Hacettepe University

Graduate School of Social Sciences

Department of Translation and Interpreting

A DESCRIPTIVE STUDY ON THE TURKISH TRANSLATIONS OF EUROPEAN PATENT DOCUMENTS

Gülden TANER

Master's Thesis

Ankara, 2011

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KABUL VE ONAY

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Yukarıdaki imzaların adı geçen öğretim üyelerine ait olduğunu onaylarım.

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ÖZET

TANER, Gülden. *Avrupa Patenti Belgelerinin Türkçe Çevirileri Üzerine Betimleyici Bir Çalışma*, Yüksek Lisans Tezi, Ankara, 2011.

Teknolojik gelişmeler ve yeni buluşlar sonucunda patent işlemleri giderek daha fazla bürokrasi ve çeviri gerektiren bir disiplin haline gelmiştir. Bu açıdan, patent başvuru dokümanlarının çevirisi, çeviri kuramcıları ve profesyonel çevirmenler tarafından, özellikle de çeviri metin yasal sınırlamalara maruz kaldığı için sıklıkla tartışılan bir kavramdır. İstemlerin yazımı ve stili ile ilgili yönetmelikler yanında patent disiplinindeki metin geleneği, patent çevirisini özel dikkat gerektiren bir alan kılmıştır. Yürürlükteki mevzuatla da ilintili olarak, bu çalışmanın temel amacı teknik çeviri stratejilerinin patent dokümanlarının, özellikle de İstemlerin çevirisine uygulanabilirlik derecesini araştırmaktır. Türkiye'de çevirmenlerin karşılaştıkları durumlar ve sorunları görmek amacıyla, patent başvurularının İngilizce'den Türkçe'ye yapılan resmi onaylı çevirileri orijinal metinlerle karşılaştırılacaktır. Analiz sürecinde, işlevsel çeviri kuramcılarının bakış açısı baz alınmıştır. Tartışmalar Hans J. Vermeer'e ait Skopos Teorisi çerçevesinde Herman (1993) tarafından öne sürülen teknik çeviri stratejilerinin uygulanabilirliği üzerine yönlendirilerek, çeviri metinde hedeflenen işlevin çeviri sürecinde çevirmenlerin aldıkları kararlar üzerinde büyük etkiye sahip olduğu sonucuna ulaşılmıştır. Bu bağlamda, bazı teknik çeviri stratejilerinin, örneğin '*uzun cümleleri bölme', 'anlamı açıklama amacıyla dipnot/sonnot ekleme'* ya da *'terimin daha genel ya da daha özel bir ifadeyle karşılanması'* gibi stratejilerin, hukuki düzenlemeler gereğince patent dokümanlarının, özellikle de İstemlerin çevirisine uygulanamaz olduğu belirlenmiştir.

Anahtar Sözcükler: teknik çeviri, patent çevirisi, İstemler, işlevsel çeviri kuramları, Skopos.

ABSTRACT

TANER, Gülden. *A Descriptive Study on the Turkish Translations of European Patent Documents*, Master's Thesis, Ankara, 2011.

Due to the technological developments and new inventions, patenting became a huge discipline involving loads of bureaucracy, paperwork and translation. With this regard, the translation of patent application documents is a concept widely discussed by translation scholars and professional translators; mainly because drafting of the translated text is subject to legal restrictions. The regulations pertaining to the style and writing of Claims as well as text tradition in patent discipline made patent translation a task demanding special attention. With reference to the legislation in force, the main aim of the study was to investigate the extent to which technical translation strategies were applicable to the translation of patent documents, especially to the translation of Claims. In order to see the real-life conditions and the problems encountered by translation professionals in Turkey, officially approved translations of patent applications from English into Turkish were compared with their original versions. In the analysis process, the perspective of functional theorists of translation was adopted. Discussions were directed on the applicability of technical translation strategies proposed by Herman (1993) within the framework of Skopos Theory of Hans J. Vermeer which led to the conclusion that the intended function of the translated text was of great influence on the decisions of translators during the translation process. In this respect, some of the technical translation strategies, namely *'breaking up long sentences'*, *'including footnotes/endnotes to clarify meaning'* or *'using a term with a different degree of specificity'* were found to be inapplicable to the translation of patent documents, especially to the translation of Claims because of legal arrangements.

Key words: technical translation, translation of patents, Claims, functional theories of translation, Skopos.

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LIST OF ABBREVIATIONS

DC	Dependent Claim
EP	European Patent
EPC	European Patent Convention
EPO	European Patent Office
IC	Independent Claim
PCT	Patent Cooperation Treaty
SD	Sample Patent Application Document
SL	Source Language
ST	Source Text
TD	Translated Patent Application Document
TL	Target Language
TPI	Turkish Patent Institute
TT	Target Text
USPTO	The United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WO	International Patent

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INTRODUCTION

I. GENERAL REMARKS

Translation has a vital role in every segment of life, from the rapidly changing global technological currents to the trends of translated best-sellers or literary works; although regarded as a secondary profession or just a part-time activity by many. Day by day, as the need for translation that legal, cultural and technological affairs of modern societies brought about increased, discussions on translation studies have become more prominent. This prominence led to an increase in the number of articles and studies dealing with technical translation; technical translation started to be valued just as much as literary translations. The traditional view of theorists and researchers backing the idea that literary translation is of more importance gradually took its way towards a tendency to develop translation strategies applicable to different text types.

Since the whole world was after keeping up with the state-of-the-art, which accelerated further developments in scientific fields in order to hit the leading position in science and technology, the focus of translation studies shifted from linguistic approaches onto functional theories of translation. This functionalist approach to translation will provide the theoretical grounds this study will be built on. In this era, translations were no longer seen solely as a linguistic matter, the functions translated text would posses, professional requirements, a better quality service and customer needs started to shape the process of translating, and the purpose of translation determined the outline of translating process.

The recognition of and respect for text types throughout the translation activity was marked by Katherine Reiss' *Text Types*, who noted the functional aspect of translated texts and proposed translation strategies accordingly. In the same era, translation was defined by Holz-Mänttäri as an activity involving different role-players. These approaches of Reiss and Holz-Mänttäri provided the basis on which a leading functional theory of translation, the *Skopos Theory* by Hans J. Vermeer was put forward. These

three concepts dominated the talks and discussions on translational activity recently, and will form the theoretical framework of this study.

Needless to say, the above-mentioned fast forward action in terms of technology is empowered by academic circles and trade partners globally. The advancements in technology entailed an increase in the use of specialized terminology and paperwork throughout the world which in turn necessitated a load of translation; it is, not to mention the effect of globalization, due to the fact that every new technology is shared, either for the benefit of humanity or for commercial interests. As the growing technology paves the way for new inventions, and as it is beneficial for all those involved in the use of these inventions, legal protection is sought in order to secure and encourage the inventors.

Patent protection in this concept is a shelter to protect inventions from being stolen, and a privilege provided to the inventor for the use of his/her invention to ensure his/her financial profit out of his/her own intellectual property. This legal protection provided to the inventor naturally requires a great deal of red tape as well; there are certain application documents to be filed in order to get an invention patented. The rules pertaining to the writing of these documents are set by law. Patenting thus has become a discipline that has a specific language use which may as well be called a *patent jargon*. Therefore, the concepts related to the patents and patenting process will be introduced in a chapter dedicated to patent documents only. Similar conditions and procedures apply for the other countries where the inventor would like to validate his/her invention. There are again some documents to be presented to national agencies. Throughout this validation process, translations of each document will be inevitably necessary, rendering the patent translation process highly important in legal terms.

Depending on all that has been said above, translation of patent application documents has been of a great concern recently (Shimohata, 2005). As the technology leaps forward, the paperwork conducted as well as the patent documents to be translated increases, thus rendering patent translation a primary subject of academic discussions

globally. In this respect, this study will concentrate on the translation of patent documents filed in the application process.

II. PROBLEM SITUATION

Research and studies carried out in the field of translation traditionally addressed literary and cultural issues and discussions were mainly about the problems encountered by literary translators. As the technology shot up, the demand for the translation of technical texts arose; occupying a larger share of the total translation work accordingly, translation of technical texts became a more widely studied and discussed phenomenon in this field.

What is mostly accepted by translator scholars when it comes to the translation of technical texts or the strategies applied in parallel is that the translator should produce a text, which is clear, concise and correct (Herman, 1993, p.11). This strategy, as these three features are the basic rules widely accepted in technical writing, formed the basis of further future discussions afterwards and became the main pillars of any discussion held by other scholars studying in the field of technical translation.

This basically meant that for the sake of clarity, conciseness and correctness, the translators could employ such strategies as including endnotes and footnotes, omission of words and/or phrases or breaking up long sentences.

However, none of these solutions proposed would be applicable to the translation of patent documents as there is a predetermined writing format. Since they are not only technical texts but also reference texts in legal terms, patent document texts have to be produced in accordance with the laws and regulations which will be specified in the upcoming chapters in greater detail. Therefore, it is more logical to consider the other functions translated text will possess and abandon the view that sees source text consisting merely of terminology and that ignores the function and special language translator have to achieve in target.

According to the functional theories of translation, namely the Skopos theory put forward by Hans J. Vermeer in 1970s, the translated text should have the same function as intended when producing the original text. The function of a patent document is to define the scope of the patent protection; it is the final and only source to examine when needed. The same applies for the translated patent documents, which renders the translated document a legal text as per the regulations in force in Turkey. In order for the translated text to be accepted as valid and to serve the same aim, translator needs to satisfy these formal and stylistic necessities defined legally, besides translating linguistic units.

As mentioned before, the translated patent documents have to use a certain terminology, and should be in a predefined format, which is determined by the Turkish Patent Institute (TPI) and published in the application guide[1], TPE Başvuru Kılavuzu (hereinafter referred to as TPI Guide). The formal features such as margins, line numbers, tables and figures, terminology and language use are all defined in the guide, and translator should produce a text complying the necessary standards during the translation process. For instance, there is a statement regarding the writing of Claims part in the application document, in which the scope of protection is defined in legal terms. This is noted as "the protection scope is defined by the Claims, special attention should be paid to the writing of Claims[2]" (TPI Guide 2010, p.4).

What is important here at this point is that, Claims consist of only one sentence (Lyon, 2005, p.5). Which means, in a single claim, which generally lasts for approximately fifteen or twenty lines, translator cannot use more than one sentence; thus cannot break up the long sentences, and the sentence cannot be "completely recast" as proposed by Herman (1993, p. 13).

Moreover, the translator cannot simplify or generalize, as offered by Herman (1993, p.11) the terms used in a claim, because generalizing a term means generalizing the

[1] Application Guide referred to herein is published in Turkish, in the year 2010.
[2] Unless stated otherwise, the citations from Turkish sources are translated by the author.

scope of protection, which will result in a failure of validation as the scope of patent will not be the same with the original invention. Just as there is a predetermined format and since this predetermined format does not allow, the translator cannot include “a translator's note, a footnote or an end note” (Zerling, 2010).

II.I. Problem Statement

Because of the legal obligations and restrictions, the translator cannot use above-mentioned technical translation strategies while translating the patent documents, which are highly technical texts. This causes the translator to experience a dilemma, between what s/he has been told to do when s/he experiences difficulties in transferring source text to the target and what s/he is supposed, or obliged, to do according to the laws and regulations in force.

III. THESIS STATEMENT

Although patent documents are among the most highly technical texts in terms of structure and terminology use, the traditional strategies of technical translation, or more basically the generally accepted suggestions for technical translation cannot be employed for the translation of patent documents. Instead, the functional theories should be taken into consideration since the patent texts have multiple functions; or to state more specifically, since the translated patent application documents function both as technical texts defining the method and application of an invention and as legal texts to define the scope of protection and the extent of patent right.

This leads to the a conclusion that every text can have more than one function as claimed by the functionalist theorists; therefore, strategies put forward by linguistic-oriented theorists who pay attention to only linguistic features of a text and classify the texts according to their content matter and who ignore the function translations will posses in the target context, will not always help the translator in the translation process; as clearly seen in the case of patent translation.

IV. METHODOLOGY

To illustrate the different strategies used in the translated texts, and to see the extent to which the function is preserved during translation, a descriptive analysis will be carried out on the translations of patent documents translated from English into Turkish. In this descriptive analysis, examples taken from four sample texts will be analyzed with an eye on the formal features determined by law, and tables comparing the original and translated samples will be presented for discussion.

There are many international organizations related to the protection of inventions and patent rights globally, such as World Intellectual Property Organisation (WIPO) which grants international patents, and other regional offices such as European Patent Office (EPO), the United States Patent and Trademark Office (USPTO), and the Japanese Patent Office which are the biggest three in the world, each issuing patents valid within their own territory (Ascheron and Kickuth, 2005, p. 225).

Turkey is in both the territory of WIPO which was established by WIPO Convention in 1967 and which grants patents under Patent Cooperation Treaty (PCT); and also in the territory of EPO established by European Patent Convention (EPC 1973, Article 4, Paragraph 1). Turkey is a party to PCT and EPC since January 1, 1996 and November 1, 2000 respectively. For this reason, WIPO patents and EPO patents are the ones validated most in Turkey and nearly all of the patent translations from English into Turkish in Turkey are carried out under the implementing regulations of Decree Law No.551 Pertaining to the protection of Patent Rights[3] in accordance with the regulations of EPC and PCT.

During the patenting process, each patent application is given an application number; these application numbers begin with two letters showing the type and origin of application. For instance, patent applications filed to the EPO and within scope of EPC

[3] Patent Haklarının Korunması Hakkında 551 Sayılı Kanun Hükmünde Kararname (KHK 551)

have the letters “EP” before the patent number which stands for “European Patent”. Similarly, patent applications filed to WIPO within the scope of PCT have the initials “WO”.

In order to confine the results of possible translation samples, these two kinds of publications in Turkey were compared in quantity. The patent search on the online database[4] of Turkish Patent Institute (TPI), mostly referred to by the patent attorneys and researchers, was conducted. As of March, 2011, it was seen that the patents whose publication numbers begin with the letters “WO” had 11483 results on 766 pages, while the query for patent publication numbers beginning with “EP” gave 26298 results on 1754 pages. It’s a fact that these figures change day by day as new validations take place, but it’s not likely that the number of PCT patents will easily exceed that of EPC patents. The results thus lay bare the inference that the most frequent patent type seen in Turkey is the European Patents (EP).

Therefore, to better represent the major part of patent translation conducted on the market in Turkey, source texts were chosen from the patents published under the control of EPO. These patents, as it was said before, can be also named shortly as European Patents (EP) with respect to the Article 2 Paragraph 1 of the European Patent Convention (EPC) which reads “Patents granted by virtue of this Convention shall be called European patents” (EPC 1973). Another criterion in the selection of these patent publications was that Turkey was among the designated countries. This ensured that the published patent would have a translation into Turkish.

As the official organ which validates patents, approves translations and grants the patent rights in Turkey is Turkish Patent Institute (TPI), the translations of original patents are taken from the online patent database on the official TPI website. It is not always possible to download all application documents from the TPI database; hence, the target texts were chosen from those available to download on official website. After randomly chosing ten EP applications validated and published in Turkey, the sampling pool was

[4] http://online.tpe.gov.tr/EPATENT/servlet/PreSearchRequestManager

further narrowed down so that the chosen texts for study would display all of the common characteristics and the jargon of patent documents most likely to be encountered in patent literature. The samples used in this study were also selected in such a way that they would be related to varying scientific fields as much as possible.

V. RESEARCH QUESTIONS

With a thorough research on theory and practice and a comprehensive analysis of source and target text samples, this study aims to find suitable answers to such questions as:

- Can patent documents be regarded merely as technical texts?
- What are the strategies proposed for translating technical texts?
- To what extent are these strategies applicable to the translation of patent documents?

VI. OUTLINE OF THE STUDY

In this descriptive study, the translation of patent documents, in particular the translation of patent Claims are examined from the perspective of functional theories of translation; with a particular attention to the common principles of style and legally determined writing format which shape the translation process. Unlike PhD Dissertation by Elif Daldeniz (2004) who examined the existency of text tradition in Turkish patent documents from the linguistic standpoint, this study focuses on the translation of these documents from the functionalist and translational perspective by comparing Turkish texts with English originals.

The introduction chapter, which has been presented so far, was aimed to define the problem this study focuses on, inform about the current state of translation studies discipline, and introduce the general outline of this study. After describing the problem situation, it presents research questions and main issues that will be addressed throughout the study. The methodology part, including information on sampling and

limitations of the scope of study, shapes the frame of research while demonstrating the borders within which the analysis is conducted.

The first chapter, titled as “Patents and Patent Documents” will dwell on the patenting procedure, in order to provide sound background information about the aim and stages of patent validation process. First, the concepts related to the patenting process will will be explained briefly to give an answer to the question of what patent is. It will also be helpful in that it will introduce the terminology which will dominate the discussion parts of this study.

The documents needed in the patenting process will also be introduced. All parts of patent application documents will be exemplified separately to clearly show the characteristics and stylistic features they have. The examples used in this definition chapter are taken from the sample patent descriptions annexed to the 13th Edition of Guide for Applicants published by EPO (2010), which will be referred to as “EPO Guide” from now on. The structure, language use, form and style of these texts will be presented via these examples as laid down by the articles and decrees prescribed by legal authorities. This part would also ensure understanding the flow and use of language in patent documents. The function of the separate parts of patent documents in this process and the legal documents which lays the principles in contouring the translation process will, along with the liabilities of the translator, be explained, with reference to international agreements and implementing regulations.

As the first chapter will provide sufficientamount of background information for the analysis part, the second chapter aims to provide a theoretical perspective and it shapes the borders within which the theoretical background to this study will be provided. The second chapter, i.e. Theoretical Framework, will mostly elaborate on the theories constituting the essence of this thesis. This theory chapter is made up of two main parts, first of which will be dealing with the specific area of technical translation while the second part will be on the functional theories of translation.

At the beginning of the theoretical framework, in the first part, the definitions of technical texts and approaches to technical writing will be presented before elaborating on proposed technical translation strategies. The question "what makes a text technical?" will be answered. Upon the presentation of the fundamentals of technical translation, a broader perspective will be opened in the second part of theory chapter, and functional theories of translation will be brought forward. In line with this, Katherina Reiss' text typology and Holz-Mänttäri's translatorial action will be presented as they cover the basic assumptions of Skopos Theory, which is the main theoretical basis of the hypothesis put forward in this thesis. After a detailed introduction to the main ideas of functional theories, a discussion of ideas for and against function oriented approaches will be highlighted.

In the third chapter, a descriptive analysis of patent translations will be conducted, in order to demonstrate the extent to which the technical translation strategies are applicable to the translation of patent documents. The sample texts will be chosen from the European Patent Applications, confirmed and published under the control of European Patent Organization, or EPO as mostly referred to. Officially approved EPO patent documents will give demonstrate the style, form and language use in original documents, i.e. the source texts. Various examples will be taken from four sample texts and their translations, to show as many different language uses as possible; and each example will be dealt with under different sub-titles reflecting the part of the document they are taken from. Each sample text will be presented in a separate table, side by side with its translation to facilitate the comparison. A discussion part elaborating further on the translation process and the possible effects of the legal restrictions on the translator will also be presented under each table.

The study will end with a conclusion, in which the discussions presented in the previous chapter will be further elaborated on in the light of the theories that underlie this thesis. The conclusion will provide a brief summary of the whole thesis, reflecting the assumptions and hypotheses and the results citing the interpretation of the analysis of translated texts. Then, the answers to research questions will be provided.

CHAPTER 1

PATENTS AND PATENT DOCUMENTS

This chapter will present the basic terminology related to patents that will be used in the upcoming parts of this study. To ensure that the nature and scope of patenting is understood clearly, this section will give information as to what a patent is, why it is needed, how it is granted, what procedures are followed, which documents are needed, how these documents are prepared and what place the translation occupy in this patenting process. As the patent texts are the main subject of analysis in this study, the parts of patent application documents and the language used in these documents will be demonstrated through examples extracted from the exemple patent documents annexed to the EPO Guide[5].

1.1. WHAT IS A PATENT?

Patent is a right granted to an inventor, to freely use and benefit from his/her invention (cf. Pasa and Benacchio, 2005; Carr, 2009; Hitchcock, 2009; Tankha, Bout, Fernandes and K.S., 2011). When an invention is made, in order to benefit financially from the advantages it brings and in order to protect the invention from being stolen, inventions and inventors are protected by law. This protection provides the inventor for a certain period with the right "to stop others from making, using or selling the invention without [their] permission" (Richard Mimick, William E. Smith, Michael Thompson 2005, p.119). This patent protection is also granted simply to encourage new inventions through the privileges it ensures for the patent holder.

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[5] Available at http://documents.epo.org/projects/babylon/eponet.nsf/0/8266ED0366190630C12575E10051F40E/$File/guide_for_applicants_part1_05_10_en.pdf

1.2. PATENTING PROCESS

Once an invention is made, an application is filed in order to benefit from legal protection. In the patent application, the inventor either chooses to apply for a patent by her/himself, or s/he assigns a patent attorney to conduct legal processes on his/her behalf.

In order for an invention to be granted a patent, it must be "patentable". There are different definitions by various authors of books on patents; although they vary in terminology, the word they converge on is the "new", i.e. "novel". For instance, while Ascheron and Kickuth (2005) state that a patentable invention must be new and capable of industrial applications, it must involve an inventive step and be consistent with known physical laws; Grissom and Pressman note that in order for an invention "to be patentable", it must be in line with at least one of the statutory classes defined, it must be useful and novel and not known to someone skilled in the art (1996, p.49).

The European Patent Convention defines patentability in Article 52, Paragraph 1 where it states "European patents shall be granted for any inventions, in all fields of technology, provided that they are new, involve an inventive step and are susceptible of industrial application" (European Patent Convention [EPC] 14th ed., 2010). Chapter 1 in the Part II of EPC is on patentability issue and it covers the articles pertaining to novelty, inventive step and industrial application (Articles 54, 56 and 57 respectively). As these aspects of the invention are the conditions *sine qua non* for the grant of a European Patent, the meaning intended to be conveyed through the use of such terms as '*novelty', 'inventive step'* and *'industrial application'* should be investigated first. In this respect, below is provided a list of definitions of the above-mentioned terms.

Novelty: Article 54 Paragraph 1 of the European Patent Convention discloses that an invention is new if it exceeds the state of the art on the day of filing of the European patent application, in other words, the date on which the requirements laid down in the Implementing Regulations are fulfilled (EPC 14th ed. 2010, Article 80). The term '*state of the art'* here means any kind of related information in a particular field of technology

which is publicly available on a particular date, and state of the art includes previous patent applications as well (EPC 14th ed. 2010, Article 54, Paragraphs 2 and 3).

Inventive Step: It is defined in Article 56 of EPC as "An invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art". (EPC 14th ed., 2010)

Industrial Application: EPC Article 57 states "An invention shall be considered as susceptible of industrial application if it can be made or used in any kind of industry, including agriculture". (EPC 14th ed., 2010)

If an inventor considers his/her invention to be patentable under the above mentioned terms, then s/he applies for a grant of patent. The European Patent Office is the body which conducts search, examination and grant of patents on behalf of contracting states party to the EPC (Harhoff, Hoisl, Reichl, Potterie and Bruno, 2007, p.4). The international application procedures, namely the PCT application steps are more or less the same and EPO is a receiving office for applications both at international and at European level, which means the procedure before the EPO is aligned with that of WIPO which is the direct authority that gives international patents to PCT applications. Therefore, since the procedures are aligned, the application documents are similar in format. Considering the similarity of documents and considering the fact that the main subject of this study will be the translation of patent documents of EP applications, EP applications will be presented as the exemplary procedure below.

First thing the inventor has to do is to decide the region s/he wants his/her intellectual property to be protected. Depending on the type of and the area s/he intends to use the invention, s/he may apply for validation in one or two countries, or s/he may seek a wider protection in multiple countries. This case is further commented on by Ascheron and Kickuth in their guide book for young scientists where they advised "in deciding where to apply for a patent application, you and your legal advisor need to consider the potential market for the product, device or process that you wish to patent" (2005, p.224).

If patent protection is to be sought in more than one country, it is much more logical for the inventor to file an international patent application, for instance under PCT or under EPC. Article 3 in European Patent Convention reads: “The grant of a European patent may be requested for one or more of the Contracting States” (EPC, 14th ed., 2010). After the grant of the patent, if the applicant decides to apply for the validation of his/her patent in one or more of EPO countries, s/he has to follow a certain path in order to validate his/her patent; s/he will have his/her patent validated in each designated country in accordance with the national legislation and with the implementing regulations for EPC in that specific country.

EPC Article 1 establishes a law system for the grant of patents for inventions. This system is common to 38 Contracting States, which are Albania, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Great Britain (UK), Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Monaco, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and Turkey. In this above-mentioned law system, there is a common procedure to be followed by patent applicants in each country as well as in the national validation of EP applications. This patenting procedure up to grant is explained further in European Patent Convention. Rather than focusing on the legal processes, this study concentrates on the application documents, which will be presented and exemplified below.

1.3. PATENT DOCUMENTS

In the first step of this application process, the applicant should provide necessary documents to EPO (EPC 14th ed., 2010, Article 78), which include (a) a request for the grant of a European patent; (b) a description of the invention; (c) one or more Claims; (d) any drawings referred to in the description or the Claims; (e) an abstract (Ascheron

and Kickuth, 2005, p.225). In order to facilitate understanding, the patent documents and their compulsory and uncompulsory components may be listed as below:

1) Request For Grant
2) Description[6]
    a. Title
    b. Technical Field
    c. Background Art
    d. Summary of The Invention
    e. Brief Description of Drawings
    f. List of Reference Numerals
    g. Detailed Disclosure of the Invention
3) Claims[7]
    a. Independent Claims
    b. Dependent Claims
4) Drawings
5) Abstract

Figure 1.1 Patent Documents and Their Sub-titles.

These documents are the main components of an application and they are subject to the procedure specified in the previous part of this chapter in order to be granted a patent. The draft description, Claims and abstract are examined and revised documents are published after the grant of patent. As these are the main documents in the patent application procedure both before national and before international authorities (Daldeniz, 2004, p.40), drafting of these documents are subject to a predetermined "template". Due to the fact that the writers of these texts have to follow a certain path

[6] Please note these components are always provided in the flow of description but their sub-titles may not be presented as it is not obligatory to include sub-titles for each of these components.
[7] In the Claims part, sub-titles are never used.

determined by legal texts, these documents are regarded as one of the text types where text traditions are seen most (Göpferich, 1988, as cited in Daldeniz, 2004, p.65).

Once a patent is granted, the inventor will seek validation in designated countries, i.e. a patent granted at European level "has to be converted into a national patent in each state for which protection is desired" (Harhoff et al., 2007, p.4). This condition may, in accordance with the national regulations in force, require translations into the official language of the designated country. In Turkey, for validation of EP applications, a Turkish translation of the patent documents is required [Article 12, in the Regulation on the Implementation of European Patent Convention Pertaining to the Grant of European Patents in Turkey (as revised on 22.05.2008)].

Before going further on the issue of translation, the characteristics of these patent application documents will be defined, along with examples clarifying the style used in these documents.

It was explained before which documents were needed in the European Patent application process. They each have a specific style and language use, and they have certain characteristics. The first of the required application documents is the request for the grant of patent, which is a form to be completed by the applicant. When the applicant applies for validation at national level, s/he does not have to provide the translation of this form; rather, there are other similar forms to be filled in and submitted to Turkish Patent Institute.

As these forms are not translated into Turkish, they will not be introduced here in detail. However, the other necessary documents for national validation, that are the description, Claims, drawings and abstract, will have to be translated into Turkish and this translation is accepted as the authentic text in case of disputes. The importance of translation and the liabilities it brings about will be further elaborated at the end of this chapter under the sub-title "Role of Translation"; prior to these discussions, firstly the texts translated in the validation procedure will be introduced.

1.3.1. Description

The description of invention is the part where the applicant describes his/her invention in detail, by adding illustrations and diagrams, s/he makes clear how a process or object functions or what it looks like (Mohan, 2011). As Grissom and Pressman state:

> Your patent application must contain a description of your invention in such full, complete, clear, and exact terms, including details of your preferred embodiment at the time you file, so that anyone having ordinary skill in the field will be readily able to make and use it, and preferably so that even a lay judge will be able to understand it. (1996, p.53)

This suggestion of Grissom and Pressman (1996) is clearly stated in Article 83 of the EPC, which basically requires the invention to be disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (EPC 14th ed. 2010). Rule 42 in the Implementing Regulations to the Convention on the Grant of European Patents outlines the components of the description as below:

> (1) The description shall:
> (a) specify the technical field to which the invention relates;
> (b) indicate the background art which, as far as is known to the applicant, can be regarded as useful to understand the invention, draw up the European search report and examine the European patent application, and, preferably, cite the documents reflecting such art;
> (c) disclose the invention, as claimed, in such terms that the technical problem, even if not expressly stated as such, and its solution can be understood, and state any advantageous effects of the invention with reference to the background art;
> (d) briefly describe the figures in the drawings, if any;
> (e) describe in detail at least one way of carrying out the invention claimed, using examples where appropriate and referring to the drawings, if any;
> (f) indicate explicitly, when it is not obvious from the description or nature of the invention, the way in which the invention is industrially applicable. (EPC 14th ed., 2010)

To this end, the description text is written in a certain way – in a way that may even be called to be according to a *template*, (as suggested by Zerling, 2009 and 2010) which

will be attempted to be clarified by the help of examples taken from the official website of European Patent Office[8].

Unless stated otherwise, all the examples are taken from the sample application documents annexed to the 13th Edition of Guide for Applicants published by EPO which was published in May 2010 as updated to 01.05.2010, hereinafter referred to as the "EPO Guide".

In the EPO Guide, there were three sample description texts annexed. To better present the flow of ideas and a consistent style, one of them was chosen to exemplify all the headings under this chapter. The sample text in field of mechanics was chosen as the primary example because it is the one that shows the characteristics most clearly; that is, it has all the preferred sections with titles, and the claim format is the most widely used and standard one. However, when talking about other types of Claims that are also accepted by EPO, the other two sample application texts annexed to the EPO Guide will be referred to.

1.3.1.1. Title

The description starts with a title, which gives information about the field of invention and the specific advantage it offers. Zerling (2010) defines title as "a technical description of the invention" and notes that it is usually made up of words used in the opening part of claims.

A sample title for a patent is advised to be short, just enough to inform about the content and the related field of a patent application - such as "Device to Deliver and Mix Water", as seen in the examples provided in the EPO Guide. This title is in conformity with the advised length for a title of an invention, giving information about the type of invention (i.e. patent protection for a device and/or product and/or method of production; eg. this example is a product patent) and about the field the invention is

[8] http://www.epo.org/index.html for homepage, http://ep.espacenet.com/ for patent search.

related to. In some cases they may also be so long as to provide more specific information about the content and the scope of the claim, an example of which can be given as “Methods, Systems, And Computer Readable Media For Verifying The Availability of an Internet Protocol (IP) Media Router During a Call Setup” (a random example taken from Espacenet database).

The statements related to abstracts are seen in Articles 78 and 83 of EPC and regulations pertaining to the writing of title are laid down in Rule 47 of the Implementing Regulations for EPC.

1.3.1.2. Technical Field

The technical field is the part of the patent description text where the area the invention related to is defined (Implementing Regulations to EPC, Rule 42, 1a). In writing the description, the applicant shall specify the technical field to which the invention relates in the technical field part. This can be done by presenting the prior art portion of the independent claims or just by simply referring to it (EPO Guide, p. 27).

As seen below, this part may have a sub-title such as “Field of the Invention” or “Technical Field”. An example is given as:

> Field of the Invention
>
> The invention concerns a device for to deliver and mix water able to be employed in electronically controlled taps wherein delivery is commanded, substantially automatically, through sensor means which detect the presence of the user.

It is seen from the example above that due to its structure and meaning, even when it does not have a sub-title, the technical field can easily be recognized and identified by someone experienced in patent document writing and/or reading.

1.3.1.3. Background Art

Background Art part of description (also referred to as Background of the Invention) introduces the previous developments in science and technology that form the base the invention builds up on. This section generally includes references to patent applications and patents that were previously published in the same technical field, and summarizes the ways this background art had to be improved. This part also provides justifications for novelty of claimed characteristics of the invention, while constituting the grounds of evidence as to why the invention is advantageous over the prior art.

First, the state of the art in the specific field the patent protection is sought is introduced, i.e. information about what is currently known in technology is provided. It can also be clearly seen in the sample description included in the EPO Guide:

> Background of the Invention
>
> The state of the art includes monocommand mixer taps comprising a mixer cartridge, located inside the monoblock of the tap, associated with a lever, which allows to regulate both the mixing and the delivery of the water, and which is mounted above the monoblock.
> The state of the art also includes taps of the electronic type wherein the water is delivered substantially automatically when the user approaches the taps.

After this introduction, the technical features of known art is described in detail so that the deficiencies of the prior art is seen and the advantages the invention brings can be better noticed. After this technical information part, the disadvantages of prior art is discussed, such as:

> […]
> This means that it is necessary to design and make specific monoblocks for the electronically controlled taps, that is, different from those for monocommand mixer taps, with greater problems in terms of planning the production and managing stocks.

> Moreover, the greater size of the monoblock considerably limits the design and aesthetics of the tap.
> Furthermore, the presence of electric and electronic parts inside the monoblock in the zone where the water passes can cause malfunctions of the tap and can compromise the safety of the user.

The background art part may also include references to previous patents and patent applications, if there are any:

> WO-A-97/47828 discloses a sanitary fitting having a housing part and an exit part containing the exit channel. […]
> EP-A-0831260, which comprises the features of the preamble of claim 1, discloses a single-control mixing valve with temperature control having two operating states, a normal operating state and a manual operating state.

1.3.1.4. Summary of the Invention

It is not compulsory to give a summary within the description but when present, it provides a general overview of the patent application, and implications of the technical problem to be solved. It is also referred to as "Brief Description of the Invention" since it briefly describes the method or product, lists the aims of the invention in terms of reducing complexity of processes, improving quality, saving time and costs and so on, along with the advantages it aims to achieve. This summary, unlike the "abstract" part, is a general disclosure of the invention, which outlines the technical information without going further in detail. It provides the general common characteristics applicable to all possible embodiments and do not include any reference to figures or to any specific preferable embodiment of proposed invention.

In the sample patent text of EPO Guide, this section is again provided under a separate sub-title. First, the aims of the invention are listed. Although some descriptions may lack the summary part, all the descriptions list the aims, i.e. purposes of their invention as given in the exemplary application text:

Summary of the Invention

The invention is set forth and characterized in the main claim, while the dependent claims describe other characteristics of the invention.

The purpose of the invention is to achieve a device for the automatic delivery of water, which can be associated with a monoblock for mixer taps of a substantially standardized type, that is, of the type for monocommand mixer taps, thus obviating the need to produce a specific monoblock for electronically controlled mixer taps.

Another purpose of the invention is to achieve a device for the automatic delivery of water which is practical, functional and compact and can be used in conditions of absolute safety for the user.

After this listing of goals, technical details are provided:

The device according to the invention comprises a mixer cartridge, able to be arranged inside a monoblock for mixer taps of a conventional type, means to regulate the mixing of the water and actuation means, commanded electrically, and comprising an interception element cooperating with said cartridge to open and close the flow of water.
The actuation means is associated above the mixer cartridge, in a position outside the monoblock of the tap, and cooperate with a sensor able to automatically determine the activation of said actuation means in the presence of the user.
The actuation means are fed by batteries.
The means to regulate the mixing, the actuation means and the electric and electronic components connected thereto are integrated into a single block and coupled above the mixer cartridge in a position outside the monoblock.

Finally, the advantages achieved by the invention are presented:

The device according to the invention is therefore able to be associated with monoblocks for monocommand mixer taps and thus allows to obviate both the problem of stylistic limitations and design imposed by the devices for electronically controlled taps, and also the problem of production and storage of different types of monoblock.

> The separation of the electric and electronic parts from the mixer cartridge confers characteristics of extreme safety and functionality on the device according to the invention.

1.3.1.5. Brief Description of Drawings[9]

This part is not usually given under a separate sub-title within the description text, nor required to be so. There are exceptions in which a sub-title, such as "Brief Description of Drawings" or "Legend to Figures" is provided. In this part of the description, the drawings illustrating various embodiments, if there are any, are described in order to help in the interpretation of the figures and the exemplary embodiments of the invention.

In the sample text, this part is given under the title "Brief Description of Drawings":

> These and other characteristics of the invention will be clear from the following description of a preferential form of embodiment, given as a non-restrictive example, with reference to the attached drawings wherein:
>
> > Fig. 1 shows a longitudinal section of a device according to the invention associated with the monoblock of a tap;
> > Fig. 2 is a side view of a tap provided with the device according to the invention.

1.3.1.6. List of Reference Numerals

This is also an optional part of the description in which the reference numerals used in the figures are listed along with the parts they correspond to. This section is of great help in the interpretation of the drawings; and is a valuable source of assistance, as a consistency among the reference numerals and the parts they refer to has to be achieved

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[9] Please note that the terms "Drawings" and "Figures" are always used interchangeably in patent literature to refer to technical drawaings illustrating the preferred embodiments of the inventions.

along with an overall terminological consistency throughout the text. It also serves as a checklist of terminology in the translation process, which shortens the time allocated to the editing of translated text. Since it is not compulsory, it is not included in the sample text annexed to the EPO Guide.

1.3.1.7. Disclosure of the Invention

The "Disclosure of the Invention", or "Detailed Description of the Embodiments" part is usually the longest section of a patent description. In this part, one or more embodiments of the invented subject matter are described in detail, with reference to the drawings. As mentioned above, all the parts illustrated in figures are each assigned a reference numeral; these reference numerals are indicated whenever these parts are mentioned in the detailed description.

This section provides all technical details related to the embodiments of an "invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art" (EPC 14th ed., 2010, Article 83). This description acts as a guide in understanding of Claims; that is, the detailed description is the part which renders the correct interpretation of Claims possible. It is clearly stated in Article 100 Paragraph (b) of the EPC that any failure to meet this requirement of clear and complete disclosure is considered a valid reason for opposition against the grant of patent right (EPC, 14th Edition, 2010).

In the exemplary paragraphs taken from the sample description of EPO Guide, use of reference numerals and the intensive use of terminology in the disclosure of technical details can be clearly seen:

> The drawing and distribution element 18 comprises a central aperture, or discharge or outlet aperture 18a, communicating with the hole 17a and a peripheral aperture 18b communicating with the eyelet 17b.

Sealing elements 23, 24, 25 are provided respectively between the bottom 14 and the supporting base 22, between the bottom 14 and the fixed platelet 16 and between the movable platelet 17 and the drawing and distribution element 18.

The upper part of the drawing and distribution element 18 protrudes with respect to the containing body 13 and has a knurling 27 on the perimeter and, at the center, a cavity 28 opening upwards.

The block 37 has at the center a first channel 29 communicating with the chamber 26 and with a second channel 31 made partly on the block 37 itself and partly on the central body 19.
The second channel 31 communicates with the axial hole 19b below the membrane 20.
A plurality of supports 34 are also mounted on the block 37, which are able to support a plate 35 on which the electronic circuit 43 is mounted.

The base 33 and the plate 35, together with the central body 19 and the block 37, define the seating 39 for the drive member 41 at the center and, on the periphery, seatings 38 for the batteries 36.

As seen above, being rich in technical details entails excessive use of terminology, which renders detailed descriptions a challenge for the translators. As they mostly require technical knowledge or a detailed terminology search before translation, the translator spends most of his/her time and effort on this part. On the other hand, as the detailed description helps better understand the structure and the scope of the Claims, it is also useful for the translator in that it provides a sound understanding of the invention.

The patent descriptions in Turkish follow a similar format since the Turkish legal patenting procedures are aligned with that of EPO. The flow of ideas as exemplified in English are also applicable to Turkish patent descriptions. The only difference is in the writing of reference numerals. The reference numerals in Turkish descriptions are written in parentheses. This requirement is clearly stated in the Article 8 Paragraph (e) of Implementing Regulations for The Decree Law 551 Pertaining to the Protection of Patent Rights. Although same is valid for EP description drafting, one is likely to

encounter reference numerals without parantheses in the description as well as ones with parantheses.

1.3.2. Claims

The scope of protection is determined by the Claims; this fact makes them a vital part both in legal and in translational terms (Daldeniz, 2004, p.45). The description part introduced above provides a basis and a justification for the Claims, and it is used for the interpretation of Claims (Article 69(1), EPC 14th ed., 2010). As also stated in international documents, in Turkish patent legislation, the Claims are required to be within the boundaries set out in the description, i.e. Claims cannot exceed the features of invention as disclosed in the description part of the application (Decree Law 551, Article 47). Another characteristic of patent Claims is that "the claim must consist of a single, albeit possibly very complex, sentence" (Sheremetyeva and Nirenburg, 1996, p.2).

As stated above, similar to other parts of a patent application, although it is possible to write Claims in a number of different ways, they have a certain format. Some claim types accepted by authorities differ in terms of structure and their specific language use. These different types of claims will be introduced here with reference to examples taken from sample patent texts annexed to the application guide of EPO.

The most widely known classification of claim types is according to their relations to other claims. A claim can be *independent;* that is, it may have no reference to other claims and describe the characterizing features of the invention on its own, or a claim can be *dependent*, which gives reference to a previous independent claim and adds some further technical characteristics to the claimed structure. Article 9 of the Implementing Regulations for the Decree Law 551 announces that an independent claim shall state all the main features of the invention. Rule 43 in the Implementing Regulations to the Part III of the Convention defines dependent claims as "any claim which includes all the features of any other claim".

Claims can also be classified in two groups according to their sentence pattern. Advised are claims consisting of two parts; in other words, they have a prior art portion (reference portion in dependent claims) and a characterizing portion (EPO Guide, 2010, p.30). However, although quite rare, it is possible to come across claims that have only the characterizing part, i.e. claims that give no reference to prior art and are therefore named as one-part claims.

These prior art and characterizing portions are each described in the Implementing Regulations for EPC; Rule 43 clearly states that:

> […] wherever appropriate, Claims shall contain:
>
> (a) a statement indicating the designation of the subject-matter of the invention and those technical features which are necessary for the definition of the claimed subject-matter but which, in combination, form part of the prior art;
> (b) a characterising portion, beginning with the expression "characterised in that" or "characterized by" and specifying the technical features for which, in combination with the features stated under sub-paragraph (a), protection is sought.

In the examples provided below, the above-mentioned claim structures will be clarified through a general analysis of sentences in the exemplary Claims:

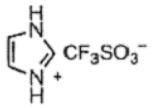
> Device to deliver and mix water for taps (12), said device comprising a mixer cartridge (30), able to be arranged inside the monoblock (11) of the tap (12), means to regulate the mixing of the water, actuation means arranged above said monoblock (11), able to determine the opening and closing of the flow of water and commanded electrically, an interception element (20) able to cooperate with said mixer cartridge (30), wherein said actuation means comprise a movable element (42) able to condition said interception element (20) and wherein said actuation means (42) are commanded by drive means (41) associated with at least a presence_sensor (44), **characterized in that** at least said actuation means (42), said drive means (41) and the related battery means and electric and electronic components (43), said presence sensor (44) and said interception element (20) are integrated in a single unit (40), which is mounted above said mixer cartridge (30) and associated to it in a position outside said monoblock (11).

When considered in terms of dependency, it is clear that this claim is an *independent* one; it has no reference to any other claim that comes before it. When its sentence structure is analyzed, it is seen that in the sample above, the claim is composed of two parts separated by a phrase *'characterized in that'*, which is the most common phrase seen in Claims as a sentence connector. The prior art portion is the part right before *'characterized in that',* which means the technical features listed in the opening part are known in the state-of-the-art. The new technical features this invention introduced to the technical field are described in the second part of the sentence; after the sentence connector. This second part, in other words the characterizing portion, is the part where protection is claimed for. This claim can be named as an independent two-part claim.

Below is another exemplary claim taken from EPO Guide:

> Device as in Claim 1, **characterized in that** timer means are associated with said drive means (41) in order to automatically de-activate said drive means (41) after a pre-determined time from when said sensor (44) detects the presence of a user.

Clearly, if examined in terms of its dependency status, the claim above is a *dependent* claim, in that it refers to a previous claim and introduces new features above the claimed new features of Claim 1. In other words, the device has all the technical properties stated in the referred claim (both in the prior art portion and in the characterizing portion of Claim 1), and it adds new features which are listed after the sentence connector. As obvious from the sample above, it is seen that again a two part claim structure is followed; nonetheless, this is a little different from the independent claim structure: the statement *"device as in Claim 1"* do not constitute a prior art portion; rather, it can be suggested that it is in the form of a 'reference portion' here. This reference part includes the prior art along with new features claimed in previous claim, and the part after the sentence connector *'characterized in that'* constitutes the characterizing portion of this claim. Therefore, this claim is a dependent two-part claim.

> A method for chemical synthesis of an oligonucleotide by the phosphoroamidite method, which comprises preparing a base moiety-unprotected nucleoside phosphoroamidite from a base moiety-unprotected nucleoside by use of an imidazole trifluoromethanesulfonate represented by the following chemical formula, and coupling said base moiety-unprotected nucleotide phosphoroamidite in a predetermined order in the presence of imidazole trifluoromethanesulfonate to chemically synthesize an oligonucleotide consisting of a specific nucleotide sequence.
>
> 

In the sample above, the sentence is comprised of one part; that is, the protection is sought for all the features listed in the sentence. It has only the characterizing portion, i.e. includes no reference to prior art or to any known technical knowledge, nor it has a sentence connector such as *'characterized in that'*or '*wherein*'. In addition to these, it has no reference to a previous claim, which makes it an independent one-part claim.

> A method according to Claim 1, wherein the coupled base moiety-unprotected nucleoside phosphoroamidite is treated with a benzimidazole trifluromethanesulfonate solution.

The claim above has a reference to previous claim, which makes it a dependent one. What is worth mentioning here is that, it has a different structure, the sentence connector *'wherein'* is used instead of *'characterized in that'*. '*Wherein'* is also a quite common sentence connector used in Claims. It divides the claim into two parts; a prior art and a characterizing portion just as *'characterized in that'* does. In this claim, as it is a dependent one, the prior art portion leaves its place to a reference portion. Thus, this claim is a dependent one, having two parts.

> An electronic device according to any preceding claim, wherein said device is mobile communication device and further comprises a communication keypad (9) constructed on said first face (8) of said second panel (6), said keypad being exposed for operative use in the closed position.

In the example above, it is seen that the reference part includes reference to more than one claim, different from the previous dependent claim examples. It is clearly stated in

Rule 43 of the Implementing Regulations of EPC that a dependent claim may refer back to several claims. In this sample, again a sentence connector, '*wherein',* is used, which makes this claim a dependent and two-part one.

Claims flow in a similar sentence pattern in Turkish, they have a prior art and a characterizing portion connected to each other by a sentence connector. As the examples of claims will be abundant in the analysis chapter and they will be discussed further under that chapter, Turkish claim samples are not included here.To put in a nutshell, it can be clearly seen from what has been said above, the Claims have certain sentence structures, along with an obviously typical language use. The language use in Claims will further be discussed in a separate sub-title with reference to previous studies conducted about patent texts.

1.3.2.1. Language Use in Claims

This peculiar language use in patent documents consisting of highly specialized terminology and complex sentence structures is most obvious in the Claims part. Though the most of the terminology used in Claims is also used in other parts of patent documents, Sheremetyeva (2003, p.67) argues that a claim is also quite different in terms of its content and syntax. The difference in syntax, noted here by Sheremetyeva, must be due to the fact that these Claims consist of only one sentence (Lyon, 2005, p.5). Daldeniz (2004) reminds that this is a well known fact in patent literature. Each claim having only one full-stop necessitates quite long sentences with almost unclear references within the sentence.

As seen clearly from the sample claims presented above, the sentence structure used in Claims are more or less the same. No matter which sentence connector is used, the claim sentences are nominal sentences consisting of a number of phrases referring to each other. This is a fact also laid down by Sheremetyeva (2003) who adds "the obligatory form of a single extended nominal sentence, (…) frequently includes long and telescopically embedded predicate phrases" (p.67). To someone unfamiliar with the technical field the invention is related to, these references may be mostly ambiguous

especially in long independent claims. To deal with the problems that are likely to arise, this is the point where the description is a source of reference which helps readers better understand the claimed features. This does not pose a burden for a person experienced in reading patent texts, the structure of these sentences are easily recognized and the relationships between the phrases become clear when one knows how to look at the text.

Another feature specific to the language Claims is the terminology used in the writing of them. Since there is an abundancy of terms used in patent Claims, the terms used in patent documents can be classified in two categories; some are "terms specific to the invention" which are novel terms used for the first time in the technical field in that particular invention, and some are "terms specific to the domain", which are used especially in patent documents and not known by those unfamiliar with patent texts (Shinmori, Okumura, Marukawa and Iwayama; 2003).

Usually, the terminology of technical field is required in understanding the invention itself; however, besides the technical terminology one has to know the functions of words or phrases specific to patent jargon in order to interpret claims correctly. An example of the words specific to patent jargon may be the word "claim" itself; and its Turkish equivalent "istem", is not a word widely used by many other than those familiar with patent descriptions. Other terms specific to the patent claims may be the sentence connectors which are '*characterized in that', 'characterized by'* and *'wherein'*. These phrases have a certain function in the patent domain, because they signal the prior art and characterizing portions of a claim. The same thing applies for the Turkish equivalents of these phrases: *'özelliği, ...dir', '... ile karakterize edilir', 'özelliği gösterir.'* or *'karakteristik özelliği şudur: ...'*.

1.3.3. Drawings

It is not obligatory to add drawings to a patent application, but they greatly help in the illustration of the preferred embodiments of an invention; as noted in Article 69 of EPC, they are used in the interpretation of the scope of Claims along with the description. Nearly all patent applications include technical drawings, which may be either in forms

of schematic illustrations, flow diagrams or charts. Illustration of molecules and chemical compositions can be presented in the drawings. Drawings also include the reference numerals related to each part of the claimed structure, thus making the understanding of description and Claims easier. The reference numerals of corresponding parts of an invention can be seen from the exemplary Figure annexed to EPO Guide:

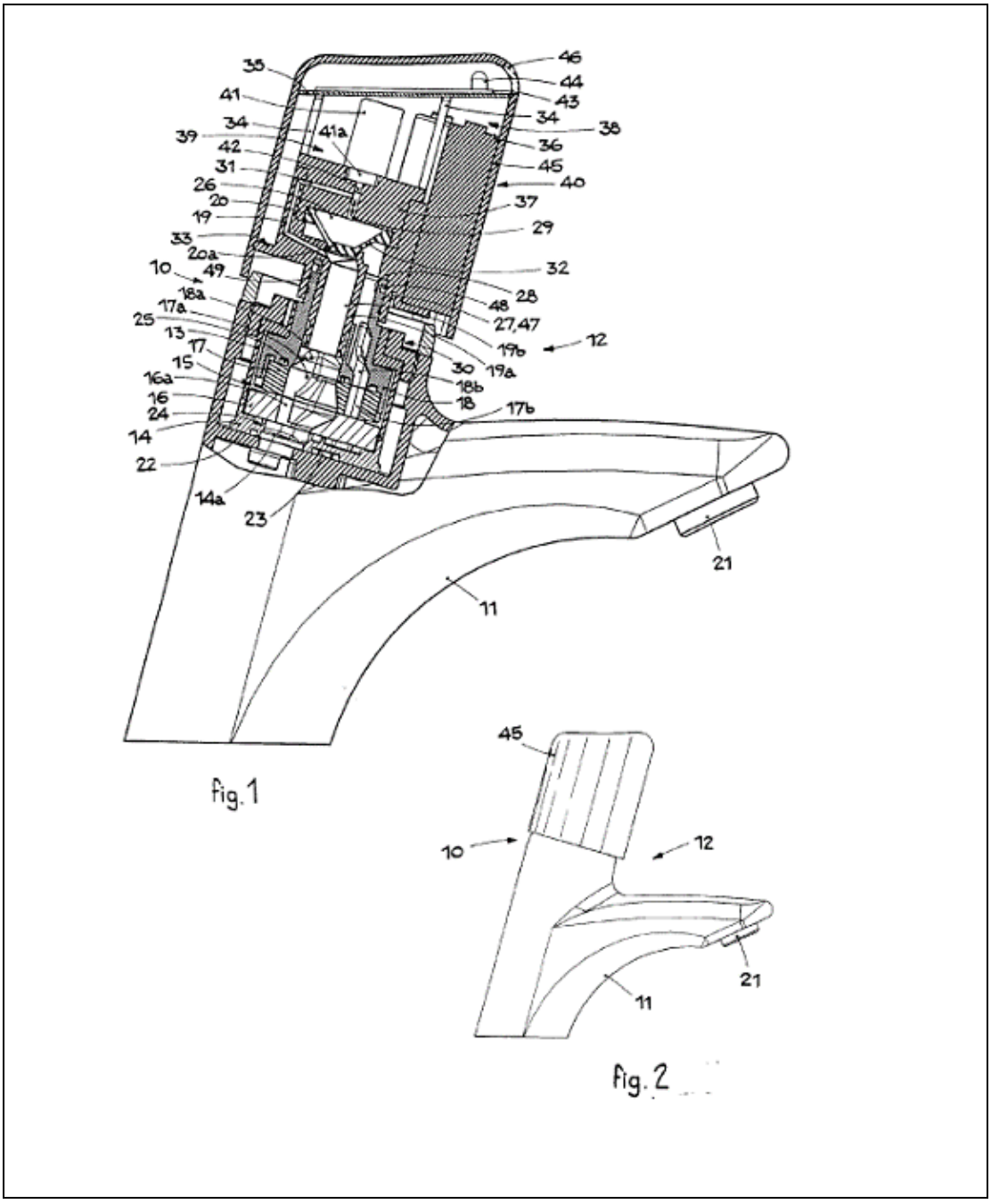


Figure 1.2: Sample patent application drawing

1.3.4. Abstract

Rule 47 of the Implementing Regulations to the EPC regulates the form and content of the abstract part. As stated therein, the abstract includes the title of the invention, it should be clear, make obvious the technical field the invention is related to, indicate the technical problem aimed to be solved, the solution brought by the invention and gives information about the use of the invention. It must be brief, "The abstract shall preferably not contain more than one hundred and fifty words" (Rule 47, Paragraph 3 in the Implementing Regulations for EPC, 2010).

The exemplary abstract below is taken from EPC Guide:

> Abstract
> Device to deliver and mix water
>
> Device (10) to deliver and mix water for taps (12), said device comprising a mixer cartridge (30), able to be arranged inside the monoblock (11) of the tap (12), means to regulate the mixing of the water and actuation means arranged above said monoblock (11), able to determine the opening and closing of the flow of water, said actuation means being commanded electrically and comprising an interception element (20) able to cooperate with said mixer cartridge (30).

Abstract of a patent application, as seen above, is used to serve as a primary source in patent search. The patents search is done by reading the abstracts of the inventions in a particular field, which means it should give a clear idea about the content of an application so that the patent attorneys can predict the content of an application. It is generally a repetition of claimed features of an invention. The abstract format in Turkish is also the same, therefore a separate example is not given here but translation examples are provided under the case study chapter.

1.4. ROLE OF TRANSLATION

An interesting phenomena pointed by Daldeniz (2004, p.96) is that the translation has a vital role within the patent system of Turkey. She states that the rules and regulations governing the application procedures and translation of patent documents are themselves transferred into the Turkish legal system through translation; which is an interesting point in that the rules of translation itself is determined by way of *translated* legislation. When the number of applications of foreign origin is compared to the number of domestic applications, it is seen from the statistics[10] provided by TPI that the foreign applications have a larger share. 5093 patent applications out of 8343 patent applications were from foreign contries, which meant the foreign patent applications occupied nearly %62 of the total number of all applications submitted to TPI, considered as of 2010. In this respect, it is seen what is said by Daldeniz (2004) still holds to be valid; as Turkish patent system serves more to the applications from other countries, the application documents are mostly translated target texts. This fact may lead to formatting of patent applications according to EPO patenting norms and unifies the style of writing in patent documents greatly. Along with the national legislation aligned to that of EPO, the text tradition is shaped by the translation of European patent documents.

Even when considered just as a requirement, translation is a huge pillar of the patent domain. First, a patent application to EPO has to be drafted in and/or translated into the Organization's three official languages: English, French and German (EPC, Article 14). Besides the translation work within the Organization itself, translation for national validation has a great deal of share in patent application processes. The translation procedures and requirements are regulated under the Article 65 of the EPC:

> Any Contracting State may, if the European patent as granted, amended or limited by the European Patent Office is not drawn up inone of its official languages, prescribe that the proprietor of the patent shall supply to its central industrial property office a translation of

[10] http://www.turkpatent.gov.tr/dosyalar/istatistik/patent/Patent_basvuru_orijine_gore_grf.pdf

> the patent as granted, amended or limited in one of its official languages at his option or, where that State has prescribed the use of one specific official language, in that language. (EPC 14th ed., 2010)

With due reference to this EPC Article above, *"Avrupa Patentlerinin Verilmesi ile İlgili Avrupa Patent Sözleşmesinin Türkiye'de Uygulama Şeklini Gösterir Yönetmelik"*[11] has an article (Article 12) on the requirement for the submission of the translated patent application documents within three months after publication of the mention of grant for a European Patent. It is clearly stated that in case of any failure in submission of necessary documents in provisioned time, European patent shall be considered invalid from the beginning. This condition is also included in the European Patent Convention itself, which reads: "Any Contracting State may prescribe that in the event of failure to observe the provisions adopted in accordance with paragraphs 1 and 2, the European patent shall be deemed to be void *ab initio* in that State" in Article 65 (3) (EPC 14th ed., 2010).

This situation above may not seem to be of great importance; in fact, the failure in the submission of translation may result in serious problems. The inventor may lose the patent protection intended for a specific state, which means s/he will lose great sources of income along with the right to use his/her invention.

Patent protection gives a monopoly to the inventor for a specific period to benefit commercially from his/her invention. Once an invention is made public anywhere in the world, it is inevitable that it will be public globally; that is the reason the inventors try to validate their invention in more than one country: to increase their revenues by increasing the territory they have a monopoly on. The loss of a designated state may mean loss of a great market and may result in serious loss of opportunities. Knowing this, the translator is stressed because of the time limit which may in turn affect his/her decisions during the translation process.

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[11] Regulation on the Implementation of European Patent Convention Pertaining to the Grant of European Patents in Turkey (as revised on 22.05.2008)

Another point that is of great importance for patent translation is the fact that translation of an application is considered to be the authentic text in Turkey. This is clearly stated in the Article 15 of the Regulation for the Implementation of EPC Pertaining to the Grant of European Patents: if the scope of the translation is narrower than that of the original European Patent document, the translation is regarded as the authentic text in determining the scope of protection in Turkey. In other words, the translation may cause a partial loss of patent right in a country.

Article 16 of the same Regulation concerns the correction of translation, stating that an applicant may file a corrected translation any time. This is an opportunity to preserve the protection. However, it doubles the translation costs as a translation fee has to be paid again for the submission of corrected translation. In some cases however, this may not be a solution either; if someone in good faith has started to use the invention or had serious preparations to do so before the translation is corrected, s/he may use the invention as defined in the unrevised (the previous 'wrong' version of) transation, without any need for approval from the inventor (EPC 14th ed., 2010, Article 17). This also means loss of monopoly as was addressed above. Therefore, a patent translator, knowing the above-mentioned outcomes, always has a greater responsibility of his/her translation. Being aware of possible outcomes, s/he is restricted in his/her decisions while translating patents, both by regulations and by likely results.

In this chapter, the aim was to provide general information regarding the patenting process and thus to ensure that the terminology, or jargon, used in patent literature became clearer and comprehensible. In this respect, with references to legal texts and official information, the first part of the chapter concentrated on the definition of patent and the procedure followed to be granted a patent. The basic terms were defined and the patent documents were introduced. After building a basic knowledge about the patent context, the exemplary application documents annexed to the EPO Application Guide were used to define and illustrate all the parts of necessary patent documents. In the last part of this chapter, the role of translation was discussed, and the importance it holds in the patenting process was shown in relation with the legal context and practice. To further build on the necessary information about the patents and patent documents, the

second chapter will elaborate on the functional translation theories, with the aim of constructing a theoretical perspective before advancing into the analysis of patent translations.

CHAPTER 2

THEORETICAL FRAMEWORK

Change is so rapid in science and technology that it is not possible to keep up with its speed. This so called speeded up technology and inventions in a mass variety of scientific fields naturally require drafting of technical texts which will contribute to the state-of-the-art and accelerate the future advancements.

Globalization goes hand in hand with the technological and scientific developments, rendering the role of technical texts much more significant as an information source. This situation increases the demand for translation services among the followers of latest technology in the countries that fall behind the technology possessed by their developed counterparts. Patent documents, in this respect, are both a source of technical information on latest developments and a source of reference for legal rights of inventors.

The terminology related to the patenting process and the features of the documents required in the patent applications were presented in the previous chapter. This chapter will construct the theoretical framework of the study as a source of reference for the analysis of patent translations which will be conducted in the next chapter. Knowing basic characteristics of patent documents may be helpful in understanding the writing process of patent application documents; but for understanding and evaluating the translation process, the documents need to be viewed from a theoretical perspective; which will be of functional translation theorists in this study.

The first part of the theoretical framework will be constituted by technical translation. Subsequent to a brief introduction on the characteristics of technical texts and a view of patent documents as technical texts, the strategies suggested by translation scholars for translation of these types of (i.e. technical) texts will be presented. This path will lead to

setting the theoretical grounds of the discussion that will be presented in the second part of this chapter, in which the applicability of proposed – seemingly prescribed – strategies of technical translation to the translation of patent documents will be questioned.

In order to facilitate the discussion of technical translation strategies, and their applicability for patent documents, patent documents will be viewed from the perspective of functional theories in the second part. With the help of Reiss' text types, the function of patent documents will be attempted to be defined. The translation of these texts will be discussed within the borderlines of the functional theories of translation, namely the Skopos Theory.

The patent texts have multiple functions, since they are both the product and the output of a commercial act. They are produced with a certain purpose and their translation requires preserving their function in the target language. The translation process is shaped mostly by the norms of target context, i.e. they are target oriented. Because of these features listed above, an approach to translation which will take into account all these aspects is needed to constitute a broader perspective through which the technical translation strategies can be viewed. For these reasons, the second heading under this chapter will be "Functional Theories of Translation", within which the views of functional theorists will be presented in order to offer a sound standpoint towards patent translation.

2.1. TECHNICAL TEXTS AND TECHNICAL TRANSLATION

When a patent document is read, it is easy to name patent documents as highly technical texts. Firstly, the factors that make readers name a text as being *technical* will be defined, or in other words, the technical texts will be introduced.

The first thing that strikes attention is the content of a text. If a text related to technology or science, then it is named as a technical one. Therefore, the distinction between scientific and technical texts is not clear-cut. This leads to the classification of

technical texts together with scientific ones and there is no clear distinction between the two. The scholars tend to refer to these texts as technical and scientific texts and their comments about technical writing are always accompanied by scientific writing. This may be due to the fact that these types of texts (i.e. technical and scientific texts) are similar to each other in terms of their content. The term technical writing is used as an umbrella term covering different areas of language use; in accordance with this, Hirschhorn defined the prime objective of a scientific and technical writer as producing 'a clear, logical, accurate and succinct piece of literature for a specific use' (1980, p.6).

This "specific use" as referred to by Hirschhorn (1980) is, when it comes to the patent documents, to produce a text that is describing an invention clearly. It is also obvious from the content of patent documents that the subject, or the information presented in the document is related to a technical development. This fact automatically renders the patent application documents as "technical texts".

Other characteristics that anyone can list when asked about the principal features of technical and scientific writing are the excessive use of terminology and the complex structures of language because of which the hard-to-catch-up message gets more unreachable. There is a specific language use, as stated by Erten (1997), free of style and any figures of speech when used properly. Byrne, opposing this view, expresses the use of style in technical texts:

> In many cases, the importance or even existence of style in technical texts goes completely unacknowledged, due largely to the belief that because technical language is functional, it must be "plain" and stripped of any form of style or linguistic identity. In reality, however, technical translation is a highly complex endeavour and style is one of its most important facets (2006, p. 5).

Patent documents can be regarded as a good example of these features; it was previously noted in the first chapter with regard to the examples that patent documents have a language use that is a characteristic of them, a style specific to patent writing. They include sentences of complex structures and excessive use of terminology along with some expressions specific to patent documents. Any person familiar with patent

application documents may easily notice that a sentence is taken from a patent document, even when they see a sentence in an unrelated context; more experienced patent document readers may even name the part of patent document these sentences are taken.

This style and excessive use of terminology lead to an idea that patent texts are “hard to understand, boring to read” for a non-expert mind, as is the case for technical texts. This made the theorists to attempt to draw the attention on readability issue, when talking about writing for science and technology (cf. Fielden, 1963; Selzer, 1983; DeGeorge, Olson, Ray, 1984; Giles, 1990). Aware of these problems faced by knowledge seekers and by even the most skilled in the art, they advised the writers pay attention to producing readable texts:

> Readability will not arise from the hopeful application of formulas, but rather from a thoughtful approach on the part of the writer to every aspect of the technical paper. It will result when the writer understands the psychology of the reader, realizes what the reader needs to know, and is aware of how the reader can be led through the labyrinth of the most difficult paper by exact planning of material (Fielden, 1963. p.33).

As can be inferred from Fielden’s point of view, there is a clear emphasis on the importance of target. His views on the importance of reader-oriented production of technical texts were further supported with Pfeiffer and Boogerd’s statement that “your writing must be clear, concise and correct if you expect the reader to pay attention to your message” where the responsibility of writer was seen in the production of scientific and technical text as mainly the communication of message to the reader- correctly, clearly and concisely and with a certain grace of style if that is possible. (2004, p.530).

This triad of “correct, clear and concise” was followed by a four-sided view of scientific and technical writing, which was expressed clearly by the statement that “Scientific and technical writing is not limited to serving the world of modern science and technology, but can apply to any subject that has to be written about clearly, logically, accurately and succinctly” (Hirschhorn, 1980, p.7). These views on technical writing were

appreciated in translation studies discipline, as technical translation was seen as a practice that went hand-in-hand with good technical writing skills (Herman, 1993, p.11). Different approaches to technical translation will be presented below.

Through a respectively limited literature regarding technical translation, this section will provide a basis for further discussion on the translation strategies traditionally proposed in theory. The definitions at the beginning will set the grounds on which the initial steps towards a current debate of our modern world surrounded by technology and science will be taken. Jody Byrne uses the metaphor of *ugly duckling* to refer to technical translation, which have been the most neglected and most widely conducted type of translation:

> Not particularly exciting or attractive and definitely lacking in the glamour and cachet of other types translation, technical translation is often relegated to the bottom division of translation activity and regarded as little more than an exercise in specialised terminology and subject knowledge. (Byrne, 2006, p.1)

This was also stated by Aixela (2004), who criticizes the general opinion about technical translation; with the statement that the only thing that is considered worth discussing was the translation of canonized literature and technical translation had always been ignored partly due to the fact that translation itself was in fact always seen as a secondary activity (p.30).

These views regarding the translation as a not respect-worthy practice started to change with the technology-boom; the a mass production of technical and scientific texts along with the uncontrollable spread of knowledge all around the world brought about the need for the translation of these texts. Patent texts in this respect can be listed among the ones that are produced excessively around the world. The above-mentioned developments in science and technology meant an increase in the drafting of patent application documents, which are, as discussed above, highly technical texts. As the globalized world required sharing of knowledge anywhere in the world, and as the patent holders had to validate their patents to be able to use them in other countries

translation of patent documents became a separate field of specialization. Supporting this idea, Kingscott (2002, p.247) noted that 90% of the world's total annual translation output is formed up of technical translation (as cited in Byrne, 2007, p. 3).

As the importance and role of technical translation gradually started to be acknowledged at global level, the quality of the translation and the translator himself became components of greater concern. Aixela (2004) comments on the new trend as:

> The more or less explicit argument now (directly deduced from the law of supply and demand) is that there are very few who can understand and translate a complex technical text, whereas (almost) anyone can understand and, hence, translate a literary text (!!) (p.30)

Before opposing this statements by providing her own views as to technical translation where he regarded the technical translation as the bulk of the translated texts Aixela quoted Jumpelt's view that "the extremely high requirements set for scientific and technical translation mark it out clearly from other genres, making it into an independent research field in its own right" (as cited in Aixelá, 2004, p. 31).

As seen above, although traditionally ignored, technical translation is now a phenomenon that captures attention of many scholars and causes discussions on its importance. In this respect, the views of technical translation scholars will be presented below.

"By technical translation we mean translation of empirical and descriptive texts written in the context of scientific and technological disciplines". This definition of technical translation given by Hervey and Higgins (1992, p.165) shows that the distinction between scientific and technical texts does not necessarily reflect itself in the theories and strategies related to translation, as both text types share common characteristics and cause common problems during the translation process.

In the practice of technical translation there is a limited theoretical framework, and this may be due to the traditional *ugly-duckling* status of technical translation quoted above.

The existing discussions and suggestions as to how we should translate technical texts are mainly shaped by scholars' views on technical writing mainly. "An excellent technical translator is an excellent technical writer" (Herman, 1993, p. 11). This view of Mark Herman entails the presupposition that translator is a text producer himself, contrary to the common sense. Similar to Herman's views, Kingscott (2002) notes that "the technical translator, in fact, has to be a technical writer but operating across two languages instead of just one" (p.248). That is, just like the views on technical writing, technical translation strategies will centre around three terms: clarity, concision and correctness.

Clarity is the clear meaning a translator should achieve in his/her translation. With his statement that "If the syntactical and lexical features of the source and target languages differ, clarity often requires that the sentences in the target language be completely recast", Herman recommends even a total re-production in the target language for the sake of clarity (1993, p. 13). This statement reflects the reader-oriented approach as in the technical writing.

The second term, concision, can be defined as conveying a message through the least number of linguistic items, under which Herman proposes; "words which do not contribute to the meaning or clarity can be eliminated once the sentence has been recast from source language into proper target language word order." (1993, p. 17)

The last but not least important feature that should be sought in technical translation is correctness. His own definition for this term is as follows: "In a technical translation means two things. First, it means accurate re-creation of the ideas and technical terms of the original in the target language (…)" (Herman, 1993, p. 18).

Having the image of clarity, concision and correctness as the principal stylistic goals of technical writing – which simultaneously makes them the goals of technical translation in his mind – Mark Herman (1993) gives a list of techniques to help the technical translators achieve clarity, concision and correctness. Among these, two draw most attention as they are the ones most proposed in the profession: first is breaking up the

long sentences, and the second is “substituting more specific or less specific English terminology for the more general or the less general terms of other languages” (1993, p. 11).

The ideas put forward here by Herman are accepted and acknowledged by scholars and theorists of translation studies and by the technical translators themselves; however, this opinion leaves its validity apart when the texts to be translated are in the form of Claims in a patent document. As laid down by the EPC (European Patent Convention), “The Claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description” (EPC Article 82); but the ‘Claims’ of a patent document should be written in a way that every claim should have only one proposition. In other words, in principle, a claim is written in the form of a single descriptive phrase with only a single period and only one initial capital letter (cf. Sheremetyeva and Nirenburg, 1996; Daldeniz, 2004 and Lyon, 2005). This renders the strategy of breaking down the sentences impossible to employ in the translation of patent documents.

Herman’s elaboration on the topic on the following pages supports his views on the translation of technical texts. However, as already discussed above, due to the nature and style of patent documents, it is not possible to follow his advice for the terminology: “in addition to breaking up and rearranging the original sentence, clarity sometimes requires the use of English terminology with a different degree of specificity than that of the original” (Herman, 1993, p. 15).

While presenting her views based on a detailed research on the tradition of translation strategies applied to translation into Chinese, Liao (2010) defines the general view taken as having the aim of providing new information, which favors the accuracy of content more than any other aspect (p. 44). The same approach, just like in any other country that imports technology from the forerunners of scientific development, is obviously seen in the tradition of – or the approach towards – technical and scientific translation in Turkey. This may be because the information obtained through translation is necessary for importing technological developments. Reflections of this approach are likely to be

seen in academic publications by scholars in the field of translation. Erten (1997), focusing on the accuracy of information, suggests in her work that “Since the purpose of technical texts is to convey information expressed by the scientist it is possible to produce an accurately translated text” (p. 19).

Many scholars have differing ideas as to what a technical translator is supposed to do.“The rule is:”, as uttered by Finch (1969) in his work on technical translation where he emphasized the importance of the transfer of accurate information, “The translator should aim to convey to the reader of the translation the information which the original was intended to convey.” (p. 14). This can be regarded as a leading opinion which shed light on the way that the translators of technical and scientific texts followed for years, and summarized the general understanding of and technical translation.

According to Jumpelt (1961), the task of technical translator is a highly specialized, knowledge-based and demanding one (as cited in Aixela, 2004). The opinions of Finch (1969) are also in the same direction:

> The specific difference of technical translator from the general translator is that he must have some knowledge of the subject which he is translating - indeed, knowledge of the subject is usually of more importance than knowledge of the language. (Finch, 1969 - p.1)

With this remark, Finch attributes the quality of the technical translation to the background knowledge of translator in the field concerned. If the translator lacks adequate knowledge in the technical field to which the translation is related, this may cause some problems during the translation process especially in the accurate transfer of content – or information – and terminology which is one of the components of technical writing and translation as noted by Erten who demands that “technical translation is distinguished from other types of translation by the special terminology used” (1997, p 19). This obviously is true to some extent; however, it would be neither linguistically nor theoretically appropriate if the excessive and sophisticated terminology is considered as the sole characteristic that makes a text technical. In this respect, Jody Byrne discusses his view of technical translation as a multi-laterally affected

performance and insists that the success or failure of technical translations depends on much more than just specialised terminology (2006, p. 253).

Jody Byrne, referring to the lack of sufficient theoretical background and a sound basis for the strategies of translation of technical texts, and aware of the problems technical translators experience, considers the translators as being true communicators; he defines the role of technical translators as "to ensure that the information is communicated effectively" and sees the technical translation as a communicative activity, stating that "this view opens the door to a variety of new and interesting avenues of investigation" (2006, p. 253).

Byrnes view of technical translation as a form of "communicative activity" is in great conformity with functional theories of translation, which will be dwelt on in the next part of this chapter. The "communicative" aspect points to Reiss and Vermeer's theoretical point of view, who tries to achieve a communicative function in the target context. The word "activity" is certainly an indication that "translation is an action", which is named as translational action by Holz-Mänttäri and which confirms to the argument of Vermeer in that every action has a purpose, i.e. *skopos*. In the next part, the functional theories of translation will be presented in order to provide a broader perspective to the patent translation task.

2.2. FUNCTIONAL THEORIES OF TRANSLATION

In the previous part, the patent texts were classified as technical texts. This classification was made, as stated before, simply with reference to its content. In this second part of theoretical framework, the patent texts will be inspected from a functionalist standpoint; on the grounds that patent texts, as all others, are written for an aim and they have a function once they are produced. Patent documents are at the heart of technological and scientific developments and acting as the pillars of further advancements, their role is being a source of information; so their translation would also have a similar role in the target community. In this account, the theoretical borderlines

of this study will be drawn by the translation theories that deal with the role of translation, that are, functional theories of translation.

At the end of 1970s, the functions of texts rather than their linguistic aspects drew the attention of most translation scholars, namely the functionalist theorists (Venuti, 2000) as the process of translation started to be viewed as a process affected and eventually shaped by the desires of customers. This period of functionalist approach to translation studies was marked by German theorists Katharina Reiss, Justa Holz-Mänttäri, Hans Vermeer and Christiane Nord. The opinions of these translation scholars will be presented here under a general overview on functional theories of translation, with Reiss', Mänttäri's and Vermeer's views predominating. This is because the text typology of Reiss (1977), translational action of Holz-Mänttäri (1984), and Skopos Theory of Vermeer (1984) were all directly in the applied field of translation studies while the text analysis of Nord (1988) was intended primarily for translation pedagogy (Munday, 2001, p. 82) which is not a theoretical area directly related to this study. It is also important to note that Vermeer's *skopos* theory will be of greatest concern since it converges and covers all the concepts of its predecessors, i.e. text types and translational action theories.

Before elaborating further on each translation theory, functionalism in translation studies will be introduced in general terms, along with views of translation scholars about the period functional theories were put forward.

The 'functionalist stage' in translation studies, as defined by Peter Newmark (2009, p.21) was dominated by German theorists, and is mostly associated with Vermeer. Basil Hatim, referring to the importance placed on the purpose of translation, sees functionalism as an 'influential trend in modern translation studies' (2009, p.39). This trend, placing more importance on the target text rather than source text, commenced a new era in that the factors shaping the translation process were brought to light. Edwin Gentzler (2001) also sees the shift in 1980s from source oriented theories to target text oriented theories as an important change in translation studies (as cited in Kuhiwzcak and Littau, 2007).

With reference to Mänttäri's (1984) and Reiss' (1971) work, Newmark (2009) viewed functionalist approaches as a simplified 'practical reaction' which focused more on customer satisfaction and which was conducted more as a business commission against the intensive interest in linguistics in the previous era (p.33). In Newmark's definition, this stage starts from 1970s and is related generally to non-literary texts, paying more attention to the intention of a text rather than its language; what highlighted this era was that "[i]t tends to be seen as a commercial operation, with the author as the vendor, the text and/or the translation as the tender, and the readership as the consumer" (2009, p.21). In this vein, outlining the main concerns of functionalists with questions, Hermans (2009) provides a relatively simpler definition of the role-players in the translation process and functionalism flow in translation studies. 'Functionalism' according to him, 'asked who translated what, for whom, when, where, how and why" (HErmans, 2009, p. 95).

Anthony Pym (2010) refers to the year 1984 as the date a paradigm shift from 'equivalence' to 'purpose' was witnessed in translation studies discipline with the publication of *Grundlegung einer allgemeinen Translationstheorie (Foundation for a General Theory of Translation)* by Reiss and Vermeer and *Translatorisches Handeln. Theorie und Methode (Translatorial Action. Theory and Method*) by Holz-Mänttäri (pp. 43-44). While Pym attributes the paradigm shift to the change of focus from equivalence onto purpose, Schäffner (2008) sees a paradigm shift from linguistic approaches to "a more functionally and socio-culturally oriented concept of translation" (p.116). For Edwin Gentzler, there were two significant shifts in translation theory at this period; one from source-orientedness to target-orientedness, and the other one adding cultural aspects to the linguistic elements in translation pedagogy (2001, p.70).

There are differing views of translation scholars on the functionalist era of translation studies (cf. Sunwoo 2007, Leòn 2008, Toury, 1995). What leaves no doubt is that the functionalist stage of translation studies was highly important and widely referred to in publications about translation theory (Pym, 2010), due to the new concepts it introduced

to the discipline. These concepts will be presented below under separate titles about the most widely known functional theories of translation.

2.2.1. Katharina Reiss and Text Types

Katharina Reiss constructed a text type approach to translation in analogy with Bühler's three functions of the linguistic sign (Reiss, 1971). Reiss lists four types of texts: *informative, expressive, operative* and the *audiomedial* in her study, every text type had an advised translation strategy in relation to the text's function (as cited in Munday, 2009). According to Reiss, every text had a function and the translation therefore was to be shaped by the function of the text in question (see Reiss 1981, Venuti 2000, Nord 2005, Munday 2001 and others).

In this text typology of Reiss, with respect to their communicative function, there are three text types: *informative, expressive,* and *operative* (Andrews and Maksimova, 2009, p. 63). These text types were defined by Reiss (1977/89 in Hatim and Munday, 2004, pp.183-184) herself, Munday (2001) presents brief definitions for each text type (p.73) as summarized below:

Informative: 'plain communication of facts', with the main interest being merely transmitting information, the dominant form of language used is logical or referential. Communication focus is on topic or content. The best examples for this type of texts may be reference source texts or news articles.

Expressive: 'Creative composition', artistic shaping of content. Language is aesthetical. Focus is on author or sender, and the form of the message. Best examples are poems, or other literature masterpieces.

Operative: 'Inducing behavioral responses', using dialogic language. The function is appellative, that is, persuading readers, or receivers, to act in a certain way. The best examples are tourist brochures, or user manuals.

Reiss (1977/89) allows that any text may have more than one function; in this case, the text is referred to as mixed form. Reiss (1971, p.164; in Venuti, 2000) notes that the text types may not be "realized in their 'pure' form" but may have more than one text function. Reiss (1971) refers to these texts as problematic cases (p.169) and advises in these situations that the dominating function should be preserved if it is not possible to preserve all functions.

As seen above, Reiss was primarily concerned with the function source texts had, and she proposed that a functional equivalence in the target text was sought in translation. In this respect, she proposed translation strategies for each text function, which may be seen clearly from Munday's table below, illustrating functional characteristics of text types (2001, p. 74):

Table 2.1 Munday's Text Type Table

Text Type	*Informative*	*Expressive*	*Operative*
Language Function	Informative (representing objects and facts)	Expressive (expressing sender's attitude)	Apellative (making an appeal to text receiver)
Language Dimension	Logical	Aesthetic	Dialogical
Text-focus	Content-focused	Form-focused	Appellative-focused
TT should	Transmit referential content	Transmit an aesthetic form	Elicit desired response
Translation method	'Plain prose', explicitation as required	'Identifying' method, adopt perspective of ST author	'Adaptive', equivalent effect

The table above presents a comprehensive overview of Reiss' theory. If patent texts are considered from this point of view, it can be concluded that the patent texts are informative in that they present facts and give information about the invention they

describe. However, they may also be commented to have an appellative function since especially the Claims of patent texts serve as definitions of scope of protection and demands that the recipients act in accordance with the content they display. For instance, when information given in a patent claim exceeds the scope of the invention, then this may mean that the reader/receiver may oppose the grant of patent and file an opposition case. Or simply, once an invention is made, the users of patent will act in accordance with the definitions in the patent texts, they will shape their working process according to the patent document. This shows that the actions of recipients are affected by the content of patent text, that is, the patent texts have an operative function along with the informative one; in other words, patent texts are in mixed form.

2.2.2. Translational Action of Holz-Mänttäri

Translatorial action (or translational action) was a model suggested by Holz-Mänttäri who defined the term translational action as "the intentional action of different operatives [i.e. people] that is positively or negatively oriented in terms of a superordinate goal" (Holz-Mänttäri 1984, pp. 23-24; as cited in Pym 2000). Schäffner (2008) stated that giving importance to the purpose and outcome, Holz-Mänttäri considered translation as an action; demonstrating that it was influenced mostly by communication theory and action theory (p. 118). Anthony Pym (2007) also informs that Holz-Mänttäri was influenced primarily from von Wright's (1968) action theory and reflected the views on social anthropology. According to him, Vermeer's main claim that a purpose is always there for an action of translation links with Holz-Mänttäri's approach in that the purpose, as defined by Vermeer who place much importance on clients commission and other contextual factors, is "highly variable and is negotiated with any number of social actors" while Holz-Mänttäri focuses more on the "complexity of these negotiations, the translator's role as an expert, and many modes of translational action" (Pym, 2007, p.35).

Translational action, according to Holz-Mänttäri, involves certain players and roles (as cited in Munday, 2001, p.77):

- **the initiator:** the company or individual who needs translation;
- **the commissioner:** the individual who contacts the translator;
- **the ST producer:** the individual within the company who writes the ST (source text) , not necessarily always involved in the TT (target text) production;
- **the TT producer:** the translator;
- **the TT user:** the person who uses the TT; for example as teaching material or sales literature;
- **the TT receiver:** the final recipient of the TT; for example the students in a TT user's class or clients reading the sales literature.

When the patenting process is monitored within this framework, the roles of players in the process of EP validation can be classified accordingly. It is important to note here that the players and roles may change; for instance, an inventor him/herself may draft his/her EP application, and then apply for a patent in Turkey and s/he may directly contact the translator which makes her/him the *ST producer, the initiator* and *the commissioner* at the same time. But generally, the patenting process is as follows;

- after making an invention, the inventor consults to a patent agency and assigns a patent attorney to conduct patent application and validation processes on his/her behalf,
- the patent application documents are prepared by the patent agency/attorney
- after application, patent agency/attorney contacts a Turkish patent agency/attorney
- the Turkish patent agency/attorney sends the documents to a translator directly or via a translation agency
- the translated documents are sent to Turkish Patent Institute, which publishes the documents officially after examination and uses the texts as legal definition of patent right granted to the inventor
- The published documents are used mostly by other patent attorneys and examiners in determining the state-of-the-art.

In this process, the role players defined by Holz-Mänttäri are as follows:

- **the initiator:** foreign patent agency/attorney;
- **the commissioner:** the Turkish patent agency/attorney;
- **the ST producer:** the foreign patent agency/attorney;
- **the TT producer:** the translator;
- **the TT user:** Turkish Patent Institute;
- **the TT receiver:** other patent attorneys and examiners.

The translational action, according to Munday (2001) aim is to construct a target text that is functionally communicative for the reader. In this respect, in order to reach this aim, the form and genre of the TT may be determined in accordance with the intended function, rather than producing a TT that follows ST traditions strictly. All in all, a translator is an expert in creating transcultural message carriers, in other words, a text producer him/herself (Schäffner and Wiesemann, 2001, p. 20).

2.2.3. Skopos Theory of Hans J. Vermeer

Text types and translational action theories are the grounds for the theory of Hans J. Vermeer who defined Skopos theory as part of a theory of translational action (Vermeer, 1989/2000). This was also noted by Hatim who claimed that the *skopos* idea had shared concepts with pragmatics such as intention and action, which may be an indication that Hatim also draws attention to the connection between action theory and *skopos* theory (2009, p.40). Indeed, Skopos was also combined with Reiss' translation theory to construct a general translation theory (Schäffner, 2008, p.117). Therefore, the theory has shared concepts with Translational Action and Text Types; the translational action is commenced by a commissioner, translator is an expert and there are role players in the translation process, as in Holz-Mänttäri's theory; the source text has a function and the translator has to pay attention to the intended function in the target context just as argued by Reiss.

On these theoretical grounds, Vermeer informs that since any action has a purpose, "*skopos* is a technical term for the aim or purpose of translation" (1989/2000, p.221). This *skopos* is determined "by a set of specifications as to how the source text should be translated whether it needs to be translated faithfully, paraphrased or completely re-edited" (Vermeer, 1983 and 1989 as cited in Anderman, 2007). And once the *skopos* is determined, it determines the translation strategies to be followed in order to reach a functionally adequate target text (Munday, 2009) which is termed as *translatum* by Vermeer (Sánchez 2009, p.63). Kuhiwczak and Littau also note that since the translation strategies are determined by the objective or function of translation, "the function a translation is meant to fulfil in the target culture enables that translator make certain choices" (2007, p.14). In this respect, translators are responsible not only to the ST author but also to the TT receiver (Bajaj 2009, p. 188).

In this process of producing a translatum according to the aimed function, Munday (2001) notes that there are some underlying rules of Skopos Theory, which he lists as:

1. A *translatum* (or TT) is determined by its *skopos*.
2. A TT is an offer of information (*Informationsangebot*) in a target culture and TL concerning an offer of information in a source culture and SL.
3. A TT does not initiate an offer of information in a clearly reversible way.
4. A TT must be internally coherent.
5. A TT must be coherent with the ST.
6. The five rules above stand in hierarchical order, with the *skopos* rule predominating.

These above-mentioned rules of Skopos theory may also be discussed in relation to the translation of patent texts. Starting with Rule 1, the *skopos* of the patent translation is, for the inventor, to validate his/her invention in the target context and for the patent translator, to produce a text that will have a similar function in the target context. For this, the inventor provides necessary information (eg. documents, terminology packs, information about the patenting process) to a translator. The translator then produces a

TT in TL; in other words, s/he offers information in TL concerning the information in ST (Rule 2). Rule 3 indicates that "the function of a translatum in its target culture is not necessarily the same as in the source culture" (Munday 2001, p.79). In patent translation the ST, which is also a patent document used to apply for a patent have nearly the same function as the TT which will be used for a national patent application for validation at target country. In conformity with Rule 4, the coherency rule, Gentzler comments that traditionally known fidelity concept was now constituting a base for analysis of translation; "if the derivation is consistent with the original Skopos, it is called faithful, and accepted as a good translation" (1993, p.71). If patent translation is evaluated in this respect, translated patent document must be "sufficiently coherent to allow the intended users to comprehend it" (Schäffner 2008, p.117). It is seen that this objective is just as legally required about the writing of patents: "The European patent application shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art." (European Patent Convention 14th ed., Article 83). On the other hand, Rule 5, or the fidelity rule as generally referred to, necessitates that there must be coherence between the source and target texts. Bajaj (2009) defines the fidelity rule of *skopos* theory as describing a requirement for a coherence between ST and TT – which necessitates "a correlation between what the ST author has intended, what the translator's interpretation of this is and how the ST information is reproduced in the TT" (Bajaj, 2009, p.188). This 'correlation' marks the responsibility of translator to the source text. This is also reflected in patent translation; the information contained in the translated patent text (TT) should be coherent with the original patent application document (ST). This is in fact, another factor that is of importance in patent translation; the translated patent text should define the same scope of protection as defined in the original, the translator is responsible for accurate transfer of information as the translatum of patent translation process, i.e. the translated text will be accepted as authentic in cases of conflict before law (as regulated in Turkey in accordance with Article 70 (3) of the EPC, 14th ed.).

There are discussions about the above mentioned rules and also some criticisms as to the applicability of Skopos Theory. The most debated one is that the theory relates only to non-literary texts and it does not apply to literary translation. Although Newmark

sees *skopos* theory as inapplicable to and inappropriate for literary translation, Theo Hermans considered it to be related in a way to the translation of literature "to the extent that institutional constraints and audience expectations figure prominently in the model", and he saw the reason of its limited influence on the studies conducted in the literary translation field in the difficulty of providing exact definitions of audience expectations (Hermans, 2007). All in all, the concern of this study is translation of patent texts, which makes the *skopos* theory applicable in this study as the subject matter is technical texts. It was demonstrated above how applicable the Skopos Theory is to the translation of patent documents.

Though there are criticisms against functional theories, it does not change the fact that "the *skopos* theory has wide-ranging implications in technical translation" (Kingscott, 2002, p.249). Respecting the *skopos* theory, Kingscott advocates the implications of functional theories for technical translation:

> Different types of text need differet types of writing approach. You would go about translating a patent specification in a different way from translating an instruction manual, because the two documents are aiming to achieve different purposes (2002, p.250).

While Kingscott (2002) notes the purpose of patent specifications, there are other criticisms directed to Skopos, to which Vermeer responded himself: the criticism that 'not all actions have an aim: some have "no aim"'. Stating that the definition of action itself requires there to be an initial aim, Vermeer responds to this criticism with the statement that "if a given act of behaviour has neither goal nor function nor intention, as regards its realization, result or manner, then it is not an action" (1989/2000, p.224). The fact that translation is an action itself, or it consists of series of actions (such as the commissioner calling the translator, the translator turning on his computer etc.) obviously confutes these arguments.

It is natural that functional theories attracted criticisms, since they marked a paradigm shift and it is not easy to adopt new perspectives at once. All in all, the Skopos theory brought a broad perspective that applied to as many types of translation as possible. It

posed implications especially for a field that had been ignored for a long time, and was appreciated much more than it was criticized.

Building on the background knowledge on patent and patent documents presented in the first chapter, this chapter provided the theoretical view, in order to construct the infrastructure the discussion in the next chapter will rise on. Firstly, the opinions of scholars about the technical writing were presented. Then, linked with technical writing, the concept of translation was discussed. In order to provide a broader perspective, the theoretical focus shifted from technical translation strategies onto the functional approaches. In the last part of theory chapter, the functional theorists and their theories were introduced and the ways they affected each other were made clear. Criticisms against functional theories were cited and responded, along with application of theories to the translation of patent documents.

In the next chapter, the patent texts and their translations will be analysed. The analysis aims to judge the applicability of technical translation strategies within the framework of functionalist approaches. In this respect, as many examples as to be enough for representing different characteristics and parts of patent documents will be presented from the sample patent documents and their translations.

CHAPTER 3

ANALYSIS OF PATENT DOCUMENTS AND TRANSLATIONS

This chapter will elaborate on the subject of translating patent documents and question the applicability of technical translation strategies proposed in translation studies discipline. With references to previous chapters, this chapter will provide examples on which the translation strategies adopted by patent translators can be observed. In addition to the evaluation of translated texts, the factors affecting the decision process will be addressed within the theoretical framework presented in the previous chapter.

Above all, the main aim of this study is to demonstrate the constraints faced by the patent translators and discuss the degree to which the technical translation strategies can help translators deal with the possible outcomes of their translations. In order to see real-life translation work and the strategies adopted, authentic patent texts will be presented as examples in this chapter.

The sample texts were randomly chosen from among a variety of patent applications in a way that the chosen samples will represent the most commonly encountered types of documents in patent register. The sample texts were examined, revised and published by European Patent Office and had translated versions in Turkish, which are electronically and officially published by Turkish Patent Institute. This means, in fact, the translations presented as examples here are considered to be valid by above-mentioned authorities and these translated texts are now seen as the authentic texts during the patenting process. These aspects make them reliable data to draw conclusions about patent translation work.

3.1. SAMPLE PATENT APPLICATION DOCUMENTS

There are four sample patent application documents provided below, each are granted European Patents after the examination process at European Patent Organization. Turkey was among the designated countries in these patent applications, which made them candidates to be sample documents provided here. They were translated into Turkish and these translated documents are published online at Turkish Patent Institute's official website.

Before going into the analysis process, each sample patent application document will be introduced. The first sample is the document of a patent application for a part of a product; this sample document will be hereafter referred to as SD1 throughout the study, in order to facilitate the comparison of all samples and translations. The second sample patent application document is for a product and the documents of this application is provided here as SD2. The third sample, SD3 from now on, is the document of a patent application for a method while the last one, the SD4, is from a patent application related to a chemical process. Thus, we ensure that different types of patent applications are presented and the writing style for each is exemplified. The translations of sample documents SD1, SD2, SD3 and SD4 will be referred to as translated documents TD1, TD2, TD3 and TD4, respectively. All the documents presented here as sample texts are included in the appendices to this study along with their translations.

3.1.1. SD1 and TD1

SD1 is a published European patent application document electronically available on the EPO website for patent search; it can be directly downloaded from the patent

database[12]. The invention is related to a part of a product, that is, the invented matter is used along with another product available in the known art. Turkey is a designated country, which meant the patent document had to be translated for validation at Turkish Patent Institute. The latest version available on the website is the original document that was translated into Turkish during the validation process in Turkey. The SD1 is six pages long; it includes a bibliography page, description, four claims and three drawings (figures). The abstract is not included in the document, but it is also available online through a direct link on the same webpage.

Turkish translation of SD1 is available in the patent database of TPI and it can be retrieved online from the patent database search page[13] of the official website of TPI by entering the query "EP1426530B1" into the EPC Application Number (*EPC Yayın Numarası)* field. The TD1 is seven pages long, including the description, Claims, abstract and drawings. As TPI does not require translation of the bibliography page (because the information listed in the original documents' bibliography is given in the forms submitted to TPI during the application process), the bibliography page is not translated and therefore not included in the TD1.

3.1.2. SD2 and TD2

SD2 is another European patent application document available electronically in full-text on EPO patent database[14]. The invention disclosed in the SD2 is about a product; the patent protects a whole product. Turkey is again a designated country, so the patent document was translated for validation at Turkish Patent Institute. The latest version available on the website is the original document that was translated into Turkish during the validation process in Turkey. The SD2 is eight pages long, it includes a bibliography page, description, fourteen claims and four drawings. The abstract is not included in the

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[12] http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20090506&DB=EPODOC&locale=en_EP&CC=EP&NR=1426530B1&KC=B1

[13] http://online.tpe.gov.tr/EPATENT/servlet/PreSearchRequestManager

[14] http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20070822&DB=EPODOC&locale=en_EP&CC=EP&NR=1648260B1&KC=B1

document, but it is available online through a direct link provided on the same webpage. Generally, abstracts of previous corresponding documents are used as the latest version, because the abstracts do not change after the first drafting unless the scope of invention is changed to a great extent.

Turkish translation of SD2, i.e. TD2, can be found in the patent database of TPI official website and it can be retrieved from the patent database search page[15] of the TPI by entering the query "EP1648260B1" into the EPC Application Number field. The TD2 is ten pages long; including the description, Claims, abstract and drawings. As mentioned earlier under the previous title, it is not required to translate the bibliography page of the original document. Therefore, TD2 does not have a translated bibliography page.

3.1.3. SD3 and TD3

SD3 is another European patent application document available electronically in full-text on EPO patent database[16.] The subject matter of the invention described in SD3 is about a method of production. The invention was intended to be protected in Turkey, so the patent document was translated into Turkish for the validation process before TPI. The latest version available on the website is the original document that was translated into Turkish during the validation process in Turkey. The SD3 is thirteen pages long; it includes a bibliography page, description, ten claims and thirteen drawings. The abstract is not included in the document, but it is available online with a direct link from the same address.

Turkish translation of SD3, from heretofore TD3, can be found in the patent database of TPI official website and it can be retrieved from the patent database search page[17] of the TPI by entering the query "EP1321365B1" into the EPC Application Number field. The TD3 is twenty pages long; including the description, Claims, abstract and drawings. As

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[15] http://online.tpe.gov.tr/EPATENT/servlet/PreSearchRequestManager

[16] http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20081008&DB=EPODOC&locale=en_EP&CC=EP&NR=1321365B1&KC=B1

[17] http://online.tpe.gov.tr/EPATENT/servlet/PreSearchRequestManager

mentioned earlier under the previous title, it is not required to translate the bibliography page of the original document. Therefore, TD3 does not have a translated bibliography page.

3.1.4. SD4 and TD4

The last sample SD4 is, just like the previous ones, a published European patent application document electronically available on the EPO website for patent search; it can be directly downloaded from the patent database[18]. The invention is related to a chemical process. During the EP application process, Turkey was a designated country, so the patent documents are translated into Turkish. The latest version available on the website is the original document that was translated into Turkish during the validation process in Turkey. The SD4 is 9 pages long; it includes a bibliography page, description and seven claims. It does not have any drawings but has illustrations of the chemical process within the description part. The document is in a format different from others, as specific to the descriptions of inventions in chemistry and pharmaceutics. The abstract is not included in the document, but it is available online.

Turkish translation of SD4, hereafter referred to as TD4, is available in the online patent database of TPI and it can be retrieved from the search page[19] of the official website of TPI by entering the query "EP1554235B1" into the EPC Application Number field. The TD4 is ten pages long, including the description, Claims and the abstract. As explained earlier, the bibliography page is not translated into Turkish, thus not included in the TD4.

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[18] http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20090218&DB=EPODOC&locale=en_EP&CC=EP&NR=1554235B1&KC=B1

[19] http://online.tpe.gov.tr/EPATENT/servlet/PreSearchRequestManager

3.2. ANALYSIS OF SAMPLE DOCUMENTS

The main focus of this study, as mentioned earlier, is on the translation of Claims in a patent application. Nevertheless, as the other parts of a patent application document, such as description and drawings, are integral parts of a patent application and since they have a facilitating function in the interpretation of Claims, these parts of patent documents will also be presented here briefly. This will help in understanding the changes and similarities observed in the writing styles of different patent documents in general. To better see the differences between the writing of texts, i.e. patent application documents, and for a detailed comparison of their translated versions, the main parts of each document will be analyzed together. Drawings are not included in the analysis phase due to the fact that they do not require translation into another language as long as they do not include any text. The drawings of sample documents taken in this study do not include any chunks to be translated; therefore, they are excluded from the analyzed data of this study.

Before advancing further on the main focus of this study, which is the translation of Claims, the other parts of a patent application documents, namely the title, abstract and description parts of sample patent applications will be briefly presented and their translations will be discussed on.

First, the titles of these four sample patent application documents will be given along with their translations. After the presentation of titles and a discussion on the examples extracted from the translations of sample documents, a brief introduction to the translation of abstracts and descriptions will be provided. In order to limit the space allocated to the examination of abstracts and descriptions with respect to the analysis of Claims, abstract examples will be taken from first two sample applications, SD1 and SD2; and description examples will be taken from the last two sample application documents, SD3 and SD4 rather than examining all the parts of each sample document.

Two sample abstracts will be dealt with in order to present the common characteristics as to the nature and function of abstracts for each patent application document; and

afterwards, general remarks will be made about the translation of abstracts. With reference to the aim and function of descriptions which were explained in greater detail in the first chapter, the writing style of description texts and the translations of these will be dealt with, leading to a demonstration of the applicability of proposed technical translation strategies through the example sentences extracted from SD3 and SD4. In the last and in fact the most important part, the Claims of each sample document and their translations will be scrutinized, to construct a sound and comprehensive general conclusion about the common translation strategies observed in translations. This deep analysis of the translations of claims will pave the way for a better discussion on the usability of technical text strategies at the end of this chapter.

It is important here to note that, the term "analysis" here simply refers to determining the functional aspects of the examples taken, and the analysis covers comments on the effects of these functions on the translation process and the possible outcomes of decisions taken by translators; and it also covers discussions about the possibility of the use of translation strategies proposed by translation scholars for the translation of technical texts in order to reach a general conclusion as to whether a functional equivalence as the *skopos* is achieved. In other words, this section is intended neither to analyze the sentences from a linguistic perspective, nor to examine the quality or accuracy of translations nor to demonstrate mistranslations.

3.2.1. Titles

The title is the first component of a patent application that gives implication about the subject-matter of an invention. The titles of the sample patent application documents provided as examples in this study are presented below, along with the translations into Turkish as approved and published by Turkish Patent Institute officially in their patent bulletins and their online database. The table below would help a better comparison of the titles of each sample patent application document.

Table 3.1. Titles of the inventions described in sample patent application documents.

SD1	Striker For Electric Or Mechanical Lock	**TD1**	Elektrikli Kilit Veya Mekanik Kilit İçin Kilit Karşılığı
SD2	Umbrella Cover	**TD2**	Şemsiye Kabı
SD3	Method Of Wrapping Elongated Articles In Groups	**TD3**	Uzun Parçaların Gruplar Halinde Ambalajlanmasına Yönelik Metot
SD4	Process For Synthesizing L-Y-Methylene Glutamic Acid And Analogs	**TD4**	L-Y-Metilen Glutamik Asit Ve Anologların Sentezlenmesi İçin Proses

As seen above, each title gives information about the content of the described invention and the technical field the invention is related to. Titles in the original documents indicate the type of the patent, i.e. it is clear from the titles whether the patented invention is product or a method. The same clarity is protected in the translated titles.

Titles include the terminology related to the invention they belong. Therefore, however simple might the translation of the titles seem, the translator has to choose the correct terminology for a title and that is possible only after a sound understanding on what is meant by the invention.

The title of the SD1, for instance, consists of 6 words while the translation is made up of 8 words. The one word *"striker"* is translated as *"kilit karşılığı"* with two words, which is likely to be due to lack of an exact equivalent term in the target language. On the other hand, it is seen that the phrase *"electric or mechanical lock"* is translated as *"elektrikli kilit veya mekanik kilit"*. It is for sure that the first *"kilit"* in the title was not necessary; it may as well be translated as *"elektrikli veya mekanik kilit"* and the omission of the word added by the translator would not restrict the meaning. The reason behind this may be that the translator wanted to clarify the type of product in order to avoid any misunderstanding. The addition of one word here in title would not affect the scope of the invention in any way, which might have caused serious negative outcomes

in the Claims part where the scope is exactly defined. However, regardless of the place it is used, it is obvious that the added word does not extend the scope understood. Therefore, the translated title is, although there are some additions to the original, an acceptable one.

The translated titles of TD2, TD3 and TD4 do not possess any additions or omissions to be discussed; they seem to be the exact equivalents for the titles of SD2, SD3 and SD4 respectively. If looked from the perspective of the functionalist theorists presented in Chapter 2 of this study, as the function of the title is the same for the translated document, which is to give initial information about the content of the invention disclosed in the document, all the titles are suitable for this aim and therefore, the translations can be said to be successful in that they serve the function the translated text was intended to have.

3.2.2. Abstracts

The function of the abstract, as defined earlier in the first chapter, is to give brief information about the technical field and the content of patent application to third persons interested in field. Abstracts of patent documents generally consist of sentences taken from the description texts or directly from Claims, and there are many cases in which even the sentence structure remains the same. The reason behind this is that since the first independent claim gives information both about the state-of-the-art and about the new features introduced by the invention, it provides a good summary of the patented matter.

Abstract is the first component of an invention which is published in official patent bulletins well before the description and Claims of an application and therefore is the first part that is made public (Daldeniz, 2004, p.79). The abstract is not taken into consideration in determining the limits of patent protection and therefore has no function other than giving information. This is also explicitly stated in the Article 85 of the EPC as “The abstract shall serve the purpose of technical information only; it may

not be taken into account for any other purpose, in particular for interpreting the scope of the protection sought or applying Article 54, paragraph 3." (EPC 14th Ed., 2010).

Implementing regulations to the European Patent Convention defines how the abstracts should be written; the only merits regarding the style and form of abstract writing are specified in Rule 47, in which the Paragraph 2 states that the abstract should be a concise summary which allows clear understanding of technical problem. The other provisions of Rule 47 include such other statements as: "… a reference sign should be placed in parentheses" (Paragraph 4), and "it shall preferably not contain more than one hundred and fifty words" (Paragraph 3).

Below is a discussion about the two sample patent abstracts, Abstract1 and Abstract2, taken from sample patent application documents SD1 and SD2, respectively.

Abstract 1[20]

> A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently. The holes (5) rotatably accommodate the ends of the pivot (7). The diameter of the ends (8) of the pivot (7) is smaller than the diameter of the holes (5), producing a mechanical play (9) that allows the pivot (7) to tilt its own axis with respect to the pivoting axis of the links (4).

Abstract 2[21]

> An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4) which are closed internally by water repellent porous fabric.

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[20] http://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&adjacent=true&locale=en_EP&FT=D&date=20040609&CC=EP&NR=1426530A2&KC=A2

[21] http://worldwide.espacenet.com/publicationDetails/originalDocument?FT=D&date=20060810&DB=EPODOC&locale=en_EP&CC=US&NR=2006174926A1&KC=A1

The patent abstracts above are good examples of patent abstracts. The reason for this is, as required in the regulations, they contain no more than a hundred and fifty words, and reference signs are placed in parentheses and both abstracts contain information about the technical problem the invention is related to. It is important here also to note the similarity of flow of information to the sentence flow in the first claim of the same application, which is the first sample independent claim examined in the Claims part. The similarity can be clearly observed when the abstract and claim is presented side-by-side:

Table 3.2 Comparison of Abstract 1 and Claim 1 of SD1

Abstract 1 from SD1	**Claim 1 from SD1**
A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently. The holes (5) rotatably accommodate the ends of the pivot (7). The diameter of the ends (8) of the pivot (7) is smaller than the diameter of the holes (5), producing a mechanical play (9) that allows the pivot (7) to tilt its own axis with respect to the pivoting axis of the links (4).	A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently, said holes rotatably accommodating the ends (8) of said pivot (7), **characterized in that** the diameter of said ends (8) of the pivot (7) is smaller than the diameter of said holes (5), producing a mechanical play (9) that allows said pivot (7) to tilt its own axis with respect to the pivoting axis of said links (4).

The sentences flow more or less in the same way, all the information contained in Claim 1 is also present in the abstract. The only difference between the claim sentence and the abstract is that the abstract has more than one sentence, that is, the sentence of Claim 1 is divided into parts and some additional information is provided. The same pattern can be observed in the second sample abstract:

Table 3.3 Comparison of Abstract 2 and Claim 1 of SD2

Abstract 2 from SD2	**Claim 1 from SD2**
An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4) which are closed internally by water repellent porous fabric.	An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4, 10) which are closed internally characterised in that the openings (4, 10) are closed by water repellent porous fabric.

As it is seen in the first example, the second example is also a version of Claim 1 of the same document. The reason may be, as stated previously, that the Claim 1 always includes a prior art portion that states the present technical problem and in the characterizing portion, intended protection is defined; therefore, the first claim always describes the invention in general. For this reason, use of first claim as the abstract provides adequate information about the content of application. The main point here is, the claim and abstract texts differ in function: the abstract is a source of information and the claim is the legal definition of patent protection. An abstract should be, as of regulations, clear and concise and easily understandable (Rule 47, Implementing Regulations of EPC). Therefore, in order to eliminate any drawbacks in terms of comprehension, of using a long sentence as done in Claims, the abstract is written in a relatively clear manner.

The reflection of this in translation may be that in translating the abstract, the translator is aware about the differences between the abstract and claim sentences and that the translator translates the abstract as divided portions of first claim as seen in the example above as well as the translations below.

Table 3.4 Comparison of Abstracts and Translations

Abstracts	**Translations**
Abstract 1: A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently. The holes (5) rotatably accommodate the ends of the pivot (7). The diameter of the ends (8) of the pivot (7) is smaller than the diameter of the holes (5), producing a mechanical play (9) that allows the pivot (7) to tilt its own axis with respect to the pivoting axis of the links (4).	Translated Abstract 1: İçerisinde uzunlamasına deliklerin (5) yer aldığı iki bağlantı parçasının (4) içerisine eş eksenli olarak ve bağımsız bir şekilde pivotların yerleştirilmiş olduğu, bir arka sabitleme plakasına (2) sahip olan, mandal tutma sistemi için bir pivot (7) içeren elektrikli ya da mekanik kilit için bir kilit karşılığı. Bahsi geçen delikler (5) bahsi geçen pivotların (7) uçlarını dönmesine olanak sağlayacak şekilde tutar. Bahsi geçen pivot (7) uçlarının (8) çapları, bahsi geçen deliklerin (5) çaplarından daha küçüktür ve bu sayede bahsi geçen pivotun (7) kendi eksenini, bahsi geçen bağlantı parçalarının (4) dönme eksenlerine göre eğmesine olanak sağlayan bir mekanik oynama alanı (9) ortaya çıkar.
Abstract 2: An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4) which are closed internally by water repellent porous fabric.	Translated Abstract 2 Mevcut buluş, katlanmiş bir şemsiyeyi içine almak için adapte edilmiş ve bir bagaja çıkarılabilir şekilde takılmak için bağlantı elemanları (5) ile donatılmış olan ve içeriden kapanan açıklıklara (4,10) sahip, tabanca kılıfı şeklinde bir delikli destek elemanı olup özelliği; açıklıkların (4,10) su def edici gözenekli doku tarafından kapatılıyor olmasıyla ilgilidir.

This divergence in function may also allow the translator to be relatively free in the decisions s/he takes during the translation of abstract. Because, the aim of translation

becomes producing a text that is intended purely to give information. However, the translator of the second abstract above -probably because the sentence was directly taken from the claim and it was not divided into separate sentences- uses the sentence connector '*özelliği'* which is something specific to the writing of Claims, even though it is not present in the abstract.

Due to the fact that all patent abstracts have the same function in patent application procedures before different national agencies, the translated abstract text, just like the original one will have the function of providing a general opinion about what the invention is. In this vein, translator is responsible only for conveying information in the translation of abstracts. As the abstracts do not have a specific writing style defined legally, the translator is relatively free in translating the abstract as long as s/he preserves the information contained in the original text.

3.2.3. Descriptions

The description is, as already seen in the first chapter, the longest explanatory part of a patent application document. As a brief answer to the question as to what a description text is, its role can basically be defined as introducing the technical field of the invention, giving background knowledge, describing the application of invention in detail with reference to drawings, discussing the advantages it brings over the state of the art. To go hand in hand with and above all these features mentioned, the main function of a description text is to help readers in the interpretation of Claims.

When the patent description texts are viewed from this perspective, it is seen that their main function is "informative" when viewed from the perspective of Reiss' (1976) theory on text types. The patent descriptions provide information and represent objects and facts using a logical language in order to clarify the meaning and scope, their aim is neither "expressing sender's attitude through an aesthetic language" (expressive), nor "appealing to the receiver through a dialogic language use" (appellative). Since the patent descriptions are informative texts, the basic translation strategy to be followed, as suggested by Reiss (1976) whose idea provided the grounds on which the Skopos

Theory of Vermeer (1984) was built, is transmitting the referential content of the text (Munday, 2001).

The patent description texts have a certain format at textual level, that is, they have a flow that is common to most of the patent descriptions (cf. TPI Application Guide 2010 and EPO Guide 2010; detailed description and analysis of the text flow available in Daldeniz, 2004). However, these texts do not have a predetermined and required format at sentence level as the Claims do. To be more specific, it is necessary to remind that there are certain rules in writing of Claims; the most eminent one being 'claim is a single sentence' (cf. Battle, 1997, and Daldeniz 2004). However, unlike Claims, there's no rule provided in legal documents (cf. EPC 14th ed., 2010; Decree Law 551; Implementing Regulations for EPC; Implementing Regulations for Decree Law 551) regarding the structure of the sentences in the patent description text. In the description and abstract, the sentences can be long or short; a paragraph may consist of only one sentence or more. There's no limit as to how the sentences are constructed. Therefore, it is possible for the translator to employ such strategies as breaking up long sentences or changing the sentence structure in these parts. However, it is important here also to note that it is not possible to include footnotes or endnotes in any part of patent documents; that is, translator may only provide clarification within parantheses or as an additional clause. The only thing that needs attention is that it must all be done without broadening or limiting the meaning. In that vein, the advised strategy of *using a term with a broaderor narrower meaning in cases when no exact equivalent is found* cannot be used. In these cases, the translator may employ calque or borrowing.

The examples provided below are all taken from the sample patent applications randomly chosen from the officially approved EP validations in Turkey. In order to facilitate the location of sample sentences in the appendices, each sample sentence provided here will have a reference title, which consists of the paragraph number the sentence is taken from along with an indication of the sample document. For instance, when a sentence taken from the second paragraph of third sample text is used, the sentence will be given the reference "SD3[0002]"; in which SD3 stands for the third sample document and [0002] stands for the number of the paragraph the example is

taken. This will facilitate the locating of sample sentences in the sample documents included in the appendices of this study. In these example sentences, the application of technical translation strategies suggested by translation scholars will be addressed.

Table 3.5 Description Sentence Example 1

SD3[0003]	Translation
Methods of wrapping orderly groups of cigarettes - hereinafter referred to simply as "groups" - normally comprise folding a sheet of wrapping material about a group to form a tubular wrapping; and closing two tubular portions, projecting from opposite ends of the group, onto the group itself.	Düzenli sigara gruplarının (bundan böyle sadece "gruplar" olarak anılacaktır) ambalajlanmasına yönelik metotlar, genellikle bir ambalaj malzemesi tabakasının bir grup etrafında silindirik bir ambalaj oluşturacak şekilde katlanmasını; grubun karşıt uçlarından dışarıya doğru çıkıntı yapan iki silindirik kısmın grubun üzerine kapatılmasını içerir.

As seen above, while the original sentence has dashes, the translator converted it into parentheses. This is most probably because dashes are not of standard use in Turkish. The translator changed a feature of original text into a more proper one in order to create a text that would be in more conformity with the target norms. This reflects target-orientedness, which is a well-known dimension of functional translation theories.

Table 3.6 Description Sentence Example 2

SD3[0008]	Translation
US4823536A1 discloses a method for handling groups of cigarettes, whereby each group of cigarettes is transferred from a first Wheel turning in one direction on to a second Wheel turning in opposite direction; (…)	US4823536A1 sayılı ABD patent başvurusunda, sigara gruplarına yönelik bir metot anlatılmaktadır. Bu metoda göre her bir sigara grubu bir yönde dönen birinci tekerden, onun aksi yönde dönen ikinci tekere aktarılmaktadır; (...)

In the Example 2 above, there are two main changes that capture attention. First, the translator gave some additional information about the referred patent document. Here the translator needed to clarify the meaning and provided an additional information "*sayılı ABD patent başvurusunda*" which does not affect the readers interpretation of the invention but facilitates understanding. And also, the active sentence is translated into a passive one. As the second change, it is seen that the original sentence is a long one and the translator chose to divide it into two parts while constructing the Turkish one, which helped her/him build a sentence that is simpler, i.e. easier to read and understand. The translator is seen to be relatively free in his/her choices about the sentences in the description part as long as s/he does not broaden or limit the interpretation of Claims. It leads to the conclusion that, it is possible for the translator to employ the advised technical translation strategy *"breaking up long sentences"* in the translation of the description part of patent documents.

Table 3.7 Description Sentence Example 3

SD3[0032]	**Translation**
(…) With reference to Figure 11, as pocket 7 slides along flat face 38 (not shown in Figure 11 for the sake of clarity), (…)	(…) Şekil 11'e göre; cep (7) düz yüzey (38 – resmi karmaşık hale getirmemek amacıyla Şekil 11'de gösterilmemiştir) boyunca kayarken, (…)

In the sentence Example 3 above, the chunk *"for the sake of clarity*" is transformed into a chunk with meaning *"in order not to make the Figure complex"* (*resmi karmaşık hale getirmemek amacıyla*) so that it sounds more natural to the target readers. There again is the free choice and target oriented decision of the translator, and this shift in meaning is acceptable since the sentence structure used in description part is not strictly determined as the ones in Claims. And this conversion does not limit or broaden the meaning of invented matter.

Table 3.8 Description Sentence Example 4

SD4[0006]	Translation
(…) This property is suggestive of potent CNS activity, which may translate into the development of agents to treat various CNS disorder.	(…) Bu özellik potent/muhtemel CNS (merkezi sinir sistemi) aktivitesini akla getirir; bu, çeşitli merkezi sinir sistemi hastalıklarını tedavi etmek için maddelerin geliştirilmesi anlamına gelebilir.

In Example 4, the translator tends to clarify the meanings of terms specific to the technical field of the invention. The term potent, used also in Turkish by specialists of chemistry is accompanied with its exact meaning with the aim of clarification for those reading the patent descriptions simply to get information. Also, the abbreviation CNS is used as standing for *Central Nerve System*.Although its long form is not provided to the readers anywhere in the original, the translator needed to provide its meaning in parentheses along with the abbreviation, most probably because its Turkish equivalent *'Merkezi Sinir Sistemi'* has different initials –MSS– and therefore it is not easy to guess what CNS stands for in Turkish if not clearly stated. The choices of translator here are also acceptable.

And in Example 5 below, the same condition is seen again. The translator probably felt the need for clarification and gave the Turkish translation of the name of the document in parentheses since s/he could not change the name of the original document. Additions of information or clarifications by the translator are seen to be acceptable as long as they do not change the scope of protection:

Table 3.9 Description Sentence Example 5

SD4[0007]	Translation
The free acid form of 4-methylene-L-glutamic acid (…) appended to the Information Disclosure Sheet that accompanies this application.	4-metilen-L-glutamik asidin serbest asit formu, bu başvuruyla birlikte yer alan "Information Disclosure Sheet" (Bilgi Açıklama Sayfası) ekindeki (…)

As is obvious from the examples above, this part is where the features of technical texts are as evident as in Claims and where the technical translation strategies listed in the previous chapter can be employed. From the examples and the discussion about the possible outcomes of translators' choices, it can be concluded that the translator is relatively free to use any technical translation strategy to help reader understand the text since the text here has the function of helping the interpretation of Claims. It is the informative part of the patent application and does not have a legal dimension anyhow. Nevertheless, it is important to note that the translator again has to consider the results of his/her choices. Since the description used in the interpretation of Claims, the translator has to be consistent in terminology s/he uses throughout the application document including title, description, Claims and abstract and s/he has to make sure that his/her choices do not change the meaning or in any way affect the understanding of terms. Clarifying an intentional ambiguity or broadening/limiting the sense of any term may result in a different interpretation of Claims which in turn may cause a change in the scope of protection.

3.2.4. Claims

In previous chapters, it is clearly stated that the Claims are the most important part of a patent application since they are the determinants of scope of protection. This fact adds a legal dimension to the text in question, rendering the translation of Claims a task demanding a special attention from the translator. The translator, while translating the

Claims, has to be aware of the writing style of Claims set out by the regulations in force in the target community, and s/he has to shape his/her translation accordingly. The decisions taken by the translator in this process is shaped primarily by the function the target text will serve: the translated Claims, just like the original ones, will determine the limits of the invention and will shape the borders of the patent right granted to an inventor. Also, there are other functional aspects that are to be preserved in target language. For instance, the first and second parts of a claim have different functions: the first part defines the prior art while the second part defines the characterizing portion. In addition to these, the function of sentence connectors within the sentence is noted by Daldeniz (2004) in her PhD dissertation: the function of sentence connectors is to mark the separation of prior art and characterizing portions. All these functions at sentence and at phrase level are to be preserved while translating; since Claims have similar functions in Turkish and in English.

To get back to the function of Claims in general terms, it should be noted that while the whole patent application document mostly serves for providing information about the invention to other inventors and patent examiners or those interested in the technical field, the Claims part has another function that is of more prominence in terms of patenting process. In other words, all the subsections of a patent application has an informative function and the main "*skopos*" is to explain the invention and provide readers with enough information about the technical or scientific improvement proposed. Nevertheless, this is not the only function that Claims have. In addition to being informative, Claims have another function: acting as reference legal texts in defining the patent and the invention before the judicial authorities that grant the patent right as regulated by law. Although they may seem to be nothing more than texts giving technical information when viewed from a semantic standpoint, they actually serve an important function when they are considered pragmatically. Therefore, the *skopos* of the translation of Claims turns into a complex task aiming to convey any piece of information besides any ambiguity.

With all these in mind, the final thing that awaits the patent translator is to be attentive to the demands of the target language for the writing of patent documents, especially for

the Claims, while drafting the translation. As clearly stated in Chapter 1, there is a certain way suggested by legal authorities to write Claims. For these reasons, the translation of claims is the most important task for the patent translator who has to be a competent technical writer in the technical field of the invention besides being a translator with adequate background knowledge and skills to draft a technical text with certain stylistic and formal features.

To better understand the writing style and characteristics of claims, this study aims to analyze the claims taken from four sample applications in greater detail below. To help easier comparison, the independent claims and dependent claims will be analyzed under separate headings with regard to their sentence structures and they will be compared with their translations. The translation strategies followed by the translators will be discussed under the discussion part at the end of each comparison section.

To draw a general picture of sentence structures used interchangeably while writing the claims, an overview of claim sets taken from patent applications is sure to be helpful. The complete claim sets of each sample patent application document are included in the Appendices part of this study, what is intended here is to produce a general outline for each set before the detailed analysis at sentence level.

- The claim set of SD1 consists of four Claims, first of which is an independent claim. All the Claims in SD1 consist of two parts as advised in application guides and as specified in implementing regulations of EPC. Each claim has the sentence connector '*characterized in that'* which is the most common expression in Claims. All the Claims have a common structure and the claim set can be commented to be consistent in writing style.

- The second set, i.e. the Claims of SD2 is comprised of one independent and thirteen dependent Claims, fourteen in total. The independent claim of second claim set includes the sentence connector *'characterized in that'* while dependent Claims have *'in which'* as the sentence connector. The last claim has no sentence connector; the noun clause is constructed with a gerund and directly

connected to the other part of the sentence. This claim set includes different structures that are to be paid attention by the translator.

- The third claim set, taken from SD3, consists of ten claims the first of which is independent. The claims describing the steps of the disclosed method (Claims 1, 2, 8 and 10) do not have any sentence connectors while other claims have *'wherein'*. The Claims can be said to have a consistent way of writing as a specific style is used for separate types of claims.

- The last set of exemplary claims taken from SD4 includes 7 Claims. The first claim again is the independent one which does not have a sentence connector. dependent claims, on the other hand, have *'wherein'* as the connector. The style of writing in the claims, however quite different from others in terms of formal features, is consistent within the claim set itself.

The differences in writing style are clear from the general statements above. The implications of these differences for and in the translation task can only be understood after analyzing each claim individually and by comparing the translations thereof. Grouping the claims according to their dependency status would be useful in comparing the strategies each translator adopted while translating claims of similar types. The tables presented will be helpful in the comparison of translated claims with their originals. Brief comments on the translation will be provided under each table comparing the claims and their translations. These comment and discussion parts will be further referred to in the conclusion chapter.

3.2.4.1. Independent Claims

Independent claim, as defined earlier in the chapter on the patent texts, is the one that includes no reference to other claims. The independent claims are advised to be comprised of two parts, they define the present knowledge in the technical field in the first part of the claim sentence and give information about the characteristics the

invention claims to bring to the technical field in the second part where the limits of patent right and scope of protection for the invention is defined.

The first claim of a patent application is always an independent claim. Also, there are cases in which a patent document includes more than one independent claim in which case the second or third independent claim may be in the middle or at the end of the claim set. In the sample patent application documents provided below, all the samples have only one independent claim which is the first claim of every sample application document.

Considering the independent claims taken from the sample texts, it is seen that each claim has a different sentence structure; some are one-part claims and some consist of two parts. What is common to all these independent claims is that they are all only one sentence. They include lots of noun clauses connected to each other, and mostly they have a sentence connector specific to the writing of claims; which functions as a separator for two part claims to indicate the prior art and characterizing portions.

In these samples, the independent claim taken from SD1, which will be named as IC1 for short from now on, is a two part claim, consisting of one sentence whose prior art and characterizing portions are connected to each other with the sentence connector "characterized in that".

The independent claim of SD2, hereafter IC2, is again a two part claim whose two portions are connected to each other with a '*characterised in that'* to make up a single sentence.

The third sample independent claim, IC3, taken from SD3 is again a single sentence, but does not have any sentence connectors. It seems to be in the form of a one-part claim, the noun clauses of which are connected to each other by the help of semicolons. The IC3 has no sentence connectors, and this leads to an ambiguity which will be discussed further in the discussion part at the end of the analysis of independent claims.

The last example of independent claim IC4, taken from the sample application SD4, is again a one part claim. Like IC3, IC4 does not have a sentence connector but the meaning is not ambiguous in that IC4 is a well organized sentence which avoids any misunderstanding in the interpretation of Claims.

In order to see the differences between the sentence structures, a table including each independent claim as well as notes on the sentence structure is presented below.

Table 3.10 Sentence Structure of Independent Claims

ID	Independent Claim	About the Claim
IC1	A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently, said holes rotatably accommodating the ends (8) of said pivot (7), characterized in that the diameter of said ends (8) of the pivot (7) is smaller than the diameter of said holes (5), producing a mechanical play (9) that allows said pivot (7) to tilt its own axis with respect to the pivoting axis of said links (4).	- Single sentence - Two parts - Sentence connector *"characterized in that"*
IC2	An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4, 10) which are closed internally characterised in that the openings (4, 10) are closed by water repellent porous fabric.	- Single sentence - Two parts - Sentence connector *"characterised in that"*
IC3	A method of wrapping elongated articles in groups, the method comprising the steps of: feeding a first and a second pocket (6; 7) continuously along a first and, respectively, second path (P1, P2) having a common portion (T), the first and the second	- Single sentence - Seems to be consisting of one part - No sentence

	pocket (6, 7) comprising, respectively, a first and a second bottom wall (12; 21), and first and second lateral walls (13, 22, 23); penetrating the second pocket (7) with the first pocket (6) along the common partion (T) by inserting the first lateral walls (13) of the first pocket (6) between the second lateral walls (22, 23) of the second pockets (7) to transfer a group (3) from the first to the second pocket (6, 7) together with a sheet (18) of wrapping material; gripping a first and a second flap (57, 58), opposite and parallel to each other, of the sheet (18) of wrapping material between the first and second lateral walls (13, 22, 23); and extracting the first lateral walls (13) from the second pocket (7); the method comprising the further step of compressing the group (3) and a portion (56) of the sheet (18) of wrapping material between the first and second bottom wall (12, 21) when extracting the first lateral walls (13) from the second pocket (7).	connector - Ambiguity due to the structure: it is not obvious whether the characterizing portion starts from the beginning or it is only the last paragraph.
IC4	A process for synthesizing substantially enantiomerically pure 4-methylene-L- glutamic acid and analogs thereof, said process comprising the steps of: a. providing a (2S) -pyroglutamic acid or a derivative thereof as a starting material; b. converting the starting material to a 4-enamine derivative thereof; c. hydrolyzing the 4-enamine derivative to a 4-hydroxymethylidene derivative thereof; and d. reducing the 4-hydroxymethylidene derivative to a 4-methylene derivative of pyroglutamic acid or an ester thereof; e. reacting the 4-methylene pyroglutamic acid with a strong base to form linear 4-methylene glutamic acid, or esters and salts thereof.	- Single sentence - One part - No sentence connector

As seen clearly from the Table 3.10 presented above, there are different kinds of structures in claim sentences. These different sentence structures in claims may also affect the translation. Under the next heading, a discussion on whether these different sentence structures are reflected in the translations will be provided. Later on, the decisions taken by the translators in each case will be commented on with reference to the possible implications of translators' decisions in legal terms.

3.2.4.1.1. Translations of Independent Claims

The translations of claims as published on the official website of Turkish Patent Institute is given below. To allow for better comparison with originals, the original and translated versions of each claim will be presented as a separate table.

It is important to note here that the aim in the analysis of translations is neither to show mistranslations nor to judge the translators for the mistakes s/he had made. Rather, the aim is to discuss the possible outcomes that may result from these mistakes in translation and try to draw a general conclusion as to how the function of Claims and the target text norms shape the decision process for the translator. Therefore, the focus will not be on the evaluation of the correctness of translation but on the process and implications of translations. The analysis will attempt to demonstrate how the function of text is a determinant factor in the decisions taken during the translation process.

Table 3.11 IC1 and its Translation

IC1	**Translation of IC1**
A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently, said holes	İçerisinde uzunlamasına deliklerin (5) yer aldığı iki bağlantı parçasının (4) içerisine eş eksenli olarak ve bağımsız bir şekilde pivotların yerleştirilmiş olduğu, bahsi geçen deliklerin (5) bahsi geçen pivotların (7) uçlarını (8) kavradığı bir arka

rotatably accommodating the ends (8) of said pivot (7), **characterized in that** the diameter of said ends (8) of the pivot (7) is smaller than the diameter of said holes (5), producing a mechanical play (9) that allows said pivot (7) to tilt its own axis with respect to the pivoting axis of said links (4).	sabitleme plakasına (2) sahip olan türde bir kilit karşılığı olup, **özelliği**; bahsi geçen pivot (7) uçlarının (8) çaplarının, bahsi geçen deliklerin (5) çaplarından daha küçük olması ve bu sayede bahsi geçen pivotun (7) kendi eksenini, bahsi geçen bağlantı parçalarının (4) dönme eksenlerine göre eğmesine olanak sağlayan bir mekanik oynama alanının (9) ortaya çıkmasıdır.

The original text, i.e. IC1, consists of noun clauses connected to each other in the first part, and a separate sentence in the second part connected to the first part with the phrase "characterized in that". As seen above in the Table 3.11, the translator used a single sentence to translate the IC1 which is a correct choice, since the teaching in the patent literature that demands a claim to be a single sentence prevails. It is seen that, the sentence connector "characterized in that" is translated as *'özelliği'* as suggested in the patent application guide of Turkish Patent Institute. The sentence connector *'characterized in that'* here, along with the function of connecting separate parts to form a single sentence, has the function of separating the prior art and characterizing portions of the claim. It is an indication of the beginning of characterizing portion in which the new features for which the protection is demanded. And the sentence connector '*özelliği*' in the translated claim serves the same aim, that is, *skopos* is achieved at this point.

When analyzed at a deeper level, it is seen that the translator did not translate certain parts of the first clause defining the known art in the prior art portion. In the prior art portion, the clause *"electric or mechanical ... for a pawl engagement system"* and the word *"rotatably"* is not translated. It causes a broadening in the sense. When written in this way, the sentence, without defining parts, points to all locks of the known art: either *rotatable* or not, either *electric* or not, and either having a *pawl engagement system* or not. While the referred known lock is clearly specified in the original, it has a broader

meaning in the translated document. The translator caused an unintentional change in the meaning of claim, which may have legal consequences. What makes this mistake trivial is that the said mistranslation is not in the characterizing portion. Since it is the characterizing portion where the protection is demanded, the mistranslation in prior art would not affect the scope of protection to a great extent.

Table 3.12 IC2 and its Translation

IC2	Translation of IC2
An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4, 10) which are closed internally **characterised in that** the openings (4, 10) are closed by water repellent porous fabric.	Katlanmış bir şemsiyeyi içine almak için adapte edilmiş ve bir bagaja çıkarılabilir şekilde takılmak için bağlantyı elemanları (5) ile donatılmış olan ve içeriden kapanan açıklıklara (4, 10) sahip, tabanca kılıfı şeklinde bir delikli destek elemanı (2) ihtiva eden bir şemsiye taşıyıcısı (1) olup özelliği; açıklıkların (4, 10) su def edici gözenekli doku tarafından kapatılıyor olmasıdır.

The claim above shown in the Table 3.12 is another good example of the most common claim type seen in patent literature. This claim again is a two part claim made up of a single sentence; consisting of a prior art portion and a characterizing portion. These portions are separated from each other with the help of sentence connector '*characterized in that*', as in the previous example shown in Table 3.11.

The function of first part, i.e. the prior art portion is again to inform about the current known status of the art, and the second portion gives information about the new feature the invention adds to the already known product. The translator preserves these functions of the claim, and translates it again in two separate parts and uses a functionally equivalent sentence connector '*özelliği'*. Therefore, taking the

predetermined way of writing Claims in Turkish into consideration, the translator produces a functionally equivalent sentence.

Table 3.13 IC3 and its Translation

IC3	**Translation of IC3**
A method of wrapping elongated articles in groups, the method comprising the steps of:	Uzun parçaların gruplar halinde ambalajlanmasına yönelik bir metot olup; bu metot şu adımları içerir:
feeding a first and a second pocket (6; 7) continuously along a first and, respectively, second path (P1, P2) having a common portion (T), the first and the second pocket (6, 7) comprising, respectively, a first and a second bottom wall (12; 21), and first and second lateral walls (13, 22, 23);	sırasıyla bir birinci ve bir ikinci alt duvardan (12; 21) ve birinci ve ikinci yan duvarlardan (13, 22, 23) oluşan birinci ve ikinci ceplerin (6, 7), ortak bir kısma (T) sahip birinci ve ikinci geçit (P1, P2) boyunca aynı sırayla sürekli olarak beslenmesi;
penetrating the second pocket (7) with the first pocket (6) along the common portion (T) by inserting the first lateral walls (13) of the first pocket (6) between the second lateral walls (22, 23) of the second pockets (7) to transfer a group (3) from the first to the second pocket (6, 7) together with a sheet (18) of wrapping material;	bir ambalaj malzemesi tabakası (18) ile birlikte bir grubu (3) birinciden ikinci cebe (6, 7) aktarmak için, birinci cebin (6) birinci yan duvarlarını (13) ikinci cebin (7) ikinci yan duvararı (22, 23) arasına sokarak, ortak kısım (T) boyunca birinci cebin (6) ikinci cebe (7) geçirilmesi;
gripping a first and a second flap (57, 58), opposite and parallel to each other, of the sheet (18) of wrapping material between the first and second lateral walls (13, 22, 23); and	birinci ve ikinci yan duvarlar (13, 22, 23) arasında ambalaj malzemesi tabakasının (18) birbirleriyle karşılıklı ve paralel birinci ve ikinci kanatlarının (57, 58) kıstırılması;
extracting the first lateral walls (13) from the second pocket (7);	birinci yan duvarların (13) ikinci cepten (7) çıkartılması;
	metot ayrıca, birinci yan duvarlar (13)

the method comprising the further step of compressing the group (3) and a portion (56) of the sheet (18) of wrapping material between the first and second bottom wall (12, 21) when extracting the first lateral walls (13) from the second pocket (7).	ikinci cepten (7) çıkartılırken, birinci ve ikinci alt duvarlar (12, 21) arasında, ambalaj malzemesi tabakasının (18) bir kısmı (56) ve grubun (3) sıkıştırılması adımını içerir.

The sample provided in Table 3.13 above, as clearly seen, does not have a sentence connector. This causes an ambiguity as to where the prior art portion ends and where the characterizing portion starts. It also becomes clear here that the function of the phrase '*characterized in that*' is not only providing a connection, but also highlighting the separate portions of a claim.

Here, the sentence flow is in a way that would be suitable for breaking up for translation; because the original sentence is too long and it already consists of smaller sentences tied to each other with the help of semicolons. As there is an obligation to use a single sentence in a claim, the translator has to follow the same format; both because any ambiguity has to be preserved as the translated claim will function as a legal text, and because there's a predetermined way and constraints in claim writing.

In the original text, i.e. IC3 above, there is an ambiguity as to whether it has a prior art portion or it consists only of characterizing portion. This ambiguity is due to the lack of sentence connectors in the claim. This may mean in the first case, the last portion separated by a semicolon is protected; in the second case, any feature listed in the claim is protected. It is important to note that such an ambiguity can be solved by referring to the description text to understand what is included in the prior art and what is new according to the invention; this is exactly what the description text is intended for: helping in the interpretation of Claims. No matter if the description text helps the translator distinguish the prior and characterizing portions or not, the translator should not try to solve this ambiguity. Because the text, however technical it may seem, has a legal function as well. Changing anything in the claim, or clarification of any ambiguity

may eventually mean loss of rights either for the inventor who would lose his/her patent right, or for the other possible users of the patented product who may lose their right to use it because of the monopoly granted to the patent holder. Any disputes on the interpretation of Claims is to be solved by competent authorities, i.e. legal persons in this case; it is not a task of the translator who is responsible only for preserving the function and conveying the meaning of a text through translation.

The ambiguity in the original claim as to where the characterizing portion starts is preserved in translated claim as we see in Table 3.13,, since the translator followed the same pattern and used the same punctuation. Contrary to the advices for clarification or being concise in technical translation, the translator did not interfere in the text anyhow. This may be a clear indication that the function of the text is a major determinant in the translation strategy followed.

Table 3.14 IC4 and its Translation

IC4	**Translation of IC4**
A process for synthesizing substantially enantiomerically pure 4-methylene-L-glutamic acid and analogs thereof, said process comprising the steps of:	Büyük oranda enantiyomerik olarak saf 4-metilen-L-glutamik asit ve bunun analoglarını sentezlemek için proses olup, bu proses şu basamakları içerir:
a. providing a (2S) -pyroglutamic acid or a derivative thereof as a starting material;	a. başlangıç maddesi olarak bir (2S)-piroglutamik asit veya bunun bir türevinin sağlanması,
b. converting the starting material to a 4-aminomethylidene derivative thereof ;	b. başlangıç materyalinin bir 4-aminometiliden türevine dönüştürülmesi,
c. hydrolyzing the 4-aminomethylidene derivative to a 4-hydroxymethylidene derivative thereof; and	c. 4-aminometiliden türevinin, 4-hidroksimetiliden türevine hidrolize edilmesi,
d. reducing the 4-hydroxymethylidene derivative to a 4-methylene derivative of	d. 4-hidroksimetiliden türevinin,

pyroglutamic acid or an ester thereof; e. reacting the 4-methylene pyroglutamic acid with a strong base to form linear 4-methylene glutamic acid, or esters and salts thereof.	piroglutamik asit ya da bunun bir esterinin 4-metilen türevine indirgenmesi, e. lineer 4-metilen glutamik asit ya da bunun esterleri ve tuzlarını oluşturmak üzere, 4-metilen piroglutamik asidin güçlü bir bazla reaksiyona sokulması.

In the last example of independent claims shown above in Table 3.14, the sample text again has a claim with no sentence connectors, like in IC3. Nevertheless, unlike IC3, the sentence structure of IC4 allows the reader to understand the protected features of invention easily: the claim sentence starts with the noun clause "a process…" and this process is defined in the second part. The translator of IC4 preserved the sentence structure again, connected two separate sentences corresponding to first and second parts to each other with the word "olup", so that s/he did not divide the sentence into two sentences.

To state more clearly, this example can viewed from another window: if the sentence was used in a text having only informative function, then it would not be a problem – indeed, to help the reader get the information easier, it would be more convenient – to translate it as two separate sentences. But here, the claim has a legal dimension which will not allow the translator to employ the previously mentioned technical translation strategies.

3.2.4.2. Dependent Claims

Dependent claims, as described in detail with examples in the first chapter, are the claims that have a reference to one or more of the preceding claims, (cf. EPO Guide for Applicants, TPI Application Guide 2010; Loring, 2005, Pienkos, 2004). There is no limitation about the number of dependent claims, there can be as many dependent

claims as needed, in order to list the new features of the invention for which patent protection is claimed in the most appropriate and comprehensible way.

Number of dependent claims also varies in the sample application documents. In SD1, there are three dependent Claims. SD2 has thirteen dependent claims while the SD3 has nine and the SD4 has only six dependent claims. In this section, examples of dependent claims will be presented as translated into Turkish along with their original versions taken from sample patent applications. The second claims of each sample application document were taken as examples here since they varied in sentence structure; that is, they each exemplified a different type of dependent claim sentence. These differences of dependent claims – or DC1, DC2, DC3 and DC4 as they will be referred to – will be elaborated on under the next heading.

As mentioned before, the dependent claims taken from sample applications have different sentence structures. The dependent claims consisted of sentences that included *'characterized in that', 'in which'* and *'wherein'* as well as one having no sentence connector. In terms of exemplification of writing and translation of different types of dependent claims, this poses a great advantage in that it provides samples of different use of style and writing in patent claims.

The first dependent claim DC1 taken from the first sample patent application SD1 is an example of the most common type seen in patent literature. The sentence connector used in DC1 is 'characterized in that'. When the second example of dependent claim DC2, taken from SD2, is considered, a rather rarely seen sentence connector is used to mark the beginning of listing of features for which protection is claimed. DC2 has *'in which'* as the sentence connector, which exactly has the same function as the phrase *'characterized in that'*. Interestingly, the third sample dependent claim, DC3 taken from SD3 has no sentence connectors, but has a structure that is again consisting of a reference part and a characterizing portion. The last example dependent claim DC4 taken from SD4 has *'wherein'*, the most common sentence connector encountered after '*characterized in that'*. This type of claim, that is, claims with '*wherein'* are highly common claim types. For ths reason, an additional sample dependent claim, DC5, will

be presented to better understand structure of claims with '*wherein'*. DC5 is the fifth claim of third sample patent application, SD3.

In order to facilitate the comparison, a table comprising all the dependent claims taken as examples here is provided below:

Table 3.15 Sentence Structure of Dependent Claims

ID	Dependent Claim	About the Claim
DC1	The selvage according to claim 1, characterized in that said pivot (7) is substantially cylindrical, its ends (8) having a smaller diameter and being suitable to be accommodated in said holes (5) of the links (4).	- Single sentence - Reference to previous claim(s) - Sentence connector *'characterized in that'*
DC2	An umbrella carrier (1) as claimed in claim 1 in which the perforated support element (2) is provided as a substantially cylindrical tube.	- Single sentence - Reference to previous claim(s) - Sentence connector *'in which'*
DC3	A method as claimed in Claim 1, and comprising the further step of folding the sheet (18) of wrapping material into a U by pushing the sheet (18) of wrapping material into the second pocket (7) by means of the ends (45) of the first lateral walls (13).	- Single sentence - Reference to previous claim(s) - No sentence connector
DC4	The process of Claim 1 wherein step b includes reacting the starting material with an amide or an acetal.	- Single sentence - Reference to previous claim(s) - wherein

DC5	A method as claimed in Claim 4, wherein each plate (25) comprises a thin plate having an inner face (52) and an outer face (53), and a first and a second end (54, 55) opposite each other and which are respectively adjacent to the second lateral walls (22, 23) in said work position of the plates (25).	- Single sentence - Reference to previous claim(s) - wherein

As seen above in Table 3.15, dependent claims, just like independent ones, can be written in different ways. What is common to all claims is that they are in the form of a single sentence and that they consist of two parts: a reference portion that refers to previous claim or claims and the characterizing portion separated from the reference part with a sentence connector or simply by a comma. This is a common format for all dependent claims; the reference part comes first and leads to the characterizing portion. This structure is a determinant factor in the translation; though there are other possible ways of expressing the original information in the target language, the translators seek to preserve the sentence structure in order for their translations to be valid texts without any ambiguity, or say, in order to achieve an equivalent function in the target context. The next sub-title will present analysis of dependent claims and their translations which will be discussed with reference to the target functions to be achieved.

3.2.4.2.1. Translations of Dependent Claims

The translations of dependent Claims mentioned above will be presented in this section with the aim of seeing the ways the choices of translators are affected by the function of target text that is to be achieved through the translation. Translated Claims are taken from corresponding translated texts TD1, TD2, TD3 and TD4, which are published by Turkish Patent Institute as official translations of SD1, SD2, SD3 and SD4, respectively. Each sample dependent claim will be given separately in a table side by side with its translation.

Table 3.16 DC1 and its Translation

DC1	Translation of DC1
The selvage according to claim 1, characterized in that said pivot (7) is substantially cylindrical, its ends (8) having a smaller diameter and being suitable to be accommodated in said holes (5) of the links (4).	İstem 1'e göre kilit karşılığı olup özelliği; bahsi geçen pivotun (7) büyük oranda silindirik olması, uçlarının (8) daha küçük çaplara sahip olması ve bağlantı elemanlarının (4) bahsi geçen deliklerine (5) yerleşmeye uygun şekilde olmasıdır.

The first sample dependent claim DC1 provided above is in a format that is most widely seen type of claim structure. The claim sentence, like other dependent claims, has a reference portion and the characterizing portion. The translator translated the sentence in a way that the translated sentence will have the same pattern in the target language. As advised in patent application guides available in Turkish, the translated claim has '*özelliği'* as the sentence connector, which is sure to have the same function as the original did.

The translator here paid special attention to provide exact equivalents of terms, and this feature was obvious throughout the sample patent application document SD1. The translator tried to find an exact equivalent for such terms as *"selvage"* and *"link"*, and attempted to give the exact meaning in two words: rather than borrowing *"selvage",* s/he translated it as *"kilit karşılığı"* or rather than translating "*link*" as "*bağlantı*" which would cause additional meanings that may even refer to a "*connection*" or to a "*circuit*", s/he translated it as "*bağlantı elemanı*" to refer exactly to the specific part mentioned. This demonstrates that the translator is aware of the legal function of the translated text and of the possible outcomes that may be faced in case s/he changes the meaning of words.

Table 3.17 DC2 and its Translation

DC2	**Translation of DC2**
An umbrella carrier (1) as claimed in claim 1 in which the perforated support element (2) is provided as a substantially cylindrical tube.	İstem 1'e göre şemsiye taşıyıcısı (1) olup, özelliği, delikli destek elemanının (2) esasen silindirik bir tüp oalrak tedarik edilmesidir.

In the sample dependent claim DC2 above in Table 3.17, there is a sentence connector which is not as common as '*characterized in that'* in claim writing. However, '*in which'* has the same function as '*characterized in that'*; that is, signaling the end of reference part and the beginning of characterizing portion.

The translator translated the sentence connector '*in which'* as '*özelliği',* which is generally accepted as the equivalent term for '*characterized in that'*. This is a clear indication that the translator here is aware of the function the phrase *'in which'* possesses, and is also aware of the target text tradition in which the sentence connector preferred most is '*özelliği'*. In this light, translator was successful in creating the same effect in terms of function without leaving any doubt as to the meaning of claim.

Table 3.18 DC3 and its Translation

DC3	**Translation of *DC3***
A method as claimed in Claim 1, and comprising the further step of folding the sheet (18) of wrapping material into a U by pushing the sheet (18) of wrapping material into the second pocket (7) by means of the ends (45) of the first lateral walls (13).	İstem 1'de açıklandığı şekliyle bir metot olup, ayrıca birinci yan duvarların (13) uçları (45) aracılığıyla ambalaj malzemesi tabakasının (18) ikinci cebin (7) içine doğru itilmesiyle, ambalaj malzemesi tabakasının (18) U şeklinde katlanmasından oluşan bir adım daha içerir.

Unlike DC1 and DC2, the third sample dependent claim, DC3, does not have a sentence connector. The translated version of DC3 does not include a sentence connector, either. It is seen that the translator did not change the sentence structure while translating the claim. The original sentence consists of two parts with different functions, similar to the previous examples of dependent claims: a reference and a characterizing portion. Here, the difference is that the characterizing portion does not begin with a marker such as '*wherein*', or in other words, sentence connector is not present in this case. However, it is obvious to the reader where the reference ends and where the characterizing portion starts. In order to preserve this structure, the translator uses *"olup"* at the end of first part and thus warns the reader that a separate part with a different function is coming. Therefore, at sentence level, the reference and characterizing functions of two parts and at textual level, the legal function of claim sentence are preserved.

Table 3.19 DC4 and its Translation

DC4	**Translation of DC4**
The process of Claim 1 wherein step b includes reacting the starting material with an amide or an acetal.	İstem 1'deki proses olup, burada b basamağı başlangıç maddesinin bir amid ya da bir asetalle reaksiyona sokulmasını içerir.

The fourth dependent claim DC4, similar to all previous claim examples, consists of two parts; what makes it different is the sentence connector '*wherein',* the second most common sentence connector encountered in patent literature. The translator here again, aware of the specific writing style of patent Claims, translated the claim according to the target text norms to produce a functionally equivalent text.

What is remarkable in this claim is the translation of the term "process" as "proses" rather than "süreç" which is the Turkish equivalent for the original term. Here, as the subject matter of the invention is in the field of chemistry, the translator uses the term as

used in the technical field and does not need to apply any clarification or domestication. This is again due to the function of the text: the Claims are intended to give information to "persons skilled in the art", or at least to persons interested and having some knowledge. It can be inferred here that bearing these aspects of translation task in mind, the translator translated his/her text in accordance with its *skopos*.

Table 3.20 DC5 and its Translation

DC5	**Translation of DC5**
A method as claimed in Claim 4, wherein each plate (25) comprises a thin plate having an inner face (52) and an outer face (53), and a first and a second end (54, 55) opposite each other and which are respectively adjacent to the second lateral walls (22, 23) in said work position of the plates (25).	İstem 4'te tanımlandığı şekliyle metot olup, burada her bir levha (25), bir iç yüze (52) ve bir dış yüze (53) sahip olan ince levha ile levhaların (25) bahsi geçen çalışma konumunda ikinci yan duvarlara (22, 23) aynı sırayla bitişik ve birbirleriyle karşı karşıya olan bir birinci ve bir ikinci uç (54, 55) içerir.

As previously stated, the sentence connector *'wherein'* is one of the most widely used phrases in the writing of Claims. For this reason, another sample dependent claim, DC5, which is the fifth claim of sample application document SD3, was presented here as an additional example. As clearly seen above, the sentence structure is the same with the previous examples of dependent Claims. All the sentence connectors used, which are '*characterized in that', 'in which'*, and '*wherein'* have certain functions. Even in the claim that did not include any sentence connector, there was a pattern of writing which was preserved. Translation is shaped according to the text traditions in the target language, which is a clear demonstration that the translator knows who the target *users* and *receivers* are, what the nature of the *commission* and what the intended function of the *translatum* is, in short, what the *skopos* is. And s/he shapes his/her *translatum* according to the *skopos.*

This chapter analyzed four sample patent application documents to discuss the applicability of technical translation strategies defined in Chapter 2. The final part of this thesis will be the conclusion which will present an overview on the study and provide answers to the research questions with reference to theoretical background and the analysis chapters.

CONCLUSION

With the advancement of technology, technical developments and therefore technical translation work increased globally. Among the mostly translated texts are patent application documents. This is mainly because countless new inventions are made everyday and these inventions are patented. For the patenting process, technical documents describing the nature of the invention are drafted and these technical texts are translated into other languages when the inventors decide to protect their patent rights in different countries. In this respect, patent translation became a widely known field as a profession but the attention paid to this field by translation scholars is still inadequate.

Research questions were about the text-type of patent documents, proposed translation strategies for these types of texts and about applicability of these strategies to the patent translation. Throughout the study, these questions were answered in each chapter, and the findings will also be presented below.

The main aim of this study was to investigate the applicability of technical translation strategies to the translation of patent application documents, especially to the translation of Claims. The secondary aims of this study may be listed as follows:

- identification of text-type and function in the patent documents,
- definition of the patent translation process from the perspective of functional translation theorists,
- specification of the influential factors that shape the decisions taken by the professional translator while translating patent documents with reference to the laws and regulations in force in Turkey,

With the aim of finding answers to the above mentioned concepts, the patent documents were introduced in the first chapter of this study. With the introduction to the patenting process, the aim was to clarify the key aspects of the patents and patent documents. In

this respect, examples of patent documents were provided in order to illustrate the language use in patent documents.

After the construction of patenting concept, the theoretical framework that would shape the discussions was constructed in the second chapter. In the context of technical texts and technical writing, the patent texts were referred as highly technical texts, since they involved excessive use of terminology and presented technical information, which may be referred to as the most common characteristics of technical texts. In this respect, the most widely referred technical translation strategies were presented and discussions were directed towards the applicability of these translation strategies presented.

From the specific view of technical translation strategies, the theoretical approach to the patent translation task was shifted into a broader perspective: the functional theories of translation. The forerunners of functional translation theories were introduced and the implications of functional translation theories for patent documents and patent translation were cited. In this phase, the patent documents were evaluated first according to Reiss' text types. It was concluded that the patent documents were a *mixed form*, since they had more than one function. In other words, the patent texts were classified as informative texts since they provided information about a particular field of technology; and they were also classified as operative texts since they determined a protection scope and caused the patent holder and other inventors behave in a certain way; (eg. trade or direct new inventions) within the scope it determined.

Secondly, the concepts of Holz-Mänttäri's translational action were introduced and the stages of translational action were adapted to patent translation task. Although the first roles; namely *initiator, commissioner* and *ST producer* vary from time to time, the other aspect that never changed was the last roles; *TT producer, TT user* and *TT receiver.* In these role definitions of players as adapted to patent translation, The *TT producer* is always technical translator, *TT user* is the official organs and *TT receivers* are mostly new inventors or patent attorneys along with some knowledge seekers.

In the last part of the theoretical framework, building on the pillars of text-types and translational action theories, Skopos Theory was introduced. The patent documents and the patent translation task were evaluated in accordance with Vermeer's "*rules"*. The function of the original text was found to be *determining the scope of legal protection* and the skopos of the translation was seen as *preserving the original (for instance legal) function of the text in the target context*. In this respect, the translated samples were analyzed within the framework of functional theories of translation.

To better represent the major part of the patent translation work in Turkey, the sample patent application documents analyzed in the third chapter were chosen from the European Patents validated in Turkey. These validated patents had translations from English into Turkish which were officially approved and published by Turkish Patent Institute.

In the analyzing process, different parts of the patent application documents were analyzed separately with references to their intended function and role in the target context. It was seen that translators' attitudes towards separate parts of texts were different; mainly due to the separate function each part of the patent application documents had. In this respect, there were certain technical translation strategies proposed which were found as inappropriate to employ in the translation of separate parts, as well as the ones inappropriate for all parts. These strategies are listed below:

i. Including footnotes and/or endnotes in order to ensure clarity of meaning in the target language: This strategy was inapplicable in all parts of the patent application documents. This is because of the certain format the patent application documents have to follow; a patent application document may never contain footnotes and/or endnotes. In order to ensure clarity of the texts, the translators used other strategies that were acceptable; for instance, they included additional information in parentheses or in the form of an explanatory clause next to an unfamiliar item. Addition of information in parentheses or as a subordinate clause was an acceptable solution mainly in the description part in which the invention is disclosed; it was also possible in the translation of abstract but not in the Claims part. This is because of the

strict writing style seen in the claims. Since the Claims part is the part where the legal protection scope is defined, it has to follow a certain format, which is determined by the rules and regulations in force.

What is important here is that the translators avoided providing additional information in general, in other words, it was not a general tendency to give additional information about the concepts and terminology encountered in patent documents in any part of the document, not only in the Claims part. This may be due to the fact that the target readers are already skilled in the art and they do not need additional information about the concepts or because the translators refrained from clarifying the meaning in any part of the application document, simply because it has a legal aspect and the description is used as a source of reference for the interpretation of claims; that is, any additional information may affect the interpretation of claims and thus change the scope of patent protection. This is a clear indication that the document was intended for a certain audience and the translators were aware of this; and that the translation process was influenced primarily by the legal function the translated text would possess.

ii. Providing a term with different degree of specificity when no exact equivalent is found in the target language: This strategy is advised mainly in cases when the terminology in the TL is not as abundant and developed as in the SL in a particular technical field. Translators are called on to choose an existing term rather than inventing a new one. However, in the context of patent translation, translating a term with a different degree of specificity, i.e. using a term which is broader or more limited in sense may cause a change in the scope of protection. Therefore, the patent translator should be sensitive to find an exact equivalent in the target language; or s/he may simply find a new equivalent (in cooperation with someone specialized in the technical field the invention is related to) and provide the exact meaning of it in the description part as additional information and use his/her own term throughout the document; so that the scope of protection is not affected. In such cases, calque or borrowing are more acceptable strategies than changing a term with one having a broader or limited sense. The inapplicability of this strategy is again due to the legal function the target text is

intended to have; since translator's any interference with the text may mean a change in the legal affect of the document.

iii. Breaking up long sentences: This strategy is advised for ensuring clarity and conciseness in the target text. However, as the writing of Claims is defined by the legislation in force and as there is a well known rule that each claim is a single sentence, it is not applicable to the translation of claims part in a patent application document. Rather, in cases of long sentences, as seen in the Claims parts of sample documents, the professional patent translators generally used semicolons instead of periods and linked the sentences to each other as relative clauses; just because they are expected to translate each claim as a single sentence. It is clearly evident here that the legal demands affect the process of translation and the decisions taken by the translator. It is because if the translator fails to produce a text complying with the rules and regulations in force related to the writing of Claims, the patent application document may be invalid as an authentic legal text in the TL context. Therefore, the translator cannot employ this traditionally known translation strategy in the translation of Claims.

On the other hand, it is acceptable to use this breaking-up strategy in other parts of the patent application document, i.e. in the abstract and description parts. There were rare examples of sentence-dividing to ensure clarity. This is, however, also done to the extent that would not affect the interpretation of Claims. This finding is also a clear demonstration of the fact that patent translators generally refrain from changing structures because of the specific writing style seen in Claims and they tend to follow the same style in other parts of patent documents.

In conclusion, it was obvious from the analysis of sample patent application documents that these above-mentioned translation strategies were not applied to the translation of Claims and generally not preferred by professional patent translators in other parts of the patent application documents. This is mainly because of the legal function the translated text will serve in determining the scope of protection as an authentic legal text, and also because there is a certain way of writing claims specified in rules and regulations related to the writing of patent documents.

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The Implementing Regulations Under The Decree-Law No 551 Pertaining To The Protection of Patent Rights. available at official website of TPI: http://www.tpe.gov.tr/dosyalar/EN_khk/Patent_Regulation.pdf

APPENDICES

Appendix 1: SD1: Striker For Electric Or Mechanical Lock
TD1: Elektrikli Kilit Veya Mekanik Kilit İçin Kilit Karşılığı

Appendix 2: SD2: Umbrella Cover
TD2: Şemsiye Kabı

Appendix 3: SD3: Method Of Wrapping Elongated Articles In Groups
TD3: Uzun Parçaların Gruplar Halinde Ambalajlanmasına Yönelik Metot

Appendix 4: SD4: Process For Synthesizing L-Y-Methylene Glutamic Acid And Analogs
TD4: L-Y-Metilen Glutamik Asit Ve Anologların Sentezlenmesi İçin Proses

APPENDIX 1:

SD1

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(54) **Striker for electric or mechanical lock**

Schliessbügel für elektrisches oder mechanisches Schloss

Gâche pour serrure électrique ou mécanique

(84) Designated Contracting States:
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Description

[0001] The present invention relates to a selvage for an electric or mechanical lock with a pivot for a pawl engagement system.

[0002] An example of an electric or mechanical lock with a pivot for a pawl engagement system is known from publication WO 02/059443 in the name of this same Applicant; said lock is constituted by two parts: a casing that is rigidly coupled to the leaf that is to be opened electrically, and a selvage with a pivot, which is fixed to the fixed structure against which the leaf abuts when closed.

[0003] The casing contains the electric elements that are designed to actuate other mechanical elements that close and open the lock. When the leaf is closed, a hook-shaped retention element surrounds the pivot, rigidly coupling the casing to it.

[0004] The selvage is constituted by a rear plate for fixing to the fixed structure, to which two links are pivoted, said links having, at their other end, respective aligned through holes that rotatably accommodate the ends of the pivot. In this manner, the pivot can rotate about its own axis and can oscillate over a short arc of a circle traced by the freedom of rotation of the two links with respect to the rear fixing plate.

[0005] The leaves on which this type of lock is normally installed are heavy, since they are in fact gates, main doors and the like; often the weight of these leaves, over time, deforms the hinges or more simply displaces them slightly. The leaf tilts as an immediate consequence. The tilt of the leaf causes the less than perfect mechanical coupling between the pivot (the selvage is installed so that the axis of said pivot is vertical) and the hook-shaped retention element, which has the same inclination as the leaf, since it is rigidly coupled thereto.

[0006] For leaf tilts that exceed the angular play allowed to the coupling between the hook-shaped retention element and the pivot, it becomes impossible to close the lock.

[0007] The aim of the present invention is to obviate the above-cited drawbacks and to meet the above-mentioned requirements, by providing a selvage for an electric or mechanical lock with a pivot for a pawl engagement system with which it is possible to close the lock even when the leaf is slightly tilted.

[0008] Within this aim, an object of the present invention is to provide a selvage that is simple, relatively easy to provide in practice, safe in use, effective in operation, and has a relatively low cost.

[0009] This aim and this object are achieved by the present selvage for an electric or mechanical lock with a pivot for a pawl engagement system, of the type that comprises a rear fixing plate in which two links with through holes are pivoted coaxially and independently, said holes rotatably accommodating the ends of said pivot, characterized in that the diameter of said ends of the pivot is smaller than the diameter of said holes, producing a mechanical play that allows said pivot to tilt its own axis with respect to the pivoting axis of said links.

[0010] Further characteristics and advantages of the invention will become better apparent from the detailed description of a preferred but not exclusive embodiment of a selvage for an electric or mechanical lock with a pivot for a pawl engagement system, with a pivot that is articulated according to the invention, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a perspective view of a selvage for an electric or mechanical lock with a pivot for a pawl engagement system according to the invention;

Figure 2 is a partially sectional front view of a selvage for an electric or mechanical lock with a pivot for a pawl engagement system according to the invention, with the pivot tilted;

Figure 3 is a front view of a selvage for an electric or mechanical lock with a pivot for a pawl engagement system according to the invention, with the pivot inclined in a direction that is alternative to the direction of Figure 2.

[0011] With particular reference to the figures, the reference numeral 1 generally designates a selvage for an electric or mechanical lock with a pivot for a pawl engagement system.

[0012] The selvage 1 is fixed to the wall or frame by means of the rear plate 2, which has holes 3 for anchoring by means of screws, screw anchors or the like.

[0013] Two links 4 are pivoted to the plate 2, respectively in an upper region and in a lower region along a same pivoting axis; said links are provided respectively with a through hole 5 in their free end, i.e., the one that lies furthest from the pivoting axis. The rear plate 2 has rotation stroke limits 6 that limit the movements of the links 4.

[0014] The pivot 7 is substantially cylindrical and has regions with a smaller diameter at its two ends 8; said narrower ends 8 engage in the holes 5 of the links 4, providing a play 9 by way of this coupling.

[0015] The pivot 7 is firmly retained inside the holes 5 as a consequence of the forcing of respective heads 10 that have a larger diameter than the holes 5, or by means of elastic rings, the heads 10 therefore constituting a shoulder.

[0016] The operation of the invention is intuitive: the pivot 7 can move parallel to itself and to the pivoting axis of the links 4 and can rotate about its own axis by way of the shape of the couplings of the links 4 with the plate 2 and of the pivot 7 with the links 4. The play 9 provided in the coupling of the pivot 7 to the links 4 further allows the pivot 7 to tilt its own axis with respect to the pivoting axis of the links 4.

[0017] The inclination of the pivot 7 allows the coupling of the pivot 7 to the electric or mechanical lock with pawl engagement system even when said lock is fitted on a tilted inclined leaf: the pivot 7, too, can in fact tilt in order

to cope with the different angle of insertion in the lock produced by the tilt of the leaf.

[0018] It has thus been shown that the invention achieves the intended aim and object.

[0019] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0020] For example, in order to improve the coupling between the lock and the pivot 7, the pivot 7 can be cambered, said shape being suitable to constitute a guide for the engagement of the lock if said lock is tilted.

[0021] In the described embodiments, individual characteristics, given in relation to specific examples, may actually be interchanged with other different characteristics that exist in other embodiments.

[0022] In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the appended claims.

[0023] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A selvage for electric or mechanical lock with a pivot (7) for a pawl engagement system, comprising a rear fixing plate (2) in which two links (4) with through holes (5) are pivoted coaxially and independently, said holes rotatably accommodating the ends (8) of said pivot (7), **characterized in that** the diameter of said ends (8) of the pivot (7) is smaller than the diameter of said holes (5), producing a mechanical play (9) that allows said pivot (7) to tilt its own axis with respect to the pivoting axis of said links (4).

2. The selvage according to claim 1, **characterized in that** said pivot (7) is substantially cylindrical, its ends (8) having a smaller diameter and being suitable to be accommodated in said holes (5) of the links (4).

3. The selvage according to one or more of the preceding claims, **characterized in that** respective heads (10) mate on said ends (8), have a larger diameter than said holes (5) and are suitable to prevent the exit of the pivot (7) from said holes (5).

4. The selvage according to one or more of the preceding claims, **characterized in that** said pivot (7) has, at its center, a cambered region in order to provide a better coupling to said pawl system of the lock when said lock is tilted.

Patentansprüche

1. Schließbügel für ein elektrisches oder mechanisches Schloss mit einem Drehzapfen (7) für ein Schließklinken-System., umfassend eine Befestigungsrückplatte (2), in der zwei Verbindungselemente (4) mit Durchgangslöchern (5) koaxial und unabhängig drehbar gelagert sind, wobei die genannten Löcher die Enden (8) des genannten Drehzapfens (7) drehbar aufnehmen, **dadurch gekennzeichnet, dass** der Durchmesser der genannten Enden (8) des Drehzapfens (7) kleiner als der Durchmesser der genannten Löcher (5) ist, wodurch ein mechanisches Spiel (9) erzeugt wird, das ermöglicht, dass der genannte Drehzapfen (7) seine eigene Achse in Bezug zur Schwenkachse der genannten Verbindungselemente (4) kippen kann.

2. Schließbügel nach Anspruch 1, **dadurch gekennzeichnet, dass** der genannte Drehzapfen (7) im Wesentlichen zylindrisch ist, wobei seine Enden (8) einen kleineren Durchmesser haben und dazu geeignet sind, in den genannten Löchern (5) der Verbindungselemente (4) aufgenommen zu werden.

3. Schließbügel nach einem oder mehr der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** jeweilige Köpfe (10) auf die genannten Enden (8) passen, einen größeren Durchmesser als die genannten Löcher (5) haben und dazu geeignet sind, den Austritt des Drehzapfens (7) aus den genannten Löchern (5) zu verhindern.

4. Schließbügel nach einem oder mehr der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der genannte Drehzapfen (7) in seiner Mitte einen gekrümmten Bereich hat, um eine bessere Kopplung an das genannte Klinkensystem des Schlosses vorzusehen, wenn das Schloss schräg steht.

Revendications

1. Gâche pour serrure électrique ou mécanique avec un pivot (7) pour un système d'encliquetage, comprenant une plaque arrière de fixation (2) dans laquelle deux articulations (4) à trous traversants (5) sont amenées à pivoter de manière coaxiale et indépendante, lesdits trous recevant à rotation les extrémités (8) dudit pivot (7), **caractérisée en ce que** le diamètre desdites extrémités du pivot (7) est plus petit que le diamètre desdits trous (5), produisant un jeu mécanique (9) qui permet audit pivot (7) d'incliner son propre axe par rapport à l'axe de pivotement desdites articulations (4)

2. Gâche selon la revendication 1, **caractérisée en ce**

que ledit pivot (7) est sensiblement cylindrique, ses extrémités (8) ayant un diamètre plus petit et se prêtant à être reçues dans lesdits trous (5) des articulations (4).

3. Gâche selon une ou plusieurs des revendications précédentes, **caractérisée en ce que** des têtes respectives (10) s'ajustent sur lesdites extrémités (8), ont un plus grand diamètre que lesdits trous (5) et servent à empêcher le pivot (7) de sortir desdits trous (5).

4. Gâche selon une ou plusieurs des revendications précédentes, **caractérisée en ce que** ledit pivot (7) a, en son centre, une zone cambrée afin d'assurer un meilleur accouplement avec ledit système d'encliquetage de la serrure quand ladite serrure est inclinée.

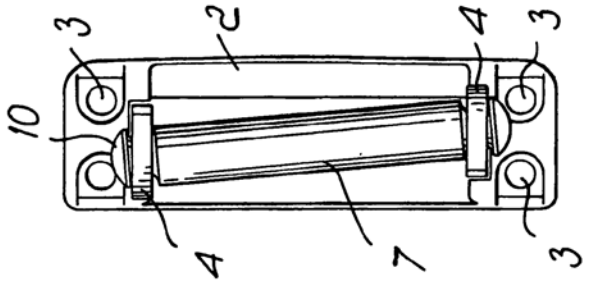

Fig. 3

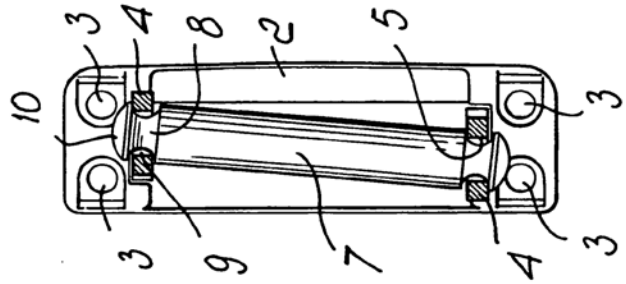

Fig. 2

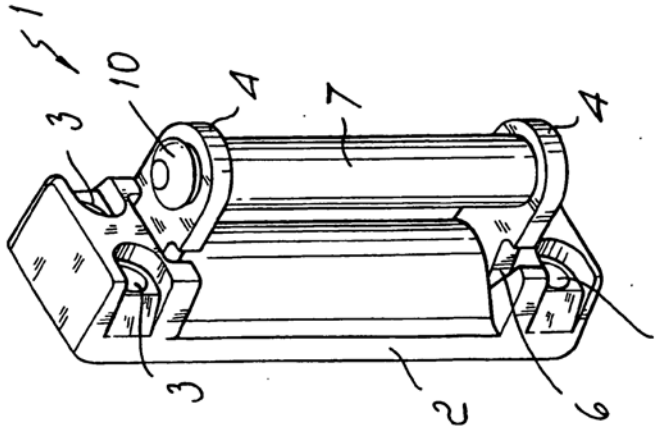

Fig. 1

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

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TD1

TARİFNAME
1. Sayfa

565/EP/TR

TARİFNAME

ELEKTRİKLİ KİLİT VEYA MEKANİK KİLİT İÇİN KİLİT KARŞILIĞI

Mevcut buluş, bir mandal tutma sistemi için kullanılan bir pivota sahip olan bir mekanik veya elektrikli kilit için bir kilit karşılığı ile ilgilidir

Mandal tutma sistemi için bir pivota sahip olan elektrikli ya da mekanik kilitlerin bir örneği, aynı başvuru sahibi adına yayınlanmış olan WO 02/059443 sayılı yayınlanmış patent başvurusundan da bilinmektedir, bu başvurunun konusu olan bahsi geçen kilit iki parçadan oluşur ve bunlar da elektriksel olarak açılacak olan kapı kanadına sıkı bir şekilde birleştirilmiş olan bir kaplama ve kapatılması halinde yaprağın dayandığı sabit yapıya sabitlenmiş olan bir pivot içeren bir kilit karşılığıdır

Kaplama, kilidi açan ve kapatan diğer mekanik elemanları aktive etmek üzere tasarlanmış olan elektrik elemanlarını içerir Kapı kanadı kapalı konumda iken çengel şeklindeki bir tutma elemanı pivotu çevreler ve kaplamayı bu parçaya sıkı bir şekilde birleştirir

Kilit karşılığı, iki bağlantı elemanının pivot ile bağlandığı sabit yapıya sabitlenmesi için bir arka plakadan oluşur ve burada bahsi geçen bağlantı elemanları diğer uçlarında pivotun uçlarının içerisine dönebilir bir şekilde yerleştiği, uygun şekilde hizalanmış uzunlamasına deliklere sahiptir Bu bağlamda, pivot kendi ekseni etrafında dönme hareketi yapabilir ve iki bağlantı elemanının arka sabitleme plakasına göre dönüşü sırasındaki serbestliği sonucu oluşan kısa yuvarlak yay üzerinde salınım yapabilir

Bu türden bir kilidin üzerine kurulduğu kapı kanatları, aslında geçiş kapıları, ana kapılar ya da benzeri türden kapılar oldukları için genel olarak ağırdır, bu kapı kanatlarının ağırlıkları çoğunlukla zaman geçtikçe menteşeleri deforme eder ya da daha basit bir şekilde ifade etmek gerekirse menteşelerin hafifçe yerinden kaymasına sebep olur Kapı kanadı bir anda yana doğru eğrilebilir Kapı kanadının eğilmesi en iyi ihtimalle, zaten sıkı bir şekilde kapı kanadı üzerine sabitlenmiş olduğu için kapı kanadı ile aynı eğime sahip olan çengel şeklindeki tutma elemanı ile çengel arasında (kilit karşılığı, bahsi geçen pivotun ekseni dikey olacak şekilde yapılmıştır) bir mekanik bağlantı yapılmasına sebep olur

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2. Sayfa

Kapı kanadında, çengel şeklindeki tutma elemanı ile pivot arasındaki bağlantı için mumkun olan oynama alanını aşan kaymalar olması halinde ise, kilidi kapatmak imkansız hale gelmektedir

Bu buluşun amacı, kapı kanadı hafifçe kaymış olsa bile kilidin kapatılmasının mumkun olmasını sağlayan bir mandal tutma sistemine sahip olan elektrikli ya da mekanik kapı kilitleri için bir kilit karşılığı sağlayarak yukarıda anlatılan olumsuz durumların onune geçmek ve yukarıda bahsı geçen gereklilikleri sağlamaktır

Bu amaç çerçevesinde, bu buluşun bir başka hedefi de, basit, uygulamaya konması diğerlerine gore daha kolay, kullanımı guvenli, etkin bir şekilde işleyen ve nispeten daha duşuk maliyetli bir kilit karşılığı sağlamaktır

Bu amaç ve hedef, bahsı geçen bir mandal tutma sistemi için pivot içeren bir elektrikli kilit ya da mekanik kilit için kilit karşılığı ile elde edilir, bu kilit karşılığı, içerisinde uzunlamasına deliklerin yer aldığı iki bağlantı parçasının içerisine eş eksenli olarak ve bağımsız bir şekilde pivotların yerleştirilmiş olduğu, bahsı geçen deliklerin bahsı geçen pivotların uçlarını kavradığı bir arka sabitleme plakasına sahip olan turdedir ve ozelliği, bahsı geçen pivot uçlarının çaplarının, bahsı geçen deliklerin çaplarından daha kuçuk olması ve bu sayede bahsı geçen pivotun kendi eksenini bahsı geçen bağlantı parçalarının donme eksenlerine gore eğmesine olanak sağlayan bir mekanik oynama alanının ortaya çıkmasıdır

Buluşun diğer ozellikleri ve avantajları, pivotun buluşa gore duzenlenmiş olduğu, mandal tutma sistemi için bir pivota sahip olan bir elektrikli ya da mekanik kilit için kilit karşılığının, tercih edilen fakat sınırlandırıcı olmayan bir uygulamasının detaylı anlatımı ile daha da anlaşılır hale gelecektir Bu uygulama sınırlayıcı olmayan bir orneği kullanılarak ekteki şekillerde gosterilmiştir ve bu şekillerden

Şekil 1, buluşa gore bir mandal tutma sistemi için bir pivot içeren elektrikli ya da mekanik kilit için kilit karşılığının perspektif bir gorunuşudur

Şekil 2, buluşa gore bir mandal tutma sistemi için bir pivot içeren elektrikli ya da mekanik kilit için kilit karşılığında, pivotun eğrilmiş halinin kısmen kesitli onden goruntusudur

TARİFNAME
3. Sayfa

Şekıl 3, buluşa gore bır mandal tutma sıstemı ıçın bır pıvot ıçeren elektrıklı ya da mekanık kılıt ıçın kılıt karşılığının, pıvotun, Şekıl 2'dekı yone alternatif bır yonde kayma yapmış olduğu halının onden goruntusudur

Şekıllere gonderme yapılarak, 1 referans numarası genel olarak buluşa gore bır mandal tutma sıstemı ıçın bır pıvot ıçeren elektrıklı ya da mekanık kılıt ıçın kılıt karşılığını ıfade eder

Kılıt karşılığı (1) duvar ya da çerçeveye bır arka plaka (2) aracılığıyla sabıtlenmıştır ve bu plaka, vıdalar, tespıt vıdaları ya da benzerı elemanlar aracılığıyla tutturulmak uzere delıklere (3) sahıptır

Levhaya (2), ıkı bağlantı elemanı (4) aynı donme eksenı boyunca sırasıyla bır ust bolgede ve bır de alt bolgede pıvot ile bağlanmıştır, bahsı geçen bu bağlantı elemanlarının serbest uçlarında, bır başka deyışle donme eksenınden en uzakta yer alan uçta bır uzunlamasına delık (5) bulunur Arka plaka (2), bağlantı elemanlarının (4) hareketlerını sınırlandıran donuş hareket sınırına (6) sahıptır.

Pıvot (7) buyuk olçude sılındırıktır ve ıkı ucunda da (8) daha kuçuk çapta bolgeler yer alır, bu daha dar bolgeler (8) bağlantı elemanlarının (4) delıklerının (5) ıçerısıne yerleşır ve boylece bu bağlantı yoluyla bır oynama alanı (9) sağlar

Delıklerden (5) daha buyuk çapları olan ılgılı kafaların (10) zorlaması sonucu veya elastık halkalar aracılığıyla kafaların (10) destek oluşturması sayesinde pıvot (7) delıklerın (5) ıçerısınde sıkı bır şekılde tutulmuş olur

Buluşun ışleyışı değışık şekıllerde olabılır pıvot (7) kendısıne paralel olarak ve bağlantı elemanlarının donme eksenıne paralel olarak hareket edebılır ve bağlantı elemanlarının (4) plaka (2) ıle ve pıvotun (7) bağlantı elemanları (4) ıle yaptığı bırleşmelerın şeklı yoluyla kendı eksenı çevresınde donebılır. Pıvotun (7) bağlantı elemanlarına (4) bırleştırılmesınde kullanılan oynama alanı (9) ayrıca, pıvotun (7) kendı eksenını, bağlantı elemanlarının (4) mıl eksenlerıne gore kaydırmasına olanak sağlar

Pıvotun (7) eğımı, mandal tutma sıstemıne sahıp olan elektrıklı ya da mekanık kılıtlere, bahsı geçen kılıt hafıfçe kaymış eğımlı bır kapı kanadının yüzeyıne sabıtlenmış olduğunda

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4. Sayfa

bile pivotun (7) bağlanmasına olanak sağlar, pivot (7) da aslında kapı kanadının kaymış olması sebebiyle kilidin farklı açılardan girmesine olanak sağlamak için kaymış olabilir

Boylece, buluşun beklenen hedef ve amaca ulaşmış olduğu gosterilmiştir

Bu şekilde açıklanan buluş, çok sayıda modifikasyon ve varyasyonlara açıktır, bunların hepsi ektekı istemlerin kapsamı dahilindedir

Orneğin, pivot (7) ile kilidin arasındakı bağlantının guçlendirilmesi için, pivota (7) kavisli bir şekil verilebilir, bahsi geçen bu şekil eğer bahsi geçen kilit kaymışsa için bir yol gostermeye uygun bir şekildir

Yukarıda anlatılan uygulamalarda, belirli ornekler ile ilişki kurularak verilen karakteristik ozellikler, diğer uygulamalarda yer alan farklı karakteristik ozellikler ile değiştirilerek de kullanılabilir

Uygulamada, kullanılan materyallerin yanı sıra şekiller ve boyutlar da, ihtiyaca gore herhangi bir şekilde olabilir ve bunlar ekli istemlerin koruma kapsamı dışında kalmayacak şekildedir

Herhangi bir istemde yer alan teknik ozellikler için kullanılan referans numaraları, sadece istemlerin anlaşılabilirliğini arttırmak amacıyla kullanılmaktadır ve buna uygun olarak da bu referans numaraları, benzer referans numaraları ile sadece orneklendirme yoluyla verilen her bir elemanın belirlenmesinde sınırlandırıcı etkiye sahip değildir

565/EP/TR

İSTEMLER

1. Içerısında uzunlamasına delıklerın (5) yer aldığı ıkı bağlantı parçasının (4) içerısine eş eksenlı olarak ve bağımsız bır şekılde pıvotların yerleştırılmış olduğu, bahsı geçen delıklerın (5) bahsı geçen pıvotların (7) uçlarını (8) kavradığı bır arka sabıtleme plakasına (2) sahıp olan turde bır kılıt karşılığı olup, **özelliği;** bahsı geçen pıvot (7) uçlarının (8) çaplarının, bahsı geçen delıklerın (5) çaplarından daha kuçuk olması ve bu sayede bahsı geçen pıvotun (7) kendı eksenını, bahsı geçen bağlantı parçalarının (4) donme eksenlerıne gore eğmesıne olanak sağlayan bır mekanık oynama alanının (9) ortaya çıkmasıdır

2. Istem 1'e gore kılıt karşılığı olup **özelliği;** bahsı geçen pıvotun (7) buyuk oranda sılındırık olması, uçlarının (8) daha kuçuk çaplara sahıp olması ve bağlantı elemanlarının (4) bahsı geçen delıklerıne (5) yerleşmeye uygun şekılde olmasıdır

3. Oncekı ıstemlerden bırı ya da bırden fazlasına gore kılıt karşılığı olup **özelliği;** ılgılı kafaların (10) bahsı geçen uçlar (8) ıle eşlenmış olması, bahsı geçen delıklerden (5) daha buyuk bır çapa sahıp olması ve pıvotun (7) bahsı geçen delıklerden (5) çıkmasını engellemeye uygun şekılde olmasıdır

4. Oncekı ıstemlerden bırı ya da bırden fazlasına gore kılıt karşılığı olup **özelliği;** bahsı geçen pıvotun (7) merkezınde, bahsı geçen kılıt eğıldığında de kılıdın bahsı geçen mandal sıstemıne daha ıyı bağlanmasını sağlamak uzere bır kavıslı bolgeye sahıp olmasıdır

PARAGON

21 Temmuz 2009

HULYA ÇAYLI

ÖZET

ELEKTRİKLİ KİLİT VEYA MEKANİK KİLİT İÇİN KİLİT KARŞILIĞI

İçerisinde uzunlamasına delikleri (5) yer aldığı iki bağlantı parçasının (4) içerisine eş eksenli olarak ve bağımsız bir şekilde pivotların yerleştirilmiş olduğu, bir arka sabitleme plakasına (2) sahip olan, mandal tutma sistemi için bir pivot (7) içeren elektrikli ya da mekanik kilit için bir kilit karşılığı Bahsi geçen delikler (5) bahsi geçen pivotların (7) uçlarını dönmesine olanak sağlayacak şekilde tutar Bahsi geçen pivot (7) uçlarının (8) çapları, bahsi geçen deliklerin (5) çaplarından daha küçüktür ve bu sayede bahsi geçen pivotun (7) kendi eksenini, bahsi geçen bağlantı parçalarının (4) dönme eksenlerine göre eğmesine olanak sağlayan bir mekanik oynama alanı (9) ortaya çıkar

APPENDIX 2:

SD2

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(54) **UMBRELLA COVER**

SCHIRMHÜLLE

HOUSSE DE PARAPLUIE

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EP 1 648 260 B1

Description

[0001] This invention relates to an umbrella cover which can be attached to luggage, for example briefcases, handbags, laptop bags and rucksacks.

[0002] Umbrella carriers attached to, for example, briefcases and handbags are known and are usually provided in the form of a sleeve of the same kind of material as that used in the construction of the bag itself. The intention is that the sleeve can carry a rolled collapsible-type umbrella and hold it in position. A disadvantage of this type of carrier is that the umbrella tends to retain its wet condition within the carrier and, when the carrier is not being used, that is to carry an umbrella, it is an unattractive item on the bag.

[0003] A carrier according to the preamble of claim 1 is known from DE-U- 201 03521.

[0004] The present invention is intended to provide an umbrella carrier which not only improves the drying process for the umbrella but also allows the carrier to be removed from the bag when not required and can be transferable to another item of baggage.

[0005] According to the present invention, an umbrella carrier adapted to receive a folded umbrella and provided with attachment means for removable securing it to an article of luggage includes a holster-like perforated support element having openings which are closed internally by water repellent porous fabric.

[0006] Thus, when a wet folded umbrella is placed in the carrier it can dry out through the openings which are closed by the water repellent porous fabric.

[0007] Preferably the perforated support element is provided by a substantially cylindrical tube formed with openings in its side which are closed internally by the water repellent porous fabric.

[0008] The water repellent fabric can be in the form of a sleeve inside the cylindrical tube and reduces the likelihood of the umbrella snagging or sticking on its way into or out of the carrier and, in addition, the sleeve is given protection by the perforated support element and is less likely to be torn or damaged.

[0009] The sleeve also draws moisture off the umbrella and allows it to evaporate through the openings. This construction also reduces the likelihood of the luggage to which the carrier is attached getting wet.

[0010] The perforated support element can be made from any convenient material but is preferably formed from a synthetic plastics material or metal, it can also be formed as an open mesh or lattice.

[0011] The attachment means can be adapted to engage a carrying handle or strap on the article of luggage with which it is to be used.

[0012] The perforated support element can be flexible and can be split along its length to provide an opening, and include means for adjusting the cross-sectional diameter of the support element to accommodate umbrellas of different sizes.

[0013] Again, the perforated support element can be flexible and the cross-section of the carrier can be restrictive in relation to the cross-section of the umbrella with which it is to be used so that the support element resiliently deforms slightly when the umbrella is inserted and acts to retain it in place.

[0014] The invention can be performed in various ways and some embodiments will now be described by way of example and with reference to the accompanying drawings in which :

Figure 1 is a diagrammatic isometric view of a removable umbrella carrier according to the present invention attached to the handle of a briefcase;

Figure 2 is a similar view of an alternative construction;

Figure 3 is another diagrammatic isometric view of an alternative construction with means for attachment to the handles of, for example, a handbag.; and

Figure 4 is a diagrammatic view of another embodiment.

[0015] As shown in Figure 1 a removable umbrella carrier 1 according to the present invention for attachment to luggage comprises a holster-like perforated support element in the form of a substantially cylindrical tube 2 made, for example, from a light metallic material such as aluminium or a synthetic plastics material. The tube 2 has an inner lining in the form of a sleeve 3 made from a water repellent porous fabric. Four openings 4 provide perforations in the tube and are closed internally by the sleeve 3.

[0016] The tube 2 and its inner lining 3 together provide a carrier for a collapsible umbrella.

[0017] The tube 2 can be of any suitable cross-section, for example cylindrical, polygonal or even square, provided it will accept a folded umbrella.

[0018] The carrier is provided with attachment means 5 which comprise a loop of flexible material, for example, a synthetic plastics material or leather and which is attached to the support element 2 where indicated by reference numeral 6.

[0019] In Figure 1 the carrier is shown in use on a briefcase indicated by broken lines 7 and which has a handle 8. The loop 5 is dimensioned so that it can be placed over the handle 8 and will hang on the upper side of the briefcase 7.

[0020] Thus it will be seen that the carrier can be easily attached and removed from the briefcase 7 merely by slipping it over the handle 8 and due to the openings 4 being closed by the water repellent porous fabric 3 a wet umbrella placed in the carrier can dry out. Moreover, the carrier will protect the greater part of the wet umbrella from the user and the luggage.

[0021] The arrangement is such that the carrier can easily be removed and reattached on different pieces of

luggage merely by placing it over the handle thereof or, in the case of a rucksack, placing it over the shoulder straps. If required the attachment point 6 can be provided with clips (not shown) for easy attachment and removal of the loop 5 or by use of a loop and hook type fabric (Velcro) on each of the parts. This arrangement is particularly useful when employing the holster on, for example, a rucksack to enable it to be easily attached to the shoulder straps of the rucksack if they are not easily releasable.

[0022] In an alternative construction, shown in Figure 2, the same reference numerals are used to indicate similar parts but in this arrangement the cylindrical tube 2 is formed with a larger number of openings 10 in its sides so that it is, in effect, a lattice frame. It is again closed internally by a water repellent porous fabric sleeve 3.

[0023] This construction shows how the carrier can be attached to a briefcase 7 by an alternative attachment means which comprises a pair of resilient wire or plastics material hooks. Each hook is secured to the tube 2 by a rivet or other means 11 and is shaped to provide a hook end 12 which is shaped and adapted to engage the lower end of the handle 8 of the briefcase. The hooks 12 are carried on arms 13 which are sufficiently resilient to allow the hooks to be sprung inwardly to detach them from the briefcase and which will spring out again to the position shown in Figure 2 to secure the carrier to the briefcase.

[0024] Figure 3 shows a carrier according to the invention which can be constructed as shown in Figure 1 or Figure 2 but which is adapted for connection to a handle 15 of a handbag 16. The handbag has two handles and the carrier can be attached to either both of them or only one, as shown in Figure 3. In this construction the attachment means comprises a pair of loops of fabric 17 the ends 18 of which are provided with a loop and hook material (Velcro) so that they can be pressed together. The ends 19 of the loop 17 are secured to the tube 2 by stitching, riveting or any other convenient means. Thus, once again, the carrier can be easily removed from the handbag and transferred to some other article of luggage if required.

[0025] In Figure 3 a collapsible umbrella 20 is shown in broken lines in position in the carrier

[0026] The general construction of the carrier, as shown in Figure 3, can be similar to the embodiments shown in Figures 1 and 2 but Figure 3 also shows an alternative construction for the tube, which can also be used in the other embodiments. In this arrangement the tube 2 is formed by a wire or plastics material to produce an open mesh or lattice 25 which is lined by the sleeve 3 of water repellent porous fabric.

[0027] In the constructions described above the general cross-section of the tube 2 has been cylindrical, polygonal or even square but the tube 2 could be constructed so that it is flexible and the cross-section could be slightly oval or some other slightly restrictive shape so that it will hold the umbrella in place once it has been inserted and such a slightly oval cross-sectional tube 2 is also shown in Figure 3. In order to provide the flexibility the tube can be made from a plastics material or metal which is originally formed in a slightly oval shape, the shape being deformable to accept the umbrella due to its inherent resilience. This flexible tube 2 could also be employed on the construction shown in Figures 1 and 2.

[0028] In another alternative construction, as shown in Figure 4, the perforated tube 2 is made in any of the ways described above and is flexible or resiliently deformable but is split along its length to provide an opening 21. Thus the inherent resilience of the material can be employed to allow for the movement to alter the cross-sectional diameter of the tube. The tube can be formed so that it assumes a minimum diameter, the opening 21 allowing it to be resiliently opened to provide a larger cross-sectional diameter, the resilient bias towards the closed portion acting to grip the umbrella. Alternatively, the tube 2 can be formed to a larger diameter so that it can be closed to a smaller cross-sectional area and to hold it in position retaining means in the form of a clip or flexible attachment strip 22 can be provided.

[0029] The construction shown in Figure 4 can be used for umbrellas of different sizes.

[0030] This adjustable construction can also be used in the construction shown in Figures 1, 2 or 3 when not employing the oval or slightly constrictive shape. The tube 2 is again lined with a sleeve of water repellent porous fabric but which is not shown in Figure 4. The attachment means (not shown) can be as set forth in any of the preceding embodiments.

Claims

1. An umbrella carrier (1) adapted to receive a folded umbrella and provided with attachment means (5) for removably securing it to an article of luggage, and which includes a holster-like perforated support element (2) having openings (4, 10) which are closed internally **characterised in that** the openings (4, 10) are closed by water repellent porous fabric.

2. An umbrella carrier (1) as claimed in claim 1 in which the perforated support element (2) is provided as a substantially cylindrical tube.

3. An umbrella carrier (1) as claimed in claim 1 or claim 2 in which the perforated support element (2) is lined with water repellent porous fabric in the form of a sleeve (3).

4. An umbrella carrier (1) as claimed in any one of claims 1 to 3 in which said perforated support element (2) is made from a synthetic plastics material.

5. An umbrella carrier (1) as claimed in claim 1, claim 2 or claim 3 in which said perforated support element (2) is made from metal.

6. An umbrella carrier (1) as claimed in any of the preceding claims in which the attachment means (5) is adapted to engage a carrying handle or strap on the article of luggage with which it is to be used.

7. An umbrella carrier (1) as claimed in any of the preceding claims in which the attachment means includes attachable clips.

8. An umbrella carrier (1) as claimed in any one of the preceding claims in which the attachment means includes a pair of hooks which can be resiliently adjusted to engage the luggage.

9. An umbrella carrier (1) as claimed in any one of the preceding claims in which the perforated support element (2) is formed as an open mesh or lattice.

10. An umbrella carrier (1) as claimed in any one of preceding claims 1 to 9 in which the perforated support element (2) is flexible and its general cross-section is restrictive in relation to the cross-section of the umbrella with which it is to be used so that the support element (2) resiliently deforms slightly when the umbrella is inserted and acts to retain it in place.

11. An umbrella carrier (1) as claimed in claim 11 in which the cross-section of the perforated support element (2) is slightly oval.

12. An umbrella carrier (1) as claimed in any one of the preceding claims 1 to 9 in which the perforated support element (2) is split along its length to provide an opening, and including means for adjusting the cross-sectional diameter of the support element to accommodate umbrellas of different sizes.

13. An umbrella carrier (1) as claimed in claim 11 in which the means for adjusting the cross-sectional diameter of the support element (2) is provided by the inherent resilience of the material from which it is made.

14. An umbrella carrier (1) as claimed in claim 13 including retaining means for holding the adjusted support element in position.

Patentansprüche

1. Schirmträger (1), der zur Aufnahme eines gefalteten Schirms angepasst und mit Befestigungsmitteln (5) zur entfernbaren sicheren Befestigung an einem Gepäckgegenstand versehen ist und ein holsterähnliches perforiertes Halteelement (2) enthält, dass innenseitig geschlossene Öffnungen (4, 10) enthält, **dadurch gekennzeichnet, dass** die Öffnungen (4, 10) durch ein wasserabstoßendes poröses Gewebe geschlossen sind.

2. Schirmträger (1) nach Anspruch 1, wobei das perforierte Halteelement (2) durch eine im Wesentlichen zylindrische Röhre bereitgestellt ist.

3. Schirmträger (1) nach Anspruch 1 oder 2, wobei das perforierte Halteelement (2) mit einem wasserabstoßenden porösen Gewebe in Form einer Hülle (3) ausgekleidet ist.

4. Schirmträger (1) nach einem der Ansprüche 1 bis 3, wobei das perforierte Halteelement (2) aus einem synthetischen Plastikmaterial gemacht ist.

5. Schirmträger (1) nach Anspruch 1, 2 oder 3, wobei das perforierte Halteelement (2) aus Metall gemacht ist.

6. Schirmträger (1) nach einem der vorangehenden Ansprüche, wobei das Befestigungsmittel (5) angepasst ist, um einen Tragegriff oder -riemen am Gepäckstück, an dem es verwendet wird, in Eingriff zu nehmen.

7. Schirmträger (1) nach einem der vorangehenden Ansprüche, wobei die Befestigungsmittel befestigbare Klipps enthalten.

8. Schirmträger (1) nach einem der vorangehenden Ansprüche, wobei die Befestigungsmittel ein Paar von Haken enthalten, welche zum in Eingriff nehmen des Gepäckstücks elastisch angepasst werden können.

9. Schirmträger (1) nach einem der vorangehenden Ansprüche, wobei das perforierte Halteelement (2) als ein offenes Gitter oder Netz gebildet ist.

10. Schirmträger (1) nach einem der vorangehenden Ansprüche 1 bis 9, wobei das perforierte Halteelement (2) flexibel ist und sein wesentlicher Querschnitt in Bezug auf den Querschnitt des Regenschirms, bei dem es verwendet wird, beschränkend ist, so dass das Halteelement (2) sich leicht elastisch deformiert, wenn der Schirm eingesetzt wird, und wirkt, um diesen an seinem Platz zu halten.

11. Schirmträger (1) nach Anspruch 10, wobei der Querschnitt des perforierten Halteelements (2) leicht oval ist.

12. Schirmträger (1) nach einem der vorangehenden Ansprüche 1 bis 9, wobei das perforierte Halteelement (2) zum Bereitstellen einer Öffnung entlang seiner Länge gespalten ist, und Mittel zum Anpassen des Querschnittsdurchmessers des Halteelements zur Aufnahme von Schirmen unterschiedlicher Grö-

ßen enthält.

13. Schirmträger (1) nach Anspruch 12, wobei das Mittel zum Anpassen des Querschnittsdurchmessers des Halteelements (2) durch die inhärente Elastizität des Materials, aus dem es gemacht ist, bereitgestellt wird.

14. Schirmträger (1) nach Anspruch 13, wobei er Rückhaltemittel enthält, um das angepasste Halteelement in seiner Position zu halten.

Revendications

1. Porte-parapluie (1) adapté pour recevoir un parapluie replié et muni de moyens de fixation (5) pour fixer celui-ci de façon amovible à un bagage, et qui comprend un élément de support perforé en forme d'étui (2) comportant des ouvertures (4, 10) qui sont fermées intérieurement, **caractérisé en ce que** les ouvertures sont fermées par un tissu poreux hydrophobe.

2. Porte-parapluie (1) selon la revendication 1, dans lequel l'élément de support perforé (2) est réalisé sous la forme d'un tube sensiblement cylindrique.

3. Porte-parapluie (1) selon la revendication 1 ou la revendication 2, dans lequel l'élément de support perforé (2) est revêtu d'un tissu poreux hydrophobe sous la forme d'un manchon (3).

4. Porte-parapluie (1) selon l'une quelconque des revendications 1 à 3, dans lequel ledit élément de support perforé (2) est réalisé en une matière plastique synthétique.

5. Porte-parapluie (1) selon la revendication 1, la revendication 2 ou la revendication 3, dans lequel ledit élément de support perforé (2) est réalisé en métal.

6. Porte-parapluie (1) selon l'une quelconque des revendications précédentes, dans lequel les moyens de fixation (5) sont adaptés pour venir en prise avec une courroie ou une poignée de portage sur le bagage avec lequel il doit être utilisé.

7. Porte-parapluie (1) selon l'une quelconque des revendications précédentes, dans lequel les moyens de fixation comprennent des attaches pouvant être fixées.

8. Porte-parapluie (1) selon l'une quelconque des revendications précédentes, dans lequel les moyens de fixation comprennent une paire de crochets qui peuvent être ajustés de façon élastique de façon à venir en prise avec le bagage.

9. Porte-parapluie (1) selon l'une quelconque des revendications précédentes, dans lequel l'élément de support perforé (2) est formé sous la forme d'un treillis ou maille ouvert.

10. Porte-parapluie (1) selon l'une quelconque des revendications 1 à 9 qui précèdent, dans lequel l'élément de support perforé (2) est souple et sa section transversale générale est restrictive par rapport à la section transversale du parapluie avec lequel il doit être utilisé, de telle sorte que l'élément de support (2) se déforme légèrement élastiquement lorsque le parapluie est inséré, et agisse de façon à maintenir celui-ci en place.

11. Porte-parapluie (1) selon la revendication 11, dans lequel la section transversale de l'élément de support perforé (2) est légèrement ovale.

12. Porte-parapluie (1) selon l'une quelconque des revendications 1 à 9 qui précèdent, dans lequel l'élément de support perforé (2) est divisé le long de sa longueur afin de constituer une ouverture, et comprenant des moyens pour ajuster le diamètre de section transversale de l'élément de support afin de recevoir des parapluies de tailles différentes.

13. Porte-parapluie (1) selon la revendication 11, dans lequel les moyens pour ajuster le diamètre de section transversale de l'élément de support (2) est constitué par l'élasticité inhérente du matériau à partir duquel il est réalisé.

14. Porte-parapluie (1) selon la revendication 13, comprenant des moyens de maintien pour maintenir l'élément de support ajusté en position.

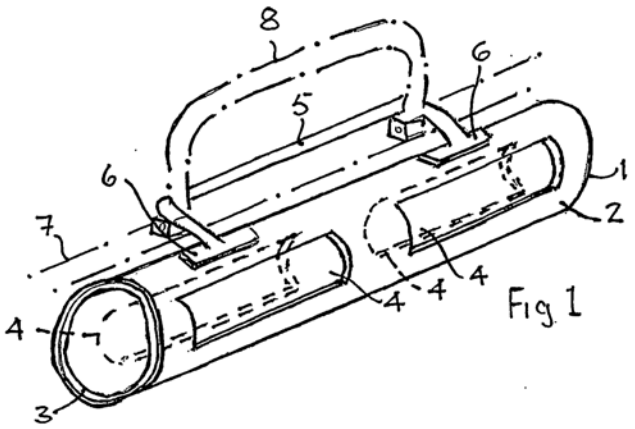

Fig 1

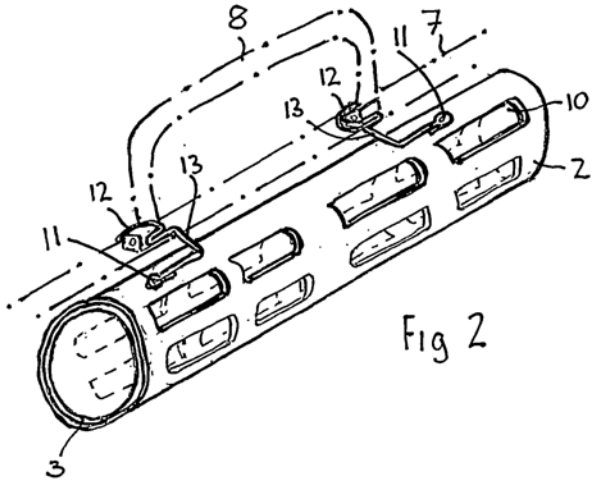

Fig 2

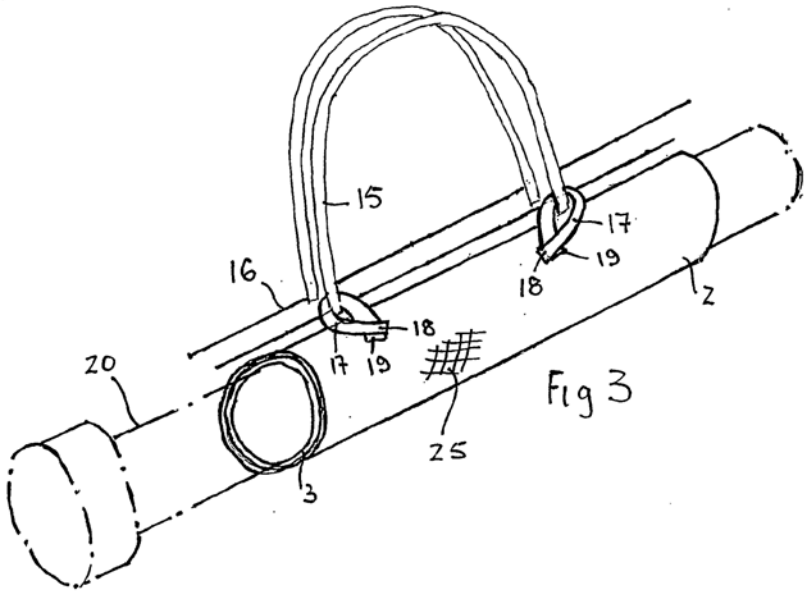

Fig 3

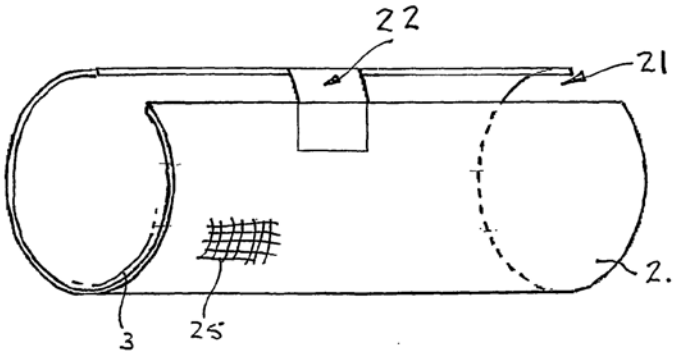

Fig 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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TD2

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1. Sayfa

ŞEMSİYE KABI

Tarifname

Bu buluş, orneğin evrak çantaları, el çantaları, dizüstü bilgisayarı çantaları ve sırt çantaları gibi bir yüke takılabilen bir şemsiye kabıyla ilgilidir.

Orneğin evrak çantalarına ve el çantalarına takılan şemsiye taşıyıcıları bilinmektedir ve bunlar genellikle çantanın konstrüksıyonun yapıldığı malzemeden yapılmış bir süzgeç şeklindedir. Buradaki amaç, süzgecin yuvarlanır katlanabilir bir şemsiyeyi taşıyabilir ve bunu bu pozısyonda tutabilir olmasıdır. Bu tip taşıyıcının bir dezavantajı şudur ki şemsiye ıslak durumunu taşıyıcı içinde muhafaza edecek ve taşıyıcı kullanılmadığı zaman yanı bir şemsiye taşımadığı zaman çanta uzerınde cazip olmayan bir madde olacaktır.

İstem 1'in önsözüne uygun bır taşıyıcı DE-U-201 03521'den bilinmektedir.

Mevcut buluş, sadece şemsiye için bır kurutma prosesi geliştirmekle kalmayan, aynı zamanda istenmediği zaman taşıyıcının çantadan ayrılmasına izin veren ve bir başka bagaja transfer edilebılen bir şemsiye taşıyıcısı tedarik etmeyi amaçlamaktadır.

Mevcut buluşa göre, katlanmış bir şemsiyeyı kabul etmek için adapte edilmiş ve bunu bir yük eşyasına soküebilır şekilde takmak için bir bağlantı aracı ile donatılmış olan bır şemsiye taşıyıcısı, iç taraftan, su def edici gözenekli doku ile kapatılan açıklıklara sahip, tabanca kılıfı şeklinde delikli bir destek elemanı ihtiva etmektedır.

Böylece, katlanmış ıslak bir şemsiye, taşıyıcı içine yerleştirildiği zaman, su def edici gözenekli doku tarafından kapatılan açıklıklar vasıtasıyla kuruyabilmektedir.

Tercıhen delikli destek elemanı, iç tarafında, su def edici gözenekli doku tarafından içten kapatılan açıklıklara sahip, esas itibarıyle silindirik bir tüple donatılmaktadır.

Su def edici doku, silindirik tüpün ıçında bir süzgeç formunda olabilmektedir ve şemsıyenin taşıyıcıya girerken veya taşıyıcıdan çıkarken takılması ihtimalini azalmaktadır ve ilave olarak delikli destek elemanı tarafından süzgece koruma sağlanmakta ve yırtılması veya hasar gormesi ihtimali azalmaktadır.

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Süzgeç aynı zamanda, şemsiyenin nemini çekmekte ve bunun açıklıklardan buharlaşmasına izin vermektedir. Bu konstrüksiyon ayrıca taşıyıcının takıldığı bagajın ıslanması ihtimalini azaltmaktadır.

Delikli destek elemanı herhangi bir uygun malzemeden yapılabilmektedir fakat tercihen bir sentetik plastik malzeme veya metalden yapılmaktadır, bu ayrıca, açık bir örgü veya elek gibi de yapılabilmektedir.

Bağlantı aracı, birlikte kullanılacağı bagaj üzerindeki bir taşıma sapı veya kayışına bağlanacak şekilde adapte edilebilmektedir

Delikli destek elemanı esnek olabilmektedir ve bir açıklık oluşturmak için kendi uzunluğu boyunca yarılabilmektedir ve farklı boylarda şemsiyelerin yerleştirilebilmesi ve destek elemanın enine kesit çapını ayarlamak için araçlar ihtiva etmektedir.

Delikli destek elemanı esnek olabilmektedir ve taşıyıcının enine kesiti, birlikte kullanılacağı şemsiyenin enine kesitine gore kısıtlayıcı olabilmektedir, böylece şemsiye içeri sokulurken destek elemanı elastiki olarak hafifçe şekil değiştirmekte ve bunu yerinde tutmak için görev yapmaktadır.

Buluş değişik yollarla yerine getirilebilir ve şimdi örneklerle ve eşlik eden çizimlerin referansıyla bazı yapılanmalar açıklanacaktır.

Şekil 1, bir evrak çantasının sapına takılmış olan, mevcut buluşa uygun çıkarılabilir şemsiye taşıyıcısının diyagramsal izometrik bir görünüşüdür;

Şekil 2 alternatif bir konstrüksiyonun benzer bir görünüşüdür;

Şekil 3, örneğin bir el çantasının sapına tutturmak için araçlara sahip alternatif bir konstrüksiyona ait bir başka diyagramsal izometrik görünüştür ve

Şekil 4, bir başka yapılanmanın diyagramsal bir görünüşüdür.

Şekil 1'de gösterildiği gibi, bagaja bağlantı için mevcut buluşa uygun bir ayrılabilir şemsiye taşıyıcısı 1, örneğin alüminyum gibi hafif bir metalik malzemeden veya sentetik plastik malzemeden yapılmış esasen silindirik bir tüp 2 formunda bir tabanca kılıfı şeklinde delikli destek elemanı ihtiva etmektedir. Tüp 2, su defedici gözenekli bir dokudan yapılan bir suzgeç 3 şeklinde bir iç astara sahiptir. Dört

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açıklık 4 tüp içinde küçük delikler tedarik etmekte ve süzgeç 3 tarafından içten kapatılmaktadır.

Tüp 2 ve bunun iç astarı 3 birlikte, katlanabilir bir şemsiye için bir taşıyıcı tedarik etmektedir.

Tüp 2, içine katlanmış bir şemsiyenin girebilmesi şartıyla, örneğin silindirik, çok köşeli veya hatta dörtgen herhangi bir enine kesite sahip olabilir.

Taşıyıcı, bir sentetik plastik malzeme veya deri gibi bir esnek malzemeden yapılmış ve 6 referans numarasıyla gosterilen destek elemanına takılmış bir ilmek ihtiva eden bağlantı aracı 5 ile donatılmaktadır.

Şekil 1'de, kesikli çizgilerle gösterilen ve bir sapı 8 olan bir evrak çantası 7 üzerinde kullanımda olan taşıyıcı gosterilmektedir. İlmek 5 sapın 8 üzerine yerleştirilebilecek ve evrak çantasının 7 üst tarafı üzerine asılacak şekilde boyutlandırılmaktadır.

Boylece, taşıyıcının evrak çantasına 7, sadece sap 8 üzerinden kaydırılarak kolayca takılabildiği ve çıkarılabıldiği ve su def edici gözenekli doku 3 tarafından kapatılan açıklıklar sayesinde taşıyıcıya yerleştirilen ıslak bir şemsiyenin kuruyabildiği görülebilmektedir Bunun ötesinde taşıyıcı, ıslak şemsiyenin daha büyük bir kısmını kullanıcıdan ve bagajdan koruyacaktır.

Duzenleme şöyledir ki, taşıyıcı sadece bagajın sapı üzerine yerleştirilmek suretiyle veya sırt çantasının omuz kayışı üzerine yerleştirilerek kolayca çıkarılabilmekte veya tekrar takılabılmektedır. Eğer ıstenırse, ilmeğin 5 kolay takılıp çıkarılması için bağlantı noktası 6 kelepçelerle (gösterilmemiş) veya her bir parça üzerine bir ilmek veya kanca tipi doku (Velcro) ile donatılabilmektedir. Bu düzenleme özellikle, örneğin bır sırt çantası uzerıne, sırt çantasının omuz kayışlarına, eğer bunlar kolayca ayrılabilir değilse, tabanca kılıfını kolayca takabilmek için çok kullanışlıdır.

Şekıl 2'de gösterilen alternatif bır konstrüksiyonda, benzer parçaları göstermek için aynı referans numaraları kullanılmaktadır fakat bu düzenlemede silindirik tüp 2, tarafları içinde daha fazla sayıda açıklıkla şekillendirilmektedir, böylece bu hakikaten daha eleksi bir çerçevedir. Bu yine, bir su def edici gözenekli doku süzgeç 3 tarafından içten kapatılmaktadır.

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Bu konstrüksıyon, bir çift elastıkı tel veya plastik malzemeden kancalar içeren alternatif bir bağlantı aracı ile taşıyıcının bir evrak çantasına 7 nasıl takılabildiğini göstermektedir. Her bir kanca, tüpe 2 bir perçin veya başka araçla 11 sağlamlanmakta ve evrak çantasının sapının 8 alt ucuna bağlanmak için şekillendirilen ve adapte edılen bır kanca ucu 12 tedarik etmek için şekillendirilmektedir. Kancalar 12, kancaların evrak çantasından çıkarılması için içe doğru yaylanmalarını sağlamak uzere kâfi derecede elastiki olan kollar 13 üzerinde taşınmaktadır, kancalar, taşıyıcıyı evrak çantasına sağlamlamak için Şekıl 2'de gösterilen pozisyona tekrar dışa doğru yaylanacaklardır.

Şekıl 3, Şekil 1 veya Şekil 2'de gosterildiği gibi yapılandırılabilen fakat bir el çantasının 16 sapına 15 bağlantı için adapte edilmiş mevcut buluşa uygun bir taşıyıcıyı göstermektedir. El çantasının ıki sapı vardır ve taşıyıcı Şekil 3'te gösterildiği gibi ya her ikisine bırden veya sadece birine takılabilmektedir. Bu konstrüksiyonda bağlantı aracı, uçları 18 bır ilmek ve kanca malzemesi (Velcro) ile donatılmış bır çift ilmek doku 17 içermektedir, böylece bunlar birlikte preslenebilmektedir. İlmeğın 17 uçları 19, tüpe 2 dikişle, perçinlemeyle veya başka bir uygun şekılde sağlamlanmaktadır. Böylece, bir kez daha, taşıyıcı el çantasından kolayca çıkarılabilmekte ve eğer istenirse bir başka bagaja transfer edilebilmektedir.

Şekıl 3'te, katlanabilir bir şemsıyenın 20, taşıyıcı içindeki durumu kesikli çizgilerle gösterilmektedir.

Şekıl 3'te gösterıldiği gibi taşıyıcını genel konstrüksiyonu, Şekil 1 ve 2'de gösterilen yapılanmalara benzer olabilmektedir fakat Şekil 3 ayrıca, tüp için diğer yapılanmalarda da kullanılabilecek bir alternatif konstrüksiyon göstermektedir. Bu düzenlemede, tüp 2, su def edici gözenekli dokunun süzgeci 3 ile astarlanan açık bır örgü veya elek 25 oluşturmak için bir tel veya plastik malzeme ile şekillendirilmektedir.

Yukarıda açıklanan konstrüksiyonlarda tüpün genel enine kesiti silindirik, çok köşelı veya dortgen idi, fakat tüp 2 esnek olacak şekilde yapılabilmektedir ve enine kesıt hafıfçe oval veya başka bır hafifçe kısıtlayıcı şekil olabilmektedir, böylece şemsıyeyi bir kez yerleştirildiği yerde tutacaktır, enine kesiti böyle hafifçe oval olan bir tup 2 de Şekıl 3'te gösterilmektedır. Esnekliği sağlamak için, tüp, orijinal olarak

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hafifçe oval olarak şekillendirilen plastik bir malzemeden veya metalden yapılabilmektedir, bu şekil, iç elastikiyeti sayesinde şemsiyeyi kabul etmek için şekil değiştirebilmektedir. Bu esnek tüp 2 ayrıca Şekil 1 ve 2'de gösterilen konstrüksiyonda da kullanılabilmektedır.

Şekıl 4'te gösterıldiği gibi bır başka alternatıf konstrüksiyonda, delikli tüp 2, yukarıda anlatılan yolların herhangı birine göre yapılmaktadır ve esnektir veya elastiki olarak şekil değiştirebilmektedir fakat bir açıklık 21 sağlamak için uzunluğu boyunca yarılmaktadır. Böylece, malzemenin iç elastikiyeti, tüpün enine kesit çapını değiştirmek ıçın harekete izin vermek üzere kullanılabilmektedir. Tüp, bir mınımum çap alacağı şekilde yapılabilir, açıklık 21, bunun daha geniş bir enine kesit çap sağlaması için elastiki olarak açılmasına izin verir, kapalı parçaya doğru elastıki gerilim şemsiyeyi kavramayı sağlar. Alternatif olarak tüp daha geniş bir çapa göre şekillendirılebılir böylece daha küçük bir enine kesit alana kapatılabilir ve bunu pozısyonda tutmak için bır kelepçe veya esnek bir bağlantı şeridi 22 şeklınde tespit araçları sağlanabilir.

Şekil 4'te gösterilen konstrüksıyon farklı boylarda şemsiyeler için kullanılabilmektedir.

Bu ayarlanabilır konstrüksiyon, Şekil 1, 2 veya 3'te gösterilen konstrüksiyonda oval veya hafifçe kısıtlayıcı şekil görev yapmadığı zaman da kullanılabilmektedir. Tüp 2 yıne su def edici gözenekli doku süzgeci ile astarlanmaktadır, fakat bu Şekil 4'te gosterilmemektedir. Bağlantı araçları, (gosterilmemiş) yukarıdaki yapılanmaların herhangi birinde anlatıldığı gibi olabilir

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1. Katlanmış bir şemsiyeyi içine almak için adapte edilmiş ve bir bagaja çıkarılabilir şekilde takılmak için bağlantı elemanları (5) ile donatılmış olan ve içeriden kapanan açıklıklara (4,10) sahip, tabanca kılıfı şeklinde bir delikli destek elemanı (2) ihtiva eden bir şemsiye taşıyıcısı (1) olup özelliği; açıklıkların (4,10) su def edici gözeneklı doku tarafından kapatılıyor olmasıdır.

2. İstem 1'e göre şemsıye taşıyıcısı (1) olup, özelliği, delikli destek elemanının (2) esasen silindirik bir tüp olarak tedarik edılmesidir.

3. İstem 1'e veya İstem 2'ye göre şemsiye taşıyıcısı (1) olup, özelliği, delikli destek elemanının (2), süzgeç (3) şeklindeki su def edıcı doku ile astarlanmasıdır.

4. Istem 1-3'ten herhangi birine gore bir şemsıye taşıyıcısı (1) olup, özelliği, bahsedilen delıklı destek elemanın (2) sentetik bir plastik malzemeden yapılmasıdır.

5. İstem 1, istem 2 veya ıstem 3'e göre bir şemsiye taşıyıcısı (1) olup, özelliği, bahsedilen delikli destek elemanının (2) metalden yapılmasıdır.

6. Yukarıdakı ıstemlerin herhangi birine göre bir şemsiye taşıyıcısı (1) olup, özelliği, bağlantı aracının (5) birlıkte kullanılacağı bagajın taşıma sapı veya kayışına bağlanacak şekilde adapte edilmesidir.

7. Yukarıdakı istemlerin herhangi birine göre bir şemsiye taşıyıcısı (1) olup, özellığı, bağlantı aracının, takılabilir kelepçeler ihtiva etmesidir.

8. Yukarıdaki istemlerin herhangı birine göre bir şemsiye taşıyıcısı (1) olup, özellığı, bağlantı aracının, bagaja bağlanmak için elastiki şekilde ayarlanabilen bir çıft kanca ihtiva etmesidir.

9. Yukarıdaki istemlerin herhangı birine göre bir şemsiye taşıyıcısı (1) olup, özellığı, delıklı destek elemanının (2) açık bir örgü veya elek gibi şekillendirilmesidir.

10. Yukarıdaki istemler 1-9'dan herhangi birine göre şemsiye taşıyıcısı (1) olup, özelliği, deliklı destek elemanının (2) esnek olması ve bunun genel enine kesıtının birlikte kullanılacağı şemsiyenin enine kesitine göre kısıtlayıcı olması,

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böylece destek elemanının (2) şemsıye sokulurken hafifçe şekil değiştirmesi ve bunu yerinde tutmak için görev yapmasıdır.

11. İstem 10'a göre bır şemsiye taşıyıcısı (1) olup, özelliği, delikli destek elemanının (2) enine kesitinin hafifçe oval olmasıdır.

12. Yukarıdaki istemler 1-9'dan herhangı birine göre şemsiye taşıyıcısı (1) olup, ozellığı, delikli destek elemanının (2), bir açıklık sağlamak için uzunluğu boyunca yarılması ve farklı boylardaki şemsiyeleri yerleştirmek için destek elemanının enine kesit çapını ayarlamak için araçlar ihtiva etmesidir.

13. İstem 12'ye göre bir şemsiye taşıyıcısı (1) olup, özelliği, destek elemanının (2) enine kesit çapını ayarlamak için olan araçların, yapıldığı malzemenin yapısal elastıkiyetine sahip olmasıdır.

14. Istem 13'e göre bir şemsiye taşıyıcısı (1) olup, özelliği, ayarlanmış destek elemanını pozisyonda tutmak için tespıt aracı ihtiva etmesidir.

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8

ÖZET

ŞEMSİYE KABI

Mevcut buluş, katlanmış bir şemsiyeyı ıçine almak için adapte edilmiş ve bir bagaja çıkarılabilir şekilde takılmak için bağlantı elemanları (5) ile donatılmış olan ve ıçerıden kapanan açıklıklara (4,10) sahip, tabanca kılıfı şeklinde bir delikli destek elemanı (2) ihtıva eden bir şemsiye taşıyıcısı (1) olup özelliği; açıklıkların (4,10) su def edici gozeneklı doku tarafından kapatılıyor olmasıyla ilgilidir.

APPENDIX 3:

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(54) **Method of wrapping elongated articles in groups**

Verfahren zur Umhüllung von gruppierten, länglichen Artikeln

Procédé pour envelopper des articles allongés groupés

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Description

[0001] The present invention relates to a method of wrapping elongated articles in groups.

[0002] More specifically, the present invention relates to a method of wrapping orderly groups of cigarettes, to which the following description refers purely by way of example.

[0003] Methods of wrapping orderly groups of cigarettes - hereinafter referred to simply as "groups" - normally comprise folding a sheet of wrapping material about a group to form a tubular wrapping; and closing two tubular portions, projecting from opposite ends of the group, onto the group itself. Formation of the tubular wrapping comprises a first folding step wherein the sheet of wrapping material is folded into a U; a second folding step wherein a first free flap of the sheet of wrapping material is folded into an L; and a third folding step wherein a second free flap of the sheet of wrapping material is folded into an L onto a third flap folded onto the group when making the U-shaped fold.

[0004] In known methods of a first type, the group is inserted inside a metal spindle, and a sheet of wrapping material is folded about the spindle. Methods of this type provide for forming sharp-edged folds - particularly appreciated in the cigarette manufacturing industry - but involve extracting the spindle from the tubular wrapping, thus slowing down the wrapping unit as a whole.

[0005] In known methods of a second type, the sheet of wrapping material is folded directly about the group, so that the tubular wrapping has rounded edges with a radius of curvature substantially equal to the diameter of the cigarettes.

[0006] Given the current emphasis, in automatic machine design, on producing continuously-operating machines to increase output, wrapping methods of the first type are more or less discarded, by extraction of the group and wrapping from the spindle not being adaptable to continuously-operating machines.

[0007] One known method of wrapping groups on a continuously-operating machine normally comprises feeding a first and a second pocket continuously along a first and, respectively, second path having a common portion, along which the first pocket penetrates the second pocket to transfer an orderly group of cigarettes from the first to the second pocket together with a sheet of wrapping material, which is folded into a U, when transferring the group, and is then folded about the group by folding devices located along the second path. The first pocket comprises a first bottom wall and two lateral walls, and the second pocket comprises a second bottom wall and second lateral walls. When making the U-shaped fold, a portion of the sheet of wrapping material is gripped between the group and the second bottom wall; and two opposite, parallel flaps of the sheet of wrapping material are gripped between the first and second lateral walls. The first and second pocket are then fed separately along the respective paths, and the first pocket, obviously, is extracted from the second. When extracting the first lateral walls, the sheet of wrapping material may slip with respect to the second pocket and to the group housed inside the second pocket, even to the extent of impairing subsequent folds and formation of the wrapping as a whole. On the other hand, it is extremely difficult to determine the conditions resulting in such a difference in friction between the two first lateral walls and the flaps as to cause slippage of the sheet of wrapping material.

[0008] US4823536A1 discloses a method for handling groups of cigarettes, whereby each group of cigarettes is transferred from a first wheel turning in one direction, on to a second wheel turning in the opposite direction; the transfer is made in a position wherein the two wheels are set a minimum distance apart, and wherein a seat for a group of cigarettes of the first wheel is aligned and coincides substantially totally with a corresponding seat of the second wheel.

[0009] DE3713332A1 discloses an apparatus for the transfer of sweets and comprising gripper and wrapping wheels, which rotate at a constant speed and carry pairs of pivotable gripping elements and associated plungers for transferring sweets together with their wrappers from one wheel to the other. The pairs of grippers on the gripper wheel and the pairs of grippers on the wrapping wheel are each pivotal about spindles by means of cams so that during movement over the transfer zone respective pairs of grippers are coaxially aligned but radially spaced from each other.

[0010] It is an object of the present invention to provide a method of wrapping elongated articles in groups, which may be implemented easily on an automatic, continuously-operating machine of the type described above, and which at the same time provides for preventing slippage of the sheet of wrapping material during the folding operations.

[0011] According to the present invention, there is provided a method of wrapping elongated articles in groups as recited in the accompanying claims.

[0012] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic side view, with parts in section and parts removed for clarity, of a unit for wrapping elongated articles in groups and implementing the method according to the present invention;

figures 2, 3, 6, 7, 11 and 13 show side views, with parts in section and parts removed for clarity, of a detail of the Figure 1 unit at successive steps in the method according to the present invention;

Figures 4, 5 show larger-scale side views of details in Figure 3;

Figure 8 shows a larger-scale side view of a detail in Figure 7;

Figure 9 shows a section, with parts removed for clarity, of a detail in Figure 1;

Figure 10 shows a view in perspective of the Figure 9 detail;

Figure 12 shows a larger-scale side view of a detail in Figure 11.

[0013] With reference to Figure 1, number 1 indicates as a whole a unit for wrapping cigarettes 2 arranged in groups 3 on an automatic, continuously-operating wrapping machine not shown. Unit 1 comprises two wheels 4 and 5 shown by the dash lines in Figure 1 and fitted to a structure S to rotate about respective parallel axes (not shown) perpendicular to the Figure 1 plane. Wheels 4 and 5 respectively support two successions of pockets 6 and 7, only two of which are shown in Figure 1, and which respectively travel along two endless paths P1 and P2 having a common portion T. Unit 1 also comprises two folding devices 8 and 9 located along path P2 and cooperating with pocket 7.

[0014] Pocket 6 comprises a frame 10 fitted to wheel 4 to rotate about an axis 11 perpendicular to the Figure 1 plane; and a bottom wall 12 and two lateral walls 13 fixed to frame 10. Bottom wall 12 is movable with respect to frame 10 along an axis A1, and is integral with a rod 14 fitted in sliding manner to frame 10, and with a cam actuating device 16.

[0015] Lateral walls 13 are defined by two thin, flat, facing plates parallel to each other and to axis A1 and fixed rigidly to frame 10.

[0016] Downstream from each pocket 6, wheel 4 supports a gripper 17 extending radially from wheel 4, and which provides for withdrawing the end of a sheet 18 of wrapping material from a known device (not shown), and for drawing sheet 18 of wrapping material in front of pocket 6 along a portion of path P1.

[0017] Each pocket 7 comprises a frame 19 fitted to wheel 5 to rotate about an axis 20 parallel to axis 11; a bottom wall 21 and two lateral walls 22 and 23; a jaw 24; and two plates 25 supported on U-shaped arms 26 and shown in Figures 9 and 10.

[0018] With reference to Figure 1, bottom wall 21 is movable along an axis A2, and is fitted to a rod 27 guided by frame 19 and activated by a cam device not shown. Lateral walls 22 and 23 are mounted to rotate about respective axes 28 and 29, are activated by respective cam devices not shown, are located on opposite sides of bottom wall 21, and are movable between a rest position, and a work position in which they are parallel to each other and to axis A2. Jaw 24 is located on the wall 22 side, and rotates about an axis 30 coincident with axis 28. Wall 22 is defined by a thin, flat plate, and jaw 24 is movable between a rest position, and a work position in which it is parallel to walls 22 and 23 and adjacent to wall 22.

[0019] With reference to Figure 9, plates 25 and respective arms 26 rotate, with respect to frame 19 and about respective axes 31 perpendicular to axes 28, 29 and 30, between a rest position, shown by the dash line, and a work position, shown by the continuous line.

[0020] With reference to Figure 1, folding device 8 is fitted to structure S, and comprises a plate 32 mounted to rotate about an axis 33 perpendicular to the Figure 1 plane. Plate 32 comprises a curved portion 34; and a flat portion 35 having slots 36 for the insertion of part of device 9. Curved portion 34 and flat portion 35 have respective faces 37 and 38 connected to each other and facing wheel 5.

[0021] Device 9 comprises a wheel 39 shown by the dash line in Figure 1, and which rotates, with respect to structure S, about an axis 40 parallel to axis 33. Wheel 39 comprises three folding devices 41 equally spaced about axis 40 and having plates 42 which, in use, engage slots 36 comb-fashion and project from face 38.

[0022] With reference to Figure 2, each lateral wall 13 of pocket 6 comprises an inner face 43 directly contacting group 3 in use, an outer face 44, and a free end 45; bottom wall 12 of pocket 6 comprises a face 46 contacting a central portion of group 3 in use; wall 22 comprises an inner face 47 and an outer face 48; wall 23 comprises an inner face 49; jaw 24 comprises an inner face 50; and bottom wall 21 of pocket 7 comprises a face 51.

[0023] With reference to Figure 9, each plate 25 comprises an inner face 52 contacting the ends of cigarettes 2 in group 3 in use; an outer face 53; and two opposite ends 54 and 55 (Fig. 10).

[0024] In actual use, wheels 4, 5 and 39 rotate continuously, wheel 5 clockwise and wheels 4 and 39 anticlockwise in Figure 1. As wheels 4 and 5 rotate, pockets 6 and 7 are swung about respective axes 11 and 20 by cam devices (not shown) known in the automation industry and comprising pawls, levers, and cam profiles (not shown) for moving pockets 6 and 7 into given positions with respect to wheels 4 and 5 along respective paths P1 and P2. The movements of lateral walls 22 and 23, jaw 24, bottom walls 12 and 21, plate 32, and folding devices 41 are controlled by similar cam devices also operated by rotation of wheels 4 and 5. Pockets 6 and 7 are fed continuously along respective paths P1 and P2, and are so timed and swung about respective axes 11 and 20 as to align axes A1 and A2 and insert pocket 6 inside pocket 7 along the common portion T of paths P1 and P2. As wheel 4 rotates, and upstream from portion T, gripper 17 grips a sheet 18 of wrapping material supplied in known manner not shown, and retains sheet 18 of wrapping material in a given position with respect to pocket 6.

[0025] With reference to Figure 2, axes A1 and A2 are aligned, and bottom wall 21 is moved along axis A2 from the position shown by the dash line to the position shown by the continuous line, in which sheet 18 of wrapping material is gripped between face 51 of bottom wall 21 and ends 45 of walls 13. At this stage, gripper 17 releases sheet 18 of wrapping material, which has a portion 56 compressed between ends 45 of the two lateral walls 13 of pocket 6, and two flaps 57 and 58 projecting on opposite sides of portion 56.

[0026] In Figure 2, walls 22 and 23 are open to enable

pocket 6 to be inserted easily inside pocket 7.

[0027] As wheels 4 and 5 travel further along portion T, pocket 6 is inserted inside pocket 7. At this stage, bottom wall 21 is withdrawn along axis A2, and pocket 6 penetrates pocket 7 to fold flaps 57 and 58, with respect to portion 56, about ends 45 of walls 13 of pocket 6. In the meantime, lateral walls 22 and 23 are closed, i.e. positioned parallel to each other, so that flaps 57 and 58 are folded squarely with respect to portion 56.

[0028] With reference to Figure 4, the fold between portion 56 and flap 57 is made about end 45 of wall 13, and, being short, flap 57 is gripped completely between outer face 44 of wall 13 and inner face 47 of wall 22. With reference to Figures 3 and 5, the fold between portion 56 and flap 58 is made about end 45 of the other wall 13, and, being long, flap 58 is gripped partly between outer face 44 of wall 13 and inner face 49 of wall 23, and projects partly from pocket 7 to define a flap 59.

[0029] With reference to Figure 6, as wheels 4 and 5 rotate, pockets 6 and 7 are gradually parted, so that lateral walls 13 are extracted from pocket 7. At this stage, pockets 6 and 7 swing about respective axes 11 and 20 to keep axes A1 and A2 aligned, and bottom wall 12 is gradually extracted from lateral walls 13 by cam device 16, and exerts pressure on the group and on sheet 18 of wrapping material to retain group 3 inside pocket 7 and prevent sheet 18 of wrapping material from slipping when extracting lateral walls 13 from pocket 7. With reference to Figures 9 and 10, once lateral walls 13 are extracted from pocket 7, plates 25 are moved into the work position, in which inner faces 52 of plates 25 rest on opposite ends of group 3 on opposite sides of bottom wall 12. In other words, faces 52 of plates 25 are coplanar with and adjacent to face 46 of bottom wall 12. Once plates 25 are moved into the work position, bottom wall 12 is withdrawn along axis A1, and group 3 and sheet 18 of wrapping material are retained firmly inside pocket 7 by plates 25.

[0030] Extracting lateral walls 13 from pocket 7 before moving plates 25 into the work position enables plates 25 to be so sized as to form, with wall 23, an extremely small passage, which extends between end 54 and face 49 of wall 23, only allows the passage of sheet 18 of wrapping material, and through which flap 59 projects (Figure 8).

[0031] Pockets 6 and 7 are then fed along respective paths P1 and P2 and parted. Pocket 7 fed along path P2 is brought into contact with plate 32, and flap 59 is gripped partly between face 37 and ends 54 of plates 25, and is folded into an L about ends 54. As wheel 5 rotates further, pocket 7 is fed along flat portion 35 of plate 32, as shown in Figure 7, where flap 59 is smoothed between flat face 38 and outer faces 53 of plates 25. To slide pocket 7 along plate 32, pocket 7 and plate 32 are swung about respective axes 20 and 33 to keep plates 25 parallel to flat face 38, and to grip flap 59 partly between faces 53 of plates 25 and face 38 of plate 32.

[0032] Once flap 59 is folded about ends 54, sheet 18 of wrapping material has a flap 60 projecting from pocket 7. With reference to Figure 11, as pocket 7 slides along flat face 38 (not shown in Figure 11 for the sake of clarity), a plate 42 engages slots 36 comb-fashion and folds flap 60 onto outer face 48 of lateral wall 22, and about the end 22a of lateral wall 22 as shown in Figure 12. Once the tubular wrapping is formed and plate 42 extracted from slots 36, jaw 24 is closed to retain flap 60 between outer face 48 of wall 22 and inner face 50 of jaw 24.

[0033] Once the tubular wrapping is completed and kept closed by jaw 24, plates 25 can be extracted and restored to the rest position, and the tubular wrapping is then closed at the ends in known manner (not shown) to form a closed wrapping. Though both the tubular wrapping and the closed wrapping have flap 57 and flap 60 separated by wall 22, this in no way impairs extraction of the wrapping from pocket 7, which is done by simply opening jaw 24 and activating bottom wall 21 to slide flaps 57 and 60 with respect to wall 22 and expel the wrapped group 3. Once the wrapping is extracted from pocket 7, flaps 57 and 60 overlap. Of the advantages of the wrapping method described, it should be pointed out that, besides preventing slippage of sheet 18 of wrapping material, it also enables the formation of sharp-edged folds, which are particularly appreciated in the wrapping of cigarettes.

Claims

1. A method of wrapping elongated articles in groups, the method comprising the steps of:

   feeding a first and a second pocket (6; 7) continuously along a first and, respectively, second path (P1, P2) having a common portion (T), the first and the second pocket (6, 7) comprising, respectively, a first and a second bottom wall (12; 21), and first and second lateral walls (13, 22, 23);

   penetrating the second pocket (7) with the first pocket (6) along the common portion (T) by inserting the first lateral walls (13) of the first pocket (6) between the second lateral walls (22, 23) of the second pockets (7) to transfer a group (3) from the first to the second pocket (6, 7) together with a sheet (18) of wrapping material;

   gripping a first and a second flap (57, 58), opposite and parallel to each other, of the sheet (18) of wrapping material between the first and second lateral walls (13, 22, 23); and

   extracting the first lateral walls (13) from the second pocket (7);

   the method comprising the further step of compressing the group (3) and a portion (56) of the sheet (18) of wrapping material between the first and second bottom wall (12, 21) when extracting the first lateral walls (13) from the second pocket (7).

2. A method as claimed in Claim 1, and comprising the further step of folding the sheet (18) of wrapping material into a U by pushing the sheet (18) of wrapping material into the second pocket (7) by means of the ends (45) of the first lateral walls (13).

3. A method as claimed in Claim 2, wherein said portion (56) extends between the ends (45) of the first lateral walls (13) and between the first and second flap (57, 58); the method providing for gripping said portion (56) between said group (3) and the second bottom wall (21).

4. A method as claimed in one of Claims 1 to 3, wherein, following extraction of the first lateral walls (13) from the second pocket (7), plates (25) on the second pocket (7) are positioned on opposite sides of the first bottom wall (12) and in a work position in which said plates (25) are coplanar with the first bottom wall (12) and crosswise to the second lateral walls (22, 23) to retain the group (3) of elongated articles (2) by opposite ends of said elongated articles (2).

5. A method as claimed in Claim 4, wherein each plate (25) comprises a thin plate having an inner face (52) and an outer face (53), and a first and a second end (54, 55) opposite each other and which are respectively adjacent to the second lateral walls (22, 23) in said work position of the plates (25).

6. A method as claimed in Claim 5, wherein said second ends (55) of the plates (25) are adjacent to the end (22a) of a second lateral wall (22) in said work position of the plates (25).

7. A method as claimed in Claim 6, wherein said second flap (58) comprises a third flap (59) projecting with respect to the plates (25); the method providing for folding said third flap (59) squarely with respect to the second flap (58) about the first ends (54) of the plates (25) and along the outer faces (53) of the plates (25) by means of a first folding device (8) located along the first path (P1).

8. A method as claimed in Claim 7, and comprising the further step of gripping the third flap (59) partly between the outer faces (53) of the plates (25) and a flat face (38) of said first folding device (8).

9. A method as claimed in Claim 7 or 8, wherein said third flap (59) comprises a fourth flap (60) projecting with respect to a second lateral wall (22); the method providing for folding said fourth flap (60) squarely with respect to the third flap (59) about the end (22a) of said second lateral wall (22).

10. A method as claimed in Claim 9, and comprising the further step of gripping the fourth flap (60) between said second lateral wall (22) and a movable jaw (24) fitted in rotary manner to the second pocket (7).

Patentansprüche

1. Verfahren zum Umwickeln lang gestreckter Artikel in Gruppen, wobei das Verfahren die folgenden Schritte umfaßt,

   ununterbrochenes Zuführen einer ersten Tasche und einer zweiten Tasche (6; 7) längs eines ersten bzw. eines zweiten Wegs (P1, P2), die einen gemeinsamen Abschnitt (T) besitzen, wobei die erste Tasche und die zweite Tasche (6, 7) eine erste bzw. eine zweite Bodenwand (12; 21) und erste bzw. zweite Seitenwände (13, 22, 23) aufweisen;
   Einschieben der ersten Tasche (7) in die zweite Tasche (6) längs des gemeinsamen Abschnitts (T) durch Einsetzen der ersten Seitenwände (13) der ersten Tasche (6) zwischen den zweiten Seitenwänden (22, 23) der zweiten Taschen (7), um eine Gruppe (3) zusammen mit einer Folie (18) aus Einwickelmaterial von der ersten zu der zweiten Tasche (6, 7) umzuladen;
   Ergreifen einer ersten und einer zweite Klappe (57, 58), die einander gegenüber liegen und zueinander parallel sind, der Folie (18) aus Einwickelmaterial zwischen der ersten und der zweiten Seitenwand (13, 22, 23); und
   Herausziehen der ersten Seitenwände (13) aus der zweiten Tasche (7);

   wobei das Verfahren den weiteren Schritt des Zusammendrückens der Gruppe (3) und eines Abschnitts (56) der Folie (18) aus Einwickelmaterial zwischen der ersten und der zweiten Bodenwand (12, 21) umfasst, wenn die ersten Seitenwände (13) aus der zweiten Tasche (7) herausgebogen werden.

2. Verfahren nach Anspruch 1, das den weiteren Schritt des Faltens der Folie (18) aus Einwickelmaterial zu seinem U durch Schieben der Folie (18) aus Einwikkelmaterial in die zweite Tasche (7) mittels der Enden (45) der ersten Seitenwände (13) umfasst.

3. Verfahren nach Anspruch 2, wobei sich der Abschnitt (56) zwischen den Enden (45) der ersten Seitenwände (13) und zwischen der ersten und der zweiten Klappe (57, 58) erstreckt; wobei das Verfahren das Ergreifen des Abschnitts (56) zwischen der Gruppe (3) und der zweiten Bodenwand (21) vorsieht.

4. Verfahren nach einem der Ansprüche 1 bis 3, wobei nach dem Heraufziehen der ersten Seitenwände (13) aus der zweiten Tasche (7) Platten (25) an der zweiten Tasche (7) an gegenüberliegenden Seiten

der ersten Bodenwand (12) und in einer Arbeitsposition, in der die Platten (25) zu der ersten Bodenwand (12) koplanar und zu den zweiten Seitenwänden (22, 23) quer orientiert sind, positioniert werden, um die Gruppe (3) lang gestreckter Artikel (2) durch gegenüberliegende Enden der lang gestreckten Artikel (2) zurückzuhalten.

5. Verfahren nach Anspruch 4, wobei jede Platte (25) eine dünne Platte mit einer Innenfläche (52) und einer Außenfläche (53) und einem ersten und seinem zweiten Ende (54, 55), die einander gegenüber liegen und jeweils zu den zweiten Seitenwänden (22, 23) in der Arbeitsposition der Platten (25) benachbart sind, enthält.

6. Verfahren nach Anspruch 5, wobei die zweiten Enden (55) der Platten (25) zu dem Ende (22a) einer zweiten Seitenwand (22) in der Arbeitsposition der Platten (25) benachbart sind.

7. Verfahren nach Anspruch 6, wobei die zweite Klappe (58) eine dritte Klappe (59) aufweist, die in Bezug auf die Platten (25) vorsteht; wobei das Verfahren das Falten der dritten Klappe (59) quadratisch in Bezug auf die zweite Klappe (58) um die ersten Enden (54) der Platten (25) und längs der Außenflächen (53) der Platten (25) mittels einer ersten Faltvorrichtung (8), die sich längs des ersten Weges (P1) befindet, umfasst.

8. Verfahren nach Anspruch 7, das ferner den Schritt des Ergreifens der dritten Klappe (59) teilweise zwischen den Außenflächen (53) der Platten (25) und einer ebenen Fläche (38) der ersten Faltvorrichtung (8) umfasst.

9. Verfahren nach Anspruch 7 oder 8, wobei die dritte Klappe (59) eine vierte Klappe (60) umfasst, die in Bezug auf die zweite Seitenwand (22) vorsteht; wobei das Verfahren das Vorsehen eines Faltens der vierten Klappe (60) quadratisch in Bezug auf die dritte Klappe (59) um das Ende (22a) der zweiten Seitenwand (22) vorsieht.

10. Verfahren nach Anspruch 9, das den weiteren Schritt des Ergreifens der vierten Klappe (60) zwischen der zweiten Seitenwand (22) und einer beweglichen Klaue (24), die an der zweiten Tasche (7) drehbar angebracht ist, umfasst.

Revendications

1. Procédé pour envelopper des articles allongés par groupes, le procédé comprenant les étapes qui consistant :

à faire avancer des première et seconde cases (6 ; 7) en continu le long de premier et, respectivement, second chemins (P1, P2) ayant un tronçon commun (T), les première et seconde cases (6, 7) comportant, respectivement, des première et seconde parois de fond (12 ; 21), et des premières et secondes parois latérales (13, 22, 23) ;
à faire pénétrer la première case (6) dans la seconde case (7) le long du tronçon commun (T) en insérant les premières parois latérales (13) de la première case (6) entre les secondes parois latérales (22, 23) des secondes cases (7) afin de transférer un groupe (3) de la première à la seconde case (6, 7) en même temps qu'une feuille (18) de matière d'enveloppement ;
à prendre des premier et second rabats (57, 58), opposés et parallèles l'un à l'autre, de la feuille (18) de matière d'enveloppement entre les premières et secondes parois latérales (13, 22, 23) ; et
à extraire les premières parois latérales (13) de la seconde case (7) ;
le procédé comprenant en outre l'étape consistant à comprimer le groupe (3) et une partie (56) de la feuille (18) de matière d'enveloppement entre les première et seconde parois de fond (12, 21) lors de l'extraction des premières parois latérales (13) de la seconde case (7).

2. Procédé selon la revendication 1 et comprenant en outre l'étape consistant à plier la feuille (18) de matière d'enveloppement en un U en poussant la feuille (18) de matière d'enveloppement dans la seconde case (7) au moyen des extrémités (45) des premières parois latérales (13).

3. Procédé selon la revendication 2, dans lequel ladite partie (56) s'étend entre les extrémités (45) des premières parois latérales (13) et entre les premier et second rabats (57, 58) ; le procédé réalisant la prise de ladite partie (56) entre ledit groupe (3) et la seconde paroi de fond (21).

4. Procédé selon l'une des revendications 1 à 3, dans lequel, à la suite de l'extraction des premières parois latérales (13) depuis la seconde case (7), des plaques (25) situées sur la seconde case (7) sont positionnées sur des côtés opposés de la première paroi de fond (12) et dans une position de travail dans laquelle lesdites plaques (25) sont coplanaires avec la première paroi de fond (12) et transversales aux secondes parois latérales (22, 23) pour retenir le groupe (3) d'articles allongés (2) par des extrémités opposées desdits articles allongés (2).

5. Procédé selon la revendication 4, dans lequel chaque plaque (25) comprend une plaque mince ayant

une face intérieure (52) et une face extérieure (53), et des première et seconde extrémités (54, 55) opposées l'une à l'autre et qui sont respectivement adjacentes aux secondes parois latérales (22, 23) dans ladite position de travail des plaques (25).

6. Procédé selon la revendication 5, dans lequel lesdites secondes extrémités (55) des plaques (25) sont adjacentes à l'extrémité (22a) d'une seconde paroi latérale (22) dans ladite position de travail des plaques (25).

7. Procédé selon la revendication 6, dans lequel ledit second rabat (58) comporte un troisième rabat (59) faisant saillie par rapport aux plaques (25) ; le procédé effectuant un pliage dudit troisième rabat (59) au carré par rapport au deuxième rabat (58) autour des premières extrémités (54) des plaques (25) et le long des faces extérieures (53) des plaques (25) au moyen d'un premier dispositif de pliage (8) placé le long du premier chemin (P1) .

8. Procédé selon la revendication 7 et comprenant en outre l'étape qui consiste à prendre le troisième rabat (59) partiellement entre les faces extérieures (53) des plaques (25) et une face plate (38) dudit premier dispositif de pliage (8).

9. Procédé selon la revendication 7 ou 8, dans lequel ledit troisième rabat (59) comprend un quatrième rabat (60) faisant saillie par rapport à une seconde paroi latérale (22) ; le procédé réalisant le pliage dudit quatrième rabat (60) au carré par rapport au troisième rabat (59) autour de l'extrémité (22a) de ladite seconde paroi latérale (22).

10. Procédé selon la revendication 9, et comprenant en outre l'étape qui consiste à prendre le quatrième rabat (60) entre ladite seconde paroi latérale (22) et un mors mobile (24) monté de manière à pouvoir tourner sur la seconde case (7).

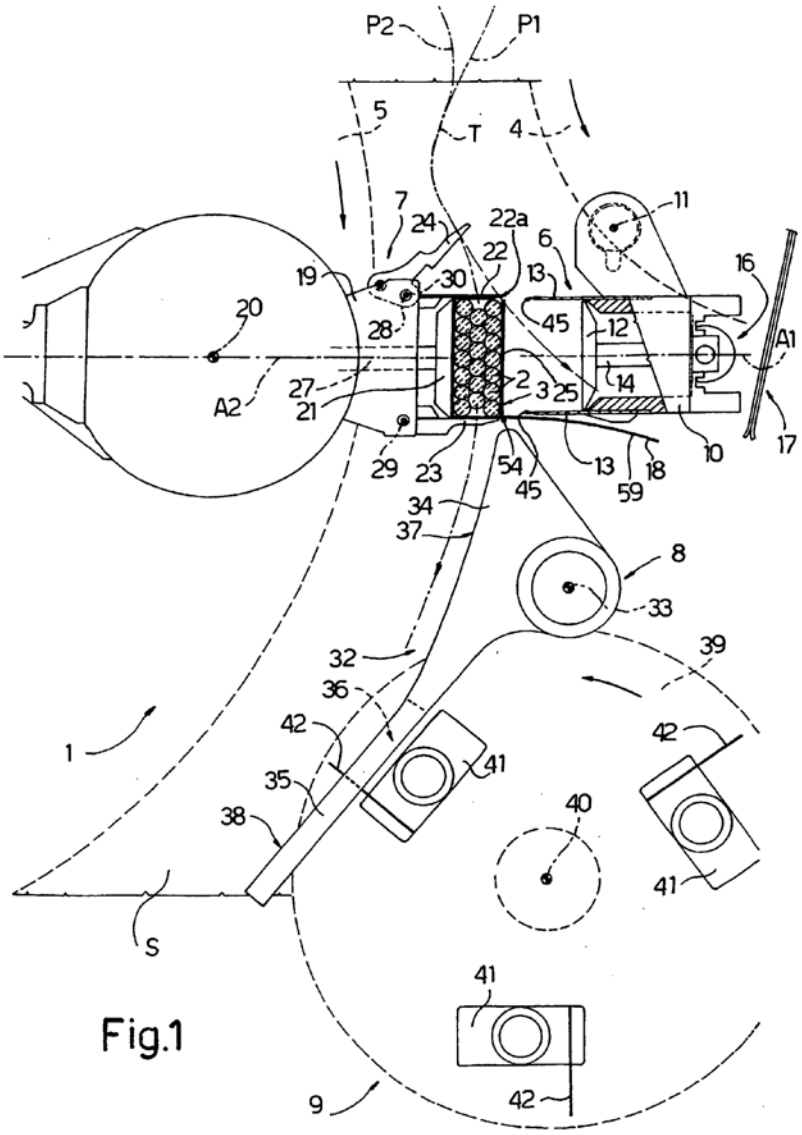
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Fig.1

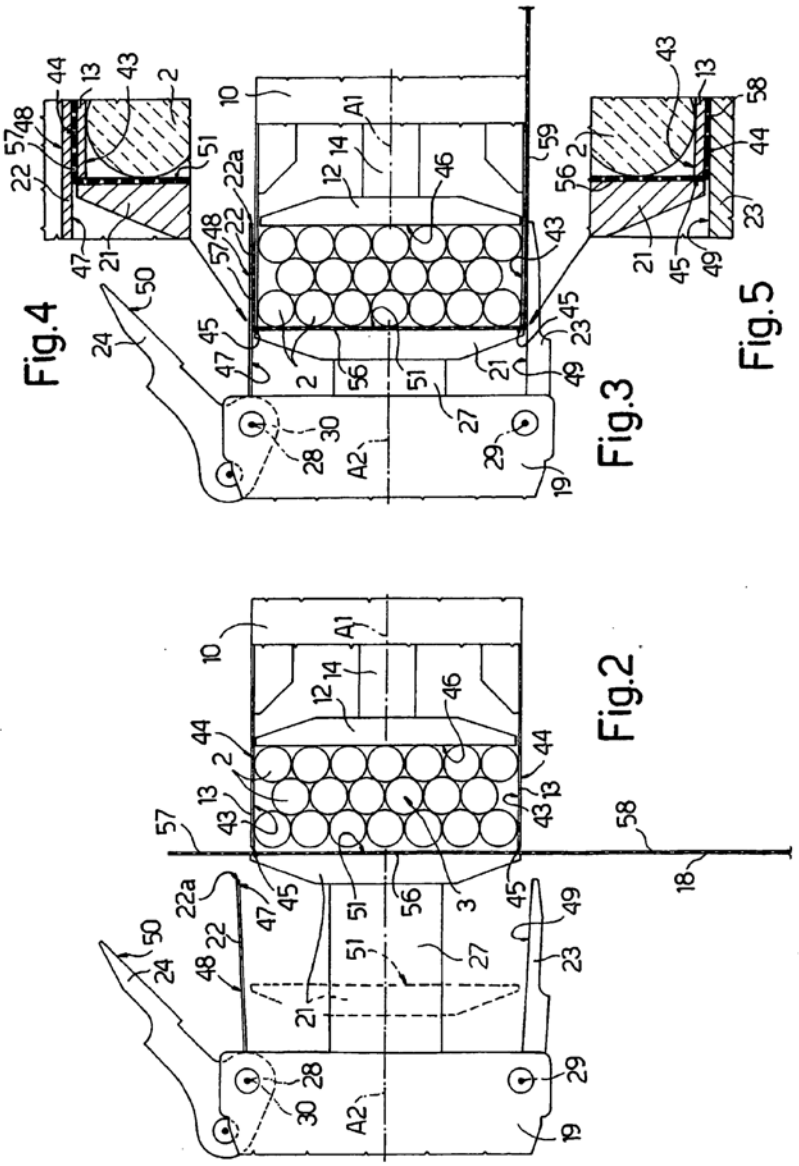

Fig.4 Fig.3 Fig.5

Fig.2

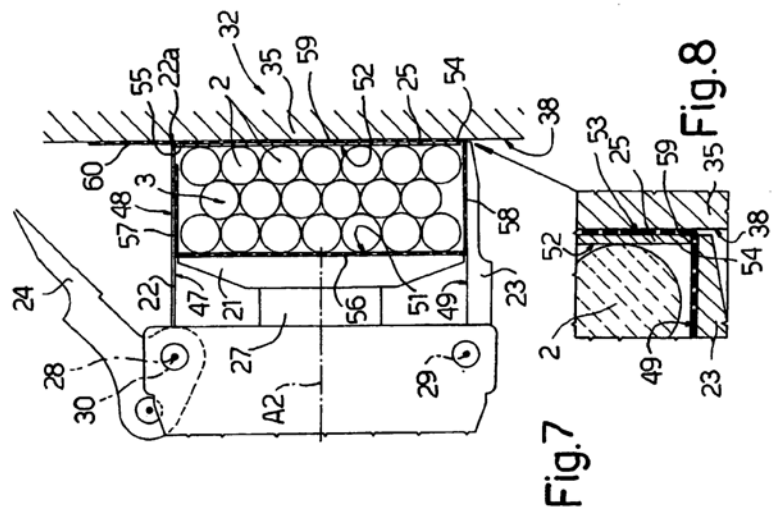

Fig.7

Fig.8

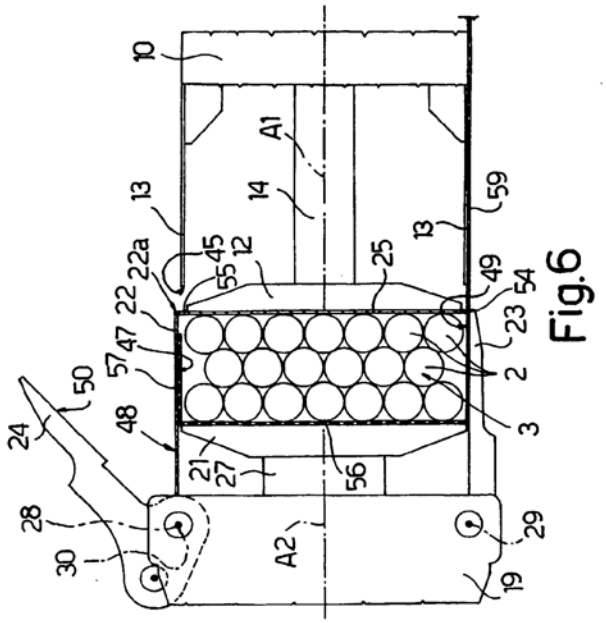

Fig.6

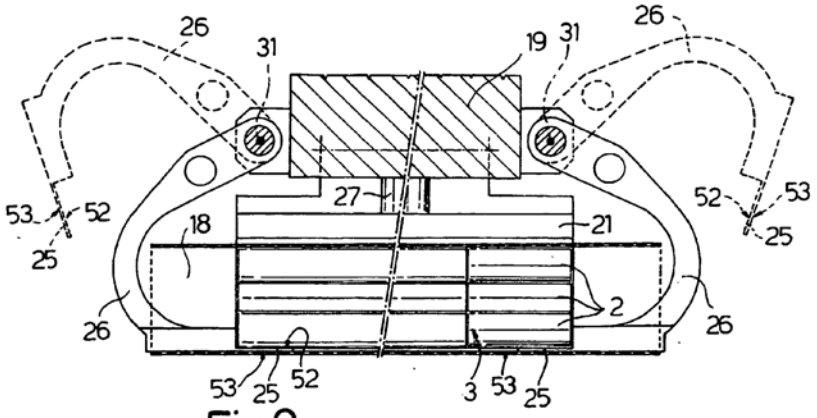
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Fig.9

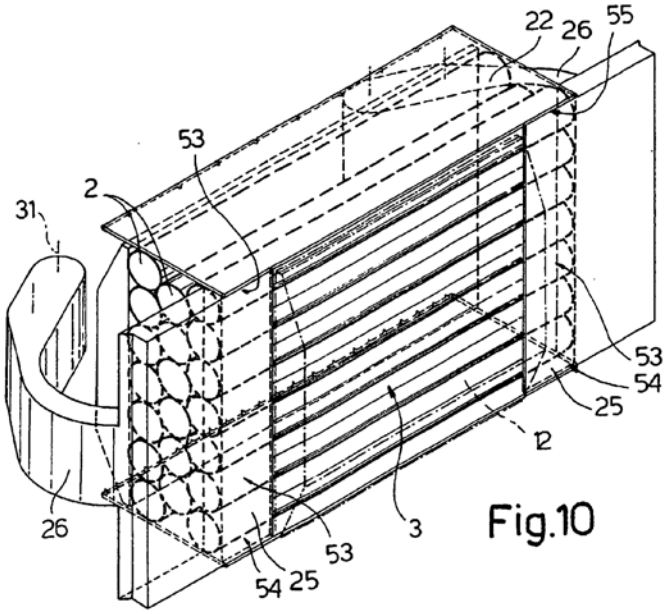
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Fig.10

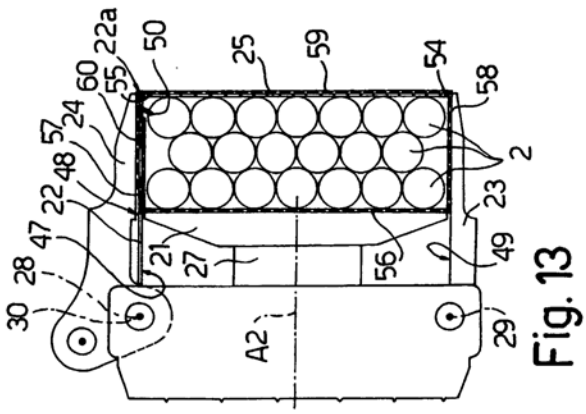

Fig. 13

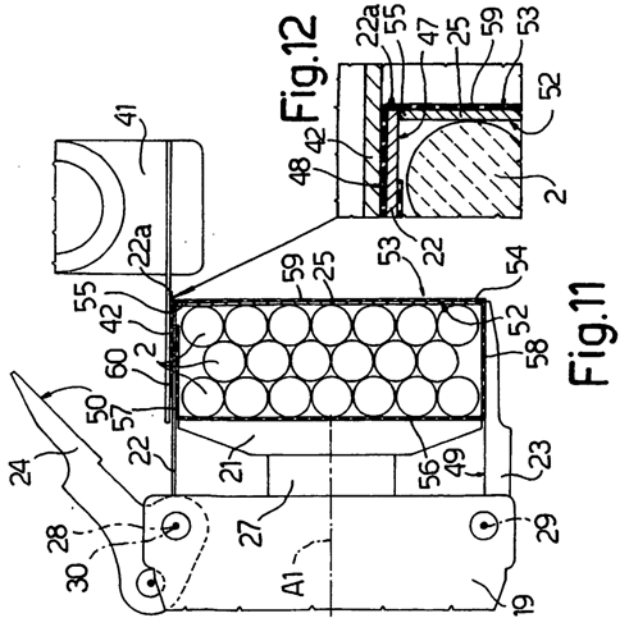

Fig.12

Fig.11

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 4823536 A1 **[0008]**
- DE 3713332 A1 **[0009]**

TD3

TARİFNAME
1. Sayfa

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TARİFNAME

UZUN PARÇALARIN GRUPLAR HALİNDE AMBALAJLANMASINA YÖNELİK METOT

Mevcut buluş, uzun parçaların gruplar halinde ambalajlanmasına yonelık bır metot ıle ılgılıdır.

Daha açık bır şekılde belırtmek gerekırse, mevcut buluş, bu tarıfnamenın sadece ornek yoluyla atıfta bulunduğu duzenlı sıgara gruplarının ambalajlanmasına yonelık bır metot ıle ılgılıdır

Duzenlı sıgara gruplarının (bundan boyle sadece "gruplar" olarak anılacaktır) ambalajlanmasına yonelık metotlar, genellıkle bır ambalaj malzemesı tabakasının bir grup etrafında sılındırık bır ambalaj oluşturacak şekılde katlanmasını, grubun karşıt uçlarından dışarıya doğru çıkıntı yapan ıkı sılındırık kısmın grubun uzerıne kapatılmasını ıçerır sılındırık ambalajın oluşumu, ambalaj malzemesı tabakasının U şeklınde katlandığı bırıncı katlama adımını, ambalaj malzemesı tabakasının bırıncı serbest kanadının L şeklınde katlandığı ıkıncı katlama adımını ve ambalaj malzemesı tabakasının ıkıncı serbest kanadının, U şeklındekı katlama yapılırken grubun uzerıne katlanmış olan uçuncu kanadın uzerıne L şeklınde katlandığı uçuncu katlama adımını ıçerır

Bılınen metotların ılk çeşıdınde, grup bır metal mılın ıçerısıne yerleştırılır ve bır ambalaj malzemesı tabakası bu mılın çevresıne katlanır Bu şekıldekı metotlar keskın kenarlı katlamalar yaparken ışe yarar, bunlar da sıgara uretım endustrısınde ozellıkle tercıh edılen yontemlerdır, ancak bu metot mılın sılındirik ambalajdan çıkartılmasını gerektırır, bu da ambalajlama unıtesını butun olarak yavaşlatır

Bılınen metotların ıkıncı bır çeşıdınde ıse, ambalaj malzemesı tabakası, sılındırık ambalajın, sıgaraların boyutlarına hemen hemen eşit bır eğrılık yarıçapına sahıp yuvarlatılmış kenarlara sahıp olması ıçın ambalaj malzemesı tabakası doğrudan grubun uzerıne katlanır

Otomatık makıne tasarımında, çıktıyı arttırmak amacıyla surekli ışleyen makınelerın uretılmesıne halıhazırda verılen oneme bağlı olarak, grubun çıkartılması ve mil uzerınden

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katlama işlemlerinin sureklı işleyen makinelere uygulanamayacak olması sebebıyle bırıncı turdeki ambalajlama metotlarından az çok vazgeçilmiştir

Grupların sureklı işleyen bır makıne üzerınde ambalajlanmasına yonelık bılınen bır metot, normal olarak ortak kısımları olan ve uzerınde grup aktarılırken U şeklınde katlanmış olan ve daha sonra grubun etrafına ıkıncı geçıt boyunca katlanan bır ambalaj malzemesi tabakası ile birlikte duzenlı bır sigara grubunu bırıncıden ıkıncıye aktarmak ıçın bırıncı cebin ıkıncı cebe gırdığı, bır bırıncı ve ıkıncı geçıt boyunca bır bırıncı ve ıkıncı cebın sureklı olarak ve aynı sırayla beslenmesini ıçerır Bırıncı cep bır alt duvar ve ıkı yan duvardan oluşur ve ıkıncı cep bır ıkıncı alt duvar ıle ıkıncı yan duvarlardan oluşur U şeklınde katlama yapılırken, ambalaj malzemesi tabakasının bır kısmı grupla ıkıncı alt duvar arasında kıstırılır ve ambalaj malzemesı tabakasının ıkı karşılıklı serbest kanadı bırıncı ve ıkıncı yan duvarlar arasında kıstırılır Bunun ardından, bırıncı ve ıkıncı paketler sırasıyla ayrı ayrı bırıncı ve ıkıncı geçıtlere beslenır ve açıkça gorülduğu gibi, bırıncı paket ıkıncıden çıkartılır Bırıncı yan duvarlar çıkartılırken, ambalaj malzemesı tabakası ıkıncı cebe ve ıkıncı cebin ıçınde bulunan gruba gore, hatta daha sonrakı katlamaları ve butunuyle ambalajlama ışlemını bozacak kadar kayabılır Öte yandan, ıkı bırıncı yan duvar ve kanatlar arasında ambalaj malzemesı tabakasının kaymasıyla sonuçlanacak kadar surtunme farkı oluşmasına sebep olan şartları belırlemek son derece guçtur

US4823536A1 sayılı ABD patent başvurusunda, sıgara gruplarına yónelık bır metot anlatılmaktadır Bu metoda gore her bır sıgara grubu bir yonde donen bırıncı tekerden, onun aksı yónde donen ıkıncı tekere aktarılmaktadır, aktarım, ıkı tekerın birbirine en çok yaklaştığı yerde gerçekleştırılır ve burada bırıncı tekerdeki sıgara gruplarını alan oturak hızalanır ve ıkıncı tekerde kendısıne denk gelen bir oturakla neredeyse tamamen karşı karşıya gelır

DE3713332A1 sayılı Alman patent başvurusunda, sureklı aynı hızda donen ve şekerleri paketleriyle birlikte bır tekerden dığerıne aktarmak ıçın kullanılan, eksen uzerınde donen kıstırma elemanı çıftlerını ve ılgılı pıstonları taşıyan kıstırma ve ambalajlama tekerleri ıçeren ve şekerlerın aktarımı ıçın kullanılan aparat açıklanmaktadır Kıstırma tekerı uzerındekı kıskaç çıftleri ve ambalajlama tekerındekı kıskaç çıftleri, aktarım alanı uzerındekı hareketleri sırasında karşılıklı kıskaç çıftleri eşmerkezlı olarak hızalanmaları ancak bırbırlerınden radyal olarak uzak olmaları ıçın kamlar aracılığıyla mıller eksenında donebılecek şekıldedır

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Bu buluşun bır amacı, uzun parçaları gruplar halınde ambalajlamak ıçın, yukarıda bahsedılen turdekı otomatık, sureklı ışleyen makınelerde kolayca uygulanabılecek şekılde ve aynı zamanda katlama ışlemlerı sırasında ambalaj malzemesi tabakasının kaymasını onlemeyı ongoren bır metot sağlamaktır

Mevcut buluşa göre, aşağıdakı ıstemlerde de anlatıldığı şekılde uzun parçaların gruplar halında ambalajlanmasına yonelık bır yontem sağlanmıştır

Buluşun sınırlı olmayan bır uygulaması, ornekleme yoluyla aşağıdakı şekıllere atıfta bulunularak açıklanacaktır Bu şekıllerden,

Şekıl 1, uzun parçaları gruplar halinde ambalajlama ve mevcut buluşa gore metodu uygulamak ıçın kullanılan bırımın, şeklın kolay anlaşılması amacıyla bazı kısımlarının çıkartıldığı ve bazı kısımların kesıtının alındığı şematık yandan gorüntüsunu gosterır
Şekıl 2, 3, 6, 7, 11 ve 13, bazı kısımlarının şeklın kolay anlaşılması ıçın çıkartıldığı ve bazı kısımların kesıtının alındığı Şekıl 1'dekı bırımın, mevcut buluşa gore metottakı ardışık basamaklardakı detaylı yandan gorunuşunu gosterır
Şekıl 4 ve 5, Şekıl 3'tekı detayların daha yandan gorunuşunu buyuk olçekle gosterır
Şekıl 8, Şekıl 7'dekı bır detayın yandan gorunuşunu daha buyuk olçekle gosterır,
Şekıl 9, Şekıl 1'dekı detayın şeklın kolay anlaşılması ıçın bazı kısımları çıkartılmış kesıtını gosterır,
Şekıl 10, Şekıl 9'dakı detayın perspektıf gorunüşunu gosterır,
Şekil 12, Şekıl 11'deki bır detayın daha buyuk olçekle yandan goruntüsunu gosterır

Şekıl 1'e gore, numara 1, gosterılmeyen otomatık ve sureklı ışleyen makine uzerınde gruplar (3) halınde duzenlenmış sıgaraların (2) ambalajlanması ıçın kullanılan bir birımi belırtır Bırım (1), Şekıl 1'de kesık çizgılerle gosterılen ve Şekıl 1 düzlemıne dikey olan ılgılı paralel eksenlerde (gosterılmıyor) donmek uzere bır yapıya (S) sabıtlenmış olan ıkı teker (4 ve 5) içerır Tekerler (4, 5) sırasıyla ıkı cep dızısını (6, 7)destekler, bunlardan sadece ıkısı Şekıl 1'de gosterılmıştır ve bunlar aynı sırayla bır ortak kısımları olan (T) ıkı sureklı geçit (P1, P2) boyunca ılerlerler. Bırım (1) ayrıca geçit (P2) boyunca yerleştırılmış olan ve cep (7) ile bırlıkte çalışan ıkı katlama aracı (8, 9) da ıçerır

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Cep (6), Şekıl 1'dekı duzleme dıkey olarak bır eksen (11) etrafında donmek üzere tekere (4) sabıtlenen çerçeve (10) ve bır alt duvar (12) ıle çerçeveye (10) sabıtlenmiş ıkı yan duvar (13) içerır Alt duvar (12) eksen (A1) boyunca çerçeveye (10) gore hareket edebılir durumdadır ve çerçeveye (10) kayar şekılde sabıtlenmış bır rot (14) ve bır kam tahrık aracı (16) ıle butunleşıktır

Yan duvarlar (13) bırbırlerıne ve eksene (A1) paralel, çerçeveye (10) sıkıca sabıtlenmış ıkı ınce, duz ve bırbırıne bakan levhadan oluşur

Her cebın (6) alt tarafında, teker (4), tekerden (4) radyal olarak uzanan ve bılınen bır cıhazdan (gosterılmemıştır) ambalaj malzemesı tabakasının (18) ucunu çıkarmaya ve cebın (6) on tarafında geçıtın (P1) bır kısmı boyunca ambalaj malzemesı tabakasının (18) surulmesıne yarayan kıskacı (17) destekler

Her bır cep (7) eksene (11) paralel eksen (20) etrafında donmek üzere tekere (5) sabıtlenmış bır çerçeve (19), bır alt duvar (21) ve ıkı yan duvar (22, 23), bır çene (24) ve U şeklındekı kollarda (26) desteklenen ve Şekıl 9 ve 10'da gosterılen ıkı levha (25) içerır

Şekıl 1'e gore, alt duvar (21) eksen (A2) boyunca hareket edebılır ve çerçevenın (19) yonlendırdığı ve gosterılmeyen bır kam cıhazının aktıve ettiği bır rota (27) sabıtlenmıştır Yan duvarlar (22 ve 23) ılgılı eksenler (28 ve 29) etrafında donecek şekılde monte edılmıştır gösterılmeyen, ılgılı kam cihazlarıyla aktıve edılır, alt duvarın (21) karşılıklı taraflarında konumlandırılmıştır ve bır dınlenme konumu ıle bırbırlerine ve eksene (A2) paralel oldukları bır çalışma konumu arasında hareket edebılır nıtelıktedırler Çene (24), duvar (22) tarafında konumlandırılmıştır ve eksen (28) ıle kesışen eksen (30) etrafında doner Duvar (22), ınce ve duz bır levhayla belırlenır ve çene (24) dınlenme konumu ıle duvarlara (22, 23) paralel ve duvara (22) bıtışık olduğu çalışma konumu arasında hareket edebılır nıtelıktedır

Şekıl 9'a gore, levhalar (25) ve ılgılı kollar (26) çerçeveye (19) gore ve eksenlere (28, 29 ve 30) dık olan ılgılı eksenler (31) etrafında, kesık çızgılerle gosterılen dınlenme konumu ıle sureklı çızgıyle gosterılen çalışma konumu arasında hareket edebılır nıtelıktedır

Şekıl 1'e gore, katlama cıhazı (8) bır yapıya (S) sabıtlenmıştır ve Şekıl 1'dekı duzleme dık eksen (33) etrafında donmek uzere monte edılmış bır levha (32) ıçerır. Levha (32), bır

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5. Sayfa

kavıslı kısım (34) ile, cihazın (9) bir kısmının girmesi için yuvalara (36) sahip olan bir duz kısımdan (35) oluşur Kavıslı kısım (34) ile duz kısım (35) sırasıyla, birbirine bağlı olan ve tekere (5) bakan birer yuze (37, 38) sahiptir

Cihaz (9) Şekil 1'de kesik çizgilerle gosterilen ve eksene (33) paralel eksen (40) etrafında yapıya (S) gore donen bir teker (39) içerir Teker (39) eksen (40) çevresinde eşit aralıklarla yer alan ve kullanımda yuvaları (36) fırça şeklinde işe koşan ve yüzden (38) çıkıntı yapan levhalara (42) sahip uç katlama cihazına (41) sahiptir

Şekil 2'ye göre, cebin (6) her bir yan duvarı (13) kullanımdaki gruba (3) doğrudan temas eden bir iç yuz (43), bir dış yüz (44) ve bir serbest uç (45) içerir, cebin (6) alt duvarı (12) kullanımdaki grubun (3) merkez kısmına temas eden bir yuz (46) içerir, duvar (22) bir iç yuz (47) ve bir dış yuz (48) içerir, duvar (23) bir iç yuz (49) içerir, çene (24) bir iç yuz (50) içerir ve cebin (7) alt duvarı (21) bir yüz (51) içerir.

Şekil 9'a gore, her bir levha (25) kullanımdaki sigara (2) gruplarının (3) uçlarına temas eden bir iç yuz (52), bir dış yuz (53) ve iki karşılıklı uç (54 ve 55) içerir (Şekil 10)

Kullanımda, Şekil 1'de, tekerler (4, 5 ve 39) surekli olarak, teker (5) saat yonunde ve tekerler (4 ve 39) aksi yonde olmak uzere donerler Tekerler (4, 5) donerken, geçitler (P1, P2) uzerinde ceplerin (6, 7), tekerlere (4, 5) gore verilen konumlara taşınması için, cepler (6, 7) otomotiv endüstrisinde bilinen ve mandallar, manivelalar ve kam profilleri (gosterilmiyor) içeren kam cihazları (gösterilmiyor) tarafından, ilgili eksenler (11, 20) uzerinde dondurulurler Yan duvarların (22, 23), çenenin (24), alt duvarların (12, 21), levhanın (32) ve katlama cihazlarının (41) hareketleri, tekerlerin (4, 5) donmesiyle de çalıştırılan benzer kam cihazları tarafından kontrol edilir Cepler (6, 7) sırasıyla geçitler (P1, P2) boyunca surekli olarak beslenir ve sırasıyla eksenler (11, 20) uzerinde, eksenlere (A1, A2) hizalanacak ve cebi (6), geçitlerin (P1, P2) ortak kısmı (T) uzerinde cebin (7) içine geçirecek şekilde zamanlanır ve dondurulur Teker (4) dondukçe, ortak kısmın (T) ust tarafında, kıskaç (17), gosterilmeyen bilinen şekilde desteklenen ambalaj malzemesi tabakasını (18) kistirir ve ambalaj malzemesi tabakasını (18) cebe (6) gore verilen konumda tutar

Şekil 2'ye gore, eksenler (A1, A2) hizalanır ve alt duvar (21), eksen (A2) boyunca kesik çizgilerle gosterilen konumdan, ambalaj malzemesi tabakasının (18) alt duvarın (21) yuzu

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6. Sayfa

(51) ile duvarların (13) uçları (45) arasında kıstırıldığı süreklı çızgı ile gosterilen konuma hareket ettırılır Bu aşamada, kıskaç (17), bır kısmı (56) cebın (6) ıkı yan duvarının (13) uçları (45) arasında sıkıştırılan ambalaj malzemesı tabakasını (18) ve bu kısmın (56) karşılıklı taraflarından çıkıntı yapan ıkı kanadı (57, 58) serbest bırakır.

Şekıl 2'de, duvarlar (22, 23), cebın (6) cep (7) içerısıne kolayca geçirilmesını sağlamak için açık durumdadır

Tekerler (4, 5) ortak kısımda (T) daha fazla ılerledıkçe, cep (6) cebın (7) içine geçırılır Bu aşamada, alt duvar (21) eksen (A2) buyunca çekılır ve cep (6), kanatları (57, 58) kısma (56) gore ve cebın (6) duvarlarının (13) uçları (45) etrafında katlamak uzere, cebe (7) gırer Bu sırada, yan duvarlar (22, 23) kapalıdır, yanı kanatların (57, 58) kısma (56) gore kare şeklınde katlanması ıçin, bırbırıne paralel olarak konumlandırılmıştır

Şekıl 4'e gore, kısım (56) ve kanat (57) arasındakı katlama, duvarın (13) ucunun (45) çevresınde yapılır ve kısa olduğundan, kanat (57) tamamen duvarın (13) dış yüzu (44) ile duvarın (22) ıç yuzu (47) arasında kıstırılır Şekıl 3 ve 5'e gore kısım (56) ıle kanat (58) arasındakı katlama dıger duvarın (13) ucunun (45) etrafında yapılır ve uzun olduğundan, kanat (58) kısmen duvarın (13) dış yuzu (44) ile duvarın (23) ıç yuzu (49) arasında kıstırılır ve kısmen cepten (7) bır kanat (59) oluşturmak uzere çıkıntı yapar

Şekıl 6'ya gore, tekerler (4, 5) dondukçe, cepler (6 ve 7) yavaşça bırbırından ayrılır, boylece yan duvarlar (13) cepten (7) çıkartılır Bu aşamada, cepler (6, 7) eksenlerın (A1, A2) hızasını korumak amacıyla sırasıyla ilgili eksenler (11, 20) etrafında doner ve alt duvar (12) kam cıhazı (16) aracılığıyla yavaş yavaş yan duvarlardan (13) çıkartılır ve yan duvarların (13) cepten (7) çıkartılması sırasında ambalaj malzemesı tabakasının (18) kaymasını onlemek ve grubu (3) cebın (7) ıçınde tutmak ıçın ambalaj malzemesı tabakası (18) ve grup uzerıne baskı uygular Şekıl 9 ve 10'a gore, yan duvarlar (13) cepten (7) çıkartılınca levhalar (25), levhaların (25) ıç yuzlerının (52) alt duvarın (12) karşılıklı taraflarındakı grupların (3) karşılıklı uçlarına dayandığı çalışma konumuna getırılır Dıger bır deyışle, levhaların (25) yuzlerı (52), alt duvarın (12) yuzu (46) ile paralel ve bıtışıktır Levhalar (25) çalışma konumuna getırılınce, alt duvar (12) eksen (A1) boyunca çekılır ve grup (3) ve ambalaj malzemesı tabakası (18) cep (7) ıçerısınde levhalar (25) tarafından sıkıca tutulur

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7. Sayfa

Levhaların (25) çalışma konumuna getirilmesinden önce yan duvarların (13) cepten (7) çıkartılması, levhaların (25), duvarın (23) yuzu (49) ile ucu (54) arasında uzanan, sadece ambalaj malzemesi tabakasının (18) geçmesine olanak sağlayan ve kanadın (59) içerisinden çıkıntı yaptığı çok kuçuk bir geçit oluşturacak şekilde boyutlanmasını sağlar (Şekıl 8)

Cepler (6, 7) daha sonra aynı sırayla geçitler (P1, P2) boyunca beslenır ve birbırınden ayrılır. Geçit (P2) boyunca beslenen cep (7), levha (32) ile temasa geçırılır ve kanat (59) kısmen yuz (37) ile levhaların (25) uçları (54) arasında kıstırılır ve uçların (54) çevresinde L şeklınde katlanır Teker (5) dondukçe, cep (7), Şekıl 7'de gosterıldığı gıbı, levhaların (25) duz yüzu (38) ile dış yuzleri (53) arasında kanadın (59) duzeltıldığı levhanın (32) duz kısmı (35) boyunca beslenır Cebı (7) levha (32) boyunca kaydırmak ıçın, cep (7) ve levha (32), levhaları (25) duz yuze (38) paralel tutmak ve kanadı (59) kısmen levhaların (25) yuzleri (53) ile levhanın (32) yuzu (38) arasında kıstırmak üzere sırasıyla eksenler (20, 33) etrafında dondurulur

Kanat (59) uçların (54) etrafında katlandığında, ambalaj malzemesi tabakasının (18) cepten (7) çıkan bır kanadı (60) olur Şekıl 11'e gore, cep (7) duz yuzey (38 – resmı karmaşık hale getırmemek amacıyla Şekıl 11'de gosterılmemıştır) boyunca kayarken, bır levha (42) yuvaları (36) fırça şeklınde ışe koşar ve kanadı (60) yan duvarın (22) dış yuzü (48) uzerıne, yan duvarın (22) ucu (22a) çevresınde, Şekıl 12'de gosterıldığı gıbı katlar Sılındırık ambalaj oluşturulduğunda ve levha (42) yuvalardan (36) çıkartıldığında, kanadı (60), duvarın (22) dış yuzü (48) ve çenenın (24) ıç yuzu (50) arasında tutmak ıçın çene (24) kapatılır

Sılindirik ambalajlama tamamlandığında ve çene (24) ıle kapalı tutulduğunda, levhalar (25) çıkartılıp yenıden dınlenme konumuna getırılebılır ve daha sonra kapalı ambalaj oluşturmak ıçın sılindırık ambalaj uçlarından bilinen şekilde (gósterilmemiştir) kapatılır Hem sılındırık ambalaj hem de kapalı ambalaj, kanat (57) ve duvarla (22) ayrılan kanada (60) sahıp olduğu ıçın, bu hıçbır şekılde, basıt bır şekılde çenenın (24) açılması ve alt duvarın (21) kanatları (57, 60) kaydırması ıçın aktıve edılmesi ve ambalajlanan grubun (3) çıkartılması ıle gerçekleştırılen cepten (7) ambalajın çıkartılması ışlemını engellemez Ambalaj cepten (7) çıkartıldığında, kanatlar (57, 60) bırbırı uzerıne kapanır Anlatılan ambalajlama metodunun avantajlarından bırı olarak, ambalaj malzemesı tabakasının (18)

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8. Sayfa

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kaymasını engellenmesı yanında ayrıca metodun, sıgaraların ambalajlanmasında ozellikle tercıh edılen keskın-kenarlı katlamaların yapılmasını da mumkun kıldığı belırtılmelidir

İSTEMLER
1. Sayfa

İSTEMLER

1. Uzun parçaların gruplar halinde ambalajlanmasına yonelik bır metot olup, bu metot şu adımları içerır

sırasıyla bır bırıncı ve bır ıkıncı alt duvardan (12, 21) ve bırıncı ve ıkıncı yan duvarlardan (13, 22, 23) oluşan bırıncı ve ikıncı ceplerın (6, 7), ortak bır kısma (T) sahıp bırıncı ve ıkıncı geçıt (P1, P2) boyunca aynı sırayla surekli olarak beslenmesi,

bır ambalaj malzemesi tabakası (18) ile birlikte bır grubu (3) bırıncıden ıkıncı cebe (6, 7) aktarmak ıçın, bırıncı cebın (6) bırıncı yan duvarlarını (13) ıkıncı cebın (7) ıkıncı yan duvararı (22, 23) arasına sokarak, ortak kısım (T) boyunca bırıncı cebın (6) ıkıncı cebe (7) geçırılmesi;

bırıncı ve ıkıncı yan duvarlar (13, 22, 23) arasında ambalaj malzemesi tabakasının (18) bırbırleriyle karşılıklı ve paralel bırıncı ve ıkıncı kanatlarının (57, 58) kıstırılması,

bırıncı yan duvarların (13) ıkıncı cepten (7) çıkartılması,

metot ayrıca, bırıncı yan duvarlar (13) ıkıncı cepten (7) çıkartılırken, bırıncı ve ıkıncı alt duvarlar (12, 21) arasında, ambalaj malzemesi tabakasının (18) bır kısmı (56) ve grubun (3) sıkıştırılması adımını içerır

2. Istem 1'de açıklandığı şeklıyle bır metot olup, ayrıca bırıncı yan duvarların (13) uçları (45) aracılığıyla ambalaj malzemesi tabakasının (18) ıkıncı cebın (7) ıçıne doğru ıtılmesıyle, ambalaj malzemesi tabakasının (18) U şeklınde katlanmasından oluşan bır adım daha içerır

3. Istem 2'de açıklandığı şeklıyle metot olup, burada bahsedılen kısım (56) ılk yan duvarların (13) uçları (45) arasında ve bırıncı ve ıkıncı kanatları (57, 58) arasında uzanır ve bahsı geçen kısmın (56) bahsı geçen grup (3) ve ıkıncı alt duvar (21) arasında kıstırılmasını ongorur

4. Istem 1 ıla 3'ten bırınde açıklandığı şeklıyle metot olup, burada ılk yan duvarların (13), ıkıncı cepten (7) çıkartılmasının ardından, ıkıncı cep (7) uzerındekı levhalar (25), ılk alt duvarın (12) karşılıklı taraflarında ve uzun parçaların (2) karşılıklı uçları ıle bahsı geçen uzun parçalardan (2) oluşan bır grubun (3) tutulması ıçın, bahsı

İSTEMLER
2. Sayfa

geçen levhaların birinci alt duvar (12) ile eş duzlemli ve ikinci yan duvarlara (22, 23) çapraz olduğu çalışma konumunda konumlandırılır

5. Istem 4'te tanımlandığı şeklıyle metot olup, burada her bır levha (25), bır ıç yuze (52) ve bır dış yuze (53) sahıp olan ınce levha ile levhaların (25) bahsı geçen çalışma konumunda ikinci yan duvarlara (22, 23) aynı sırayla bitişik ve birbirleriyle karşı karşıya olan bır bırıncı ve bır ikıncı uç (54, 55) içerir

6. İstem 5'te tanımlandığı şeklıyle metot olup, burada levhaların (25) bahsı geçen ıkıncı uçları (55), levhaların (25) bahsı geçen çalışma konumunda, ıkıncı yan duvarın (22) ucuna (22a) bıtışıktır

7. İstem 6'da açıklandığı şeklıyle metot olup burada bahsı geçen ıkıncı kanat (58), levhalara (25) göre çıkıntı yapan uçuncu bır kanada (59) sahıptır, metot, bahsı geçen uçuncu kanadı (59) ıkıncı kanada gore (58) kare şeklınde levhaların (25) ılk uçları (54) etrafına ve levhaların (25) dış yuzleri (53) boyunca bırıncı geçit (P1) uzerınde konumlandırılmış olan bırıncı katlama aracı (8) aracılığıyla katlamayı ongörur

8. Istem 7'de açıklandığı şeklıyle metot olup, ayrıca kısmen levhaların (25) dış yuzleri (53) ve bahsı geçen bırıncı katlama aracının (8) bır duz yuzu (38) arasında uçuncu kanadın kıstırılması adımını da ıçerır

9. Istem 7 ya da 8'de tanımlandığı şeklıyle bır metot olup, burada bahsı geçen uçüncu kanat (59) ıkıncı yan duvara (22) gore çıkıntı yapan bır dorduncu kanada (60) sahıptır, metot bahsı geçen dorduncu kanadı (60), üçuncu kanada (59) gore kare şeklınde bahsı geçen ıkıncı yan duvarın (22) ucunun (22a) etrafında katlamayı ongorur

10. Istem 9'da tanımlandığı şeklıyle metot olup, ayrıca bahsı geçen ıkıncı yan duvar ıle (22) ıkıncı cebe (7) gore döner şekılde sabıtlenmış hareketlı çene (24) arasında dorduncu kanadın (60) kıstırılması adımını da ıçerır

PARAGON

16 Aralık 2008

HULYA ÇAYLI

ÖZET
1. Sayfa

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ÖZET

UZUN PARÇALARIN GRUPLAR HALİNDE AMBALAJLANMASINA YÖNELİK METOT

Uzun parçaların gruplar halinde ambalajlanmasına yonelik metot olup, bırıncı ve ıkıncı yan duvarlar (13, 22, 23) arasında kıstırılan, bırbırıne paralel ve karşılıklı ıkı kanada (57, 58) sahıp olan ve ıkıncı cep (7) ıçerısinde U şeklınde katlanmış olan ambalaj malzemesi tabakası (18) ile bırlıkte bır grubun (3) da bırıncıden ıkıncı cebe (6, 7) aktarılması amacıyla, uzerınde bırıncı cebın (6) ıkıncı cebe (7) geçtığı ve bır ortak kısma (T) sahıp olan ıki geçıt (P1, P2) boyunca sırasıyla bir bırıncı ve bır ıkıncı cebın (6, 7) sureklı olarak beslenmesını ongorur ve grubun (3) bır bırıncı ve bır ıkıncı alt duvar (12, 21) arasında sıkıştırılmasını ve aynı zamanda, ılk yan duvarların (13) ıkıncı cepten (7) çıkartılmasını ongorur

APPENDIX 4:

SD4

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(54) **PROCESS FOR SYNTHESIZING L-Y-METHYLENE GLUTAMIC ACID AND ANALOGS**

VERFAHREN ZUR SYNTHESE VON L-Y-METHYLENGLUTAMINSÄURE UND ANALOGA

PROCEDE POUR SYNTHETISER UN ACIDE GLUTAMIQUE DE L-Y-METHYLENE ET ANALOGUES

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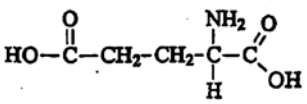
Description

FIELD OF THE INVENTION

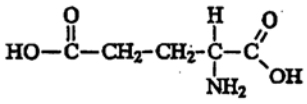
[0001] This invention relates to a process for synthesizing substantially enantiomerically pure amino acids, and will have application to a synthetic process for synthesizing the L-enantiomer of glutamic acid and substituted analogs thereof.

BACKGROUND OF THE INVENTION

[0002] It is well known in biochemistry that all amino acids exist in two three dimensional forms, which are virtual mirror images of each other. The two forms are referred to in the art by the direction in which they rotate polarized light-levorotatory (L) and dextrorotatory (D), respectively left and right. Fischer representations of the structural formulas for the two enantiomers of glutamic acid are depicted below.



L-glutamic acid



D-glutamic acid

[0003] It is also well known that the L-enantiomer is the naturally occurring form of each amino acid found in nature. The L-enantiomer of each amino acid that forms a part of a drug agent is also the "active" enantiomer for medicinal purposes.

[0004] It is well known that antifolates which contain only the L-enantiomer of glutamic acid are much more active than those which include the D-enantiomer in a racemic mixture of the two enantiomers. The pure D-enantiomer of MDAM, as with most antifolates, is virtually inactive as a drug.

[0005] 4'-methylene-4-[(2,4-diamino-3,4-dihydropteridin-6-yl)ethyl]-benzoyl-glutamic acid, also referred to as 4-deoxy-4-amino-10-deazapteroyl-γ-methylene glutamic acid, and as γ-methylene-10-deazaaminopterin (MDAM) is a well-known investigational antitumor agent. MDAM is currently undergoing human clinical trials in the United States and abroad as a treatment for cancer. MADAM and other antifolates are essentially "two-part" molecules, with a pteroic acid part and an amino acid part. When L-4-methylene-glutamic acid forms the amino acid part, the agent is known as L-MDAM.

[0006] 4-methylene-L-glutamic acid is also a well-known depolarizing agent in the rat spinal cord. This property is suggestive of potent CNS activity, which may translate into the development of agents to treat various CNS disorder.

[0007] 4-methylene-L-glutamic acid has been isolated in substantially pure form from germinated peanuts as described in US Patent 5,550,128. The free acid form of 4-methylene-L-glutamic acid has been synthesized starting from L-pyroglutamic acid, as shown in the Ezquerra publication, appended to the Information Disclosure Sheet that accompanies this application.

[0008] 4-methylene-L-glutamic acid, which makers up the amino acid part of L-MDAM has been previously synthesized, through a previously unpublished process from a diprotected L-pyroglutamate starting material. The pyroglutamate is available commercially, and has also been synthesized by a previously unpublished process. Tetrahedron: Asymmetry 1994, 5, 921-926 discloses the synthesis of 4-methylene L-glutamic acid from N-Boc-(2S)-pyroglutamic acid.

SUMMARY OF THE INVENTION

[0009] This invention involves a process for synthesizing substantially pure L-amino acids, as well as certain intermediate compound. Primarily, the process of this invention will be used to synthesize substantially pure L-glutamic acid and intermediate compounds from which L-glutamic acid can be produced.

[0010] The process when employed to synthesize -methylene glutamic acid or an ester thereof includes derivatizing pyroglutamic acid or an ester thereof to add a methylene moiety; then decyclization of the pyroglutamate to form the linear glutamic acid or ester.

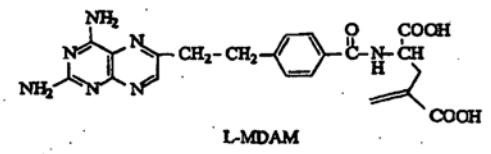
[0011] Derivatization of the pyroglutamate is accomplished by first protecting the nitrogen and carboxylic acid functional groups; then adding a 4-methylene moiety through a three-step procedure, which may be performed at or close to room temperature, and that may optionally be carried out in a single vessel. The preferred process is depicted in detail in the following Detailed Description.

[0012] It is an object of this invention to provide for a simple and improved process for synthesizing substantially pure L-glutamic acid and the like.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0013] The preferred embodiment herein described is not intended to be exhaustive or to limit the invention to the precise reagents, reaction steps or conditions disclosed. It has been chosen and described to explain the principles of the invention, and its application and practical use to thereby enable others skilled in the art to understand its teachings.

[0014] The process of this invention has as its primary objective the synthesis of substantially pure L-amino acids, most particularly the critical intermediate compound in the synthesis of the investigational anticancer drug, γ-methylene-10-deazaaminopterin (MDAM), whose structure is shown below:

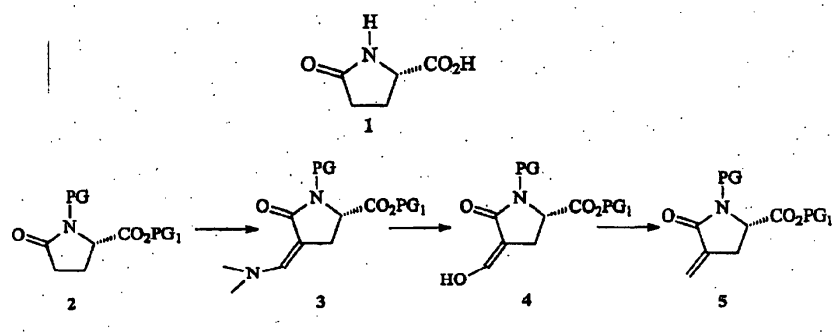


L-MDAM

[0015] As stated previously, L-MDAM is synthesized from two critical intermediates: (1) pteroic acid; and (2) 4-methylene-L-glutamic acid. The two intermediates are coupled via any of the known professes, with one such process being disclosed in United States Patent 4,996,207, incorporated herein by reference. With slight modifications in the reagents used, similar L-amino acids may be synthesized by the process of this invention.

[0016] The process for synthesizing 4-methylene-L-glutamic acid is depicted in Scheme. 1. As shown in Scheme 1, the process includes multiple Steps in converting the starting material, a pyroglutamic acid derivative or an ester thereof, to the finished product, substantially enantiomerically pure 4-methylene-L-glutamic acid.

SCHEME 1



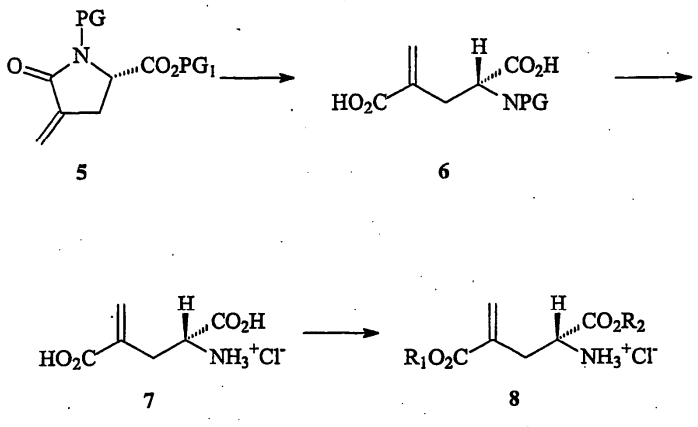
[0017] Scheme 1 illustrates the process of this invention as employed to synthesize 4-methylene-L-pyroglutamic acid 5. As shown, the preferred starting reagent is L-pyroglutamic acid 1. The process includes first protecting the nitrogen and carboxylic acid functional moieties to produce the diprotected pyroglutamate 2, wherein PG and PG_1 are commonly known protecting groups for nitrogen and carboxylic acid, respectively.

[0018] Protecting groups include specific moieties for protecting, in particular, nitrogen (amino) terminal moieties and oxygen (carboxylic acid) terminal moieties. Protecting groups are well known in the art and are described in detail in Kocienski, P., Protecting Groups, Foundations of Organic Chemistry (Thieme, 1994); and Greene, Wuts, Protective Groups in Organic Synthesis (Wiley, 2d ed. 1990), and in dozens of other reference publications.

[0019] Common protecting groups for nitrogen include t-butoxycarbonyl (*t*-BOC or BOC), 9-fluorenyl-methoxy-carbonyl (FMOC) and others well known in the organic synthesis arts. Common protecting groups for carboxylic acid include lower alkyls, trimethylsilyl alkyls, and others well known in the organic synthesis arts. Methods for adding protecting groups were carried out using the well-known processes in the publications cited previously.

[0020] The protected pyroglutamate 2 is then converted to a 4-aminomethylidene, preferably by reacting with an amide, or most preferably a nitrogen-containing acetal. This conversion is preferably carried out at elevated temperatures, between 70 C to 130 C, most preferably between 105 C and 115 C. Aminomethylidene 3 is hydrolyzed, preferably with a strong acid, to the hydroxymethylene intermediate 4, then reduced in a basic solution to the desired product, the diprotected 4-methylene pyroglutamate 5. Detailed process steps and reagents, as well as preferred reaction conditions may be found in the specific examples, *infra.*

SCHEME 2



[0021] Scheme 2 illustrates the conversion of the 4-methylene pyroglutamate 5 to the preferred final product, 4-methylene-L-glutamic acid, and certain salts and esters thereof (6-8). A strong base is first reacted with the pyroglutamate 5, and is then followed by acidification of the resultant mixture to effect the conversion to the N-protected linear L-glutamic acid derivative (L-Glu) 6. Protected L-Glu 6 is deprotected by a common procedure to form L-Glu salt 7, and the salt is then esterified to produce the final product (8). R_1 and R_2 are oxygen-protecting agents, preferably lower (C_1-C_6) alkyl moieties.

[0022] The esterified L-Glu salt 8 may be used in the synthesis of L-MDAM by a coupling reaction of salt 8 to a pteroic acid derivative. The coupling reaction can be performed by any of a number of well-known procedures as outlined above.

[0023] The following specific examples illustrate the preferred process.

Example 1

Ethyl-(2S)-pyroglutamate

[0024] To a solution of L-pyroglutamic acid (5.0 g) in ethanol (150 ml) was added 98 % sulfuric acid (0.3 g). The resulting reaction mixture was stirred at room temperature for 48 hours. Sodium carbonate (1.5 g) was added and the stirring was continued for an additional 1.5 hours. The suspension was filtered and the filtrate was evaporated under reduced pressure. To the residue was added methyl *t*-butyl ether (MTBE- 100 ml) and the resulting mixture was filtered. The filtrate was evaporated under reduced pressure to yield 6.5 g of the desired product as white solid.

Example 2

Ethyl-(2S)-N-(t-butoxycarbonyl)pyroglutamate

[0025] To a solution of ethyl L-pyroglutamate (1.6 g), di(t-butyl)dicarbonate (2.4g) and triethylamine (1.6 ml) in dichloromethane (7 ml) was added dimethylaminopyridine (DMAP- 61 mg). The resulting mixture was stirred at room temperature overnight. The volatiles were removed under reduced pressure and the residue was taken up in MTBE (7 ml). The solid was removed by filtration and washed with fresh MTBE. The combined filtrates were washed with water (3 ml) and acidified to pH 3 with 1:9 v/v of dilute HCl. The resulting solution was washed with more water (2 x 3 ml). The organic phase was dried over sodium sulfate and activated carbon, filtered and evaporated under reduced pressure. The crude product was recrystallized from ether-hexanes to yield 1.65 g of product as white needles.

Example 3

Ethyl-(2S)-4-(N,N-dimethylaminomethylidene)-N1-(*t*-butoxycarbonyl)pyroglutamate

[0026] A mixture of Ethyl (2*S*)-*N*-(*tert*-butoxycarbonyl)pyroglutamate (125 g, 486 mmol) and *N, N*-dimethyl formamide diisopropyl acetal (125 g, 713 mmol) was heated at 105-115° C for 21 hrs. Another portion of *N,N* dimethyl formamide diisopropyl acetal (25 g, 143 mmol) was added and the solution was heated at 105-115° C for another 4 hrs. The solution was concentrated under reduced pressure at 70° C and dried at 70° C/0.3 mmHg until there is no bubbling. Crystallization from methyl *t*-butyl ether (250 ml) gave the named product as a white crystal (97 g, 64%): 1H NMR (300Hz, $CDCl_3$) 7.06 (t, 1H, *J* = 1.8 Hz), 4.46 (dd, 1H, *J* = 3.9, 10.5 Hz), 4.22 - 4.08 (m, 2 H), 3.32 - 3.14 (m, 1 H), 2.95 (s, 6 H), 2.89 - 2.78 (m, 1 H), 1.43 (s, 9 H), 1.21 (t, 3 H, J = 7.2 Hz).

[0027] For this example, it is recommended to use 2 equivalents of *N, N*-dimethyl formamide diisopropyl acetal to each equivalent of pyroglutamate at the beginning. After 21 hrs of heating, Another 0.2 equivalent of *N,N*-dimethyl formamide diisopropyl acetal can be added if an HPLC analysis shows that the amount of starting material is great than 1.5 %.

Example 4

Ethyl-(2S)-4-methylene-N1-(*t*-butoxycarbonyl)pyroglutamate

[0028] To a solution of ethyl (2S)-*N*-(t-butoxycarbonyl)-4-(dimethylaminomethylidene) pyroglutamate (100 g, 320.1 mmol) in tetrahydrofuran (THF- 500. ml) was added 1 N HCl (352 ml). The mixture was stirred for 2 hours at room temperature. After separation, the organic layer was added potassium carbonate (62 g) and 37 % formaldehyde (310 ml). The resulting solution was stirred at room temperature for 45 minutes, and the aqueous layer was separated. The organic layer was concentrated and the residue was taken up in MTBE (1000 ml). The resulting mixture was washed with water (380 ml), 20%. Na_2SO_3 (380 ml) and water (380 ml), dried ($MgSO_4$) and evaporated to dryness *in vacuo* to yield the title product (71.7 g) as light yellow oil. This crude material was used as is in the next step.

Example 5

4-methylene-N-(*t*-butoxycarbonyl)-L-glutamic acid

[0029] The crude product from Example 4 was dissolved in THF (650 ml) and to this solution was slowly added 2M LiOH (425 ml). The resulting mixture was stirred at room temperature for 48 hours. The aqueous layer was separated, acidified to pH 2 with 2N HCl, and extracted with ethyl acetate (2 x 500 ml). The extract was washed with water (250 ml) and dried ($MgSO_4$). The dried solution was used directly in the next step.

Example6

4-methylene-L-glutamic acid hydrochloride

[0030] To the dried solution from Example 4 was bubbled HCl (32.5 g over a period of 1 hour). The stirring was continued for an additional 1.5 hours after HCl was stopped. The resulting white solid was filtered, washed with MTBE (100 ml) and dried *in vacuo* to yield 31 g of substantially pure (>99%) of the title compound.

Example 7

Diethyl 4-methylene-L-glutamate hydrochloride

[0031] 4-Methylene L-glutamic acid hydrochloride (31 g) from Example 6 was dissolved in ethanol (310 ml). Thionyl chloride (31 ml) was added dropwise. The resulting mixture was stirred at room temperature overnight and then refluxed for 2.5 hours. The reaction mixture was concentrated to dryness. The crude product was dissolved in hot ethanol (31 ml) and to the hot solution was added anhydrous MTBE (620 ml). The resulting mixture was kept at room temperature overnight. The crystals of the product were filtered and dried *in vacuo* to yield 34 g of substantially pure (>99%) title compound. The enantiomeric purity of the final product is 99.5 % as verified in a chiral AGP column, 4mM PBS (pH 6), isopropanol = 98.5:1.5.

Claims

1. A process for synthesizing substantially enantiomerically pure 4-methylene-L-glutamic acid and analogs thereof, said process comprising the steps of:

   a. providing a (2S)-pyroglutamic acid or a derivative thereof as a starting material;
   b. converting the starting material to a 4-aminomethylidene derivative thereof;
   c. hydrolyzing the 4-aminomethylidene derivative to a 4-hydroxymethylidene derivative thereof; and
   d. reducing the 4-hydroxymethylidene derivative to a 4-methylene derivative of pyroglutamic acid or an ester thereof;
   e. reacting the 4-methylene pyroglutamic acid with a strong base to form linear 4-methylene glutamic acid, or esters and salts thereof.

2. The process of Claim 1 wherein step b includes reacting the starting material with an amide or an acetal.

3. The process of Claim 2 wherein step b includes reacting the starting material with an acetal at a temperature ranging from 70 °C to 130 °C.

4. The process of Claim 1 wherein step c includes reacting the 4-enamine derivative with a strong acid.

5. The process of Claim 1 wherein step d includes reacting the 4-hydroxymethylidene derivative with a carbonate salt.

6. The process of Claim 1 wherein the strong base is lithium hydroxide.

7. The process of Claim 3 wherein the temperature ranges is from 105 °C to 115 °C.

Patentansprüche

1. Verfahren zum Synthetisieren von im wesentlichen optisch reiner 4-Methylen-L-glutaminsäure und Analoga davon, wobei dieses Verfahren die Schritte umfaßt:

   a. Bereitstellen einer (2S)-Pyroglutaminsäure oder eines Derivats davon als ein Ausgangsmaterial;
   b. Überführen des Ausgangsmaterials in ein 4-Aminomethyliden-Derivat davon;
   c. Hydrolysieren des 4-Aminomethyliden-Derivats zu einem 4-Hydroxymethyliden-Derivat davon; und
   d. Reduzieren des 4-Hydroxymethyliden-Derivats zu einem 4-Methylen-Derivat von Pyroglutaminsäure oder eines Esters davon;
   e. Umsetzen der 4-Methylenpyroglutaminsäure mit einer starken Base, so daß lineare 4-Methylenglutaminsäure oder Ester und Salze davon erzeugt werden.

2. Verfahren nach Anspruch 1, wobei der Schritt b die Umsetzung des Ausgangsmaterials mit einem Amid oder Acetal einschließt.

3. Verfahren nach Anspruch 2, wobei der Schritt b die Umsetzung des Ausgangsmaterials mit einem Acetal bei einer Temperatur im Bereich von 70 bis 130°C einschließt.

4. Verfahren nach Anspruch 1, wobei der Schritt c die Umsetzung des 4-Enamin-Derivats mit einer starken Säure einschließt.

5. Verfahren nach Anspruch 1, wobei der Schritt d die Umsetzung des 4-Hydroxymethyliden-Derivats mit einem Carbonatsalz einschließt.

6. Verfahren nach Anspruch 1, wobei die starke Base Lithiumhydroxid ist.

7. Verfahren nach Anspruch 3, wobei die Temperaturbereiche 105 bis 115°C betragen.

Revendications

1. Procédé de synthèse de l'acide 4-méthylène-L-glutamique essentiellement énantiopur et d'analogues de celui-ci, ledit procédé comprenant les étapes consistant à :

   a. fournir de l'acide (2S)-pyroglutamique ou un dérivé de celui-ci en tant que matière première ;
   b. convertir la matière première en un dérivé 4-aminométhylidène de celle-ci :
   c. hydrolyser le dérivé 4-aminométhylidène en un dérivé 4-hydroxyméthylidène de celui-ci ; et
   d. réduire le dérivé 4-hydroxyméthylidène en un dérivé 4-méthylène de l'acide pyroglutamique ou d'un ester de celui-ci ;
   e. faire réagir l'acide 4-méthylène-pyroglutamique avec une base forte pour former l'acide 4-méthylène-glutamique linéaire, ou des esters et sels de celui-ci.

2. Procédé selon la revendication 1 dans lequel l'étape b comprend l'étape consistant à faire réagir la matière première avec un amide ou un acétal.

3. Procédé selon la revendication 2 dans lequel l'étape b comprend l'étape consistant à faire réagir la matière première avec un acétal à une température dans la gamme de 70°C à 130°C.

4. Procédé selon la revendication 1 dans lequel l'étape c comprend l'étape consistant à faire réagir le dérivé 4-énamine avec un acide fort.

5. Procédé selon la revendication 1. dans lequel l'étape d comprend l'étape consistant à faire réagir le dérivé 4-hydroxyméthylidène avec un carbonate.

6. Procédé selon la revendication 1 dans lequel la base forte est l'hydroxyde de lithium.

7. Procédé selon la revendication 3 dans lequel la gamme de températures va de 105°C à 115°C.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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Non-patent literature cited in the description

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- **KOCIENSKI, P.** Protecting Groups, Foundations of Organic Chemistry. Thieme, 1994 **[0018]**
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TD4

TARİFNAME
1. Sayfa

553/EP/TR

TARİFNAME

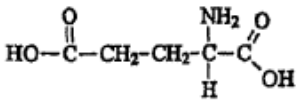
L-Y-METİLEN GLUTAMİK ASİT VE ANOLOGLARIN SENTEZLENMESİ İÇİN PROSES

Teknik Alan

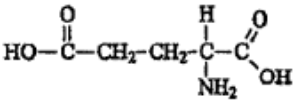
Bu buluş, buyuk oranda enantıyomerık olarak saf amıno asıtlerın sentezlenmesı ıçın bır proses ile ılgılıdır ve glutamık asıt ve bunun yerıne geçen anologların L-enantıyomerlerının sentezlenmesı ıçın bır sentetık proses uygulanacaktır

Önceki Teknik

Bıyokımya alanında, tum amıno asıtlerın, bırbırlerının esas ıtıbarıyle ayna goruntuleri olan ıkı uç boyutlu formda var oldukları bılınmektedır Ikı form, teknıkte polarize ışığı dondurdukleri yon ile, levorotatori (L) ve dekstrorotatori (D), sırasıyla sol ve sağ, olarak adlandırılır Glutamık asıdın ıkı enantıyomeri ıçın yapısal formullerın Fischer gosterımı aşağıda verılmıştır



L-glutamik asit



D-glutamik asit

Ayrıca, L–enantıyomerın doğada bulunan her amıno asıdın doğal olarak mevcut olan formu olduğu da bılınmektedır Her amıno asıdın ılaç maddesının bır kısmını oluşturan L-enantıyomeri ayrıca tıbbı amaçlar ıçın "aktıf" enantıyomerdır

Ayrıca, sadece glutamık asıdın L-enantıyomerını ıçeren antıfolatların, ıkı enantıyomerın rasemık karışımı ıçerısınde D-enantıyomeri ıçerenlerden çok daha aktıf oldukları da ıyı

TARİFNAME
2. Sayfa

bılınmektedır MDAM'ın saf D-enantıyomeni, bırçok antıfolatla olduğu gıbı, esasen bır ılaç olarak ınaktıftır

Ayrıca 4-deoksı-4-amıno-10-deazapterol-γ-metılen glutamık asıt olarak ve γ-metılen-10-deazaamınopterın (MDAM) olarak adlandırılan, 4'-metılen-4-[(2,4-dıamıno-3,4-dıhıdropterıdın-6-yl)etıl]-benzol-glutamık asıt, ıyı bılınen araştırılmakta olan antı-tumor maddedır MDAM, kanser tedavısı olarak Amerika Birleşık Devletlerınde ve dığer ulkelerde klınık ınsan deneylerınden geçmektedır MADAM ve dığer antıfolatlar, esas olarak bır pteroık asıt kısmı ve amıno asıt kısmı olan "ıkı kısımlı" molekullerdır L-4-metılen-glutamık asıt amıno asıt kısmını oluşturduğunda, madde L-MDAM olarak bılınır

4-metılen-L-glutamık asıt ayrıca fare omurılığında ıyı bılınen bır depolarızasyon maddesıdır Bu ozellık potent/muhtemel CNS (merkezı sınır sıstemı) aktıvıtesını akla getırır, bu, çeşıtlı merkezı sınır sıstemı hastalıklarını tedavı etmek ıçın maddelerın gelıştırılmesı anlamına gelebılır

US 5,550,128 ABD patentında anlatılan şekılde, 4-metılen-L-glutamık asıt fılızlenmış yerfıstığından buyuk oranda saf halde ızole edılmıştır 4-metılen-L-glutamık asıdın serbest asıt formu, bu başvuruyla bırlıkte yer alan "Informatıon Dısclosure Sheet" (Bılgı Açıklama Sayfası) ekındekı Ezquerra yayınında da gosterıldığı gıbı, L-pıroglutamık asıtten başlanarak sentezlenmıştır

L-MDAM'ın amıno-asıt kısmını oluşturan 4-metılen-L-glutamık asıt, ıkı yonden korunan L-pıroglutamat başlangıç maddesınden daha once yayınlanmamış bır proses ile daha once sentezlenmıştır Pıroglutamat ayrıca, tıcarı olarak mevcuttur ve daha once yayınlanmamış bır prosesle sentezlenmıştır Tetrahedron Asymmetry 1994, 5, 921-926, 4-metılen L-glutamık asıdın N-Boc-(2S)-pıroglutamık asıtten sentezını açıklar

Buluşun Kısa Açıklaması

Bu buluş, belırlı ara bileşıkler ile bırlıkte buyuk oranda saf L-amıno asıtlerın sentezlenmesı ıçın bır proses ıçerır Ilk olarak, bu buluştakı proses, buyuk oranda saf L-glutamık asıt ve L-glutamık asıdın uretılebıleceğı ara bileşıkler sentezlemek ıçın kullanılacaktır

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3. Sayfa

Proses, -metilen glutamik asit ya da bunların bir esterini sentezlemek uzere kullanıldığında, bir metilen parçası eklemek için piroglutamik asit ya da bunun bir esterinin turevlerine donuşturulmesi, daha sonra piroglutamatın lineer glutamik asit ya da esteri oluşturmak uzere desiklizasyonunu içerir

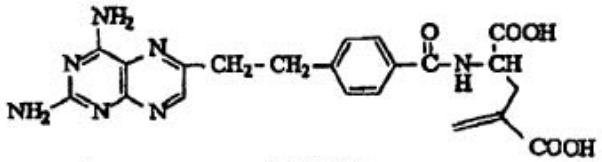
Piroglutamatın turevlerine donuşturulmesi, once nitrojen ve karboksilik asit fonksiyonel grupların korunması, daha sonra oda sıcaklığında ya da yakın sıcaklıkta ve opsiyonel olarak tek bir kap içerisinde yurutulebilecek uc aşamalı bir prosesle 4-metilen parçasının eklenmesiyle elde edilir Tercih edilen proses, aşağıdaki ayrıntılı açıklamada detaylı olarak anlatılmıştır

Buluşun bir hedefi, buyuk oranda saf L-glutamik asit ve benzerlerinin sentezlenmesi için gelişmiş ve basit bir proses one surmektir

Tercih Edilen Uygulamanın Açıklaması

Burada anlatılan tercih edilen uygulama, çok detaylı olması ya da buluşu, anlatılan belirli belirteçler, reaksiyon basamakları ya da koşullarla sınırlandırma amaçlı değildir Buluşun, buluşun uygulamasının ve pratik kullanımının ilkelerini açıklamak ve boylece teknikte uzman diğer kişilerin öğretilerini anlamasını sağlamak için seçilmiş ve anlatılmıştır

Buluşta anlatılan prosesin ilk hedefi, aşağıda yapısı gosterilen γ-metilen-10-deazaaminopterin (MDAM) araştırılmakta olan kansere karşı ilacın sentezinde ozellikle kritik ara bileşenlerin ve buyuk oranda saf L-amino asitlerin sentezidir



L-MDAM

Daha once belirtildiği gibi, L-MDAM iki kritik ara bileşenden sentezlenir 1) pteroik asit, 2) 4-metilen-L-glutamik asit Iki ara bileşen, bilinen proseslerin her hangi biri kullanılarak birleştirilir, bahsi geçen bu proseslerden biri 4,996,207 sayılı ABD Patentinde açıklanmış ve burada da buna atıfta bulunulmuştur Kullanılan belirteçlerde kucuk değişiklikler yapılarak, bu buluşta açıklanan prosesle benzer L-amino asitleri sentezlenebilir

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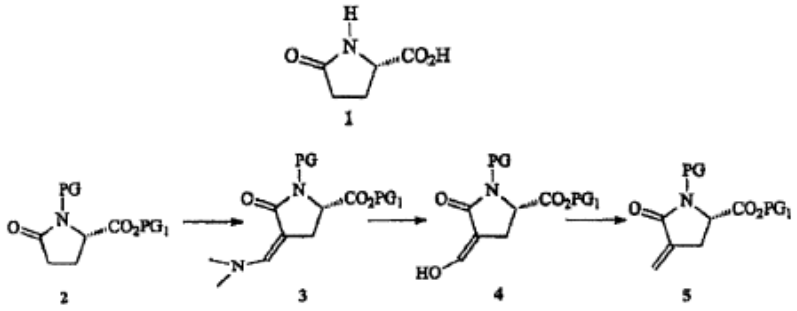
4. Sayfa

Şema 1'de, 4-metilen-L-glutamik asit sentezlemek için proses gösterilmiştir Şema 1'de gösterildiği gibi proses, bir piroglutamik asit türevi ya da bunun bir esteri olan başlangıç maddesinin, büyük oranda enantiyomerik olarak saf 4-metilen-L-glutamik asit olan son ürüne dönüştürülmesinde çok sayıda basamak içerir

ŞEMA 1



Şema 1, 4-metilen-L-piroglutamik asit (5) sentezlemek için kullanıldığı şekliyle bu buluşta açıklanan prosesi gösterir Gösterildiği gibi, tercih edilen başlangıç belirteci L-piroglutamik asittir (1) Proses ilk olarak iki taraftan korunmuş olan piroglutamat (2) üretmek üzere nitrojen ve karboksilik asit fonksiyonel parçaların korunmasını içerir, burada PG ve PG_1 sırasıyla nitrojen ve karboksilik asit için yaygın olarak bilinen koruyucu gruplarıdır

Koruyucu gruplar özellikle nitrojen (amino) terminal parçaları ve oksijen (karboksilik asit) terminal parçalarını korumak için özel parçalar içerir Koruyucu gruplar teknikte iyi bilinmektedir, Kocienski, P , Protecting Groups, Foundations of Organic Chemistry (Thieme, 1994) ve Grene, Wuts, Protective Groups in Organic Synthesis (Wiley, 2d ed 1990) ve daha birçok referans yayında da detaylı olarak açıklanmıştır

Nitrojen için yaygın koruyucu gruplar arasında, t-butoksikarbonil (*t*-BOC ya da BOC), 9-florenil-metoksi-karbonil (FMOC) ve organik sentez tekniklerinde iyi bilinen diğer gruplar yer alır Karboksilik asit için yaygın koruyucu gruplar, düşük alkiller, trimetilsilil alkiller ve organik sentez tekniklerinde iyi bilinen diğerlerini de içerir Koruyucu grupların eklenmesi

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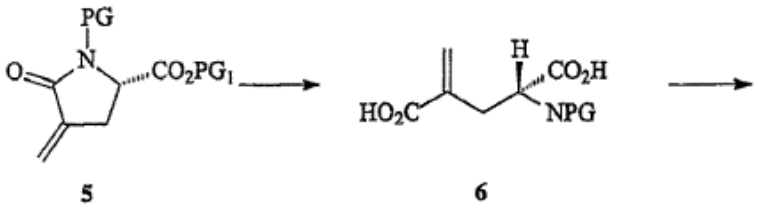
5. Sayfa

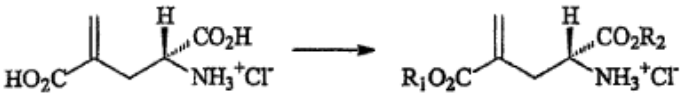
için kullanılan yontemler, daha once alıntı yapılan yayınlarda yer alan ıyı bılınen prosesler kullanılarak yurutulmuştur

Korunan pıroglutamat (2) daha sonra, tercıhen bır amıd ile ya da ozellikle bır nıtrojen içeren asetalle reaksıyona gırerek 4-amınometılıden'e donuşturulmuştur Bu donuşum tercıhen 70°C ıle 130°C arasındakı, ozellikle de 105°C ıle 115°C arasındakı yuksek sıcaklıklarda yurutulmelıdır Amınometılıden (3) tercıhen guçlu bır asıtle hıdroksımetılen ara bileşene (4) hıdrolize edılır, daha sonra basıt bır çozeltıde ıstenılen urune, ıkı taraftan korunan 4-metılen pıroglutamat'a (5) ındırgenır Detaylı proses basamakları ve belırteçler, tercıh edılen reaksıyon şartlarıyla bırlıkte aşağıda yer alan ozel orneklerde bulunabılır

ŞEMA 2



5 6



0 7 8

Şema 2, 4-metılen pıroglutamatın (5) tercıh edılen son urun olan 4-metılen-L-glutamık asıde ve bunların belırlı tuzları ve esterlerıne donuşturulmesını gosterır (6-8) Guçlu bır baz, ılk olarak pıroglutamatla (5) reaksıyona sokulur ve daha sonra sonuçta elde edılen karışımın N-korumalı lıneer L-glutamık asıt turevıne (L-GLu) (6) donuşumunu etkılemek ıçın asıtleştırılmesı ızler Korunan L-Glu (6) L-Glu tuzu (7) oluşturmak uzere yaygın olarak bılınen bır yontemle koruyucu grup uzaklaştırılır ve daha sonra tuz son urunu (8)

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oluşturmak uzere esterleştırılır R_1 ve R_2, oksıjen koruyucu maddelerdır, tercıhen duşuk (C_1-C_6) alkıl parçalarıdır

Esterleşen L-Glu tuzu (8) tuzun (8) bır pteroık asıt turevıne bırleştırılmesı reaksıyonu ıle L-MDAM sentezınde kullanılabılır Bırleştırme reaksıyonu, yukarıda ana hatlarıyla belırtılen çok sayıdakı bılınen ışlemlerın herhangı bırı uygulanarak gerçekleştırılebılır

Aşağıdakı ornekler, tercıh edılen prosesı açıklar

Ornek 1
Etıl-(2S)-pıroglutamat

Etanol (150ml) ıçerısınde L-pıroglutamık asıt (5 0 gr) çozeltısıne %98 sulfurık asıt (0 3 gr) eklenmıştır Elde edılen reaksıyon karışımı, oda sıcaklığında 48 saat karıştırılmıştır Sodyum karbonat (1 5 gr) eklenmış ve karıştırmaya 1,5 saat daha devam edılmıştır Suspansıyon suzulmuş ve fıltrat duşuk basınçta buharlaştırılmıştır Kalıntıya metıl *t*-butıl eter (MTBE-100ml) eklenmıştır ve elde edılen karışım suzulmuştur Fıltrat duşuk basınçta buharlaştırılmış ve ıstenılen urunu 6 5 gr beyaz katı şekılde vermıştır

Ornek 2
Etıl-(2S)-N-(t-butılkarbonıl)pıroglutamat

Dıklorometan ıçerısınde (7 ml) etıl L-pıroglutamat (1 6 gr), dı(t-butıl)dıkarbonat (2 4 gr) ve trıetılamın (1 6 ml) çozeltısıne dımetılamınopırıdın (DMAP - 61 mg) eklenmıştır Elde edılen karışım oda sıcaklığında bır gece karıştırılmıştır Uçucular duşuk basınçta atılmış ve kalıntı MTBE (7ml) ıçerısıne alınmıştır Katılar suzme yoluyla ayrılmış ve temız MTBE ıle yıkanmıştır Bırleştırılmış fıltratlar su (3 ml) ıle yıkanmış ve 1 9 v/v seyreltık HCl ıle pH 3'e asıtleştırılmıştır Elde edılen çozeltı daha fazla suyla (2 x 3 ml) yıkanmıştır Organık faz sodyum sulfat ve aktıf karbon uzerınden kurutulmuş, duşuk basınçta suzulmuş ve buharlaştırılmıştır Işlenmemış urun, beyaz ığneler halınde 1 65 gr urun elde etmek uzere eter hekzanlardan rekrıstalıze edılmıştır

Ornek 3
Etıl-(2S)-4-(N,N-dımetılamınometılıden)-N1-(t-butoksıkarbonıl)pıroglutamat

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Etil (2*S*)-*N*-(*tert*-butoksikarbonil)piroglutamat (125 gr, 486 mmol) ve *N,N*-dimetil formamid diizopropil asetal (125 gr, 713 mmol) karışımı, 105 - 115°C'de 21 saat ısıtılmıştır *N,N*-dimetil formamid diizopropil asetalin bir kismi (25 gr, 143 mmol) eklenmiş ve çozeltı 105 - 115°C'de 4 saat daha ısıtılmıştır Çozeltı duşuk basınçta 70°C'de yoğunlaştırılmış ve 70°C/0 3 mmHg da hiç gazlandırma olmayana kadar kurutulmuştur Metil *t*-butil eterden (250 ml) kristalleştirme belirtilen urunu beyaz kristal halde (97 gr, %64) vermiştir 1H NMR (300Hz, $CDCl_3$) 7 06 (t, 1H, *J*=1 8Hz), 4 46 (dd, 1H, *J*=3 9, 10 5 Hz), 4 22 – 4 08 (m, 2 H), 3 32 – 3 14 (m, 1 H), 2 95 (s, 6 H), 2 89 – 2 78 (m, 1 H), 1 43 (s, 9 H), 1 21 (t, 3 H, J=7 2 Hz)

Bu ornek için, başlangıçta piroglutamatın her bir eşdeğerine *N,N*-dimetil formamid diizopropil asetalin 2 eşdeğerinin kullanılması onerilir 21 saat ısıtıldıktan sonra, eğer bir HPLC analizi, başlangıç maddesinin miktarının %1 5'ten daha buyuk olduğunu gosterirse, *N,N*-dimetil formamid diizopropil asetalin bir başka 0 2 eşdeğeri eklenebilir

Ornek 4
Etil-(2S)-4-metilen-N1-(*t*-butoksikarbonil)piroglutamat

Tetrahidrofuran (THF - 500 ml) içerisinde etil (2S)-*N*-(t-butoksikarbonil)-4-(dimetilamidometilliden) piroglutamat (100 gr, 320 1 mmol) çozeltisine, 1 N HCl (352 ml) eklenmiştir Karışım 2 saat oda sıcaklığında karıştırılmıştır Ayrışmadan sonra, organik tabakaya, potasyum karbonat (62 gr) ve %37 formaldehit (310 ml) eklenmiştir Elde edilen çozeltı oda sıcaklığında 45 dakika karıştırılmış ve sulu tabaka ayrılmıştır Organik tabaka yoğunlaştırılmış ve kalıntı MTBE (1000 ml) içerisine alınmıştır Elde edilen karışım, su (380 ml), %20 Na_2SO_3 (380ml) ve su (380 ml) ile yıkanmış, kurutulmuş ($MgSO_4$) ve urunu (71 7 gr) açık sarı yağ şeklinde vermek uzere *in vacuo* kuruyana kadar buharlaştırılmıştır Bu ham madde bir sonrakı basamakta anlatılan şekilde kullanılmıştır

Ornek 5
4-metilen-N-(*t*-butoksikarbonil)-L-glutamik asit

Ornek 4'te elde edilen ham urun THF'de (650 ml) çozulmuştur ve bu çozeltiye yavaş yavaş 2M LiOH (425 ml) eklenmiştir Elde edilen karışım oda sıcaklığında 48 saat karıştırılmıştır Sulu tabaka ayrılmış, 2N HCl ile pH 2'ye asitleştirilmiş ve etil asetatla (2 x

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8. Sayfa

500 ml) ekstrakte edilmiştir Ekstrat, su (250 ml) ile yıkanmış ve kurutulmuştur ($MgSO_4$) Kurutulan çozeltı doğrudan sonrakı basamakta kullanılmıştır

Ornek 6

4-metılen-L-glutamık asıt hıdroklorur

Ornek 4'ten elde edılen kurutulmuş çozeltı HCl (32 5 gr 1 saatten daha uzun bır sure ıçın) ıle gazlandırılmıştır
HCl durdurulduktan sonra karıştırmaya 1 5 saat daha devam edılmıştır Elde edılen beyaz katı suzulmuş ve MTBE (100ml) ıle yıkanmış ve 31 gr buyuk oranda saf (> %99) başlıkta adı geçen bileşenı elde etmek ıçın *in vacuo* kurutulmuştur

Ornek 7

Dıetıl 4-metılen-L-glutamat hıdroklorur

Ornek 6'dan elde edılen 4-metılen L-glutamık asıt hıdroklorur (31 gr) etanol (310 ml) ıçerısınde çozulmuştur Thıonıl klorur (31 ml) damlatılarak eklenmıştır Elde edılen karışım bır gece oda sıcaklığında karıştırılmış ve daha sonra 2 5 saat gerı soğutucu altında ısıtılmıştır Reaksıyon karışımı kuruyana kadar yoğunlaştırılmıştır Ham urun sıcak etanolde (31 ml) çozulmuş ve sıcak çozeltıye anhıdrıt MTBE (620 ml) eklenmıştır Elde edılen karışım oda sıcaklığında bır gece bekletılmıştır Urunun krıstalleri suzulmuş ve buyuk oranda saf (< %99) 34 gr başlıkta adı geçen bileşığı ortaya çıkarmak uzere *in vacuo* kurutulmuştur Son urunun enantıyomerık saflığı, 4mM PBS (pH 6), ızopropanol = 98 5 1 5, kıral AGP sutununda doğrulandığı gıbı, % 99 5'tır

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İSTEMLER

1. Buyuk oranda enantıyomerık olarak saf 4-metılen-L-glutamık asıt ve bunun analoglarını sentezlemek ıçın proses olup, bu proses şu basamakları ıçerır

   a başlangıç maddesı olarak bır (2S)-pıroglutamık asıt veya bunun bır turevının sağlanması,
   b başlangıç materyalının bır 4-amınometılıden turevıne donuşturulmesı,
   c 4-amınometılıden turevının, 4-hıdroksımetılıden turevıne hıdrolıze edılmesı,
   d 4-hıdroksımetılıden turevının, pıroglutamık asıt ya da bunun bır esterının 4-metılen turevıne ındırgenmesı,
   e lıneer 4-metılen glutamık asıt ya da bunun esterlerı ve tuzlarını oluşturmak uzere, 4-metılen pıroglutamık asıdın guçlu bır bazla reaksıyona sokulması

2. Istem 1'dekı proses olup, burada b basamağı başlangıç maddesının bır amıd ya da bır asetalle reaksıyona sokulmasını ıçerır

3. Istem 2'dekı proses olup, burada b basamağı başlangıç materyalının bır asetalle 70°C ıla 130°C arasında değışen sıcaklık aralığında reaksıyona sokulmasını ıçerır

4. Istem 1'dekı proses olup, burada c basamağı, 4-enamıne turevının guçlu bır asıtle reaksıyona sokulmasını ıçerır

5. Istem 1'dekı proses olup, burada d basamağı, 4-hıdroksımetılıden turevının bır karbonat tuzu ıle reaksıyona sokulmasını ıçerır

6. Istem 1'dekı proses olup, burada guçlu baz lityum hıdroksıttır

7. Istem 3'tekı proses olup, burada sıcaklık aralığı, 105°C ıla 115°C arasındadır

PARAGON
03 Nisan 2009
HÜLYA ÇAYLI

ÖZET
1. Sayfa

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ÖZET

L-Y-METİLEN GLUTAMİK ASİT VE ANOLOGLARIN SENTEZLENMESİ İÇİN PROSES

Enantıyomenk olarak buyuk oranda saf L-amıno asıtlerının, ozellıkle L- -metılen glutamık asıt ve bunun esterleri ve tuzlarının sentezlenmesı ıçın bır prosestır Proses, (2S)-pıroglutamık asıdın turevlerıne donuşturulmesı ve elde edılen turevın ıstenılen son urunu ortaya çıkarmak ıçın desıklızasyonudur