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— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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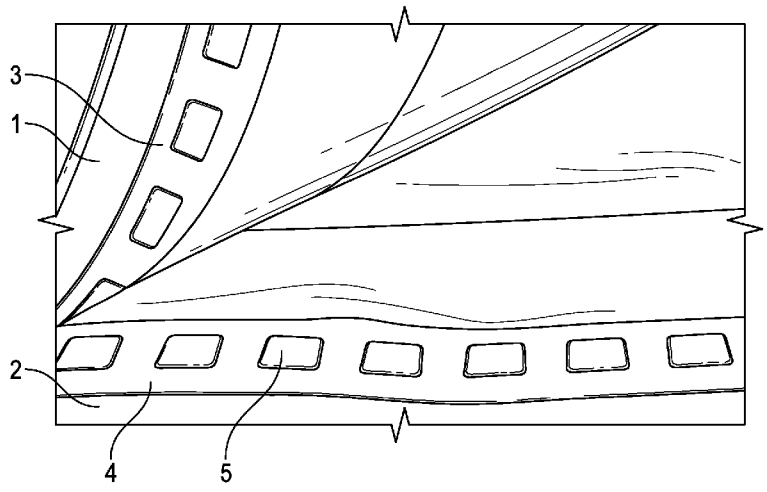
(54) Title: TWO-PARTS CUSTOMIZABLE MATTRESS

Figure 2



(57) Abstract: The present invention relates generally to the use of magnetic fasteners (3, 4) for holding together, fitting, adjusting or fastening two layers (1, 2) of a mattress. Also a method for automatically fitting a top layer (1) of a mattress on a bottom layer (2) of the mattress is disclosed.

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TWO-PARTS CUSTOMIZABLE MATTRESS

FIELD OF THE INVENTION

The present invention relates generally to the use of magnetic fasteners for holding together, fitting, adjusting or fastening two layers of a mattress. Also a method for automatically fitting a top layer of a mattress on a bottom layer of the mattress is disclosed.

BACKGROUND TO THE INVENTION

A mattress is an important purchase and is intended to provide the user with a sleeping surface that can last for years. Though, each individual's physique and personal preferences may change with time and may also vary in each season, and users are then forced to replace their entire mattress to meet their changing needs. Conventional bedding mattresses also failed to satisfy each user because no two individuals share the same preferences in the comfort and support of their mattress. In addition, during normal use, a mattress, and in particular the top cover of the mattress is subject to wear and tear and to exposure of liquids that may accidentally be spilled on the mattress.

Manufacturers have attempted to combat this problem by creating customizable hybrid mattresses, where each mattress includes two half mattresses, and where the top layer can be changed according to the individual's preferences, such as for example defined in WO200018275 and US2011094039. These modular mattress systems have been developed to provide individualized mattress systems that allow the user to continually customize or replace a portion of the mattress. As a result, multiple modifications and variations can be made.

An important disadvantage of these hybrid mattress systems is that the top layer needs to be placed in the right position on the bottom layer. In particular, the surface area of a two-persons mattress is large and correct placing of the top layer of said mattress on the bottom layer can be time consuming and difficult. In addition, the top layer needs to be firmly fixed to the bottom layer to prevent shifting of the top layer during the night when a sleeping person is still

making a considerable number of movements. Currently used fastener systems to secure a top layer on a bottom layer of a mattress include zippers, or hook-loop systems such as Velcro™ or buttons, but the use of these systems is time consuming and careful positioning of the top layer into the right position on the bottom layer is required. Secure systems using magnetic fasteners in a mattress setting are also available, as described in DE202008000249 U1, though without any anti-magnetic protection, thereby limiting their use in medical applications in which protection from strong magnetic fields is essential.

It is accordingly an object of the present invention to provide the use of a fastening system that allows the automatic fitting of a top layer of a mattress in the right position on a bottom layer of said mattress and that can be used in medical applications as well.

SUMMARY OF THE INVENTION

The present invention is directed to the use of a magnetic fastener in a mattress setting for holding together, fitting or fastening a top layer (1) and a bottom layer (2) of a mattress, said magnetic fastener comprising a first part (3) and a second part (4) used for holding together, adjusting, fitting or fastening two layers of a mattress, wherein the first part comprises at least one first sheath (5) in which at least one first magnet or ferromagnetic element is inserted, these being attached inside said first sheath (5), and a second part containing at least one second magnet or ferromagnetic element subject or submitted to the magnetic attraction of the first magnet or ferromagnetic element of the first part, and characterized in that each magnet of the fastener is associated with an anti-magnetic protection component. The use of such an anti-magnetic protection component results in an almost complete neutralization of the magnetic field on the outside of the magnetic fastener. Hence, the use of a magnetic fastener in a mattress setting as described above can also be applied in a medical setting for people carrying pacemakers or other medical devices that should be protected from strong magnetic fields.

Preferably, the present invention provides the use of a magnetic fastener in a mattress setting for holding together, fitting or fastening two layers of a mattress, wherein the second magnet or ferromagnetic element is attached to the second part of the magnetic fastener.

In a particular embodiment, the present invention provides the use of a magnetic fastener in a mattress setting as detailed above, wherein the first part and/or second part of the magnetic fastener have two sheaths. In another embodiment, the present invention provides the use of a magnetic fastener, which comprises at least two sheathes.

In one embodiment, the present invention provides the use of a magnetic fastener in a mattress setting for holding together, fitting or fastening two layers of a mattress, wherein at least one of the first and second parts of the magnetic fastener has a series of at least two magnets or ferromagnetic elements hinged together. In a further embodiment, the first and second parts of the magnetic fastener that is used in a mattress setting as detailed above have a series of magnets or ferromagnetic elements hinged together, their number being sufficient to surround the peripheral edge portion of the top and/or bottom layer of the mattress.

In a further embodiment, the use of a magnetic fastener in a mattress setting for holding together, adjusting, fitting or fastening two layers of a mattress, comprises the use of magnets produced from the family of rear earths of the type Neodynium Iron Boron.

Furthermore, the present invention also comprises the use of a magnetic fastener in a mattress setting as defined in any of the embodiments described herein above, wherein the surface area of the top layer and the bottom layer of the mattress have the same size. In addition, the magnetic fastener as described above is used in a mattress setting, wherein the first part of the magnetic fastener is secured to the top layer of the mattress. In particular, this first part of the magnetic fastener is secured to the peripheral edge portion of the top layer of the mattress. In a particular embodiment, this first part of the magnetic fastener is secured to the peripheral edge portion of three of the four

sides of the top layer of the mattress. In another embodiment, the present invention comprises the use of a magnetic fastener in a mattress setting as described above, wherein the second part of the magnetic fastener is secured to bottom layer of the mattress. In a more particular embodiment, this second part of the magnetic fastener is secured to the peripheral edge portion of the bottom layer of the mattress. In a further particular embodiment, this second part of the magnetic fastener is secured to the peripheral edge portion of three of the four sides of the bottom layer of the mattress. In a particular embodiment, the present invention includes the use of a magnetic fastener in a mattress setting consisting of two layers as defined above, wherein the first part of the magnetic fastener is secured to the top layer of the mattress and wherein the second part of the magnetic fastener is secured to the bottom layer. In an even further preferred embodiment, the present invention includes the use of a magnetic fastener in a mattress setting as defined above, wherein the first part of the magnetic fastener is secured to the peripheral edge portion of the top layer of the mattress and wherein the second part of the magnetic fastener is secured to the peripheral edge portion of the bottom layer of the mattress. In a particular embodiment, the present invention includes the use of a magnetic fastener in a mattress setting as defined above, wherein the first part of the magnetic fastener is secured to the peripheral edge portion of three of the four sides of the top layer of the mattress and wherein the second part of the magnetic fastener is secured to the peripheral edge portion of three of the four sides of the bottom layer of the mattress.

The present invention is also directed to a mattress consisting of two layers, and characterized by the use of a magnetic fastener as defined in any of the previous embodiments.

In a particular embodiment, the mattress consists of two layers, a top layer and a bottom layer, wherein the surface area of these layers of the mattress have the same size. These two layers of the mattress are hold together, adjusted, fitted or fastened by the use of a magnetic fastener as described above.

A particular aspect of the present invention resides in a mattress consisting of

two layers and characterized by the use of a specific magnetic fastener, wherein the first part of the magnetic fastener is secured to the top layer of the mattress. In a particular embodiment, the first part of said magnetic fastener is secured to the peripheral edge portion of the top layer of the mattress. In an even more particular embodiment, the first part of said magnetic fastener is secured to the full peripheral edge portion of three of the four sides of the top layer of the mattress.

Another aspect of the present invention resides in a mattress consisting of two layers and characterized by the use of a specific magnetic fastener, wherein the second part of the magnetic fastener is secured to the bottom layer of the mattress. In a further embodiment, the second part of said magnetic fastener is secured to the peripheral edge portion of the bottom layer of the mattress. In a particular embodiment, the second part of said magnetic fastener is secured to the full peripheral edge portion of three of the four sides of the top layers of the mattress.

In a preferred embodiment, the present invention resides in a mattress consisting of two layers and characterized by the use of a specific magnetic fastener, wherein the first part of the magnetic fastener is secured to the full peripheral edge portion of three of the four sides of the top layer of the mattress, and wherein the second part of the magnetic fastener is secured to the full peripheral edge portion of three of the four sides of the bottom layer of the mattress.

The present invention is also directed to a method for automatic fitting a top layer of a mattress on a bottom layer of said mattress, wherein the method comprises the use of a magnetic fastener as specified in any of the previous embodiments in a mattress consisting of two layers.

BRIEF DESCRIPTION OF THE DRAWINGS

With specific reference now to the figures, it is stressed that the particulars shown are by way of example and for purposes of illustrative discussion of the

different embodiments of the present invention only. They are presented in the cause of providing what is believed to be the most useful and readily description of the principles and conceptual aspects of the invention. In this regard no attempt is made to show structural details of the invention in more detail than is necessary for a fundamental understanding of the invention. The description taken with the drawings making apparent to those skilled in the art how the several forms of the invention may be embodied in practice.

Fig. 1: Figure of a mattress consisting of a top layer (1) and a bottom layer (2) as disclosed in the present invention. The mattress consists of two layers and is characterized by the use of a magnetic fastener for holding together, adjusting, fitting or fastening the two layers of the mattress. The magnetic fastener consists of two parts, wherein a first part (3) of the magnetic fastener is secured to the top layer (1) of the mattress and a second part (4) of the magnetic fastener is secured to the bottom layer (2) of the mattress.

Fig. 2: Detailed figure of the magnetic fastener that is used in the present invention, wherein a first part (3) of the magnetic fastener is secured to the top layer (1) of the mattress and a second part (4) of the magnetic fastener is secured to the bottom layer (2) of the mattress. Both parts of the magnetic fastener have a series of multiple magnets or ferromagnetic elements hinged together. Each magnet or ferromagnetic element is attached inside a sheath (5) and is associated with an anti-magnetic protection component.

DETAILED DESCRIPTION OF THE INVENTION

In the context of the present invention, “mattress” means a ticking filled with resilient material used alone or in combination with other products intended or promoted for sleeping upon.

The present invention is directed to the use of a magnetic fastener in a mattress setting for holding together fitting or fastening two layers of a

mattress. Traditional mattresses generally comprise only one layer. A major disadvantage is that this type of one-layer mattress cannot be customized during time, whereas each individual's physique and personal preferences may change with time and may also vary in each season. To provide a solution for these disadvantages, hybrid mattress systems, such as for example described in WO200018275 and US2011094039 have been developed in the past and are currently part of the prior-art. An important disadvantage of these systems is the mechanism by which the two layers are fixed together, such as a zipper or a hook-loop system like Velcro™. Secure systems using magnetic fasteners in a mattress setting are also available, as described in DE202008000249 U1, though without any anti-magnetic protection, thereby limiting their use in medical applications in which protection from strong magnetic fields is essential.

The present invention comprises the use of a magnetic fastener in a mattress setting for holding together, adjusting, fitting or fastening two layers of a mattress. The invention is characterized in that the magnetic fastener that is used comprises a first part and a second part used for holding together, adjusting, fitting or fastening two layers of a mattress, wherein the first part comprises at least one first sheath in which at least one first magnet or ferromagnetic element is inserted, these being attached inside said first sheath, and a second part containing at least one second magnet or ferromagnetic element subject or submitted to the magnetic attraction of the first magnet or ferromagnetic element of the first part. The magnetic fastener that is used was disclosed in WO0033328 and WO03056956 for holding together, adjusting, fitting or fastening parts of a garment, shoe, or any other accessory. Typical for the present invention is the use of a magnetic fastener in a mattress setting as detailed above, wherein each magnet of the fastener is associated with an anti-magnetic protection component. The use of such an anti-magnetic protection component results in an almost complete neutralization of the magnetic field on the outside of the magnetic fastener. Hence, the use of a magnetic fastener in a mattress setting as described

above can also be applied in a medical setting for people carrying pacemakers or other medical devices that should be protected from strong magnetic fields. It is accordingly an object of the present invention to provide the use of magnetic fasteners in a mattress setting as detailed herein, and characterized in the presence of an anti-magnetic protection component, such as for example an anti-magnetic covering at one side of the magnets as shown in figures 3a-f, 3j and 3k of WO0033328.

In the context of the present invention, said magnetic fastener is used for holding together, adjusting, fitting or fastening two layers of a mattress. In a particular embodiment, the second magnet or ferromagnetic element is attached to the second part. Typical for the magnetic fastener is that it comprises two parts, wherein the first part comprises at least one first sheath in which at least one first magnet or ferromagnetic element is inserted and being attached inside said first sheath. In another embodiment, the second part of the magnetic fastener contains at least one second magnet or ferromagnetic element that is attached to the second sheath. In another particular embodiment, the first and/or second part of the magnetic fastener has at least two sheathes. In an even further embodiment, the first and second parts of the magnetic fastener have a series of magnets or ferromagnetic elements hinged together, their number being sufficient to surround the total peripheral edge portion of three of the four sides of the top and/or bottom layer of the mattress.

Typical for the present invention, is that the first part of the magnetic fastener is secured to the top layer of the mattress. This first part of the magnetic fastener is secured to the peripheral edge portion of the top layer of the mattress. Even more in particular, this first part of the magnetic fastener is secured to the peripheral edge portion of three of the four sides of top layer of the mattress. Furthermore, the second part of the magnetic fastener that is used in the present invention is secured to the bottom layer of the mattress, wherein the second part of the magnetic fastener is secured to the peripheral edge portion of the bottom layer of the mattress. In a particular embodiment,

the second part of the magnetic fastener is secured to the peripheral edge portion of three of the four sides of the bottom layer of the mattress. Because the peripheral edge portions of three of the four sides of both layers are completely covered with a part of the magnetic fastener, both layers, when positioned on top of each other, are firmly fixed together and the magnetic attraction between both layers was found strong enough to keep both layers in the right position, even to the extend that the top layer cannot be shifted during the night when a sleeping person is still making a considerable number of movements. Currently used fastener systems to secure a top layer on a bottom layer of a mattress include zippers, or hook-loop systems such as Velcro™ or buttons, but the use of these systems is time consuming and the top layer still needs to be put manually in the right position on the bottom layer.

Furthermore, the present invention also comprises the use of a magnetic fastener in a mattress setting as defined in any of the embodiments described herein above, wherein the surface area of the top layer and the bottom layer of the mattress have the same size. As explained above, the magnetic fasteners are secured to the peripheral edge portion of each layer. Therefore, it is unnecessary that an overhang is created in the top layer to secure this layer on the bottom layer, as is often seen in mattress covers that are described in the prior-art such as defined in US7930779. Since both layers of the mattress that is used in the present invention have the same size, no extra fabric is needed, which reduces the production costs of said mattress.

In a further embodiment, the use of a magnetic fastener in a mattress setting for holding together, adjusting, fitting or fastening two layers of a mattress, comprises the use of magnets produced from the family of rear earths of the type Neodynium Iron Boron.

By the use of the specific magnetic fasteners in a mattress setting as described above, an autofit mechanism is created whereby the top layer automatically fits in the right position to the bottom layer. This facilitates the application of the top layer to the bottom layer of the mattress and hence facilitates and stimulates a switch between top layers.

It will be apparent to those skilled in the art that various modifications and variations can be made in the customizable mattress system of the present invention. For example, top layers can be changed according to the season, with an autumn/winter and spring/summer top layer that can be applied to the same bottom layer.

CLAIMS

1. Use of a magnetic fastener in a mattress setting for holding together, adjusting, fitting or fastening two layers of a mattress, said magnetic fastener comprising a first part and a second part used for holding together, adjusting, fitting or fastening two layers of a mattress, wherein the first part comprises at least one first sheath in which at least one first magnet or ferromagnetic element is inserted, these being attached inside said first sheath, and wherein the second part contains at least one second magnet or ferromagnetic element subject or submitted to the magnetic attraction of the first magnet or ferromagnetic element of the first part, and characterized in that each magnet of the fastener is associated with an anti-magnetic protection component.

2. The use of a magnetic fastener in a mattress setting according to claim 1, wherein the second magnet or ferromagnetic element is attached inside a second sheath of the second part.

3. The use of a magnetic fastener in a mattress setting according to any of preceding claims, wherein the first part and/or second part of the magnetic fastener has at least two sheathes.

4. The use of a magnetic fastener in a mattress setting according to any of preceding claims, wherein at least one of the first and second parts of the magnetic fastener has a series of at least two magnets or ferromagnetic elements hinged together.

5. The use of a magnetic fastener in mattress setting according to any of preceding claims, wherein the fastener comprises magnets produced from the family of rare earths of the type Neodynium Iron Boron.

6. A mattress consisting of two layers, and characterized by the use of a magnetic fastener as defined in any one of claims 1 to 5 for holding together, adjusting, fitting or fastening the two layers of the mattress.

7. The use of a magnetic fastener in a mattress setting according to any one of

claims 1 to 5, or the mattress consisting of two layers according to claim 6, wherein the surface area of the top layer and the bottom layer of the mattress has the same size.

8. The use of a magnetic fastener in a mattress setting according to any one of claims 1 to 5, or the mattress consisting of two layers according to claim 6, wherein the first part of the magnetic fastener is secured to the top layer of the mattress.

9. The use of a magnetic fastener in a mattress setting or the mattress consisting of two layers according to claim 8, wherein the first part of the magnetic fastener is secured to the peripheral edge portion of the top layer of the mattress.

10. The use of a magnetic fastener in a mattress setting according to any one of claims 1 to 6, or the mattress consisting of two layers according to claim 7, wherein the second part of the magnetic fastener is secured to the bottom layer of the mattress.

11. The use of a magnetic fastener in a mattress setting or the mattress consisting of two layers according to claim 10, wherein the second part of the magnetic fastener is secured to the peripheral edge portion of the bottom layer of the mattress.

12. Method for automatically fitting a top layer of a mattress on a bottom layer of the mattress, said method comprising the use of a magnetic fastener as defined in any one of claims 1 to 5 and 7 to 11.

Figure 1

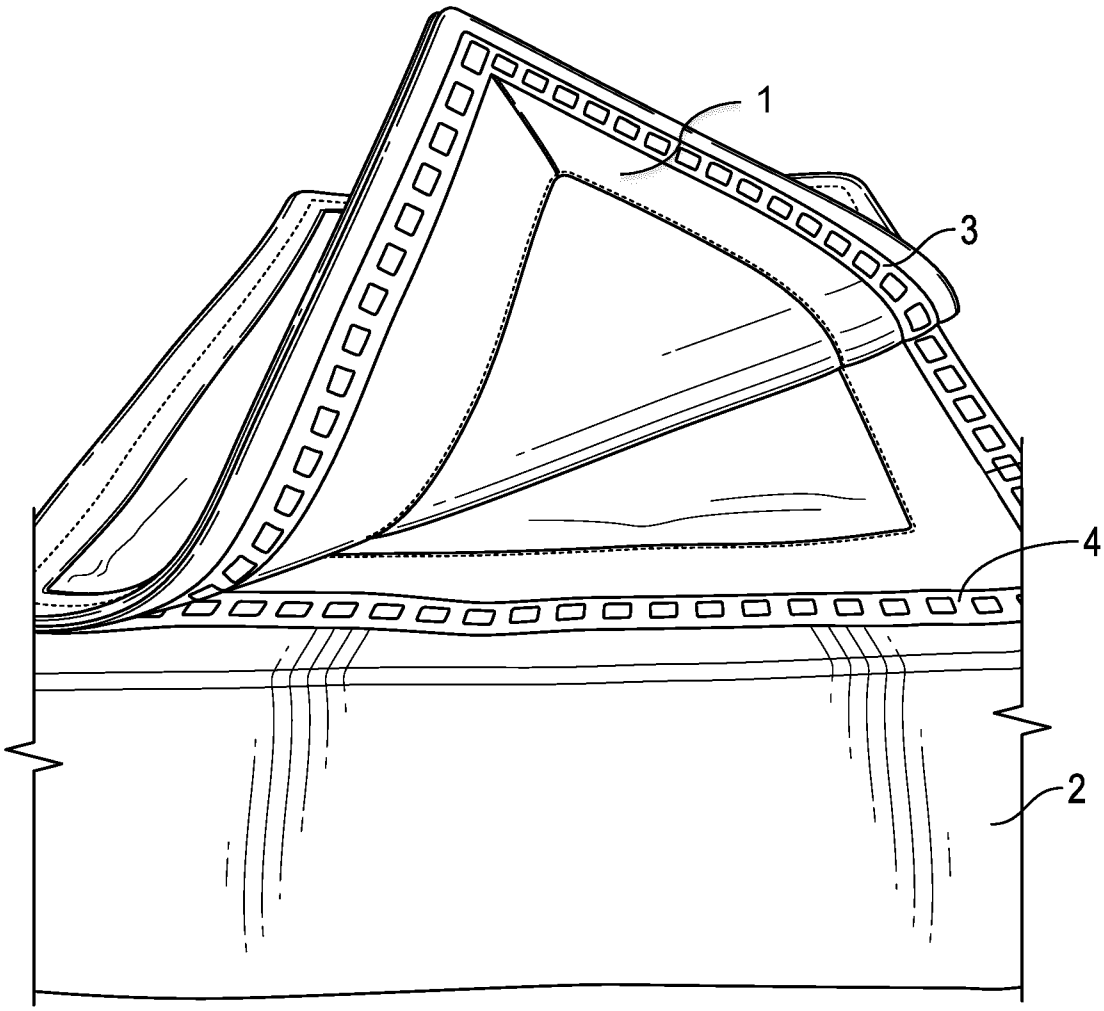
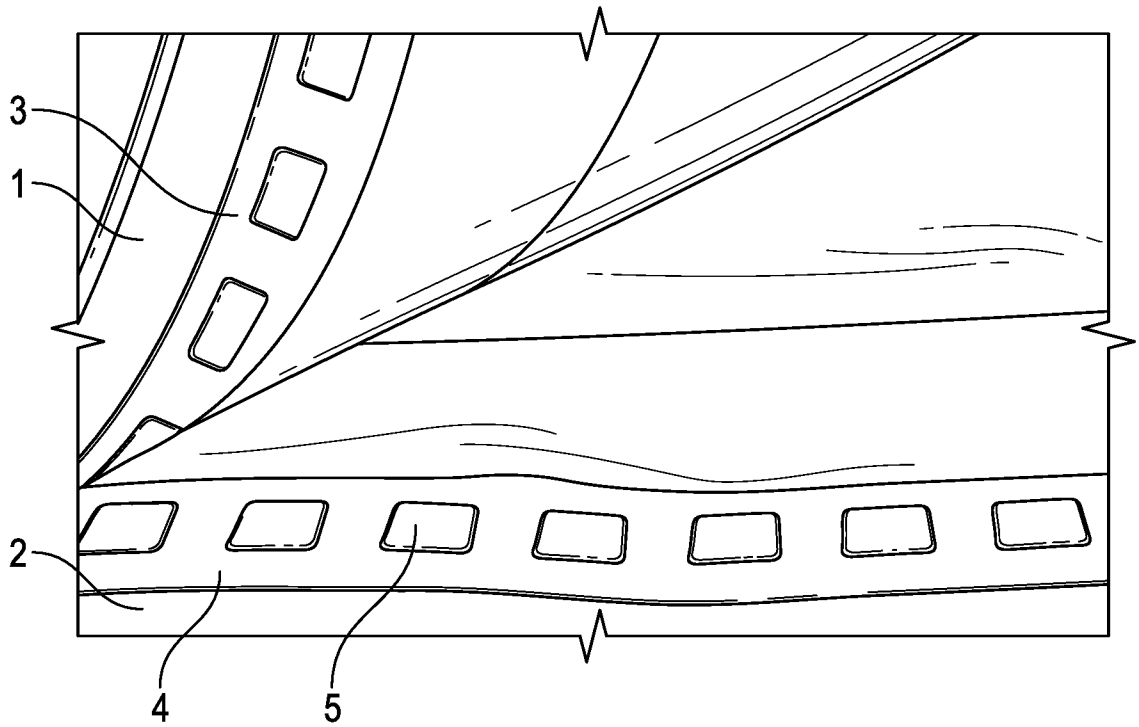


Figure 2



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/054565

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47C31/00 A47C27/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 20 2008 000249 U1 (SCHWENK) 27 March 2008 (2008-03-27) paragraph [0011]; claims; figures	1-12
A	WO 03/056956 A2 (E. SITBON; A. STIBON) 17 July 2003 (2003-07-17) cited in the application claims; figures	1-12
A	US 2010/077552 A1 (MALIKHIN ET AL) 1 April 2010 (2010-04-01) paragraphs [0015], [0017]; figures	1-12
A	US 2014/182060 A1 (MIKKELSEN ET AL) 3 July 2014 (2014-07-03) claims; figures	1-12

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2016/054565

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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