(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 352 597 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
18.01.2006 Bulletin 2006/03

(21) Application number: **03447087.2**

(22) Date of filing: **09.04.2003**

(51) Int Cl.:
A47C 31/12 *(2006.01)* ***A47C 27/06*** *(2006.01)*

(54) Box spring

Sprungfedermatratze

Sommier élastique

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

(30) Priority: **11.04.2002 BE 200200255**

(43) Date of publication of application:
15.10.2003 Bulletin 2003/42

(73) Proprietor: **Biesmans, Jos**
3740 Bilzen (BE)

(72) Inventor: **Biesmans, Jos**
3740 Bilzen (BE)

(74) Representative: **Bird, Ariane et al**
Bird Goën & Co
Klein Dalenstraat 42A
3020 Winksele (BE)

(56) References cited:
EP-A- 1 159 897
DE-U- 29 600 151
US-A- 1 371 362

EP 1 352 597 B1

Description

[0001] Lack of sleep or an interrupted sleep pattern presents a major problem. Sleeping comfort forms a very important factor in this context. It is important for sleeping comfort to be as good as possible in the various sleeping positions which a person can adopt. A reduced or less than desirable sleeping comfort leads to an interrupted sleep pattern or to a lack of sleep.

[0002] Therefore, attempts have been made to improve sleeping comfort. Box springs are known. Box springs are used in many formats. They are used as supports for mattresses, the box spring resiliently supporting the mattress above it. The box_spring is a mattress-like base containing springs onto which the true mattress is placed. The use of a box spring generally has a positive influence on the sleeping comfort.

[0003] However, it becomes more difficult to create good sleeping comfort since sleeping comfort is not a parameter which can be measured unambiguously. What one person finds comfortable will be less comfortable or even far from ideal for another person.

[0004] There are box springs in which, by way of example, a special shoulder region is provided in a base section. This shoulder region is of the same height as the base section but has a lower hardness. The whole (base section + shoulder region) is surrounded by one covering, and consequently the two parts cannot act independently of one another. The covering, at the seam between insert and base section, will prevent the insert from being fully depressed at that location.

[0005] US 1 371 362 describes a bed mattress, comprising an outer integral mattress in rectangular form with a central recess and an inner mattress section which is removably fitted within the recess. The outer mattress comprises a first kind of springs, while the inner mattress comprises a second kind of springs. The first kind of springs are considerably shorter than the second kind of springs and are considerably stiffer, so that the outer mattress will be less yielding than the inner mattress, and whereby the outer portion of the mattress is better adapted to resist the weight of a person sitting thereon, when the weight is concentrated in a smaller area.

[0006] DE 296 00 151 describes a mattress which can be adapted to a persons body, and which is intended for being laid onto a mattress support. The mattress comprises a frame with at least two modules which can be placed in the frame. The frame and the modules may be made of a latex foam. The modules are each adapted for supporting part of a human body, such as for example, if there are four modules, one module supports the neck, the second supports the shoulders, the third supports the body and the fourth supports the feet.

Summary of the invention

[0007] It is an object of the invention to provide a box spring which makes it possible, in a simple way, to increase sleeping comfort.

[0008] To this in a first aspect of the present invention a box spring is provided which is characterized in that the box spring includes an assembly of a base section, which includes at least one recess at the level of a shoulder and upper arm region and/or a recess at the level of a hip region of a user of the box spring, and an insert, which is positioned in the recess, the insert and the base section functioning independently of one another in the assembled state. The term "functioning independently" is to be understood as meaning that the insert and adjoining zones of the base section can be depressed in different ways, for example with a higher pressure on the insert while the pressure on the base section remains constant not causing any altered pressure on adjoining zones of the base section. In other words, a greater hardness of the base section will not prevent the insert from being depressed.

[0009] According to a first embodiment of the invention, the insert may be a separate removable insert. The insert and the base section may furthermore be provided with a separate clothing or covering.

[0010] According to a second embodiment, the insert forms a recessed but fixed section in the base section. In this embodiment, a box spring is provided which includes an assembly of a base section, which includes a recess at the level of a shoulder and upper arm region and/or at the level of a hip region of a user of the box spring, and an insert, which is positioned in the recess, a cloth-covered slit being present between the insert and the base section in the assembled state. The cloth-covered slit, i.e. a notch, slot or groove between base section and insert, the walls of which are lined with cloth, reduces the coefficient of friction between base section and insert.

[0011] The invention is based on the insight that the independent insert creates a highly unique individual region in a box spring. Since the insert is not vertically connected to the other adjoining regions of the base section (as would be the case if the insert were to be integral with the remainder of the box spring), this insert can function almost completely independently of the base section. Consequently, the adjoining zones can have little or no inhibiting influence on the adaptability of the independent insert. To enable the independent functioning of the base section and insert to be improved, there are means for reducing the friction between the two parts. These means preferably comprise at least one layer of cloth which is arranged between base section and insert. This cloth may form a covering for base section and/or insert, so that a cloth-covered slit is formed between the two. This covering may be a separate covering for base section and insert or a common covering for the two parts which also lines the inner side of the slit between the two parts. In the embodiment in which the insert is removable and is positioned in a recess in the base section, the properties of the insert can be selected in a very simple way such that they adapt to the person in question at a given moment. This is of considerable practical importance,

since although box springs (as well as mattresses) have a long service life, people's weight or sleeping habits often change. A box spring according to embodiments of the invention in which a removable insert is used therefore makes it easy to take account of such changes without the box spring as a whole having to be replaced and to create maximum sleeping comfort over a prolonged period of time.

[0012] The fact that the insert functions independently has the further comfort-enhancing consequence for the corresponding body region that both the mattress and the said body region of the person can sink in more deeply; and even if the abovementioned mattress has already been provided with a lowered comfort zone, the independent insert still provides further added value, resulting in a noticeable improvement to the function of this comfort region.

[0013] The hardness of the insert preferably differs from the hardness of adjoining regions of the base section and/or the support surface of the insert is preferably recessed or projecting, preferably recessed, with respect to support surfaces of adjoining regions of the base section.

[0014] In one embodiment, the insert can be removed from the recess in the base section of the box spring. The height or depth of the insert can then be adapted or its hardness can be replaced by a different desired hardness. The height can be adjusted by either adjusting the thickness of the insert or by using means in or on the base section and/or on the insert which enable the insert to be fixed at a lower or higher level in the recess. The height or depth adjustability ensures that the separate independent insert in the box spring can be adjusted separately according to the width of the shoulders. This dimension may differ from person to person. The hardness of the insert can be adjusted by using a different material. Examples of possible materials are pocket springs, optionally having a different steel wire and/or spring diameter, foam, latex, polyurethane, polyether or other materials, such as air, water or gel. A number of these different materials may be present in the same insert. The hardness of the insert is dependent on the material used and on the height of the insert.

[0015] The support surface of the insert is preferably recessed with respect to support surfaces of adjoining regions of the base section.

[0016] Since for an average person the shoulders and hips are wider than the remainder of the body, a depression at the level of the shoulder and/or hip region ensures that the mattress can compress further in these regions and the shoulder and/or hip of the person lying on his side can sink deeper into the shoulder and/or hip region of the mattress.

[0017] The weight of the shoulders and/or hips may differ for each person and may even change over the course of time for the same person. Therefore, it is advantageous if the hardness of this shoulder and/or hip region can also be adjusted, so that it ensures that the correct hardness is achieved for each person. The separate, removable nature of the insert of or for a box spring according to one embodiment of the invention makes this possible.

Brief description of the drawings

[0018] These and further aspects of the invention are illustrated below by way of example with reference to the drawings, in which:

Figure 1 diagrammatically depicts a perspective view of a box spring having a base section and a separate insert, according to a first embodiment of the invention;

Figure 2 shows a box spring as shown in Figure 1, in which the insert is positioned in the base section;

Figure 3 diagrammatically depicts a perspective view of a box spring with a base section and fixed insert, according to a second embodiment of the invention;

Figure 4 diagrammatically depicts a cross section through a box spring according to one of the embodiments of the invention, together with mattress and person.

[0019] The figures are diagrammatic and not to scale; identical components are generally denoted by identical reference symbols. Figures 1, 2 and 3 are shown as if the box spring were transparent. This is only done in order to make it possible to demonstrate more clearly which of the various components are which and how they fit together. In reality, of course, a box spring according to the invention is not usually transparent.

Detailed description of the drawings

[0020] Figure 1 shows a box spring 1 according to a first embodiment of the invention. The box spring 1 includes a base section 2 in which there is a recess 3, in the example shown, in a shoulder region. The box spring 1 also includes an insert 4, in the example shown a shoulder piece, which can be placed into and removed from the recess. In the figure, this is diagrammatically indicated by means of a double-headed arrow. Figure 2 shows a box spring 1 in which the separate, removable insert 4 is positioned in the recess 3. Because the insert is removable and is positioned in the recess 3 in the base section 2, it is very easy to select or alter the properties of the insert 4 in such a manner that it matches a user of the box spring at a given time. The insert 4 can be removed from the recess in the box spring. As a result, the height or depth of the insert 4 can be adjusted, or the insert 4 can easily be replaced by an insert with a different desired hardness. The height can be adjusted by either

adjusting the thickness of the insert 4 or by using means in or on the base section 2 and/or on the insert 4, enabling the insert 4 to be fixed more or less deeply in the recess. The adjustable height or depth ensures that the separate, independent insert 4 can be adjusted separately in the box spring 1 according to the width of the shoulders. This dimension may vary from person to person. The weight of the shoulder portion of the body may also differ for each person and may even vary for the same person over the course of time. Therefore, it is desirable for it also to be possible to adjust the hardness of this shoulder region, so that an appropriate hardness is ensured for each person. The separate, removable nature of the shoulder piece 4 of the box spring according to the invention makes this possible.

[0021] If desired, "sleeping tests" can be carried out. If the user has become heavier (or lost weight) over the course of time, the insert 4 can be replaced by a more suitable insert, i.e. an insert with properties which provide optimum sleeping comfort at that time given the weight and any other requirements, and this can be done in a simple manner and at relatively low cost. These benefits are not offered by regions which are fixed in the box spring. The insert 4 and the base section 2 function almost independently of one another. Consequently, the adjoining zones have little to no inhibiting effect on the adjustability of the separate, independent region, in the example shown the shoulder region. For this purpose, it is preferable to provide means for reducing the friction between base section 2 and insert 4, for example a cloth covering around base section 2 and a cloth covering around insert 4. These coverings cannot be seen as such in Figures 1 and 2.

[0022] The support surface of the insert 4 is preferably recessed with respect to the support surfaces of adjoining regions of the base section 3.

[0023] Figure 3 diagrammatically depicts a perspective view of a second embodiment of a box spring 1 according to the invention. In this case, a recess 3 is arranged in a well-defined region (for example the shoulder region) over the entire width of the box spring 1. In another embodiment, this recess could also cover part of the width of the box spring 1. The base section 2 includes, for example, pocket springs or foamed rubber. In the recess 3 there is an insert 4 which is recessed but not removable. This insert 4 is produced separately and has a different height and if appropriate a different hardness from the base section 2. A covering 8 is arranged around base section and insert, specifically in such a way that a cloth-covered slit 7 is present between the base section 2 and the insert 4. This is shown more clearly in the detailed view presented by the circle in Figure 3. This shows a cross section through that part of the box spring 1 where insert 4 is positioned in the recess 3 in the base section, the assembly of base section 2 and insert 4 being surrounded by a common covering 8. In this case, cloth-covered slits 7 are formed between insert 4 and base section 2. These cloth-covered slits 7 enable the base section 2 and the insert 4 to function independently of one another. The purpose of the cloth at the level of the slit 7 is to reduce the coefficient of friction between base section 2 and insert 4. The cloth-covered slit 7 may be present over part of the height of the box spring and/or of the insert or over virtually the entire height of one and/or the other. In the embodiment presented in Figure 3, the cloth-covered slit 7 is present over the entire height of the insert 4 but not over the entire height of the box spring.

[0024] Figure 4 diagrammatically depicts a side view of a person lying on a mattress 5 on a box spring 1 according to the invention. In this case, the insert 4 is recessed with respect to the base section 2, i.e. the support surface (when neither insert 4 nor base section 2 is under load) of the insert 4 with respect to the support surface of adjoining regions of the base section 2. In this case, the hardness of the insert 4 is also lower than the hardness of adjoining regions of the base section 2.

[0025] Since the shoulders are generally wider than the hips of a person, a depression in the shoulder region ensures that the mattress 5 can sink down further in this region, as shown in Figure 4, and that the shoulder of the person lying on his side can sink deeper into the shoulder region of the mattress. The lower hardness has a similar effect.

[0026] It will be clear that the examples given should not be considered to constitute any restriction to the invention and that numerous variations are possible within the scope of the invention. For example, the box spring may be placed on legs, as diagrammatically indicated in the figures, but may also be placed in a surround. The box spring may be a single box spring or a double box spring. In the latter case, the box spring may be provided with two recesses, in which case an insert can be placed in each of the recesses, with one recess in which a double insert or two smaller single inserts can be placed. A box spring according to the invention may be provided with a recess at the level of the shoulder region, a recess at the level of the hip region or a combination of the two. The invention also relates to a base section and an insert for use in a box spring.

Claims

1. Box spring (1), the box spring (1) including an arrangement of a base section (2), which includes at least a recess (3) and an insert (4), which is positioned in the recess, the insert (4) and the base section (2) functioning independently of one another in the assembled state, **characterized in that** the recess (3) is at the level of a shoulder and upper arm region of a user of said box spring (1).

2. Box spring (1) according to claim 1, **characterized in that** said insert (4) is a separate, removable insert.

3. Box spring (1) according to claim 1 or 2, **character-**

ized in that said base section (2) and insert (4) are provided with a separate covering (8).

4. Box spring (1) according to claim 1, **characterized in that** said insert (4) forms a recessed but fixed section in said base section (2), a cloth-covered slit (7) being present between the insert (4) and the base section (2) in the assembled state.

5. Box spring (1) according to one of the preceding claims, **characterized in that** the hardness of the insert (4) differs from the hardness of the adjoining regions of the base section (2).

6. Box spring (1) according to one of the preceding claims, **characterized in that** the support surface of the insert (4) is recessed with respect to support surfaces of adjoining regions of the base section (2).

7. Box spring (1) according to one of claims 1 to 5, **characterized in that** the support surface of the insert (4) projects with respect to support surfaces of adjoining regions of the base section (2).

8. Box spring (1) according to one of the preceding claims, **characterized in that** it is provided with means for reducing the friction between base section (2) and insert (4).

9. Box spring (1) according to claim 8, **characterized in that** the means for reducing the friction is at least one layer of cloth which is located between base section (2) and insert (4).

10. Box spring (1) according to Claim 79, **characterized in that** the cloth forms a covering (8) around base section (2) and/or insert (4).

11. Box spring (1) according to any of the preceding claims, **characterized in that** it furthermore comprises a recess (3) at the level of a hip region of a user of said box spring (1).

12. Base section for a box spring (1) according to one of the preceding claims.

13. Insert (4) for a box spring (1) according to claim 2 or one of claims 3 or 5 to 10 in as far as dependent on claim 2.

Patentansprüche

1. Sprungfedermatratze (1), wobei die Sprungfedermatratze (1) eine Anordnung eines Basisbereiches (2) aufweist, der mindestens eine Aussparung (3) und ein Einsatzstück (4), das in der Aussparung angeordnet ist, aufweist, wobei das Einsatzstück (4) und der Basisbereich (2) im zusammengebauten Zustand unabhängig voneinander funktionieren, **dadurch gekennzeichnet, dass** die Aussparung (3) sich in Höhe eines Schulter- und Oberarmbereiches eines Nutzers der Sprungfedermatratze (1) befindet.

2. Sprungfedermatratze (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Einsatzstück (4) ein separates, entfernbares Einsatzstück ist.

3. Sprungfedermatratze (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** der Basisbereich (2) und das Einsatzstück (4) mit einer separaten Abdeckung 8 versehen sind.

4. Sprungfedermatratze (1) nach Anspruch 1, **dadurch gekennzeichnet , dass** das Einsatzstück (4) einen ausgesparten aber ortsfesten Bereich in dem Basisbereich (2) bildet, wobei ein mit Gewebe abgedeckter Schlitz (7) zwischen dem Einsatzstück (4) und dem Basisbereich (2) im zusammengebauten Zustand vorhanden ist.

5. Sprungfedermatratze (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Härte des Einsatzstückes (4) sich von der Härte der benachbarten Bereiche des Basisbereiches (2) unterscheidet.

6. Sprungfedermatratze (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Auflagefläche des Einsatzstücks (4) hinsichtlich der Auflageflächen der benachbarten Bereiche des Basisbereiches (2) ausgespart ist.

7. Sprungfedermatratze (1) nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Auflagefläche des Einsatzstückes (4) in Bezug auf die Auflageflächen der benachbarten Bereiche des Basisbereiches (2) hervorsteht.

8. Sprungfedermatratze (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie mit Mitteln zum Reduzieren der Reibung zwischen dem Basisbereich (2) und dem Einsatzstück (4) versehen ist.

9. Sprungfedermatratze (1) nach Anspruch 8, **dadurch gekennzeichnet, dass** die Mittel zur Reduzierung der Reibung mindestens eine Gewebeschicht ist, die zwischen dem Basisbereich (2) und dem Einsatzstück (4) angeordnet ist.

10. Sprungfedermatratze (1) nach Anspruch 9, **dadurch gekennzeichnet, dass** das Gewebe eine Abdekkung (8) um den Basisbereich (2) und / oder das Einsatzstück (4) bildet.

11. Sprungfedermatratze (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sie weiterhin eine Aussparung (3) in Höhe des Hüftbereiches eines Nutzers der Sprungfedermatratze (1) aufweist.

12. Basisbereich für eine Sprungfedermatratze (1) nach einem der vorhergehenden Ansprüche.

13. Einsatzstück (4) für eine Sprungfedermatratze (1) nach Anspruch 2 oder einem der Ansprüche 3 oder 5 bis 10, soweit sie von Anspruch 2 abhängig sind.

Revendications

1. Sommier à ressorts (1), le sommier à ressorts (1) comprenant un dispositif d'une section de base (2), qui inclut au moins une cavité (3) et un élément rapporté (4) qui est positionné dans la cavité, l'élément rapporté (4) et la section de base (2) fonctionnant indépendamment l'un de l'autre à l'état assemblé, **caractérisé en ce que** la cavité (3) est au niveau d'une zone d'épaule et de bras d'un utilisateur dudit sommier à ressorts (1).

2. Sommier à ressorts (1) selon la revendication 1, **caractérisé en ce que** ledit élément rapporté (4) est un élément distinct et amovible.

3. Sommier à ressorts (1) selon la revendication 1 ou 2, **caractérisé en ce que** ladite section de base (2) et ledit élément rapporté (4) sont pourvus d'un revêtement distinct (8).

4. Sommier à ressorts (1) selon la revendication 1, **caractérisé en ce que** ledit élément rapporté (4) constitue une section renfoncée mais fixe dans ladite section de base (2), une fente entoilée (7) étant présente entre l'élément rapporté (4) et la section de base (2) à l'état assemblé.

5. Sommier à ressorts (1) selon l'une des revendications précédentes, **caractérisé en ce que** la dureté de l'élément rapporté (4) diffère de la dureté des zones contiguës de la section de base (2).

6. Sommier à ressorts (1) selon l'une des revendications précédentes, **caractérisé en ce que** la surface de soutien de l'élément rapporté (4) est renfoncée par rapport aux surfaces de soutien des zones contiguës de la section de base (2).

7. Sommier à ressorts (1) selon l'une des revendications 1 à 5, **caractérisé en ce que** la surface de soutien de l'élément rapporté (4) fait saillie par rapport aux surfaces de soutien des zones contiguës de la section de base (2).

8. Sommier à ressorts (1) selon l'une des revendications précédentes, **caractérisé en ce qu'**il est équipé d'un moyen pour réduire la friction entre la section de base (2) et l'élément rapporté (4).

9. Sommier à ressorts (1) selon la revendication 8, **caractérisé en ce que** le moyen pour réduire la friction est au moins une couche de tissu qui se trouve entre la section de base (2) et l'élément rapporté (4).

10. Sommier à ressorts (1) selon la revendication 9, **caractérisé en ce que** le tissu forme un revêtement (8) autour de la section de base (2) et/ou de l'élément rapporté (4).

11. Sommier à ressorts (1) selon l'une quelconque des revendications précédentes, **caractérisé en ce qu'**il comprend de plus une cavité (3) au niveau d'une zone de hanche d'un utilisateur dudit sommier à ressorts (1).

12. Section de base d'un sommier à ressorts (1) selon l'une des revendications précédentes.

13. Elément rapporté (4) pour un sommier à ressorts (1) selon la revendication 2 ou l'une des revendications 3 ou 5 à 10 dans la mesure où elle dépend de la revendication 2.

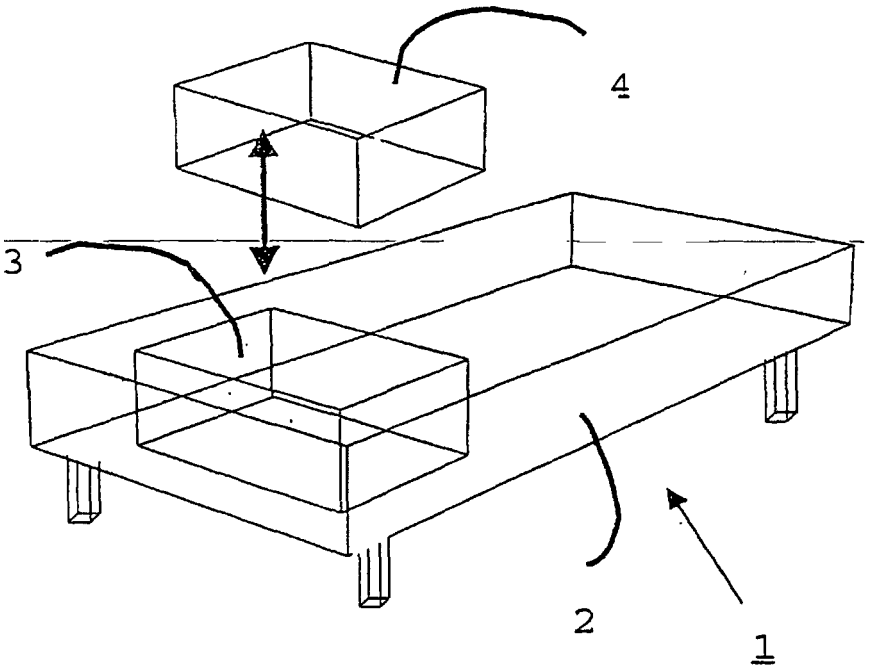

Fig. 1

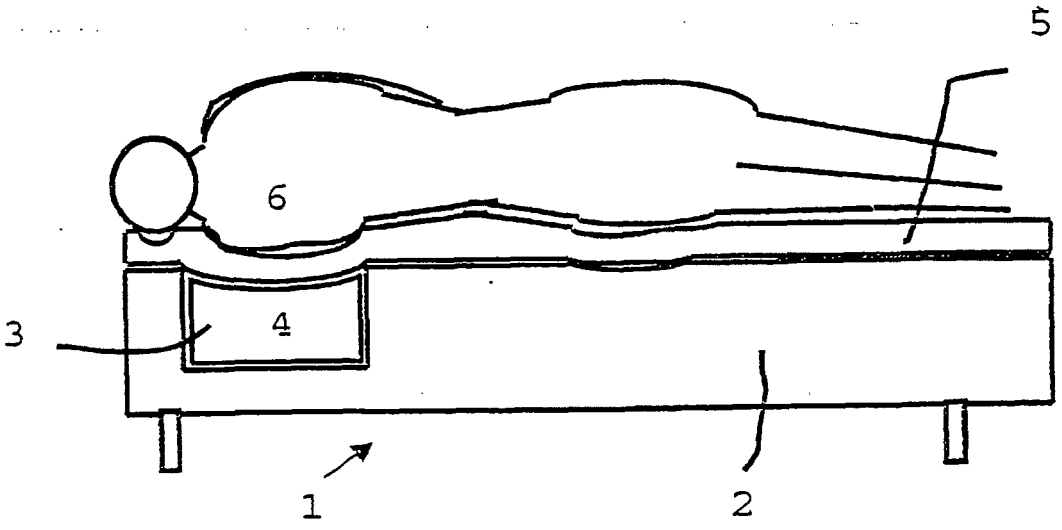

Fig. 4

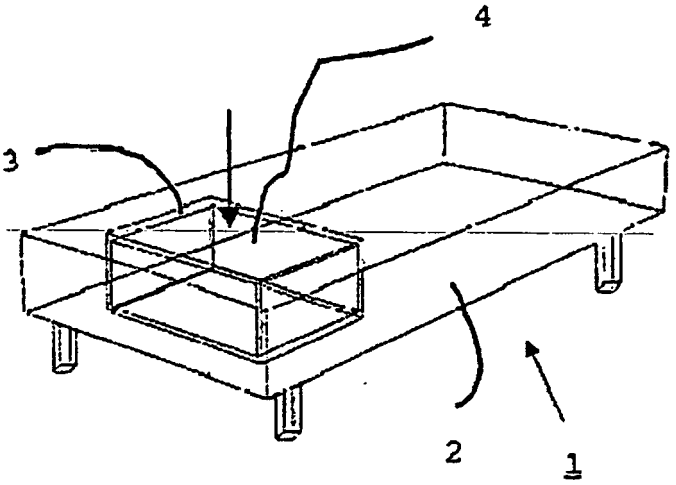

Fig. 2

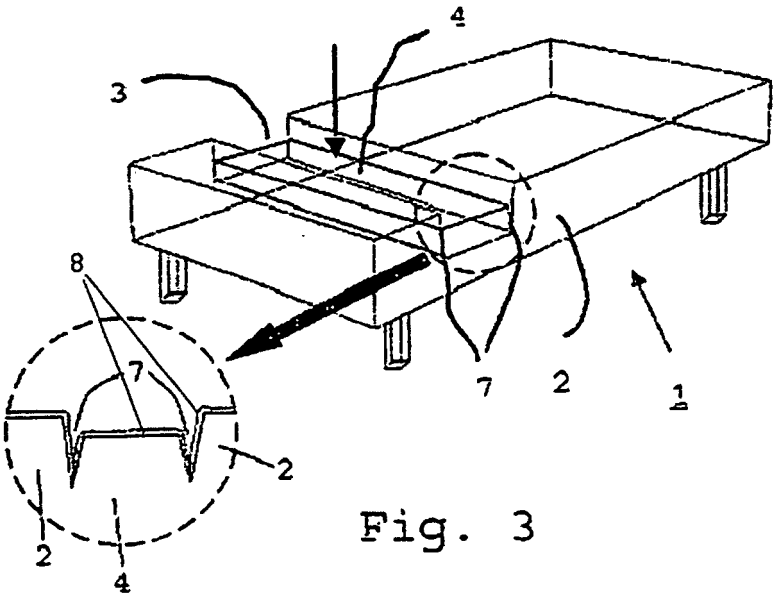

Fig. 3