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(54) **Adjustable spiral mattress supporting base with trapping safeguard**

Einstellbare Mattentrageunterlage mit Spiralbewehrung mit Verfangschutz

Base de support de matelas à spirale réglable avec protection contre le pinçage

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(56) References cited:  
**EP-A- 1 535 593 CA-A1- 2 471 005**  
**DE-C1- 19 839 166 GB-A- 2 419 523**  
**NL-A- 9 200 992 US-A- 5 870 784**  
**US-B1- 6 499 162 US-B1- 7 293 309**

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## Description

**[0001]** The subject relates to a mattress supporting base, comprising a fixed lower frame, an upper frame which is mounted directly onto the lower frame and which comprises movable upper frame members, as well as supporting means by means of which at least a portion of the upper frame is supported by the lower frame, which upper frame consists of longitudinal sections disposed transversely at a fixed distance in relation to one another, and transverse members extending between the longitudinal sections, which lower frame consists of lower longitudinal sections which are at a fixed distance in relation to one another in transverse direction.

**[0002]** A mattress supporting base according to the preamble of claim 1 is disclosed in US-A-6499162. This prior art mattress supporting base has a base provided with a sliding frame and a number of bed plate frames pivotably connected to the sliding frame. The bed plate frames are furthermore supported with respect to the base by means of a number of link bars. By activating a motor, the sliding frame is displaced with respect to the base resulting in a pivoting movement of the link bars and of the bed plate frames.

**[0003]** WO 2007 010218 A2 discloses another mattress supporting base directed to a rigid curved backrest section with no indication as to how is realised the connection between the upper and lower frames.

**[0004]** A further mattress supporting base as disclosed in NL-A-9200992 has an upper frame provided with a network of interlocked helical springs which are spanned between the longitudinal sections of the frame.

**[0005]** Also, a supporting mattress frame is known wherein the longitudinal sections thereof and possibly the cross-sections at the longitudinal ends thereof, which are in full view, have a slim line form that must be advantageous to the design of the spiral mattress support. In the folded down position the longitudinal sections of the upper mattress are positioned directly on top of the longitudinal sections of the lower mattress in an effort to retain the general impression of a slim line construction. A mattress may subsequently be placed upon the upper frame. Alternatively, the upper frame between which the diagonally spanned helical springs are fastened, may also be constructed as part of a so-called "box spring". In that case, a lower mattress is attached to the upper frame, upon which lower mattress further upper mattresses may be placed.

**[0006]** However, there are various drawbacks associated with this known construction of the spiral mattress supporting base. Firstly, the longitudinal sections of the lower frame and of the upper frame cannot easily be stacked to form a slim line whole. The joint thickness of the stacked longitudinal sections still shows a minimum thickness that cannot be ignored and which could adversely affect the appearance of the spiral mattress supporting base.

A further drawback related to the sections that lie one on

top of the other relates to the comfort of the spiral mattress supporting base. When folding down the movable upper frame members onto the fixed lower frame, there is the risk of trapping. In this manner, the user could accidentally get a hand or arm trapped between the longitudinal sections of the lower frame and upper frame when manipulating the control means of the movable upper frame members, which control means are usually located on a lateral side of the spiral mattress supporting base and attached to a longitudinal section. During the continued downward movement of the upper frame members, trapping could subsequently occur. Such a problem may also arise when two spiral mattress supporting bases are set up adjacent to one another, wherein the user of the one spiral mattress supporting base is exposed to the risk of trapping if the user of the one spiral mattress supporting base operates the movable upper frame members of the other spiral mattress supporting base.

According to the present invention, there is provided a mattress supporting base as claimed in claim 1. Preferred and other features are set out in the dependent claims and in the description and drawings.

**[0007]** The invention further relates to a box spring, comprising a mattress supporting base, as claimed, as well as a fixed box spring mattress attached to this mattress supporting base. The box spring mattress may comprise a circumferential element surrounding the outermost sections of the upper frame. Furthermore, the box spring mattress may comprise a lower mattress.

**[0008]** The invention will now be described with reference to the exemplary embodiment shown in the figures.

Figure 1 shows a side view of a first embodiment of the spiral mattress supporting base according to the invention.

Figure 2 shows an end view of two spiral mattress supporting bases placed next to each other according to figure 1.

Figure 3 shows a second embodiment of the spiral mattress supporting base constructed as a box spring mattress.

Figure 4 shows an end view of two box spring mattresses placed next to each other according to figure 3.

Figure 5 shows an alternative end view.

Figure 6 shows a top view of the spiral mattress supporting base according to figure 1, without a support surface.

**[0009]** The spiral mattress shown in figures 1, 2 and 6 according to the invention comprises a fixed lower frame 1 and, in its entirety, the lower frame indicated by the numeral 2. The upper mattress 3 is shown schematically on top of the upper frame 2. The upper frame 2 comprises the movable upper frame members 4, 5 and 6. The movable upper frame member 4 which is intended for supporting the body is attached by means of a hinge 8 to the fixed upper frame member 7. Further to this, the movable

upper frame member 5 is attached to said upper frame member 7 by hinge 9. The further upper frame member 6 is attached by hinge 10 at the other end of the fixed upper frame member 7. The upper frame members 5 and 6 are intended for the support of the legs. The upper frame members 4, 5 and 6 may be moved between the folded down position, indicated by continuous lines, and the folded up position, indicated by interrupted lines, by support bodies and actuators 30, which are known and are indicated schematically. Instead of actuators, locking devices may also be applied which only secure the upper frame members in the desired position. Adjustment of the upper frame members is therefore performed manually. In the embodiment of figures 1 and 2 a detachable soft trim 28 is attached all around the entire upper frame 2. This provides protection against the hard sections of the upper frame.

**[0010]** The upper frame member 4 consists of the upper longitudinal sections 11 and the upper transverse sections 22 which extends between there at the end; the upper frame member 5 consists of the upper longitudinal sections 12 and the upper frame member 6 consists of the upper longitudinal sections 13 and the upper transverse sections 23 which extends between these. The fixed upper frame member 7 consists of the upper longitudinal sections 20. These upper longitudinal sections 11-13 and 20 are all jointly connected by traverse members 14, 15 extending transversely between the upper longitudinal sections which, as can be seen in the end view of figure 2, have a downwardly curved shape. The traverse members indicated with 14 are all attached to a movable upper frame member 4-6, the traverse members indicated with 15 are all attached to the upper frame member 7. These latter traverse members are therefore permanently attached to the lower frame 1. The support surface 24, which is known, consists of interlocked helical springs and is spanned between the upper longitudinal sections 11-13 and 20.

**[0011]** In turn, the lower frame 1 consists of two lower longitudinal sections 16 and two lower transverse sections 17, as well as of feet 18 which are disposed at the corner points where the lower longitudinal sections and the lower transverse sections are attached to one another. Furthermore, fixed supports 19 are attached to the lower longitudinal sections 16 at the position of the traverse members 14.

**[0012]** The traverse members 14 which are attached to the movable frame members 4-6, are all provided opposite the corresponding supports 19 on the lower frame with supporting rubbers 21 which rest on the supports 19, as shown in figure 1 by continuous lines.

These supporting rubbers 21 are arranged inwardly at a distance from the upper longitudinal sections 4-6, thus further enhancing the slim line appearance of the spiral mattress supporting base. To further increase the comfort, a soft edge trim 28 is attached to the outer side of the upper longitudinal sections 11-13 and 20 and of the upper traverse sections 22, 23.

**[0013]** In the alternative arrangement of figures 3 and 4, a spiral mattress supporting base is shown which corresponds to that of figures 1 and 2, but onto which the box spring mattress indicated by 25 is coupled in its entirety. This box spring mattress 25 consists of the lower mattress 27 and the circumferential element 26 attached to the circumference thereof, which covers the upper longitudinal sections 11-13 and 20 as well as the upper transverse sections 22 and 23 (the soft edge trim 28 is omitted here). The upper mattress 3 is placed on top of this box spring mattress 25.

**[0014]** The alternative arrangement of Figure 5 shows an embodiment wherein two adjacently arranged spiral mattress supporting bases according to the invention are coupled by means of coupling sections 29 which are attached to the transverse sections 17. In this embodiment only four feet 18 are present.

List of reference numerals

**[0015]**

1. Lower frame
2. Upper frame
3. Upper mattress
4. Movable upper frame member
5. Movable upper frame member
6. Movable upper frame member
7. Fixed upper frame member
8. Hinge
9. Hinge
10. Hinge
11. Upper longitudinal section
12. Upper longitudinal section
13. Upper longitudinal section
14. Traverse member
15. Traverse member
16. Lower longitudinal section
17. Lower transverse section
18. Foot
19. Support
20. Upper longitudinal section
21. Supporting rubber
22. Upper transverse section
23. Upper transverse section
24. Transversely spanned interlocking helical springs
25. Box spring
26. Circumferential element
27. Lower mattress
28. Edge trim
29. Coupling section
30. Adjusting and/or locking means

**Claims**

1. Mattress supporting base, comprising a fixed lower frame (1), an upper frame (2) which is mounted di-

- rectly onto the lower frame (1) and which comprises a fixed upper frame member (7) and movable thereto movable upper frame members (4-6), as well as supporting means (19, 21) by means of which the movable upper frame members (4, 5, 6) are supported by the lower frame (1), which upper frame (2) consists of longitudinal sections (11-13, 20) disposed transversely at a fixed distance in relation to one another and traverse members (14, 15) extending between the longitudinal sections, which lower frame (1) consists of lower longitudinal sections (16) which are at a fixed distance in relation to one another in transverse direction, whereby the transverse distance between the lower longitudinal sections (16) is smaller than the transverse distance between the upper longitudinal sections (11-13, 20) and the supporting means (19, 21) engage at a distance between the outer ends of at least one of the traverse members (14), **characterized in that** it is a spiral mattress supporting base whereby between which upper longitudinal sections (11-13, 20) a network of interlocked helical springs is spanned, and **in that** all the traverse members (15) attached to the fixed upper frame member (7) are permanently attached to the lower frame (1).
2. Mattress supporting base according to claim 1, wherein at least one of the traverse members (14) and/or the lower longitudinal sections (16) bear/are provided with supporting means (19, 21).
  3. Mattress supporting base according to claim 2, wherein at least one of the traverse members (14) bears a downwardly directed supporting means (19, 21) which engages with or across a lower longitudinal section (16) or a support (19) attached thereto.
  4. Mattress supporting base according to claim 2 or 3, wherein one of the traverse members (14) bears a supporting rubber (19, 21) with an engaging surface formed from the absorbent material.
  5. Mattress supporting base according to any of the preceding claims, wherein the upper frame (2) comprises a fixed upper frame member (7) fixed to the lower frame (1) and a hingeable movable upper frame member (4, 5) arranged on at least one side of the fixed upper frame member (7).
  6. Mattress supporting base according to any of the preceding claims, wherein at least one of the movable upper frame members (4, 5, 6) is formed articulated.
  7. Mattress supporting base according to any of the preceding claims, wherein adjusting means and/or securing means (30) are provided, which, on the one hand, engage the lower frame (1) and one of the movable upper frame members (4-6) on the other.
  8. Mattress supporting base according to any of the preceding claims, wherein the upper longitudinal sections (11-13) and/or the upper transverse sections (22, 23) are provided with an edge trim (28) formed from a relatively soft material.
  9. Mattress supporting base according to any of the preceding claims, wherein the lower frame (1) is provided with lower transverse sections (17) which extend transversely between the lower longitudinal sections (16).
  10. Mattress supporting base according to claim 9, wherein the distance between the outermost lower transverse sections (17) is smaller than the distance between the outermost upper transverse sections (22, 23).
  11. Mattress supporting base according to claim 9 or 10, wherein feet (18) are attached to the lower longitudinal sections (16) and/or to the lower transverse sections (17).
  12. In combination, two adjacently arranged mattress supporting bases according to any of the preceding claims in conjunction with coupling sections (29) for coupling the lower frames (1) of the spiral mattress supporting bases.
  13. Box spring, comprising a mattress supporting base according to any of the preceding claims 1-11, and a box spring mattress (25) mounted in a fixed position onto the mattress supporting base.

#### Patentansprüche

1. Matratzenuntergestell, umfassend einen feststehenden unteren Rahmen (1), einen oberen Rahmen (2), der direkt auf dem unteren Rahmen (1) angebracht ist und ein feststehendes oberes Rahmenelement (7) und dazu bewegbare bewegliche obere Rahmenelemente (4-6) umfasst, sowie Tragmittel (19, 21), über welche die beweglichen oberen Rahmenelemente (4, 5, 6) durch den unteren Rahmen (1) getragen werden, wobei der obere Rahmen (2) aus quer mit einem feststehenden Abstand zueinander angeordneten Längsprofilen (11-13, 20) und sich zwischen den Längsprofilen erstreckenden Querelementen (14, 15) besteht, wobei der untere Rahmen (1) aus in Querrichtung mit einem feststehenden Abstand zueinander angeordneten unteren Längsprofilen (16) besteht, wobei der Querabstand zwischen den unteren Längsprofilen (16) kleiner ist als der Querabstand zwischen den oberen Längsprofilen (11-13, 20) und die Tragmittel (19, 21) mit

- einem Abstand zwischen den äußeren Enden wenigstens eines der Querelemente (14) in Eingriff stehen, **dadurch gekennzeichnet, dass** es sich um ein Spiralfeder-Matratzenuntergestell handelt, bei dem zwischen den oberen Längsprofilen (11-13, 20) jeweils ein Netz ineinander greifender Schraubenfedern gespannt ist, und dass alle an dem feststehenden oberen Rahmenelement (7) befestigten Querelemente (15) dauerhaft an dem unteren Rahmen (1) befestigt sind.
2. Matratzenuntergestell nach Anspruch 1, wobei wenigstens eines der Querelemente (14) und/oder der unteren Längsprofile (16) Tragmittel (19, 21) trägt bzw. mit solchen versehen ist.
3. Matratzenuntergestell nach Anspruch 2, wobei wenigstens eines der Querelemente (14) ein nach unten gerichtetes Tragmittel (19, 21) trägt, das mit einem unteren Längsprofil (16) oder einem daran befestigten Träger (19) oder über ein(en) solches/n hinweg in Eingriff steht.
4. Matratzenuntergestell nach Anspruch 2 oder 3, wobei eines der Querelemente (14) einen Traggummi (19, 21) mit einer aus einem absorptionsfähigen Material ausgebildeten Eingriffsfläche trägt.
5. Matratzenuntergestell nach einem der vorangehenden Ansprüche, wobei der obere Rahmen (2) ein an dem unteren Rahmen (1) befestigtes feststehendes oberes Rahmenelement (7) und ein auf wenigstens einer Seite des feststehenden oberen Rahmenelements (7) angeordnetes schwenkbares bewegliches oberes Rahmenelement (4, 5) umfasst.
6. Matratzenuntergestell nach einem der vorangehenden Ansprüche, wobei wenigstens eines der beweglichen oberen Rahmenelemente (4, 5, 6) gelenkig ausgebildet ist.
7. Matratzenuntergestell nach einem der vorangehenden Ansprüche, wobei Einstellmittel und/oder Sicherungsmittel (30) vorgesehen sind, die einerseits mit dem unteren Rahmen (1) und andererseits mit einem der beweglichen oberen Rahmenelemente (4-6) in Eingriff stehen.
8. Matratzenuntergestell nach einem der vorangehenden Ansprüche, wobei die oberen Längsprofile (11-13) und/oder die oberen Querprofile (22, 23) mit einem aus einem relativ weichen Material ausgebildeten Kantenbesatz (28) versehen sind.
9. Matratzenuntergestell nach einem der vorangehenden Ansprüche, wobei der untere Rahmen (1) mit unteren Querprofilen (17) versehen ist, die sich quer zwischen den unteren Längsprofilen (16) erstrecken.
10. Matratzenuntergestell nach Anspruch 9, wobei der Abstand zwischen den äußersten unteren Querprofilen (17) kleiner ist als der Abstand zwischen den äußersten oberen Querprofilen (22, 23).
11. Matratzenuntergestell nach Anspruch 9 oder 10, wobei an den unteren Längsprofilen (16) und/oder den unteren Querprofilen (17) Füße (18) befestigt sind.
12. Kombination aus zwei benachbart angeordneten Matratzenuntergestellen nach einem der vorangehenden Ansprüche zusammen mit Verbindungsprofilen (29) zum Verbinden der unteren Rahmen (1) der Spiralfeder-Matratzenuntergestelle.
13. Boxspringbett, umfassend ein Matratzenuntergestell nach einem der vorangehenden Ansprüche 1-11 und eine in einer feststehenden Position auf dem Matratzenuntergestell angebrachte Boxspringmatratze (25).

## Revendications

1. Base de support de matelas, comprenant un cadre inférieur fixe (1), un cadre supérieur (2) qui est monté directement sur le cadre inférieur (1) et qui comprend un organe de cadre supérieur fixe (7) ; et mobiles vers celle-ci, des organes de cadre supérieurs mobiles (4 à 6), ainsi que des moyens de support (19, 21) au moyen desquels les organes de cadre supérieurs mobiles (4, 5, 6) sont supportés par le cadre inférieur (1), lequel cadre supérieur (2) consiste en des sections longitudinales (11 à 13, 20) disposées transversalement à une distance fixe les unes par rapport aux autres et des organes transversaux (14, 15) s'étendant entre les sections longitudinales, lequel cadre inférieur (1) consiste en des sections longitudinales inférieures (16) qui sont à une distance fixe les unes par rapport aux autres dans la direction transversale, moyennant quoi la distance transversale entre les sections longitudinales inférieures (16) est plus petite que la distance transversale entre les sections longitudinales supérieures (11 à 13, 20) et les moyens de support (19, 21) s'enclenchent à une distance entre les extrémités extérieures d'au moins un des organes transversaux (14), **caractérisée en ce qu'il s'agit d'une base de support de matelas à spirales**, moyennant quoi entre lesquelles sections longitudinales supérieures (11 à 13, 20), un réseau de ressorts hélicoïdaux entremêlés s'étend, et **en ce que** tous les organes transversaux (15) attachés à l'organe de cadre supérieur fixe (7) sont attachés en permanence au cadre inférieur (1).
2. Base de support de matelas selon la revendication

- 1, dans laquelle au moins un des organes transversaux (14) et/ou des sections longitudinales inférieures (16) porte/est doté de moyens de support (19, 21).
3. Base de support de matelas selon la revendication 2, dans laquelle au moins un des organes transversaux (14) porte un moyen de support dirigé vers le bas (19, 21) qui s'enclenche avec ou à travers une section longitudinale inférieure (16) ou un support (19) attaché à ceux-ci.
4. Base de support de matelas selon la revendication 2 ou 3, dans laquelle au moins un des organes transversaux (14) porte un caoutchouc de support (19, 21) doté d'une surface d'enclenchement formée à partir du matériau absorbant.
5. Base de support de matelas selon l'une quelconque des revendications précédentes, dans laquelle le cadre supérieur (2) comprend un organe de cadre supérieur fixe (7) fixé au cadre inférieur (1) et un organe de cadre supérieur mobile articulable (4, 5) agencé sur au moins un côté de l'organe de cadre supérieur fixe (7).
6. Base de support de matelas selon l'une quelconque des revendications précédentes, dans laquelle au moins un des organes de cadre supérieurs mobiles (4, 5, 6) est formé articulé.
7. Base de support de matelas selon l'une quelconque des revendications précédentes, dans laquelle des moyens d'ajustement et/ou des moyens d'arrimage (30) sont prévus, lesquels, d'une part, enclenchent le cadre inférieur (1) et un des organes de cadre supérieurs mobiles (4 à 6) d'autre part.
8. Base de support de matelas selon l'une quelconque des revendications précédentes, dans laquelle les sections longitudinales supérieures (11 à 13) et/ou les sections transversales supérieures (22, 23) sont dotées d'une bordure (28) formée à partir d'un matériau relativement souple.
9. Base de support de matelas selon l'une quelconque des revendications précédentes, dans laquelle le cadre inférieur (1) est doté de sections transversales inférieures (17) qui s'étendent transversalement entre les sections longitudinales inférieures (16).
10. Base de support de matelas selon la revendication 9, dans laquelle la distance entre les sections transversales inférieures les plus à l'extérieur (17) est plus petite que la distance entre les sections transversales supérieures les plus à l'extérieur (22, 23).
11. Base de support de matelas selon la revendication
- 9 ou 10, dans laquelle des pieds (18) sont attachés aux sections longitudinales inférieures (16) et/ou aux sections transversales inférieures (17).
- 5 12. En combinaison, deux bases de support de matelas agencées de façon adjacente selon l'une quelconque des revendications précédentes, conjointement avec des sections de couplage (29) pour coupler les cadres inférieurs (1) des bases de support de matelas à spirales.
- 10 13. Sommier à ressorts, comprenant une base de support de matelas selon l'une quelconque des revendications 1 à 11 précédentes, et un matelas pour sommier à ressorts (25) monté en position fixe sur la base de support de matelas.
- 15 20 25 30 35 40 45 50 55

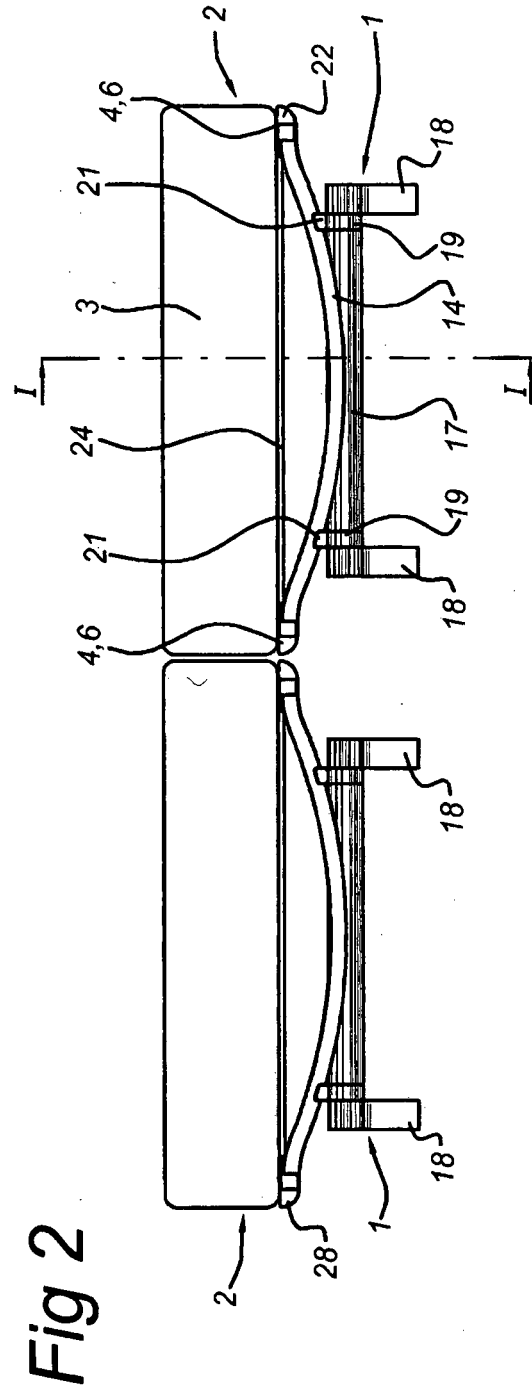
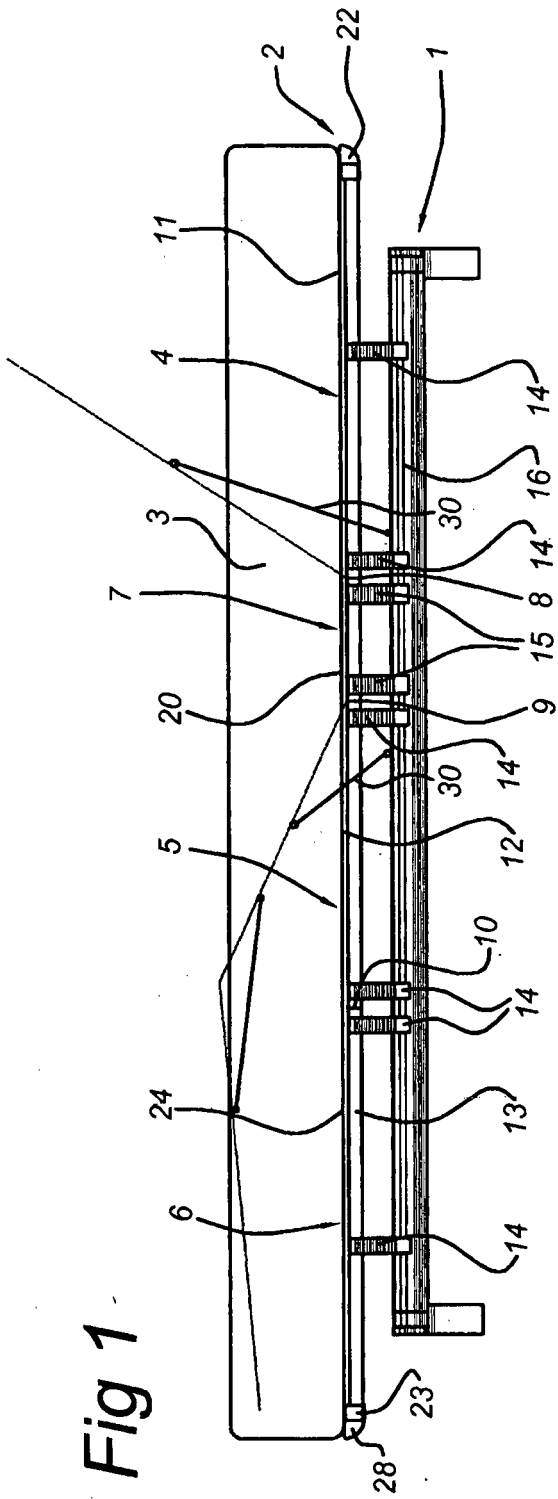


Fig 3

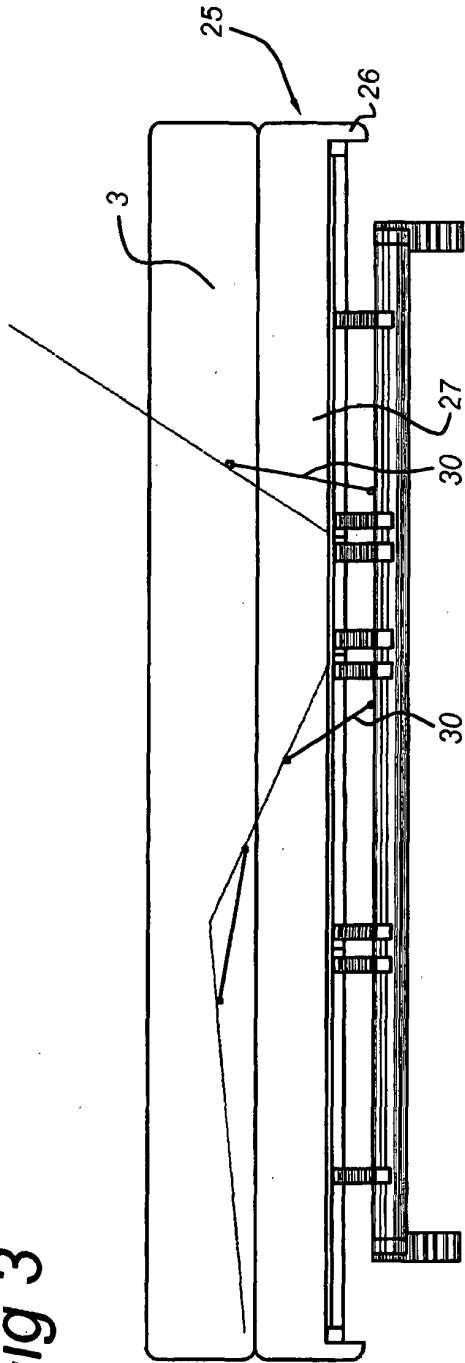
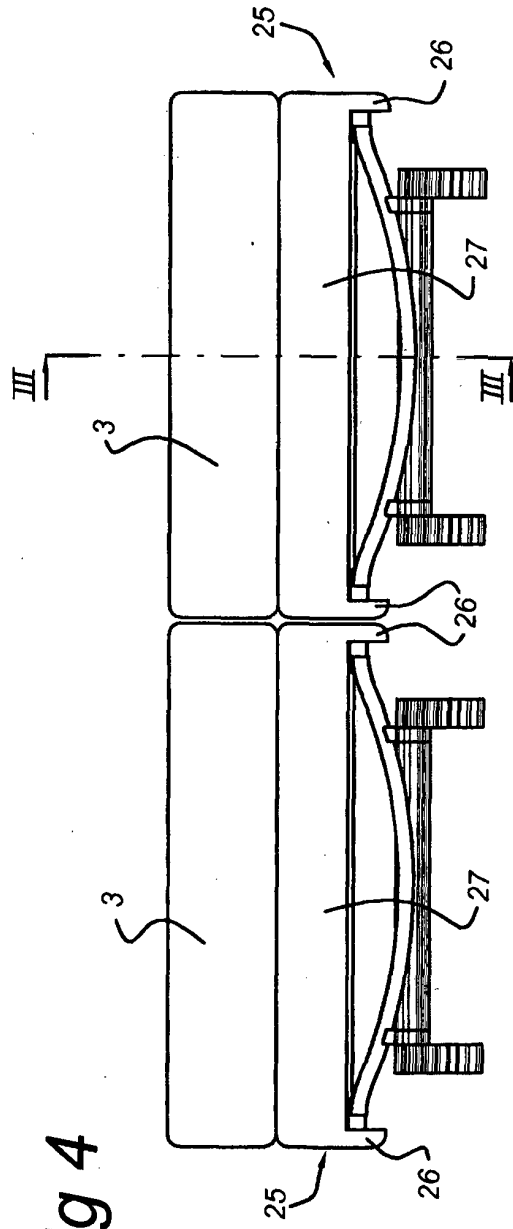


Fig 4





**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- US 6499162 A [0002]
- WO 2007010218 A2 [0003]
- NL 9200992 A [0004]