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

(11) **EP 1 913 919 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.04.2008 Bulletin 2008/17

(51) Int Cl.:
A61G 7/015 *(2006.01)* ***A47C 19/02*** *(2006.01)*

(21) Application number: **06122340.0**

(22) Date of filing: **16.10.2006**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(71) Applicant: **Jensen Mobler as**
3061 Svelvik (NO)

(72) Inventors:
- **Van Dullemen, Marlies**
  2314 EN, Leiden (NL)
- **Maurice, Ingmar Christiaan**
  1075 VH, Amsterdam (NL)

(74) Representative: **Metman, Karel Johannes et al**
De Vries & Metman
Overschiestraat 180
1062 XK Amsterdam (NL)

Remarks:
A request for correction of the drawings has been filed pursuant to Rule 139 EPC. A decision on the request will be taken during the proceedings before the Examining Division (Guidelines for Examination in the EPO, A-V, 3.).

(54) **Adjustable bed bottom, bed and adjustable headboard**

(57) The invention relates to a bed bottom having a plurality of transverse support sections including at least a foot rest section, an upper body section and at least one intermediate section. They are adjacent to each other in longitudinal direction of the bed to support a mattress thereon in an adjustable manner. The bed bottom is adjustable from a first position wherein all support sections are substantially in line to a second position in which at least one section is moved in vertical direction. At least one intermediate section is movable downwardly from the first position to the second position. Longitudinal edges of the bed bottom for supporting the mattress remain stationary during movement of the bed bottom between the first and second positions. An adjustable headboard at the head end of the bed is adjustable between a substantially vertical position and a position in which the headboard extends obliquely downwardly from the head end of the bed towards a mattress to be supported by the bed bottom, in order to provide a comfortable support in combination with the bed bottom.

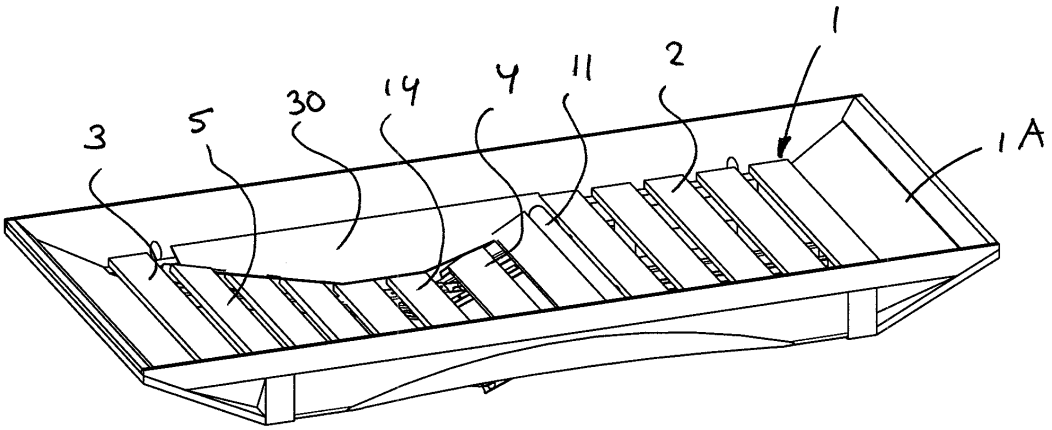

Fig. 6

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Description

[0001] The present invention relates to a bed bottom according to the preamble of claim 1.

[0002] Such adjustable bed bottom is known in numerous embodiments. At least the upper body section and sometimes all sections are movable upwardly in order to obtain positions of the bed bottom which are adapted to a specific use. Bed bottoms for normal home use are adjustable to obtain a comfortable sit-up position, for example to read in bed or to watch television. On the other hand, especially in twin beds having a common mattress, a common topper mattress or mattress cover, such upward adjustment of the bed bottom is impossible or at least cumbersome. Special back rests or adjustable headboards have been designed to allow people to sit-up in bed without adjusting the bed bottom, but these solutions do not allow for a very comfortable position in bed as the lower body is inclined to slip away on the mattress.

[0003] The present invention aims to provide a bed bottom which is suitable for use in twin beds and/or in combination with separate back rests to obtain a very comfortable sit-up position.

[0004] For this purpose, the bed bottom according to the invention is a characterised in that the at least one intermediate section is movable downwardly from the first position to the second position.

[0005] By moving at least one intermediate section of the bed bottom downwardly, it is possible to create a recess for a persons bottom which creates a much more comfortable sit-up position in bed, especially when the person uses a separate or integrated back rest. As it is not necessary to obtain a large downward movement of the intermediate section, it is possible to adjust only one of the bed bottoms in a twin bed, without disturbing the person lying on the other bed bottom having a different position.

[0006] In its most simple form one intermediate section and an adjacent support section - which may be the upper body section or a second intermediate section - are pivotable downwardly such that facing ends thereof move downwardly. Of course, there are many other possibilities to adjust the bed bottom, for example to create a lowest point in the bed bottom at different longitudinal positions, to adapt the bed bottom to longer or shorter persons.

[0007] It is favourable if a bridge section is supported on two adjacent pivotable sections, overlapping both sections and being pivotally connected to one of said pivotable sections and being slidably supported by the other pivotable section.

[0008] Such bridge section covers the gap between two pivoting sections and creates a small flat bottom of the recess in the bed bottom.

[0009] An important embodiment which is especially intended to be used in a twin bed having two adjacent bed bottoms is characterised in that longitudinal edges of the bed bottom for supporting the mattress remain stationary during movement of the bed bottom between the first and second positions.

[0010] Due to this feature, the edges of the mattress remain stationary when the bed bottom is adjusted and there is only created a recess in the bed bottom and in the mattress were a person is lying or sitting, i.e. in a transversally central portion. This further reduces the disturbance between the bed bottoms.

[0011] An even smoother transition between the stationary longitudinal edges of the bed bottom and the recess created therein is obtained if the longitudinal edges of the bed bottom comprise pivotable side flaps pivotally connected to the longitudinal edges and resting with their free ends on the support sections, said side flaps preferably extending only in the region of the downwardly movable support sections, the free ends of the side flaps being configured to remain in contact with the pivotable support sections, and preferably have a shape adapted to the shape of the bed bottom in the second position.

[0012] The bed bottom may be adjusted manually and/or by means of the weight of a person, manually by spring force or motorised by means of electric, hydraulic or pneumatic motors.

[0013] A bed which comprises a frame having a head end and a foot end and which is favourable in combination with the bed bottom as described above, comprises an adjustable headboard at the head end of the frame, the headboard being adjustable between a more or less upright position and a more inclined position in which the headboard extends obliquely downwardly from the head end of the bed towards a mattress to be supported by the bed bottom.

[0014] This adjustable headboard creates a back rest for a person who wishes to sit-up in the bed and may create a very comfortable sit-up position in combination with the adjustable bed bottom as described.

[0015] It is especially favourable if the headboard is provided with a spring element allowing at least in some of the inclined positions of the headboard an at least limited pivoting movement back towards the vertical position.

[0016] Due to this feature, the headboard allows some resilience and adaptation to the persons position and for example to the position of the mattress on the bed bottom. This is further improved if the headboard is provided with a cushion supported by a flexible support which is allowed to flex also at the lower end, as a headboard may then even better adapt itself to the back of the person resting against the headboard.

[0017] The invention will hereafter be elucidated with reference to the drawings showing embodiments of the invention by way of example.

Fig. 1 A-G are very schematic side views of six different embodiments of the bed bottom according to the invention.

Fig. 2 A-F are side views corresponding to those of Fig. 1, showing different positions of the bed bottom

according to Fig. 1F.

Fig. 3 are very schematic side views of the bed bottom of Fig. 1C in different positions, illustrating a manner of repositioning the lowest point of the bed bottom in its lower position.

Fig. 4 A, B are very schematic side views of a bed bottom according to the invention in two different positions and in combination with an adjustable headboard.

Figs. 5A, 6A and 5B, 6B are perspective views and longitudinal sectional views, respectively, of a practical embodiment of the bed bottom of Fig. 1F, in two different positions.

Fig. 7 is an enlarged perspective top view of the bed bottom of Fig. 6, in mirror image and with a part of the bed bottom cut away.

Fig. 8 A-C are very schematic perspective views of a bed with an adjustable headboard according to the invention in three different positions.

Fig. 9 is an adjustable headboard shown separately from a bed and in an upright position.

Fig. 10 is a view corresponding to that of Fig. 9 but on a larger scale and with a portion of the headboard removed to illustrate the structure of the adjusting mechanism.

Fig. 11 shows detail XI in Fig. 10 on a larger scale.

Figs. 12 -14 are views corresponding to those of Fig. 9-11 but with the headboard in an almost horizontal position.

[0018] Figs. 1 A-F show various principal embodiments of a bed bottom 1 according to the invention. The bed bottom 1 according to the invention has a plurality of transverse support sections including at least a foot rest section 2, an upper body section 3 and one or more intermediate sections 4-6. These sections are positioned adjacent to each other in longitudinal direction of the bed to support a mattress thereon in an adjustable manner. As a result, the bed bottom 1 is adjustable from a first position in which all support sections 2-6 are substantially in line (not shown) to a second position in which at least one of the intermediate sections 4-6 is moved downwardly from the first position to the second position.

[0019] In Fig. 1A there are three intermediate sections 4-6 which can be moved downwardly to form a recess in the bed bottom between the foot rest section 2 and the upper body section 3. In this recess, the central intermediate section 5 forms the bottom of a recess and the other intermediate sections 4, 6 form inclined walls thereof.

[0020] In the embodiment of Fig. 1B, there is only one intermediate section 4 which is movable up and down in a horizontal manner to form the bottom of a recess between the foot rest section 2 and the upper body section 3 of the bed bottom 1.

[0021] Fig. 1C shows an embodiment in which two intermediate sections 4, 5 and the upper body section 3 are movable to form a recess between the foot rest section 2 and the head end of the bed.

[0022] The variant of Fig. 1D has one movable (pivotable) intermediate section and a pivotable upper body section 3.

[0023] In Fig. 1E there is an embodiment comprising two pivotable intermediate sections 4, 5 which are connected in such a way to each other that no gap will occur when the intermediate sections 4, 5 are moved to there downward position.

[0024] Fig. 1F shows a variation in which the length of the upper body section 3 and the intermediate sections 4 and 5 have been varied.

[0025] The variant of Fig. 1G, there are again two pivotable intermediate sections 4, 5, but a gap 7 is created between the ends of the downwardly pivotable intermediate sections 4, 5 that are facing each other. Furthermore, the intermediate section 5 has its pivoting axis positioned between its ends so that the end remote from the other pivoting section 4 will move slightly upwardly when its other end is moved downwardly.

[0026] Of course, all kinds of other variations are conceivable, also variations in which the foot rest section 2 is movable, although in all embodiments shown in Fig. 1 the foot rest section 2 is stationary. This is preferred to keep the bed bottom simple and concentrate the movement of the bed bottom in the region of a person's bottom. The downward movement of the intermediate section is independent and not the result of an upward movement of one of the other sections, as is known from some prior art bed bottoms. The length of the various sections of the bed bottom 1 may be varied, and may also be adjustable. In all embodiments shown, the bed bottom sections are either stationary or movable (from the aligned horizontal position) in downward direction only. According to the invention it is preferred that the bed bottom sections will be movable mainly downwardly from their horizontal position. If there would be an upward movement from the horizontal position, this would be small. One could think for example of a slight upward movement of the section of the bed bottom supporting the knees of a person sitting or lying in bed.

[0027] Figs. 2A-F show how the embodiment of Fig. 1F can be adjusted, in this case by the weight of a person lying in bed. Versions with mechanical or electrical actuators are also possible. The circle P symbolises the bottom of a person. In Fig. 2A the person is lying with its bottom at the position of the intermediate sections 4, 5. When this person P exerts a force (symbolised by a downward arrow) the intermediate sections 4, 5 will pivot downwardly, preferably against the force of a spring and preferably after unlocking a lock which holds the intermediate sections 4, 5 in their upper position in which they are aligned with the foot rest section 2 and the upper body section 3.

[0028] Fig. 2C shows that the intermediate sections 4, 5 can be locked in there downwardly moved positions by a manually actuable lock 8 preventing the intermediate sections 4, 5 from moving upwards again under the force of the springs, also when there is no weight from a person

P resting on the intermediate sections 4, 5, as is shown in Fig. 2D.

[0029] In Fig. 2E, the lock 8 is unlocked again, so that the spring force can move the intermediate sections 4, 5 back to their upward position in which they can be locked again by the lock 8 to hold the intermediate sections 4, 5 in their upward position, also when a person P is resting on the intermediate sections 4, 5.

[0030] Fig. 3 shows a further embodiment of the bed bottom 1 according to the invention in which it is possible to readjust the lowest point of the recess in the bed bottom 1, which can be chosen by the person lying on the bed bottom 1 according to a position suiting that persons body length. In this embodiment, the intermediate sections 4, 5 and the upper body section 3 are pivotable with respect to each other in a different manner, so that different positions of the three sections can be obtained.

[0031] In Fig. 3A the bed bottom is in its flat position having all sections aligned.

[0032] In Fig. 3B the intermediate section 4 has been maintained stationary and only the intermediate section 5 and the upper body section 3 have been pivoted, so that the lowest point (see arrow) of the recess formed is at the joint between the intermediate section 5 and the upper body section 3.

[0033] Fig. 3C shows the position in which the intermediate section 4 has started to move, such that it is now aligned with the intermediate section 5. The lowest point has not been repositioned, but the shape of the recess has changed.

[0034] In Fig. 3D the intermediate section 4 has been rotated to a larger extent and the intermediate section 5 has followed such that it has taken up a horizontal position, thereby forming the lowest point of the recess over its entire length.

[0035] In Fig. 3E, the intermediate section 5 has been pivoted such that it has become aligned with the upper body section 3 and as a result the lowest point of the recess has been readjusted to the joint between the intermediate sections 4 and 5. In this position persons having a longer upper body can lie or sit in a comfortable position in such bed.

[0036] Figs. 4 A, B show positions of the bed bottom 1 which are comparable to those of Fig. 3E and 3B. These figures illustrate the co-operation between the bed bottom 1 and an adjustable headboard 9 which can take up various positions in order to enable a person lying in bed to sit-up in bed in a comfortable position with its bottom, back and head partly in the recess and partly on the headboard 9. A particular embodiment of the headboard 9 will be described later on.

[0037] Fig. 5, 6 and 7 show a practical embodiment of the bed bottom according to the invention. One can recognise a bed tray 1A for a mattress having the bed bottom 1 integrated therein. This bed bottom 1 includes a stationary foot rest section 2, intermediate sections 4 and 5 and an upper body section 3. The bed tray 1A will support the edges of a mattress to be supported on the bed bottom 1. The intermediate section 4 and the upper body section 3 are both pivotable about a horizontal transverse axis, and the intermediate section 4 is driven by a motor, for example through a drive shaft 11 positioned coaxial with the pivot axis. This motor (not-shown) is actuated by the person lying in bed by means of a (remote) control connected to the motor.

[0038] The intermediate sections 4 and 5 are connected to each other through a pin slot connection (Fig. 7), in this case comprising a pin 12 fixed to the end of the intermediate section 4 engaging a longitudinal elongated slot 13 in the intermediate section 5. Through this pin slot connection, both sections 4, 5 are connected to each other at their ends facing each other in a slidable manner, so that no gap will be formed when both sections 4, 5 pivot downwardly with respect to each other. Both sections 4, 5 will slightly overlap each other, where the overlap is larger in the horizontal position than in the downwardly pivoted position.

[0039] In order to create a flat bottom in the recess caused by the downwardly pivoted sections 4, 5 there is provided a bridge section 14 which, in this case, is pivotally connected to the intermediate section 5 and slidably connected to the intermediate section 4, while the bridge section 14 overlaps both sections 4 and 5. In the upper, aligned position of the sections 4 and5, the bridge section 14 will be aligned as well, whereas the bridge section 14 will remain substantially horizontal when the intermediate section 4 and the intermediate section 5 pivot downwardly. Due to the bridge section 14, a mattress will be supported properly and there will be created a comfortable recess in the bed bottom 1 and a mattress resting thereon.

[0040] As shown in Figs. 5, 6, the bed bottom is provided with side flaps 30 pivotally connected to longitudinal edges 1' of the bed bottom 1 or tray 1A (Fig. 7). The flaps 30 extend away from its longitudinal axis of rotation over the bed bottom 1, and its longitudinal extent and position is such that the flaps are especially present in the region of the movable bed bottom sections 3, 4. The free edges of the flaps 30 are shaped to remain in contact with the bed bottom when the sections 3, 4 are moved downwardly, in fact the shape of the free edge conforms to the shape of the recess formed in the bed bottom, such that the flaps are moved from a horizontal position when the bed bottom 1 is horizontal (Fig. 5), to a downwardly inclined position when the bed bottom is in its lowest position (Fig. 6). The flaps ensure that a mattress supported on the longitudinal edges 1' and on the support sections 4, 5 of the bed bottom 1 is properly supported adjacent the stationary edges 1' also when the bed bottom is partly moved downwardly. Only in the central part of the mattress and bed bottom (as seen in transverse direction) the recess will be created.

[0041] In the embodiment shown, the bed bottom is provided with rigid transverse planks for supporting a spring box mattress, but of course all kinds of support for the bed bottom 1 are conceivable, depending on the mat-

tress for which it is designed. Therefore, the bed bottom may also have a flexible or spring support.

[0042] Figs. 8-14 show an embodiment of an adjustable headboard already indicated in Fig. 4. The headboard structure or unit 15 is integrated in the bed frame 10 or is a separate structure connected or positioned adjacent to the bed frame 10.

[0043] In the very schematic drawings of Fig. 8, it is shown that the headboard 9 can be positioned at various different inclinations, varying from a substantially vertical position (Fig. 8A) to a substantially horizontal position as is shown in Fig. 8C. In order to prevent the lower end of the headboard 9 from becoming spaced from the upper surface of a mattress M lying on the bed bottom, the movement of the headboard 9 is caused by a combination of a rotational movement of the headboard 9 around an upper horizontal rotary axis 16 and a vertical movement thereof. As a result, the lower end of the headboard 9 will remain at a position close to the mattress M in every different position. Furthermore, the headboard 9 will be able to be urged against a spring force in downward direction so as to adapt the position of the headboard 9 more to the circumstances, for example upon downward movements of the upper surface of the mattress M when a person is lying or sitting on it.

[0044] The structure of a specific embodiment of the headboard according to the invention will be discussed with reference to Figs. 9-14 showing the headboard in two different positions.

[0045] The drawings show that the headboard unit 15 comprises an adjustable headboard 9 and a frame structure including a vertical frame part 17 and an inclined frame part 18, both adapted to be attached to the bed frame 10.

[0046] The headboard 9 comprises a flexible support plate 19 and a cushion 20 together forming a comfortable support for the upper body of a person sitting-up in bed. The flexible support plate 19 is attached to two arms which may be formed by the legs of a U-shaped part, the web of which forms the horizontal rotary axis 16 of the headboard 9. The rotary axis or shaft 16 is supported by a movable subframe 22 guided with respect to the vertical frame part 17 through cylindrical guide shafts 23 and movable in vertical direction by means of a motor driven vertical shaft 24 adapted to move the subframe 22 and the horizontal axis 16 supported thereon up and down. Non-lectrical versions are also possible, for instance by means of a weight balance and lock, locking the head board at desired positions.

[0047] The vertical frame part 17 and the arms 21 are interconnected by a connecting arm 25 pivotally connected to the vertical frame part 17 and at least pivotally, but in this case also slidably connected to the corresponding arm 21 at a distance from the rotary axis 16.

[0048] The connecting arms 25 are pivotally connected to slides which are slidable in the corresponding arm 21 to a limited extent, determined by an elongated slot 27 in each arm 21. Each slide 26 is biased in the direction of the rotary axis 16 by means of a spring, in this case a helical spring 28 urging the connecting arm 25 to its most upward position, i.e. towards the rotary axis 16.

[0049] When comparing the positions of the connecting arms 25 with respect to the arms 21 in the position according to Fig. 13, 14 and according to Fig. 10, 11, it will become clear that in the position according to Fig. 10, 11 the connection between the connecting arms 25 and the arms 21 is rigid when someone is resting against the headboard 9, as the connecting arm 25 is urged by the helical spring 28 to its upward position. When a force is exerted on the headboard 9, the angle between the connecting arms 25 and the arms 21 is such that the connecting arms will be urged upwardly against their respective stops. However, when the connecting arms are moved to a less inclined position (and the arms 21 to a less inclined position as well) the angle between the connecting arms 25 and the arms 21 will transfer from a acute angle through 90° to an obtuse angle as is shown in Figs. 13 and 14. When in this position a force is exerted on the headboard 9, the connecting arms 25 will be urged downwardly away from the rotary axis 16 against the force of the helical springs 28, so that the headboard 9 becomes springy or resilient enabling the headboard 9 to yield to a limited extent when a person is resting against the headboard 9, so that the headboard 9 is allowed to adapt itself to the person sitting up in the bed.

[0050] The control for the motor in the adjustable headboard structure may be combined with the control for the bed bottom and it is also conceivable that some movements are programmed so that the headboard and the bed bottom move in conjunction to one or more positions which are pre-programmed.

[0051] The headboard may have many other shapes or adjusting mechanisms. The headboard may also comprise several sections which are movable with respect to each other either automatically or manually. For example, the headboard may comprise a head supporting section pivotally connected to a back rest section. It is also conceivable to attach the rotary axis to arms pivotable with respect to the frame to move the rotary axis in vertical direction when the headboard is pivoting in order to keep the lower end of the headboard close to the mattress.

[0052] From the foregoing, it will be clear that the invention provides an adjustable bed bottom and an adjustable headboard each enabling a person to sit-up in bed in a comfortable position and even adding to this comfort when used in combination. The bed bottom and headboard are very useful in twin beds, as each person in the twin bed may adjust the bed bottom and/or the headboard without disturbing the other person in the bed, while still providing one large double mattress surface, without a gap, at the same time. The adjustable bed bottom and the adjustable headboard can be therefore be used in combination with a two persons mattress or in a combination with a mattress cover covering the two mattresses.

[0053] The invention is not limited to the embodiments

shown in the drawings and described herein before, which may be varied in the different manners within the scope of the claims and their technical equivalents. Aspects of the various embodiments may be combined with each other. For example, it would be possible not to move the one or more bed bottom sections downwardly with respect to the stationary longitudinal edges of the bed bottom but to move the longitudinal edges upwardly while one or more bed sections remain at a lower level thereby creating a level difference between the longitudinal edges and a central portion of one or more bed bottom sections. If the bed bottom is intended to be placed in a specially adapted bed frame, the stationary longitudinal edges of the bed frame could be integrated in the bed frame, while the bed frame may have wedged sides to hold and support the sides or edges of the mattress when the bed bottom is moved.

Claims

1. Bed bottom having a plurality of transverse support sections including at least a foot rest section, an upper body section and at least one intermediate section, adjacent to each other in longitudinal direction of the bed to support a mattress thereon in an adjustable manner, such that the bed bottom is adjustable from a first position wherein all support sections are substantially in line to a second position in which at least one section is moved in vertical direction, **characterized in that** the at least one intermediate section is movable downwardly from the first position to the second position.

2. Bed bottom according to claim 1, wherein at least the at least one intermediate section and an adjacent support section are pivotable downwardly such that facing ends thereof move downwardly.

3. Bed bottom according to claim 2, wherein the adjacent pivotable support section is the upper body section.

4. Bed bottom according to claim 2, wherein the adjacent pivotable support section is a second intermediate section.

5. Bed bottom according to claim , wherein a bridge section is supported on the two adjacent pivotable sections, overlapping both sections and being pivotally connected to one of said pivotable sections and being slidable supported by the other pivotable section.

6. Bed bottom according to one of the preceding claims, especially intended to be used in a twin bed having two adjacent bed bottoms, wherein longitudinal edges of the bed bottom for supporting the mattress remain stationary during movement of the bed bottom between the first and second positions.

7. Bed bottom according to claim 6, wherein the longitudinal edges of the bed bottom comprise pivotable side flaps pivotally connected to the longitudinal edges and resting with their free ends on the support sections, said side flaps preferably extending only in the region of the downwardly movable support sections, the free ends of the side flaps being configured to remain in contact with the pivotable support sections, and preferably have a shape adapted to the shape of the bed bottom in the second position.

8. Bed bottom having a plurality of transverse support sections including at least a foot rest section, an upper body section and at least one intermediate section, adjacent to each other in longitudinal direction of the bed to support a mattress thereon in an adjustable manner, such that the bed bottom is adjustable from a first position wherein all support sections are substantially in line to a second position in which at least one section is moved in vertical direction, wherein longitudinal edges of the bed bottom for supporting the mattress remain stationary during movement of the bed bottom between the first and second positions.

9. Bed, comprising a frame having a head end and a foot end, preferably a bed bottom according to one of the preceding claims supported in the frame, and an adjustable headboard at the head end of the frame, the headboard being adjustable between a substantially vertical position and a position in which the headboard extends obliquely downwardly from the head end of the bed towards a mattress to be supported by the bed bottom.

10. Bed according to claim 9, wherein the lower end of the adjustable headboard is moved towards the foot end if the headboard is in the oblique position.

11. Bed according to claim 9 or 10, wherein the headboard is connected to the frame through an upper horizontal rotary axis and an inclination adjusting mechanism provided at a distance from the horizontal rotary axis.

12. Bed according to claim 11, wherein the inclination adjusting mechanism includes a slide supporting the horizontal rotary axis and being vertically movable along the frame, as well as a connecting arm which is pivotally connected to the frame and to the headboard at positions spaced from the rotary axis.

13. Bed according to one of claims 9 - 12, wherein the headboard is provided with a spring element allowing at least in some of the inclined positions of the head-

board an at least limited pivoting movement back towards the vertical position.

14. Bed according to claims 12 and 13, wherein the connecting arm is not only pivotally, but also slidably connected to the headboard, while the spring element is provided in the headboard and acts upon the connecting arm

15. Bed according to claim 14, wherein the connecting arm extends upwardly from the frame when the headboard is in its substantially vertical position and encloses with respect to the headboard an angle of less than 90°, while the angle is larger than 90° when the headboard is in its position pivoted maximally away from the frame at the head end, the spring biasing the connecting arm in the direction of the horizontal rotary axis, whereas the connecting arm is allowed to slide away from the horizontal rotary axis against the spring force.

16. Bed according to one of claims 9 - 15, wherein the headboard is provided with a cushion supported by a flexible support which is allowed to flex also at the lower end.

17. Bed according to one of claims 9 - 16, wherein the slide is driven by a motor, preferably a hydraulic or electric motor.

18. Headboard for use in the bed according to one of the claims 9 - 17.

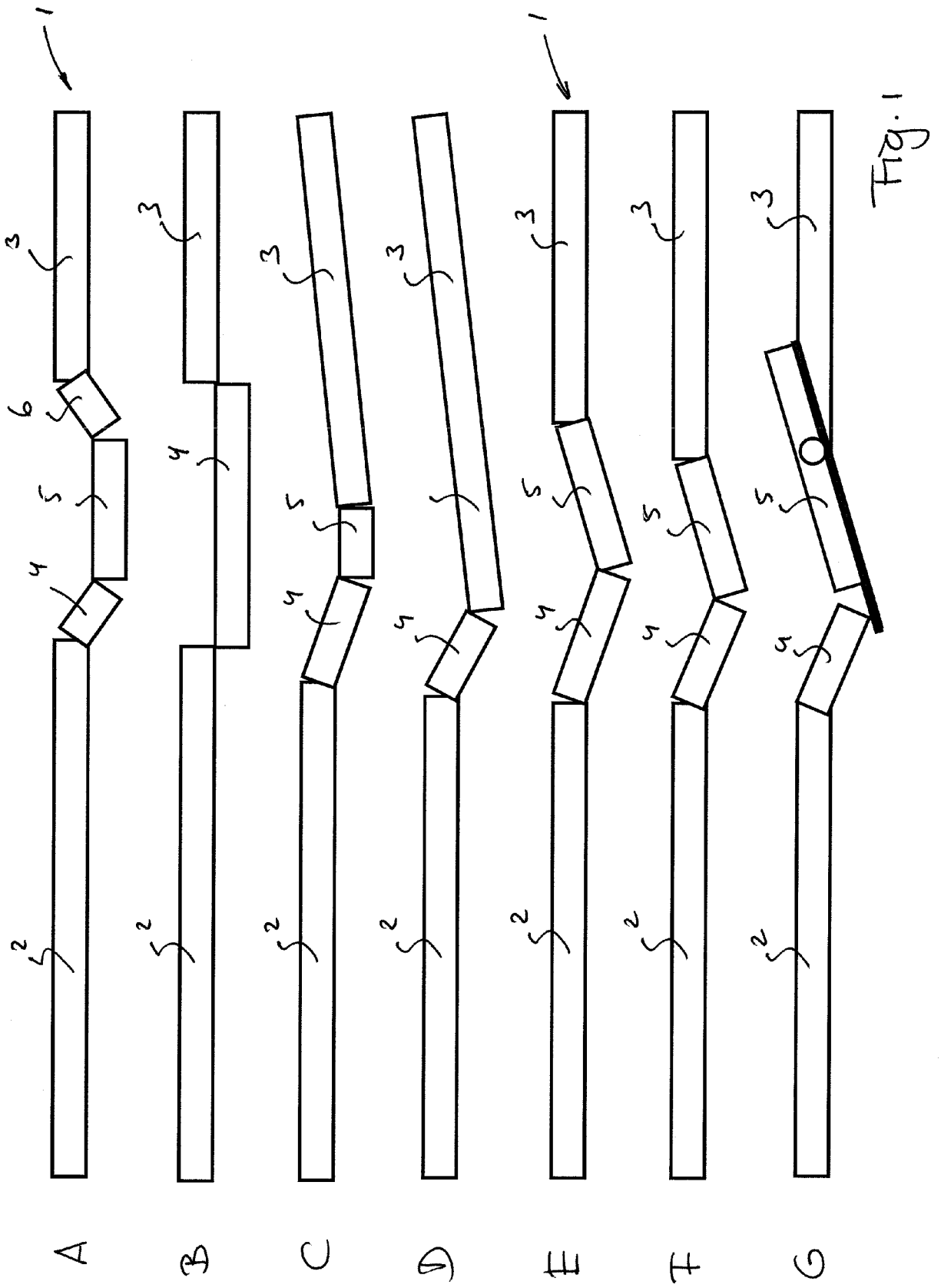


Fig. 1

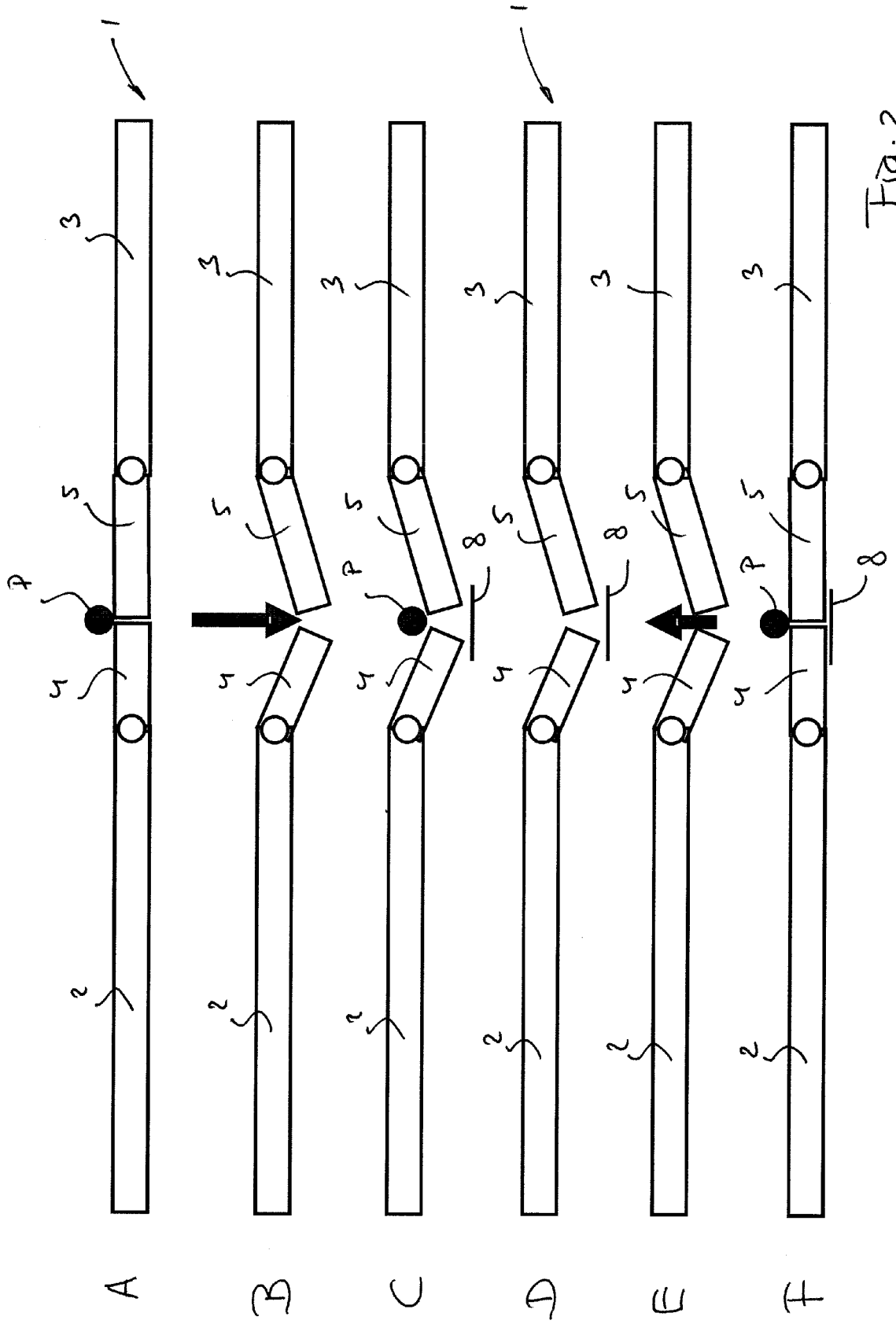


Fig. 2

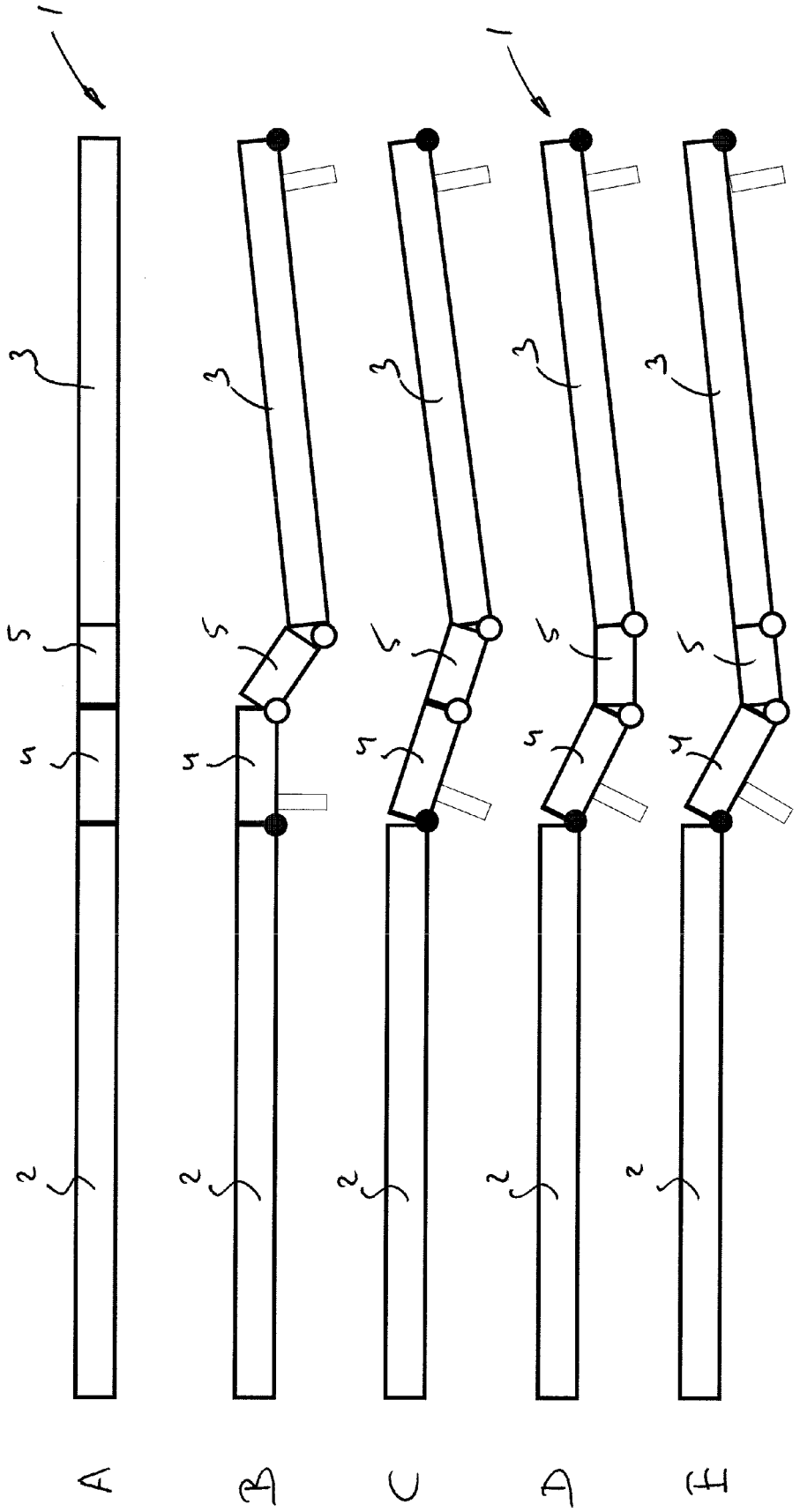


Fig.3

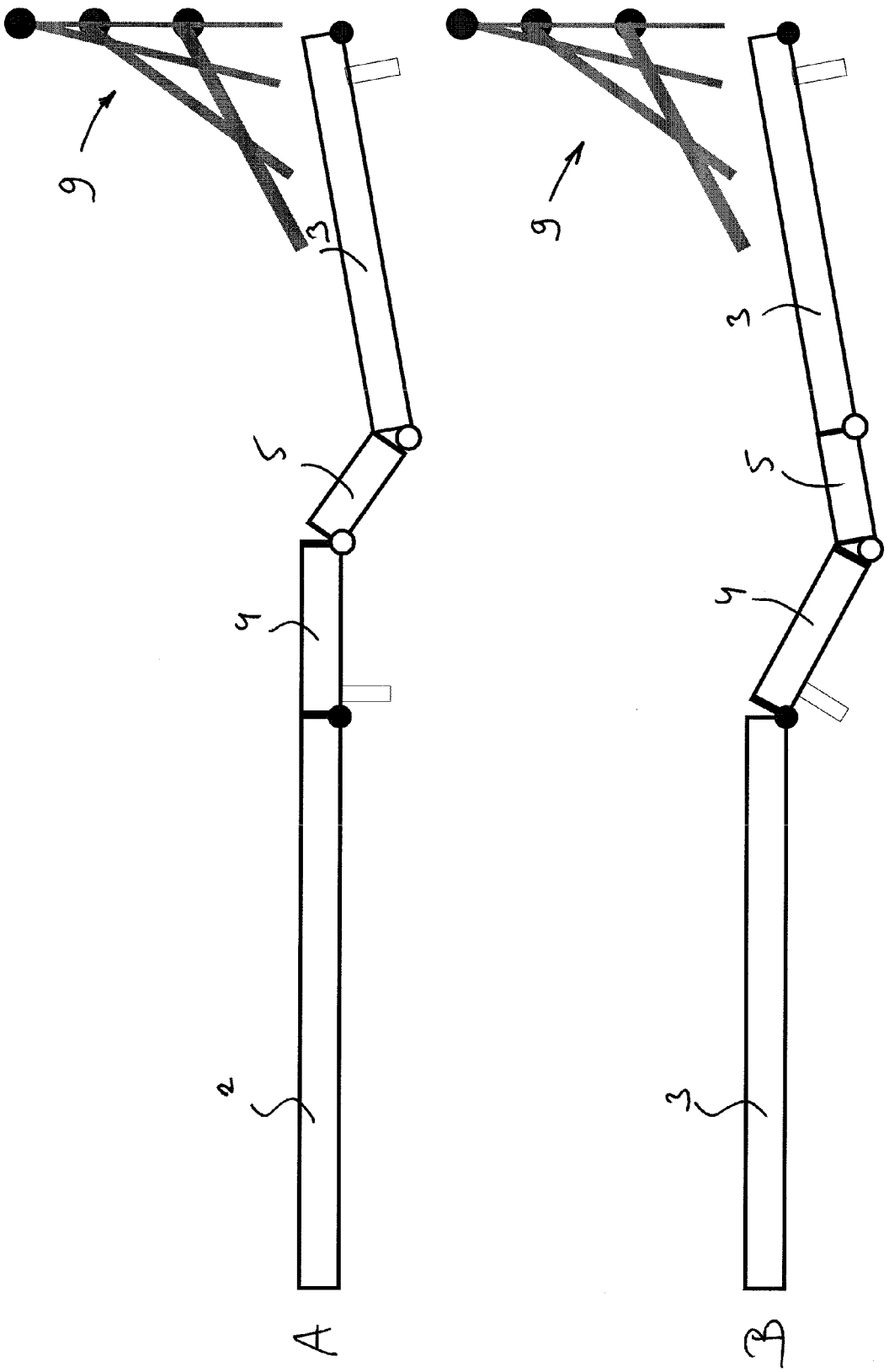


Fig. 4

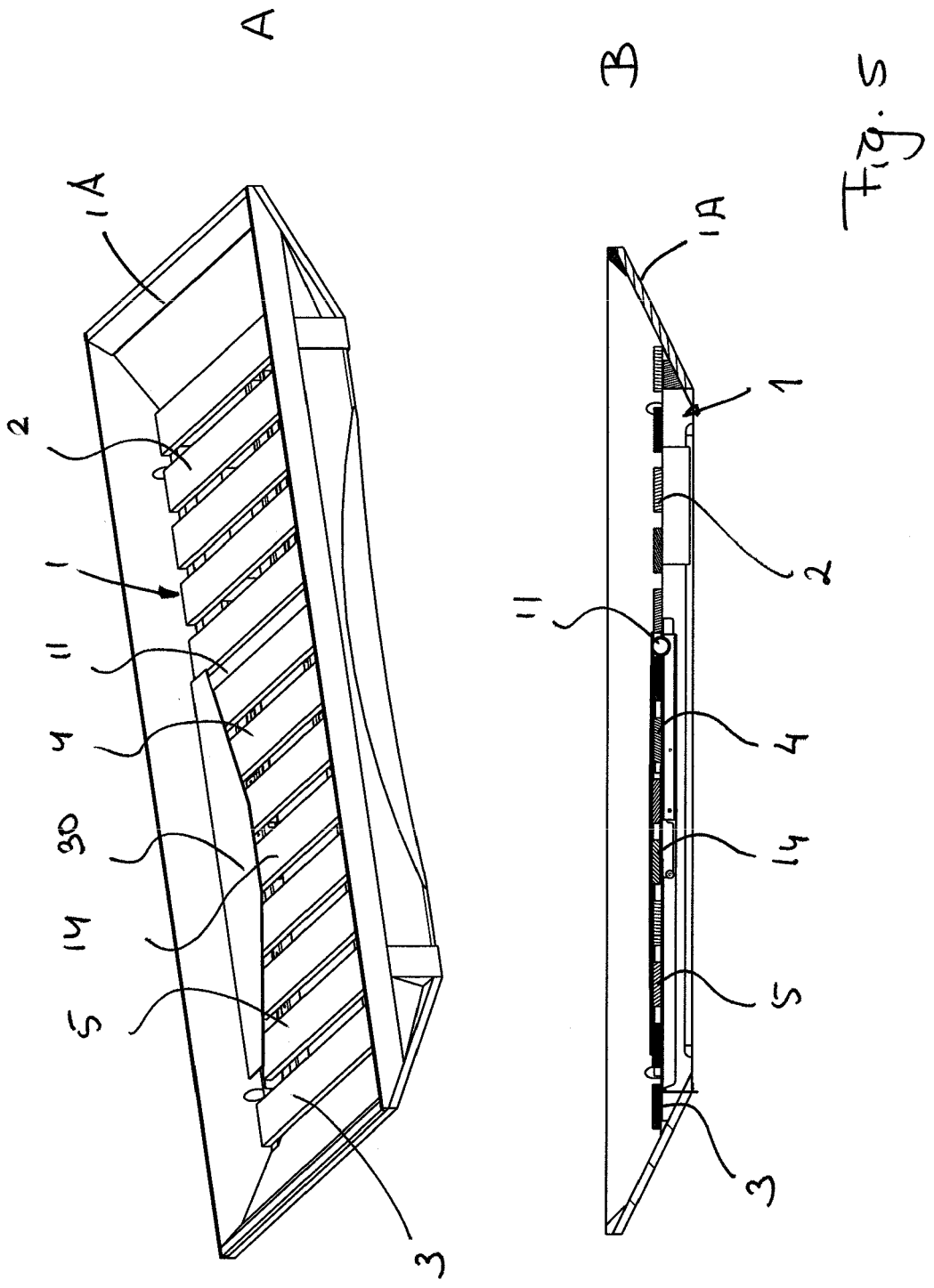


Fig. 5

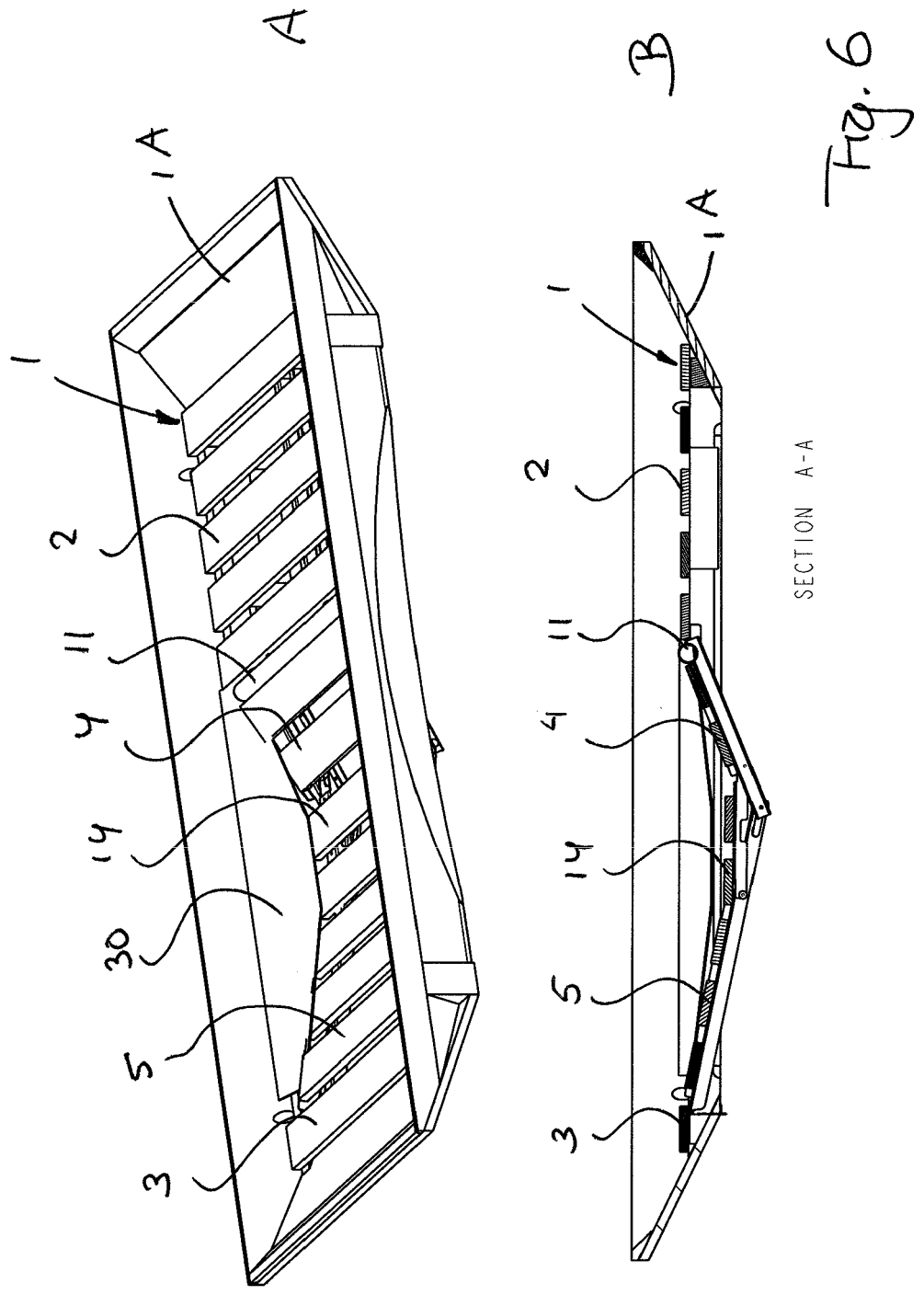


Fig. 6

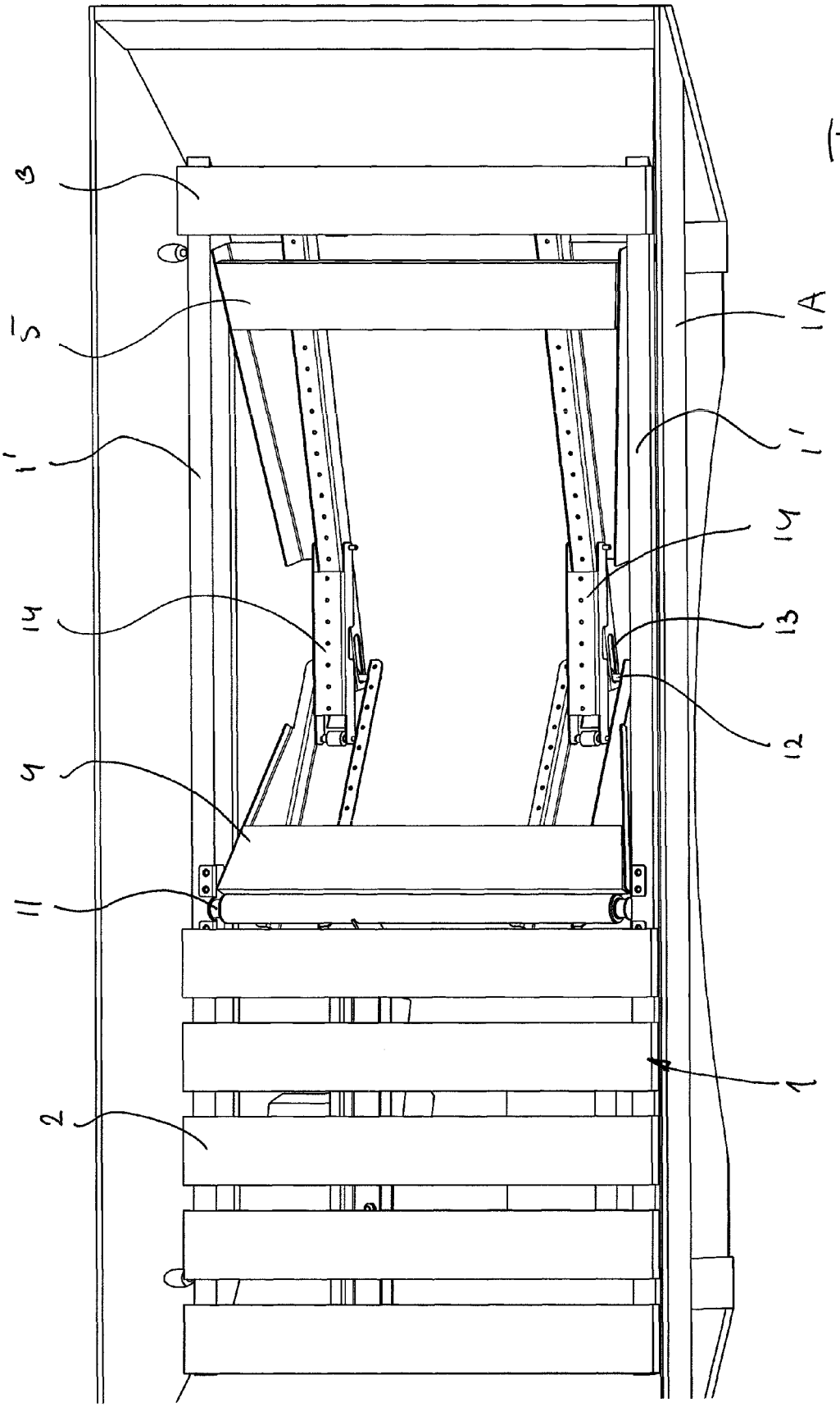


Fig. 7

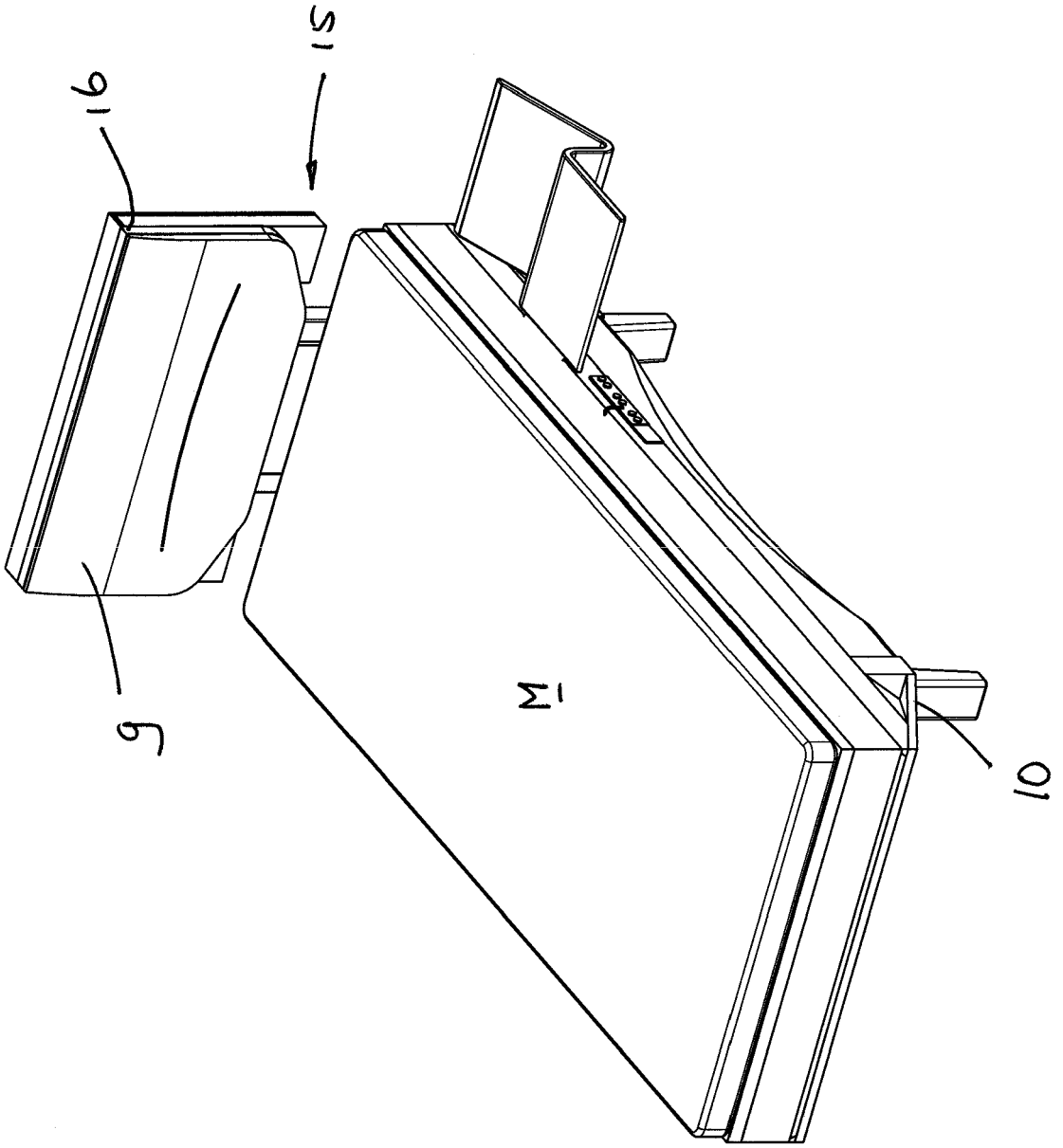


Fig. 8A

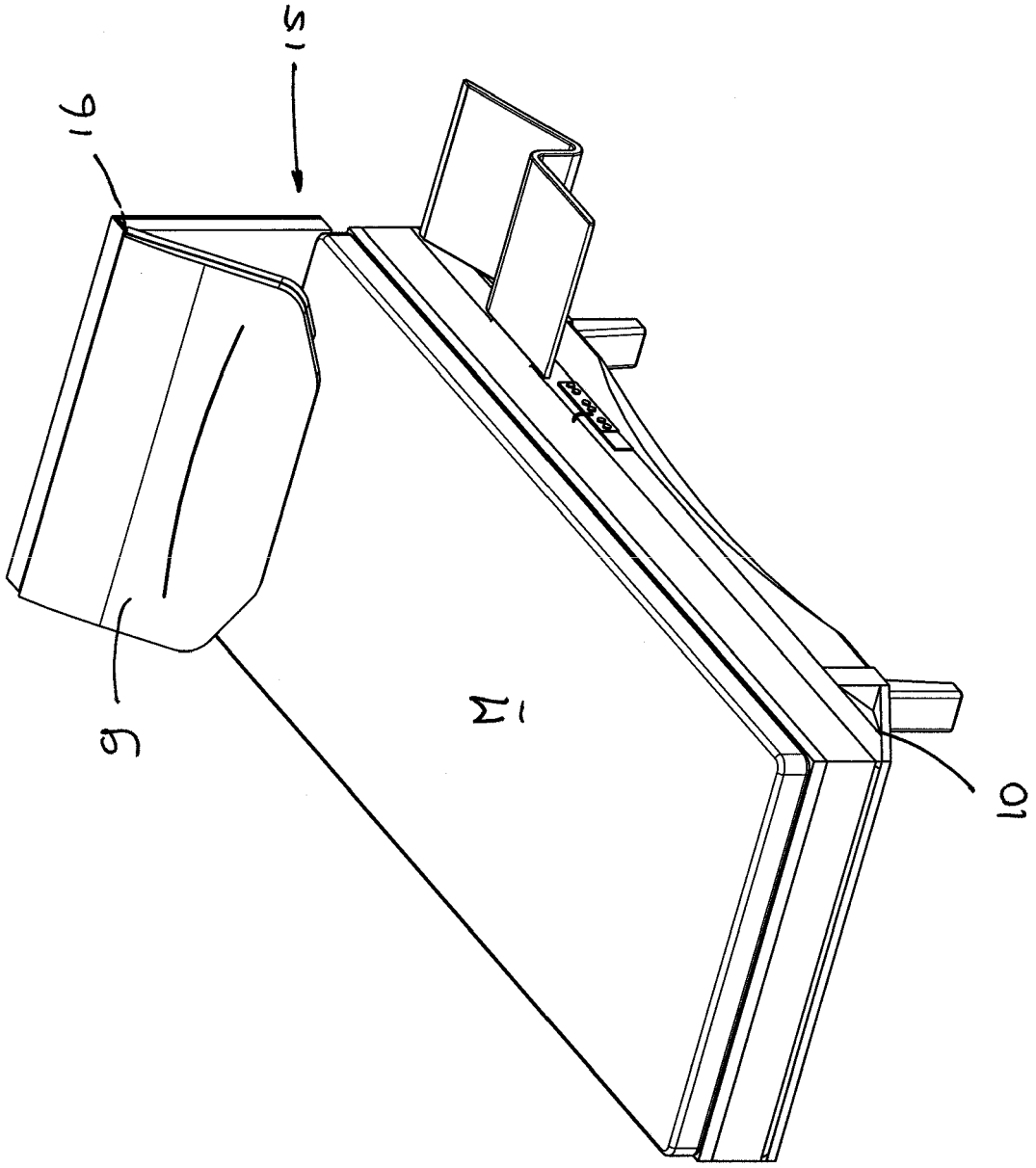
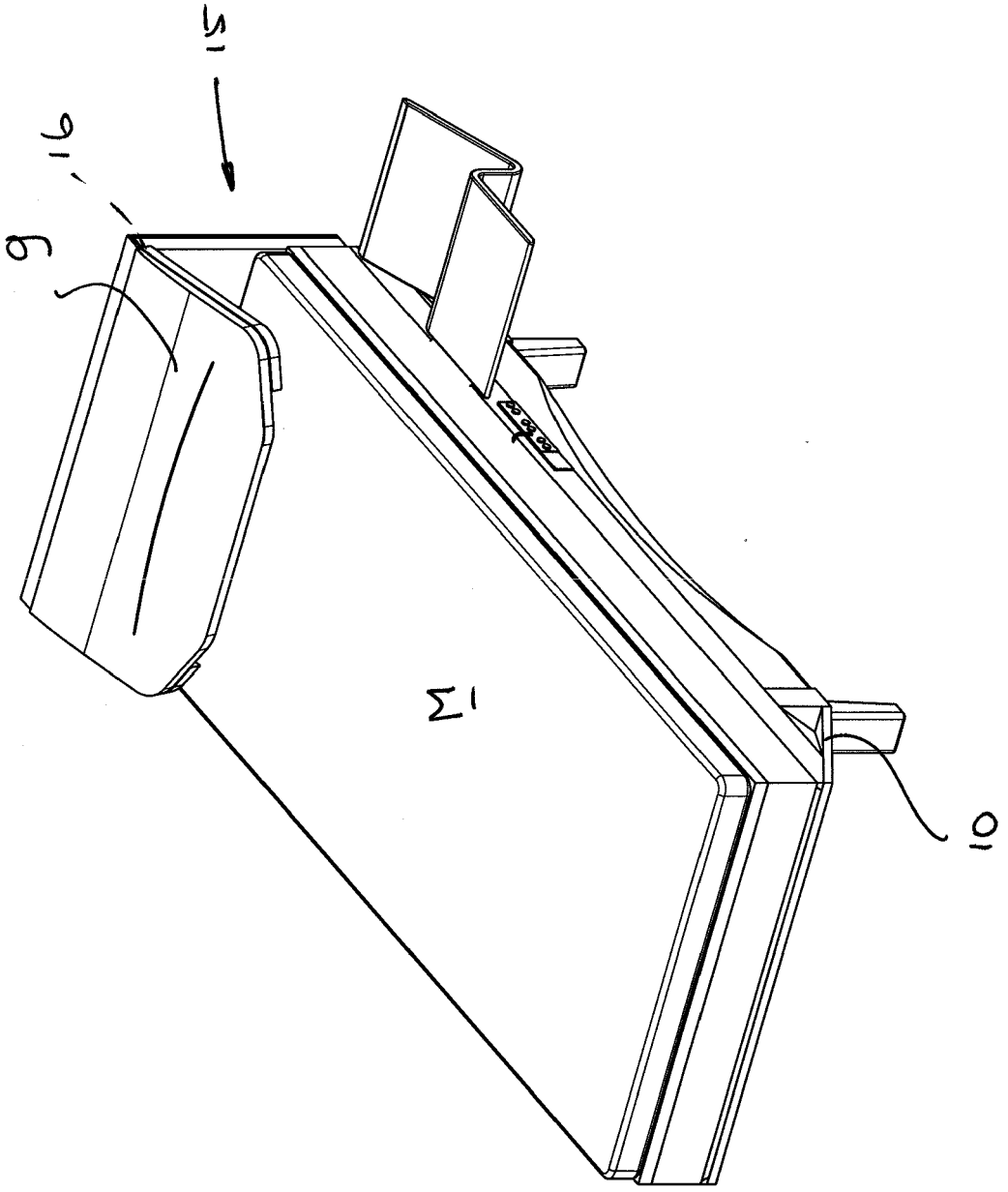


Fig. 8B

Fig. 8C



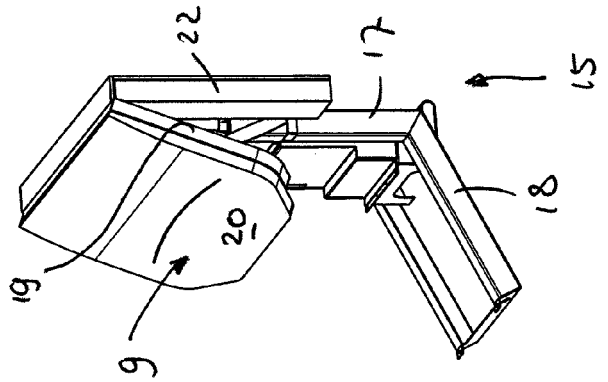


Fig. 9

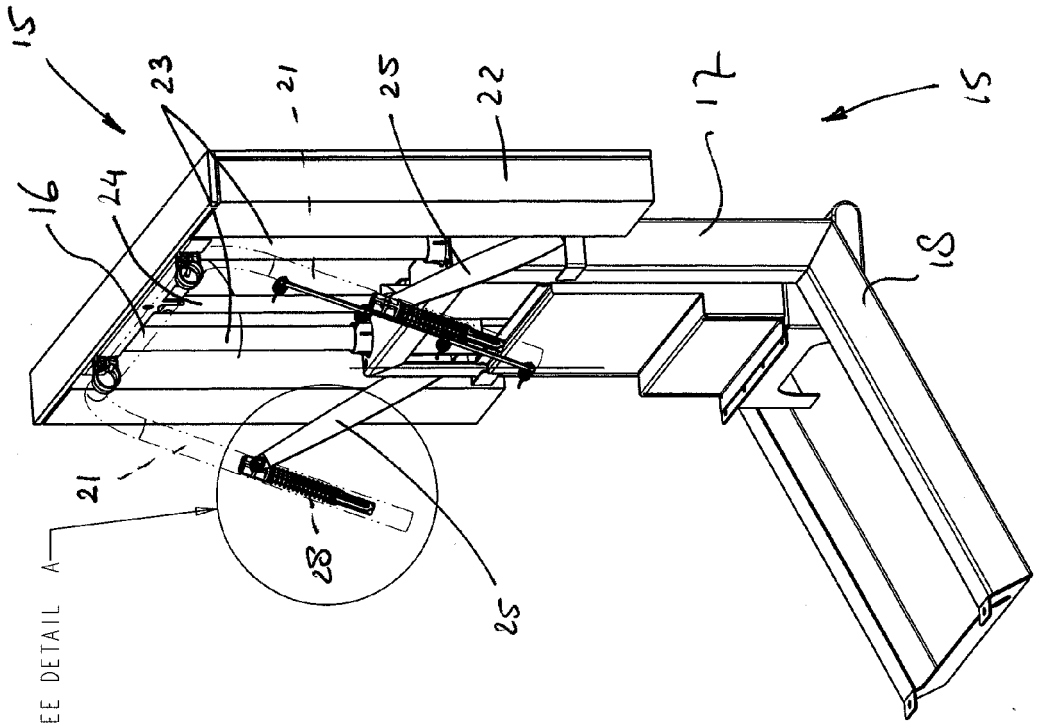
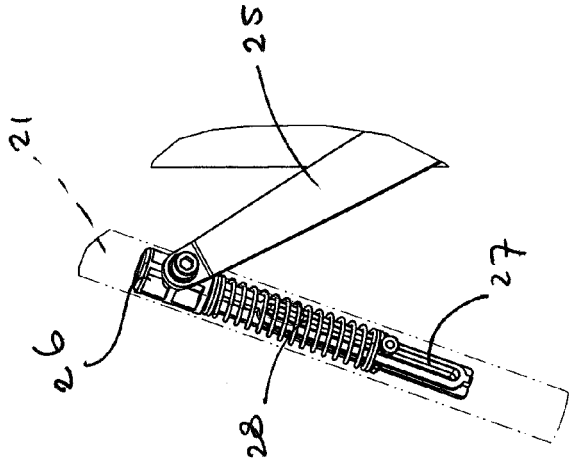


Fig. 10



DETAIL A
SCALE 1:2

Fig. 11

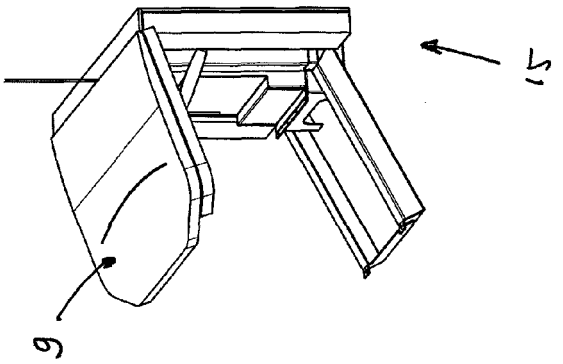


Fig. 12

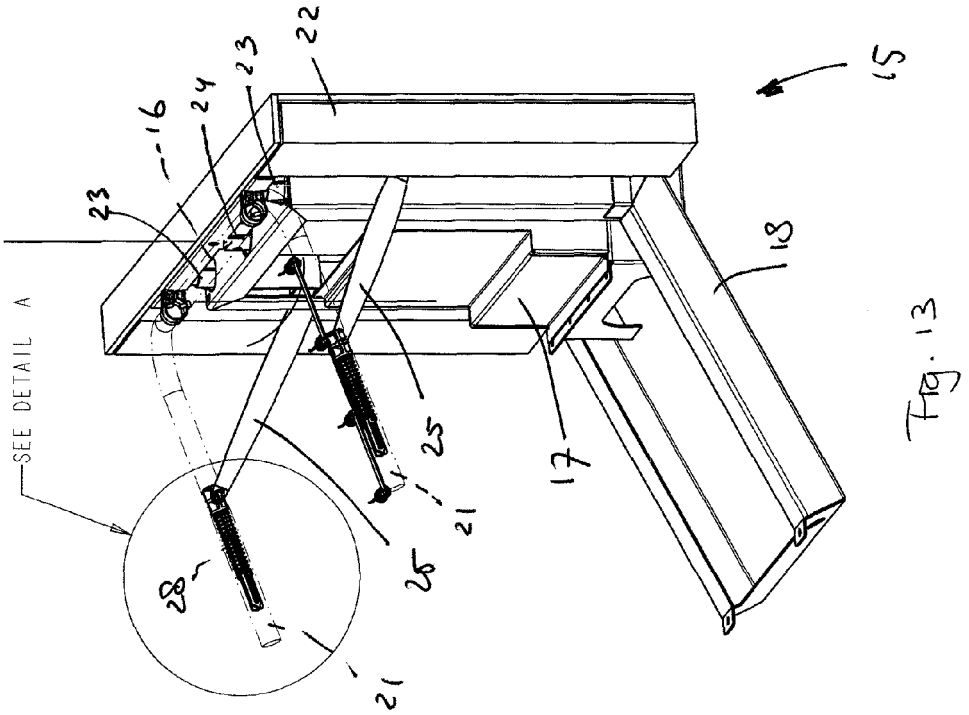


Fig. 13

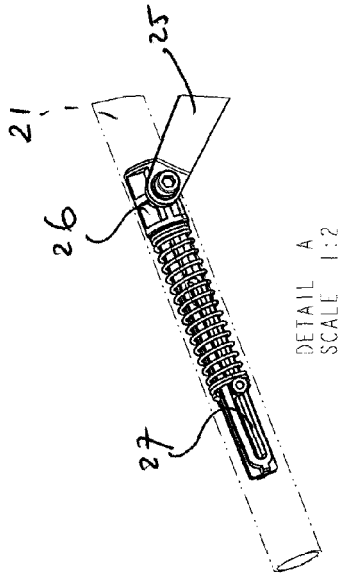


Fig. 14

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EUROPEAN SEARCH REPORT

Application Number
EP 06 12 2340

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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	-/--		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 July 2007	Lassen, Steen D.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EUROPEAN SEARCH REPORT

Application Number
EP 06 12 2340

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 July 2007	Lassen, Steen D.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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& : member of the same patent family, corresponding document

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Application Number
EP 06 12 2340

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 06 12 2340

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-8

   Claims 1-8 address a bed bottom composed of at least three sections, at least an intermediate section thereof being able to descend to below the level of the bed bottom sections as a whole when making up a horizontal surface.

   ---

2. claims: 9-18

   Claims 9-18 address a bed with a bed frame comprising at a head-end an adjustable headboard, cf. Figs 4 and 8-14. The bed with headboard is not linked to the multi-section adjustable bed-bottom of claims 1-8 in a unitary manner.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 06 12 2340

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-07-2007

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82