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(54) Mechanism for sofa-beds and the like

(57) Mechanism for sofa-beds and the like, which comprises a base (1, 2) and one or more sliding supports (3, 6) which can slide longitudinally with respect to said base (1, 2), can support at least one cushion or mattress (14, 15) and comprise a first frame (3) which is provided with a plurality of slats (4) arranged longitudinally with respect to this frame (3) and with a plurality of wheels (5) for running longitudinally to and from the base (1, 2), wherein said sliding supports (3, 6) comprise also a sec-

ond frame (6) which is provided with a plurality of slats (7) arranged longitudinally with respect to this frame (6) and with a plurality of wheels (8, 9) for running longitudinally under or over the first frame (3), the slats (4) of the first frame (3) being arranged substantially on the same plane and offset with respect to the slats (7) of the second frame (6), so that by arranging the two frames (3, 6) one over the other, the slats (4, 7) result arranged side by side in an alternated manner.

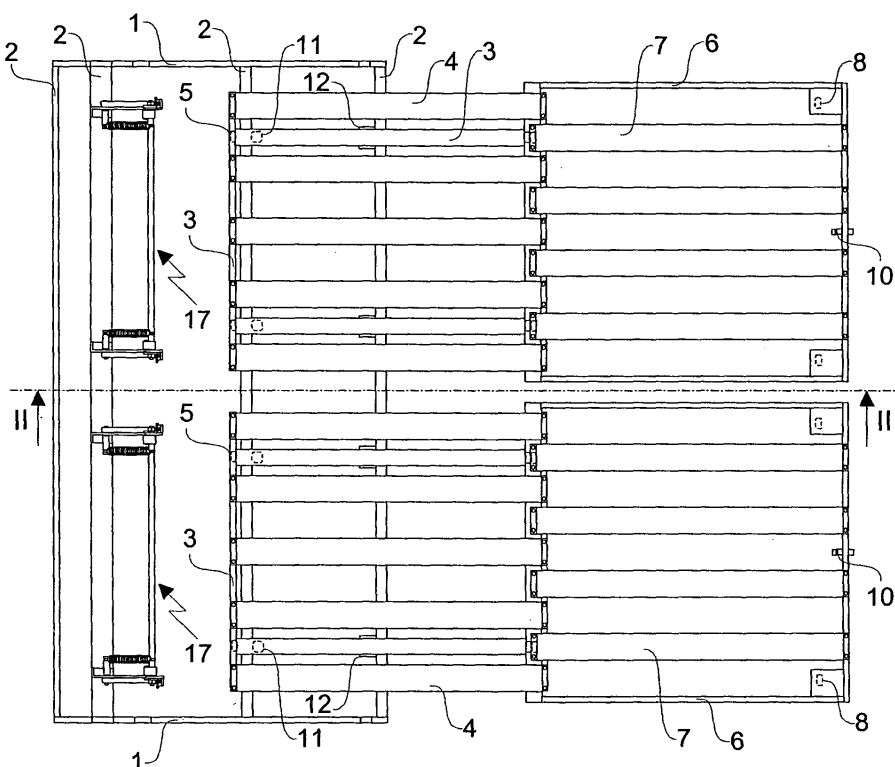


Fig. 1

Description

[0001] The present invention relates to a mechanism for sofa-beds and the like, for example chair-beds or pouf-beds, and in particular a mechanism which allows to obtain an extensible chair or sofa and/or one or more beds having a standard size.

[0002] Known mechanisms comprise a base and one or more sliding supports which can slide longitudinally for being extracted from a seat made in this base. These sliding supports can be provided with a plurality of slats for supporting at least one cushion or mattress and rest on a plurality of wheels for longitudinally sliding from and to the base. However, for supporting a standard-sized mattress, these sliding supports have the side of a bed an must be arranged transversally in the base. Thus, chair-beds cannot be made with this kind of mechanism.

[0003] It is therefore an object of the present invention to provide a mechanism free from said disadvantage. Said object is achieved with a mechanism, the main features of which are disclosed in the first claim and other features are disclosed in the subsequent claims.

[0004] Thanks to the sliding supports which are divided in at least two frames, can be slid one over the other and are provided with slats alternately arranged on a same plane, the mechanism according to the present invention allows to make chairs which can be transformed in a simple and quick manner into a single bed or sofas which can be transformed into a double bed or two mutually independent single beds.

[0005] Furthermore, the mechanism according to the present invention also allows to transform a chair or sofa with a standard seat into a chair or sofa with an extended seat, thereby keeping the movement of the back independent, if desired.

[0006] The positions of the seat with respect to the back are preferably determined by seats which are made in a frame and can partially house wheels fixed to the base of the mechanism.

[0007] Further advantages and features of the mechanism according to the present invention will become clear to those skilled in the art from the following detailed and non-limiting description of an embodiment thereof with reference to the attached drawings, wherein:

- figure 1 shows a top view of the mechanism for sofas, in a bed position;
- figure 2 shows a sectioned view of plane II-II of the mechanism of figure 1;
- figure 3 shows an enlarged side view of a reclining support of the mechanism of figure 1 in an upright position;
- figure 4 shows a front view of the support of figure 3;
- figure 5 shows a partial top view of the support of figure 3;
- figure 6 shows an enlarged side view of the support of figure 3 in a reclined position;
- figure 7 shows a front view of the support of figure 6;

- figure 8 shows a partial top view of the support of figure 6; and
- figures 9 to 12 show sectioned side view of the mechanism of figure 1 during the transformation from the bed position to the sofa position.

[0008] Figures 1 and 2 show the mechanism according to the present invention which comprises in a known way a base, for example made up of a pair of shaped sides 1 mutually connected by crossbars 2. One or more sliding supports which can slide longitudinally with respect to said base and can support at least one cushion or mattress comprise a first frame 3 which is provided with a plurality of slats 4 arranged longitudinally with respect to this frame and with a plurality of wheels 5 (shown with broken lines in figure 1) which can run on the floor for extracting the sliding supports from a seat made in said base. The present embodiment of the mechanism comprises two sliding supports arranged side by side, both provided with a first frame 3 which can be extracted longitudinally in a manner independent from the other frame. The version of the mechanism for chair-beds is similar to the version for sofa-beds, but comprises only one sliding support.

[0009] According to the invention, said sliding supports comprise also a second frame 6 which is also provided with a plurality of slats 7 arranged longitudinally with respect to this frame and with a plurality of wheels 8 (shown with broken lines in figure 1) which can run on the floor. Slat 4 of the first frame 3 are arranged substantially on the same plane and offset with respect to slats 7 of the second frame 6, so that by arranging the two frames one over the other, slats 4 and 7 result arranged side by side in an alternated manner. As a matter of fact, the first frame 3 and/or the second frame 6 comprise a plurality of wheels 9 (shown with broken lines in figure 1) which allow one frame to run on the other. In the present embodiment, the second frame 6 comprises a pair of wheels 9' which can run on two longitudinal bars of the first frame 3, so that the second frame 6 can run on the first frame 3 for being further extracted from the base. The second frame 6 is preferably provided with at least one mobile hook 10 for hooking the front portion of the first frame 3 and preventing the mutual sliding between the two frames, when required. Crossbars 2 of the base and/or the first frame 3 are preferably provided with wheels 11, 12 for supporting and/or guiding the first frame 3 during its movement with respect to the base. In particular, a pair of wheels 11 (shown with broken lines in figure

1) are fixed to a crossbar 2 of the base and support in a rotating manner the two longitudinal bars of the first frame 3. These longitudinal bars are provided with lower seats 13 which can contain a portion of wheels 11 for opposing the sliding of the first frame 3 if this frame is not pushed or pulled with a sufficient force. The mattress which can be supported by slats 4, 7 of frames 3, 6 preferably includes at least a rear

cushion 14 and a front cushion 15 (shown with broken lines in figure 2) which can be folded one on the other when the frames are arranged one over the other. One or more armrests 16 can be fixed outside sides 1 of the base. One or more reclining supports 17 which can support at least one back are fixed to a crossbar 2 of the base. The present embodiment comprises two reclining supports 17 arranged side by side, both provided with a back which includes an upper portion 18 and a lower portion 19.

[0010] Figures 3 to 5 show a reclining support 17, which comprises two upper fixing members 20 and two lower fixing members 21. These fixing members are provided with perforated plates for fixing one of the two portions 18, 19 (partially shown with broken lines in figure 3) of the back and are pivoted to a horizontal shaft 22, in turn pivoted to a pair of fixed supports 23 through a pair of first levers 24 perpendicular to this shaft. The fixed supports 23 are fixed to the base of the mechanism, in particular to an upper crossbar 2 thereof, so that frames 3, 6 can slide under a back and only a portion of cushions 14, 15 protrudes therefrom. A pair of second levers 25 are pivoted between the upper fixing members 20 and the fixed supports 23, while a pair of pulling elastic means, for example two springs 26, are fixed between the horizontal shaft 22 and the fixed supports 23, more precisely a pin 27 protruding inside each fixed support 23.

[0011] Referring also to figures 6 to 8, it is seen that at least one of the two portions 18, 19 of a back can be inclined by pushing or pulling this portion, for example the upper portion 18. The upper fixing members 20 thus rotate around the horizontal shaft 22, which is pushed forwards by the movement of a pair of articulated quadrilaterals made up of an upper fixing member 20, of a fixed support 23, of a first lever 24 and of a second lever 25. This reclining movement of the back is opposed by springs 26 up to the overcoming of a deadlock, beyond which it is instead assisted. Therefore, for restoring the back in the upright position, it is sufficient to push or pull portion 18 of the back up to overcome said deadlock, after which springs 26 pull the horizontal shaft 22, thereby restoring the reclining supports 17 to their initial position.

[0012] Figure 9 shows a seat which rests on slats 7 of the second frame 6 and is obtained by overturning the rear cushion 14 onto the front cushion 15 in the direction of the arrow.

[0013] Figure 10 shows the second frame 6 which is pushed in the direction of the arrow over the first frame 3, thereby running on wheels 8 and 9. The two frames 3, 6 can thus be mutually locked by means of the mobile hook 10. Slats 4, 7 of frames 3, 6 result therefore arranged side by side in an alternated manner under cushions 14 and 15.

[0014] Figure 11 shows frames 3 and 6 which are pushed in the direction of the arrow toward the base, thereby running on wheels 5 and 8, so as to arrange wheels 11 in other two seats 13 of the first frame 3 and

to make up a sofa with an extended seat.

[0015] Figure 12 finally shows frames 3 and 6 which are further pushed in the direction of the arrow toward the base, always by running on wheels 5 and 8, so as to arrange wheels 11 in further two seats 13 of the first frame 3 and to make up a sofa with a short seat. The back can be reclined by means of the reclining supports 17.

10 Claims

1. Mechanism for sofa-beds and the like, which comprises a base (1, 2) and one or more sliding supports (3, 6) which can slide longitudinally with respect to said base (1, 2), can support at least one cushion or mattress (14, 15) and comprise a first frame (3) which is provided with a plurality of slats (4) arranged longitudinally with respect to this frame (3) and with a plurality of wheels (5) for running longitudinally to and from the base (1, 2), **characterized in that** said sliding supports (3, 6) comprise also a second frame (6) which is provided with a plurality of slats (7) arranged longitudinally with respect to this frame (6) and with a plurality of wheels (8, 9) for running longitudinally under or over the first frame (3), the slats (4) of the first frame (3) being arranged substantially on the same plane and offset with respect to the slats (7) of the second frame (6), so that by arranging the two frames (3, 6) one over the other, the slats (4, 7) result arranged side by side in an alternated manner.
2. Mechanism according to the previous claim, **characterized in that** the second frame (6) can slide on the first frame (3) by means of wheels (9) which can run on longitudinal bars of the first frame (3).
3. Mechanism according to one of the previous claims, **characterized in that** a frame (6) is provided with at least one mobile hook (10) for hooking the other frame (3) and preventing the mutual sliding between the two frames (3, 6).
4. Mechanism according to one of the previous claims, **characterized in that** the base (1, 2) and/or the first frame (3) are provided with wheels (11, 12) for supporting and/or guiding the first frame (3) during its movement with respect to the base (1, 2).
5. Mechanism according to the previous claim, **characterized in that** a plurality of wheels (11) are fixed to the base (1, 2) and support in a rotating manner longitudinal bars of the first frame (3).
6. Mechanism according to the previous claim, **characterized in that** said longitudinal bars of the first frame (3) are provided with lower seats (13) which can contain a portion of said wheels (11) fixed to the base (1, 2) for opposing the sliding of the first frame

(3) with respect to the base (1, 2).

7. Mechanism according to one of the previous claims,
characterized in that one or more backs (18, 19)
are fixed to the base (1, 2), so that the frames (3, 6) 5
can slide under these backs (18, 19).
8. Mechanism according to the previous claim, **char-**
acterized in that said backs (18, 19) are fixed to the 10
base (1, 2) by means of reclining supports (17).
9. Mechanism according to the previous claim, **char-**
acterized in that said backs (18, 19) are divided in
two portions (18, 19) which can be reclined in a man- 15
ner different from each other.
10. Mechanism according to one of the previous claims,
characterized in that the first frame (3) and the sec-
ond frame (6) support a rear cushion (14) and a front 20
cushion (15), respectively, which can be folded one
on the other when the frames (3, 6) are arranged
one over the other.

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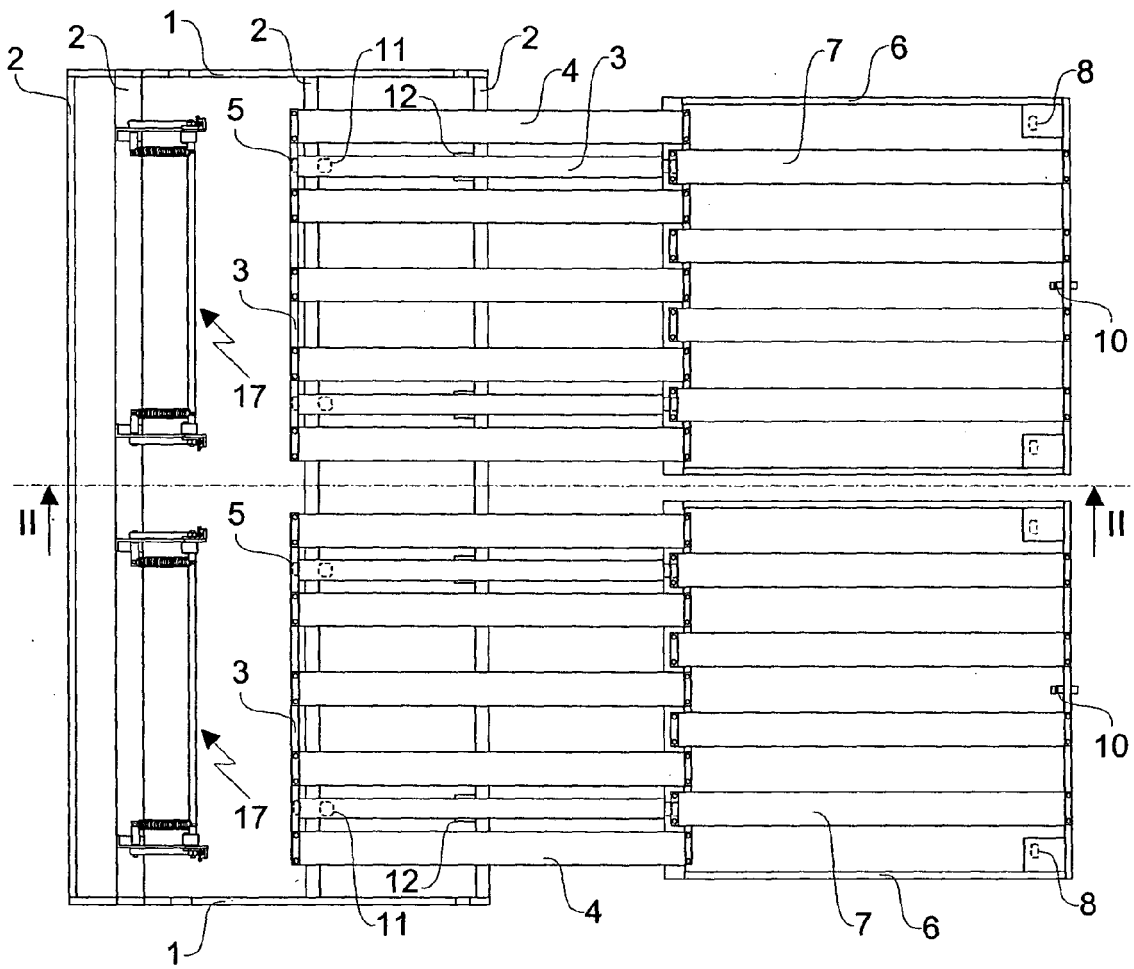


Fig. 1

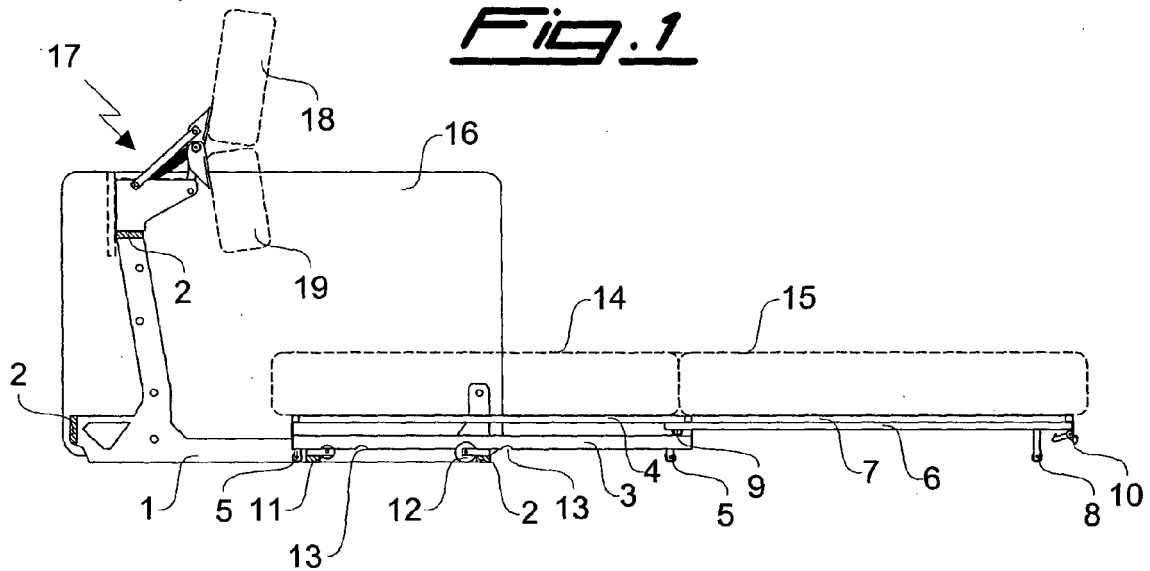


Fig. 2

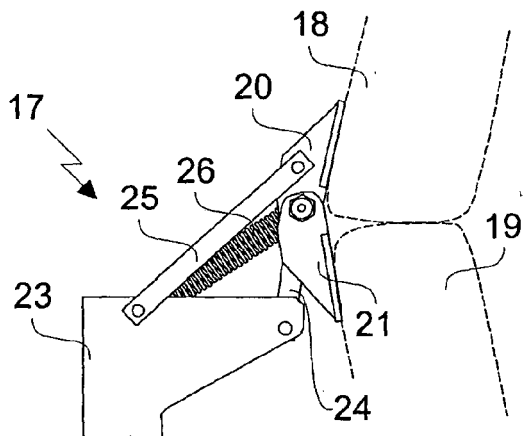


Fig. 3

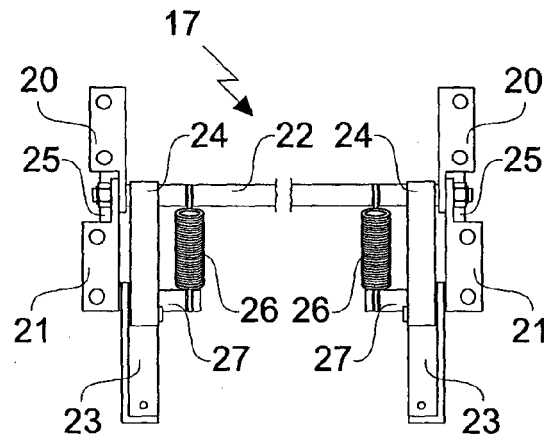


Fig. 4

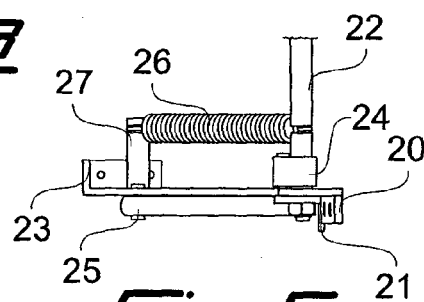


Fig. 5

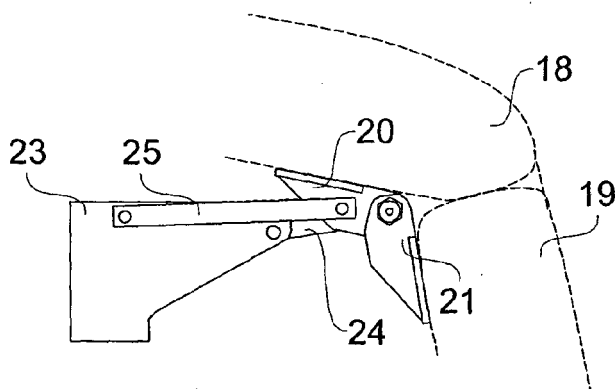


Fig. 6

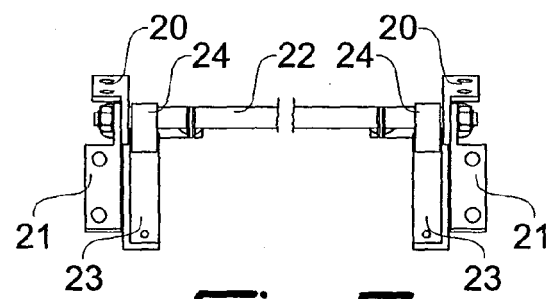


Fig. 7

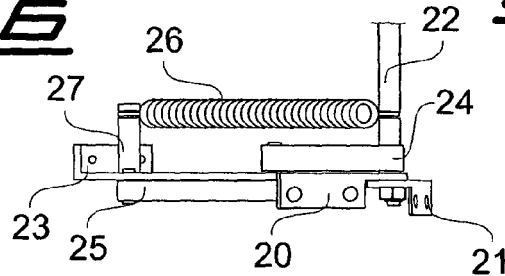


Fig. 8

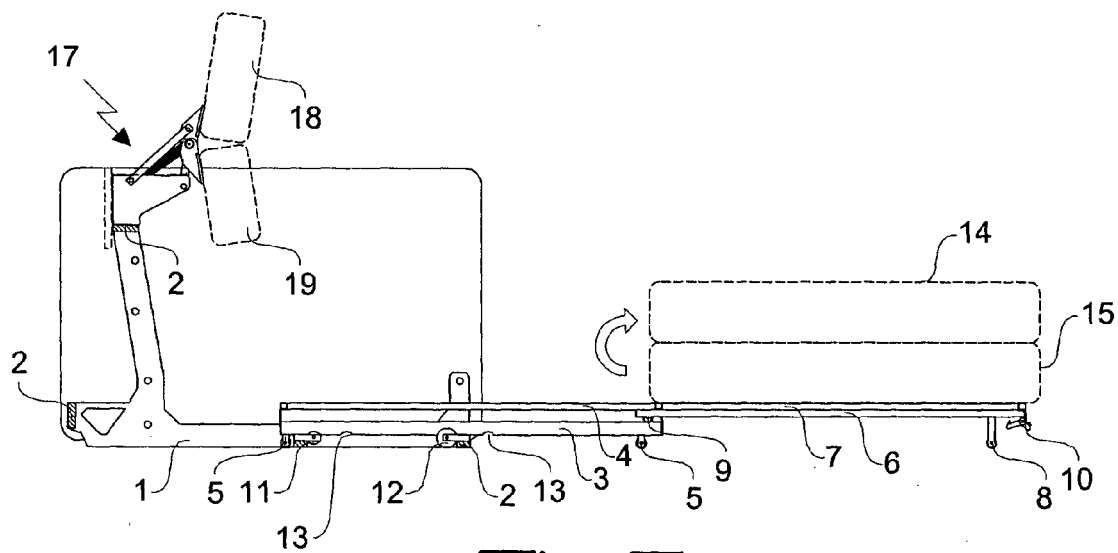


Fig. 9

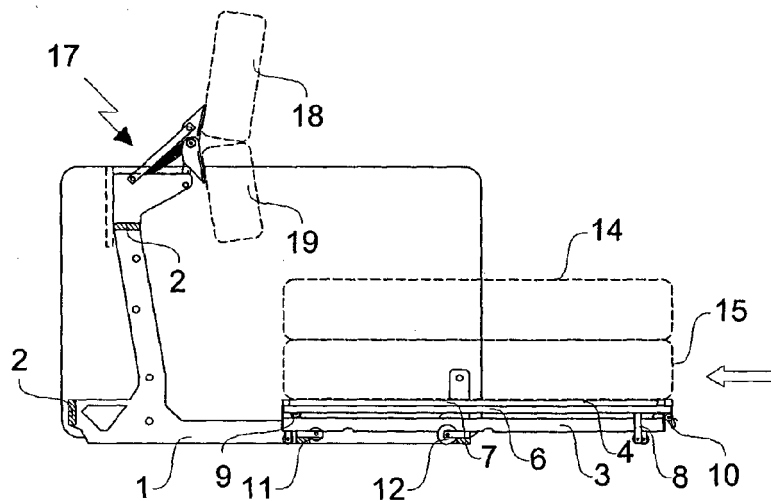


Fig. 10

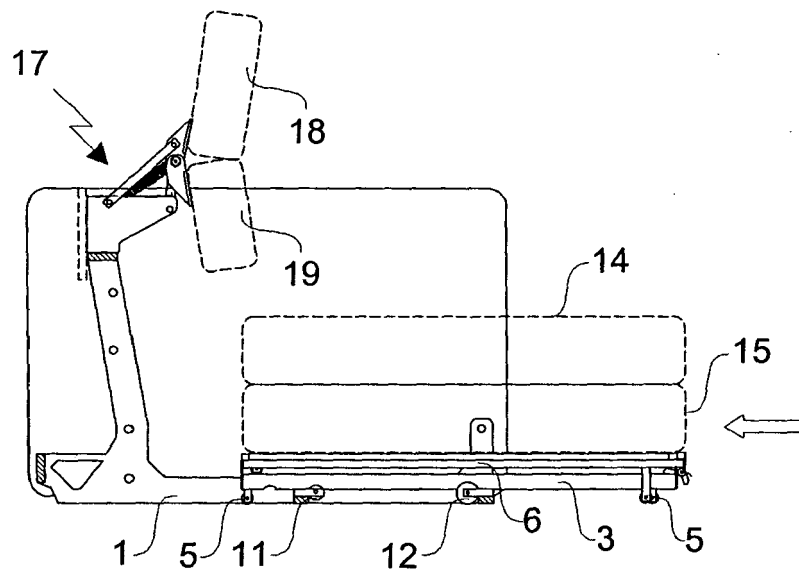


Fig. 11

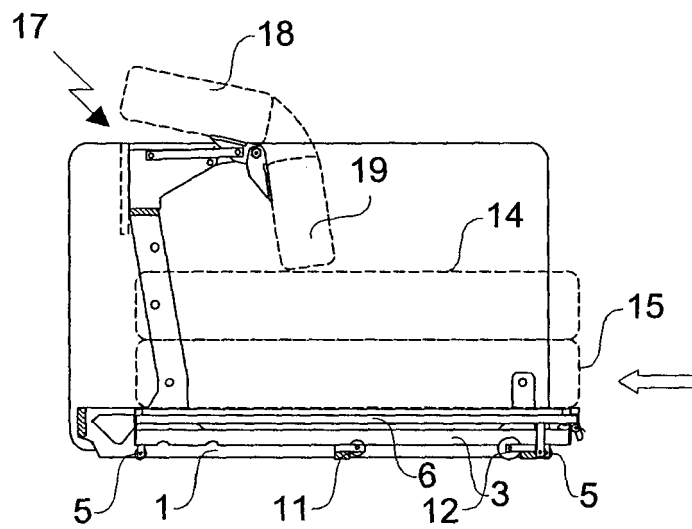


Fig. 12



European Patent
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Application Number
EP 05 42 5204

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4	Place of search The Hague	Date of completion of the search 11 October 2005	Examiner Kus, S
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EUROPEAN SEARCH REPORT

Application Number
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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