

Slatted Base for a Bed

Technical Field

This invention relates to a slatted base for a bed with two longitudinal
5 supports, spaced apart, running essentially in longitudinal direction of the bed,
with a number of spring slats disposed mutually spaced apart essentially in
transverse direction with respect to the longitudinal supports, which collectively
form a supporting surface for a mattress, and with elastically deformable
supporting slats situated lower with respect to the spring slats, via which the
10 spring slats are connected to the longitudinal supports, the longitudinal
supports being disposed below the spring slats and the outer sides of the
longitudinal supports facing the ends of the spring slats being set back with
respect to the spring slat ends and in each case at least one spring slat and
one supporting slat being combined with two lateral edge-area elements into a
15 bearing module.

State of the Art

Such a slatted base is disclosed in the European Patent Application EP
0 539 644. Shown therein are lower supporting elements, or respectively lower
20 supporting slats, which are either firmly connected to the longitudinal supports
or have a considerable degree of freedom at the places of connection to the
longitudinal supports. It has been shown that the sleeping comfort achievable
with the slatted base can be increased with specially designed supporting slats
and with a corresponding fastening of these to the longitudinal support. It is
25 important to give the lower supporting slat a certain elastic characteristic. It is
also important to arrange the fastening of the supporting slats to the longitudi-
nal supports in such a way that there is only a certain limited degree of freedom
of the supporting slats with respect to the longitudinal supports.

Furthermore the lateral connecting element, or the edge-area element as
30 it will be called in the following, is of great significance. This edge-area

element, which connects together a lower supporting slat and one or more upper spring slats at each of their ends and combines them into a bearing module, is designed in such a way that a pivoting of each individual spring slat, or a pivoting of all of the spring slats combined into a bearing module is possible transversely to the longitudinal direction of the longitudinal supports.

Resulting upon deflection of both the spring slats as well as the supporting slats are these longitudinal changes; these have to be compensated for, whether through the edge-area elements or the way of fastening the bearing module to the longitudinal supports.

With the present type of slatted bases, the longitudinal supports, which are hidden laterally below the spring slats, are not the dominating elements, which mark the appearance of the slatted base, but instead the edge-area elements, side by side in a row. So that the slatted base has an aesthetic, appealing appearance, these edge-area elements should be as flat as possible, or respectively be constructed as low as possible, so that the lateral edge areas of the slatted base are finished off with a relatively slender line. Such a construction gives the viewer the impression of a freely suspended slatted base or bed.

Invention

It is the object of the present invention to create a slatted base, improved with respect to the state of the art.

This object is achieved according to the invention in that the supporting slat has a central, elastically deformable area situated between the longitudinal supports, which is more elastic than two end areas of the supporting slat directed from the longitudinal supports toward the spring slat ends, in that the supporting slat is supported on the two longitudinal supports and is held thereon with connecting elements, and in that in each case a pivoting movement of the supporting slat is possible at each supporting place in the transverse direction to the corresponding longitudinal support, which pivoting

movements have the effect that the two lateral edge areas of a bearing module, when loaded at any place, move from the support side downward.

Obtained by means of the areas of differing elasticity of the supporting slat is only a relatively weak deflection of the edge areas of the slatted base, although the range of deflection of the spring slats in the middle of the slatted base is relatively large. Too deep a sinking in of a person sitting down at the edge of the slatted base can thereby be prevented. Through the holding, especially the holding down, of the supporting slat on the longitudinal supports with connecting elements at the places where the supporting slat is supported on the former, and through the relatively highly elastic, deformable middle area of the supporting slat, the opposed pivoting movement is achieved at the places of support. This opposed pivoting movement is responsible for the opposite lateral slatted base edge not being lifted up, but being likewise lowered in the direction of load, when the one lateral slatted base edge is loaded. Thereby prevented is a tilting effect of the slatted base, in the case of one-sided loading.

Achieved with the limiting member, which each end area of a supporting slat has, and which, in unloaded state of the slatted base, is spaced apart in each case from the more closely situated longitudinal support, is that a deflection, in particular of the edge areas of the slatted base, cannot take place to the point of destruction of a component, but instead is kept within reasonable limits. The maximal deflection of the edge area is preferably designed to be changeable, with an adjustably disposed setting member. Since a setting member is foreseen on both sides of the slatted base for each bearing module, an individual setting of the maximal deflection of the bearing module is possible along the slatted base. With the setting member an interim space present between the limiting member and the more closely situated longitudinal support, which serves as limit stop, is enlarged or reduced. The limiting member, with increasing deflection, then sooner or later comes to a stop at the setting member. It can be preferably foreseen that the setting member is made

of an elastic, rubber material. In this way the deflection is not stopped abruptly, but is gently braked.

The placement of the supporting slat on the longitudinal supports takes place preferably with a support projection protruding from the supporting slat in each case over the longitudinal supports, which projection can be essentially
5 triangular in cross-section and can extend in the longitudinal direction of the longitudinal supports essentially over the entire width of the supporting slat. A triangular point is thereby turned toward the longitudinal supports. By means of the connecting elements, in particular holding-down elements, acting upon the
10 supporting slat, the support projections are each held down on the longitudinal supports. A lifting off of the supporting slat from the longitudinal supports is thereby made impossible. On the other hand, a pivoting of the supporting slat at the support places about the support point of the support projection is possible. The holding-down elements are designed in such a way that
15 necessary compensations in length of the supporting slat upon deflection of its middle area can take place, with changing load of the slatted base.

A support element made of an elastic material is preferably provided between the support projections and the longitudinal supports. In this way, on the one hand, deflection noises can be prevented, and, on the other hand, the
20 aforementioned movement possibilities of the supporting slat at the places of contact, relative to the longitudinal supports, are already provided by means of the elastic support. The support element is preferably made of a relatively soft rubber or silicon material or the like, and has a notch into which the aforementioned support projection of the supporting slat is led. The support
25 element rests, with a plate-shaped layer, on the longitudinal support.

The spring slats of the slatted base in the unloaded state are slightly raised in the middle. They have an upwardly protruding deflection curve. Upon loading of the slatted base, the spring slats deflect downward and attain a downward, sagging bend. The middle area of the supporting slat is preferably
30 designed in such a way that it is bent concavely relative to the unloaded spring

slats. The curve of the bend of the supporting slats is preferably designed such that it corresponds to that of the correspondingly loaded, downwardly deflected spring slats. The supporting slat, thus bent, does not disturb thereby the relatively large range of deflection of the spring slats. It however limits the maximal range of deflection without creating thereby an essentially hard, punctual limitation spot directed toward the mattress.

Seen as a whole, the supporting slat is also pre-bent, preferably concavely, with respect to the spring slats. The supporting slat can however be of undulating design.

According to their manufacture, the supporting slat ends have at least a stretch of 5 cm which runs straight. In this way it is possible to adjust a supporting slat to a limited range of differing slatted base widths by shortening these ends. The direction of insertion of the supporting slat ends into the edge-area elements remains the same after the shortening.

Foreseen is manufacture of the supporting slats as injection-moulded part, preferably of a thermoplastic material. The limiting member can be integrated into the supporting slat. To avoid material accumulations, a ribbed construction is usually necessary. It is also possible to manufacture the supporting slats according to a so-called gas internal pressure process. An injection-moulded hollow body is thereby generated, which has on the outside a surface without ribs. This has a positive effect as concerns any possible layers of dust.

It is foreseen, according to the invention, that each edge-area element has essentially pocket-shaped holding means for the end of the at least one spring slat and for the end of the supporting slat of a bearing module, that all holding means are disposed side by side in the longitudinal direction of the longitudinal supports and do not overlap in this direction, and that a cover wall, designed as bearing element, spanning all holding means, is provided which connects the holding means together tensionally.

By means of this construction an edge-area element is created, which has an extremely slender construction, owing to the fact that the holding means for all slat ends are disposed side by side.

The edge-area elements are intended to accept and hold all slat ends facing each other which form a bearing module. One of the slats is a lower-situated supporting slat, and at least one is a higher-situated spring slat. Preferred embodiments foresee bearing modules with two spring slats disposed next to each other, the lower-situated supporting slat being disposed between the two spring slats. Also foreseeable, however, for the edge areas at the head and at the foot of the slatted base are edge-area elements in which three spring slats, disposed side by side, can be used, the lower-situated supporting slat being disposed in one of the two interim spaces between the spring slats.

The edge-area element is slippable onto the spring slat ends and supporting slat ends facing each other. Owing to the given construction, in which the edge-area element is not likewise connected to any longitudinal groove, it is necessary to provide means to prevent a lateral slipping off of an edge-area element from the slat ends. According to the invention, securing means are provided which are designed as a type of snap device. A notch can be cut into one of the slat ends, preferably in the end of the supporting slat, the notch running transversely to the supporting slat, into which notch a rib engages, which is disposed on the holding means of the edge-area element for the supporting slat.

The holding means for the supporting slat, which, like the holding means for the spring slat, is designed pocket-shaped, is connected to the cover wall of the edge-area element via a member which can be stressed upon torsion and bending. The connecting member can be designed tongue-shaped. It serves the purpose of enabling the edge-area element to be pivoted with respect to the supporting slat in the longitudinal direction of the slatted base. The spring slats inserted in the corresponding edge-area element are thereby also pivotable with respect to the longitudinal supports. Provided between the cover

wall of the edge-area element and the holding means for the supporting slat end is a pivot limit stop of circular cross-section about which the holding means for the supporting slat can roll upon pivoting of the edge-area element.

Each holding means for one of the spring slats, which is preferably
 5 designed as a pocket surrounding the end of the spring slat, is further conceived in such a way that the spring slat is tiltable therein, within limits, transversely to its longitudinal direction. This can be achieved, for example, in that projections are provided inside the pocket running in the longitudinal
 10 direction of the spring slat, pressing upon the middle of the spring slat, about which projections the spring slat is tiltable on both sides until it abuts limit stops. Spring elements in the form of flexible tongues inside the pocket-shaped holding means press upon the lateral edge areas of a spring slat end inserted in the holding means, so that this can be held in an untilted position in an
 15 unstressed state. This gives an uncovered slatted base an aesthetically appealing appearance in that the spring slats are all directed toward each other in an untilted position.

The aforementioned, multiple tilting possibilities ensure that the spring slats adapt optimally to the body contours of a person lying on the bed.

The holding means, in particular those which do not have the
 20 aforementioned securing means, can be provided with a stop which is designed in such a way that, in the unloaded state of the slatted base, the end of the associated slats reaches essentially to the stop. The slatted base can therefore be lifted on the lateral edge areas without there occurring any upward deflection worth mentioning of the correspondingly grasped bearing module.

25 The edge-area element is preferably manufactured in one piece of a thermoplastic material. This gives the edge-area element the stability necessary for this type of slatted base.

An edge-area element, which is characterized in that it has essentially pocket-shaped holding means for the end of the at least one spring slat and for
 30 the end of the supporting slat of a bearing module, all holding means being

disposed side by side in the longitudinal direction of the longitudinal supports of the slatted base and not overlapping in this direction, and a cover wall designed as a bearing element spanning all holding means being provided, which connects the holding means together tensionally, can also be used on a
 5 slatted base according to the state of the art as described in the introduction. Likewise the connecting member, which can be stressed upon torsion and bending, and via which the holding means for the supporting slat is connected to the edge-area element, is not limited to use together with edge-area elements with holding means disposed side by side.

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Brief Description of the Drawings

The invention is more closely described in the following with reference to figures of a preferred embodiment example. Shown are:

Fig. 1, a view of a slatted base according to the invention;

15 Fig. 2, a cross-section through the slatted base according to Fig. 1 along the line II-II;

Fig. 3, an enlarged section of the detail III of Fig. 2, depicting the arrangement of the supporting slat on a longitudinal support;

Fig. 4, a side view of this arrangement, the supporting slat being cut;

20 Fig. 5, a perspectival representation of an element for holding down the supporting slat on a longitudinal support of the slatted base;

Fig. 6, a partial section through a bearing module of a slatted base along the line VI-VI in Fig. 1, the arrangement of the various slats in an edge-area element being shown;

25 Fig. 7, a view of the edge-area element according to Fig. 6;

Fig. 8, a partial depiction of an edge-area element according to Fig. 6, the edge-area element being drawn in a tilted position relative to the supporting slat;

Fig. 9, a section along the line IX-IX in Fig. 7, in which the fastening of the holding means for the supporting slat is visible on the edge-area element; and

Fig. 10, a section along the line X-X in Fig. 3, showing a spring slat end in a tilted position in a pocket-shaped holding means of the edge-area element.

Best Way of Execution

Shown in Fig. 1 is a preferred embodiment example of the slatted base seen from above. Fig. 2 comprises a section along the line II-II in Fig. 1, and shows essentially a side view of a bearing module 7 of the slatted base. This comprises two or three upper spring slats 3 and a lower supporting slat 4, which slats extend transversely with respect to the longitudinal supports 1, 2, which run below the slats. The ends 3a, 4a, facing each other, of all slats 3, 4, which form a bearing module 7, are held in an edge-area element 6.

Disposed in a row along the longitudinal supports 1, 2, which are spaced apart from each other and which usually run parallel to each other, are bearing modules 7 of the previously described kind. The spring slats 3, thereby lying side by side, of all the bearing modules, form a supporting surface for a mattress to be placed on the slatted base.

The supporting slat 4 of each bearing module 7 is intended to hold the latter firmly on the longitudinal supports 1, 2.

The slatted base construction is of the kind that the longitudinal supports 1, 2 run under the spring slats and are set back laterally from the spring slat ends 3a toward the middle of the slatted base. Outwardly projecting supporting feet 71 can be fastened to the longitudinal supports 1, 2 at both the head and foot of the slatted base, or there can be a bearing angle intended for insertion of the slatted base into a bed frame. In the construction with supporting feet, without bed frame, the longitudinal supports are not visible to an observer from the side, and the slatted base gives the impression of suspended spring slats 3, which are limited laterally by the edge-area elements 6.

In the unloaded state, the spring slats 3 are bent slightly upward, i.e. away from the longitudinal supports 1, 2. The supporting slat 4, lower with respect to the spring slats 3, has, on the whole, a concave curvature, relative to the spring slats 3. The supporting slat 4 is designed undulating. The

5 supporting slat 4 is subdivided into essentially three parts. In a middle part 8, which extends from longitudinal support 1 to longitudinal support 2 and which is designed elastically deformable. Adjacent to the middle area, each supporting slat 4 has one end area 9, 10 each, extending outwardly from the longitudinal supports 1, 2, whose outer end 4a in each case is turned toward the ends 3a

10 of the higher-situated spring slat 3 and terminates in an edge-area element 6. Provided over the longitudinal supports 1, 2, for each supporting slat 4, are connecting elements, or respectively holding-down elements 11, which hold, or respectively hold down, the supporting slats 4 on the longitudinal supports 1, 2, not rigidly, but in such a way that compensations in length during deflection of

15 the supporting slat, or respectively of the spring slats, are possible relative to the longitudinal supports, and that a pivoting movement of the supporting slat in transverse direction to the longitudinal support is possible at each place of contact of the supporting slat 4 on the longitudinal supports 1, 2.

Achieved through the specially conceived connection of the supporting

20 slat 4 to the longitudinal supports 1, 2 with the holding-down elements 11 in the aforementioned sense, and through the elastically deformable middle area 8 of the supporting slat 4, is that with the loading of the spring slats 3 at the support places of the support slat 4 on the longitudinal supports 1, 2, a pivot movement in counter direction takes place; i.e., with each loading of the slatted base, the

25 edge-area elements move downward on both sides of a bearing module 7. Interesting is that this is not only the case when loading of the slatted base takes place in the middle, but that it is also the case when only one lateral edge of the slatted base is loaded. A slanted position of the mattress is thereby avoided, and the tilting effect, known until now, does not occur.

In order to give the edge area of the slatted base the necessary stability and in order not to make the range of deflection there excessively large, it has been foreseen to design the two end areas 9, 10 of the supporting slat less elastically deformable than the middle area 8 of the supporting slat.

5 Indicated by the arrow 14 in Fig. 2 is a loading of just the one lateral edge of the slatted base. Indicated by the arrows 12 and 13 are the pivoting directions at the places of support of the supporting slat 14 on the longitudinal supports 1 and 2. Indicated by the arrows 12, 13, 14 are moreover the direction of movement of the edge-area elements 6 with increasing loading.

10 In each end area 9, 10 of a supporting slat 4, a limiting member 15, 16 is provided near the outer side 17, 18 of each longitudinal support 1, 2. The left and the right limiting member 15, 16 extend downward on said outer side of the longitudinal supports over a certain partial area of the latter, a stop face being formed on each limiting member, which face runs parallel to the outer side of
15 the corresponding longitudinal support 1, 2. In the unloaded state of the corresponding bearing module 7 one interim space 19, 20 each is present between said stop face of the limiting members 15, 16 and said outer sides 17, 18 of the longitudinal supports 1, 2. Upon loading of the corresponding bearing module 7, the limiting members 15, 16 move with their stop faces, as a
20 result of the previously described pivoting of the supporting slat supports, toward the outer sides 17, 18 of the longitudinal supports 1, 2, and, after a certain deflection of the spring slats 3 and of the edge-area elements 6, come to rest on the outer sides of the longitudinal supports 1, 2. Since now a further pivoting of the supporting slat 4 about its support places is no longer possible,
25 the range of deflection is thereby limited. Depending upon the size of the interim space 19, 20 selected, the range of deflection, especially of the edge-area elements 6, is larger or smaller.

Fastening devices are foreseen on the edge area element 6 so that holder parts, connecting parts or other parts can be fastened thereon.

Provided in the embodiment shown, for example, are holder pieces 68, which prevent a lateral slipping off of a mattress lying on the slatted base.

Designated by the reference symbol 69 are head and foot-side holders, which can prevent a longitudinal shift of a mattress on the slatted base.

5 Shown enlarged in Fig. 3 is a place of contact of the supporting slat 4 on one of the longitudinal supports, in the example shown on the right longitudinal support 2. Fig. 4 shows a view of this place from the direction of the arrow designated IV in Fig. 3. Fig. 5 shows a perspectival representation of the holding-down element 11, which plays a central role in connecting the
10 supporting slat 4 to the longitudinal supports. Figs. 3, 4 and 5 will therefore be described together in the following.

In Fig. 3 the right longitudinal support 2 is shown in section. Drawn above it is a partial area of the supporting slat 4, said middle area 8 being left of the longitudinal support 2, and the end area 10 of the supporting slat 4
15 extending to the right of the longitudinal support 2. The supporting slat 4 is constructed in one piece as a plastic injected part in the example shown, and comprises in particular an upper rib 46, extending continuously from supporting slat end to supporting slat end, and a lower rib 45, running essentially parallel thereto and spaced apart therefrom, the two ribs being connected on their
20 entire lengths by means of a central crosspiece 47. The cross-section of the supporting slat 4 is thereby essentially H-shaped. Additional reinforcement ribs 48, running in vertical direction, ensure the necessary stability. In the middle area 8, which is more elastically deformable than the end area 9 and 10, there are no reinforcement ribs 48. In the end areas 9, 10, there are many, however.
25 The elastic deformability of the end areas 9, 10 is thereby less, compared to the middle area 8. The limiting member 16, visible in Fig. 3, which extends downward on the outer side of the longitudinal support 2, is integrated into the supporting slat, manufactured as one piece. Very clearly visible is the interim space 20 between the outer side 18 of the longitudinal support 2 and the stop
30 face, running parallel thereto, of the limiting member 16.

A connecting element, or respectively a holding-down element, designated by 11, comprises a support 26 on which a support element 25, two hold-down bolts 42, a setting member 21 and a covering cap 50 are disposed. The support 26 is a part designed essentially U-shaped with a longer limb 28, which extends on the outer side 18 toward the longitudinal support and a shorter stop limb 29, which extends on the inner side of the longitudinal support 2. Disposed in the base side, which connects two said limbs together and which extends in the area of the supporting slat 4 over the upper side 22, 23 of the longitudinal support 1, is a preferably rectangular aperture for insertion and holding 27. The support element 25, made of an elastic material such as rubber, silicon or the like, is led and held through this aperture. The support element 25 has a plate-shaped layer on the side facing the longitudinal support 2. The side of the support element 25 projecting upward out of the insertion aperture 27 comprises a surface 37, cambered transversely to the longitudinal support 2, in which a notch 35 has been made, running in the longitudinal direction of the longitudinal support 2. The notch is essentially triangular in cross-section. Provided on the supporting slat 4 in the area of the upper sides 22, 23 of the two longitudinal supports 1, 2 is one support projection 24 each, which projects into the notch 35, just mentioned, in the mounted state of the supporting slat 4. The support 26 is screwed onto the longitudinal support 2 by means of screws, which are led through the fastening eyes 30 on the fastening flange 28.

The aim now is to hold down the supporting slat 4, placed on the support element 25. For this purpose the support 26 has one guide piece 44 each in the longitudinal direction of the longitudinal support, in each case adjacent to said insertion aperture 35; formed on the guide piece 44 is a dovetailed slip-in guide. One of the hold-down bolts 42 each is slideable over the guide piece 44 along the dovetailed slip-in guide and can be pushed forward against the supporting slat 4. Facing this, each hold-down bolt 42 has a hold-down projection 43, which is slideable over the lower rib 45 of the supporting slat 4,

and which thereby holds down the supporting slat 4 on the cambered surface 37 of the support element 25.

Disposed along the dovetailed slip-in guide, both on the guide piece 44 and on the hold-down bolt 42, are catch means 49, which make possible only a stepwise sliding of the hold-down bolt along the guide piece upon provision of a certain sliding force. The catch means 49 serve the purpose of preventing the bolts 42 holding down a supporting slat from being able to remove themselves from their pushed-forward, holding position. The catch means 49 are designed preferably in such a way that the slip on force is less than the retraction force. This can be achieved through a correspondingly shaped toothing.

A covering cap 50 of an elastic material, such as rubber, silicon or the like, extends, essentially in the shape of a truncated pyramid, over the base side of the support 26, the hold-down bolt 42 and the held-down area of the supporting slat 4. The covering cap 50 is held on holding projections 51, which are disposed on the base side of the support 26, and fulfils, in addition to the task of purely covering, the further task of limiting, relatively gently and noiselessly, the range of spring of extremely elastic spring slats. The covering cap is a stop means 50 for the spring slats 3.

Disposed in the fastening limb 28 of the support 26 is a guiding slot 31, which extends essentially from the free limb end toward the supporting slat 4. Provided along the guiding slot 31 are engagement extensions 32, periodically spaced. The end area of the guiding slot 31 facing the free end of the limb 28 is rectangularly extended, a rectangular opening, which thereby results, serving to introduce a guide piece 38 of the setting member 21 into the guiding slot 31. A crosspiece 33 remaining at the end of the limb 28 serves as end stop so that the setting member cannot be pulled downward out of the guiding slot 31. The guide piece 38 slides along the guiding slot 31 in a recess 52, which has been made in the limb from the surface abutting on the outer side 18 of the longitudinal support 2. In addition two guide ribs 40 for the setting member 21 are provided on the outer side of the limb 28 remote from the outer side 18 of

the longitudinal support 2, which ribs are provided with an impeding toothing 41 to prevent the setting member 21, once set, from moving by itself.

The setting member 21 is essentially a plate-shaped creation, which allows itself to be moved along the guiding slot 31 in the interim space 20
 5 between the limiting member 16 and the longitudinal support 2. The interim space 20, or respectively the pivot path of the limiting member, can be thereby limited. Preferably foreseen now is to design the setting member 21 essentially wedge-shaped, the pivot path decreasing with increasing advance of the setting member in the interim space 20. An advantageous design of the setting
 10 member 21 results when, instead of a wedge shape, a three-step design is chosen with setting steps 39a, 39b and 39c with increasing height of step. The engagement extensions 32 in the guiding slot are then spaced apart from one another in such a way that three defined positions result for the setting member 21. The range of deflection of the edge-area elements of the slatted base can
 15 thus be set or reset simply, from large to medium-sized, to small, depending upon the insertion extent of the setting member, and can be adjusted to the needs of the person for whom the slatted base is intended. The setting member can be made of an elastic material, such as rubber, silicon or the like, to achieve a limiting of the range of deflection which is not abrupt, but is
 20 instead gentle and noiseless.

Shown in Figs. 6 and 7 is an edge-area element, with which the lateral ends 3a, 4a of all spring slats 3 and of the supporting slat 4, which form a bearing module 7, are combined. The edge-area element 6 is designed in such a way that a holding means 56 for the end 4a of the supporting slat 4 and one
 25 holding means 55 each for the end 3a of a spring slat are provided. Preferably combined in an edge-area element are the supporting slat 4 and two spring slats 3, one each left and right of the supporting slat. The holding means 55, 56 do not overlap thereby in the longitudinal direction of the edge-area element 6, this element having a relatively elongated, but low and slim effect.

It can be foreseen, particularly for the head and foot ends of the slatted base, that the edge-area elements be so designed that on the one side of the supporting slat 4, i.e. on the side facing the slatted base end, holding means 55, are provided for two spring slats 3. Such a construction of an edge-area
5 element 6 is indicated in dots and dashes in Figs. 6 and 7.

The holding means 55, 56 for the spring slat 3, respectively for the supporting slat 4, are preferably designed pocket-shaped and completely embrace the end 3a of a spring slat 3, respectively the end 4a of the supporting
10 slat 4. All holding pockets 55, 56 are connected together tensionally with a bearing element, which is designed as the cover wall 57. The cover wall 57, which encompasses the lateral areas and the upper side of a bearing module in its edge area, is completed with a side wall 70 on the face remote from the slats
3, 4. In this way the edge-area element seems to the viewer as closed toward the outside on all sides.

15 In the type of slatted base shown, the edge-area element 6 is merely pushed over the ends 3a, 4a of the spring slats 3 and of the supporting slat 4. It has no connection of any kind with a longitudinal support and a longitudinal groove. Thus it must be ensured that the edge-area element 6 cannot slide laterally by itself. To this end it can be foreseen to provide at least one holding
20 means 55, 56 and the slat associated thereto with securing means 58, 59, preferably a kind of snap device, by means of which, after slipping the edge-area element 6 on the slat ends 3a, 4a, a lateral sliding off by itself is no longer possible. Preferably foreseen therefor have been the holding means 56 and the end 4a of the supporting slat 4. The holding means 56 has a first securing
25 means in the form of at least one rib 59, extending transversely to the pocket, projecting into the pocket, and the end 4a of the supporting slat has a second securing means in the form of a notch 58, which extends in such a way that, upon insertion of the end 4a of the supporting slat 4 into the pocket 56, the rib
59 engages in the notch 58 and thereby prevents a sliding of the edge-area
30 element 6 by itself from the slat ends 3a, 4a.

Indicated by 67 is a fastening device in the form of an eye to receive a screw thread of a screw, to which the previously mentioned terminal part 68, for example, can be fastened. The holding pockets 55 for the spring slats 3 have a stop 64. The inserted spring slats extend practically up to the stop in the unloaded state of the slatted base. Upon lifting up the slatted base at the edge-area element, the spring slats, bent slightly upward, experience a stretching and thus an enlargement in length. They come to rest thereby on the stop and make impossible any significant considerably deflection upward of the edge-area element 6.

10 The holding element 56 for the supporting slat 4 likewise has a stop 65. The end of the supporting slat 4 is already held firmly by said securing means 58, 59, however, and a longitudinal shift is prevented.

Shown in Fig. 8 is that the edge-area element 6 and thus the spring slats held therein is designed pivotable relative to the holding pocket 56 with the supporting slat 4. An essentially circular segment-shaped pivot stop 66 is disposed between the cover wall 57 and the side of the pocket of the holding means 56 facing this cover wall. It is intended to define the aforementioned pivoting movement in that the side of the holding means 56 abutting the pivot stop rolls along the pivot stop 66 during a tilting of the edge-area element 6.

20 The fastening of the holding means 56 to the cover wall 57, respectively to the side wall 70, is shown in Fig. 9. The holding pocket 56 is connected to the side wall 70 with a connecting member 60, which can be stressed upon torsion and bending. The connecting element 60 is preferably a relatively thin-walled tongue, which extends between the holding pocket 56 and the side wall 70. Visible from Fig. 9 is that the pivoting movement is executable, as shown in Fig. 8, thanks to this tongue, which is relatively elastic. Moreover the longitudinal direction of the holding pocket 56 relative to the cover wall is also changeable, however, in that this wall can be bent downward in the direction of the arrow 72. Depending upon the deflection of the bearing

module 7, the relative lengths of the ends 3a of the spring slats 3 and of the end 4a of the supporting slat 4 can change with respect to one another.

Each holding pocket 55 for one of the ends 3a of a spring slat 3 is designed in such a way that a limited tilting of the spring slat is possible transversely to its longitudinal axis in the holding pocket 55. For this purpose the cross-section of the holding pocket is designed larger than the cross-section of the spring slat end. Provided in the holding pocket is then an upper projection 61 running in the longitudinal direction of the spring slat and a lower projection 62, which extend in the longitudinal direction of the spring slat and abut of the spring slat end 3a essentially in the middle. The lower projection 62 is thereby designed essentially in the form of a V, with a large angle of opening, the two limbs of the V, on the one hand, and the cover wall 57, on the other hand, serving as limitation for the tilting movement of the spring slat 3 inside the holding means 55.

Spring means 63 inside the holding pocket 55 in the form of two flexible tongues, which act upon the spring slat end 3a on each side of the longitudinal axis of a spring slat 3, ensure that, in the unloaded state of the slatted base, the spring slats 3 lie side by side, directed toward each other, in an untilted state.

The edge-area element 6 is preferably made of a thermoplastic material, in one piece, as an injection-molded part.

Not only the design of the supporting slat 4, its positioning on the longitudinal supports 1, 2, but also the design of the edge-area element 6 contribute, each part in itself, its particular share to achieving the initially set object.



Claims

1. Slatted base for a bed, characterized by:

two longitudinal supports, which run essentially in the longitudinal direction of the bed and are spaced apart from each other;

- 5 a number of spring slats with mutual spacing to one another, which run essentially in transverse direction with respect to the longitudinal supports and which collectively form a supporting surface for a mattress;

elastically deformable supporting slats, which are situated lower with respect to the spring slats, and via which the spring slats are connected to the longitudinal supports, the longitudinal supports being disposed below the spring slats and the outer sides of the longitudinal supports facing the ends of the spring slats being set back with respect to the spring slat ends, the supporting slats having an elastically deformable middle area situated between the longitudinal supports (1, 2), which area is more elastic than two end areas of the supporting slats directed from the longitudinal supports toward the spring slat ends;

two lateral edge-area elements, with which at least one spring slat and one supporting slat each are combined into a bearing module; and

connecting elements, with which the supporting slats are held on the two longitudinal supports, by means of which in each case one pivot place of the supporting slats is formed at each holding place in the transverse direction to the corresponding longitudinal support, in such a way that the two lateral edge areas of a bearing module, when loaded at any place, move from the support surface downward.

25 2. Slatted base according to claim 1, characterized by:

a member in each end area of each supporting slat to limit the deflection of the supporting slat, the member being spaced with respect to one side of the more closely situated longitudinal support in the unloaded state of the slatted base, and starting from a certain loading of, in particular, one of the lateral



areas of the slatted base, having an effect upon the more closely situated longitudinal support, which is a limit stop for the member.

3. Slatted base according to claim 2, characterized by:

5 a setting member, which is provided in an interim space between the limiting member and the limit stop, the timepoint of effect of the limiting member on the limit stop being adjustable as a function of the load.

4. Slatted base according to claim 2, characterized by:

10 a setting member, which is provided in an interim space between the limiting member and the limit stop, the strength of effect of the limiting member on the limit stop being adjustable as a function of the load.

5. Slatted base according to claim 1, characterized by:

support projections, which are disposed on the supporting slats in the area of the longitudinal supports and are turned toward an upper side of the longitudinal supports; and

15 support elements, which are held between the upper side of the longitudinal supports and the support projections of the supporting slats.

6. Slatted base according to claim 1, characterized by:

20 a concave bending of the middle area of the supporting slat, relative to the at least one spring slat, the curve of the bend corresponding approximately to that of a loaded spring slat.

7. Slatted base according to claim 1, characterized by:

a concave bending of the entire supporting slat, relative to the at least one spring slat, the concave bend being undulating.

8. Slatted base according to claim 1, characterized by:

25 straight-running support slat ends of an unmounted, unloaded support slat, which have a length of at least two inches.

9. Slatted base according to claim 1, characterized by:

at least one stop means on each bearing module for soft and silent limiting of the spring range of the spring slats.

30 10. Slatted base according to claim 1, characterized by:



supporting slats manufactured as injection-moulded part.

11. Slatted base according to claim 1, characterized by:

supporting slats made of a thermoplastic material.

12. Slatted base according to claim 1, characterized by:

5 pocket-shaped holding means of the edge-area elements each for one end of the at least one spring slat and for one end of the supporting slat of a bearing module, all holding means being disposed side by side in the longitudinal direction of the longitudinal supports and not overlapping in this direction; and

10 a cover wall, which is designed as the bearing element and which spans all holding means of an edge-area element and connects the holding means thereby tensionally with one another.

13. Slatted base according to claim 12, characterized by:

15 edge-area elements which can be slipped on the ends of the at least one spring slat and of the supporting slat; and

securing means on a holding means and on one end associated thereto of one of said slats to prevent a lateral sliding off of the slipped-on edge-area element.

14. Slatted base according to claim 13, characterized by:

20 securing means, which are designed as a snap device.

15. Slatted base according to claim 12, characterized by:

a connecting member, which can be stressed upon torsion and bending, with which the holding means for the end of the supporting slat is connected to the cover wall.

25 16. Slatted base according to claim 12, characterized by:

projections, which are provided in the holding means intended for receiving the spring slat end, project inwardly, run in the longitudinal direction of the spring slat and point to the middle of the spring slat, the projections being intended to hold the spring slat in the holding means associated thereto



tiltable within limits transversely to the longitudinal direction of the spring slat;
and

spring means, which press on the lateral edge areas of the spring slat
end and are intended to keep the unloaded spring slat in an untiltable position
5 relative to the holding means.

17. Slatted base according to claim 12, characterized by:

a stop in each of the holding means for the spring slats or for the
supporting slats, all ends of said slats reaching essentially up to the stop in the
holding means in the unloaded state of the slatted base.

10 18. Slatted base according to claim 12, characterized by:

edge-area elements which are designed as one piece.

19. Slatted base according to claim 12, characterized by:

edge-area elements which are made of a thermoplastic material.

20. Slatted base for a bed, characterized by:

15 two longitudinal supports, which run essentially in the longitudinal
direction of the bed and are spaced apart from each other;

a number of spring slats with mutual spacing to one another, which run
essentially in transverse direction with respect to the longitudinal supports and
which collectively form a supporting surface for a mattress;

20 elastically deformable supporting slats, which are situated lower with
respect to the spring slats, and via which the spring slats are connected to the
longitudinal supports, the longitudinal supports being disposed below the
spring slats and the outer sides of the longitudinal supports facing the ends of
the spring slats being set back with respect to the spring slat ends, the
25 supporting slats having an elastically deformable middle area situated between
the longitudinal supports (1, 2), which area is more elastic than two end areas
of the supporting slats directed from the longitudinal supports toward the spring
slat ends;

two lateral edge-area elements, with which at least one spring slat and
30 one supporting slat each are combined into a bearing module; and



pocket-shaped holding means of the edge-area elements each for one end of the at least one spring slat and for one end of the supporting slat of a bearing module, all holding means being disposed side by side in the longitudinal direction of the longitudinal supports and not overlapping in this
5 direction;

a cover wall, which is designed as the bearing element and which spans all holding means of an edge-area element and connects the holding means thereby tensionally with one another;

connecting elements, with which the supporting slats are held on the two
10 longitudinal supports, by means of which in each case one pivot place of the supporting slats is formed at each holding place in the transverse direction to the corresponding longitudinal support, in such a way that the two lateral edge areas of a bearing module, when loaded at any place, move from the support surface downward; and

15 a member in each end area of each supporting slat to limit the deflection of the supporting slat, the member being spaced with respect to one side of the more closely situated longitudinal support in the unloaded state of the slatted base, and starting from a certain loading of, in particular, one of the lateral areas of the slatted base, having an effect upon the more closely situated
20 longitudinal support, which is a limit stop for the member.

Abstract

The slatted base has two longitudinal supports, spaced apart, running essentially in the longitudinal direction of the bed, with a number of mutually spaced spring slats running transversely with respect to the longitudinal supports which collectively form a supporting surface for a mattress. The spring slats are connected to the longitudinal supports via elastically formable supporting slats, the supporting slats being situated lower with respect to the spring slats. The longitudinal supports are disposed below the spring slats and the supporting slats, and are set back inwardly toward the middle with respect to the lateral edges of the slatted base. At least one spring slat and one supporting slat in each case are combined at their opposite ends with one edge-area element each into a bearing module. The supporting slat has an elastically deformable middle area situated between the longitudinal supports which is more elastic than two end areas of the supporting slat directed from the longitudinal supports toward the spring slat ends. The supporting slat is supported on the longitudinal supports and is held at the supporting places by holding-down elements. A limited pivoting of the supporting slat at each supporting place is possible in transverse direction to the corresponding longitudinal support, the pivot direction, in the case of loading of the slatted base, being opposite at the two support places at any given time. The edge-area element has a pocket-shaped holding means for each end of the spring slats and of the supporting slats. All holding means are disposed side by side in the longitudinal direction of the longitudinal supports and do not overlap in this direction. The holding means are tensionally connected among themselves with a spanning cover wall designed as bearing element. The individual spring slats are tiltably held in the edge-area element. The edge-area element itself is tiltable with respect to the supporting slat. Achieved with the proposed construction is a slatted base which ensures exceptional sleeping comfort and is aesthetically appealing.

(Figs. 1, 2)

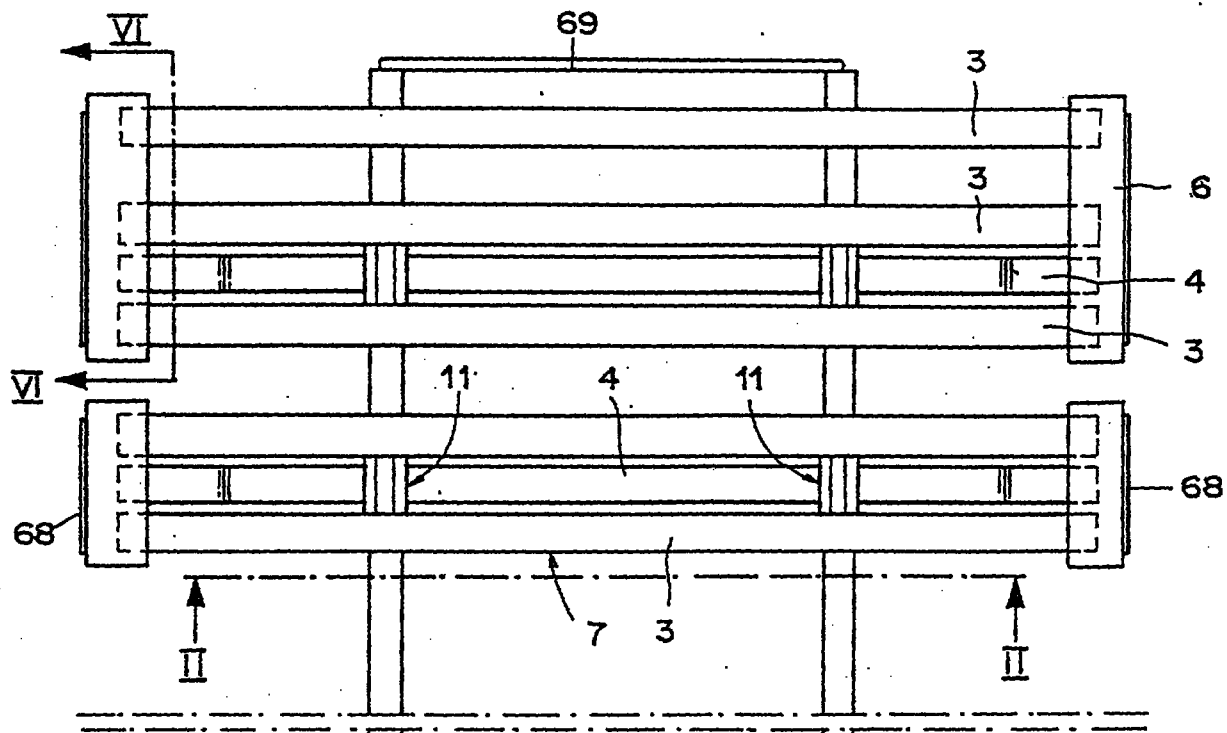


Fig. 1

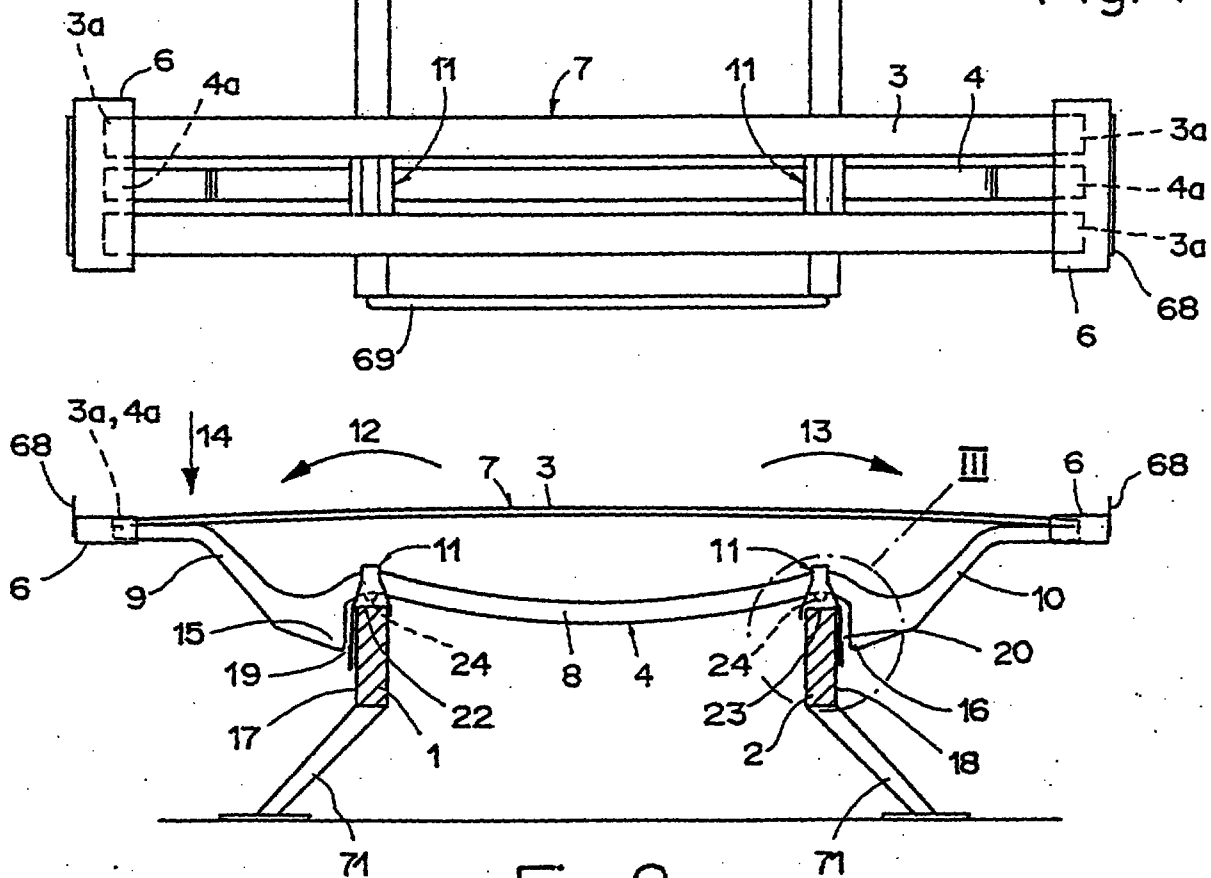


Fig. 2

Fig. 3

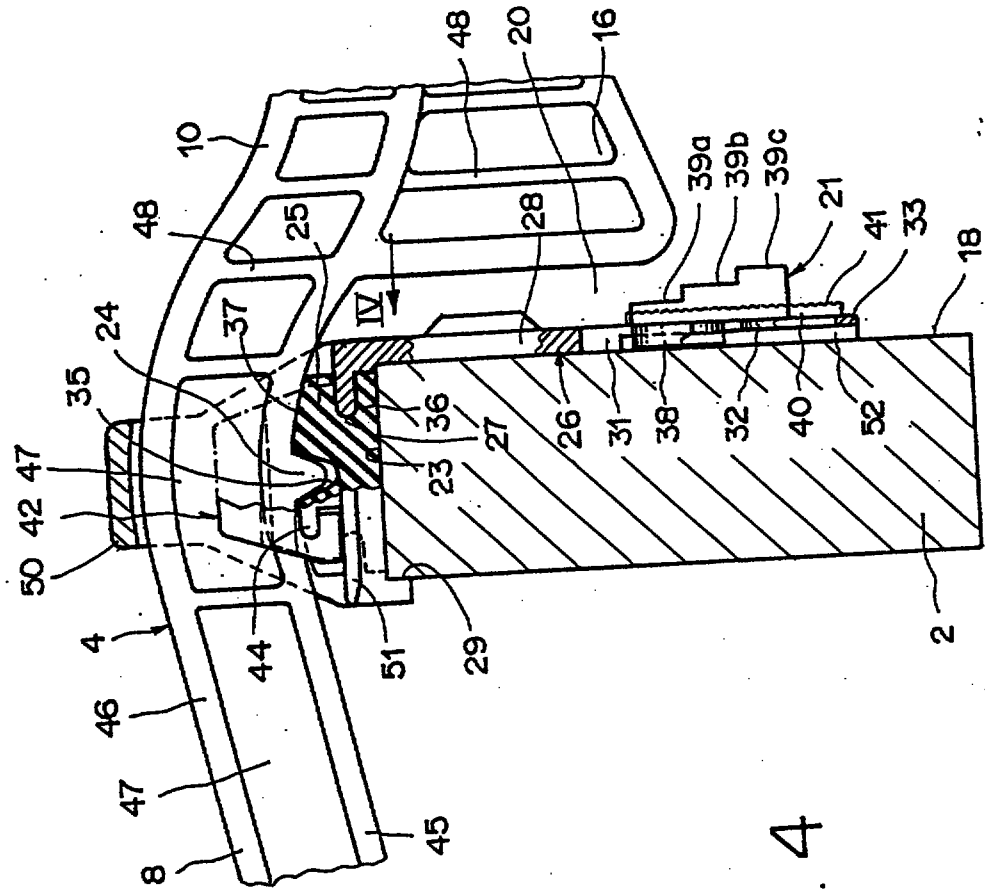


Fig. 4

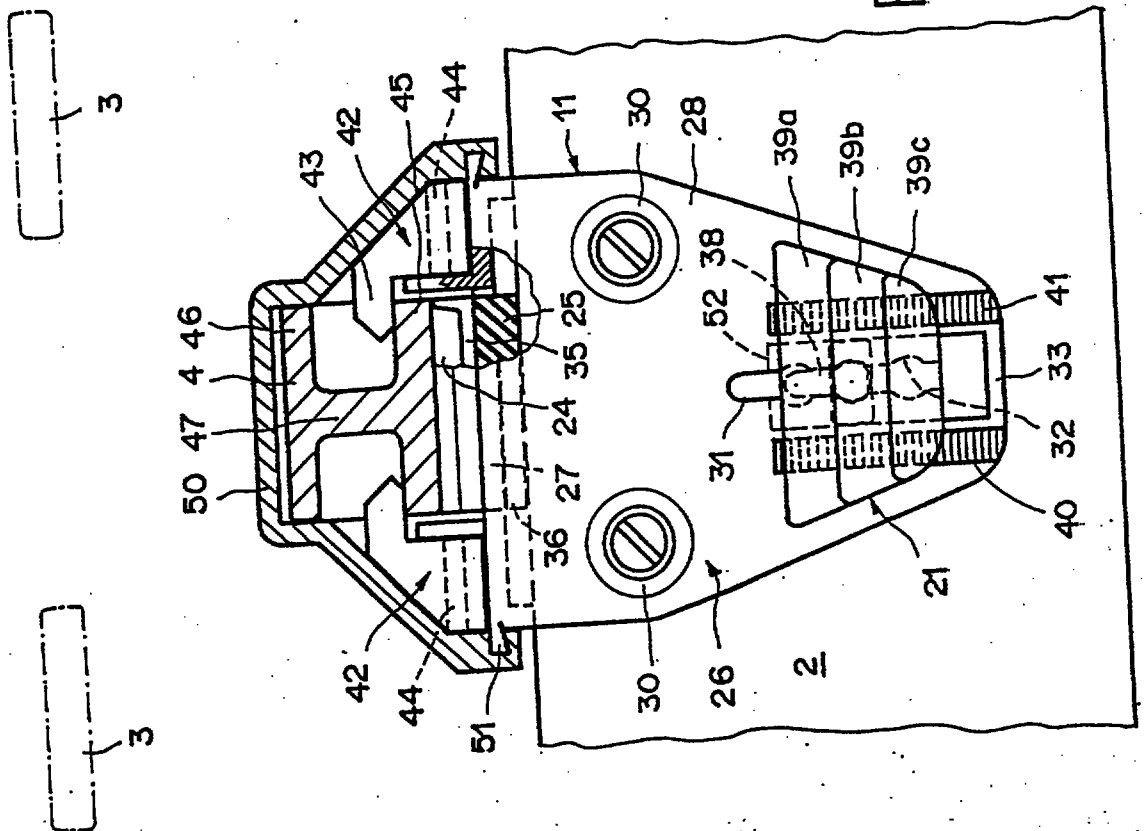


Fig. 5

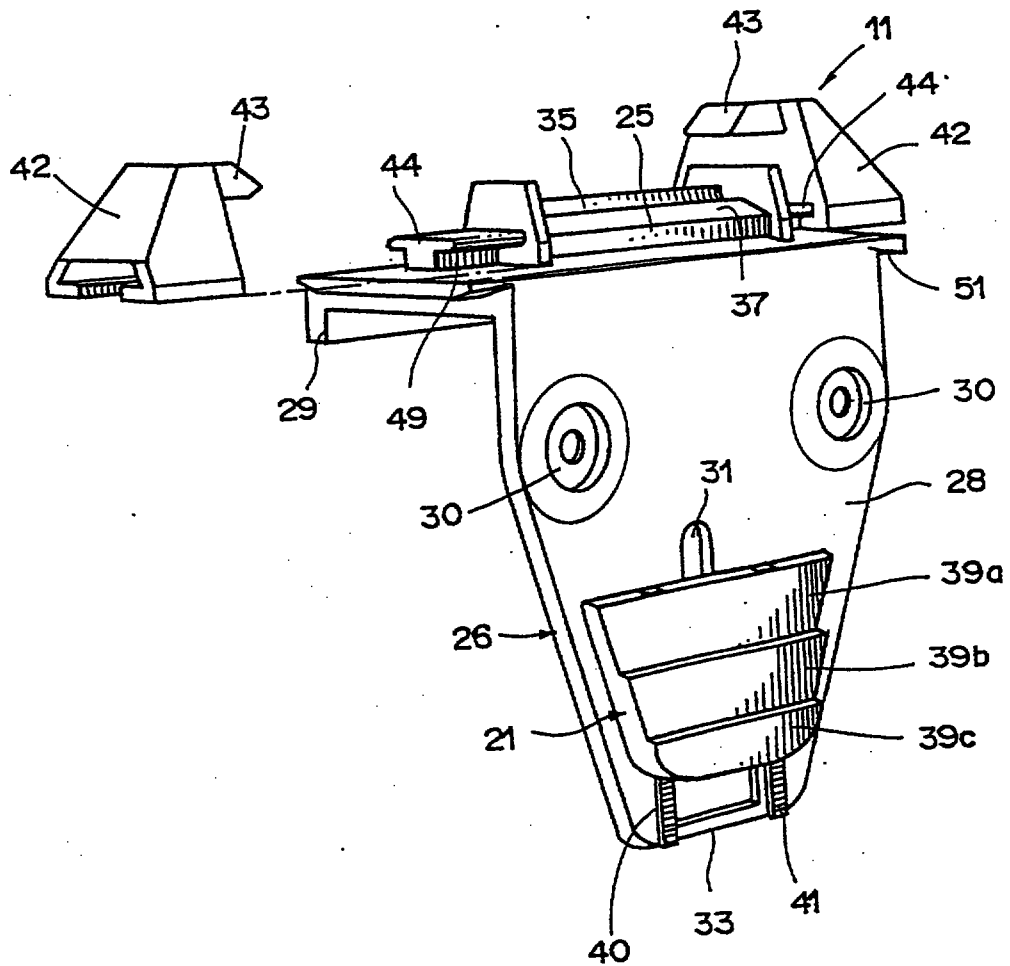


Fig. 6

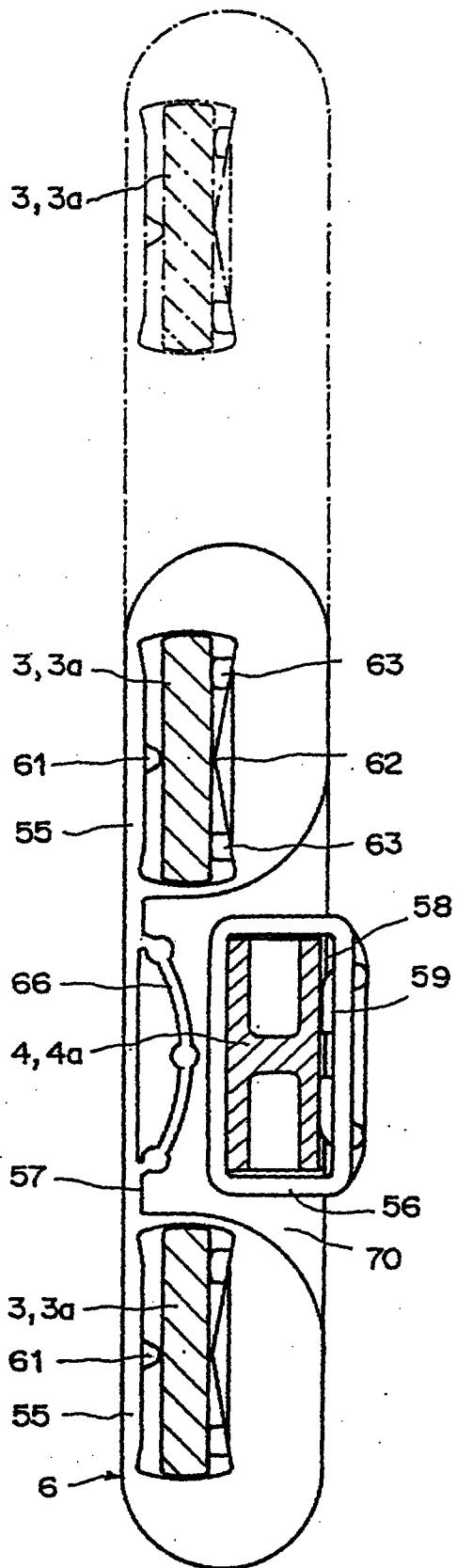


Fig. 7

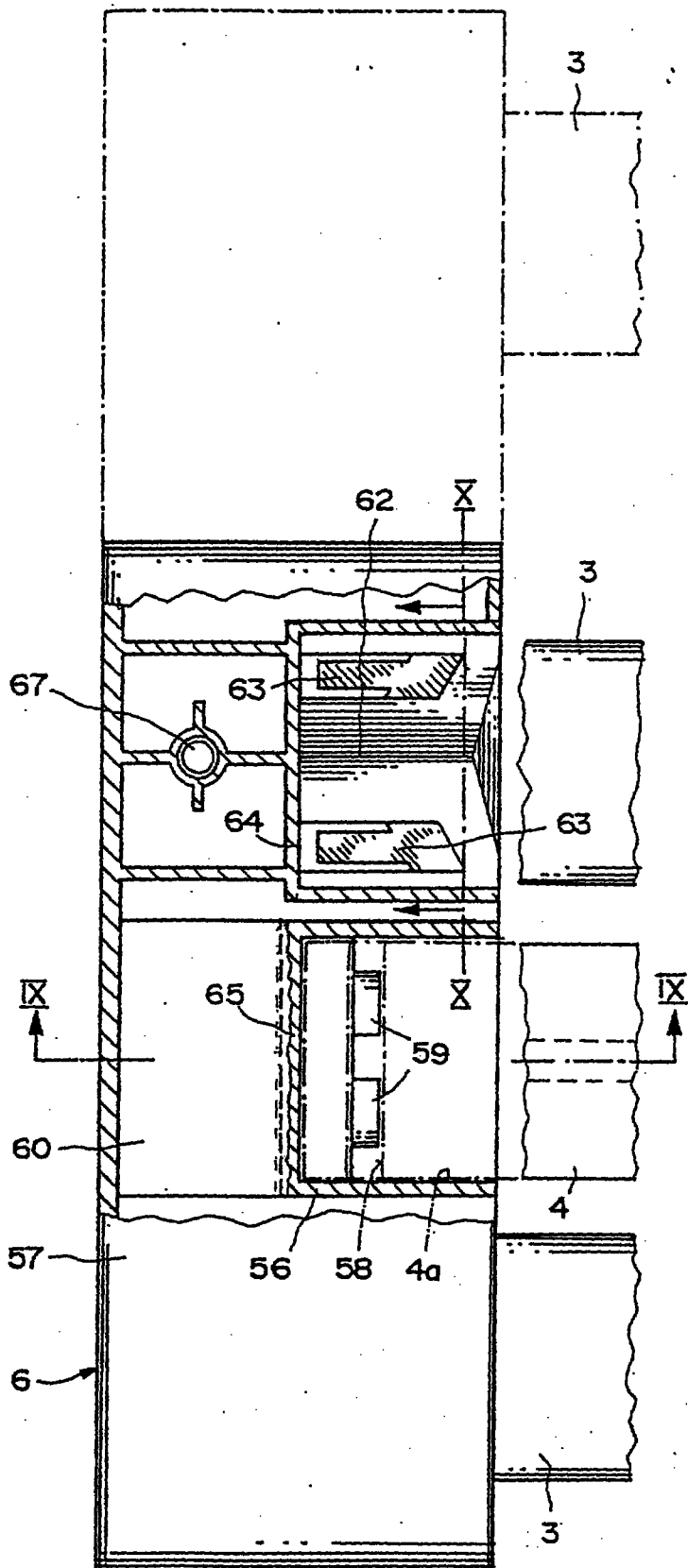


Fig. 8

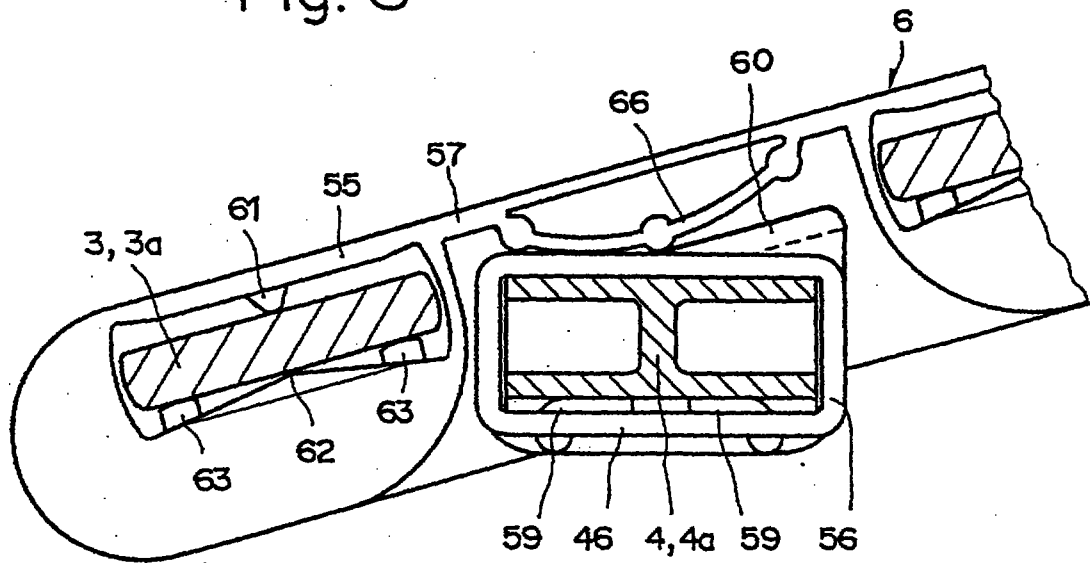


Fig. 9

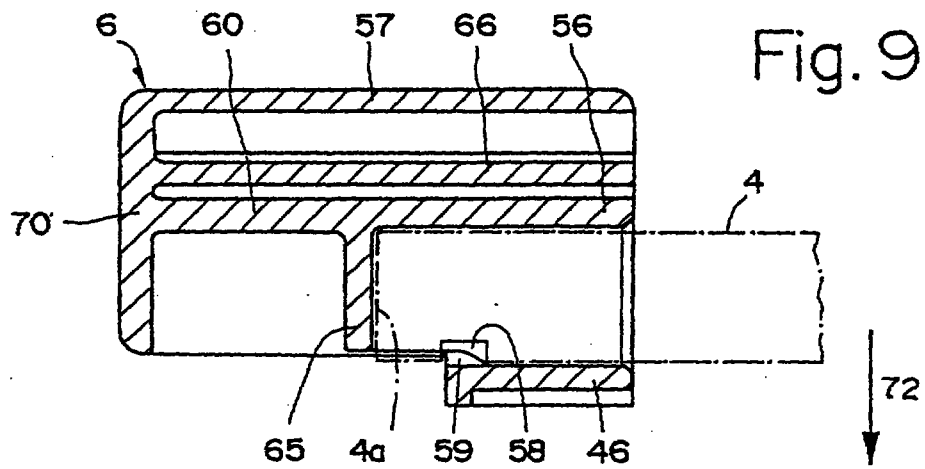


Fig. 10

