

June 1, 1971

H. DEGEN

3,581,320

UNDER MATTRESS FOR RECLINING FURNITURE

Filed April 18, 1969

3 Sheets-Sheet 1

FIG. 1

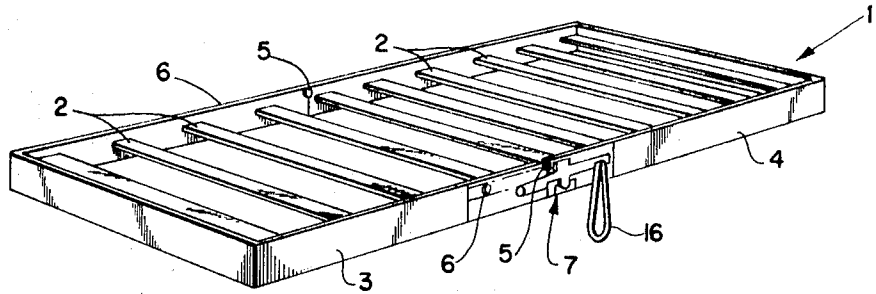


FIG. 8

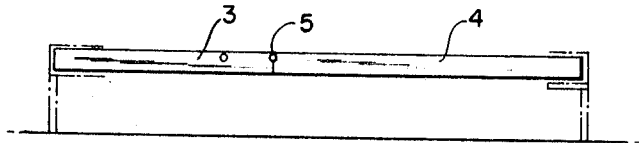


FIG. 9

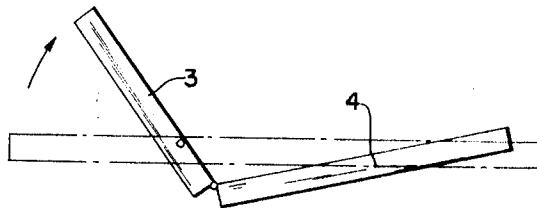


FIG. 10

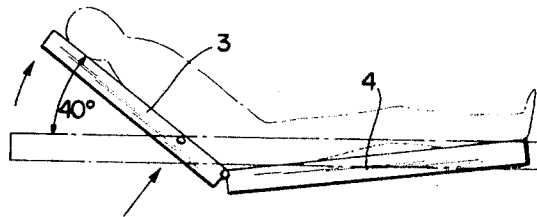


FIG. 11

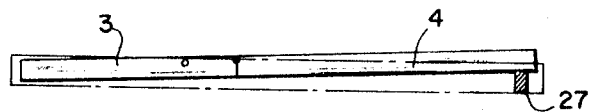
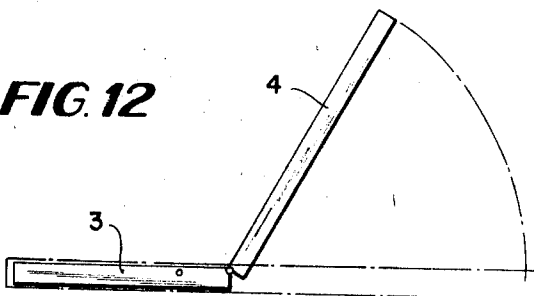


FIG. 12



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FIG. 2

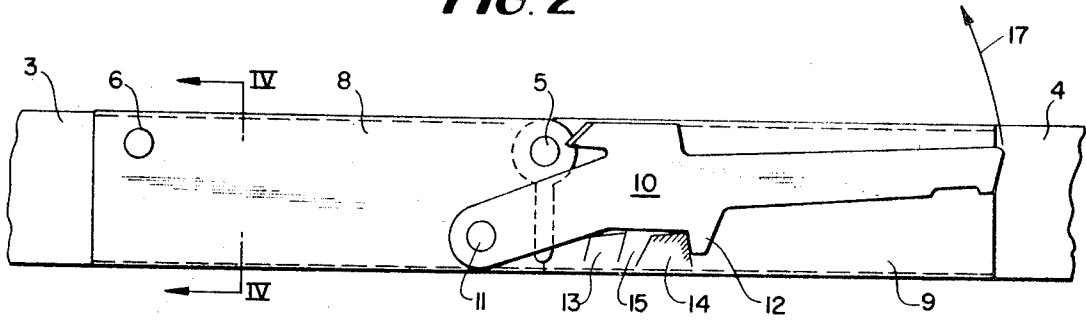


FIG. 3

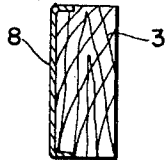
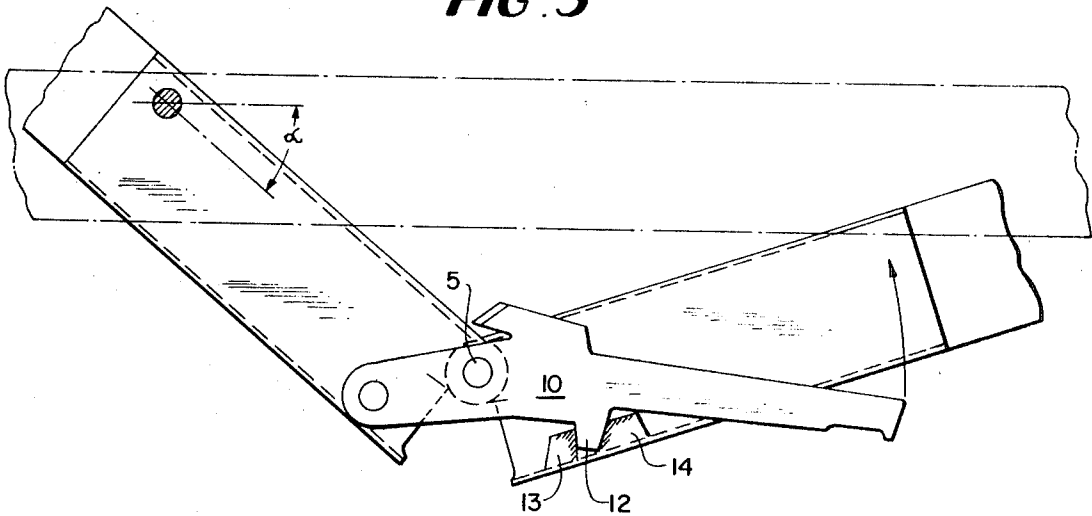


FIG. 4

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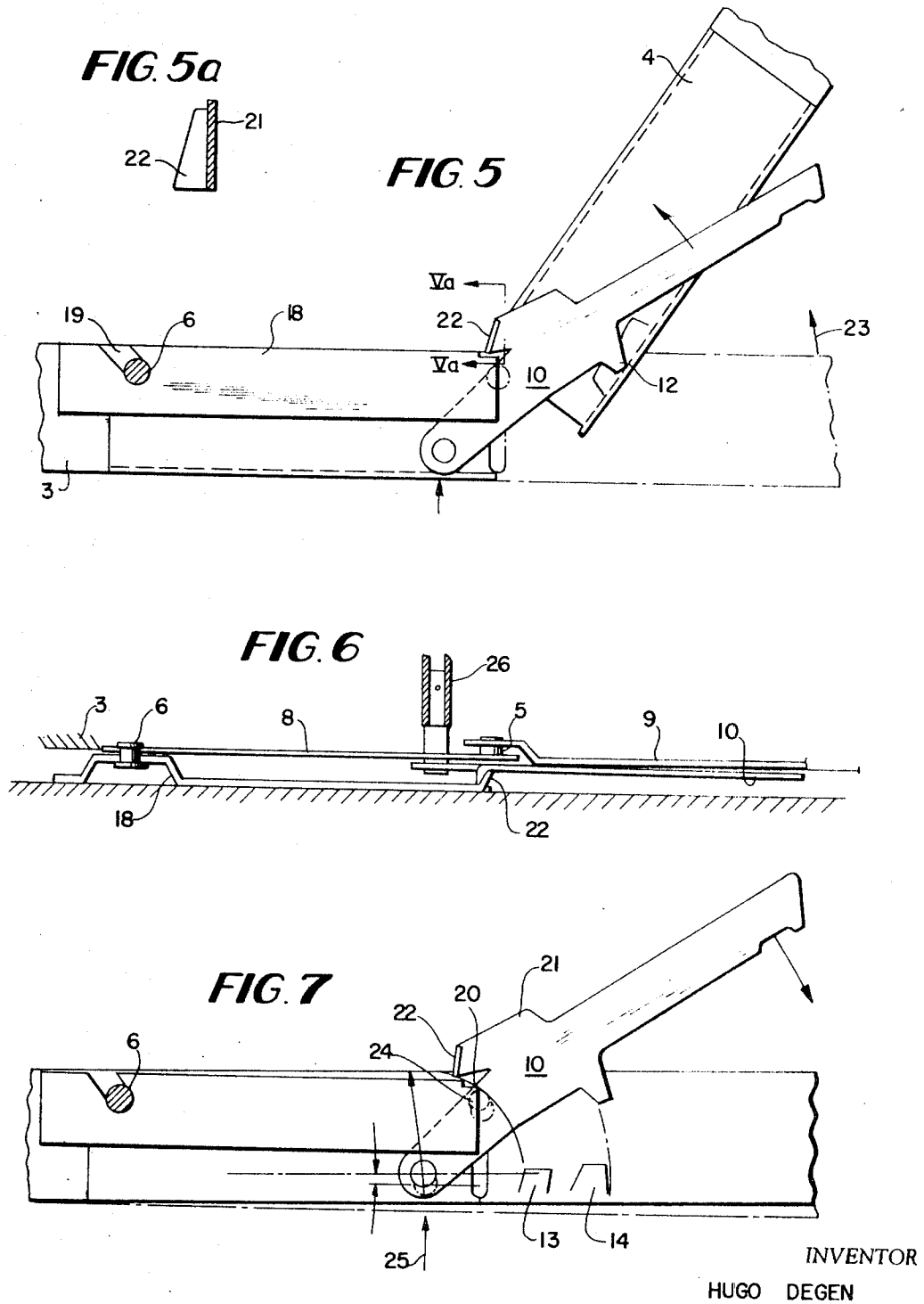
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UNDER MATTRESS FOR RECLINING FURNITURE

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5,802/68

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U.S. Cl. 5—202

5 Claims

ABSTRACT OF THE DISCLOSURE

An under mattress for reclining furniture having a frame which is pivotally mounted in side portions of the reclining furniture and is subdivided into at least two sections which are relatively pivotable about an axis transverse to the longitudinal axis of the reclining furniture. The angular position of the two sections is lockable by a stop means operable by a person resting on the under mattress in a substantially horizontal stop position and one other stop position. The stop means has on each side of one frame section a pivotally mounted locking member overlapping the adjacent frame section to positively engage with locking means provided on the latter in each stop position of the under mattress but to adjustably engage in positions of the under mattress intermediate the stop positions, whereby the two frame sections can assume any relative angular relationship between the two stop positions in response to movements of a person resting on the under mattress, the stop means automatically becoming locked when the two frame sections reach said substantially horizontal stop position. The locking member is a lever provided with at least one downwardly extending catch and the locking means on the adjacent frame section comprises spaced-apart cams, the space between which corresponds to the dimensions of the said catch.

The present invention relates to an under mattress for reclining furniture having a frame which is mounted to swivel at least at one end in the side portions of the reclining furniture and is subdivided into at least two sections which can be swivelled with respect to each other about an axis running transversely to the longitudinal axis of the reclining furniture, the angular positions of the two sections being capable of being fixed by stop means operable by the reclining person at least in the practically horizontal rest position and in one other position.

Under mattresses are already available which consist of a plurality of sections pivotally connected together. The section of the reclining furniture at the head part may thus be brought into various fixable angular positions. These known under mattresses however have various important disadvantages. For example if the under mattress is fixed in the sitting position and the person sitting on the reclining furniture goes to sleep (which may happen for example while reading) the under mattress remains in this position which is quite unhealthy for sleeping. Moreover the prior art reclining furniture of this type cannot be provided in the lower portion of the reclining furniture with a receptacle for bedclothes because access to such a bedclothes receptacle is made very difficult by the prior conventional constructions.

These disadvantages are obviated by the under mattress forming the subject of the present invention. In the under mattress according to this invention the stop means has on both sides at the inner end of a frame section a pivotally mounted locking member which overlaps the adjacent frame section and can be coupled with a locking means provided on the latter so that the two frame sections can assume any variable angular position between

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two stop positions, determined by the person resting, and the stop means automatically snaps into the corresponding locking means when the practically horizontal rest position has been reached.

In a preferred embodiment the said member of the stop means is a lever provided with a downward catch and the locking means on the adjacent frame section is constructed in the form of two cams, the space between them corresponding to the dimensions of the said catch.

The upper portion of the lever advantageously has an outwardly projecting, upwardly tapering extension, while on the adjacent side portion of the reclining furniture there is provided a support member, the position of the upper edge of this support member which faces the extension being chosen so that the lever, after one section of the frame has been lifted, engages in the locking position corresponding to the sitting position and the extension at the same time is supported on the said support member and the frame section is thus held in its raised position.

One embodiment of the subject of the invention is illustrated in the accompanying drawing.

FIG. 1 is a simplified view of the whole of the under mattress according to the invention;

FIG. 2 is a partial view of the under mattress showing the stop means in the practically horizontal rest position;

FIG. 3 shows the under mattress in the sitting position;

FIG. 4 is a section on the plane IV—IV in FIG. 2;

FIG. 5 illustrates the accessibility of the receptacle for bedclothes by swinging up and locking one section of the under mattress;

FIG. 5a is a section on the plane Va—Va in FIG. 5;

FIG. 6 is a simplified view on one side of the connecting position of two mattress sections;

FIG. 7 illustrates releasing the under mattress locked according to FIG. 5; and

FIGS. 8 to 12 show in diagrammatic form the various possibilities of adjustment of the new under mattress.

The under mattress diagrammatically shown in FIG. 1 while omitting all inessential units has a frame indicated as a whole by 1 which is provided in known manner with transverse slats 2 and is subdivided into two sections 3 and 4. The frame sections 3 and 4 are pivotable relatively to each other about an axis 5—5 running transversely to the longitudinal axis of the reclining furniture; the section 4 may if desired be subdivided again into two sections linked together by hinges.

The whole frame 1 has in its head portion two laterally projecting pins 6. The frame can be suspended by means of these pins in two appropriate recesses in a reclining furniture (not shown) so that it can pivot about the axis 6—6. The foot portion of the frame is supported in known manner on supporting ledges secured to the side portions of the reclining furniture.

The two frame sections 3 and 4 are connected together by a stop means 7 (FIG. 1) whose construction and manner of operation will now be described with reference to FIGS. 2 to 7. In the following description only one side of the stop means will be considered and it will be understood that the opposite side is designed in the same way.

As may be seen in FIG. 2 in conjunction with the sectional view according to FIG. 4, there is secured on each side of the frame sections 3 and 4 a metallic plate 8 or 9 of U-shaped cross-section. The two metal plates 8 and 9 are pivotally connected by way of a bolt 5 so that the two sections 3 and 4 of the under mattress 1 can carry about the axis 5—5 the pivoting movement already described.

A lever 10 is mounted at the inner end of the under mattress section 3 so as to pivot about an axis 11. The lever 10 has a downwardly directed catch 12 which coacts with two cams 13, 14 secured to the frame section 4. The cams project laterally from the plate 9 and a space 15 is left between them which corresponds in shape and size to the catch 12 on the stop lever 10.

The lever 10 is prolonged beyond the catch 12 and may be provided with an actuating strap 16 (FIG. 1) which permits operation of the lever by a person resting on the reclining furniture.

According to FIG. 2 the catch 12 engages the cam 14 and locks the two frame sections 3, 4 in their practically horizontal position which correspond to the normal sleeping position of the occupant. If the person resting wishes to change to the sitting position, he pulls the free end of the lever 10 up in the direction of the arrow 17 by means of the strap 16. Owing to the weight of the person resting (see also FIG. 9) the two frame sections 3 and 4 pivot relatively to each other about the axis 5—5 until the catch 12 snaps in between the cams 13 and 14 and thus locks the under mattress in this angular position (FIGS. 3, 9 and 12). The angle α may be chosen at will by appropriate design of the cams 13 and 14 and the dimensions of the lever 10.

By repeated lifting of the lever 10, the two sections of the under mattress may be brought into an unstable position in which the catch 12 lies on the cam 14. If the person who is resting becomes tired or even goes to sleep, the two frame sections 3 and 4 pivot so that the angle α is progressively decreased and the catch 12 slips to the back of the cam 14, the force necessary for this pivoting movement being applied by slight alterations in position or by movements of the person resting. The under mattress thus gradually moves again into the extended rest position according to FIGS. 2 and 8 in which the catch 12 again snaps into the position according to FIG. 2 and bolts the under mattress in this position which is necessary for healthy lying.

By virtue of its unstable adaptability to any position and the automatic return to the rest position, the under mattress described is particularly suitable for sickbeds. With minimum effort the sick person can bring the mattress into any position without extraneous aid and then bring about the rest position without operating any mechanism, merely by movements of the body.

Modern reclining furniture is often used as a bed at night and as a seat during the day. It is an advantage if the bedclothes can be accommodated during the day in a bedclothes receptacle in the reclining furniture itself. Attempts have already been made to do this but prior art constructions leave much to be desired in relation to accessibility of the bedclothes receptacle. When using the abovementioned under mattress this problem can be solved by including a few constructional details as will now be described with reference to FIGS. 5 to 7.

Between the side portions (not shown) of the reclining furniture and the frame 1 of the under mattress there is provided a support member 18, for example in the form of a flat iron bar as shown in FIG. 5, which is screwed to the inner face of the side portion of the reclining furniture. This support member has an oblique slot 19 in which the axis 6 of the under mattress 1 rests. The edge of the support member 18 which faces the lever 10 is provided with a small recess 20 (FIG. 7).

The stop lever 10 has on its upper portion an extension 21 to which is attached an ear 22 projecting laterally outwards. The ear 22 tapers upwardly (FIG. 5a).

When access is to be made available to the bedclothes receptacle beneath the under mattress, all that need be done is to lift the frame section 4 (FIG. 5) in the direction of the arrow 23. Owing to the slope of the ear 22 it slides behind the edge 24 of the support member 18 and settles in the recess 20 from the top. Since the catch 12 is also engaged in the upward movement of

the section 4, the frame section 4 remains in this position and the bedclothes can be removed from the bedclothes receptacle or placed therein. To lower the frame section 4 a slight lifting of the frame 1 (arrow 25 in FIG. 7) from the dash-dotted position into the full-line position is sufficient; by such a displacement of position (amounting to only a few millimetres) the lever 10 is allowed to unlatch so that the frame section 4 can fall.

The two levers 10 provided on each side of the frame 1 are joined together by an axis 26 (FIG. 6) so that the stop mechanism can be operated from both sides of the bed. If this connection is absolutely stiff and without play, difficulties may arise in engaging the lever, particularly in the position according to FIG. 5. To counteract this, play may be provided in the connecting axis 26 so that the two levers can be pivoted to a limited extent, for example by 5°, relatively to one another. In this case each lever should of course be under the action of an elastic means, for example a spring, which constantly urges it in the direction of its locking positions. Satisfactory engagement of both levers is thus ensured in all positions.

For the sake of clarity, the most important positions of the said under mattress are again illustrated diagrammatically in FIGS. 8 to 12. FIG. 8 shows the rest position in which both frame sections 3 and 4 are rigidly locked together, FIG. 9 shows the similarly locked sitting position (compare also FIG. 2). After loosening the locking from FIG. 9, the under mattress moves into an unstable intermediate position according to FIG. 10 from which by further lowering of the head section 3 it collapses into the rest position according to FIG. 11. Obviously the under mattress may be provided, in addition to the construction described above, with a known raised foot position which is indicated in FIG. 11 by a support batten 27.

FIG. 12 indicates finally how the frame section 4 can be raised and locked in the raised position to give access to a bedclothes receptacle.

The apparatus described would function theoretically even if the support member 18 is made solid (i.e. without the recess 20) on the edge 24 which faces the lever 10. In this case however there would be a risk that the frame upon lifting the section 4—in spite of the inclination of the oblique slot 19—would spring out from this slot. This is obviated by the recess 20 which effectively prevents displacement of the frame in the direction of its longitudinal axis.

I claim:

1. An under mattress for reclining furniture comprising a frame pivotally mounted in the side portions of the reclining furniture subdivided into at least two sections relatively pivotable about an axis transverse to the longitudinal axis of the reclining furniture, stop means operable by a person resting on the under mattress whereby the angular position of the two sections are lockable in a substantially horizontal stop position and one other stop position, said stop means comprising on each side of one of said sections pivotally mounted locking member, each of said locking members overlapping the adjacent section to positively engage with locking means provided on said section in each of said stop positions and adjustably to engage in positions of the under mattress intermediate said stop positions, whereby said two sections can assume any relative angular relationship between said two stop positions in response to movements of a person resting on the under mattress, said stop means automatically becoming locked when said two sections reach said substantially horizontal stop position.

2. An under mattress according to claim 1, in which said locking member is a lever provided with at least one downwardly extending catch and the locking means on the adjacent section comprises spaced-apart cams, the space between which corresponds to the dimensions of the said catch.

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3. An under mattress according to claim 2, in which an extension is provided which projects upwardly from the upper part of the lever and tapers upwardly, and a support member is secured to the adjacent side portion of the reclining furniture, the position of the upper edge of the support member which faces the extension being such that after a lifting of one section relative to the other by a predetermined amount it is locked in said other stop position with the extension then engaging said support member to hold the lifted section in its raised position. 5 10

4. An under mattress according to claim 3, in which said support member is constructed in the form of a metallic bar attached to each side portion of the reclining furniture and having a slot for the reception of pivot pins for the under mattress frame and on its upper edge a recess for receiving and anchoring the extension of the lever. 15

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5. An under mattress according to claim 2, in which the two levers are coupled together by a connecting rod and are pivotable to a limited extent, for example through an angle of about 5°, relatively to each other.

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