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F. R. MUENZEN

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FOLDING RECLINING BED BOARD

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FIG. 1.

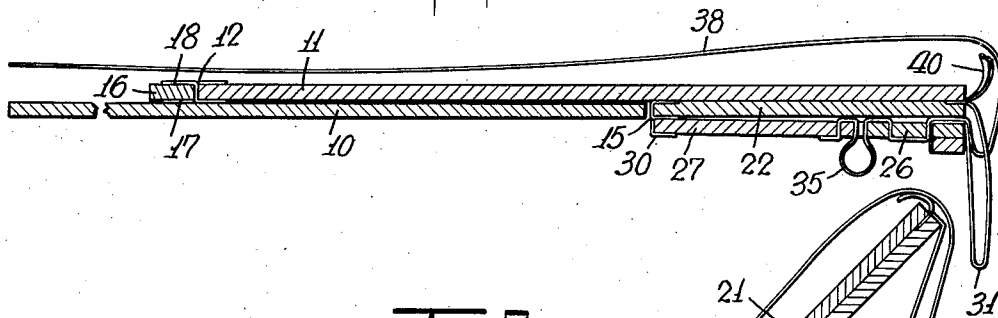


FIG. 2.

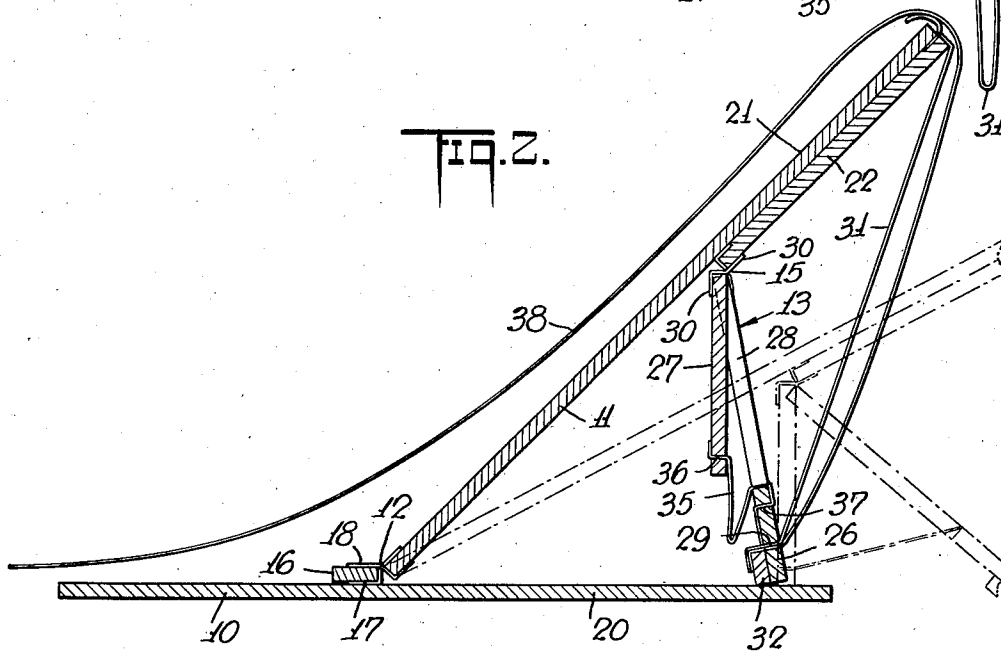
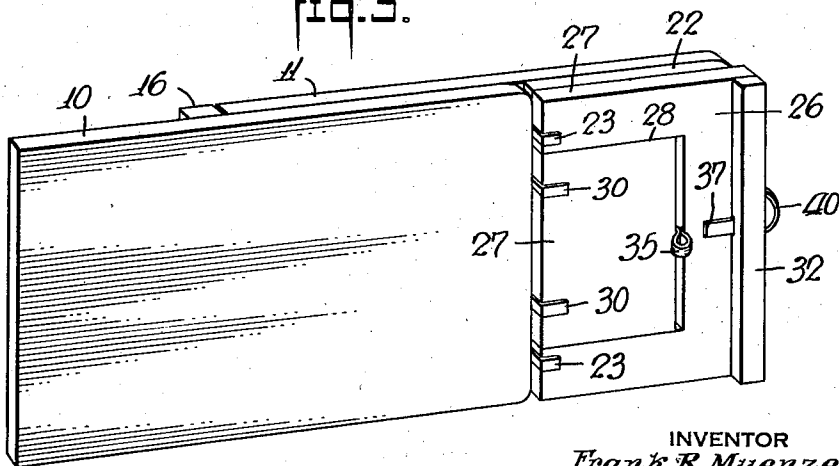


FIG. 3.



INVENTOR
Frank R. Muenzen
BY
Dean Lombardi Hensch
ATTORNEYS

44-124

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FOLDING RECLINING BEDBOARD

Frank R. Muenzen, New Rochelle, N. Y.

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8 Claims. (Cl. 5-71)

The present invention is an improvement in the general type of folding bed frame shown and described in my copending application Serial No. 515,908. In that application, there is shown a folding bed frame having a main horizontal body, an inclinable back-rest hinged thereto, and a prop hinged to the underside of said back-rest, and adapted to support said back-rest in a pre-determined inclined position. This bed frame is adapted for insertion between the springs and mattress of a conventional bed, and in conjunction with such a bed affords the selective comfort of an adjustable hospital bed.

Among the objects of the present invention is to provide a folding bed frame of the general type described having a back-rest which may be easily and selectively set into any one of a plurality of inclined back-resting positions, and which, although of restricted bulk, is nevertheless of sturdy, durable and inexpensive construction.

A further object is to provide a construction in which the proper support for any inclination will automatically move into position when the inclination is changed.

Various other objects of the invention will be apparent from the following particular description, and from an inspection of the accompanying drawing, in which:

Fig. 1 is a longitudinal section of the folding bed frame embodying the present invention, and shown in folded collapsed condition;

Fig. 2 is a fragmentary longitudinal section of the frame, and shows in full lines the back-rest set up in one inclined position, and shows in dot and dash lines the back-rest set up in a less accentuated inclined position; and

Fig. 3 is a perspective showing the bed frame foldably collapsed and standing on edge for storage or transportation.

Referring to the drawing, the folding bed frame of the present invention includes a flat main body 10 adapted to be set substantially horizontally in position between the bed springs and mattress, and beneath the hips of a reclining person, a flat back-rest 11 hinged at 12 to said main body intermediate the ends thereof, and a support 13 for said back-rest hinged at 15 to the underside of the back-rest intermediate its ends. Each of these frame parts 10, 11 and 13 is desirably of suitable flat sheet-like material, and in the specific form shown, is constructed of compressed paper fiber board having a covering of paper (not shown) imparting the desired finish and appearance to the board, as indicated in my copending application referred to.

The back-rest 11 is hinged to the upper side of the main body 10 desirably by means of a slat 16 of compressed fiber board, rigidly secured to the upper side of said body by any suitable means, as for example, adhesive and/or nails (not shown), and extending across its full width, or at least a substantial part of its width, to afford a strong hinge anchorage for said back-rest. At least two spaced hinge connections are provided between the backrest 11 and the slat 16, each of these desirably including a pair of adjoining narrow flexible fabric strips or tapes 17 and 18 firmly secured to the slat 16 and back-rest 11 by any suitable means, as for example, adhesive. One of these hinge tapes 17 is retained at one end between the slat 16 and the main body 10, and is secured at the other end to the upper surface of the back-rest 11, while the other hinge tape 18 has its ends secured to the upper surface of said slat 16 and the underside of said back-rest respectively. With this cross arrangement of the hinge tapes 17 and 18, the hinge axis is formed at the upper adjoining corner edges of the slat 16 and back-rest 11, thereby permitting free swinging movement of said backrest from a horizontal position in the plane of said slat to different inclined positions, two of which are indicated in full lines and in dot and dash lines in Fig. 2. To support the back rest 11 in its horizontal position, and to afford a base for the back-rest support 13 in its set-up position, the main body 10 has a section 20 extending rearwardly beyond the slat 16.

The upper head supporting part 21 of the back-rest 11 is reinforced by a panel 22 rigidly fastened to the underside of said back-rest by any suitable means. The support 13 is hinged to this reinforcing panel 22 by a pair of spaced hinge connections, each desirably comprising a pair of adjoining flexible tapes 23 crossed in opposite directions to define a hinge axis along the outer adjoining edge corners of said panel and said support, in a manner similar to that already described in connection with the hinge connections at 12.

When the support 13 is set into upright position shown in full lines in Fig. 2 with the lower edge of said support resting on the base extension 20, the back-rest 11 will be in the inclined position shown.

As a feature of the present invention, the support 13 is constructed to permit the back-rest 11 to be sustained in a less inclined position as shown in dot and dash lines in Fig. 2. For that purpose, the support 13 comprises two props 26

and 27, which are of different effective lengths, and which are manipulable to permit either one to be set into back-rest supporting position. The two props 26 and 27 are desirably of complementary shape, and in folded position of the bed frame, lie in the same plane. In the specific construction shown, the prop 26 is of general rectangular outline, and in order to nest the prop 27 therein, has a rectangular opening 28 extending to its inward edge. The prop 27 is of rectangular shape corresponding substantially to the shape of the opening 28, and fits into said opening between the side arms of the U-shaped prop 26. This inner prop 27 is hinged to the back-rest 11 through the reinforcing panel 22, independently of the hinge connections 23 between the side arms of the outer prop 26 and the reinforcing panel 22, so that this inner prop 27 is free to swing about its hinge connections to a limited extent with respect to the outer prop 26. For that purpose, there is desirably provided between the inner prop 27 and the reinforcing panel 22 a pair of spaced hinge connections, each desirably including a pair of adjoining flexible tapes 30 arranged in cross relationship, as in the case of the hinge tapes 23, to define a hinge axis along the outer adjoining edge corners of the panel 22 and the inner prop 27, substantially coextensive with the hinge axis defined by the hinge tapes 23.

The hinge connections between the props 26 and 27 and the reinforcing panel 22 are such as to permit these props to be folded back against said panel when the bed frame is collapsed in the condition shown in Figs. 1 and 3.

To limit angular movement of the outer prop 26 beyond its operative supporting position shown in Fig. 2, there is provided a flexible strap 31, desirably in the form of a woven tape or fabric having one end firmly secured centrally to the outer end of the back-rest 11, and the other end affixed centrally to the outer free end of the prop 26. This strap 31 may be secured at one end to the back-rest 11, as for example, by retaining said end between the back-rest 11 and its reinforcing panel 22. The other end of the strap 31 may be secured to the prop 26 by passing said strap end through a slit 29 in said prop and partially around a slat 32, and fastening said strap end to said slat by any suitable means. This slat 32 extends across and is rigidly secured to the prop 26 along its outer end, and serves to impart rigidity to the outer prop 26 in back-rest supporting position, and to afford a firm footing for said outer prop 26 in its back-rest supporting engagement with the base extension 20, as shown in full lines in Fig. 2.

In order to pull the inner prop 27 with the outer prop 26 in the collapsing folding movement of said outer prop towards the back-rest 11, while permitting limited relative angular movement between the two props, there is provided a flexible strap 35 desirably of woven fabric or tape material connected at one end to the outer end of the inner prop 27, and at its other end to the outer prop 26 at the base of its opening 28. To assure firm anchorage for the ends of the strap 35, one end of said strap may pass through a slit 36 in the inner prop 27, while the other end may pass over the base of the opening 28, along one side of the outer prop 26, through a slit 37 in said outer prop, and along the other side of said latter prop.

When the inner prop 27 is in the plane of the outer prop 26 as shown in Figs. 1 and 3, the strap 35 will form a loop extending outside said plane.

There is enough space afforded between the base of the opening 28 and the adjoining outer edge of the inner prop 27 to obviate jamming of the inner prop 27 in the prop opening 28 resulting from the presence of the strap 35.

In order to allow the recumbent occupant of the bed frame easily to collapse the bed frame into completely folded position, there is provided a pull or draw strap 38 desirably of flexible tape or other woven material fixed to the outer prop 26 desirably in a manner similar to that by which the strap 31 connects to said outer prop and at the same place. This draw strap 38 in set-up position of the bed frame, extends around the outer edge of the back-rest 11, and along the frame within convenient reach of the bed occupant.

The base extension 20 is long enough so that when the frame is in collapsed position shown in Figs. 1 and 3, with the support 13 reversely folded against the reinforcing panel 22, the outer edge of said base extension 20 will be spaced from but close to the corresponding inner edge of said panel 22, and said base extension and said panel will lie substantially in the same plane.

While the apparatus may be used in various ways with or without a conventional bed, it is particularly adapted for use in connection with such a bed. For that purpose, the bed frame would be disposed between the mattress and the springs of the conventional bed, as shown in my copending application above referred to. In the collapsed position between the mattress and the springs, the bed frame is compactly folded and the occupant of the bed is hardly conscious of the presence of the bed frame. Should it be desired for the occupant to be set up with his back in an inclined position, the weight of the occupant is removed from the back-rest 11, and said back-rest is angularly lifted. To facilitate the lifting of the back-rest into inclined position, a suitable handle 40 is fixed to the outer end of said back-rest. This handle may consist of a flexible tape having its ends adhesively or otherwise retained between the back-rest 11 and the reinforcing panel 22 at their outer edges.

As the back-rest 11 is raised from the horizontal position shown in Fig. 1, the support 13 will angularly gravitate about its hinge connections 23 and 30 from the position shown in Fig. 1 to a somewhat upright position as limited by the strap 31. When this support 13 has reached its limiting angular position with respect to the back-rest 11, said back-rest is lowered until the lower edge of the outer prop 26 rests firmly on the base extension 20.

Should it be desired to set up the back-rest 11 into the less inclined position, the outer prop 26 is swung partially outwardly to a position where its outer edge is beyond the rear outer edge of the base extension, while the inner prop 27, which is independently hinged to the reinforcing panel 22, remains with its lower edge directly above said base extension 20. While the outer prop 26 is held in this inoperative position, the back-rest 11 is lowered until the lower edge of the inner prop 27 rests on said base extension, as shown in dot and dash lines in Fig. 2. In this position, the back-rest 11 will be in a less inclined position, and will be amply supported by the inner prop 27 to permit the occupant to rest comfortably thereon.

When the bed occupant desires to collapse completely his bed frame, he pulls on his draw strap 38, to cause the outer prop 26 to swing outwardly to a further extent. This will cause the strap 35 to pull the inner prop 27 out of supporting po-

sition and towards the reinforcing panel 22. When the inner prop 27 is beyond the base extension 20, the back-rest 11 may be lowered to complete the collapse of the bed frame.

As many changes can be made in the above apparatus, and many apparently widely different embodiments of this invention can be made without departing from the scope of the claims, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A foldable bed frame comprising a main body adapted to be set substantially horizontally, a back-rest hinged to said main body, a pair of props of different effective lengths independently hinged to said back-rest along a common axis for supporting said back-rest in either one of two inclined positions, said props being foldable into inoperative position against said back-rest and being selectively movable into back-rest supporting position, a flexible strap between said props, whereby said props may be moved in unison towards folded inoperative position, while permitting limited relative angular movement therebetween about their hinged connections, and a draw strap connected to the longer prop and adapted to be pulled to fold said longer prop towards said back-rest.

2. A bed frame comprising a main body adapted to be set substantially horizontally, a back-rest hinged to said main body, and a pair of props of different effective heights for supporting said back-rest in either one of two inclined positions, said props being independently hinged to the underside of said back-rest for relative swinging movement about substantially the same axis, whereby either one of said props may be moved selectively into back-rest supporting position.

3. A bed frame comprising a main body adapted to be set substantially horizontally, a back-rest hinged to said main body, and a pair of flat prop boards of different effective lengths for supporting said back-rest in either of two inclined positions, said props being disposed in the same plane and being independently hinged to the underside of said back-rest for relative swinging movement about substantially a common axis, whereby said props may be swung relatively out of the same plane to permit the shorter prop to be moved into back-rest supporting position, while the longer prop is moved into inoperative position.

4. A bed frame comprising a main body adapted to be set substantially horizontally, a back-rest hinged to said main body, an outer flat U-shaped prop board hinged at the outer ends of its side arms to the underside of said back-rest for supporting said back-rest in one inclined position, and an inner flat prop board disposed between said side arms and hinged along one edge to the underside of said back-rest, said prop boards being relatively swingable about their hinge supports to permit movement of said inner prop board into position to support said back-rest at a less inclination.

5. A bed frame comprising a main flat board adapted to be set substantially horizontally, a flat back-rest board hinged to said main body, an outer flat U-shaped prop board hinged at the

outer ends of its side arms to the underside of said back-rest for supporting said back-rest in one inclined position, and an inner flat prop board for supporting said back-rest in a less inclined position disposed between said side arms, and hinged along one edge to the underside of said back-rest for swinging movement about an axis substantially coextensive with the hinge axis of said outer prop board, said prop boards being adapted to be folded into a single plane against the underside of said back-rest, and being selectively extensible into back-rest supporting position.

6. A bed frame comprising a main body adapted to be set substantially horizontally, a back-rest hinged to said main body, a pair of adjoining props of different lengths for supporting said back-rest in either one of two inclined positions, said props being independently hinged to the underside of said back rest for relative swinging movement about a common axis, said props being foldable into inoperative position against said back-rest towards its outer end, and being swingably lowered by gravity from said inoperative position into downward position when said back-rest is angularly raised about its hinge support from a substantially horizontal position, and a pull strap secured to the longer of said props for collapsing said longer prop into inoperative position against said back-rest.

7. A bed frame comprising a main body adapted to be set substantially horizontally, a back-rest hinged to said main body, a pair of adjoining props of different lengths for supporting said back-rest in either one of two inclined positions, said props being independently hinged to the underside of said back-rest for relative swinging movement about a common axis, said props being foldable against said back-rest towards its outer end, and being swingably lowered by gravity from said folded position into downward position when said back-rest is angularly raised about its hinge support from a substantially horizontal position, a strap between said back-rest and the longer prop limiting downward movement of said latter prop when said back-rest is angularly raised from a substantially horizontal position, a pull strap secured to the longer prop for collapsing said longer prop into inoperative position against said back-rest, and a strap between said props for limiting angular movement of said shorter prop relative to said longer prop.

8. A foldable bed frame comprising a main flat board adapted to be set substantially horizontally, a flat back-rest board secured by a hinge connection to the upper side of said main board intermediate its ends, whereby said main board projects rearwardly beyond said hinge connection, and defines thereby a base extension, and a prop board for supporting said back-rest board in inclined position, secured by a hinge connection to the underside of said back-rest intermediate its ends, said prop board being adapted to be folded against the underside of said back-rest and towards its outer free end, said base extension being long enough to form a support for said prop board in back-rest supporting position of said prop board, but being shorter than the distance between said hinge connections to permit folding of said bed frame into a compact unit.

FRANK R. MUENZEN.