

Dec. 25, 1945.

A. W. SCHENKER

2,391,746

BED OR SIMILAR BODY RESTING APPLIANCE

Filed June 12, 1942

3 Sheets-Sheet 1

Fig. 1.

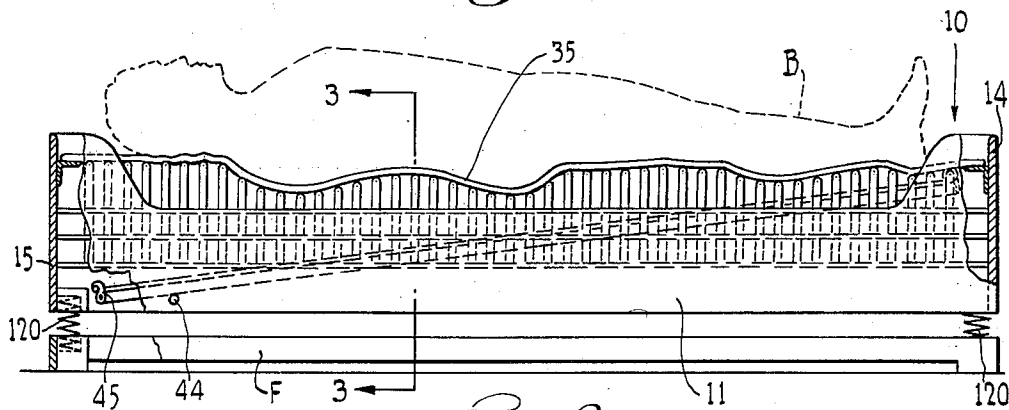


Fig. 2.

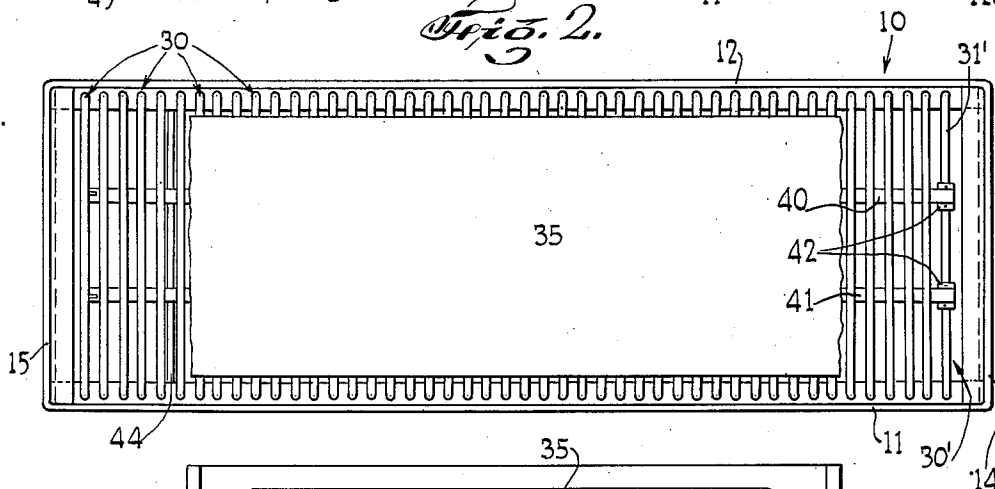
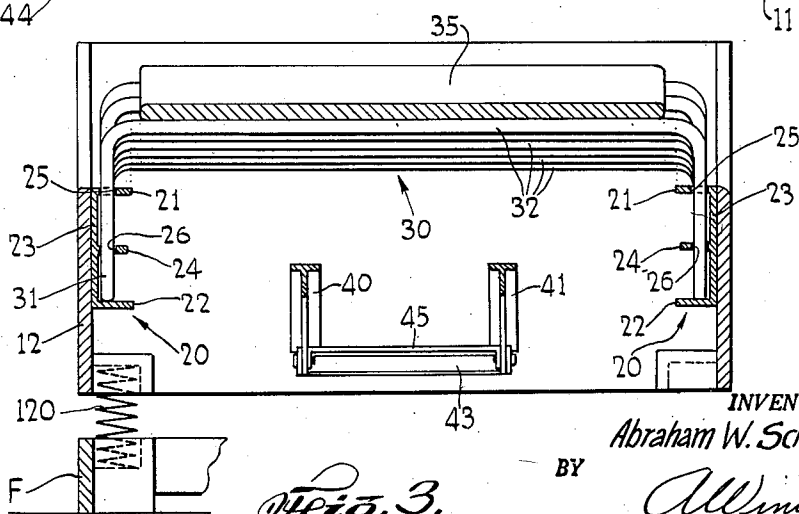


Fig. 3.

INVENTOR.

Abraham W. Schenker

BY

Allinburn
ATTORNEY

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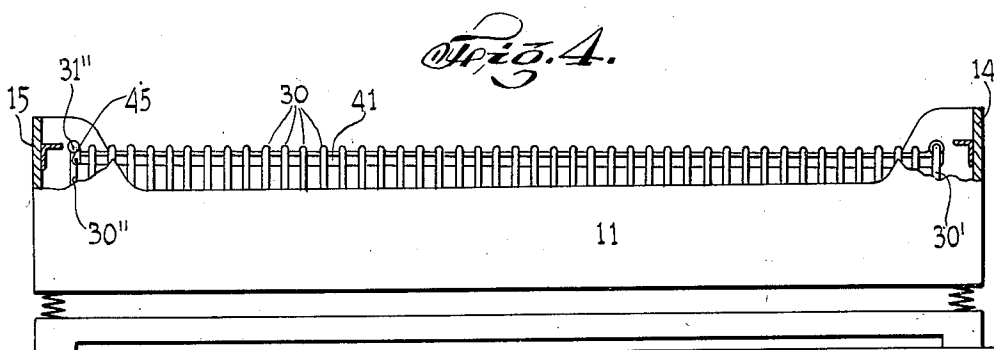
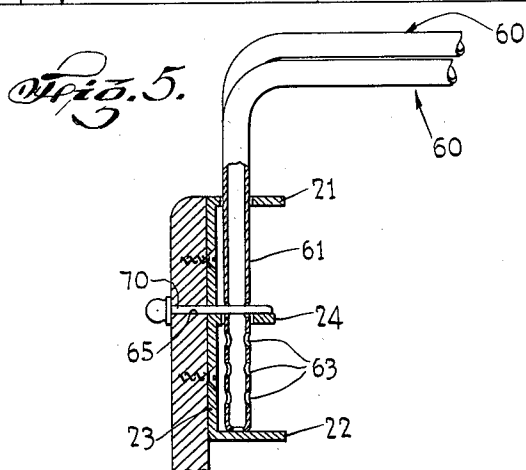
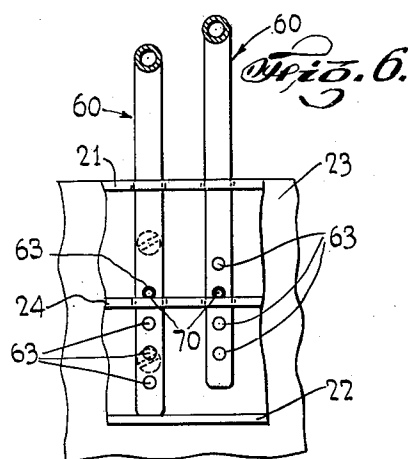
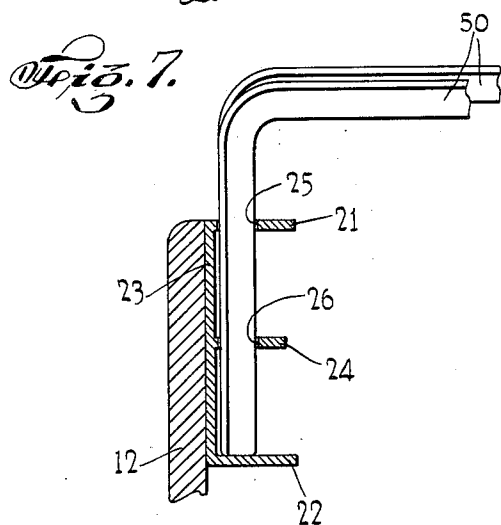
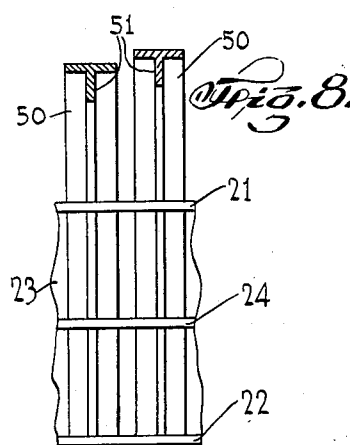
A. W. SCHENKER

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3 Sheets-Sheet 2



INVENTOR.

Abraham W. Schenker

BY

Allinburn

ATTORNEY

Dec. 25, 1945.

A. W. SCHENKER

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Fig. 9.

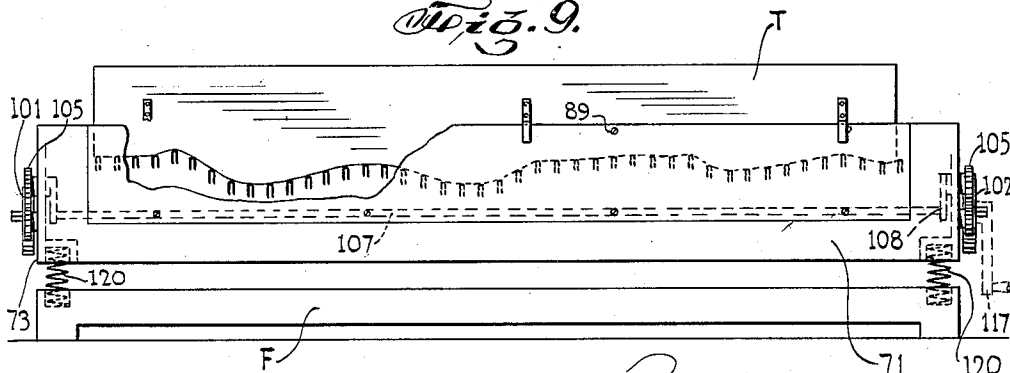


Fig. 10.

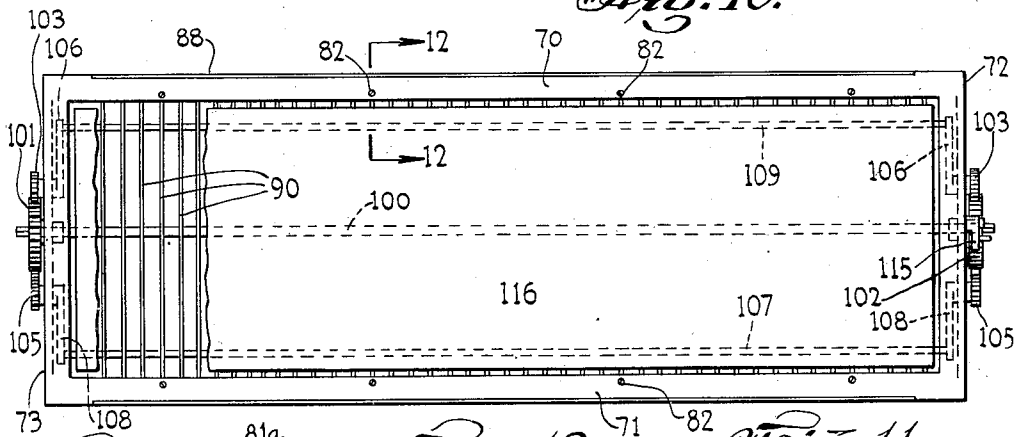


Fig. 12.

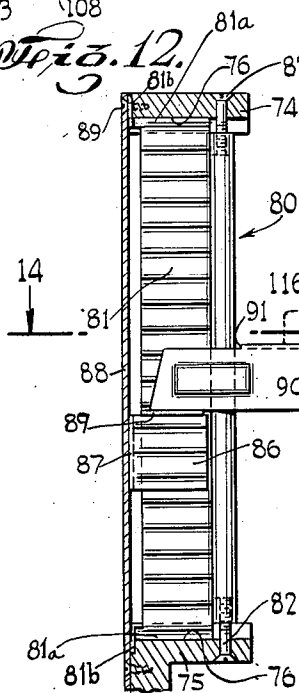


Fig. 13.

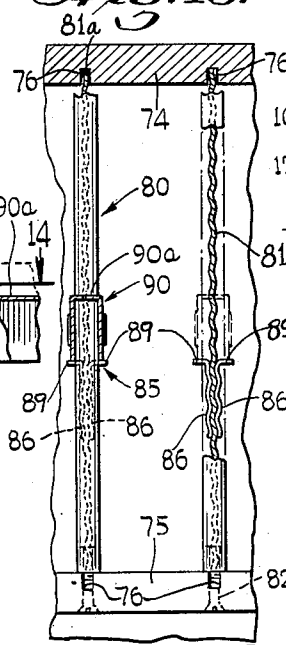


Fig. 11.

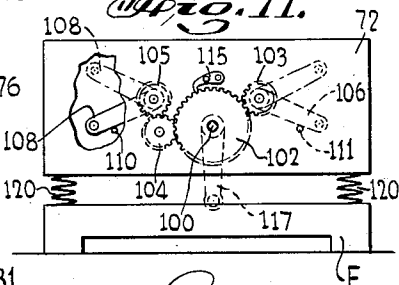
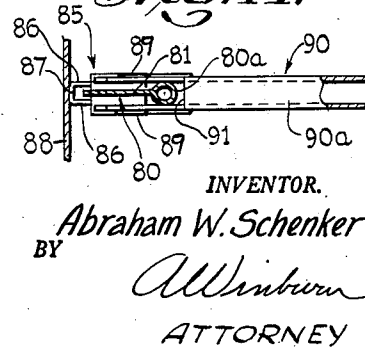


Fig. 14.



INVENTOR.

Abraham W. Schenker

BY

Attorney

UNITED STATES PATENT OFFICE

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BED OR SIMILAR BODY RESTING
APPLIANCE

Abraham W. Schenker, New York, N. Y.

Application June 12, 1942, Serial No. 446,721

4 Claims. (Cl. 5—60)

My invention relates generally to beds or similar body resting appliances designed for therapeutic application to complaints referred to the human bony frame and more particularly of the type of bed shown and described in the copending application of Abraham W. Schenker Serial No. 398,798, filed June 19, 1942, for Bed or similar body resting appliances, and which became Patent No. 2,373,421, issued April 10, 1945.

As pointed out in the said copending application persons suffering from spinal or other bony ailments especially backache due to the arthritides, spondylolisthesis, etc., heretofore assumed that if they provided themselves with thick soft mattresses upon which to sleep they would obtain relief from such ailments and subsequent cure. Such treatment is now known actually to produce directly contrary results, thereby aggravating their complaints instead. In accordance with my invention, I take cognizance of the fact that in treating back ailments there are certain natural concavities and convexities of the spine which should be rigidly supported in conformity with such natural shape and that in certain pathological conditions it is desirable that the concavities and convexities be made shallower.

It is one of the objects of the present invention to provide an improved bed or similar body resting appliance having a novel and improved non-yielding body resting support in which the said support has been arranged so as to provide waves and curves of predetermined contour with respect to the curvature of selected portions of the posterior aspect of the body of the user including the head, shoulders, spine, thighs and legs.

Another object of my invention is to provide an improved construction for a bed or similar body resting appliance of the class described which shall be characterized by the standardization of certain of the essential units so that the same bed may be utilized for different persons or the contour of the waves and curves making up the unyielding supporting surface may be readily altered as desired.

Still another object of my invention is to provide an improved construction for beds or similar body resting appliances of the class described which shall be so constructed and arranged that when not in effective use for therapeutic purposes it may be made to appear as any customary or standard type of bed, couch or the like.

Further objects of my invention will become apparent in the following detailed description thereof.

In the accompanying drawings,

Fig. 1 is a side elevational view (partly in section) of a body resting appliance constructed and arranged in accordance with my invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is an enlarged cross sectional view taken substantially on the line 3—3 of Fig. 1;

Fig. 4 is side elevational view similar to Fig. 1, but illustrating another feature of my invention in connection therewith;

Fig. 5 is an enlarged sectional detail view of a portion of the appliance shown in Fig. 3, but illustrating a modified form of my invention;

Fig. 6 is a side elevational view thereof, with a part in cross-section;

Figs. 7 and 8 are views similar to Figs. 5 and 6 respectively, but illustrating still another modified form of my invention;

Figs. 9 and 10 are views similar to Figs. 1 and 2 respectively, but illustrating a further modification of my invention;

Fig. 11 is an end elevational view thereof;

Fig. 12 is an enlarged cross-sectional view taken substantially along the line 12—12 of Fig. 10;

Fig. 13 is a cross-sectional view taken substantially along the line 13—13 of Fig. 12; and

Fig. 14 is a cross-sectional view taken substantially along the line 14—14 Fig. 12.

Referring now in detail to Figs. 1 to 4 of the drawings I have shown a body resting appliance, which for the purposes of illustration, is shown as a bed 10. The said bed may comprise a rectangular frame consisting of a pair of longitudinal side members 11 and 12 and end members 14 and 15 interconnected with the said side members in any suitable manner to form a frame.

Fixed to the inner surface of each of the side members 11 and 12 by any suitable means known to the art such as, for example, riveting, welding, or by the screws 18, shown in Fig. 5 of the drawings, is a channel member 20 of rigid material. The said channel 20 comprises a top flange 21, a bottom flange 22 and an interconnecting vertical web 23. Each channel 20 may also be provided with an additional flange 24 parallel to the flanges 21 and 22 and extending from the web 23. The channels 20 are so positioned on the side members 11 and 12 that the flanges 21, 22 and 24 will be in substantial alignment. The top flange 21 of each channel 20 is provided with through apertures 25 which are spaced along the length of the channels, the apertures 25 in one channel being in corresponding alignment with the apertures 25 in the other channel. The flanges 24 of the channels 20 are provided with through aper-

tures 26 corresponding to and in axial alignment with the apertures 25 in the top flanges 21. The purpose and function of the flanges 24 and apertures 26 therein, will become apparent as the description proceeds.

The following means are employed for providing an unyielding body support for the bed.

A plurality of rigid, unyielding inverted U-shaped members 30 having vertical leg portions 31 and horizontal interconnecting portion 32, are provided, the said leg portions 31 being adapted to be received in the axially aligned apertures 25 and 26 of each channel 20, with the bottom edges of the said leg portions 31 resting upon the bottom flanges 22.

As clearly noted in Fig. 1 of the drawings the legs portions 31 of many of the members 30 may be of different lengths so that when placed in supporting position on the channels 20 the horizontal portions 32 thereof will be at different heights. The varying heights of the said horizontal portions 32 and the sequence of their positioning are determined by the waves and curves of the posterior aspect of the body as shown by the dotted line representation B.

It is thus seen from the above described construction that by removing and replacing or by rearranging the members 30, any desired longitudinal surface curvature, defined by the transverse horizontal portions 32, may be obtained.

In this connection and as a feature of my invention, it is here noted that a supply of each of the different sized members 30 may be made up in desired quantities and stocked so that the body resting appliances conforming to the posterior curvatures of selected portions of the body may be readily made up in accordance with the prescription of the physician.

In order to prevent the discomfort which may arise from intimate contact of the body with the rigid unyielding supporting members 30, a pad or relatively thin mattress 35 may be employed to overlie the horizontal portions 32 of the members 30.

In accordance with my invention I have provided the following means for leveling longitudinally waved and curved surface for the body supporting part of the appliance herein described so that when the bed is not in use for the therapeutic purposes above described it will not attract undesired critical attention in the room but will present the appearance of the usual bed or couch.

A pair of parallel longitudinal rod members 40 and 41 are each suitably pivotally mounted at one end thereof adjacent one of the end members such as for example the member 14. The said rods 40 and 41 may be pivoted directly to the said rail 14 or to the horizontal portion 31' of the extremely positioned member 30', by means of the bearing members 42 as shown in Figs. 1 and 2 of the drawings. The said rods 40 and 41 extend for substantially the entire length of the bed and are disposed within frame 10, so as not to be visible from the outside of the bed, between the side members 11 and 12, and underneath the horizontal portions 32 of the members 30. The unpivoted ends of the members 40 and 41 may be joined by a transverse angle member 43. As shown in Fig. 1 the said rods 40 and 41 are normally designed to rest upon a cross bar 44 supported between the side members 11 and 12, in which position they will be out of contact with the horizontal portions 32 of the rigid body supporting members 30.

When it is desired to raise all the members 30

to the same level it is merely necessary to pivotally raise the rods 40 and 41 from the position shown in Fig. 1 to the position shown in Fig. 4, where it is noted that the members 30 will be supported by the said rods 40 and 41, rather than by the channels 20. In this latter position it is noted that the longitudinal waves and curves have been leveled.

The cross angle member 43 may be provided with a pivoted hook 45 (see Figs. 1 and 4) designed to engage the horizontal portion 31' of the extreme member 30' to retain the rods 40 and 41 in raised position, so that the bed may be used in the normal manner.

The rod members 40 and 41 may be of any desired cross-sectional contour, such as for example the T-shaped members shown in Fig. 3.

While in the drawings I have shown the rigid body supporting members 30 as being circular or annular in cross section, it is understood that they may be made of any other desired cross-sectional shape. In Figs. 7 and 8 I have illustrated one form of inverted U-shaped supporting member, designated by the numeral 50, which is of T-shaped cross-sectional contour. This form I have found to be satisfactory because it permits of a wider body supporting area and thereby reduces the space between adjacent members, the center ribs 51 at the same serving to reinforce and strengthen the said members 50.

In Figs. 5 and 6 I have shown a modified form of my invention in which I provide rigid, unyielding body supporting members 60, similar in shape and function to that of the members 30 and 50, but in which the legs 61 of the said members 60 are provided with a plurality of transverse apertures 63 spaced along the length thereof. In this form of my invention the side members of the frame are each provided with a plurality of transverse openings 65, there being one such opening 65 for each leg, 61 and so positioned that the openings 63 in the legs 61 are adapted to be in axial alignment with the corresponding opening 65. An enlarged headed pin 70, inserted in the said aligned openings 63 and 65 will maintain the members 60 at any desired level. It is therefore seen that with this form of my invention only one standard size inverted U-shaped body supporting member is needed and the desired longitudinal curvature of the top portions of the said supporting members, in accordance with the posterior aspect of the body, may be effected by placing and maintaining the said members at different heights above the bottom flange 22.

It is noted that in this form of my invention, as well as in the other forms herein described, the center ribs 24 of the members 23 serve to prevent rocking or lateral swaying of the said supporting members 30, 50 or 60.

In Figs. 9 to 14 I have shown a further modification of my invention in which I have provided the following novel means for arranging the unyielding body supporting members, which are of standard uniform size, in longitudinal waves and curves in accordance with a template previously made of the curvature of the posterior aspect of the body of the user.

As in the Figs. 1 to 4 form of my invention the bed may comprise a similar rectangular frame consisting of longitudinal side members 70 and 71 and end members 72 and 73 suitably interconnected with the said side members to form the frame. As shown in Figs. 12 and 13 each of the members 71 and 72 comprises an

upper rail 74 and a lower rail 75 spaced therefrom.

The rails 74 and 75 are each provided with transverse notches 76 spaced along their length, each notch 76 in the rail 74 corresponding to and being in opposed alignment with a notch 76 in the rail 75. Received in each such pair of corresponding notches 76 is a vertically disposed member 80 provided with transverse corrugations 81. The members 80 may be made from a single sheet of suitable relatively rigid material with an end 80a thereof being rounded as clearly shown in Fig. 14. The said members 80 may be retained in position in the notches 76 by having end portions 81a, of the corrugated portion of the members 80, extending into the notches 76, while the ends of the rounded portions 81 adjacent the end portions 81a extend up to the notches, but do not enter the same. I provide tabs 81b bent at right angles to the plane of the portion 81 and designed to be in abutting relationship to the outer longitudinal edges of the rails 74 and 75. Certain selected rounded end portions 80a may be internally threaded to receive therein suitable screws 82 passing through the rails 74 and 75, and to thus more positively hold the rails 74 and 75 and the members 80 in assembled relationship.

Adapted to be mounted on the corrugated portion 81 of each member 80 in snug mating relationship is a supporting unit 85. This unit 85 comprises a pair of spaced wall members 86 which are corrugated with substantially the same corrugations as the transverse corrugations 81 of the members 80. The walls 86 are spaced apart such distance as to provide a snug fit when placed in position where they straddle the corrugated portions 81. The walls 86 are connected by a short wall 87 to form a substantially U-shaped member. Portions 89 of each wall 86 adjacent the top ends thereof are outwardly flanged to provide a table surface for the rigid body supporting members now to be described. Adapted to rest upon the flange portions 89 and be supported by the units 85 are transverse body supporting rods 90 which are preferably of inverted U-shaped cross sectional contour and made of relatively light unyielding material.

As explained in connection with the Figs. 1 to 4 of my invention the rods 90 serve the same function as the horizontal portions 32 of the inverted U-shaped members 30, namely to support the body of the person for whom the bed is designed.

It is noted that the supporting units 85 may be selectively positioned at any desired vertical level along the members 80 in accordance with the previously determined postural contour of the spine and body of the user of the bed. In order to determine at which particular level correspondingly opposed units 85 may be placed, a templet T, made in accordance with the postural measurements of the patient, may be suitably held in position alongside the side frame members 70 and 71, in such manner that the bottom contour line will form a gauge for the height at which the various supports 85 should be placed. After this has been done, the templet may be removed. The units 85 are forced on to the corrugated portions 81 of the members 80 from the edges thereof opposite to that of the rounded edges 80a, after which a covering member 88 suitably fastened by screws 89 may be used to conceal from view the edges of the members 80 and the units 85.

Each of the members 90 may be provided at

opposite ends thereof with notched portions 91 in the transverse flange 90a of the U-shaped members 90 to provide clearance for the members 80 as clearly shown in Fig. 14 of the drawings, so that the said members 90 are free to slide vertically on the members 80 and have portions thereof resting upon the flange portions 89.

The following means are provided for raising all of the bars 90 to a uniform level so that the bed may appear normal and standard when not in use for therapeutic purposes.

Journalled in the ends 72 and 73 of the frame is a shaft 100, having mounted thereon on each end and for rotation therewith, the gears 101 and 102. Rotatably mounted on the end 72 is a pinion 103 in mesh with the gear 102. Also rotatably mounted on the end 72 is an idler pinion 104 and a pinion 105. The idler pinion 104 meshes with the gear 102, while the pinion 105 meshes with the pinion 104. A similar arrangement of pinions 103, 104 and 105 in mesh with the gear 101 is provided at the end 73. Fixed to the pinions 103 for movement therewith are a pair of arms 106 rigidly supporting between them a bar 109. Also fixed to the pinions 105 for movement therewith are a pair of arms 108 supporting between them a second bar 107.

It is thus seen from the above described construction that when the gear 102 is rotated, the bars 107 and 109 will be moved either upwardly or downwardly depending upon the direction of rotation of the said gear 102. Stop pins 110 and 111 are provided to limit the downward movement of the arms 106 and 108.

When it is desired to raise all of the body supporting bars 90 to a uniform level it is merely necessary to rotate the gear 102 in a clockwise direction so that the bars 107 and 109 will move upwardly and carry with them all of the bars 90 with which they come in contact and such rotational movement will continue until all of the said bars 90 are supported by the bars 107 and 109. Pawl members 115 cooperating with the gears 102 are provided to maintain the bars 90 in their uppermost position so that the bed may be used in the customary manner. Any suitable covering 116 may be provided to overlies the bars 90 so as to prevent the same from causing discomfort to the user.

To facilitate the rotation movement of the gear 102, I provide a suitable handle 117 fixed to the shaft 100 for rotation therewith.

In all the forms of my invention shown in the drawings and as above described it is noted that an unyielding body supporting surface is provided which is shaped in a predetermined manner in accordance with the posterior aspect of the body of the user. However it is noted that the frames in each case are in turn resiliently supported by means of springs 120 which are in turn mounted on a suitable auxiliary frame F. It is seen that while the body supporting members are unyielding to thereby maintain the necessary curvature to provide the desired therapeutic effect, at the same time greater comfort to the user is furnished by resiliently supporting the entire body supporting unit in a yielding frame.

In accordance with the provisions of the patent statutes, I have herein described the principle and operation of my invention, together with apparatus which I now consider to represent the best embodiments thereof, but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means. Also, while it is designed to use

the various features and elements in the combination and relations described, some of those may be altered and others omitted without interfering with the more general results outlined, and the invention extends to such use.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. In a bed or similar body resting appliance of the type wherein a plurality of adjacently disposed rigid body supporting members are provided and in which said body supporting members are arranged at different levels in accordance with the posterior aspect of the body of the user—that improvement which comprises providing a single means, adapted to be manually operated, for raising all of said body supporting members to a position where they will be disposed at substantially a uniform level so that when the bed is not used for therapeutic purposes it may present the appearance of and be used as the customary type of bed and means for releasably maintaining said supporting members at such uniform level.

2. In a bed or similar body resting appliance, the improvement according to claim 1 in which said single means comprises a longitudinal member pivoted at one end thereof to one end of said bed and means for releasably supporting the unpivoted end of the said longitudinal member.

3. In a bed or similar body resting appliance of the class described, the combination of a body supporting unit, said unit comprising a frame having longitudinal side rails, a head rail and a

foot rail, brackets fixedly attached to each of said side rails, said brackets comprising upper walls, lower walls and intermediate walls, apertures in said upper and intermediate walls, the said apertures being in alignment, a plurality of inverted U-shaped members of unyielding material comprising horizontal portions and depending leg portions, said horizontal portions being transversely disposed with respect to said frame, said leg portions being adapted to be freely received in corresponding pairs of said aligned apertures on each bracket on each side rail, the bottom of said leg portions being adapted to freely rest upon the lower walls of said brackets, the said leg portions of certain U-shaped members being of different length from other U-shaped members so as to dispose said horizontal portions at different levels, the sequence of adjacently disposed different sized U-shaped members being determined by the posterior aspect of the body of the user.

4. A bed according to claim 3 including a single means for raising all of said U-shaped members to substantially the same level whereby the bed, when not in use for therapeutic purposes may present the appearance of the customary bed, said aligned apertures in said brackets serving to maintain the upright position of said U-shaped members while being raised, and means for releasably securing said raising means in position, whereby said U-shaped members are held in their raised position.

ABRAHAM W. SCHENKER.