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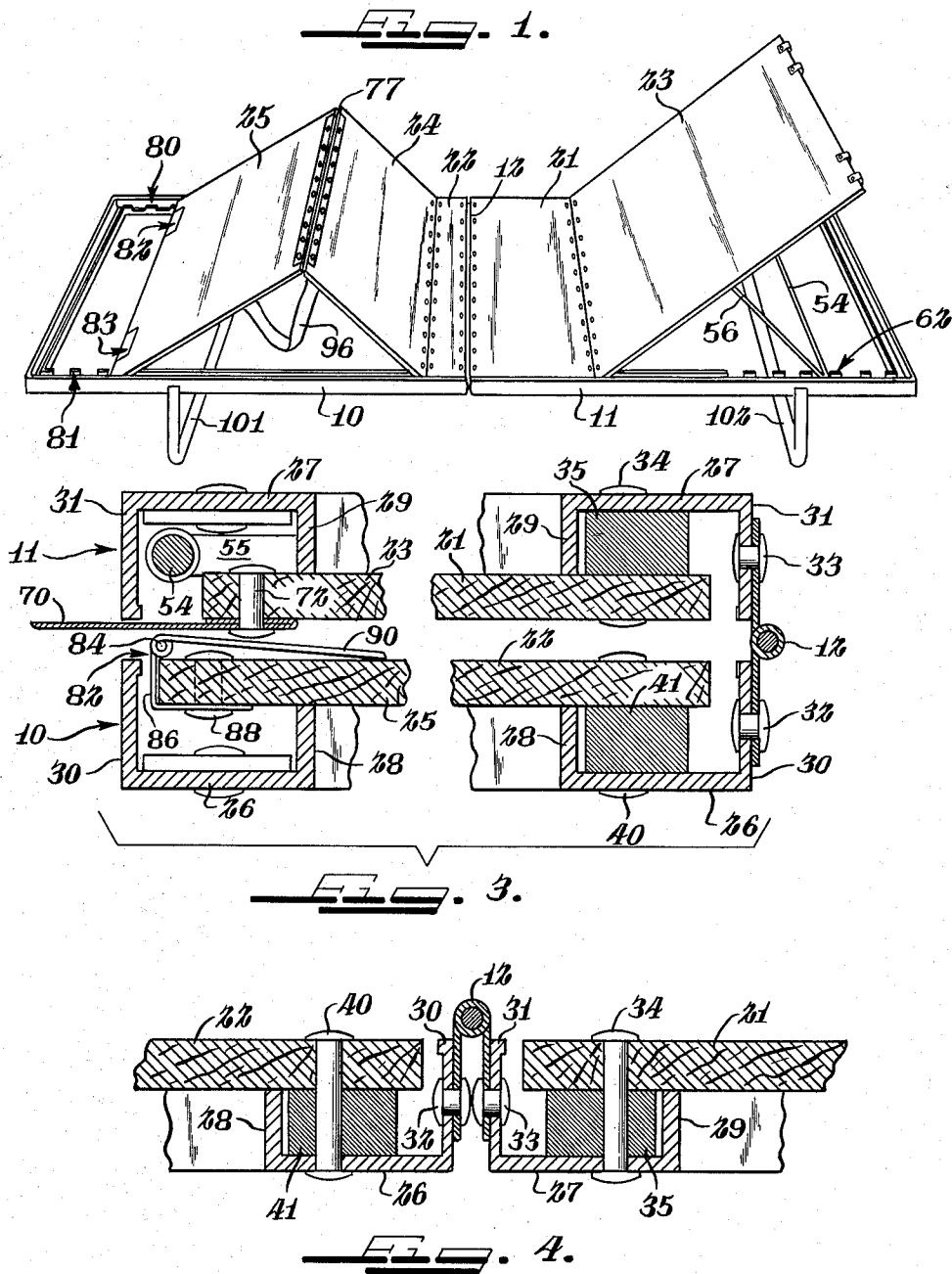
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3,245,092

ADJUSTABLE BEDBOARD

Filed Oct. 8, 1963

2 Sheets-Sheet 1



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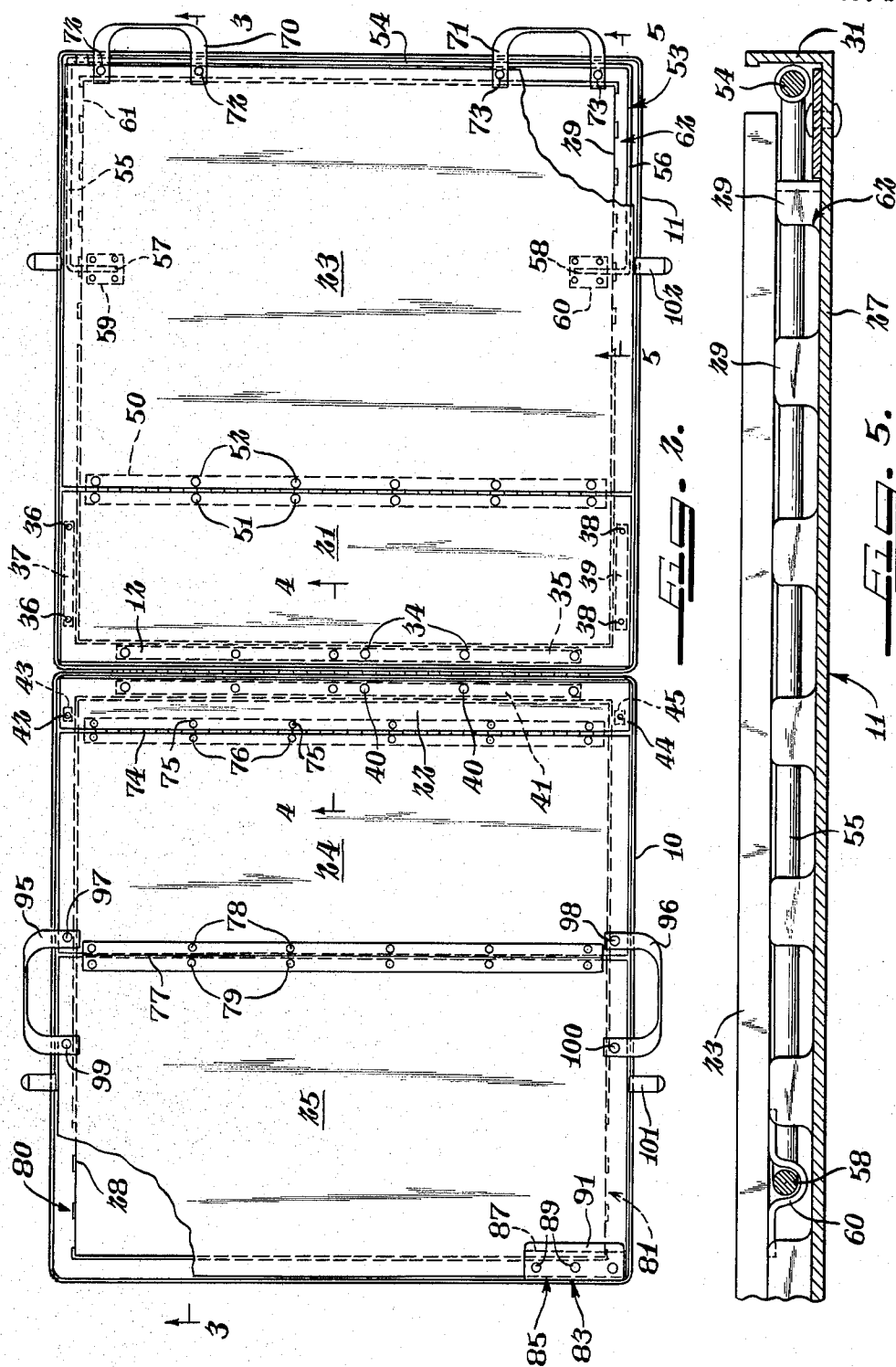
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ADJUSTABLE BEDBOARD

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8 Claims. (Cl. 5—68)

The present invention relates to bedboards and in particular to an adjustable bedboard.

Orthopedic and neurosurgeons often prescribe the use of a bedboard under a mattress for various types of backache and as an aid in the recovery of various back injuries. Such bedboards have been constructed of large sheets of approximately 1/4 inch thickness wood or plywood board. They are inserted above the springs and below the mattress of ordinary beds in order to give greater firmness to the mattress. These boards are normally a single panel of wood cut to the approximate dimensions of the mattress or spring so that they completely overlie the spring and support substantially the entire bottom of a mattress. Thus, even for a single bed or a twin bed, an ordinary bedboard is so large that it cannot normally be transferred from place to place. It is too large to be easily carried by a person and too large to be placed in an automobile or carried with luggage on an aircraft or railroad car. Even if the size of the ordinary bedboard were small enough to be carried by a person, the weight alone of so large a board prevents it from being carried easily from place to place by an average person.

The present invention makes it possible for a person needing the use of a bedboard to not only utilize it on his bed in his home, but to easily carry it with him while traveling so that he may utilize it with whatever bed he is using on a particular occasion by providing a bedboard which is foldable, light in weight, and easily carried. Hospital beds are usually constructed so that a portion of the bed can be raised to raise the upper torso portion of a patient's body and so that the mattress of the bed under a patient's knees may be raised. Hospital beds are generally unattractive in appearance, relatively heavy in weight (weighing approximately 230 pounds apiece), and relatively expensive as compared to beds normally utilized in the household. Patients who require an adjustable hospital bed are either retained in the hospital for periods beyond that which would be required if they had a hospital bed in their home, or are forced to purchase such hospital beds for use in their homes. The present invention, in addition to providing a portable bedboard, provides for converting a normal household bed into an adjustable bed by having portions which can raise a normal mattress under a person's upper torso and can raise the mattress under his knees.

Therefore, the present invention provides a bedboard which is completely portable and may be utilized upon any bed, and at the same time, provides a device that will convert any normal household bed to one which has the capabilities of a hospital bed. It may also be utilized to convert a standard bed into the equivalent of a contour chair for such pleasures as reading, relaxing in bed, or for watching television.

Therefore, an object of the present invention is to provide a new and improved bedboard.

An additional object is to provide a portable bedboard which, when folded, is small enough in overall size

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and sufficiently light in weight to be manually carried while traveling.

Another object is to provide an adjustable bedboard which may be utilized to convert a standard bed into the equivalent of a hospital bed.

A further object is to provide a bedboard which can be utilized to provide a body contoured reclining surface analogous to a contoured chair, wherein the contour may be varied to suit the desires of a user while engaged in such pleasures as reading, relaxing, or watching television.

A principal object of the present invention is to provide an adjustable bedboard composed of a frame and inclinable panels wherein the panels, when they are set parallel to the frame, lie wholly within the protective frame.

Yet another object is to provide a portable bedboard which may be folded in half and that is sufficiently light in weight to be easily carried with luggage while traveling.

Still another object is to provide an adjustable bedboard having a framework and panels inclinable to the frame with a mattress retaining device at the foot end of the bedboard which prevents a mattress from slipping off the bedboard when a panel at the head end of the bedboard is inclined.

Further objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings, in which:

FIGURE 1 is a perspective view of a preferred embodiment of the present invention;

FIGURE 2 is a top view of the embodiment of the invention illustrated in FIGURE 1 with a portion of a panel broken away to show the underlying frame structure;

FIGURE 3 is a sectional view of the embodiment of the invention illustrated in FIGURES 1 and 2 taken along the lines 3—3 in FIGURE 2 when the embodiment is in a folded condition;

FIGURE 4 is a sectional view of the center portion of the embodiment of the invention shown in FIGURES 1 and 2 taken along lines 4—4 when the embodiment is opened for use; and

FIGURE 5 is a sectional view of the embodiment of the invention illustrated in FIGURES 1 and 2 taken along the lines 5—5 in FIGURE 2.

While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail, an embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated. The scope of the invention will be pointed out in the appended claims.

The embodiment of the present invention illustrated in the figures comprehends a framework composed of two similar frames, hinged together, upon which are mounted a series of hinged panels which may be positioned to lie within the protected edges of the frames for transportation and may be adjusted to raise a portion of a mattress under the upper torso or under the knees (as required) when inserted between the mattress and springs of a standard bed. Thus, the bedboard illustrated in the figures is light in weight and foldable to a convenient size for transportation. The frames not only provide a framework to sup-

port the inclinable portions of the bedboard, but they also form a protecting case around the edge of the panels of the bedboard to protect them from damage while the bedboard is being transported.

Referring now to FIGURES 1 and 2, a framework, composed of frames 10 and 11 joined by a hinge 12, has a series of panels 21, 22, 23, 24 and 25 mounted thereon so that panels 23, 24, and 25 are inclinable relative to the framework. The dimensions of the framework are appropriately equal to the horizontal dimensions of a mattress. As is more clearly shown in FIGURES 3 and 4, the frames 10 and 11 are constructed of channel bars having respective backs 26 and 27, respective inner sides 28 and 29, and respective outer sides 30 and 31. The hinge 12 is joined to frame 10 by a line of rivets indicated at 32 and to frame 11 by a line of rivets 33 which secure the flange portion of the hinge 12 to the respective channel bar sides 30 and 31.

The difference in height between the inner channel bar sides 28 and 29, respectively, and the outer sides 30 and 31, respectively, is substantially equal to the thickness of the panels 21 and 22. Therefore, with the panels 21 and 22 engaging the short inner sides 28 and 29, as illustrated in FIGURES 2 and 3, the non-engaging sides of panels 21 and 22 lie in a plane described by the ends of the longer outer sides 30 and 31 so that the ends of the panels 21 and 22 are protected by the outer sides 30 and 31. The panel 21 is secured to the frame 11 by a series of rivets, generally indicated at 34, which pass through the panel 21, channel bar back 27 and an elongated block 35 interposed between panel 21 and channel bar back 27; by a pair of rivets, generally indicated at 36, which pass through the panel 21, the channel bar back 27, and an interposed elongated block 37; and by a pair of rivets generally indicated at 38, which pass through the panel 21, the channel bar back 27 and an elongated block 39. In a similar manner, the panel 22 is secured to the frame 10 by a line of rivets generally indicated at 40 which pass through the panel 22, the channel bar back 26 and an interposed elongated block 41; by a rivet 42 which passes through the panel 22 and the channel bar back 26 and an interposed block 43; and by a rivet 44 which passes through the panel 22, channel bar back 26 and an interposed block 45. The blocks 35, 37, 39, 41, 43 and 45 have heights equal to the heights of the inner channel bar sides 28 and 29 in order that the top of the panels 21 and 22, as viewed in FIGURES 1 and 2, will substantially lie in planes described by the top of the channel bar outer sides 30 and 31, and thereby be level with the top of the channel bar outer sides.

The panel 23 is pivotally secured to the panel 21 by a hinge 50 which is secured to the panel 21 by a line of rivets generally indicated at 51 and to panel 23 by a line of rivets generally indicated at 52. Thus, panel 23 forms an inclinable back rest for supporting the head portion of a mattress when the bedboard is inserted between the mattress and springs of a standard bed. An adjustable support 53 has a straight center portion 54, side portions 55 and 56, and end portions 57 and 58. The end portions 57 and 58 are pivotally secured to the underside of panel 23 by a pair of brackets 59 and 60 riveted to the panel. As is shown in FIGURES 1 and 2, and particularly clearly illustrated in FIGURE 5, the inner channel bar sides 29 of frame 11 have a pair of racks, generally indicated at 61 and 62, formed therein to adjustably receive the central portion 54 of the support 53 so that the panel 23 may be adjustably positioned at various inclinations to the frame 11. When the panel 23 is not inclined, support 53 lies within the trough of the channel bar constituting the frame 11 in order that the panel 23 may engage the top edge of the channel bar inner side 29 and thereby allow the top of panel 23 to be substantially level with the top edge of the channel bar longer outer side 31, as illustrated in FIGURE 5.

As illustrated in FIGURES 2 and 3, a pair of flexible

handles 70 and 71 are riveted to the top side of panel 23 by a pair of rivets 72 and a pair of rivets 73.

The panel 24 is pivotally secured to panel 22 by a hinge 74 which is secured to panel 22 by a line of rivets, generally indicated at 75, and to panel 24 by a line of rivets, generally indicated at 76. The panel 25 is pivotally secured to panel 24 by a hinge 77 which is secured to panel 24 by a line of rivets generally indicated at 78 and to panel 25 by a line of rivets generally indicated at 79. A pair of racks 80 and 81 are formed in the channel bar inner side 28 to adjustably receive the free edge of the panel 25 opposite the hinge 77. Thus, the panels 24 and 25 may be positioned at varying inclinations to the frame 10 for adjusting the lower portion of a mattress when the bedboard is inserted between a mattress and springs of a standard bed.

A pair of mattress stops or abutments, generally indicated at 82 and 83, comprise a pair of respective hinges 83 and 84 having respective L-shaped flanges 84 and 85 secured to panel 25 by two respective sets of rivets, generally indicated at 86 and 87, and straight respective flanges 88 and 89. When the straight flanges 88 and 89 are rotated counterclockwise, the respective hinges 83 and 84 will allow them to be rotated until they are substantially perpendicular to the panel 25. In this form, they form abutments which will retain the end of the mattress to keep it from sliding on the bedboard when the panel 23 is adjusted to an inclined position. When they are not required to retain the end of the mattress, they may be rotated clockwise to the position illustrated in FIGURES 1, 2 and 3.

A pair of flexible straps 95 and 96 has one end riveted to the top of panel 24 by rivets 97 and 98, and their respective other ends riveted to the top of panel 25 by rivets 99 and 100.

A pair of straps 101 and 102 is riveted to the frames 10 and 11, as illustrated in FIGURES 1 and 2, in order that they may be utilized to secure the framework around the spring structure of a standard bed.

When the bedboard is to be transported, the panels 23, 24 and 25 are laid flat within the encircling channel bar outer sides 30 and 31, as illustrated in FIGURE 3. The frames 10 and 11 are rotated about hinge 12 until they reach the relative position illustrated in FIGURE 3. The handles 70, 71, 95 and 96 may be extended outwardly between the frames 10 and 11 so that they may be used as carrying handles for transporting the bedboard in its folded condition. The frames 10 and 11 are maintained in a folded position by either or both the straps 101 and 102 when they are secured around the opposing frame.

To utilize a bedboard on a standard bed, the mattress of the bed is removed and the bedboard is unfolded, as illustrated in FIGURES 2 and 4, placed upon the spring of the bed and then the mattress is replaced on top of the bedboard. With the panels 23, 24 and 25 lying flat, as illustrated in FIGURE 2, under the mattress of a standard bed, the adjustable bedboard performs the normal function of an ordinary bedboard. When it is desirable to incline the upper portion of the body by inclining the head portion of a mattress, panel 23 is rotated about the hinge 50, and the support 53 is positioned in appropriate slots of racks 61 and 62 to give the desired inclination to the panel 23 and thereby to a head portion of a mattress. The handles 70 and 71 are utilized to lift panel 23 and the head portion of a mattress overlying it. When it is desired to raise the knee portion of the body, the panels 24 and 25 are raised, preferably with the aid of handles 95 and 96 and the free end of panel 25 opposite the hinge 77 is positioned in corresponding slots of racks 80 and 81 which give the desired inclination to the panels 24 and 25 and thereby to the overlying portion of a mattress. When the panel 23 is inclined, a mattress has a tendency to slide toward the foot end of the bed, particularly when the panels 24 and 25 are not inclined. The

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abutments 82 and 83 may be rotated into their upright position in order to retain the mattress on the bed without sliding or creeping in the direction of the foot of the bed.

Where there is a possibility of considerable movement on the bed, straps 101 and 102 may be utilized to secure the frames 10 and 11, respectively, to the bed so there will be no tendency for the mattress and bedboard to be forced off the springs.

Thus, the adjustable bedboard disclosed herein may be utilized either as a bedboard or as an adjusting device to equip a standard bed with the capabilities of a hospital bed or to transform a standard bed into the equivalent of a contour chair so that it may be utilized for either patients that require a bedboard or an adjustable bed, or by healthy persons who desire a contoured surface for pleasure and relaxation.

I claim:

1. A lightweight bed board placed under a mattress comprising:

two rectangular frames hinged to each other along one side of each,

a first flat panel rigidly secured to one of said frames adjacent the hinged side,

a second flat panel rigidly secured to the other of said frames adjacent the hinged side, said first and second panels forming a horizontal section which extends across the hinged sides of said frames for supporting the hip portion of the torso,

a third flat panel hinged along an edge thereof to an edge of said first panel,

a fourth flat panel hinged along an edge thereof to an edge of said second panel, and

a fifth flat panel hinged along an edge thereof to an edge of said fourth panel.

2. In combination with the bedboard specified in claim 1:

a support member movably attached to said third panel and

a pair of racks secured to said one frame for receiving said support member to select the inclination of said third panel to said first panel.

3. In combination with the bedboard specified in claim 1:

a pair of racks secured to said other frame for receiving an edge of said fifth panel to select the inclinations of said fourth and fifth panels to said second panel.

4. In combination with the bedboard specified in claim 1:

a pair of flexible handles, each having one end secured to a different end of said fourth panel and another end secured to a different end of said fifth panel for raising said fourth and fifth panels to inclined positions.

5. In combination with the bedboard specified in claim 1:

abutments rotatably secured to said fifth panel and having a retaining position for retaining an end of a mattress when said third panel is inclined and said fourth and fifth panels are horizontal, said abutments being rotated to a retracted position when not required to retain an end of a mattress.

6. A lightweight bedboard placed under a mattress comprising:

two rectangular frames of equal size hinged to each other along one side of each,

a first flat panel having one edge thereof secured to the hinged side of one of said frames, having an unsecured edge opposite the secured edge, and having ends secured to the opposite side of the frame which adjoin the hinged side,

a second flat panel having one side thereof secured to the hinged side of the other of said frames, having an unsecured edge opposite the secured edge, and having ends secured to the opposite sides of the

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frame which adjoin the hinged side, said second panel being substantially narrower than said first panel,

a third flat panel hinged along an edge thereof to the unsecured edge of said first panel, the combined area of said first and third panels being approximately equal in size and shape to the area defined by said rectangular frames,

a fourth flat panel hinged along an edge thereof to said unsecured edge of said second panel and having an edge opposite said hinged edge, and

a fifth flat panel hinged along an edge thereof to said opposite edge of said fourth panel, the combined area of said third, fourth and fifth panels being approximately equal in size and shape to the areas defined by said rectangular frames.

7. A lightweight bedboard placed under a mattress comprising:

two rectangular aluminum frames of equal size hinged to each other along one side of each,

a first flat panel having one edge thereof secured to the hinged side of one of said frames, having an unsecured edge opposite the secured edge, and having ends secured to the opposite side of the frame which adjoin the hinged side,

a second flat panel having one side thereof secured to the hinged side of the other of said frames, having an unsecured edge opposite the secured edge, and having ends secured to the opposite sides of the frame which adjoin the hinged side, said second panel being substantially narrower than said first panel,

a third panel hinged along an edge thereof to the unsecured edge of said first panel, the combined area of said first and third panels being approximately equal in size and shape to the area defined by said rectangular frames,

a fourth flat panel hinged along an edge thereof to said unsecured edge of said second panel and having an edge opposite said hinged edge,

a fifth flat panel hinged along an edge thereof to said opposite edge of said fourth panel, the combined area of said second, fourth and fifth panels being approximately equal in size and shape to the areas defined by said rectangular frames,

a support member movably attached to said third panel,

a pair of racks on said one frame for receiving said support member to select the inclination of said third panel to said first panel,

a pair of racks on said other frame for receiving an edge of said fifth panel to select the inclination of said fourth and fifth panels to said second panel,

a strap, adapted to connect said bedboard to a bed, connected to at least one of said frames,

a pair of flexible handles connected to said third panel, another pair of flexible handles, each having one end secured to a different end of said fourth panel and another end secured to a different end of said fifth panel, and

abutments rotatably secured to said fifth panel for retaining an end of a mattress.

8. A lightweight bedboard placed under a mattress comprising:

two rectangular frames hinged to each other along one side of each and constructed of channel bars having a back and sides whose backs form the bottom of the frames when they are opened from each other for insertion under a mattress, the inward side of each channel being shorter than the outward side of each channel and

flat panels having a thickness approximately equal to the difference in length between said channel sides and secured to said frames to have one side engage the short sides of said channel bars and to have the

other side substantially lying in a plane described
by ends of the long outward channel sides of each
frame.

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