Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 1

Fig. 1

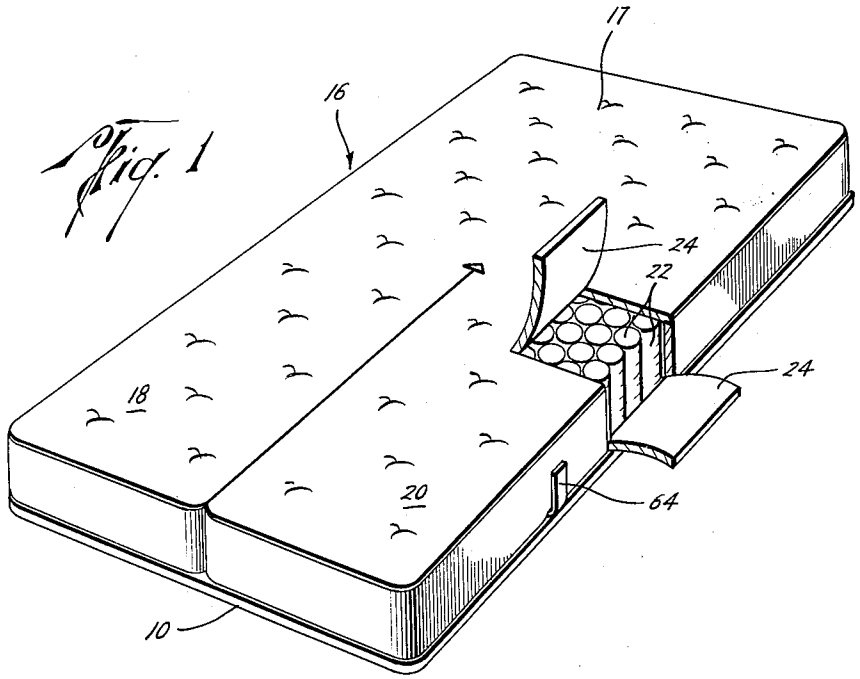
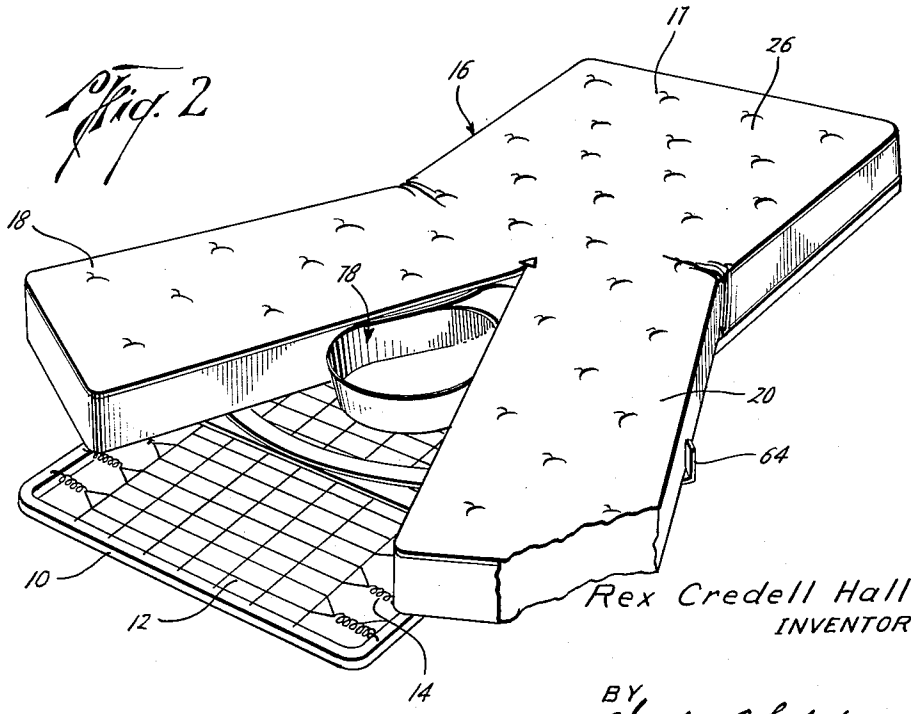


Fig. 2



Rex Credell Hall
INVENTOR

BY Charles E. Lightfoot
ATTORNEY

Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 2

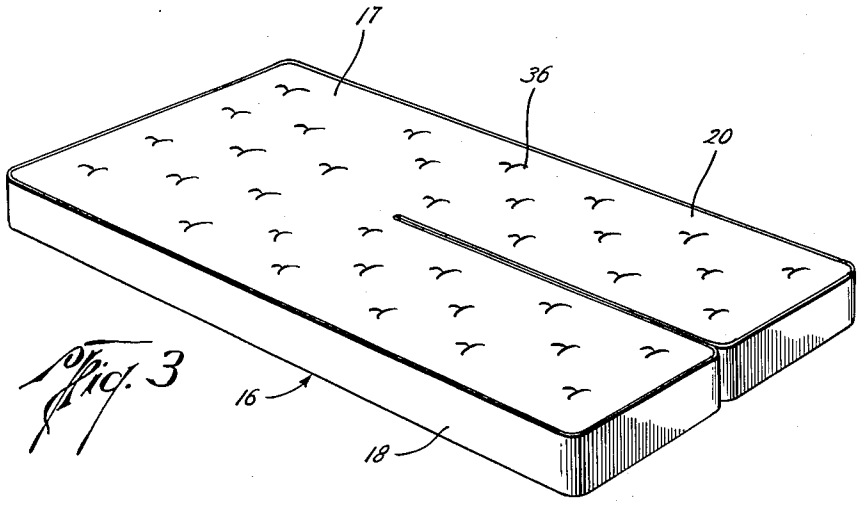


Fig. 3

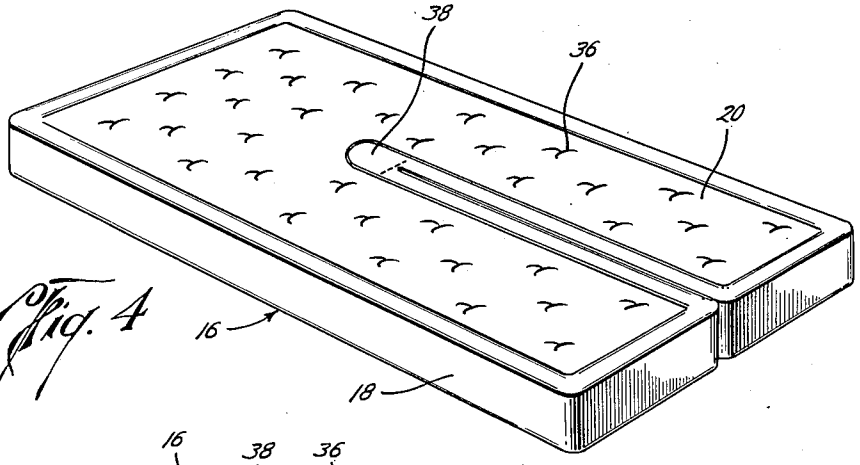


Fig. 4

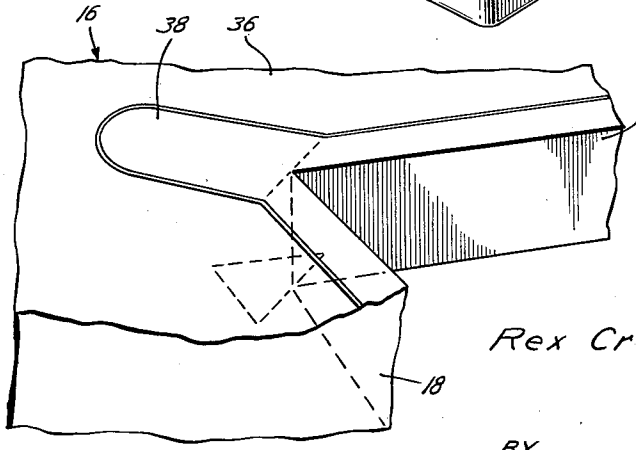


Fig. 5

Rex Credell Hall
INVENTOR

BY Charles E. Tiglitfoot
ATTORNEY

Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 3

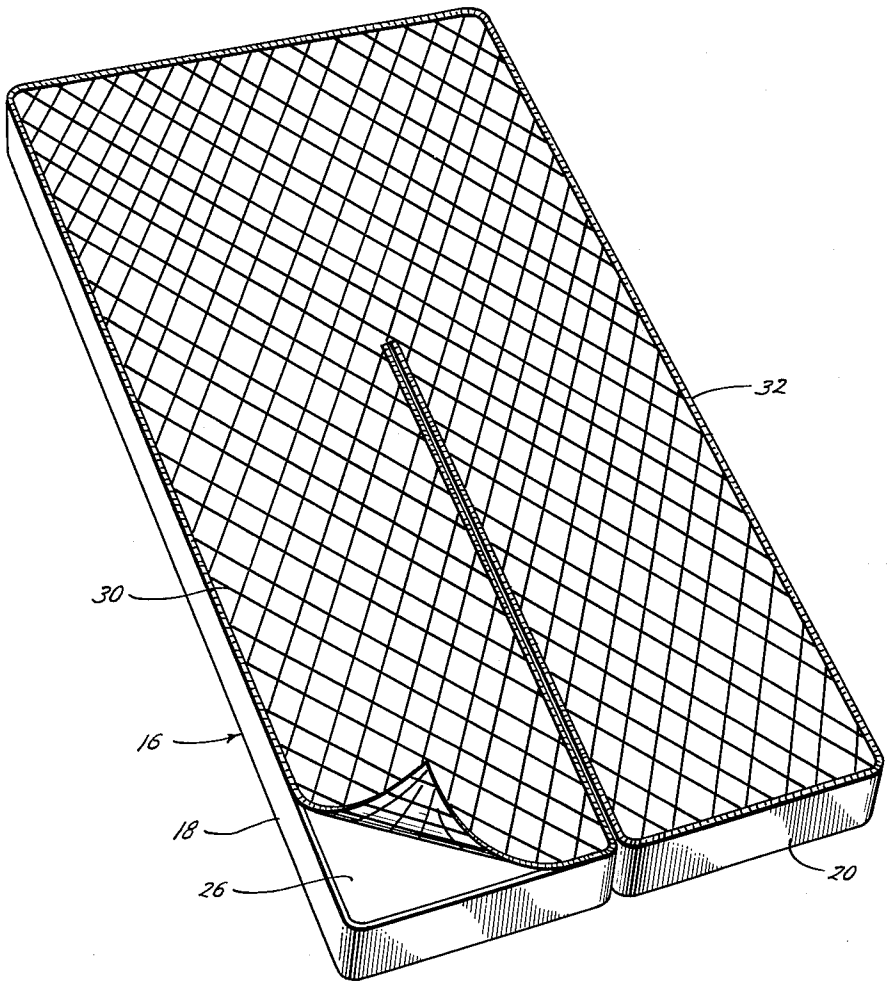


Fig. 6

Rex Credell Hall
INVENTOR

BY
Charles E. Lightfoot
ATTORNEY

Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 4

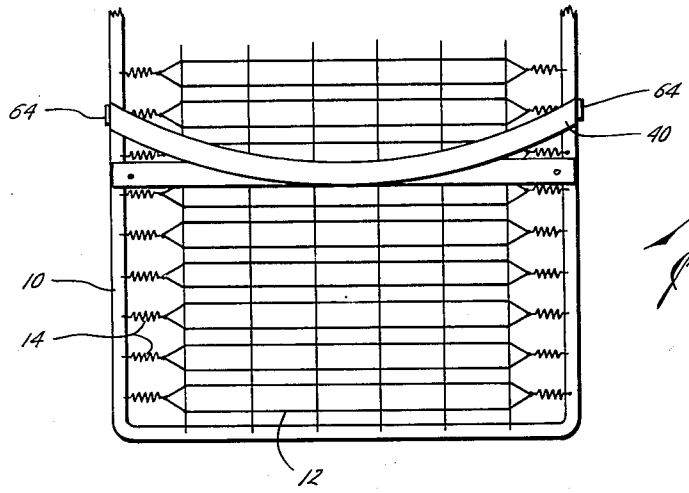


Fig. 7

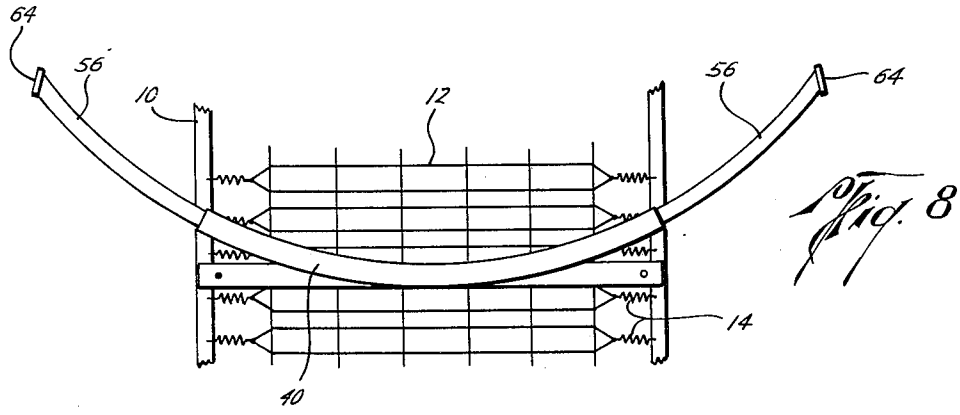


Fig. 8

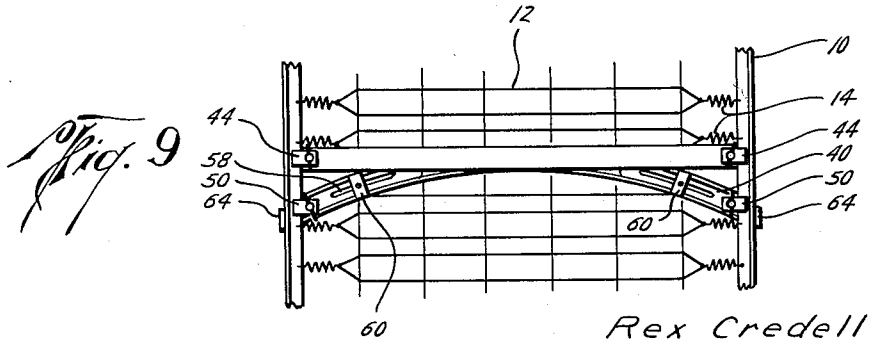


Fig. 9

Rex Credell Hall
INVENTOR

BY Charles E. Lightfoot
ATTORNEY

Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 5

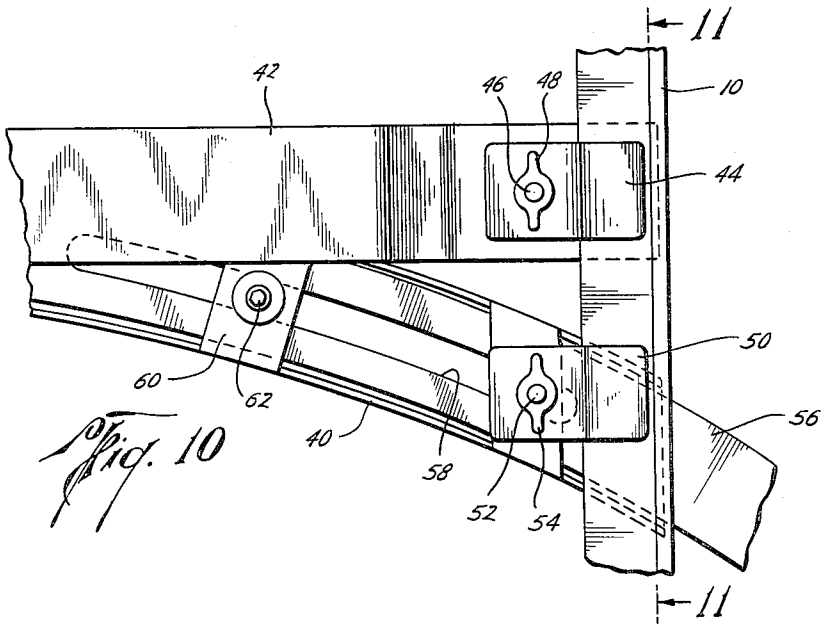


Fig. 10

Fig. 11

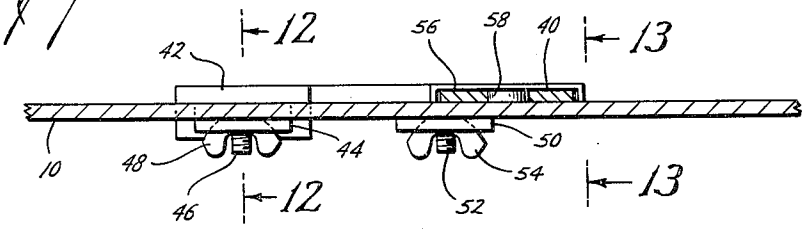


Fig. 12

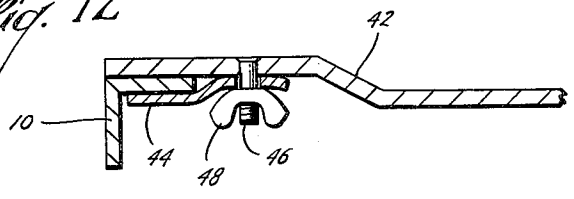
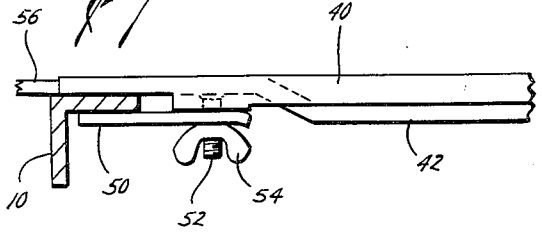


Fig. 13



Rex Credell Hall
INVENTOR.

BY
Charles E. Lightfoot
ATTORNEY

Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 6

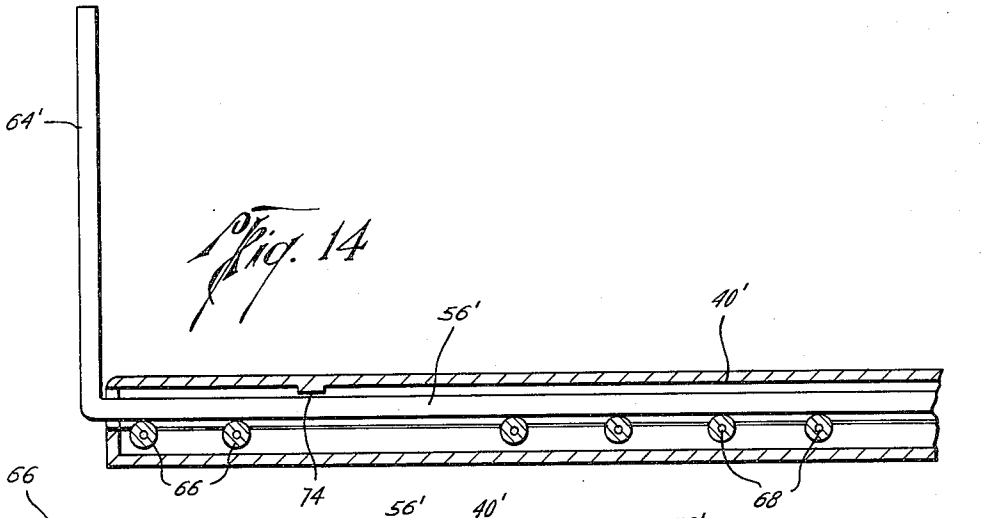


Fig. 14

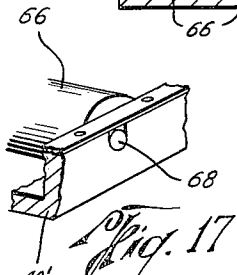


Fig. 17

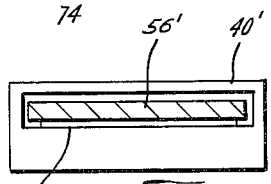


Fig. 15

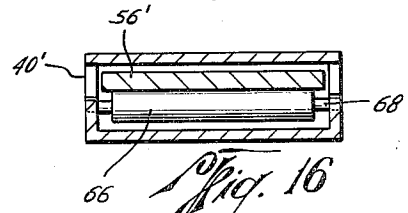


Fig. 16

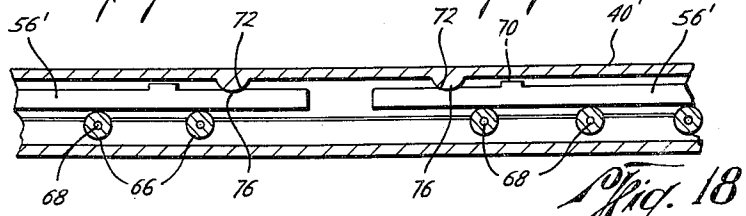


Fig. 18

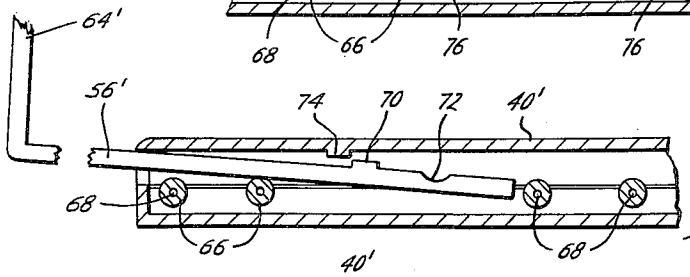


Fig. 19

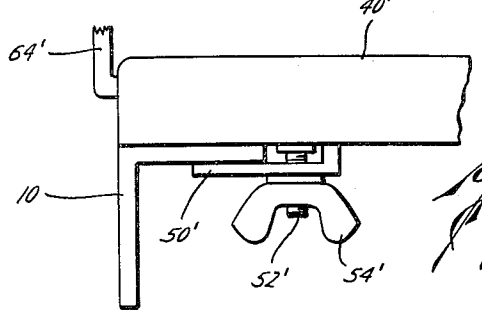


Fig. 20

Rex Credell Hall
INVENTOR

BY Charles E. Lightfoot
ATTORNEY

Dec. 26, 1961 R. C. HALL 3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Filed June 27, 1958 7 Sheets-Sheet 7

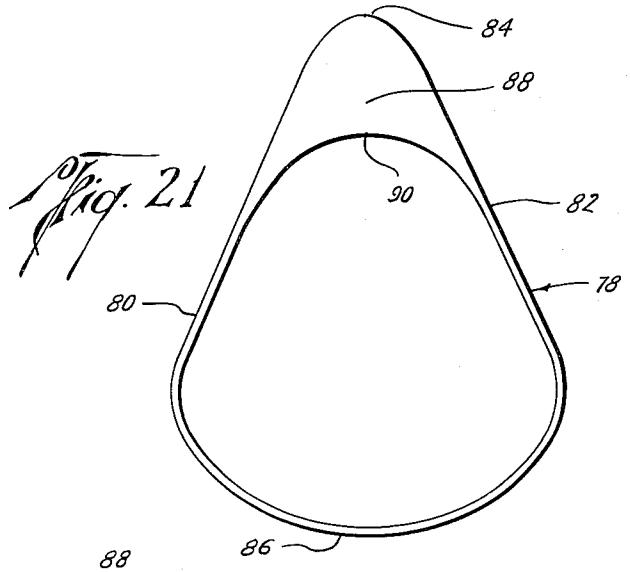


Fig. 21

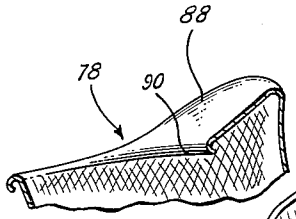


Fig. 23

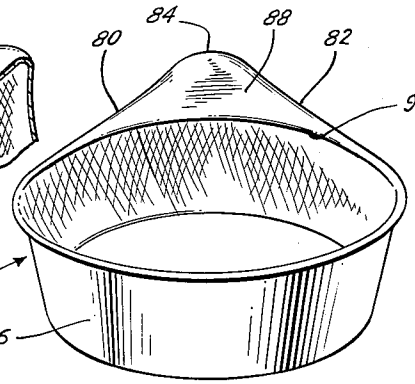


Fig. 22

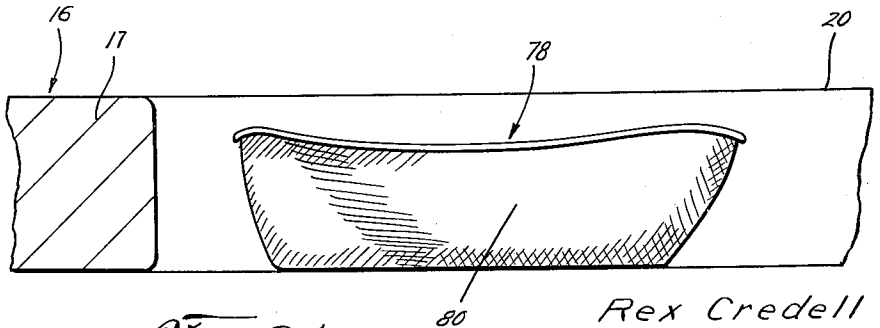


Fig. 24

Rex Credell Hall
INVENTOR

BY Charles E. Lightfoot
ATTORNEY

United States Patent Office 3,014,224 Patented Dec. 26, 1961

3,014,224

ADJUSTABLE MATTRESS AND SUPPORTING MEANS THEREFOR FOR USE WITH HOSPITAL BEDS

Rex Credell Hall, Beaumont, Tex., assignor to National Hospital Manufacturing & Distributing Company, Beaumont, Tex., a corporation of Texas

Filed June 27, 1958, Ser. No. 744,948
2 Claims. (Cl. 5—90)

This invention relates to hospital beds, and more particularly to an adjustable mattress and supporting means therefor, which are designed for increased convenience in the care of and for the comfort of patients occupying such beds.

The invention finds particular application in connection with the care and attending to patients who are required to remain in bed and especially under conditions which make it necessary for such patients to make use of a bed pan.

Heretofore in the care of bed patients under conditions requiring the use of bed pans, it has been necessary that such a patient assume an awkward and frequently uncomfortable position because of the lack of any provision for properly positioning the bed pan at a convenient level for use. At times it is difficult or even dangerous to elevate such patients or to substantially change the patient's position for the purpose of placing a bed pan in proper position for the patient's use, and under conditions in which the patient may be moved sufficiently to enable the bed pan to be placed beneath the patient, the patient must often assume an awkward and undesirable position resulting in great discomfort with attendant danger of displacement of the pan or soiling of the bed.

Various devices have been proposed heretofore for facilitating the positioning of bed pans beneath the patient to avoid moving the patient or causing discomfort, such as the provision of mattresses with openings therethrough located to receive the bed pan or having removable portions for accomplishing this purpose, but such expedients have not proven satisfactory, due to the necessity of disturbing the patient or substantially shifting the patient's position and also because of the difficulty of inserting and removing the pan where such means is employed.

The present invention has for an important object the provision of a mattress having portions which may be easily adjusted without substantially moving a patient occupying the mattress to facilitate the positioning of a bed pan beneath the patient in a location for convenient use without discomfort to the patient.

Another object of the invention is the provision of a mattress of one piece construction having portions which may be moved apart to provide an opening for the insertion of a bed pan beneath a patient and including means for supporting the movable portions of the mattress in any position of adjustment to support the patient in a comforable position.

A further object of the invention is to provide a mattress which is longitudinally divided, centrally throughout a portion of its length to form sections which may be spread apart laterally to provide for the insertion of a bed pan between the sections beneath a patient and adjustable means for support the sections in open position.

The invention also contemplates the provision of a bed pan which is shaped for insertion between the sections of the mattress of the invention to hold the sections in open position and to be supported on the bed springs in a position for comfortable use by the patient.

A further object of the invention is the provision of a mattress cover for a mattress which is formed with portions which are movable relatively to each other to position the same for the placement of a bed pan between

such portions and in which the mattress remains covered in all positions of the mattress.

Another object of the invention is to provide an adjustable support structure adapted to be applied to a bed for use with a mattress having portions which may be moved apart to permit the insertion of a bed pan between such portions, and which is adjustable to support the mattress in all positions of said portions.

A still further object of the invention is the provision of a mattress of the kind referred to for use with hospital beds and adjustable means for supporting the mattress sections which is of simple design and rugged construction capable of withstanding the hard usage to which such a device is likely to be subjected.

The above and other important objects and advantages of the invention may best be understood from the following detailed description, constituting a specification of the same when considered in conjunction with the annexed drawings, wherein—

FIGURE 1 is a perspective view illustrating a mattress constructed in accordance with the invention and showing the same in closed condition on a bed;

FIGURE 2 is a view similar to that of FIGURE 1 illustrating the mattress in open condition and showing the means by which the adjustable sections are held and supported in opened position;

FIGURE 3 is a perspective view illustrating the mattress of the invention in closed condition, separated from the bed and supporting structure and enclosed in an outer cover or sheet;

FIGURE 4 is a perspective view similar to that of FIGURE 3 showing the bottom of the mattress provided with the cover or sheet in accordance with the invention;

FIGURE 5 is a fragmentary perspective view, on an enlarged scale illustrating a portion of the mattress of the invention as seen in FIGURE 4 and showing the manner in which the outer cover or sheet is constructed;

FIGURE 6 is a perspective view illustrating a detachable pad constructed for use with the mattress of the invention and showing how the same is applied to the mattress;

FIGURE 7 is a fragmentary, top plan view illustrating a preferred embodiment of the supporting structure for the adjustable sections of the mattress showing the same applied to a bed and in retracted condition;

FIGURE 8 is a view similar to that of FIGURE 7 showing the supporting structure in extended condition;

FIGURE 9 is a bottom plan view of the supporting structure as illustrated in FIGURE 7 showing the manner in which the same is attached to the bed;

FIGURE 10 is a fragmentary bottom plan view on a greatly enlarged scale showing details of structure of the supporting structure for the adjustable mattress sections and the means by which the same is removably attached to the bed;

FIGURE 11 is a cross-sectional view taken along the line 11—11 of FIGURE 10, looking in the direction indicated by the arrows;

FIGURE 12 is a cross-sectional view taken along the line 12—12 of FIGURE 11, looking in the direction indicated by the arrows;

FIGURE 13 is a cross-sectional view, taken along the line 13—13 of FIGURE 11, looking in the direction of the arrows;

FIGURE 14 is a fragmentary, side elevational view illustrating a somewhat different form of the mattress section supporting structure of the invention;

FIGURE 15 is a cross-sectional view, taken along the line 15—15 of FIGURE 14, looking in the direction indicated by the arrows;

FIGURE 16 is a cross-sectional view, taken along the

line 16—16 of FIGURE 14, looking in the direction indicated by the arrows;

FIGURE 17 is a fragmentary, perspective view of a portion of the supporting structure as illustrated in FIGURE 14 showing details of the mounting of the rollers therein;

FIGURE 18 is a view similar to that of FIGURE 14, showing details of construction of the means by which the parts of the mattress section supporting structure are interengageable when the same are in retracted position;

FIGURE 19 is a view similar to that of FIGURE 14 showing the parts of the mattress section supporting structure in extended position;

FIGURE 20 is a fragmentary, side elevational view of a portion of the mattress section supporting structure of FIGURE 14, showing the means by which the same is secured to a bed;

FIGURE 21 is a top plan view of a bed pan constructed for use with the mattress of the invention;

FIGURE 22 is a perspective view of the same;

FIGURE 23 is a fragmentary view, partly broken away and partly in cross-section of a portion of the bed pan of FIGURE 21, showing details of the internal structure of the same; and

FIGURE 24 is a fragmentary side elevational view of a portion of the mattress of the invention with the adjustable sections thereof in opened condition and the bed pan in position between the same.

Referring now to the drawings in greater detail the mattress and adjustable supporting means therefor of the invention is adapted for use in connection with a bed of conventional structure, such as a hospital bed having bed springs of the general type illustrated in FIGURES 2, 7, 8 and 9, which are usually provided with a rectangular frame, generally designated **10**, formed of angle iron or other suitable shape, to which a mesh **12** of wire is attached by means of means of coil springs **14**. Beds of this type are provided with mattresses which are usually of one piece, generally rectangular or box-like construction, of a size to conform substantially with the frame of the bed springs. When a bed furnished with a mattress of this type is occupied by a patient for whom a bed pan must be provided, there is no way in which such a pan can be positioned beneath the patient without moving the patient, and the patient must assume an awkward and uncomfortable position in using such a pan.

It is for the purpose of overcoming the above disadvantages of mattresses of ordinary construction and to improve the convenience in use and comfort to the patient that the present invention has been provided. The mattress of the invention generally designated **16** is preferably of the box type having the usual over all generally rectangular shape which is centrally, longitudinally divided for a portion of its length to provide a main body portion **17** and smaller portions or sections **18** and **20** attached to the main portion **17** and which may be positioned parallel as shown in FIGURE 1 when in ordinary use, or may be moved apart angularly as seen in FIGURE 2 to provide an opening of substantially V-shape between the portions **18** and **20** to permit the convenient insertion and removal of a bed pan between the sections.

The mattress is preferably formed with separately pocketed, covered coils or resilient units **22**, over which one or more pads **24** are positioned, as seen in FIGURE 1, and the coils and pads then enclosed in an inner cover **26** shown in FIGURE 2 which is also fitted to each of the sections **18** and **20**. By this construction the sections **18** and **20** may be moved to the open position of the mattress, as shown in FIGURE 2 without disrupting the inner structure of the mattress, the coil units **22** being sufficiently flexible to allow such movement.

The cover **26** of the mattress may be provided with an outer pad **30**, which may be quilted or otherwise constructed, and which is shaped to conform to the shape of the upper surface of the mattress and suitably detachably secured thereto, as by means of an endless fastener or zipper **32**, extending about the edges of the pad and the upper face of the mattress, including the central longitudinal slot forming the sections **18** and **20**, as best illustrated in FIGURE 6.

An outer cover or fitted sheet **36** is provided for the mattress, which fits over the upper surface of the mattress and downwardly about the sides thereof, as shown in FIGURE 3, and beneath the bottom surface of the mattress as shown in FIGURE 4. The sheet or cover extends continuously about the sides of the mattress and the adjacent sides of the sections **18** and **20** in the slot between the sections, and is provided with a reinforcing flap **38** extending beyond the inner end of the slot between the sections. The cover or sheet **36** may be fitted with elastic or the like to cause the same to closely fit the mattress when applied thereto.

Supporting means for the sections **18** and **20** of the mattress to support the same when the mattress is in opened condition, a preferred embodiment of which supporting means is illustrated in FIGURES 7 to 13, inclusive. The supporting means, in the present illustration, takes the form of an arcuate trackway **40**, of inverted channel shape in cross-section, which is carried on a cross-bar **42** extending between the opposite sides of the frame **10** of the bed springs beneath the sections **18** and **20** of the mattress. The cross-bar **42** is attached to the side portions of the frame **10** by perforated clips **44** adjustably secured to the cross-bar by bolts **46** provided with wing nuts **48**, whereby the cross-bar may be detachably secured to the frame and the trackway **40** is also secured to the sides of the frame by similar clips **50**, adjustably attached to the trackway by bolts **52** provided with wing nuts **54**. A pair of arcuate oppositely slidable support elements **56** are slidably positioned in the trackway **40**, each of which elements is provided with a longitudinal slot **58** therethrough, as best seen in FIGURES 9 and 10, and the trackway has a bridge piece **60** extending between the sides of the trackway over the elements **56** and through which screws **62** are extended, which also extend through the slots **58**, whereby the supporting elements may be moved to extended positions as seen in FIGURE 8, to support the mattress sections **18** and **20** in the opened condition of the mattress or may be moved to retracted position, as seen in FIGURES 7 and 9 when the mattress is closed. The support elements **56** may be provided at their outer ends with upturned end portions **64** positioned for engagement with the sides of the mattress sections **18** and **20** to cause the support elements to move to extended positions with the mattress sections when the mattress is opened.

It will be apparent that the above described supporting structure may be readily attached to the bed springs at any desired locations beneath the sections **18** and **20** of the mattress and when so attached is out of the way and does not interfere with any normal use of the bed or mattress, and upon opening of the mattress by moving the sections **18** and **20** away from each other the support elements **56** will be extended to support the sections in the same level with the remainder of the mattress.

In FIGURES 14 to 20, inclusive, a somewhat different form of the supporting structure of the invention is illustrated, wherein a tubular trackway **40'** of generally rectangular shape in cross-section is provided, which extends between the sections of the frame **10** and is detachably connected thereto by clips **50'** attached to the trackway by bolts **52'** provided with wing nuts **54'**. Rollers **66** are provided in the trackway **40'**, extending from side to side thereof and having shafts **68** pivotally supported at their opposite ends on the trackway. Oppositely movable support elements **56'** are positioned in the trackway **40'** on the roller **68** therein, each of which trackways has an upwardly extending projection **70** and an upwardly opening notch **72** spaced longitudinally inwardly from the

projection. The upper wall of the trackway 40' is also provided with downwardly extending projections 74 positioned to be engaged by the projections 70 of the support elements to limit outward movement of the elements relative to the trackway, and with rounded downwardly extending projections 76, positioned to be engaged in the notches 72 to releasably hold the support elements in retracted positions in the trackway.

At their outer ends the support elements 56' are provided with upturned end portions 64', positioned for engagement with the sides of the mattress sections 18 and 20.

The rollers 66 are spaced apart to permit the support element 64' to be tilted, in the manner best illustrated in FIGURE 19, to disengage the projections 76 of the trackway from the notches 72 of the elements, to permit the elements to be moved to their extended positions when it is desired to open the mattress. When in their extended positions the support elements will be in supporting engagement with the sections 18 and 20 of the mattress so that the projections 70 of the elements will be positioned to engage the projections 74 of the trackway to hold the elements against further movement in a direction to extend the elements.

The supporting structure illustrated in FIGURES 14 to 20, inclusive, is for the same purpose and functions in substantially the same manner as the supporting structure previously described in connection with FIGURES 7 to 13, inclusive.

For the purpose of holding the mattress sections 18 and 20 in their open positions a bed pan 78 is provided, whose structure is illustrated in FIGURES 21 to 24, inclusive. This bed pan has side wall portions 80 and 82 which converge toward the front end of the pan in position for engagement with the adjacent sides of the mattress sections when the bed pan is inserted between the sections to hold the sections in spread apart or opened condition. The bed pan is preferably formed with rounded end portions 84 and 86, and has an upper web portion 88 extending rearwardly from its forward end, and which slopes downwardly and inwardly of the pan and whose inner marginal portion 90 is downwardly rolled. The height of the bed pan is preferably somewhat less than the thickness of the mattress, so that the upper rim of the bed pan lies in a convenient position for use by the patient when the bed pan is in position in the mattress.

In making use of the invention, constructed and arranged in the manner described above, the sections 18 and 20 of the mattress may be moved apart to open the mattress, so that the sections are supported in the same level as the rest of the mattress and the bed pan is inserted between the sections to hold the sections in open position. With the equipment thus adjusted, the patient will be supported in a comfortable position, and the patient need not be moved in order to properly place the bed pan in position for use.

It will thus be seen that the invention provides an adjustable mattress and supporting means therefor for use with hospital beds, which is of simple construction and economical manufacture, and which greatly simplifies the care of patients whose condition makes it dangerous or inconvenient to move.

The invention has been disclosed herein in connection with certain specific embodiments of the same, but it will be understood that these are intended by way of illustration only, and that numerous modifications can be made in the construction and arrangement of the various parts within the spirit of the invention and the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. The combination with bed springs having a generally rectangular frame and a mattress supported on the frame and having a main body portion of rectangular configuration extending from a point mediate the ends of the mattress toward one end thereof and formed with two laterally adjacent sections extending from said point toward the other end of the mattress and having adjacent sides which are separated along the longitudinal center line of the mattress to permit the sections to be spread apart angularly of extensible supports slidably mounted on the frame for movement into and out of positions extending laterally beyond the sides of the frame for engagement with the sections mediate the ends of the sections to support the sections when the sections are spread apart.

2. The combination with bed springs having a generally rectangular frame and a mattress supported on the frame and having a main body portion of rectangular configuration extending from a point mediate the ends of the mattress toward one end thereof and formed with two laterally adjacent sections extending from said point toward the other end of the mattress and having adjacent sides which are separated along the longitudinal center line of the mattress to permit the sections to be spread apart angularly of means for supporting the sections when the sections are spread apart comprising a trackway carried by and extending laterally of the frame beneath the sections and extensible means slidably mounted on the trackway for movement into and out of positions extending laterally beyond the sides of the frame.

References Cited in the file of this patent

UNITED STATES PATENTS

307,717	Gunold	Nov. 4, 1884
759,882	Hall	May 17, 1904
1,700,535	Kaufmann	Jan. 29, 1929
2,295,006	Philips	Sept. 8, 1942
2,644,957	Shudde	July 14, 1953

FOREIGN PATENTS

186,225	Germany	June 12, 1907
288,612	Germany	Nov. 9, 1915
452,575	Great Britain	Aug. 26, 1936