

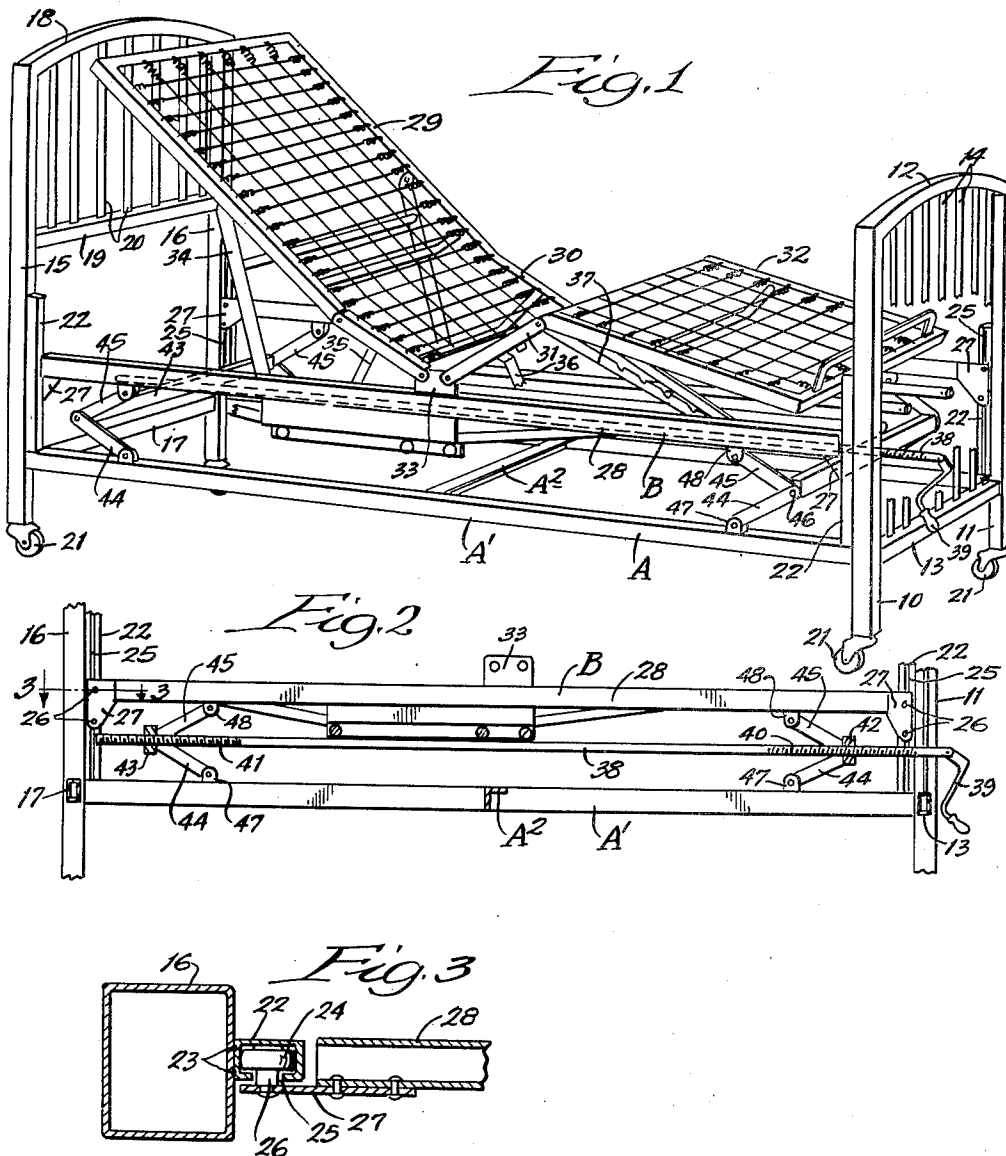
Sept. 15, 1953

H. M. BERNER

2,651,785

VERTICALLY ADJUSTABLE SEGMENTAL BED

Filed June 10, 1948



Inventor.
Harry M. Berner.
By *Danah, Omer, Brink & Spangenberg*,
Attorneys.

UNITED STATES PATENT OFFICE

2,651,785

VERTICALLY ADJUSTABLE SEGMENTAL BED

Harry M. Berner, Chicago, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill., a corporation of Illinois

Application June 10, 1948, Serial No. 32,107

2 Claims. (Cl. 5—63)

1

This invention relates to a hospital bed. The invention is particularly useful in connection with a hospital bed having a spring section which may be raised or lowered and also a spring section formed with segmental panels which may be adjusted angularly with respect to each other.

An object of the present invention is to provide a hospital bed structure in which the frame, including the legs, and the head and foot portions are stationary, means being provided for raising and lowering the spring section of the bed. A further object is to provide a hospital bed with a spring section formed of segmental parts which may be adjusted to form a spring bed contour of irregular shape, the entire spring section being readily moved to raised or lowered positions without changing the contour formed by the segmental spring sections. Yet another object is to provide a hospital bed with a vertically guided spring frame and also with a device operable through the use of a single handle or other means for raising and lowering the spring frame. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a single embodiment, by the accompanying drawing, in which—

Fig. 1 is a broken perspective view of apparatus embodying my invention; Fig. 2, a broken longitudinal sectional view showing the mechanism for raising and lowering the spring frame; and Fig. 3, an enlarged detailed sectional view, the section being taken as indicated at line 3 of Fig. 2.

In the illustration given in Figs. 1 to 3, inclusive, A designates a hospital bed frame and B, a spring frame vertically guided upon the bed frame.

The bed frame A may be of any suitable construction and may be formed as the usual bed frame is formed. In the illustration given, the frame comprises legs 10 and 11 having a cross-piece 12 and a bottom rail 13. Slats 14 connect the top rail 12 and the lower rail 13. The structure just described forms the foot panel of the bed frame.

Similarly, the head panel or frame of the bed is formed by the posts 15 and 16 connected by a bottom rail 17 and a top rail 18. An intermediate rail 19 is also provided for connecting posts 15 and 16. Slats or bars 20 connect the rails 18 and 19 in a well known manner. The bed may be provided with the usual casters 21, if desired.

Any suitable means for guiding the spring frame B upon the bed frame A may be provided. In the illustration given, each of the bed posts or legs is provided with a track member 22. As shown more clearly in Fig. 3, the member 22 is welded to the bed post at 23 and provides a track

2

closed on three sides for receiving the roller 24. The member 22 is apertured at 25 to receive the shaft 26 upon which the roller 24 is mounted. The shaft 26 has a reduced end extending through the plate 27, the outer end of the shaft being riveted to secure it firmly upon the plate. The other end of the plate is secured by rivets or other means to each of the beams 28 of frame B. It will be understood that each beam 28 is provided at each end with a plate 27 carrying a shaft 26 upon which is mounted a roller 24 and that the roller is housed within the guide 22 carried by the post adjacent thereto.

The head and foot sections of the bed frame are connected by longitudinal beams A' and preferably the beams A' are connected near their center by a transverse angle iron member A2.

Upon the beams 28 of frame B are mounted a plurality of bed sections indicated by the numerals 29, 30, 31 and 32. These sections are provided with frames which are pivotally connected and the innermost frames 30 and 31 are pivotally connected on each side to a plate 33 carried by each beam 28. The spring frames 29, 30, 31 and 32 are adjustably supported with respect to each other by a series of brace arms 34, 35, 36 and 37. The segmental bed structure just described, together with the brace arms, is an old structure well known in the art and the details thereof need not be set out herein. In such structure, the brace members are moved so as to support the spring frame sections in desired angular positions, as illustrated in Fig. 1 and the operation thereof is well known.

From the foregoing description, it will be observed that the spring frame B may be moved, through the use of its slidably mounted beams 28, in a vertical plane with respect to the bed frame A so as to raise the segmental spring sections without disturbing any arrangement of the sections. Any suitable means for raising and lowering the beams 28 may be provided. In the specific illustration given, I provide an actuating rod 38 equipped at one end with a handle 39. The rod 38 is provided with threaded portions 40 and 41 upon which are mounted beams 42 and 43. The beams 42 and 43 are provided each with a threaded opening receiving the threaded section of rod 38 upon which it is mounted and the threads are effective for moving the beams 42 and 43 simultaneously toward each other or simultaneously away from each other.

Secured to each end of the cross-beams 42 and 43 are the link members 44 and 45. The link members are pivotally connected by pin 46 to the end of the beam. The outer end of each link 44 is pivotally connected to an ear 47 carried by the frame beams A'. The outer end of each link 45 is connected to a depending ear 48 carried by a beam 28 of frame B. Thus, when

3

the rod 38 is rotated and the threaded beams 42 and 43 are moved toward each other, the spring frame B is lifted and when the rod 38 is rotated in the opposite direction the frame B is lowered. Any suitable type of handle may be employed which may be operated conveniently when drawn forwardly and, which, when released will preferably fall to a position within the bed frame so that it is out of the way. Instead of using a handle, it will be understood that power means may be provided for raising and lowering the spring frame.

In the operation of the structure, the spring frame A may be raised to any desired elevation at which the patient may be conveniently treated by the physician or nurse and thereafter, the bed frame may be lowered to a height just a little above the floor at which the patient can easily move out of bed without danger of injury. To effect the raising and lowering of the spring frame, it is merely necessary for the nurse to rotate the handle 39. As the beams 42 and 43 move toward each other, the spring frame B is raised while, when the rod 38 is rotated to move the beams 42 and 43 away from each other, the frame B is lowered. By the use of the threaded rod and nut structure, it will be understood that the spring frame B is thus automatically held in any position to which it may be moved and special locking means need not be employed. Further, the vertical movement is accomplished through the use of a single rotating shaft. Furthermore, the screw-threaded shaft for effecting the raising and lowering of the frame is mounted centrally with respect to the bed frame and thus in a non-accessible position with respect to the patient.

The segmental spring frame which permits the spring sections to be angularly adjusted with respect to each other, is operated independently of the raising and lowering mechanism described and may retain any selected angular position during the raising and lowering of the frame B. Furthermore, the structure shown permits the ready assembly upon the bed frame of different types of spring sections as desired.

While in the foregoing specification, I have set forth a specific embodiment of the invention in considerable detail, it will be understood that such details of structure may be modified widely by those skilled in the art without departing from the spirit of my invention.

I claim:

1. In a hospital bed structure, a bed frame having corner posts, a spring frame comprising two longitudinally-extending beams, each of said beams being mounted for vertical movement above said bed frame and in vertical alignment with the sides thereof, segmental spring sections adjustably mounted upon said spring frame, means for supporting said spring sections upon said spring frame in angular positions, means for raising and lowering said spring frame independently of the angular position of said spring sections comprising a floating cross bar extending transversely of the spring frame and therebelow at each end thereof and provided with a threaded opening, a link arm pivotally connected to each end of each of said cross bars and having its upper end pivotally connected to said spring frame, a second link arm pivotally connected to each end of each cross bar and having its other end pivotally connected to said bed frame, and a handle-equipped rotatable rod having threaded portions engaging the threaded

4

openings of said cross bars, whereby said rod may be rotated to selectively raise or lower said cross bars and the spring frame linked thereto, and means for guiding the spring frame for vertical movement upon said bed frame comprising a vertical track member secured to the inner side of each corner post, said track members having side walls defining a substantially-enclosed track adapted to receive a rotatably-mounted roller, one of the side walls having a longitudinally-extending slot therein adapted to receive a roller shaft, and a plate at each end of the spring frame beams and rigidly secured thereto, each of said plates having a roller shaft secured thereto provided with a rotatably-mounted roller, the roller being received within the track provided by the side walls of said vertical track members, whereby said spring frame is guided for vertical movement upon said bed frame while at the same time said track members restrain the spring frame against both lateral and longitudinal movement with respect to said bed frame.

2. In a hospital bed structure, a bed frame having corner posts, a spring frame mounted for vertical movement upon said bed frame, adjustable segmental spring sections mounted upon said spring frame, means for raising and lowering said spring frame independently of the adjustment of said segmental spring sections comprising a floating transverse cross bar adjacent each end of said spring frame, each of said cross bars being mounted below said spring frame and having a threaded opening there-through, a link arm pivotally connected at one end to each end of each cross bar and being pivotally connected at its other end to said spring frame, a second link arm pivotally connected at one end to each end of each cross bar and being pivotally connected at its other end to said bed frame, a handle-equipped rod having threaded portions rotatably engaging the threaded openings of said cross bars, said threads being disposed so that said rod is selectively rotatable to raise and lower said spring frame, and means for guiding said spring frame for vertical movement upon said bed frame, said means for guiding the spring frame comprising a vertical track member rigidly secured to each of said corner posts, said track members having side walls defining a substantially enclosed track for receiving a rotatably-mounted roller, one side wall of each track member having a longitudinally-extending slot therein adapted to receive a roller shaft, and a roller shaft rigidly mounted at each corner of said spring frame in alignment with said slots and equipped with a rotatably-mounted roller received within the adjacent track member.

HARRY M. BERNER.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
346,246	Uhde	July 27, 1886
796,791	Anderson	Aug. 8, 1905
824,057	Armstrong et al.	June 19, 1906
836,397	McGough	Nov. 20, 1906
974,495	Jones	Nov. 1, 1910
1,058,076	Loweree	Apr. 8, 1913
1,977,944	Haskett	Oct. 23, 1934
2,112,702	Loibl	Mar. 29, 1938
2,393,433	Caldwell et al.	Dec. 1, 1942
2,349,701	Buttkofer	May 23, 1944