Aug. 11, 1936. G. W. BROOKS 2,050,269

APPARATUS FOR HOSPITAL BEDS

Filed Sept. 21, 1933 3 Sheets-Sheet 1

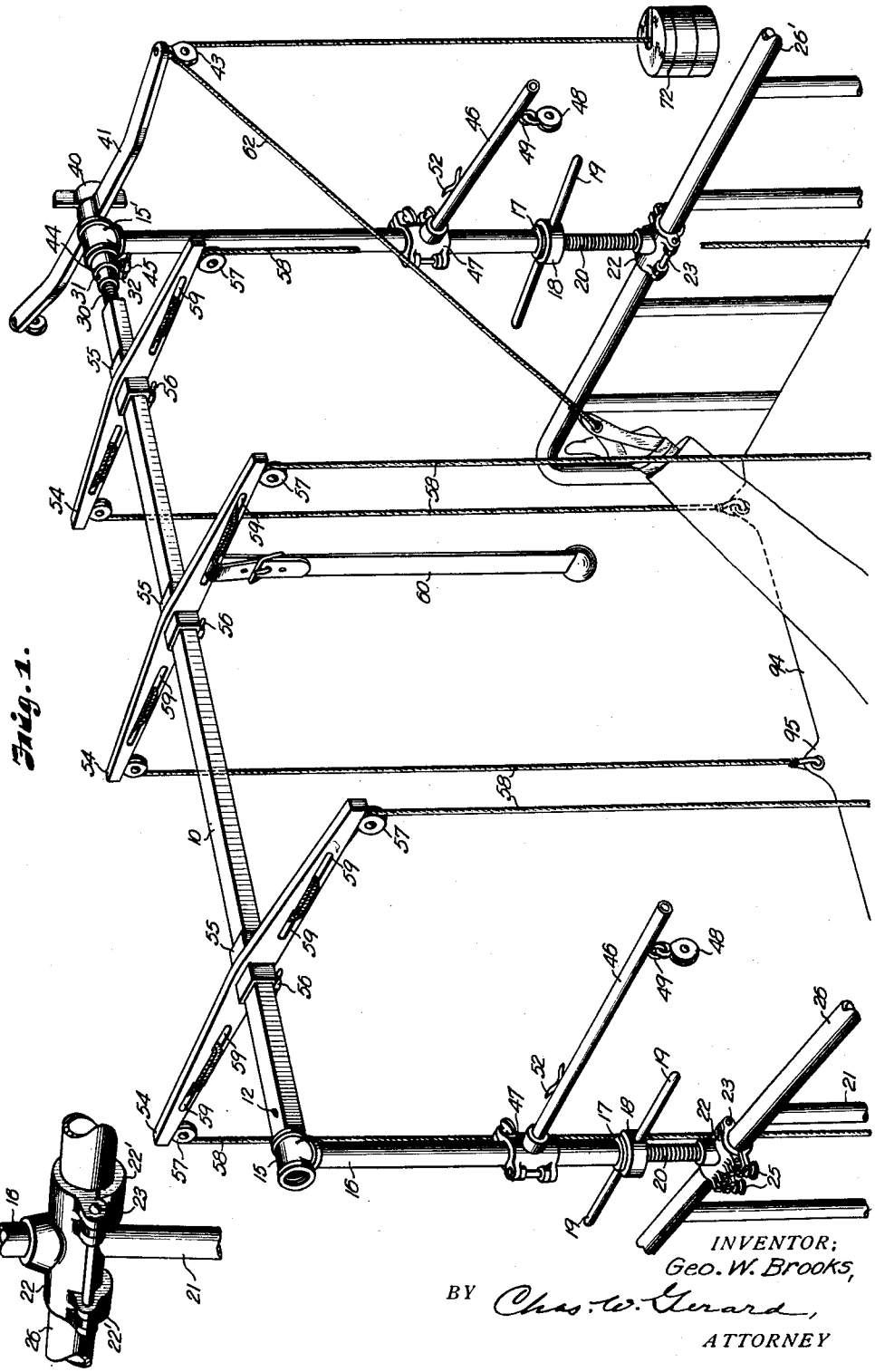


Fig. 1.

Fig. 8.

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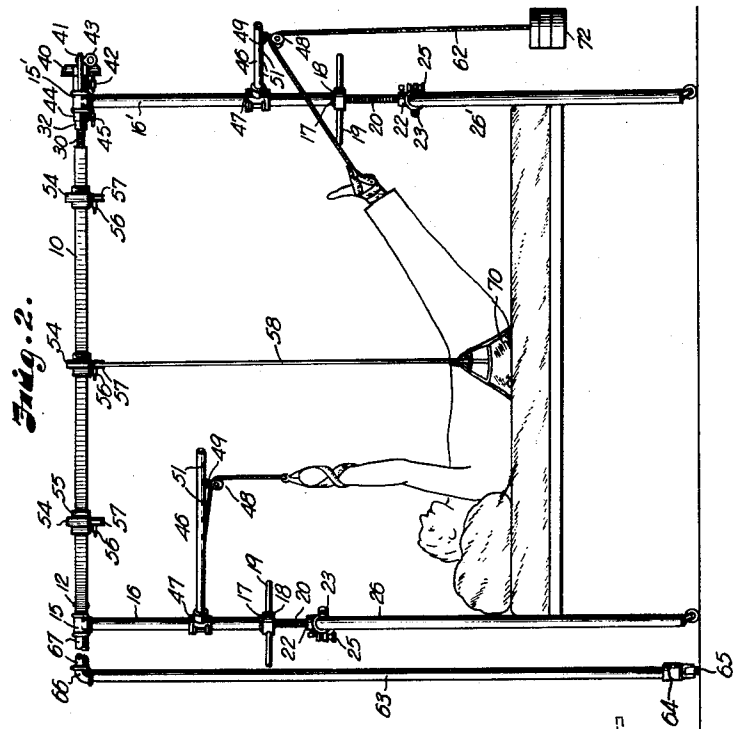


Fig. 2.

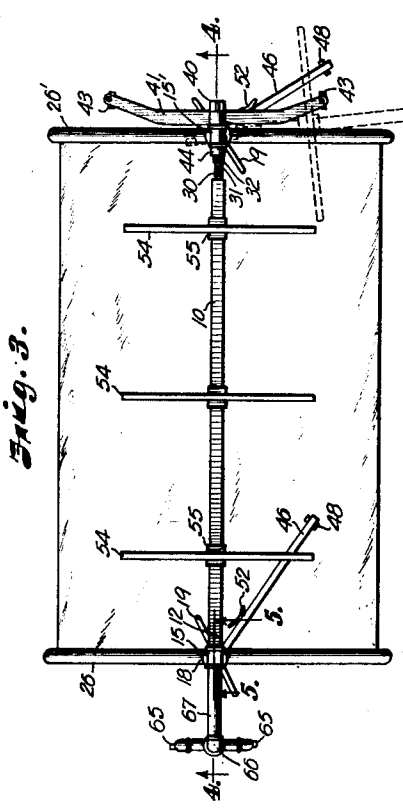


Fig. 3.

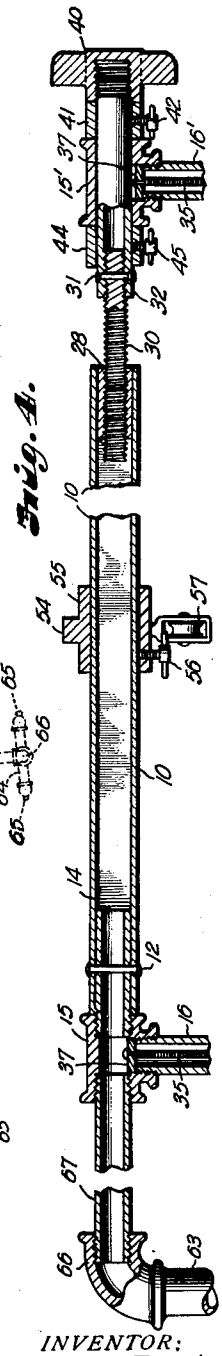


Fig. 4.

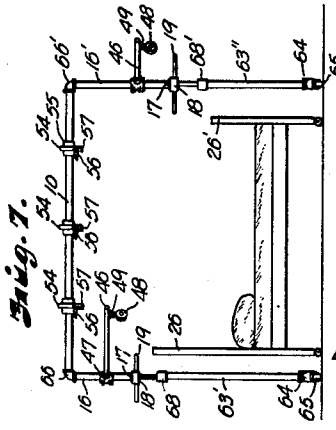


Fig. 7.

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Fig. 5.

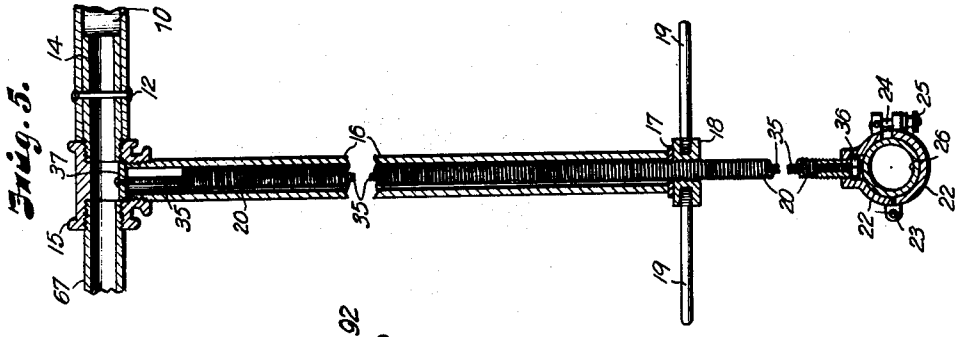
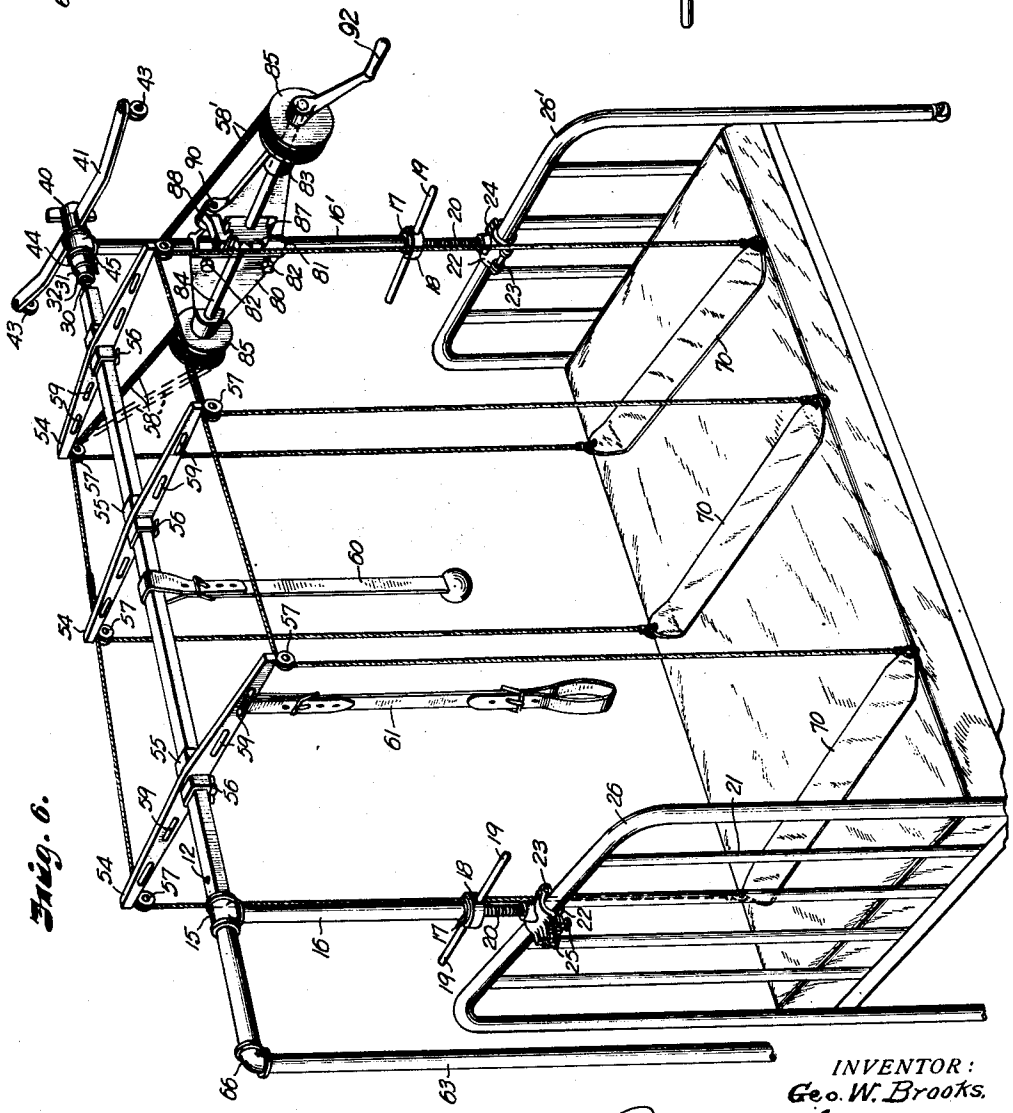


Fig. 6.



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UNITED STATES PATENT OFFICE

2,050,269

APPARATUS FOR HOSPITAL BEDS

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Application September 21, 1933, Serial No. 690,375

7 Claims. (Cl. 5—84)

The present invention relates to apparatus or appliances for use with hospital or invalid beds, and aims to provide a novel and efficient apparatus which may be conveniently positioned in proper relation to such beds for the purpose of enabling the invalid to be supported in various positions, or for facilitating other operations which may become necessary in the treatment of the patient.

Accordingly, I have devised an apparatus which may be conveniently attached to the frame of the bed, and adapted to form a support for various appliances in suitable overhead relation to the bed for facilitating the proper handling of the patient or enabling him to make such use of the appliances as may be desired. Where the apparatus is designed for attachment to the head and foot frames of the bed, suitable provision is also made for convenient longitudinal adjustment of the apparatus for properly accommodating the length of the bed.

It is also sought to provide apparatus of this character which may be either attached to the ends of the bed, or supported at either or both ends independently of the bed, whereby the apparatus may be readily moved into and out of overhead relation to the bed, as by a bodily movement thereof or by swinging the apparatus pivotally about one of its connections with the bed.

A further feature of the improved construction resides in the provision of a means of supporting the patient, together with connections whereby the patient may be either lifted vertically, or turned or rolled from one side to the other upon the bed, as for facilitating the change of bed linen, or the like.

With these various principal objects in view, as well as minor objects as will appear in the course of the detailed specification, the invention will now be described by reference to the accompanying drawings, illustrating a suitable form of embodiment of the improved details of construction, after which those features and combinations deemed to be novel will be particularly set forth and claimed.

Figure 1 is a perspective view showing a portion of a bed frame having the improved apparatus applied thereto;

Figure 2 is a side elevation on a smaller scale, and showing also a modified form of supporting standard;

Figure 3 is a plan view of the same with broken lines representing a part of the apparatus in shifted position;

Figure 4 is an enlarged sectional view, representing a section taken on the line 4—4 of Figure 3;

Figure 5 is a similar sectional view, representing a section taken on the line 5—5 of Figure 3;

Figure 6 is a perspective view illustrating a bed equipped with a modified form of the apparatus;

Figure 7 is a side elevation on a reduced scale, showing the apparatus with standards at both ends for supporting the equipment without attachment to the bed frame; and

Figure 8 is a detail illustrating a modified form of bracket for attachment to the bed frame.

Referring now to the drawings in detail, the apparatus is illustrated as comprising a main longitudinal frame member 10 for the mounting of various appurtenances in overhead relation to the bed and adapted to be supported for this purpose by upright frame members at the head and foot of the bed, respectively. The frame member 10 is shown as a square tubing, the head end of which is secured by a pin 12 to a short sleeve 14 which is threaded into a T 15 at the upper end of a tubular post 16. The lower end of this post rests upon a washer 17 carried by an adjusting nut 18 having suitable operating handles 19 for turning the nut upon a tubular screw 20 which projects up within the post 16 and has its lower end fitted to the upper section of a split clamping bracket. This bracket comprises the hinged sections 22 connected by a pivot pin 23 and provided with swivel bolts 24 and nuts 25 whereby the bracket may be conveniently clamped to the top of the head frame 26 of the bed.

The opposite or foot end of the frame member 10 is fitted with an internal sleeve 28 threaded for a screw 30 secured by a pin 31 to a short section of tubing 32 which is mounted slidingly in a T 15' at the upper end of the tubular post 16' which is of a suitable length for supporting the same upon the top of the foot frame 26' of the bed by means of a screw 20 and similar bracket structure, as in the case of the post 16.

Each of the bracket devices 22 is provided with a supporting spring 35, the lower end of which carries a nut 36 or the like for retaining engagement with the upper bracket section, said spring extending up through the screw 20 and having its upper end provided with a retaining washer 37 for engagement with the upper end of the post 16 or 16', as shown in Figure 5. By this means the bracket structures are prevented from becoming casually dropped during the assembly of the parts of the apparatus in place, or in the adjustment of the same, thus guarding against any of the parts falling on the

floor, or accidentally upon the bed, or the patient himself in case the bed is occupied.

The outer end of the tubing 32 is fitted with a suitable hand adjusting nut 40 adapted to shoulder against either the T 15' or an interposed cross member 41 clamped by a set screw 42 to said tubing and carrying a pair of pulleys 43. Operation of the nut 40 of course serves to accommodate the posts 16 and 16' to the particular length of the bed, said nut cooperating with the collar 44 and its set screw 45 at the front of the T 15' for securing this adjustment.

Each of the posts 16 and 16' may be provided with a horizontal arm 46 attached to the post by means of an adjustable split clamping bracket comprised of hinged clamping sections 47 (similar in all respects to the bracket 22). Each of the arms 46 carries a pulley 48 suspended from a screw eye 49 adapted to be secured in any one of a series of openings 51 in said arms (see Figure 2), which are also provided with rope or cable securing cleats 52.

The longitudinal member 10 also serves as a support for a series of cross arms 54 having the square sleeve portions 55 adapted to be adjustably secured by set screws 56 at any desired position along the member 10. The ends of the cross arms are provided with pulleys 57 for cables 58 and also with slot openings 59 for the support of straps such as 60 and 61, as well as for reeving of the cables 58 when desired, as represented in Figure 1.

Provision may be made for the support of the apparatus at the head of the bed independently of the bed frame, as by means of a standard 63 supported on a base 64 provided with rollers 65, the top of said standard having an elbow 66 attached by a sleeve 67 to the T 15 at the top of the upright 16, as illustrated in Figures 2–4. Or, if preferred, a shorter standard 63' may be provided (Fig. 7), having a collar 68 for accommodating the complete adjustable post structure 16—20 between said collar and the elbow 66, as represented in Figure 7, which view illustrates similar provision for the support of the other end of the apparatus independently of the foot of the bed by means of a still shorter standard 63'', collar 68' and upper elbow 66', whereby the complete apparatus is supported altogether independently of the bed.

This allows the apparatus to be rolled to and from the bed, as is preferable under some conditions, and moreover with only one end of the apparatus thus supported independently (as with the head end as shown in Figures 2 and 3), the apparatus may be swung upon its roller support, with the foot post as a pivot, into a lateral position as illustrated by the broken lines in Figure 3, for allowing the bed linen to be changed, or the carrying out of other operations as desired.

In the use of the apparatus as above described, it will be understood that the apparatus may be supported either altogether independently of the bed, or by attachment of either or both ends to the bed, and in the latter cases the proper vertical adjustment of the supporting posts 16 may be quickly and conveniently made by means of the nuts 18 for raising or lowering the ends of the longitudinal member 10, in addition to which the necessary longitudinal adjustment is also readily made by turning of the nut 40 and clamping the set collar 44 as already indicated. Some of the various functions designed to be provided for by the parts of the apparatus are indicated by the drawings, such as the support of the patient by a pelvic band 70 attached to cables 58 suspended from the pulleys 57 carried by the cross arms 54 (Figure 2); the application of a tractor or tensioning action to one of the patient's limbs by a cable 62 attached to the foot and operating over a pulley 48 carried by one of the arms 46, or one of the pulleys 43 carried by the arm 41, the pulley in either case being so positioned as to dangle the tensioning weights 72 entirely outside or beyond the foot of the bed, as represented in Figures 1 and 2; the attachment of a strap 60 or 61 in convenient position for lifting purposes; or the use of a cable for the support of the patient's arm in any predetermined position by means of the arm 46 and its pulley 48, said arm 46 and pulley both being readily adjusted in an obvious manner. It may be further noted that the patient may be supported by a plurality of bands suspended from the several cross arms 54, so that if the apparatus is supported at only one end by one of the roller standards, as 63, the patient may be lifted and swung entirely off the bed by a movement of the apparatus as represented by the broken lines in Figure 3.

Still another operating feature is illustrated by the construction shown in Figure 6 of the drawings. Upon the post 16' is mounted a bracket member 80 having a sleeve portion 81 secured to the post by set screws 82 and also formed with end bearings 83 for journaling a shaft 84 carrying pulleys 85 for receiving the ends of the cables 58'. To the intermediate portion of the shaft 84 is secured a ratchet wheel 87 engaged by a pawl 88 pivoted at 90 to the top margin of the bracket member 80, and one end of the shaft 84 is provided with a suitable handle 92 for the simultaneous rotation of said pulleys 85. The upper ends of the cables 58 already referred to may be connected by suitable splicing to the cables 58', and their lower ends attached to a series of the bands 70, or to the sides of a sheet 94 on the bed, having suitable eyelets 95 for convenient attachment to the cables, whereupon the operation of the pulleys will serve to produce a uniform lifting movement upon all the cables for raising the patient up off the bed. Or, as an important alternative operation, the cables may be wound in opposite directions on the pulleys 85, as represented by the broken lines in Figure 6 with reference to one of said pulleys, whereby the patient may be comfortably moved by a turning or rolling movement to one side of the bed, as a convenient method of handling the invalid, as in changing the sheets of the bed.

A modified form of attachment for connection with the bed frame is illustrated in Figure 8, where the lower portion of the bracket is formed in two separately hinged sections 22' for the purpose of clearing a spindle or other portion 21 of the bed, where such portion would otherwise interfere with the proper positioning of the post 16.

It will thus be apparent that a very efficient, practical and useful apparatus is provided for the various purposes for which such equipment may be employed for invalids confined to hospital beds, and that the same may be adjusted and operated with great facility and a maximum degree of comfort to the patient. I am aware that apparatus of the character described is not broadly new in equipment of this type, but the various improvements and combinations defined in the following claims are believed to be new, and I accordingly desire to be understood as reserving the right to make such changes or mod-

ifications as may fairly fall within the spirit and scope thereof.

What I claim is:

1. Apparatus of the character described for hospital beds, comprising a longitudinal member for carrying appliances in overhead relation to the bed, post structures for supporting the ends of said member upon the head and foot frames of the bed, respectively, a T secured to the upper end of one of said post structures, a tube section slidingly mounted in said T and having one end thereof provided with a screw in threaded engagement with the adjacent end of said longitudinal member for effecting approximate length adjustment of the latter with reference to the post structures, and a hand adjusting nut on the other end of said tube section for cooperating with the corresponding end of said T in effecting and securing positive final length adjustment of the longitudinal member.

2. Apparatus of the character described for hospital beds, comprising a longitudinal member for carrying appliances in overhead relation to the bed, post structures for supporting the ends of said member upon the head and foot frames of the bed, respectively, a T carried by the upper end of one of said post structures, a tube section slidingly mounted in said T and having one end thereof adjustably connected with the adjacent end of said longitudinal member for effecting approximate length adjustment of the latter with reference to the post structures, a hand adjusting nut on the other end of said tube section for cooperating with the corresponding end of said T in effecting positive final length adjustment of the longitudinal member, and set collars carried by said tube section in engagement with the opposite ends of the T for securing the parts in said adjusted relation.

3. Apparatus of the character described for hospital beds, comprising a supporting post structure provided with a clamping bracket for attachment to the bed frame, and a spring device contained within said post structure for yieldingly suspending said bracket from the post structure when detached from the bed.

4. Apparatus of the character described for hospital beds, comprising a supporting post structure provided with means for vertically adjusting the same, a bracket member carried by said post structure for attachment to the bed frame, and spring means housed within said post structure for yieldingly retaining the parts in connected relation while permitting vertical adjustment of said post structure.

5. In apparatus of the character described for hospital beds, a supporting post structure comprising a tubing and a tubular screw telescoping within said tubing and provided with an adjusting nut abutting the end of the tubing, and a clamping bracket secured to said screw for attachment to the bed frame and provided with a yielding retaining connection with the upper end of said tubing.

6. Apparatus of the character described for hospital beds, comprising a longitudinal member carrying cross-arms in overhead relation to the bed, post structures for carrying said member in overhead position, pulleys carried by said cross-arms and provided with cables extending to opposite sides of the bed, and cable-operating means carried by one of said post structures and operative to take up only those cables at one side of the bed while paying out those cables at the opposite side thereof.

7. Apparatus of the character described for hospital beds, comprising a longitudinal member carrying cross-arms in overhead relation to the bed, post structures for carrying said member in overhead position, pulleys carried by said cross-arms and provided with cables extending to opposite sides of the bed, and cable-operating means including pulleys engaging said cables in oppositely-wound relation for taking up only those cables at one side of the bed while paying out those cables extending to the opposite side of the bed.

GEORGE W. BROOKS.