May 27, 1930. L. R. DOUGHERTY 1,760,303

ATTACHMENT FOR BEDS

Filed March 17, 1928 2 Sheets-Sheet 1

Fig. 1.

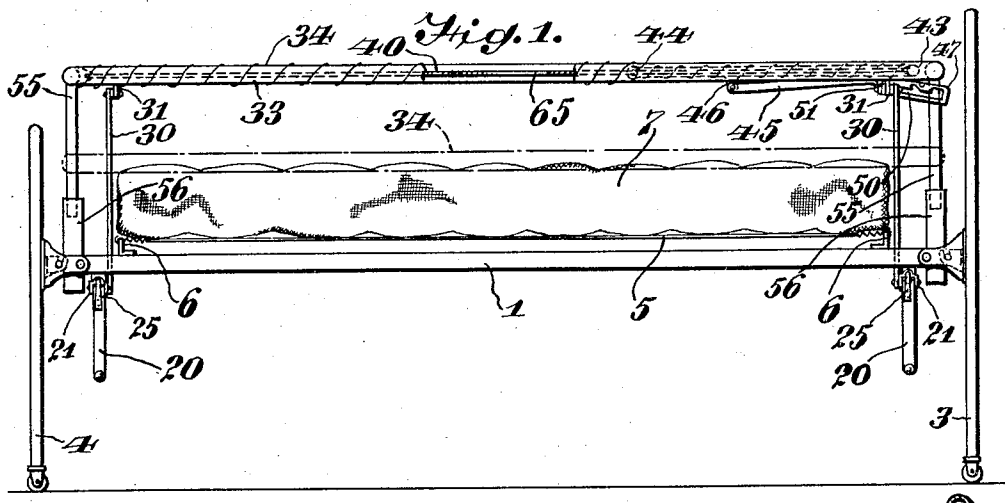


Fig. 2.

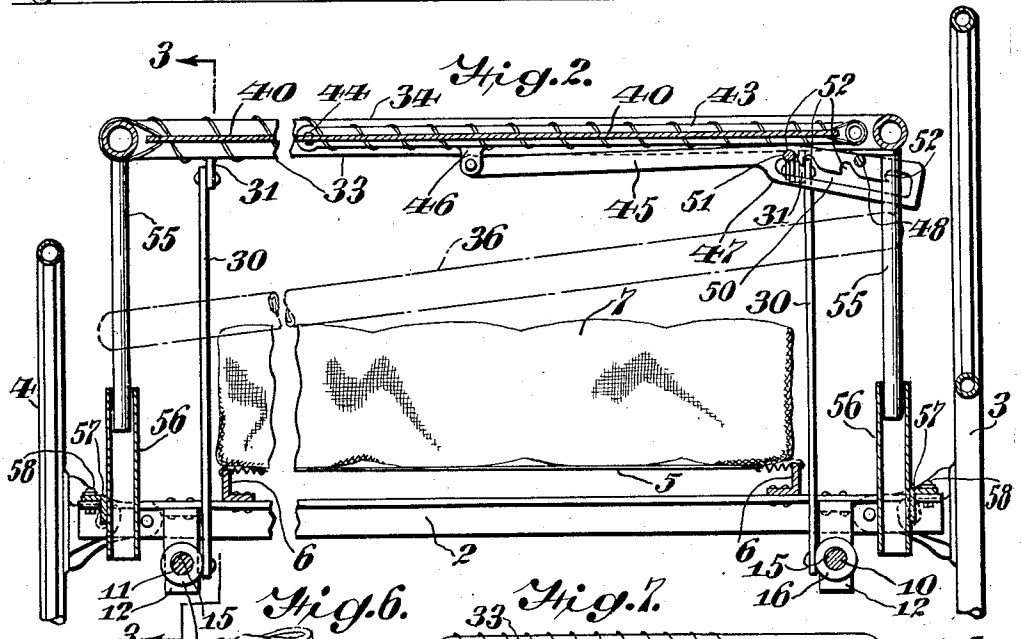


Fig. 6.

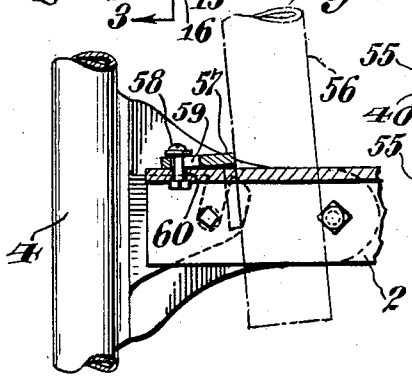
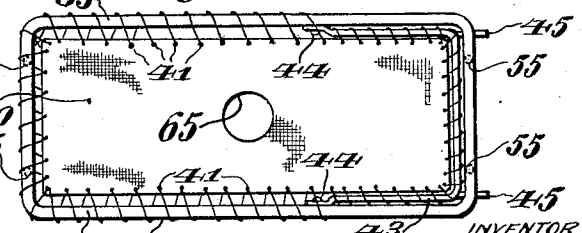


Fig. 7.



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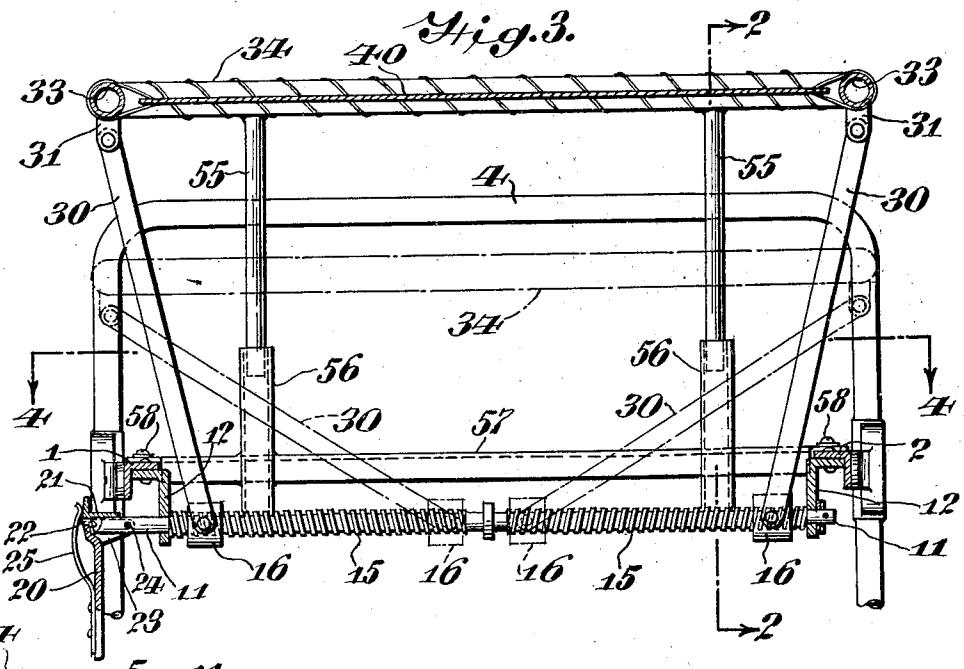
Attorney

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ATTACHMENT FOR BEDS

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Fig. 3.



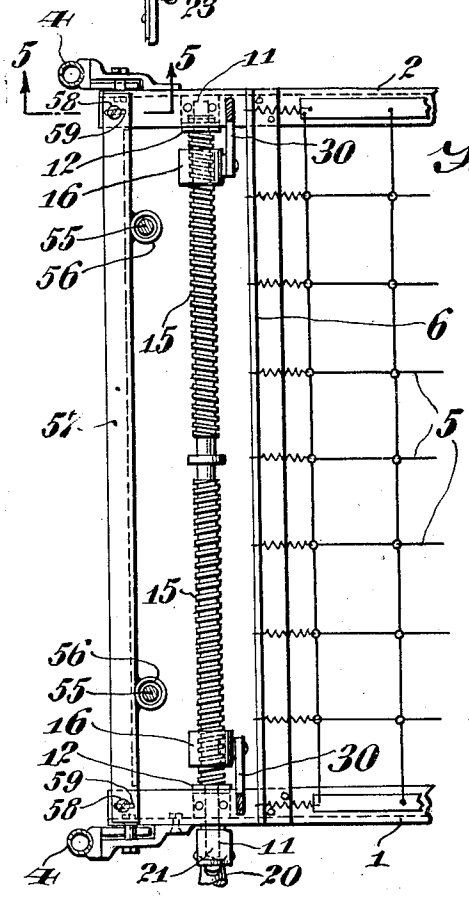
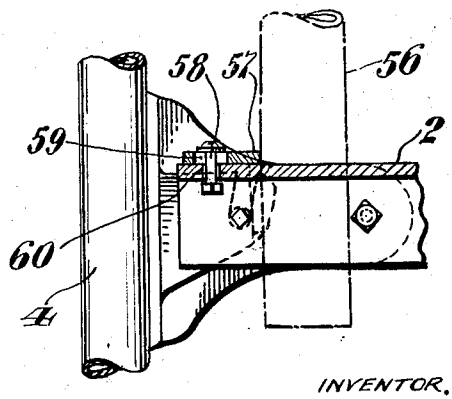


Fig. 4.

Fig. 5.



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Patented May 27, 1930 1,760,303

UNITED STATES PATENT OFFICE

LAURENCE R. DOUGHERTY, OF PENFIELD, PENNSYLVANIA, ASSIGNOR TO H. D. DOUGHERTY & COMPANY, INCORPORATED, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

ATTACHMENT FOR BEDS

Application filed March 17, 1928. Serial No. 262,560.

My invention relates to hospital beds broadly but more especially to beds in which means is provided for lifting or elevating the patient above the mattress in order to change the bed linen and for other purposes.

In hospital beds of this character means is provided which may rest upon and be interposed between the mattress and the patient and which is adapted to be elevated to lift or elevate the patient to a position above the bed for the purpose above stated and for other purposes which will be set forth more fully hereinafter.

The general object of the invention is to provide an improved and novel construction of means for moving and supporting a patient in an elevated position above the mattress of a bed.

A more specific object of the invention is to provide mechanism of the character indicated including means whereby the opposite end portions of the elevating means may be elevated to different positions or heights.

It also is an object of the invention to provide mechanism of the character indicated including means of novel construction whereby one end of the portion of the mechanism upon which the patient is supported may be adjusted into angular position with respect to the remaining portion thereof for the purpose of supporting a patient in a sitting posture.

Without attempting to point out here more fully the objects and advantages of the invention I shall proceed to describe the same in detail and in the further description thereof will point out other objects and advantages incident to the invention. Moreover certain objects of the invention which may not be mentioned specifically will be apparent from the description and the drawings.

In order that the invention may be readily understood and its many practical advantages fully appreciated reference should be had to the accompanying drawings wherein I have illustrated that embodiment thereof which is at present preferred by me. However, it is to be understood that the invention is susceptible of embodiment in other forms of construction than that shown and that changes in the details of construction may be made within the scope of the claims without departing from the invention or the principle thereof.

In the drawings:

Fig. 1 is a view in side elevation of a bed provided with mechanism embodying my invention, a portion of the latter being shown in section;

Fig. 2 is a longitudinal sectional view taken on the line 2—2 of Fig. 3, an intermediate portion being broken away and removed and other portions shown enlarged;

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a view in horizontal section of an end portion of the bed and of the mechanism associated therewith embodying my invention, the said view being taken on the line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a similar view showing certain of the parts in different positions; and

Fig. 7 is a top plan view of reduced size of the mechanism or means embodying the invention.

In the drawings I have shown a bed of any known construction having side rails or bars 1 and 2 supported at their opposite ends upon the legs of the head and foot frames 3 and 4. A mattress supporting spring 5 of any known construction is supported at its opposite ends upon angle bars 6 which are supported upon their opposite ends upon the side rails 1 and 2 of the bed. The mattress is shown at 7 supported upon the spring 5.

I shall not describe the bed-stead, the mattress and the mattress supporting spring in any further detail because those parts may be constructed in any way which may be known and desired.

I shall now proceed to a description of that portion of the structure to which my invention specifically relates and as the description unfolds the operation and advantages of the mechanism will be more clearly understood and more fully appreciated.

In the embodiment of the invention as illustrated I have provided rods or shafts 10

and 11 supported at their opposite ends in bearing openings provided in brackets 12 depending from the opposite side rails of the bedstead as shown. These rods or shafts 10 and 11 are each provided with right and left helixes 15 formed upon the portions thereof upon opposite sides of the middle or medial portions thereof. The portions of the said rods or shafts which are mounted within the openings or bearings in the brackets 12 are cylindrical so that rotation thereof may be effected without any tendency to longitudinal movement in either direction. As a matter of fact, longitudinal movement in either direction is prevented by the presence of the outer ends of the helixes 15 which are in adjoining relation to the brackets 12 as illustrated, for instance, in Figs. 3 and 4. Nuts 16 are mounted upon the helixes 15. Upon rotation of either of the said rods 10 or 11 the nuts 16 thereon, which are held against rotation as hereinafter will be described, are adjusted simultaneously toward or from each other, depending upon the direction of rotation. For example, if it be assumed that the rod 11 shown in Fig. 3 be rotated in a clockwise direction by means of the handle 20 secured upon one end thereof the nuts 16 will be adjusted simultaneously away from each other or toward the opposite outer ends of the said rod. If the said rods should be rotated in the opposite or in an anti-clockwise direction the said nuts would be moved simultaneously inwardly toward each other and toward the middle part of the said rod. The handle 20, to which reference has been made, occupies, when in use to effect rotation of a rod 10 or 11, a substantially vertical position as shown in Fig. 3 and is retained in said position by means of the holding member 21 provided with ears 22 upon opposite sides thereof which are pivoted to ears 23 which latter are pivoted at 24 to a rod or shaft 10 or 11 at a point in adjoining relation to an end thereof. A spring 25 secured to the handle 20 contacts with the outer end of the holding member 21 to hold it in a position substantially at right angles to the length of the handle 20. Its operation to hold the handle 20 in a vertical position as shown in Fig. 3 is obvious. When the handle is turned toward the right, having reference to Fig. 3, the holding member 21 contacts yieldingly with the end of the rod or shaft 10 or 11, as the case may be, and operates to hold the handle 20 in inwardly adjusted position underneath the structure.

Links 30 are pivotally connected at their lower ends to the nuts 16 and at their upper ends to lugs or projections 31 which extend downwardly from the side members 33 of a frame 34. Preferably the side and end members of the frame 34 are tubular for the sake of lightness of construction. The depending lugs or projections 31 are located in adjoining relation to the opposite ends of the side members 33.

The connection of the lower ends of the links 30 to the nuts 16 prevents the latter from rotating when the rods or shafts 10 and 11 are rotated for the purpose of adjusting the said nuts.

It will be apparent that upon rotation of the rods or shafts 10 and 11 to adjust the nuts 16 thereon to move the lower ends of the links 30 in or out vertical adjustment of the frame 34 above the mattress 7 is effected. It will be apparent that either the rod or shaft 10 or 11 may be adjusted independently of the other, and it also will be apparent that if one only of the said rods be adjusted the frame 34 will be adjusted to occupy a position of angularity with respect to a horizontal plane, as indicated by the broken lines 36 in Fig. 2 of the drawings.

A sheet 40 of suitable fabric is supported inside of the frame 34. The greater portion of the said sheet is connected directly to the frame 34 and for that purpose a suitable cord or string is laced through openings 41 in adjoining relation to the edges of the sides and ends thereof and around the side members 33 and the end member in adjoining relation to the foot portion or end of the bedstead. The remaining portion of the sheet 40 is connected with a yoke-shaped member 43 the inner ends of the opposite sides of which are pivotally connected by means of pivots 44 to the side members 33. The closed portion of the yoke member 43 is adapted to be positioned inside of and in adjoining relation to the end of the frame member 34 which is located in adjoining relation to the head end or portion of the bed-sted. The yoke-shaped member 43 is adapted to be elevated or adjusted upwardly about the pivots 44 and is adapted to be held in such elevated adjusted position by means of links 45. The inner ends of these links are pivoted to projections 46 which extend downwardly from the opposite sides of the U-shaped member 43. The outer free end portions of the said links are widened as indicated at 47 and are connected together by means of a tie rod 48. The said outer end portions also extend downwardly and form slight angles with the remaining portions of the said links. Slots 50 are provided in the said outer end portions which slots extend longitudinally of said portions and are of a width to permit the movement or passage therethrough of a rod 51 which is supported at its opposite ends upon the opposite side members 33 of the frame 34. The upper sides of the slots 50 are provided with notches as indicated at 52 with which the said rod 51 is adapted to be engaged. Slidable movement of the links 45 with respect to the rod 51 is caused or effected by pivotally moving the U-shaped member 43 upwardly about the pivots 44, as will be apparent when it is

noted that the projections 46 to which the said links are pivoted are located a distance from the said pivots 44.

As already stated, pivotal upward movement of the yoke-shaped member 43 causes sliding movement of the links 45 with respect to the rod 51. As these links slide over the rod 51 the respective notches 52 engage the latter and hold the said links against return movement or movement in the opposite direction. It will be seen, therefore, that the portion of the sheet 40 which is connected with the U-shaped member 43 may be supported in angular position or relation to the remaining portion thereof by means of the links 45 having the notches 52 which engage the rod 51.

In the construction as illustrated I have provided four notches in the upper edge of each slot. The rod 51 occupies two of these notches as shown. It will be noted that when the inner notches are engaged by the rod 51 the sheet 40 occupies a horizontal position. If the rod 51 be caused to engage with the next adjoining notches the frame 43 and the portion of the sheet 40 connected therewith will be held in a slightly angular position. If the links are moved so as to cause the next succeeding notches to engage the rod 51 the sheet will be held in a position of greater angularity and so on until the final notches adjoining the outer ends of the links 45 are placed in engagement with the rod 51.

By adjusting the nuts 16 upon the rods or shafts 10 and 11 inwardly or toward the middles of the said shafts the sheet 40 may be lowered into position to rest upon the upper side of the mattress 7 or upon the linen covering which may be present thereon. On the other hand, if the nuts 16 are adjusted to positions in adjoining relation to the outer ends of the helixes of the shafts 10 and 11, as shown for example in Fig. 3, the said sheet and the support therefor are elevated to positions a substantial distance above the top of the mattress 7, at which time the linen upon the mattress may be removed or changed.

For the purpose of guiding the frame 34 in its vertical adjustments I have provided rods 55 which in the construction as illustrated depend from the opposite ends of the frame 34. These rods enter and are guided by vertically positioned tubular members or sections 56 which are connected with and supported by cross bars 57, the latter being supported at their opposite ends upon the side rails 1 and 2 of the bed-stead. These bars 57 are located in contiguous relation to the opposite ends of the said rails.

For the purpose of enabling and permitting angular adjustment of the frame 34, as has been described previously, the external diameters of the depending rods 55 are somewhat less than the internal diameters of the tubular guiding members 56 so that there is considerable play. As a further means of providing for such angular adjustment the opposite ends of the bars 57 are loosely connected with the side rails 1 and 2. The said connection is effected by means of bolts 58 which extend through slots 59 in the opposite flat ends of the bars 57. It will be noted that the holes 60 in the horizontal flanges of the side rails 1 and 2 through which the bolts 58 extend are somewhat larger than the bolts so that there may be slight tilting motion of the bolts in case the frame 34 should be adjusted into angular position.

In Fig. 5 of the drawings, in which the tubular guide member 56 is shown in vertical position, it will be noted that the bar 57 occupies a substantially horizontal position; but in Fig. 6, in which the guide member 56 is shown in a tilted position, it will be noted that the bar to which it is connected has been slid or moved slightly inwardly from the adjoining end of the rail and that it is tilted. The looseness of the fit of the depending rods 55 in the tubular guide members 56 and the tilting of the supporting bars 57 and of the bolts 58 is sufficient to permit such angular adjustment of the frame 34 as may be desired.

I have provided the sheet 40 with an opening 65 to facilitate the use of a bed-pan by a helpless patient.

It will be seen that by my invention I have provided a bed having means associated therewith for facilitating the care of helpless patients which not only is highly efficient but also is extremely simple in construction and operation.

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

1. In combination, a bed, a frame having means for supporting a person, means for supporting said frame in position above the bed, means for vertically adjusting the opposite ends of said frame independently of each other whereby the said frame may be placed in angular position with respect to the plane of the opposite side rails of the bed, means for guiding the said frame in its vertical adjustments the said means comprising projections which depend from the said frame, and tubular projections which extend upwardly from the bed structure, the said projections being in telescopic engagement with each other and relatively axially adjustable, and means for pivotally supporting said tubular projections whereby angular adjustment thereof may be permitted.

2. In combination, a bed having side rails, a frame member having means for supporting a person, rods extending transversely of the bed and supported at their opposite ends upon the said rails, each of the said rods being provided with right and left hand screw threads, nuts mounted upon the screw threaded portions of the said rods, links having di-

rect connection at their lower ends with the said nuts and at their upper ends with the said frame member, means for rotating the said rods to effect vertical adjustments of the said frame member above the bed, and means for guiding the said frame member in its vertical adjustments, the said means comprising projections which depend from the said frame member and tubular projections which extend upwardly from the bed structure, the said projections being in engagement with each other and being relatively adjustable axially, the said tubular projections being pivotally supported whereby angular adjustment of the said frame relative to a horizontal plane may be permitted.

In witness that I claim the foregoing as my invention I have hereunto signed my name this 14th day of March, A. D. 1928.

LAURENCE R. DOUGHERTY.