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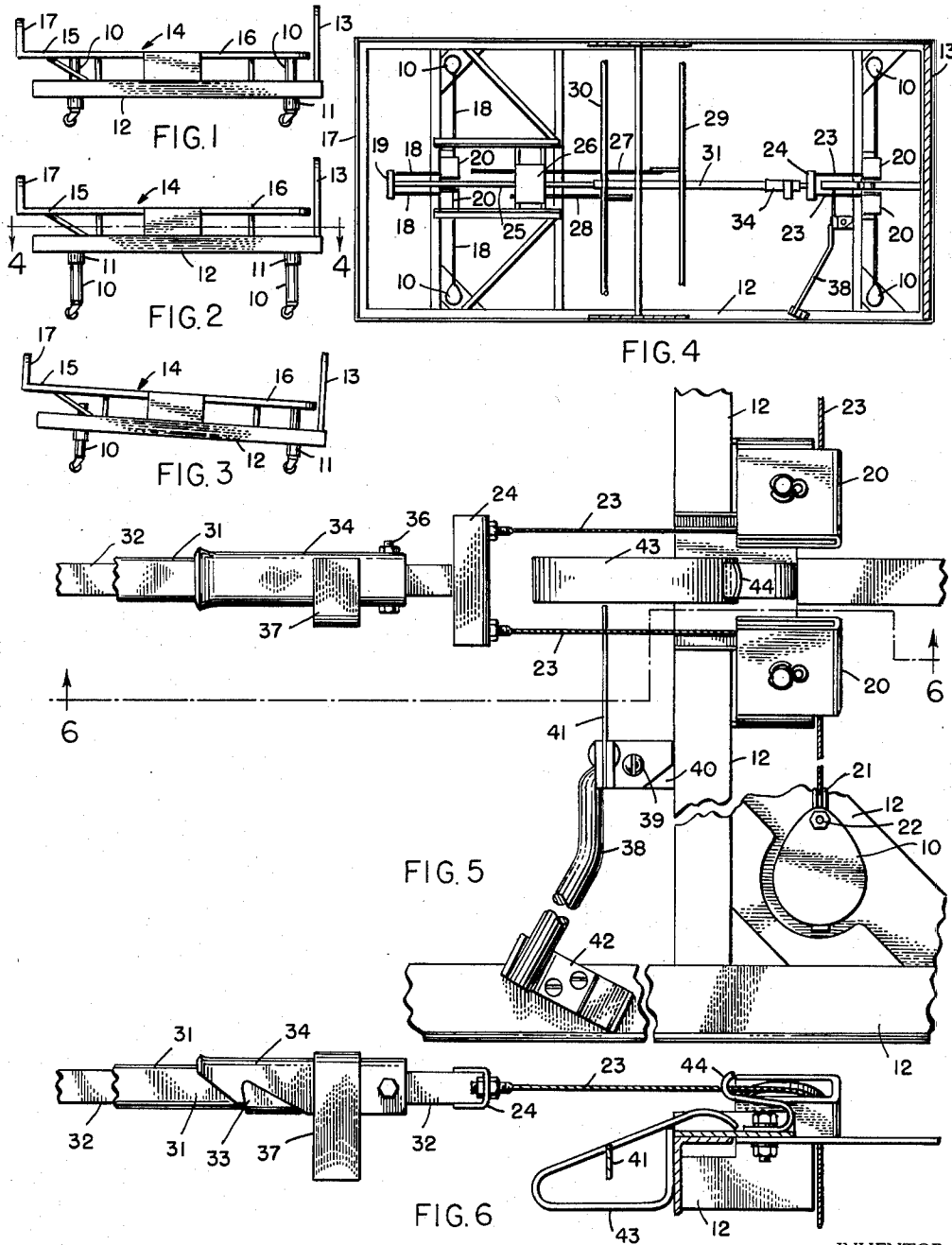
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ADJUSTMENT MECHANISM FOR HOSPITAL BED

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

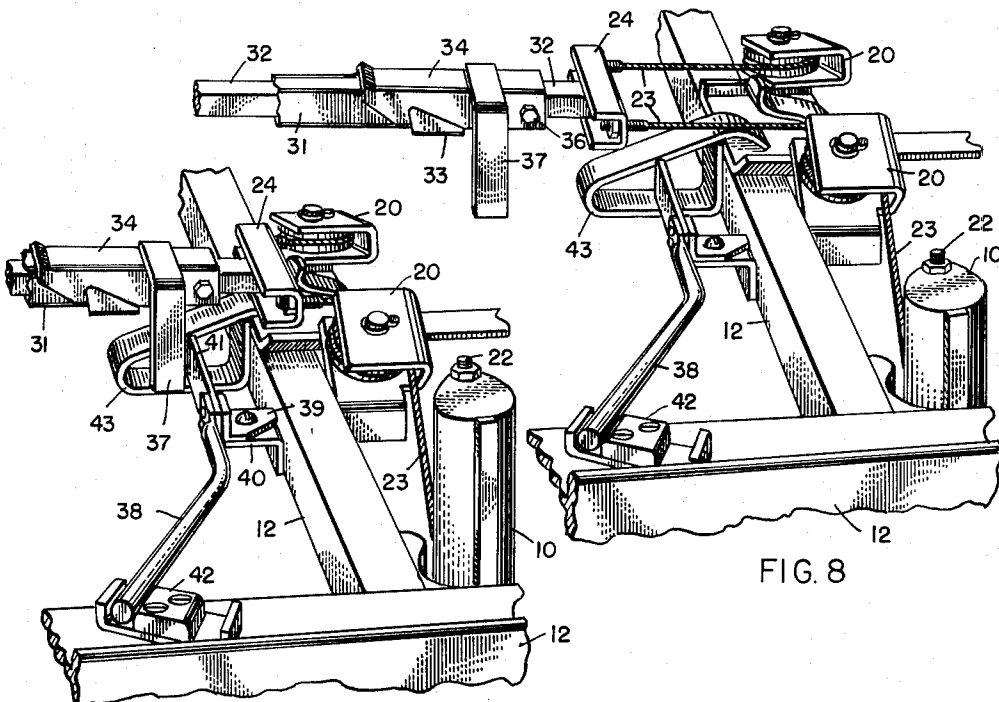


FIG. 7

FIG. 8

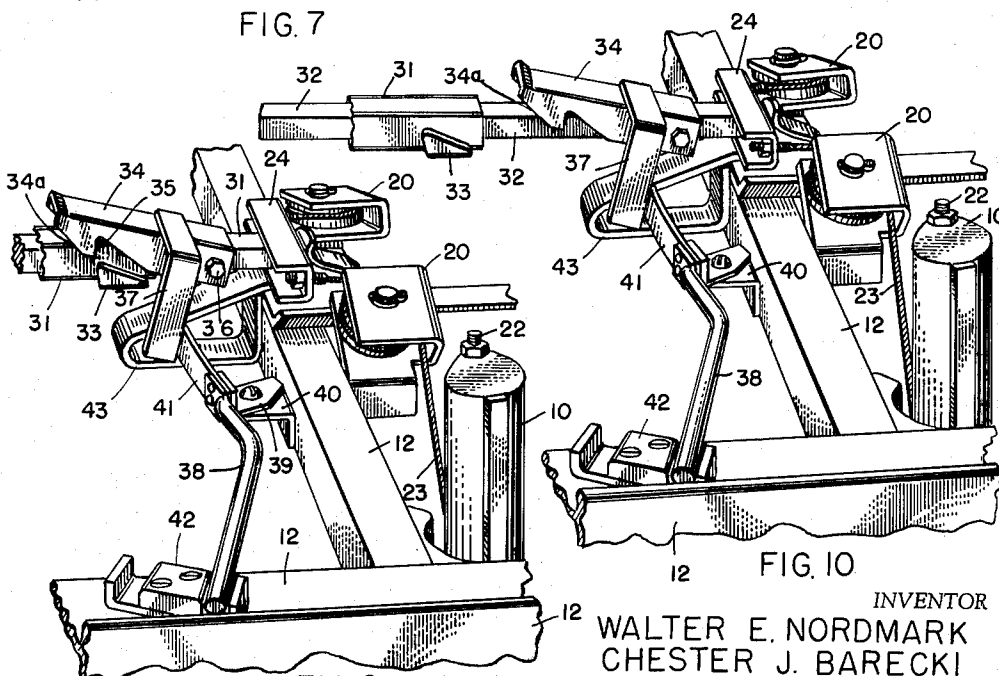


FIG. 9

FIG. 10

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ADJUSTMENT MECHANISM FOR HOSPITAL BED

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5 Claims. (Cl. 5—63)

This invention relates to adjustment mechanism for hospital bed, and is particularly useful in the adjustment of a hospital bed to the Trendelenburg or other positions.

An object of the invention is to provide simple and effective means for raising and lowering a hospital bed and the control of the movement to the Trendelenburg or other positions. A further object is to provide in a hospital bed adjustment mechanism or latch mechanism by which the bed can be caused to move to various selected positions. Another object is to provide means for conditioning latch mechanism whereby the operating parts will be automatically connected or disconnected in the raising of the hospital bed. Other specific objects and advantages will appear as the specification proceeds.

In the illustration given, FIGURE 1 is a side view in elevation of a hospital bed equipped with mechanism embodying our invention, the bed being shown in lowered position; FIG. 2, a view similar to FIG. 1 but showing the bed in raised position; FIG. 3, a view similar to FIG. 1 but showing the bed in inclined or Trendelenburg position; FIG. 4, a view taken as indicated at line 4—4 of FIG. 2; FIG. 5, a broken top plan view on an enlarged scale of a portion of the structure shown in FIG. 4; FIG. 6, a broken side view in elevation, the view being taken as indicated at line 6—6 of FIG. 5; FIG. 7, a broken perspective view of the structure shown in FIGS. 5 and 6 with the bed frame in lowered position; FIG. 8, a view similar to FIG. 7 but showing the bed frame in raised position; FIG. 9, a view similar to FIG. 7 but showing the latch means in disconnected position; and FIG. 10, a view similar to FIG. 9 showing the draw bars disconnected and in fully separated position.

In the illustration given, particularly in FIGS. 1 to 4 inclusive, 10 designates bed legs which are shown as tubular legs received within fixed tubular sleeves 11 carried by a bed frame 12. The bed frame 12 is provided at one end with a headboard 13. Mounted upon the base bed frame 12 is a segmental hospital bed frame 14 equipped with a hinged bottom segment 15 and a hinged top segment 16, the bottom segment 15 being provided with a footboard 17. All of the foregoing structure is well known and a further detailed description is believed to be unnecessary.

Referring to FIG. 4, cable means are provided in accordance with known practice for raising and lowering the bed frame 12 upon the tubular legs 10. At the foot of the bed, cables 18 are connected to a drawhead 19, and the cable passes around pulleys 20 and thence under pulleys 21 fixed to the bed frame 12 and thence up to eye-bars 22 fixed to the top of legs 10, as shown best in FIG. 5. Similar cables 23 are secured to a drawhead 24 at the head of the bed for raising that end of the bed. All of such structure is well known in the art and further detailed description is unnecessary. It will be understood that as the drawhead 24 is drawn inwardly and the drawhead 19 is pushed outwardly, the cables passing under the lower pulley 21 fastened to the frame 12 cause the bed frame 12 to rise, and similarly when the drawhead 19 moves inwardly and the drawhead 24 moves to the right, as shown in FIG. 4, the bed frame lowers.

In order to move the drawheads 19 and 24, there is provided an elongated ratchet bar 25 which engages a gear provided with meshing teeth driven by motor 26 causing bar 25 to move in a longitudinal direction.

While not an essential part of the invention herein, FIG. 4 shows a pair of ratchet bars 27 and 28 which are also driven by gears operated by motor 26. The bar 27 is moved longitudinally to raise and lower a head bed segment member 29, while bar 28 is moved longitudinally to operate a foot raising and lowering segment member 30. Since such structures are well known, a further detailed description is believed unnecessary.

In the present invention, we secure to one end of the ratchet bar 25 a shell or tube member 31 which slidably receives a drawbar 32. The drawbar or inner bar 32 is anchored to the drawhead 24, as shown best in FIGS. 5 and 6. Means are provided for positively latching or connecting the tube 31 and the bar 32 so that power may be transmitted from the ratchet bar 25 directly to the drawhead 24 for the raising of the head portion of the bed 12, as illustrated best in FIG. 6. The latch mechanism and control means therefor are best shown in FIGS. 5 to 10 inclusive and will now be described in detail.

At the rear end of the tube 31 is mounted a triangular latch segment 33, preferably on each side of the tube. Pivotaly connected to the tube is a latch 34 having a triangular slot 35 adapted to receive the latch segment 33. The latch 34 is connected to the bar 32 by pivot pin 36. Fixed to the latch 34 and extending laterally thereof is a finger or trip member 37.

Manually-operable means are provided for controlling the tripping of the finger 37. A lever 38 has a flattened portion 39 pivotally mounted on bracket 40 carried by the frame 12, and to the lever 38 is secured a blade 41 which may be moved to the inoperative positions shown in FIGS. 7 and 8 in which the latch members remain in connected position, and may be moved also to the operative positions shown in FIGS. 9 and 10 in which the blade 41 is moved into obstructed position in which it engages the trip finger 37 and tilts the latch 34 to disconnect the tube 31 and drawbar 32. In order to hold the lever 38 in the selected position, we provide the frame 12 with a plate 42 provided with a pair of spaced recesses for receiving the lever.

We prefer also to provide the head portion of the frame 12 with a ramp member 43 and above the ramp member with a spring 44, as shown best in FIG. 6.

Operation

In the operation of the apparatus, the tube 31 and drawbar 32 may be held in connected relation, as shown best in FIGS. 5 to 8 inclusive, and in this position when the ratchet bar 25 is moved in one direction, the base frame 12 is raised from the lowered position shown in FIG. 1 to the raised position shown in FIG. 2, and may move in the opposite direction to lower the bed frame from the raised position shown in FIG. 2 to the lowered position shown in FIG. 1.

When a patient is in shock and it is desired to tilt the bed to the inclined position (Trendelenburg) shown in FIG. 3, the operating lever 38 is moved to the position shown in FIGS. 9 and 10, with the result that the tube 31 is disconnected from the drawbar 32, and the operation of the motor causes only the foot portion of the bed to rise while the head portion of the base frame 12 remains in lowered position, as shown best in FIG. 3.

In the operation of the latching mechanism, the hospital attendant will move the operating bar to the forward position shown in FIGS. 5, 7 and 8 when the bed is to be operated in the normal raising and lowering movements illustrated in FIGS. 1 and 2. When the bed is to be adjusted to the Trendelenburg position, the hospital attendant will move the lever 38 to the position shown in FIGS. 9 and 10, bringing about the disconnecting of the tube 31 from the bar 32. With the drawbar in this position, the head portion of the bed remains in a fixed

lowered position irrespective of the operation of other parts of the bed. For example, the foot portion of the bed may be moved to the position illustrated in FIG. 3, and then independently the segmental foot 15 and head 16 portions of the segmental bed 14 may be tilted through the operation of the ratchet bars 28 and 27.

When it is desired to return the tube 31 and drawbar 32 to latched positions, this is accomplished automatically when the bar 30 is moved to the forward position shown in FIGS. 7 and 8. As the tube 31 moves rearwardly, it slides over an inclined face 34a of the latch 34 into engagement, as shown in FIGS. 7 and 8. Hence, the lever 38 is not only effective in separating the operating parts, but also conditions them for automatic re-engagement and without requiring special care or manipulation by the attendant.

While in the foregoing specification we have set forth a specific structure in considerable detail for the purpose of illustrating embodiments of the invention, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of our invention.

We claim:

1. In a hospital bed, supporting legs, a base frame slidably mounted on said legs for vertical movement thereon, cables attached to said frame and legs for lifting and lowering the end of said frame, motor-driven means for drawing said cables at both ends of said bed to raise said bed, including at one end of the bed a tube and a drawbar telescoping with said tube, said drawbar being connected to the cables at one end of said bed, and manually-operable latch means for connecting and disconnecting said tube and drawbar.

2. In a hospital bed, supporting legs, a base frame slidably mounted on said legs for vertical movement thereon, cables connected to said frame and legs for lifting and lowering at least one end of said frame, a drawbar connected to said cables, a tube slidably receiving said

drawbar, motor-driven means for moving said tube, latch means for connecting said tube and drawbar, said latch means comprising a latch segment carried by said tube and a hollow latch member pivotally mounted on said drawbar and equipped with a recess receiving said segment, said latch being provided with a laterally-extending trip member, and a manually-operable lever for moving an obstruction into the path of said trip member to tilt said latch member out of engagement with said tube segment.

3. The structure of claim 2 in which a ramp member extends below said drawbar to cushion rearward movement thereof.

4. The structure of claim 3 in which a spring abutment is mounted over said ramp member.

5. In a hospital bed of the character set forth, supporting legs at opposite ends of said bed, a base frame slidably mounted on said legs for vertical movement, a pair of cables at each end of said bed attached to said frame and legs for lifting and lowering the bed at each end thereof, motor-driven draw means for moving said cables to raise and lower the bed said means including at the head end of the bed a motor-driven tube receiving a drawbar connected to said cables, a tiltable latch secured to said drawbar and equipped with means interlocking with said tube, said latch being provided with a laterally-extending finger, and a manually-movable lever adapted to be moved into the path of said finger for tilting said latch to disconnect said tube and drawbar.

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