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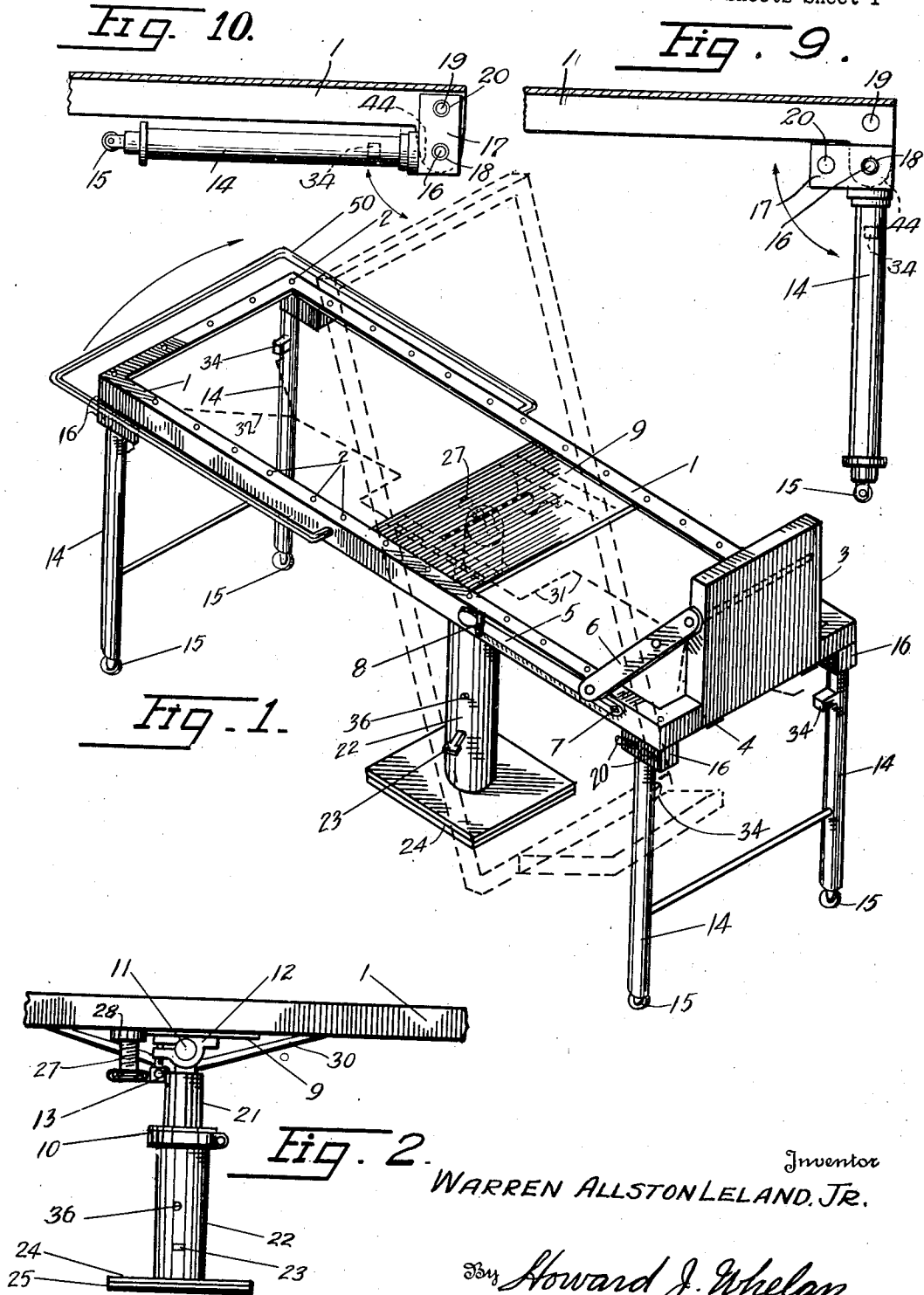
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2,251,797

INVALID BED

Filed March 25, 1939

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

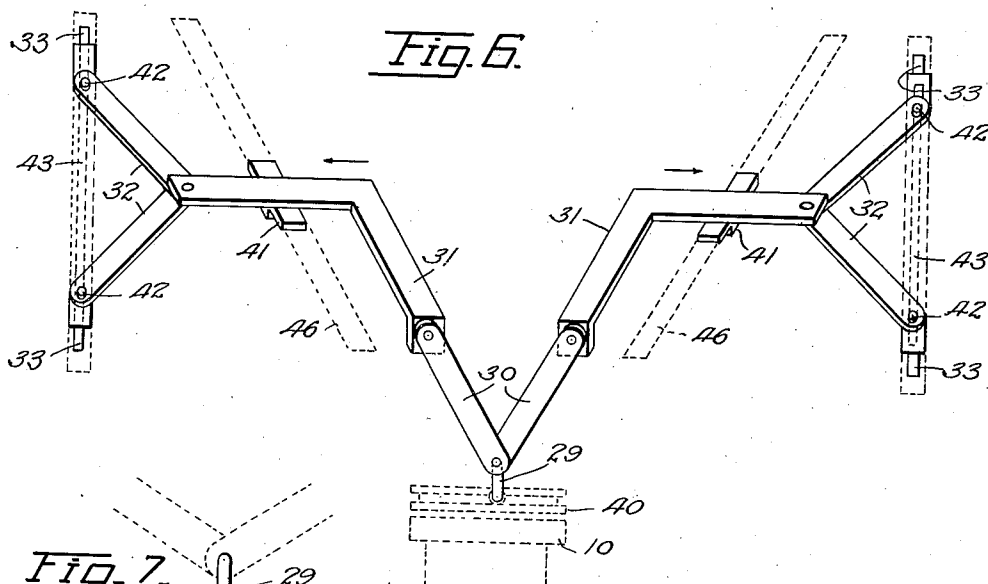
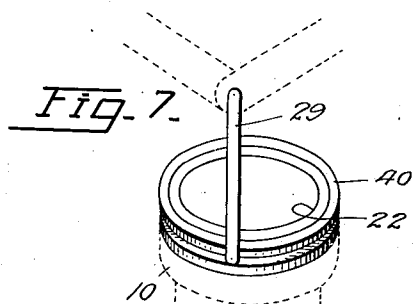


Fig. 5.

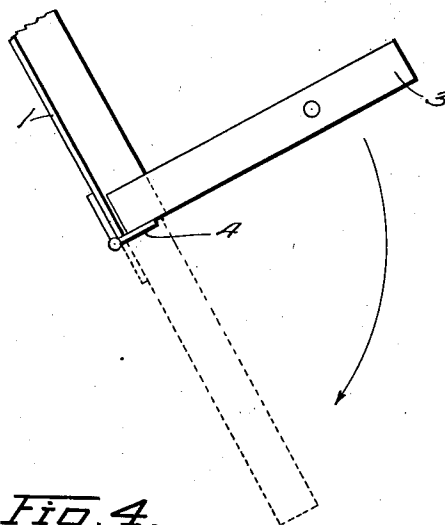
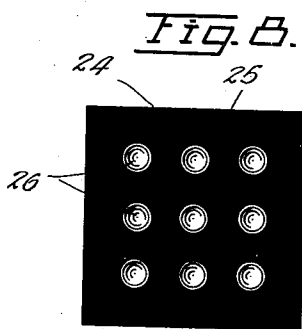


Fig. 3.

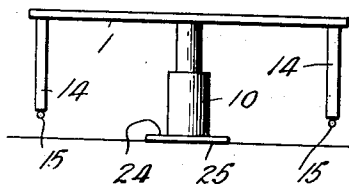
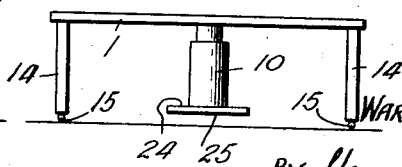


Fig. 4.



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2,251,797

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Application March 25, 1939, Serial No. 264,210

2 Claims. (Cl. 5—60)

This invention refers to beds and more particularly to those for handling invalids for general hospital purposes. It has among its objects to provide a table bed that may be variably positioned with facility and afford the necessary conveniences that will enable the patient to be placed on or off the bed. Another object is to provide a lifting jack for lifting the bed proper off the legs, that the latter may be closed up out of the way, and with the same arrangement enable the legs to support the bed with the said jack out of the way. Further objects include provision for allowing the patient to be placed in an upright position so that he may walk away from same in a conventional manner; to have a mechanism that will lock the legs automatically in position against slipping actions that might cause accidents, as well as arrangement to make a patient feel more comfortable and safer, and other objects that will become apparent as the invention is more fully set forth.

Adjustable table beds, as heretofore used, employ various complicated mechanisms that enable the bed to be given a variety of positions, that the patient thereon may be examined, treated, or operated upon in accordance with the determined requirements. In this invention, the bed may be positioned by tipping front for back to an approximate upright placement.

The table bed may be rotated in any horizontal plane on its central supporting jack, and tilted to various angles, keeping the face of the bed from sidewise tilting or from being placed upside down. A particular feature of the invention is the locking of the legs so they will positively support the bed, when the central supporting jack is redrawn above the floor plane out of the way. The purpose of this is to permit the bed to be wheeled around without interference from parts of the supporting jack, and still have the latter available. This support has a non-slipping base, and arrangements are provided on the bed in the form of a handle bar that the patient may hold on to while being lifted or positioned on the bed, to not only hold him and lessen accidents, but also to make him feel safer and more at ease. The non-slipping arrangement holds on to the floor securely and offsets the effects of gravity, in case the weight of the patient during tilting overbalances the bed.

In the drawings, which illustrate a form of the invention:

Figure 1 is a view in perspective of an invalid bed embodying this invention; dotted outlines being used to indicate the manner of tilting the bed, as well as to illustrate diagrammatically the toggle mechanism used in the device;

Figure 2 is a detail in elevation of the middle portion of the bed with the jack used in operating it;

Figure 3 is a diagrammatic view of the table raised by the jack;

Figure 4 is a diagrammatic view of the table resting on the corner legs and with the jack contracted;

Figure 5 is an enlarged detail of the foot rest used with this bed;

Figure 6 is a view in perspective of the toggle mechanism, used for locking the corner legs in a vertical position to support the table, while the jack is contracted off the floor;

Figure 7 is a detail of part of the jack and attached toggle mechanism;

Figure 8 is a detail of the non-slipping pad under the base plate of the jack;

Figure 9 is a detail sectioned through the side of the frame to indicate the connection of the hinged legs thereto.

Figure 10 is a detail of the hinged leg shown in Figure 9, in a closed position against the frame.

Similar reference characters refer to similar parts throughout the drawings.

In the construction outlined in the drawings 1 represents the frame of a bed, made of angle iron which is drilled with holes 2 to secure a canvas or mattress of conventional type thereto with cords. One end of the frame is provided with a foot rest 3 hinged to it at 4, manipulated by a handle 5 and link 6 attached and pivoted to the side of the frame at 7. The foot rest is preferably of box form and strikes and stops on the frame when at right angles to it, so as to permit the feet of the patient to come flatly against its surface. The handle is held by the attendant during manipulation and is held in a suitable catch 8 when in right angle position. The central portion of the frame has a central brace or framework 9 that makes a plate for a lifting jack mechanism 10 to connect to. The connection is made through a shaft 11 journaled at 12 to the plate 9, so that the frame 1 of the bed may tilt thereon, as required. A clamp arrangement 13 on one or more of the journals 12 enables the bed to be clamped in any position to the mechanism 10, by the manual operation of the user or attendant.

The angle-iron frame 1 is provided with legs 14 at each of the four corners of same. These legs are hinged on bolts 16, journaled in holes 18, drilled through the extension pieces 44 mounted on the frame. The upper portions of the legs have knee members 17, in which holes 20 are provided for the purpose of enabling the legs to be locked by bolts to the frame, when the holes 20 are aligned with the holes 19, when the legs are raised to their horizontal position as shown in Figure 10. The legs 14 are raisable when the jack has raised the table proper above normal level sufficient to lift the casters on the

legs off the floor. The jack is extended to raise the table frame and is contracted to lower same. When the frame is high enough, the legs are raised or swung manually to a horizontal position, and not automatically or mechanically. The legs cannot be raised out of their vertical position when the toggle mechanism is operated by the jack in the manner described hereinafter.

The mechanism 10 consists of a hydraulic jack with a moving cylinder 21 in an exterior oil cylinder casing 22 and suitable pedal 23 to pump the jack up for raising the cylinder 21 in a conventional manner. To lower the jack requires the release of the valve 36 permitting the cylinder 21 to retreat into the cylinder casing 22. In a like manner the oil cylinder casing 22 is raisable on the moving cylinder 21, when this valve is opened, through the use of a spring inside the cylinders of sufficient strength to bring about this action. The oil cylinder casing 22 is attached to a plate 24 to increase its foundation area and incidentally its stability. A rubber pad 25 is attached to this base plate 24 and has vacuum holes or recesses 26 to make it more rigid and stable on the floor.

An adjustable stop 27 is mounted on the moving cylinder of the jack and with its head 28 controls the movement of the head-half of the table bed downwardly, to prevent the patient being moved in this direction without special intention. The cylinder 22 is provided with a collar 40 having a contact pin 29. This pin 29 contacts with a main toggle mechanism 30 underneath the frame 1 and the main toggle mechanism through its offset links 31 operates bolt-operating toggles 32 that move their bolts 33 in front of spurs 34 attached to the upper portion of the legs 14. When the bolts are pushed in front of these spurs, they prevent the legs from moving into a position close to the frame 1. Suitable supports and guides guide the movements of these mechanisms properly. These are shown in Figure 6, in which 41 designates strap iron piece attached to the underside of the frame 1 to the cross pieces 46 of the frame bent to form guides and supports for the toggle links 31 to slide back and forth in. Pins 42 in the arms 32, near their so-called free ends extend down into the slots 43 and operate therein. These parts form the main supports and guides for the toggle mechanism.

The pedal 23 indicates the usual method of pumping up the hydraulic jack, and 36 is the release valve.

In operating the table bed, the patient is stood up and the table bed is brought adjacent to him and tilted so the foot rest is placed in back of his heels. He steps back onto the foot rest and his back is brought against the nearly vertical mattress on the bed. The footrest is closed to the right angle position and holds him on the bed. Slowly the table is tilted backwardly with the patient on it until the stop restricts it to a horizontal position.

The legs 14 are then allowed to drop to the vertical supporting position. Then the clamp on the journal is tightened to keep the table top firmly in the position selected. After this, the valve 36 is released and lowers the top until the casters on the legs 14 reach the ground and support the weight of the bed and patient. After this, the oil cylinder casing can continue to rise under the action of the spring and raise the foundation base off the ground. While the cylinder casing 22 rises, it lifts the pin 29 and operates

the main and bolt toggle mechanism so that the bolts will be in front of the spurs and prevent the legs from closing up accidentally on the table bed. The foot rest is brought to the position shown in the drawings or at right angles to the frame as soon as the patient is resting on the bed, and its handle slipped into the catch 8. A handle bar 50 is attached to the head portion of the table bed and swings above it as indicated, and is rotatable over the head of the patient and brought down in front of him, so the latter may grasp it with his hands. This affords him security actually and psychologically. It is quickly moved out of the way, when desired, and does not interfere with the operation of the bed in any way.

The manner in which the toggle mechanism operates is as follows: The jack is actuated in a conventional manner, to extend its cylinder 21 and raise the frame. This also raises the legs off the floor. The legs on being raised off the floor, offer no resistance to being swung on their hinges 16. They are manually raised to a horizontal position against the underside of the frame. When the holes 20 and 19 are aligned with one another a stud or bolt may be inserted to lock the legs against the frame. The jack may then be operated in the usual manner, as it rests on the floor when extended and supports the frame, and the legs 14 offer no interference with its action.

While but one form of the invention is shown in the drawings, it is not desired to limit this application for patent to the particular construction indicated, as it is appreciated that other forms might be made using the same principles and coming within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. In a tiltable table bed of the class described, the combination of a frame for carrying a mattress or the like, a middle plate attached rigidly to a predetermined portion of the frame underneath, a jack having a base portion with a reciprocating cylinder acting in cooperation therewith, means attached to the jack and said plate adapted to permit the frame to assume various tilting positions in relation to the jack when supported thereby, legs hinged at the corners of the frame for supporting the frame in a horizontal position independently of the jack and provided with lugs thereon, a toggle mechanism attached to the frame and arranged to be operated by the cylinder of the jack when retracting in relation to the frame and to lock against the lugs of the legs to retain same in a position for supporting the frame.

2. In a tiltable table bed of the class described, the combination of a bed frame, a plate on the frame, a jack attached to the plate for raising and lowering the frame in various tilted positions when extending and contracting thereunder, a set of legs hinged to the table for supporting same horizontally, means for engaging the legs to hold them in predetermined position, toggle mechanism mounted on the frame with portions connected with the jack and the said means adapted to operate the means when extended and to release same when contracted, said legs being raisable against the frame when released by the means and for locking against the frame, and means for locking the legs against the frame.