Oct. 2, 1956 S. SILVER 2,764,763

PATIENT-OPERATED HOSPITAL BED

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Fig. 1

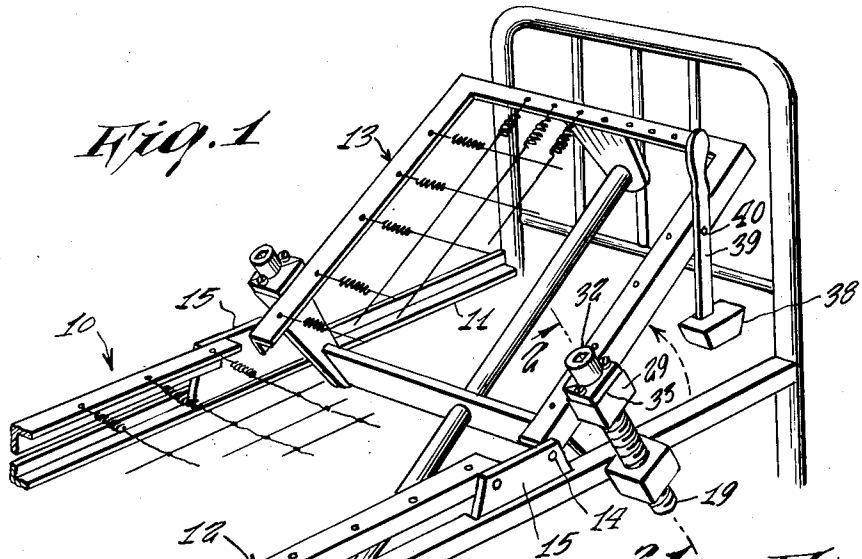
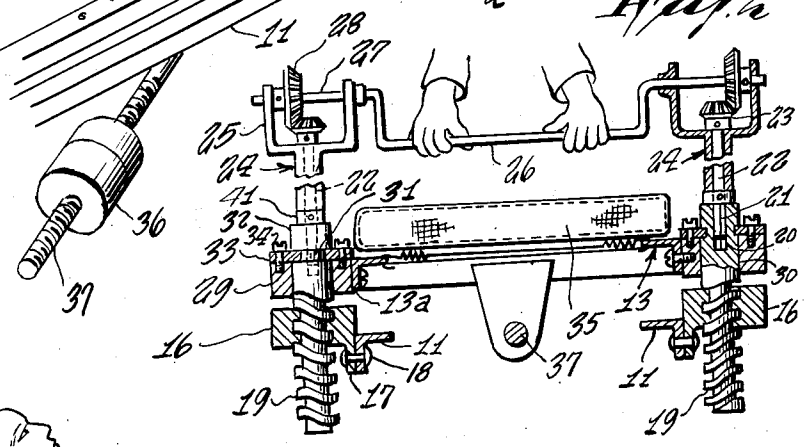


Fig. 2



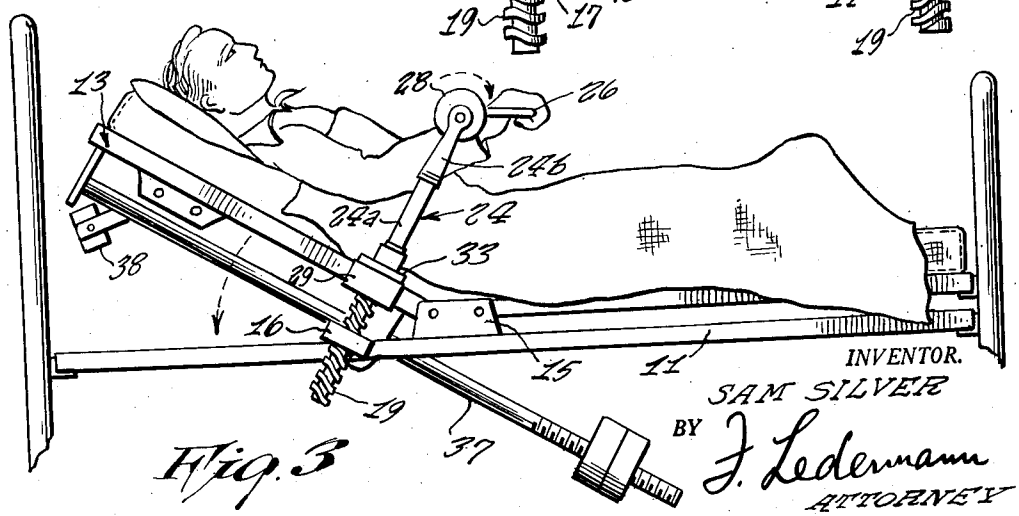


Fig. 3

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PATIENT-OPERATED HOSPITAL BED

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1 Claim. (Cl. 5—79)

This invention relates to hospital type beds, that is, beds having means for raising and lowering the head end of the bed so that the patient may be made more comfortable by resting in a sitting or near sitting position from time to time.

However, patients after being thus made comfortable, after a time wish the head end of the bed lowered or raised, as is readily understandable, but they are not always able to obtain the services of a nurse or assistant to come and change the position of the bed so that they frequently suffer great discomfort in being obliged to maintain the uncomfortable position. It is therefore an object of this invention to provide a hospital bed with means which enable the patient to raise or lower the head of the bed at will whenever he desires to change his posture, without the aid of an assistant and with a minimum of exertion.

It is another object of the invention to provide a hospital bed with means such as mentioned above, which are simple in construction and operation and entirely operable by the unaided patient after the main counterweight has once been positioned to accommodate the particular patient.

The above broad as well as additional objects will be clarified in the following description wherein characters of reference refer to like-numbered parts in the accompanying drawing. It is to be understood that the drawing is intended solely for the purpose of illustration and that it is therefore neither desired nor intended to limit the invention necessarily to any or all of the exact details of construction shown except insofar as they may be deemed essential to the invention.

Referring briefly to the drawing, Fig. 1 is a fragmentary perspective view of a hospital bed equipped with the patient-operated means for raising or lowering the head end of the bed, with parts omitted, and parts in section.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a side elevational view of a hospital bed embodying the improvements presented by this invention, illustrating the manner in which the same is operated by the patient.

Referring in detail to the drawing, the numeral 10 indicates a hospital bed which includes the two side rails 11. As is customary in such beds the spring is made of a lower part 12 which is fixedly supported on the rails and a movable part 13 which is pivoted on a transverse axis 14 to a support or to ears 15 secured to the rails. The movable or head end of the spring 13 is adapted to be tilted between an upper position nearly at right angles to the horizontal and a lowermost position horizontal and aligned with the lower portion 12 of the spring. Only one intermediate position of the spring 13, between the above two extremes, is shown in the drawing.

Blocks or the like 16, one on each side of the bed, are pivoted by means of projecting ears 17 on aligned pins 18 to the rails 11. These blocks have internal threads in which screws 19 register. The upper portions of the

screws have axial passages 20 descending thereinto, which are square in cross-section, and pegs 21 of complementary cross-section register slidably therein. The pegs 21 constitute the lower portions or ends of stems 22 which are circular in cross-section and have bevel pinions 23 rigid on their upper ends. The stems 22 are rotatably mounted in tubular supports 24 having yokes 25 on their upper extremities. A crank 26 has its aligned ends 27 rotatably supported in the yokes 25, the ends 27 having bevel gears 28 rigid thereon between the yoke arms and in mesh with the pinions 23.

It is now apparent that when the crank 26 is turned in one direction, the stems 22 will rotate the screws 19 so as to move the latter upward with respect to the blocks 16 and the rails 11, and opposite rotation of the crank will move the screws downward.

A second pair of blocks or the like 29 is secured, one on each side of the bed, to the frame 13*a* of the spring 13, and the upper portion 30 of the screw 19, which is smooth-surfaced, not threaded, passes rotatably through complementary passages through the blocks 29. Near but spaced below the upper extremity of the screw its diameter is reduced to provide a neck 31 thus forming a head 32 on the upper extremity. A plate 33 having an opening therethrough equal to the diameter of the neck 31, is secured, as by screws 34, to the top of the block 29 between the head 32 and the block. This plate may be made of two complementary halves, that is, as though the plate were cut in two on a diagonal, to facilitate its installation, as shown in Fig. 1. Hence, the plate 33 keeps the screw 19 from moving up or down through the block 29. Thus, as the crank 26 is turned as mentioned above, the spring 13 will be tilted upward or downward. Of course the upper end of the mattress 35 will cover the spring 13. The supports 24 are so dimensioned as to position the crank 26 conveniently for operation thereof by the patient. It is to be noted that when the self-operated means is not desired by the patient, the upper portion thereof, including the supports 24, the stems 22 and the crank 26, may be removed simply by lifting it up, leaving only that portion of the mechanism appearing in Fig. 1.

To minimize the effort the patient must exert to operate the mechanism easily, a counterweight 36 is movably mounted on a threaded rod 37 extending from the spring 13 to which the rod is attached, toward the foot of the bed. By positioning the weight 36 to counterbalance the weight of the patient's body the effort required to tilt the head end one way or the other will be reduced substantially.

Additionally, an auxiliary counterweight may be provided, readily accessible to the patient, to be tilted one way or the other by him accordingly as he wishes to raise or lower the spring 13. Such a weight is shown at 38, on the lower end of an elongated handle 39 pivoted intermediate its length at 40 to the side of the spring 13. The upper end of the handle 39 is thus readily accessible to the patient. If he wishes to lower the spring 13, he will pull the upper end of the handle 30 to the left, Fig. 1, to move the weight 38 in the opposite direction to increase its torque about the axis 14 and thus further reduce the force required to turn the crank. Conversely, if he wishes to raise the spring 13, he can move the weight 38 in the opposite direction, thus again reducing the required torque.

In order to make the height of the crank 26 above the body of the patient adjustable to accommodate different patients, the supports 24 may be made of two sections 24*a* and 24*b*, as shown in Fig. 3, the section 24*a* being screwable into or partly out from the section 24*b*, within the range set by the depth of the square opening 20 and the square peg 21. Ring bearings or washers 41 may be provided between the supports 24 and the screw heads 32, locked to the stems 22, preferably releasably locked,

Obviously, modifications in form or structure may be made without departing from the spirit or scope of the invention.

I claim:

A hospital bed including opposed side rails having a substantially rectangular frame having one end thereof pivotally mounted on the rails on a transverse axis distant from the head end of the bed, the distance between said axis and the head end of the bed exceeding the distance from the axis to the end of the frame opposite the axis so that the frame may be positioned substantially horizontally, internally threaded blocks pivotally secured to said rails on an axis parallel with said first-named axis, screws registering threadedly through said blocks having the upper ends thereof cylindrical and smooth-surfaced, blocks secured to opposite sides of said frame on an imaginary transverse line parallel with said axes, said last-named blocks having smooth cylindrical passages therethrough, the said upper ends of said screws registering rotatably in said passages, means restraining said upper ends of the screws from longitudinal movement in said passages, tubular supports mounted on the upper ends of said screws in alignment therewith, said supports having yokes on their upper ends, a crank rotatably mounted in said yokes, said crank having spaced bevel gears thereon between the arms of the yokes, stems rotatably mounted in said supports and having bevel pinions on their upper ends in mesh with said bevel gears, said screws having

axial passages square in cross-section extending downward thereinto, the lower ends of said stems having complementary square cross-sections and registering slidably in said axial screw passages, said supports each comprising two threadably interengaged sections whereby their length may be varied, a threaded rod secured to said frame and extending longitudinally under the bed and having an internally threaded weight threadably and movably mounted thereon, an elongated handle pivoted to one side of said frame intermediate its length on a transverse axis positioned near the free end of the frame, and a weight on the lower end of said handle.

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