No. 654,165. Patented July 24, 1900.

F. M. LEPORE.

INVALID'S BED.

(Application filed Nov. 6, 1899.)

(No Model.)

Fig. 1.

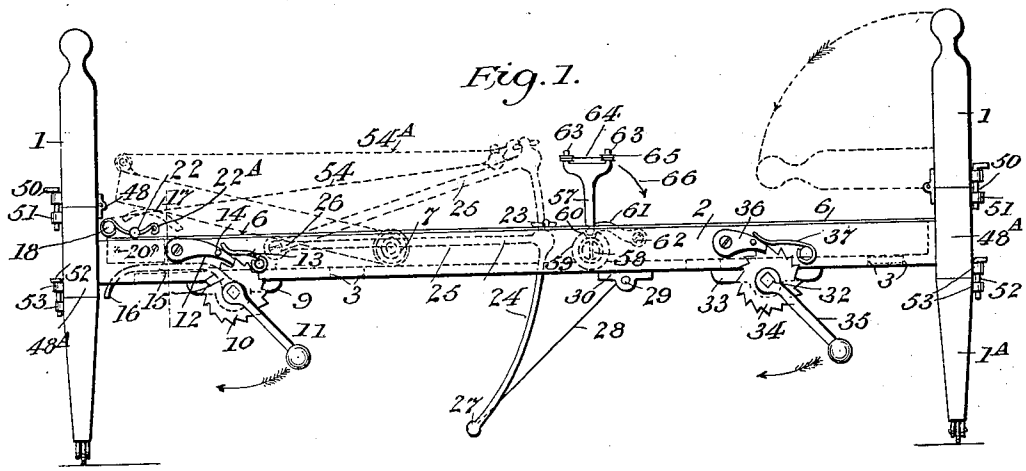


Fig. 2.

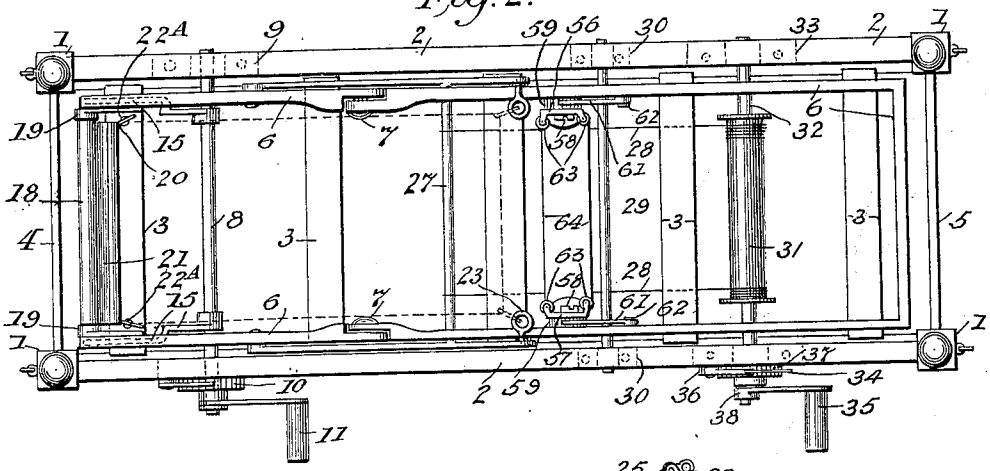


Fig. 4.

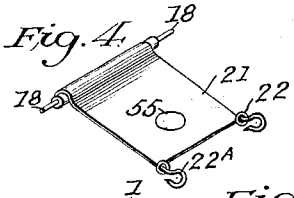


Fig. 5.

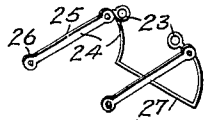
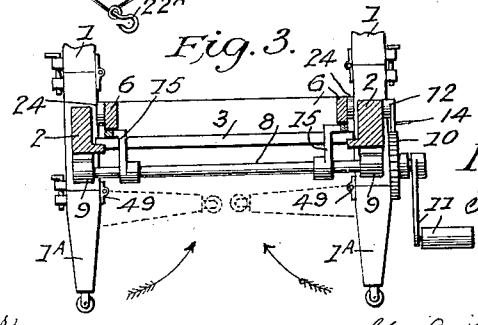


Fig. 3.



Witnesses:

Claude A. Dunn.

Mel Emerson Peters.

Inventor:

Felix M Lepore

By H. S. Bailey Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FELIX M. LEPORE, OF DENVER, COLORADO.

INVALID'S BED.

SPECIFICATION forming part of Letters Patent No. 654,165, dated July 24, 1900.

Application filed November 6, 1899. Serial No. 736,029. (No model.)

To all whom it may concern:

Be it known that I, FELIX M. LEPORE, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Invalids' Beds; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in beds for invalids and for hospital use; and the objects of my invention are, first, to provide a hospital-bed having means for raising and adjustably securing the head and shoulders of an occupant to an inclined or to a sitting position; second, to provide means for elevating the body of an invalid above the bedstead to any desired position for surgical or other purposes, and, third, to provide means for folding the bedstead up for storage when not in use. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a bed embodying my invention. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a cross-section of Fig. 1 on line A of the bedstead. Fig. 4 is a perspective view of the lifting-sheet and its roller, and Fig. 5 is a perspective view of the lifting-sheet's supporting-frame.

Similar figures of reference refer to similar parts throughout the several views.

Referring to the drawings, the numeral 1 designates the corner-posts; 1^A, the legs of the corner-posts; 2, the side rails; 3, cross-slats which rest on a projecting strip forming an integral part of the side rails.

A headboard 4 and a footboard 5 extend between the corner-posts. A frame 6, which I will term a "tilting" frame, rests on the cross-slats and fits loosely between the side rails and the head and foot boards. The head end of this tilting frame is pivotally jointed at about one-third of its length from the head end by the bolts 7. Under the head portion of this tilting frame and across the sides a shaft 8 is journaled in bearings 9. At one end a ratchet-wheel 10 is secured on the outside of the side rail, and a crank 11 is fitted to the end of the shaft, which is squared to receive it. A pawl 12 is pivoted to the side of the rail and engages the teeth of the ratchet and is kept in mesh with them by a spring 13. A projecting pin 14, which is secured to the pawl, enables the pawl to be raised by the hand of an operator out of mesh with the ratchet-wheel.

Upon the shaft adjacent to the opposite sides of the frame two lifting-arms 15 are mounted, which are formed to extend over the end cross-slat and under the end of the frame 6. The ends 16 of these lifting-arms are curved downward, so that, by turning the shaft by means of the crank, they are raised, as shown by the dotted lines 17, and they will bear and work smoothly against the under side of the end of the frame.

Across the end of the frame 6 a roller 18 is mounted in brackets 19 at each end which are secured by the screws 20 to the side pieces of this frame. This roller may be a common form of a spring-operating curtain-roller or a plain roller which can be turned by hand. A sheet or blanket 21, which is shown in Fig. 7, is secured to it. The sheet is normally rolled up on the roller, as shown in Figs. 1 and 2. The free end of this sheet contains eyes 22 and hooks 22^A at its corners or other suitable means for detachably fastening it to the eyes 23 of the lifting-frame 24 when it is unrolled for use.

The lifting-frame 24, which I will term the "sheet-lifting" frame, consists of the side arms 25, which are pivotally connected by the bolts 26 to the outside of the sides of the frame 6 and to its head portion and between the sides of this frame and the sides of the bedstead. The opposite ends of the sheet-lifting frame are bent downward and extend to near the level of the ends of the legs of the corner-posts and curve slightly toward the pivotal end of its arms. At their lower ends they are turned toward and are connected together by an integral rod portion 27, as shown in Fig. 5. From their free upper ends a lateral eye 23 extends over the top of the frame 6, to which the hooks of the sheet are attached. Two ropes 28 are attached to the rod portion 27 of the sheet-lifting frame. They extend over

the roller 29, which is supported in suitable bearings 30, attached to the under sides of the side rails of the bedstead and extend to the winding-drum 31, to which they are attached. The drum is supported by a shaft 32 in bearings 33, secured to the under side of the side rails of the bedstead. A ratchet-wheel 34 is secured to the shaft on the outside of one rail, and a crank 35 is fitted to the end of the shaft adjacent to the ratchet-wheel, which is squared to receive it. A pawl 36 is pivotally attached to the rail and meshes with the ratchet-wheel and is held in operative engagement therewith by a spring 37. A pin 38 projects from the side of the pawl and enables it to be raised to disengage it from the ratchet when it is desired to lower the sheet and its lifting-frame from its raised position, which is shown by the dotted lines 38, to which position it is raised by winding the rope on the drum by turning the crank, the pawl and spring locking and holding the drum from unwinding whenever the crank is replaced.

I have arranged the bedstead so that it can be folded up when not in use, so that it may be easily stored away or placed at the side of a room or in a closet. In carrying out this feature of my invention I have hinged the posts and legs. Thus the top of the posts are hinged by a hinge 48 to the central portion 48^A, that connects with the side rails, so that they will fold over toward the side rails, and the legs are also hinged by hinges 49 to the central portion, but are arranged to swing upward toward each other under the ends of the bed. The tops are locked in vertical positions by sliding bolts 50 and keepers 51 and the legs and center portions by the bolts 52 and keepers 53.

The tilting head portion of the inner frame is adapted to raise a patient to an inclined or sitting position, the ratchet-wheel and pawl locking it in any position it is raised to by its crank.

The lifting-sheet is adapted for surgical and other purposes and raises the hips of invalids above their heads, as shown by the incline of the dotted lines 54, which represents a plane of its raised position. A patient can also be raised bodily up above the bed and held substantially level by raising the head portion of the tilting frame and the end of the sheet at the same time. The sheet would then occupy a horizontal plane substantially like the dotted line 54^A. An aperture 55 is made in the sheet near its free end for access through the sheet to its upper portion at this point. In Fig. 2 the position of the sheet is shown in dotted lines in its extended position hooked to the eyes of its frame. When not in use, it is rolled up in the roller and does not interfere with the bedding.

56 and 57 designate two arms that are pivotally attached by a screw 58 opposite one another to preferably the inside of the frame 6, although they could be attached, if preferred, to the side rails 2. A hub portion 59 is formed at the pivotal end in which there is a notch 60, into which fits the free end of the pawl 61, which is pivotally attached to the side of the frame by a screw 62. The pawl is adapted to lock the arm only in an upright position, as shown. The upper end of each arm is preferably widened out, and at each corner an upright pin 63 projects from them. Upon these pins a band 64, of sheeting or flexible material, is hooked by rings 65, that are secured to the corners of the band. This arrangement enables the band to be easily attached and removed from the pins of the arms. The arms and band are adapted for a leg-rest, upon which an injured leg may be raised above the bed for examination, dressing, or for rest. There may be several bands provided varying a few inches in length, so that different heights above the bed may be provided by using one that would just reach across or another that would sag, say, several inches. When not in use, the pawls can be raised out of the notches and the arms turned down in the direction of the arrow 66 and will rest on the shaft 29.

The bedstead may be all made of metal and be designed light of weight and portable. The arrows indicate the direction of the operative movements of the cranks, the head of the lifting-frame, and the sheet-lifting frame.

My invention is simple and can be applied to beds in use with but trifling expense and will add greatly to the comfort and ease of handling invalids.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the posts, the side rails and the tilting frame, of a roller journaled to the head of said frame and a sheet or blanket attached to said roller, a sheet-supporting frame pivotally secured to the sides of said tilting frame, means for unrolling said sheet and securing its loose end to the said frame, and means including a drum and a ratchet-and-pawl holding device for raising and locking said sheet-supporting frame in any desired position above said side rails, substantially as described.

2. The combination with the posts and the side rails of the tilting frame, the shaft, the arms secured to said shaft, the ratchet-and-pawl holding device and the crank for holding said frame, with the roller journaled to the end of the tilting frame, the sheet secured to the said roller, the hooks secured to the free end of said sheet and the sheet-supporting frame arranged to swing at one end above said side rails, eyes in the free ends of said frame adapted to receive the hooks of said sheet and means for raising and lowering said frame including the shaft, the drum mounted on said shaft, the ropes connecting said frame to said drum, the crank and the ratchet-and-pawl locking device, substantially as described.

3. The combination with the posts, the side

rails, the cross-slats and the tilting frame, of a common spring-actuated, rotating curtain-roller mounted on the head end of said tilting frame, a sheet or blanket secured at one end to said roller and adapted to be unrolled and spread over a portion of the head end of the bed and adapted to support the body portion of invalids, an aperture in said sheet near its lower end, a vertically-swinging supporting-frame arranged and adapted to support the free end of said sheets and means including winding and locking mechanism for raising and locking said sheet in adjusted positions above said side rails and said tilting frame, substantially as described.

4. The combination of the posts, the side rails and the tilting frame, of the arms pivoted at one end to the opposite sides of said frame, and having at their opposite ends downward-curved portions and at their lower ends a cross connecting-rod, eye-rings at their upper ends, a winding-drum rotatably mounted adjacent to said arms, ropes secured at one end to said cross-rod and at their opposite end to said drum, a shaft supporting said drum, a ratchet-wheel secured to said shaft, a spring-controlled pawl arranged to engage and lock said ratchet-wheel, a pin for raising said pawl out of engagement with said ratchet-wheel and a crank for winding said drum, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FELIX M. LEPORE.

Witnesses:
BESSIE THOMPSON,
ANDREW KELLY.