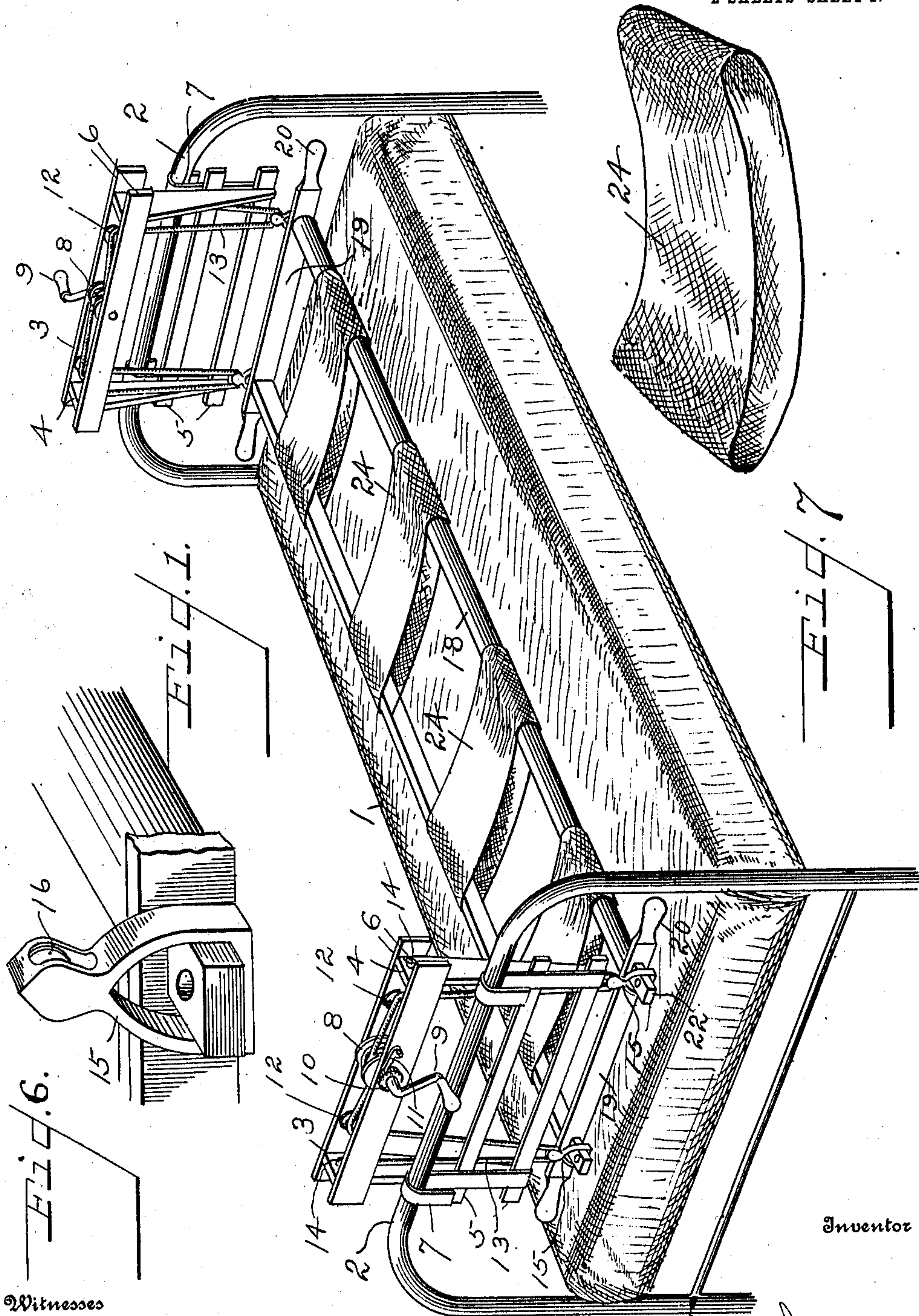


J. FRAVEL.  
INVALID LIFTING APPARATUS.  
APPLICATION FILED JUNE 12, 1909.

982,807.

Patented Jan. 31, 1911.

2 SHEETS-SHEET 1.



Witnesses

H. H. Dickinson  
Mabel B. Carr

By

Jesse Fravel  
J. L. Walker

Inventor

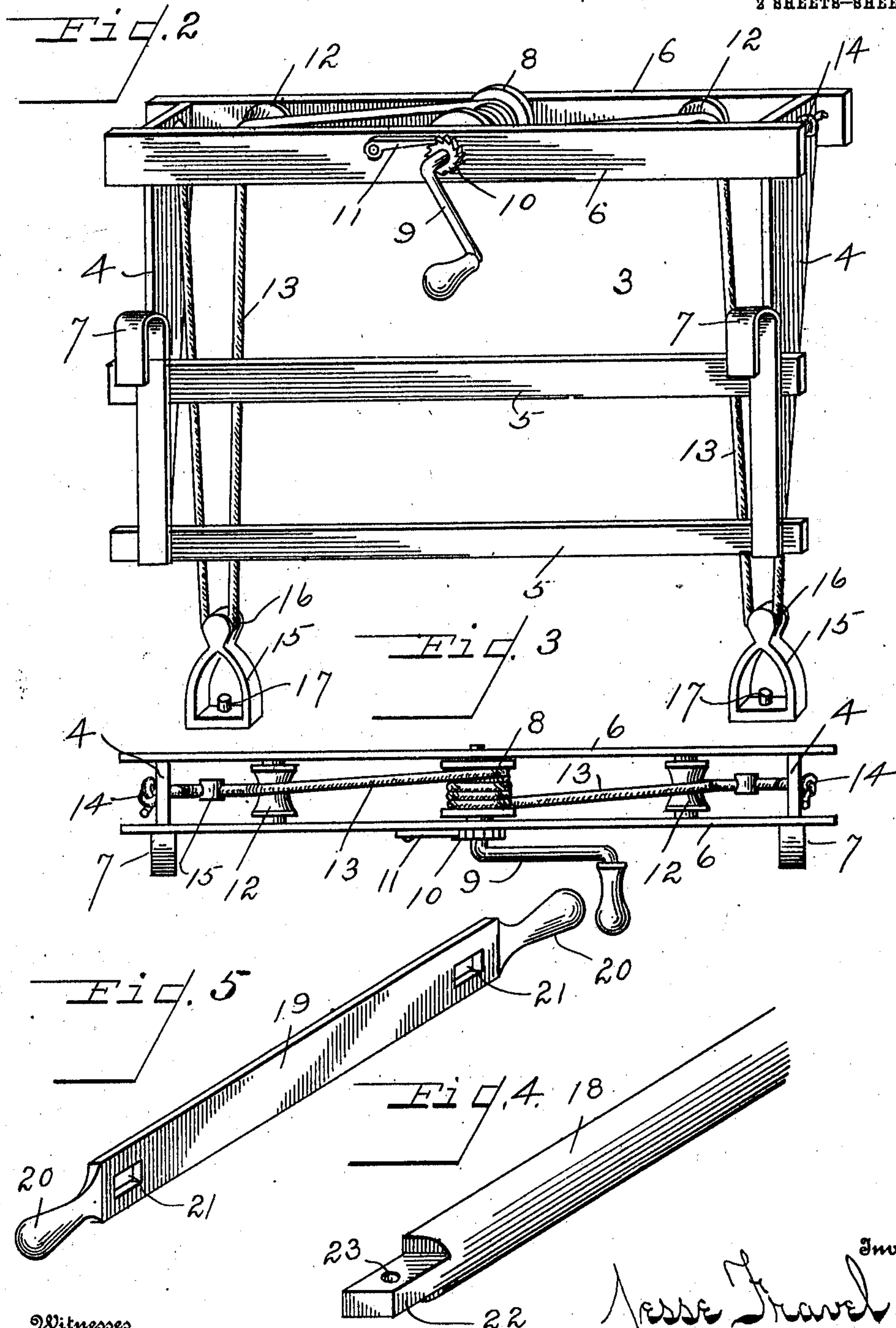
Attorney

J. FRAVEL.  
INVALID LIFTING APPARATUS.  
APPLICATION FILED JUNE 12, 1909.

982,807.

Patented Jan. 31, 1911.

2 SHEETS—SHEET 2.



Witnesses

H. H. Dickinson  
Mabel B. Carr

By

Jesse Fravel  
J. L. Walker  
Inventor  
Attorney



# UNITED STATES PATENT OFFICE.

JESSE FRAVEL, OF DAYTON, OHIO.

INVALID-LIFTING APPARATUS.

982,807.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed June 12, 1909. Serial No. 501,823.

*To all whom it may concern:*

Be it known that I, JESSE FRAVEL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Invalid-Lifting Apparatus, of which the following is a specification.

My invention relates to invalid beds and particularly to lifting and conveying apparatus by which the patient may be, without effort on his or her part, gently elevated or moved, thereby facilitating the operations of making up the bed, airing the bed clothing, and the performance of various offices incident to the attendance upon invalids.

The object of the invention is to simplify the structure as well as the means and mode of operation of such devices, whereby they will not only be cheapened in construction, but will be rendered more efficient in use, easily operated, and unlikely to get out of repair.

I am aware that there have been devices of this character devised, but such devices have usually involved a frame extending over the bed and within sight of the patient, which has been found unsatisfactory and irritating to a patient of nervous temperament.

To provide a structure which will be compact, having a minimum number of parts is one of the primary objects of the invention.

With the above primary and other incidental objects in view, as will more fully appear in the specification, the invention consists of the features of construction, parts and combinations thereof and the mode of operation, or their equivalents, as hereinafter described and set forth in the claims.

Referring to the drawings, Figure 1 is a perspective view of a bed with the improved lifting apparatus in position thereon. Fig. 2 is a detail perspective view of one of the frame members and connections. Fig. 3 is a top plan view of one of the frame members. Fig. 4 is a perspective view of one end of one of the side rails. Fig. 5 is a perspective view of one of the spreader bars. Fig. 6 is a detail perspective view showing the engagement of the side rail, the spreader bar, and the stirrup. Fig. 7 is a detail perspective view of one of the endless webbing supporting members.

Like parts are indicated by similar char-

acters of reference throughout the several views.

In the drawings, 1 is a bed of the usual hospital type, having similar head and foot rails 2. Supported on the head and foot rails 2 of the bed frame are duplicate frame members 3. These frame members (see Fig. 2) comprise uprights 4 connected by horizontal bars 5—5, 6—6. Hook members 7 are secured to the frame members and adapted to engage the horizontal rail 2 of the bed frame. Journaled in the horizontal bars 6—6 is a drum 8 rotated by a crank 9. Secured on the shaft of the drum 8 is a ratchet wheel 10 engaged by a detent pawl 11 pivoted on the horizontal bar 6— and engaging the ratchet wheel 10 to maintain the drum 8 in its adjusted position. Also journaled in the horizontal bars 6—6 are idler pulleys 12 located at opposite sides of the drum 8.

Flexible cables 13 are secured adjacent to the upper portion of the upright members 4 as at 14, said cables forming a bight or loop between their connection 14 and the idlers 12 pass over said idlers to the drum 8 where they are connected in reverse arrangement whereby upon the rotation of the drum 8 in a given direction both the cables 13 will be simultaneously wound upon the drum. Carried in the bights of the respective cables 13 are stirrup members 15 having in their upper portions pulleys 16 about which the cables 13 reeve. Within the stirrup 15 is a projecting stud 17. The frame members at the opposite ends of the bed are exact duplicates. The stretcher portion of the device comprises side rails 18 connected at opposite ends by spreader bars 19. The spreader bars are provided with carrying handles 20 and mortise 21 through which the reduced ends 22 of the side rails 18 project. The reduced portion 22 of the side rails projecting beyond the spreader bars 19 is adapted to engage within the stirrups 15 and is provided with a vertical hole 23 for the engagement of the stud 17 to prevent the accidental disengagement of the stirrup and side rail. Endless bands 24 of webbing or other fabric inclose the side rails 18 and form a support for the patient.

The device is not permanently secured to the bed but is detachable and adapted to be secured thereto only when it is necessary to lift the patient from the bed. When in use, a number of endless bands 24 are



passed beneath the patient, the side rails 18 are then passed through the bands 24 on either side of the patient. The spreader bars 19 are engaged with the side rails by having reduced portions 22 of the side rails projected through the openings 21 of the spreader bars. The frame members 3 are then supported upon the head and foot of the bed respectively, and the stirrup members 15 thereof are engaged with the projecting portions 22 of the side rails 18 at the opposite ends of the device. An operator at each end of the bed, then rotates the drums 8 by means of the cranks 9 to wind the cables 13 upon the drums 8 of the head and foot members 3. The cables 13 reeving about the stirrup pulleys 16 and the idler pulleys 12 in the frame members serve to elevate the stretcher portion of the device and therewith the patient from the bed. The engagement of the detent pawl 11 with the ratchet wheel 10 maintains the stretcher in elevated position while the bedding is being changed. In case it is necessary to move the patient the stretcher portion, comprising the side rails, spreader bars and the endless webbing bands may be used independent of the elevating devices and the device affords an easy and convenient method of placing the patient on such a stretcher without inconvenience to the patient.

From the above description it will be apparent that there is thus produced a device of the character described, possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportion, detail construction, or arrangement of parts, without departing from the principle involved or sacrificing any of its advantages.

Having thus described my invention I claim:

1. In a lifting apparatus, two separate and independent frame members, means for removably supporting one of the frame members on the head portion of the bed, and means for removably supporting the other frame member on the foot portion thereof, winding drums mounted in each of the frame members and operated independent of each other, two dependent cables carried by each of the frame members and adapted to be simultaneously wound upon the winding drum of the corresponding frame member, and a stretcher adapted to support the patient, with which the cables of each of the frame members is connected.

2. In a lifting apparatus for invalids, two separate and independent supporting frames, hooks located on the outer sides of said frames adapted to engage the head and foot portions of the bed, a shaft journaled in each of the frames, winding drums carried by each of the shafts, cranks secured upon

each of the shafts by which the said shafts may be independently rotated, ratchet wheels carried by each of the shafts and pawls on the frame members adapted to engage the corresponding ratchet wheels whereby each of the winding drums will be maintained in its operated position independent of the operation of the other winding drum, independent lifting cables adapted to be wound upon the winding drums of each frame member, and a stretcher for the support of the patient with which the cables of the separate frame members are removably connected.

3. In a lifting apparatus for invalids, two separate and independent supporting frames adapted to be removably secured upon the head and foot portions of the bed, hoisting apparatus in each of the frames, the hoisting apparatus of each frame being capable of operation independent of that of the other frame, a knock down stretcher separable into its component parts, comprising longitudinal side bars, transverse spreader bars with which the side bars are detachably connected, endless bands of fabric through which the side bars extend and means for detachably connecting the hoisting apparatus of each supporting frame with the stretcher whereby the opposite ends of the stretcher may be independently lifted.

4. In a device of the character described, the combination with a stretcher adapted to support the patient, of independent frame members adapted to be removably supported on the head and foot portions of the bed, winding drums journaled in each of the frame members, cables carried by the frame members adapted to be simultaneously wound upon said drum, stirrup members carried by said cables and adapted to engage the side bars of the stretcher, the said side bars being provided with an opening adjacent to the extremities thereof, a stud located within each of the stirrup members and adapted to engage the opening in the side bar of the stretcher to prevent the accidental disengagement of the parts.

5. In a device of the character described, a stretcher comprising side bars, spreader bars arranged transversely and engaging with the side bars, endless bands of fabric through which the side bars extend and upon which the patient is supported, the said stretcher being separable into its component parts, independent frame members adapted to be removably supported upon the head and foot portions of the bed, elevating means carried in each of said frame members and adapted to be engaged with said stretcher.

6. In a device of the character described, a knock-down stretcher comprising independent side bars, transverse spreader bars detachably engaged with the side bars, end-



less bands of fabric inclosing the side bars and adapted to support the patient, hoisting apparatus comprising independent frames removably supported on the head and foot portions of the bed, flexible cables carried by said frames, winding mechanism for said cables located in each of the frames and operated independent of each other, connections between said cables and the side bars of said stretcher.

7. In a device of the character described, the combination with a knock-down stretcher comprising parallel independent side bars, said side bars being reduced at their extremities and having an opening in said reduced portion, transverse spreader bars having mortises therein through which the reduced ends of the side bars are adapted to project, endless bands of fabric adapted to be passed beneath the patient and through

which the side bars are extended on each side of the patient before being engaged with the spreader bars, independent frame members supported on the head and foot portions of the bed winding drums journaled in said frame members, cables carried by said winding drums, stirrup members carried by said cables and adapted to be engaged with the reduced portion of the side bars projecting beyond the spreader bar, said stirrup members having projections therein engaging the opening in the extremity of the side bars, and means for maintaining the stretcher in its elevated position.

In testimony whereof, I have hereunto set my hand this 22nd day of May A. D. 1909.

JESSE FRAVEL.

Witnesses:

HARRY F. NOLAN,  
F. L. WALKER.