

No. 662,477.

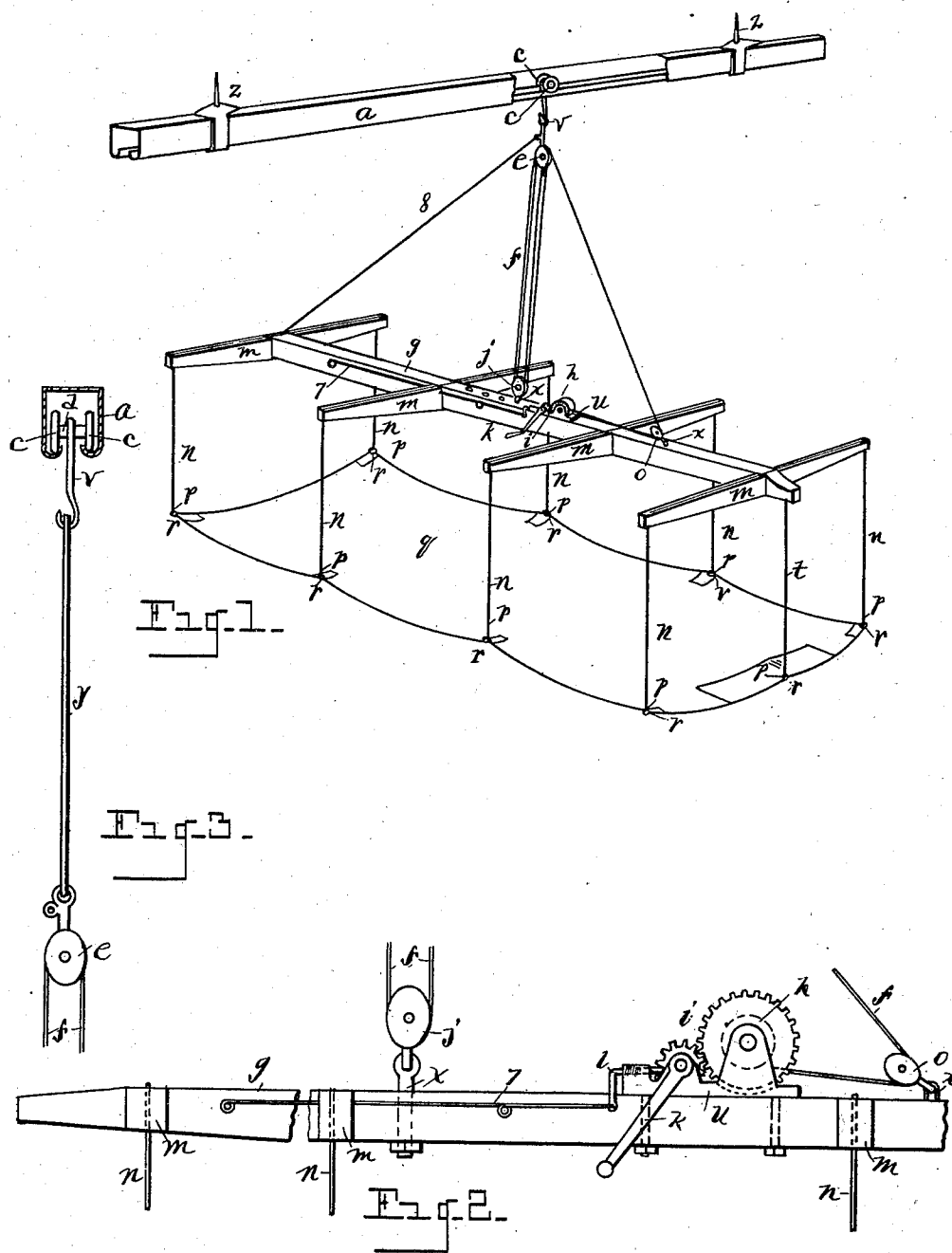
Patented Nov. 27, 1900.

C. B. ULRICH.
LIFTING DEVICE FOR INVALIDS.

(Application filed Nov. 17, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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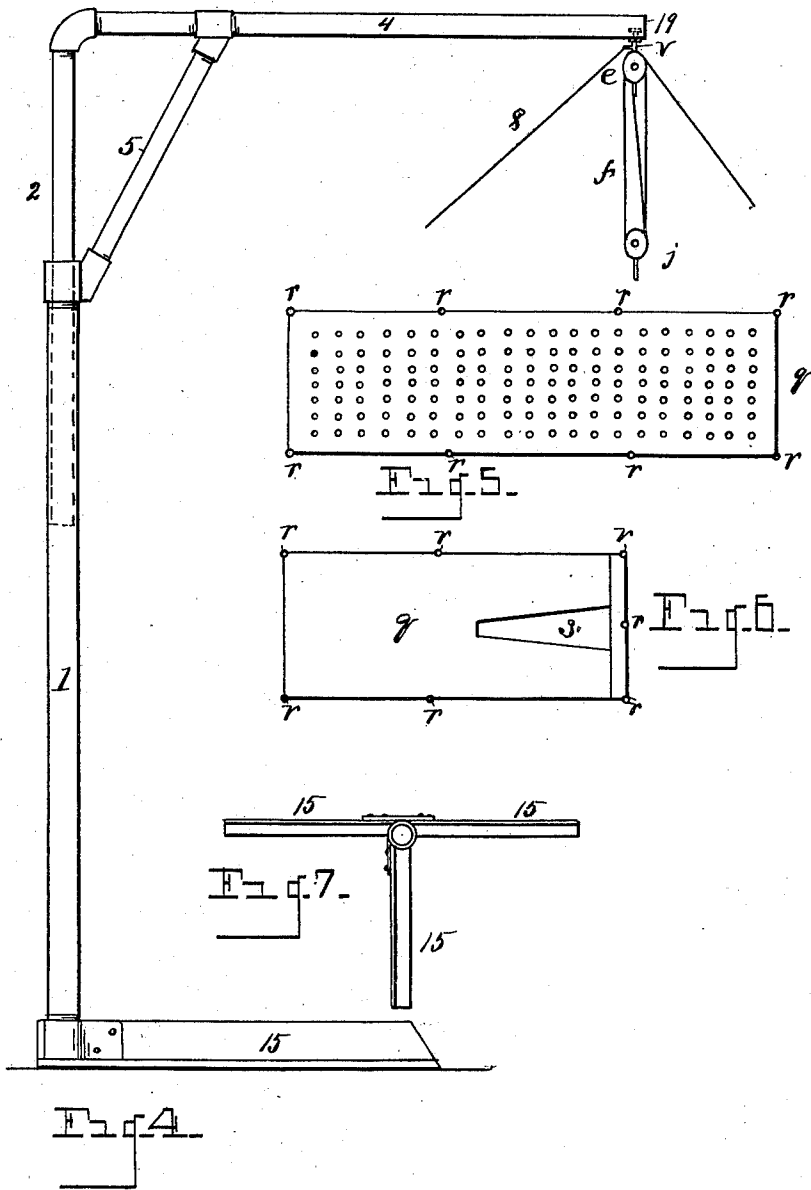
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UNITED STATES PATENT OFFICE.

CHARLES B. ULRICH, OF DULUTH, MINNESOTA.

LIFTING DEVICE FOR INVALIDS.

SPECIFICATION forming part of Letters Patent No. 662,477, dated November 27, 1900.

Application filed November 17, 1899. Serial No. 737,290. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. ULRICH, a citizen of the United States, residing at Duluth, county of St. Louis, State of Minnesota, have invented a certain new and useful Improvement in Lifting Devices for Invalids; and I 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, which form a part of this specification.

My invention relates to a lifting device for lifting invalids, and is designed for raising an invalid off from a bed in a reclining or sitting position, whereby the patient may be moved off from the bed to air the bed or to make up the bed, to rest the patient, to transfer the patient to a chair or to the bath-room or out of the room in order to air the room, or to transfer the patient to an operating-room. The device is also adapted to raise the patients into position where they may take slight exercise, as by swinging back and forth with their feet upon the floor; also, to facilitate the use of a bed-pan, to roll the patient from side to side, and to handle the patient generally without exertion of the patient, the device being readily operated by an attendant. The device or portions thereof may also be made removable when not in use, or parts thereof, as the track, may be permanently located.

My invention consists of the combination of devices hereinafter specified and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective. Fig. 2 is an enlarged view in side elevation. Fig. 3 is a view in section through the track. Fig. 4 is a detail view of a removable crane to support the track. Fig. 5 shows a perforated blanket. Fig. 6 illustrates a modification in the construction of the blanket. Fig. 7 is a reduced plan view of the foot of the crane.

More particularly my present invention is designed as an improvement, as respects certain features, over a device of this class for which United States Letters Patent were granted to me June 2, 1896, No. 561,363.

Any suitable track (indicated at *a*) may be employed, the same being engaged, preferably, upon the ceiling of a room, as in a hospital-ward, for example. Wheels *c* are arranged to travel upon the track, said wheels mounted upon an axle *d*, with which is connected a pulley *e*, over which is passed a lifting-rope *f*. A lifter-bar *g* is provided with a drum *h*, said drum made rotatable by suitable gear *i*, whereby the lifting-rope may be wound upon said drum. The lifting-rope is also passed over a pulley *j*, attached to the lifting-bar at one side the drum, and preferably also over an additional pulley *o*, attached to the lifter-bar on the opposite side of the drum. The gear is actuated by a crank-handle *k*, a pawl *l* being employed to hold the gear in fixed position. This lifting-bar, with its attachments, is suspended over the patient's bed upon the track. The lifting-bar is provided with a series of cross-arms *m*, having depending cords *n* at their extremities, each of said cords being preferably provided at their lower extremities with a snap-hook at *p*. A canvas or blanket *q* is employed to be placed under the patient, provided at its lateral edges with rings *r* to engage the hooks upon the ends of said cords. The blanket may be constructed in a variety of ways and of various materials. Where it is desired to give a patient a bath, a perforated rubber blanket may be employed. (Indicated in Fig. 5.) To facilitate the use of a bed-pan, a shorter canvas is preferably employed, provided with an elongated slit, (indicated at *s*, Fig. 6,) an additional depending cord or rope *t* being engaged with the lower end of the lifting-bar and with the canvas intermediate its lateral edges to hold the canvas from spreading unduly adjacent to said slot.

I prefer to mount the drum upon which the lifting-rope is wound upon a bracket (indicated at *u*) rigidly secured to the lifter-bar.

If the ceiling is high, a suspending rod or cable *y* is employed to connect the axle of the wheels with the upper pulley. In operation the lifting-bar, with its attachments, is moved on the track over the patient and the cords depending therefrom are engaged with the canvas or blanket placed under the pa-

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tient. Then by means of the gear engaged with the drum the lifting-rope is wound, thereby lifting the patient, when he may be transferred upon the track, as mentioned.

5 The track may extend upon the ceiling across a hospital-ward, so that the lifting device may be moved over any patient therein.

The pulleys *j* and *o* are perfectly engaged with the lifting-bar by means of swivels *x* or
10 their equivalent. The axle *d* of the wheels *c* may be provided with a depending hooked arm *v* to engage the rod *y* or the pulley *e*.

Where the track *a* is attached to a ceiling, supporting-brackets *z* are employed. The
15 track shown in the drawings is constructed with an inclosing body channeled on its under side and provided with flanges projecting into the body, the wheels *c* traveling in the ways formed at the sides of said flanges.

20 Instead of a track *a* a crane *b* may be employed. The crane *b* is constructed with a hollow base-section (indicated at 1) engaged upon a supporting-foot of angle-iron or otherwise. Into the hollow base-section is tele-
25 scoped a section 2. The section 2 carries a lateral arm 4, upon which the lifter-bar is suspended. A brace 5 is shown bracing the arms upon the adjacent section. The crane may be readily placed at the end of the bed
30 and is readily removable from the room. The arm 4 may be swung laterally in the base-section 1, so as to carry the patient away from over the bed. The foot of the crane may consist of three radiating parts 15. (Indicated more particularly in Fig. 8.) The
35 lifting-bar *g* is provided with a series of perforations in order that the pulley *j* may be adjusted into desired position, so that the center of gravity may be changed as re-
40 quired. The pawl *l* is preferably in the nature of a spring-pawl. The pawl may be operated from any desired position to disengage it from the adjacent gear. I prefer to attach
45 to the pawl a rod 7, extending longitudinally of the bar *g* toward the head thereof, so that it may be readily operated by the attendant. Where it is desired to securely hold the lift-
50 ing-bar *g* from tilting longitudinally, a rod or cord 8 may be employed, connected with the pulley *e* and with the forward end of the lifting-bar *g*.

The suspending-cords *n* preferably pass through the ends of the cross-arms and extend across the top of said arms, so that if
55 by any possibility the corresponding arms should break the cord will be sustained upon the lifting-bar and prevent the patient from dropping.

The addition of the pulley *o* materially as-
60 sists in guiding the rope while the patient is being turned from one side to the other, the turning being readily accomplished by tilting the lifter-bar in the proper direction.

In using the crane *b* I prefer to attach the
65 pulley *e* permanently to the outer end of the frame, which may readily be done by bolting

the rod *v* to the arm 4, as indicated at 19, Fig. 4.

The pulley *o* is employed as a guide-pulley to keep the rope from winding against the
70 side of the drum when the patient is tilted or when the lifting-frame is tipped to one side. By the use of this additional pulley the rope will not wind against the side of the drum when letting the patient down.

By providing the pawl with a rod 7, extend-
75 ing longitudinally of the lifting-bar toward the head of said bar, the pawl may be released by the hand of the attendant at the head of the frame, while with the same hand
80 the lifting device may be steadied at the same time, the other hand being employed to operate the drum.

What I claim as my invention is—

1. In a lifting device, the combination of a
85 support, a lifting-bar, a series of cross-arms engaged therewith, a pulley carried by said support, a pulley *j* attached to the lifting-bar, a guide-pulley *o* attached to the lifting-bar, a rope or cable engaged with said pulleys, a
90 rotatable drum having a fixed engagement with said lifting-bar and connected with said rope, a pawl to hold the drum in normal position, gear to operate said drum, depending
95 devices connected with the outer ends of the cross-arms, and a canvas or blanket engaged with said devices.

2. In combination, a support, a pulley connected with said support, a lifting-bar, a drum
100 upon said bar, pulleys engaged with said bar on opposite sides of the drum, a rope passing over said pulleys and drum, means to rotate said drum to raise and lower the lifting-bar, depending cords suspended from the extre-
105 mities of the cross-arms, and passing from extremity to extremity of the cross-arms, a canvas or blanket connected with said cords, and a depending cord suspended from the lower
110 end of the lifting-bar to engage with the lower end of the canvas or blanket intermediate its lateral edges, substantially as described.

3. In a lifting device, a support, a lifting-bar, means connecting said bar with said support
115 to raise and lower said bar, a series of cross-arms engaged with the lifting-bar, depending cords connected with the extremities of the cross-arms, a canvas or blanket provided with an elongated slit toward one end thereof
120 engageable with said cords, and a cord connected with the lower extremity of the lifter-bar and with said canvas intermediate its edges and adjacent to said slit, substantially as described.

4. In a lifting device, the combination of a
125 support, a lifting-bar provided with a series of cross-arms engaged therewith, a rotatable drum having a fixed engagement with said lifting-bar, pulleys on either side of said drum engaged with the lifting-bar, a pulley connected with the support, a rope or cable con-
130 necting said pulleys and said drum, a pawl to hold the drum in given position, gear to

operate said drum, depending devices connected with the outer end of said cross-arms, a canvas or blanket engaged with said devices, and a device engaged with the pulley
5 connected with said support and with one extremity of the lifter-bar to hold said bar from tilting.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES B. ULRICH.

Witnesses:

CHARLES C. TEARE,
JESSE NORTON.