No. 826,278. PATENTED JULY 17, 1906.

J. B. RUNNER.

LIFTING JACK.

APPLICATION FILED DEC. 28, 1905.

Fig. 2.

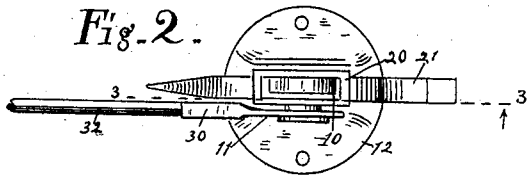



Fig. 1.




Fig. 3.

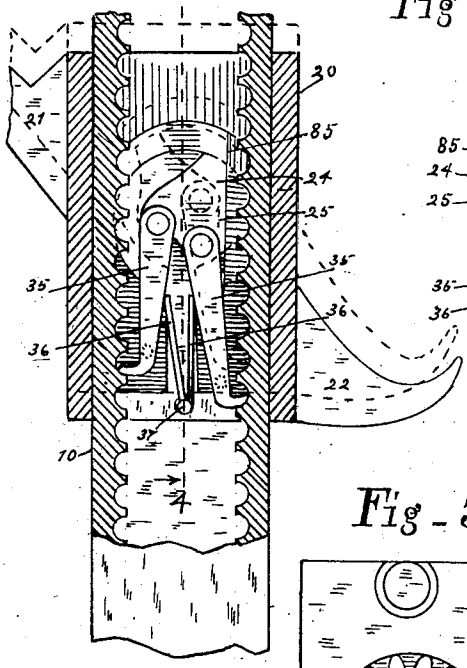



Fig. 4.




Fig. 5.

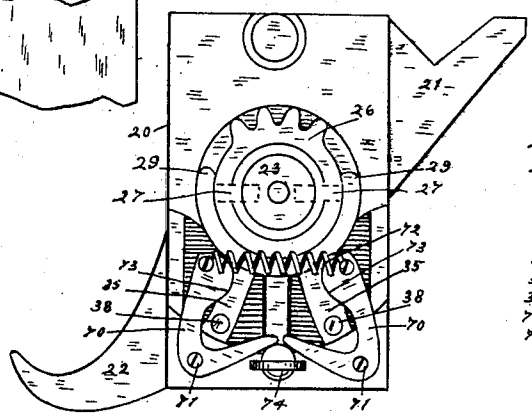
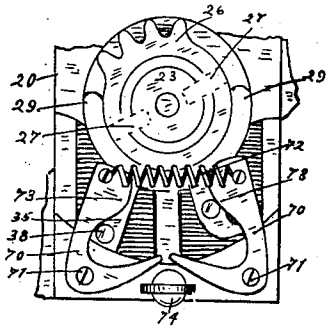



Fig. 6.

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# UNITED STATES PATENT OFFICE.

JOHN B. RUNNER, OF INDIANAPOLIS, INDIANA.

## LIFTING-JACK.

No. 826,278. Specification of Letters Patent. Patented July 17, 1906.

Application filed December 28, 1905. Serial No. 293,560.

*To all whom it may concern:*

Be it known that I, JOHN B. RUNNER, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Lifting-Jack; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention is an improvement added to the lifting-jack set forth in Letters Patent granted to me June 6, 1905, No. 791,581. This particular improvement is to cause the lifting-jack to reverse and to operate downwardly to let a load down slowly and safely.

The nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a side elevation of a lifting-jack. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a vertical section through the device on a line 3 3 of Fig. 2 with the parts broken away and the altered position of the traveling frame shown by dotted lines. Fig. 4 is a transverse vertical section on the line 4 4 of Fig. 3. Fig. 5 is a side elevation of the traveling frame as it is shown in Fig. 1, but on a larger scale. Fig. 6 is a view of a portion of Fig. 5, showing the reverser in position to cause the frame to travel downward.

In the first place a rack-bar 10 is provided that is longitudinally recessed and has oppositely-placed racks 11, shown herein facing each other, and in the recess between the racks the means for operating the traveling frame is located. The rack-bar 10 is pivoted at its lower end to the base 12 by a pivot 13. This base may be used for securing the rack-bar on a bench or elsewhere or used as a broad bottom to support the rack-bar when it is placed on the ground. The lower end of the rack-bar is pivoted between two ears 14 from said base, and there is a hole 15 through said ears that registers with a similar hole in the rack-bar when the latter is vertical to hold the same vertical. A pin 16 fits in said holes to hold the rack-bar upright, and when it is removed the rack-bar may be turned down, as in the last three figures. The rack-bar has an opening at its upper end to receive any stationary block or part.

A traveling frame 20 slips over and surrounds the rack-bar 10. It is formed so that its position on the rack-bar may be reversed, if desired. It is in the form of a casing and has on its upper right-side hand an angle-arm 21 and on its lower left-hand side a hooked arm 22. An oscillatory member is mounted in said frame consisting of an arbor 23, having integral on its inner end an enlarged circular head 24, and also integral with said head there is a cam-shaped head 25. This oscillatory member is integral, but may be made in any desired way, so that the parts fit snugly in place, as shown in Fig. 4, for a considerable strain is brought upon them during the operation of the device. A mutilated gear 26 is secured on the outer end of the arbor 23 by screws 27 passing through the gear into the holes 28 in said arbor. On the casing at each side of said gear 26 there is a stop 29 to limit the oscillation of said gear. It is oscillated by a lever 30, having a toothed head to mesh with the teeth of said gear, said lever having a hole in its head whereby it slips readily over the bearing-pin 31, extending upward from the upper part of the traveling frame 20. A handle 32 is secured to said lever. By oscillating the handle the mutilated gear is oscillated.

A pair of dogs 35 are pivoted to the cam-shaped head 25 of the oscillating member and on each side of the center thereof. The dogs extend downward and are pressed laterally into engagement with the racks by springs 36, secured to the traveling frame on the inside at 37, as seen in Fig. 3. It is thus obvious that when the handle and mutilated gear are oscillated the dogs will be alternately elevated and actuated, and while one is being elevated the other will engage its rack and support the traveling frame and load, and thus the operation of the lever 30 will cause the traveling frame to travel upward. The load may be carried by either the angular arm 21 or the curved arm 22.

The dogs 35 are loosely pivoted on the head 25 in recesses, so that the strain on said dogs while under a load will be received by and transmitted to the head 25 rather than the pivot-pins, and said strain is transmitted from the head 25 to the shoulders 85 on the frame above said head, as appears in Figs. 3 and 4. The strain therefore on the parts while under a load is from the dogs directly to the head 25 and from said head 25 directly to said shoulders 85 rather than to the pivots of the dogs or the arbor 23.

The traveling frame is moved along the device rapidly by drawing the two dogs 35 toward each other with one's fingers, and for this purpose each dog has a pin 38 extending

outward to a position where the same is easily engaged by the fingers. These disengage the dogs from the racks and enable the frame to be moved into any desired position readily. The traveling frame 20 may be lowered slowly and gradually under a load by alternately releasing one of the dogs 35. Gravity will cause the frame to move downward and the dogs to alternately engage the racks.

Means is provided for automatically controlling the dogs so that the traveling frame may be gradually lowered under the weight of a load. This means consists of a pair of oppositely-located bell-crank levers 70, pivoted to the traveling frame by pivots 71. The upper ends of the bell-cranks are drawn toward each other by a spring 72 and have shoulders 73, adapted to engage the pins 38 on the dogs 35 when drawn toward each other by said spring. Said shoulders are arranged so that they will push the dogs out of engagement with the rack and prevent a dog from engaging the tooth above or the tooth from which it was last removed, but will permit it to enter a lower tooth. Since the dogs are actuated alternately, they will be alternately acted upon by the bell-crank levers, and while one dog is thus being lowered to the tooth below the other dog will be supporting the load. Therefore with this arrangement a load however heavy may be lowered as gradually and easily as it may be elevated As stated above, said bell-crank levers cause the traveling frame to move downward when the handle-lever 30 is being operated. They cause said traveling frame to move upward when said bell-cranks are held out of engagement with the pins 38 on the dogs by an eccentric knob 74. Thus when said eccentric knob is turned upward, as in Fig. 5, it engages the lower ends of the bell-cranks and holds the upper ends spread so they will not affect the operation of the dogs and the dogs operate as first described in this specification. When the eccentric knob is turned down, as shown in Fig 6, it merely serves as a stop to limit the approach of the upper ends of the levers toward each other.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a lifting-jack, a bar provided with oppositely-located racks, a frame movable on said bar, an oscillating member in said traveling frame, a pair of oppositely-acting spring-controlled dogs pivoted to said member for engaging said racks, pins extending from said dogs whereby they may be disengaged from the racks, and spring-actuated levers mounted on said frame adapted to engage said pins as the dogs are released and temporarily hold them out of engagement with the racks, whereby the frame will be caused to move in an opposite direction from what it would without said levers.

2. In a lifting-jack, a bar provided with oppositely-located racks, a frame movable on said bar, an oscillating member in said traveling frame, a pair of oppositely-acting spring-controlled dogs pivoted to said member for engaging said racks, pins extending from said dogs whereby they may be disengaged from the racks, a pair of bell-crank levers mounted on said frame with one end adapted to engage the pins on said dogs when released from the racks, a spring tending to draw the actuating ends of said levers toward each other, and a stop adapted to be engaged by the other end of said levers to limit their movement.

3. In a lifting-jack, a bar provided with oppositely-located racks, a frame movable on said bar, an oscillating member in said traveling frame, a pair of oppositely-acting spring-controlled dogs pivoted to said member for engaging said racks pins extending from said dogs whereby they may be disengaged from the racks, a pair of bell-crank levers mounted on said frame with one end adaptedto engage alternately the pins on said dogs when released from the racks, a spring tending to draw the actuating ends of said levers toward each other, and means adapted to engage the other end of said levers for throwing and holding said levers in an inoperative position.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

JOHN B. RUNNER.

Witnesses:

N. ALLEMONG,

HELEN B. MCCORD