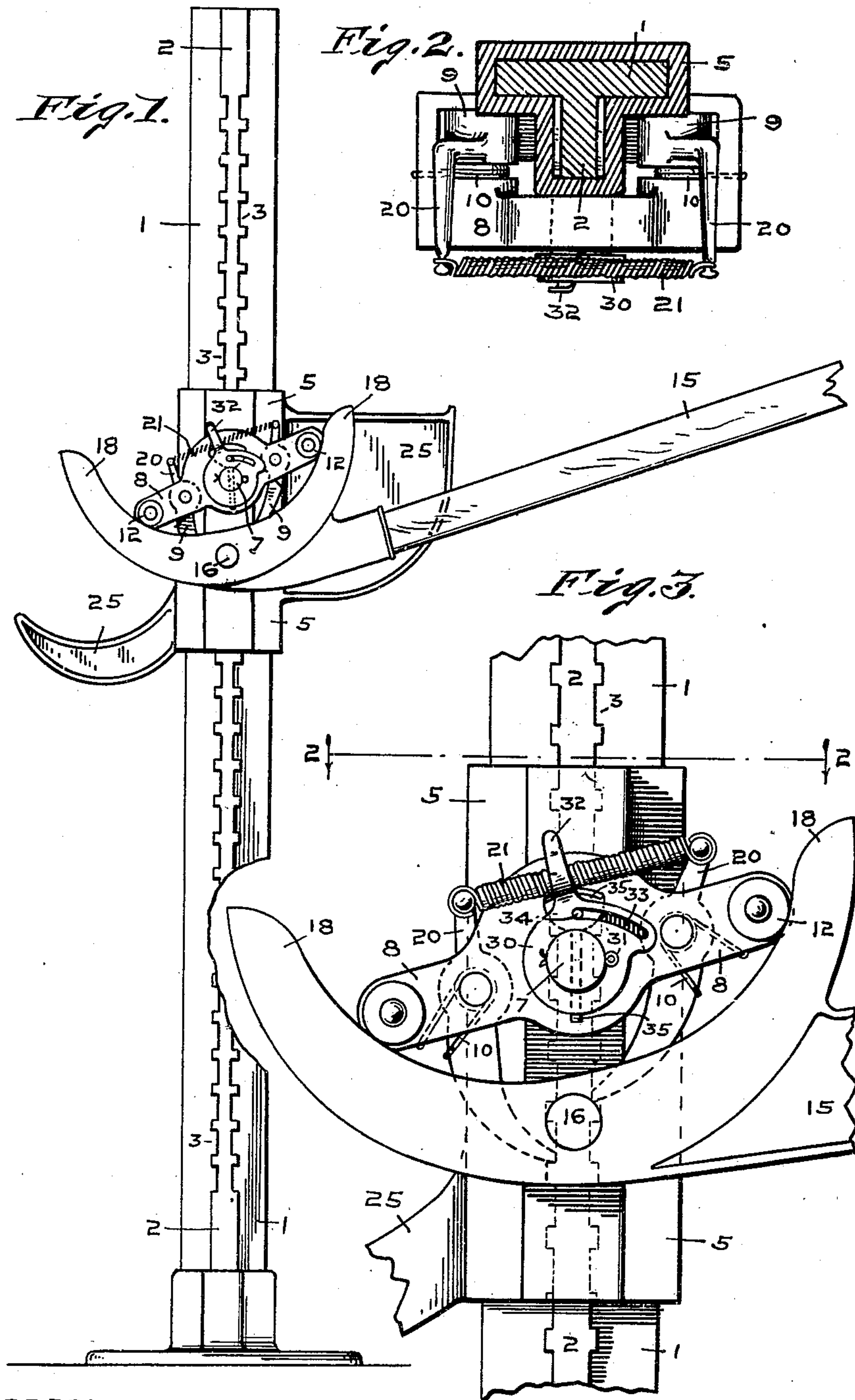


J. B. RUNNER.
LIFTING JACK.

APPLICATION FILED NOV. 22, 1909.

969,567.

Patented Sept. 6, 1910.



WITNESSES:

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LIFTING-JACK.

969,567.

Specification of Letters Patent.

Patented Sept. 6, 1910.

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To all whom it may concern:

Be it known that I, JOHN B. RUNNER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to lifting jacks; and the object of the invention is to provide a lifting jack of the above character whereby the load to be lifted may be raised and lowered by the same movement of the operating lever.

A further object of the invention is to provide a lifting jack within the movable block for carrying the weight may be slid by hand into contact with the object sought to be lifted, so that the operation of moving the object is facilitated.

I accomplish the objects of the invention by means of the lifting jack illustrated in the accompanying drawings, forming a part of this application, in which—

Figure 1 is a front elevation of the lifting jack embodying my invention. Fig. 2 is a cross section of the lifting jack on the line 2—2 in Fig. 3. Fig. 3 is an enlarged detail view in elevation of the lifting mechanism.

In the drawings, 1 represents the upright or stand for the jack upon which the lifting mechanism is mounted. The upright, as shown in Fig. 2, comprises a T-shaped bar, the right angle rib 2 adding strength to the upright and also affording the necessary side surfaces for the notches 3. The means for mounting the lifting mechanism comprises a sleeve or body 5 which is provided with an internal aperture formed to correspond to the exterior surface of the upright 1. The sleeve 5 is provided with a trunnion 7 which forms a bearing for the rocking arm 8, and the arm supports the movable pawls 9, one of which is arranged on each side of the rib 2 of the upright 1, said pawls making engagement with the notches 3 under the tension of the springs 10. The rocking arm 8 also carries the friction rollers 12 so as to reduce the friction between the operating lever and the rocking arm. When the rocking arm 8 is rocked, its opposite ends being alternately elevated and depressed, the pawls 9 are alternately elevated to engage the succeeding notch 3 so that the sleeve 5 is forced

to travel vertically along the upright 1. 55
The rocking arm 8 is actuated by means of the operating lever 15 which is mounted on the trunnion 16 on the sleeve 5. The lever 15 at one end is formed into a yoke and the inner surfaces of the prongs 18 provide a way upon which the friction rollers 12 travel. Hence, when the operating lever 15 is alternately elevated and depressed, the rocking arm 8 will be actuated to alternately raise the pawls 9. It will be noted that by lengthening the rocking arm 8 and placing the friction rollers near the ends of said arm, the contact of the yoke with said arm will be so far removed from the axis of said arm that, with the additional leverage secured, the lifting capacity of the jack is correspondingly increased. This feature is more appreciated by examining other jacks where the operating levers engage the rocking arm, by means of gear teeth, immediately below or at a point parallel with the axis of said rocking arms. 60
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The above description relates to the operation of elevating the sleeve 5 and the load, and the manner in which said sleeve may be lowered will now be described. It will be noted that each of the pawls 9 is provided with the extension 20 which projects above the pivots of said pawls. The two extensions 20 are tied together by means of the coil spring 21 which, when occupying normal position as shown in Figs. 1 and 3, is unexpanded and therefore does not influence or interfere with the free action of the pawls 9, the latter at this time being solely under the influence of the springs 10. When however, the spring 21 is elevated at its center so that the coils are expanded, the said spring will exert a tension upon the pawls 9, and as the operation of expanding the spring increases the tension of said spring upon the pawls will increase until the opposing tension of the springs 10 is overcome, at which time the opposite ends of the pawls will be forced out and away from the notches 3 when the rocking arm is moved to permit said pawls to free themselves. At this time, if the rocking arm 8 is held at an approximate right angle of the upright 1, the sleeve 5 may be moved, without interference, from one end of the upright to the other. This enables the sleeve to be quickly moved so that the lifting prongs 25 will immediately 80
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be brought into contact with the object to be raised, thereby eliminating the slower movement induced by the operating lever 15 which obtains after the act of lifting the object is begun. As before stated, this free movement of the sleeve is possible only when the rocking arm 8 stands at right angle with the upright 1, which position must be maintained by the operator for, unless the rocking arm is so held the pawls 9, even though they stand out of engagement with the notches 3, the pawls will be forced into said notches when the rocking arm 8 is rocked, induced by the arcs in which said pawls are forced to travel. As an illustration, when the operating lever 15 is elevated as shown in Fig. 1 the pawl on the same side as the lever will be free of the notches while the pawl on the opposite side is sustaining the load. When the lever 15 is depressed the free pawl will be lowered, the arc of travel forcing said pawl inward, until the end of the pawl enters one of the notches 3, while by further depressing the operating lever 15 the pawl on the opposite side of the upright 1 is released. When the lever 15 is again elevated the action of the pawls are reversed, thereby causing the sleeve 5 to move downward. The means for expanding the spring, as above mentioned, will now be described.

The lifting jack is provided with the movable plate 30 which is mounted on the trunnion 7 above and rests upon the surface of the rocking arm 8, and the said plate is held in position by means of the cotter-pin 31. The plate 30 is provided with the handle 32 by which it may be rocked on said trunnion 7, and said plate is further provided with a cam slot 33, and this slot is engaged by a pin 34 which is mounted upon a movable member 35 which passes through an aperture in the trunnion 7. The trunnion thus forms a guide for said member 35, causing said member to travel in a determined plane. The upper end of the member 35 is widened as shown and the upper edge of this widened portion is generally bent at right angle so as to present an increased bearing surface for the spring 21. Thus, when the plate 30 is moved about the trunnion 7 the cam shaped formation of the slot 33 will, by means of the pin 34, cause the member 35 to move outward away from the axis of the trunnion. This enforced movement of the plate 30 induces a similar movement of the central portion of the spring 21, causing the latter to be expanded and apply a tension upon the pawls 9, as heretofore described. When the plate 30 is moved in the reverse direction the member 35 is returned to its normal position, at which time the pressure against the spring 21 is also removed.

Having thus fully described my invention, what I desire to secure by Letters Patent, is—

1. In a lifting jack of the above specified class, an upright provided on its opposite sides with a plurality of notches, a movable sleeve arranged to move along said upright, a rocking-arm mounted upon said sleeve, engaging-means carried by said rocking-arm and adapted to engage the notches in said upright, and a yoke contacting the ends of said rocking-arm and adapted to rock said arm for moving the engaging-means alternately into engagement with the notches in said upright.

2. In a lifting jack of the above specified class, an upright provided on its opposite sides with a plurality of notches, a movable sleeve arranged to move along the said upright, a rocking-arm mounted upon said sleeve, engaging-means carried by said rocking-arm and adapted to engage the notches in said upright, a yoke contacting the ends of said rocking-arm and adapted to rock said arm for moving the engaging-means alternately into engagement with the notches in said upright, and means to normally hold said engaging-means into engagement with the notches in said upright.

3. In a lifting jack of the above specified class, an upright provided on its opposite sides with a plurality of notches, a movable sleeve arranged to move along said upright, a rocking-arm mounted upon said sleeve, engaging-means carried by said rocking-arm and adapted to engage the notches in said upright, a yoke contacting the ends of said rocking-arm and adapted to rock said arm for moving the engaging-means alternately into engagement with the notches in said upright, means to normally hold said engaging-means into engagement with the notches, to permit the sleeve to be elevated, and means for holding the engaging-means away from the notches, to permit said sleeve to be lowered.

4. In a lifting jack of the above specified class, a T-shaped upright provided on the opposite sides of the stem of the T with a plurality of notches, a movable sleeve arranged to move along said upright, a rocking-arm mounted upon said sleeve, pawls carried by said arm to engage the notches in said upright, springs to normally hold said pawls toward the notches, a coil spring connecting the pawls together, means to expand the coil spring holding the pawls out of the notches, and means for operating the rocking-arm to permit the pawls to be alternately moved into engagement with the notches in the upright.

5. In a lifting jack of the above specified class, a T-shaped upright provided on the opposite sides of the stem of the T with a plurality of notches, a movable sleeve arranged to move along said upright, a rocking-arm mounted upon said sleeve, pawls carried by said arm to engage the notches in

said upright, springs to normally hold said
pawls toward the notches, a coil spring con-
necting the pawls together, a movable-mem-
ber to expand the coil spring holding the
5 pawls out of the notches, and a cam for
moving the movable-member into engage-
ment with said last mentioned coil spring.

In witness whereof, I, have hereunto set

my hand and seal at Indianapolis, Indiana,
this, 30th day of September, A. D. one thou- 10
sand nine hundred and nine.

JOHN B. RUNNER. [L. s.]

Witnesses:

F. W. WOERNER,
L. B. WOERNER.