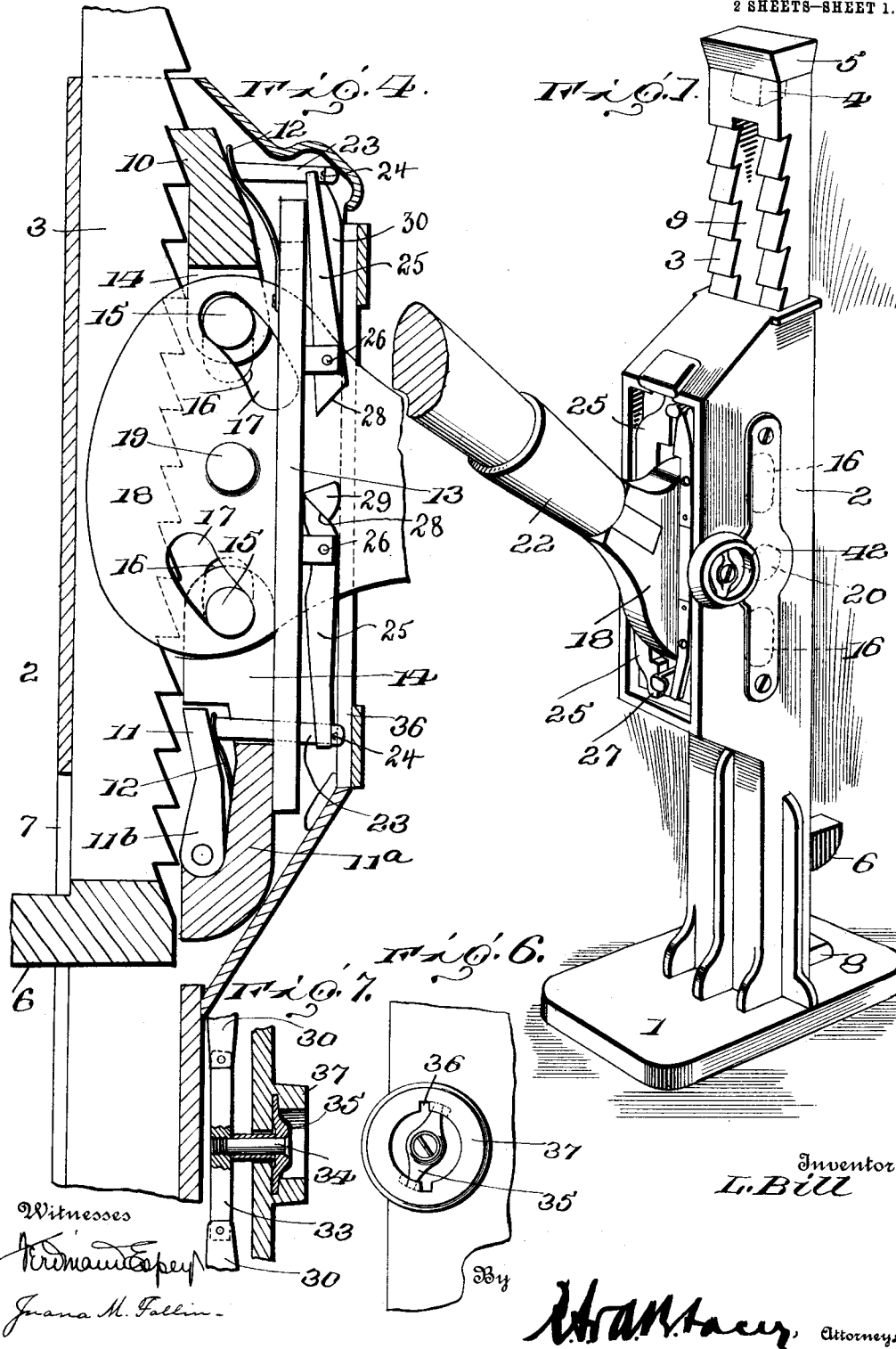


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LIFTING JACK.
APPLICATION FILED JULY 6, 1911.

1,052,451.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.

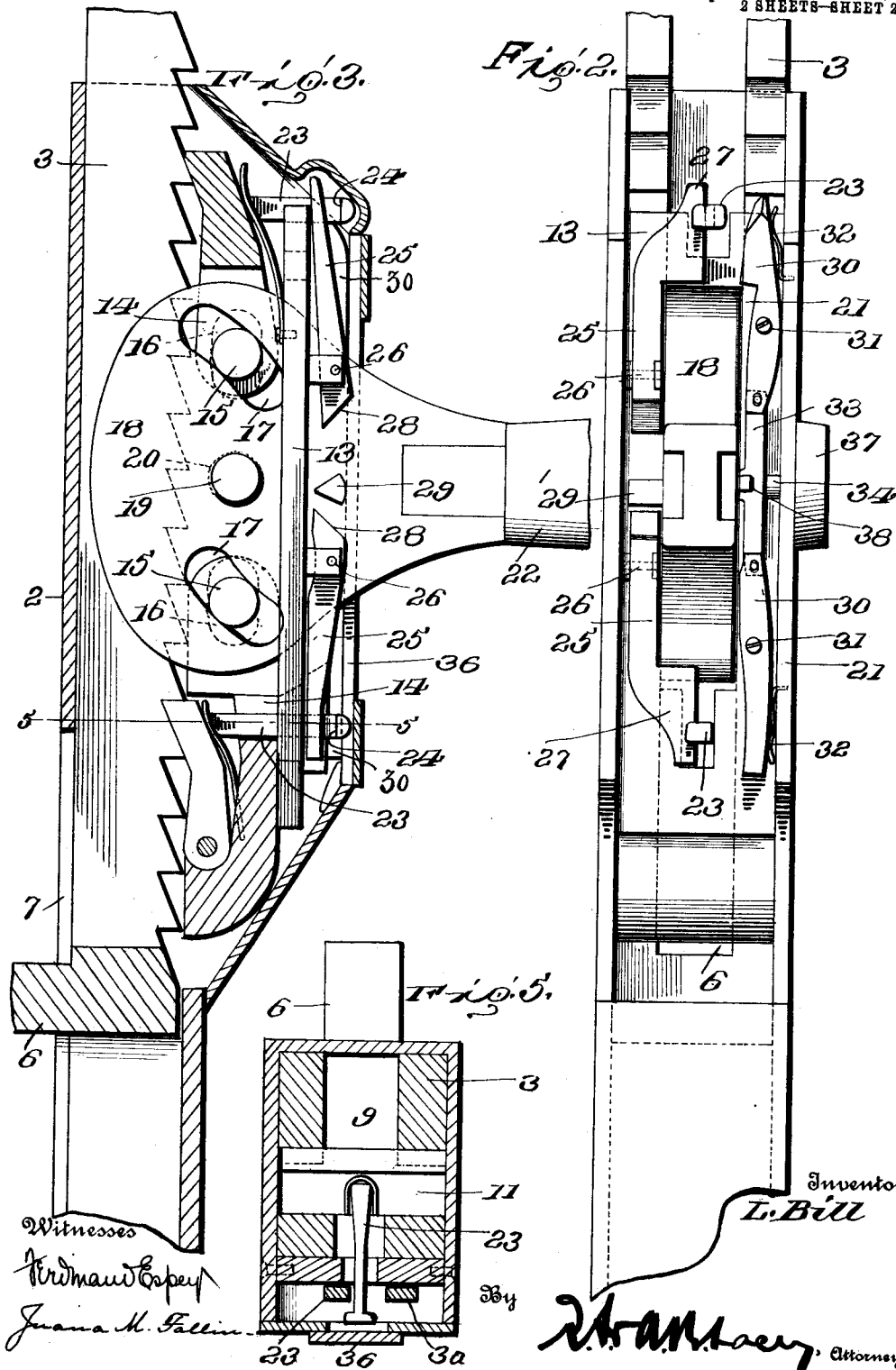


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UNITED STATES PATENT OFFICE.

LEO BILL, OF EASTON, PENNSYLVANIA.

LIFTING-JACK.

1,052,451.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed July 6, 1911. Serial No. 637,164.

To all whom it may concern:

Be it known that I, LEO BILL, a citizen of the United States, residing at Easton, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

This invention relates to the class of hoisting, and comprehends certain new and useful improvements in hoisting or lifting jacks of the lever, bar, and double-acting pawl type.

The invention has for its primary object a simple, durable and efficient construction of lifting jack of this character, embodying improved means whereby a positive step by step movement may be imparted to the rack bar in both an upward and a downward direction, by corresponding oscillatory movements of the operating handle, through the adjustment of parts, which adjustment may be easily effected.

The invention also has for its object an improved construction of lifting jack, the parts of which may be easily made and readily assembled and which will be durable and not liable to get out of order. And the invention also aims to generally improve this class of devices, to simplify their construction and to render them more useful and commercially desirable.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a jack embodying the improvements of my invention; Fig. 2 (Sheet 2) is a fragmentary face view, the cover plate being omitted; Fig. 3 is a vertical longitudinal section; Fig. 4 is a similar view with the parts in different positions from that illustrated in Fig. 3; Fig. 5 is a section on the line 5—5 of Fig. 3; and, Figs. 6 and 7 are detail views.

Corresponding and like parts are referred

to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings, the numeral 1 designates the base of my improved lifting jack, 2 the hollow standard thereof, and 3 the longitudinally movable rack bar mounted in said standard, said rack bar being preferably provided at its upper end with a dowel pin 4 on which a cap block 5 is adapted to be held in any desired way, as by frictional engagement. The rack bar 3 is formed at its lower end with a foot 6, which projects out through and works in a longitudinal slot 7 formed in the standard 2. Preferably, the base 1 is formed with a substantially rectangular web 8 raised upon its upper surface, whereby to form a socket in which the foot 6 is adapted to fit in the lowered position of the rack bar 3, so as to protect the foot from being broken off, when the parts are in their inoperative positions.

The rack bar 3 is divided into two sets of rack teeth by means of a longitudinal slot 9, and said teeth are designed for engagement by an upper dog 10 and a lower dog 11, said dogs being pressed toward and into engagement with the teeth by means of springs 12. One spring bears against the dog 10 and a transversely extending plate 13 which is preferably formed integral with the hollow standard 2. The lower dog 11 includes a block 11^a and a rock member 11^b pivotally connected to the block 11^a and engaged by the spring 12, as best illustrated in Fig. 4. Each of the dogs 10 is formed with laterally spaced arms 14 apertured as shown, rollers 15 being passed transversely through the apertures of said arms and being mounted at their ends in longitudinally elongated slots 16 formed in the sides of the standard 2. The rollers 15 also pass through eccentric slots 17 that are formed in a lever head 18, the said head being fulcrumed on a pin 19 which is mounted at its ends in transversely elongated slots 20 formed in the sides of the standard 2, between the slots 17. The head 18, which forms part of the operating lever, of the device, projects out through a slot 21 formed in the plate 13 and is formed with or has secured thereto a han-

dle socket or ferrule 22, in which the operating handle of the device, that forms part of the lever, is secured in any desired way.

Each of the dogs or pawls (10 and 11) is formed with a pin 23, said pins projecting out through recesses formed in the plate 13 and being provided with opposite shoulders 24 that are formed by heads on the ends of said pins, as clearly illustrated in the drawings.

25 designates dog releasing members. These are pivoted on the outer face of the plate 13, as at 26, and extend longitudinally in opposite directions, their outer ends being formed with laterally extended heads 27, and their inner or adjacent ends being preferably beveled, as indicated at 28 for alternate engagement by a stud 29 which projects laterally from one face of the lever head 18.

Dog locking members 30 are pivotally mounted intermediate of their ends, as at 31, on the outer face of the plate 13 and are located adjacent that side face of the lever head 18 which is opposite to the members 25, the locking members 30 being movable on axes extending at right angles to the axes of the members 25, it being noted that the members 30 rock in planes parallel to the plane of the plate 13, while the members 25 rock in a plane at right angles to the plane of said plate. The members 30 are pressed upon by springs 32 which tend to hold them with their outer ends in the operative paths of movement of the adjacent shoulder 24 of the retracting pins 23 of the dogs or pawls. The two locking members 30 are pivotally connected together at their inner or adjacent ends by means of a link 33, said link being in turn connected to a shank 34 of a turn button 35. This turn button is mounted for movement in a bayonet slot 36 that is formed in a ring 37 secured in one side of the standard 2. By pushing the turn button in, giving it a partial rotation about the shank 34 as an axis, it will be caught by the ends of the bayonet slots 36 and be held in an inner position, the link 33 thereby holding the locking members 30 in their retracted or inoperative position. Upon releasing the turn button from the bayonet slots 36, the springs 32 will be permitted to act so as to cause the outer ends of the locking members 30 to rock to positions where they will be alternately engaged by the heads of the retracting pins 23. In this position of the members 30, a nib 38 projecting laterally from the adjacent face of the lever head 18 will move in a path to one side of the link, while in the innermost position of the link, the nib 38 will move over the adjacent edge of the link.

A slotted face plate 39 is secured to the standard 2 so as to cover the operating

parts, the lever head 18 passing out through the slot of the plate. Preferably, the face plate is formed with beveled lugs 41 designed for locking engagement with the standard. The face plate may be secured to the standard in any desired way.

42 designates cover plates which may also be secured to the opposite sides of the standard by any desired fastening devices, said plates covering the ends of the rollers 15 and the ends of the fulcrum pin 19.

From the foregoing description in connection with the accompanying drawings, the operation of my improved lifting or hoisting jack will be apparent. In the practical use of the device, when it is desired to raise a load, the turn button 35 is pushed inwardly and caught by the bayonet slots 36 of the ring 37, whereby the outer ends of the locking members 30 will be moved laterally to positions where they will be out of the path of movement of the retracting pins 23. In this position of the parts, an up and down movement of the actuating lever, will, through the instrumentality of the eccentric slots 17 and the rollers 15 that are mounted therein and secured to the depending arms 14 of the dogs or pawls, alternately effect the engagement of the pawls with the teeth of the rack bar 3, and at the same time raise one dog while the other is being retracted, a step by step movement in an upward direction being thereby imparted to the rack bar. When it is desired that the rack bar 3 shall climb down, it is only necessary to release the turn button 35 from its innermost position, whereupon the springs 32 will be permitted to act to press the outer ends of the two locking members 30 inwardly into the operative paths of movement of the heads of the pins 23. The members 30 being considerably thicker than the members 25 as clearly shown in Figs. 3 and 4, will by engaging the heads 24, hold the members 10 and 11 out of the paths of the members 25, and thus cause the members 30 to operate the pawls instead of the members 25. Consequently, when the hand lever is oscillated, the nib 29 that is laterally projected from the head 18 of the lever, will press first upon one beveled inner end and then upon the other, to cause the members 25 to alternately retract the pawls 10 and 11. When, for instance, the lever is moved in a direction to retract the upper pawl, the head 27 of the uppermost member 25 will, by engaging the shoulder formed by the head of the pin 23, pull the pin and its pawl outwardly so as to free the pawl from the tooth of the rack bar then engaged by it, and as soon as said tooth has been released by the pawl, the head of the said pin 23 will be engaged by the outer end of the adjoining dog locking member 30, the

pawl being thereby held in retracted position until the return movement of the hand lever has lowered the lowermost pawl and the rack bar supported thereby a distance
 5 sufficient to allow the tooth that has been engaged by the uppermost pawl to come below the tooth of said pawl, whereupon said upper pawl or dog will be released and its spring will push it inwardly into the next
 10 tooth above, while the lowermost pawl will then in its operation be retracted and held locked for a corresponding action. In this way, intermittent step by step movement will be imparted to the rack bar in a downward direction.

It is to be understood that while the specification and accompanying drawings disclose what I believe to be the preferred embodiment of my invention, the invention is
 20 not limited thereto, as various changes may be made in the construction, operation and proportions of the parts without departing from the scope of the invention as defined in the appended claims.

25 Having thus described the invention, what is claimed as new is:

1. A jack comprising a standard, a rack bar mounted therein, pawls mounted in the standard and engageable with said rack bar,
 30 an operating lever fulcrumed in the standard and operatively connected to said pawls to raise and lower them alternately, said pawls being provided with retracting pins, pawl retracting members pivotally carried
 35 by the standard and adapted to engage said pins to retract the pawls from the bar, and a stud carried by the operating lever and adapted to alternately engage the pawl retracting members.

40 2. A jack comprising a standard, a rack bar mounted therein, pawls mounted in said standards and engageable with said rack bar, an operating lever fulcrumed in said standards and operatively connected to said
 45 pawls to alternately raise the same, a plate forming part of the standard, pawl retracting members pivotally mounted on said plate and extending in opposite directions above and below the operating lever, and
 50 pins carried by the respective pawls and formed with shoulders designed for engagement with the uppermost ends of the pawl retracting members, the lever being provided with a laterally projecting stud adapted
 55 to alternately engage the inner opposing ends of said members to rock the latter, substantially as described.

3. A jack comprising a standard, a rack bar mounted therein, pawls mounted in the
 60 standard and engageable with the rack bar, a plate forming part of the standard, the springs tending to move the pawls into engagement with the rack bar, the pawls being respectively provided with pins adapt-

ed to project through the plate, the pins being
 65 respectively formed with shoulders extending in opposite directions, pawl retracting members pivotally mounted on said plate and adapted to engage the shoulders
 70 of said pins, and an operating lever fulcrumed in the standard and operatively connected to said pawls to raise them alternately, the lever projecting out through said plate and being formed with a laterally projecting stud adapted to engage the inner
 75 ends of the pawl retracting members, substantially as described.

4. A jack comprising a standard, a rack bar mounted therein, pawls mounted in the standard and engageable with said rack bar,
 80 the pawls being provided with shoulder pins, pawl retracting members carried by the standard and adapted to engage said pins, an operating lever fulcrumed in the standard and operatively connected to said
 85 pawls to raise and lower them alternately, said lever being provided with a stud adapted to engage the pawl retracting members alternately, and pawl locking members also carried by the standard and adjustable
 90 therein into the path of movement of said pins, whereby to engage with the shoulders of the pins and momentarily hold the pawls in retracted position.

5. A jack comprising a standard, a rack
 95 bar mounted therein, pawls mounted in the standard and engageable with said rack bar, the pawls being provided with shoulder pins, pawl retracting members carried by the standard and adapted to engage said
 100 pins, an operating lever fulcrumed in the standard and operatively connected to said pawls to raise and lower them alternately, said lever being provided with a stud adapted to engage the pawl retracting members
 105 alternately, and pawl locking members pivotally carried by the standard and spring pressed in a direction to carry their ends into the path of movement of the shoulders
 110 of the pins so as to momentarily lock the pawls in their retracted position, a link joining together the adjacent ends of said locking members, and means operatively connected to said link designed to hold the
 115 pawl locking members in an inoperative position.

6. A jack comprising a standard, a rack bar mounted therein, pawls mounted in the standard and engageable with said rack bar,
 120 the pawls being provided with shoulder pins, pawl retracting members carried by the standard and adapted to engage said pins, an operating lever fulcrumed in the standard and operatively connected to said
 125 pawls to raise and lower them alternately, said lever being provided with a stud adapted to engage the pawl retracting members alternately, and pawl locking members piv-

otally carried by the standard and spring
pressed in a direction to carry their ends
into the path of movement of the shoulders
of the pins so as to momentarily lock the
5 pawls in their retracted position, a link
joining together the adjacent ends of said
locking members, and means operatively
connected to said link designed to hold the
pawl locking members in an inoperative po-

sition, the operating lever being provided 10
with a nib co-acting with said link.

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

LEO BILL. [L. S.]

Witnesses:

JOHN M. HAHN,
EDWARD C. VREELAND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."