A. NEAL.

LIFTING JACK.

APPLICATION FILED MAY 10, 1917.

1,239,941.

Patented Sept. 11, 1917.

2 SHEETS—SHEET 1.

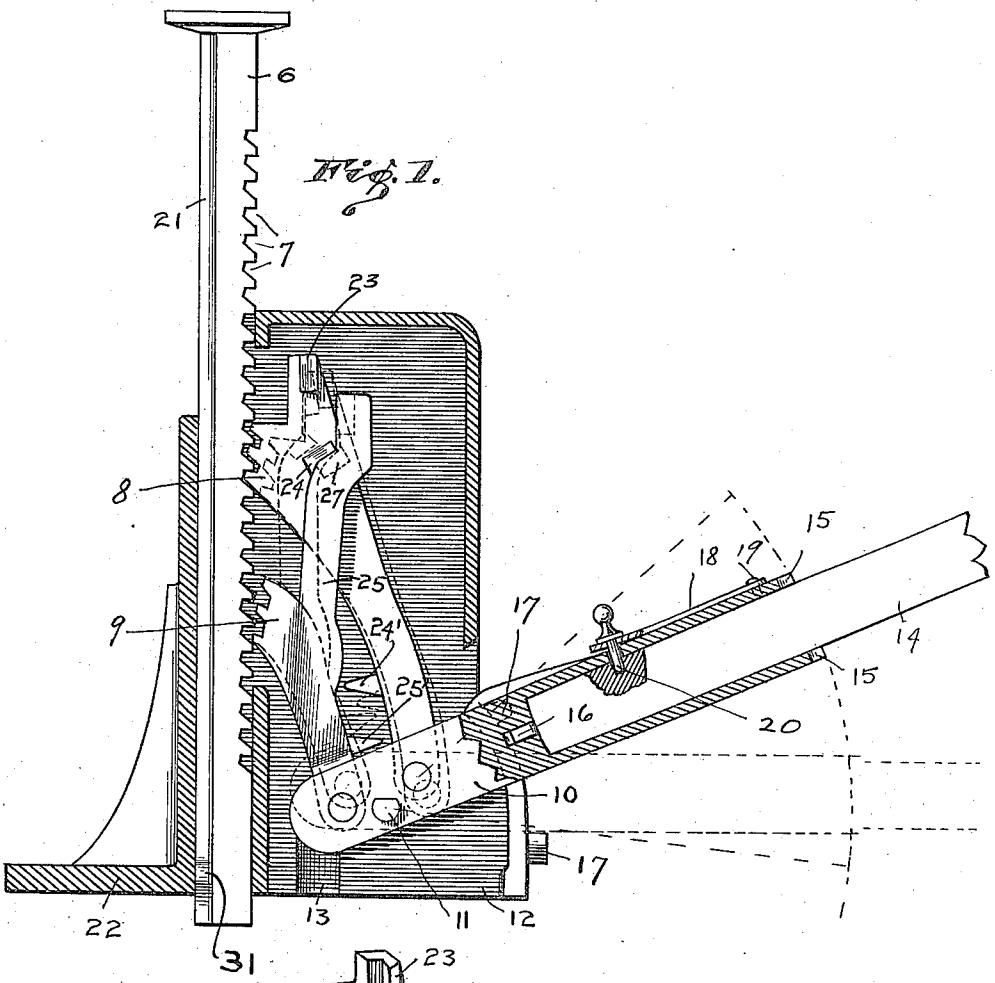


Fig. 1.

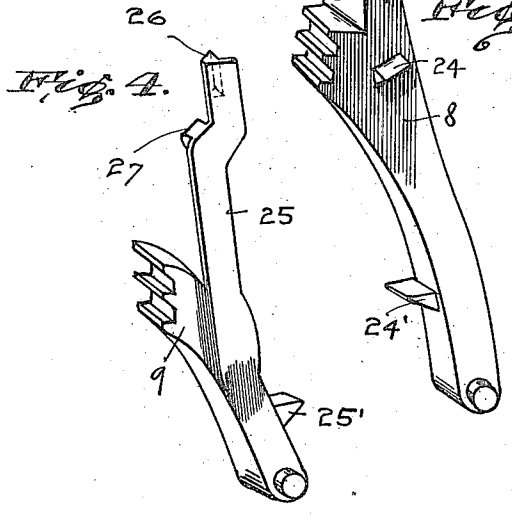


Fig. 4.

Fig. 5.

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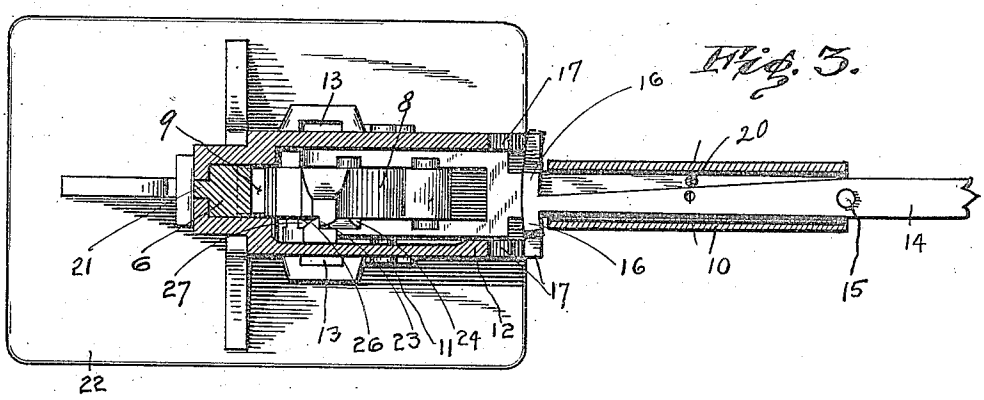


Fig. 3.

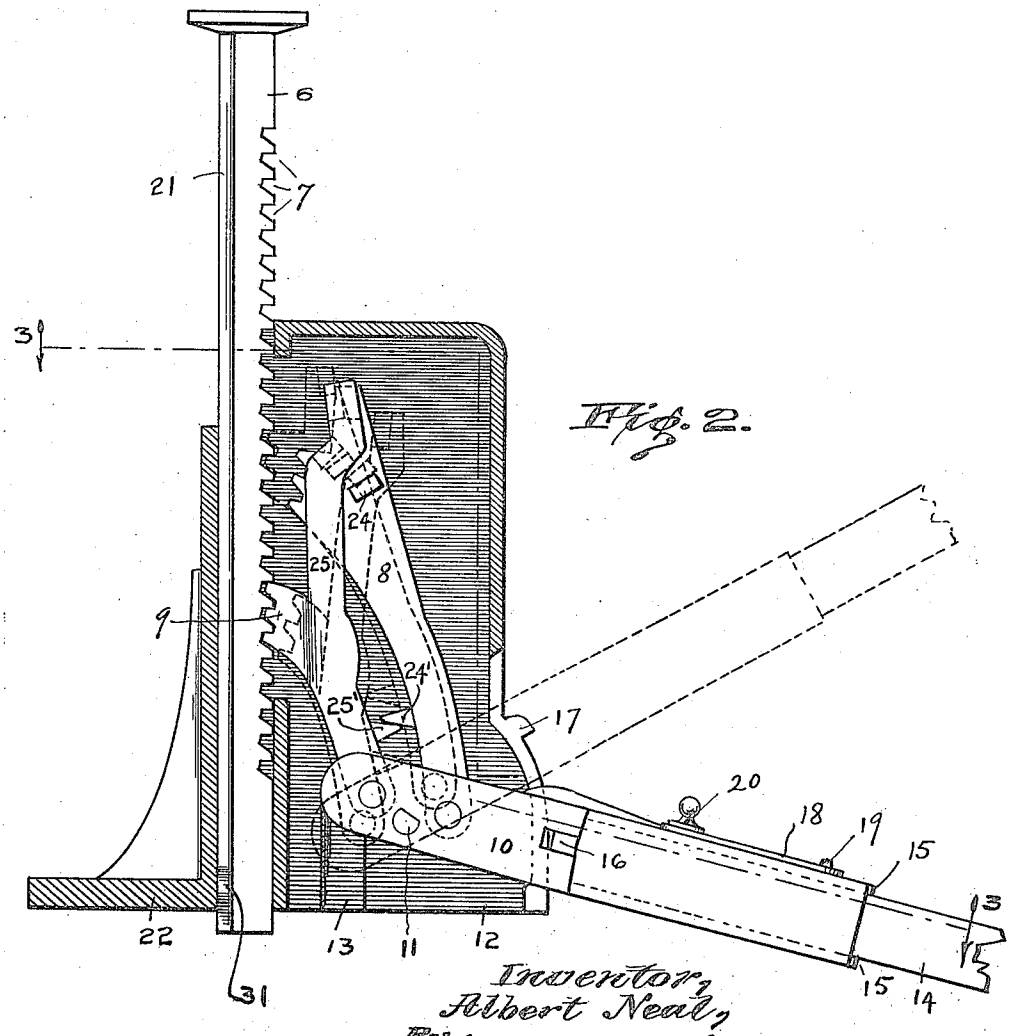


Fig. 2.

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UNITED STATES PATENT OFFICE.

ALBERT NEAL, OF KOKOMO, INDIANA.

LIFTING-JACK.

1,239,941. Specification of Letters Patent. Patented Sept. 11, 1917.

Application filed May 10, 1917. Serial No. 167,793.

To all whom it may concern:

Be it known that I, ALBERT NEAL, a citizen of the United States, residing at Kokomo, in the county of Howard and State of Indiana, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

The object of this invention is to provide a lifting jack wherein by the manipulation of a single lever the staff or head may be advanced or retracted at will whereby that jack can be used to advantage around tin-plate, iron, glass and other hot furnaces, for raising and lowering heavy doors, rolls, and the like; or under water at bridges, gas plants, and places where the operator cannot get close to the jack and must operate it at long range by means of an extended handle.

A further object is to provide an easy adjustment for changing the throw of the handle from a short stroke to raise the load to a longer stroke for lowering it.

I accomplish the above and other objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of my invention set for raising a load, the pawls being shown in full lines for the raised position of the handle and in dotted lines for the lowered position of the handle. Fig. 2 is a like view showing the handle and pawls in the operation of lowering a load, the parts being shown in full lines for the lowered position of the handle and in dotted lines for the up-stroke. Fig. 3 is a horizontal section on the line 3—3 of Fig. 2. Figs. 4 and 5, are perspective views of the two pawls, detached from all other parts.

Like characters of reference indicate like parts throughout the several views of the drawings.

The staff 6 has notches 7 on one side to be engaged by a pair of pawls 8 and 9, which are pivoted to the hollow head 10 of a hand lever, on opposite sides of the pivot 11 of the latter. The pawls preferably have a plurality of points to engage a like plural number of the notches 7, for greater security in the operation of the jack. The pivotal pins of the pawls are seated at the bottoms of suitable grooves in the lever which allow the pawls to be readily removed from the lever (see Fig. 3).

The pivot 11 is supported by the walls of a housing 12, which has seats from same with grooves 13, leading thereto which allow the head of the lever to be assembled and removed at will. The head projects from the housing through a suitable opening for the purpose, as shown, and the effective length of the lever is increased by the introduction of a handle 14, in the hollow head. The extent of handle insertion is determined by lugs 15, 15, which enter notches for seats, in the end of the head. The inserted portion of the handle is tapered as shown in Fig. 3 to allow the end to be swingingly adjusted, and this end terminates with a T-shaped head, the projecting members 16, 16, of which are alternately made to project through suitable openings in the head 10, to contact with stops 17, 17, on one side of the housing-opening and regulate the swing of the lever for raising the load. The stops are farther apart on the other side of the lever-opening thereby allowing the lever to swing through a larger arc before it is stopped by the member 16 when projected on that side. A spring plate 18 can be swung edgewise on its attaching pivot 19 when not wanted for use. The plate has a pin 20 near its free end, which, entering the handle-socket, can be made to lock the handle at either limit of its swinging adjustment on member 16, 16.

On the opposite side of the staff 6 from the notches 7 is a longitudinally extended strengthening rib 21. A slideway conforming in cross section to the cross section of the staff is formed in the housing 12 to receive the staff, and a suitable base 22, is formed on the bottom of the housing.

The upper pawl 8 has an upward extension from its upper end, on the outer side of which is a vertical lug 23 beveled on its side next to the handle, the other side forming an abrupt shoulder, and below it opposite the plurality of points of the pawl is a similarly shaped but obliquely located lug 24. Still closer to the pivot of the pawl, on the side toward the staff, is a tapering lug 24′ which, in certain positions of the two pawls is adapted to contact with a similar lug 25′ projecting toward it but a little lower down, from the pawl 9. Offset from the side of the pawl 9 is a vertical arm 25, adapted to sweep across the surface of pawl 8 at each movement back and forth of the lever. It has a lug 26 at its upper end oppositely beveled from lug 23, and adapted to ride over the latter when their sloping faces are brought together, and to lock when their

opposite faces are contacted. Below the lug 26 is an oblique lug 27 which is beveled on its under side, opposite to the bevel on the lug 24, with which lug 24 it is adapted to contact, override and lock at certain positions of the pawls. The resiliency of the arm 25, which is thin, holds the lugs of the two pawls in a common path with spring enough to pass when their beveled faces are brought into contact.

The operation of my improved jack is as follows: For raising a load the handle 14 is set with its head-member 16 projecting to contact with the two stops 17, 17, and between these minimum limits of handle movement the pawls 8 and 9 will alternately engage the notches 7 of the staff and force the staff upwardly.

To lower the load, the handle 14, is set with the head-member 16 withdrawn from contact with the stops 17 which gives the lever a longer or maximum throw. With the hand lever lowered as shown in full lines in Fig. 2, the load on the staff will be on the lower pawl 9, with the pawl 8 forced out of engagement with the staff by contact of lug 25′ with lug 24′. The raising of the handle-lever lowers pawl 9, and the load, pawl 8 being held away from the staff until its top lug 23, which has been in contact with lug 26, has passed over the latter. Pawl 8 then drops into contact with the staff and upon a further raising of the lever the pawl 9 slides out of engagement with the notches of the staff and its lug 27 is moved outside of lug 24. The handle is then lowered which lowers pawl 8 and its load, and pawl 9 is held away from staff 6 until its lug 27 has passed above the lug 24. Further lowering of the handle brings lugs 24′ and 25′ into contact again, which swings the upper end of pawl 8 away from the staff causing lug 23 on pawl 8 to pass lug 26, thus bringing the pawls back again to the first assumed position, except that the staff and load have been lowered.

To keep the staff 6 from dropping out of the standard when the jack is turned upside-down in handling, I prefer to thicken it at 31 to make a tight enough fit to hold it, and the adjacent walls of the slideway in which it operates may be similarly thickened for the same purpose.

Having thus fully described my invention, what I claim as new and wish to secure by Letters Patent of the United States, is—

1. In a lifting-jack, a standard, a notched staff mounted in the standard, a lever pivoted to the standard, a pair of pawls pivoted to the lever on opposite sides of the lever pivot and alternately engaging the notched staff by the rocking of the lever, means by a greater angular movement of the lever to alternately hold the pawls out of engagement with the next notches above to retract the staff comprising lugs on the side of one of the pawls and an extension from the other pawl having lugs which variously engage with the lugs of the first pawl as the two pawls are moved by a movement of the lever.

2. In a lifting-jack, a standard, a notched staff mounted in the standard, a lever pivoted to the standard, a pair of pawls pivoted to the lever on opposite sides of the lever pivot and alternately engaging the notched staff by the rocking of the lever, means by a greater angular movement of the lever to alternately hold the pawls out of engagement with the next notches above to retract the staff comprising a pair of lugs on the side of one of the pawls, said lugs being beveled on one side, and an extension from the other pawl having a corresponding pair of oppositely beveled lugs which variously engage with the lugs of the first pawl as the two pawls are moved by a movement of the lever, and spring means for insuring engagement between the two sets of lugs.

3. In a lifting-jack, a standard, a notched staff mounted in the standard, a lever pivoted to the standard, a pair of pawls pivoted to the lever on opposite sides of the lever pivot and alternately engaging the notched staff by the rocking of the lever, means by a greater angular movement of the lever to alternately hold the pawls out of engagement with the next notches above to retract the staff comprising a pair of lugs on the side of one of the pawls said lugs being beveled on one side, and an extension from the other pawl having a corresponding pair of oppositely beveled lugs which variously engage with lugs of the first pawl as the two pawls are moved by a movement of the lever, spring means for insuring engagement of the two sets of lugs, another pair of coöperating lugs one lug on each pawl, and means for regulating the angular movement of the lever.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 27th day of February, A. D. one thousand nine hundred and seventeen.

ALBERT NEAL. [L. S.]

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