S., D., J. & L. S. BARROW.
Lifting-Jack.

No. 199,177. Patented Jan. 15, 1878.

Fig. 1.

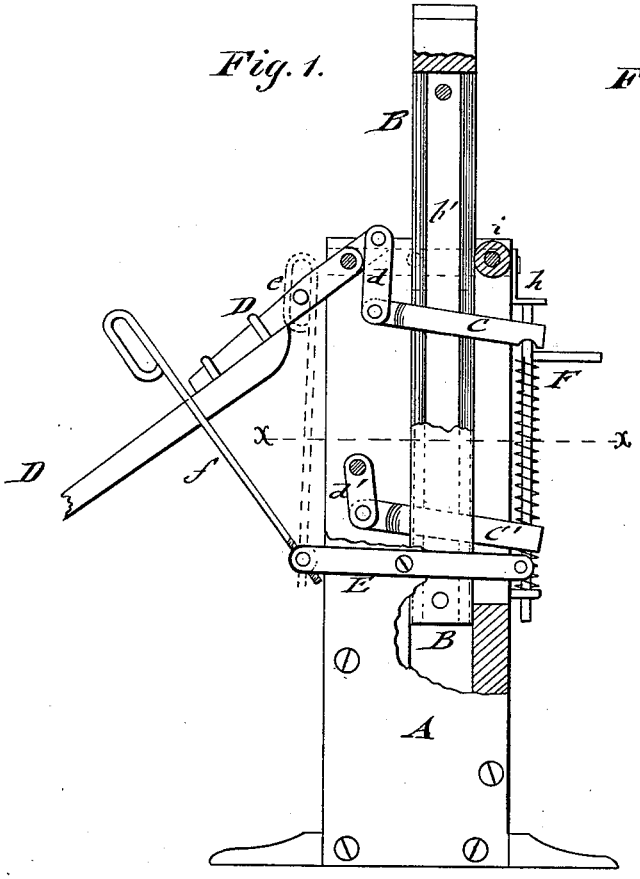

Fig. 2.

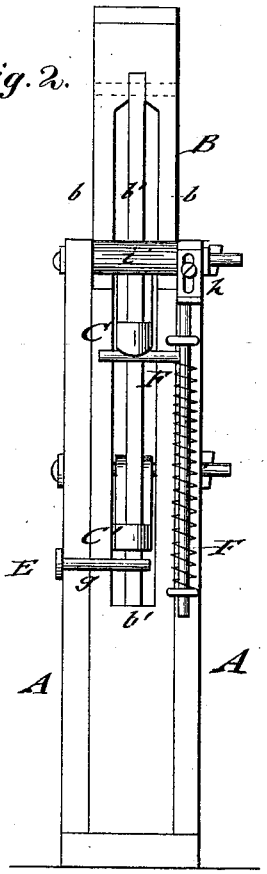

Fig. 3.

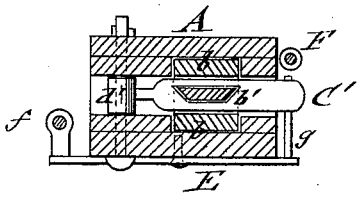

Fig. 4.

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SAMUEL BARROW, DAVID BARROW, JACOB BARROW, AND LINZY S. BARROW, OF WINDFALL, INDIANA.

IMPROVEMENT IN LIFTING-JACKS.

Specification forming part of Letters Patent No. **199,177**, dated January 15, 1878; application filed November 16, 1877.

To all whom it may concern:

Be it known that we, SAMUEL BARROW, DAVID BARROW, JACOB BARROW, and LINZY S. BARROW, of Windfall, in the county of Tipton, and State of Indiana, have invented a new and Improved Lifting-Jack, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a side elevation of our improved lifting-jack, partly in section. Fig. 2 is a rear elevation. Fig. 3 is a detail top view of the pawl with lifting-bar in section; and Fig. 4 is a horizontal section of the jack on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to an improved lifting-jack for pulling stumps, raising buildings, cars, and other heavy loads, also for pressing and other purposes, the jack having the advantage that, by throwing certain attachments into gear, the load may be lowered by the same stroke of the lever that raises it when the attachment is thrown out of gear therewith.

The invention consists of a supporting-standard that guides the lifting bar or post by the joint action of an upper biting-pawl, operated by a hand-lever, and of a lower weighted pawl.

The biting-pawls are slotted to engage a dovetailed iron center-bar of the lifting-post. The lowering attachment consists of a lever-rod connection of the lower pawl with the hand-lever, and of a sliding and spring-acted rod with fixed arm, that is swung below upper pawl to release the upper pawl and admit lowering of lifting-post alternately with action of lower pawl. The stroke of the spring-arm is adjusted by a slotted stop-plate.

Referring to the drawing, A represents the supporting standard or casing of our improved jack, which is made of wood or other suitable material, and strengthened at the parts exposed to heavy strain by iron straps *a*. The standard is grooved at the inside to guide the lifting bar or post B, which is made of three pieces, two wooden or other side rails, *b*, that run in the guide-grooves of the standard, and a center bar or rail, *b'*, having beveled edges, so as to form a dovetailed bar. The side rails and center-bar are connected in suitable manner by a strapped head-block at the upper, and by a lateral screw-bolt and nuts at the lower, end.

The lifting-post B is raised by means of two weighted pawls, C C', of iron, that are provided with dovetailed slots, so as to fit on the center-bar *b'* and slide readily along the same. The upper pawl C is connected by an intermediate pivot-link, *d*, with a hand-lever, D, that is fulcrumed to a cross-bolt of the upper part of the standard. The lower pawl C' is pivoted to a forked link, *d'*, that is applied at its upper end to a fixed pivot-bolt of the standard A.

The joint action of the lower retaining-pawl C' and of the upper lifting-pawl, that is operated by the hand-lever, raises the lifting-post and the load. The letting-down attachment is applied to the side and front end of the jack, and consists of a lever-rod connection of the hand-lever with the lower pawl and of a sliding spring-arm connection with the upper pawl. The operating-lever D is for this purpose connected by a side pin, *e*, with a loop at the upper end of a rod, *f*, that is, by means of its lower threaded end, adjustably attached to the fixed arm of a fulcrumed side piece, E, that is applied to the side of standard A, so as to exert a certain friction thereon.

A lateral arm, *g*, at the front end of the fulcrumed side piece E, engages the lower pawl C', and serves to raise the latter when the lever is thrown down. The side piece is retained by its friction with the standard in raised position until the side pin of the lever strikes the upper end of the loop of the connecting-rod, when the lever is raised, so as to drop thereby the pawl and cause the same to bind on the center-bar. As long as the lower pawl is held up into horizontal position by the arm of the side piece, it allows the lifting-bar to pass down through the same; but as soon as the pawl is dropped it bites on the center-bar and supports the load, which, by means of a sliding spring-arm, F, applied to staples at the rear part of the jack, loosens the upper pawl and raises the same, so that the lever is permitted to go down until the pawl gets above the reach of the spring-arm F, when it catches and slightly raises, so as to loosen, the lower pawl. The

load is then lowered again by the upward motion of the lever and the lifting of the lower pawl, as before described.

The spring-arm F bears with its upper end against a slotted stop-plate, *h*, that is adjusted by a clamp-screw, so as to be raised or lowered as may be required, for adjusting the extent of downward motion of the sliding post.

A roller, *i*, at the upper back part of the jack, serves to overcome the friction of the post caused by the lifting of the pawls.

The jack is operated as follows: For raising any load, the letting-down attachment E F is thrown out of gear by pressing the looped connecting-rod sidewise of the pin of the lever, and raising it so that the hoisting-arm in the rear drops the lower pawl. The spring-arm is thrown outward, so as to be removed from under the upper pawl, and the jack is thus ready for raising the weight. For lowering the load, the letting-down attachment is thrown into gear by attaching the looped rod and swinging in the spring-arm. The lever is then worked at full stroke, which will lower the weight by the alternating action of the pawls instead of raising it. However, there must be weight enough on the jack in letting down to overcome the power of the spring-arm. Unless this is the case, the spring-arm will raise the upper pawl, and the lifting-bar will drop at once.

For pulling stumps, two jacks are used, and the cross-beam with the hook attached to the tops of the lifting-bars by means of dowels of the beam entering holes in the heads of the lifting-bars. The chain is then hooked onto the beam, and the grab-hooks applied to one of the roots and the lower end of the chain. The jacks are then worked simultaneously and the stump pulled, and finally released from the grab-hooks.

The jack may also be used for cider and other presses where pressure is required, the letting-down attachment facilitating its application to a variety of purposes.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a lifting-jack, the combination of the interior grooved standard A, lifting post or bar B, made of side guide-rails and dovetailed center-bar, and of slotted pawl C C′, that bite on the center-bar, and are operated for lifting by the hand-lever, substantially in the manner set forth.

2. The combination, in a jack, of a lifting post or bar and upper and lower pivoted pawls, with a lever-rod connection of hand-lever and lower pawl, and spring-arm connection with upper pawl, so that the pawls alternately release and bind on the lifting-bar, to allow the lowering of the same, substantially as specified.

3. The combination, in a jack, with a guided lifting bar or post operated by pivot-pawls, biting on a dovetailed center-bar, of an upper roller to overcome the friction of the post, substantially as set forth.

4. The combination, in a jack, of the upper pawl-releasing spring-arm F, with a slotted adjustable stop-plate, to adjust extent of drop-motion of jack in lowering weight, substantially as specified.

5. The combination, in a jack, of the operating hand-lever D, having side pin, looped adjusting connecting-rod *f*, fulcrumed side piece E, having arm *g*, with lower slotted pawl of lifting bar or post, to alternately raise and drop the same, substantially as described.

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