(No Model.)

F. ROBINSON.

LIFTING JACK.

No. 458,255. Patented Aug. 25, 1891.

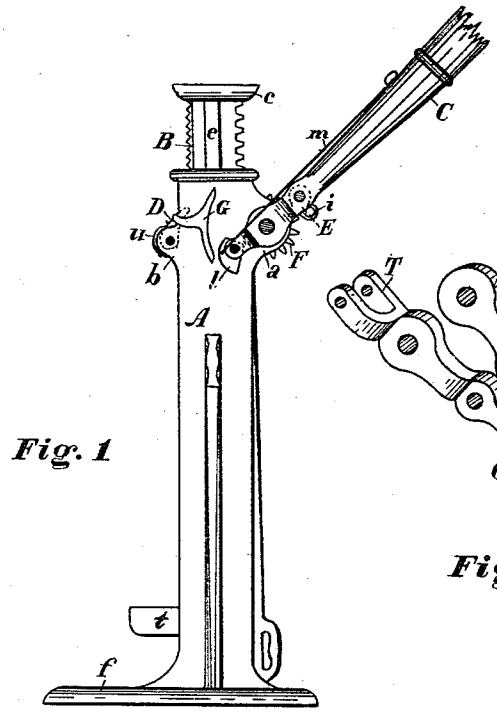


Fig. 1

Fig. 2

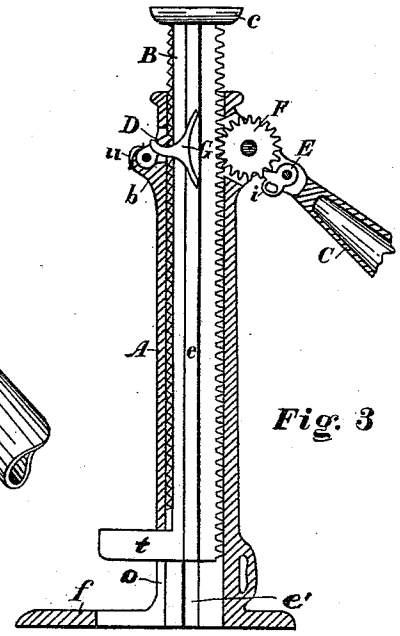


Fig. 3

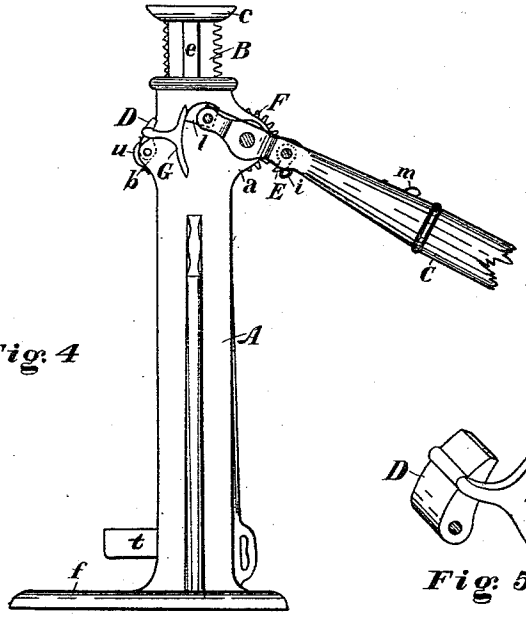


Fig. 4

Fig. 5

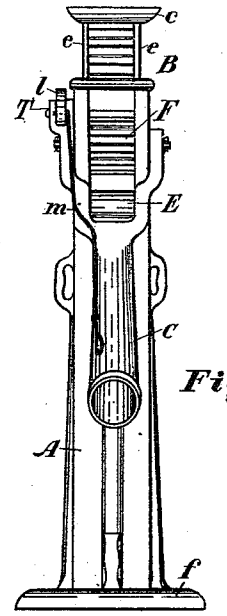


Fig. 6

Witnesses:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK ROBINSON, OF BANGOR, MAINE, ASSIGNOR OF ONE-HALF TO A. O. NORTON, OF BOSTON, MASSACHUSETTS.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 458,255, dated August 25, 1891.

Application filed May 11, 1891. Serial No. 392,260. (No model.)

To all whom it may concern:

Be it known that I, FRANK ROBINSON, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented new and useful Improvements in Lifting-Jacks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide an improved "lifting-jack" of great power and rapid in operation and one that will serve the purpose of a track-jack and be instantly tripped by the operating-lever or gradually released, as desired. This is accomplished as hereinafter set forth and described throughout the description, of which reference is had to the accompanying drawings, in which—

Figure 1 represents a side elevation of my invention, showing the lift-bar partially raised and the operating-lever in position for another stroke. Fig. 2 shows a perspective view of the forked end of the operating-lever. Fig. 3 is a vertical sectional elevation of my improved jack, showing construction of same. Fig. 4 is a side elevation of my improved jack, showing the operating-lever in position to release the retaining-dog to trip the lift-bar. Fig. 5 is a perspective view of the retaining-dog used in my invention, showing the form of releasing-arm thereunto attached. Fig. 6 shows a rear elevation of my improved jack with the operating lever depressed.

Similar letters of reference refer to correspondingly like parts throughout the several figures.

My device consists of a box casting or case A, having a broad base *f* at one end thereof, upon which it is intended to stand, a lift-bar B, adapted to slide in said case and constructed with gear-teeth and retaining-notches upon two of its sides, a broad cap *c*, attached to the top, and a right-angular projection or foot *t* at its lower end, which projects through an opening or slot in one side of the case A. The lift-bar B is operated by a pinion-wheel F, pivoted to projecting lugs *a a*, extending from the back and top end of the case A, and the said pinion meshes into gear-teeth cut across one side of the lift-bar B. Pivoted to the projecting axle of the pinion-wheel is the forked end of the operating-lever C, which is provided with a small dog E, which engages in the teeth of the pinion-wheel F and remains therein by the force of gravity and pressure when working my device.

It can now be readily understood that by raising the operating-lever C to its upper position, or that shown in Fig. 1 of the drawings, the pinion-dog E will naturally engage the pinion-wheel F. Then as the said pinion-wheel meshes into the teeth in the lift-bar B by applying weight to the operating-lever a partial rotation of the pinion is obtained, which movement raises the lift-bar a distance equal to the amount of travel of the said pinion-wheel. By the use of a pinion operating the lift-bar in a lever-jack a greater lift can be obtained with a short fulcrum at each stroke of the lever than by any other known method. For example, with a one and one-half inch fulcrum using a three-inch pinion having practically a nine-inch circumference, one stroke of the operating-lever would travel through an arc between one-third and one-half of the circumference of the circle, which with the construction above described would cause the lift-bar to be raised at the very least three inches at a stroke.

In order to retain the lift-bar B at the end of each stroke of the operating-lever, I have pivoted to the opposite side or front of the case A a retaining-dog D, which extends diagonally upward from its pivotal connection, and is attached to the case by means of projecting lugs *b*, cast thereon near the top of the same. The free end of the retaining-dog D is adapted to enter notches cut in the lift-bar B, which notches can be made somewhat finer than the size of the gear-teeth with the advantage of holding every slight upward movement of the lift-bar.

Formed upon the retaining-dog D in such manner as to project over one side of the case A is an arm G, whose extremity is enlarged and terminates in an arc of a circle described from the center of the pinion-wheel axis. The advantage of the retaining-dog arm, with its

arc-shaped terminus, is to facilitate the disengaging of the said dog to release the lift-bar by means of certain movements of the operating-lever, as will hereinafter be fully described.

The operating-lever G of my device consists of a wooden handle of any desired length entering a metal socket terminating in a forked end, which is pivoted to the case A by means of the projecting ends of the pinion-wheel axis. Sufficient opening is left in the forked end of the operating-lever between the periphery of the pinion F and the socket to admit the pivoting of the pinion-dog E, and a small loop or handle *i* is formed at a convenient place upon this dog to facilitate the operating of the latter by hand when desired.

One branch of the forked end of the operating-lever C extends beyond its pivotal connection with the case A and preferably terminates into a second fork T, within which is pivoted a cam *l*, which is adapted to be operated or set by a cam-rod *m*, attached thereto and extending to a convenient part of the operating-lever. This extended branch of the forked end of the operating-lever C projects over the same side of the case A as the arm G of the retaining-dog D, and the cam *l* should be of such size that when extended to its greatest length it will project sufficiently to bear against the arm G of the retaining-dog and force the latter out of the notches in the lift-bar.

Now it will be readily seen by referring to the drawings that with the cam *l* in the position represented in Fig. 1 the operating-lever can be manipulated to raise the lift-bar without interfering with the action of the retaining-dog. When the jack has been elevated the desired height, the most natural position is to leave the operating-lever extending downward, in which position the pinion-dog E by its own weight falls out of engagement with the teeth of the pinion F. Then by pulling the cam-rod *m* to extend the cam *l* the device is set in position to be instantly tripped by a slight upward movement of the operating-lever C, which movement disengages the retaining-dog D by forcing the said cam *l* against the arm G and pushes the dog out of the notches in the lift-bar.

If desired, a curved spring *u* can be fastened to the case A and be brought to bear against the retaining-dog, which will assist the latter in entering the notches in the lift-bar.

When it is desired to lower the lift-bar B by hand, by placing the operating-lever C in its lower position, as shown in Fig. 4 of the drawings, and extending the cam *l*, as shown, then engaging the pinion-dog E into the pinion F an upward movement of the lever C will disengage the retaining-dog until the cam *l* has passed by the lower extremity of the arm G, when the said retaining-dog will again check the lift-bar, and the process can be repeated. Thus it can be readily understood that with this construction, as hereinbefore described, my device can be used for either a rapid or lever lowering jack.

The right-angular projecting foot *t*, extending from the bottom of the lift-bar B, projects through a vertical slot *o* cut through the front side of the case A, and by its construction adapts my jack for track purposes and to raise low objects. In order to stiffen and prevent unnecessary wear upon the teeth of the lift-bar B, I have formed longitudinal ribs *e* upon the plain sides of the said bar, which slide in corresponding grooves upon the inside of the case A and serve to prevent any lateral play of the said lift-bar when under strain.

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. An improved lift or track jack consisting of the combination of a case having a base thereon and provided with a longitudinal opening, a lift-bar slidable in said opening and provided on opposite edges with gear-teeth and notches for the purpose described, a pinion pivoted to the case and meshing into the lift-bar, a retaining-dog also pivoted to said case and adapted to engage notches to retain the lift-bar, said retaining-dog having an arm thereon extending in such manner as to be operated by the operating-lever, and an operating-lever having a forked end pivoted on the extending axis of the pinion and provided with a dog adapted to engage the pinion, and a forked extension having a cam adapted to come in contact with the projecting arm of the retaining-dog to release the latter, substantially in the manner set forth, and for the purpose described.

2. A lifting-jack consisting of the combination of a supporting-case, a lift-bar slidable in said case, a pinion meshing into the lift-bar, an operating-lever pivoted on the projecting axis of the pinion and provided with a dog adapted to engage said pinion, said lever having an extension beyond its pivotal connection provided with a cam, for the purpose described, and a retaining-dog pivoted to opposite side of the case and engaging notches in the lift-bar and provided with a projecting arm adapted to be released by an extending branch of the operating-lever in certain movements of the latter, substantially as shown and described.

3. In a lifting-jack, a lift-bar, a pinion and lever, and the tripping mechanism for the same, consisting of a cam pivoted to an extending branch of the operating-lever and provided with a cam-rod, for the purpose described, in combination with the lift-bar-retaining dog having an arm provided with an enlarged concaved end projecting in such manner that certain movements of the operating-lever will when the cam is extended release the said dog in the manner described, and substantially as shown and set forth.

4. The combination, in a lifting-jack having a lift-bar, of the operating-lever having an ex-

tension beyond its pivotal connection, a cam pivoted to said extension, and the lift-bar-retaining dog provided with an extending arm, the extremity of which is enlarged and concaved, for the purpose described, and adapted to be operated in the manner shown and set forth.

Signed at Bangor, in the county of Penobscot and State of Maine.

FRANK ROBINSON.

In presence of—
W. D. STEWART,
THOMAS F. MAHER.