(No Model.)

F. B. MALLORY.

LIFTING JACK.

No. 421,592. Patented Feb. 18, 1890.

Fig 6.

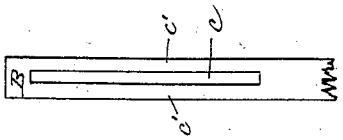


Fig 7.

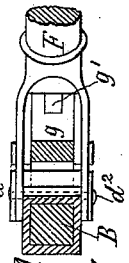


Fig 5.

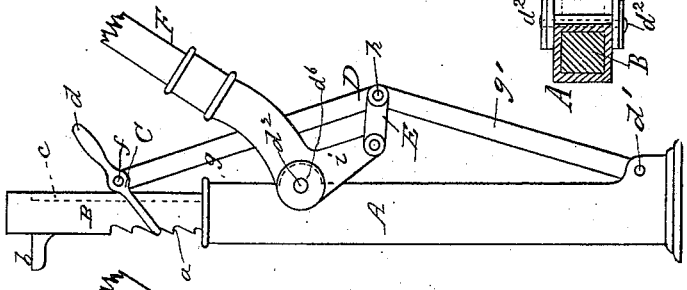


Fig 4.

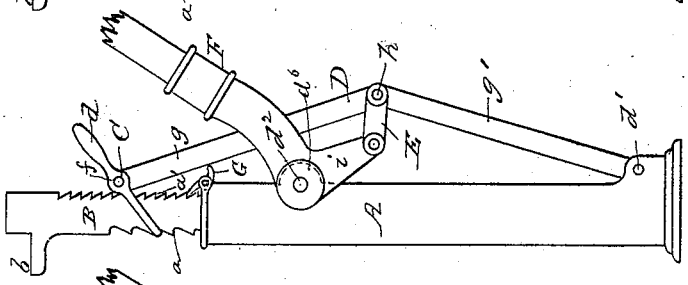


Fig 3

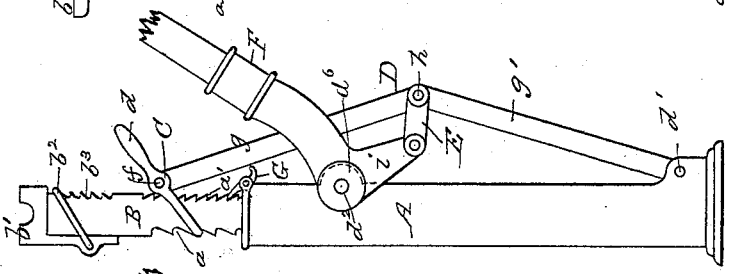


Fig 2.

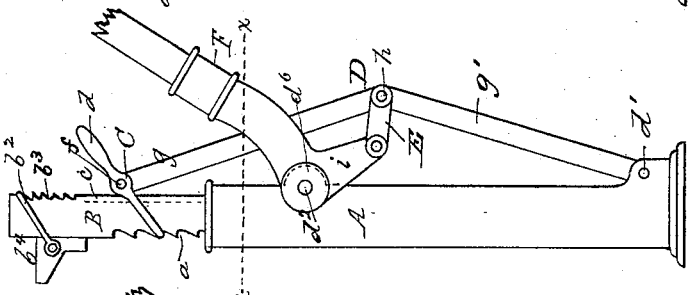
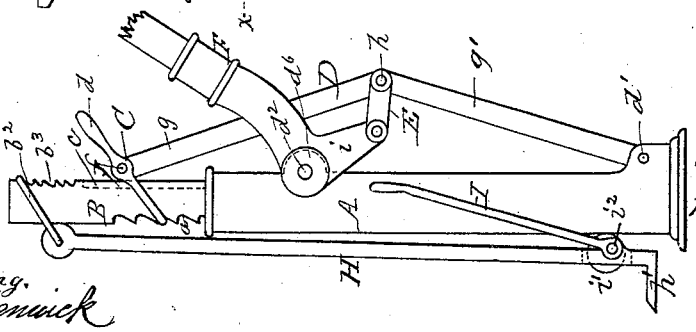


Fig 1.



Witnesses:
J. P. Theo. Lang.
Edward I. Fenwick

Inventor:
Frank B. Mallory
by his Atty
Mason, Fenwick & Lawrence

UNITED STATES PATENT OFFICE.

FRANK B. MALLORY, OF FLEMINGTON, NEW JERSEY.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 421,592, dated February 18, 1890.

Application filed December 16, 1889. Serial No. 333,994. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. MALLORY, a citizen of the United States, residing at Flemington, in the county of Hunterdon and State of New Jersey, have invented certain new and useful Improvements in Lifting-Jacks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in a lifting-jack comprising in combination a guiding and supporting standard, a sliding ratchet-toothed lifting-bar, a swinging pawl having a lever-handle extension, a toggle-lever connected to said pawl and to the guiding-standard, a link-connection at the toggle-joint of the toggle-lever, and to a hand-lever pivotally connected to a fulcrum-lug of the standard and said link, as will be hereinafter described.

It also consists in certain other novel constructions, combinations, and arrangements of parts in a lifting-jack which comprises the aforesaid combination of parts, all as will be hereinafter described.

In the accompanying drawings, Figures 1, 2, 3, 4, and 5 are side elevations of lifting-jacks constructed in accordance with my invention; and Fig. 6 is a broken back view of the ratchet-toothed lifting-bar shown in Figs. 1, 2, and 5. Fig. 7 is a horizontal section of the lifting-jack on the line x x of Fig. 2.

A in the drawings represents an upright standard having a rectangular chamber in it of sufficient depth to allow for the necessary up and down movements of a lifting-bar B, which is placed within it, as illustrated. The lifting-bar B, when made in its simplest form, is constructed with ratchet-teeth a and a supporting-flange b on its front side, and with a rectangular depression or channel c in its rear side, as shown, said lever being bifurcated at its lower end, and the link E, toggle-lever D, and said lug upon which the lever F is fulcrumed being fitted between the jaws or prongs of the said bifurcated end of the lever F, as shown in Fig. 7 and indicated in other figures of the drawings.

C is a loop-shaped gripping and lifting pawl having a lever-handle d. This pawl is slipped upward upon the bar B of the jack and is pivoted at f to the upper limb g of a toggle-lever D, the lower limb g' of said toggle-lever being pivoted to the foot portion of the standard A, as indicated at d'.

E is a link pivoted to the toggle-joint h of the toggle-lever D, and also to the short arm i of a hand-lever F, which is pivotally fulcrumed, as at d^2, upon a lug d^6 of the standard A, as shown. By this construction of jack the toggle-lever D, when straightened by the hand-lever F and link E, causes the loop C to pull upward against the ratchet-toothed bar B, and thereby lift a carriage-body, or any other weight that may be above and resting on the flange b, as shown in Figs. 4 and 5.

In order to avoid undue friction against the upper limb g of the toggle-lever D and the lifting-pawl C at the joint f, the channel c is cut into the lifting-bar B, said parts thus only having contact with ledges c' c' on the sides of the channel.

To adjust the jack for starting to lift, the hand is applied upon the flange b, and the bar B is raised to a position in contact with the object to be raised, or the toggle is straightened by moving the lever F and then adjusting the lever-loop C out of contact with the ratchet-teeth a of the bar B, this latter operation being effected by depressing the handle portion d until the said lever-loop pawl occupies about a horizontal position. This done, the lever F is moved backward so as to bow the toggle-lever, and while this operation is being performed the lever portion d of the loop-pawl is pressed upward and its loop portion brought and held under a ratchet-tooth a, so as to glide down on the bar B and fall into another of the ratchet-teeth a when the bar B is drawn or forced upward. In this latter operation a pivoted pawl G will be provided on the standard A, and the same take into ratchet-toothed stops a' on the back of the bar B, as shown in Figs. 3 and 4. When the ratchet-teeth A′ and the pawl G are used, the adjustment made by two or more movements of the lever F, preparatory to beginning to lift a weight, can be retained automatically, and the necessity of holding up the bar B by hand until it has been adjusted to the proper height for starting is avoided.

Furthermore, during the operation of lifting the weight the successive movements of the lever F and the grips of the lever-loop pawl can be automatically retained, and thus a jack of any desired lifting capacity is secured.

Instead of employing a flange b, as in Figs. 4 and 5, an angular grooved cap-block b', as shown in Fig. 3, may be provided, and the same connected to the bar B by a loop b^2 and ratchet-teeth b^3, or instead of the flange b or cap-block b' an angular block b^4, furnished with a loop, as b^2, and fitting ratchets, as b^3, may be adopted, as shown in Fig. 2.

In Fig. 1 I have shown the jack represented in Figs. 2 and 5 as provided with a lifting lever-bar H, said bar being connected to a loop b^2, which takes into ratchet-teeth b^3 of bar B. The lever-bar H oscillates on the loop b^2, and it is extended down to near the base of the standard A, and bent horizontally, as at h', so as to form a beveled-edged lifting-foot, as shown.

In a slot cut horizontally through the lever-bar H an eccentric or cam i' is arranged on a pivot i^2, passed through ears of the bar. To the pivot of the cam a hand-lever I is connected, and by means of this lever the cam i' is turned and made to bear against the front side of the standard A, and by its gradually-increasing eccentricity with respect to the said side of the standard and its axis on the bar H it causes the foot h' to move forward under the head of the spike or other object requiring to be pried up, and this adjustment being made, the bar B is raised by means of the pawl C, toggle-lever D, and hand-lever F in the same manner as before described.

By my invention it will be seen I utilize all the advantages of the toggle-lever as a powerful lifting device, and at the same time provide a jack which has a variable or adjustable lifting-grip, whereby a successive number of operations of the toggle can be secured, and also, if desirable, only a single operation of said toggle-lever may be employed, and in such single operation the bar B can be set for starting, in contact with the object to be lifted, without any hinderance from the toggle-lever mechanism.

What I claim is—

1. A lifting-jack comprising, in combination, a guiding and supporting standard A, a sliding toothed lifting-bar B, a swinging pawl C, a toggle-lever D, connected to said pawl and to the guiding-standard, and means for operating the toggle-lever, substantially as described.

2. A lifting-jack comprising, in combination, standard A, bar B, pawl C, toggle-lever D, link E, and lever F, substantially as described.

3. A lifting-jack comprising standard A, bar B, pawl C, having lever-handle d, toggle-lever D, and means for operating the toggle-lever, all substantially as described.

4. A lifting-jack comprising standard A, bar B, having teeth a and teeth b^3, pawl C, loop b^2, lifting-bar H, cam i', lever I, toggle-lever D, and means for operating the toggle-lever, all substantially as described.

5. A lifting-jack comprising a standard A, tooth-bar B, pawl C, loop b^2, toggle-lever D, and means for operating the toggle-lever, all substantially as described.

6. A lifting-jack provided with a toothed bar B, having teeth a and a', a standard A, provided with a pawl G, pawl C, toggle-lever D, and means for operating the toggle-lever, all substantially as described.

7. The toothed bar B, having a channel c in its back, in combination with a standard, the pawl C, the toggle-lever D, and means for operating the toggle-lever, substantially as described.

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

FRANK B. MALLORY.

Witnesses:
C. C. DUNHAM,
N. DUNHAM STEGER.