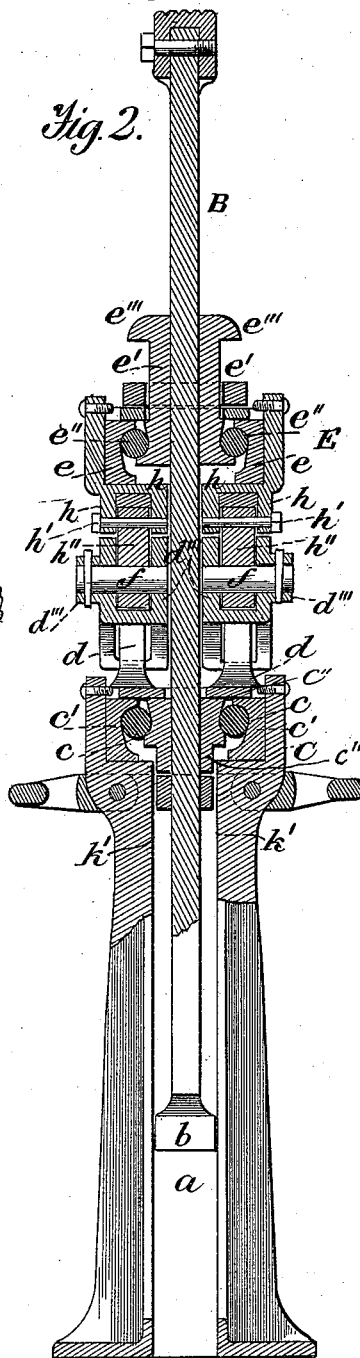


2 Sheets—Sheet 1.

No. 346,783.

Patented Aug. 3, 1886.



Inventor:
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assoc. atty.

(No Model.)

2 Sheets—Sheet 2.

A. L. STANFORD.
LIFTING JACK.

No. 346,783.

Patented Aug. 3, 1886.

Fig. 3.

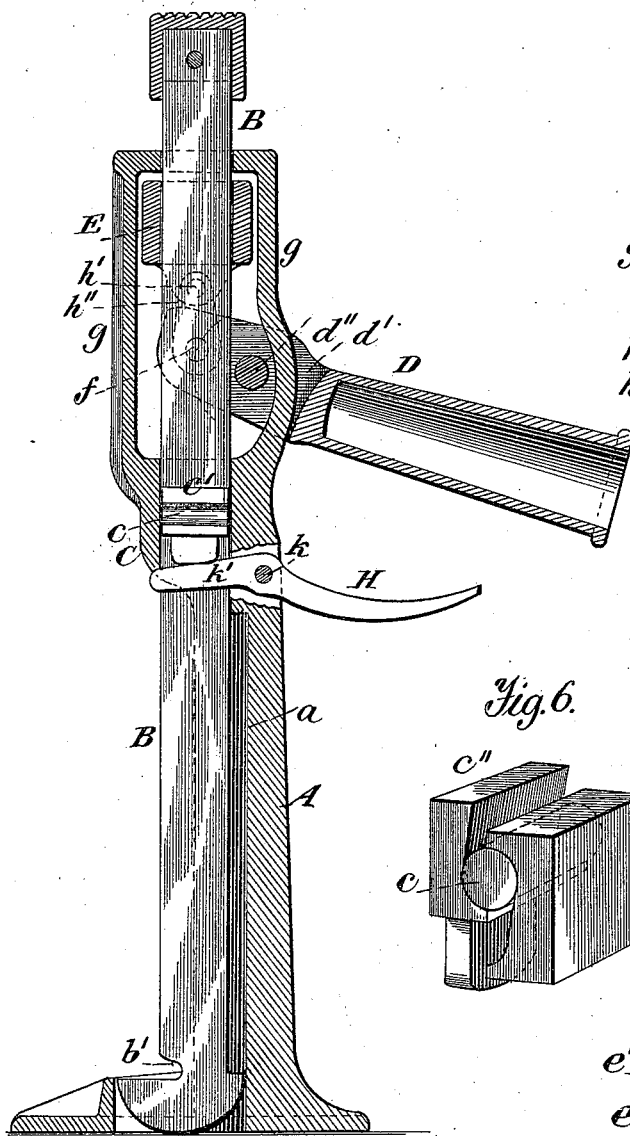


Fig. 4.

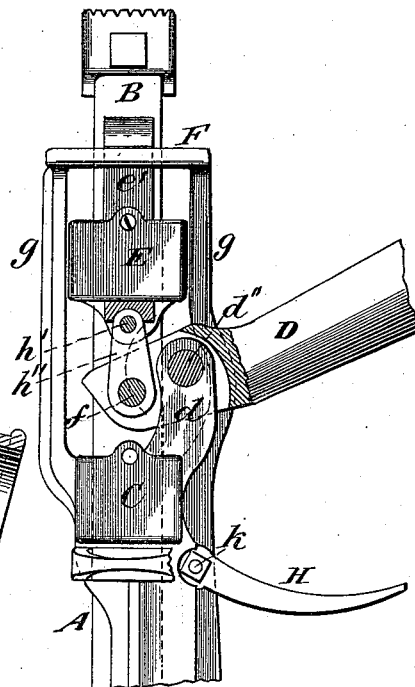


Fig. 6.

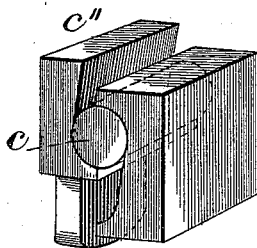
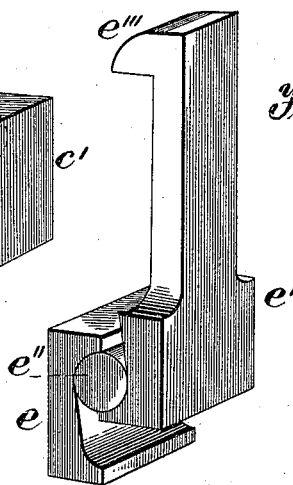


Fig. 5.



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UNITED STATES PATENT OFFICE.

ARTHUR L. STANFORD, OF WAUKEGAN, ILLINOIS.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 346,783, dated August 3, 1886.

Application filed January 23, 1886. Serial No. 189,527. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR L. STANFORD, a citizen of the United States, residing at Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Lifting-Jacks and Track-Raisers, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in the construction and arrangement of parts hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of my improved lifting-jack or track-raiser. Fig. 2 is a front view, partly in section. Fig. 3 is a vertical transverse section of Fig. 1. Figs. 4, 5, and 6 illustrate details of my invention.

Similar letters of reference indicate similar parts in the respective figures.

A is the main standard or casting, having an opening, *a*, in which the lifting-bar B slides. This bar B is provided at its lower end with a foot, *b*, which is recessed, so that the flange of a rail may fit in and under the lifting-bar when the jack is used as a track-lifter. This construction is an important improvement, as the foot can be made much shorter than usual. The load is also brought nearer the center of the base of the jack, by reason of which, in connection with the arrangement of the fulcrum of the lifting-lever hereinafter described, uneven settling of the jack when used in soft ground is prevented, and the lifting power may be exerted with much better effect. In order to prevent such uneven settling, the location of the centers of the load and the fulcrum of the lifting-lever with reference to the center of the base of the jack, is determined by the following considerations:

If the load rested stationary upon the foot *b*, the center of support should be directly under the center of the load; but in raising the load weight must be applied to the lever D, thus transferring the load-line to a perpendicular drawn through the pivot *d'*. As these two conditions are alternating with each other, I so construct the standard as that the center of the supporting-foot is half-way between the two points indicated. I am aware that such a disposition, generally, of these three points is not original with me, but in order to at-

tain the end for which such disposition is made it is necessary that the centers of both lever-fulcrum and load be brought as near the center of the base of the jack as possible, to accomplish which I recess or offset the lifting-bar at *b'*, and make the lifting-lever forked, as hereinafter described, thus bringing the points of application of the power to the clutch-box to the middle of the lifting-bar, and bringing the fulcrum of the lifting-lever, as well as the load, nearer to the center of the base of the jack, and I thus prevent all tendency to tipping or uneven sinking.

Cast integrally with the standard A is the clutch-box C. Within the box C, on each side of the bar B, are fitted two nicely-finished steel backing and friction plates, *c' c'*, of the form shown in Figs. 2 and 6, each pair forming a bearing for a friction-roll, *c*. The clutch-box is protected from the wear by the plates *c' c'*, thus differing from the construction shown in Patent No. 312,400, granted to me February 17, 1885, and the clutch mechanism contains additional features, which form the subject-matter of another application (Serial No. 189,728) for Letters Patent filed contemporaneously with this application.

Cast with and extending upward from the box C are the projections *d d*, which form the bearing for the bolt *d''* of the hand-lever D, by which the jack is operated. The upper extension, *g g* F, forms a guide for the upper part of the lifting-bar, and, in addition, a support on which the flange *e'''* may rest when the upper clutch is depressed to its fullest extent, thus throwing the clutch out of operation, so that the lifting-bar may descend when the retaining-clutch is released, as hereinafter described. The inner end of the handle D is slotted or cored at *d'* to straddle the lifting-bar, and also cored out at *d''*, whereby bearings are provided for the pins *f*, and also for the pins *h'*, hereinafter referred to.

E is an upper clutch-box, into which is fitted the steel backing-plates *e*. (Shown in Figs. 2 and 5.) The friction-plates *e' e'*, also working in the upper box, E, are formed as shown in Figs. 2 and 5, and, in conjunction with the plates or slides *ee*, form bearings for the rolls *e''*.

The top F of the main standard or casting A is provided with an opening to allow the passage through it of the bar B and the fric-

tion-plates e' , and is supported by the standards g , solid with it and the main standard A.

The upper clutch box, E, is provided with ears $h h h h$, two being on each side of the opening, through which the lifting-bar B passes. To each of these ears h is pivoted at one end a link, h'' , by a pin, h' , each link at its other end being pivoted by one of the pins f to the hand-lever D. It will be seen that by means of this pivotal connection between the clutch-box E and the hand-lever D the clutch-box will always move in a vertical line corresponding with the direction of the lift, while the links h'' , attached to the clutch, will move in the arc of a circle described from the pin d'' . The construction is such that the movement in the said arc of a circle is equally divided on each side of the vertical line of the lift, the total deviation from the vertical being only about one-eighth of an inch, one-sixteenth of an inch being on each side of the line.

The friction-clutches are so arranged that friction will only be operative in the upper clutch-box, E, when the box is moved upward by the depression of the hand-lever, while the frictional action in the lower box, C, will only occur when the lifting-bar B has a tendency to move downward.

H is a foot or tripping lever pivoted in the main standard at k , its inner arm, k' , being forked and extending under the friction-plates e'' . When it is required to relieve the lifting-bar from the friction in the lower box, C, the tripping or foot lever H must be depressed, thus lifting the friction-plates e'' , which project slightly below the box C. When the weight is very great, it is necessary to take the weight upon the upper clutch by depressing the lever D before releasing the lower clutch. Then by raising the lever D till the flanges $e''' e'''$ come in contact with the top of the standard the weight will by its own action release the upper clutch and the bar will descend to its lowest point.

The operation is as follows: By depressing the hand-lever D the bar B will be lifted by the rise of the friction-plates in the clutch-box E. On elevating the lever D the strain will be taken from the upper box, E, and transferred to the lower box, C, the lifting-bar B being held in the position to which it was raised while another grip is taken by the upper friction-plates to again elevate the bar, and so on, the operation being repeated till the load is lifted to the required height.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a lifting-jack, the combination, substantially as set forth, of a standard, a stationary clutch, a movable clutch, a lifting-bar, and an actuating-lever, said standard being extended above the movable clutch to form a guide for the lifting-bar, and also as a rest for the flanges e''' , as described.

2. The combination, in a lifting-jack, of movable and stationary clutches and a lifting-bar, with a standard having a stationary clutch-box cast integrally therewith, and an upward extension, substantially as and for the purpose set forth.

3. In a lifting-jack, a standard having the center of its supporting-foot midway between one perpendicular drawn through the center of the load and another drawn through the fulcrum of the operating-lever, combined with friction-clutch devices, a lifting-bar, and a forked lifting-lever, substantially as set forth.

4. The combination of the standard A, extension F, lifting-bar B, clutches C and E, with a lifting-lever located between them, releasing-lugs $e''' e'''$, operating against said extension F, and the trip-lever H.

ARTHUR L. STANFORD.

Witnesses:

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