(No Model.) 2 Sheets—Sheet 1.

W. H. COX.

LIFTING JACK.

No. 589,701. Patented Sept. 7, 1897.

Fig. 1.

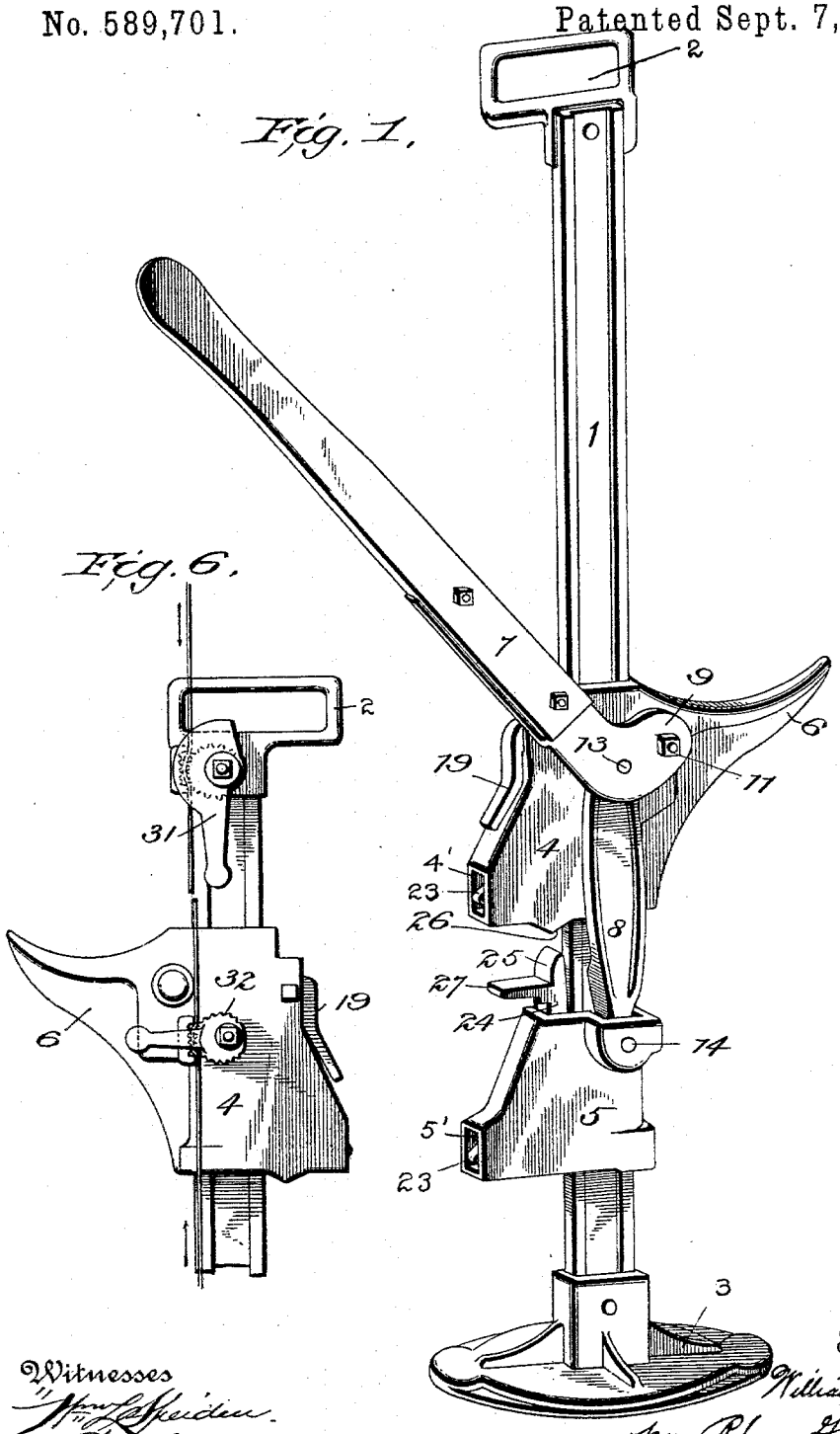


Fig. 6.

Witnesses
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R. F. Warfield

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

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

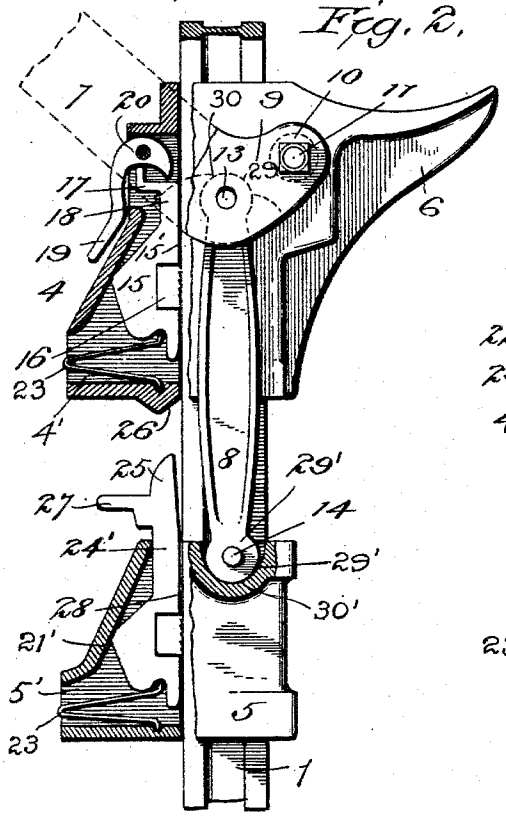


Fig. 3.

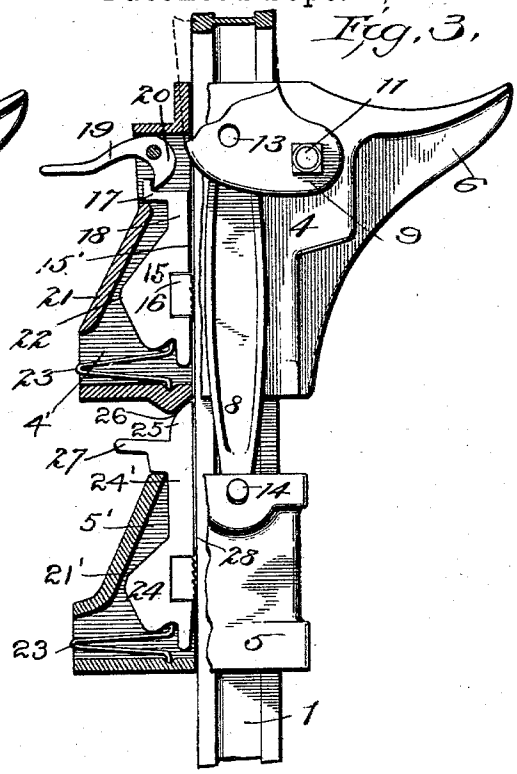


Fig. 4.

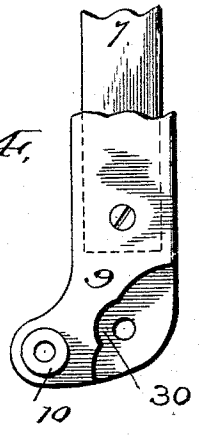
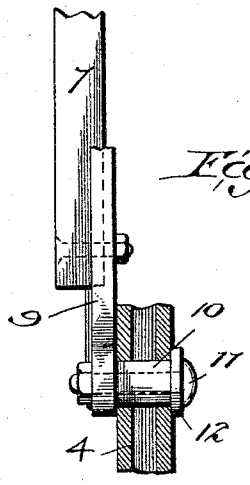


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM H. COX, OF VIRDEN, ILLINOIS.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 589,701, dated September 7, 1897.

Application filed January 7, 1897. Serial No. 618,218. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. COX, a citizen of the United States, residing at Virden, in the county of Macoupin and State of Illinois, have invented certain new and useful Improvements in Lifting-Jacks; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in the class of lifting-jacks wherein a vertical standard is provided with a supporting bracket or step furnished with a clutch and cooperating with a lower clutch through the medium of a lever and movable fulcrum, whereby the oscillating of the lever will cause the two clutches to alternately grip and release the standard to effect an intermittent climbing action.

The object of my device is to produce a much more compact and desirable mechanism, which can be easily manipulated to climb both up and down, so that in case a wagon or other weight should be lifted too high it can be gradually lowered to the requisite height.

To this end my invention consists in a pair of peculiarly-constructed coacting clutches, which will be more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a perspective view of my complete device, wherein the hand-lever is shown raised to perform the lifting operation. Fig. 2 is a side elevation minus the top and bottom portions of the standards, the parts being shown in the positions they assume when the hand-lever is extended upward at an angle of about forty-five degrees. The casting is cut away to show the mechanism within. Fig. 3 is a similar view showing the position of the parts when the lever is raised into nearly a vertical position for lowering. Figs. 4 and 5 are detail views of the attached lower end of the lever, showing the manner in which the parts are fitted together; and Fig. 6 is a detail view of the side of the jack opposite that seen in Fig. 1, showing the manner in which the jack can be utilized as a wire tightening or splicing implement.

Reference-numeral 1 denotes the standard, the top of which is provided with a handle 2 and the bottom with a foot 3.

4 and 5 represent the upper and lower runners, respectively, provided with chambers 4′ and 5′, containing the clutching mechanism, to be described hereinafter. The upper runner is provided with the usual step 6. Both runners are connected by means of a hand-lever 7 and vertically-extending pitman 8, the latter serving as a movable fulcrum in the lifting operation and the two parts forming a toggle-link mechanism. The lower end of the lever has the general outline of a bell-crank, the upturned arm 9 of which has a lateral extension at right angles to the lever, forming a strong tubular bearing 10, which bearing passes through a hole in the runner 4 in front of the standard, being secured in place by a bolt 11 and washer 12, said bolt passing through the bearing. The top and bottom ends 29 and 29′ of the pitman are rounded and pivotally attached to pivots 13 and 14, passing through the lever 7 and the top portion of the runner 5, respectively. The ends 29 and 29′ of the pitman fit in corresponding sockets 30 and 30′ in the lever 9 and lower runner 5, respectively, and take the endwise pressure of the weight brought to bear on the pitman. This relieves the pins 13 and 14 from excessive strain. The only strain brought to bear on the pins is when the lever lifts the lower runner in the operation of climbing.

Each runner is provided with a clutching mechanism consisting of a wedging device normally held in active position by a spring 23. The wedge 15 in the chamber 4′ of the upper runner 4 consists of a substantially triangular casting, the base 15′ of which is adapted to bear against the vertical edge of the standard and is provided with an inserted hardened-steel block 16, having teeth which grip the standard whenever the inclined surface or can 21 bears down on the outer corner 22 or vertex of the wedge. A horizontally-disposed V-shaped spring 23 normally urges the wedge upward and keeps it in contact with the cam. Downward pressure on

the runner 4 forces the cam 21 against the corner 22 of the wedge 15 and crowds the latter sidewise against the standard to lock the runner against downward movement. A contrary movement of the runner produces a contrary effect, allowing the runner to ascend the standard freely through the lifting action of the lever.

The means by which the wedge is thrown out of action to allow the runner 4 to descend consists of a laterally-extending L-shaped arm 17 on the top of the wedge. This arm is connected to the top of the wedge by a neck 18. A small throwout-lever 19 is pivoted in the casting above the wedge. The head portion 20 of this lever is substantially hook-shaped and the end of the hook engages the top and upturned end of the arm 17 whenever the long arm of the lever is lifted out horizontally, as in Fig. 3. When in this position, the wedge in runner 4 is thrown out of action by being pushed down out of contact with the inclined surface 21 to a position where it has more room and is not crowded against the bar, leaving the runner free to slide down the standard. When the outer arm of the lever 19 is thrown down, as seen in Fig. 2, the spring 23 will return the wedge up into contact with the inclined surface 21 and the weight of the runner will be transferred to bear upon the side of the wedge, the upturned portion of the arm 17 passing into the hollow of the hook 19.

The clutching mechanism in the lower runner 5 is substantially a duplication of that in the upper runner with a few exceptions. The upper end of the wedge 24 is provided with different means for throwing it out of action. This means consists of an integral extension 24′ on the upper end of the wedge. This extension projects upwardly out of the top of the runner far enough to allow its beveled end 25 to be engaged by a cam 26 on the bottom of the upper runner 4. When this engagement occurs, the wedge 24 will be forced downward against the tension of the spring 23 and inward away from the cam 21′, as seen in Fig. 3, thereby transferring the weight of the upper runner from the side to the end of the wedge and rendering it inoperative precisely as in the upper clutching mechanism. The upwardly-projecting end 25 of the lower wedge 24 is also provided with a laterally-extending arm 27, by means of which the wedge can be pressed inward independently of the upper runner. The flat vertical surface 28 of the wedge, which lies close to the standard, is slightly bowed or curved away from the latter to permit the upper and lower portions of the wedge to be given a slight rocking movement on the side of the standard in the operation of throwing the wedge in and out of action.

The construction of my device having been set forth, I will now proceed to describe its operation.

When the parts are placed in operative position for lifting, as in Fig. 2, the lowering of lever 7 will lift the runner 4, and hence the cam 26, from the top 25 of the lower wedge 24, thereby allowing the latter to grip the standard by throwing all the weight upon the pitman 8 and the lower runner 5. The reverse or upward movement of the lever throws the upper wedge 15 into action and releases the lower wedge and transfers the fulcrum of the lever from the lower runner to the bearing 10, thereby lifting the lower runner 5, through the medium of the pitman 8, to a higher gripping-point on the standard. Thus the two clutches alternately move toward and away from each other to grip and release the standard when the hand-lever is oscillated. The descent of the parts for a new lift is effected by throwing the upper wedge 15 out of action by means of lever 19, as previously described, and allowing the upper runner to come down close enough to the top of the lower runner to engage the top of the lower wedge, pressing it downward and inward away from the cam 21′, and thereby releasing it from the standard. Both clutches being now out of action the whole mechanism descends.

In permitting the runner 4, with its load, to step or climb down the standard the load is transferred from clutch to clutch in the reverse order from that in climbing up the standard. Suppose the lever is in a horizontal position, the runners then being at their greatest distance apart, the first step to be taken is precisely as if one were to trip the lower clutch and drop the load suddenly. First, the upper clutch is thrown out of action by means of the releasing-lever 19. Then permit the lever to rise, carefully watching the descent of the upper runner. When the runner has nearly reached the upper projection 25 of the lower wedge 24, throw the releasing-lever in and permit the upper clutch to come into action to maintain the load. Nothing but the weight of the lever is now upon the lower wedge. Lift the lever slightly to remove this weight, release the lower clutch by means of the projection 27, and the wooden lever will drop to a horizontal position, as in the beginning. This is one step down, and a repetition of this operation will lower the weight to the desired point.

My device is also constructed to form a combined lifting-jack and wire stretcher and splicer by providing a wire-clamp 31 on top of the standard and a second clamp 32 upon the upper runner 4, as seen in Fig. 6. To tighten or stretch a fence-wire, place the moving mechanism at the lowest point on the standard and put the hook or step of the upper runner on that side of the post farthest from the point where the other end of the wire is fastened. Fasten the wire to be stretched in the clamp at the top of the standard. By operating the lever the wire is drawn toward the post, and when sufficiently taut is stapled. For splicing a wire the two ends

should be placed in the clamps and drawn toward each other.

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

1. In a lifting-jack, the combination of a standard, a pair of alternating runners, a wedging device in each runner, and means for making the upper runner engage and release the wedge in the lower runner to allow the clutches to climb down the standard, substantially as described.

2. In a lifting-jack, the combination of a standard, alternating runners each provided with an inclined or cam surface, a pitman and lever connecting said runners, a wedge in each runner, a spring for holding each wedge normally against said inclined or cam surface, and a throw-out lever connected with one of the wedges, to render the wedge inoperative, substantially as described.

3. In a lifting-jack, the combination of a standard, alternating runners having inclined or cam surfaces, wedging devices actuated thereby, said devices consisting of a substantially triangular wedge, the base of which lies next the standard, said inclined surface on each runner adapted to engage the vertex opposite the side of the base of the wedge to crowd the wedge against the standard, and a spring interposed between the wedge and its casing to hold the two in engagement, substantially as described.

4. In a lifting-jack, the combination of a standard provided with upper and lower runners having hollow chambers containing gripping-wedges, cam-surfaces on the runner adapted to engage the wedges to force them into contact with the standard, a spring in each runner to normally hold the wedges up against the cam-surface, a projection on the lower wedge adapted to come in contact with the upper runner, a pitman and lever forming a toggle-link connection between the two runners, and a hand-lever adapted to operate the toggle-link mechanism to move the runners toward and away from each other, substantially as described.

5. In a lifting-jack, the combination of a standard provided with a runner having a chamber containing a wedge, a cam-surface on the inside of the chamber adapted to engage one side of the wedge, a spring, and an inserted toothed block in the opposite side of the wedge to engage the standard, substantially as described.

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

WILLIAM H. COX.

Witnesses:
G. J. PATTISON, Jr.,
GEO. H. HILL.