

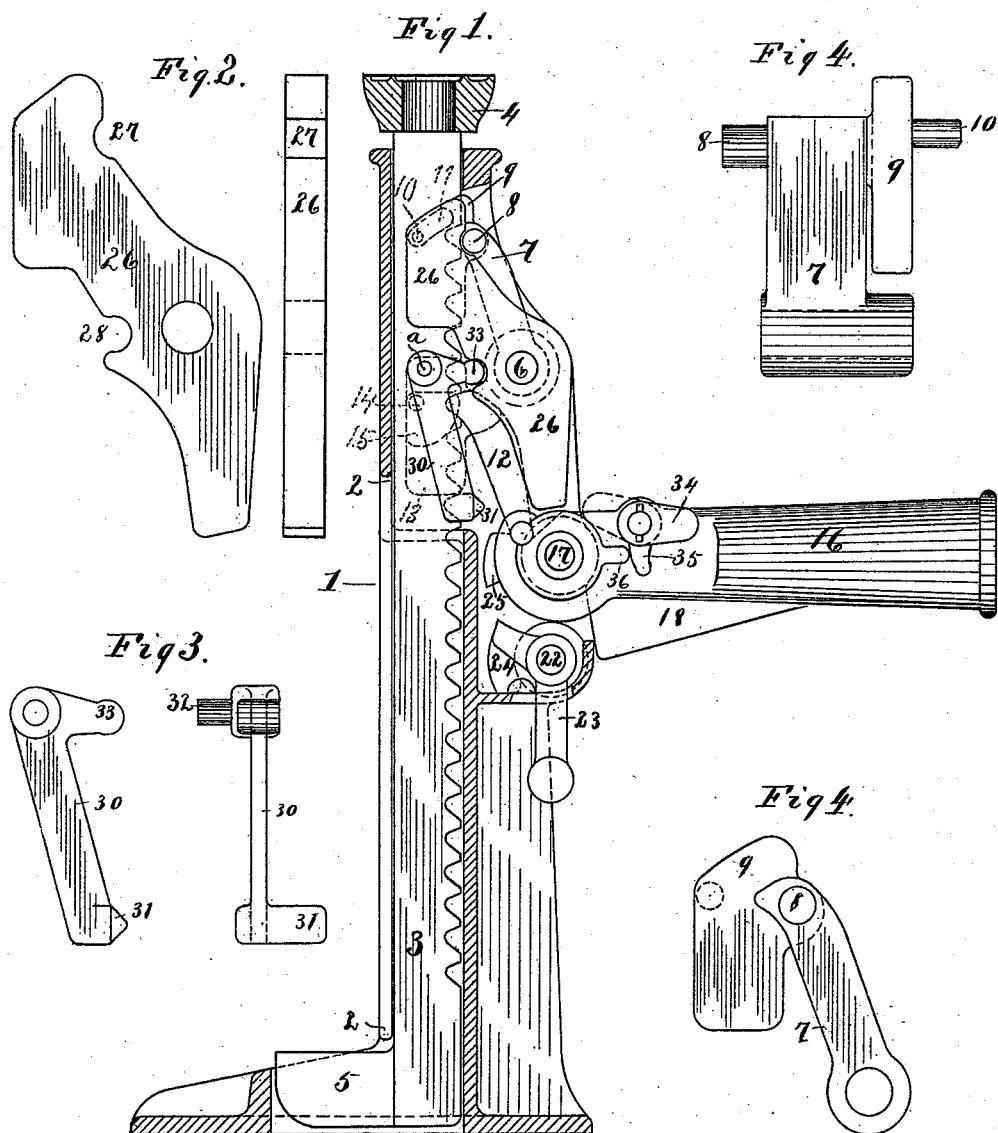
(No Model.)

2 Sheets—Sheet 1.

E. R. STILWELL.
LIFTING JACK.

No. 523,717.

Patented July 31, 1894.



WITNESSES:

Lester L. Allen.
Alfred J. Fiorini.

E. R. Stilwell. INVENTOR
BY
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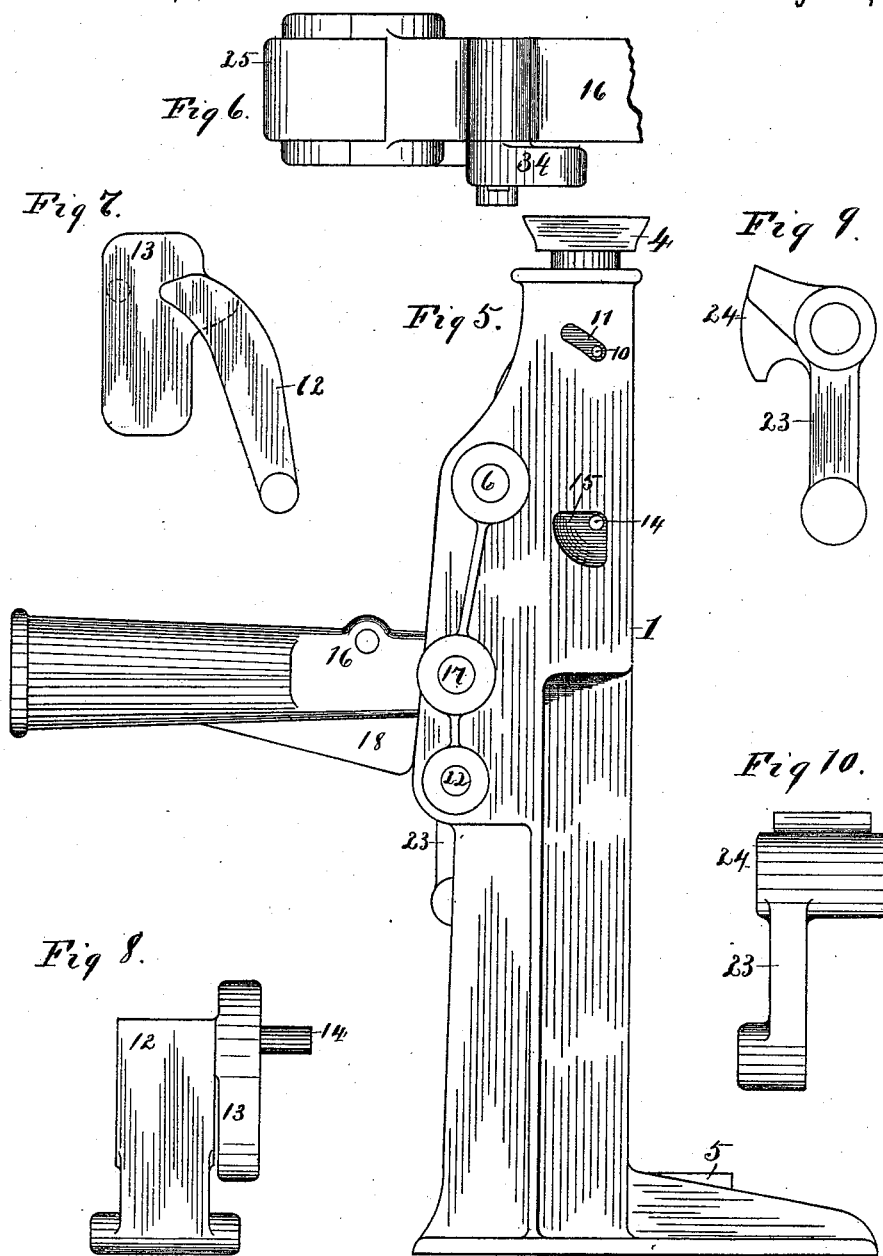
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UNITED STATES PATENT OFFICE.

EDWIN R. STILWELL, OF DAYTON, OHIO.

LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 523,717, dated July 31, 1894.

Application filed April 26, 1894. Serial No. 509,136. (No model.)

To all whom it may concern:

Be it known that I, EDWIN R. STILWELL, of Dayton, county of Montgomery, State of Ohio, have invented a new and useful Improvement 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 letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in lifting-jacks.

The object of said improvements is to provide a lifting-jack, which, besides being capable of performing, generally, the work required of a machine of this character is especially designed for and adapted to rail-road work. It is well known by those familiar with rail-road repairing that sometimes, while repairs are being made it is important that the load held by the jack be quickly let down and the jack speedily removed to avoid impending danger. To accomplish this I provide mechanism through the agency of which the lifting bar may be instantly lowered; and further I provide mechanism for lowering said lifting bar step by step when the character of the work requires a gradual letting down, and also mechanism to sustain the operating lever and lifting bar with its load, at one half notch.

The various parts of the jack as hereinafter described are constructed of steel and malleable iron.

In the drawings hereto annexed and forming a supplement to the specification, Figure 1. represents a vertical section of my improved lifting-jack; Fig. 2. detail side and front elevations of the vibrating plate; Fig. 3. detail side and front elevations of the bell-crank lever; Fig. 4. is a detail side and Fig. 4^a a front elevation of the retaining pawl; Fig. 5. a side elevation of the lifting-jack; Fig. 6. a plan view of the inner end of the operating lever. Figs. 7 and 8 represent detail side and front elevations of the lifting pawl; Figs. 9 and 10, detail side and front elevations of the half-way stop.

Coming to a specific reference (1) indicates the supporting and inclosing frame provided as usual with a central longitudinal opening, rectangular in cross section, and extending

throughout its entire length, and a vertical slot (2) in the rear; the front of the frame adjacent to the operating mechanism, is open from a point above the retaining pawl to a point below the operating lever, as shown in Fig. 1.

(3) indicates a notched lifting bar having a bearing block (4) and a base (5); this bar moves in the central opening in the frame and the base portion (5) in the slot therein in a well known manner.

(6) indicates a transverse pivot pin journaled in bosses in the sides of the frame; (7) is a retaining pawl journaled on said pivot pin, and provided with a lug (8) projecting from one side thereof, and a gravity plate (9) cast integrally with the pawl to give the upper end of said pawl sufficient weight to cause it to normally engage with the notches on the lifting bar.

(10) is a lug projecting laterally from the outer side of the plate (9) and through an opening (11) in a side of the frame.

(12) designates the lifting pawl having a gravity plate (13) at its upper end and a lug (14) projecting laterally from the outer side of said plate and through an opening (15) in the frame. This pawl, gravity plate and lug thereon are of a single casting, and similar in construction to the parts on the retaining pawl.

(16) is a casting forming the socket for the operating lever, having a fulcrum on a shaft (17) journaled in bosses on the sides of the frame.

(18) is a flange projecting from the lower side of said socket casting to impinge with the lower front of the frame to stop and maintain the operating lever in a horizontal position.

(22) indicates a pivot pin journaled in bosses in the sides of the frame, and (23) is a stop mounted on said pin with its lower end projecting through a slot in the lower front of the frame in which slot it may oscillate; on the upper end of this stop there is a projection or flange (24) of a two-fold thickness, the function of which is to limit the upward movement of the operating lever to a half throw, and therewith the downward movement of the lifting pawl to a half notch on the lifting bar, which relieves the retaining pawl of the load and transfers it to the lifting pawl; to accomplish this the stop (23) is turned upon

its axis by bringing the foot in contact with the lower exposed portion of said stop, this throws the projection or flange on the upper end of said stop in the path of the projecting end or extension (25) on the lever socket, and thereby the movement of the latter is arrested at half way. When not maintained in this position by the weight of the load, the stop drops by gravity to the position shown in Fig. 1, and the projection or flange thereon abuts with the inner surface of the frame to hold the stop in said position. To lower the lifting bar step by step, the lugs (10) and (14) that project from the gravity plates of the pawls, and through the openings (11) and (15) in the frame, are alternately pressed forward thereby releasing one at a time, said pawls from the notches in the lifting bar.

Thus far I have described the mechanism for elevating the lifting bar by a full throw or a half throw of the operating lever, and the means for gradually lowering said bar step by step. I will next describe certain trip mechanism through the agency of which said lifting bar may be quickly dropped from any point of elevation.

(26) denotes a vibrating plate mounted on the pivot pin (6) on one side of and adjacent to the retaining pawl (7); this plate has a preponderance of weight at its upper end to maintain it in a proper position, and semi-circular recesses (27) and (28) in its periphery, in the former of which, the lug (8) on the retaining pawl lies.

(30) is a bell-crank lever having a horizontal extension or flange (31) on the vertical arm thereof to trip the lifting pawl; said lever has its fulcrum at (a) where its journal (32) enters a boss in the side of the frame. This lever occupies space between a side of the lifting bar, and the frame, in the rear of and on a line with the plate (26) so that the end (33) of the horizontal arm projects into the recess (28) in said plate. The plate (26) normally maintains the vertical arm of the bell-crank lever on the incline as shown in Fig. 1; a position to prevent the flange (31) from coming in contact with the notches on the lifting bar.

(34) is a trip pawl pivoted to one side of the socket casting (16), and when not in use, is turned backward upon its axis to the position shown in Fig. 1, in which position, the lug (35) thereon engages with a similar lug (36) projecting from one of the bearing bosses of the socket casting (16) and thereby maintains said pawl in that position.

Briefly describing the operation of simultaneously tripping the retaining and lifting pawls to instantaneously lower the lifting bar,—the pawl (34) is turned upon its axis to the position shown in dotted lines, Fig. 1, the operating lever is raised which causes the pawl (34) to impinge with the lower end of the vibrating plate (26) causing the latter to press against the lug (8) on the retaining pawl, and against the vertical arm of the bell-

crank lever (30) which causes the flange (31) to come in contact with the lifting pawl to move it out of the notches in the lifting bar, and thus are the two pawls simultaneously tripped to instantaneously drop said lifting bar.

Having fully described my invention, I claim—

1. A notched lifting bar in combination with an operating lever, a trip pawl, and a lifting pawl pivotally mounted on said operating lever, a vibrating plate actuated by said trip pawl; a retaining pawl, and a bell-crank lever actuated by said vibrating plate, through the agency of which mechanism, the lifting bar may be instantaneously lowered, as herein described.

2. A notched lifting bar in combination with an operating lever provided with a projection (25), a lifting pawl pivoted to said operating lever, and a half-way stop pivotally mounted below said operating lever, whereby the movement of said lever may be limited to a half-way throw and the lifting bar moved a distance less than one tooth, substantially as herein described.

3. In a lifting-jack, the combination with the frame, lifting bar and operating lever, of lifting and retaining pawls pivotally mounted as described, a vibrating plate mounted adjacent to the retaining pawl, a bell-crank lever pivoted adjacent to said vibrating plate and lifting pawl, and a pawl pivoted to the lifting lever, adapted to come in contact with said vibrating plate and thereby simultaneously trip said retaining and lifting pawls to instantaneously drop the lifting bar.

4. The combination with the frame having openings (11) and (15) and the lifting bar, of a retaining and a lifting pawl, provided respectively with gravity plates (9) and (13) and lugs (10) and (14) projecting therefrom and through the openings (11) and (15), the operating lever (16) provided with the extension (25), and the stop (23) pivoted below the operating lever and adapted to be turned upon its axis to limit the throw of said operating lever.

5. The combination with the frame having openings (11) and (15) in one side thereof, the lifting bar, and the operating lever, of a lifting and a retaining pawl the latter being provided with a lug (8) and both of said pawls being provided respectively with lugs (10) and (14), the vibrating plate (26) adjacent to the retaining pawl, the bell-crank lever (30) with flange (31), and pivoted adjacent to said vibrating plate and lifting pawl, the operating lever and means thereon for moving the plate (26).

In testimony whereof I have hereunto set my hand this 16th day of April, 1894.

EDWIN R. STILWELL.

Witnesses:

S. A. DICKSON,
LESTER L. ALLEN.