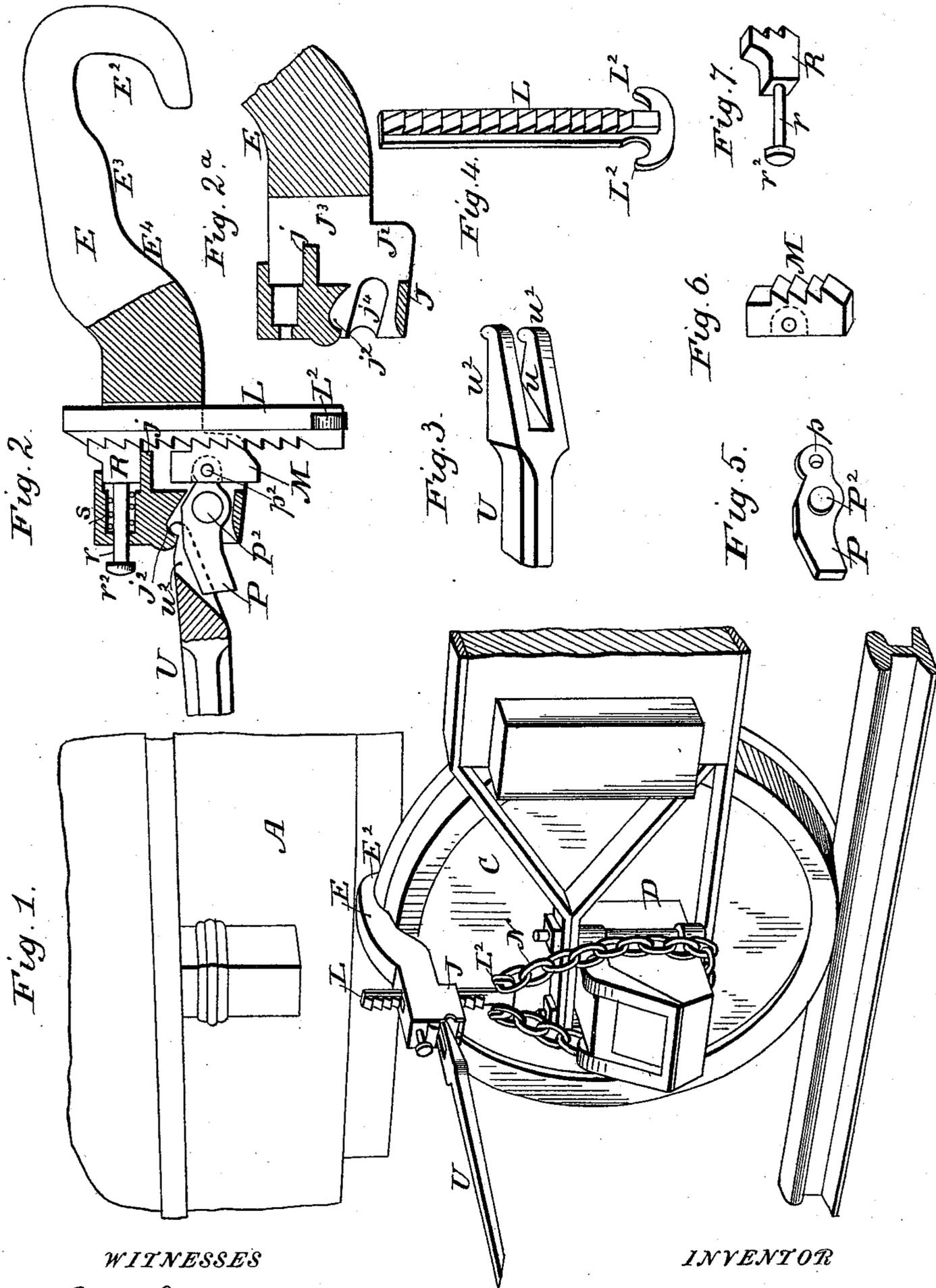


(No Model.)

J. LAFORE.  
LIFTING JACK.

No. 539,624.

Patented May 21, 1895.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JOHN LAFORE, OF LITTLE ROCK, ARKANSAS.

## LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 539,624, dated May 21, 1895.

Application filed November 26, 1894. Serial No. 530,059. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN LAFORE, a citizen of the United States, residing at Little Rock, in the county of Pulaski, State of Arkansas, have invented certain new and useful Improvements in Lifting-Jacks, of which the following is a specification.

My invention relates to improvements in lifting jacks used mainly to lift the axle boxes (and consequently a portion of the body of a railway car), for the prompt replacement of their brass bearings. Heretofore the lifting jacks having rack and pawl employed for that purpose have generally been made to rest upon a piece of timber placed alongside of the track and their lifting heads made to bear against the under side of the axle box. The end of the axle generally following the axle box and being elevated thereby, required to be pried down again before the old brass bearing could be removed and a new one be inserted, and generally required the strength of two men and the use of a long crow-bar.

The objects of my improvement are to dispense with the timber support for the lifting jack and obviate the necessity of prying down the axle from the axle box by securing the lifting jack support of the rack and pawl to the upper portion of the rim of the car wheel carrying the axle operated upon, and using said wheel and jack support as a fulcrum for the operative lifting means. I attain these objects by the construction illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of a railway-car and truck, showing the lifting-jack in position for use upon the axle-box. Fig. 2 is a side view, partly in section, of the lifting-jack, with the outer end of the jack-lever broken away. Fig. 2<sup>a</sup> is a longitudinal section of the rear end of the frame of the lifting-jack. Fig. 3 is a perspective view of the inner end of the jack-lever to operate the lifting-pawl. Fig. 4 is a perspective view of the rack-bar. Fig. 5 is a perspective view of the equalizer-lever detached from the lifting-pawl. Fig. 6 is a perspective view of the lifting-pawl. Fig. 7 is a perspective view of the retaining-dog.

In said drawings A represents a portion of the body of a railway car, C one of the wheels, and D its journal box.

The lifting jack consists in part of a strong metal bar E having its inner end in the form of a hook E<sup>2</sup> designed to extend over the inner flange of a car-wheel, with its point in engagement with the under side of said flange; in which position the under portion E<sup>3</sup> of the bar E rests upon the thread of the wheel. The portion E<sup>4</sup> of said bar is curved downward to render the bar stronger where it is without the support of the wheel, the rounding or curvature of said portion, when in contact with the edge of the wheel having also a tendency to cause the hook to engage more firmly with the inner flange of the wheel. The outer end or head J of the bar E (opposite its hooked end) is made vertically thicker to give room between its sides J<sup>2</sup> for the bearings of the movable parts of the lifting jack. Between said sides there is a vertical opening J<sup>3</sup>, within which is placed a rack-bar L the lower end of which has hooks L<sup>2</sup> projecting from its sides to receive some of the links of a chain N. Forwardly from the rack bar L, there is placed within the head J of the bar E between its sides J<sup>2</sup>, a lifting pawl M having a series of ratchet teeth adapted to engage with the teeth of the rack bar L. Within the rear edge of the lifting pawl there is a segmental mortise to receive the circular head *p* of an equalizer-lever P, the segmental mortise constituting the bearing for said head *p*; but the parts M and P are preferably retained united together by a pivot pin *p*<sup>2</sup> passing through the head *p*, and through the sides of the lifting pawl. The lever P has projecting from its sides, short trunnions P<sup>2</sup> that are received within grooves J<sup>4</sup> formed in the inner faces of the sides J<sup>2</sup> of the head of the bar E. Said grooves J<sup>4</sup> are forwardly, slightly inclined down to have a tendency to direct the lever P and the lifting pawl M toward the rack bar to facilitate the engagement of their teeth.

Above the lever P and the lifting pawl M, there is within the head J a shelf *j* to support a retaining dog R provided with teeth for engagement with the rack bar L. Said dog has a stem *r* projecting rearwardly through the rear of the head J. Within said head there is a cylindrical cavity to receive a coiled spring placed around the stem *r*. One end of said spring bears against the bottom of said cavity.

and the other end against the rear of the dog, to force the latter into engagement with the rack-bar. The rear end of the dog-stem  $r$  is provided with a button or handle  $r^2$  to permit  
 5 the dog to be pulled outwardly, and thus release it from the rack-bar when desired, and particularly when the rack bar is to be lowered.

To operate the device, the jack-lever U is  
 10 used, one end of which is beveled like the end of a pinch-bar and is useful for many purposes. Its opposite end is bifurcated having two parallel branches  $u^2$  with a mortise  $u$  between them to receive the outer end of the  
 15 equalizer-lever P. The inner end of the mortise  $u$  is undercut to form a beveled surface not only to bear upon the outer end of the lever P but to have also a tendency to force forward said lever P and the lifting pawl toward the  
 20 rack-bar. The ends of the branches  $u$  are upturned to form lugs that are received within recesses  $j^2$  formed within the head J, in the top of the opening within which the lever P is placed.

To operate the device the bar E is placed  
 25 on top of the car wheel with its hooked end in engagement with the under side of the flange of said wheel. The chain N is then passed around the axle box D with two of its  
 30 links resting upon the hooks  $L^2$  of the rack-bar. The bifurcated end of the lever U is then inserted within the head J of the bar E, said end being astride of the lever P. Then the operator, by pressing down upon the lever  
 35 U causes the lifting pawl M to engage with the teeth of the rack-bar and lift the latter the distance of one tooth. The dog R retaining it in said elevated position permits the operator to lift the lever U, and the pawl M  
 40 to slide down into engagement with a new series of teeth of the rack; and the operation is repeated until the axle box is sufficiently lifted to permit the operator to remove a worn out brass-bearing and to replace it by a new  
 45 one.

To lower again the axle box the operator

temporarily sustains the rack bar and pawl M by means of the lever U, with one hand while he temporarily pulls with his other hand upon the stem of the dog and withdraws it  
 50 from engagement with the rack-bar. The operator then slowly elevates the lever U while he releases the dog, for engagement with the other teeth of the rack. These motions of the operator are repeated until the axle box is  
 55 again in normal position upon the axle. The lever U, chain N, and the jack frame are then removed from the wheel.

Having now fully described my invention, I claim— 60

1. In a lifting jack the combination, of a metal bar having a hook at one end and a chambered head at the opposite end, a rack-bar vertically movable in said head, a retaining dog having teeth on its front and a stem  
 65 projecting from its rear, a lifting pawl, a lever P having one end pivoted to said pawl, and a lever U adapted to press upon the opposite end of the lever P substantially as described.

2. In a lifting jack the combination, of a  
 70 metal bar having a hook at one end and a chambered head at the opposite end, a rack-bar vertically movable in said head and having hooks on its sides, a chain in engagement with said hooks, a retaining dog having teeth  
 75 at one end and a stem at the opposite end, with a spring upon said stem, a lifting pawl, and means to elevate said pawl substantially as described.

3. In a lifting jack the combination, of a  
 80 metal bar having a hook at one end and a chambered head at the opposite end a rack bar vertically movable in said head, a retaining dog, a lifting pawl, a lever P having one end pivoted to said pawl and having trunnions  
 85 resting in grooves in the chambered head, and a lever U forked at its front end and straddling the lever P, substantially as described.

JOHN LAFORE.

Witnesses:

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 JOHN T. ANDERER.