

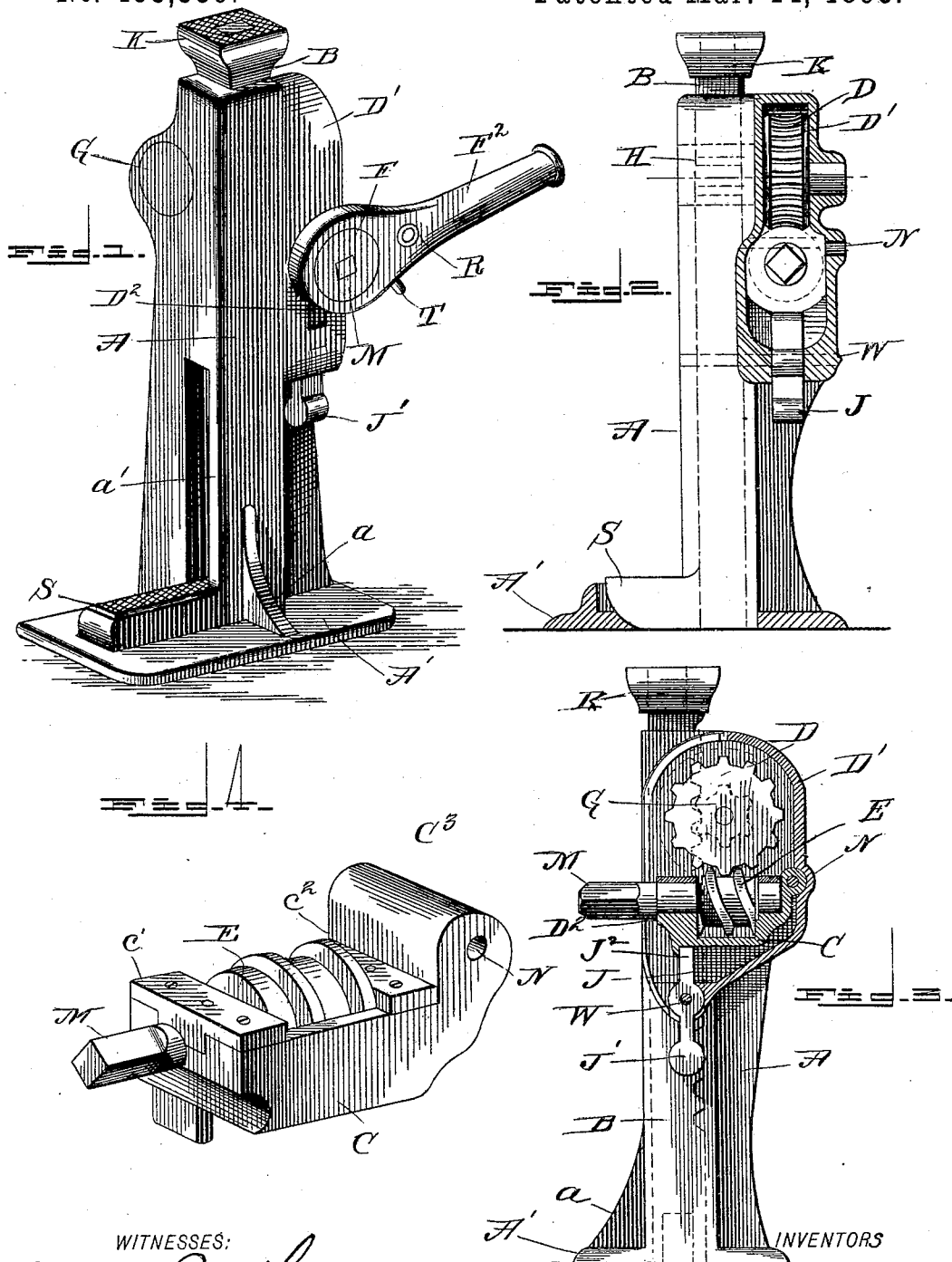
(No Model.)

2 Sheets—Sheet 1.

J. A. MEAD & C. JOHNSON.  
QUICK RETURN LIFTING JACK.

No. 493,336.

Patented Mar. 14, 1893.



WITNESSES:

*W. H. Rumphrey*  
*Chas. H. La Porte*

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BY *Charles Johnson*  
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their ATTORNEY.

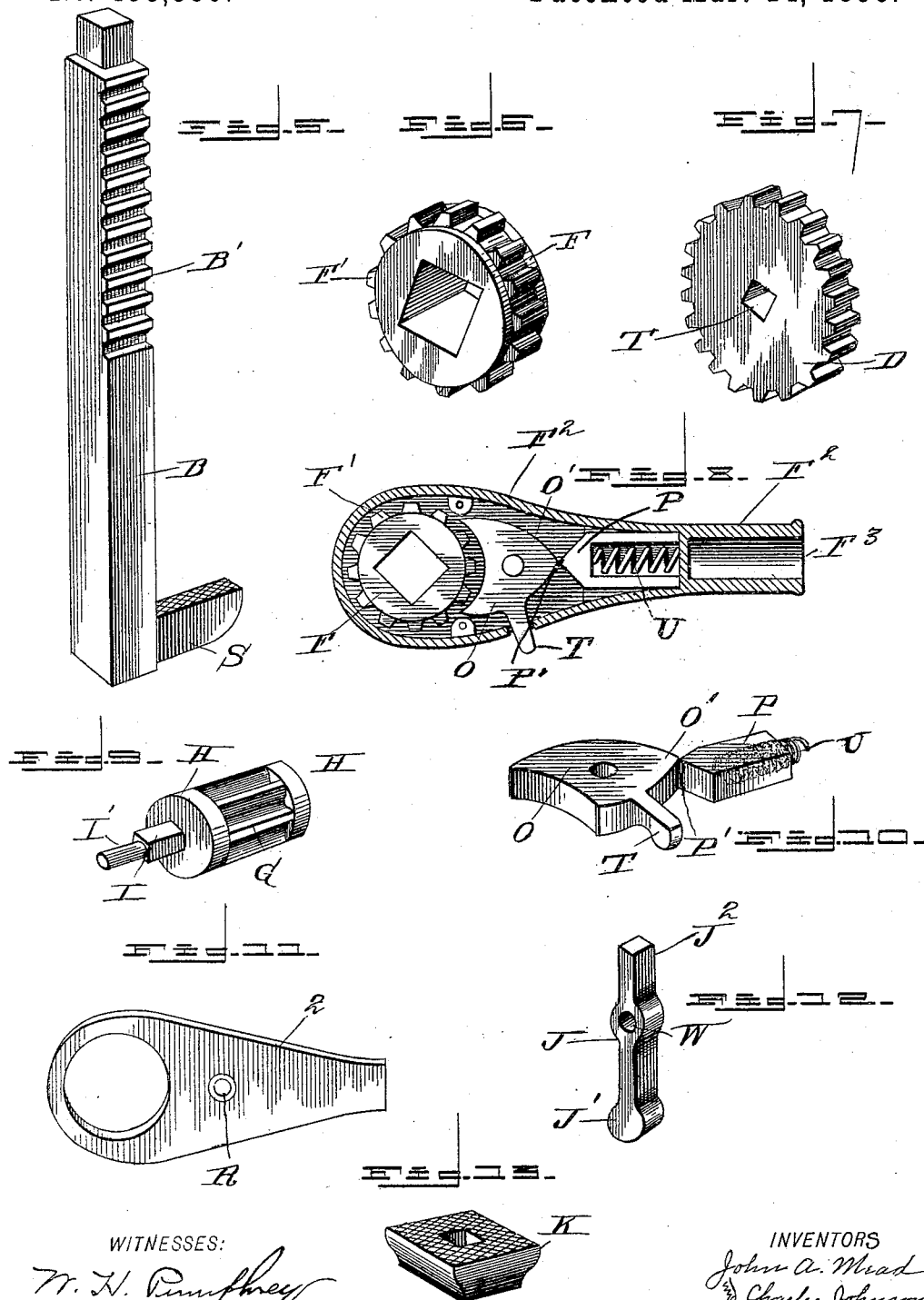
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOHN A. MEAD AND CHARLES JOHNSON, OF RUTLAND, VERMONT.

## QUICK-RETURN LIFTING-JACK.

SPECIFICATION forming part of Letters Patent No. 493,336, dated March 14, 1893.

Application filed November 3, 1892. Serial No. 450,827. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN A. MEAD and CHARLES JOHNSON, citizens of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in Quick-Return Lifting-Jacks; and we 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.

Our invention relates to an improved jack-screw, and it consists in the construction and arrangement of the parts of the same, which will be more fully hereinafter described, and pointed out in the claims.

The object of our invention is to provide a quick return jack which is simple and effective in its construction and operation, strong and durable, easily handled, quickly operated, and readily understood, positive in its results, and cheaply manufactured. We attain this object by the construction of a jack screw, as illustrated in the accompanying drawings, wherein like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a vertical perspective view of the jack complete and ready for use. Fig. 2 is a sectional side elevation, showing the jack with the parts all in position. Fig. 3 is a rear view showing the jack with the outer shell removed, and showing gears, worm, and sectional view of housing. Fig. 4 is a view of the worm shaft and a suitably arranged housing with removable caps on each side to hold oil or greased waste. Fig. 5 is a perspective view of the lifting bar. Fig. 6 shows in perspective a circular block of metal having toothed projections on its periphery, the radial lines thereof leading direct from the circumference toward the center, and the teeth and spaces being of the same width. Fig. 7 is a perspective view of the pinion or worm wheel which is operated by the worm, with teeth shown of such construction as to prevent the pinion from turning upon the worm, when in use, independently of the operator. Fig. 8 is a horizontal sectional view of the lever for operating the jack, showing all the parts in position. Fig. 9 is a view in per-

spective of the pinion which works in the rack on the lifting bar. Fig. 10 is a view of the pawl and sliding block. Fig. 11 is a view of a plate or cover to protect the ratchet wheel and block in the jack operating lever. Fig. 12 is a perspective view of a dog to be pivoted in the shell to support the gearing and to hold the worm in mesh with the worm wheel, and— Fig. 13 is a view of a cap, formed to fit on the upper extremity of the lifting bar and upon which the load may rest.

A represents the frame of the jack, having a broad base A' braced and strengthened by ribs  $\alpha$ , and a rectangular shaped passage through the whole length and an opening  $\alpha'$  in front about one half the length of the jack which connects with the above passage and receives a lifting bar B of rectangular form keeping it in a central position. This lifting bar B has a rectangular shaped foot S projecting from the lower end of the bar and integral with or fixedly secured thereto for use in lifting a load near the ground. The bar has toothed projections B' or a rack on one side.

C is a vessel shaped housing, having suitable bearings with removable caps  $c'$   $c^2$ , see Fig. 4. In the bearings in this housing is mounted the shaft of the worm E, see Figs. 3 and 4, of suitable form. This shaft has a rectangular shaped end M on which ratchet wheel F' and operating lever F<sup>2</sup> are suitably mounted. Underneath the shaft in its housing is provided sufficient space for greased waste and oil. The vessel shaped housing C has, at its inner end, a projection C<sup>3</sup> with an aperture N by means of which and a shaft the housing is pivotally secured at this end within the outer shell D'. Outer shell D' on one side has a vertical slot D<sup>2</sup> cut therein through which projects the squared end M of the worm shaft. Housing C is held in a horizontal position within the outer housing, as shown, by means of a dog J suitably pivoted at W in an aperture in the lower part of the outer shell D' and provided with a weighted lower end J' to hold the dog normally in a vertical position. When in this position the upper end J<sup>2</sup> of the dog contacts with the bottom of housing C, and holds the housing in the position stated. When the lower weighted

end J' of this dog is swung outwardly, the end of the vessel shaped housing, not pivoted, will of its weight fall downward.

D represents a worm wheel having teeth on its outer circumference to fit into and to work with the spiral shaped grooves of the worm E. This wheel fits on a squared shaft I on shaft I' of the pinion G, see Fig. 9. This shaft is suitably mounted in the upper part of the outer shell in such a manner that pinion G is in mesh with rack B' on the lifting bar, and wheel D is in gear with the worm E when the vessel housing C is held in a horizontal position by the dog J. Pinion G may be made integral with its shaft I' and the teeth of the pinion are of sufficient width to permit rack B' to be easily engaged thereby. On shaft I' at the ends of the teeth may be formed flanges H H to strengthen the teeth of the pinion.

F is a cylindrical block of metal with a central rectangular shaped aperture, and a ratchet wheel F' formed on one end. The aperture in this block fits the squared end-M of the worm shaft.

F<sup>2</sup> represents a lever for operating the jack. This lever has one end of elliptical form hollowed out to fit over the end of shaft M, and the ratchet wheel mounted thereon, see Fig. 1. The other end F<sup>3</sup> has an aperture therein for the insertion of a handle not shown. Within the larger end of this lever is pivoted a double pawl O of crescent shape, provided with an operating handle T which projects through an aperture in the lever. This pawl in the rear has a pointed projection O', Fig. 10, which contacts with a pointed apex P' of a sliding block P in a suitable guide way in rear of pawl O, the block being held in a forward position by a spring U in rear thereof. By means of handle T the tension of the spring U may be overcome, throwing projection O' of the double pawl to either one or the other side of the sliding block, thereby engaging either of the pawls as may be required to turn ratchet wheel F' to the right or left and thus raise or lower the lifting bar.

Q is an apertured cover of suitable shape to fit in the large end of the lever to protect the ratchet mechanism and to hold the same in place. This cover may be fastened in place by a rivet passing through aperture R in the plate, and the rivet also passing through and serving as a pivot for the double ratchet O to turn upon.

K is removable cap of suitable form to fit on the upper end of the lifting bar, when required to raise and support the load.

The operation of the jack is as follows: The gearing is put into operative position, as shown in Figs. 1 and 3, and the jack placed under

the load which is desired to be raised. By means of handle T, the projection O' is thrown to the right or below apex P' of the sliding block which throws the right hand or lower pawl of the double pawl into contact with the ratchet wheel and by raising and lowering lever F<sup>2</sup>, the connecting gearing will raise the lifting bar and the load resting thereon. If it is desired to lower the load slowly, the right hand pawl may be thrown out and the left hand pawl thrown into contact with the ratchet wheel, and by operating the lever lifting bar and load resting thereon will be lowered. If it is desired to lower the jack quickly, all that is necessary is to throw the bottom of dog J outward; this will permit the worm E to drop downward out of gear with worm wheel D, and the jack will quickly run down of its own accord.

It is evident that many changes may be made in the construction and arrangement of parts without departing from the spirit of the invention.

What we claim, and desire by Letters Patent, is—

1. In a jack, the combination of a lifting bar having a rack, a pinion meshing with the rack and a worm wheel mounted on the same shaft as the pinion, a second shaft a frame in which the latter shaft is journaled, a worm on the latter shaft engaging the worm wheel, said frame pivoted at one end in an outer shell, and a dog pivoted in the outer shell underneath the frame and adapted to support said frame and hold the worm in mesh with the worm wheel, a ratchet lever with an enlarged apertured end to fit the squared end of the second shaft, a ratchet wheel, and a spring-actuated double pawl to revolve the second shaft and operate the jack, substantially as described and set forth.

2. The combination in a jack of a lifting bar having a rack, a pinion engaging the rack, and a worm wheel mounted on the same shaft as the pinion, a worm, a frame with a closed bottom, the frame being pivoted at one end in the outer shell, a dog pivoted in the outer shell underneath the frame, the upper end of the dog supporting the opposite end of said frame to hold the worm in mesh with the worm-wheel, and a lever with an enlarged apertured end to engage the squared end of the second shaft to operate the jack, as and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN A. MEAD.  
CHARLES JOHNSON.

Witnesses:

CARL B. HINSMAN,  
RUST P. BARRETT.