(No Model.)

M. REISCH.

JACK SCREW.

No. 397,387. Patented Feb. 5, 1889.

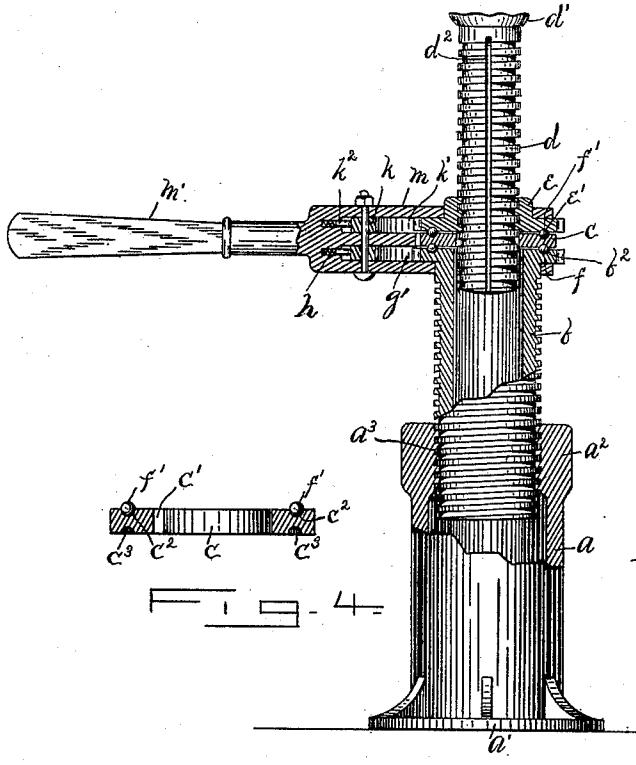


Fig. 1.

Fig. 4.

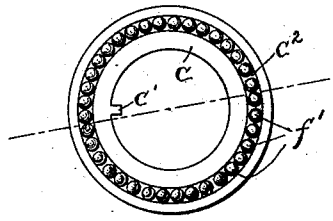


Fig. 3.

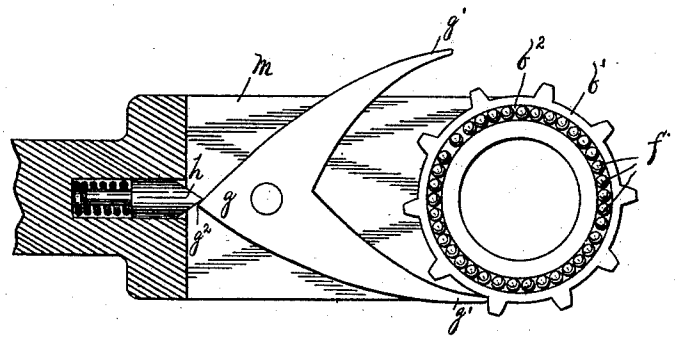


Fig. 2.

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JACK-SCREW.

SPECIFICATION forming part of Letters Patent No. 397,387, dated February 5, 1889.

Application filed November 12, 1887. Serial No. 254,989. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL REISCH, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Jack-Screws; and I 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention consists in certain improvements in jack-screws for which Letters Patent No. 364,373 were granted to me June 7, 1887.

The object of my invention is to provide a jack-screw with improved construction adapted for the reception of ball-bearings, by means of which the power required in the manipulation of the jack is greatly reduced, all of which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a central vertical section of my improved jack-screw. Fig. 2 is an enlarged detail plan view of one of the oscillating catches and ratchet-wheels, showing the balls in position in the groove on the upper surface of the wheel; and Figs. 3 and 4 are a plan and cross-section, respectively, of the washer.

Referring to the drawings, a is the tubular standard, having the base a' and re-enforced top a^2, said top a^2 being interiorly screw-threaded as at a^3.

b is a hollow screw having upon its upper end and integral therewith the ratchet-wheel b', the upper surface of which is provided with the annular groove b^2 for the reception of the balls f, as more clearly shown in Fig. 2. This hollow screw b is adapted for engagement with the screw-threaded aperture a^3 of the standard a, in which it is to be raised and lowered.

c is a washer (which is here used in place of the tubular collar and keeper shown in patent above referred to) and has the annular groove c^2 cut in its top surface for the reception of the balls f', and the annular groove c^3 cut in its bottom surface for the reception of the balls f. On its inner edge is arranged a small projecting lug c'. This washer c rests loosely upon the balls f, which are placed in the annular groove b^2 in the top surface of the ratchet-wheel b' and held in place by the annular groove c^3 in the bottom surface of the washer c, between which grooves the series of balls f play.

d is a screw passing through the washer c and into the hollow screw b, at the top of which is rigidly secured the rasped or notched circular plate d', which forms the top of the jack. Along the side of the screw d is the vertical groove d^2, adapted for the reception of the projecting lug c' in the washer c.

e is a ratchet-wheel in engagement with the screw d, with an annular groove, e', on its bottom surface. This ratchet-wheel e rests loosely upon the balls f', which are placed in the annular groove c^2 in the top surface of the washer c, and held in place by the annular groove e' in the bottom surface of the ratchet-wheel e, between which grooves the series of balls f' play.

A casing, m, incloses the ratchet-wheels b' and e and washer c, at the outer end of which is the lever-handle m'. The screw d passes loosely out of the top of the casing m, and the hollow screw b extends loosely through the lower wall of the same. At one side of the casing in its lower portion is provided the oscillating plate or dog g, having the two pawls g' g' and pointed projection g^2. The pawls g' g' are adapted for engagement alternately with the ratchet-wheel b', being held in either of such positions by the spring-pressed catch h, as clearly shown in Fig. 2.

k is a similar oscillating plate or dog having the pawls k' k', (only one of which is shown,) with spring-pressed catch k^2. The pawls k' k' are adapted for engagement alternately with the ratchet-wheel e. The operation of the parts just described is as follows:

To raise the notched-plate d', and with it the body placed upon it, the left-hand pawl g' of the plate g is placed in engagement with the ratchet-wheel b', and the right-hand pawl k' of the plate k is placed in engagement with the ratchet-wheel e, both pawls being held in place by the spring-catches k^2 and h. As the

lever-handle m' is turned to the right, and with it the casing m, the ratchet-wheel e is also turned to the right by the pawl k', and as the screw d passing through the ratchet-wheel cannot turn by means of the lug c', it rises in such ratchet-wheel, carrying with it the object placed upon the notched plate d'. As the lever-handle m' is turned back to the left, the ratchet-wheel b' upon the hollow screw is turned by the pawl g', which causes the hollow screw to turn in its screw-threaded aperture a^3 in the standard a, and at the same time to rise, carrying with it the upper part of the jack and the object to be lifted thereby. The washer c and its ball-bearings being interposed between the ratchet-wheels prevents one wheel from moving the other in their rising and lowering action, the washer having only a vertical movement with the other parts, and as most of the friction is at this point it will thus be seen that by the adjustment of my improved ball-bearings the friction is greatly reduced and manipulation made much easier.

To lower the object, the opposite pawl of each oscillating plate is engaged with the ratchel-wheels, and as they then operate in the opposite direction the moving of the lever-handle serves to lower the screw d and hollow screw b in the same manner as they were before raised.

I claim—

1. A lifting-jack having substantially two lifting-screws, b d, separate and independent of each screw having an independent ratchet-wheel, b' e, adapted to be operated by plates having separate pawls g' k', an intervening washer, c, and two series of balls, f f', running in grooves above and below the washer c, inclosed in a common casing, m, and a single lever-handle, m', substantially as shown and described.

2. In a lifting-jack, the combination, with the screw b, having integral ratchet-wheel b', adapted to be moved up and down in the tubular standard a, the screw d, adapted to be moved up and down in the screw b, the ratchet-wheel e, engaged therewith, and the washer c, engaging with the vertical slot in the screw d, of the double spring-pressed dogs and plates having pawls k' and g', engaging independently with each ratchet-wheel, the series of balls f, playing between the annular groove c^3 of the washer and annular groove b^2 of the ratchet-wheel b', and the series of balls f', playing between the annular groove c^2 of the washer and annular groove e' of the ratchet-wheel e, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MICHAEL REISCH.

Witnesses:

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