

C. JOHNSON.
JACK SCREW.

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JACK-SCREW.

SPECIFICATION forming part of Letters Patent No. 493,332, dated March 14, 1893.

Application filed November 10, 1892. Serial No. 451,496. (No model.)

To all whom it may concern:

Be it known that I, CHARLES JOHNSON, residing at Rutland, in the county of Rutland and State of Vermont, 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.

My invention relates to certain improvements in jack-screws, and the object of my invention is to provide a jack-screw of improved construction and novel arrangement of parts, adapted for the reception of ball bearings, by which frictional resistance is greatly overcome and less power is required to operate the jack.

A further object is to provide a jack-screw of simple construction, of few parts, readily understood, easily manipulated, inexpensive to manufacture, and which may be used to raise objects where the space for operation is limited, also to raise objects where higher and lower surfaces are to be acted on at the same time.

For a fuller understanding of my invention reference is to be had to the accompanying drawings wherein like letters indicate corresponding parts in the several views.

Figure 1 is a perspective view showing the jack complete and ready to use. Fig. 2 is a sectional view of Fig. 1. Fig. 3 is a perspective view of the lifting bar. Fig. 4 is a plan view of the base of the jack, showing also a sectional view of the shell or frame and the foot of the lifting bar. Fig. 5 is a sectional view of the ratchet lever for operating a threaded nut. Fig. 6 is a view in side elevation of a threaded nut made to fit the upper chamber in the main frame, the large part of the nut fitting a circular aperture in a ratchet lever. Fig. 7 is a view of a plate to fit the aperture in the ratchet lever to protect and hold in place the mechanism therein. Fig. 8 is a plan view of an annular steel box full of steel balls to form a ball bearing. Fig. 9 is a perspective view of a double pawl of semi-circular shape to operate the ratchet lever, and a spring held sliding block to retain one or the other of the pawls in operative position.

A is the frame or shell of the jack with a

broad base strengthened by flanges or ribs a, and provided with a longitudinal central opening A' throughout its length, and a vertical slot A² on its front side, about three quarters of its length, to permit lifting bar B which fits the longitudinal opening and its foot P which projects through this slot to work freely up and down, also to limit the upward travel of the lifting bar. Lifting bar B is a cylindrical formed threaded shaft with a foot P projecting from its lower extremity and made integral therewith or fixedly secured to B.

C is a nut threaded on its inside surface to fit the threaded lifting bar B, and is provided at its upper end with a ratchet wheel D, fixedly secured to the nut. This nut and ratchet wheel fit the upper chamber A³ (see Fig. 2,) in the frame of the jack, and the lower end of the nut rests upon ball bearings K. The annular box K' containing the steel balls K, rests on the bottom of the upper chamber A³.

A⁴ is a suitable handle on the frame A of the jack.

D² represents the ratchet lever with an elliptical shaped end and provided with a circular aperture through which lifting bar B works, also a hollowed out chamber about the circular aperture to receive the ratchet wheel D and the double pawl n of semi-circular shape pivoted therein by a pivot J' and provided with a handle E which extends through a slot in the side of the lever to operate the pawl, as hereinafter described. The rear of the pawl forms an apex N', see Fig. 9. A rectangular steel sliding block I with a wedge shaped end I' is fitted in a chamber I² in rear of this pawl. End I' of this block is normally held in contact with the rear end of the double pawl, as shown, by means of a spring I³ secured in an aperture in rear end of this block and attached to and pressing against the rear wall of the chambered recess.

G is a removable cap attached to the upper end of the lifting bar.

H is the recessed end of the ratchet lever into which may be inserted a lever of suitable length.

J is a plate which fits into the hollowed out portion of the ratchet lever as a cover to protect and retain the ratchet mechanism in place.

J' is a pivot for retaining the cover in po-

sition, also serving as a pivot for the double pawl to work upon.

On the inside of the shell or main frame A are annular projections L to retain lifting bar B in a central upright position, and thereby little frictional surface is exposed to the bar.

O is a recess cut in the exterior surface of the threaded nut, there being a corresponding recess O' on the interior surface of the upper chamber of the jack to permit the insertion of a ball bearing, if desired.

The operation of the jack is as follows: Place the jack under the object to be raised and press the handle E in the ratchet lever to the left. This will permit the apex N' of the double pawl to pass by the wedge shaped point I' of the sliding block I by compressing spring I³, and will throw the left hand pawl of the double pawl into operative position with ratchet wheel D. Take hold of the ratchet lever at H or insert a bar in the opening, draw the lever toward you and this will cause the nut to revolve and raise the load. By pressing handle E to the right, the left hand pawl of the double pawl will be thrown out and the right hand pawl thrown into operative position and, by operating lever D, by pushing it from you, the nut will turn in an op-

posite direction and the bar and the load will descend. The upper end of the lifting bar and its foot may operate at the same time on an object or the upper end and its foot may be operated separately, as may be required.

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

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

A jack-screw comprising a lifting bar B having a lifting foot P, and a removable cap G, a frame A with projections L on its interior surface, an internally threaded nut C in the upper part of the frame, a ratchet wheel D on the nut, ball bearings for said nut, a ratchet lever D embracing the ratchet wheel, and a spring actuated double pawl N having handle E, substantially as described and set forth.

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

CHARLES JOHNSON.

Witnesses:

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