No. 729,410. PATENTED MAY 26, 1903.

S. POPKY.

HOISTING JACK.

APPLICATION FILED OCT. 23, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

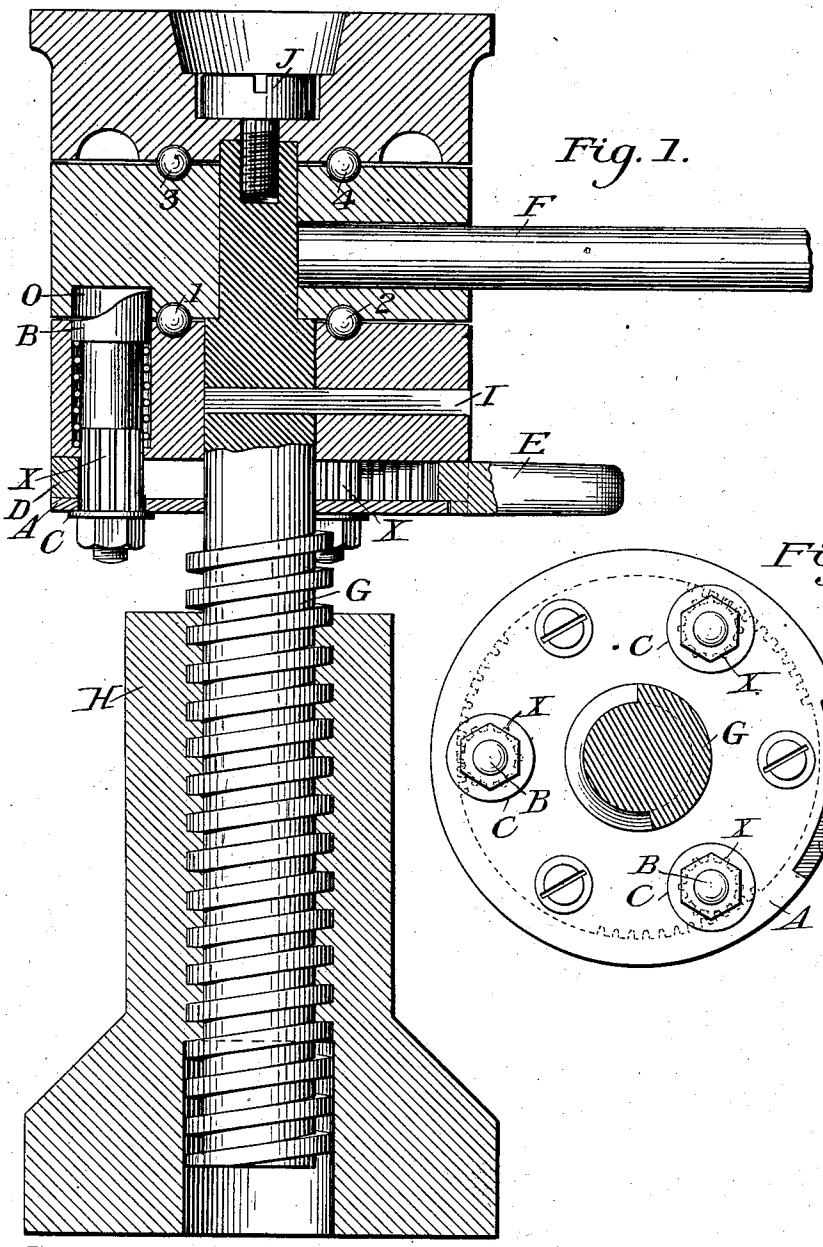


Fig. 2.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

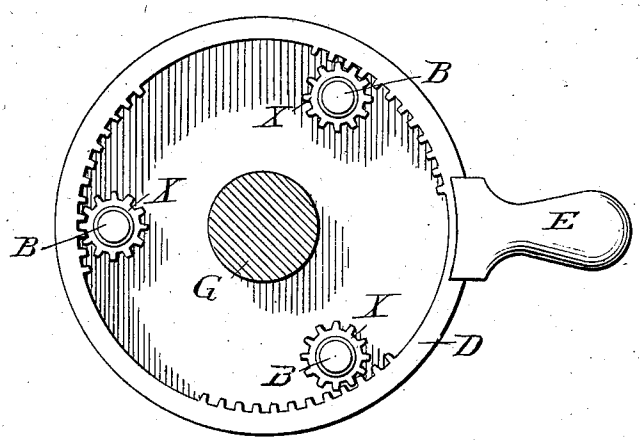
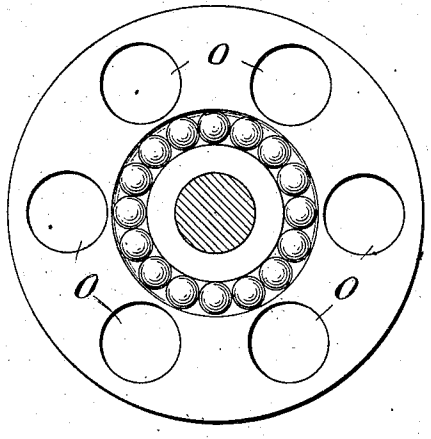


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL POPKY, OF WILKESBARRE, PENNSYLVANIA.

HOISTING-JACK.

SPECIFICATION forming part of Letters Patent No. 729,410, dated May 26, 1903.

Application filed October 23, 1902. Serial No. 128,511. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL POPKY, a citizen of the United States, residing in Wilkesbarre, county of Luzerne, State of Pennsylvania, have invented an Improved Hoisting-Jack, of which the following is a specification.

My invention consists in means for operating the said jack by reducing the friction usual in hoisting heavy bodies and also by increasing the leverage and reducing the movement to a minimum by means of a system of clutches and bearing-points and by dividing the head of said jack into sections.

Figure 1 is a vertical section in part at its base and a cross-section for that part of the machine including the working mechanism above, which is comprised of three sections. Fig. 2 is a bottom view of the bottom side of section 1, showing the geared device for operating the clutch pins or bolts and the lever for changing or reversing the same. Fig. 3 is a bottom view of the disk D, showing the cogged part of said disk and the bottom part of bolts B, having cogs X meshing into the geared portion of said disk D. Fig. 4 is the bottom side of section 2, showing the holes to receive the upper ends of clutch-bolts B and also showing the annular groove to receive the balls separating section 1 and section 2.

Similar letters and figures refer to similar parts in each of the views.

In Fig. 1 section 1 shows the circular part thereof cut across the middle and forming a sectional view, while the lower part shows the threaded screw and body of the jack or its base as a vertical elevation, the base being partly in section. On section 1, A is a circular plate having openings O running through section 1 into section 2, through which operate the clutch-bolts B, only one of which is shown; but the disk contains three bolts equally spaced around the section. The clutch-bolt B is so formed that it allows of a spiral spring to be placed around it, as shown by the dotted lines, and resting against a shoulder at the top of said bolt and resting upon a shoulder within section 1. A washer C is secured tightly to the said bolt B by means of a threaded stem and nut. The said bolt will pass freely through plate A and section 1 when operating the machine. On the bottom end of clutch-bolt B is formed a cog-wheel X and which is a part of said bolt or firmly attached thereto.

D represents a ring or disk having gear-teeth cut upon its inner edge at points adjacent to the bolts B, said gear-teeth meshing into the gear X on the bottom of bolt B. As there are three of said clutch-bolts, each one is connected in the same way with a cogged disk, as seen on Fig. 3, which is a view of the bottom side of geared disk D and the cogged portion X of clutch-bolts B, showing the lower end of same as they mesh together. Attached to this disk or ring D is a handle E, extending outward, by which means the geared clutch-bolts may be reversed, so as to operate in the opposite direction. By reference to Fig. 2 it will be seen that a section of the plate A is cut away in such a manner that when the handle E is moved against the side of said removed section it will exactly reverse the points of the clutch-bolts, so as to have them set in the opposite direction by means of the cogwork. (More fully shown by Fig. 3, Sheet 2.) By means of the spiral spring about the bolts B they are thrown upward as far as the washer C and nut will allow and are held there, the said bolts passing up into section 2, into which holes O are drilled about one-fourth of an inch deep and, say, six in number, of equal distances apart, around section 2. (More fully shown by Fig. 4, Sheet 2, being a view of the under side of section 2.)

Upon the upper side of section 1 and the under side of section 2 a circular depression is formed and into which a number of balls 1 and 2 are inserted, said balls being large enough to separate the sections slightly and allow for wearing, thus having two sections operating upon the said balls, the said balls filling the entire space around.

The tops of bolts B are so formed that the upper part of the same extend into the holes O, bored into section 2, and are beveled off on the one side, as seen, so that when the lever F is moved the bolts acting within the holes in sections will turn them in the direction required and operate the threaded stem G within the base H, and thus hoist whatever weight the jack may be pressing against.

In order to have a perfectly rigid machine, the threaded bolt G is fitted tightly into sec-

tion 1 and may be reinforced and held by means of a pin I. When the weight has been raised, in order to release the jack, which is done by turning the lifting-screw in the opposite direction, or to lower the weight to any desirable point, the lever E of disk D is reversed, placing the clutch-bolts B in the opposite direction, when by the use of lever F the jack will be released or the weight lowered.

When turning the lever F, which may be made any suitable length for power or convenience, the upper section 3 is held against the weight to be moved and is provided with recesses turned into section 2 and section 3 and balls 3 and 4 to operate within the same to reduce friction, the balls filling the whole circular space around. (Fully shown by Fig. 4, Sheet 2.)

It will be seen that the stem of the threaded screw is so formed as to pass up and through section 2 and is secured to section 3 by means of a threaded bolt J, run into said stem, which bolt is allowed to turn freely within the recess formed within section 3, and the stem of the threaded screw is also allowed to turn freely on or within section 2.

On Fig. 2 will be seen the plate A and immediately under it the cogged rim or disk D, the dotted lines showing the width of cogs, also the lower ends of the cogged bolts B, meshing into the same, the threaded screw G and the handle E of the cogged rim D, also a suitable part cut away from the plate A. When the handle E is moved toward the side of such recess or cut-out part, it will operate the cogs of the clutch-bolts B and reverse the positions of the bearing parts which extend up into the holes O of section 2, as fully seen on Sheet 2, Fig. 4, showing cogs on lower part of bolts B. As the upper ends of bolts B are beveled, when turning the handle E said bolts will press down the spiral springs and allow them to be turned into the opposite direction, or when working the jack by means of the lever F the said bolts will be forced down and slip up again into the other holes formed within section 2 and act in the manner of a ratchet, and by means of the movement of lever F the said clutch-bolts will stop at the first set of holes or may be forced onto the succeeding set if it is intended to operate the machine slowly or rapidly, as may be desired by the person operating the said lever. The plate A is secured to section 1 by means of bolts or screws, (shown in Fig. 2,) so as to allow the cogged ring to operate freely.

Fig. 5, Sheet 2, is an elevation of the clutch-bolts B with annular recess turned out of section 1, forming a shoulder S within said section, and within the recess thus formed between said shoulder and the shoulder on bolts B is placed a spiral spring K, passing around the bolts B and acting to force the said bolts into holes O of section 2. The plate A, disk D, and sections 1 and 2 are made in cross-section cut through the middle of holes O or the openings to receive bolts B. It will be seen that the said bolts may be pressed down by means of the movement of section 2 acting upon the inclined portion of the upper ends of said bolts B, so that in operating the lever F of section 2 the edges of holes O will cause the bolts B, spring K, cog-wheel X, and washer C to drop down and slide into holes O of the next series of section 2 by means of the spring K when the same is brought over said bolts B, thus raising the weight. In order to release the jack or lower the weight to any point, use handle E of the gear D and reverse the bolts B. Then by operating lever F the same will be accomplished, as the screw is supposed to not move up or down except by the use of lever F. The movement of the clutch-bolts B will act to fasten themselves within the holes O of section 2 and operate in the form of a ratchet in raising or lowering the weight to be handled.

Having thus fully described my invention, so that any skilled person can make and operate the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a hoisting-jack, the clutch-bolts B formed with offsets and having cogs at their bases, and having washers secured thereto, and spiral springs resting upon supports formed within section 1, and adapted to press upon said bolts, and in combination with said cogs a cogged ring or disk D the same operating in the manner and form specified.

2. In a hoisting-jack, the plate A, washer C, disk cogged ring D, having handle E, clutch-bolts B operating in suitable openings of section 2, ball-bearings of section 1 and section 2 and section 3, all arranged and combined with the threaded screw G and base H in the manner and for the purposes specified.

3. In a hoisting-jack, the clutch-bolts, reversible by means of a disk and cog-geared mechanism as above specified.

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