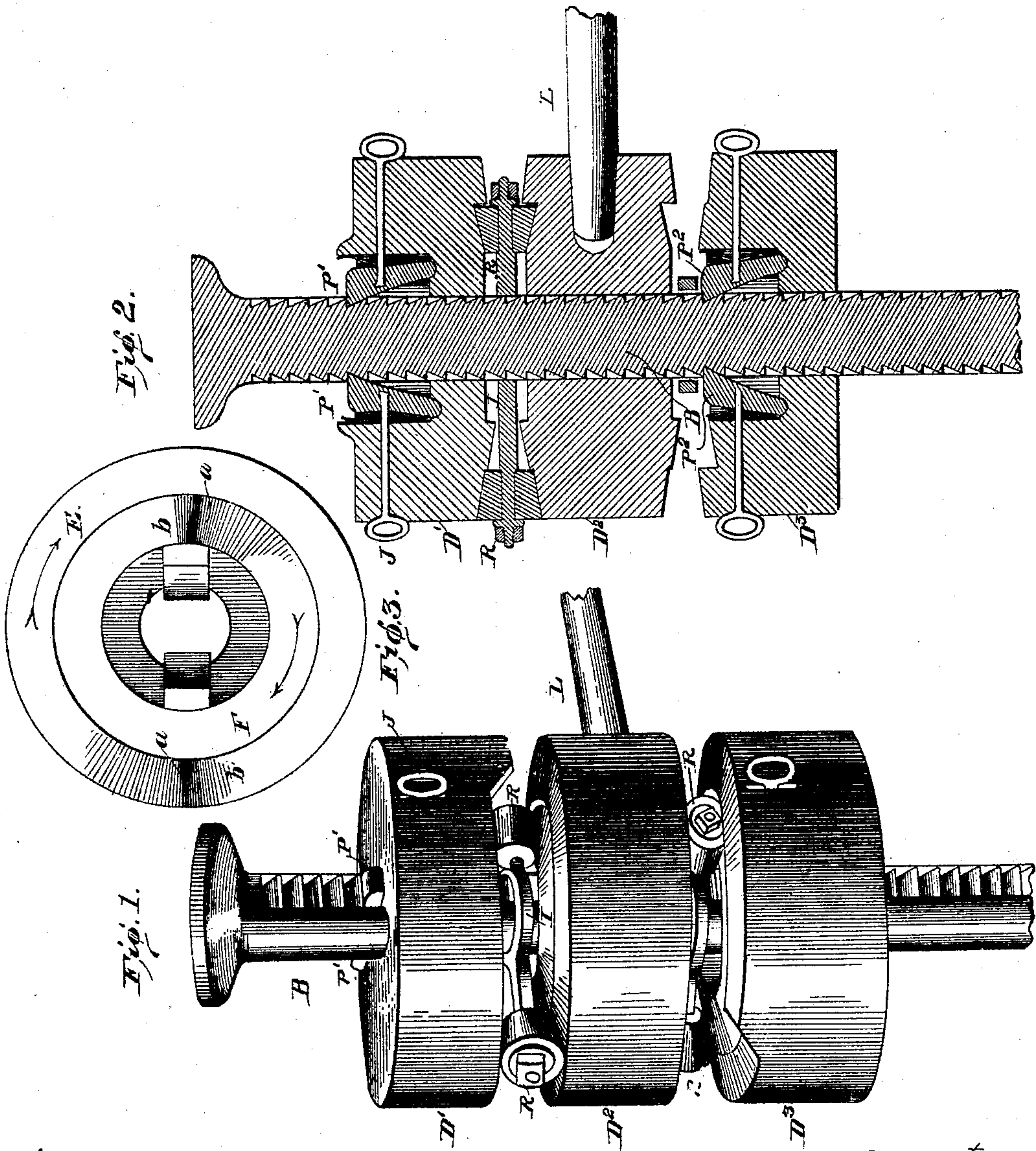


No. 27,494.

PATENTED MAR. 13, 1860.

R. WOOD.  
JACK.



Witnesses:

*G. Johnson.*  
*J. F. White*

Inventor.

*Reuben Wood*



# UNITED STATES PATENT OFFICE

REUBEN WOOD, OF GRAND LEDGE, MICHIGAN.

JACK.

Specification of Letters Patent No. 27,494, dated March 13, 1860.

*To all whom it may concern:*

Be it known that I, REUBEN WOOD, of Grand Ledge, in the county of Eaton and State of Michigan, have invented a new and  
5 useful Improvement in Machines known as "Jacks", which said improvement is designed either for lifting or otherwise moving heavy bodies or for compressing any elastic material; and I do hereby declare  
10 that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

15 Figure 1 is a perspective view; Fig. 2, a vertical section through the center; Fig. 3, a plan of one of the disk faces.

This improvement consists of a peculiar arrangement of spirals, or inclined planes, with interposed antifriction rollers, used in  
20 connection with a ratchet bar and series of lifting and holding pawls, in such manner that all side pressure is removed from said bar, by four opposite points of resistance, and an intermitting motion produced, either  
25 by moving a lever continuously in one direction or alternately back and forth.

B represents a ratchet bar of cast iron, with teeth formed on two opposite flattened  
30 sides, to which are fitted lifting pawls  $P'$  and holding pawls  $P^2$ .  $D'$ ,  $D^2$ ,  $D^3$  are three stout disks or circular shaped plates, also of cast iron, which are ranged loosely on the bar B. The two outer disks cannot turn  
35 by reason of the fullness on two sides of their eyes, which corresponds with the flattened sides of the bar; but the middle disk  $D^2$  has a round eye so that it can turn freely.

Fig. 3 exhibits the arrangement of the  
40 two spiral tracks E, F which are formed on each working face of the three disks; the lowest points of depression (which are determined by the pitch required), are indicated by the letters  $a$ ,  $a$ , and the highest  
45 points of elevation by  $b$ ,  $b$ , the spiral tracks ascending in the direction of the arrows. The lines of elevation and depression are arranged at a right or other suitable angle with each other, in each pair of working  
50 faces of the disks, so that four points of resistance may be preserved around the circle. Two rollers R, R are interposed between each pair of faces, one traveling between the two outer and one between the two inner  
55 tracks. These rollers are steadied in place by a cross bar I, with end journals, around

which each roller revolves, and is prevented from working off by a nut and washer; and the cross bar is kept in place by its ring which fits loosely around the ratchet bar. 60 The rollers are of course, frustums of cones, to correspond with the bevel of the spiral tracks, so that each roller will travel around its own proper circle.

The two pair of pawls  $P'$ ,  $P^2$ , of wrought 65 iron or steel, rest in semicircular bearings at the bottom of chambers sunk in the body of the disks  $D'$ ,  $D^3$ , and a spring is placed against each pawl to insure its proper action. The pawls can be readily disengaged 70 at any time when it may be necessary to lower the bar B, by looping them to the edge of the disks as seen at J, or by any other common device adapted to the purpose.

L, is a lever inserted in the middle disk, 75  $D^2$ , for the purpose of turning said disk around the bar B.

Spurs may be formed in casting the disk  $D^3$  to cause it to bite sufficiently into an abutment to prevent the machine turning. 80

The mode of operation is as follows, the bar B is lowered, the pawls liberated and the machine placed in a proper position with the object to be lifted or compressed, with the disk  $D^3$ , resting on solid abutments 85 on each side of the bar. On turning the middle disk (by means of the lever L,) in a suitable direction, the rollers which are at the bottom will be forced to ascend the spiral inclines, and will by the time they make a 90 complete circuit of the circle be placed between the summits; and consequently, will have advanced the bar B, a distance equal to four times the rise or pitch of each opposite track, by the pawls  $P'$ , abutting on 95 the disk  $D'$ . The holding pawls  $P^2$  are so arranged however, that just before the rollers have reached the ends of their tracks, said pawls engage with the ratchets, until the said rollers are carried past the summit 100 points, when they, along with the disks, fall by their own gravity to their former positions, or are driven thereby a spring, (not shown) provided the machine is intended to act in any position that deviates much from 105 the perpendicular. This operation is continued by carrying around the lever in one direction until the "slack" has been all taken up which in some cases would require a good many rotations of the disk. When 110 the resistance has so increased that it would be no longer safe to pass the summit points



by reason of the lead that it is found necessary to give to the lifting pawls P' I then work the rotating disk with a longer lever, or with more than one if found necessary, and by alternate motions of the same, advance the bar by a tooth or two at a time, which only requires a back and forth motion or travel of the rollers over a portion of the circular tracks.

10 This improvement is found to be cheap in construction, rapid yet powerful in its action and capable of resisting anything short of an absolutely crushing force.

I do not claim of themselves, broadly, the disks, with inclined tracks and interposed rollers, or balls; nor do I claim any novelty in the pawls and ratchet bar, when driven progressively at a uniform and relative speed with that of the actuating device

as this has been done, by means of "toggle jointed" levers, and in various other ways: but

What I claim as my invention and desire to secure by Letters Patent, is—

The combination of the pawls and ratchet bar, with the disks D', D<sup>2</sup>, D<sup>3</sup>, having annular inclined tracks E, F on their faces, between which rollers or balls may travel continuously in one direction, or alternately back and forth, in such manner as to change the progressive speed at which the ratchet bar is worked, by a different manipulation of the hand lever, substantially as, and for the purposes, specified.

REUBEN WOOD.

Witnesses:

AMOS HEWITT,  
GEORGE JOHNSON.