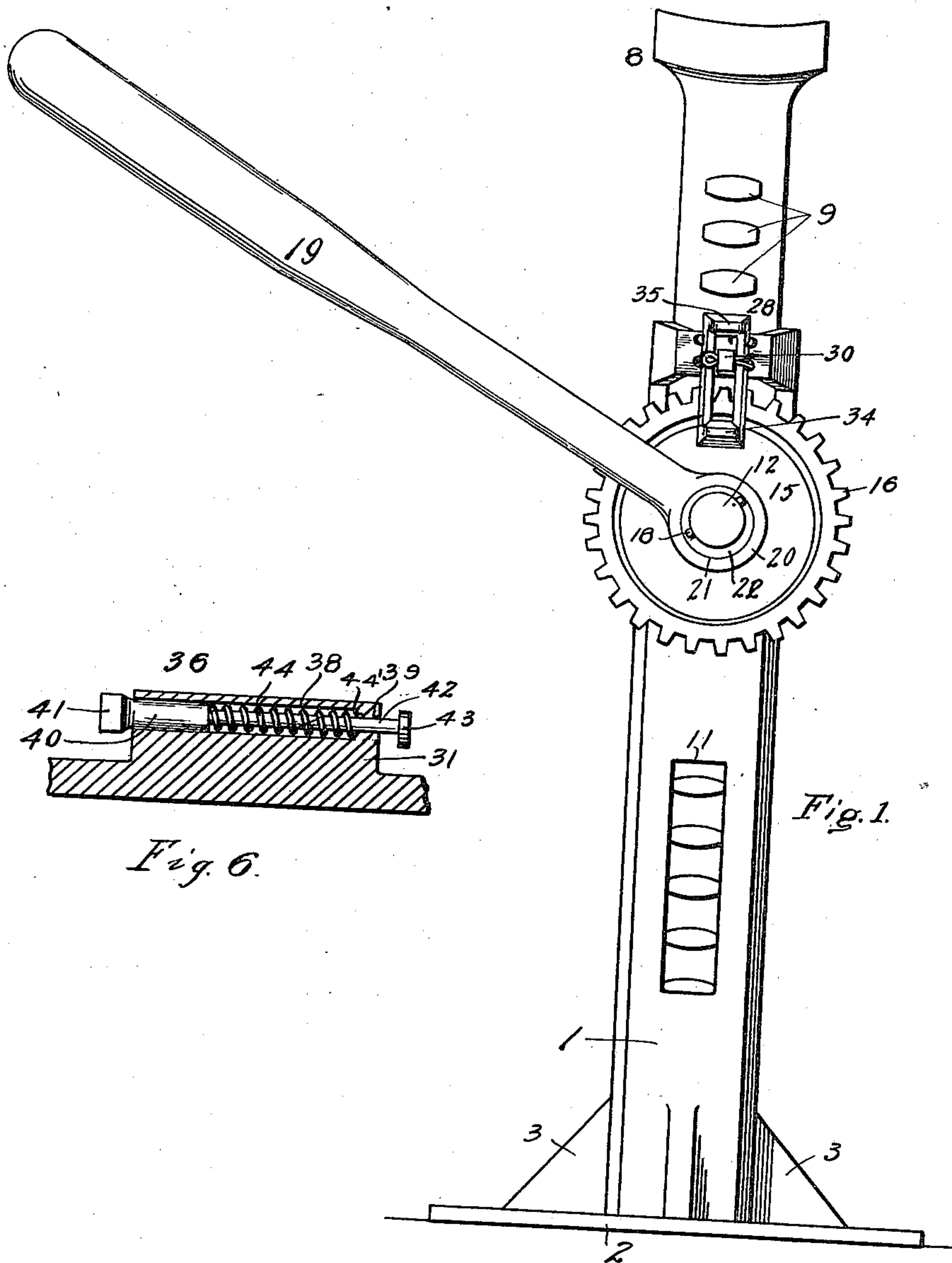


LE ROY WILLOUR.
JACK.
APPLICATION FILED APR. 30, 1910.

976,239.

Patented Nov. 22, 1910.
2 SHEETS—SHEET 1.



Witnesses
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By C. L. Parker, Attorney

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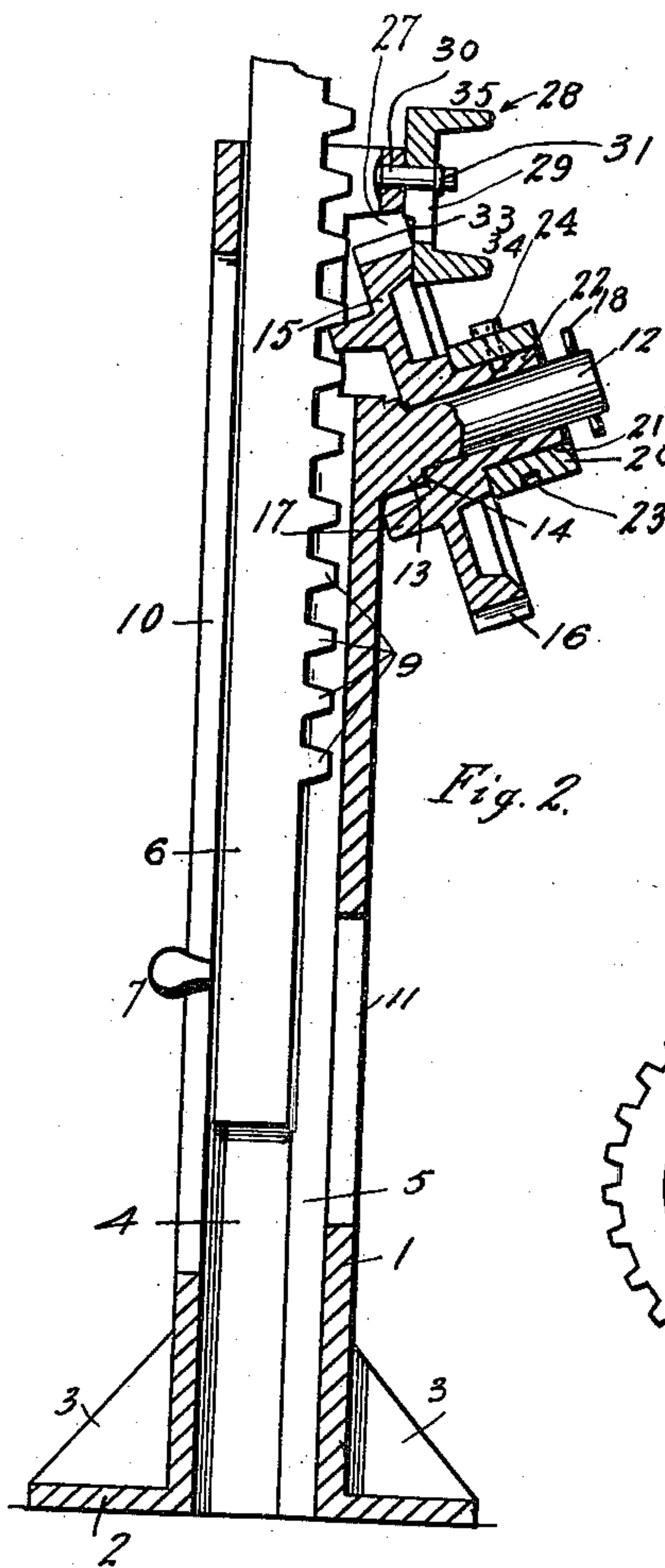


Fig. 2.

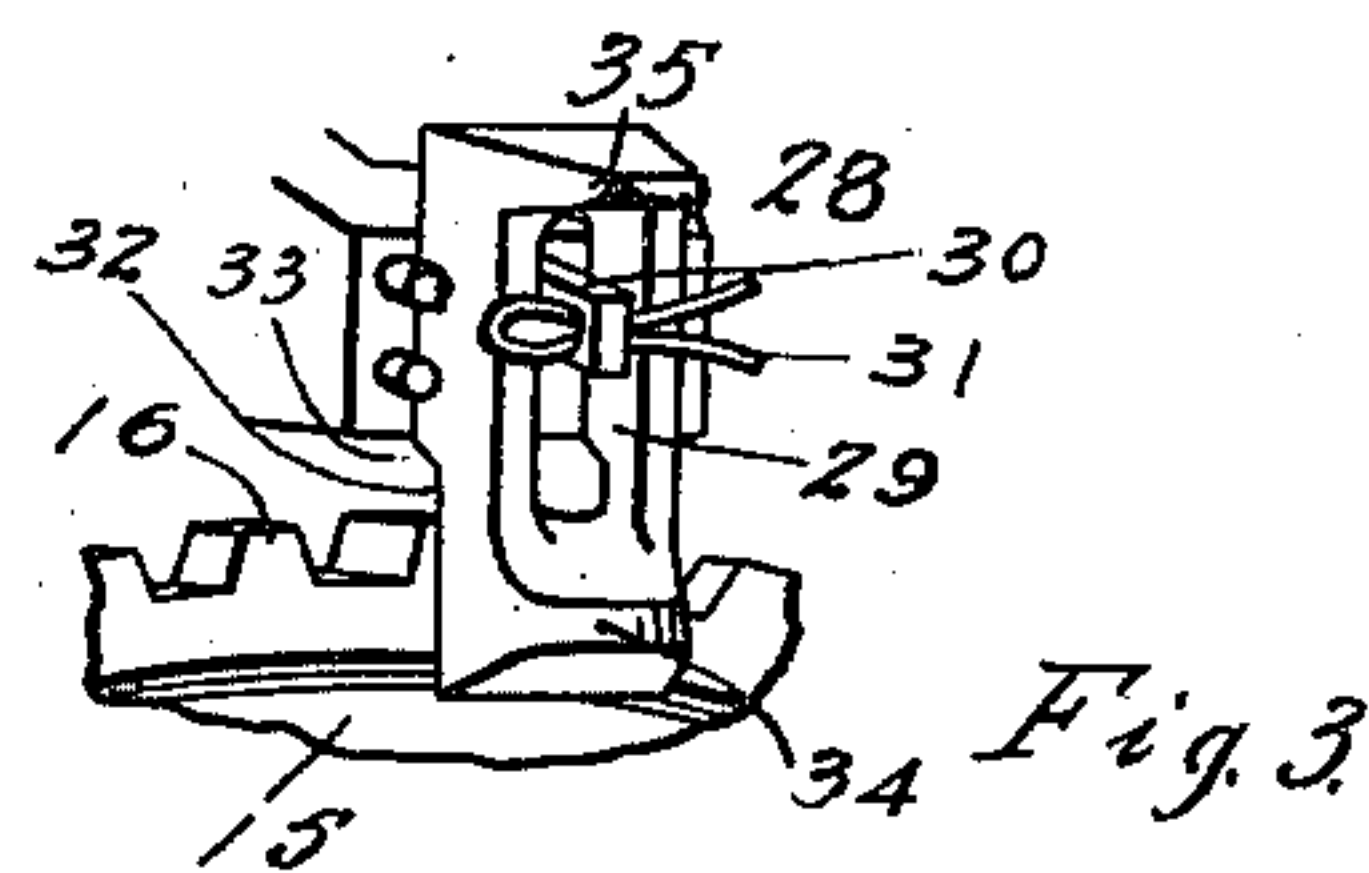


Fig. 3.

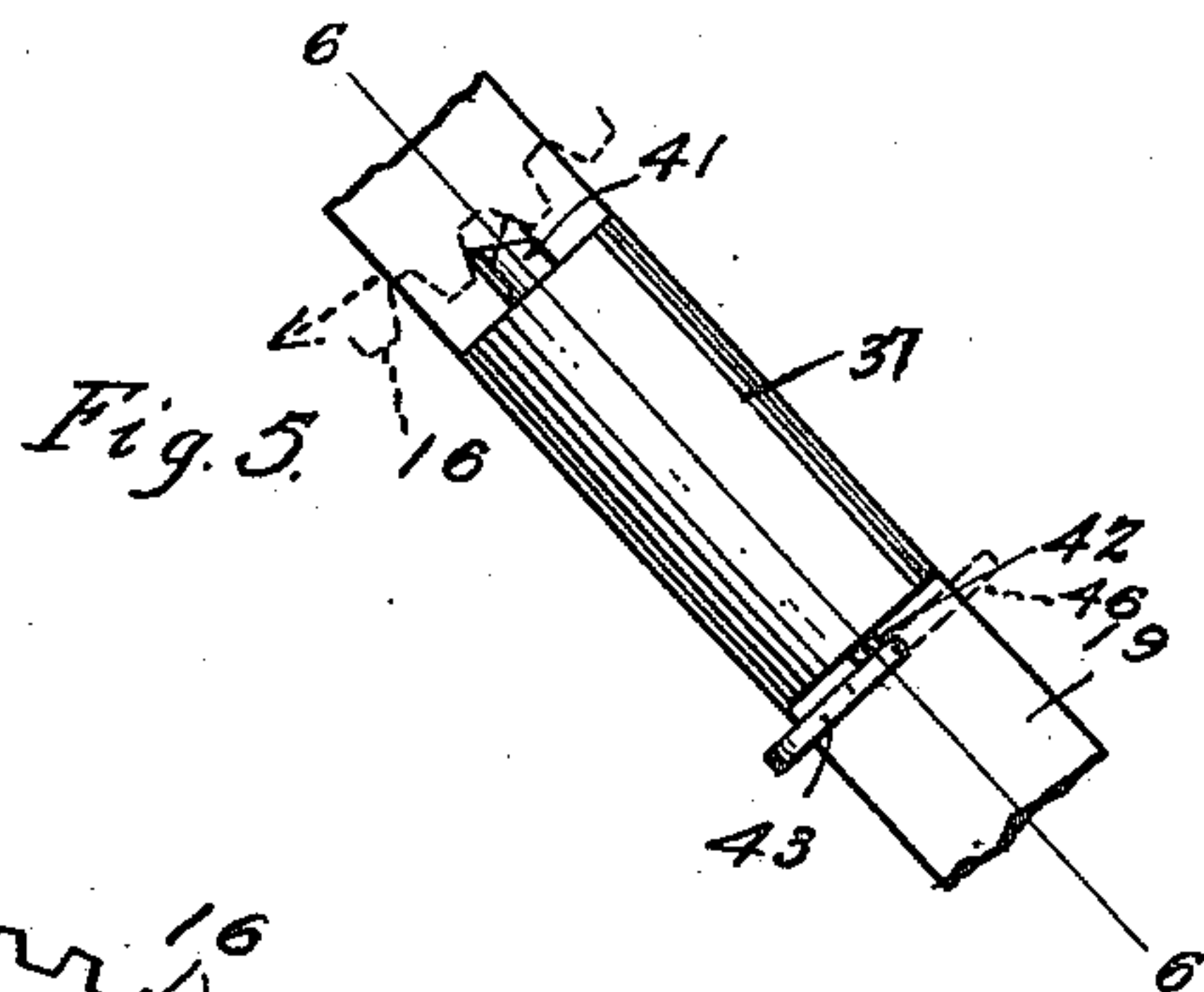


Fig. 5.

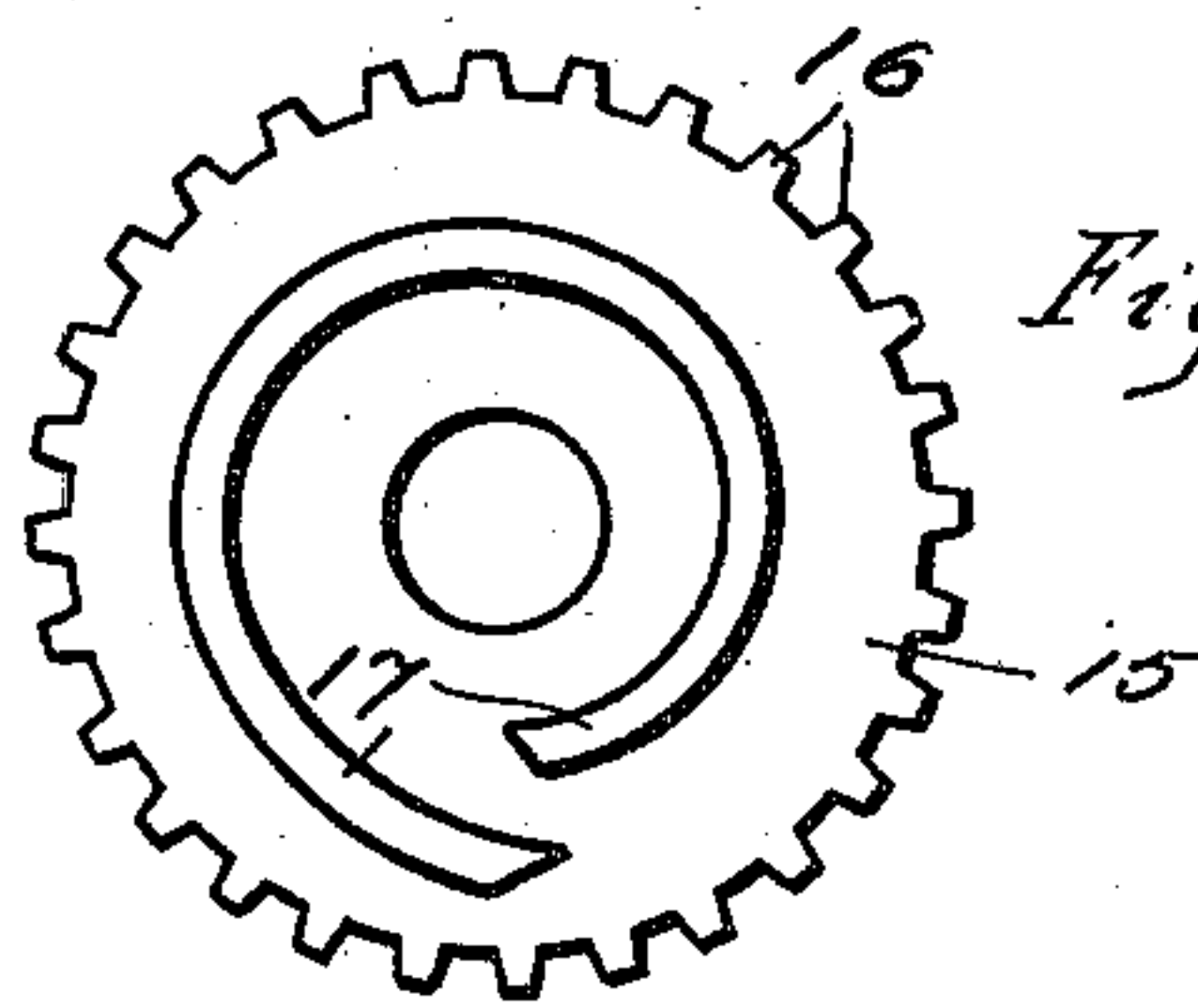


Fig. 4.

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UNITED STATES PATENT OFFICE.

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JACK.

976,239.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed April 30, 1910. Serial No. 558,557.

To all whom it may concern:

Be it known that I, LE ROY WILLOUR, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Jacks, of which the following is a specification.

My invention relates to lifting jacks.

An important object of this invention is to provide a jack, the rack bar of which may be quickly and easily adjusted to engage the load.

A further object of this invention is to provide a jack of the above character, which is simple in construction, efficient in operation, and cheap to manufacture.

Other objects and advantages of this invention will appear hereinafter.

In the accompanying drawings, forming a part of this specification, and in which like numerals are used to designate like parts throughout the same, Figure 1 is a side elevation of the jack. Fig. 2 is a central vertical section through the same, taken at right angles to Fig. 1. Fig. 3 is a detail perspective view of the latch employed upon the jack. Fig. 4 is an inside plan view of the worm disk. Fig. 5 is a top plan view of a housing formed upon the handle of the jack, showing a pawl arranged therein. Fig. 6 is a vertical sectional view taken on line 6—6 of Fig. 5.

In the drawings, wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates a vertically disposed standard forming the body support of the jack. This standard is provided at its lower end with a base 2, which is connected to said standard by means of triangular sections of material 3. The standard 1 is provided with a main axial opening 4, which merges into an auxiliary axial opening 5. Within the axial opening 4 is slidably mounted a lift or rack bar 6, provided near its lower end with a laterally extending handle or knob 7 and at its upper end with a head 8. This rack bar is provided upon one side thereof with rack teeth 9, disposed to travel within the axial opening 5. The standard 1 is provided upon one of its walls with a longitudinal slot or opening 10,

through which the knob 7 extends, as clearly shown in Fig. 2. The standard 1 may further be provided upon its wall opposite the slot 10, with a longitudinal slot 11, the purpose of the same being to reduce the surplus weight of the jack. The standard 1 is provided near its upper end and upon the wall thereof adjacent the rack teeth 9, with a stud shaft 12, which may be cast integral with the standard 1 and disposed at an obtuse angle to said standard with relation to the lower end thereof. The inner end of the stud shaft 12 is formed slightly larger, as shown at 13, to form a shoulder 14. Loosely mounted upon the stud shaft 12 is a worm disk 15, provided upon its periphery with teeth 16 and upon its inner side with an involute worm thread 17. It is to be understood that the disk 15 is rotatably and slidably mounted upon the stud shaft 12. This disk in its lowermost position, as shown in Fig. 2, engages the shoulder 14, and the same is limited in its upward movement by a cotter pin 18, disposed within a transverse opening formed through the outer end of the stud shaft 12. An operating lever 19, has its inner end provided with a head 20 having a cylindrical opening 21 extending therethrough. This head is pivotally mounted upon a sleeve 22, cast integral with the disk 15. The sleeve 22 is provided centrally thereof with an annular groove 23, within which is mounted the inner smooth end of a screw 24, arranged within a suitable opening formed through the head 20. It is obvious that the lever 19 is capable of oscillating upon the sleeve 22, while it cannot move longitudinally thereof. As shown in Fig. 2, the disk 15 is angularly disposed owing to the inclination of the stud-shaft 12 above referred to, and said disk operates within an opening 27, formed through the upper end of the standard 1.

When the disk 15 is in its lowermost position, as shown in Fig. 2, its involute thread engages the rack teeth 9 to raise or lower the rack bar 10, in accordance with the direction of rotation of said disk. When the disk 15 is moved away from the standard 1, by forcing lever 19 toward the cotter pin 18, the involute thread 17 will be disengaged from

the rack teeth 9, and rack bar 6 may then be moved longitudinally without actuating the disk 15. This structure affords a great advantage, since it permits of the quick movement of the rack bar to engage the load to be lifted. The disk 15 is releasably held in the position shown in Fig. 2, by means of a latch 28, the body portion of which is provided with a longitudinally disposed slot 29. A bolt 30 or the like is fixedly mounted upon the upper end of the standard 1, adjacent disk 15, said bolt being disposed within the slot 29. The latch 28 is prevented from accidental displacement from the bolt 30, by means of a cotter pin 31, passing through an opening formed through the free end of said bolt. The latch 28 is free to be moved longitudinally upon bolt 30, for the extent of its slot 29, and is also capable of an oscillatory movement when moved to its uppermost position. The latch 28 is provided upon its inner side, near its lower end with a cut out portion 32 to form a shoulder 33, disposed near the center of said latch 28. The latch 28 in its lowermost position, as illustrated in Fig. 2, engages the disk 15, whereby the same is held in its lowermost position. When it is desired to move the disk 15 away from the rack bar 6, the latch 28 is first moved to its uppermost position, whereby the free edge of the shoulder 33 will be in substantially horizontal alinement with the bolt 30. The lower end of the latch 28 is provided with a beveled outwardly extending lip 34 and the upper end of said latch 28 is provided with an outwardly extending lip 35. The lower end of the latch 28 may now be swung inwardly, the same turning upon the free edge of the shoulder 33 as an axis, whereby the beveled lip 34 will be disposed upon the teeth 16. The new inclined position of the latch 28 will prevent the same from accidentally returning to its lowermost position, as shown in Fig. 2, and the disk 15 is accordingly free to be moved longitudinally of the stud shaft 12. Inter-mittent rotation in either direction, is imparted to the disk 15, from the oscillating lever 19, by means of a pawl 36, which is mounted upon said lever, in a manner to be described. The lever 19 is provided near the disk 15, with a housing 37, having a cylindrical axial opening 38, extending from the outer end of said housing to a point near its inner end. A reduced cylindrical axial opening 39 passes through the inner end of the housing 37 and communicates with the opening 38.

The pawl 36, above referred to, comprises a cylindrical body portion 40, upon the inner end of which is formed an enlarged beveled head 41, and upon the outer end of this body portion is formed a reduced cylindrical rod 42. This rod extends through the opening

39 and is loosely mounted therein. The rod 42 is provided at its free end with a handle 43, which is constructed separate from the rod 42, and rigidly mounted thereon by any suitable means. Within the opening 38 is disposed a compressible coil spring 44, surrounding the rod 42, and compressed between the end of the body portion 40 and the end wall 44', of the opening 38. By the above construction it is to be understood that the pawl 36, is rotatably mounted within its housing and also capable of slight longitudinal movements therein. As shown in Fig. 5, the pawl 36 is urged by the spring 44, into engagement with the teeth 16 of the disk 15. This disk may now be rotated in the direction of its arrow upon the oscillation of lever 19 in that direction, and when lever 19 is oscillated in the opposite direction, the head 41 of the pawl will skip along the teeth 16. Now, if this pawl is moved longitudinally to withdraw the head 41 from engagement with the teeth 16, and the handle 43 rotated to assume the position indicated by the dotted lines at 46, this pawl will now be capable of rotating disk 15 in a direction opposite to its arrow.

Briefly, the operation of the entire device is as follows: The latch 28 is raised so that the disk 15 may be moved away from standard 1, to permit the disengagement of the thread 17 and teeth 9. The rack bar 6 is then raised until the head 8 engages the load to be raised. The disk 15 is now moved to its lowermost position to allow the thread 17 to engage the teeth 9. The disk 15 is now locked, by means of latch 28, in its lowermost position. By the oscillation of the lever 19, as above described, the disk 15 may be rotated in the desired direction to raise the rack bar 6. By the reversal of the pawl 36, as above described, the lever 19 may be oscillated to rotate disk 15 in an opposite direction to lower the rack bar.

I wish it understood that certain changes may be made in the shape, size, and arrangement of parts of my device without departing from the spirit of my invention as set forth in the annexed claims.

Having fully described my invention, I claim:

1. In a lifting jack, a standard, a rack-bar having slidable engagement therewith, a stud-shaft connected with said standard, a disk provided with an involute thread rotatably and slidably mounted upon said stud-shaft, so that the involute thread may be moved into and out of engagement with said rack-bar, means to positively limit the movement of said disk longitudinally of said stud-shaft in a direction away from said rack-bar, and means to rotate said disk.

2. In a lifting jack, a standard, a rack-bar having slidable engagement therewith,

a stud-shaft connected with said standard,
a disk provided with an involute thread and
rotatably mounted upon said stud-shaft,
said disk being capable of being moved lon-
5 gitudinally of said stud-shaft so that its in-
volute thread may be disengaged from the
teeth of the rack-bar, means to rotate said
disk, means to releasably hold said disk in
its position adjacent the rack-bar, and means

to positively limit the movement of said disk 10
away from said rack-bar.

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

LE ROY WILLOUR.

Witnesses:

S. L. ARNOLD,

C. G. PHILLIPS.