

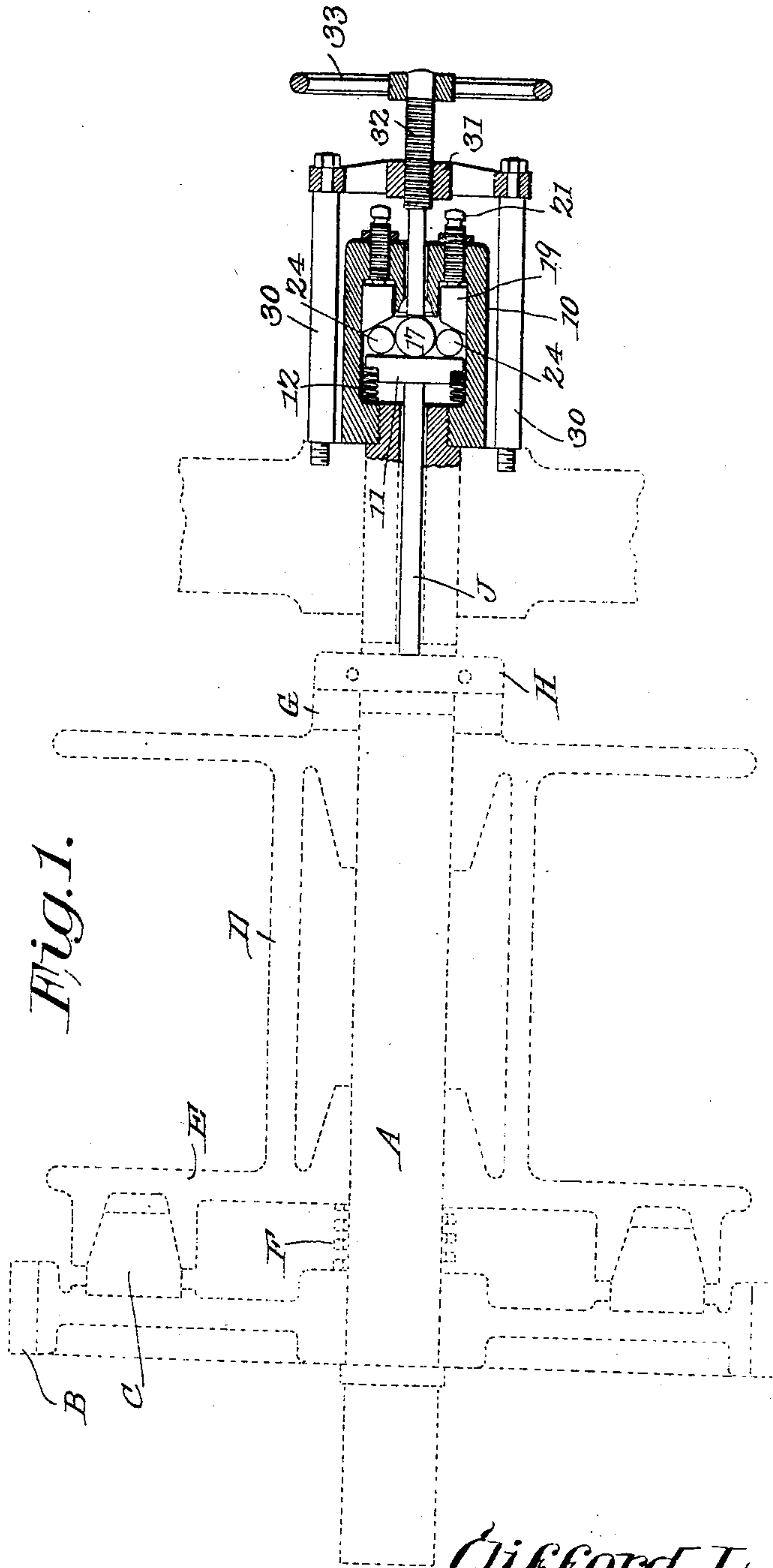
No. 810,509.

PATENTED JAN. 23, 1906.

C. L. REED.
CLUTCH OPERATING MECHANISM.

APPLICATION FILED MAY 26, 1905.

2 SHEETS—SHEET 1.



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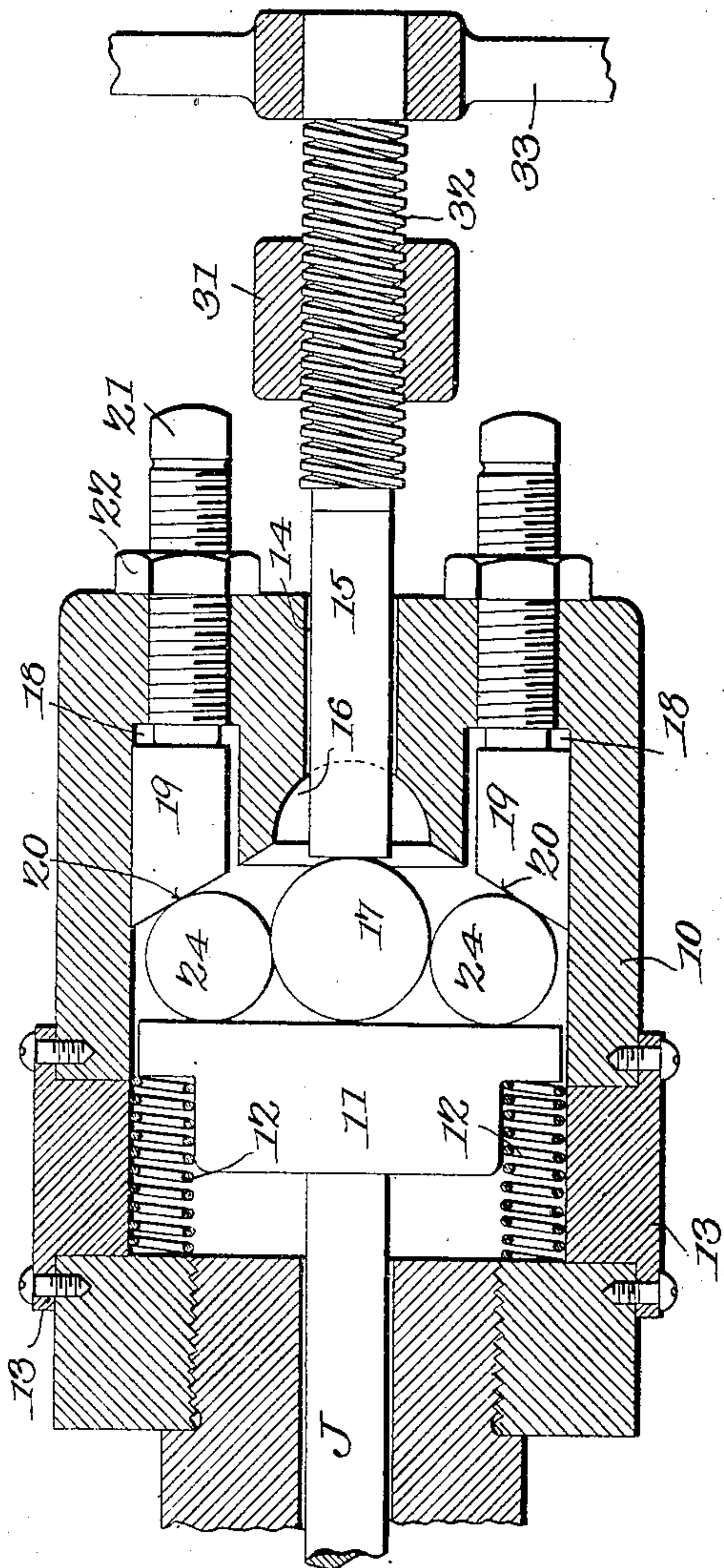


Fig. 2.

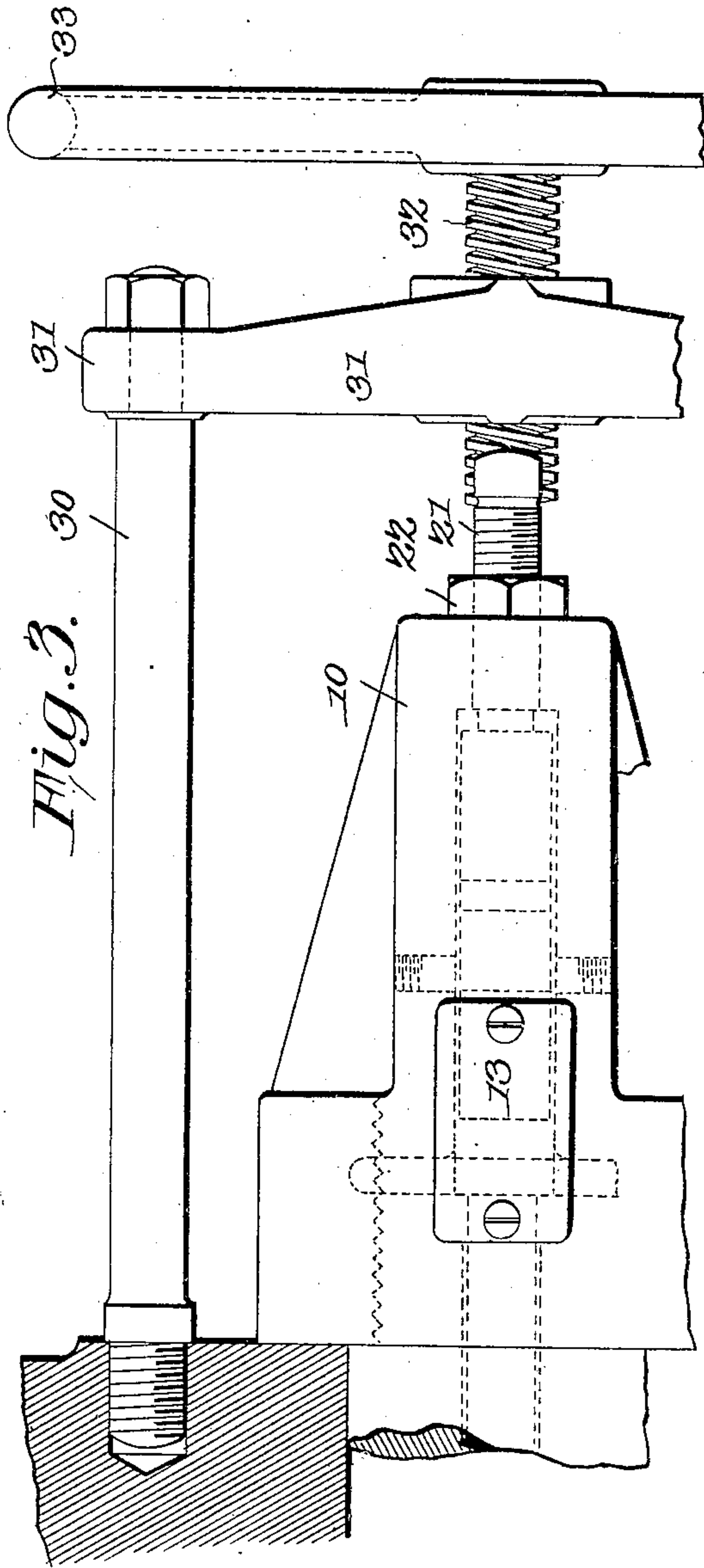


Fig. 3.

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UNITED STATES PATENT OFFICE.

CLIFFORD L. REED, OF PORTLAND, OREGON.

CLUTCH-OPERATING MECHANISM.

No. 810,509.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed May 26, 1905. Serial No. 262,474.

To all whom it may concern:

Be it known that I, CLIFFORD L. REED, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Clutch-Operating Mechanism, of which the following is a specification.

This invention relates to mechanism for operating the clutch of hoisting and logging engines and similar devices, where the drum or other longitudinally-movable member carries a clutching device that is movable into engagement with a clutching device of an operating member.

The principal object of the invention is to provide a clutch-operating device in which the friction at the point of contact between the revoluble and stationary members is reduced to a minimum and in which the movable clutching member may be positively forced into engagement with the driving member with comparatively small exertion.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of sufficient of the winding-drum and clutching mechanism of a logging and hoisting mechanism to illustrate the application thereto of a clutch-operating device constructed in accordance with the invention, the latter being shown in full lines and the remaining portion of the mechanism in dotted lines. Fig. 2 is a detail sectional view of the clutch-operating mechanism drawn to an enlarged scale. Fig. 3 is a plan view of the same, partly in section.

Similar characters of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The shaft A is mounted in suitable bearings and is provided at one end with a gear B, to which movement is imparted from any suitable source of power, said gear being keyed or otherwise permanently secured to the shaft. On one face of the gear is a clutch

member C, and slidably mounted on the shaft and free to rotate independently of said shaft is a winding-drum D, one of the end flanges of which is provided with a clutch member E, adapted to engage the clutch member C, the two being normally separated by a helical compression-spring F. The opposite end of the drum or a suitable collar G is engaged by a key H, that extends through a slot I, formed in the shaft A, and the key is engaged by a longitudinally-movable pin J, the pin being moved in the direction of its length in order to engage clutch members E and C. The mechanism for moving this pin forms the subject of the present invention.

To the outer end of the shaft is secured a casing 10, and guided within said casing is a cross-bar 11, that abuts against the outer end of the pin J. The opposite ends of the cross-bar are recessed for the reception of helical compression-springs 12, that normally tend to move the pin in a direction away from the winding-drum. To permit the renewal of the spring when fatigued or broken, the casing is provided with removable plates 13.

The central portion of the outer end of the casing 10 has a non-circular opening 14 for the reception of a non-circular thrust-pin 15, that slides freely through said opening, and the central inner portion of the casing is provided with a semicircular recess 16 to receive a thrust-roller 17, with which the pin 15 engages. On each side of the recess 16 is a recess 18 for the reception of a slidably-mounted block 19, having an inclined or wedge face 20 at one end, and with the opposite or outer end of the block engages a set-screw 21, extending through a threaded opening in the outer end of the casing and carrying a locking-nut 22, the set-screw and lock-nut serving to adjust the block to compensate for wear.

In the space between the outer face of the bar 11 and the blocks 19 are arranged rollers 24 of a diameter less than the diameter of the roller 17 and so disposed that when the roller 17 is forced between them they will travel under the inclined or cam faces 20 of the blocks and will thrust the cross-bar 11 in the direction indicated by the arrow in Fig. 2—i. e., in the direction of the drum.

Secured to the permanent frame of the machine by bolts 30 is a cross-bar 31, the central portion of which has a threaded opening in axial alinement with the thrust-pin 15,

and through this threaded opening extends a screw 32, having at its outer end a hand-wheel 33.

When the clutch is to be set or locked, the hand-wheel is turned in such manner as to force the thrust-pin in the direction of the drum, and said pin engaging the central roller 17 forces the latter inward and spreads the two smaller rollers 24, the three rollers forming a toggle joint or lever, while the thrust-pin 15 forms the toggle-operating member. The smaller rollers 24 in moving outward travel down the inclined cam-faces 20, and thus act as wedges to force the cross-bar 11 in the direction of the drum, and the movement is imparted through the pin J and key H to said drum, the clutch members being firmly locked together. When the parts are clutched, the rotation of the casing causes the end of the thrust-pin 15 to rotate against the end of the screw 32; but the friction at this point is comparatively small, owing to the fact that the end thrust of the drum under the influence of spring F is transmitted to all three of the rollers and cannot act independently on the central roller 17, the greater portion of the thrust being taken up by the outer rollers 24 and the blocks 19, and it is found in practice that there is little or no heating of the end of the screw. To unclutch, it is merely necessary to reverse the movement of the screw, and the roller 17 will ride outward into the recess 16, inasmuch as said roller cannot be locked between the two smaller rollers owing to its greater diameter, it being impossible for the axes of the three rollers to move into alinement.

Having thus described the invention, what is claimed is—

1. In a clutch-operating mechanism, a longitudinally-movable member, a thrust-pin, inclined members opposed to the longitudinally-movable members, wedging members movable between the inclined members and the longitudinally-movable member, and means for transmitting movement from the thrust-pin to said wedging members.

2. A longitudinally-movable clutch-operating member, a pair of relatively stationary cams having inclined faces opposed to said member, wedging members movable toward and from each other in the space between the cams and said member, and means for spreading said wedging members.

3. A longitudinally-movable clutch-operating member, in combination with a pair of relatively stationary cams having inclined faces opposed to the member, a pair of rollers movable between said member, and the cams, and means for spreading the rollers.

4. A longitudinally-movable clutch-operating member, in combination with a pair of relatively stationary cams, having inclined faces opposed to said member, a pair of rollers movable between the member and the cams

to effect the longitudinal movement of said member, a thrust-pin, and means actuated thereby for spreading said rollers.

5. A longitudinally-movable clutch-operating member, in combination with a plurality of relatively stationary cams, rollers movable between the cams and the operating member to effect longitudinal movement of the latter, a spreading roller movable between and arranged to separate the first rollers, and a thrust member for operating the spreading roller.

6. A longitudinally-movable clutch-operating member, in combination with a plurality of relatively stationary cams having inclined faces opposed to said member, wedging-rollers movable between the cams and said member, a spreading roller arranged to separate the wedging-rollers, and a thrust-pin for operating the spreading roller.

7. A longitudinally-movable clutch-operating member, a plurality of relatively stationary cams having inclined faces opposed to said member, a plurality of wedging-rollers movable between the cams and said member, a spreading roller between the wedging-rollers and of greater diameter than said wedging-rollers, a thrust-pin for engaging the spreading roller, and means for imparting longitudinal movement to the thrust-pin.

8. In a device of the class specified, a revoluble shaft, a casing secured thereto, a clutch-operating pin extending through the shaft, a cross-bar at the end of the pin and arranged within the casing, a pair of cams having inclined faces opposed to the face of the cross-bar, wedging-rollers between the cams and cross-bar, a spreading roller for engaging the wedging-rollers and of greater diameter than said wedging-rollers, a thrust-pin guided in the casing, and a screw for operating said thrust-pin.

9. In a device of the class specified, the combination with a revoluble shaft, of a casing secured thereto, a clutch-operating pin extending through the shaft, a cross-bar at the end of the pin and disposed within the casing, springs tending to move the cross-bar and pin to unclutching position, a pair of cams arranged in the casing and having inclined faces opposed to the faces of the cross-bar, means for adjusting said cams, a pair of wedging-rollers movable between the cams and bar, a spreading roller arranged to engage the wedging-rollers, a non-circular thrust-pin engaging the spreading roller, and a screw for imparting longitudinal movement to the thrust-pin.

10. In a device of the class specified, the combination with a revoluble shaft, of a casing secured thereto, a clutch-operating pin extending through the shaft, a cross-bar at the end of the pin and disposed within the casing, springs disposed within the casing and engaging the cross-bar, the springs tend-

ing to move the cross-bar to clutch-disengag-
ing position, removable filling-plates car-
ried by the casing at points adjacent to the
springs to permit renewal of the latter, cams
5 carried by the casing and having inclined
faces opposed to the face of the cross-bar,
means for adjusting said cams, a pair of wedg-
ing-rollers disposed between the cams, and
cross-bar, a spreading roller between the
10 wedging-rollers, and of greater diameter than
the latter, a non-circular thrust-pin guided
by the casing, a pin-actuating screw, a sta-
tionary nut for said screw, and an operating
means secured to the end of the screw.

15 11. A movable clutch-operating pin, a cross-
bar for transmitting movement thereto, a
pair of rollers movable on said bar and serv-

ing through the latter to impart endwise
movement to the pin, and means for spread-
ing said rollers. 20

12. A movable clutch-operating pin, a cross-
bar for transmitting movement thereto, a
pair of rollers engaging the bar, means for
spreading the rollers, and means for directing
the rollers against the bar during such spread- 25
ing movement.

In testimony that I claim the foregoing as
my own I have hereto affixed my signature
in the presence of two witnesses.

CLIFFORD L. REED.

Witnesses:

EMIL CHRISTENSEN,
H. S. BRITT.