Oct. 30, 1923. 1,472,726

J. M. McLAUGHLIN

FRICTION DEVICE FOR LOG HANDLERS

Filed Nov. 30, 1921 2 Sheets-Sheet 1

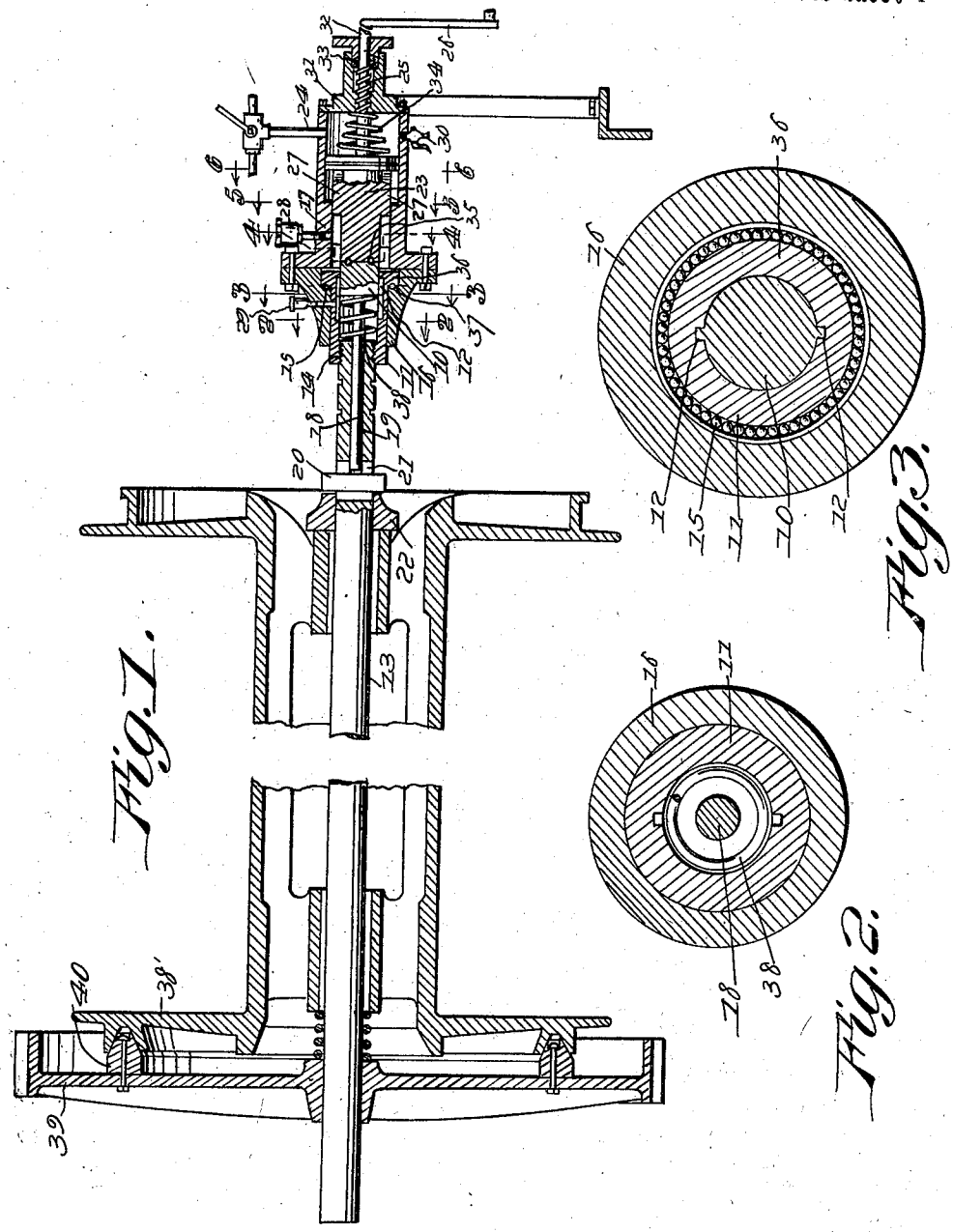


Fig. 1.

Fig. 3.

Fig. 2.

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2 Sheets-Sheet 2

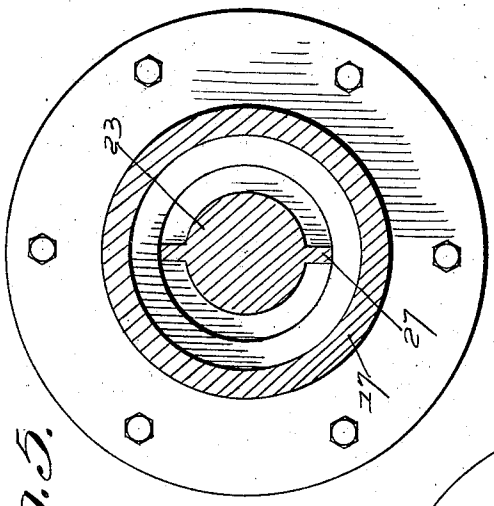


Fig. 5.

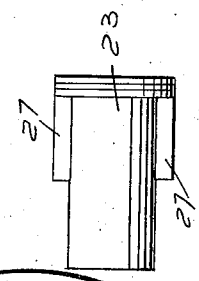


Fig. 7.

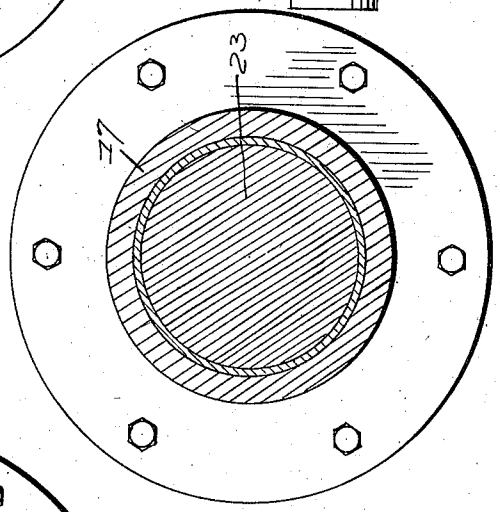


Fig. 6.

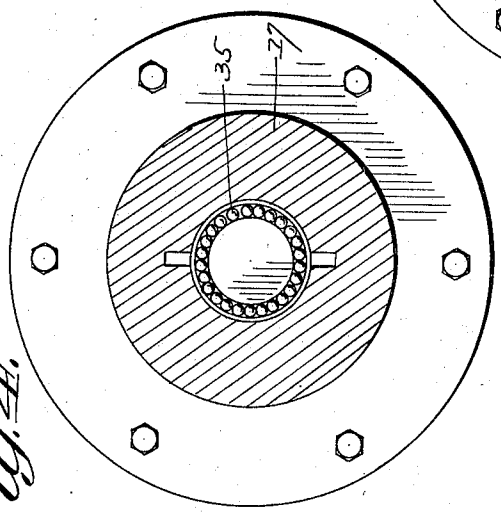


Fig. 4.

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Patented Oct. 30, 1923. 1,472,726

UNITED STATES PATENT OFFICE.

JAMES M. McLAUGHLIN, OF PORTLAND, OREGON.

FRICTION DEVICE FOR LOG HANDLERS.

Application filed November 30, 1921. Serial No. 518,889.

To all whom it may concern:

Be it known that I, JAMES M. McLAUGHLIN, a citizen of the United States of America, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Friction Devices for Log Handlers, of which the following is a specification.

The object of the invention is to provide a friction device for the control of a drum in connection with log handling and similar apparatus, which may be alternatively operable manually and by steam or other fluid pressure, such as compressed air or the like and incidentally to provide a means for applying pressure to the drum in the closing of the clutch whereby the wearing of the key or gib and the strain thereon are minimized to avoid the risk of breaking or otherwise causing damage thereof and thereby impairing the mechanism or putting the same out of commission when the holding of the drum is necessary; and with these objects in view the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the accompanying drawings, wherein:

Figure 1 is a longitudinal sectional view of a friction device embodying the invention applied in the operative position to a conventional form of drum.

Figures 2, 3, 4, 5 and 6 are cross sectional views respectively on the planes indicated by the lines 2—2, 3—3, 4—4, 5—5 and 6—6 of Figure 1.

Figure 7 is a detail view of the piston by which the follower is actuated.

The apparatus consists essentially of a follower 10 fitted for longitudinal movement in a sleeve 11 and keyed thereto as shown at 12, said sleeve being secured to the end of the drum shaft 13 as by means of a threaded joint 14 and being revolubly mounted as by means of an anti-friction bearing 15 in the head 16 of a casing 17, said follower having a bearing pin 18 operating in a bore 19 of the drum shaft for terminal contact with a transverse key or gib 20 fitted in a transverse slot or keyway 21 in the drum shaft for contact with the adjacent head 22 of the drum, together with means for imparting longitudinal movement to the follower, and consisting in the construction illustrated of a piston 23 mounted in the cylinder 17 and adapted for actuation either by pressure admitted through the valved inlet 24 or manually through the agency of the feed screw 25 fitted with a crank 26.

In the construction illustrated the piston is keyed as at 27 in the cylinder so as to prevent rotary movement thereof and suitable lubricating means such as oil cups 28 and 29 are arranged in communication with the guides 27 and the bearing of the sleeve 11 in the head 16. Also a drain cock 30 is provided in communication with the cylinder between the piston 23 and the head 31 in which is mounted the feed screw 25. The shank 32 of the feed screw passes through a suitable stuffing box 33, and a compression spring 34 is interposed between the head 31 and the end of the piston to serve as a cushioning agency for the return or backward movement of the piston.

The communication of pressure from the piston to the follower 10 is through an anti-friction end bearing 35 permitting of the free rotary movement of the follower with the sleeve 11 which in turn is free to rotate with the drum shaft 13 by reason of the anti-friction bearing 15 formed by an outwardly directed flange 36 on the sleeve arranged in opposing relation to a shoulder 37 on the cylinder head 16. Also a cushioning spring 38 is interposed between the follower and the end of the shaft 13 to yieldingly resist the advance movement of the follower and return the same when pressure upon the piston has been relieved, so as to release the key or gib 20 by which pressure is communicated to the head of the drum.

When pressure is applied to the piston, either mechanically as by steam or compressed air admitted through the valve port 24, or manually by means of the crank 26, it causes the advance of the follower 10 to communicate corresponding movement through the follower pin 18 to the key or gib 20, but while the sleeve 11 is free to rotate with the drum shaft 13, endwise movement of the latter is prevented by the anti-friction bearing 15, so that movement in one direction is imparted by the follower to the head 22 of the drum which carries the friction disk 38′, causing it to engage the friction blocks 40 carried by the disk 39 mounted on the drum shaft, said friction blocks and disks constituting the friction clutch by which the rotary motion is communicated from the shaft to the drum.

The apparatus, therefore, while being adapted for actuation either manually or

mechanically has the advantage of closing the drum clutch with the required force which is imposed upon the key or gib 20, which is common in devices of this class or designed for this purpose and does not tend to wear or break the same for the reason that the follower pin through which the pressure is applied is rotatable with and at the same rate of motion as the shaft and key, owing to the fact that the sleeve 11 by which the follower with its pin and compression spring are carried is secured to and rotates with the drum shaft and carries with it the follower which receives longitudinal movement from the piston through the anti-friction thrust bearing 35.

Having described the invention, what is claimed as new and useful is:—

1. A friction apparatus for a hoisting drum including a drum shaft and a drum revolubly mounted thereon, a clutch having its members carried respectively by the drum and shaft, a follower operatively connected with the drum to effect longitudinal movement of the latter for the engagement of said clutch members, and means for applying pressure to the follower consisting of a cylinder, a piston keyed to and longitudinally movable in the cylinder and having a thrust bearing against the follower, fluid means for imparting endwise pressure to the piston, and manual means for actuating the piston selectively as against said fluid means, and embodying a feed screw connected with the piston, a stuffing box through which the extremity of said feed screw extends, and a crank handle for actuating said feed screw.

2. A friction apparatus for a hoisting drum including a drum shaft and a drum revolubly mounted thereon, a clutch having its members carried respectively by the drum and shaft and a key or gib slidably mounted on the shaft for longitudinally moving the drum to close the clutch, a revoluble guide sleeve secured to the drum shaft, a follower fitted for longitudinal movement in the sleeve and provided with means for advancing the key or gib, and means for applying pressure to the follower to impart longitudinal movement thereto, consisting of a cylinder in one head of which said sleeve is mounted, a piston keyed to and longitudinally movable in the cylinder and having a thrust bearing against the follower and means for applying endwise pressure to the piston.

3. A friction apparatus for a hoisting drum including a drum shaft and a drum revolubly mounted thereon, a clutch having its members carried respectively by the drum and shaft and a key or gib slidably mounted on the shaft for longitudinally moving the drum to close the clutch, a revoluble guide sleeve secured to the drum shaft, a follower fitted for longitudinal movement in the sleeve and provided with means for advancing the key or gib, and means for applying pressure to the follower to impart longitudinal movement thereto and consisting of a cylinder provided with a valved pressure inlet port, a piston keyed for longitudinal movement in the cylinder and having a thrust bearing against the follower, and a cushioning spring for resisting return movement of the piston.

In testimony whereof I affix my signature.

JAMES M. McLAUGHLIN.