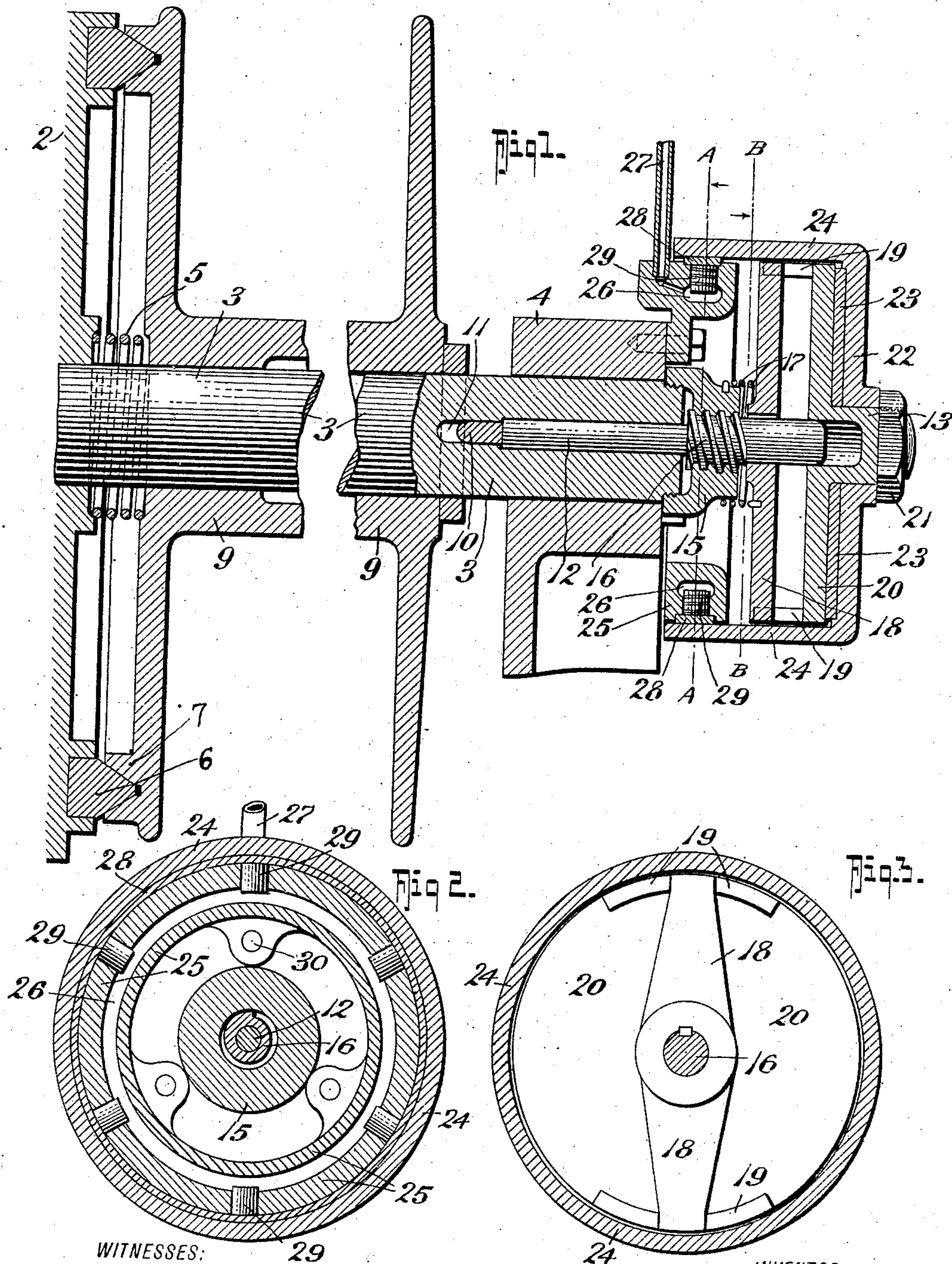


No. 850,250.

PATENTED APR. 16, 1907.

F. P. QUINN.  
MEANS FOR OPERATING LOG HAUL CLUTCHES.  
APPLICATION FILED JAN. 23, 1907.



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# UNITED STATES PATENT OFFICE.

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## MEANS FOR OPERATING LOG-HAUL CLUTCHES.

No. 850,250.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed January 23, 1907. Serial No. 353,686.

*To all whom it may concern:*

Be it known that I, FLOYD P. QUINN, a citizen of the United States of America, residing at Vancouver, in the Province of British Columbia, Canada, have invented a new and useful Improvement in Means for Operating Log-Haul Clutches, of which the following is a specification.

This invention relates to an improved means for automatically applying the friction-clutch by which the wire-rope drum of a log-hauling engine is connected to the mechanism by which it is driven. In engines of this class a frictional driving contact is provided between the driving-gear and the wire-rope drum, and the latter part is pressed into frictional contact with the driving-gear and is rotated thereby when it is desired to haul. The end pressure necessary to provide the required friction is usually applied to the wire-rope reel on the shaft through the medium of a central stem and cotter in the opposite end of the driving-shaft, the pressure being applied to the central stem by a screw rotatable by means of a hand-lever in a nut secured to the engine-frame. In some cases the lever and screw are dispensed with and a fluid-operated piston imparts the desired end movement and pressure. These methods require a manual application and are open to various other objections.

My object has therefore been to apply to the screw by which the end movement and pressure is attained a means whereby the screw may be rotated automatically when steam is admitted to the engine, provision being of course made whereby the wire-rope drum may be allowed to run free if the engine is required to operate a second drum.

The invention is fully described in the following specification, reference being made to the drawings by which it is accompanied, in which—

Figure 1 is a vertical longitudinal section through a wire-rope drum, showing the frictional connection between the drum and the driving-gear and the application of my device thereto; Fig. 2, a cross-section on the line A A; Fig. 3, a cross-section on the line B B.

In the drawings, 2 represents a portion of the driving-gear wheel, which is keyed on the shaft 3 and by which this shaft is rotatable in bearings in the frame 4 of the log-haul. The wire-rope reel 9 runs free on this shaft 3, but may be secured to the gear 2 to rotate

with it by an annular V-groove on the flange 7 of the reel engaging in frictional contact a correspondingly-shaped ring 6, preferably of wood, on the adjacent side of the driving-gear 2.

Endwise movement is imparted to the reel to set up the required friction by means of a cotter 10 in a cotter-hole 11 through the shaft 3, the outer ends of which cotter bear through the medium of a washer on the end of the reel 9. A central stem 12 bears on the mid-length of the cotter 10 in the shaft, and its outer end projects beyond the end of the shaft 3 outside of its bearing in the frame 4. A spring 5, interposed between the gear 2 and the reel 9, holds the frictional surfaces normally out of contact.

The parts thus far described are common in most hauling-engines of this class, and it is to the provision of a means by which an end movement and pressure may be automatically applied to the stem 12 that my improvement has been directed.

Secured to or integral with the end of the shaft 3, which projects outside of the bearing in the frame 4, is a nut 15, adapted to receive a short quick-pitch double-threaded screw 16, the inner end of which is fitted on the outwardly-projecting end of the pin 12. Toward the outer end of this screw is keyed or otherwise secured a cross-bar 18, by which the screw may be rotated in the nut, a coil-spring 17 being interposed between the nut and the cross-arm, which will backwardly rotate the screw and normally maintain it clear of the end of the pin 12.

On the outer end of the screw 16 is mounted, so as to be susceptible of limited axial movement on it, a friction-disk 20, which disk is provided with projections 19 to engage the ends of the cross-arm 18 to rotate it while permitting the endwise axial movement before referred to. On an outwardly-projecting boss 13 of the disk 20 is rotatably mounted a disk 22, having secured to its face adjacent to the disk 20 a friction-disk 23, of indurated fiber or similar material, the pressure between 22 and 20 through the medium of 23 being regulated by a nut 21, fitting a fine thread on the end of the boss 20. From the outer edge of the disk 22 is carried back toward the frame 4 of the machine a hollow cylindrical body 24, and secured to the frame 4, so as to project within the mouth of this cylinder, is a ring 25, having an annular cored chamber 26, which chamber is in com-



munication through a pipe 27 with the steam-pipe which serves the cylinders of the log-haul engine, so that a fluid-pressure may be admitted to the chamber 26 when steam is admitted to the engine. Fitted into a recessed groove round the circumference of the ring 25 is a ring 28, of metal, having preferably an outer layer of indurated fiber or other material having a high coefficient of friction, and on the inner side of this ring 28 a series of short plungers 29 bear, on which plugs the fluid-pressure in the annular chamber 26 will act to press them outward and force the ring 28 into frictional contact with the inner side of the cylinder 24.

In the operation of the device when the engine is started a fluid-pressure will be admitted through the pipe 27 to the annular chamber 26 and acting on the plungers 29 will press the ring 28 into frictional contact with the cylinder 24, holding it against rotation. The friction-disk 20 will to the extent of the friction set up by means of the nut 21 between it and the ring 23 be also prevented from rotating and will hold the screw 16 by means of the engagements 19 and the cross-arm 18. As the gear-wheel 2 rotates and turns with it the shaft 3, to which it is secured, the nut 15 as it turns with the shaft will draw the screw 16, which is held against rotation, tightly upon the stem 12 and will endwise move the wire-rope reel 9 into frictional engagement with the annular friction-ring 6 of the gear-wheel 2, so that the reel 9 will rotate with the gear and its shaft. On release of the pressure from the annular chamber 26, caused either by the stopping of the engine or by independent means provided, the outward pressure of the plungers 29 against the ring 28 and against the inner side of the cylinder 24 that body and its connected parts will no longer be secured to the frame of the engine, but will be free to rotate, and the coil-spring 17, placed under rotational strain by the former movement of the nut 15 on the screw, will exercise its effort and rotate the screw through the cross-arm 18, to which the spring 17 is attached, to withdraw the screw from contact with the stem 12, which effort will be assisted by the spring 5 between the wire-rope reel and the gear-wheel 2.

Having now particularly described my invention and the manner of its operation, I hereby declare that what I claim as new, and desire to be protected in by Letters Patent, is—

1. In a friction-clutch, means for imparting an endwise movement to a freely-rotatable mechanism to bring it into frictional contact with the driving mechanism on a shaft on which the freely-rotatable mechanism runs, a nut secured to the shaft, a screw operable in said nut, and means for holding the screw against rotation by a fluid-pressure

from the pipe which serves the engine of the driving mechanism.

2. In a friction-clutch, means for imparting an endwise movement to a freely-rotatable mechanism to bring it into driving contact with the driving mechanism on a shaft on which the freely-rotatable mechanism runs, a nut secured to the shaft, a screw operable in said nut, means for holding the screw against rotation by a fluid-pressure from the pipe which serves the engine of the driving mechanism, and a spring between the nut and the screw to withdraw the screw from the nut.

3. In a friction-clutch, whereby a freely-rotating mechanism is secured to a driving mechanism on a shaft on which the free mechanism runs, means for imparting an endwise movement to the free mechanism to bring it into contact with the driving mechanism said means comprising a nut secured to the end of the shaft of the driving mechanism, a screw operable in said nut and contacting with the means for transmitting the endwise movement to the free mechanism, a friction-disk in driving engagement with the screw, a coil-spring between the nut and the screw, a second friction-disk in contact with the one before mentioned, means for holding said disks in frictional contact, and means operative by a fluid-pressure from the engine for holding the last-named friction-disk against rotation whereby the screw is rotated in the nut.

4. In a friction-clutch whereby a freely-rotating mechanism is secured to a driving mechanism on a shaft on which the free mechanism runs, means for imparting an endwise movement to the free mechanism to bring it into contact with the driving mechanism said means comprising a nut secured to the end of the shaft of the driving mechanism, a screw operable in said nut and contacting with the means for transmitting the endwise movement to the free mechanism, a rotatable part in driving engagement with the screw, a second rotatable part in frictional engagement with the aforementioned part and having means for varying the pressure of such frictional engagement, means for frictionally securing the last-mentioned part to a fixed part of the machine-frame said means being operative by a fluid-pressure from the pipe which serves the engine of the driving mechanism, and a spring to withdraw the screw from engagement with the endwise communicating mechanism of the clutch.

5. In a friction-clutch for a log-haul, the combination with a driving-gear secured to a shaft of a wire-rope reel freely rotatable on the shaft of the driving-gear, of a frictional driving-surface between the wire-rope reel and the driving-gear, a cotter loosely fitted through the shaft of the driving-gear and bearing on the wire-rope reel, a stem endwise



movable in the shaft one end of which stem  
bears on the cotter and the other end pro-  
jects beyond the end of the shaft outside of  
the bearing, a nut secured to the outer end of  
5 the shaft, a screw operable in said nut and  
bearing on the outwardly-projecting end of  
the stem, a driving-arm secured to said nut,  
a spring between the nut and the driving-  
arm that will rotate the screw from engage-  
10 ment with the end of the stem, a friction-  
disk in driving engagement with the driving-  
arm of the screw, a member rotatable on and  
in frictional engagement with the last-named  
friction-disk, means for regulating the pres-  
15 sure and varying the friction between the  
two last-named parts, a ring concentric with  
the driving-shaft and secured to the frame of  
the machine said ring having an annular

chamber and means for delivering a fluid-  
pressure thereto from the steam-pipe which 20  
serves the engine of the driving-gear, a series  
of plungers radially projecting through the  
ring and in communication with the annular  
chamber therein, a friction band or ring sur-  
rounding the outer end of such plungers, and 25  
a hollow cylinder against the inner side of  
which said friction-ring contacts which cylin-  
der is integral with or secured to the outer ro-  
tatable friction member.

In testimony whereof I have signed my 30  
name to this specification in the presence of  
two subscribing witnesses.

FLOYD P. QUINN.

Witnesses:

ROWLAND BRITTAIN,  
CLIVE S. CARMAN.