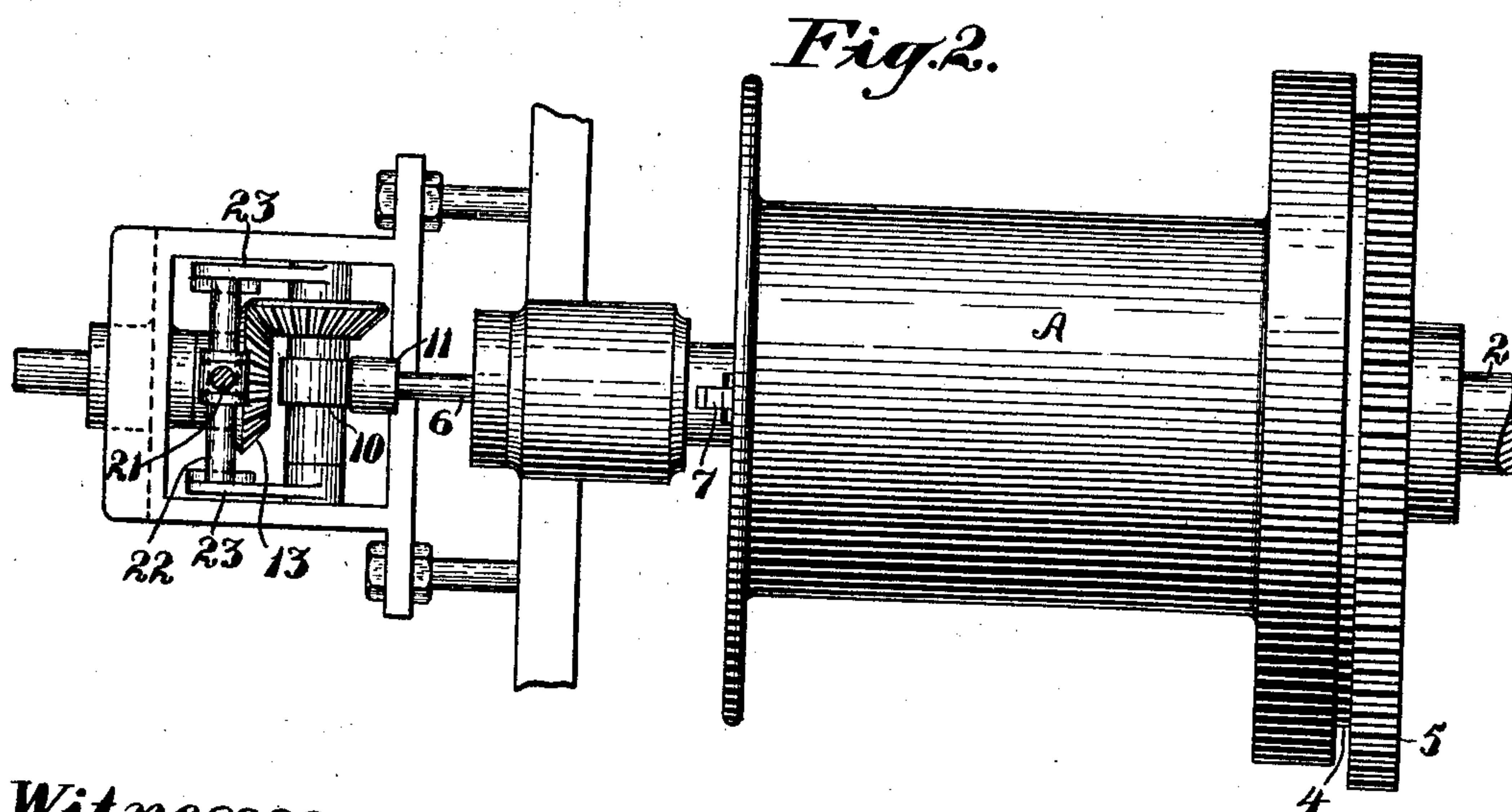
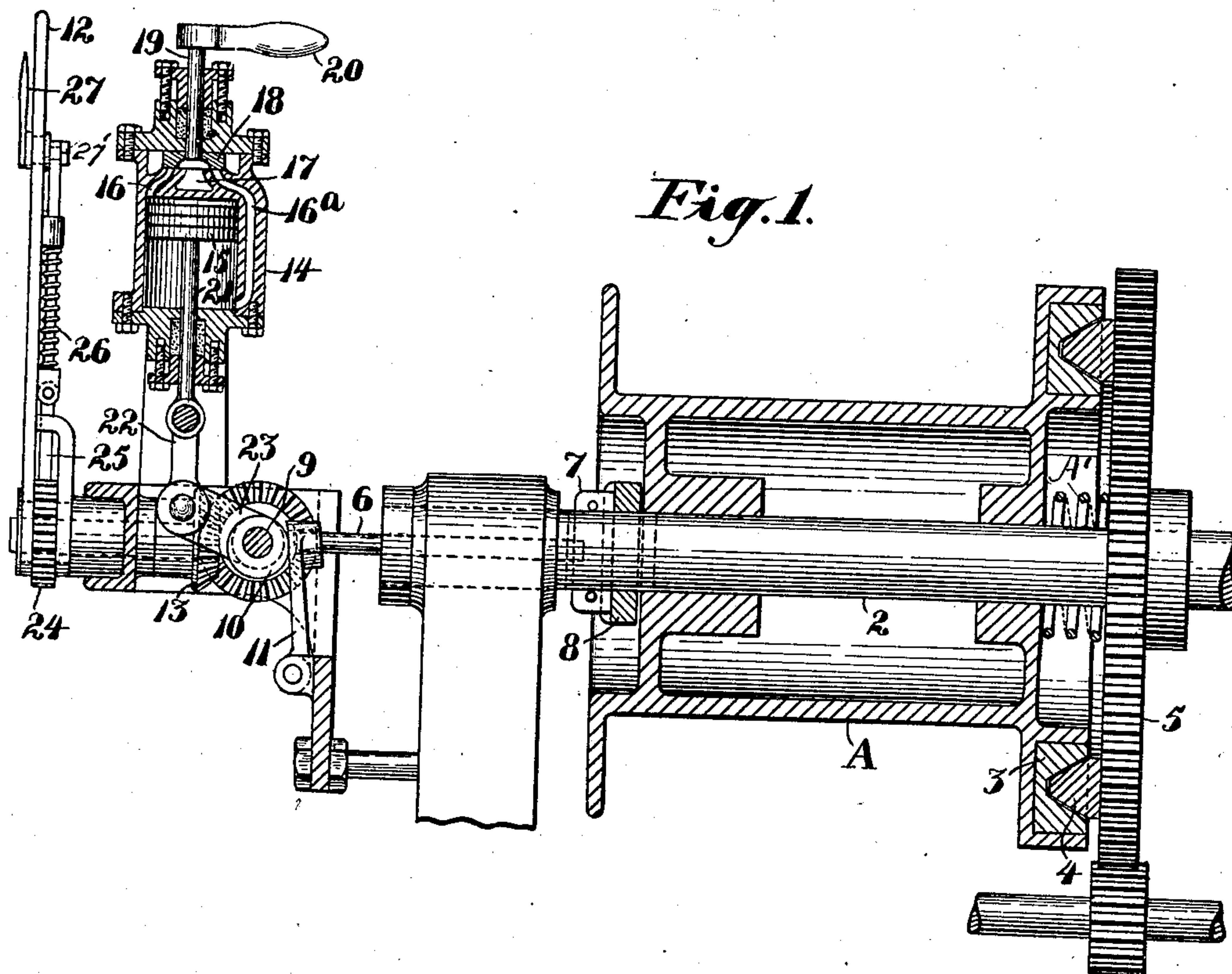


No. 828,565.

PATENTED AUG. 14, 1906.

W. F. MURRAY.
WINDING DRUM ATTACHMENT.
APPLICATION FILED SEPT. 14, 1905.



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UNITED STATES PATENT OFFICE.

WILLIAM F. MURRAY, OF SAN FRANCISCO, CALIFORNIA.

WINDING-DRUM ATTACHMENT.

No. 828,565.

Specification of Letters Patent.

Patented Aug. 14, 1906.

Application filed September 14, 1905. Serial No. 278,390.

To all whom it may concern:

Be it known that I, WILLIAM F. MURRAY, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Winding-Drum Attachments, of which the following is a specification.

My invention relates to an attachment for winding-drums in which a drum loosely revoluble upon a driven shaft may be alternately connected so as to be revolved therewith by frictional contact with a driving member and released therefrom.

It consists in a combination of parts and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a sectional view of my device. Fig. 2 is a plan view of same with the hand-lever and its connections omitted and the piston-rod shown in section.

In the operation of rope-winding drums under conditions where it is desirable to alternately wind the rope upon the drum and release it therefrom, as in the operation of hammers for pile-driving and the like, it is often necessary to strike a great number of blows to effect the desired object, and the constant movement and work necessary to alternately engage and disengage the winding apparatus becomes so wearisome that it is difficult for the operator to continue the work for the necessary time. In my invention I have shown a mechanically-operated device by which this engagement and disengagement may be effected with little labor for the operator.

As shown in the drawings, A is a winding-drum loosely turnable upon a shaft, as at 2, and this shaft is driven by any suitable motor which will give it the proper rate of revolution. At one end the drum carries one member 3 of a suitable clutch, and the other member 4 may be continuously revolved by the gear or device 5, which is fixed to the shaft 2 and through which power is derived to rotate the shaft. In order to engage these frictional members, I have shown at the opposite end of the shaft a pin or stem 6, which is guided and slidable in a hole bored centrally in the shaft. The shaft may be slotted transversely, and the end of this stem 6 carries a transverse bar 7, the ends of which ex-

tend out through the slot in the shaft and are adapted to contact with a frictional collar 8, loosely turnable upon the shaft 2. By this device when the stem is pressed inwardly the bar 7, pressing the part 8 against the drum, slides the drum along the shaft and causes the frictional members to engage so that motion is transmitted to wind the drum. When pressure upon the stem is released, the frictional members are allowed to separate, and the drum is free to revolve in the opposite direction. Thus in operating the hammer of a pile-driver when the drum is caused to revolve the rope will be wound up and the hammer lifted. When the hammer is released, the rope will unwind and the hammer will fall upon the head of the pile, and the operation of driving will be very rapid.

In order to alternately force the stem 6 inwardly and release it as described, I have shown a transverse shaft 9, having upon it a cam or eccentric 10, which contacts with the outer end of the stem 6 or with a connected part, so that when the eccentric is revolved so as to present its larger portion against the pin, the latter will be forced inwardly and the frictional contact of the driving members effected.

When the eccentric is turned to present its smaller portion in line with the stem, pressure upon the latter will be relieved and the frictional members released. This release may be more certainly effected by means of a spring or equivalent so connected as to move the drum along the shaft to disengage the frictional members. Such a device may be in the form of a spring A', arranged on the shaft 2 between the end of the drum and the gear 5, as shown, although any well-known means for effecting the same result may be used.

The shaft 9 and its eccentric are turned by means of a hand-lever 12, which may either be mounted directly upon or in connection with the shaft 9 or upon another shaft extending in line with the shaft 2 of the winding-drum, and connection made between this latter shaft and the shaft 9 by means of a bevel-gear, as shown at 13. This latter connection is preferable, because the operator usually stands facing the drum and the work to be done and it is more convenient to operate the lever in a plane transverse to the winding-drum. The operation of this lever

by hand is an exceedingly wearisome task where piles are being driven in very hard material or where the alternate winding and unwinding of the rope upon the drum for any purpose is long continued. I have therefore shown a mechanical means for alternately turning the shaft 9 and eccentric 10, which consists of a steam-cylinder 14, having a piston 15 movable therein. The cylinder is provided with an inlet-port, as at 16, to admit steam to force the piston down and another port 16^a, extending to the lower end of the cylinder, to admit steam or other elastic medium to again raise the piston.

17 is the exhaust-port, and 18 is a valve controlling the alternate admission of steam and its exhaustion. This valve is here shown as having a stem 19 and a short hand-lever 20, fixed upon the upper end, by which the stem and valve may be readily turned to change the admission and exhaust of the elastic medium by which the piston is actuated.

The piston-rod 21 extends through a stuffing-box (here shown at the lower end of the cylinder) and connects, by means of a link 22, with short cranks or rocker-arms 23, fixed to the eccentric-shaft 9, so that when the piston is forced down it will turn the shaft and cause the eccentric to act, as previously described, to force the frictional members into contact to revolve the drum. When the piston is again raised, the eccentric will be sufficiently turned to release the frictional members and allow the drum to revolve. This operation being effected by the short easily-turned lever or handle 20, having comparatively small movement, will make it much easier for the operator than to move the longer lever-arm 12 for the greater throw through which it must pass.

The shaft upon which the lever-arm 12 is fixed has fixed upon it a ratchet-wheel 24, and the lever has a sliding pawl 25, adapted to engage with the ratchet-wheel when the lever 12 is to be used. This pawl is actuated by a spring, as at 26, and the lever may have the usual or any suitable connection and a handle 27, by which the pawl may be disengaged and held permanently out of connection with the ratchet when the mechanically-operating device is in use. Thus for any portion of the work that it is desirable to do by the use of the hand-lever 12 the pawl may be engaged with the ratchet-wheel, and the movements of the lever will be communicated to the eccentric, and when the piston and pressure apparatus are to be used it is only necessary to disengage the pawl from the ratchet, allowing the lever 12 to stand without movement, and the engine operates the rocker-arms 23 and through it the eccentric and the frictional driving members.

The pawl may be locked out of engage-

ment with the ratchet by any suitable means, as by means of an eccentric-pin 27', turnable with the handle 27 and to which the connecting-rod of the pawl is attached, so that the turning of the eccentric will raise the pawl out of engagement with the ratchet. Any suitable or equivalent means may be adopted in place of this construction.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination in a hoisting apparatus of a driven shaft, a drum loosely turnable thereon, frictional members one of which is carried by the driven shaft and the other by the drum, means for moving the drum to engage the frictional members, said means comprising a turnable eccentric and intermediate pressure device by which the drum is moved, a rocker-arm fixed to the eccentric-shaft, a reciprocating connecting-rod and a motor whereby the rocker-arm may be turned to actuate the eccentric.

2. In a rope-winding apparatus, a driven shaft, a drum loosely turnable thereon, frictional members one carried by the shaft, and the other upon the drum, a stem slidable with relation to the shaft having a pressure-bar whereby the drum may be moved to engage the frictional members, an eccentric acting upon the end of the stem, a cylinder having a piston reciprocable therein, a rocker-arm mounted upon the eccentric-shaft, connections between the rocker-arm and the piston-rod, and means for admitting a fluid under pressure to reciprocate the piston.

3. In a rope-winding apparatus, a driven shaft, a winding-drum loosely turnable thereon, frictional driving members carried respectively by the driven shaft and the drum, a stem movable axially with relation to the driven shaft having a transverse bar, an eccentric by which the stem and bar may be moved to engage the frictional members, a cylinder having a piston movable therein, a rocker-arm fixed to the eccentric-shaft, connections between the piston-rod and the rocker-arm, ports connecting with opposite ends of the cylinder and an exhaust-port, a valve revoluble over said ports and a handle by which said valve may be turned to admit and exhaust a fluid under pressure to reciprocate the piston.

4. In a rope winding and hoisting apparatus, a driven shaft, a drum loosely revoluble upon the shaft, frictional members carried by the driven shaft and upon the drum, a stem movable in the line with the shaft-axis having an attachment adapted to move the drum longitudinally upon the shaft and engage the frictional members, an eccentric contacting with the end of the stem, a rocker-arm upon the eccentric-shaft, a reciprocable motor connecting with said rocker-arm to

mechanically actuate the eccentric, a hand-
lever by which the eccentric-shaft is also
independently turnable, and a pawl-and-
ratchet mechanism by which said hand-lever
5 may be connected or disconnected from the
eccentric-shaft.

In testimony whereof I have hereunto set

my hand in presence of two subscribing wit-
nesses.

WILLIAM F. MURRAY.

Witnesses:

CHAS. T. STANLEY,
S. H. NOURSE.