

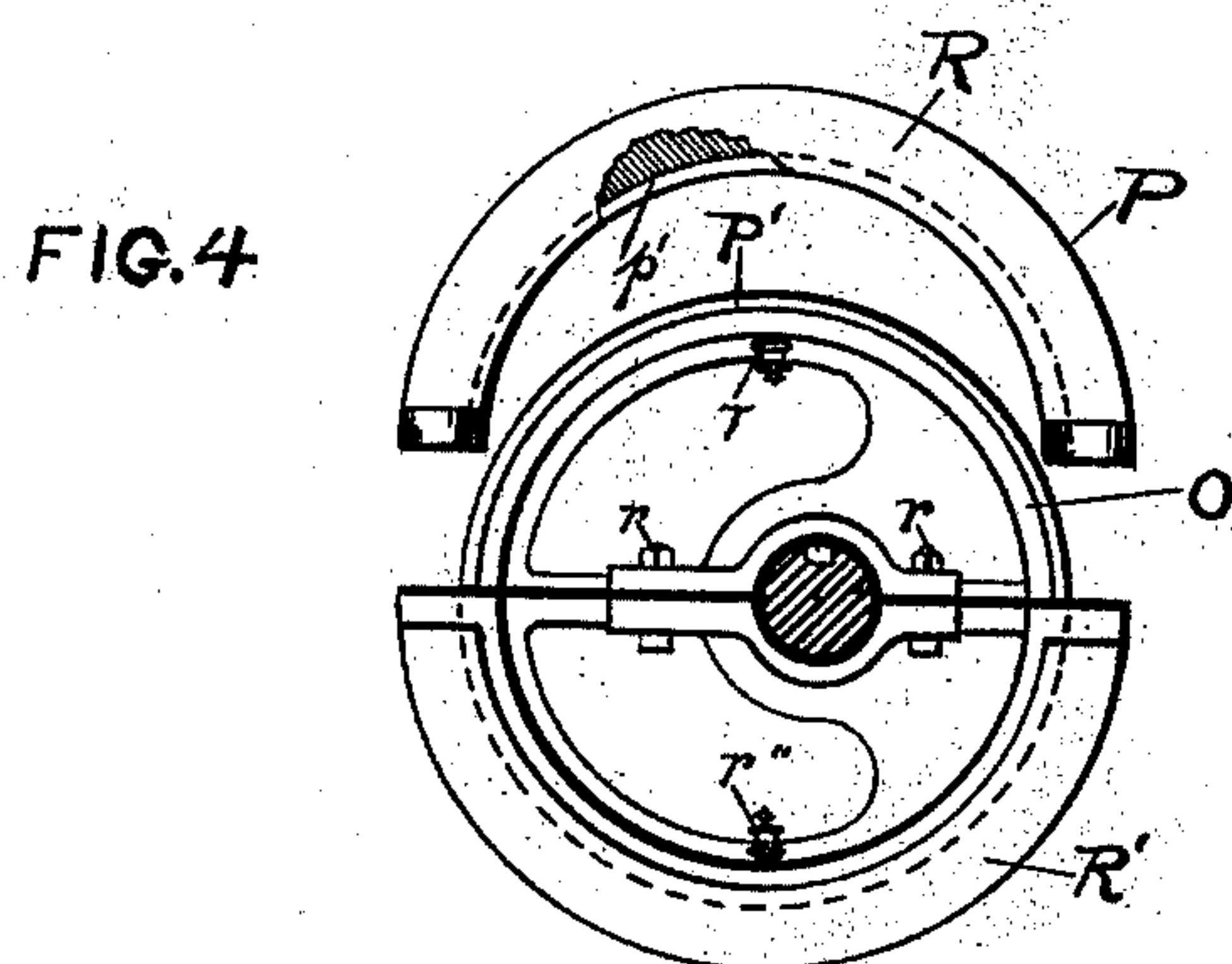
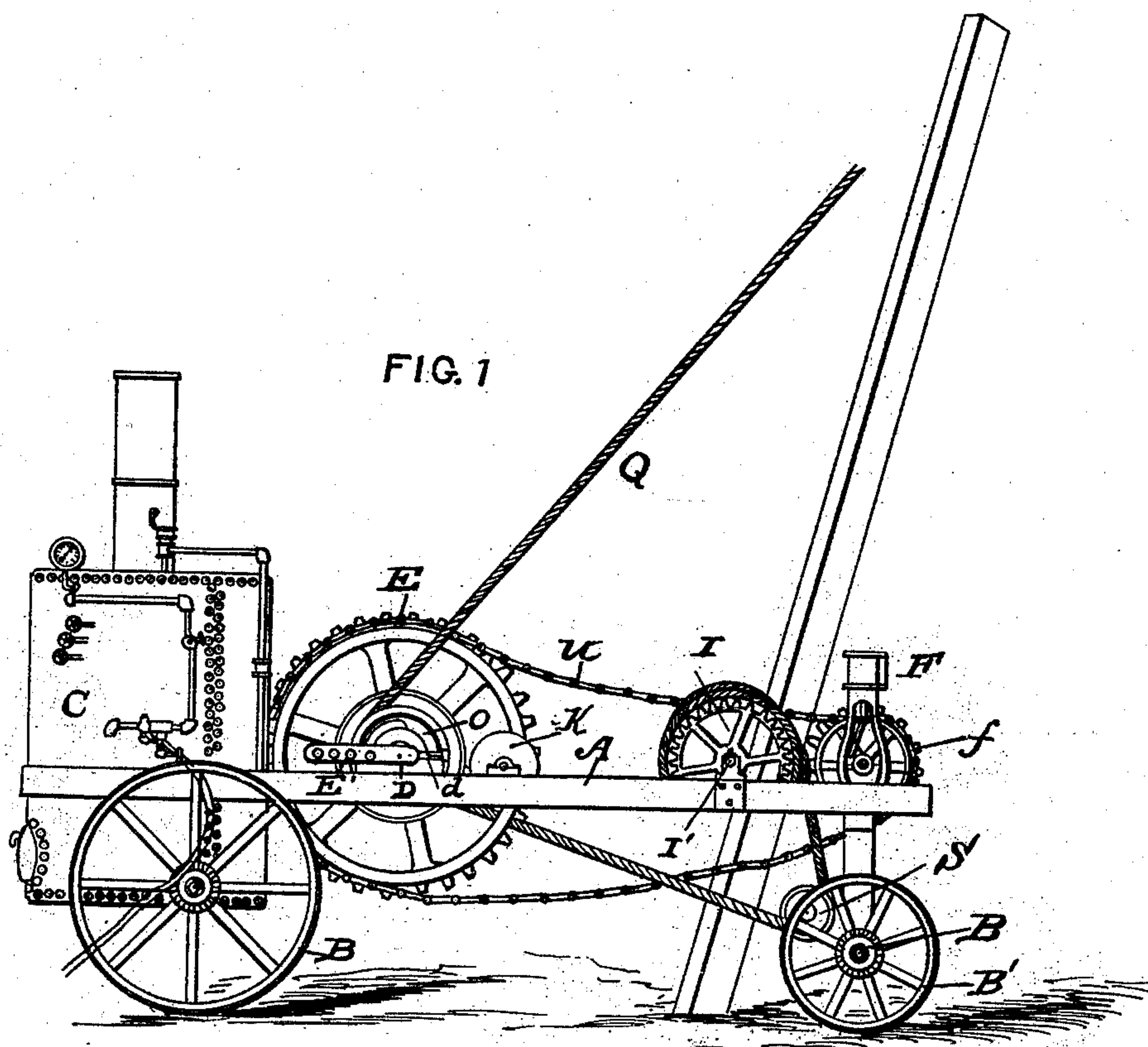
(No Model.)

2 Sheets—Sheet 1.

A. C. DARRAGH.
WELL DRILLING MACHINERY.

No. 505,443.

Patented Sept. 26, 1893.



WITNESSES

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J. B. Slavin

W. H. Bishop.

INVENTOR

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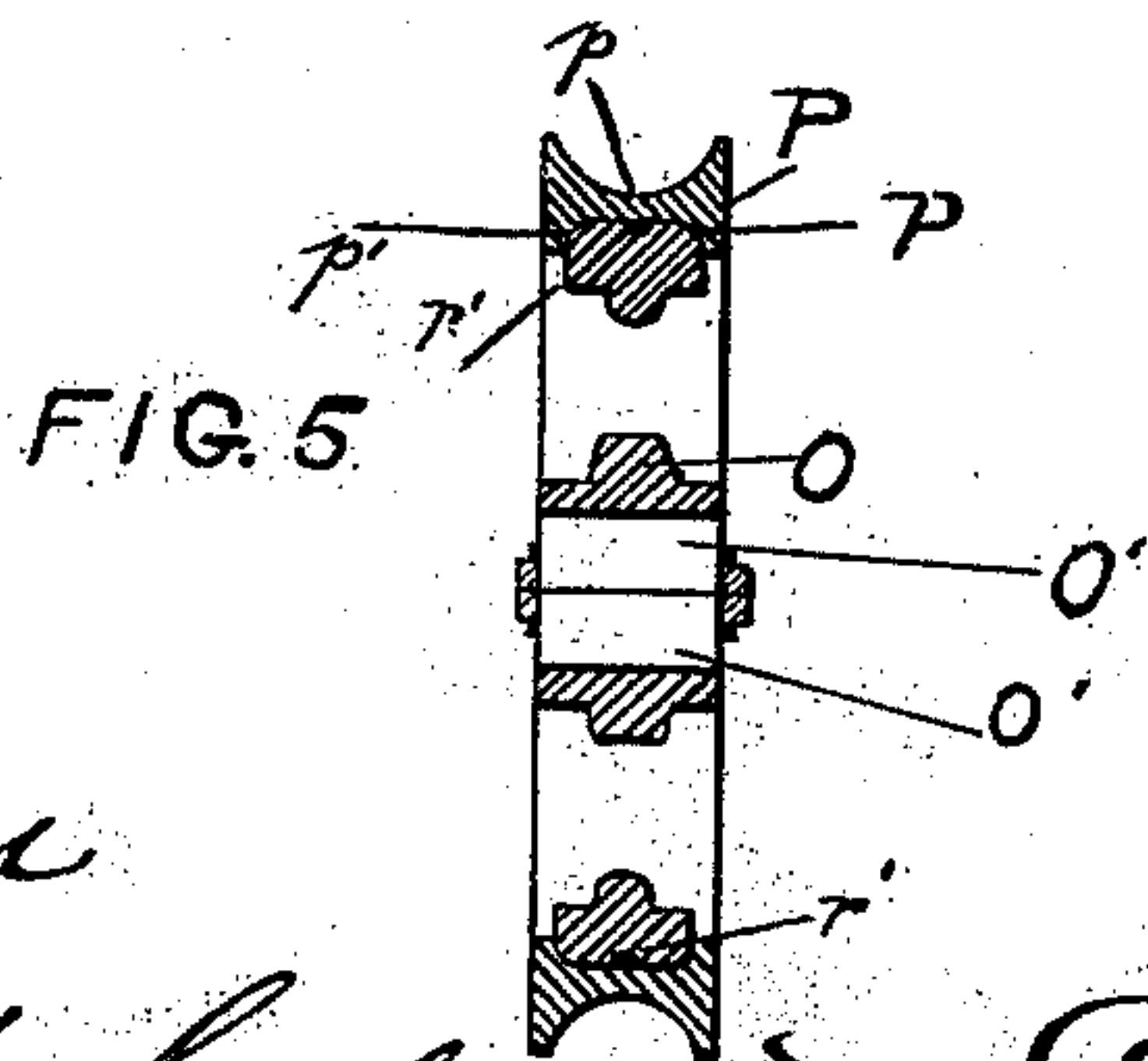
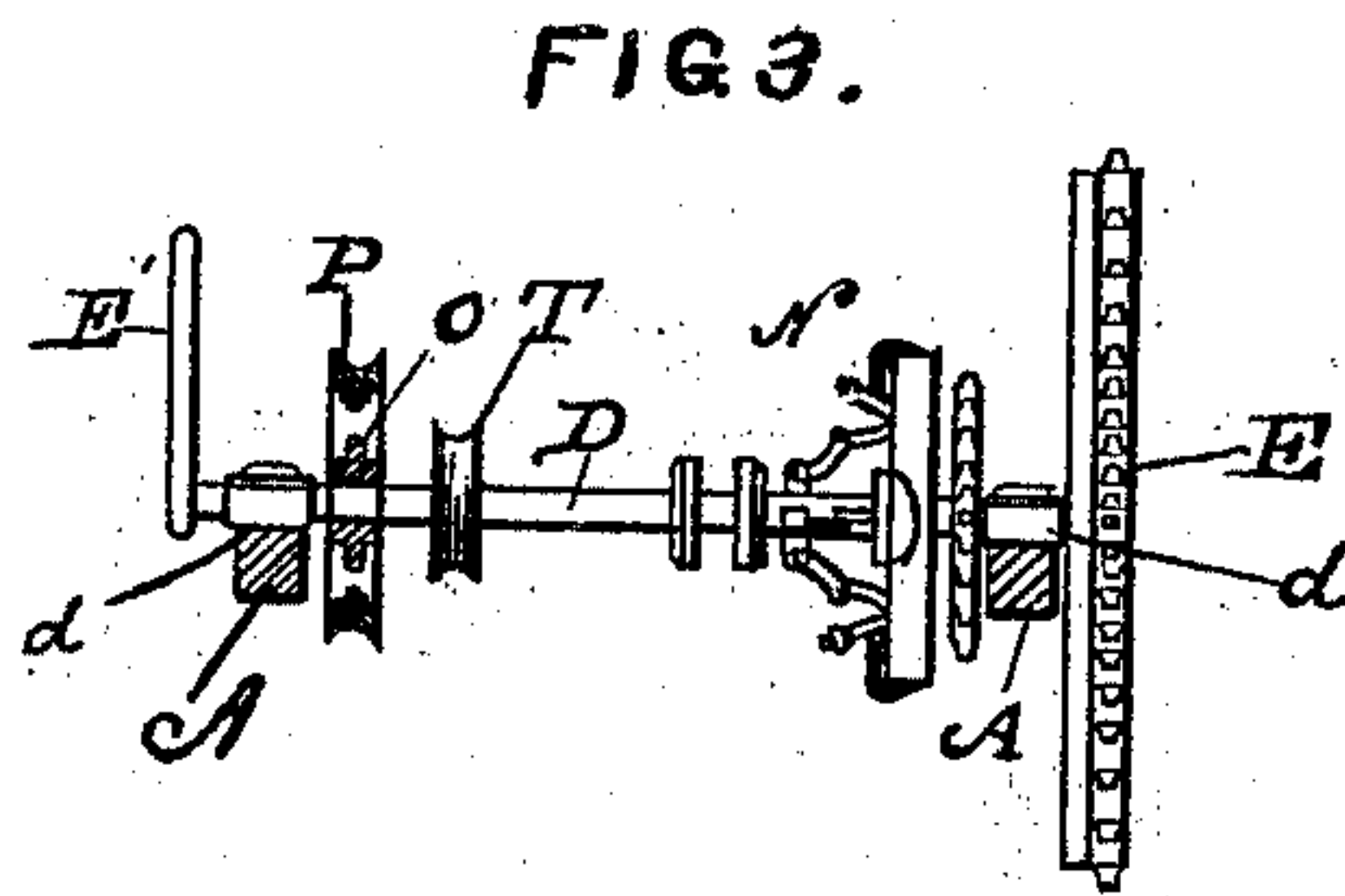
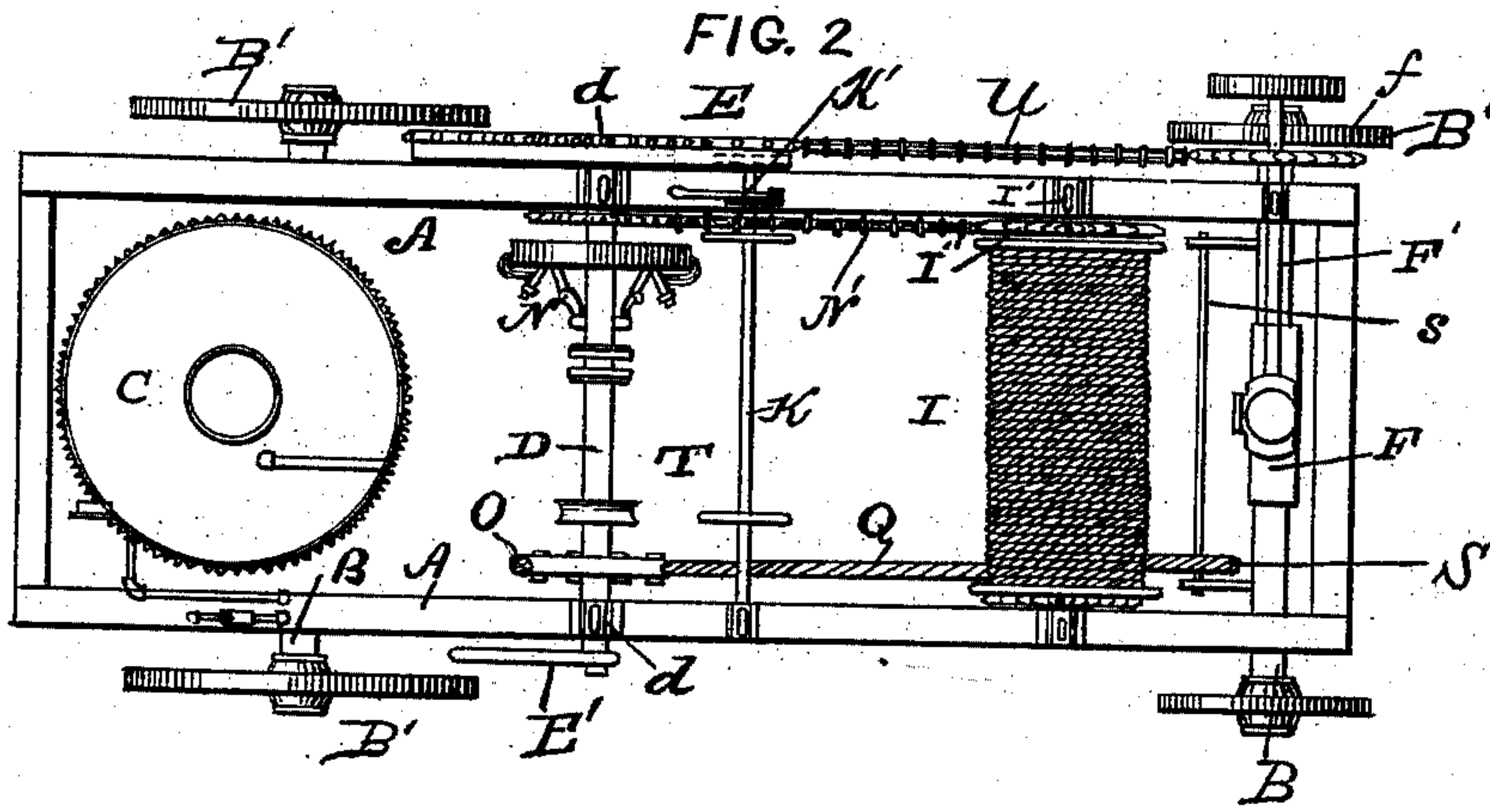
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UNITED STATES PATENT OFFICE

ALBERT C. DARRAGH, OF ALLEGHENY, PENNSYLVANIA.

WELL-DRILLING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 505,443, dated September 26, 1893.

Application filed June 18, 1891. Serial No. 396,784. (No model.)

To all whom it may concern:

Be it known that I, ALBERT C. DARRAGH, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Well-Drilling Machinery; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to provide means for operating a drill-rope or cable without chafing the same. In driving the casing or drilling a well the drill-rope, or the cable to which is attached the driving-weight or the tools, is usually subjected to continual friction with the power-arm, eccentric, or other device by which the rope is operated, and it is my object to operate the rope by such means that friction is avoided, thus reducing the expense and increasing the certainty and effectiveness of drilling.

In carrying out this object my invention consists in an eccentric around which the drill-rope extends, the periphery of the eccentric being inclosed in an annular sheave which is exteriorly grooved to receive the rope. The eccentric rotates within and independently of the sheave, and the latter rocks with the drill-rope without friction therewith.

The invention is more fully described in connection with the drawings, wherein—

Figure 1 is a side view of a drilling-machine embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is a transverse sectional view, showing the main shaft and eccentric. Fig. 4 is a detail view of the eccentric, showing the sheave, detached, and Fig. 5 is a cross-section through the center of Fig. 4.

The truck of the drilling-machine which is shown in the drawings, is provided with sills, A A, axles, B, and wheels, B', a boiler, C, being arranged at the rear end of the truck, between the sills.

A main-shaft, D, is mounted transversely on the truck, in bearings, d d, on the sills, and carries the power-wheel, E, at one end and the crank, E', at the opposite end. The power-wheel and crank are arranged outside the

sills.

The engine (not shown) will be located at F, the driving-shaft, F', thereof, being provided with a pinion, f, which is connected by means of a sprocket-chain, U, with the power-wheel, above mentioned.

In rear of engine is arranged the transverse bull-wheel, I, having a shaft, I', and a sprocket-wheel, I'', the latter being connected by means of a sprocket-chain, N', with a friction-clutch, N, on the main shaft. The said sprocket-chain is connected to the loose member of the clutch, whereby when not in use the bull-wheel may be disconnected from the main-shaft.

In rear of the bull-wheel shaft is arranged the sand-reel, K, which is employed when operating the sand-pump, not shown, the shaft, K', of the sand-reel being provided with means for connecting it with the main-shaft or disconnecting it therefrom.

An eccentric, O, consisting of a circular disk or wheel, is secured to the main-shaft, and is fitted with a peripheral sheave, P, having an exterior groove, p, to receive the drill-rope, Q, said drill-rope being reeled on the bull-wheel. The eccentric is provided with a peripheral rib, P', which fits in a corresponding channel, p', in the interior surface of the sheave. The peripheral rib is provided with an oil-duct, r', and oil-cups, r'', are arranged on the rim of the eccentric to connect with said duct. The annular sheave, P, fits loosely on the periphery of the eccentric, and is formed in two separable sections, R R', provided at their adjoining ends with lateral ears which are perforated to receive fastening bolts, r. The eccentric is formed in two separable sections, O' O', provided with lateral perforated ears, o, in which are fitted connecting bolts, o', whereby the eccentric may be applied to the shaft of any ordinary drilling-machine. A key, o'', is employed to lock the eccentric on the shaft, and prevent independent rotation. The drill-rope extends from the bull-wheel, around a small, laterally-adjustable pulley, S, supported by the front axle, thence around the eccentric, and thence to the top of the derrick, or a suitable support above the well. As the eccentric rotates, the drill-rope is alternately tightened and slackened, thereby alternately lifting and

dropping the drill-tools or the pipe-driving-weight, which is secured to the free end of the drill-rope. During the rotation of the eccentric the sheave remains stationary, or merely
 5 rocks with the drill-rope, thus protecting the latter from friction. To lower the drill-tools or weight, as the work progresses, the bull-wheel is allowed to rotate, thereby unreeling the desired length of rope, and as the latter passes
 10 around the eccentric, the sheave turns therewith. Thus, it will be seen that the sheave which is arranged between the eccentric and the drill-rope, moves only with the latter and does not move independently thereof, while the
 15 eccentric is allowed to rotate freely within the sheave. The pulley, S, is mounted loosely on a transverse, horizontal guide-rod, s, which is supported by the front axle, said pulley being free to move laterally to guide the drill-
 20 rope in reeling and unreeling. A small pulley, T, having a peripheral groove, is mounted loosely upon the main-shaft, adjacent to the eccentric, to guide the drill-rope when the tools are being elevated. The drill-rope is
 25 transferred from the eccentric to the said pulley, after which the clutch on the main-shaft is operated to cause the bull-wheel to rotate, to reel the drill-rope.

Heretofore, the wearing of the drill-rope,
 30 caused by the friction of the eccentric, or power-arm, has been considered a serious obstacle to rapid drilling, the chafing and consequent fraying of the cable preventing the free movement of the latter around the pul-
 35 leys, and frequently causing breakage and loss of the drill-tools. By the use of the eccentric above described, the friction is reduced to a minimum, thus increasing the fa-
 40 cility of operation, and prolonging the life of the cable. It is desirable to have the eccen-

tric rotate within the sheave with as little friction as possible, in order that the sheave may be free to accommodate itself to the movements of the drill-rope.

By forming the eccentric in separable sec- 45 tions, I am enabled to apply it to the shaft of an ordinary drilling-machine, and remove it without detaching or removing any other parts.

In the drawings I have shown my improved 50 eccentric applied to a drilling-machine, but it will be understood that the mechanism, as described, for operating the drill-rope or cable, is of general application, and is adapted to be applied to any machine or used in any 55 position where it is desired to convey power by means of a cable or other flexible medium.

Having thus described my invention, what I claim, and desire to secure by Letters Pat- 60 ent of the United States, is—

1. The combination of an eccentric for operating a rope, cable, &c.; a loose annular sheave encircling said eccentric, said sheave having a groove for the power transmitter and provided with an internal channel to receive 65 a peripheral rib on the eccentric, substantially as set forth.

2. The combination of an eccentric for operating a rope, cable, &c., a loose annular sheave encircling said eccentric and provided 70 with a groove for the power transmitter, and means for preventing the lateral displacement of said sheave, substantially as set forth.

In testimony whereof I have affixed my signature in the presence of two witnesses.

ALBERT C. DARRAGH.

Witnesses:

J. B. SLAVIN,
 F. P. HOWLEY.