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Patented Nov. 20, 1900.

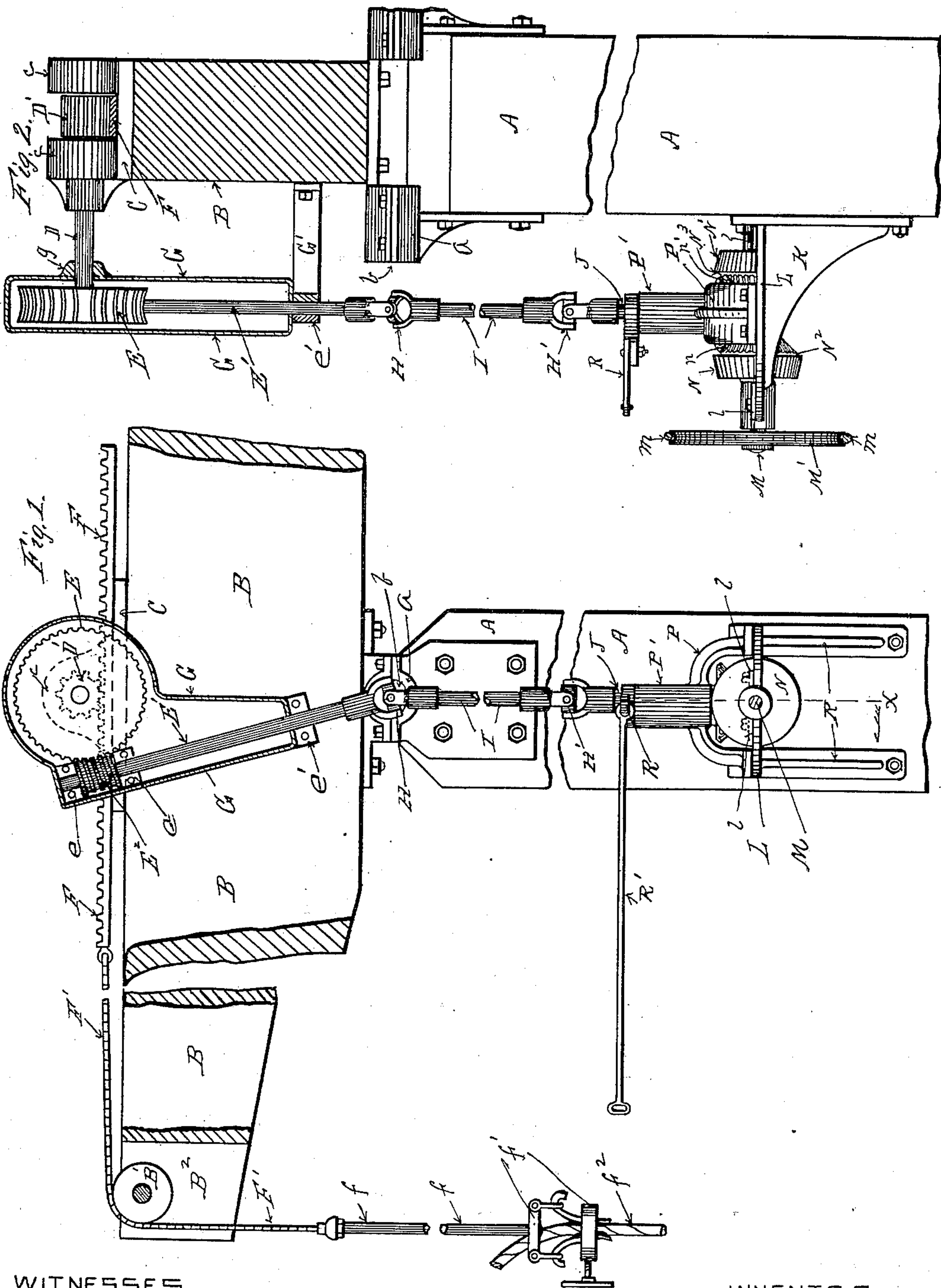
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ARTESIAN WELL DRILLING MECHANISM.

(Application filed Jan. 29, 1900.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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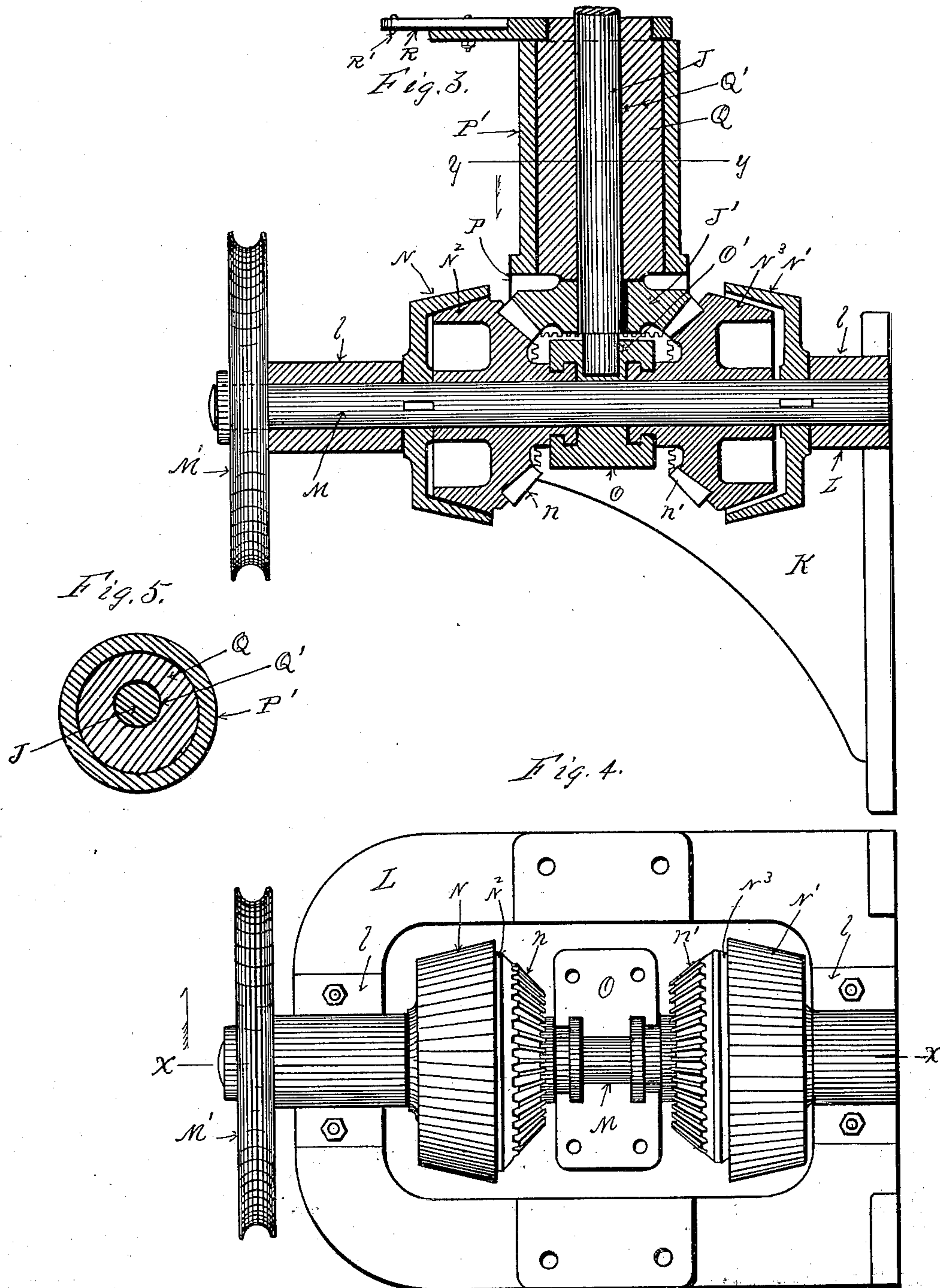
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UNITED STATES PATENT OFFICE.

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ARTESIAN-WELL-DRILLING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 662,289, dated November 20, 1900.

Application filed January 29, 1900. Serial No. 3,175. (No model.)

To all whom it may concern:

Be it known that I, LESTER J. McNUTT, a citizen of the United States, residing at Jefferson, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Artesian-Well-Drilling Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention relates to improvements in Artesian-well-drilling mechanism, and particularly to that portion thereof used for adjusting the cable supporting the tools during the operation of drilling.

The object of this invention is to dispense with what is known as the "temper-screw" and so connect the cable-clamps with the drilling-engine or other source of power that the cable can be raised or lowered by power from the drilling-engine at the will of the driller without having to manually operate a temper-screw therefor. To accomplish this result, I connect the ordinary cable-clamps with a chain or wire rope extending back on the walking-beam to suitable mechanism for drawing the same back or moving it forward, which mechanism extends down upon the samson-post supporting the walking-beam, where it is provided with means for connecting it with the engine and also with mechanism whereby its operation can be reversed at the will of the driller.

This invention is hereinafter fully set forth and explained, and illustrated in the accompanying drawings, in which—

Figure 1 is a side view in elevation of a portion of the walking-beam and samson-post of an Artesian-well-drilling rig, together with mechanism embodying this invention thereon, partially in elevation and partially in section. Fig. 2 is a rear view in elevation of the same. Fig. 3 is an enlarged sectional view of the mechanism mounted on the samson-post on the line *x* in Figs. 1 and 4. Fig. 4 is a top or plan view of a portion of the same. Fig. 5 is a sectional view of a portion of the same on the line *y y* in Fig. 3.

In the drawings thus illustrating my invention, A is the samson-post of an Artesian-well-drilling rig, and B B sections of the walking-beam mounted on journals operating in bearings *a a* on the top of the samson-post in the usual manner.

On the top of the walking-beam B above the bearings *a a* there is secured a bracket C, provided with upwardly-projecting ears *c c*, in which is mounted the shaft D of a worm-wheel E. On the shaft D between the ears *c c* there is a spur-gear D', which intermeshes with a reciprocating rack F, to the end of which is secured a chain or rope F', which extends over a pulley B' in a vertical slot B² in the end of the walking-beam B and down to a rod *f* and rope-clamp *f'* of the usual and ordinary construction for connecting the drilling-cable *f*² therewith.

Surrounding the worm-wheel E there is an inclosed case G, provided with a bearing *g*, surrounding the shaft D and operating as a support for the upper end of the case G, the lower end of the case G being supported by means of a bracket G', secured to the side of the walking-beam B. In the case G there is a shaft E', mounted in the bearings *e e* and *e'* therein and provided with a worm E², which engages and drives the worm-wheel E. This case G is secured to the walking-beam B at such an angle that the lower end of the shaft E' extends to a point approximately opposite to the center of the trunnions *b*, where the shaft E' is provided with a flexible coupling H, by means whereof it is connected to a vertical shaft-section I, on the lower end of which there is another flexible coupling H', by means whereof it connects with a vertical shaft J. Below the shaft J there is a bracket K, secured to the side of the samson-post A, on the top of which there is a plate L. (See Figs. 3 and 4.) On this plate in bearings *l l* there is mounted a shaft M, and to the shaft M are secured two pan-clutches N N', the movable members N² N³ of which are mounted loosely on the shaft M, and between these movable members N² N³ there is a box O, which interlocks with said movable members and slides loosely on said shaft, and in the top of the box O there is a bearing O', in which the lower end of the vertical shaft J rests. (See Fig. 3.) On the outer faces of the

movable clutch members $N^2 N^3$ are bevel gear-wheels $n n'$, and on the shaft J there is a bevel gear-wheel J', which intermeshes with the gear-wheels $n n'$. Secured to the top of the plate
 5 L directly over the box O there is a yoke P, terminating in an upright sleeve P', in which sleeve there is mounted a second sleeve Q, the central opening Q' in which is eccentric to the periphery thereof, and in this opening
 10 Q' the shaft J is mounted and rotates. The sleeve Q is provided at its upper end with an arm R, by means whereof the sleeve Q may be rotated, so as to throw either of the movable portions N^2 or N^3 into contact with the
 15 fixed portions N or N' of the clutches, as desired, so as to reverse the motion of the shaft J at the pleasure of the operator. From the arm R a rod R' extends forward to the station of the driller, so he can operate the lever R
 20 and the eccentric sleeve Q at pleasure.

It will be observed that when the eccentric sleeve Q is in a central position the shaft M will revolve without driving the shaft J, as at this point neither of the movable parts N^2 or
 25 N^3 of the clutches are in contact with the fixed parts N or N' thereof, while a slight movement of the arm R in either direction brings one or the other of the clutch members into engagement, so as to drive the shaft J.

30 On the end of the shaft M there is a pulley M', on which a rope driving-belt m operates to drive the shaft M.

It is obvious from the foregoing description of this invention that the driller by means
 35 of the rod R' can at any time operate the mechanism to raise and lower the drilling-cable f^2 , as he may desire.

I have thus described a convenient mechanism embodying my invention; but it is
 40 manifest that the mechanism described can be greatly modified in construction without departing from the spirit of my invention, as

What I claim as new, and desire to secure by Letters Patent of the United States, is—

45 1. In well-drilling mechanism, the combination, with a samson-post, and a beam pivoted thereto; of a toothed rack for raising the drilling-cable, a toothed pinion operating the said rack, a worm-wheel secured concentric with the said pinion, a worm provided
 50 with a driving-shaft and engaging with the said worm-wheel, all the said parts being carried by the said beam; reversible driving mechanism carried by the said samson-post,
 55 and an intermediate shaft and two flexible couplings connecting the said driving mechanism with the said worm-shaft, substantially as set forth.

2. In well-drilling mechanism, the combination, with a samson-post, and a beam pivoted thereto; of lifting mechanism for the
 60 drilling-cable carried by the said beam, reversible driving mechanism carried by the said samson-post, and a shaft and two flexible couplings operatively connecting the two
 65 said mechanisms, one of the said couplings being arranged on the axis of the end of the pivot of the said beam, so that the axis of the said pivot passes transversely through the
 70 meeting point of the inclined axes of the parts forming the said coupling, substantially as set forth.

3. In an Artesian-well-drilling mechanism, the combination of a reversible clutch and
 75 bevel-gear driving mechanism, worm-wheel and gear and reciprocating rack mechanism, flexible connections between the reversible driving mechanism and the worm-wheel and
 rack-gear mechanism, and flexible connections between the reciprocating rack and the
 80 drilling-cable clamps, substantially as and for the purpose set forth.

4. In an Artesian-well-drilling mechanism, the combination of two clutches and two
 85 bevel-gears driven thereby, a shaft and bevel-gear intermeshing with the first-named bevel-gears and adapted to be driven thereby, with mechanism for alternately throwing said
 clutches into or out of engagement, so as to reverse the operation of the mechanism, a
 90 worm-wheel mechanism driving a spur-gear intermeshing with a reciprocating rack, flexible connections between the shaft driven by said clutch and bevel-gear mechanism, and
 95 the worm-shaft and flexible connections between said reciprocating rack and the drilling-cable clamps, substantially as and for the purpose set forth.

5. In well-drilling mechanism, the combination, with a samson-post, and a beam pivoted thereto; of lifting mechanism for the
 100 drilling-cable carried by the said beam and provided with a driving-shaft E', reversible driving mechanism carried by the said samson-post, a shaft I actuated by the said driving mechanism, and a flexible coupling H arranged upon the axis of the pivot of the said
 105 beam and samson-post and connecting the shafts E' and I, substantially as set forth.

In testimony whereof I affix my signature
 110 in presence of two witnesses.

LESTER J. McNUTT.

Witnesses:

CHAS. C. BABCOCK,
 C. S. TAYLOR.