

No. 684,079.

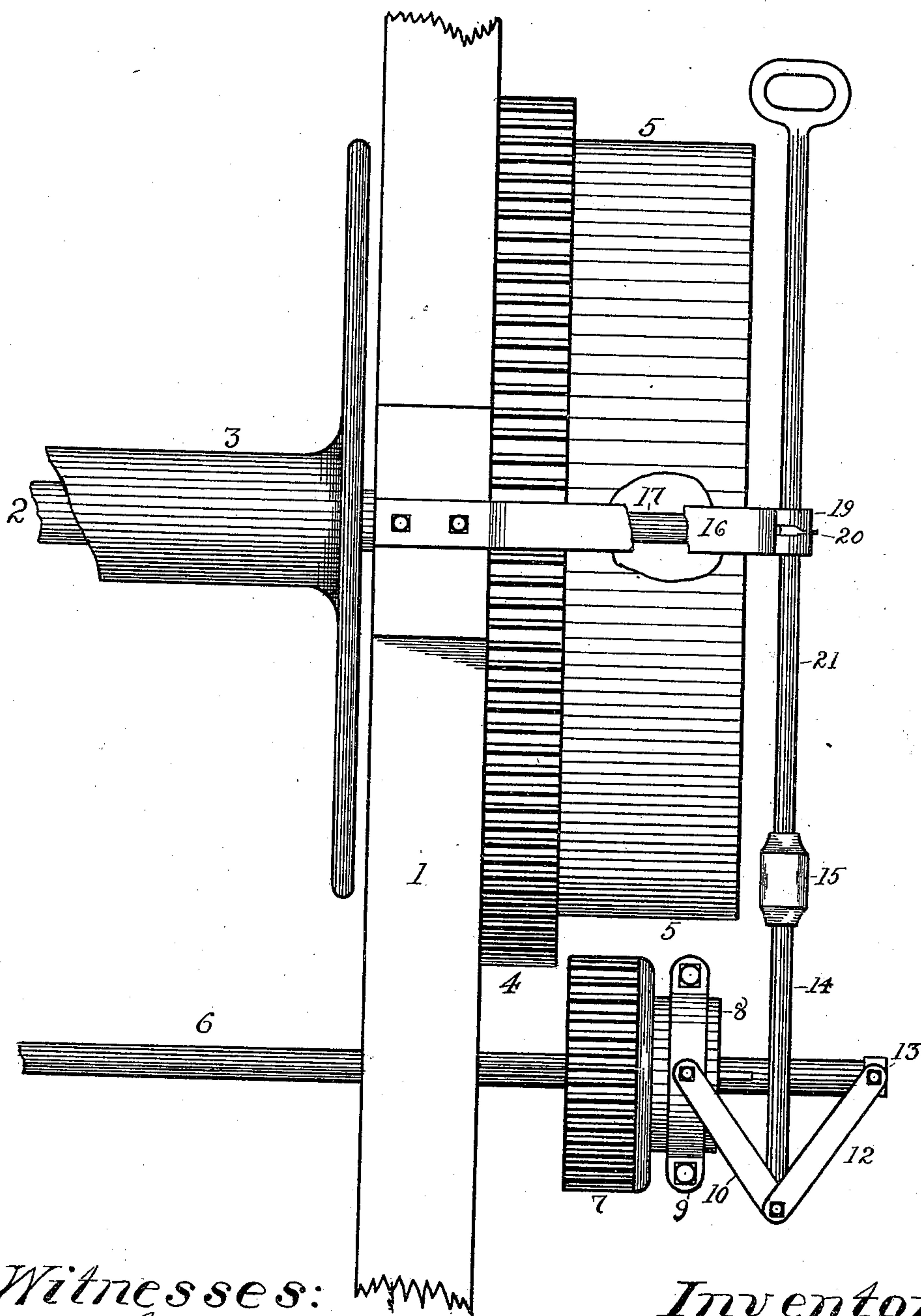
Patented Oct. 8, 1901.

J. W. MILLER.
WELL DRILLING MACHINE.

(Application filed Mar. 22, 1901.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:
Eva Lidyard.
Bessie Crook.

Fig. 1.

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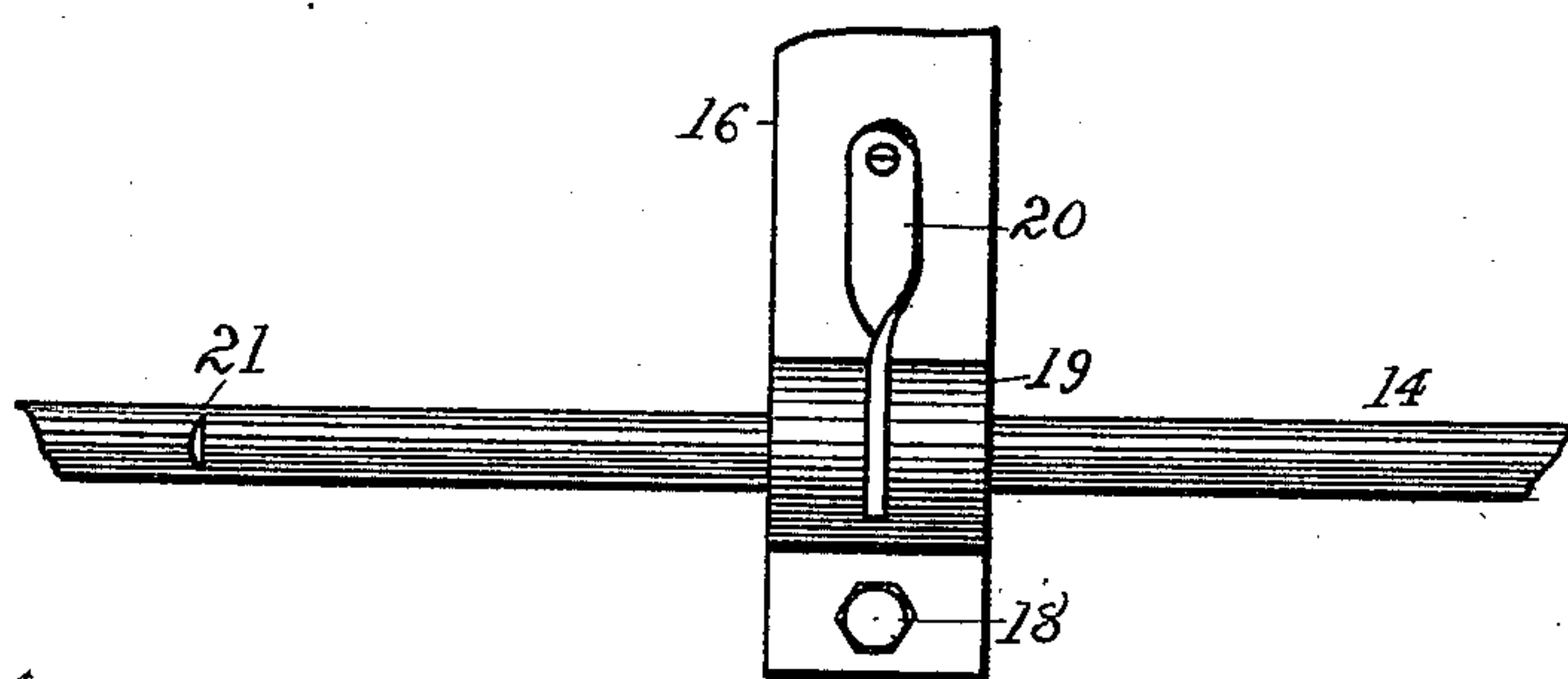
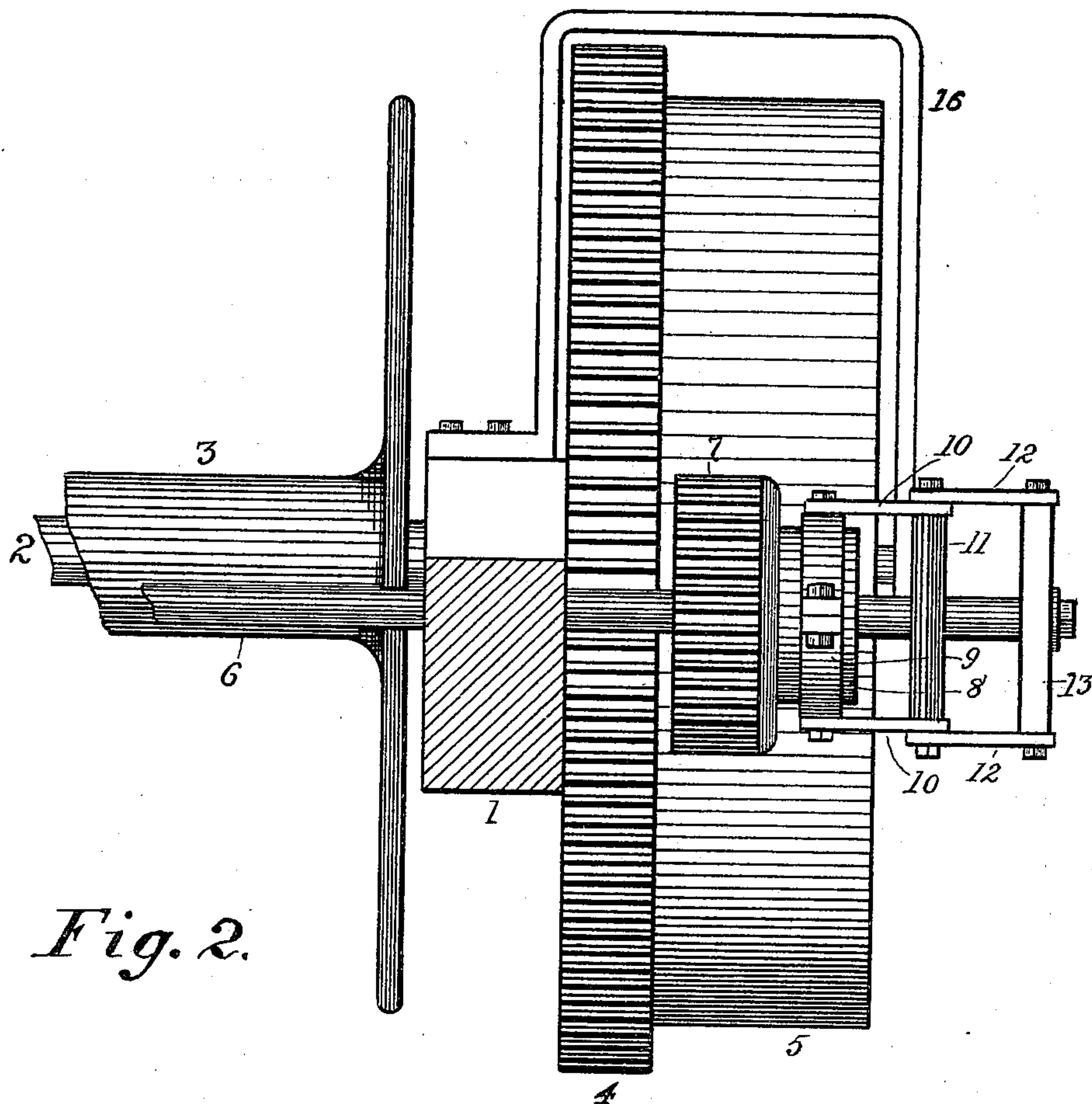
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3 Sheets—Sheet 2.



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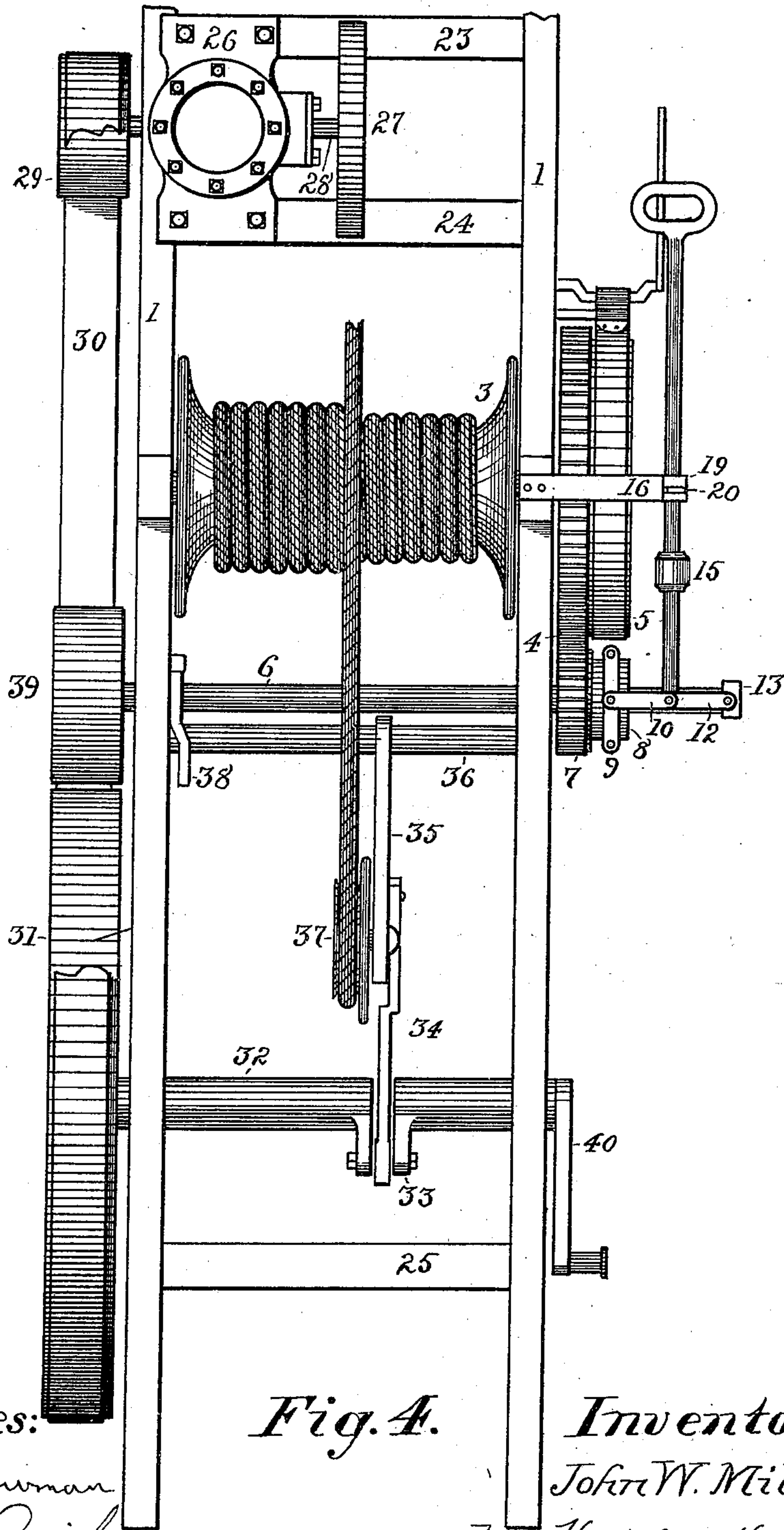


Fig. 4.

Witnesses:

Walter Bowman
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Inventor:

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UNITED STATES PATENT OFFICE.

JOHN W. MILLER, OF AKRON, OHIO.

WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 684,079, dated October 8, 1901.

Application filed March 22, 1901. Serial No. 52,333. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. MILLER, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Well-Drilling Machines, of which the following is a specification.

My invention has relation generally to devices for drilling wells, and has an especial relation to mechanism for causing two gears arranged to mesh together to be thrown in and out of operative connection.

The object of my invention is to provide a simple and effective device for releasing the drum upon which the rope is wound in raising tools, &c., out of the well from the influence of the power-driving mechanism in order to enable the drum to revolve freely in the process of lowering tools in the well unincumbered by the otherwise necessary revolution of a large number of connecting mechanisms.

To the aforesaid object my invention consists in the peculiar and novel arrangement, construction, and combination of the various parts hereinafter described and then specifically pointed out in the claims, reference being had to the accompanying drawings, forming a part of this specification.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different views, Figure 1 is a plan of my device and so much of the mechanism of a well-drilling machine as to show its application thereto; Fig. 2, an end elevation of the same looking from the lower part of Fig. 1; Fig. 3, a detail of the manner of supporting and locking the actuating-lever, and Fig. 4 a plan of certain portions of a well-drilling machine to show the application of my improved device.

In the drawings, 1 is one of the wooden side beams of the main frame, on which all the operative mechanism is mounted, and in the frame is journaled a shaft 2, upon which and within said frame 1 is mounted a drum 3, upon which is wound a rope used in raising and lowering the tools and drilling appliance into the well. On the outside of said frame 1 and tightly mounted on said shaft is a large gear 4, and attached to and arranged to revolve with said gear is a drum

5, having, if preferred, a band friction-brake arranged to inclose it to check its revolution. A main power-driven shaft 6 is also mounted in said frame parallel to the first and is provided with a pinion 7 outside of said frame, arranged to mesh in gear 4. The shaft 6 from the frame outward is feathered to enable the gear 7 to slide lengthwise thereon and revolve therewith. On the gear 7 is a hub 8, having a loose divided ring 9 surrounding it and partially sunk into a channel cut therein for its reception. On the upper and lower parts of this ring 9 are two oppositely-disposed studs to which are connected the ends of connecting-links 10. The opposite ends of the links 10 are pivotally fastened to the opposite ends of a vertical rod 11. From the top and bottom of this rod 11 extend like links 12, which connect with the opposite ends of a rod 13. This rod 13 is centrally mounted by a bolt passing into the end of the shaft 6 or into a stub-shaft fastened into the end of the shaft 6, if preferred. From the rod 11 and avoiding the shaft 6 extends a long handle-lever 14, having in its middle portion a swivel 15 and terminating in a loop or other device affording a convenient grasp for the hand. The extended or free end of the lever 14 is supported by brace 16, which is bolted to the frame 1 at one end and then passes over the gear 4 and drum 5 down past the center line of the shaft 2. The shaft 2 terminates within the drum 5, and an extension 17 concentric therewith reaches from the shaft 2 to meet the brace 16, to which it is pivotally attached by bolt 18, and by this means the lower end of the brace is supported. Just above the bolt 18 on the brace 16 is a boss 19, through which is a hole in which the lever 14 passes and slides and is supported. Above the boss 19 is fastened a flat spring 20, having a half-twist in its length and placed edgewise to the boss 19, and in that position it enters a narrow transverse slit in the boss and engages notches 21, cut in the lever 14, and prevents the lever 14 being operated unless the handle portion of the lever is rotated to bring the notches out of reach of the spring 20.

In Fig. 4 is shown a general plan of a well-drilling machine on which my device is placed and consists of two timbers 1 1, connected by

cross-bars 23, 24, and 25. Upon the cross-bars 23 and 24 is mounted an upright engine 26, provided with a balance-wheel 27 on a shaft 28, which carries a pulley 29, on which
 5 runs a belt 30 over a large pulley 31, mounted on a shaft 32, mounted in the side bars 1 1 of the main frame. In the shaft 32 is a crank 33, to which is connected an offset connecting-rod 34, attached to the middle portion of
 10 a rocking bar 35, pivoted on a cross-shaft 36 and which bears a revoluble sheave. As the shaft 32 is rotated the crank 33 will cause a reciprocating motion in the connecting-rod 34, and thus rock the arm 35 and its sheave
 15 37 back and forth. The rope for raising the tools is passed from the drum 3 over the sheave and thence over a pulley on a derrick down into the well, and the oscillations of the sheave 37 will cause the tools and drills to
 20 rise and fall in the well.

Across the frame 1 1 is a shaft 38, bearing a friction-pulley 39, attached, when desired, to bear against the inner face of the pulley 31 between the two sides of the belt 6. This
 25 shaft 6 is capable of a very slight longitudinal motion in its left journal, caused by a cam 38, capable of manipulation to throw the pulley 39 against the pulley 31, so that the shaft 6 may be caused to rotate or not, as desired
 30 by the operator. On the shaft 32 is a crank 40, to which is attached, but not shown here, the connecting-lever of a walking-beam properly supported in the machine, to which are attached the drilling-tools when it is not de-
 35 sired to use the oscillating sheave 37.

The operation is as follows: In raising tools from the well the lever 14 is turned a partial turn to free it from the spring 20 and is then
 40 drawn toward the operator, which causes the rod 11 to approach the shaft 6 and the angle between the two links 10 and 12 is made to approach a straight line, thereby forcing the pinion 7 to the left and into gear with the spur-wheel 4. The notch in the lever will
 45 hold the mechanism in position, and then power being supplied to pulley 39 by pulley 31 the drum 3 is rapidly revolved. When it is desired to lower tools or drills into the well, no power being required and speed and
 50 a diminution of friction being very desirable, the operator releases the lever 14 from the spring 20 and places the parts in the position shown in the drawings, thereby enabling the drum 3 with its shaft to revolve more rap-
 55 idly than is possible were the other parts compelled to revolve therewith.

What I claim is—

1. The combination in a machine for drilling wells having a revoluble shaft bearing a

winding-drum and a gear-wheel; a feathered 60 counter-shaft bearing a pinion arranged to slide thereon to engage and mesh in said gear-wheel and to withdraw from such engagement, and a ring connected with and ar-
 65 ranged to move said pinion, of two pairs of links pivotally connected at one end together and with an interposed rod, forming toggle-joints, the free ends of one pair pivotally con-
 70 nected with said ring, and the free ends of the other pair with a fixed rod, and a handle connected to said interposed rod to draw said rod to bend said joints to move said pinion
 75 away from said gear, and to straighten them to return said pinion, substantially as shown and described.

2. The combination in a machine for drill- 75 ing wells having a revoluble shaft bearing a winding-drum and a gear-wheel; a feathered counter-shaft bearing a pinion arranged to
 80 slide thereon to engage and mesh in said gear-wheel and to withdraw from such engagement, and a ring connected with and arranged to move said pinion, of two pairs of links piv-
 85 otally connected at one end together and with an interposed rod, forming toggle-joints, the free ends of one pair pivotally connected with said ring, and the free ends of the other
 90 pair with a fixed rod, and a handle connected to said interposed rod to draw said rod to bend said joints to move said pinions away from said gear, and to straighten them to re-
 95 turn said pinion and a locking device to hold said handle in either position, substantially as shown and described.

3. In a drilling-machine of the kind de- 95 scribed, having a pair of gears to operate a drum to raise and lower the tools, the combination with a post mounted on an extension of the shaft of one of said gears, a post at-
 100 tached to an operating-lever, said lever being provided with a locking device, a brace attached to an extension of the shaft of one of the gears, a bearing for said lever on said
 105 brace, a revoluble ring on the hub of said first-mentioned gear, links connecting said posts with each other and with said ring arranged to cause said gears to mesh when said
 110 connecting-links are in substantially a true line and separate them when said rods are at an angle with each other, substantially as shown and described.

In testimony that I claim the above I here- unto set my hand in the presence of two sub- scribing witnesses.

JOHN W. MILLER.

In presence of—

C. E. HUMPHREY,
 EVA M. LIDYARD.