

No. 768,672.

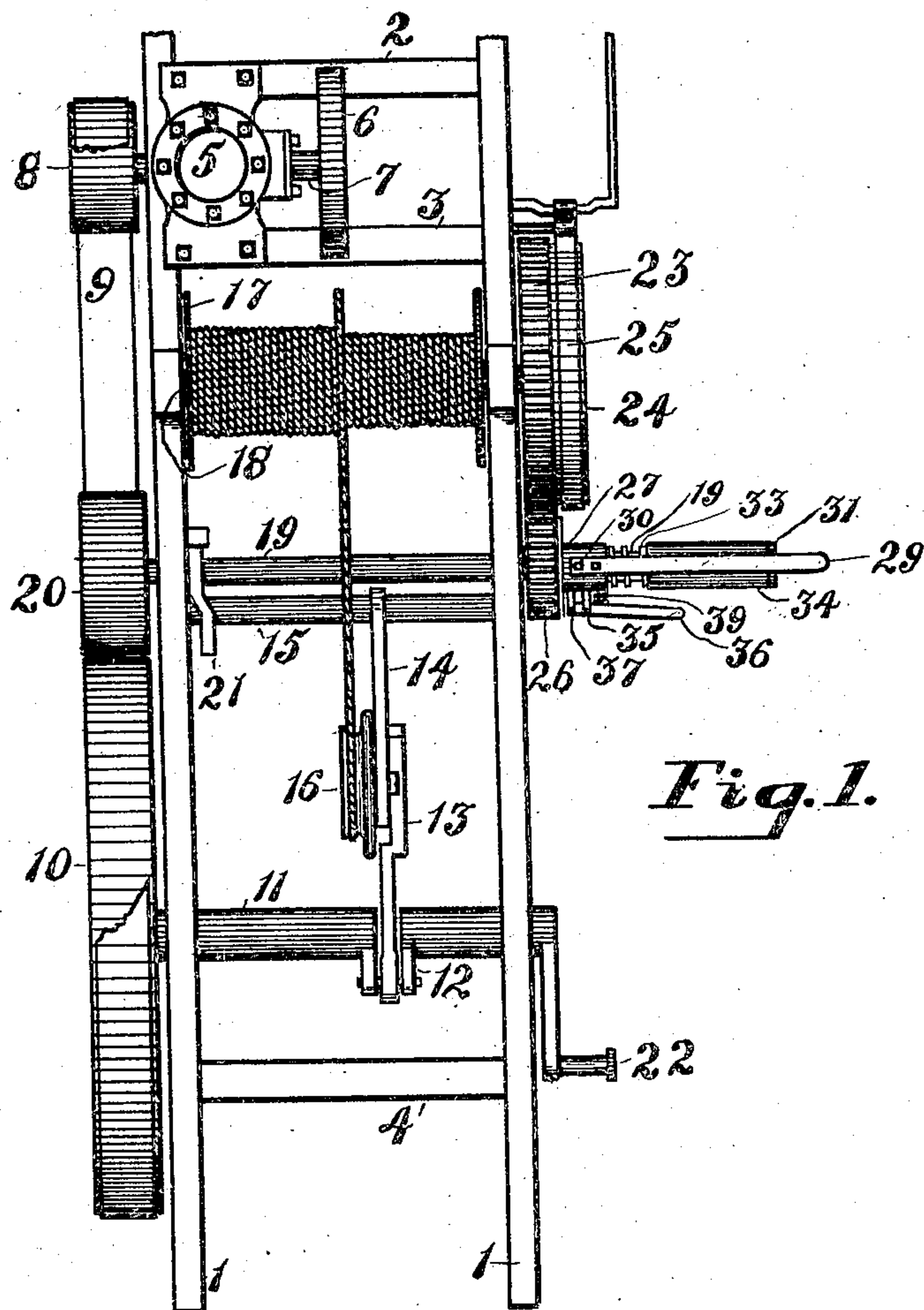
PATENTED AUG. 30, 1904.

J. W. MILLER.  
GEARING.

APPLICATION FILED MAY 4, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



*Fig. 1.*

Witnesses:

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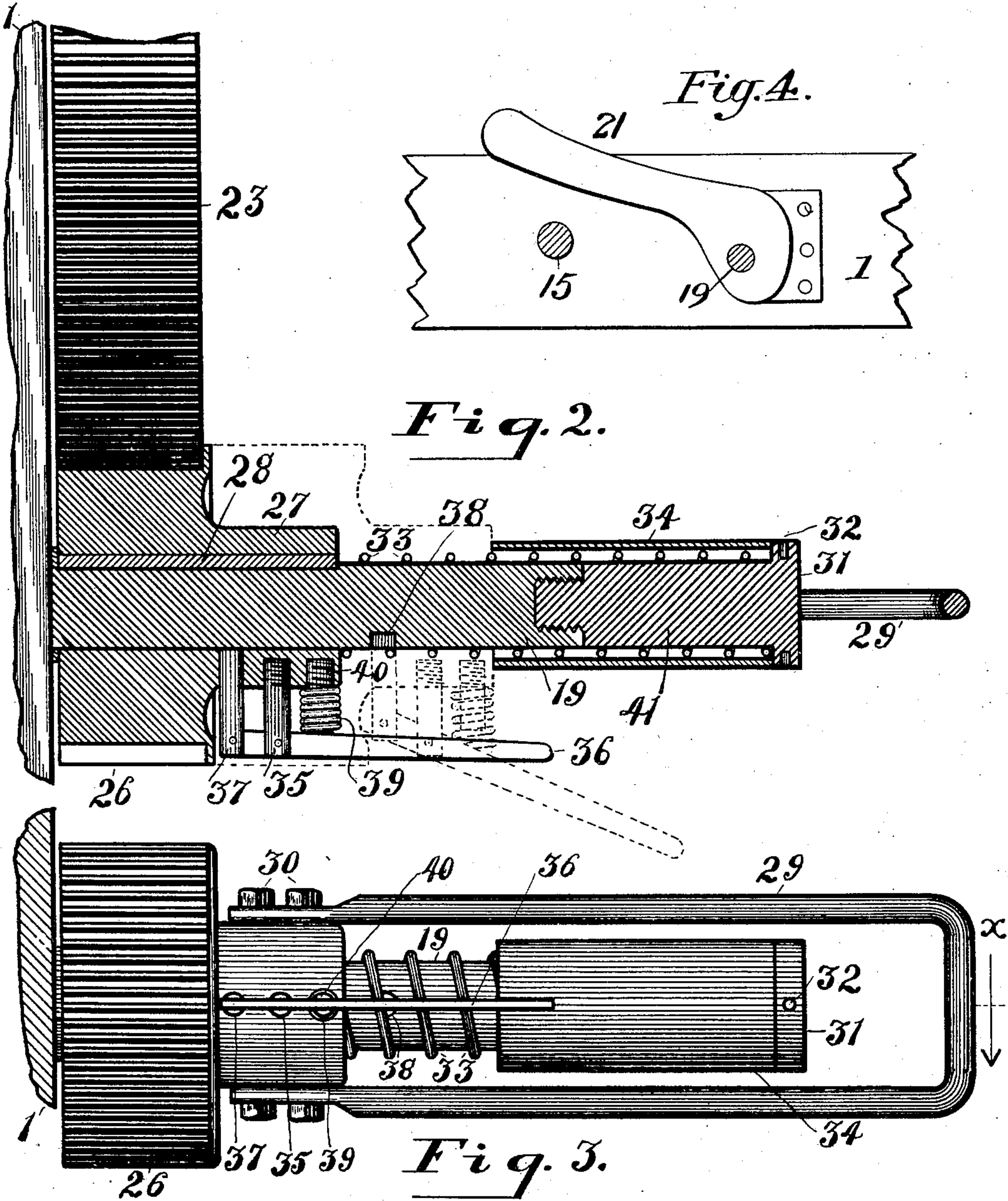
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J. W. MILLER.  
GEARING.

APPLICATION FILED MAY 4, 1904.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:  
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## UNITED STATES PATENT OFFICE.

JOHN W. MILLER, OF AKRON, OHIO.

## GEARING.

SPECIFICATION forming part of Letters Patent No. 768,672, dated August 30, 1904.

Application filed May 4, 1904. Serial No. 206,378. (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 Gearing, of which the following is a complete specification.

My invention has relation to mechanism for causing two gears arranged to mesh together to be thrown in and out of operative connection, and is especially adapted for well-drilling machines.

The object of my invention is to provide a simple and effective device for causing two meshing gears to be thrown into and out of mesh, and when used on a well-drilling machine it is especially adapted 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 accomplishment of the aforesaid object my invention consists in the peculiar and novel arrangement, construction, and combination of the various parts hereinafter described, reference being had to the accompanying drawings, forming a part hereof.

In the accompanying drawings, in which similar reference-numerals indicate like parts in the different figures, Figure 1 is a plan view of certain main portions of a well-drilling machine to show the location and application of my improved device; Fig. 2, a section of Fig. 3 at the line X; Fig. 3, an end elevation of my improvement, and Fig. 4 is an enlarged detail of a cam used in the device.

In the drawings which represent the main outlines of a well-drilling machine and which will serve as well as any other mechanism to illustrate my improvement, 1 1 are the two side timbers of the frame of the machine. These timbers 1 1 are connected by cross-bars 2, 3, and 4, and upon the first two of these is mounted an upright engine 5, provided with a balance-wheel 6 on a shaft 7, which carries

a pulley 8, over which runs a belt 9 to a large pulley 10, mounted on a shaft 11, supported by the timbers 1 1 of the frame. In the shaft 11 is a crank 12, to which is connected an offset connecting-rod 13, attached to the middle portion of a rocking arm 14, pivoted on a cross-shaft 15 and which bears a revoluble sheave 16. As the shaft 11 is rotated the crank 12 will cause a reciprocating motion of the connecting-rod 13, and thus rock the arm 14 and its sheave 16 to and fro. The rope for raising and lowering the tools is wound on a drum 17, tightly mounted on a shaft 18, supported by the timbers 1 1, and is passed from the drum 17 over the sheave 16 and from thence to a pulley in a near-by derrick (not shown) down into the well, and the oscillations of the sheave 16 will cause the tools and drills to rise and fall in the well. Across the frame-timbers 1 1 is a shaft 19, bearing a friction-pulley 20, designed when desired to bear against the face of the pulley 10 between the runs of the belt 9. This shaft 19 is capable of a very slight movement in the left journal and has around it and mounted thereon inside the frame a cam 21, capable of manipulation to cause frictional engagement between the faces of the pulleys 10 and 20, so that the shaft 19 may be rotated when desired. On the shaft 11 is a crank 22, 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 desired to use the oscillating sheave 16. On the right end of the shaft 18 is a large spur-gear 23, attached to which is a drum 24, having a band friction-brake 25 arranged to inclose it and check its revolution. On the right end of the shaft 19 is mounted a spur-pinion 26, shrouded on one end, if desired, and designed to mesh into the gear 23. This pinion 26 has on its outer end an integral extended hub 27, and both are splined on the shaft 19 by a key 28, thereby causing the revolution of the pinion in unison with the shaft, but permitting a free sliding motion thereof. Attached to the hub 27 is a U-shaped handle 29, having its free ends held in place on the hub



by bolts 30 and with its looped end projecting horizontally to furnish a grasp for the use of the operator in sliding the pinion 26 on the shaft 19.

5 In the outer end of the shaft 19 is a threaded opening into which is screwed the threaded end of a stub-shaft 41, having a diameter equal to that of the shaft 19 and provided with an integral head 31, provided with radial holes 32 to receive a pin for use in screwing the shaft 41 tightly into place. A coiled spring 33 incloses the shafts 19 and 41 between the hub 27 and head 31, with a normal tendency to force the pinion 26 toward the frame 1 and into mesh with the gear 23. Around the coiled spring 33 is a loose sleeve 34, arranged to abut against the head 31 and designed to act as a stop for the hub 27 when drawn outward by the handle 29. In the hub 27 is a catch consisting of a pin 35, fastened in the shell thereof, on which is pivoted a lever 36, having at its end a sliding pin 37, arranged to pass through the shell of the hub 27 to the shaft 19 and to enter an opening 38 therein when the hub 27 is drawn against the sleeve 34. In order to hold the inner end of the pin 37 pressed against the shaft 19 and to cause it to enter the opening 38, a coiled spring 39 is placed under the lever 36 and held in position by a stud 40, fastened in the hub 27. The operation of this device when used on a well-drilling machine is as follows: In raising tools from the well the cam 21 is thrown to cause frictional engagement between the pulleys 10 and 20 and the lever 36 pressed inward, allowing the spring 33 to force the pinion 26 into mesh with the gear 23, which causes the revolution of the drum 17. When it is desired to lower tools or drills into the well, no power being required and a diminution of friction being desirable, the operator grasps the handle 29 and by overcoming the influence of the spring 33 draws the hub 27 and pinion 26 outward until they encounter the sleeve 34 and then by throwing the cam 21, which separates the pulleys 10 and 20, allows the revolution of the drum, easily controlled by the use of the brake 25.

What I claim is—

1. A device for shifting one of two gears into and out of mesh, consisting of a hand-grasp connected with one gear to draw said gear from mesh, a catch arranged to form an operative engagement with suitable means on the shaft of said gear to retain said gear out of mesh, and a spring to return said gear into mesh.

2. The combination in a well-drilling machine, of two gears arranged to intermesh, one of which is slidable on its shaft, means to slide said gear on its shaft into mesh, cooperating engaging mechanism on said gear and shaft to lock said gear out of mesh and means to aid in withdrawing said gear from mesh.

3. The combination in a well-drilling machine, of two gears arranged to intermesh one of which is slidable on its shaft, means to slide said gear on its shaft into mesh, cooperating engaging mechanism on said gear and shaft to lock said gear out of mesh, means to limit the outward movement of said gear and means to aid in withdrawing said gear from mesh.

4. The combination with two meshing gears one of which is slidable on its shaft, to permit it to mesh and be withdrawn therefrom, of means mounted on the slidable gear to engage cooperating means on the shaft to lock it out of mesh and means to return it to mesh on the release of said locking means.

5. The combination with two meshing gears one of which is slidable on its shaft, to permit it to mesh and be withdrawn therefrom, of means mounted on the slidable gear to engage cooperating means on the shaft to lock it out of mesh, means to return it to mesh on the release of said locking means, and means to limit the amount of the slide of said gear.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

JOHN W. MILLER.

In presence of—

C. E. HUMPHREY,  
FRED. ANDERSEN.