

No. 644,341.

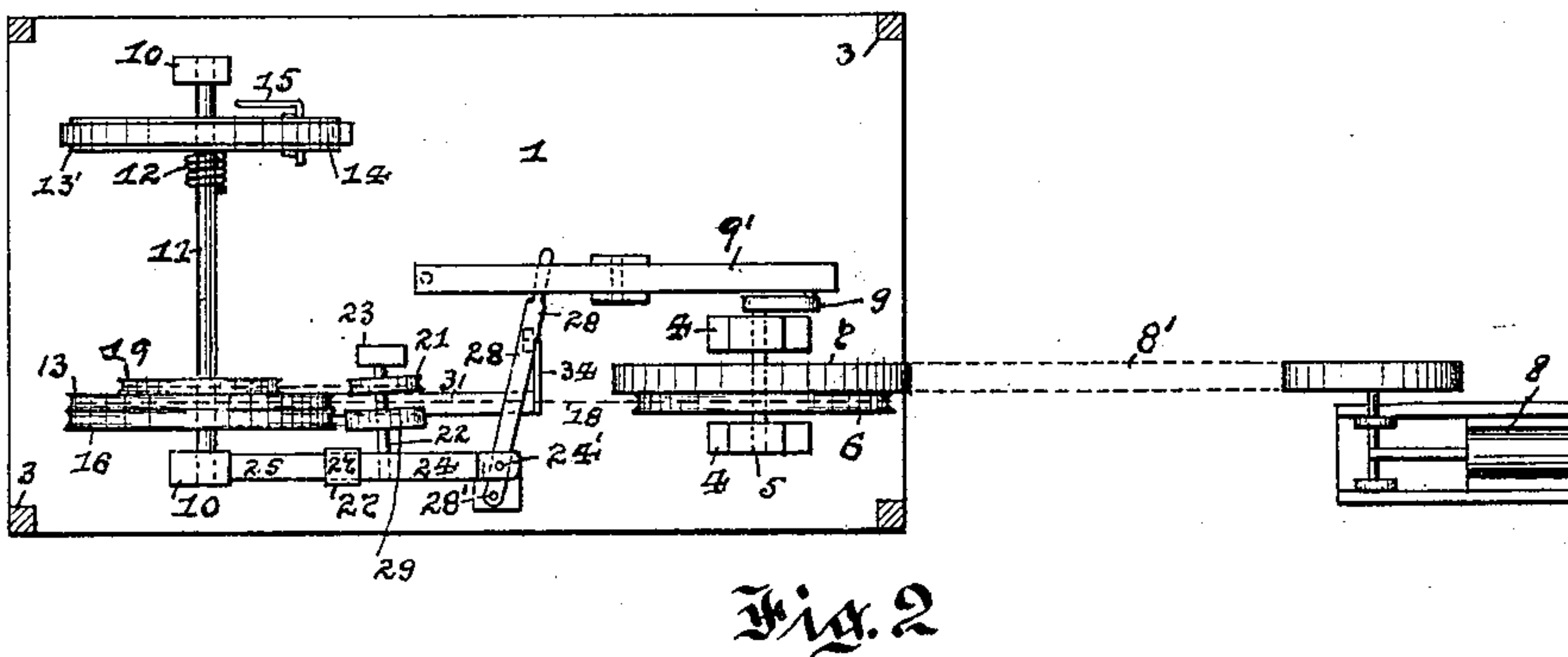
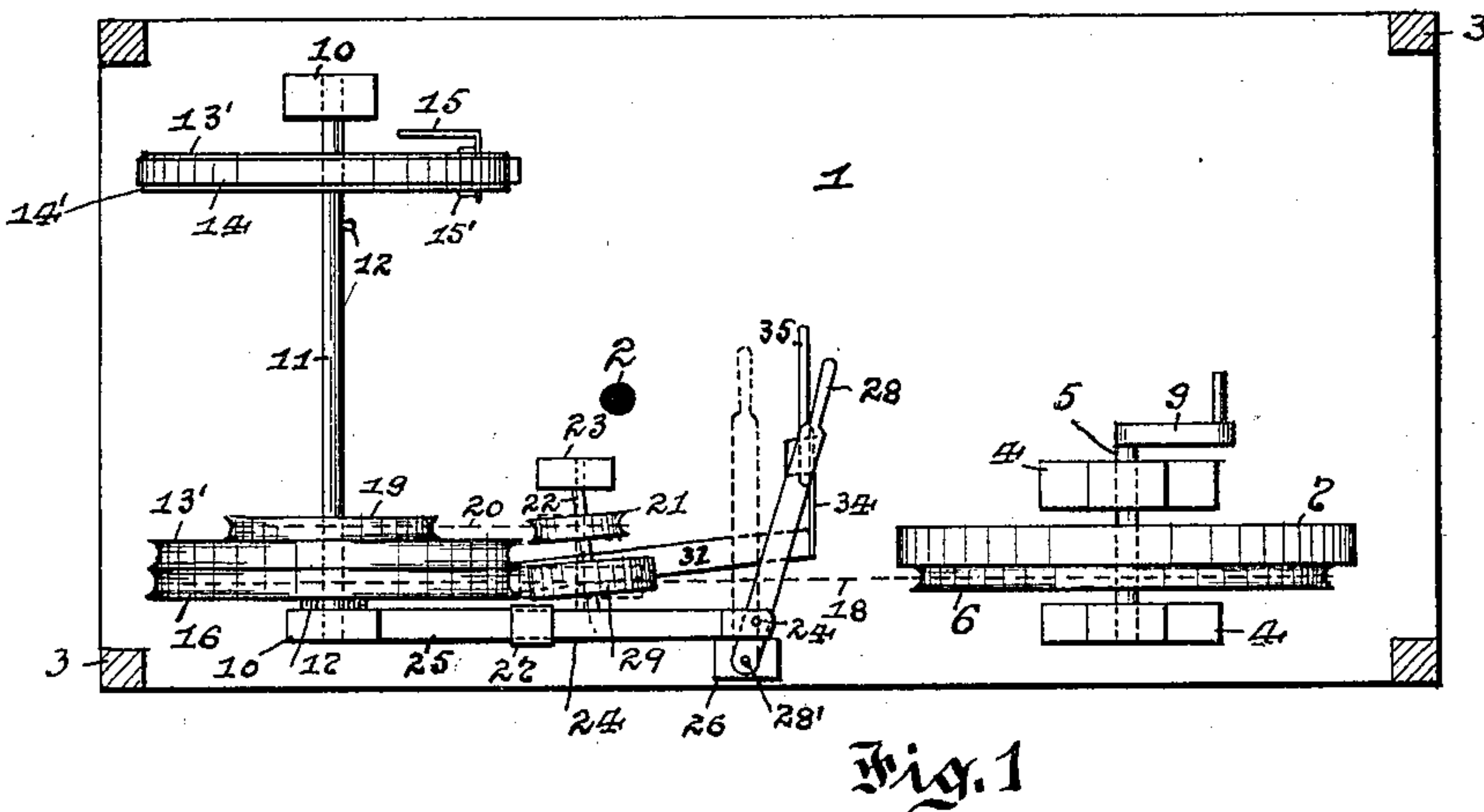
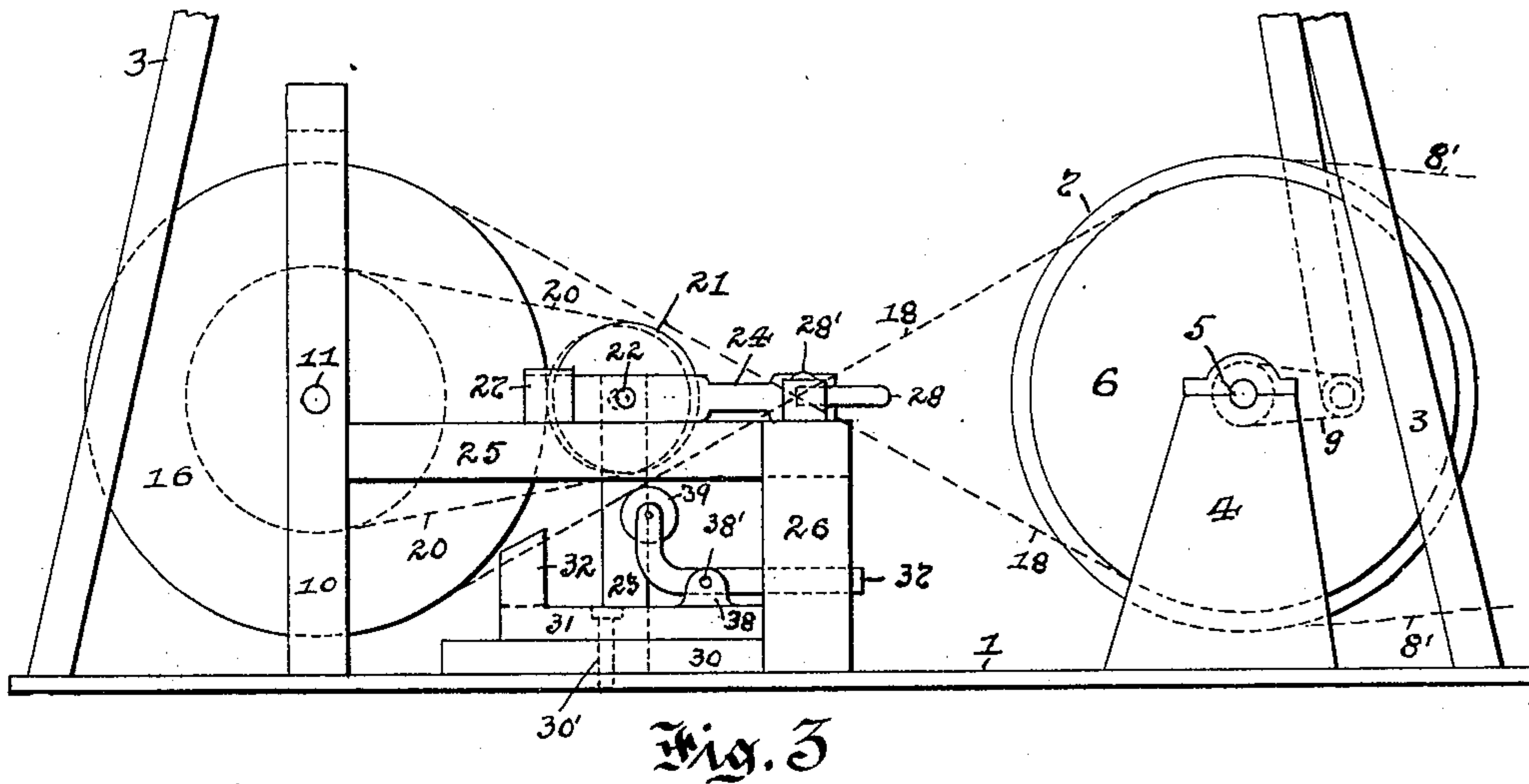
Patented Feb. 27, 1900.

J. TICHBORNE.
OIL WELL APPARATUS.

(Application filed Apr. 11, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

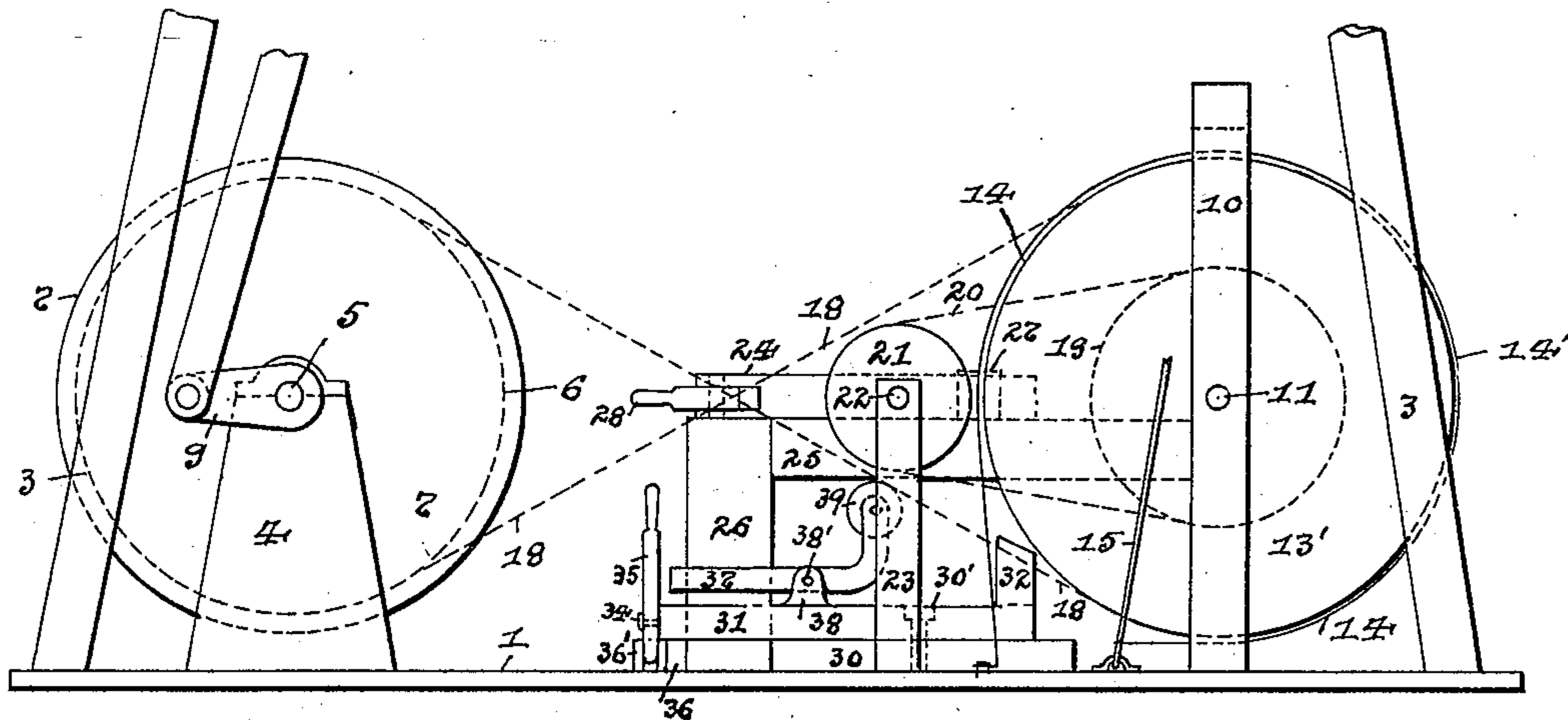


Fig. 4

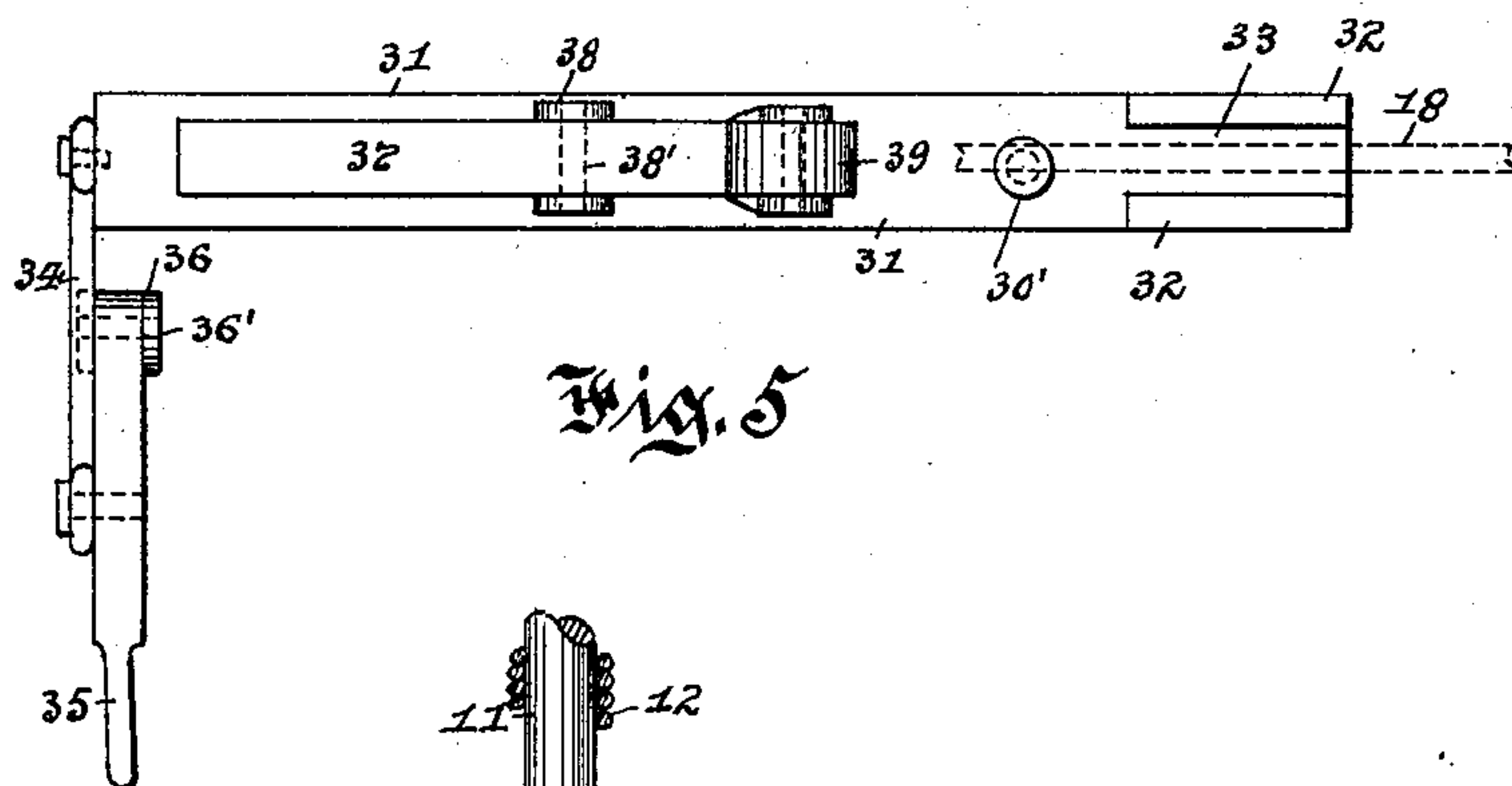


Fig. 5

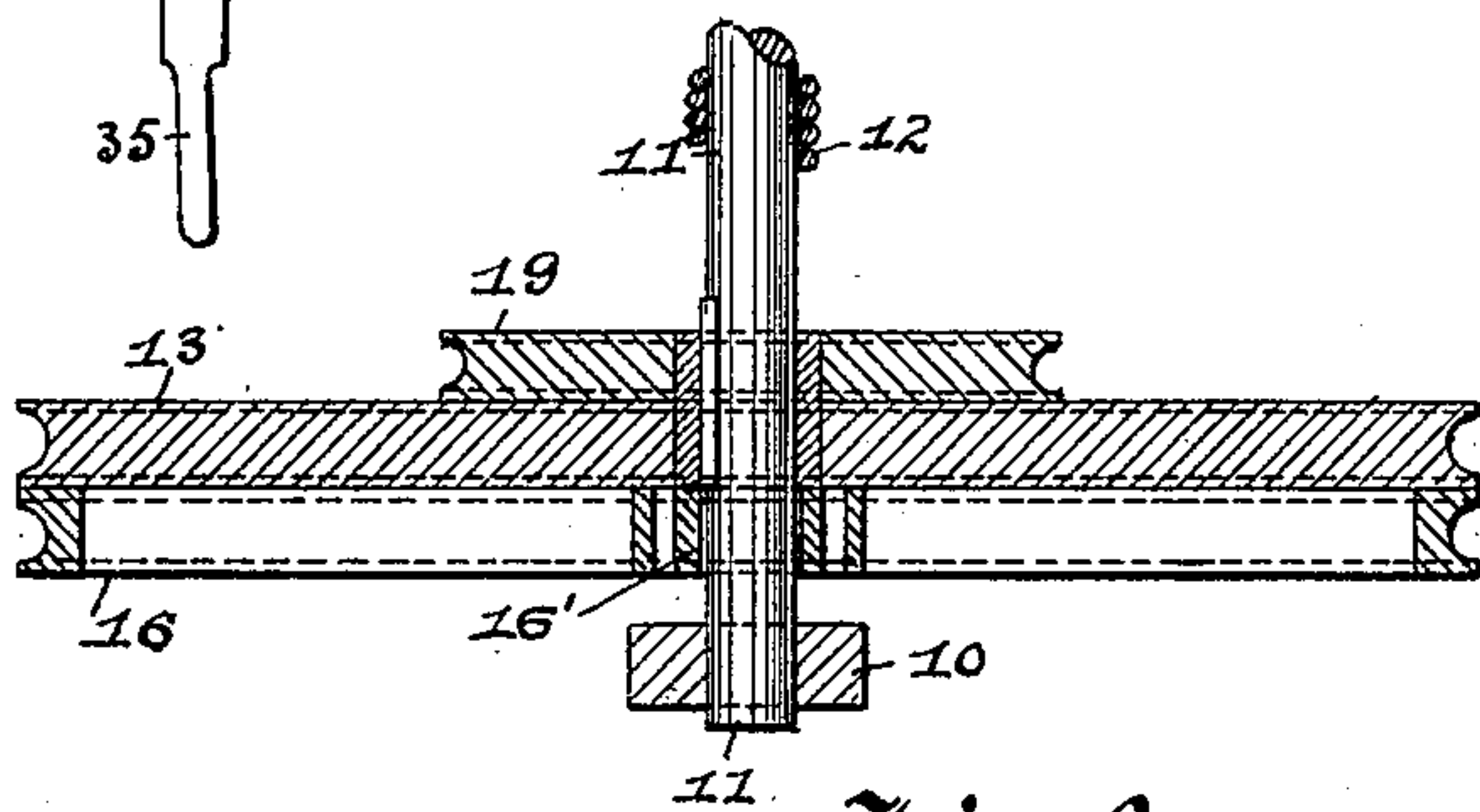


Fig. 6

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UNITED STATES PATENT OFFICE.

JOSEPH TICHBORNE, OF GLADE MILLS, PENNSYLVANIA.

OIL-WELL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 644,341, dated February 27, 1900.

Application filed April 11, 1899. Serial No. 712,607. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH TICHBORNE, a citizen of the United States, residing at Glade Mills, in the county of Butler and State of Pennsylvania, have invented a new Improvement in Oil-Well Apparatus, of which the following is a specification.

My invention relates to oil-well apparatus, and has special reference to such a form of apparatus as is particularly designed for use in connection with pumping wells.

One object of my invention is to provide such a form of oil-well apparatus for use on pumping oil-wells where a gas-engine is employed for pumping the same; and the main object of such apparatus is to permit the reversal of the bull-wheels and shaft for any purpose while the engine is running ahead.

A further object of my invention is to provide such a form of apparatus which will allow the raising or lowering of the rope and tools, &c., in a rapid manner when desired.

My invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use the apparatus, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a top or plan view of a derrick-floor, showing the bull-wheels with my invention applied thereto and showing the parts in position for allowing the engine to drive ahead without operating the bull-wheels. Fig. 2 is a like view showing the parts in position for operating the bull-wheels to wind up the rope. Fig. 3 is a side view of the apparatus, the parts being in the position shown in Fig. 1. Fig. 4 is a side view of the apparatus, the parts being in the position shown in Fig. 2. Fig. 5 is a plan view of the lever device for engaging with the bull-rope, and Fig. 6 is a sectional view of both bull-wheels and tug-wheel.

Like numerals herein indicate like parts in each of the figures of the drawings.

The derrick-floor is shown at 1, through which is the well opening or hole 2 and upon which is supported the rig or derrick 3. Jour-

naled in the standards 4 on the floor 1 is the shaft 5, upon which is mounted the bull-sheave 6, and upon said shaft 5 is also mounted a pulley 7, around which passes a belt 8, which leads to the gas or other engine 8, located in the engine-house. (Not shown.) A crank 9 is also mounted on the end of the shaft 5, to which is attached the rod which connects with the ordinary walking-beam 9' for operating the pump in well-hole 2. (Said pump mechanism not considered necessary to illustrate.)

Journaled and supported within the uprights 10 of the derrick 3 is the bull-wheel shaft 11, which carries the well-rope 12 and upon which is secured the bull-wheels 13 13'. The bull-wheel 13' has the brake-band 14 extending around its periphery 14' of said wheel 13', one end of which is secured to the floor 1 and the opposite end being secured to a crank 15', journaled on the floor 1 and forming part of the brake-lever 15.

Fitting against the bull-wheel 13 is the auxiliary bull-wheel 16, which is mounted loosely on the bull-wheel shaft 11 by its metal bushing 16' and is held against the bull-wheel 13 and confined around said shaft 11 by means of a collar 17, secured to shaft 11 and bearing against the journal-box 16'. A bull-rope 18 passes around the bull-sheave 6 and is adapted to pass around either one of the bull-wheels 13 and 16 as is desired for different operations. A sheave 19 is mounted on the bull-wheel shaft 11, which is connected, by means of a sheave-rope 20, with a sheave 21, mounted on a movable shaft 22. This shaft 22 is loosely mounted at one end in a journal-block 23, supported on the floor 1, and the opposite end is loosely mounted in a sliding bar 24, which is supported by and slides on a frame 25, connected to the upright 10 of the derrick 3 and to a standard 26, secured to the floor 1. The sliding bar 24 slides within a collar 27, secured to the frame 25, and is pivoted at 24' to a lever 28, fulcrumed at 28' for operating the same. A friction-wheel 29 is mounted on the movable shaft 22 and is adapted to engage with the outer face 29' of the auxiliary bull-wheel 16.

Pivoted at 30' to block 30 on the floor 1 under the movable shaft 22 and between the journal 23 and the standard 26 is the oscil-

lating or movable bar 31, which is provided with the lugs 32 at one end to form the space 33 between them for the reception of the bull-rope 18. A rod 34 is pivoted at the other end 5 of the bar 31 and to a lever 35, fulcrumed at 36' to a block 36, secured to the floor 1 for operating the same. If desired, a lever 37 can be pivoted at 38' in bearings 38 on the oscillating bar 31, which carries at its inner 10 end a roller 39 for pressing the bull-rope 18 against the friction-wheel 29 when desired.

The operation of my improved oil-well apparatus is as follows: When it is desired to pump the well, the parts are in the position 15 shown in Fig. 1, which allows the belt 8, leading from the engine to the pulley 7, to turn or revolve the same and with it the shaft 5, so causing the parts connecting with crank 9 and the pump in the well-hole 2 to operate in 20 pumping, and the turning of the shaft 5 will also cause the revolving of the bull-sheave 6, connected thereto, and the auxiliary bull-wheel 16 by means of the bull-rope 18 passing over the sheave 6 and wheel 16, so causing the bull-wheel 16 to revolve loosely around 25 the bull-wheel shaft 11 and allowing the bull-wheels 13 13' and the shaft 11 to remain stationary during such pumping operation; but, if desired, the bull-rope 18 can be entirely disconnected from the sheave 6 and bull-wheel 16 during pumping. When it is desired to 30 disconnect and raise the sucker-rods from the pump within the well-hole 2, the operator connects the elevator or other suitable catch on free end of the well-rope 12 to the top of 35 the upper sucker-rod section and then raises the lever 35, as shown in Fig. 2, which through the rod 34 oscillates or moves the bar 31 outwardly, so that the bull-rope 18 is caught 40 by the outer lug 32 on the bar 31 to throw the well-rope 18 over and around the bull-wheel 13. This will cause the turning of the bull-wheels 13 13' and the bull-wheel shaft 11 to wind up the well-rope 12, so raising the sucker-rods and 45 pump a sufficient distance within the derrick 3 to enable the upper sucker-rod section to be unscrewed from the next or lower sucker-rod section, when the operator above can push over or move the disconnected sucker-rod section over to stand against the derrick 50 3 and rest upon the floor thereof. During this operation the parts usually connected to the crank 9 for operating the pump are disconnected therefrom, and the engine moving 55 ahead will act to revolve the pulley 7 on the shaft 5 by means of the belt 8, so acting to revolve the bull-sheave 6 on the shaft 5 and with it the bull-wheels 13 13' and bull-wheel shaft 11 by means of the bull-rope 18 passing 60 ing around the sheave 6 and rigid bull-wheel 13. While these parts are operating to wind up the well-rope 12 the sheave 19 on the bull-wheel shaft 11 will turn the sheave 21, movable shaft 22, and friction-wheel 29 65 through the medium of the rope 20, connecting the sheaves 19 and 21, so that they are revolved without being in active operation

or affecting the operations above described. When it is desired to lower or unwind the well-rope 12 with the engine still driving 70 ahead, all that is necessary is to push the lever 28 toward the bull-wheel shaft 11, as shown in dotted lines, Fig. 1, which will cause the friction roller or wheel 29 on shaft 22 to bear against the periphery or face of the aux- 75 iliary bull-wheel 16 and cause the revolution of the shaft 22. The bull-rope 18 in this operation being connected to the bull-sheave 6 and bull-wheel 16 will revolve the bull-wheel 16 loosely around the bull-wheel shaft 11 to- 80 ward the wheel 29, and the turning or revolving of the movable shaft 22 by contact of the wheel 29 with the face of the bull-wheel 16 will revolve the bull-wheel shaft 11 and bull- 85 wheels 13 13' in a reverse direction from the bull-wheel 16 and in a more rapid manner through the medium of the sheave 21 on the shaft 22, connecting with the sheave 19 on the bull-wheel shaft 11 by means of the 90 sheave-rope 20. In order to stop the lowering or unwinding of the well-rope 12 quickly during this operation, the operator can pull or throw down the brake-lever 15, which will cause the loose brake 14 to bear against the 95 face of the bull-wheel 13' to stop the movement of the bull-wheel shaft 11, and the lever 28, pushed back to its original position (shown in Fig. 1,) so freeing the friction-wheel 100 29 from engagement with the loose bull-wheel 16 and still allowing the engine to turn the bull-wheel 16 through the bull-rope 18, being connected thereto and to bull-sheave 6. In case it is desired to wind up the well-rope 12 105 rapidly to catch the top of the sucker-rod sections to connect and lower the same to the pump in the well for any other purpose and the parts being in the position shown in Fig. 1, with the engine working ahead, the operator pushes down the lever 37, so engaging 110 the roller 39 thereon with the bull-rope 18 to press the same against the friction-wheel 29, which will cause the turning of the friction-wheel 29 and the revolving of the movable shaft 22 to allow the sheave 21 thereon 115 to revolve the bull-wheel shaft 11 and bull-wheels 13 13' rapidly to wind the rope 12 through the medium of the sheave 19 on the shaft 11, being connected to the sheave 21 by means of the rope 20. During this same operation the bull-wheel 16 is revolving loosely 120 on the shaft 11 by being connected to the sheave 6 through the medium of the rope 18, and the engine is working ahead to revolve the pulley 7 on the shaft 5, containing the sheave 6, by means of the belt 8, connected 125 thereto and with the engine. In order to stop this operation of winding up the rope quickly, the loose brake 14 can be applied to the face of the bull-wheel 13' and the lever 37 raised to free the roller 39 thereon from engagement 130 with the bull-rope 18.

It will thus be seen that my improved oil-well apparatus is cheap and simple in its construction and operation, it is not liable to

get out of order, and is practical in all its operations. By its use the engine can be constantly running ahead at all times and the apparatus can be operated for pumping the
5 well, raising or lowering the rods, &c., without interfering with the working of the engine.

Various modifications in the construction and design of the various parts of the apparatus may be resorted to without departing
10 from the spirit of the invention or sacrificing any of its advantages.

It is obvious and evident that my improved apparatus can be applied to any Artesian well
15 and used for different purposes—such as the raising and lowering of tools, tubing, casing, &c.—without interfering with the operation of the engine or requiring the use of a reversing engine or mechanism for doing the same.

20 What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an oil-well apparatus, the combination of a bull-wheel shaft, bull-wheels rigidly secured to said bull-wheel shaft, a power-
25 driven bull-sheave connected by a bull-rope to one of said bull wheels for driving said bull-wheel shaft, an auxiliary wheel loosely mounted on said bull-wheel shaft adapted to engage with said bull-rope, and mechanism
30 for connecting said bull-rope with the rigid and loose bull-wheels.

2. In an oil-well apparatus, the combination of a bull-wheel shaft, bull-wheels rigidly secured to said bull-wheel shaft, a power-
35 driven bull-sheave connected by a bull-rope to one of said bull-wheels for driving the bull-wheel shaft, an auxiliary bull-wheel loosely mounted on said bull-wheel shaft adapted to engage with said bull-rope, a mov-
40 able or oscillating bar engaging with said bull-rope to connect it with the rigid and loose bull-wheels, and a lever mechanism connected to said movable and oscillating bar to operate the same.

3. In an oil-well apparatus, the combination of a bull-wheel shaft having bull-wheels rigidly secured thereon, an auxiliary bull-
45 wheel loosely mounted on said bull-wheel shaft having a bull-rope passing around the same and over a power-driven bull-sheave, a
50 friction-wheel mounted on a movable shaft and adapted to engage with the face of said auxiliary bull-wheel, and connections from said movable shaft to the bull-wheel shaft to
55 reverse the movement of the said bull-wheel shaft.

4. In an oil-well apparatus, the combination of a bull-wheel shaft having bull-wheels

rigidly secured thereto, an auxiliary bull-
wheel loosely mounted on said bull-wheel 60 shaft having a bull-rope passing around the same and over a power-driven bull-sheave, a friction-wheel mounted on a movable shaft and adapted to engage with the face of said
65 auxiliary bull-wheel, and a sheave mounted on said movable shaft having a sheave-rope passing around the same and over a sheave on the bull-wheel shaft to reverse the movement of said bull-wheel shaft.

5. In an oil-well apparatus, the combination of a bull-wheel shaft having bull-wheels rigidly secured thereon, an auxiliary bull-
70 wheel loosely mounted on said bull-wheel shaft having a bull-rope passing around the same and over a power-driven bull-sheave, a
75 friction-wheel mounted on a movable shaft and adapted to engage with the face of said auxiliary bull-wheel, a sheave mounted on said movable shaft having a sheave-rope passing around the same and over a sheave on the
80 bull-wheel shaft to reverse the movement of said bull-wheel shaft, and a sliding bar connected to said movable shaft having lever mechanism engaging therewith for operating
85 the same.

6. In an oil-well apparatus, the combination of a bull-wheel shaft having bull-wheels rigidly secured thereon, an auxiliary bull-
wheel loosely mounted on said bull-wheel shaft having a bull-rope passing around the 90 same and over a power-driven bull-sheave, a shaft having a friction-wheel thereon and connections from said shaft to the bull-wheel shaft, and means for engaging said bull-rope with the friction-wheel to revolve the bull- 95 wheel shaft more rapidly.

7. In an oil-well apparatus, the combination of a bull-wheel shaft having bull-wheels rigidly secured thereon, an auxiliary bull-
wheel loosely mounted on said bull-wheel 100 shaft having a bull-rope passing around the same and over a power-driven bull-sheave, a shaft having a friction-wheel thereon and connections from said shaft to the bull-wheel shaft, and a lever-operated roller or wheel 105 adapted to engage said bull-rope with the friction-wheel to revolve the bull-wheel shaft more rapidly.

In testimony whereof I have hereunto set my hand, at Glade Mills, in the county of 110 Butler and State of Pennsylvania, this 30th day of March, A. D. 1899.

JOSEPH TICHBORNE.

Witnesses:

T. J. HUTCHISON,
W. B. BEDILLION.