

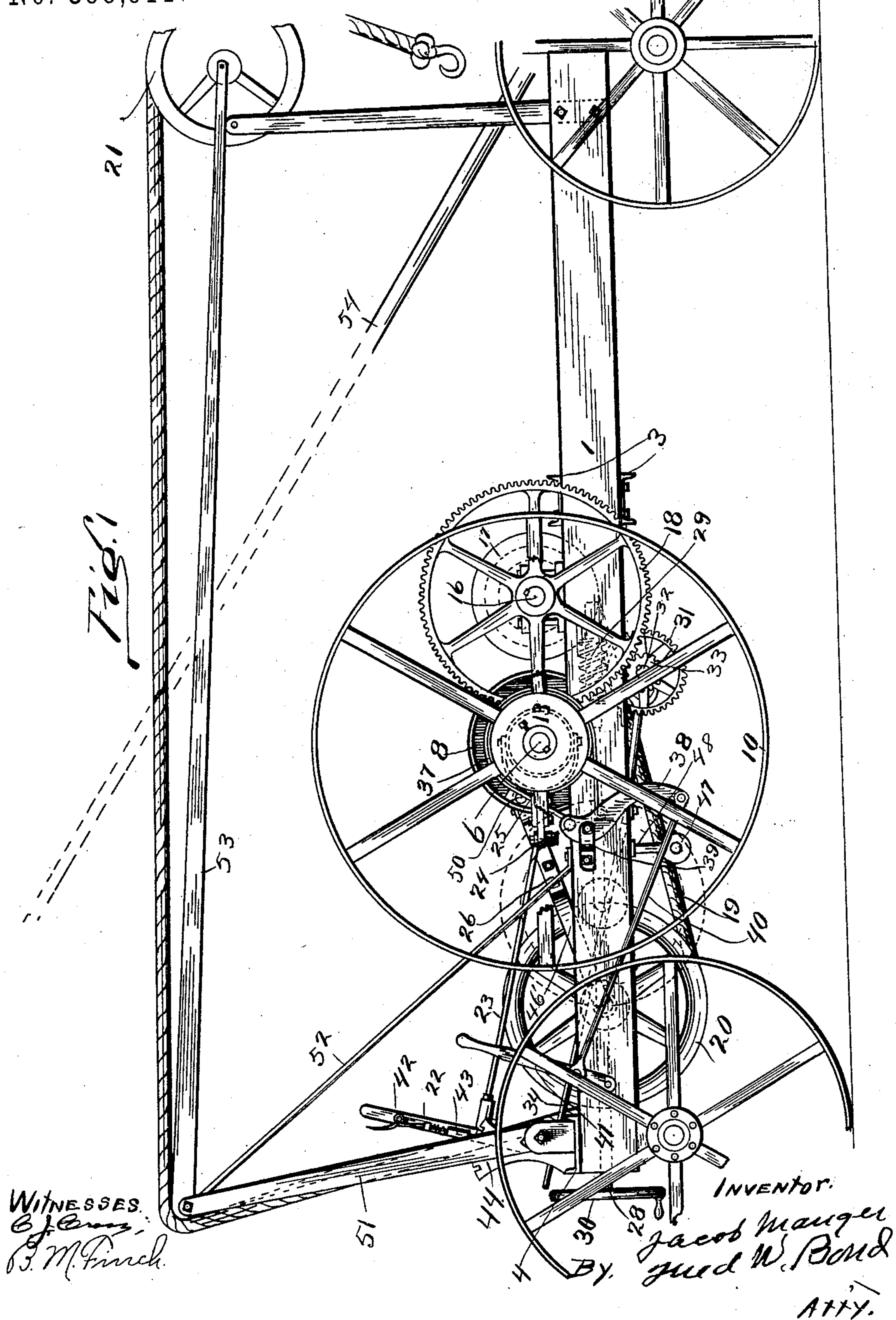
(No Model.)

4 Sheets—Sheet 1.

J. MAUGER.
WELL DRILLING MACHINE.

No. 599,911.

Patented Mar. 1, 1898.



(No Model.)

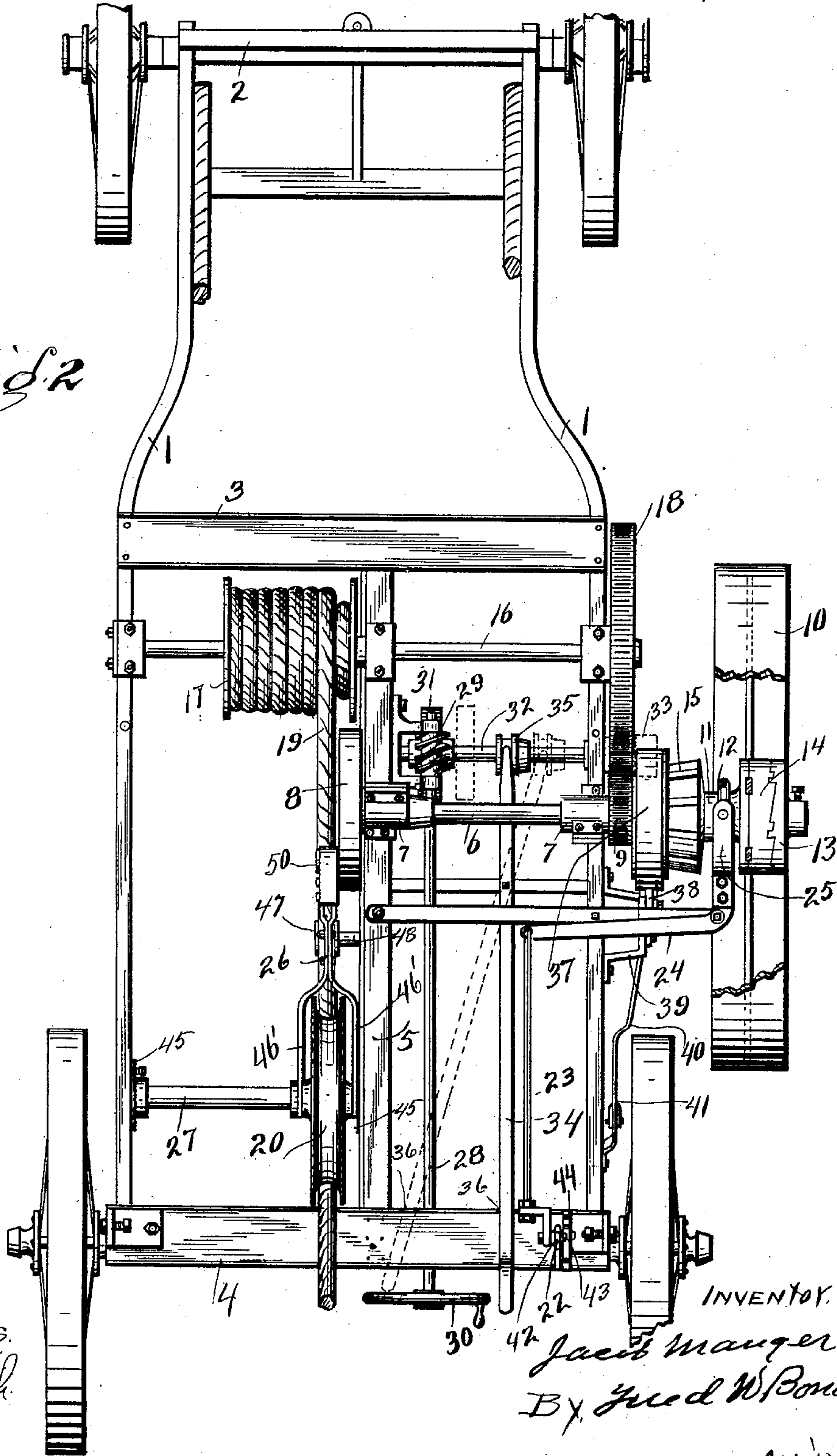
4 Sheets—Sheet 2.

J. MAUGER.
WELL DRILLING MACHINE.

No. 599,911.

Patented Mar. 1, 1898.

Fig 2



WITNESSES.
B. M. Finch.

INVENTOR.
Jacob Mauger
BY *Fred W. Bond*

AXXX.

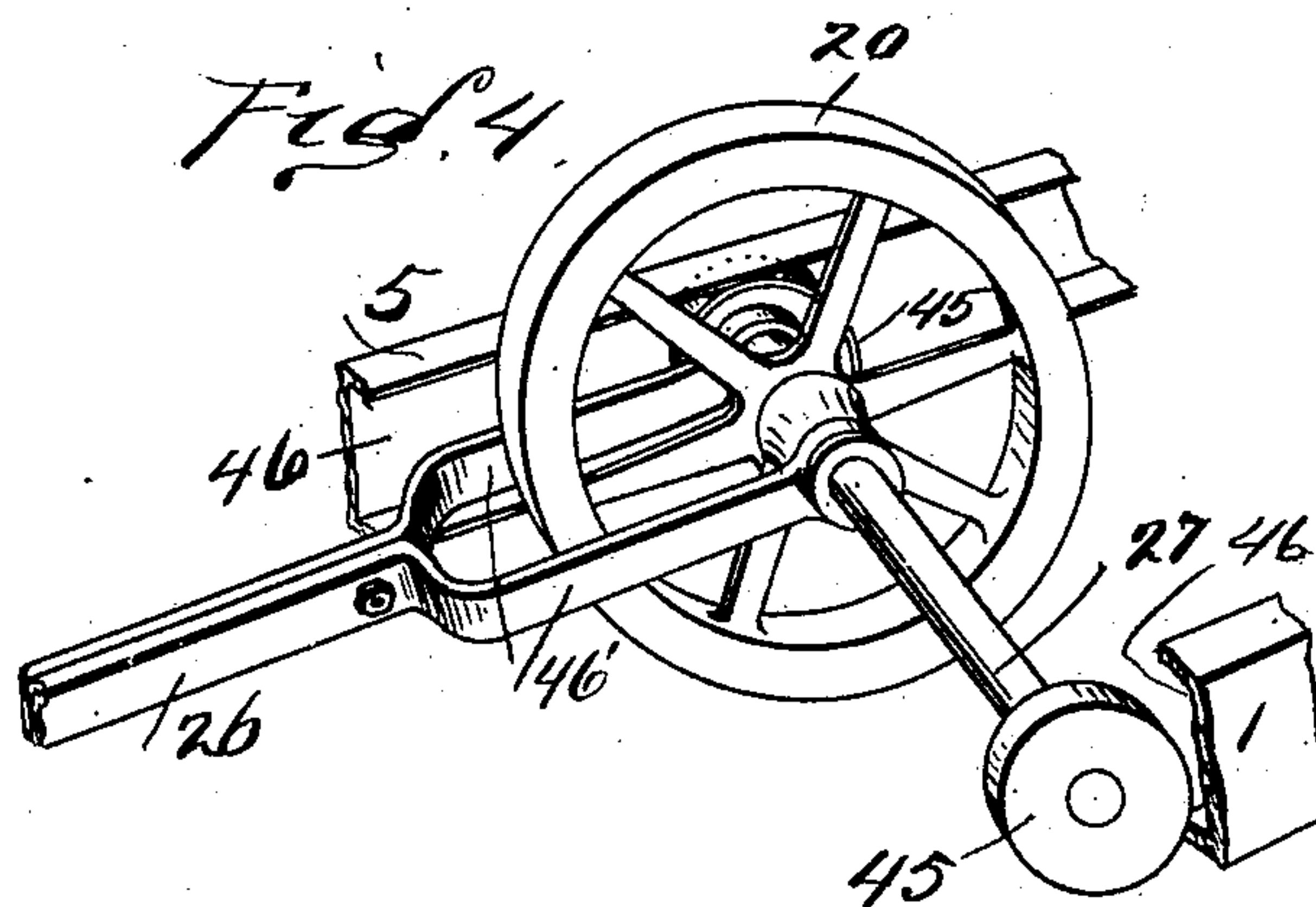
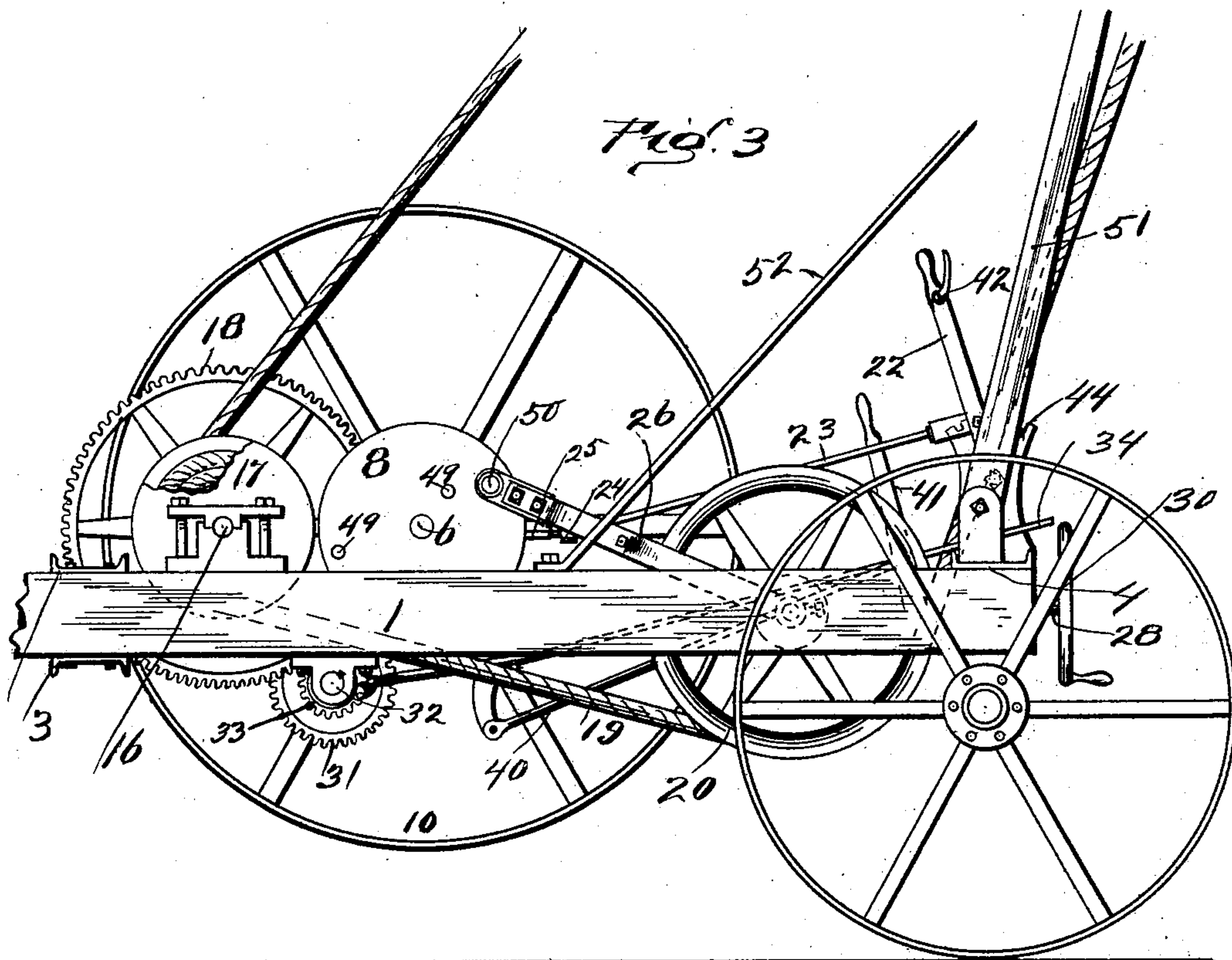
(No Model.)

4 Sheets—Sheet 3.

J. MAUGER.
WELL DRILLING MACHINE.

No. 599,911.

Patented Mar. 1, 1898.



WITNESSES
E. J. Cross
B. M. Finch

INVENTOR
Jacob Mauger
By, Fred W. Bond

Axx

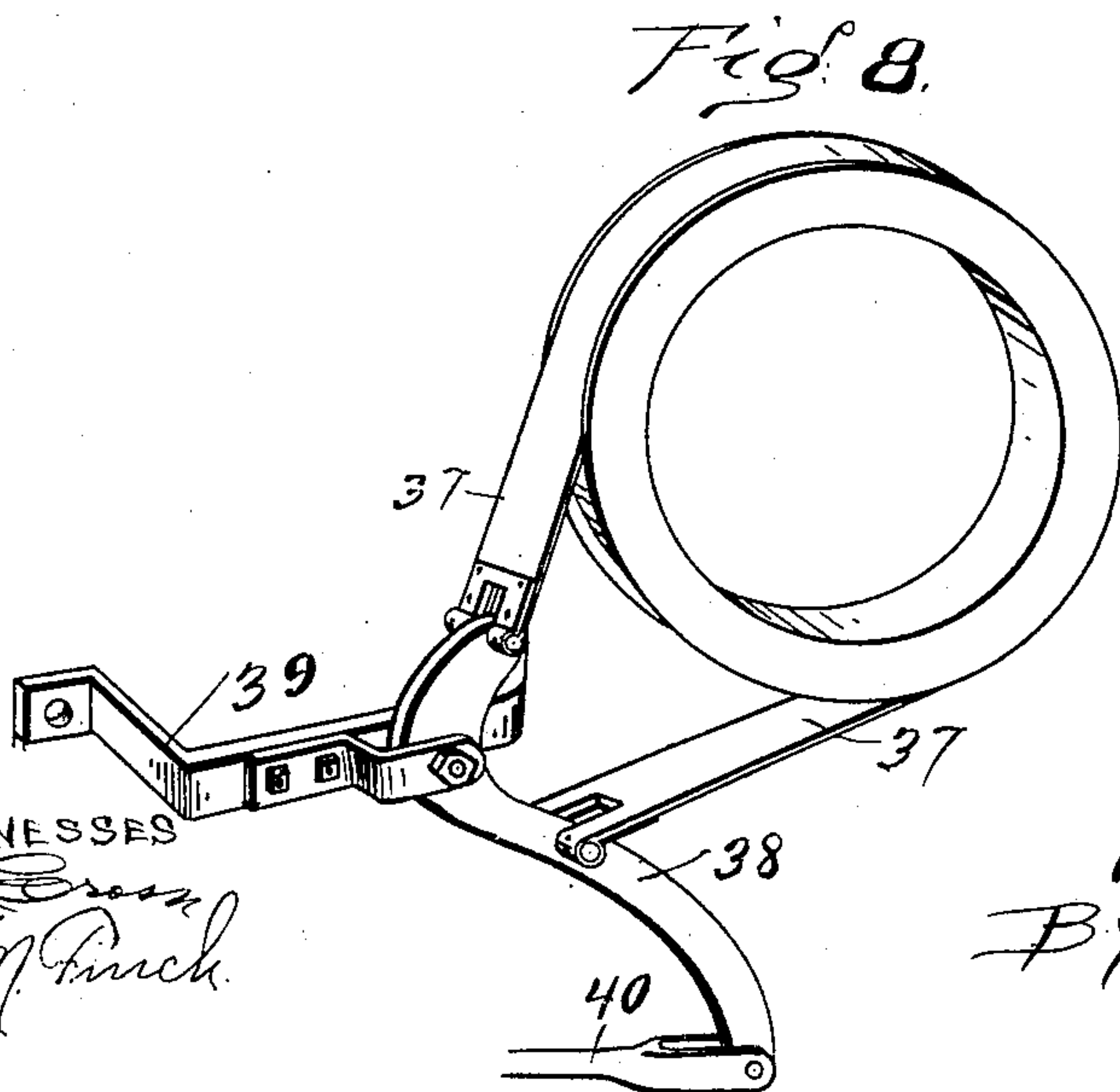
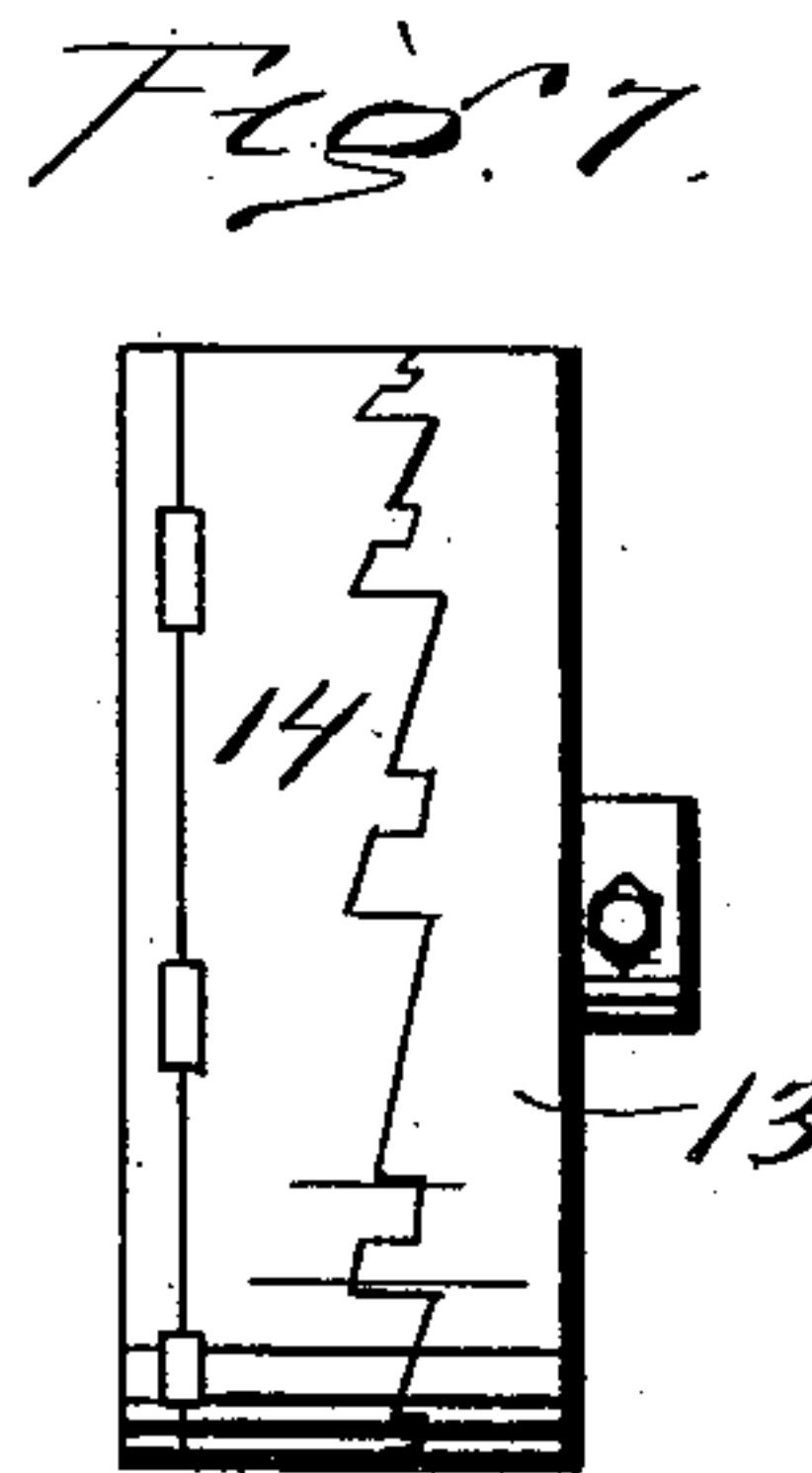
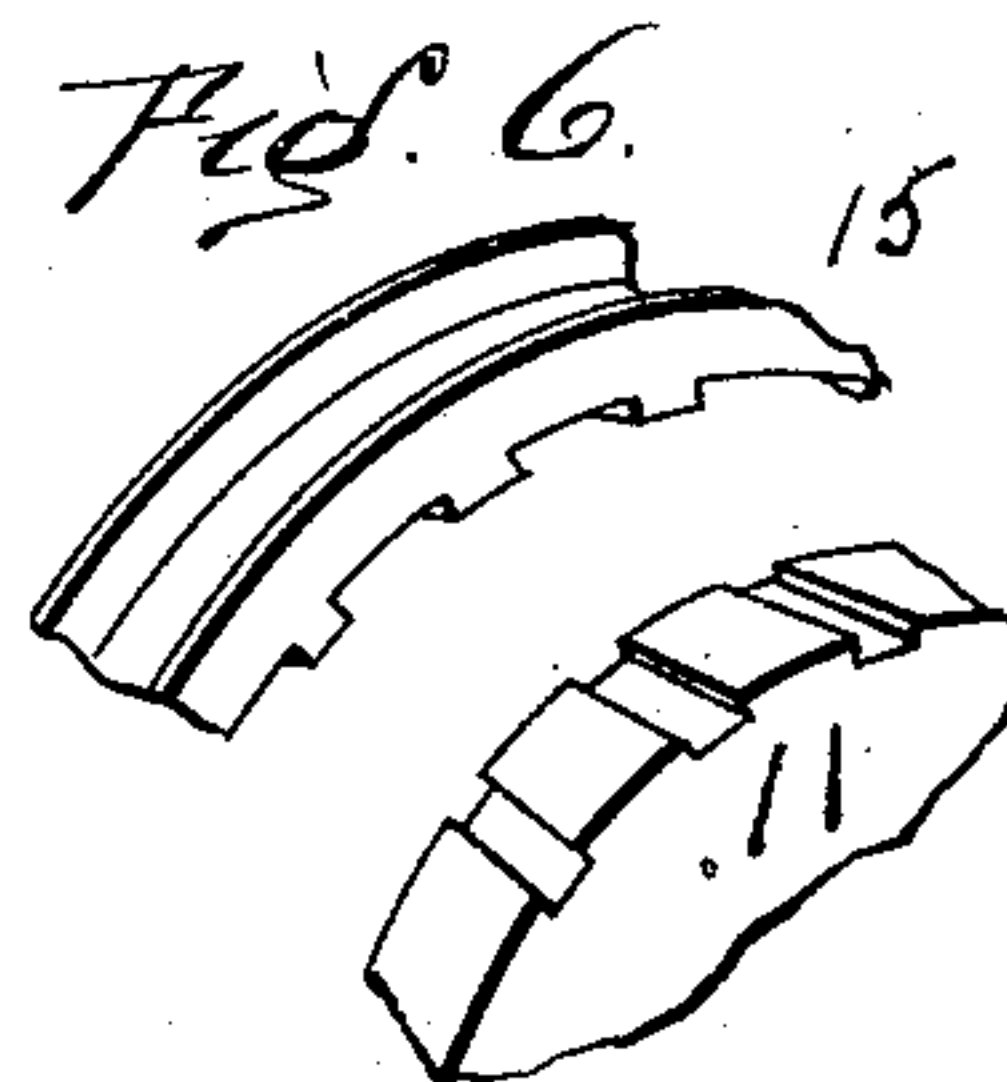
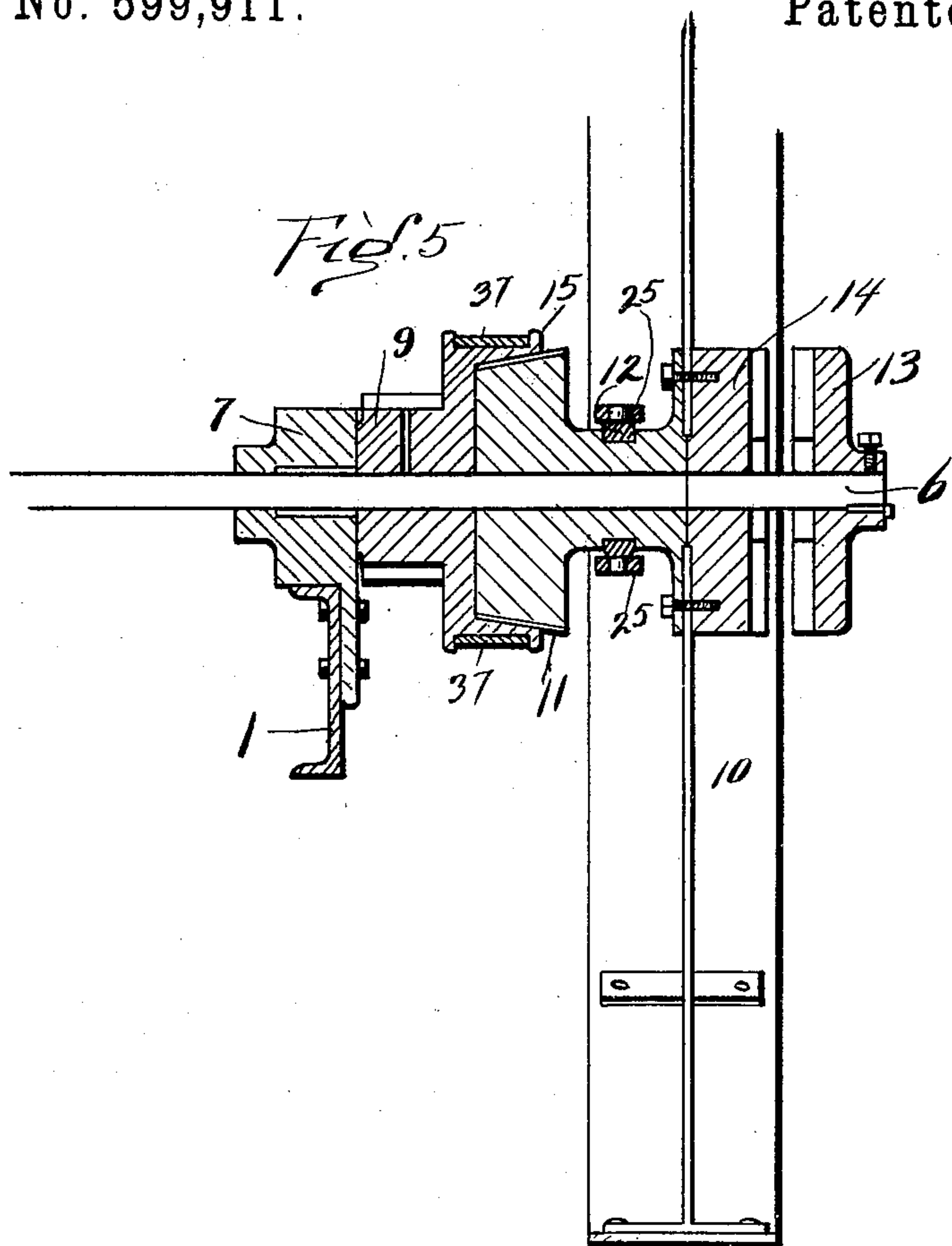
(No Model.)

4 Sheets—Sheet 4.

J. MAUGER.
WELL DRILLING MACHINE.

No. 599,911.

Patented Mar. 1, 1898.



WITNESSES
B. J. Brown
B. M. Birch

INVENTOR,
Jacob Mauger
By *Frederick W. Bond*

ATTY

UNITED STATES PATENT OFFICE.

JACOB MAUGER, OF MASSILLON, OHIO.

WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 599,911, dated March 1, 1898.

Application filed November 26, 1897. Serial No. 659,731. (No model.)

To all whom it may concern:

Be it known that I, JACOB MAUGER, a citizen of the United States, residing at Massillon, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Well-Drilling Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon, in which—

Figure 1 is a side view showing the derrick folded. Fig. 2 is a top view. Fig. 3 is a side view showing the opposite side of the machine from that shown in Fig. 1. Fig. 4 is a view showing a portion of the pitman, showing said pitman properly connected to the sliding shaft, also showing the drill-rope-operating pulley properly mounted upon the sliding shaft. Fig. 5 is a longitudinal section of the clutch and disengaging clutch. Fig. 6 is a view showing portions of the clutch. Fig. 7 is a top view of the interlacing clutch. Fig. 8 is a detached view of the drill-rope-releasing tension.

The present invention has relation to well-drilling machines; and it consists in the different parts and combination of parts hereinafter described, and particularly pointed out in the claims.

Similar numbers of reference indicate corresponding parts in all the figures of the drawings.

In the accompanying drawings, 1 represents the outer sills of the frame or bed, which are preferably connected to the running-gear of a wagon, said parts being connected in the ordinary manner. To the side sills 1 are connected the end and cross bars 2, 3, and 4, which bars are located substantially as shown in Fig. 2. From the cross-bar 3 to the end bar 4 extends the center bar or collar-beam 5, said beam being located and arranged substantially as shown in Fig. 2.

For the purpose of providing a frame for well-drilling machines that will be strong and light the sills are formed of channel-iron, and another object of forming the sills of channel-iron is to provide a better means for operating the drill-rope, as hereinafter described.

To one of the sills 1 and to the center sill 5 is journaled the power-shaft 6, which power-

shaft is located and arranged substantially as shown in Fig. 2, said shaft being held in proper position by means of the boxes 7, said boxes being securely bolted or otherwise attached to one of the sills 1 and 5. To the power-shaft 6 is securely attached the wrist-pin wheel 8, and loosely mounted on said shaft are the pinion 9 and the power-wheel 10. Upon the power-shaft 6 is mounted the inner section or portion of the clutch 11, which portion of the clutch is provided with the grooved collar 12, which grooved collar may be formed integral or attached to the power-wheel 10. To the outer end of the power-shaft 6 is securely attached the inclined toothed disk 13, which inclined toothed disk is so located and arranged that it will connect with the inclined toothed disk 14, said disk 14 forming one side or face of the hub of the outer wheel. Upon the shaft 6 is also located the outer ring or section of the clutch, said outer section or ring being designated 15.

It will be understood that the friction-clutch 11 should be so mounted upon the power-shaft that it is free to move longitudinally upon said shaft for a short distance, but is only to rotate with the power-shaft when the clutch-sections 13 and 14 are brought into engagement and when said sections are disengaged. The power-shaft 6 is to remain at rest during the time the power-wheel 10 is revolved.

To the sills is journaled the drill-rope shaft 16, said shaft being located and arranged substantially as illustrated in Fig. 2, said shaft 16 being provided with the drill-rope spool or cylinder 17 and the cog-wheel 18. The drill-rope 19 is wound around the cylinder 17 in the usual manner and leads from said cylinder under the operating sheave-pulley 20, thence upward and over the pulley 21, and thence downward to the place where the drill is to be attached.

When it is desired to impart motion to the drill proper, or, in other words, to bring the drilling-machine into operation, the clutch-sections 13 and 14 are brought into engagement by means of the lever 22, the rod 23, the lever 24, and the yoke 25, and when said clutch-sections are connected, as illustrated in Fig. 2, the shaft 6 will be rotated with the power-wheel 10, which in turn communicates

rotary motion to the wrist-pin 8 and to the pitman 26, which pitman imparts a reciprocating motion to the grooved pulley 20 and the shaft 27. It will be understood that as the grooved pulley 20 is moved away from the rope-spool 17 the drill-rope will be acted upon so as to elevate or lift the portion of the drill-rope 19 below the grooved pulley 21, located at the upper end of the derrick, and as the grooved pulley 20 is brought toward the rope-spool 17 the portion of the drill-rope below the grooved pulley 21 is freed, so as to lower the rope, together with the drill connected thereto.

For the purpose of letting out the rope as the drill descends the shaft 28 and its worm 29, together with the hand-wheel 30, are provided, said parts being located and arranged substantially as shown in Fig. 2. The worm 29 engages with the toothed wheel 31, said toothed wheel being for the purpose of imparting rotary motion to the rope-spool 17 by means of the shaft 32 and its pinion 33 and the cog-wheel 18.

It will be understood that the rope-spool 17 will be held against rotation by means of the worm 29 and the wheel 31, thereby holding the rope against unwinding during the time the drill is being operated, except at such times as it is desired to let out the rope by rotating the hand-wheel 30. It will be understood that when the worm 29 and the wheel 31 are brought into engagement the pinion 9 is to be free, which is brought about by the disengagement of the clutch-sections 11 and 15 being thrown out of engagement.

When it is desired to wind the rope 19 upon the rope-spool 17, so as to bring up the tools or drills, the clutch-sections 11 and 15 are brought into engagement, which disengages the clutch-sections 13 and 14, thereby releasing the power-shaft 6 and communicating rotary motion to the rope-spool 17, and before the clutch-sections 11 and 15 are released the worm 29 and the toothed wheel 31 may be brought into engagement by means of the lever 34 and the grooved collar 35.

It will be understood that the shaft 32, upon which the toothed wheel 31, the pinion 33, and the grooved collar 35, are mounted, are all to be moved longitudinally and held at the desired point of adjustment by means of the lever 34 and notches 36.

When it is desired to unwind the rope 19 to let the drill descend into the well, the lever 34 is moved so as to disengage the worm 29 and the wheel 31 and also the pinion 33, at which time the clutch-sections 11 and 15 may be coupled together and the rope-spool 17 rotated by the weight of the drill, and for the purpose of providing a tension the outer periphery of the clutch-section 15 is provided with the metallic band 37, which metallic band surrounds the clutch-section, as illustrated in Fig. 8, and its ends pivotally connected to the lever 38, which lever is pivotally connected to the bracket 39. To the

bottom or lower end of the lever 38 is connected the rod 40, which rod is operated by the lever 41.

For the purpose of holding the clutch-sections 13 and 14 together during the time the drilling-machine is to be in operation the lever 42 is provided, which lever is properly connected to the rod 23 and is provided with the catch-bar 43, which catch-bar engages with the toothed segment 44, said toothed segment being for the purpose of holding the lever 42 at the desired point of adjustment.

For the purpose of providing an easy movement for the reciprocating motion of the shaft 27 said shaft is provided with the rollers 45, which rollers are located in the grooves 46, said grooves being formed or produced by using channel-iron for the sills of the machine proper. It will be understood that as the drill-rope goes under the grooved pulley 20 the shaft 27 will be lifted so as to bring the rollers 45 against the upper ledges of the sills 1 and 5, thereby providing a traveling surface for said rollers 45.

For the purpose of causing the shaft 27 to be moved back and forth without producing a strain or twist upon the shaft as force is applied the pitman 26 is bifurcated or provided with the arms 46', one of which arms comes upon each side of the grooved pulley 20, thereby causing said pulley to move in true alignment and prevent any displacement of the drill-rope 19.

For the purpose of preventing the drill-rope 19 from sagging and at the same time assisting in guiding said drill-rope the grooved idler 47 is provided and is journaled to the bracket 48, which bracket is attached to the sill 5 or its equivalent.

For the purpose of changing the stroke of the pitman 26 and thereby adjusting the reciprocating movement of the drill proper the wrist-pin wheel 8 is provided with a number of wrist-pin apertures, such as 49, said apertures being located at different distances from the center of the wheel and the wrist-pin 50 adjusted or connected with the desired aperture 49.

For the purpose of providing a derrick that can be folded to be brought out of the way during the time the machine proper is transported from place to place said derrick is composed of the bottom or lower section 51, which is securely bolted or otherwise connected to the bed or frame of the machine proper and is held in an upright position by suitable stay-rods, such as 52. The upper section of the derrick 53 is hinged to the top or upper end of the section 51 and is held by ordinary brace-rods, such as 54, which brace-rods are connected in the ordinary manner.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the frame, sills provided with grooves, the reciprocating shaft 27, provided with rollers 45, located in the

grooves 46, the grooved pulley or wheel 20, mounted upon the reciprocating shaft and movable therewith, a bifurcated pitman journaled to the shaft, the wrist-pin wheel 8, connected to the power-shaft 6, clutch-sections 13, and 14, and 11, and 15, a drill-rope shaft having mounted thereon a spool, means for imparting motion to the drill-rope shaft, and the drill-rope, substantially as and for the purpose specified.

2. The combination of the sills 1, and 5, a power-shaft having securely attached thereto a wrist-pin wheel, and the clutch-section 13, a power-wheel loosely mounted on the power-shaft and provided with a clutch-section to engage the clutch-section 13, a pinion loosely mounted upon the power-shaft, and a friction-clutch located adjacent to the pinion,

and means for operating a slidable section or portion of the friction-clutch, a power-wheel, a rope-spool secured upon the shaft 16, and the cog-wheel 18, secured to said shaft 16, the shaft 32, provided with the wheel 31, and the pinion 33, the worm 29, the shaft 28, provided with the hand-wheel 30, or its equivalent, and the reciprocating shaft 27, carrying the grooved pulley 20, and the operating-rope 19, located and arranged as described, and for the purpose specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JACOB MAUGER.

Witnesses:

F. W. BOND,
B. M. FINCH.