

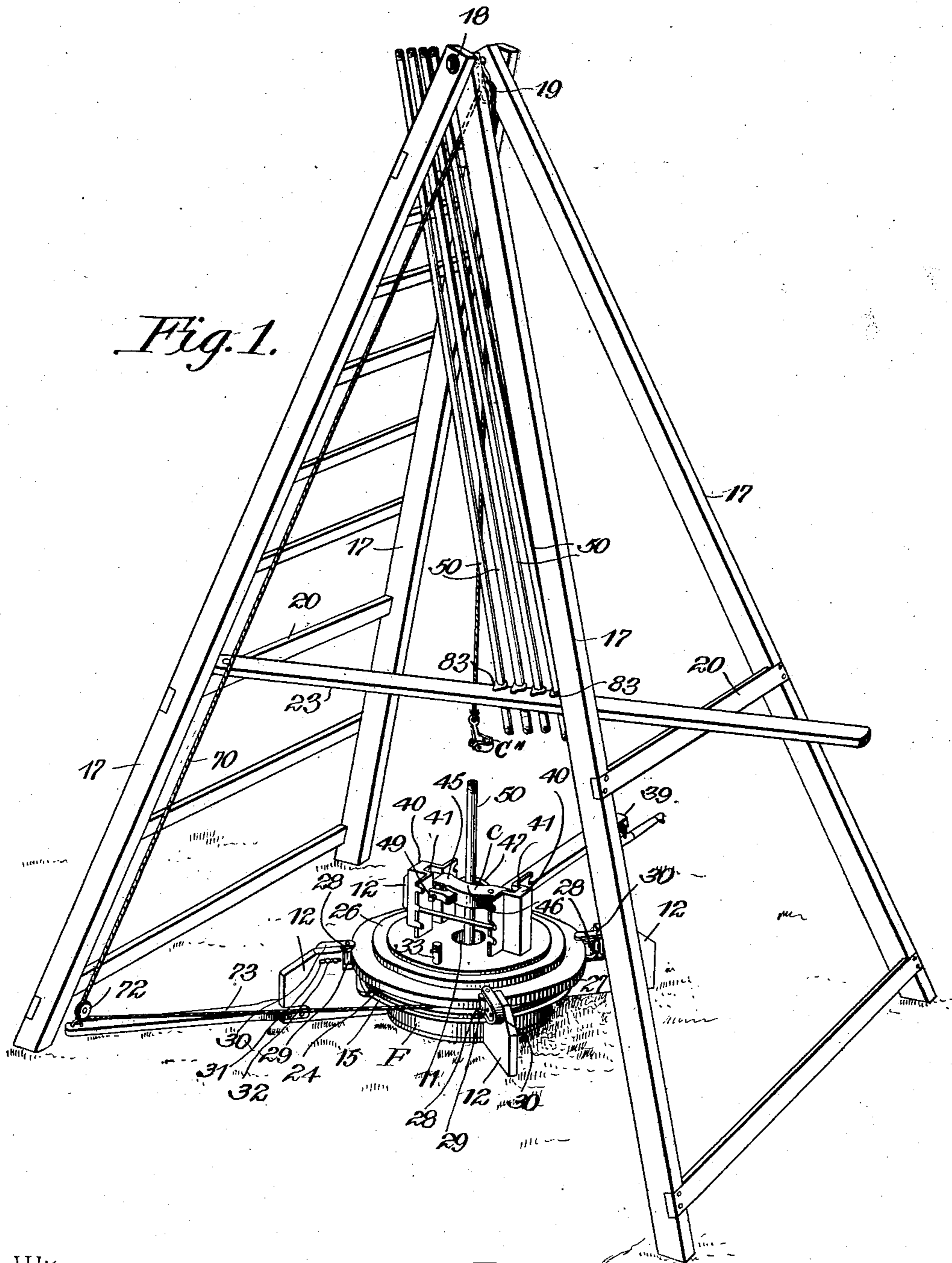
No. 739,860.

PATENTED SEPT. 29, 1903.

D. A. HARMON.
WELL BORING MACHINE.
APPLICATION FILED FEB. 28, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



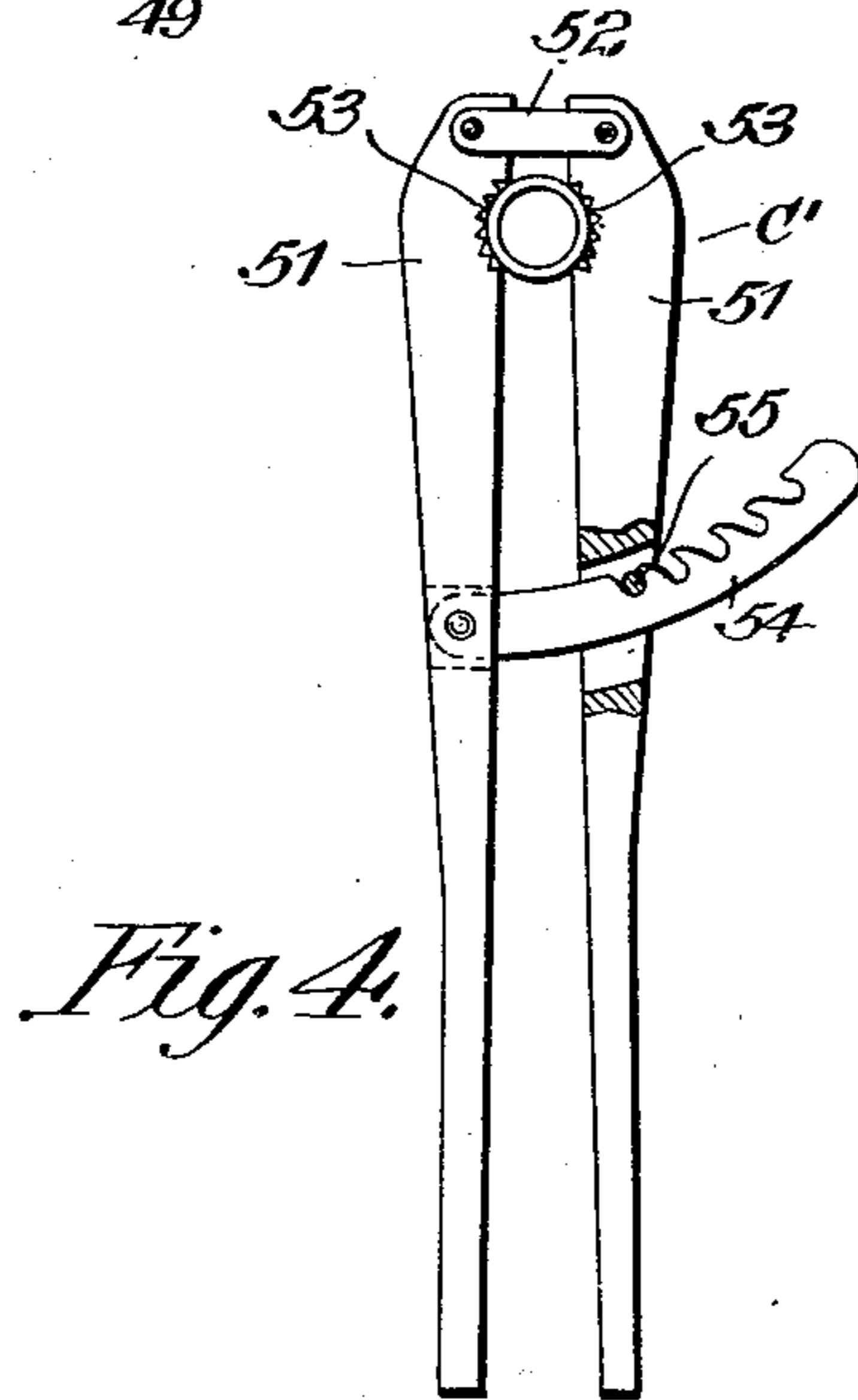
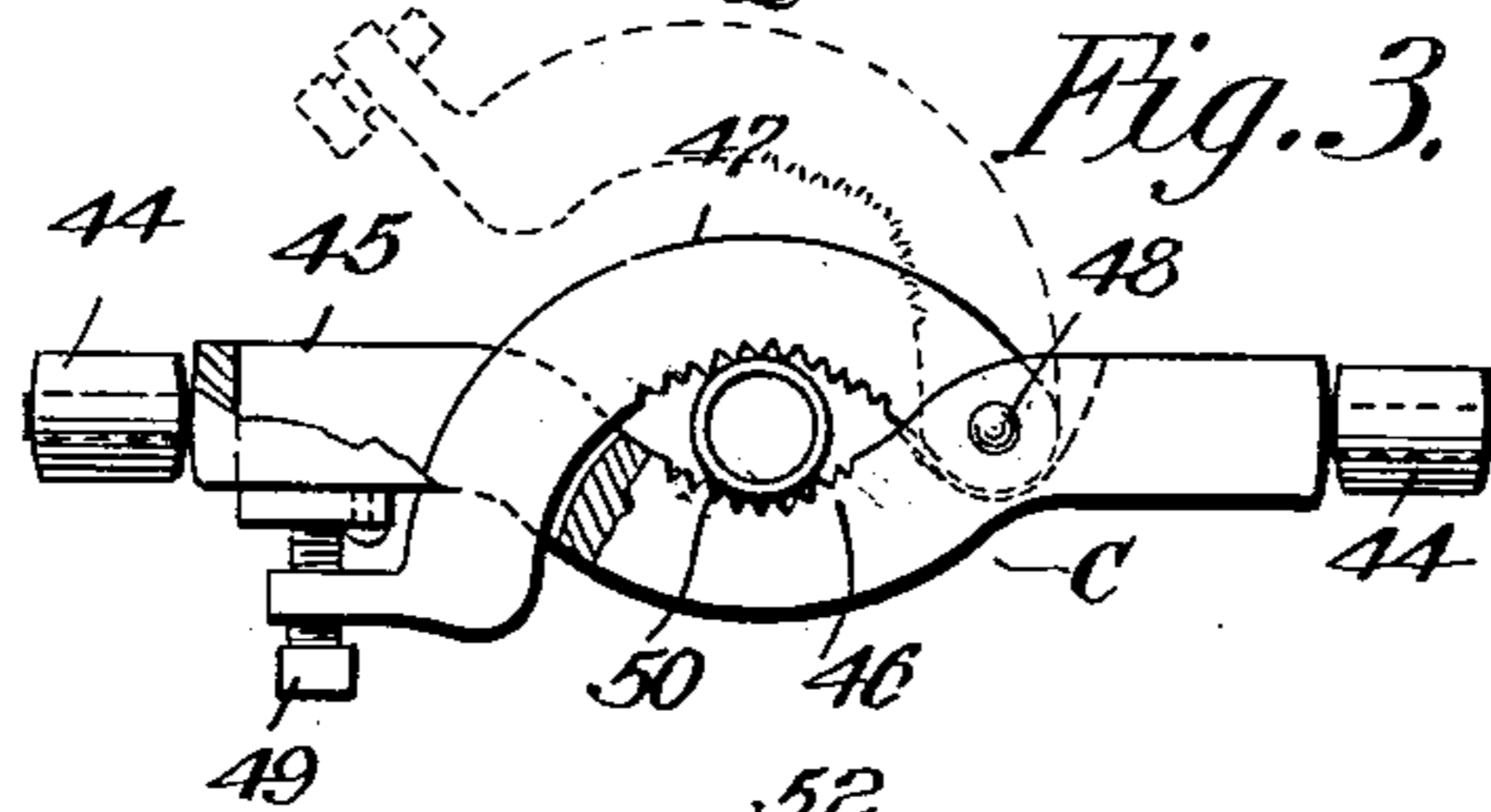
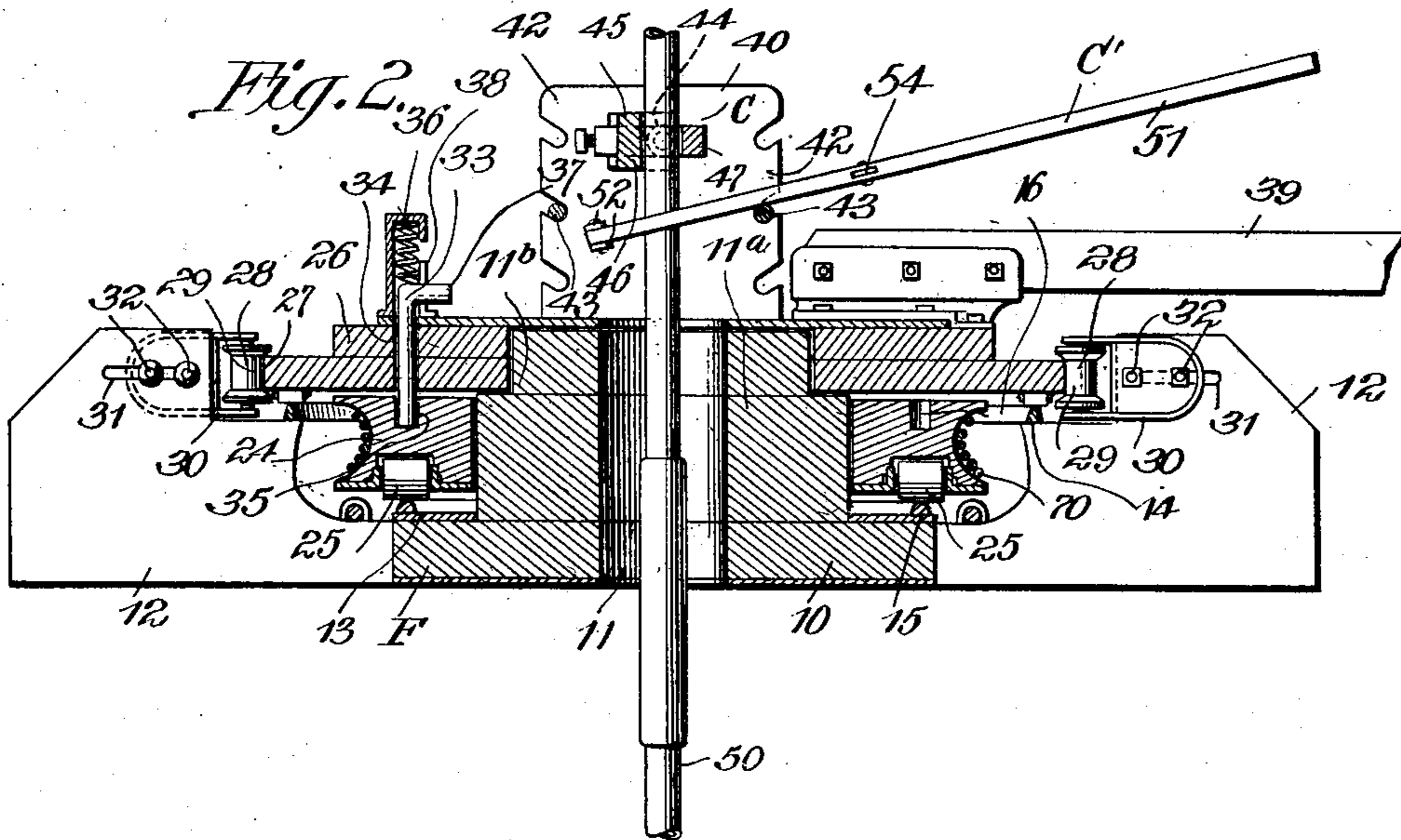
Witnesses
E. J. Stewart
J. W. Jochem, Jr.

Daniel A. Harmon, Inventor.
by *C. A. Snow & Co.*
Attorneys

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 Attorneys

UNITED STATES PATENT OFFICE.

DANIEL A. HARMON, OF INGRAHAM, ILLINOIS.

WELL-BORING MACHINE.

SPECIFICATION forming part of Letters Patent No. 739,860, dated September 29, 1903.

Application filed February 28, 1903. Serial No. 145,570. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. HARMON, a citizen of the United States, residing at Ingraham, in the county of Clay and State of Illinois, have invented a new and useful Well-Boring Machine, of which the following is a specification.

My invention relates to machines for boring wells; and it consists in the various features hereinafter described and more particularly claimed and as illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view; Fig. 2, an enlarged vertical section of the base and operating mechanism; Fig. 3, a plan view of the guide-clamp; Fig. 4, an elevation of the holding or gripping clamp.

Similar characters indicate like parts throughout the several figures of the drawings.

The letter F designates a base-frame, which may consist of a central cylindrical member 10, provided with a vertical opening 11, through which the auger and auger-shaft pass, and the lower and upper cylindrical reduced portions 11^a and 11^b, respectively, and intersecting arms 12, forming a cross and each having successive lower and upper steps 13 14, respectively. To these steps are secured metal track-rings 15 16, which also serve as braces for the frame. At opposite ends of the arms are secured the lower ends of derrick members 17 17, connected at their upper ends by a rod 18, upon which is supported a pulley 19, and at their intermediate cross-braces 20 by a cross-beam 23, just above the head of a person standing on the machine-platform.

Upon the lower track 15, about the portion 11^a of the central member, operates a windlass-drum 24, preferably provided with separate rolls 25, journaled in its under side for coaction with the track. About the upper cylindrical portion 11^b is the platform or driving member 26, which may be provided with a suitable annular contact-surface at 27, resting upon the track 16. The platform may be guided by rolls 28, having peripheral grooves 29, into which its edge projects. These rolls are preferably journaled in bearings 30, slotted at 31 to receive bolts 32 for securing them to the frame-arms and permit adjustment toward and from the platform. The under

side of the platform preferably lies in close proximity to the upper face of the windlass, and the two elements may be compelled to rotate together by a pin 33 or connector extending through an opening 34 in the platform into a recess 35 in the drum and be held into engagement with said recess by a spring 36. The pin is preferably provided with a projection 37, operating in a slot 38 in the platform, so that when the pin is raised out of the recess and slightly turned about its axis it will lock it in this position and allow the windlass to rotate independently of the platform. Radially from the platform extends a draft-bar 39, to which may be attached an animal to furnish power to the machine.

Above the platform at opposite sides of the auger-opening rise standards 40 40, in which are formed alined ways 41 41. On each side of the ways of each standard are flanges 42, provided with a vertical series of alined notches to receive at various heights a full-crum-bar 43. In the ways of the standards move rolls 44, turning upon the ends 44 of a bar 45, having formed in it one jaw 46 of a clamp member C, the movable jaw 47 being pivoted to the bar at 48 and being shown as provided with a screw 49 for drawing it toward its companion to permit it to be clamped about the auger-shaft 50.

A second clamp C', the function of which will be hereinafter described, is also shown encircling the auger-shaft. As illustrated, this consists of a pair of jaws 51 51, connected to each other by opposite pivot-bars 52, about which they turn. A depression 53 may be formed in each jaw and be faced with leather or other suitable material. A notched segment 54, pivoted to one member, extends through a slot and coöperating with a pin 55 in the other allows the clamp to be maintained fast upon the pipe.

Upon the windlass is coiled the rope 70, which passes over a pulley 72, mounted upon the end of a brace 73, extending from the frame, and finally up over the pulley 19. Upon its depending end the rope carries a clamp C'' for raising the sections of the auger-shaft.

In the operation of the machine the auger is started through the openings in the frame, windlass, and platform, and the clamp-bar C is secured upon the auger-shaft to compel it

to rotate with the platform, while allowed to move through the same by the travel of the bar-rollers in the standard ways. Now if the pin 33 is raised to permit the independent movement of the platform this may be rotated by a draft-animal, and, pressure being applied to the clamp C through a suitable lever co-acting therewith and with the fulcrum-bar, the auger will be advanced into the earth, the material removed rising through it. The clamp C is shifted upon the shaft whenever necessary. When a section of the shaft has gone down, the clamp C is loosened and the clamp C' set upon it and by this is supported upon the fulcrum-bar until a new section has been connected. This being accomplished, the clamp C' is released and the clamp C restored, and the boring goes on as before. When it is desired to remove the shaft from the hole, the clamp C'' is lowered by its rope to the proper distance, preferably to a coupling, the yield of both jaws readily permitting this, and the platform and windlass being connected by the pin the windlass is rotated by the draft-animal. The upward pull upon the clamp throws it into operative engagement with the pipe, causing it to be held firmly between the gripping members and causing the entire shaft to be raised. This continues until the coupling between the sections rises above the platform. The lower section is then caught and held by the clamp C' while the coupling is disconnected, and the upper section is grasped by one of a series of clamps 83 of any suitable form swinging upon the cross-beam 23. In a similar manner all the shaft-sections may be withdrawn and held by the clamps 83, with their upper ends resting against the derrick, rendering it unnecessary to lower them to the ground and leaving all convenient for immediate use. After the auger is drawn from the well to empty the dirt it is again lowered into position in the following manner: The rope and windlass allow the auger-box to descend until it has passed the fulcrum-bar, after which it is lowered without the assistance of either the rope or windlass. The shaft is caught by the clamp C' at the fulcrum-bar and the clamp C'' is removed if it can be reached. If it is too high, the pin 33 is raised, which allows the windlass to unwind and the clamp C'' to descend within reach, when it can be released. The arms 51 of the clamp C' are held by the hands, letting the shaft lower at any speed desired to the proper distance. When pressure is exerted upon the arms, the shaft stops. The notched segment 54 is then brought into engagement with the pin 55, and the clamp is locked in position, preventing further downward movement of the shaft. The next section is then coupled on, the segment released, and the shaft then allowed to slide down through the clamping-arms, so that another section can be fastened on, if necessary.

It is to be understood that although I have described my preferred form of construction

and arrangement of the several parts, yet I do not desire to be limited to the exact arrangement or details of constructions, as numerous changes may be made without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. In a well-boring machine, the combination with an independently-rotatable driving member and a windlass, of means for connecting the driving member with an auger-shaft, and a connector between the driving member and the windlass.

2. In a well-boring machine, the combination with a frame, of a driving member and windlass independently rotatable thereon, a clamp movable by the driving member, a rope operating about the windlass, a clamp carried by the rope, and a connector between the driving member and windlass.

3. In a well-boring machine, the combination with a frame, of a platform and windlass rotatably mounted upon the frame, means for connecting said platform with an auger-shaft, and a pin passing through the platform and engaging the windlass.

4. In a well-boring machine, the combination with a frame comprising a central cylindrical member and arms extending therefrom, each provided with two steps, of track-rings secured to the steps, a windlass movable upon the lower track-ring, a platform movable upon the upper track-ring, means for connecting the windlass and platform and means for connecting the platform with an auger-shaft.

5. In a well-boring machine, the combination with a rotatable platform, of standards mounted thereon and provided with oppositely-disposed channels forming ways, and a clamp-bar having rolls moving in the ways.

6. In a well-boring machine, the combination with a frame, of a platform rotatable thereon, standards mounted upon the platform, a clamp movable along the standards, and a fulcrum-bar supported upon the standards.

7. In a well-boring machine, the combination with a frame, of a platform rotatable thereon, standards mounted upon the platform and provided with opposite flanges each having a series of notches to adjustably support a fulcrum-bar, and a clamp movable along the standards.

8. In a well-boring machine, the combination with a rotatable platform, of standards mounted thereon, a clamp movable along the standards, a fulcrum-bar supported upon the standards, and a second clamp coacting with the fulcrum-bar.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

DANIEL A. HARMON.

Witnesses:

JONATHAN BROOKS,
WILLIAM TATE.