

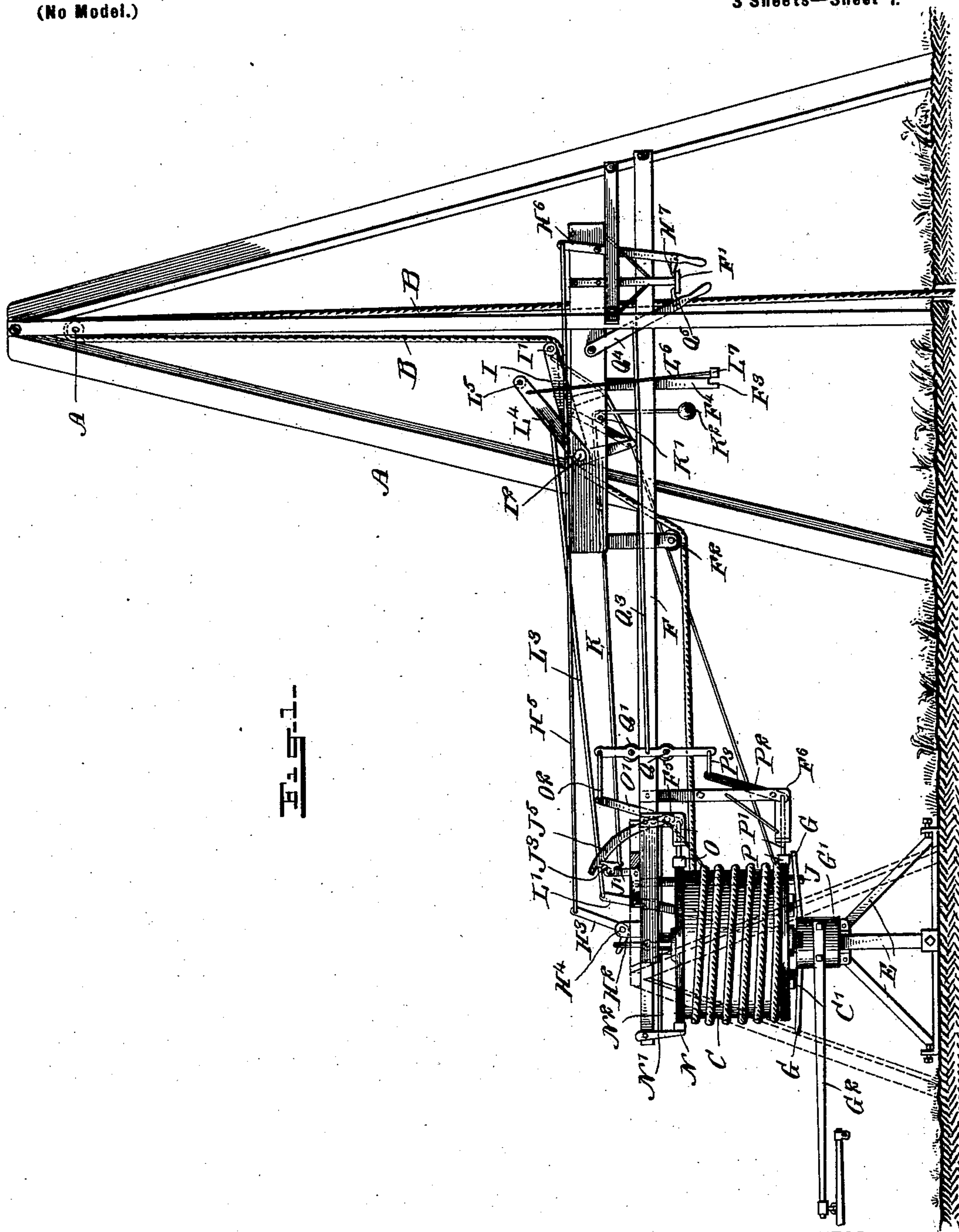
No. 714,III.

Patented Nov. 18, 1902.

R. B. MOORE, Dec'd.
T. F. MOORE, Administrator.
WELL DRILLING MACHINE.
 (Application filed Aug. 14, 1901.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

Geo. W. Waylor
Rev. J. Hooper

INVENTOR

Robert B. Moore.

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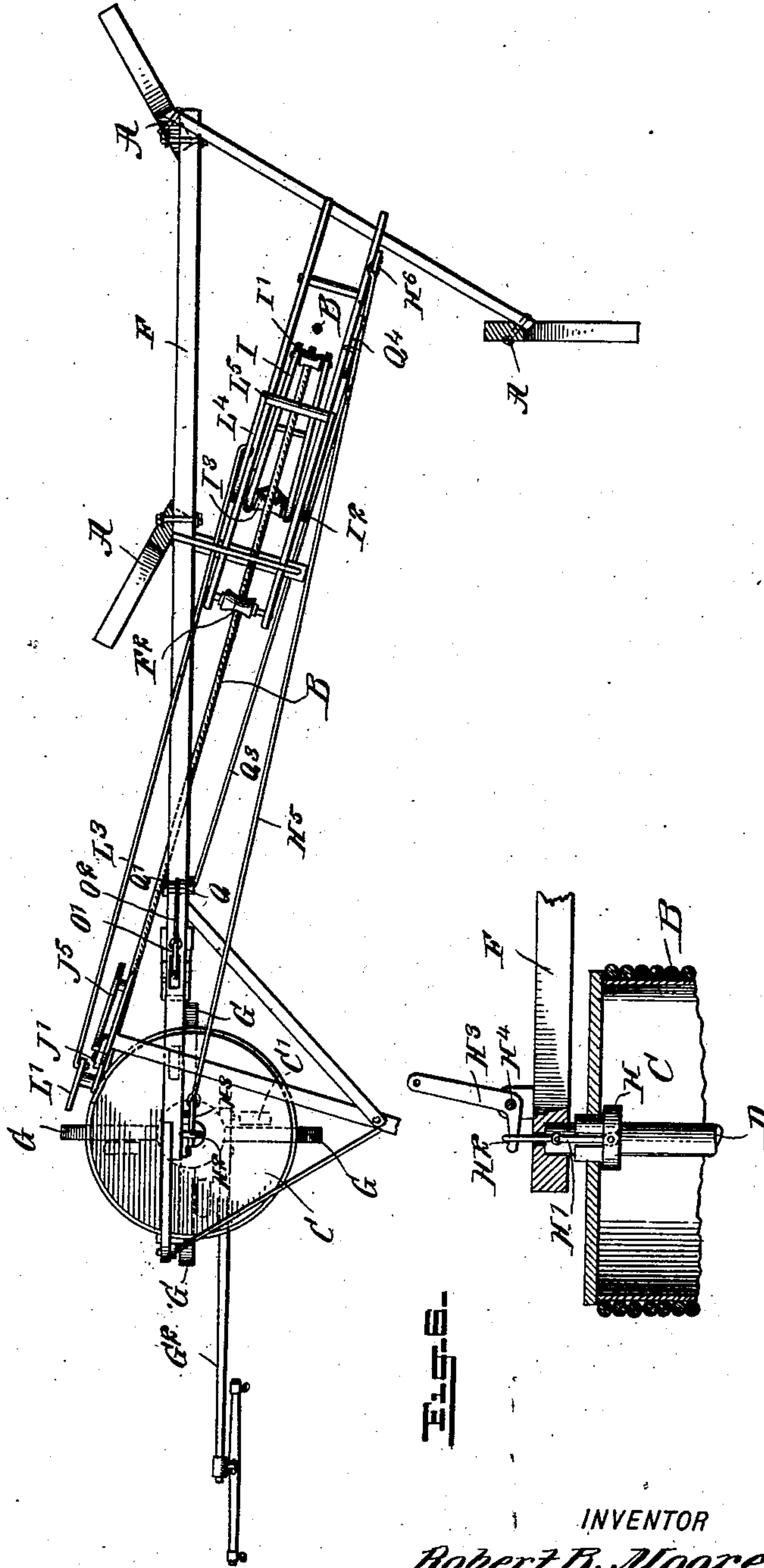
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3 Sheets—Sheet 2.

Fig. 2.



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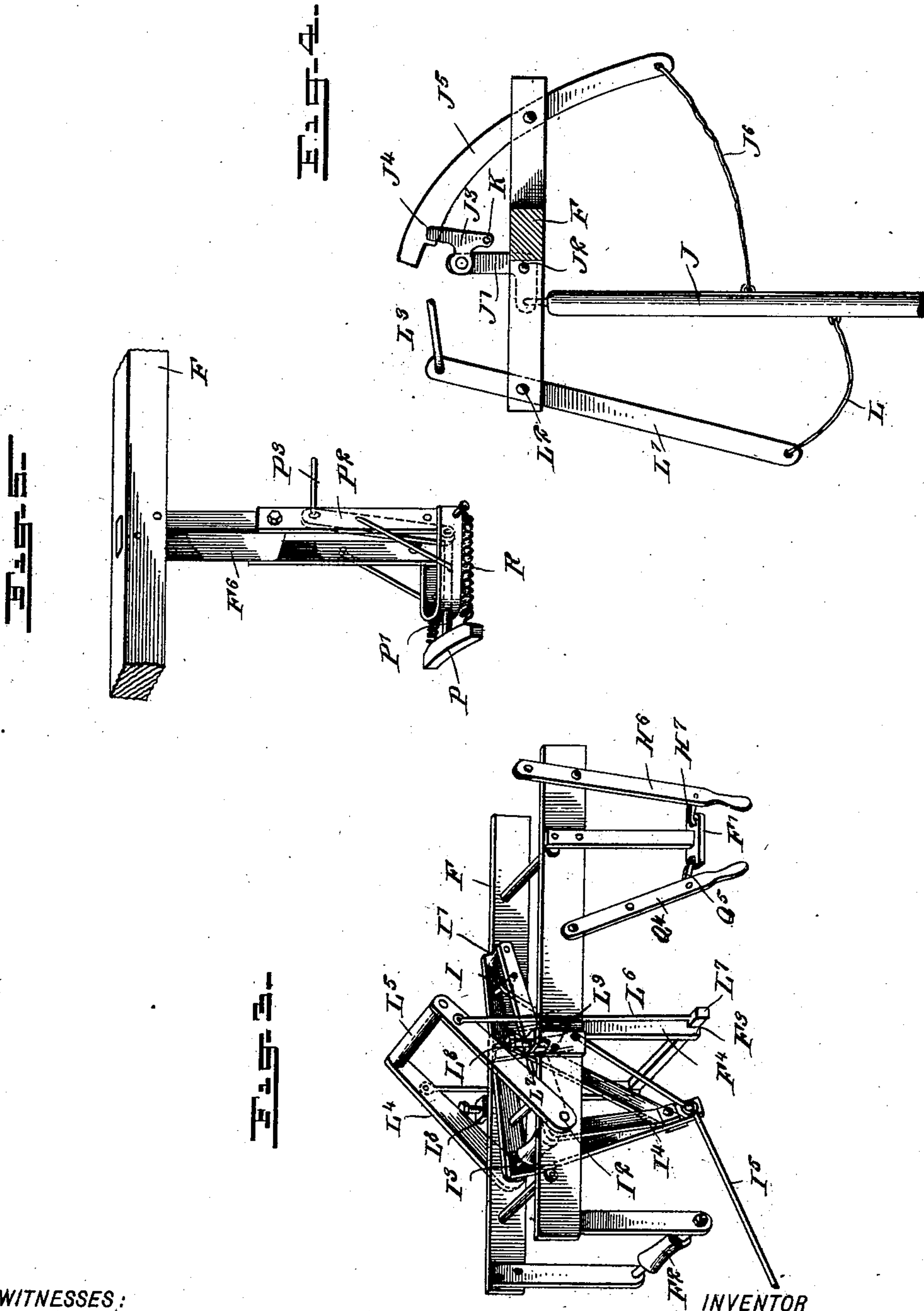
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3 Sheets—Sheet 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ROBERT BURNS MOORE, OF YARRELTON, TEXAS; T. F. MOORE ADMINIS-
TRATOR OF SAID ROBERT BURNS MOORE, DECEASED.

WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 714,111, dated November 18, 1902.

Application filed August 14, 1901. Serial No. 71,988. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BURNS MOORE, a citizen of the United States, and a resident of Yarrelton, in the county of Milam and State of Texas, have invented a new and Improved Well-Drilling Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved well-drilling machine adapted to be driven by horse-power and arranged to permit of actuating the drilling-tools for drilling purposes and to allow of conveniently and quickly raising the tools from the well whenever it is desired to do so for sharpening the tools or for other purposes.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement. Fig. 2 is a plan view of the same with the derrick in section. Fig. 3 is an enlarged perspective view of the drill-rope-actuating device to give the desired stroke to the drilling-tool. Fig. 4 is an enlarged side elevation of the tripping device for the bell-crank lever of the rope-actuating device. Fig. 5 is an enlarged perspective view of part of the brake mechanism for the actuating-drum, and Fig. 6 is an enlarged sectional side elevation of the actuating-drum.

A suitably-constructed derrick A is set on the ground over the intended well, and on the upper end of said derrick is journaled a pulley A', over which passes the drill-rope B, carrying at one end the drilling-tools (not shown) and winding at its other end on the drum C, mounted to rotate loosely and to slide vertically on the shaft D, carried at its lower end by a stand E and engaging at its upper end a frame F, secured to and projecting from the derrick A.

The under side of the drum C is provided with lugs C', adapted to be engaged by arms G, radiating from a hub G', mounted to rotate loosely on the shaft D, and said hub G'

being provided with a draft-pole G², to which a horse or other animal is hitched to turn the hub G' around and to cause the arms G to turn the drum C for winding up the rope B whenever the said drum is in a lowermost position and the said lugs C' extend into the path of the arms G.

The upper head of the drum C is engaged at the under side by a collar H, supported on links H', hung on the ends of a bail H², hooked into one arm of a bell-crank lever H³, fulcrumed at H⁴ on the frame F. The upwardly-extending arm of the bell-crank lever H³ is connected by a link H⁵ with a lever H⁶, fulcrumed on the frame F at the derrick A, and the said lever H⁶ is provided with a hook H⁷, adapted to hook onto a keeper F', held on the frame F. When the hook H⁷ engages the keeper F', as shown in Fig. 1, then the drum C is held in an uppermost position by the collar H, connected with the bell-crank lever H³, as previously mentioned. When the drum is in this position, the lugs C' are clear of the arms G, and consequently the rotation of the hub G' does not rotate the said drum C. When it is desired to rotate the drum for winding up the rope B, then the operator swings the hook H⁷ out of engagement with the keeper F' and then swings the lower handle end of the lever H⁶ to the right, so that the link H⁵ imparts a swinging motion to the bell-crank lever H³ from the right to the left to lower the bail H², the links H', collar H, and consequently the drum C, so that the lugs C' move into the path of the arms G, and when the hub G' is now rotated a rotary motion is given to the drum C to wind up the rope.

In order to give the desired stroke to the drilling-tools, the rope B is acted on by a rope-actuating device to alternately raise and drop the drilling-tool. The actuating device consists of the following parts: The rope B between the pulley A' and the drum C extends under a pulley I', held on one arm of a bell-crank lever I, fulcrumed at I² on the frame F, and the said rope then passes over a pulley I³, held on the fulcrum I² of the lever I. The rope then extends downward and passes under a guide-pulley F², held on the frame F to guide the pulley to the drum

C. The depending arm I^4 of the bell-crank lever I is pivotally connected by a link I^5 with a lever J, (see Figs. 1 and 4,) projecting at its lower end into the path of the arms G, the upper end of the lever J being hung on the bell-crank lever J' , fulcrumed at J^2 on the frame F. A latch J^3 is pivoted on the upper end of the bell-crank lever J' and is adapted to engage a notch J^4 in a tripping-lever J^5 , likewise fulcrumed on the frame F and connected by a rope J^6 with the lever J. The latch J^3 is engaged by one end of a rope K, extending over a pulley K' , journaled on the frame F at the derrick A, and the depending part of the rope K carries a handle K^2 , adapted to be taken hold of by the operator to pull the rope K so as to swing the latch J^3 out of engagement with the notch J^4 whenever it is desired to raise the lever J to lift the lower end thereof out of the path of the arms G. The lever J is connected by a rope L with a lever L' , fulcrumed at L^2 on the frame F, and the upper end of the said lever L' is connected by a link L^3 with the arm L^4 , fulcrumed loosely on the fulcrum I^2 of the bell-crank lever I, the said arm L^4 carrying at its forward end a friction pulley or roller L^5 for engagement by the rope B after the latter is released by the pulley I' of the lever I on the return or upward-swinging movement of the said lever I. The arm L^4 is pivotally connected with a bail L^6 , having its cross-bar L^7 adapted to engage a notch F^3 in a depending bracket F^4 , carried by the frame F, so as to hold the arm L^4 against upward-swinging movement as long as the cross-bar L^7 engages said notch. (See Fig. 3.) The downward-swinging motion of the arm L^4 is limited by set-screws L^8 , screwing in brackets L^9 , carried by the frame F, as will be readily understood by reference to Fig. 3.

In order to brake the drum C, I provide the brake-shoes N, O, and P, of which the brake-shoe N is adapted to engage the top rim of the drum C, and the said shoe is held on a lever N' , fulcrumed on the frame F. (See Fig. 1.) A link N^2 pivotally connects the lever N' with the lever O' , likewise fulcrumed on a bracket F^5 on the frame F and connected with a rod O^2 , carrying the brake-shoe O and supported on the bracket F^5 . The brake-shoe O engages the upper rim of the drum C at a point diametrically opposite the one engaged by the brake-shoe N, and the third brake-shoe P engages the lower rim of the drum C, as indicated in Fig. 1. This brake-shoe P is held on a rod P' , supported on a bracket F^6 and pivotally connected with a lever P^2 , fulcrumed on the said bracket. (See Figs. 1 and 5.) The lever P^2 is pivotally connected by a link P^3 with a carriage Q, having wheels Q' Q^2 mounted to travel longitudinally on the frame F. The carriage Q is also connected by a link O^2 with the lever O' , previously mentioned, so that when the carriage Q is moved from the left to the right then the levers O' and P^2 are actuated to move the brake-

shoes O and P in engagement with the drum C, and as the brake-shoe N has its lever N' connected with the lever O' it is evident that this brake-shoe N also moves in frictional contact with the drum to brake the same. When the carriage Q is moved from the right to the left, the several shoes N, O, and P are moved out of frictional contact with the drum. The brake-shoes O and P are normally held out of engagement with the drum by springs R. (See Fig. 5.) The carriage Q is connected by a link Q^3 with a lever Q^4 , fulcrumed on the frame F, and on this lever Q^4 is arranged a hook Q^5 , adapted to hook on the keeper F' , previously mentioned, so as to normally hold the carriage Q in a right-hand side position with the brake-shoes N, O, and P in engagement with the drum C. When the hook Q^5 is disengaged from the keeper F' and the operator moves the lever Q^4 from the right to the left, then the several brake-shoes N, O, and P move out of engagement with the drum C to allow of rotating the latter to allow of turning the drum for winding up the rope or for unwinding the same.

The operation is as follows: When the drum C is held in a raised position and locked against rotation by the brake-shoes N O P and the hub G' is turned around, then the arms G clear the lugs C' , but successively engage the lever J to impart a swinging motion to the same from the right to the left. During this movement of the lever J the link I^5 imparts a downward-swinging motion to the bell-crank lever I, so that the pulley I' pulls on the rope B to lift the drilling-tools a certain distance, and when the lever J about reaches the end of its outward stroke the cord J^6 pulls on the tripping-lever J^5 , so that the latter swings out of engagement with the latch J^3 to disengage the lever J from the arm G, so that the pull on the rope B by the lever I ceases and the drilling-tools by their own weight now drop, thus drawing the rope B back to a starting position. The lever I on its return or upward swinging movement strikes the roller L^5 , which is preferably made of leather or other like material to softly stop the said lever I. By adjusting the set-screws L^8 the inclination of the stop-arm L^4 is changed to increase or decrease the stroke of the lever I. The adjustment of the stop-arm L^4 causes a like adjustment of the lever L' and by the cord L of the lever J, so that the latter is engaged sooner or later by the arms G, in consequence of which the stroke of the bell-crank lever and that of the drilling-tools is correspondingly changed. When it is desired to feed more rope, then the brakes N O P are loosened to allow the drum to unwind some rope for feeding purposes. When it is desired to hoist the drilling-tools out of the well, the operator pulls on the handle K^2 to cause the rope K to impart a swinging motion by the catch J^3 to the bell-crank lever J' to raise the lever J sufficiently to clear the arms G. The operator now unlocks the lever H^6 and allows

the drum C to slide downward until the lugs C' are in the path of the arms G. As the hub G' is turned the arms G turn the drum C, and thereby cause a winding up of the rope B and consequent hoisting of the drilling-tools out of the well.

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

10 1. A drilling-machine, comprising a rope-drum mounted to turn and slide, a revoluble member operatively engaging the drum, means for sliding the drum to prevent it from being revolved by said member, means for
15 locking the drum to prevent it from revolving after it has been disengaged from the revoluble member, a rope-actuating device to alternately raise and drop the tool, and means for operating the rope-actuating de-
20 vice from the revoluble member, as set forth.

2. A drilling-machine, comprising a rope-drum mounted to turn and slide, a revoluble member operatively engaging the drum, means for sliding the drum for disengaging
25 it from the revoluble member, means for locking the drum to prevent it from revolving after it has been disengaged from the revoluble member, a rope-actuating device, means for operating the rope-actuating device from
30 the revoluble member to cause the said actuating device to pull upon the rope and lift the tool, and a tripping device for disengaging the means by which the actuating device is operated, to cause the actuating device to
35 cease to pull upon the rope, as set forth.

3. A drilling-machine having a bell-crank lever for actuating the drilling-tool rope, an adjustable swinging stop-arm for limiting the return swinging motion of said bell-crank lever and means for locking the stop-arm
40 against swinging movement, as set forth.

4. A drilling-machine having a bell-crank lever for actuating the drilling-tool rope, an actuating-lever connected with the said bell-crank lever, means for imparting a swinging motion to the said actuating-lever in one direction, and a tripping device for the said lever and controlled by the same, as set forth.

5. A drilling-machine having a bell-crank lever for actuating the drilling-tool rope, an actuating-lever connected with the said bell-crank lever, means for imparting a swinging motion to the said actuating-lever in one direction, a tripping device for the said lever and controlled by the same, the said tripping device comprising a rope connected with the lever, a tripping-lever connected with the rope, a latch engaged by the said tripping-lever, and a bell-crank lever carrying the
55 said actuating-lever and the said latch, as set forth.

6. A drilling-machine having a bell-crank lever for actuating the drilling-tool rope, an actuating-lever connected with the said bell-crank lever, means for imparting a swinging motion to the said actuating-lever in one direction, a tripping device for the said lever

and controlled by the same, a stop-arm for the said bell-crank lever, and a connection between the said stop-arm and the said actuating-lever to adjust the position of the latter according to the position of the stop-arm, as set forth.

7. A drilling-machine having a bell-crank lever for actuating the drilling-tool rope, an actuating-lever connected with the said bell-crank lever, means for imparting a swinging motion to the said actuating-lever in one direction, a tripping device for the said lever and controlled by the same, a stop-arm for the said lever and controlled by the same, a stop-arm for the said bell-crank lever, and a connection between the said stop-arm and the said actuating-lever to adjust the position of the stop-arm, the said connection comprising a link, a lever connected by the said link with the said stop-arm, and a rope connecting the last-mentioned lever with the said actuating-lever, as set forth.

8. A drilling-machine having a bell-crank lever for actuating the drilling-tool rope, an actuating-lever connected with the said bell-crank lever, means for imparting a swinging motion to the said actuating-lever in one direction, a tripping device for the said lever and controlled by the same, the said tripping device comprising a rope connected with the lever, a tripping-lever connected with the rope, a latch engaged by the said tripping-lever, a bell-crank lever carrying the said actuating-lever and the said latch, and a rope under the control of the operator and connected with the said latch, as set forth.

9. A drilling-machine having a rope-drum and a plurality of brake-shoes for braking the said drum, two of the shoes engaging the upper rim of the drum and one the lower rim, a carriage mounted to travel and under the control of the operator, and a connection between the said carriage and the several brake-shoes to actuate the same, as set forth.

10. In a drilling-machine, the combination with a rope-drum mounted to slide and turn, and means for raising and lowering the drum, of a revoluble hub provided with arms for engaging the drum to turn the same when lowered, a lever adapted to extend into the path of the arms of the hub, a bell-crank lever for actuating the drill-tool rope, and a link connecting the bell-crank lever with the said lever, as set forth.

11. In a drilling-machine, the combination with a rope-drum mounted to slide and turn and provided with projections at its lower end, and means for raising and lowering the drum, of a revoluble hub provided with arms adapted to engage the projections of the drum when lowered, a lever adapted to extend into the path of the arms of the hub, a bell-crank lever for actuating the drill-tool rope, a link connecting the said lever with the bell-crank lever, and means for moving the said lever out of the path of the arms of the hub, as set forth.

12. In a drilling-machine, the combination with a rope-drum mounted to slide and turn and provided with projections at its lower end, and means for raising and lowering the drum, of a revoluble hub below the drum and provided with arms for engaging the projections of the drum when said drum is lowered, a vertically-movable lever adapted to extend into the path of the arms of the hub, a bell-crank lever for actuating the drill-tool rope, a link connecting the said lever with the bell-crank lever, means for moving said lever out of the path of the arms of the hub, and a brake for the drum, as set forth.

13. In a drilling-machine, the combination with a rope-drum, means for operating the drum, and means for disengaging the drum from its operating means, of an actuating-lever operated by the drum-operating means, a catch carried by said lever, a tripping-lever connected with the actuating-lever and adapted to be engaged by said catch, and a tool-rope-actuating device connected with the actuating-lever, as set forth.

14. In a drilling-machine, the combination with a rope-drum, means for operating the drum, and means for disengaging the drum from its operating means, of a bell-crank lever, an actuating-lever carried by the bell-

crank lever and operated by the drum-operating means, a catch carried by the bell-crank lever, a tripping-lever connected with the actuating-lever and adapted to be engaged by the catch, and a tool-rope-actuating device connected with the actuating-lever, as set forth.

15. In a drilling-machine, the combination with a rope-drum, means for operating the drum, and means for disengaging the drum from its operating means, of a bell-crank lever, an actuating-lever carried by the bell-crank lever and operated by the drum-operating means, a catch carried by the bell-crank lever, a tripping-lever connected with the actuating-lever and adapted to be engaged by the catch, a bell-crank lever for actuating the tool-rope, a connection between the bell-crank lever and the actuating-lever, a pivoted lever connected with the actuating-lever, and a stop-arm for the last-named bell-crank lever and connected with the said lever, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT BURNS MOORE.

Witnesses:

S. G. LITTLE,

WALTER NELSON.