No. 672,470. Patented Apr. 23, 1901.

E. D. WOLBERT.

WELL DRILLING ATTACHMENT.

(Application filed Sept. 12, 1900.)

(No Model.)

Fig. 1.

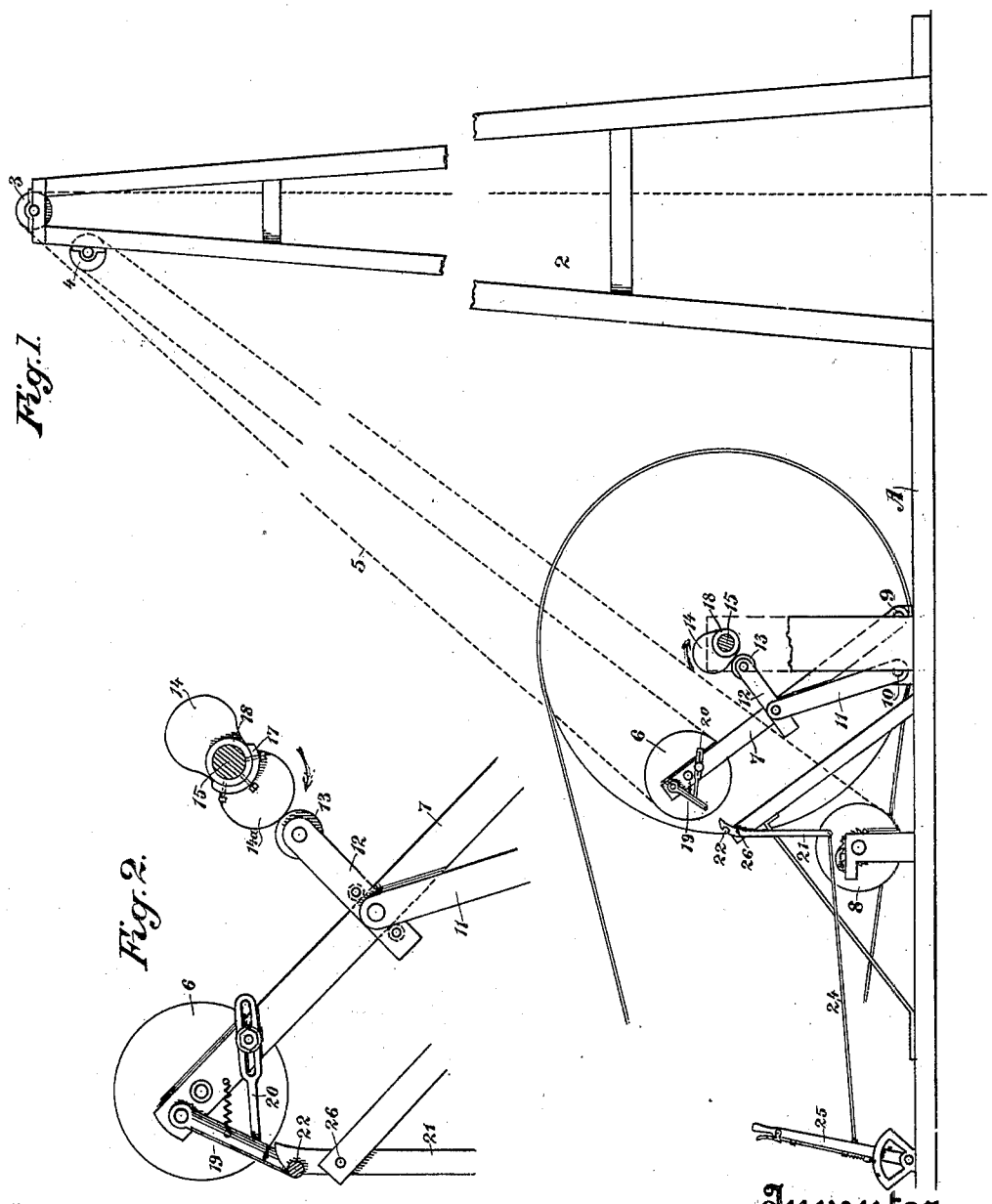


Fig. 2.

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EVERETT D. WOLBERT, OF BAKERSFIELD, CALIFORNIA.

WELL-DRILLING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 672,470, dated April 23, 1901.

Application filed September 12, 1900. Serial No. 29,756. (No model.)

To all whom it may concern:

Be it known that I, EVERETT D. WOLBERT, a citizen of the United States, residing at Bakersfield, county of Kern, State of California, have invented an Improvement in Well-Drilling Attachments; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a device which is designed for an attachment for drills, sand-pumps, and the like apparatus which is employed in drilling wells for oil or for other similar purposes.

The object of my invention is to provide a means for slowly raising the drill or other part within the well and allowing it to drop more suddenly. This sudden dropping of the drill causes it to penetrate the material through which it is passing with greater facility, and when used in conjunction with a sand-pump the sudden dropping of the pump causes it to agitate and stir up the material, and thus fill the pump-bucket, so that it can be lifted and discharged.

Referring to the accompanying drawings, Figure 1 is a general view of my device. Fig. 2 is a detail view of the locking device.

This apparatus may be used either stationary or portable. The frame A, forming the base or support upon which the mechanism is carried, may be mounted upon wheels, if desired, or it can be fixed.

2 is the derrick or gallows frame, having upon the top a pulley 3, which is in line with the well-hole, and there is also shown a second pulley 4, journaled near the first, so that the rope 5 from the drill first passes up over the pulley 3, thence down around the pulley 6, which is carried upon the end of a fulcrumed lever 7, thence back over the pulley 4 upon the gallows-frame, and thence down to the winding-drum 8.

When the drill is to be raised or lowered into the drill-hole, it is done by means of the winding-drum 8; but when the drill is at the bottom of the hole and the operation of this apparatus is to be performed the drum 8 is locked or held by pawl-and-ratchet or other equivalent mechanism, and the operations are then carried on through the rope.

The lever-arm 7 is fulcrumed to the frame A, as shown at 9. Near the fulcrum 9 is a second fulcrum-shaft 10, upon which is carried a lever-arm 11. This lever-arm has its opposite end connected with a slide 12, which is movable upon the lever 7. In the end of the slide 12 is an antifrictional roller 13, and this roller contacts with a cam 14, which is mounted upon a shaft 15, through which power is transmitted to rotate the shaft and the cam 14. This cam operates when rotated to push the slide 12 away when the larger part of the cam 14 is brought in line with the roller 13 and the slide 12, and this causes the slide to travel outwardly on the lever-arm 7 and away from its fulcrum-point. This action is effected both by the pressure of the cam and the action of the fulcrumed lever 11, and as the movement takes place the lever 7 is pushed down, carrying with it the pulley 6. This acts upon that part of the rope 5 which passes over the pulley 6 and the pulley 3 and thence down to the drill or other tool within the well, and as the opposite end of the rope is fixed to the drum 8 the downward movement of the lever 7 will act to raise the drill or other tool within the well. When by further rotation of the cam the small diameter thereof comes into line with the roller 13, it and the slide 12 move rapidly toward the shaft 15, and thus allow the lever 7 to move more rapidly about its fulcrum-point 9. This movement, carrying the pulley 6 toward the pulley 3, slacks off on the rope 5, so that the weight of the drill or other implement will cause it to drop suddenly to the bottom of the hole. If the cam is made double—that is, having two similar ends—then there will be two drops of the tool for each revolution of the cam-shaft. If it is desired to make the drops more frequent, the cam may be made as shown in Fig. 2, one portion of the cam being formed with the hub which is fixed upon the shaft 15. The other portion of the cam, having essentially the same shape, is fixed to a segmental hub 17, which, fitting over the hub 18 of the main portion, is secured thereto by bolts or other equivalent devices, so that the ends 14 and 14^a of the cam project in opposite directions, thus providing for two drops for each revolution. By removing the end 14^a only a single drop at each revolution will be produced.

If it is desired to disengage the lever 7 and

the pulley 6 from the action of the cam 14, it is effected as follows: 19 is a link or shackle, the ends of which are pivoted upon or near the shaft or pulley 6, and the bight of the link or shackle may hang below and outside of the rim of the pulley 6, as shown in Fig. 2. 20 is an arm or stop against which the link rests, the position of this arm being adjusted by a set-screw moving in a slot in the arm. Fulcrumed below the link 19 is a lever-arm 21, having a notch formed in it, as shown at 22, into which the bight of the link may drop when this arm 21 is in proper position for that purpose. This lever-arm 21 is fulcrumed to a suitable supporting-frame, as shown at 26. The lower end of the arm 21 is connected by a rod 24 with a lever 25, and by moving this lever 25 the arm 21 may be moved so as to throw it into position for the groove or notch 22 to engage with the link 19. Under ordinary conditions when the cam 14 is acting upon the parts, as previously described, this lever 22 will be out of engagement with the link 19, and there will be nothing to prevent the movement of the lever 7 at each rotation of the cam. When it is desired to disengage it, by moving the lever 25 until the lever 21 is brought into position so that the link 19 will drop into the notch 22 at the farthest outward swing of the pulley-carrying lever 7 the lever 7 will then be prevented from returning as the cam continues its rotation, and a further movement of the lever 25 will move the parts, including the lever 7, far enough to be out of contact with the cam. Under these conditions the drum 8 can be revolved to raise or lower the drill or other tool without any interference on the part of the cam if the latter still continues to revolve.

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

1. In a well-drilling attachment, mechanism for raising and dropping a tool or implement within the drill-hole consisting of a fulcrumed lever, a pulley carried at the outer end over which the drill-rope passes, a revoluble cam, a slide movable upon the pulley-carrying lever adapted to be engaged by said cam, and means fulcruming the slide adjacent to the said lever.

2. In a well-drilling apparatus, a device for raising and dropping the tool or implement into the well-hole consisting of a lever fulcrumed at one end carrying a pulley at the other over which the rope connected with the implement passes, a second lever fulcrumed adjacent to the fulcrum-point of the first-named lever, a slide movable upon said first lever with which the second lever is connected, and a revoluble cam, the ends of which contact with the slide whereby the lever is moved outwardly with a slow motion, and allowed to move inwardly with a rapid motion.

3. In a well-drilling apparatus, a fulcrumed lever having a pulley at the outer end around which the rope well passes from the tool or implement in the well, a cam revoluble in line with the lever, a slide movable upon a lever having an antifrictional roller against which the cam contacts, and a lever-arm having one end connected with the slide and the other fulcrumed adjacent to the fulcrum of the pulley-carrying lever.

4. In a well-drilling apparatus, a fulcrumed lever carrying a pulley upon its outer end around which a rope passes from the tool or implement within the well, a slide connected with a lever which is fulcrumed adjacent to the fulcrum-point of the pulley-carrying lever, a revoluble cam contacting with a roller upon the slide whereby the pulley-lever is moved about its fulcrum and the outer end reciprocated at different rates of speed, and a latching device whereby the lever and pulley may be retained out of contact with the revoluble cam.

5. In a well-drilling apparatus, a fulcrumed swinging lever having a pulley upon the outer end around which a rope passes from the tool or implement within the well, a slide carried by a second lever fulcrumed adjacent to the pulley-carrying lever, upon which the slide is movable, a revoluble cam adapted to contact with the slide to cause the pulley-carrying lever to swing about its fulcrum-point, and a latch by which it is retained out of contact with the cam consisting of a link connected with the lever, a latch adapted to engage the link and a hand-lever and connections whereby the latch is thrown into or out of engagement with the link.

In witness whereof I have hereunto set my hand.

EVERETT D. WOLBERT.

Witnesses:
S. H. NOURSE,
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