

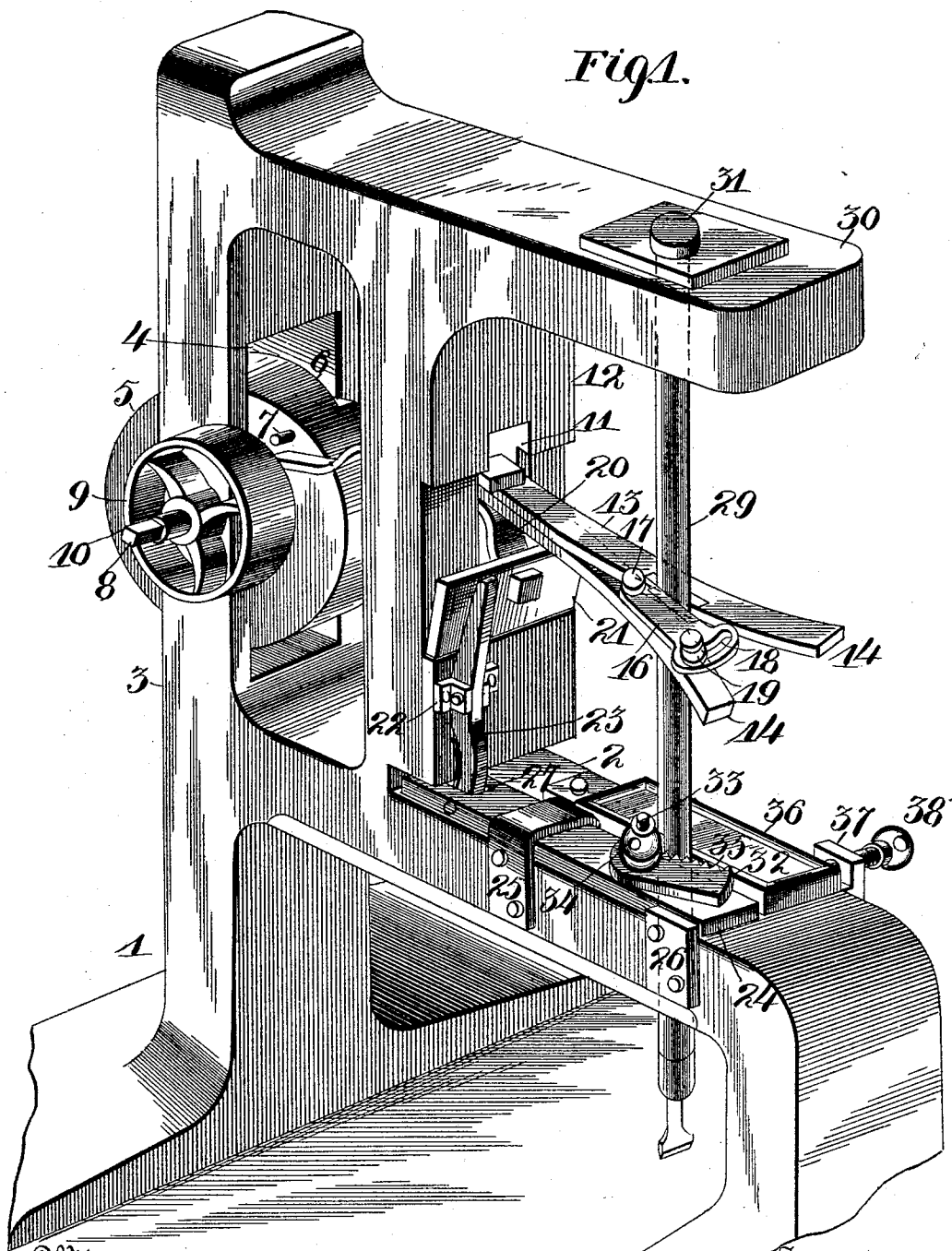
(No Model.)

2 Sheets—Sheet 1.

N. WIDMAN.
ROCK DRILLING MACHINE.

No. 481,610.

Patented Aug. 30, 1892.



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Fig. 2.

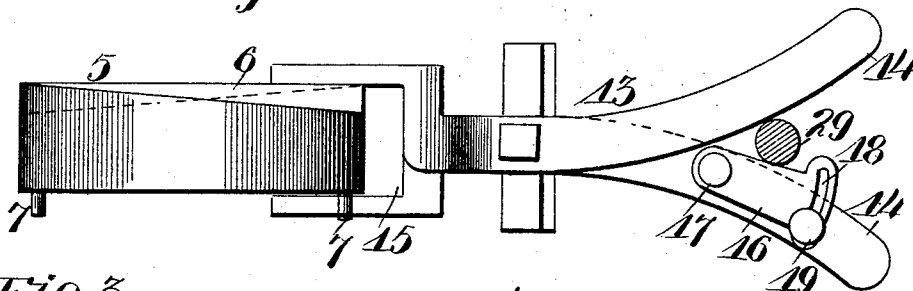


Fig. 3.

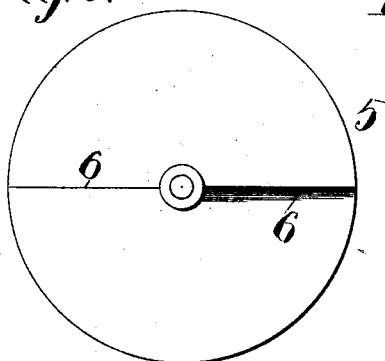


Fig. 4.

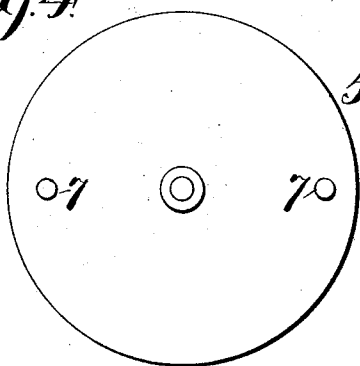


Fig. 5.

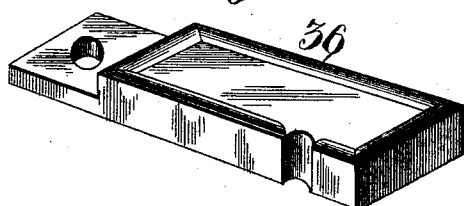


Fig. 6.

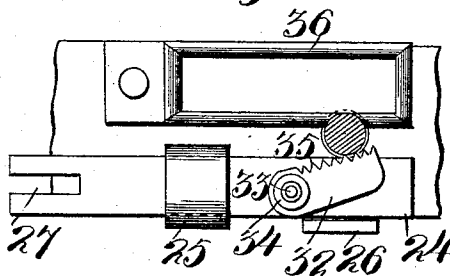
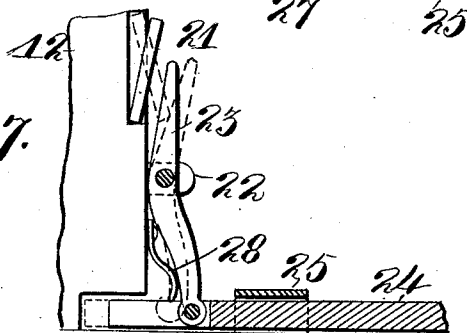


Fig. 7.



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UNITED STATES PATENT OFFICE.

NICHOLAS WIDMAN, OF MASCOUTAH, ILLINOIS.

ROCK-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,610, dated August 30, 1892.

Application filed May 21, 1892. Serial No. 433,857. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS WIDMAN, of the city of Mascoutah, county of St. Clair, State of Illinois, have invented certain new and useful Improvements in Rock-Drilling Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in rock-drilling machines; and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a perspective view of my complete invention in its normal position. Fig. 2 is a top plan view of the gripping-jaws for the drill-shaft and the means for operating the same. Fig. 3 is a side elevation of the wheel, which forms a part of my invention, showing the cam-surface of the same. Fig. 4 is a side elevation of the opposite side of the said wheel, showing more properly the pins carried thereby for operating the said gripping-jaws. Fig. 5 is a perspective view of the oil-basin for lubricating the drill-shaft. Fig. 6 is a detail view in top plan, showing the oil-basin in connection with the drill-shaft and the means for intermittently rotating the same, and Fig. 7 is a vertical longitudinal section of the reciprocating plate or bar and the lever for actuating the same.

My invention is especially adapted for drilling stone, but can be used successfully for other like purposes without departing from the nature of my invention.

Referring to the drawings, 1 represents the frame of the machine, to which the various parts of the same are movably attached, and which may be moved from place to place or fixed permanently to any suitable foundation, as may be deemed desirable.

2 represents the bed of the machine, which forms a part of the frame and to which certain movable parts are attached. The upright 3 of the frame is provided with a transverse rectangular opening 4, within which is located a wheel 5, one of the flat surfaces of which is provided with two cams 6, an illustration of which can be had by referring to

Fig. 2, which shows the same in solid and dotted lines. The opposite flat surface of said wheel 5 is provided with two pins 7, which are arranged opposite the widest portion of said cams and are adapted to elevate the free ends of the gripping-jaws in a manner as hereinafter described. 8 represents a shaft which passes through the said wheel, but is fixed thereto, and is journaled in the upright portion of the frame of the machine and is designed to impart motion to the entire mechanism. To the projecting end of said shaft is fixed a belt-wheel 9, over which an ordinary belt is adapted to be passed for imparting motion thereto by steam or other power. The terminal end of said shaft 8 is made square, as shown at 10, which end is adapted to receive a crank when it is desired to operate the machine by hand.

11 represents a rectangular opening which is formed in the support 12, comprising a part of the frame of the machine, within which is movably attached the gripper 13. Said gripper is composed of two members movably united at a suitable distance from their end forming jaws 14, which, as shown in the drawings, are somewhat curved for properly gripping the drill-shaft. The opposite ends of the said members are suitably shaped, and when the same are united, as shown in Fig. 2, the said gripper is forked, as shown at 15, which admits the wheel 5. A gripper constructed as described is adapted to be operated by both the cam-surfaces of the said wheel for working the jaws of the same for the purpose of gripping and releasing the drill-shaft, and by the pins carried by the opposite side of the wheel for raising the said drill-shaft when gripped.

16 represents a plate one end of which is movably attached to one of the members of the gripper by means of a bolt 17 and the opposite or free end of the said plate provided with a curved slot 18, through which an adjusting-bolt 19 is freely passed and screwed into said member, whereby adjustment is had which is absolutely necessary when it is desired to employ drill-shafts of various sizes.

To one of the members of the gripper is attached a curved plate 20, and to said curved plate is fixed a rectangular plate 21, which is

adapted to be actuated when motion is imparted to the gripper in a manner, as shown by dotted lines, Fig. 7.

To the lower portion of the support 12 are fixed two right-angular-shaped bearings 22, between which a lever 23 is movably fixed, against one arm of which the plate 20 is adapted to be brought in contact.

24 represents a reciprocating plate or bar which is movably fixed to the bed 2 of the machine by a strap 25 and is guided and held in its proper position by a plate 26, which is fixed to the said frame 1 in any desirable manner. One end of the said bar or plate 24 is forked, as shown at 27, and between the legs of the same is movably attached the lower arm of the lever 23, as best shown in Fig. 7, by which construction the said plate or bar 24 is reciprocated by the plate 21, and also by the spring 28, the free end of which bears against the said lower arm of the lever.

29 represents the drill-shaft, which is preferably round in cross-section and loosely passes through an opening formed in the bed 2 of the machine and also through a similar opening formed in the horizontal projecting portion 30 of the said frame. The upper end of the said drill-shaft is provided with a head 31, which limits the downward motion of the said shaft, and the opposite end of the same is provided with a chuck, affording means for suitably attaching an ordinary bit.

32 represents a plate which is movably attached to the upper surface of the bar or plate 24 by means of a bolt 33, carried by the said plate or bar. The said plate 32 is made adjustable by the nut 34, which is screwed upon said bolt and brought in frictional contact with the said plate, holding the same in any desired position in relation to the drill-shaft. One edge of the said plate 32 is serrated, as shown at 35, which construction has the effect of biting the said drill-shaft when the plate 24 is moved in the position as shown in dotted lines, Fig. 7. When the said plate 24 is moved in the opposite direction and actuated by the spring 28, the said drill-shaft 29 will be partially turned by the frictional contact of the serrated portion of the plate 32 on the same. Thus it will be seen that the said drill-shaft is intermittently rotated on each downward motion of the same.

36 represents an oil-basin, one end of which is movably attached to the bed 2 of the machine and the opposite or free end of the same adapted to be adjusted to and from the drill-shaft for purposes of oiling the drill-shaft and admitting shafts of various sizes.

37 represents a bracket the lower portion of which is attached to the frame of the machine and through which a screw 38 is passed for holding the said oil-basin to its proper adjustment against the drill-shaft and varying the feed of the oil.

When motion is imparted to the shaft 8, the wheel 5 will be rotated, causing the cam-sur-

faces 6 of the said wheel to be brought in contact with one end of one of the members of the gripper, causing the said member to be intermittently operated, gripping and releasing its hold upon the drill-shaft 29. While the gripper is in this position, one of the pins 7, carried by the opposite surface of the said wheel, is brought in contact with one end of the other member of the gripper, causing the drill-shaft to be elevated; and by a further revolution of the wheel the gripper will release its hold upon the drill-shaft and allow the same to fall by gravity. The machine on elevating the drill-shaft 29 operates the reciprocating plate 24 in one direction, causing the serrated edge of the plate 32 to be brought in contact with the shaft 29 when the said shaft is in its highest position, after which the spring 28 by its own tension will cause the said plate 24 to be moved in the opposite direction, partially rotating the said shaft on its downward movement and before the bit is brought in contact with the material to be operated on. It is also to be noted that one entire rotation of the wheel 5 operates the drill-shaft 29 twice by reason of the double cam-surfaces of the said wheel and the two pins 7, also carried by the said wheel.

What I claim is—

1. A rock-drilling machine having a gripper composed of two members pivotally united, a wheel having one of its surfaces provided with a cam or cams for actuating said gripper in one direction, and a pin or pins fixed to the opposite surface of said wheel for depressing one end of the gripper and elevating the opposite end of the same, substantially as set forth.

2. A rock-drilling machine consisting of a gripper movably attached to the frame of the machine, a wheel having cam-surfaces for operating the said gripper in one direction, pins carried by the said wheel for elevating one end of the gripper, a reciprocating plate or bar fixed to the bed of the machine, a lever movably attached to the said plate or bar and adapted to be actuated by the movement of the gripper in one direction, and a serrated plate adjustably secured to the said reciprocating plate or bar and adapted to be brought in contact with the drill-shaft for partially rotating the same, substantially as described.

3. A rock-drilling machine consisting of a gripper and means for operating the same, a lever 23, movably attached to the frame of the machine and adapted to be actuated by the said gripper, a reciprocating plate or bar 24, movably attached to one arm of the said lever, a serrated plate 32, adjustably secured to the said plate or bar and adapted to be brought in contact with the drill-shaft 29, an oil-basin 36, movably attached to the bed of the machine, and means for adjusting the same in relation to the said drill-shaft, substantially as set forth.

4. A rock-drilling machine comprising a

gripper and means for operating the same, a
plate 16, movably attached to one of the mem-
bers of the said gripper, a slot 18, formed in
the said plate, and a screw 19 for holding said
5 plate in its proper adjustment in relation to
the drill-shaft of the machine, substantially
as set forth.

In testimony whereof I affix my signature in
the presence of two witnesses.

NICHOLAS WIDMAN.

Witnesses:

D. IND. NEUDORF,
WILLIAM J. WALKER.