

(No Model.)

M. D. L. WINDELL.
ROCK DRILL.

No. 419,392.

Patented Jan. 14, 1890.

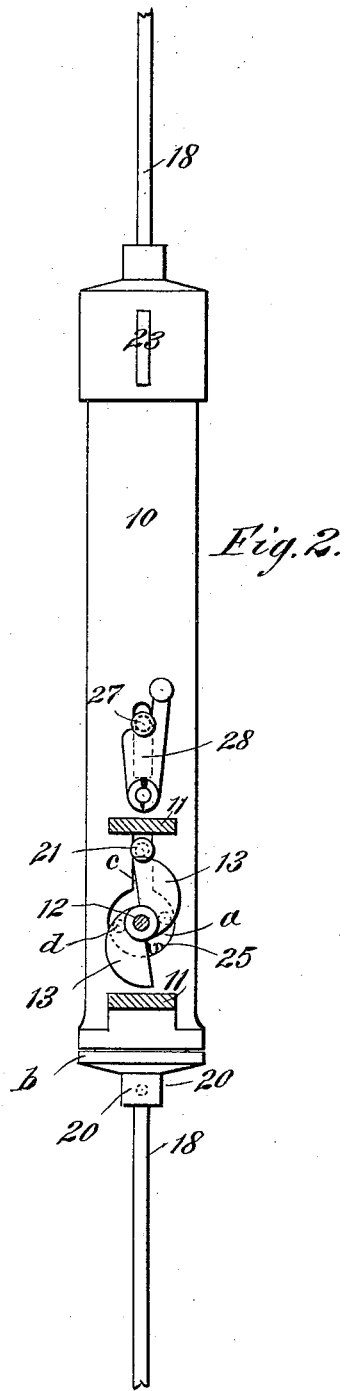


Fig. 2.

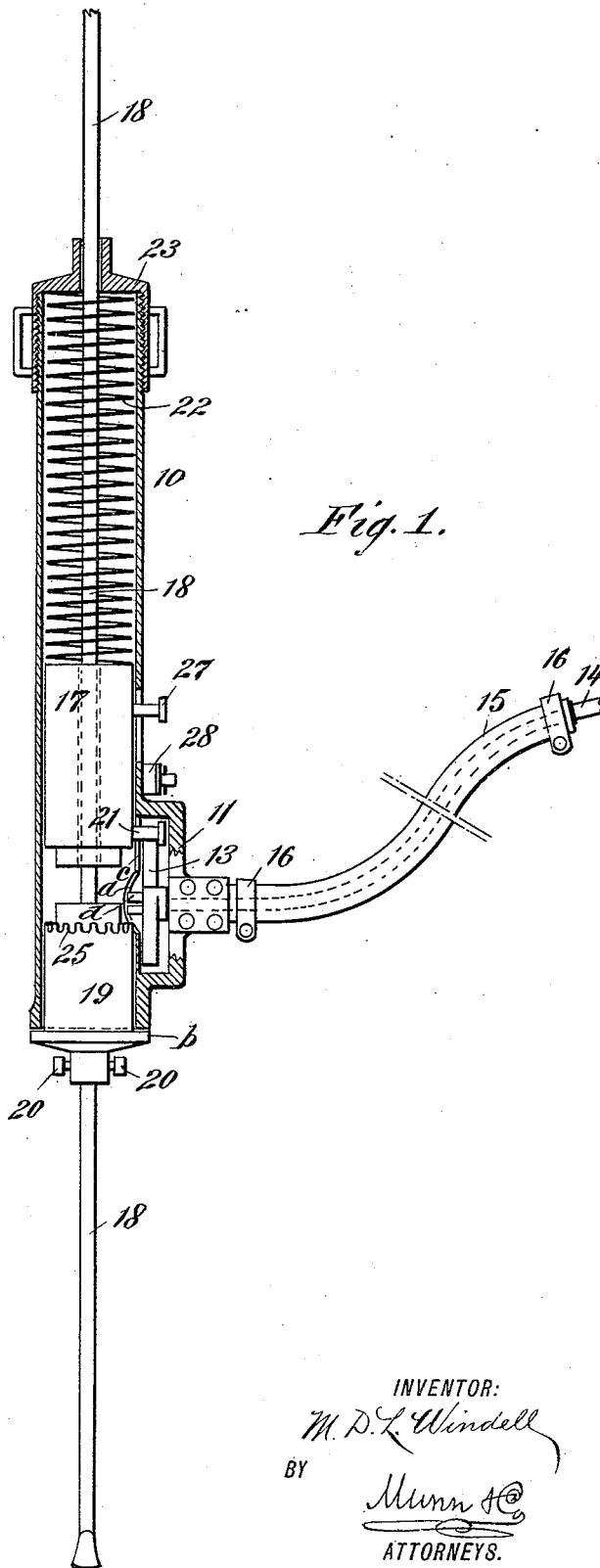


Fig. 1.

WITNESSES:

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UNITED STATES PATENT OFFICE.

MARQUIS D. L. WINDELL, OF CORYDON, INDIANA, ASSIGNOR TO HIMSELF
AND ZACHARY T. FUNK, OF SAME PLACE.

ROCK-DRILL.

SPECIFICATION forming part of Letters Patent No. 419,392, dated January 14, 1890.

Application filed May 16, 1889. Serial No. 310,973. (No model.)

To all whom it may concern:

Be it known that I, MARQUIS D. L. WINDELL, of Corydon, in the county of Harrison and State of Indiana, have invented a new and Improved Rock-Drill, of which the following is a full, clear, and exact description.

The object of the invention is to provide a light-running portable drill; and to the end named the invention consists in the construction and arrangement of parts, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a side view of my improved drill, the shaft and shaft-supporting bracket being shown in section and the latch being shown as it appears when adjusted to hold the hammer out of the way of the operating-cam; and Fig. 2 is a central sectional elevation of the drill-case, the parts therein being shown as they appear when in operative position.

In the drawings, 10 represents a case that is formed with a side opening *a* and provided with a bracket 11, which serves as a bearing for a short shaft 12, that carries a cam 13, preferably a double cam of the form shown best in Fig. 1. To the outer end of the shaft 12 there is connected a flexible shaft 14, said flexible shaft being arranged for connection with a motor. That section of the shaft 14 which is adjacent to the case 10 is protected by rubber tubing 15, the tubing being held to place by clamping-rings 16, as shown.

Within the case 10, I mount a hammer 17, through which there is passed a drill-stem 18, that is held to a plug 19 by set-screws 20, the plug fitting within the lower end of the case, but being prevented from entering the case bodily by a flange *b*. The hammer is provided with a laterally-extending boss or stud 21, which rides in a groove *c*, formed in the case 10, and in connection with the hammer there is arranged a spring 22, which bears against the upper end of the hammer and against a cap 23, that is fitted to the upper end of the case, said cap being centrally apertured to provide for the passage of the drill-stem.

In order that the plug 19 may be turned step by step when the machine is in operation, I form said plug with a crown-wheel 25, and I provide the cam 13 with studs *d*, which engage the teeth of the wheel at each revolution of the cam-shaft.

From the construction above described it will be seen that as the shaft 14 is revolved a rotary motion will be imparted to the cam 13, and as said cam revolves the hammer will be forced up against the tension of the spring 22; but immediately after either bearing-face of the cam passes from engagement with the hammer stud or pin 21 the spring 22 will be free to act to force the hammer hard against the plug 19. As each blow is struck the plug and the drill carried thereby will be turned forward one step, owing to the engagement of one of the pins *d* with the crown-wheel 25.

It is desirable that provision be made for stopping the action of the drill without stopping the motor, and to that end I provide the hammer with a pin 27, which extends through the case, there to be engaged by a latch 28, that is pivotally connected to the case, as shown in the drawings, the arrangement being such that the latch may be turned to engage the pin 27 and hold the hammer-pin 21 out of the path of the cam 13.

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

1. A drill comprising a tubular casing, a plug having longitudinal and axial movement therein and provided between its ends with an annular crown-wheel, a drill-rod passing through and fixedly secured to said plug, a hammer sliding on the drill-rod above the plug to strike its upper end and provided with a lateral projection, a spring encircling the said rod between the top of the casing and upper end of the hammer, and a vertically-rotating cam mounted in one side of the casing under the hammer projection and provided on its inner side parallel with its axis with spurs or teeth to mesh with the teeth of the crown-wheel and rotate the plug and drill-rod at intervals, substantially as set forth.

2. A drill comprising a longitudinally-slotted tubular casing, the sliding hammer provided with lateral projections extending

through the slot beyond the outer face of the casing, a latch pivoted on the outer side of the casing and having a shoulder to pass under one of the said projections and hold the hammer raised, a drill-rod passing loosely through the hammer, a spiral spring bearing on the upper end of the hammer, a plug fixedly secured to the drill-rod below the hammer, and a vertical cam engaging the other hammer projection to raise and release the hammer, substantially as set forth.

3. The combination, with the tubular casing having a side opening, a bracket on the outer side of the casing over the said opening, and a transverse shaft journaled in said bracket and having a vertically-rotating cam on its inner end within the bracket and pro-

vided on its inner face with spurs or teeth parallel with said shaft, of a drill-rod passing through the casing, a plug fixedly secured on the rod and having longitudinal and axial movement in the lower end of the casing, an annular crown-wheel around the plug near its upper end in the path of said teeth or spurs, a hammer within the casing, having a longitudinal bore through which the drill-rod loosely passes, and a lateral projection in the path of the cam, and a spiral spring bearing on the upper end of the hammer, substantially as set forth.

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Witnesses:

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