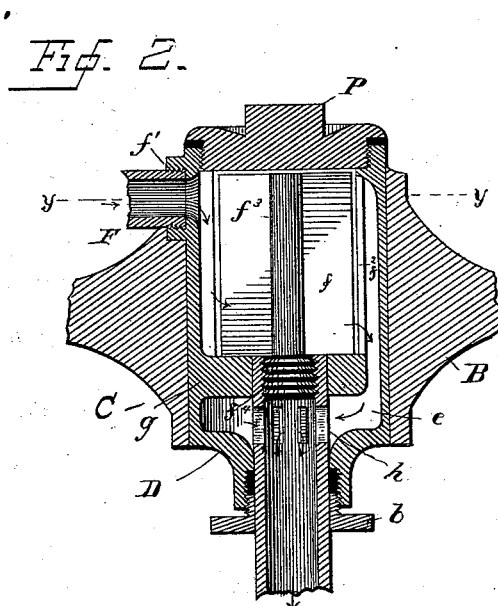
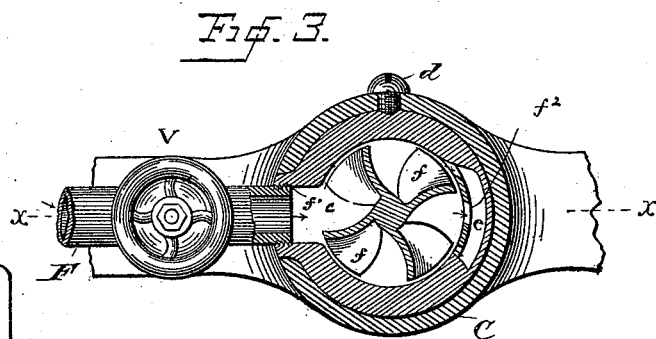
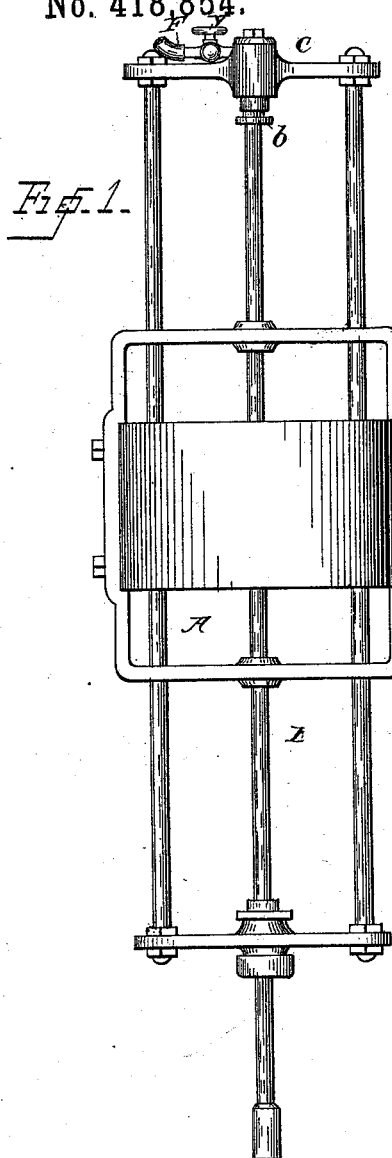


(No Model.)

I. E. STOREY.
DRILLING APPARATUS.

No. 418,854.

Patented Jan. 7, 1890.



WITNESSES:

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IMLE E. STOREY, OF BOULDER, COLORADO.

DRILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 418,854, dated January 7, 1890.

Application filed April 16, 1889. Serial No. 307,421. (No model.)

To all whom it may concern:

Be it known that I, IMLE E. STOREY, a citizen of the United States, residing in Boulder, in the county of Boulder and State of Colorado, have invented certain new and useful Improvements in Drilling Apparatus; of which the following is a specification:

My invention relates to drilling and boring apparatus, with a view to providing means for supplying a lubricant to the drilling-tool of a rock-drill.

The invention consists, generally, in the combination, with a rock or similar drill having a hollow drill-shaft, of a rotary pump connected with the shaft and adapted to force water through said shaft to the drill-point for purposes of lubrication.

The details of construction will be described with reference to the accompanying drawings, in which—

Figure 1 represents a general view of a drill and the location of the pump with reference thereto. Fig. 2 represents a central longitudinal section of the pump, and Fig. 3 a lateral section taken on line *yy* of Fig. 2.

Referring to Fig. 1, A represents the drill; A', a portion of the tripod on which the drill is supported; B, the drill-shaft, and C the pump-box located at the end of the drill-shaft. The iron casting constituting the pump-box is shown at C in Figs. 2 and 3. The box has a cylindrical opening, in which is fitted a brass shell D. This shell is locked rigidly in the box by screw *d* or in any other suitable manner. The shell projects beyond the box on both sides, as shown. The drill-shaft B enters the drill end of the shell through a stuffing-box *d*, formed therein. The shell is formed with two chambers *c* and *e*. In the former chamber the blades *ff* are located. The latter chamber is simply a passage for water or other liquid used. The inlet-tube F enters the shell at *f'*, and the passage on entering the shell spreads longitudinally, as shown, in order that the liquid may be presented to the blades throughout their full length. Diametrically opposite the inlet-port are the openings *f*² into the exit passage or chamber *e*. Blades *ff* are made in-

tegral with a center pin or shaft *f*³, which latter screws into the head of the drill-shaft, as shown at *f*⁴. Through this construction the rotary motion of the drill-shaft is partaken of by the blades. A diaphragm *g* separates the two chambers of the shell, and it is in this diaphragm that the upper end of the shaft has its bearing. Below this bearing-point the shaft is provided with openings *h*, which admit the liquid to the hollow shaft from the chamber *c*. It is thence conducted through the shaft to the drill-point at its opposite end. The top of the shell is inclosed by a cap-nut P, which is screwed in place and suitably packed.

The supply of liquid will depend, other things being equal, upon the rotation of the drill-shaft; but I have provided a valve V, located in the supply tube or pipe, whereby the flow of liquid to the pump may be regulated at pleasure.

Having described my invention, I claim—

1. The combination, with a drill and its frame, of a rotary pump mounted within said frame upon the end of the drill-shaft, an inlet-tube to said pump, and an outlet leading through the drill-shaft.

2. The combination, with the drill-frame provided with the pump-box, of the pump-shell provided with two chambers, as *c* and *e*, the pump-blades mounted on the end of the drill-shaft and rotating in said chamber *c*, and the hollow drill-shaft projecting into the pump-shell and provided with openings which form a passage from said chamber *c* to the interior of the drill-shaft.

3. The combination, with a drill and its frame, of a pump mounted upon or within said frame and connected with the drill-shaft, an inlet to said pump, and an outlet leading through the drill-shaft.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

IMLE E. STOREY.

Witnesses:

WM. A. ROSENBAUM,
F. C. GRUEY.