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D. C. DEMAREST.
ROCK DRILL.

APPLICATION FILED MAY 4, 1905.

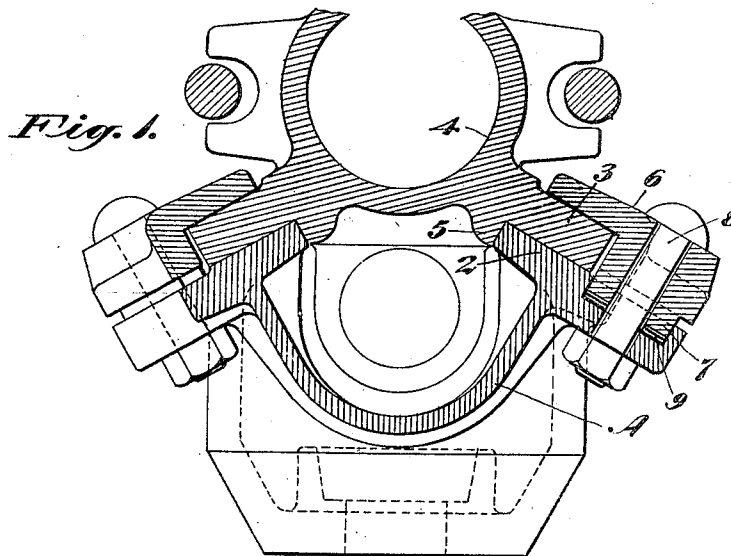
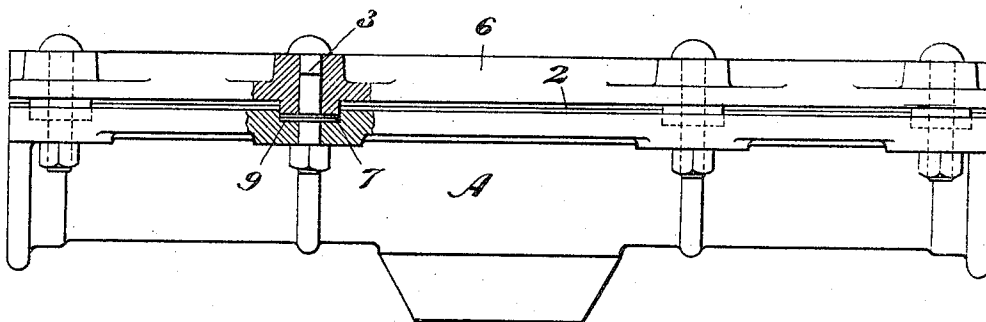


Fig. 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

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ROCK-DRILL.

No. 813,041.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID C. DEMAREST, a citizen of the United States, residing at Angels Camp, in the county of Calaveras and State of California, have invented new and useful Improvements in Rock-Drills, of which the following is a specification.

My invention relates to improvements in rock - drilling machines, and especially to drills of the well-known Ingersoll and Sergeant type. These drills usually comprise a cylinder carrying the piston and drilling-tool and a "shell," as it is called, to which the cylinder is removably clamped, and which shell is generally supported pivotally, so as to be turned in any direction up or down or side-wise, according to the desired incline or position of the hole to be drilled. Compressed air is usually used as a medium to operate the piston. Usually the abutting surfaces of the cylinder and shell are flat, and the parts are united by bolts. As the bolts and bolt-holes become worn through use, as they do by the reason of the terrific jarring and racking the machine is subject to and by reason of the cutting action due to the rock-dust arising from the rock, the cylinder becomes loose on the shell and allows the "side motion" to the drill which gives so much trouble in present machines. Taking an ordinary machine where the cylinder is not absolutely rigid on the shell with a drill four or five feet long it is a matter of much difficulty and consumes considerable time in starting a hole in hard rock, since the point of the drill may hit the rock anywhere within a radius of three or four inches. Of course after the hole is well started the side motion does not cut such a figure. The difficulty is in starting the hole. The defects of present constructions are all the more apparent and annoying where the machine is held on its side, as it is most generally in actual practice. In mining it is now generally the custom to use a bar to support the drill, which is braced either against the sides or against the floor and ceiling of the tunnel where breasting and blasting are going on. Where the bar is vertical or in inclined position, the drill is always held on its side. This throws the entire weight on the lower side of the shell. With all clamping or guiding arrangements that I know of for the cylinder and shell the wear is all brought on the lower guides or on the bolts. The result is that it is only a short time before the machine has become loose-jointed.

The object of my invention is so to change and improve the cylinder and shell construction whereby a rigid structure will be preserved at all times and all wear will be taken up practically automatically.

The invention consists of the parts and the construction and combination of parts hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a transverse section of shell, cap, and cylinder. Fig. 2 is a side elevation of the shell and cap, omitting the cylinder.

Instead of having the usual flat-faced shell upon which rests the guide-lugs of the cylinder, I have adopted what I term an "A-shell" construction, as shown in Fig. 1. In this case A represents a shell having suitable means on its under side for attachment to a tripod or to a clamp-bar and provided with the lateral and upwardly-inclined convergent seats 2 for the corresponding downwardly and upwardly inclined lugs 3 of a cylinder 4. The space between the seats 2 and inclosed by the shell and cylinder is for the operation of the usual feed-screw. (Not here shown.)

If desired, the under side of the lugs 3 may be provided with offsets 5, forming end abutments for the seats 2 and designed to give further support and steadiness to the engaging parts. The cylinder is held to the shell by means of caps 6, one disposed on either side of the cylinder and having perforations registering with corresponding perforations in the shell and provided with lips which overlap the lugs 3. Preferably the bolt-holes in the cap are surrounded on the under side of the caps by bosses 7, which fit in corresponding counterbores made in the guide-seats of the shell. These bosses on the caps, with their corresponding counterbores in the shell, prevent all motion of the shell-caps in every direction. The bolts 8 therefor need only to have a loose fit, serving the purpose simply to clamp down the caps to the shell.

The adjustment for wear is accomplished by inclosing between the bottom of a counterbore and a boss on the shell-cap thin annular washers or shims, as 9, made of stove-pipe iron, or even of paper, if a very thin washer is needed. The little washers or shims, being entirely inclosed in the counter-boring, are held in such a position that there is no chance of their working out or being lost, and it will be obvious that by removing the proper number of these washers or in-

serting them, as the case may be, a very delicate and positive adjustment of the caps to the shell and the cylinder-body can be secured. A further advantage of having the
5 bosses 7 and their corresponding counterbores is that it is possible in case of wear, so that all the washers are removed from the counterbore, to quickly file down the bosses and make the adjustment without having to
10 machine down the entire shell-cap.

While I have shown the lugs and their seats inclined A-fashion, it is obvious that the design might be reversed and the guideline of the cylinder stand up instead of down.
15 The two constructions are in every way equivalent. I prefer the design here shown because of its convenience in manufacture. There is no chance for play or loss motion between my shell and cylinder, since the one
20 part follows the other up or down according as wear takes place. Thus in a measure the take-up of one part relative to the other is automatic, since the adjustment is in the line of wear and, like the wear, is in one direction
25 only. In whatever position the drill is operated all the wear is not brought on the lugs and seats on the lower side of the cylinder, but is borne by the seats and lugs on both sides of the cylinder.

30 It is possible that various changes and modifications may be made without depart-

ing from the principle of my invention, and I do not wish to be understood as limiting myself to the specific structure here shown and described.

Having thus described my invention, what I claim, and desire to be secured by Letters Patent, is—

1. In a rock-drilling machine the combination of a shell and a cylinder supported there-
40 on one of said parts having lugs and the other part having seats for said lugs, and means to clamp the cylinder to the shell said means including bolts passing through the caps and shell said shell having counterbores
45 and said caps having bosses fitting said counterbores.

2. In a rock-drilling machine, the combination of a cylinder having lateral inclined lugs, a shell having correspondingly-inclined
50 seats for said lugs, removable caps for the lugs, said caps having bosses on their under side and said shell having counterbores adapted to receive said bosses, and means to
55 secure the caps to the shell.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

DAVID C. DEMAREST.

Witnesses:

V. L. MARCHAL,
LAWRENCE MONTE VERDA.