M. SMITH.

ROCK DRILL.

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Patented Nov. 3, 1914.

Fig. 1

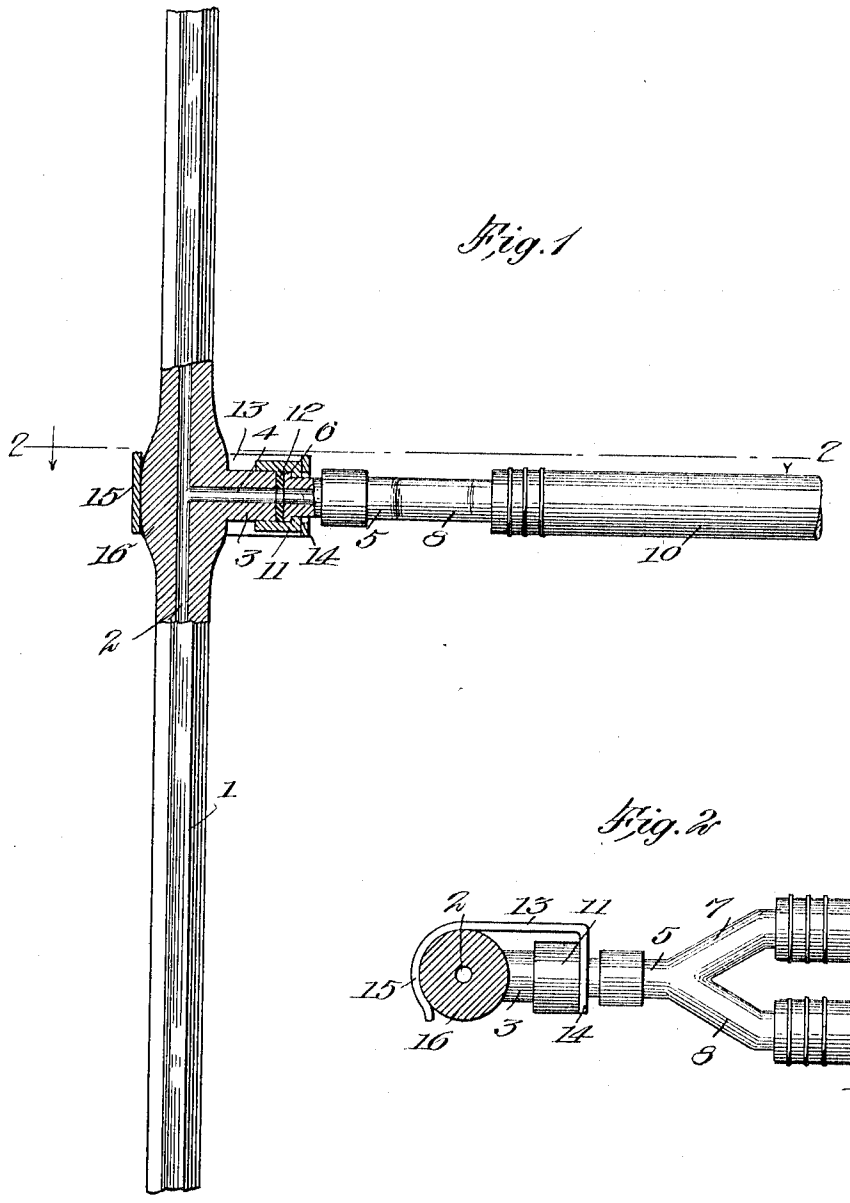


Fig. 2

WITNESSES

F. D. Sweet.

Myron G. Clear

INVENTOR

Michael Smith

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MICHAEL SMITH, OF BISBEE, ARIZONA.

ROCK-DRILL.

1,116,146. Specification of Letters Patent. Patented Nov. 3, 1914.

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To all whom it may concern:

Be it known that I, MICHAEL SMITH, a citizen of the United States, and a resident of Bisbee, in the county of Cochise and State of Arizona, United States of America, have made a new and useful Improvement in Rock-Drills, of which the following is a specification.

My invention relates to rock drills and more particularly to the drill bits used in rock drilling and of that type provided with a side inlet through which either air or water, or both, may be introduced under atmospheric or forced pressure.

The object of my invention is to provide a structure in which the side fitting or inlet nozzle may be quickly and readily attached or detached by a single movement, a spring clip of peculiar structure being employed for this purpose, and the further object of my invention is to provide a side fitting or inlet nozzle of particular structure whereby air or water, or both, may be introduced either under atmospheric or forced pressure as the needs of a particular situation demand.

In the accompanying drawing illustrating my invention, Figure 1 is a side elevation of the intermediate portion of a rock drill bit provided with my improvements, the bit being broken away and in section around the connection of the side fitting or inlet nozzle thereto. Fig. 2 is a transverse section therethrough, taken substantially on line 2—2 of Fig. 1.

Referring now to these figures, 1, indicates a rock drill bit having a longitudinal bore or aperture 2, and provided with an intermediate laterally projecting nipple 3, having a smooth outer surface and a square outer end, and provided with a bore or aperture 4, the inner end of which communicates with the aperture 2 of the bit.

For reasons mainly dependent upon economy, I preferably form the longitudinal bore or opening 2 throughout the entire length of the drill bit, after which, this bore or aperture may be plugged up at the head end of the bit by any suitable means not shown.

The side fitting or inlet nozzle comprises a cylindrical body 5, having an annular shoulder 6 around one end and bifurcated at its opposite end in order to form branches 7 and 8 respectively, adapted for connection with air and water pipes 9 and 10. This fitting is also provided with a collar 11 surrounding its first mentioned end and having an inturned annular shoulder for engagement with the shoulder 6 of the body 5 in order to prevent displacement of the collar, this collar 11, being adapted to slip over the outer end of the nipple 3. An apertured gasket 12 is preferably provided, being disposed within the collar 11 so as to engage between the contiguous ends of the body 5 and the nipple 3 when the side fitting or inlet nozzle is coupled in operative position as shown in Fig. 1.

The means whereby the above mentioned parts are coupled in the manner desired consist of a spring clip formed from a strip of metal and the body 13 of which is provided with an angularly bent end 14 having an aperture through which the body 5 of the side fitting extends and provided with an angularly bent and curved portion 15 extending in substantially the same direction with the angularly bent end 14 and adapted to clasp the bit 1, this engagement, as shown in both of the figures, being such that it may be released by one hand and with but a single movement, the disengagement of the clip leaving the side fitting or inlet nozzle entirely free for removal.

It will be noted by particular reference to Fig. 1 that the bit 1 is provided with an enlargement 16 located at the point where the nipple 3 is united to the bit and serving the double purpose of strengthening this part of the bit, the normal strength of which is slightly impaired by the connecting bores or apertures 2 and 4, and providing for the ready attachment and detachment of the clip above described, it being seen that the aperture of the angular end 14 of the clip is substantially larger in diameter than that of the body 5 of the side fitting, thus permitting of angular movement of the clip in a direction longitudinally of the drill bit in order that it may be more readily and quickly slipped on or off of the bit enlargement 16 which it clasps in the coupled position of the parts, the sides of the enlargement 16 sloping gradually in order that the engaging end 15 of the clip may be more readily moved in an angular direction when disengagement is desired.

In its practical use the quick detachable coupling, requiring but a single movement in order to attach and detach the side fitting, will be found to be of considerable advan-

tage in many instances wherein a quick change of drill bits is required, and the specific structure by which I accomplish this advantage is particularly important in that it preserves the natural normal strength of each and all of the parts.

I claim:—

A rock drilling bit provided with a longitudinal fluid passage and having an intermediate enlargement, the sides of which slope gradually, and a laterally projecting nipple extending from the enlargement and provided with a fluid passage communicating with the passage of the bit, an inlet nozzle having a flanged end adapted to abut the end of the nipple, a collar having an internal flange adapted to engage the flange of the nozzle and arranged on the nozzle to receive the end of the nipple, and a spring clip having one angular end provided with an aperture through which the nozzle projects, the said aperture being of sufficiently greater diameter than that of the nozzle whereby to permit of angular movement of the clip, the opposite end of said clip being bent angularly and curved to clasp the enlargement of the drill bit and to slide upon the sloping sides and away from the center of the enlargement when it is desired to detach the clip.

MICHAEL SMITH.

Witnesses:
DAN B. LEED,
FRANK THOMPSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."