Jan. 30, 1934. W. L. PEARCE 1,945,159

DRILL

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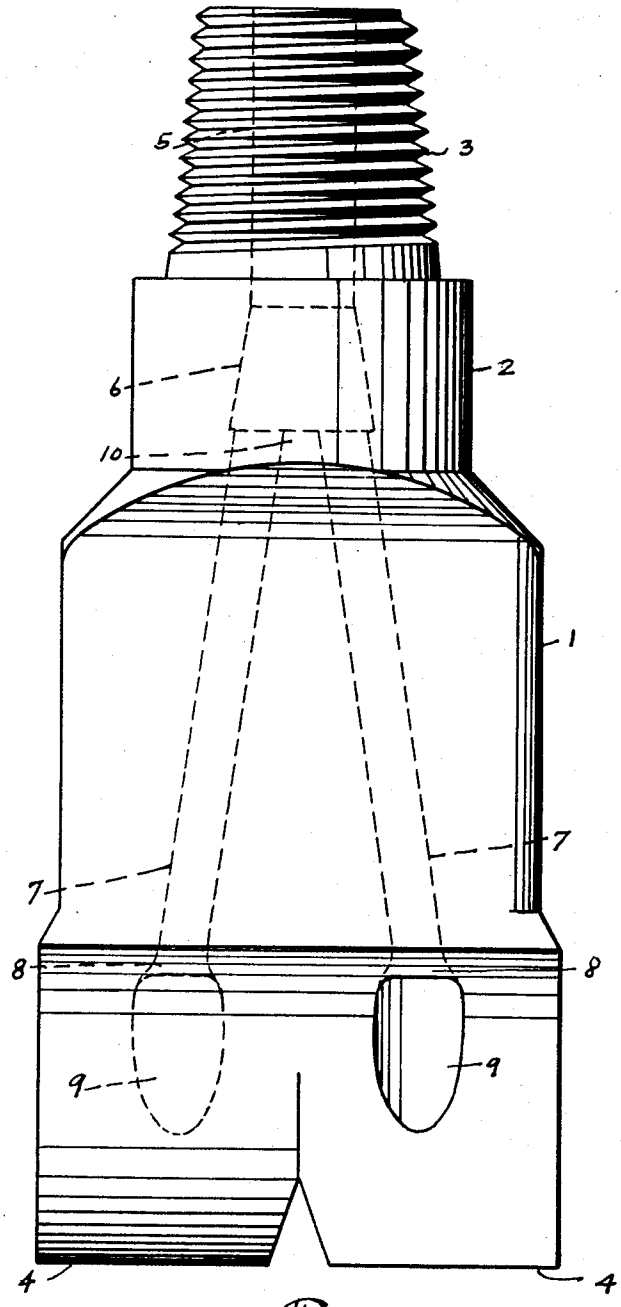


Fig. 1.

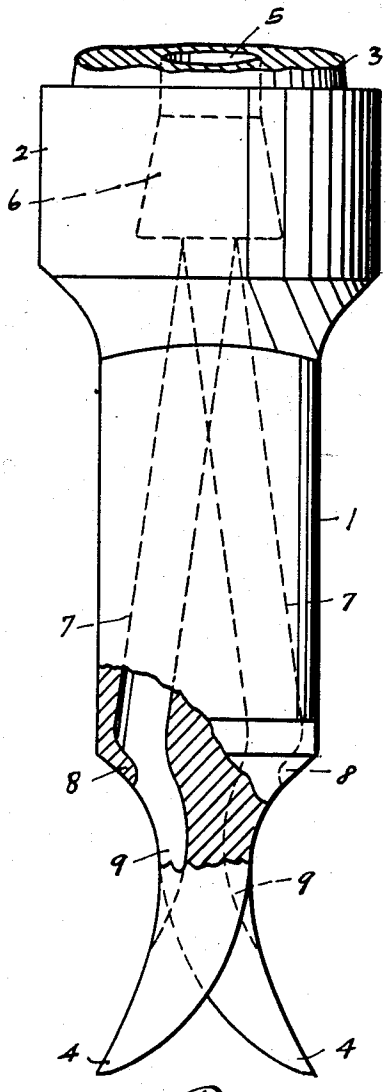


Fig. 2.

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DRILL

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3 Claims. (Cl. 255—61)

This invention relates to a drill.

An object of the invention is to provide a drill of the character described having water courses leading downwardly therethrough of novel formation and through which the flushing fluid may be delivered to the cutting points or blades of the drill.

Another object of the invention is to provide a drill of the character described wherein the discharge ends of said water courses are restricted to the end that the formation entering the lower ends of the water courses will not become packed in said water courses to plug the same up.

Another object of the invention is to provide a drill of the character described wherein the lower or discharge ends of the water courses are provided, at their forward sides, with inwardly declining lips so that they will be shielded by said lips to the end that the formation will not be liable to enter and block the water courses.

A further object of the invention is to provide a drill of the character described wherein the water courses therethrough are so arranged that the drilling fluid being forced down through the water courses will have a maximum pressure.

With the above and other objects in view the invention has particular relation to certain novel features of construction arrangement of parts and use, an example of which is given in this specification and illustrated in the accompanying drawing, wherein:

Figure 1 shows a side view of the drill, and

Figure 2 shows a fragmentary edge view thereof partly in section.

Referring now more particularly to the drawing wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 designates the body of the drill whose upper end is reduced forming a cylindrical shank 2 and above this shank there is a tapering outwardly threaded pin 3 adapted to be screwed into the drill collar in the usual way. The body of the drill is preferably flat and at its lower end the body terminates in the oppositely disposed cutting blades 4, 4 which may be approximately concave on their forward sides and convex on their rearward sides. The particular contour of the drill and the blades 4 may, of course, be varied as desired.

The pin 3 has an axial water course 5 downwardly therethrough and the lower end of this water course in the shank may be downwardly flared as shown forming the chamber 6. Leading downwardly from this chamber are the downwardly diverging channels or passageways 7, 7, and, as shown in Figure 2, each passageway terminates at the forward side of its blade 4, each of said passageways inclining forwardly. The lower end of each passageway is restricted at its forward side by means of the inwardly inclined lip 8, and beneath said restricted portion each passageway continues down in the form of the concave groove 9 whose lower end tapers out above the cutting edge of the corresponding blade. As indicated in Figure 2 each blade is curved forwardly beyond or in front of the lower end of the corresponding channel 7 so as to protect said lower end, as the drill is lowered through mud or other formation, to the end that said formation will not be so liable to enter the lower end of said water courses to plug the same up.

Any formation that may enter said water courses 7 will not be liable to pack in the water courses and plug the same but will remain therein in an unpacked state so that it may be readily washed out when fluid under pressure is forced down through said water courses. The drilling fluid emerging from the lower ends of the water courses will pass into the grooves 9 underneath any formation that may adhere to the forward sides of the blades and will keep said blades free of said formation and will spread over the forward sides of the blades and will keep them washed comparatively clean.

The gritty drilling fluid forced down through the drill to carry away the cuttings from the drill will gradually cut away the upper end of the web 10 between the upper ends of the water courses 7 but this will not materially weaken the drill.

The drawing and description disclose what is now considered to be a preferred form of the invention by way of illustration only, while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. A drill whose lower end is formed with oppositely directed cutting blades, said drill having water courses leading downwardly therethrough and terminating at the forward sides of said blades, the lower ends of said water courses having inwardly declining lips, at their forward sides whereby said ends are restricted, said lips forming deflectors which throw the solid material outwardly from said lower ends, said blades having arcuate grooves in their forward faces continuing on down from said restricted ends of said water courses.

2. A drill whose lower end is formed with oppositely directed cutting blades, said drill having

water courses leading downwardly therethrough and terminating at the forward sides of said blades, inwardly declining web-like lips at the forward sides of the lower ends of said water courses which form deflectors to restrict and shield said lower ends, said water courses diverging downwardly and being inclined forwardly.

3. A drill whose lower end terminates in oppositely directed cutting blades, said drill having an axial water course in its upper end whose lower end is enlarged forming a chamber and also having channels leading downwardly from said chamber and terminating on the forward faces of said blades transverse downwardly and inwardly declining, web-like lips across the forward sides of the lower ends of said channels whereby the channels are restricted, and shaped to cast the water discharged therefrom inwardly against the corresponding faces.

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