May 31, 1938. W. L. PEARCE 2,119,349

DRILL

Filed Dec. 28, 1936

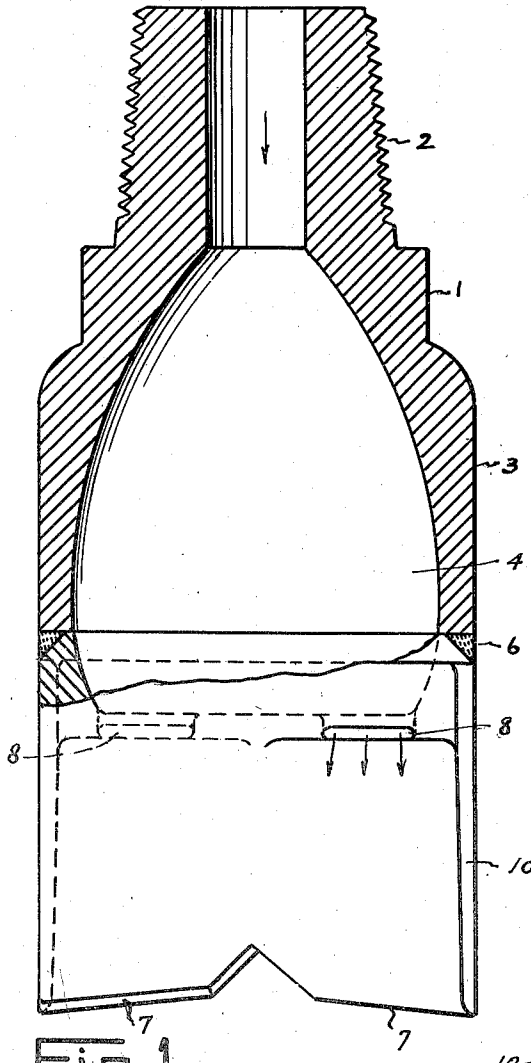

Fig. 1.

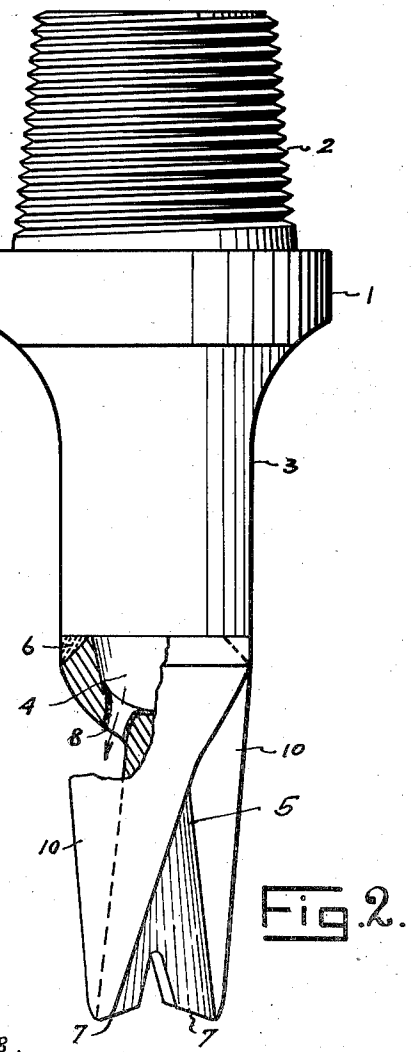

Fig. 2.

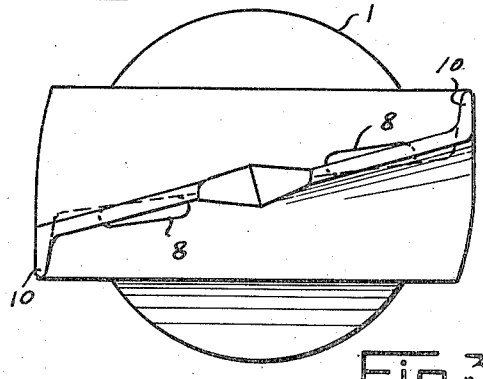

Fig. 3.

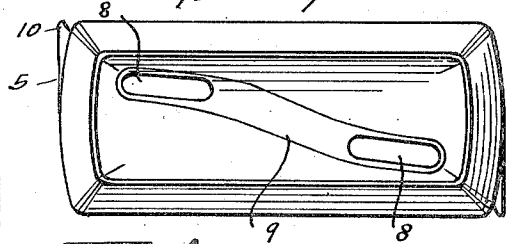

Fig. 4.

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Patented May 31, 1938 2,119,349

UNITED STATES PATENT OFFICE

2,119,349

DRILL

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Application December 28, 1936, Serial No. 117,783

3 Claims. (Cl. 255—61)

This invention relates to a drill.

An object of the invention is to provide a drill of that type specially designed for use in deep well drilling.

Another object of the invention is to provide a drill having a hollow head containing a relatively large chamber for the drilling fluid and having a cutting blade with novel outlets leading from the chamber onto the blade in front of the blade cutters.

It is another object of the invention to provide in a drill a novel type of blade formed with forwardly extended side reamers one at each outer margin of the blade.

It is a further object of the invention to provide a drill having a blade member whose upper end is shaped to register with the lower end of the body and to be welded thereto, the upper end of the blade member having outlet openings for the drilling fluid and being surfaced with a very hard material which hard material forms also a lining for the outlets to the end that the portion of the drill subjected to the greatest amount of erosion of the gritty drilling fluid will be enabled to withstand the erosive effect of the fluid flowing under high 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, partly in section.

Figure 2 shows an edge view thereof, partly in section.

Figure 3 shows a lower end view, and

Figure 4 shows a plan view of the blade portion detached.

Referring now more particularly to the drawing wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates the cylindrical drill head whose upper end is formed with a threaded shank to receive the drill collar. The numeral 3 designates the body of the drill which is widened beyond the head and is approximately elliptical in horizontal cross section. The body is shell like having comparatively thin walls and containing a large chamber 4. The numeral 5 designates the blade member. The upper end of this member is shaped to conform to the contour of and to register with, the lower end of the body 3 and is preferably welded thereto by the weld 6. The chamber 4 continues on down into the blade member 5 as indicated in Figure 2, the upper end of the blade member being hollowed out or concaved for that purpose. The lower end of the blade member is divided and formed with the oppositely directed cutters 7, 7. Above the forward sides of the respective cutters are the outlet openings 8, 8 through which the drilling fluid entering the chamber 4 may be discharged onto the faces of the blade member above the respective cutters. These outlets 8 are elongated transversely so as to discharge the drilling fluid in comparatively thin sheets whereby the fluid will spread over the forward faces of the cutters.

As above indicated the drilling fluid is gritty and is forced down into the well under high pressure. It will strike against the bottom 9 of the chamber 4 and will spread and pass out through the openings 8. In order order to render these parts, which are subjected to the greatest erosion, durable, the bottom of the chamber 4 is lined with stellite which as is well known to those familiar with the art is a very hard durable material and this surfacing material is extended each way and continued through the openings 8 forming a lining therefor to the end that the bottom of the chamber will not be readily cut away or the openings enlarged. The outer margins of the blade member have the forwardly extended vertical side reamers 10, 10 which taper downwardly and terminate at the lower ends of the cutters 7. These side reamers ream out the bore as drilling progresses and maintain the gauge thereof and also prevent the drilling fluid emerging through the openings 8 from striking against the side walls of the bore and causing the same to cave.

When the blade section 5 becomes worn away the drill may be withdrawn and the blade section removed with a cutting torch and a new one welded to the body 3 and the drill thus effectively renewed.

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 comprising a head having an upward threaded extension for the connection of a driving member thereto and having a depending hollow body, a blade portion on the lower end of the body, said body and blade portion having an inside chamber which has transversely elongated outlets on opposite sides of the blade portion, the outlets and the bottom of the cham-

ber between the outlets being lined with hard surfacing material.

2. A drill comprising a head having an upward threaded extension for the connection of a driving member thereto, and having a depending hollow body formed of relatively thin walls, a blade portion on the lower end of the body, said body and blade portion having an inside transversely elongated chamber which has transversely elongated outlets on opposite sides of the blade portion, a hard surfacing material welded to and lining the bottom of said chamber from one outlet to the other and also lining the walls of the outlets.

3. A drill comprising a head having a threaded shank for the connection of a driving member thereto and having a depending hollow body, a separate blade portion welded to the lower end of the body, said body and blade portion having an inside, transversely elongated, chamber which has outlets on opposite sides of the blade portion, the upper end of the blade portion which forms the bottom of the chamber having hard surfacing material formed integrally therewith and forming a lining for the bottom of said chamber which extends across said bottom entirely from one outlet to the other outlet and which is extended into and forms linings for the walls of said outlets.

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