A. F. McQuiston 1,737,256 PLUG FOR CORE DRILLS

INVENTOR

Attorney
My invention relates to the art of taking cores by the rotary method of drilling, being more specifically a plug for temporary and partial closure of the core receiving chamber during the lowering of the drill into the hole.

In core drills of the type used in rotary drilling, the core receiving chamber is open at its lower end and during the lowering of the drill into the hole the rotary mud or circulating fluid, together with large particles of the formation, enters the core receiving chamber. Later when drilling operations are commenced, as the core enters such chamber the fluid or mud is discharged from the top of the core tube or barrel through a valve, but any large pieces of formation accumulate in the top of the core barrel and pack therein, thereby diminishing the core receiving length of the core chamber as such material will not pass through the valve. Such material in some instances packs in the barrel to such an extent as to impede the entrance of the core into the barrel, resulting in failure to obtain a core typical of the formation being drilled.

It is the principal object of my invention to provide a collapsible plug of simple form and construction mountable in the core receiving opening of the core barrel which is positively dislodged at the time the drill is about to engage the formation.

Other objects and advantages will appear hereinafter from the following description and drawings. Referring to the drawings which are for illustrative purposes only:

Fig. 1 is a side elevation partly in section of a core drill equipped with a form of my invention.

Fig. 2 is an enlarged vertical sectional view of the lower end of the drill shown in Fig. 1.

Fig. 3 is an enlarged cross sectional view of the plug with the dart removed; and

Fig. 4 is a perspective view of the parts forming a complete plug.

More particularly describing my invention as illustrated in the drawings, 11 designates the outer barrel of a core drill which is secured, at its lower end, a drill body having a drill head 13 threaded thereon. The head 13 terminates at its lower end in a circular toothed cutter 14 formed about a central core receiving opening 15 which communicates with a central core opening 16 in the body 12 and the core chamber 17 of a core barrel 18. The core barrel 18 is spaced apart from the outer barrel to form a fluid circulation passage 19 therebetween, such passage 19 having outlet or discharge openings 20 formed in the body 12. The inner or core barrel 18 is provided at its upper end with a valve 21 which permits the circumulative fluid or mud to be discharged therefrom as the core enters the core barrel.

In addition to the circular cutter 14 the head 13 is provided with cutting blades 22 which may be of any desired form.

The plug may be termed a collapsible member and is designed to fit within the core receiving opening 15 of the head 14 and consists of two semicircular blocks 25 having downwardly and outwardly beveled adjacent faces 26 and semicircular central portions threaded as indicated at 27 to receive the threaded head 28 of a dart or plug collapsing member 29. The dart when threaded into the blocks as shown in Fig. 2 retains the plug in position in the opening 15 of the head and prevents dislodgment of the plug from the opening until the dart engages the bottom of the hole indicated at 30 in Fig. 2 as hereinafter described.

The device operates as follows: The plug is placed in the drill in the position shown in full lines in Fig. 2 with the lower end of the dart extending ahead of the lower end of the drill. The drill is then lowered into the hole and during such lowering of the drill the plug excludes large particles from entering the core barrel. The opening 31 between the two blocks 25, however, permits the circulating fluid or mud in the hole to enter the core barrel.

When the dart 29 strikes the bottom of the hole, the dart is forced upward between the blocks and the blocks collapse, riding upwardly in the core barrel on the core as indicated in dotted lines in Fig. 2. The bevel faces 26 of the blocks permit the collapsing of the blocks just described, but it is understood that the adjacent faces of the blocks...
may be made in different form as long as sufficient clearance is allowed between the blocks to permit such collapsing movement.

The blocks and dart may be made of any suitable material such as wood, iron or compositions of various kinds.

I claim as my invention:

1. A temporary plug for core drills for insertion in the core receiving opening of the drill comprising plug members mounted in the core receiving opening and a plug collapsing member mounted on said plug members and extending ahead of said drill.

2. A temporary plug for core drills for insertion in the core receiving opening of the drill comprising a collapsible plug in the core receiving opening frictionally engaging the inner walls thereof and means extending ahead of the drill for collapsing the plug.

3. A temporary plug for core drills for insertion in the core receiving opening of the drill comprising semicircular plug members in the core receiving opening and a member extending between said plug members in tapered engagement therewith, having its lower end extended ahead of said drill.

4. A temporary plug for core drills for insertion in the core receiving opening of the drill comprising semicircular plug members in the core receiving opening and a member extending between said plug members in tapered threaded engagement therewith, having its lower end extended ahead of said drill.

5. A temporary plug for core drills for insertion in the core receiving opening of the drill comprising a collapsible plug member in said core receiving opening and a dart member arranged to collapse said plug member, said dart member being mounted on said plug and extending therebelow.

In testimony whereof, I have hereunto set my hand at Bakersfield, California, this 14th day of September, 1928.

ARMEL F. McQUISTON.