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F. L. SCOTT

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VENT FOR CORE BARRELS

Filed April 6, 1928

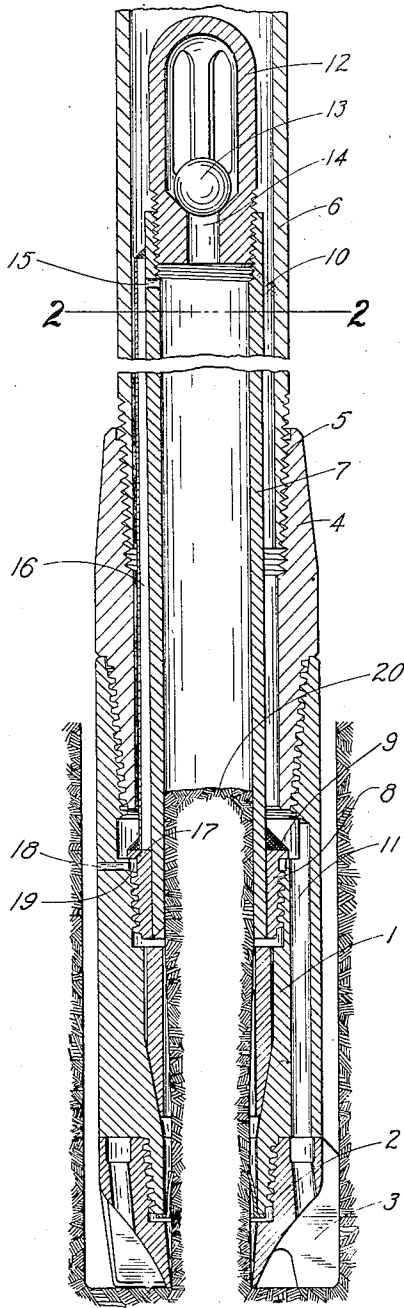


Fig. 1

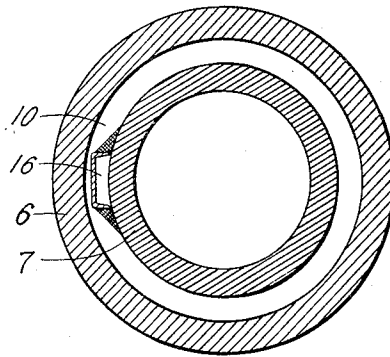


Fig. 2

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VENT FOR CORE BARRELS

Application filed April 6, 1928. Serial No. 267,882.

My invention relates to core barrels employed on soft formation core drills. It relates more particularly to means to be employed in connection with core barrels to provide a vent for the fluid which may be trapped by the core in the upper end of the core barrel.

In employing core drills in soft formation it is desirable that the core barrel be arranged so that the flushing fluid used in the drilling operation be kept from washing the core produced by the drill, thus preserving the core intact and uncontaminated by material foreign to the sample core. The common expedient for this purpose is a valve at the upper end of the core barrel which opens upwardly to allow a vent, but which closes against a downward flow. This device is satisfactory when the water pressure is not strong, but when the pressure of the flushing fluid is great, as in deep well drilling, the pressure on the upper side of the valve is sufficient to prevent the opening of the vent.

It is an object of my invention to provide a valve-closed vent of the usual type in core barrels and, in addition thereto, a lateral vent from which the fluid pressure is normally balanced, but which will allow escape of fluid from the barrel above the core when the core moves upwardly therein.

It is desired to form a vent from the core barrel unaffected by excessive fluid pressure within the drill stem and which will permit escape of fluid from the barrel at all times without allowing a circulation of fluid into the barrel while the drill is operating.

Referring to the drawings, Fig. 1 is a longitudinal section through a core drill embodying my invention. Fig. 2 is a transverse section on the plane 2—2 of Fig. 1.

My invention is adapted for use with any ordinary type of core drill. I have shown a drill having a head 1, with a detachable point 2, thereon, said point having cutting teeth 3 thereon. The head is secured to a drill collar 4, which connects the drill with the drill stem 6, said stem being threaded within the upper socket 5 in the drill collar.

The core barrel 7 has a lower threaded shank 8 thereon threaded to connect within

the head 1 below the drill collar, said shank being welded to the said core barrel at 9. The core barrel extends upwardly into the drill collar and drill stem, and is spaced therefrom to provide a fluid passage 10 between the barrel and drill stem. Flushing fluid from the drill stem may flow through said passage and through channels 11 in the head and the point 2, to wash away the cuttings from the drill and carry them upwardly outside the drill and drill stem to the surface.

The upper end of the core barrel is shown threaded internally to receive a valve cage 12, having a ball valve 13, therein to close the passage 14 leading to the cage.

Below the cage the side wall of the barrel is provided with an opening 15, forming a lateral vent. On the outer surface of the barrel, aligned with said opening, is a downwardly extending passage 16, formed by welding a channel iron 17 to said barrel and closing the upper end above said opening 15 by welding material. The channel connects with the upper end of the shank 8 of the core barrel and a passage 17 in said shank discharges into an annular groove or chamber 19, from which an outlet is provided by an opening 18 in the head 1, leading to the outside of the drill.

In operation of the drill the core, indicated at 20 will gradually work upwardly into the core barrel as the drill progresses downwardly. In soft formation the core fills the barrel so that fluid above the core must pass out at the upper end of the barrel. Where the force of the flushing fluid is not great the fluid trapped in the barrel will lift the valve 13 and escape at that point, but where high fluid pressure is set up by the pumps, as in deep wells, the fluid in the barrel will escape through the passages 16, 17 and 18 to the outside of the drill. As the pressure of the flushing fluid at the lower end of the core barrel is approximately the same as at the outlet 18, there will be no tendency of fluid to circulate inwardly to the core barrel by way of the passage 16.

By this arrangement, I provide a vent which will operate even under high pump

pressures and will enable the operator to obtain a core of the material which is practically uncontaminated by the said fluid.

What I claim as new is:

- 5 1. A core drill including a head having a threaded socket therein, an outer barrel on said head, a core barrel, a threaded shank thereon screwed within said socket and having a circumferential groove therein, a tube
10 on the side of said barrel connecting with said groove at its lower end and with the interior of said core barrel at the upper end of said barrel, said head having a lateral opening registering with said groove.
- 15 2. In combination, a core bit head, a tubular barrel thereon to rotate the same, a core barrel screwed within said head, an annular channel about said core barrel where it is attached to said head, there being a radial out-
20 let from said channel, said core barrel having a vent at its upper end, and means on said barrel leading from said vent to said channel to conduct liquid away from the interior of said barrel.
- 25 In testimony whereof I hereunto affix my signature this 29th day of February, A. D. 1928.

FLOYD L. SCOTT.

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