June 30, 1925. 1,544,167

A. J. NIGHTINGALE

CORE BARREL CONNECTION

Filed June 26, 1922

Fig.1.

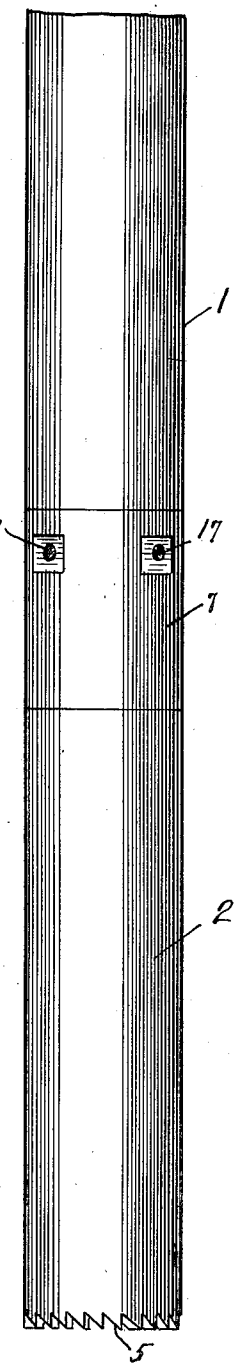


Fig.2.

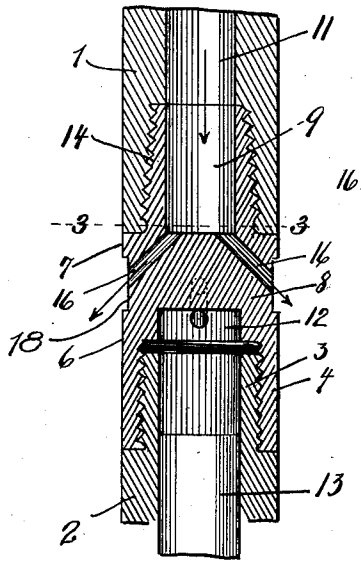


Fig.3

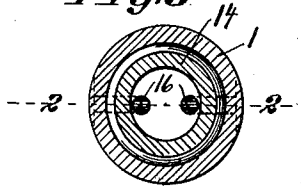


Fig.4.

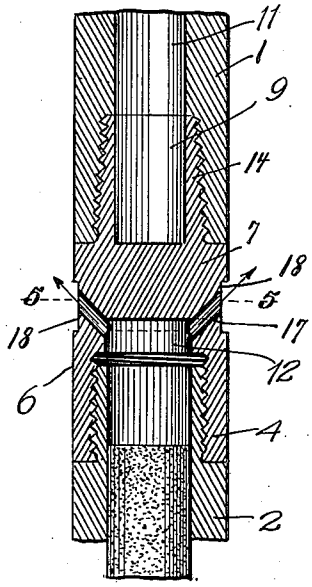
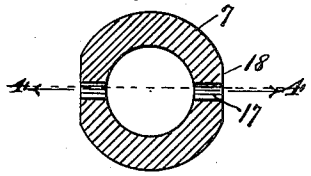


Fig.5.



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UNITED STATES PATENT OFFICE.

ANDREW J. NIGHTINGALE, OF HUNTINGTON BEACH, CALIFORNIA.

CORE-BARREL CONNECTION.

Application filed June 26, 1922. Serial No. 570,812.

To all whom it may concern:

Be it known that I, ANDREW J. NIGHTINGALE, a citizen of the United States, and a resident of Huntington Beach, county of Orange, and State of California, have invented a new and useful Core-Barrel Connection, of which the following is a specification.

The present invention relates to improvements in core barrel connections and has particular reference to means for taking samples in drilling wells. To take samples of the character described it is customary to use a barrel at the end of a hollow shaft, which latter is rotated so that the barrel works itself into the earth and its interior is filled with the earth material of the stratum in which it is worked. When the shaft and the barrel are pulled upward this earth adheres to the barrel and gives information to the operator as to the soil formation at the bottom of the well. The principal object of the present invention is to provide means between the hollow shaft and the hollow bit that will allow water to be forced through the hollow shaft for washing out the mud without interfering with the forming of the sample core within the barrel.

With this object in view I have shown the preferred form of my invention in the accompanying drawing in which Figure 1 represents a side elevation of my connecting link, the hollow shaft and the core barrel, Figure 2, a vertical section through the same along line 2—2 of Figure 3; Figure 3 a horizontal cross section along line 3—3 of Figure 2; Figure 4 a vertical section taken at right angles to that of Figure 2, and Figure 5 a horizontal cross section along line 5—5 of Figure 4. While I have shown only the preferred form of the invention I wish to have it understood that various changes or modifications may be made within the scope of the claims hereto attached without departing from the spirit of the invention.

The shaft (1) of which only a part is shown in the drawing represents the working shaft of a rotary drill and may be rotated by any suitable means not shown in the drawing. It is hollow as shown in Figures (2) and (4). The barrel (2) provided with teeth (5) at its bottom is of the same dimensions as the hollow shaft (1) and is provided at its upper end with a reduced externally threaded extension (3) adapted to receive the internally threaded bottom end (4) of my connection (6). The latter consists of a plug (7) having a solid central portion (8), an upper bore (9) adapted to register with the bore (11) in the hollow shaft and the lower bore (12) registering with the bore (13) in the barrel (2). An externally threaded reduced end (14) of the plug is adapted to engage the internally threaded lower end of the hollow shaft. The upper bore (9) has preferably two downwardly slanting communications (16) with the outside of the plug while the lower bore (12) has also preferably two upwardly slanting communications (17) with the outside of the plug, the two pairs of communications being preferably arranged at right angles to each other and all the communications preferably landing at the circumference of the plug in substantially the same horizontal plane. The communications, especially from the lower bore preferably terminate in peripheral recesses (18).

In operation water is forced downwardly through the hollow shaft (11) and is allowed to enter the hole that is being drilled through the downwardly extending communications (16). It mixes with the earth in which the drill works and enters the inside of the barrel together with the earth that is being loosened. Being lighter than the earth it is forced upward by gravitation and as the barrel fills with earth is forced outward again through the communications (17) allowing some of the heavier mud that is carried along by the water to settle around the opening and to thereby prevent the water from washing out the contents of the barrel in case the substance contained therein consists of loose sand or similar material which would readily yield to the water when being lifted.

I claim:

A core barrel connection comprising a plug having a solid center portion, a bore at either end, peripherial recesses in the outside of the plug substantially midway between the bottom ends of the bores, downwardly slanting communications between the upper bore and the outside of the plug and upwardly slanting communications between the lower bore and the outside of the plug, all the communications being disposed to discharge into the recesses at the same elevation.

ANDREW J. NIGHTINGALE.