

M. J. McLOUGHLIN & J. S. WYNN.

CORE DRILL.

APPLICATION FILED SEPT. 28, 1908.

929,780.

Patented Aug. 3, 1909.

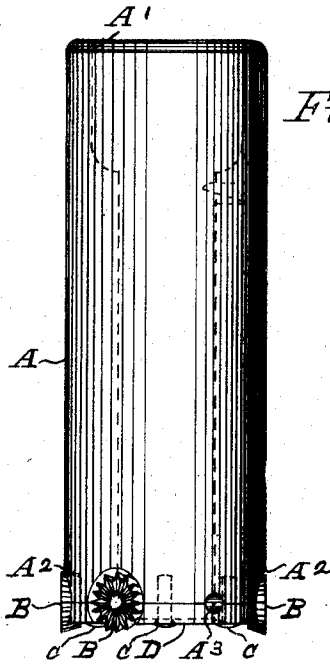


Fig. 1.

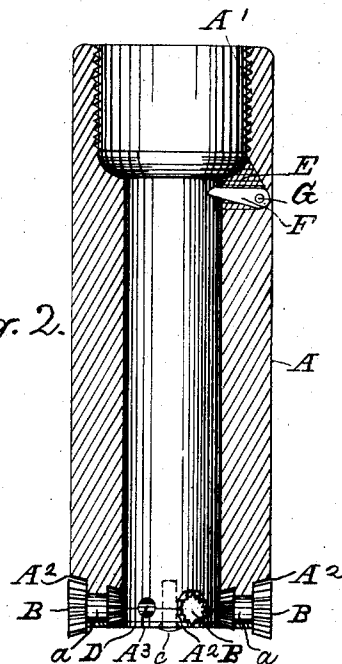


Fig. 2.

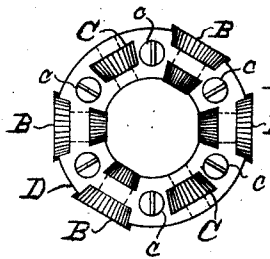


Fig. 3.

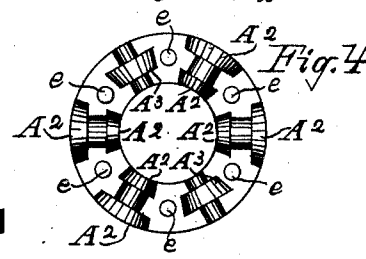


Fig. 4.



Fig. 5.

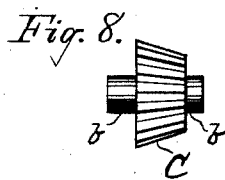


Fig. 8.

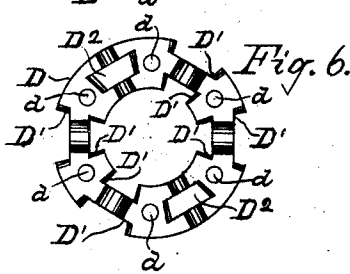


Fig. 6.

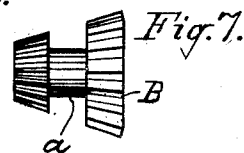


Fig. 7.

Witnesses

W. J. Hefley.
Harry Thomson.

By

Inventors
Malachuk J. McLaughlin.
John S. Wynn.
J. P. Frederick.

Attorney

UNITED STATES PATENT OFFICE.

MALACHA J. McLOUGHLIN, OF SOURLAKE, AND JOHN S. WYNN, OF BEAUMONT, TEXAS.

CORE-DRILL.

No. 929,780.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed September 28, 1908. Serial No. 455,137.

To all whom it may concern:

Be it known that we, MALACHA J. McLOUGHLIN and JOHN S. WYNN, citizens of the United States, residing at Sourlake and Beaumont, in the counties of Hardin and Jefferson and State of Texas, have invented certain new and useful Improvements in Core-Drills, of which the following is a specification.

Our invention relates to that class of drills known as "core drills," which are used in boring for mineral deposits and for similar purposes, and by the use of which, cylindrical masses or cores may be removed intact from the boring, showing the character of the stratas encountered during the boring operation; and it also relates to the construction of the core-lifting or gripping device by which the core is gripped, broken off, and held for lifting it from the bored hole in withdrawing the drilling-tool therefrom.

It is well known that the most rapid and economical method of making a bore-hole in rock and many other substances is by means of a practical core drill, and it is also best adapted for exploring certain kinds of mineralized formations, owing to the fact that a drill of this character does not cut up and pulverize the whole mass of rock or other substance through which it passes, but instead only a small portion thereof, and our invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter fully described and claimed.

An embodiment of the invention that is at present considered the preferable one is disclosed in the accompanying drawings, wherein—

Figure 1 is a vertical side elevation. Fig. 2 is a vertical sectional view. Fig. 3 is a bottom view of Fig. 1 showing the cutters in place. Fig. 4 is a bottom view of the cylinder with cap plate and cutters removed. Fig. 5 is an edge view of cap plate. Fig. 6 is a top plan view of the same. Fig. 7 is an enlarged side view of one of the double cutters, and Fig. 8 is an enlarged view of one of the single or intermediate cutters.

Similar reference letters designate corresponding parts in all the figures of the drawings.

A designates a bit or tubular drill-head, having a portion of its upper end A' chamfered and threaded internally, into which is screwed a pipe or tubular drill-rod, (not

shown) of any preferred length, and also of any preferred internal and external diameter, as the requirements of the particular classes of work may render desirable. The internal diameter of the bit or drill-head being preferably somewhat less than the diameter of the bore of the pipe or tubular drill-rod.

In the lower face of the tubular drill-head A are provided a series of radially disposed recesses A² and A³ in which are journaled respectively, serrated chilled steel cutters B and C, preferably twice as many of the former as of the latter, the cutters B have a central bearing *a* and are provided with cone shaped serrations at both ends for removing the outer and inner portions of an annular groove in the rock, while the cutter C has a journal *b* at each side of a central serrated conical portion for removing the annular ring of rock left by the operation of the double cutters.

To the lower end of the tubular drill-head A of the present and preferred embodiment is attached a cap plate D, of the same external and internal diameter as the drill-head; the said cap plate is provided with a series of recesses D¹ to receive the double steel cutters B, and recesses D² to receive the single steel cutters C; and the cap plate is firmly secured to the lower face of the tubular drill-head by screws *c*, passing through holes *d* in the plate, and in corresponding, threaded holes *e* in the drill-head. At the lower extremity of the threaded portion A' of the drill-head A is a slot E in which a dog F is loosely pivoted by pin G; this dog raises and slides freely down the core as it is made, but will dig into and catch the core when the drilling tool is drawn from the well. The core will thus be broken off and retained in the barrel until the surface is reached. To remove the core from the barrel after the same has been withdrawn from the bore-hole, it is first necessary to unscrew the drill-head from the tubular drill rod, when the core may be easily removed.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus described our invention, what we esteem as new, and desire to secure by Letters Patent of the United States, is—

- 5 1. In a core drill, a drill head having a series of recesses formed in the lower end thereof, cutter shafts mounted in said recesses, an inner series of small cutters on one end and an outer series of larger cutters on the other end of some of said shafts, and an intermediate series of single cutters on the other shafts
10 arranged to cut between the cuts of the double cutters, and a cap plate retaining the cutter shafts and forming the lower bearings therefor.
- 15 2. In combination with a tubular drill head having means for engaging the core, a bit formed on the lower end thereof, said bit consisting of a drill head having a series of radially disposed recesses formed in the lower
20 end thereof, shafts journaled in said recesses, said shafts carrying alternately double and single cutters, the double cutters being arranged one at each end of the shaft, and the single cutters being disposed intermediate
25 the length of their shafts, a cap plate having recesses, said recesses forming the lower bearings for the shafts of the single and double cutters, and means for securing the cap plate to the tubular head.
- 30 3. A core drill consisting of the tubular

head containing core grasping means, said head having recesses formed in the lower end thereof, a series of double and single serrated conical cutters alternately placed in said recesses, shafts for said cutters a perforated
35 cap plate engaging the shafts of the cutters to retain them in position, said perforations permitting the projection of the cutter faces, and means for holding the cap plate upon the lower end of the drill head.

4. In combination with a tubular drill head provided in its lower end with a series of radially disposed recesses, shafts mounted in certain of the recesses and carrying a series of small cutters at their inner ends and a series
45 of larger cutters at their outer ends, and shafts mounted in the recesses between the shafts carrying the double cutters and carrying a series of centrally disposed cutters, and a cap plate formed with recesses forming the
50 lower bearings for all of said shafts and secured to the lower portion of the drill head.

In testimony whereof we affix our signatures in presence of two witnesses.

MALACHA J. McLOUGHLIN.
JOHN S. WYNN.

Witnesses:

W. J. HEFLEY,
HARRY THOMSON.