Nov. 26, 1929. F. L. SCOTT 1,736,840

SHROUD FOR WELL DRILLS

Filed Sept. 15, 1927

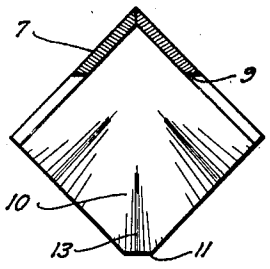


Fig. 1

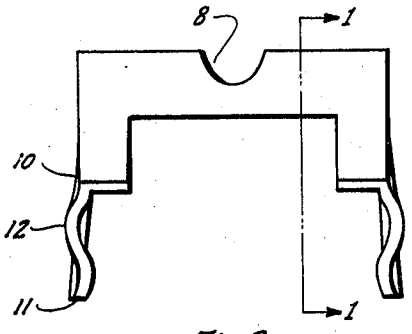


Fig. 2

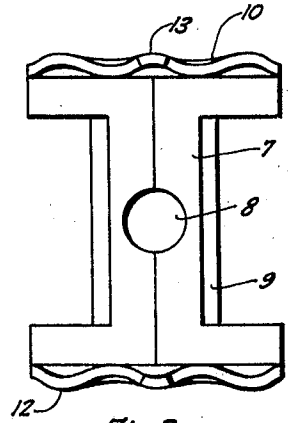


Fig. 3

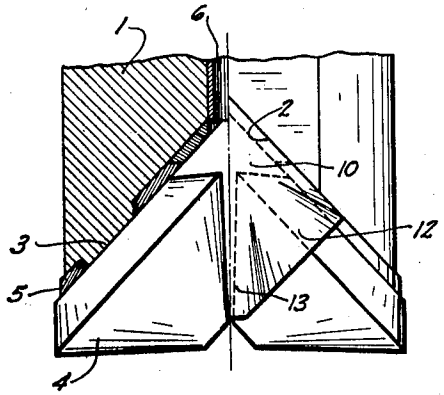


Fig. 4

Floyd L. Scott Inventor

By Jesse R. Stone

Attorney

Patented Nov. 26, 1929 1,736,840

UNITED STATES PATENT OFFICE

FLOYD L. SCOTT, OF HOUSTON, TEXAS, ASSIGNOR TO HUGHES TOOL COMPANY, OF HOUSTON, TEXAS, A CORPORATION OF TEXAS

SHROUD FOR WELL DRILLS

Application filed September 15, 1927. Serial No. 219,594.

The invention relates to well drills and pertains particularly to means on said drills for housing the cutters in the process of drilling so as to direct the flushing fluid to the cutters.

In the drilling with the "cone" type of rock drilling bit the flushing fluid, which issues from the axial center of the drill head, impinges upon the upper sides of the cutters and is free to be directed laterally from the cutters, instead of downwardly upon the bottom of the hole, as is desirable. The cuttings of the drill cutters are not carried away as effectively where the flushing fluid is not directed against the same, and the action of the cutters is impeded through the detritus, part of which thus remains upon the bottom of the hole.

It is an object of my invention to provide a shroud or housing shaped to fit the lower end of the bit head and prevent the lateral dissipation of the flushing fluid and direct it toward the bottom of the hole.

It is desired that this housing be detachable and so shaped as to best adapt it to house the cutting elements; and to permit it to be secured in place without additional securing means.

Referring to the drawing, Figure 1 is a transverse section upon the plane 1—1 of Figure 2.

Figure 2 is a side elevation of the shroud detached.

Figure 3 is a bottom plan view of the device.

Figure 4 is a side view partly in elevation and partly in section showing the broken lower end of a drill equipped with my invention.

The type of drill with which my invention is used is well known, and is shown, for example, in the patent to Fletcher, patented Feb. 5, 1924, Ser. No. 1,482,787. It employs a head, 1, which is split longitudinally, and has a transverse recess, shaped like an inverted V, in its lower end. The side walls, 2, of this recess are formed with shafts, 3, upon which opposite frusto-conical shaped cutters, 4, are mounted, to roll upon and disintegrate the bottom of the well.

Between the cutters and the walls, 2, adjacent thereto are washers, 5, which take up the wear on those areas.

The flushing fluid is pumped downwardly from the surface through the drillstem and through a watercourse, 6, in the axial center of the head of the drill.

The water from this watercourse, 6, is free to be deflected laterally in the absence of some provision to the contrary, and I have devised a removable housing for the cutters which is designed to direct the fluid forwardly against the bottom of the hole. This housing comprises two side walls, 7, inclined to fit the walls, 2, of the cutter recess. These walls are joined at their upper ends, but have a central opening, 8, at the upper ridge to receive the lower end of the water course tube, 6. The lower edges of the side walls are recessed at 9 to fit about the washers, 5, of the cutters.

The end walls, 10, of the housing are approximately rectangular in shape, as shown in Figure 1, the lower corner, 11, being slightly truncated. The said walls, 10, are flush with the side wall of the head and are hence closely adjacent the cutters. The walls are bulged outwardly at both sides to allow clearance for the cutters as indicated at 12 in Figure 3. A slight outward curve at 13 centrally of the lower edge of each end plate permits a downward stream of flushing fluid to be directed upon the cuttings.

It is not understood to be new to house the cutters of a drill, but the particular design of housing here disclosed is believed to be new and to have merit. The whole device may be placed in position upon the drill head, and when the cutters and washers are fitted in place the housing will be held securely without the necessity of any additional holding means. The flushing fluid striking the cutters is deflected by the end walls, 10, of the housing downwardly and assists materially in the cleaning action desired upon the cutters themselves, and engages the cutting so as to most effectively carry them away from the cutters. The particular shape and formation of the housing, whereby this is

accomplished is an important feature of the invention.

What I claim as new is:

1. A drill cutter housing of the character described comprising two opposite downwardly inclined side walls adapted to fit the lower end of a well drill, said walls having lower washer receiving recesses therein, and end walls connected with said side walls and having the lower edges thereof tapered from the side walls inwardly, said housing being held in position entirely by contact of said washer receiving recesses.

2. A drill cutter housing as set out in claim 1, in which the lower edges of the side walls are curved outwardly about the drill cutters.

3. A drill cutter housing of the character described comprising two downwardly inclined side walls connected along their upper edges and having a central water opening therein, said walls shaped to fit the lower end of a drill head, means on said drill against which the lower ends of said walls contact to hold said housing on said head, and end walls adapted to close the sides of said housing.

4. A drill cutter housing as set out in claim 3, in which the end walls are approximately rectangular in shape and have outwardly curved lower edges adjacent the drill cutters.

5. The combination with a well drill having a recess in the lower end thereof and opposite cutters in said recess, and washers on said cutters; of a housing shaped to fit the walls of said recess and adapted to be held in position by said washers and end walls on said housing shaped to allow a stream of flushing fluid to pass downwardly between said cutters at each side thereof.

6. The combination with a well drill head, having a V-shaped recess in the lower end thereof and opposite drill cutters mounted on the walls of said recess, of a detachable housing shaped to fit said walls, means upon the shafts of said cutters to hold said housing in position, said housing having a central flushing opening therein, and end walls on said housing closing the ends of said recess, said walls being curved outwardly to clear said cutters, and having a central curve outwardly to allow the passage of flushing fluid downwardly.

In testimony whereof I hereunto affix my signature this 7th day of Sept., A D. 1927.

FLOYD L. SCOTT.