Dec. 5, 1933. M. O. BRINK 1,937,742

REAMER FOR WELL DRILLS

Filed May 9, 1931

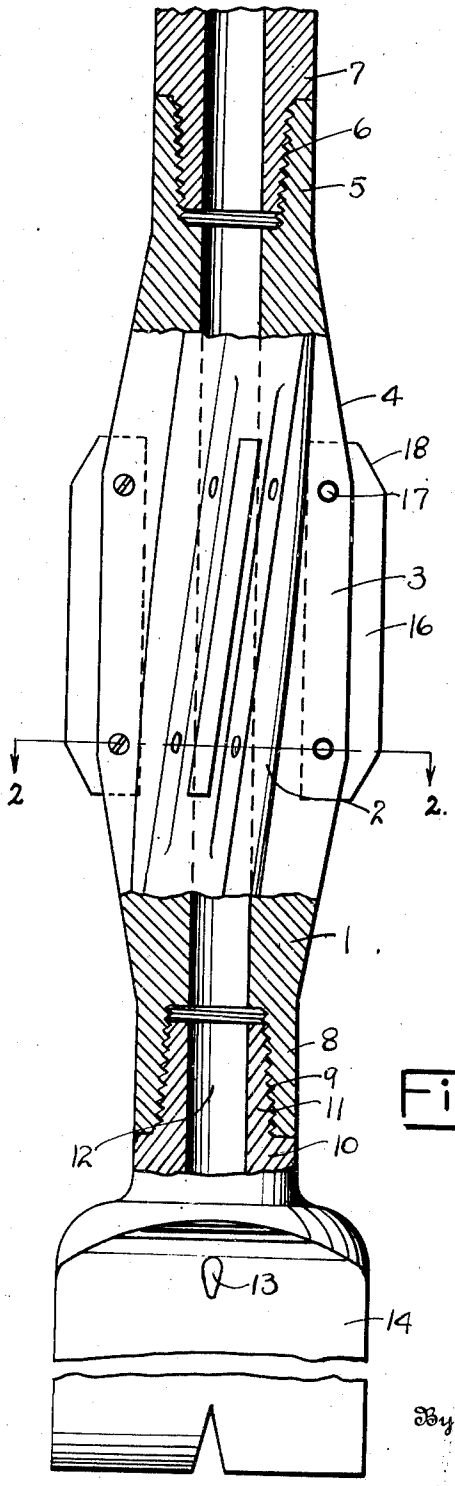


Fig. 1.

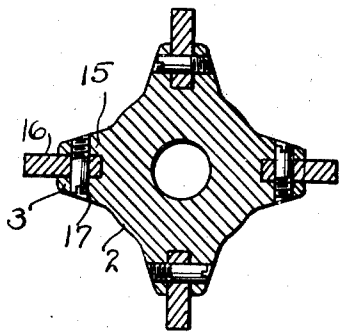


Fig. 2.

M. O. Brink Inventor

By Jesse R. Stone & Lester B. Clark

Attorneys

Patented Dec. 5, 1933

1,937,742

UNITED STATES PATENT OFFICE

1,937,742

REAMER FOR WELL DRILLS

Mehl Oran Brink, Houston, Tex.

Application May 9, 1931. Serial No. 536,109

1 Claim. (Cl. 255—73)

My invention relates to reamers for use in drilling of deep wells. It relates more particularly to reamers of the type employed in drilling soft formation, although the reamer is adapted to more general application.

It is an object of the invention to provide a reamer which may be easily and economically manufactured and which will effectively maintain the gauge of the hole in drilling.

I desire to provide a reamer having scrape blades thereon which are so mounted as to most effectively engage and scrape the side wall of the hole and in which the cutters are easily removable and replaceable.

I also desire to provide a reamer which will not interfere with the free movement of the flushing fluid upwardly away from the bit in the well hole.

In the drawing herewith Fig. 1 is a side view partly in elevation and partly in vertical section illustrating a well drill equipped with my invention.

Fig. 2 is a transverse section through the reamer taken on the plane 2—2 of Fig. 1.

I have shown my reamer as comprising a body 1, which is of a general cylindrical shape as shown at 2 in Fig. 2 but having two pairs of oppositely projecting ridges 3 thereon longitudinally of the body. These ridges are tapered at each end as shown at 4 in Fig. 1 so that the upper end terminates in a shank 5 having an interior threaded socket 6 for engagement with the drill stem 7. The lower end is also tapered and terminates in a shank 8 having an interior threaded socket 9 for connection with a drill bit 10.

It is to be understood that the drill 10 may be of any desired construction. I have shown the usual fish tail bit having an upper shank 11 connected with the reamer and having a central water passage 12 therein, through which the slush is conducted to the discharge openings 13 in the side faces of the cutting blade 14.

The reamer is formed with the ridges 3 extending slightly in an oblique direction with the lower portion extended forwardly in the direction of rotation of the drill. Each of the ridges is provided with a groove 15 longitudinal thereof to receive a reaming blade 16 which is adapted to fit in said groove and to be held in place therein by transverse bolts or pins 17 extending through the walls of the ridges 3 and through the said blades. As will be seen from Fig. 1 the blades extend slightly beyond the cylindrical central portion of the reamer body and are beveled at 18 at each end. There are two through bolts or pins 17 securing the reamer blades in position.

I have shown four reamer blades, although it is obvious that a larger or smaller number of such blades could be employed. These blades are mounted in an inclined position with the lower end forwardly so as to tend to move the cuttings upwardly along with the current of flushing fluid passing from the bit up through the well bore.

This type of reamer is of simple construction and the cutting blades therein are quickly and easily removed and replaced when desired. The reamer may be employed with any type of bit and will act to preserve the gauge of the hole throughout the life of the bit with which they are used. By inclining the reamer blades as shown I get a more effective reaming action due to the fact that each blade covers a slightly wider area on the side wall of the hole and thus serves to steady the action of the bit and the further advantage that the cuttings are more easily moved away from the wall of the well. Further, I am enabled from the shape of the head and the blades, tapered at each end, to ream upwardly as well as downwardly. That is, when I desire to withdraw the tools from the hole, if projections or cave-ins are encountered, I am enabled to ream such material away and withdraw the reamer without danger of becoming stuck in the hole.

What I claim as new is:

A reamer including a head with an approximately cylindrical portion midway of its ends, said ends being tapered, pipe connections at each of said tapered ends, radially extending ridges on said cylindrical portion said ridges being inclined forwardly at their lower ends in the direction of rotation of said head, blades fitted in slots in said ridges, said blades being tapered at their ends from points even with the ends of said cylindrical portion whereby said head and blades are both tapered away from said cylindrical portion and means to hold said blades in said slots.

MEHL ORAN BRINK.