May 30, 1939. J. H. LIND 2,160,158

DRILL

Filed Jan. 6, 1937

Fig. 1

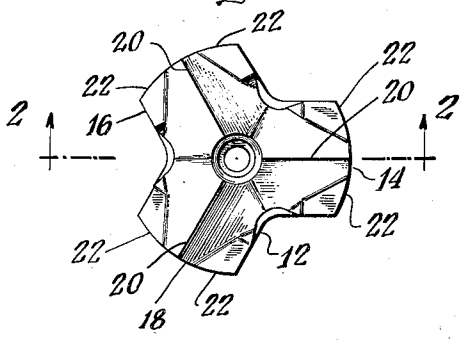


Fig. 2

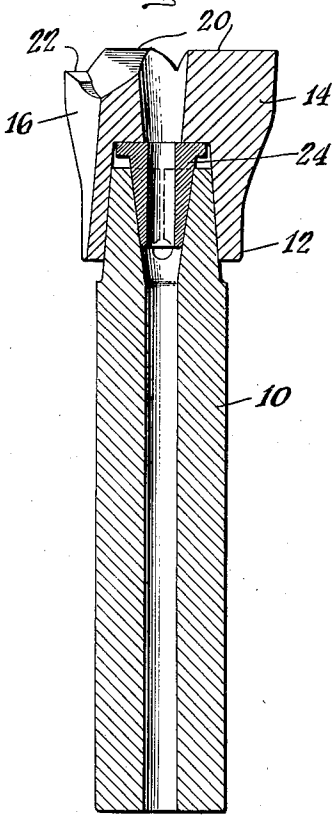
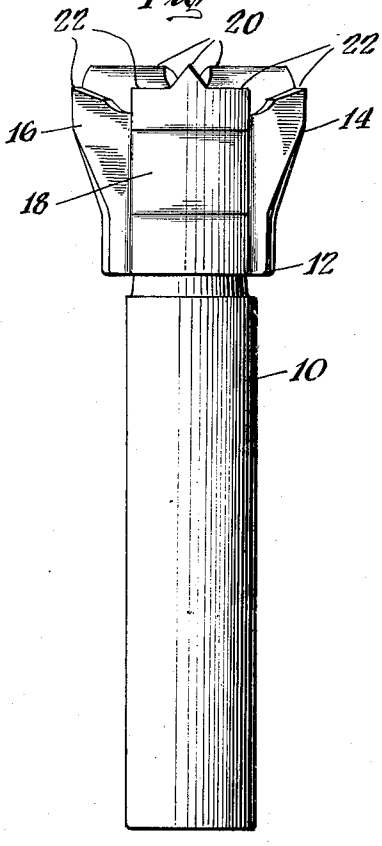


Fig. 3



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Patented May 30, 1939

2,160,158

UNITED STATES PATENT OFFICE

2,160,158

DRILL

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Application January 6, 1937, Serial No. 119,203

3 Claims. (Cl. 255—64)

This invention relates to drills and particularly concerns drill bits, embodying certain novel features of construction, that effect improved results in the drilling of rock strata and the like.

Among other features, the invention provides drill bits by which straight holes of uniform diameter can be drilled at increased or higher speeds than are attainable when using bits of conventional design.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawing forming a part thereof, in which

Fig. 1 is an end elevation of a drill constructed in accordance with the invention,

Fig. 2 is a cross-section taken along the line 2—2 of Fig. 1, and

Fig. 3 is a side elevation of the same drill as that shown in Figs. 1 and 2.

Like reference characters denote like parts in the several figures of the drawing.

Referring to the drawing, **10** represents the drill rod to which the drill bit **12** is secured. The bit **12** comprises three wings, **14**, **16** and **18**, each terminating in a cutting edge **20** with each of the three cutters or cutting edges **20** being flanked by a pair of reamers **22**. The end of the drill rod **10** adjacent the bit is tapered both externally and internally, thus coacting as a male member with respect to the bit **12** and as a female member with respect to the tapered plug **24**.

It will be noted that the reamers **22** are offset with respect to the cutters **20** instead of being flush therewith as is the case with many of the prior art contributions and it is the combination of this feature with a three-winged bit as contrasted to a two or four-winged which accounts for the much improved results that accompanying the use of the drill of the present invention.

In constructing the drill bit of the present invention, the reamers **22** are offset a considerable distance, say one-quarter inch, with respect to the cutting edges **20** so that in use they perform a true reaming function rather than a cutting function as is the case in some of the prior art structures in which such members project to the level of the cutting edges.

While the bit may be secured to the end of the drill rod in any of several different manners, it is preferably secured in the manner shown in the drawing, namely, by providing a tapered plug **24** which, when pressure is applied to the face of the drill bit, spreads the split end of the drill rod and firmly secures the bit to the rod by friction alone. Actual drilling operations have demonstrated that the bit when secured in this manner will remain fixed during the drilling operation but can be readily removed for replacing the bit simply by imparting a sharp tap to the collar thereof. Further, the frictional fitting as shown is more economical both from the standpoint of manufacture and operation than are the various threaded structures which have heretofore been commonly employed.

As previously mentioned, one of the chief advantages in employing the drill of the present invention resides in its ability to drill a straight hole of uniform diameter which not only results in higher drilling speeds but also yields better results in blasting due to the fact that the charge is confined in a hole of the same diameter and not in one having a larger diameter at the collar than at the bottom. These advantages are apparent when it is realized that it has been the usual practice in drilling a hole, say, of one and three-quarter inches diameter, to start with a bit of, say, two and one-quarter inches diameter and finish the hole with a one and three-quarter inch bit.

What is claimed is:

1. The combination with a drill rod of a three-winged drill bit having reamers wholly offset with respect to the cutters of the wings and means securing said bit to said rod.

2. A drill bit comprising three wings each terminating in a cutting edge and each cutting edge being flanked by reaming members wholly offset with respect to the cutting edge.

3. A three-winged drill bit in which each wing comprises one cutting edge and a reaming member on each side of the cutting edge, said reaming members being wholly offset with respect to the cutting edge.

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