May 8, 1923. 1,454,452

J. B. MOORE

OIL TOOL

Filed Oct. 27, 1920

Fig. 1.

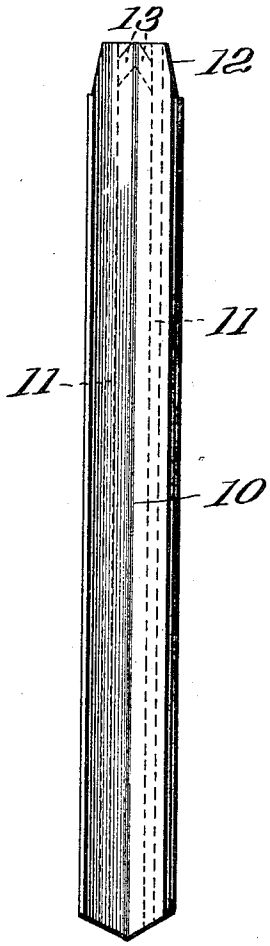


Fig. 2.

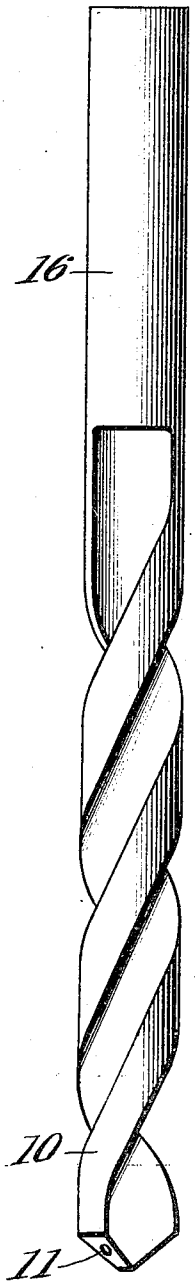


Fig. 3.

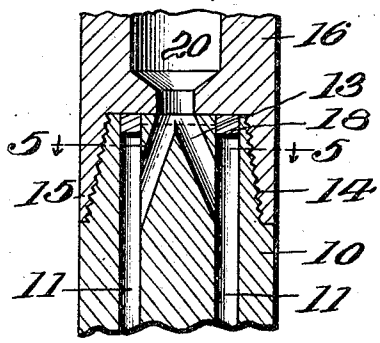


Fig. 4.

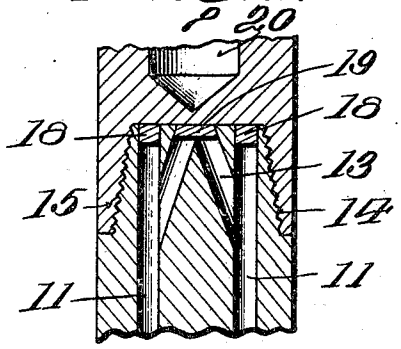
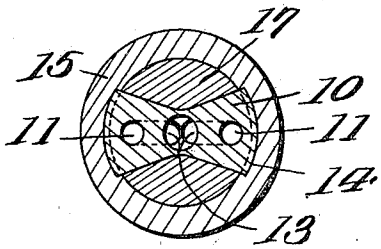


Fig. 5.



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Patented May 8, 1923. 1,454,452

UNITED STATES PATENT OFFICE.

JOHN B. MOORE, OF LATROBE, PENNSYLVANIA.

OIL TOOL.

Application filed October 27, 1920. Serial No. 419,373.

To all whom it may concern:

Be it known that I, JOHN B. MOORE, a citizen of the United States, residing at Latrobe, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Oil Tool, of which the following is a specification.

This invention is a tool of the type which is made up of a tool body of high speed metal united to a shank of lower grade metal, and having means for conducting oil to the working end.

Owing to the excessive cost of high speed steel, it is desirable to utilize metal of a lower grade for the construction of the shank of the tool in order to reduce the cost of manufacture. Heretofore many attempts have been made to produce a tool of this type, which attempts have been more or less successful so far as the initial uniting of the parts is concerned, but the problem of uniting high speed steel to a lower grade metal is a difficult one and as a consequence tools constructed in this manner are frequently too weak at the joint to stand up to working requirements, or else the expense of manufacture is relatively high.

One of the objects of the invention is to provide a tool of the character referred to in which a high speed steel body is united to a shank of lower grade metal, by a process which integrally unites the parts so that they are stronger at their point of union than elsewhere, and having means whereby oil or other lubricant may be conducted to the working end. A further object is to provide a tool of the character mentioned in which the shank and the tool body are provided with registering bores forming lubricating channels, which may be formed more accurately and cheaply than is now customary. A further object is to provide an oil tool of the type referred to, which may be of any desired length.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawing:—

Figure 1 is a side elevation illustrating the body of a twist drill of high speed steel, before the same has been twisted and united to the shank. Figure 2 is a side view illustrating a completed drill constructed in accordance with the invention. Figure 3 is a longitudinal sectional view illustrating the joint of the completed tool. Figure 4 is a similar view illustrating the joint after the parts have been united and before completion of the oil conduits. Figure 5 is a transverse sectional view illustrating the joint of the completed tool, taken on the line 5—5, Figure 3.

Referring to the drawing, 10 designates the high speed steel body of a tool, which may be of any desired type, that illustrated in the drawings being a common form of twist drill blank, provided with spaced apart longitudinal bores 11, which extend entirely through the length of the body, and are connected at the shank end 12 by laterally disposed bores 13, which converge to the center of the tool body. A twist drill has been selected for illustrative purposes, but it is to be understood that the invention is not limited to this particular type of tool, but may be applied to any tool in which a member of high grade metal is attached to a member of lower grade metal and provided with lubricating channels. The shank end of the tool blank is tapered as shown.

In practice, the blank is formed and provided with the bores, after which the body is twisted to the form illustrated in Figure 2 and the tapered shank end is provided with screw threads 14, or transverse shoulders of any other desired form, complemental to the inner wall of a socket 15 formed on the shank 16. The tool and the shank may be united in any suitable manner, but it is preferred to employ the method described and claimed in Letters Patent 1,191,717 granted July 18, 1916, in which the threads of the tool body are engaged with complemental threads of the shank socket, and the spaces between these members are filled with a suitable brazing material 17, which flows into the screw threads, thereby insuring a perfect, integral joint.

Before uniting the body 10 with the shank 16, the shank ends of the bores 11 are permanently closed by plugs 18 of any suitable material, and the meeting ends of the bores 13 are similarly plugged, as indicated at 19. After the plugs are applied, the tool body and the shank are united, as above described, it being understood that the shank has previously been provided with a longitudinal chamber 20 extending almost through to the socket. After the tool body and shank have been united, the wall between the chamber 20 and the socket 15, and the plug 18, are removed by means of a suit-

able tool, thereby providing a centrally located bore leading from the chamber 20 to the bores 13, thus providing a continuous conduit through the bores 11 to the point of the tool. The completed tool is then ground, polished and finished in the usual way. The bores 11 are cut by standard boring tools while the body 10 is suitably supported. In practice, the boring operation is started at either end of the body 10 and progresses until the bore reaches the mid-length of the said body. The latter is then reversed end for end, and the bore completed in the same manner from the reversed end. By this method the bores may be quickly and accurately formed, and it is possible to manufacture oil tools of much greater length than has heretofore been considered practicable.

Having thus explained the nature of the invention, and described an operative manner of constructing and using the same, although without attempting to set forth all of the forms in which it may be made, or all of the forms of its use, what is claimed is:—

1. A tool of the character described comprising a high speed metal tool body having spaced apart internal bores extending longitudinally therethrough, and a shank of cheaper metal having a socket, one end of the tool body being inserted into and permanently united to said socket, said shank having a longitudinal chamber provided with a centrally disposed outlet bore, the bores of the tool body having independent branches registering at their receiving ends with said outlet bore.

2. A tool of the character described comprising a high speed metal tool body having spaced apart internal bores extending longitudinally therethrough, and a shank of cheaper material having a socket, one end of the tool body being inserted into and permanently united to said socket, said shank having a centrally disposed chamber, the bores of the tool body converging to a central point at the shank end of the tool and registering with said chamber.

3. A tool of the character described comprising a high speed metal tool body having spaced apart internal bores extending longitudinally therethrough from end to end, branches leading from said bores at points contiguous to the shank ends thereof and converging to a central point at the shank end of the tool body, and a shank of cheaper metal having a socket, the shank end of the tool body being inserted into and permanently united to said socket, said shank having a longitudinal chamber provided with a centrally disposed outlet bore registering with the shank ends of said branches.

In testimony whereof I have hereunto set my hand.

JOHN B. MOORE.