Sept. 9, 1924. 1,508,268

J. J. BROSSOIT

METHOD FOR FORMING DRILL BITS

Filed April 2, 1923

Fig. 1.

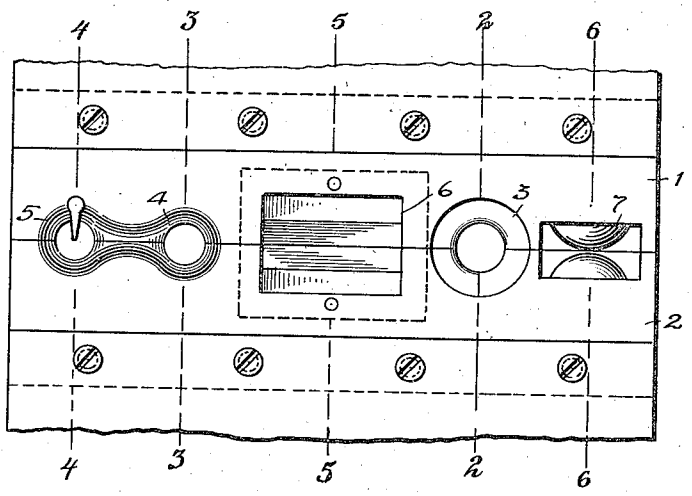


Fig. 5

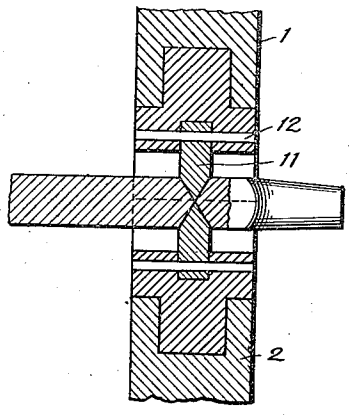


Fig. 4.

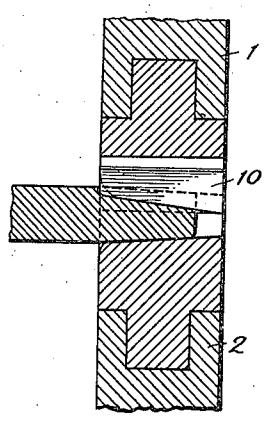


Fig. 3.

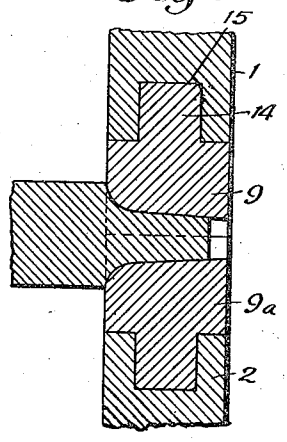
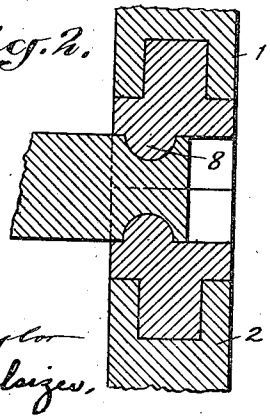


Fig. 2.



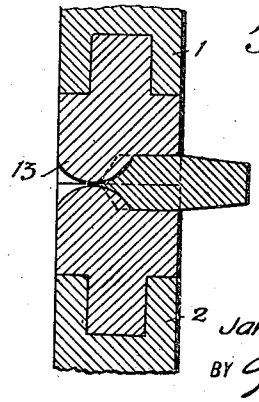


Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES J. BROSSOIT, OF SALT LAKE CITY, UTAH.

METHOD FOR FORMING DRILL BITS.

Application filed April 2, 1923. Serial No. 629,530.

To all whom it may concern:

Be it known that I, JAMES J. BROSSOIT, a citizen of the United States, and a resident of Salt Lake City, in the county of Salt Lake and State of Utah, have invented a new and Improved Method for Forming Drill Bits, of which the following is a full, clear, and exact description.

This invention relates to a method for forming drill bits, and has for an object the provision of a simple, efficient unit in which a drill bit of the type shown and described in my copending application Serial No. 610,620, filed January 4, 1923, entitled Drill bit holder can be very quickly and easily manufactured with as few manipulations thereof as possible.

The invention is illustrated in the drawings, of which—

Figure 1 is a front elevation of part of the device showing the two die members in very close relation.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 1.

Fig. 5 is a section on the line 5—5 of Fig. 1.

Fig. 6 is a section on the line 6—6 of Fig. 1.

The form of the invention shown in the drawings is a preferred form, although it is understood that modifications in the construction and arrangement of the parts and in the character of the materials used may be adopted without departing from the spirit of the invention.

The invention contemplates the provision of a method of forming drill bits and a die unit applicable and operable as a drill bit former and cutter. The unit comprises a pair of die members which can be opened and closed in the usual manner, and each of these members is provided with a plurality of recesses therein so formed and shaped that when brought together they will cooperate with the corresponding recesses in the other die member to form a chamber the configuration of which is formed in accordance with the shape which it is desired the stock material should assume when placed therein and when subjected to pressure between the die members.

Another idea is to provide in the one set of dies a plurality of die apertures of desired shape into which the stock can be successively inserted and thereby progressively shaped from its raw condition until, when it has been placed in the last recess or chamber and subjected to pressure, it will have assumed its finished form.

As illustrated in the drawings, showing the preferred form of my invention, I have provided two die members 1 and 2 which can be brought together and between which pressure can be exercised in the usual manner. These die members are provided with a plurality of depressions or recesses, 3, 4, 5, 6 and 7, of various shapes which coact with correspondingly shaped recesses in the opposite portion of the other die member, and when brought together form a complete recess or chamber of the proper shape.

Assuming that a bar of metal is to be treated to form a removable drill bit of the shape shown in the above-mentioned copending application, I proceed as follows: This bar is preferably rectangular in shape, being somewhat wider than thick. It is placed in the recess or chamber 3, and between the forming members therein there is produced on the end of a stock a circular groove by reason of the circular rib 8 disposed in said recess or chamber. This reduces a portion of the end of the stock which is then subjected to a second pressure step in the recess 4 in which the pressure bars 9 taper the end of the stock down as shown in Fig. 3. After this operation, the stock is placed in the recess 5 at right angles to the position shown in Fig. 3, and a groove is formed in the stock by means of the grooving knife 10. This groove is tapered, as will be seen, and acts as a passageway for water through the bit

After being subjected to a forming pressure in recess 5, the stock is placed in the recess 6, but in this case the other end of the stock is placed in said recess and knives 11, held in position by pins 12 within the recess, cut off the stock at the proper point and provide on its end slightly tapered faces. The stock is then placed between formers 13 located in the recess 7, and by reason of the action of these formers, the centers of the forward faces of the bit are provided with the points referred to in the above-mentioned copending application.

Therefore, in the method of forming the

drill bit, I first subject the stock material to two pressure operations to form a circular taper on one end, after which a tapered groove is formed longitudinally along this end, after which the stock is cut off the proper length and then subjected to two forming operations on this cut end to provide the tapered cutting edge with the centrally located high point therein. These operations are all obtained by placing the stock in various recesses in one die unit, enabling the operator to work much faster and much simpler than hitherto.

In each aperture the forming elements are, of course, of different shape but they essentially comprise pairs of forming bars, such as 9 and 9^a (see Fig. 3) which are representative of the others, and these are provided with projections, such as 14, extending into grooves 15 formed within the die members to hold the formed bars in place.

What I claim is:—

1. A method of forming and assembling drill bits, which comprises subjecting one end of a bit to two pressure operations to form a circular taper thereon, and then subjecting it to a pressure operation to form a longitudinally tapered groove in said end.

2. A method of forming and assembling drill bits, which comprises subjecting one end of a bit to two pressure operations to form a circular taper thereon, then subjecting it to a pressure operation to form a longitudinally tapered groove in said end, then cutting off the other end of the bit at the desired point with slightly tapered faces, and then subjecting the latter end to a pressure operation at the center of the tapered faces to produce a high point.

3. The method of forming and assembling drill bits, which comprises forming tapered faces on one end of a bit as it is cut off and then flattening the central portion of these tapered faces to produce a high point or advance cutting edge.

4. The method of forming a movable drill bit, which includes subjecting one end of the stock material to two tapering operations to form the shank of the bit, then producing a tapered groove in this shank, then subjecting the opposite end to a cutting and tapering action, and then flattening the central portion of the latter end to produce an advance cutting edge of a high point.

JAMES J. BROSSOIT.