(Model.)

T. HOOKER.

PROCESS OF AND DIE FOR MAKING TWIST DRILLS.

No. 447,450. Patented Mar. 3, 1891.

Fig. 2.

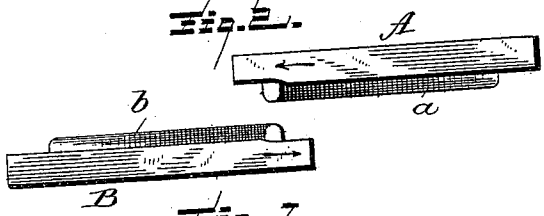


Fig. 4.

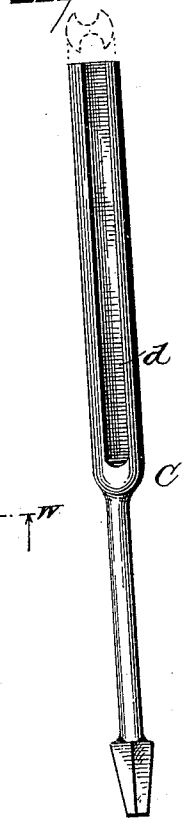


Fig. 5.

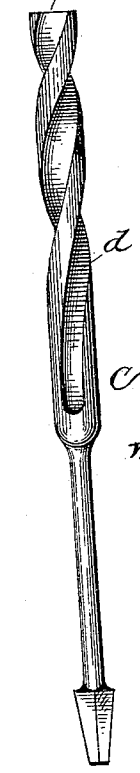


Fig. 1.

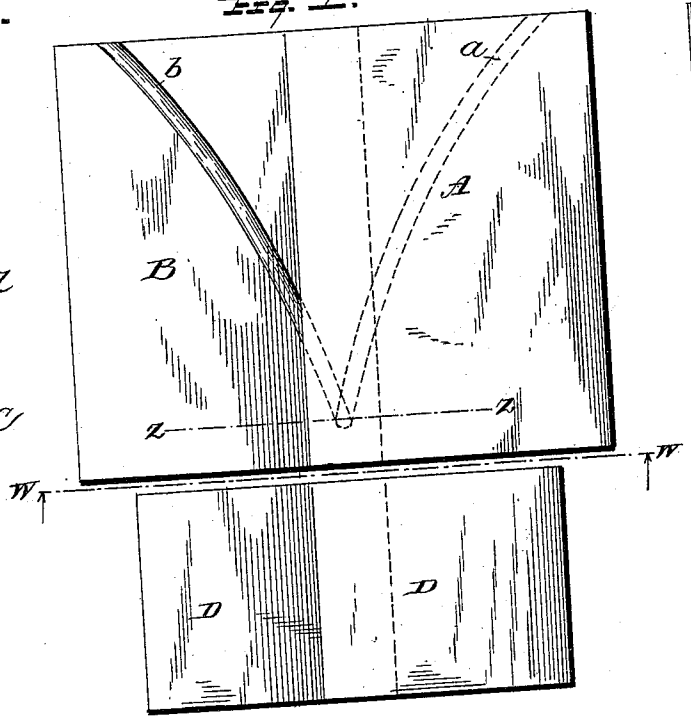
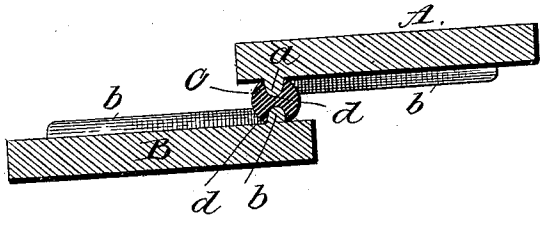


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

THOMAS HOOKER, OF SYRACUSE, NEW YORK.

PROCESS OF AND DIES FOR MAKING TWIST-DRILLS.

SPECIFICATION forming part of Letters Patent No. 447,450, dated March 3, 1891.

Application filed March 15, 1890. Serial No. 344,023. (Model.)

To all whom it may concern:

Be it known that I, THOMAS HOOKER, a citizen of the United States, residing at Syracuse, in the county of Onondaga, State of New York, have invented certain new and useful Improvements in Processes of and Dies for Making Twist-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in process of and dies for making twist-drills; and it has for its object the production of a simple, cheap, and efficient device of this character, making provision for rolling the shank, be it either larger or smaller than the blade of the drill. I give the raised ribs a slight curve to produce an increase in the twist.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a top plan view of the dies which constitute my improvement, showing also a plan of accessory dies which are employed when the shank is of a size different from that of the blade of the drill. Fig. 2 is an end view looking from the line W W in the direction of the arrows in Fig. 1. Fig. 3 is a vertical cross-section on the line Z Z of Fig. 1. Fig. 4 is a view of the grooved blank. Fig. 5 is a like view of the drill as it leaves the dies.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates one die and B the other. Each of these dies is formed or provided with a raised rib *a* and *b*, respectively, which extend in an inclined direction, preferably on slightly-curved lines, as shown in Fig. 1, to give increased twist to the drill. These ribs terminate at each end at a distance from the side of the die, as shown in Figs. 1, 2, and 3, in order to provide room for the reception of the blank and leave a support therefor.

C is the blank, which has been forged and formed with opposite longitudinal grooves *d*, as seen in Figs. 3 and 4. The faces of the dies outside of the ribs are on a different plane from those inside to provide for the introduction of the blank. The blank formed as shown in Fig. 4 is introduced between the dies, as shown in section in Fig. 3, and the dies are then moved past each other in any suitable manner. The ribs first engage the grooves of the blank where it joins the shank, and as the dies are moved past each other the ribs follow the grooves and twist and roll the blade, the drill coming from the dies in the condition shown in Fig. 5.

As no claim is made to the means for moving the dies, and as this may be accomplished in any well-known way, I have not shown any means for this purpose, the novelty residing in the dies themselves and not in the means for actuating them.

In Fig. 1 I have shown accessory dies for the purpose of rolling the shank when it is of a different size from the blade of the drill. These accessory dies are designated by the letter D. If the shank is smaller than the blade, then the accessory dies should have their acting faces nearer together than the main dies. In case the shank is larger than the blade then the accessory dies should be farther apart. They are caused to move at a rate or speed faster or slower than the main dies by any suitable means.

If desired, I may use the plain dies independently of the ribbed ones either before or after the drill is twisted.

I may sometimes make the dies in separate pieces to allow of the adjusting of the rib-pieces. Instead of rolling the shanks at the same time as I roll the other part, I may sometimes perform these two steps separate.

I am aware that it has been proposed to shape a twist-drill by means of dies having ribs; but my invention differs therefrom in that I twist the drill and at the same time shape it, taking a straight grooved shank, as seen in Fig. 4, and by the one operation form the drill shown in Fig. 5.

Importance is attached to the single grooved rib on each die, which is of a cross-section corresponding to the shape of the longitudinal

groove of the blank, as shown in Fig. 3, so that as the blank is rolled the said ribs shape the parts and finish the leading edge of the groove, thus avoiding the necessity of after filing, finishing, or trimming. The ribs are of this contour throughout their length. Both dies are moved simultaneously in opposite directions past each other with the blank between them.

What I claim as new is—

1. Dies having each an oppositely-inclined rib upon their adjacent faces of a cross-section corresponding to that of the finished groove in the drill and constructed to be operated to twist and roll a blank placed therebetween, as set forth.

2. Dies formed upon their acting faces with oppositely-curved ribs, a single rib on each die, as and for the purpose specified.

3. Dies for the purpose specified, formed upon their adjacent faces with inclined ribs, one upon each die, terminating at a distance from the edge of the die, substantially as specified.

4. The combination, with the main dies, each formed with a single curved rib constructed to twist, roll, and finish a drill-blank, of accessory dies independent of the main dies and constructed to roll the shank of the blank, substantially as specified.

5. The combination, with the main dies, formed upon their adjacent faces each with a single oppositely-inclined rib upon curved lines and of a contour corresponding to the shape of the desired completed groove, of accessory dies independent of the main dies and capable of being moved independent thereof at different rates of speed, as set forth.

6. The process herein described, which consists in passing a forged blank having a straight groove between flat parallel plates, forming a twist therein while revolving it by the continuous action of a single rib, substantially as specified.

7. The process herein described, which consists in passing a forged blank having a straight groove between parallel flat plates, forming a twist therein while revolving it by the continuous action of a single rib upon each plate, and simultaneously reducing the cylindrical portion to proper size and straightening it, substantially as specified.

8. The process herein described, which consists in passing a forged blank having diametrically-opposite longitudinal grooves between parallel plates, engaging said grooves by a continuously-acting rib, and revolving said blank and forming a twist therein during the process of revolving, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS HOOKER.

Witnesses:
EDWIN F. SMITH,
REMINGTON E. ROSE.