

(No Model.)

A. B. SHIPPEE.
MACHINE FOR MAKING TWIST DRILLS.

No. 468,468.

Patented Feb. 9, 1892.

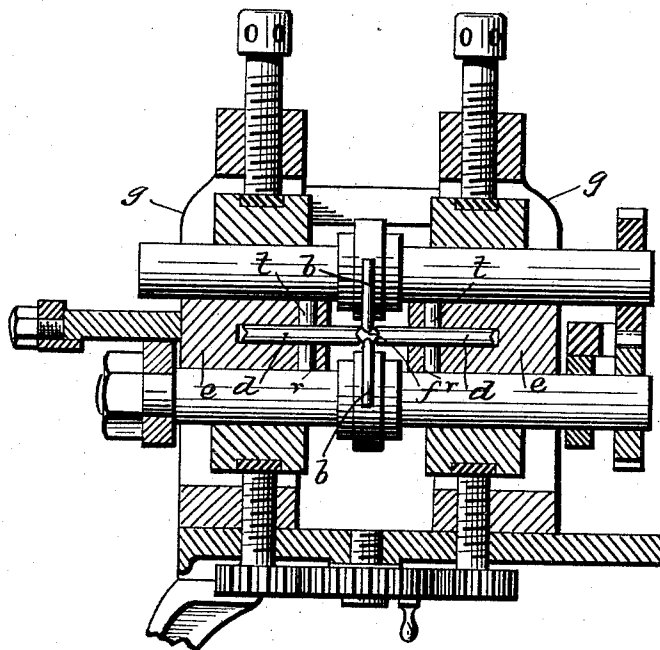


FIG. 1.

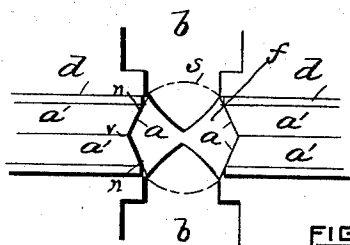


FIG. 2.

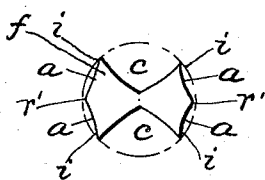


FIG. 3.

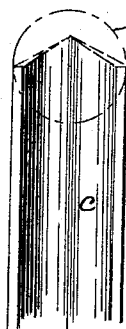


FIG. 4.

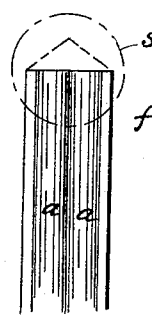


FIG. 5.

WITNESSES.

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MACHINE FOR MAKING TWIST-DRILLS.

SPECIFICATION forming part of Letters Patent No. 468,468, dated February 9, 1892.

Application filed September 21, 1891. Serial No. 406,315. (No model.)

To all whom it may concern:

Be it known that I, AARON B. SHIPPEE, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Machines for Making Twist-Drills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to the rotary side dies used in machines for rolling twist-drills in the manner as disclosed in the United States Patent No. 432,395, of July 22, 1890.

It consists, mainly, in an improvement in the working faces of those dies.

It is fully illustrated in the accompanying drawings.

Figure 1 is a vertical section of a part of the machine shown in the patent above referred to, representing the circular side dies as used in that machine, with a section of a drill-blank in the dies. Fig. 2 is an enlarged representation of the dies for rolling the main grooves in the drill and parts of the side dies with a section of a drill-blank between them. Fig. 3 shows the shape of the different rolled surfaces after the drill has been twisted to a spiral form. Fig. 4 represents a side view of a part of a drill with one of the main grooves in front. Fig. 5 is a side view of a part of a drill after rolling and before being made spiral, showing one of the sides rolled by a side die.

The part of a twist-drill-rolling machine represented in Fig. 1 consists of two arbors B B, held one above the other in adjustable bearings between suitable standards *g g*. Blocks *r r*, adjustable laterally, are placed between said standards and arbors and have recesses made in them to hold the side dies *d d*, which revolve on pivots *t t*, passing vertically through the blocks and dies. This figure is introduced mainly to identify the side dies and for the purpose of showing their positions with regard to each other, to the other parts of the machine, and to the work operated on when used. The improvement consists in making a shallow circular V-shaped

recess in the periphery of each die. These side dies *d* are circular plates held on pivots in the blocks *r r*, which, as above stated, are adjustable laterally for the purpose of moving the dies nearer to or farther from the center occupied by the drill-blank. This groove starts at *n* a short distance in on the face of the die (see Fig. 2) and runs in a straight line to the center *v* of the face at angle of about seven degrees to it, and thence at same angle to a point *n* at the same distance from the other side. These two faces *a' a'* of the dies *d* make the two flat faces *a a* on the sides of the drill-blank *f*; but twisting the drill into a spiral form makes these faces *a* concave, as seen in Fig. 3, by the raising of the edges *i*, as in twisting a square bar of metal the sides are made concave. This produces the shape as shown in section in Fig. 3, the dotted circle *s* representing the original outline of the bar before rolling. The shallow V-grooves represented by the faces *a'* in the side dies also hold the drill-blank steadily in the center of the four dies until the two dies *b b*, which form the main grooves in the drill, strike the blank and roll it out from between them as they form the grooves. The side dies *d d* by the ridges *r' r'*, Fig. 3, which they form on the sides of the drill, prevent the drill from turning on its center, while the dies *b b* roll the deep grooves in the drill. This has the effect of producing drills with perfectly-straight grooves. The side dies *d d* depend entirely on the impact of their faces upon the blank as it is rolled out by the dies *b b* to turn them, the swaging action of dies *b b* pressing the blank sidewise into the side dies. The shallow grooves thus produced on the sides of the drill by the action of the side dies and the process of twisting, besides relieving the outside of the drill, serve an important purpose in conveying the oil to the inner end of the drill, as they are too shallow to receive the chips made in boring, the rush of which along the main grooves *c c* sweeps the oil back and effectually prevents it from reaching the inner end where the cutting of the metal is being done without the whole passage is kept flooded with oil.

The usual way of relieving the outside of

the drill by sloping it away from the forward or cutting edge of the drill to the back edge of the wing only offers more facility for the oil put on the outside of the drill to be carried by the rotary motion of the drill or work
5 into the main grooves *c* to be brushed out back with the chips as they are delivered.

Having thus described my improvements and set forth the advantages derived from
10 them, I claim as my invention—

In a machine for rolling twist-drills, two rotating side dies having shallow V-shaped grooves made in their peripheries, substantially as described, in combination with rotating dies for rolling the main grooves and
15 mechanism for operating them.

A. B. SHIPPEE.

Witnesses:

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