(No Model.)

W. GODLEY & J. BOLDON.

DIE FOR FORMING TWIST DRILLS.

No. 285,996. Patented Oct. 2, 1883.

Fig. 1.

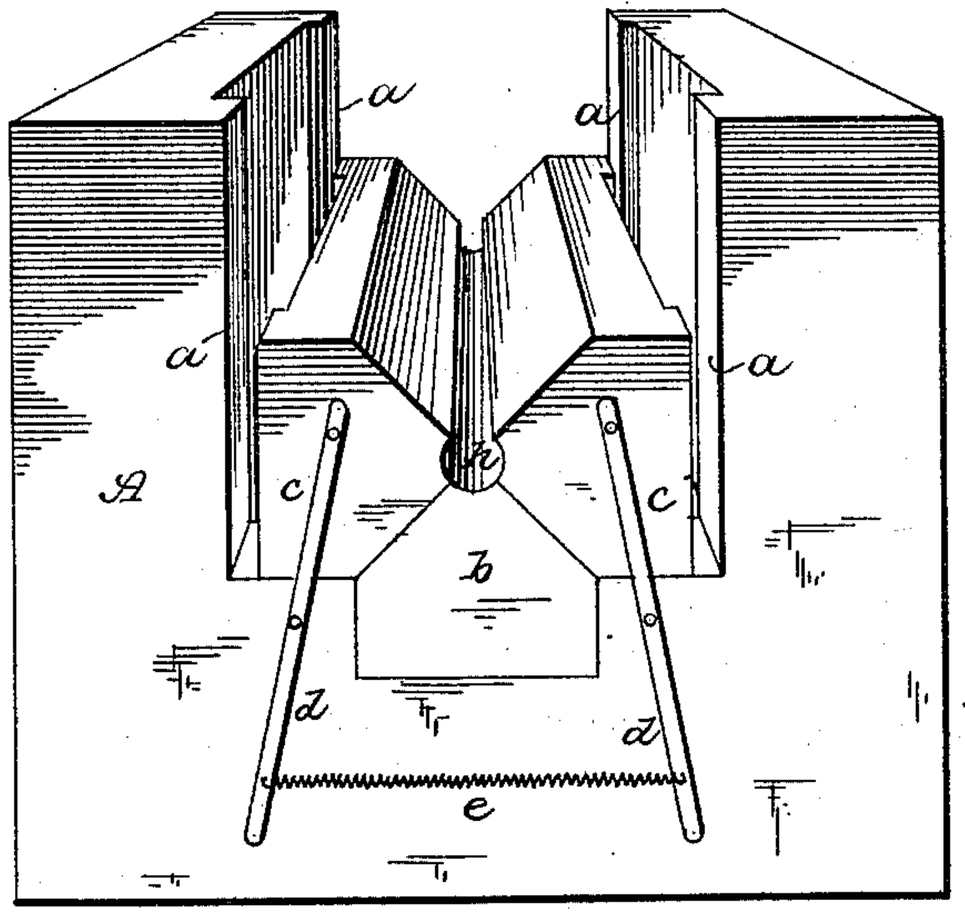
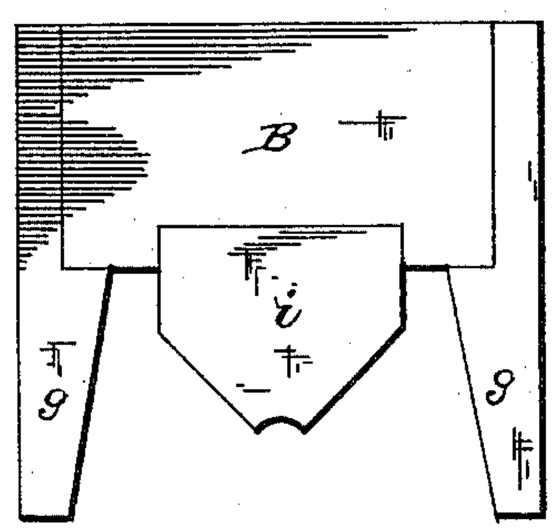


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM GODLEY AND JOSEPH BOLDON, OF PITTSBURG, PENNSYLVANIA.

DIE FOR FORMING TWIST-DRILLS.

SPECIFICATION forming part of Letters Patent No. 285,996, dated October 2, 1883.

Application filed December 30, 1882. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM GODLEY, a British subject, and JOSEPH BOLDON, a citizen of the United States, both residing at Pittsburg, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Dies for Forming Twist-Drills, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to an improvement in dies for forming twist-drills; and it consists in the combination of the frame, which is recessed in its top, so as to receive the pieces of the die, with the four pieces which form the die, and which have inclined sides at their inner ends, the top part of the die being provided with inclined projections for forcing the two side pieces of the die together, and a mechanism for moving the two side pieces outward after they have been forced together, as will be more fully described hereinafter.

The accompanying drawings represent our invention.

Figure 1 represents the box inclosing the die, without top. Fig. 2 represents the top of the box.

The outward form of the box A, inclosing the die, is cubical, and open at two opposite sides, on which are projections *a*, that serve as guides for the top, whose downward-extending sides slide inside of the guides in contact with the box.

To the elevated bottom of the box A, extending from one open side to the other, and flush with the outside, is firmly secured the bottom piece, *b*, of the die. The exposed portion of this bottom piece is in the form of a delta, △, or of a triangle occupying one-fourth part of a square, and placed upon an oblong base.

At the inclined sides of the bottom piece, *b*, are two separate movable pieces, *c*, of the form and size of the former, each of them in contact with the bottom piece. The bases of the side pieces, *c*, are turned toward the walls of the box without touching them, so as to leave an open space between them and the walls. The bases of the side pieces thus turned toward the walls are made slanting to enlarge the space at the top and decreasing toward the bottom.

At both ends, in front and rear of the side pieces, *c*, are pivoted levers *d*, that have their fulcrums on the box A, at the sides of the bottom piece, *b*, their lower ends connected and drawn toward each other by spiral springs *e* with a tendency to draw the side pieces, *c*, away from the bottom piece until arrested by the guides *a*, thereby opening the die sidewise.

The top B of the box A is provided underneath with a fourth piece, *i*, of the die, that in regard to form coincides with the side and bottom pieces, filling the square when dropped in between them. The downward-reaching sides *g* of the top are beveled at the inside, and enter like wedges into the spaces between the beveled bottoms of the side pieces, *c*, and the walls of the box, so that when driven down the movable side pieces are pushed by them toward the central point, where the four apices of the triangular pieces meet. The lower ends, *g*, of the top B, when the die is closed, depress springs on the bottom, near the walls of the box, which springs, after each blow of the hammer on the top B, cause the top to rebound, when the spirals *e*, by means of the levers *d*, draw the released side pieces away from the center, thus opening the die simultaneously for the finished drill to be removed or new material to be introduced.

At the point of intersection of the diagonal lines separating the four pieces composing die, a hole, *h*, of the diameter of the drills to be pressed, is made by removing an equal portion from each piece, which hole extends the whole length of the die. In the walls of this hole the winding or twist the drill is to have is accurately cut and evenly distributed among the four pieces, so that a rod of suitable size, when laid in the die, is converted into a corresponding twist-drill by the stroke of a hammer, or other pressure on the top of the box, and immediately released after the blow has been struck. The form of the drill having been imparted to the rod, there remains nothing to be done but to finish it in the usual manner. The number of pieces composing the die may be increased, but we prefer the number hereinbefore described.

Having thus described our invention, we claim—

The combination of the frame A, recessed in its top, so as to receive three pieces of the die, with the four pieces *b c i* of the die, all of which have inclined sides, the top B, provided with the inclined parts *g*, and a mechanism, substantially as described, for moving the pieces *c* outward after having been forced together, substantially as set forth.

In testimony whereof we affix our signatures, in presence of two witnesses, this 6th day of October, 1882.

WILLIAM GODLEY.
JOSEPH BOLDON.

Witnesses:
B. McKENNA,
J. W. GARNER.