S. W. MARTIN.

SCREW-CUTTING DIE.

No. 190,059. Patented April 24, 1877.

Fig. 1.

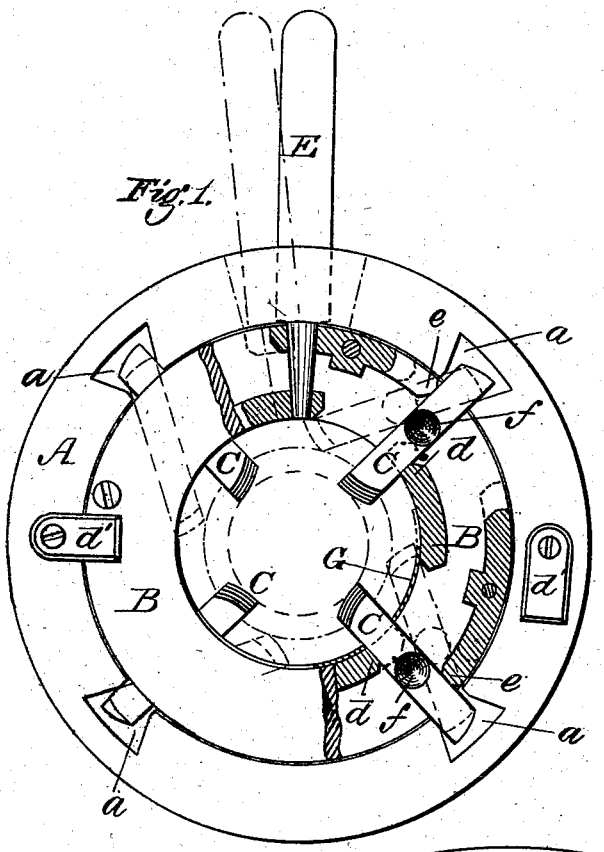


Fig. 3.

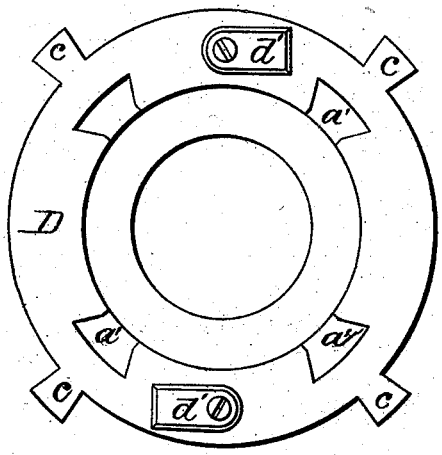
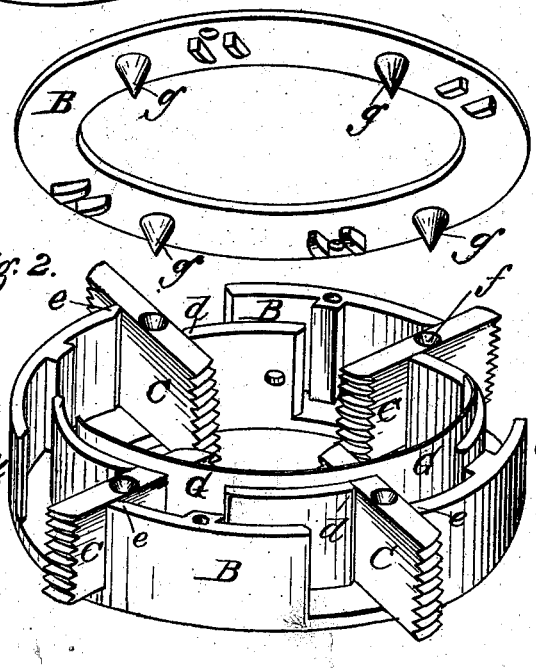


Fig. 2.



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UNITED STATES PATENT OFFICE

SAMUEL W. MARTIN, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO PHINEAS P. MAST, OF SAME PLACE.

IMPROVEMENT IN SCREW-CUTTING DIES.

Specification forming part of Letters Patent No. **190,059**, dated April 24, 1877; application filed August 3, 1876.

To all whom it may concern:

Be it known that I, SAMUEL W. MARTIN, of Springfield, in the county of Clarke and State of Ohio, have invented certain Improvements in Screw-Cutting Dies, of which the following is a specification:

My invention consists in the peculiar construction of a tool containing a series of pivoted dies or cutters, so arranged that they may be readily thrown into and out of action, and in various details and peculiarities hereinafter described.

Figure 1 represents a face view of my improved tool with portions shown in section, to illustrate more clearly the internal construction; Fig. 2, a perspective view of the die-case or ring with the dies therein, one side being lifted to show the interior; Fig. 3, a face view of one of the rings employed to reduce the internal diameter of the stock or head.

A represents the stock or body of the tool, made in an annular or ring form, and provided in its inner face with recesses *a* to receive the outer ends of the pivoted dies or bits. B represents the die case or holder, also made of an annular or ring form, with an open center, and fitted loosely within the stock A in such manner that it may be turned or rotated therein to a limited extent. C represents the dies or cutting-bits, consisting of flat straight pieces of steel pivoted in the case or ring B, with their outer ends resting in the notches *a* in the stock A, and their inner ends protruding into the central opening of the ring or case B, as shown in Figs. 1 and 2, the inner ends being provided, as shown, with the cutting threads or teeth.

The arrangement of parts is such that upon turning the case or ring B within the head or stock A in one direction the dies are turned on their pivots, so as to throw their cutting-ends inward in position for action, as shown in Fig. 1, while upon turning the case in the opposite direction the ends of the dies are thrown outward, so that they release instantly the rod, tube, or other object upon which they may have cut a thread, allowing the same to be withdrawn without a reversal of the motion of the machine. As a means of turning the case or ring B to actuate the dies or bits, a hand-lever, E, is passed through a slot in the head or stock A, and inserted into a hole or socket in the case, as shown in Fig. 1.

In order to limit the motion of the dies on their pivots, and to sustain them when in action, the case B is constructed with shoulders *d e*, against which the dies bear when in their operative positions, as clearly represented in Figs. 1 and 2. The pivots of the dies may be formed upon their edges, or passed through them; but in order to simplify the construction, and leave the dies as strong as possible, I prefer to provide the dies with conical recesses *f* in their edges, and the side plates of the case B with solid conical pivots *g* to enter the same, as represented in the drawings. The dies may be made with teeth on one end only or on both ends, in which latter case they will be arranged to be reversible end for end, so that either end may be used at will. By thus providing the dies with the teeth or threads on both ends, and making them reversible, the steel required to form an ordinary single die is made to serve all the purposes of two separate dies. In the event of one end of a die becoming injured or worn it is simply reversed, instead of being thrown away, as usual, and the tool is again as perfect as before. If desired, each die may have a right-hand thread on one end and a left-hand thread on the other, so that by simply turning them end for end in the case B, and then turning the case the other side out in the body or stock A, the tool may be readily adjusted for cutting either a right or a left hand thread, as desired.

In order to adapt the same dies for threading rods or tubes of two different sizes they may be given a greater length on one side of their pivots than on the other, so that they will be adapted for threading large or small objects according as their long or their short ends are brought into action.

In order to enable the head or stock A to receive and hold cases of different diameters internally adapted for threading objects of different sizes, I provide a series of rings, D, such as represented in Fig. 3, adapted to fit within the stock, and provided with outside studs *c* to enter the recesses *a* therein. These rings will all be made of the same external

diameter, but their internal diameters will be varied to suit the various cases which it may be desired to use therein. Each ring will be provided with internal recesses *b'* to receive the studs on the outside of the case in the same manner that they are received and held in the stock or body, as shown in Fig. 1.

Instead of making all the rings of a diameter to fit the stock A, they may be arranged to fit one within another, this latter arrangement reducing the weight of the rings and permitting them when not in use to be packed in a compact nest. The rings and the case B may be secured in place by buttons *d'*, as shown, or by any other devices which will admit of their ready insertion and removal.

The tool, as represented in the drawing, is intended more especially for use in a power-machine, the rod, tube, or other object to be threaded, being given a rotary motion, and the stock or head A secured rigidly in place, so that the attendant may operate the lever E at any moment, and thereby throw the dies into and out of action while the machine is in motion. The same principle of construction and arrangement of parts shown in the drawings may, of course, be applied in tools to be operated by hand as well as in those to be used in machines. It will be observed that the dies or bits shown in the drawings consist simply of plain pieces of steel having no irregularities or projections, and that consequently they may be cut from the end of plain bar-steel and manufactured very cheaply.

In order to prevent the entrance of chips or other foreign matters into the working parts, a sliding sheet-metal shield, G, is fitted within the case or ring B, closely around the dies, as shown, so that while it slides with and permits the free movement of the dies it effectually prevents chips, &c., from entering by their sides. When the tool is to be held stationary the shield need only be placed in the lower side of the case, as shown, but when the tool is to be rotated the shield must of course be extended around the entire inside face of the case.

It is obvious that in constructing my tool the form and arrangement of the parts may be modified, provided the operation remains substantially the same.

Having thus described my invention, what I claim is—

1. In combination with the stock or ring A, and the case or holder B mounted therein, the reversible pivoted dies or cutters C, constructed and arranged substantially as shown, that they may be turned end for end, as described

2. In combination with the stock A, having the internal recesses *a*, the ring or case B mounted therein and provided with the pivoted die C, and with the shoulders *d* and *e* to sustain the same when in action.

3. A tool for cutting both right and left hand screw-threads, consisting of an annular stock, A, a rotary reversible case or holder, B, mounted therein, and a series of pivoted reversible dies, C, mounted in said case and provided each with right-hand threads on one end, and left-hand threads on the other, as described.

4. In combination with the stock A, the hollow annular case or holder B, provided with the conical pivots *g* on its two inner sides, and the flat dies or cutters C, provided with the recesses *f* in their edges, and mounted in the case upon the pivots, as shown.

5. In combination with the stock or head A, provided with recesses *a*, a ring, B, provided with external studs *c*, and internal recesses *a'*, whereby the stock is enabled to hold die-cases of different sizes.

6. In combination with the annular case or ring B, and the dies C pivoted therein, the internal sliding guard-plate or shield G mounted therein, as shown.

7. In combination with the stock A, rotary case B, and pivoted dies C, the hand-lever E attached to the case for the purpose of turning the same within the stock to operate the dies.

8. A tool for cutting both right and left hand threads, consisting of dies having right and left hand threads on opposite ends, and a body or holder adapted to permit the reversal of the dies end for end therein, and to hold them in position for rotating and cutting either to the right or the left as occasion may require, substantially as shown and described.

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