R. C. FAY.

SCREW-CUTTING DIE.

No. 186,037. Patented Jan. 9, 1877.

Fig. 1.

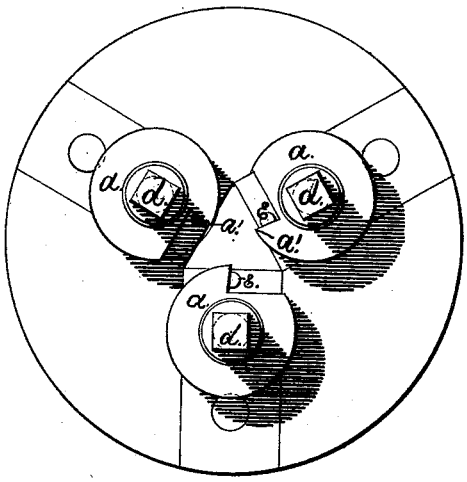


Fig. 2.

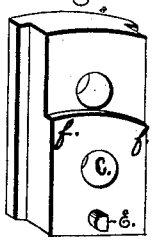


Fig. 3.

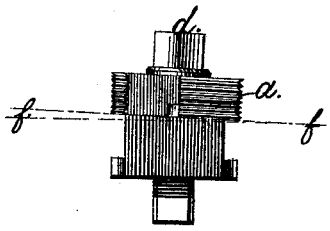
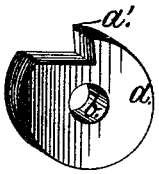


Fig. 4.



WITNESSES.

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IMPROVEMENT IN SCREW-CUTTING DIES.

Specification forming part of Letters Patent No. **186,037**, dated January 9, 1877; application filed November 23, 1876.

To all whom it may concern:

Be it known that I, RIMMON C. FAY, of Pawtucket, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Screw-Cutting Dies; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 is a view of a chuck, such as are used in screw-cutting machines, with three of my improved cutting-disks attached. Fig. 2 is a perspective view of one of the slides to which the cutting-disk is secured. Fig. 3 is an end view of the slide with the cutting-disk secured thereto. Fig. 4 is a perspective view of the cutting-disk.

This invention has reference to improvements in dies for cutting screw-threads on bolts, rods, pipes, or tubes, and is applicable to screw-cutting machines as well, and to hand-dies used for cutting screw-threads.

The invention consists in the peculiar and novel construction of the cutting-tool proper, and in the manner in which the same is secured.

In the drawings, *a a a* are the cutting-disks proper, which consist of a circular disk of steel, provided with the central hole *b*. The disks *a a a* are accurately turned, so that the hole *b* is exactly central in the disk *a*. In the edge of the disk *a* a number of V-shaped grooves are turned, corresponding with the thread to be cut, when a portion of the periphery of the disk is cut out, as shown, so as to form the cutting-edge *a'*. The disk is now hardened and is ready for use. I turn the desired grooves, V shape or other, parallel around the disk, and regulate the pitch by giving the proper angle to the surface to which the disk is secured, as is shown in Figs. 2 and 3 at *f f*, for when so arranged each disk may be ground to a good cutting-edge independent of the others around the whole periphery of the disk, and will be always in the proper position when secured to the inclined surface.

When the grooves are spiral the different disks used in the same die must be ground exactly alike, so that each will enter the groove exactly like the others.

c is a hole, provided with a screw-thread, and is bored in such a position that the periphery of the disk *a*, when secured by the bolt *d* in the hole *c*, will project sufficiently to cut a clean and deep screw-thread, and as the cutting-edge *a'* must be arranged to cut under the metal the pin *e* is provided, against which the cutting-edge of the disk *a* is placed when the thread is to be cut the full depth, and when less than the full depth is to be cut the cutting-edge is moved away more or less from the pin *e*, and as this motion is around the axis of the disk *a*, formed by the bolt *d*, the depth can be accurately adjusted with much greater nicety than is possible with other die-cutters not so arranged.

The principal object of the pin *e* is to prevent the possibility of setting the cutting-edge *a'* too far forward, and thus preventing a clean cut, and also injuring the cutter.

As the grooves on the face of the disk *a* are at all parts at the same distance from the center, it is obvious that when ground and secured by the bolt *d* to the surface placed at the proper angle to suit the pitch of the screw, the cutting-edge must be easily adjusted to cut a thread of the desired depth, and also that the whole of the periphery of the disk, less the portion removed to form the first cutting-edge, is available, and as the disk can be easily and accurately turned and finished in the lathe the cost of production is very slight.

When the improved cutters are secured on the slides of a chuck it is usual to so arrange the same that the cutting-disks will separate and allow the screw to pass out between the same. Such an arrangement can be used with equal facility with my improved cutters as with any others.

When desired, the cutting-edge *a'* may be placed at an angle not parallel with the axis of the disk, so that either the upper or lower edge will be arranged to cut first, and the angle of the cutting-edge may also be concave, or any other desired form. I prefer to use three cutting-disks, *a a a*, as shown; but any other number may be used.

To secure the disk at any desired pitch or angle, a washer may be arranged thicker on one side than the other, and by turning the same the desired angle or pitch may be se-

cured; or this angle may be secured by spindles, or any other means by which the axis of the disk is changed to suit the pitch.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A circular screw-cutting disk, provided with parallel grooves, and arranged in the die-stock at an angle with its axis, substantially as described.

2. The combination, with a screw-cutting disk provided with parallel grooves, and secured to a die-stock at an angle with its axis to form the desired pitch, of a screw-thread, with the pin *e*, substantially as and for the purpose set forth.

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Witnesses:
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