(No Model.)

F. M. BLAKE.

WIRE DRAWING DIE.

No. 326,097. Patented Sept. 15, 1885.

FIG. 1.

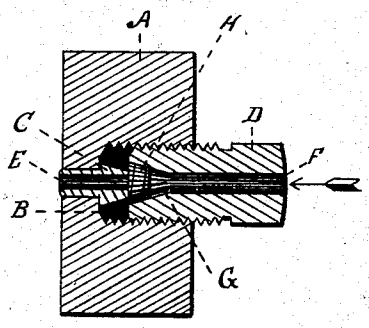


FIG. 2.

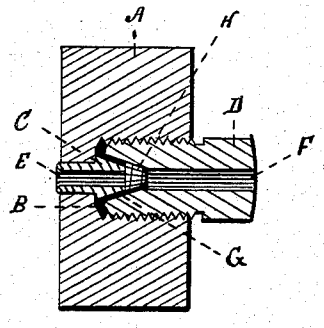




FIG. 3.



FIG. 4.



FIG. 5.

Witnesses.

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FRANCIS M. BLAKE, OF WORCESTER, MASSACHUSETTS.

WIRE-DRAWING DIE.

SPECIFICATION forming part of Letters Patent No. 326,097, dated September 15, 1885.

Application filed August 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. BLAKE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Adjustable Dies for Drawing Wire, of which the following is a specification containing a full, clear, and exact description of my invention, which is illustrated in the accompanying drawings, in which—

Figure 1 shows a vertical sectional view of an adjustable die embodying my invention. Fig. 2 is a similar vertical sectional view, but showing the adjusting-screw D advanced to effect the contraction of the die. Figs. 3 and 4 are side and end views of the coil forming the adjustable die in cylindrical form, and Fig. 5 shows the die with conical or tapering sides.

Similar letters refer to similar parts in the several views.

My invention has for its object to provide an adjustable die for wire-drawing which will permit the size of the die to be varied to compensate for the enlargement incident to its use, and thereby maintain a uniform size of the wire; and my invention consists in forming the die of a spiral coil of wire having an internal diameter equal to the desired diameter of the wire, and by a pressure applied radially to its outer surface to contract the coil and reduce the internal diameter as it becomes worn away by use; and my invention further consists in the construction and arrangement of the several parts, as hereinafter set forth.

A represents a metallic block having a screw-threaded chamber, B, to receive the screw D, through which a hole, F, passes, tapered or flaring at its inner end at G.

C is a conical follower held in the block A concentrically with the chamber B and the tapered hole G. Through the conical follower C is a hole, E, coincident with the hole F through the screw D.

In the tapered hole G, I place a spiral coil, H, of rectangular wire, its outer surface fitting the tapered hole G, and its internal diameter or "bore" equal to the desired diameter of the wire, the coil forming a hollow conoidal frustum held in the tapered opening G in the screw D, with its base resting against the end of the follower C. The length of the tapered hole G should be greater than that of the spiral coil, so as to allow the screw D to be screwed into the block A and the coil forced into the hole, as shown in Fig. 2.

In use the wire rod is made to pass through the die in the direction of the arrow in Fig. 1, being drawn through the spiral coil H, whose internal diameter is slightly smaller than the wire rod, and leaving the die or coil through the opening E in the follower C. As the hole in the spiral coil H becomes enlarged, the screw D, carrying the coil, is screwed into the block A, pressing the coil against the conical follower C, and forcing it farther into the tapered opening G in the screw D, thereby contracting the coil and reducing its internal diameter, so as to maintain with accuracy the size of the wire as drawn. This may be repeated as often as the wear upon the die shall require, until the spiral coil shall have been forced the entire length of the tapered opening G in the screw D, as shown in Fig. 2, when the coil may be replaced by one filling the larger end of the tapered opening, as shown in Fig. 1, and the operation repeated. The adjustment of the die may also be employed to vary the size of the wire within certain limits.

The spiral coils are easily and cheaply made by winding a strip of rectangular steel wire upon an arbor, forming a coil of uniform size, as shown at I in Fig. 3 and in end view in Fig. 4; and the conical shape may be given, as shown in Fig. 5, by inserting the end of the coil I in the larger end of a tapering or conical chamber and forcing the coil into the chamber, pressing it into a corresponding shape in the same manner as the coil is forced into the chamber G in the operation of adjusting the die.

I do not confine myself to the specific method shown of effecting the adjustment of the die, as other and equivalent modes of accomplishing the same result may be employed—as, for instance, the follower C may be omitted and the spiral coil H be made large enough, so the smaller end will only enter the opening G a short distance, the larger end of the coil projecting beyond the end of the screw and resting against the bottom of the chamber B, the action of the screw forcing the coil into the chamber, and causing the die to be contracted

in the same manner as has already been described; or the spiral coil may be held in a tapering chamber in the block A, and a conical follower fitting said chamber, similar to the follower C, may be provided with a screw-thread, by which it may be forced into the tapering chamber, driving the spiral coil before it and effecting the contraction of its diameter; or a cylindrical coil, I, Figs. 3 and 4, may be used, and a pressure applied radially of sufficient force to contract the coil, the essential feature of the first part of my invention consisting in a wire die in the form of a spiral coil capable of contraction by means of radial pressure upon its outer surface.

Having described the several features constituting my invention, what I claim, and desire to secure by Letters Patent, is—

1. An adjustable die for drawing wire, consisting of a spiral coil having connected means for applying radial pressure to its outer surface, whereby it may be contracted and its internal diameter or bore reduced to compensate for wear or to vary the size of the wire, as and for the purpose set forth.

2. An adjustable die for drawing wire, consisting of a conical spiral coil with an internal bore, through which the wire rod is drawn, said spiral coil being held in a tapering chamber, and having connected means for sliding the coil endwise in said chamber, whereby the diameter of the coil may be reduced, combined and operating as described, as and for the purpose set forth.

3. In an adjustable die for drawing wire, the combination of block A, having a screw-threaded chamber, B, hollow conical follower C, screw D, with hole F and tapered section G, and spiral coil H, held in said tapered section, as and for the purpose set forth.

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Witnesses:

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