

G. R. CLARKE.

MACHINE FOR THREADING AND POINTING SCREW-BLANKS.
No. 175,426. Patented March 28, 1876.

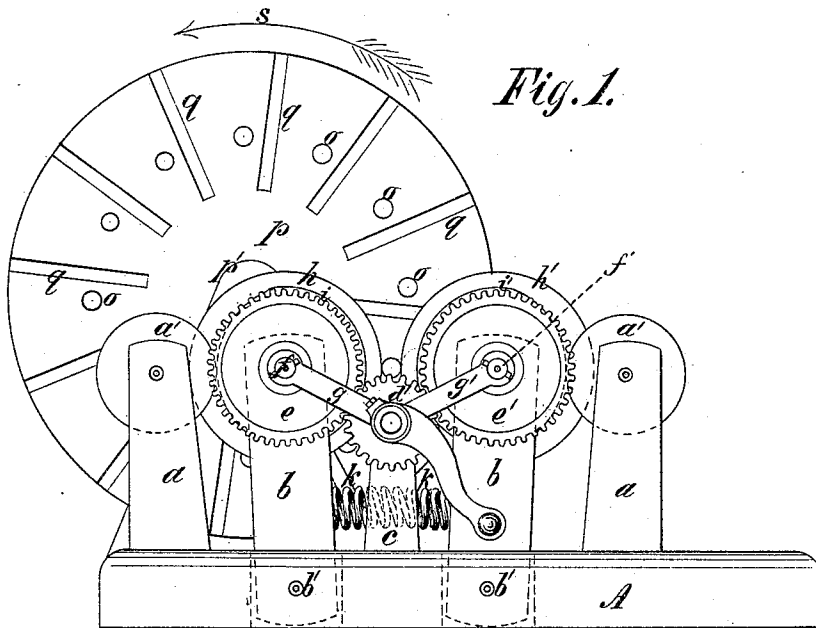
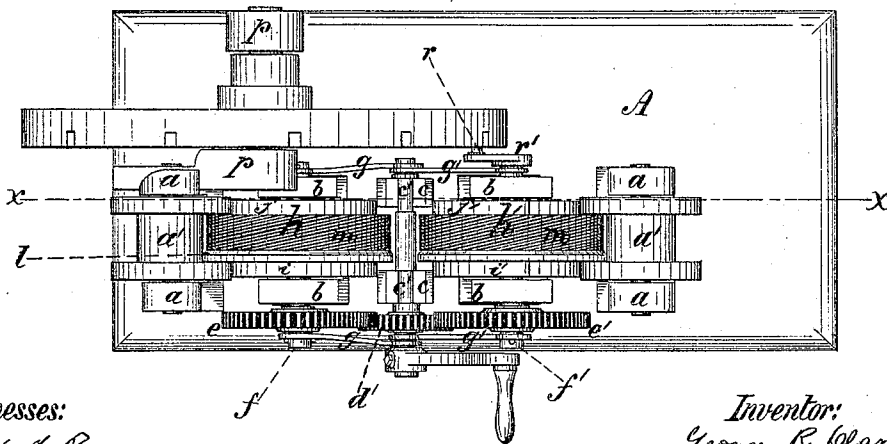


Fig. 1.

Fig. 2.



Witnesses:

Edw. A. Payson

Geo. H. Miatt

Inventor:

George R. Clarke
Per Edw. E. Quimby
Atty.

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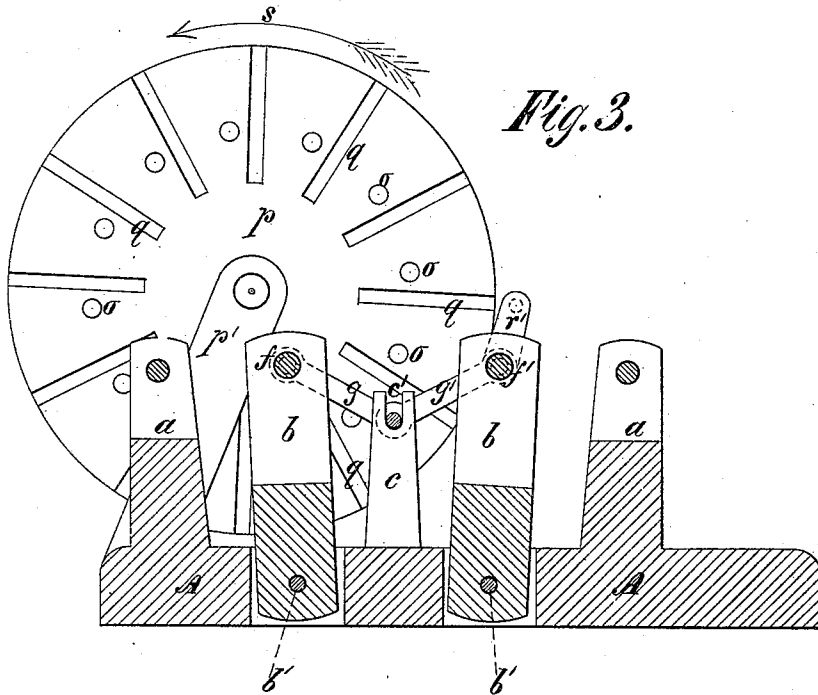
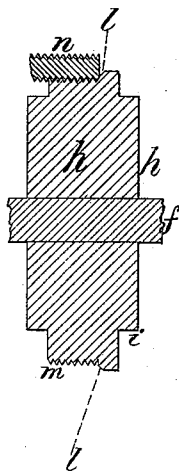


Fig. 4.



Witnesses:

Edw. A. Payson
Geo. H. Miatt

Inventor:

George R. Clarke
Per Edw. E. Quimby,
Atty

UNITED STATES PATENT OFFICE.

GEORGE R. CLARKE, OF BROOKLYN, NEW YORK, ASSIGNOR TO HAYWARD
A. HARVEY, OF ORANGE, NEW JERSEY.

IMPROVEMENT IN MACHINES FOR THREADING AND POINTING SCREW-BLANKS.

Specification forming part of Letters Patent No. **175,426**, dated March 28, 1876; application filed
February 1, 1876.

To all whom it may concern:

Be it known that I, GEORGE R. CLARKE, of Brooklyn, New York, have invented a certain Improvement in Machines for Threading and Pointing Blanks by means of Rolling-Dies, of which the following is a specification:

My invention relates to that class of machines in which screw-threads are formed upon blanks by pressure; and it consists in the combination, with each other, of two rolling-dies, rotating in the same direction, and having their peripheries formed into suitable shapes to impress the screw-threads upon the blanks introduced between them, and at the same time to point such blanks. As my invention relates particularly to the form and arrangement of the rolling-dies, I have not deemed it necessary to show any elaborate feeding apparatus. For the present purpose, it will suffice to say that I propose to feed the machine by hand, making use of the perforations in an intermittingly-rotating disk, for the purpose of guiding the blanks successively to the required position with reference to the dies.

The accompanying drawings are as follows:

Figure 1 is a front elevation of my machine, showing the rolling-dies mounted upon swinging bearings, and provided with cams engaging externally stationary rollers, for the purpose of regulating the distance of one die from the other, and also showing the pinion for imparting motion to the gears of the die-shafts, and a portion of the face of the feed-wheel, provided with radial slots for engaging a pin upon a crank affixed to the shaft of one of the dies, by the operation of which the feed-wheel is intermittently rotated. Fig. 2 is a top view of the machine. Fig. 3 is a longitudinal vertical section through the line *xx* on Fig. 2, showing the links respectively connecting the inner ends of the die-shafts and the intermediate shaft, and also showing one of the slotted vertical guide-bearings of the intermediate shaft. Fig. 4 is a transverse section of one of the rolling-dies.

My machine consists of a substantial bed-plate, *A*, provided with two stationary uprights, *a a*, for carrying the stationary rollers

a' a', which respectively engage the feed-cams on the die shafts. Between the two stationary uprights are two swinging uprights, *b b*, which afford the bearings for the shafts of the rolling-dies. These uprights swing in the same vertical plane, upon their respective pivots *b' b'*. Between the swinging uprights is the central stationary upright *c*, provided with a slot, *c'*, at its upper extremity, for guiding the intermediate shaft provided with the pinion *d'*, which engages the gears *e e'*, respectively affixed to the ends of the die-shafts *f* and *f'*. Power may be applied to either of the die-shafts, or, as shown in the drawings, to the intermediate shaft. The intermediate shaft is linked to the die-shaft at its opposite ends by the links *g* and *g'*; therefore, when the die-shafts recede from each other, the intermediate shaft is lifted, and as the die-shafts approach each other the intermediate shaft drops downward. The slot *c'* serves to guide the intermediate shaft in its motion up and down, and maintain it in the same vertical plane. The dies *h* and *h'* are keyed to their respective shafts, and are each provided upon their opposite faces with feed-cams *i i'*, and *j j'*. Either one or both of each pair of feed-cams may be made with a gain for gradually forcing the dies together after their work has commenced upon the blank introduced between them, or, as is shown in the drawings, the working feed of the dies may be effected by only one set of cams. The dies are forced apart by an expanding-spring, *k*, the ends of which engage the opposite inner surfaces of the swinging arms *b b*. By the operation of the devices which I have thus far described, the dies are sprung apart at the proper time sufficiently to allow the withdrawal of the threaded blank, and are then brought together in time to engage another blank and form a screw-thread upon its periphery, and at the same time point it. The mode of forming the peripheries of the dies into the shape required to enable them to perform their functions upon the blanks is as follows: The die-blank, which is made of soft steel, is turned upon its periphery so as to leave a beveled shoulder upon one edge. A steel screw, having a thread

of the required shape, is then securely mounted in substantial bearings, with its axis parallel to the axis of the mandrel upon which the die-blank is fastened. This screw is made very hard, and is pressed very strongly against the periphery of the die-blank, while the blank and screw are both slowly rotated. As the blank and screw are firmly supported so that they cannot slip endwise, the effect produced by the pressure of the screw upon the periphery of the blank is to form thereon a series of serrations, *mm*, shown in Fig. 4. The end of the screw used in forming these serrations is on a line with the inner end of the bevel *l*; therefore the serrations terminate at that point, and extend diagonally therefrom to the opposite edge of the periphery of the die-blank. The position which this screw occupies in producing these serrations is shown in Fig. 4, in which the screw is shown in section at *n*. The die-blanks are both formed in the same way, by the same screw, and are therefore duplicates of each other. In operating my machine the wires or blanks upon which the screw-threads are to be formed are fed successively through the holes *ooo* in the feed-wheel *p*, which is mounted upon the uprights *p'*. This feed-wheel is provided with any prescribed number of holes, equidistant from each other and from the centre of the feed-wheel. An equal number of radial slots, *qq*, are cut in the face of the feed-wheel, and these slots successively engage the pin *r* upon the end of the crank *r'*, which is affixed to the right-hand die-shaft. As that shaft revolves, the crank-pin, acting upon the feed-wheel, rotates it so as to carry forward the finished blank and bring the next hole into the proper place to deliver another blank in position to be acted upon by the rolling-dies. The machine may

be turned in either direction, but it will probably be more convenient to work it by turning it in the direction indicated by the arrow *s*.

I do not confine myself to the particular organization of the machine shown in the drawings, as it is obvious various modes may be adopted for feeding rolling-dies toward each other, or feeding a movable rolling-die toward a stationary rolling-die. Various modes may also be adopted for feeding blanks to the dies.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with each other, of two rolling-dies, geared together so as to rotate in the same direction, and having formed upon their peripheries the bevels *l*, and the serrations *m*, for the purpose of pointing a blank, and forming a screw-thread upon its periphery, substantially as described, such dies being provided with suitable devices for feeding them toward and from each other, substantially as described.

2. The rolling-dies *h h'*, each provided with the cams *i* and *i'*, and the intermediate shaft *d*, geared and linked to the die-shafts, substantially as shown and described, in combination with the stationary rollers *a'*, substantially as and for the purpose specified.

3. The pair of rolling-dies *h h'*, and the die-shaft *f'*, provided with the crank *r'*, in combination with the feed-wheel *p*, having a series of feed-holes, *ooo*, and a corresponding series of slots, *qq*, substantially as and for the purpose specified.

GEO. R. CLARKE.

Witnesses:

EDWD. PAYSON,
GEO. W. MIATT.