

(No Model.)

C. D. ROGERS.
BLANK HEADING DIE.

No. 400,794.

Patented Apr. 2, 1889.

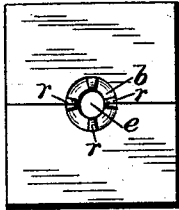


FIG. 1.

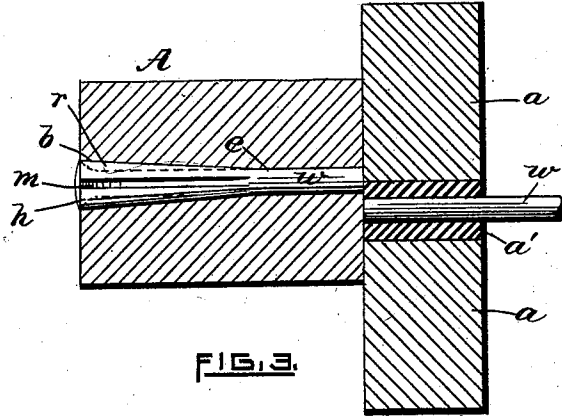


FIG. 3.

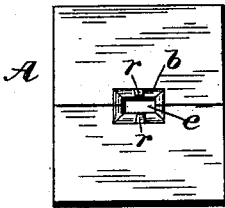


FIG. 6.

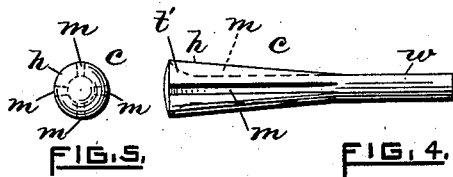


FIG. 5.

FIG. 4.

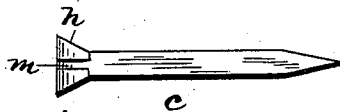


FIG. 7.

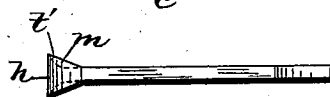


FIG. 8.

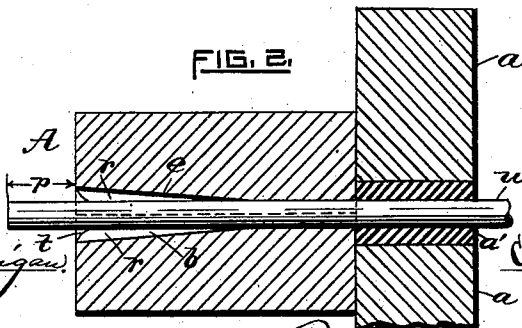


FIG. 2.

WITNESSES:

INVENTOR,

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UNITED STATES PATENT OFFICE.

CHARLES D. ROGERS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE
AMERICAN SCREW COMPANY, OF SAME PLACE.

BLANK-HEADING DIE.

SPECIFICATION forming part of Letters Patent No. 400,794, dated April 2, 1889.

Application filed July 5, 1888. Serial No. 279,052. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. ROGERS, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Blank-Heading Dies, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

The device forming the subject of my present invention consists of dies for shaping blanks or nails requiring an excessive amount of metal in their head portions—as, for example, sleigh-runner bolts, horseshoe-nails, &c.

Usually heretofore in the production of this class of nails, &c., particularly when the heads thereof are considerably tapered, the action of the plunger or upsetting-hammer in striking the end of the wire or metal protruding from the face of the die caused it to bend toward one side of the die, thereby producing imperfect heads, the metal not being uniformly disposed. This result is due mainly to the fact that the metal to be upset is unsupported laterally.

The object of my improvement herewith is to overcome the disadvantages or objections just referred to. To that end I provide the die-cavity or shaping portion with narrow ribs arranged longitudinally therein, and extending to, or nearly to, the mouth of the die. The inner faces of these ribs are employed as a guide or support to retain the wire in position laterally while it is being subjected to the action of the heading-hammer.

In the accompanying sheet of drawings, illustrating my invention, Figure 1 represents an end view of the die, (in halves,) adapted to produce blanks having cone-shaped heads. Fig. 2 is a longitudinal sectional view taken through the center of the heading-die and the shearing-die, the dies being in line axially, and having a piece of wire lying therein, the end protruding from the heading-die to be

upset to form the head of a blank. Fig. 3 is a similar view, the heading-die having been forced across the stationary die, thereby shearing or severing the blank from the wire or rod. The drawing also shows the blank completely formed and filling the die-cavity, ready to be removed therefrom. Fig. 4 is a perspective view of the blank thus made. Fig. 5 is an end view. Fig. 6 is an end view of my improved heading-die adapted to the manufacture of horseshoe-nails; and Figs. 7 and 8 represent perspective views of the nail detached.

The invention more in detail may be described as follows:

A indicates the die as a whole, the same being made usually in two parts or halves, as shown. These dies are provided with a cavity having the counterpart of the nail or bolt to be produced. In the drawings the cavity itself is indicated by *c*, its outer portion being enlarged, as at *b*, and having a cone-shaped form. The construction of the die thus far is substantially the same as heretofore made, and to which I make no specific claim.

As the operating mechanism forms no part of this invention, and as it is readily apparent to mechanics skilled in this class of machinery that ordinary forms of machines may be employed in which the dies A may be mounted and actuated, I have deemed it unnecessary to illustrate and describe such machinery more at length. In such former dies the wire *w*, to be cut off and formed into a blank, would be held or guided at the lower portion only, as indicated by Fig. 2, the sides of the enlargement *b* of the die-cavity failing to support the wire, presuming the ribs *r* to be omitted; but by reason of the introduction of the series of hardened steel narrow ribs *r* the wire is guided laterally throughout the length of the die, thereby serving to steady and maintain it in a central position during the heading operation.

It will be seen that the nails or blanks *c* produced in the ribbed die show a number of narrow grooves, *m*, formed in the surface of the head portion *h*, corresponding to the number and shape of the guide-ribs *r*. In order

to present an unbroken surface on the outer end of the blank, the ends of the ribs at the mouth of the die are well rounded, as shown by *t*, Fig. 2, &c., the counterpart being indicated by dotted lines *t'* in the blanks represented by Figs. 4 and 8.

In Fig. 1 two of the guide-ribs are represented as being divided, one-half being in each part of the die. When thus arranged, the headed blanks are preferably forced from the dies endwise. The die itself in this case may be solid. In any event, however, where the wire *w* or stock employed is substantially uniform in cross-section throughout, I make the inner faces of the ribs *r* to bear longitudinally of the wire, the ribs being separated a distance equal to the diameter or thickness of the stock used.

A manner of producing blanks by means of my improved dies is as follows: I will first assume, however, that the dies are suitably mounted in a blank-machine and having, say, a stationary shearing-die, *a'*, Fig. 2, through which the wire is intermittently fed the desired distance to produce a blank, the wire *w* at the same time being passed through the heading-die A and protruding from its face a distance, *p*, equivalent to the amount of metal to be upset to form the head. The die is then forced across the face of the die *a'*, thereby shearing the wire, after which the heading hammer or hammers act upon the projecting portion of the wire and upset it into the die-cavity *b*, completely filling the same. During this latter operation the ribs *r* have maintained the wire in position centrally, the metal flowing round the ribs and embedding them therein. After removing the blank from the die the latter is again placed in position in line with the stationary die *a'* and the wire fed through both dies, as before described.

In the case of horseshoe-nails the construction of the die A, Fig. 6, is substantially the same, except that the head is less tapering, the wire or stock being rectangular in cross-section and having a single rib, *r*, in each half of the die.

The blanks or nails produced in my improved die possess advantages over those formed in the common die. The metal composing the heads *h* is more homogeneous, the holding capacity of the nail is increased, due to the filling of the grooves *m* by the material in which it is driven, and the heads are stronger torsionally, although employing a less amount of metal.

I claim as my invention—

1. The improved die hereinbefore described, having guide-ribs in its head-forming cavity, substantially as and for the purpose set forth.

2. A die in which the heads of blanks or nails are formed, having guide-ribs arranged to laterally support the wire or stock *w* and centralize it while being subjected to the action of the heading-hammer, substantially as hereinbefore described.

3. A die of the class described having the head-forming cavity provided with a series of ribs for guiding the wire or stock laterally, and adapted to be impressed into the head of the blank during the heading operation.

4. The combination, in a machine for making headed blanks or nails, of actuated dies, substantially as hereinbefore described, having a head-forming cavity provided with guide-ribs, for the purpose specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES D. ROGERS.

Witnesses:

CHARLES HANNIGAN,
GEO. H. REMINGTON.