

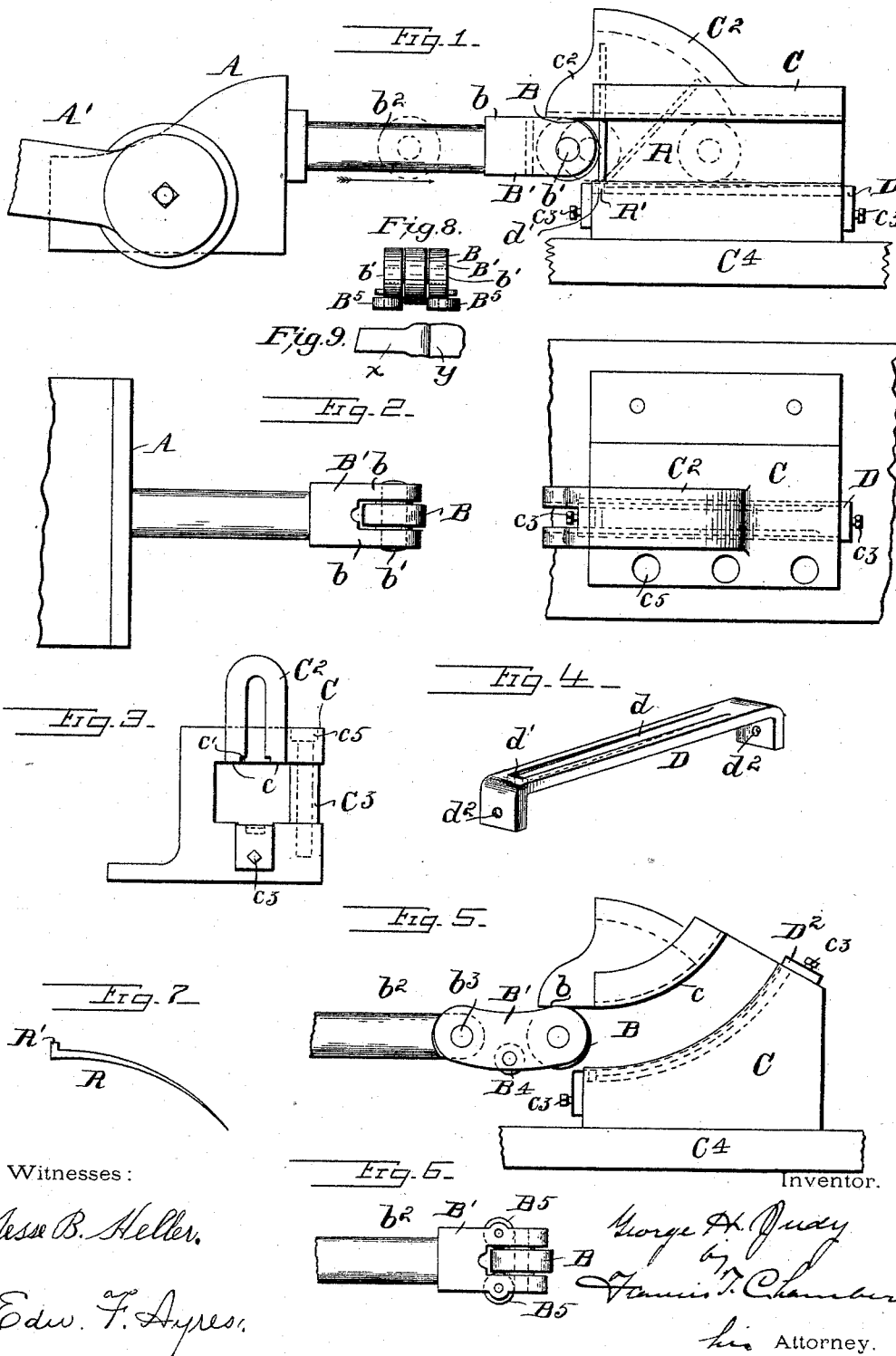
(No Model.)

G. H. JUDY.

MACHINE FOR ROLLING BRAKE SHOE KEY BLANKS INTO SHAPE.

No. 522,717.

Patented July 10, 1894.



# UNITED STATES PATENT OFFICE.

GEORGE H. JUDY, OF FORT WAYNE, INDIANA.

## MACHINE FOR ROLLING BRAKE-SHOE-KEY BLANKS INTO SHAPE.

SPECIFICATION forming part of Letters Patent No. 522,717, dated July 10, 1894.

Application filed August 8, 1893. Serial No. 482,638. (No model.)

### *To all whom it may concern:*

Be it known that I, GEORGE H. JUDY, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Metal-Rolling Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

In an application for a patent filed by me on the 8th day of August, 1893, and serially numbered 482,640, I have described a method of forging blanks. My present invention relates to a metal rolling machine designed to carry out the process there described and has for its object the production of a machine in which a suitably heated blank can be readily rolled into a die of the configuration desired.

To this end my invention consists mainly in arranging a guide in a fixed position relatively to a stationary die so that a roller may be properly guided to roll a blank over and into the die.

My invention is best described in connection with the accompanying drawings which illustrate an apparatus constructed according to my invention, and in which—

Figure 1 is a side elevation of a die casing and roller shown in the operation of rolling a blank down over a die secured in a die casing. Fig. 2 is a plan view of the device shown in Fig. 1. Fig. 3 is an end elevation of the die casing shown in Fig. 1. Fig. 4 is a perspective view of a die such as may be secured in the die casing, this particular die being such a one as would be used to form a key such as shown in Fig. 7. Fig. 5 is a modified form of die casing; Fig. 6 a modified form of head showing several rollers at different angles set therein. Fig. 7 shows a brake shoe key such as may be readily rolled in my machine. Fig. 8 is a front view of the modified form of rolling head shown in Fig. 6, and Fig. 9 a view of a blank showing the operation of this modified rolling head upon it.

A is a head adapted to be reciprocated by means of a piston or other rod A' from any suitable source of power. Secured to the

head A is a rod  $b^2$  on the end of which is secured a head B'. In this head B', as shown at  $b'$  is journaled a roller B.

C<sup>4</sup> is a suitable bed to which is secured a die casing C; in this die casing is to be secured a die such as D and the main functions of the die casing are to hold the die and serve as a guide for the roller as it is pushed forward over the face of the die to roll a blank over and into it and also to guide the free end of a blank as it is bent by the roller B, as will be explained; it is obvious that the casing may guide the roller in any desired way: as shown, shoulders  $c$  are cast or otherwise made in the casing and against these the upper faces  $b$  of the head B' are adapted to bear; a slot  $c'$  is also arranged in the casing so that there will be no chance for the roller to strike the casing above. These guiding shoulders  $c$  project forward from the front of the casing as shown at  $c^2$  so that the head in which the roller is journaled may bear firmly against the guide before the roller reaches the position where it is to act on a blank and force it over and into the die. In order to roll a properly heated blank over this die D, which is of course held stationary in the casing C, it is necessary that the blank be firmly held in a fixed position relatively to the die; this holding of the blank may be done in any desired way, a very convenient mode of this, however, is by forming a recess as at  $d'$  in the die and placing one end of the blank in it so that the main portion of the blank will be turned over at an angle to the part in the recess and so secured in a fixed position relatively to the die.

C<sup>2</sup>, Figs. 1 and 3, represents a guide for the blanks whose function is to prevent the free end of the blanks from being bent sidewise when they are first acted on by the roller, and in the construction shown this guide is conveniently formed by a bulge or swell in the casing in the opening of which the end of the blank is guided.

In Fig. 4 I have illustrated a die which shows the kind of die very conveniently used with my apparatus. This die is secured to the casing by means of screws  $c^3$  which go through holes  $d^3$  in the die.  $d'$  represents a

recess over the edge of which a blank is bent and  $d$  a groove of any desired configuration into which the heated blank is rolled.

I have illustrated in Fig. 5 a casing for a curved die  $D^2$ , and in this case the head  $B'$  is pivoted as at  $b^3$  to the rod  $b^2$  so that it can accommodate itself to the curve in the die casing. The guides  $c$  in the casing are of course curved to correspond with the curve of the die; it will be obvious that any desired form of die can be adopted, all that is necessary is that the guide on the casing should keep the roller at a certain fixed position relatively to the die. In Fig. 5 I have also shown an additional roller  $B^4$  also journaled in the head  $B'$  which may be used if desired behind the roller  $B$ ; and in Fig. 6 I have also shown two rollers  $B^5$  journaled on the head at an angle to the roller  $B$ . These additional rollers  $B^5$  may be used to roll down the edges of a blank as the first roller turns it down, that is, the rollers  $B^5$  operate on the edge of a blank as the roller  $B$  operates on the top. This mode of action is clearly shown in Fig. 9 which illustrates the blank to be acted on by the two sets of rollers,  $x$  denoting the points at which the rollers  $B^5$  bear and  $y$  the point at which the roller  $B$  bears.

Fig. 7 shows a blank  $R$  having a head  $R'$  turned in one end and beveled off in a die similar to that shown in Fig. 4, but curved as more specifically shown in Fig. 5.

In order to make the casing in a single casting and to smooth off the shoulders  $c$ , I prefer to leave one side open and arrange thimbles  $C^3$  and bolts  $c^5$  as shown in Fig. 3 to prevent the springing of the casing on the open side. In forging a key similar to that shown in Fig. 7 a straight blank, suitably heated, is inserted into the recess  $d'$  in the die and the roller  $B$  then comes forward and first bends the blank over the edge of the recess  $d'$  to form the head  $R'$ ; the free end of the blank being guided by means of the guide portion  $C^2$  of the casing; and then rolls the free end of the blank over and into the die as described.

While with careful work a blank can be completely finished in a machine of this kind it is of course evident that if desirable the blank after being rolled in the die as above described may be finished in any suitable manner, as for instance in the way shown in my application, Serial No. 482,639, filed August 8, 1893. It is also obvious that the casing and die made therein may be movable and the roller  $B$  secured to a stationary support.

Having now described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a die provided with a recess, of a casing in which said die is adapted to be secured, a guide to direct the blanks and a roller adapted to act on a blank placed with one end in the recess of the die whereby the blank may first be bent over the edge of the recess and then rolled over and into the die.

2. The combination with a die provided with a recess  $d'$  near one end thereof, of a casing in which said die is adapted to be secured, a swell or bulge  $C^3$  serving as a guide to direct the blanks and a roller  $B$  adapted to act on a blank placed with one end in the recess of the die, whereby the blank may first be bent over the edge of the recess and then rolled down over and into the die.

3. The combination with a die having a recess  $d'$  and a beveled slot  $d$  extending from the recess to near the other end of the die, of a casing to which the die is secured having a guide portion  $C^2$  for directing the blanks, and a guide  $c$  for a suitable roller and said roller  $B$  adapted to act on a blank placed with one end in the recess of the die, whereby the blank may first be bent over the edge of the recess and then rolled down over and into the die.

4. The combination with a die of a guide secured in a fixed position relatively thereto, a head adapted to move in a path defined by the guide, a roller or rollers secured in the head and adapted to pass over the die additional rollers  $B^5$  set at an angle to the first named rollers and adapted to roll the edges of a blank as the first rollers  $B$  bend it over and roll it into a die.

5. As an article of manufacture, a die casing consisting of a bed portion to which the die is to be secured and a guide portion having shoulders  $c$  and a slot formed therein substantially as and for the purpose specified.

6. A die casing having a bed portion to which the die is to be secured and a guide portion having shoulders  $c$  and a slot formed therein in combination with thimbles  $C^3$  substantially as specified.

7. The die consisting of a bar  $D$  having a recess  $d'$  formed therein as specified and a beveled slot extending from the recess and at an angle thereto to near the other end of the die substantially as and for the purpose specified.

GEORGE H. JUDY.

Witnesses:

J. H. HOBRACK,  
A. D. MARTIN.