H. E. GRANT.

Machines for Bending Links.

No. 204,316. Patented May 28, 1878.

Fig. 1.

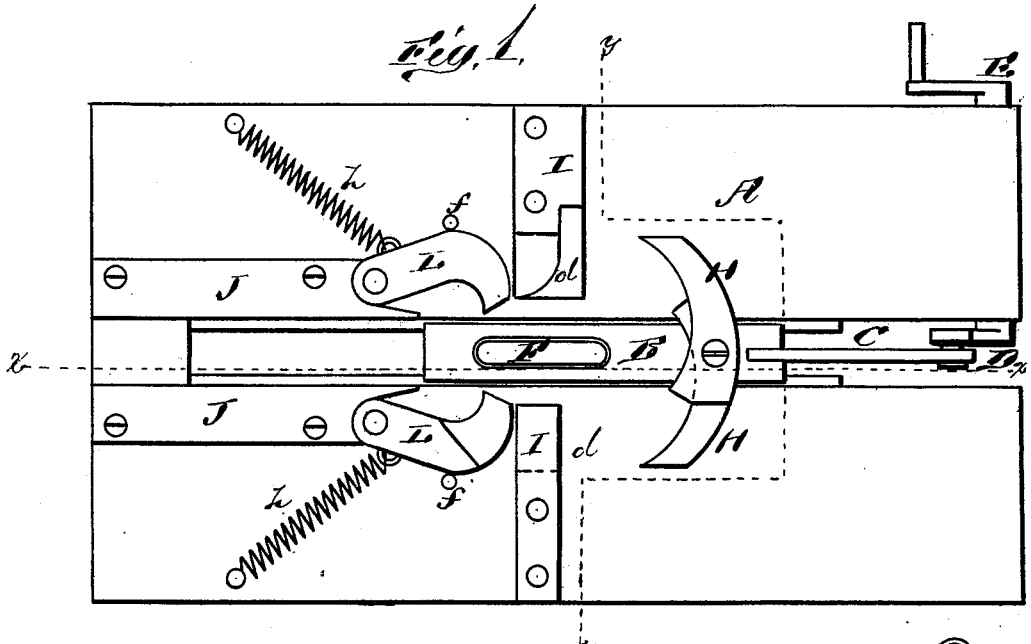


Fig. 2.

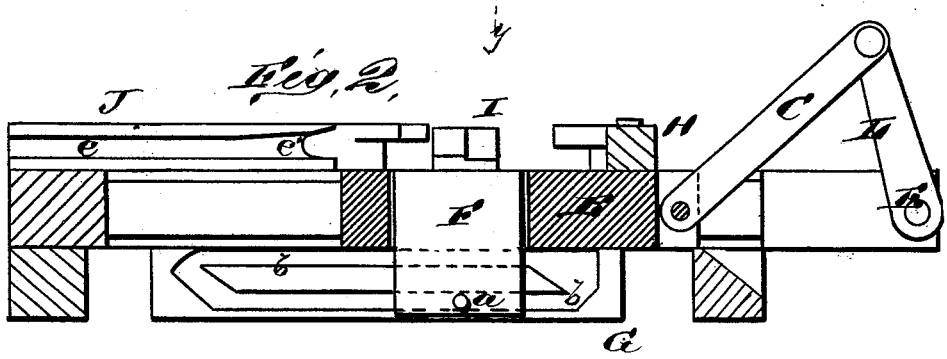
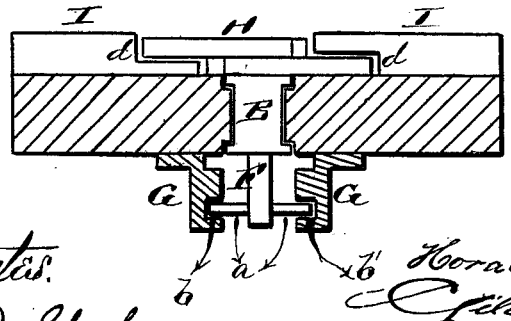


Fig. 3.



WITNESSES

E. F. Bates.

James J. Sheehy.

INVENTOR.

Horace E. Grant.

Gilmore, Switchers.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

HORACE E. GRANT, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR BENDING LINKS.

Specification forming part of Letters Patent No. **204,316**, dated May 28, 1878; application filed April 20, 1878.

To all whom it may concern:

Be it known that I, HORACE E. GRANT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and valuable Improvement in Link and Socket Bending Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a plan view of my link and socket bending machine. Fig. 2 is a longitudinal vertical sectional view. Fig. 3 is a transverse vertical sectional view.

The nature of my invention consists in the construction and operation of a machine for bending link-blanks, as will be hereinafter more fully set forth.

The annexed drawing, to which reference is made, fully illustrates my invention.

A represents a vertical plate, forming the bed of the machine, said bed having a central vertical slot extending from the top downward to near the bottom, the sides of which slot are formed or provided with suitable ribs to form guides for a vertically-reciprocating plunger or carrier, B, working in said slot. The upper end of the carrier is, by a rod or pitman, C, connected with a crank, D, on the inner end of a horizontal shaft, E, to which the power is applied.

In the lower part of the carrier B is a mortise, through which passes the former F, said former having, in rear of the carrier, a pin, *a*, through it, the ends of which pin work in grooves *b b'* in two vertical guides, G G, secured on the back of the bed A.

The grooves *b b'* in each guide G run parallel for a certain distance, and are connected at their ends in such a manner as to conduct the pin from one groove into the other, and vice versa.

Above the former F, on the front of the carrier, are permanently secured two cam-surfaces, H H, as shown in Fig. 1, for forcing together the benders L L.

On the front of the plate A are secured two horizontal pieces, I I, having formed therein, in the upper surface at their inner ends, vertical grooves *d d*, in such a manner as to receive the blank in an inclined position to the plane of the bed A, and also slanting.

J J are vertical bars secured on the front of the plate A, and having vertical grooves *e e* in their inner edges, said grooves enlarging, one forward and one backward, as shown at *e'*.

At the top of the guides J J are pivoted the benders L L, which are, by means of springs *h h*, drawn back against stops *f f*. These benders, as well as the cam-surfaces operated by the reciprocating carrier, are so constructed as to take hold and bend the blank in the inclined position in which it is passed through the machine, so as to form the lap of the ring.

The bar or blank to be bent is laid across the pieces I I in a slanting and inclined position, in the grooves or notches *d d* thereon. The former F, in its downward movement, will strike the blank in the center and bend it in the shape of a letter **U**, and push it across the points of the benders L L and into the grooves *e'*; but just as the blank enters these grooves the former is drawn out of it slightly, and the cam-surfaces H operate the pivoted benders L, so as to bend the blank across the upper edge of the former.

On the upward movement the former is drawn clear out, and leaves the bent blank, in the shape of a link, sticking in the grooves *e'* in a slanting manner. The former, on its next downward movement, will drive it out of the grooves in such a manner that it is thrown in a horizontal position and the laps of the blank thrown together.

In a full-sized machine I will apply a shear for beveling the ends; but this being old, I have not deemed it necessary to show the same in the drawing. This machine may be also used for bending sockets by simply making a slight change in the benders.

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

1. In combination with means for forcing the bent blank, the guides J J, having grooves *e* and *e'* in their inner edges, constructed as and for the purposes herein set forth.

2. The combination of the reciprocating carriage B, with former F and cam-surfaces H H, the rests I I, grooved guides J J, and pivoted benders L L, with springs *h h*, all constructed and operating substantially as and for the purposes herein set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HORACE ELLISON GRANT.

Witnesses:
GEO. A. THOMSON,
OSCAR F. GRANT.