J. W. CHEWNING, Jr.

HORSESHOE-MACHINE.

No. 188,102. Patented March 6, 1877.

Fig. 1.

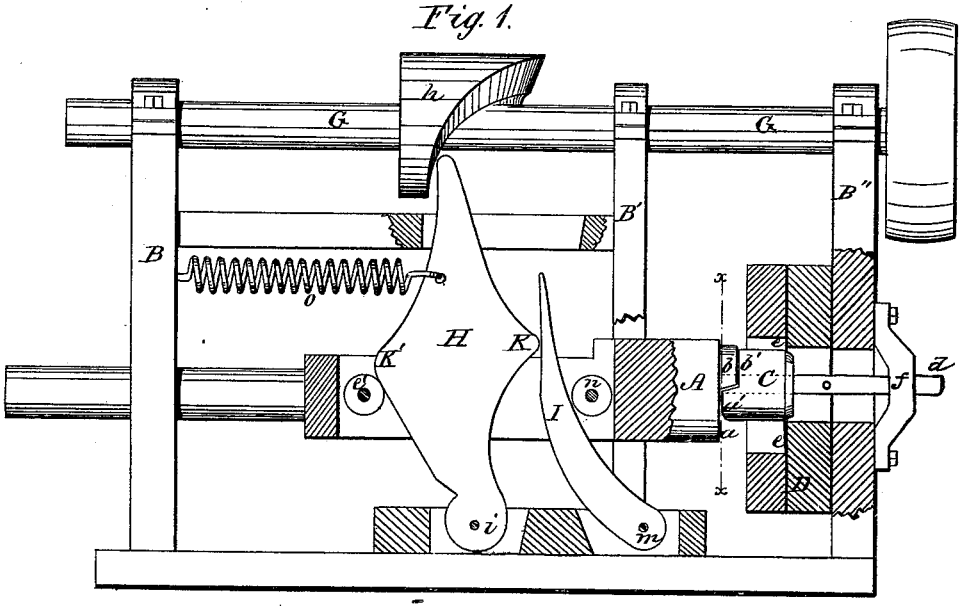


Fig. 2.

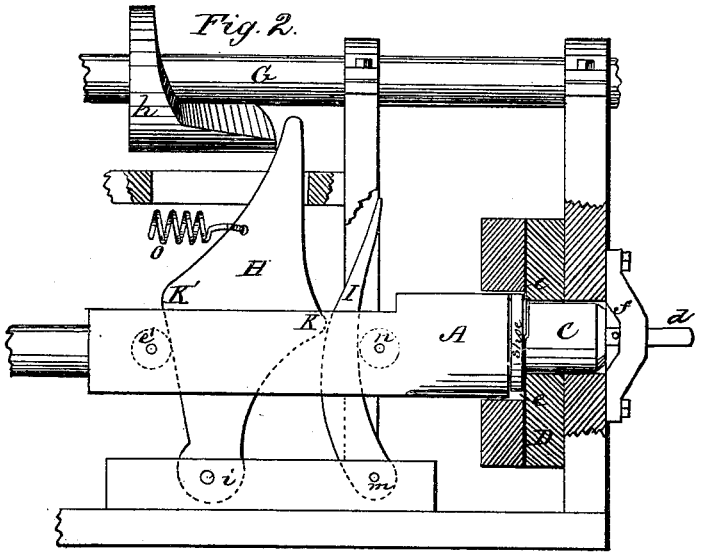
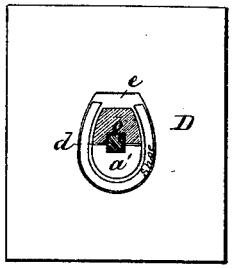


Fig. 3.



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JOHN W. CHEWNING, JR., OF SHADWELL DEPOT, VIRGINIA, ASSIGNOR TO HIMSELF, THOMAS COOPER FEREBEE, OF CAMDEN COURT-HOUSE, NORTH CAROLINA, AND JULIA MAY WALLACE, OF DEEP CREEK, VIRGINIA.

IMPROVEMENT IN HORSESHOE-MACHINES.

Specification forming part of Letters Patent No. **188,102**, dated March 6, 1877; application filed December 26, 1876.

To all whom it may concern:

Be it known that I, JOHN W. CHEWNING, Jr., of Shadwell Depot, in the county of Albemarle and State of Virginia, have invented a new and useful Improvement in Horseshoe-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My present invention is an improvement upon that for which Letters Patent of the United States were granted to me August 29, 1876, No. 181,641.

The improvement relates to the construction of the contact-surfaces of the swaging-die and the combined former and ejector; also, to the mechanism for reciprocating the swaging-die.

In the accompanying drawing, forming part of this specification, Figure 1 is a partly-vertical section of my improved machine, showing the position of parts before the blank is bent around the former. Fig. 2 is a similar view of a fragment of the machine, showing the position of parts when the swaging-die is acting on the blank. Fig. 3 is a cross-section, on line *x x* of Fig. 1.

I do not show in the drawing the jaws for bending and shaping the blank around the former, nor the knife or cutter for severing the blank from the heated bar.

For full understanding of the construction and operation of these and such other parts or devices as are necessary to form the complete operative machine, reference is made to my aforementioned patent, wherein they will be found described at length.

The swaging-die A is supported and reciprocated horizontally in suitable bearings in the posts B B′ of the metal frame, as in my previous machine. The face of the die is, however, differently constructed, the lower half, *a*, being plain or flat, and a projection, *b*, being formed on its upper half, for the purpose of assisting in imparting the desired shape to the heel of the shoe. The face of the combined former and ejector C has a corresponding configuration, its lower portion having a projection, *a′*, and the upper portion, *b′*, being flat or plain. The former and ejector C slides on a rod, *d*, which is connected with the swaging-die at one end, and works through a part, *f*, of post B″ at the other end. The female die proper, D, is composed of a recessed plate (or of two plates, as in my previous patent) having suitable configuration to impart the desired form to the shoe exteriorly, and the floor *e* of the same is likewise suitably constructed for creasing the shoe and imprinting it for the nail-holes. The part *a′* of the ejector C is flush with the floor or bed *e* of the die D when in position, Fig. 2, for the swaging-die to act on the blank. The outer or rear end of the ejector in such case abuts against the part *f* of the frame-work B″, which thus acts as a buffer to receive the shock caused by the action of the swaging-die. The lower edge or toe of projection *a′* of the former and ejector C has a slight bevel, as shown in Fig. 1, to form a cavity or recess to receive the metal when the upsetting operation takes place. The metal forced into the said cavity or recess forms a narrow lip or flange on the upper side and inner edge of the toe of the shoe.

The operation is, more particularly, as follows: The swaging-die A and former C being in the position shown in full lines, Fig. 1, the blank is cut off from the heated bar and bent around the former C, as described in my aforesaid patent, the projection *b* of the die being in contact with the plain portion *b′* of the ejector and former. The die A advances and forces the former C and the horseshoe-shaped blank, which adheres to it, back into the die D until the rear end of the former strikes the buffer or part *f* of the post B″, when the swaging action begins. The die A continues to advance and upsets the metal at the inner portion of the shoe, causing it to "flow" over the toe of the former C, or fill the shallow recess formed by beveling the toe, as before described, and at the same time compressing the metal at the heel between the sides of the female die and the projection of the swaging-die. The heel portions of the shoe thus receive a proper form, the corners or angles being made sharp or well-defined.

It will be seen that in this operation of

swaging the face of the projection on the former C becomes part of the bed of the die, and that the projection of the swaging-die performs, in part, the function of a former. The metal being spread over the edge of the toe of the former C, the latter is enabled to push the shoe out of the die, acting thus as an ejector, when the swaging-die is retracted. The first step of the retracting operation is that of the separation of the swaging-die from the former C, and the next is the movement of the latter following or corresponding to that of the swaging-die. This last is due to contact of the cross-pin in the rod with the rear side of the former. The projection of the former pushes against the toe of the shoe, and thus causes the ejection of the latter, as will be readily understood.

The mechanism for reciprocating the swaging-die consists of the following parts: G is a horizontal rotating shaft placed above and parallel to the shank or guide of die A, and provided with an oblique-faced cam, *h*. This cam works in frictional contact with the upper end of a lever, H, which is pivoted at *i* to the bed of the machine, and works in a slot formed in the enlarged shank of the die. The lever is broadened in its middle portion to form cam projections *k k'*, which work alternately in contact with friction-roller *e'* and the inclined or beveled side of a lever, I. The latter is pivoted to the bed at *m*, and its free end bears against a friction-roller, *n*, placed in the slot of the shank or guide. A retracting-spring, *o*, is attached to the upper end of the lever H; but I purpose dispensing with the spring in practice, and to substitute a grooved cam on shaft G for vibrating the lever H As the cam *h* revolves its projecting portion gradually forces the end of the lever H toward the post B' of the frame, and the movement is transmitted to the die A, through the medium of the projection *k* and lever I, until the swaging operation is complete. The spring *o* begins to retract the lever H as the end of the latter passes the apex of the cam *h*, and thus effects the gradual withdrawal of the die by the action of the projection *k'* of lever H against the friction-roller *e'*, as will be apparent without further description.

What I claim as new is—

1. In a horseshoe-machine, a reciprocating swaging-die having a portion of its face plain or flat, and the remaining or heel portion raised, in combination with a sliding former and ejector having a corresponding face, and a female die surrounding the former and ejector, substantially as shown and described.

2. In a horseshoe-machine, the combination, with a reciprocating swaging-die having a slotted shank, of a cam-shaft, pivoted lever H, and a lever having an inclined or beveled side, substantially as shown and described.

The above specification of my invention signed by me this 14th day of December, 1876.

JNO. W. CHEWNING, JR.

Witnesses:
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