E. SHAW & C. CARPENTER, Jr.

HORSESHOE MACHINE.

No. 20,023. Patented Apr. 20, 1858.

Fig. 1.

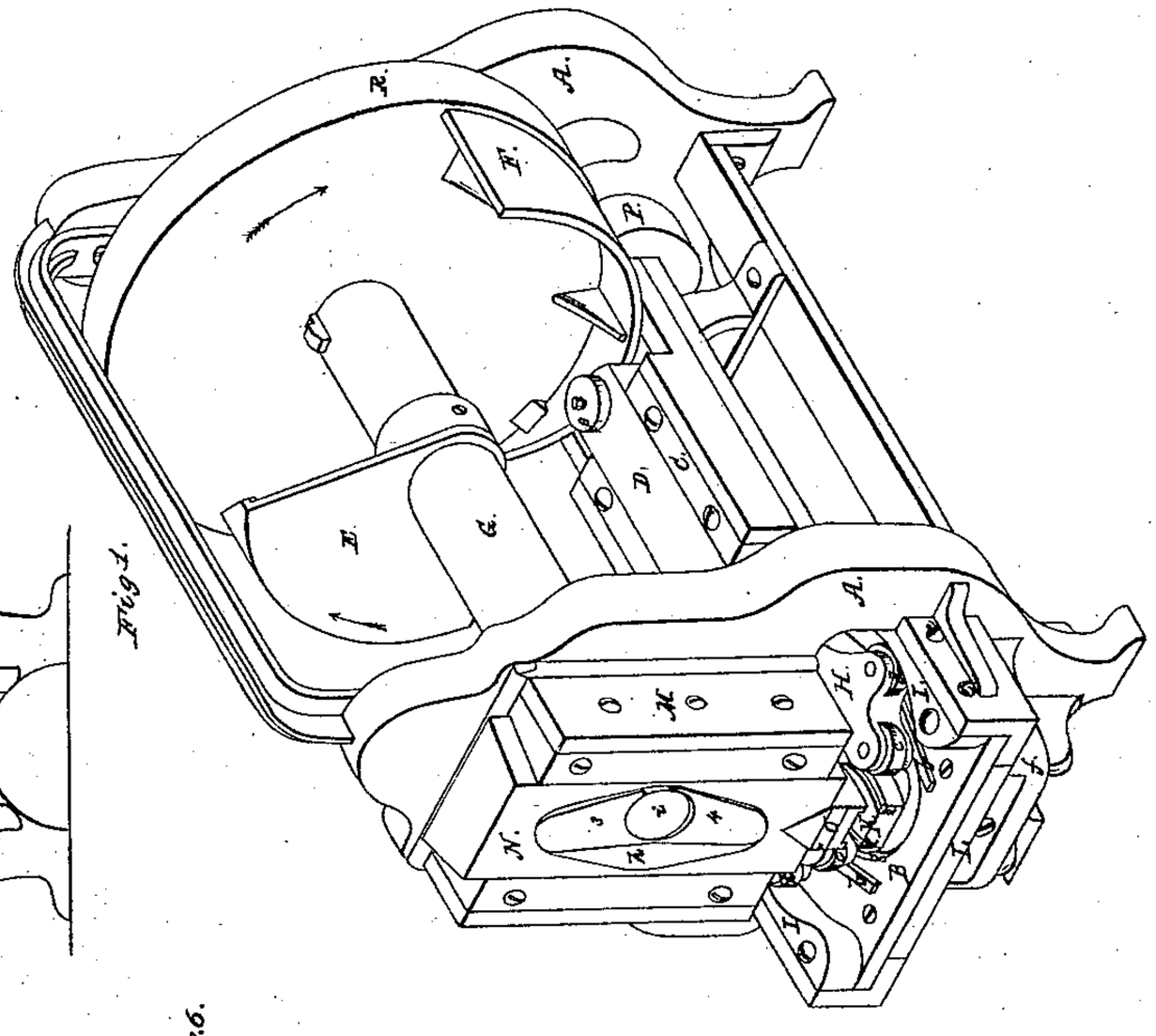


Fig. 3.

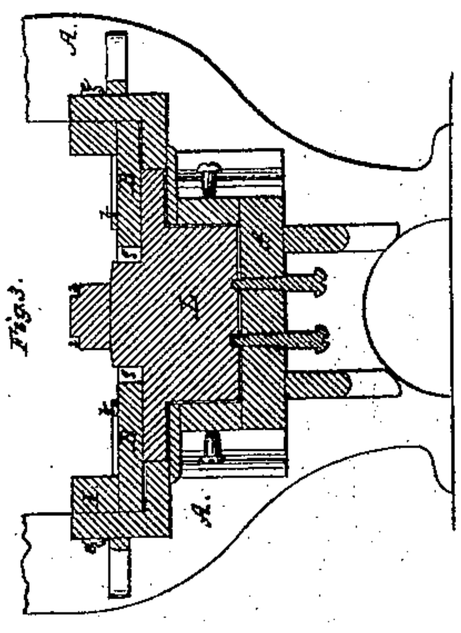


Fig. 6.

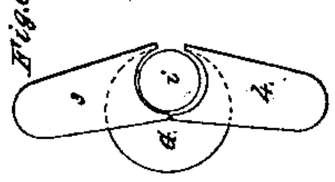


Fig. 4.

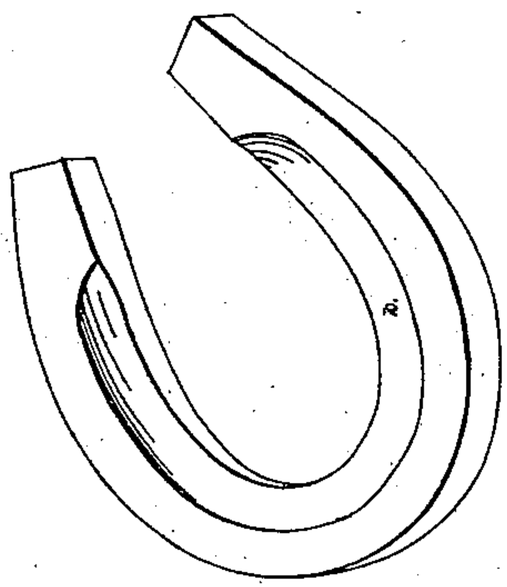
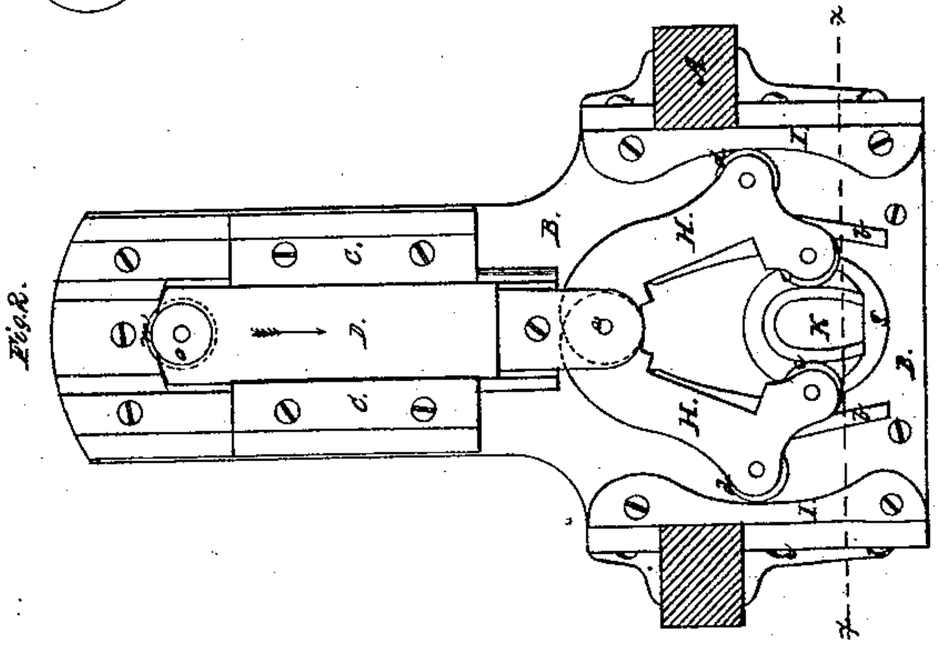


Fig. 5.

Fig. 2.



UNITED STATES PATENT OFFICE.

E. SHAW, OF PROVIDENCE, RHODE ISLAND, AND C. CARPENTER, JR., OF PAWTUCKET, MASSACHUSETTS, ASSIGNORS TO THEMSELVES, AND G. B. JASTRAM, OF PROVIDENCE, RHODE ISLAND.

HORSESHOE-MACHINE.

Specification of Letters Patent No. 20,023, dated April 20, 1858.

To all whom it may concern:

Be it known that we, ELWIN SHAW, of Providence, in the county of Providence and State of Rhode Island, and C. CARPENTER, Jr., of Pawtucket, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Horseshoes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a view of the machine. Fig. 2 is a plan of the table or part of the machine on which the bending apparatus slides. Fig. 3 is a transverse vertical section on the line *x*—*x* of Fig. 2. Figs. 4 and 5 are views of a horse shoe made in our machine. Fig. 6 detail to be referred to hereafter.

We are aware that machines have been constructed for bending horse shoes around a mold, the bending arms or followers being guided in their path by inclined guides or patterns, the position of the mold being fixed, and also that various devices have been employed for clamping the shoe to the mold while being bent.

Our present invention consists in giving to the clamping apparatus such a motion that it shall hold the shoe sufficiently firm on the mold until bent and then by an additional pressure shall flatten and smooth the shoe and impress it with a concave depression on the side which comes next to the foot to prevent the shoe from bearing too hard on the sole of the foot.

It also consists in supporting the mold on an adjustable sub-table so that its position longitudinally in the machine may be varied, and thus by altering the position of the mold as well as of the patterns a greater variety of forms may be obtained with the same mold.

That others skilled in the art may understand and use our invention we will proceed to describe the manner in which we have carried it out.

In the drawings A is the frame of the machine in which is supported a bed or table B. To this are secured the ways C between which travels the carriage D which is caused to traverse back and forth longitudinally on the table B at proper intervals of time, by means of the two cams E and F secured to a shaft G having bearings in the frame A. The cam F forms part of a wheel by which the shaft G is driven. To the front end of the carriage D are pivoted at *a* the two bending arms H which rest on ways *b* on the table B. Each arm is furnished with two rollers *c* and *d*. On each side of the table B outside of the path of the arms H is secured a curved incline or pattern I the position of which is adjusted by screws *e* passing through the side of the table B. The rollers *c* on the arms H run in contact with the iron being bent, and the rollers *d* in contact with the patterns I. Thus as the carriage D is driven in the direction of its arrow (Fig. 2) the rollers *d* follow the curve of the patterns I and the rollers *c* bend the iron around the mold and give to the edge of the shoe the requisite amount of pressure to narrow and thicken the blank at the heel part of the shoe, as shown in Figs. 4 and 5. The mold K is furnished with a recess or groove 2, Fig. 1, in which the blank as it is bent round is received. It is supported on a sub-table L (Figs. 1 and 3) which is supported on the part *f* of the table B and slides lengthwise of the machine beneath the upper part of it, the mold K rising through an opening *g* in the upper table. The position of the table L is adjusted by proper set screws. Thus by varying the position of the patterns I with reference to a vertical plane passing longitudinally through the center of the mold the amount of pressure given to the edge of the shoe may be regulated and the thickness and width of the heel be varied, and by varying the position horizontally of the sub-table L the point at which the narrowing and thickening of the heel commences may be regulated, and thus a great variety of forms may be obtained with the same mold, (different molds may also be used where much difference in size and form is required).

The clamping and compressing apparatus will now be explained.

Secured to the front of the vertical part of the frame A is a box M in which slides up and down a plunger N the inclined or dove-tail sides of which fit in the box. To the lower end of this carriage is secured the clamp or die O, which has the proper form given to its face to form the depression *k* in the shoe (as in Figs. 4 and 5). The plunger N is moved up and down in the following manner: A space or recess *h*, Fig. 1.

is cut out of the middle of it. In this recess play two dogs 3 and 4 (Figs. 1 and 6) which embrace a pin *i* placed eccentrically on the end of the shaft G so that as the shaft revolves the die O is lowered onto the blank and holds it firmly to the mold, and as the shaft continues to revolve the dogs 3 and 4 are brought into a straight line, and an additional amount of pressure is applied to the die to stamp the concave *k*. This is accomplished about the time that the arms H have completed the bending and squeezing process, the relative movements being regulated by adjusting the position of the cam F on the shaft G. The die O is to be adjusted to correspond to any change of position of the mold K. As before mentioned motion is given to the carriage D by the cams E and F. They are operated as follows: A wheel P engages with the large wheel R (these wheels are to be furnished with teeth) to which the cam F is attached and drives it in the direction of the arrow. The large wheel is secured on the shaft G. As it revolves the inclined face of the cam F bears against a roller *m* (Fig. 2) and drives the carriage D in the direction of its arrow. After the bending is completed the cam E strikes against another roller *o* on top of the carriage and drives it back in the opposite direction. After each revolution the bent shoe is removed by hand and a fresh bar or blank is introduced.

What we claim as our invention and desire to secure by Letters Patent is—

Varying the point at which the pressure for narrowing and thickening the heel commences, by moving the mold K in or out in the manner substantially as herein described.

ELWIN SHAW.
CALVIN CARPENTER, Jr.

In presence of—
Franklin J. Dickman,
Beriah Wall.