

J. W. CHEWNING, Jr.

HORSESHOE MACHINE.

No. 181,641.

Patented Aug. 29, 1876.

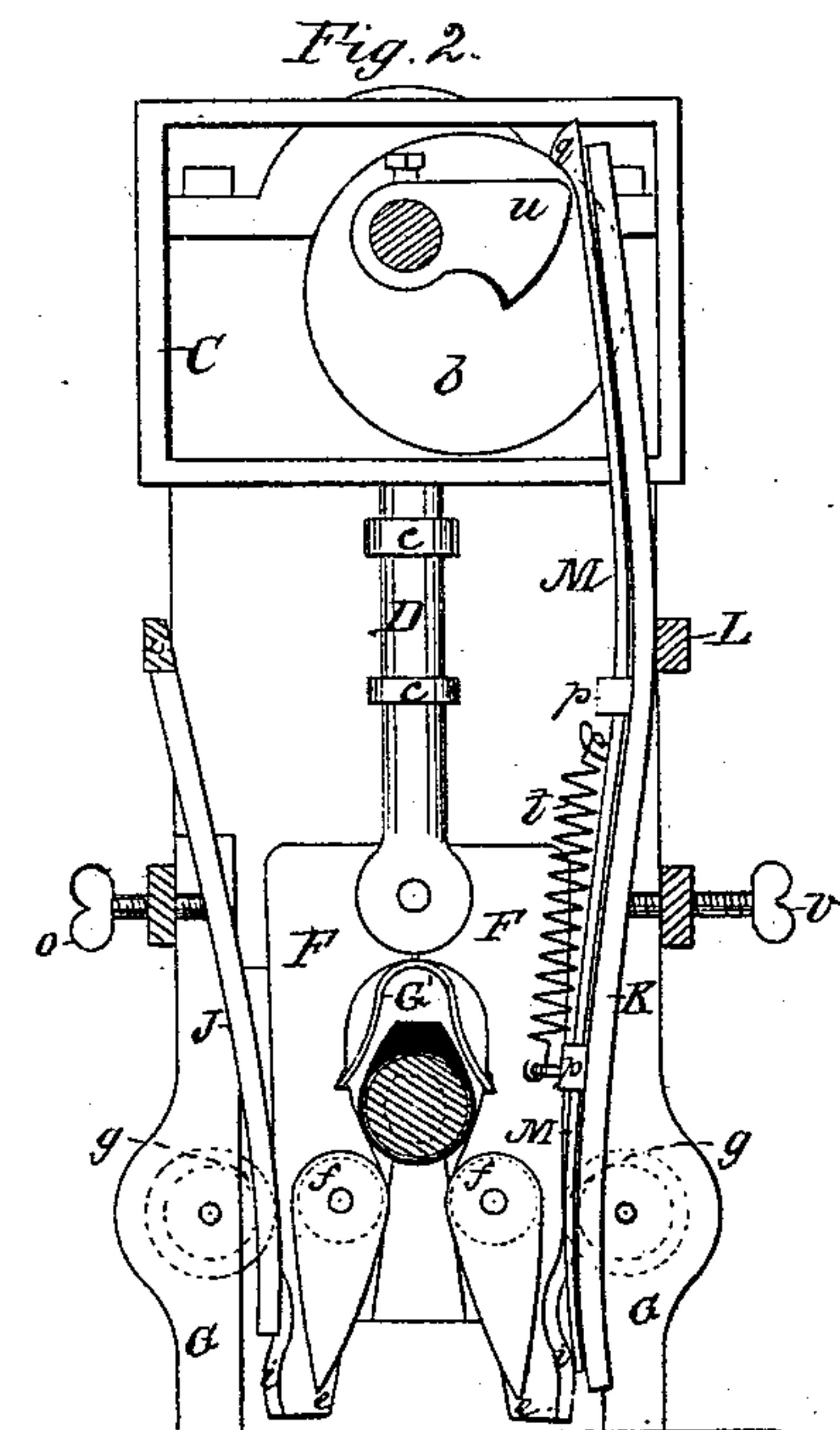
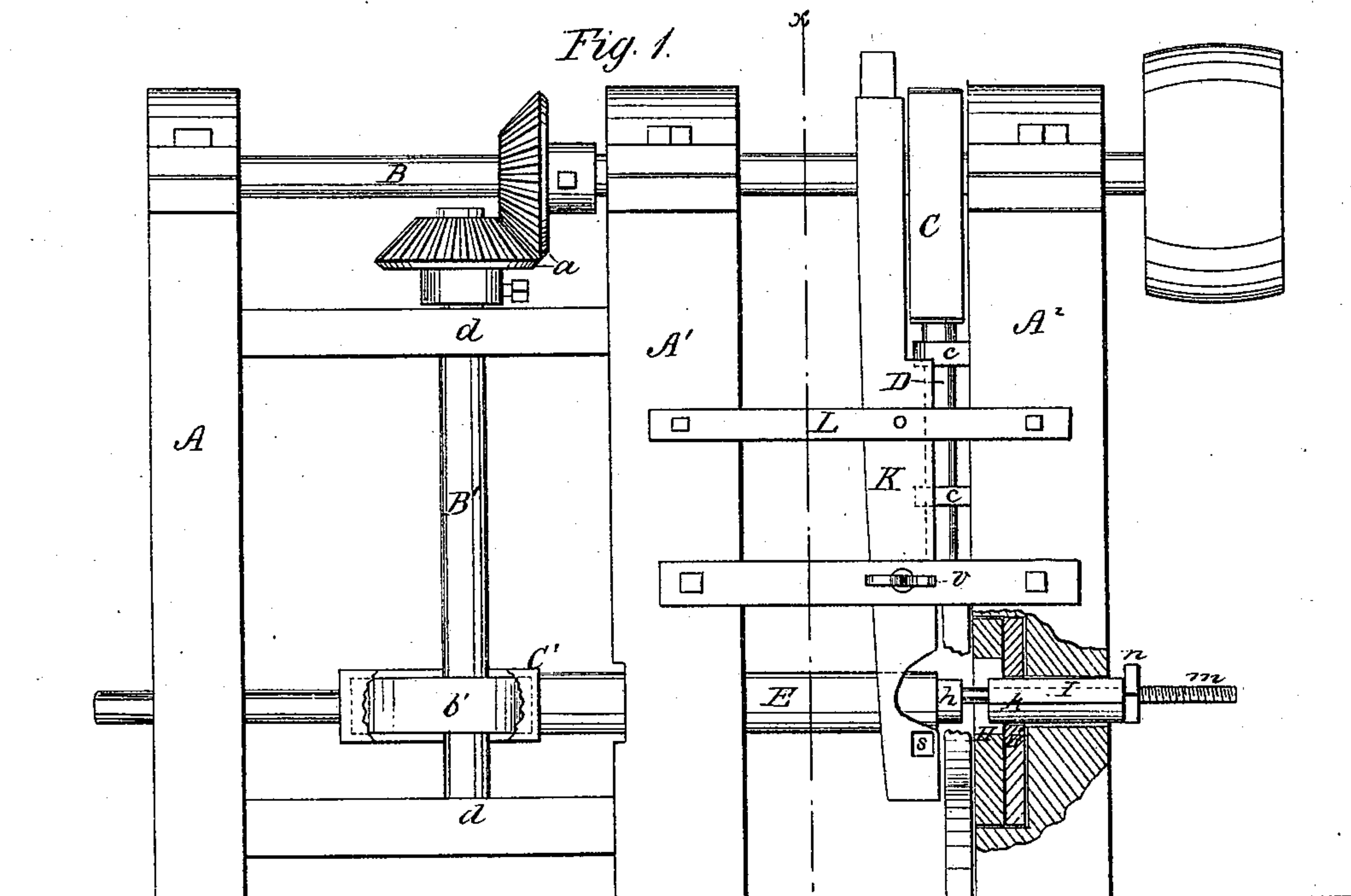


Fig. 3.



Fig. 4.

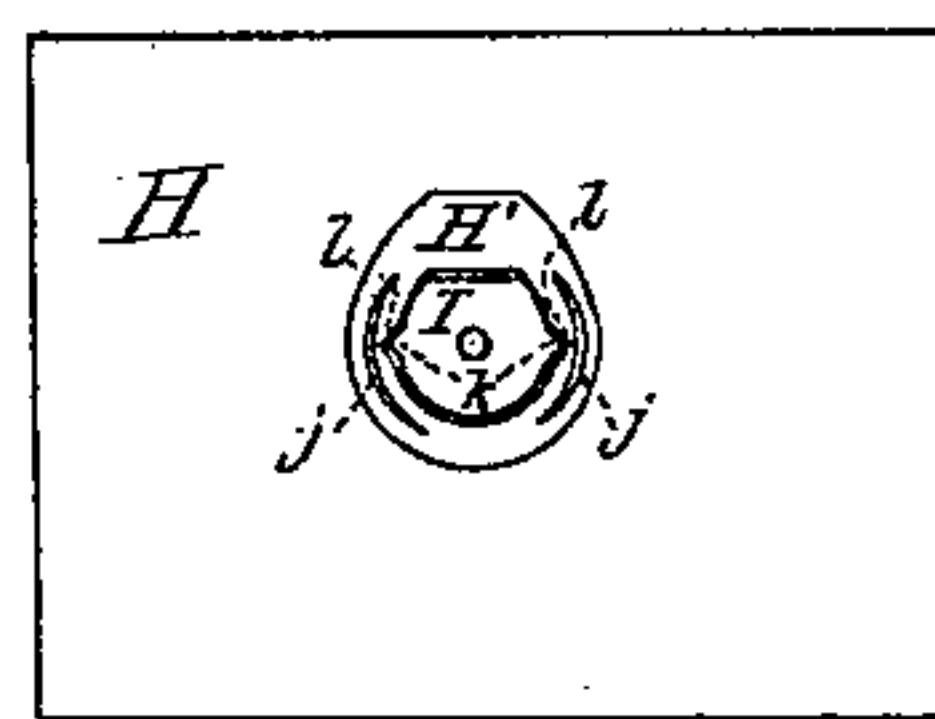
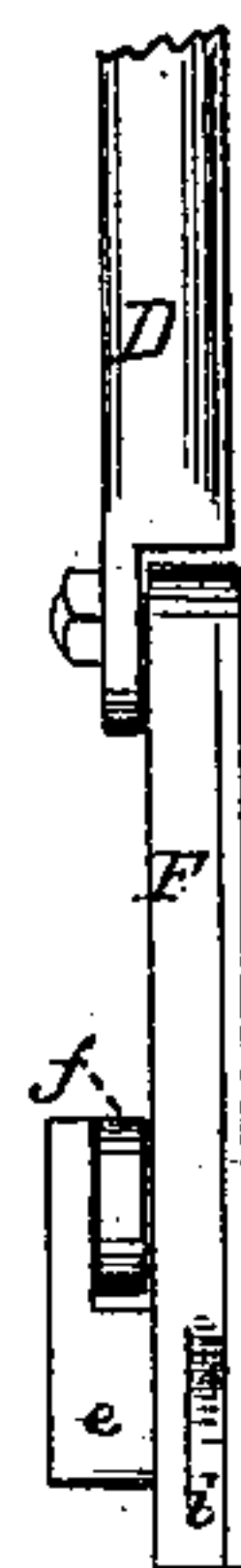


Fig. 5.



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JOHN W. CHEWNING, JR., OF SHADWELL DEPOT, VIRGINIA.

IMPROVEMENT IN HORSESHOE-MACHINES.

Specification forming part of Letters Patent No. 181,641, dated August 29, 1876; application filed May 20, 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 Improved Horseshoe-Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side elevation of the machine, part being broken away to show the construction and arrangement of the ejector. Fig. 2 is a vertical section of the machine on line *xx*, Fig. 1. Figs. 3, 4, 5 are detail views, which will be hereinafter referred to.

My invention relates to a novel construction of a horseshoe-machine; and it consists in the construction and arrangement of the devices for operating the swaging-die and bending-jaws; in the combination, with the pivoted jaws, of bending and guide-rollers; in the construction and arrangement of the ejector for the swaged horseshoe; in the construction and arrangement of the knife for cutting off the section of the bar forming the horseshoe; and in the means for adjusting length of said cut section, all as hereinafter more fully described.

In the drawing, *A A¹ A²* represent the frame-work of the machine, which is to be strongly constructed of metal, and of any suitable shape, adapted to form bearings for and carry the operating parts of the machine. *B B'* are the two main shafts of the machine, which are arranged at right angles to each other, and are geared together by the bevel-wheels *a*. The first of these shafts, *B*, is arranged horizontally at the top of the frame-work, and is journaled in bearings in the same, so as to revolve freely, while the second shaft, *B'*, is arranged vertically in bearings *d*. Shaft *B* carries a cam, *b*, which plays in a box or yoke, *C*, attached to the rod *D*, which cam serves to impart to said rod a vertically-reciprocating movement, which effects the bending of the bar of iron, while shaft *B'* has a cam, *b'*, which plays in a box or yoke, *C'*, attached to the die *E*, which imparts to it a horizontally-reciprocating movement, which effects the swaging of the horseshoe. The

rod *D* is arranged to reciprocate in guides *c c*, while the die *E* slides in guides in the frame-work. Instead of having the die *E*, however, to slide as shown, I may arrange the box or yoke *C* in side guides, in order to give greater steadiness to the movement of the die, and prevent the oscillation of the same.

F F are the two bending-jaws, which are pivoted to the reciprocating rod *D* at the top, and are pressed outwardly by an intermediate spring, *G'*. The lower portion of these jaws is enlarged at *e*, and provided with sheaves or friction-rollers *f*, upon which the bar of iron that forms the horseshoe rests, and by which the said bar is bent as the jaws rise, the bar being introduced while the rollers are below the die, and between the said die and rollers on the jaws. Upon the outside of each of the jaws *F* is arranged a stationary plate or bar, *G*, which carries a roller, *g*, which second set of rollers bear against the outside edges of the jaws, and force them inwardly as they rise, so as to effect the bending of the bar around the portion *h* of the die constituting the former. These rollers are flanged upon their periphery, and the outside edge of the jaws are correspondingly flanged or rabbeted at *i*, so that the rollers not only serve to force the jaws inwardly, but also operate as guides, by reason of their peculiar construction, to prevent the lateral displacement of the said jaws.

The female die is constructed in two parts in plates *H H'*, of which *H* is cut away in such a manner as to conform to the outer edge of the horseshoe, while *H'* forms the face or bottom of the shoe, the said latter plate being also perforated to admit the passage of the ejector, and having upon its face the raised lip or flange *j* that forms the groove in the bottom of the shoe that is to receive the heads of the nails.

The ejector consists of a slide, *I*, provided with a tongue, *k*, on each side, which slide fits in the perforation in plate *H'* of the die, and which tongues fit and slide in grooves *l* in said same plate. This slide *I* is perforated longitudinally, and has a continuous rod, *m*, running its entire length through said perforation, which rod is screw-threaded at both ends. One of these ends of the rod is screwed

into a socket in the end of the die E, while the outer end is provided with a screw-nut, *n*, which determines the position of the slide I on the rod *m*, and thus regulates the ejector according to the thickness of the shoe that is being formed. It will thus be seen that the ejector is attached directly to the swaging-die and in alignment with the same, and that it may be adjusted to suit different thicknesses of shoes. After the shoe has been compressed the retrograde movement of the die brings the slide I forward, and as its sliding tongues *k* project far enough to catch the shoe they remove it from its seat and carry it to a position between the jaws F, from whence it is free to drop, the said jaws being cut away in order to give clearance to the discharge of the shoe.

To regulate the length of the section of metal to be cut to form the shoe I have constructed upon each side of the die a gage, of which J is simply a stop-bar pivoted at the top to the frame-work, and provided below with an adjusting-screw, *o*, by means of which the said bar is forced inwardly to or out from the die, so as to shorten or lengthen the section of metal between the said bar and the knife, which is located upon the opposite side on a second gage-bar, K. This latter bar K is attached to a cross-bar, L, fastened to the frame-work, and carries the knife bar M, which consists of a bar arranged in guide *p*, which bar terminates above in an enlarged projection, *q*, and in a cutting-edge, *r*, below which cutting-edge is located just below the hole *s*, through which the bar is inserted into the machine. This said knife-bar is held down by a spring, *t*, and is elevated to cut off the section of metal by a cam, *u*, upon the main shaft B, which in its revolution strikes the projection *q* of the knife and moves the cutting-edge *r* across the hole *s*. To compensate for the adjustment of the gage-bar J, and make the bending of the cut section of metal exactly in the middle, the bar K is left free to move below, and is also provided with a binding-screw, *v*, which is adjusted with binding-screw *o* on the other side, so as to prevent one branch of the horseshoe from being longer than the other.

Having thus described in detail the construction of the machine, its general operation is as follows: The main shaft B being set in motion by any suitable application of power, the bar of iron from which the shoe is to be

formed is inserted through the hole *s*. Knife then cuts off the proper length of bar, which rests upon the rollers of the jaws F immediately below the die E. The jaws F then rise and bend the cut section around the former of the die E, after which the die itself advances and swages the shoe into proper shape in the female die. Then upon the retrograde movement of the die the ejector throws out the shoe, and the operation is complete.

Having thus described my invention, what I claim as new is—

1. The combination, in a horseshoe-machine, with the rod D, carrying the bending-jaws and the die E, of the boxes or yokes C C' and the shaft B B', connected by a bevel-gear, and having cams *b b'*, substantially as and for the purpose described.

2. The pivoted reciprocating bending-jaws F, having flanged or rabbeted edges *i*, in combination with the flanged stationary rollers *g*, substantially as and for the purpose described.

3. In a horseshoe-machine, the combination, with the swaging-die, of an ejector arranged in alignment upon the end of said die, and operated simultaneously with the die on its retrograde movement to eject the horseshoe, substantially as described.

4. The combination, with the die E, having a screw-socket in the end, of the rod *m*, slide I, and nut *n*, substantially as and for the purpose described.

5. The die E and the perforated female die H H', having grooves *l*, in combination with the slide I, having tongues K, and the continuous rod *m*, having screw-threaded ends, and nut *n*, as and for the purpose described.

6. The knife-bar M, having cutting-edge *r* and projection *q*, in combination with the spring *t*, the bar *k*, having hole *s*, and the shaft B, having cam *u*, as and for the purpose described.

7. The combination, with the swaging devices, of the pivoted gage-bar J, having set-screw *o*, and the gage-bar *k*, carrying the knife, and having the set-screw *v*, substantially as and for the purpose described.

The above specification of my invention signed by me this 13th day of May, 1876.

JNO. W. CHEWNING, JR.

Witnesses:

SOLON C. KEMON,

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