

W. W. LEWIS.
HORSESHOE MACHINES.

No. 175,864.

Patented April 11, 1876.

Fig. 1

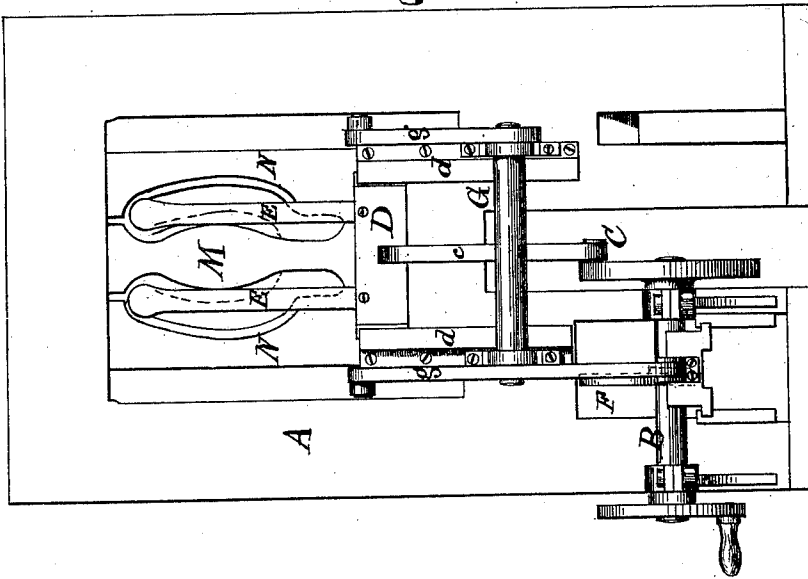
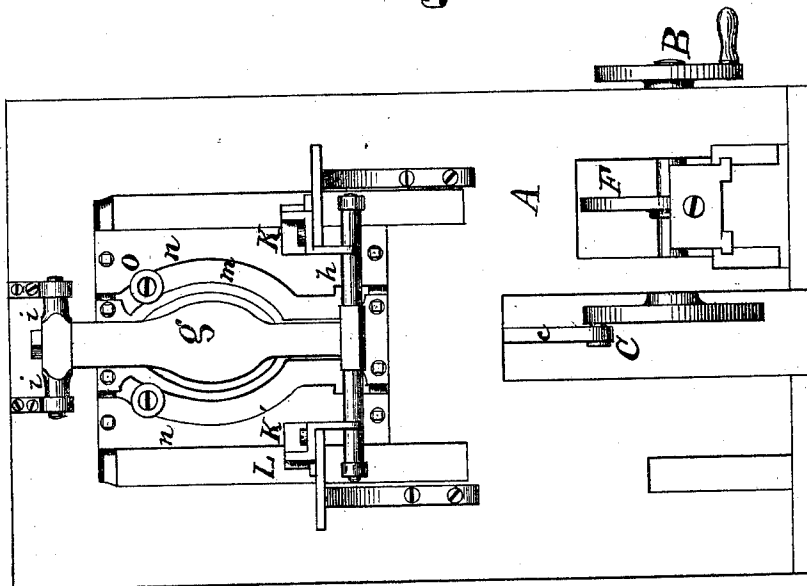


Fig. 2



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Inventor

William W. Lewis
By Seth W. Benson

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Fig. 3

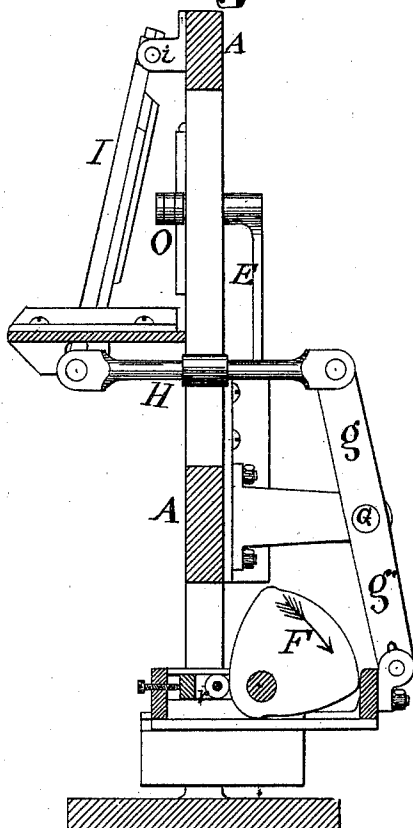


Fig. 4

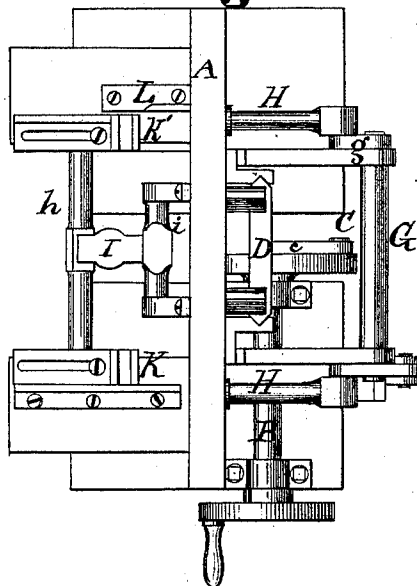


Fig. 6

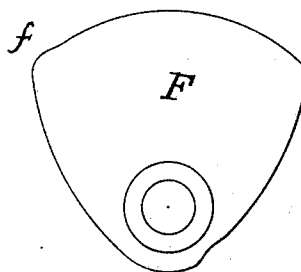


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM W. LEWIS, OF CINCINNATI, OHIO.

IMPROVEMENT IN HORSESHOE-MACHINES.

Specification forming part of Letters Patent No. **175,864**, dated April 11, 1876; application filed November 27, 1875.

To all whom it may concern:

Be it known that I, WILLIAM W. LEWIS, of Cincinnati, in the county of Hamilton, in the State of Ohio, have invented certain Improvements on Machines for Bending Horseshoes, of which the following is a specification:

My invention relates to machines for bending horseshoes, and has for its object the accurate bending of the iron to the required shape, to which end I employ a die constructed in two separable parts, one of which is attached to an oscillating arm, around which the iron is bent by suitable formers, which are guided around the die by forming-tracks of the shape of the desired shoe. The oscillating arm is operated by a double-throw cam, which holds the two parts of the die together during the operation of bending, and then by its second throw causes the shoe to be pressed out flat or to the shape of the die between the two faces of the die, and then separates the two parts of the die, so as to drop the shoe.

Figure 1 is a back view of the machine. Fig. 2 is a front view. Fig. 3 is a side sectional view. Fig. 4 is a top view. Fig. 5 is one of the rods H, and Fig. 6 is an enlarged view of the cam.

A is the frame of the machine. B is the shaft to which the driving power is applied. This shaft has a crank-arm or wheel, C, on it, which, through a pitman, operates a cross-head, D, moving in suitable guides, *d*. To this cross-head are hinged two arms, E E, having at their upper ends pins which carry friction-rollers to guide the arms and do the bending. The driving-shaft B is provided also with a double-throw cam, F, whose construction will be explained below. This cam revolves within a cam-yoke, which gives an oscillating motion to an arm, *g'*, on a rock-shaft, G, which shaft, through two arms, *g g*, gives a reciprocating motion to the rods H, which cause the arm I to oscillate. The rods H are adjustable lengthwise, either as shown in Fig. 5 or by any other suitable means. The arm I oscillates with a shaft, *i*, to which it is attached by a trunnion, or otherwise, to permit of its twisting so as to adapt itself to irregularities or variations in the blank. The cross-bar *h* also gives motion to two pockets, K K'. The blank to be bent

is slid through pocket K' until its end rests in pocket K. A projection on the arm I aids in guiding it into K. It is then carried back by the pockets, which are moved by the cross-bar *h*, cut off by a cutter, L, and brought to the proper position for the bending operation. The die around which the iron is bent is made in two separate parts. One part is attached to a slab, *m*, whose shape is that of the shoe to be produced. This slab is attached to a bar, M, on the frame of the machine, and is removable. This slab forms the inside bearings of the forming-tracks. The other part of the die is attached to the oscillating arm I. *n n* are slabs forming the outer bearings of the forming-tracks, their inner edges being curved to the shape of the shoe to be produced, so that between them and the central slab *m* are formed curved slots or grooves corresponding to the desired shape of shoe. The slabs *n n* are attached to bars N N on the frame of the machine.

When a different size or style of shoe is desired the slabs *m* and *n* and the die are removed and others substituted. Right and left shoes may be bent by making the two sides of the die different, and making the slabs to correspond.

In order that the iron may not curl over on that side which is thinnest (which in most shoes is the tread) I bevel the die on that side so as to give an easy entrance to the iron, and the die groove is gaged by the rods H.

The cam F (see Fig. 6) is constructed with a double throw, the corner *f* having a slightly greater throw than the remainder. The arm I holds the two parts of the die together until the iron is bent around it by the forming-rollers O, which are grooved to receive the outer edge of the blank. The corner *f* of the cam then gives it additional throw, thus bringing a pressure on the faces of the shoe and pressing it out flat or to the form of the die. The arm I is then moved outward by the cam, and the shoe drops into a chute or other receptacle below, which is not shown in the drawing. If desired, prongs or other devices may be used to aid in removing the shoe from the die. The pins which carry the forming-rollers O O have friction-rollers, which move in the forming-tracks and guide the forming-

rollers in the proper direction. These forming-tracks may easily be adapted to continuously-rotating machines, so that one or more shoes are formed at each revolution, and by their use I am able to accurately bend the shoe to the die.

The cam-yoke is provided with an adjustable friction-roller, *r*, to take up wear, and the lineal motion of the yoke is accommodated to the circular motion of the arm *g'* by means of a slot in the arm and a friction-roller on the pin passing through it.

I claim as my invention—

1. In combination with a swinging arm capable of adjusting itself to the irregularities of the bar a die in two separable parts, one stationary and the other attached to the swinging arm, so that the two parts of the die may be held together during the bending opera-

tion, and separated to release the shoe when the bending is completed, substantially as set forth.

2. In combination with the movable part of the die an oscillating arm, having a trunnion connection with its shaft, whereby the die is capable of adjusting itself to the entering-bar on both sides, as set forth.

3. A double-throw cam, in combination with the swinging arm, for the purpose of pressing the shoe out to proper form when bent.

4. In combination with the swinging arm I the feeding slides or pockets *K K'*, substantially as and for the purpose set forth.

W. W. LEWIS.

Attest:

WM. S. BATES,
JEREMIAH F. TWOHIG.