J. McCarty.

Horseshoe Machine.

No. 30,448. Patented Oct. 16, 1860.

Fig 1

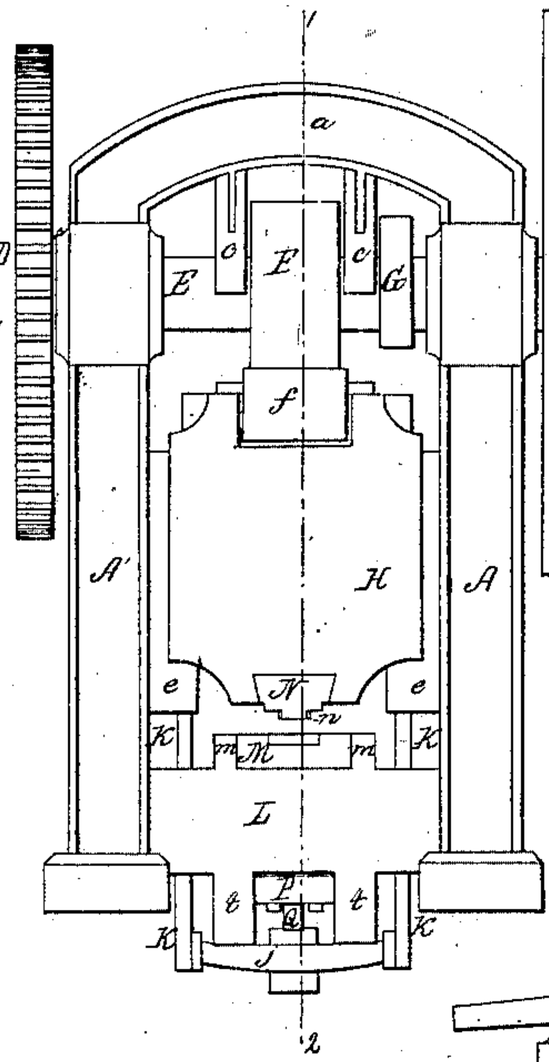


Fig. 2

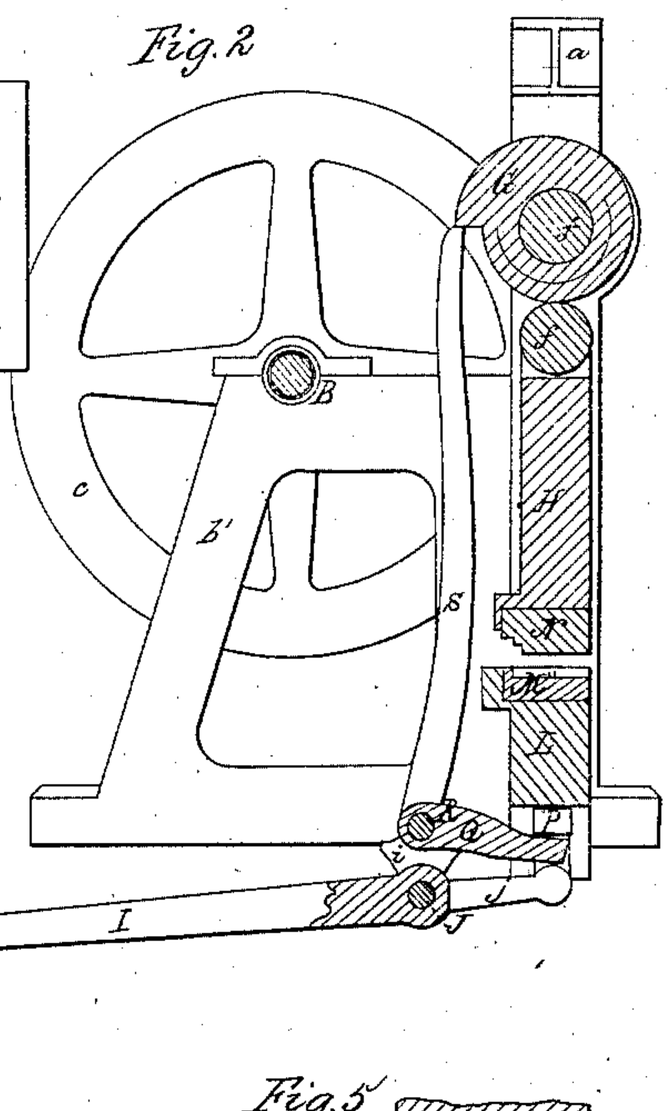


Fig. 3

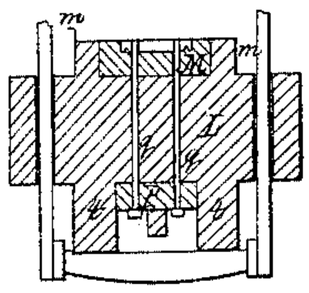


Fig. 4

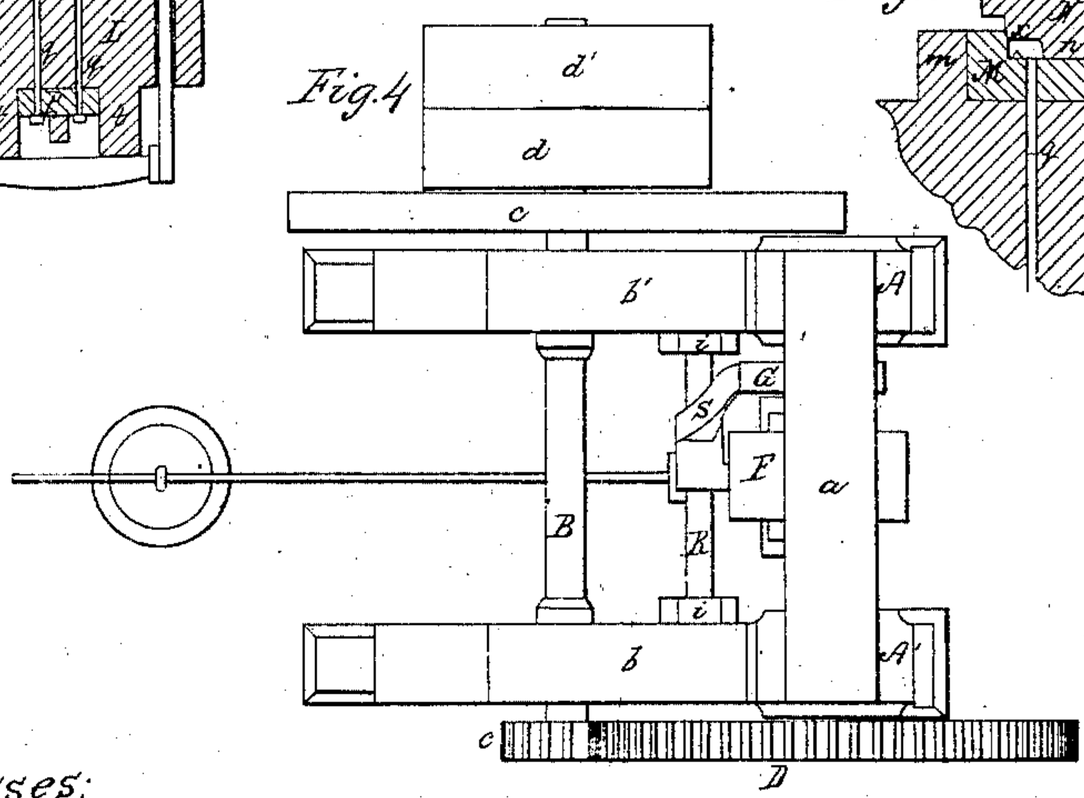
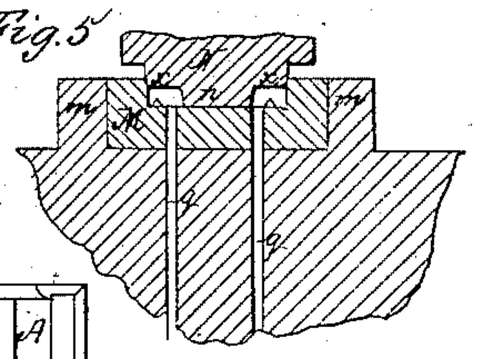


Fig. 5



Witnesses;
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UNITED STATES PATENT OFFICE.

JOHN McCARTY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO LEYFERT, McMANUS & CO., OF READING, PENNSYLVANIA.

HORSESHOE-MACHINE.

Specification of Letters Patent No. 30,448, dated October 16, 1860.

To all whom it may concern:

Be it known that I, JOHN McCARTY, of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Horseshoe-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention relates to machinery for compressing bent bars of iron between dies which impart the desired form of a horse shoe to the said bars, and my invention consists, firstly, in the peculiar construction and arrangement of dies described hereafter whereby the proper shape and desired finish may be imparted to the shoe; secondly, in a combination of devices described hereafter for operating the ram which carries the upper die; thirdly, in a device for discharging the finished shoe from the die.

In order to enable others skilled in the art to make and use my invention I will now proceed to describe its construction and operation.

On reference to the accompanying drawing which forms a part of this specification, Figure 1 is a front view of my improved machine for compressing horse shoes; Fig. 2, a vertical section on the line 1, 2 Fig. 1; Fig. 3, a vertical section of the lower part of the machine; Fig. 4, a ground plan and Fig. 5 an enlarged sectional view of the dies.

Similar letters refer to similar parts throughout the several views.

The framework of the machine consists of the standards A and A′ connected together at the top by the arch *a* and having at the back two projecting frames *b* and *b′* in the top of which turns the driving shaft B, one end of the latter being furnished with a fly wheel *c* and the usual fast and loose pulleys *d* and *d′* and the opposite end having a pinion C gearing into the cog wheel D on the cam-shaft E. This shaft turns in suitable boxes formed at the back of the standards A and A′ and is furnished with the two cams F and G.

On vertical guides *e e* attached to the inside of the standards A and A′ slides the ram H furnished at the top with a roller *f* against which the cam F bears as it revolves so as to effect the downward movement of the ram, the upward movement being caused by the weighted lever I which is secured to a shaft J hung to plates *i i* one of which is attached to each frame of the machine, the forked arm *j* of this lever being jointed to the lower ends of the vertical rods K, K, which pass through the block L and upward through the guides *e e*, their upper ends being secured to the ram H, this peculiar disposition and arrangement of the rods being such that they cannot interfere with the free access to the dies as will appear more fully hereafter.

The block L, a sectional view of which is shown in Fig. 3, is firmly secured between the two standards A, A′, of the frame and has on the top projections *m* forming a socket for receiving the lower die M which has a recess of the form to which the outer edge of the bent iron has to be compressed. Through this die M as well as through the block L pass the two rods *q*, *q*, the lower ends of which are secured to a block P which slides between guides *t*, *t*, projecting from the underside of the block L. This block P rests on the end of an arm Q secured to a shaft R which turns in the opposite plates *i i* previously alluded to, a lever S the upper end of which is acted on by the cam G being secured to this shaft R.

N is the upper die firmly secured to the ram H and having a projection *n* of the form to which the inside of the shoe has to be compressed.

It should be understood that the pieces of iron for pressing into the desired shape of the horse shoes, are bent to a form approximating to that which they will assume when acted upon by this machine, and that they are reduced to a red heat prior to being acted on by the dies.

When the cam F is in the position shown in Fig. 2 and the ram H is consequently elevated by the weighted lever I to the limit of its upward movement an attendant places the bent and heated bar in the recess of the lower die M.

As the ram descends and the upper die approaches the lower die the projection *n* of the former, which is slightly beveled at the edges passes into the inside of the bent bar before the shoulder *x* of the upper die comes in contact with the top of the bar. On the further descent of the ram the upper die begins to compress the said bent bar, before the latter however has been pressed to the

desired extent the shoulder *x* has penetrated the recess of the lower die in which recess the upper die fits snugly as seen in Fig. 5 so that there can be no bur or inequality on the edge of the shoe. The two dies in fact, when the upper one is depressed, inclose a space of the exact form of the desired shoe, so that the bent iron, if it is of the proper size in the first instance, must necessarily assume this form. After the desired pressure has been imparted to the bent bar the projecting portion of the cam F which had been previously bearing on the roller *f* and consequently depressing the ram, leaves the said roller thus placing the ram under the control of the weighted lever I which through the rods K, K, raises the ram preparatory to the projecting portion of the cam F again acting on the roller *f*. These rods K K being situated one near the inside of one standard A and the other near the inside of the standard A′ and at a distance from the dies they present no obstruction to the free introduction of the bent and heated bars into the recess of the lower die. As the ram rises the cam G begins to operate on the lever S thereby raising the block P and causing the rods *q q* to force the formed shoe from the recess of the lower die. By the time the ram has reached the limit of its upward movement however the rods *q*, *q*, are released and fall by the weight of the block P until their upper ends are on a level with the bottom of the recess of the lower die.

In order to form the nail holes and recesses for the heads of the nails on the underside of the shoe projections of a suitable form are arranged on the lower die.

I claim as my invention and desire to secure by Letters Patent—

1. The upper die N with its projection *n* of the form of the inside edge of the shoe, in combination with the lower die M, with its recess of the form of the outer edge of the shoe, the dies being so constructed and arranged that when the said projection penetrates the said recess a space of the desired form of the shoe shall be inclosed by the two dies.

2. The weighted lever I its rods K K the latter passing through the guides *e e* of the frame, and being connected to the ram as specified, and the whole being arranged and combined with the revolving cam F substantially as and for the purpose herein set forth.

3. The block P with its rods *q q* passing through the lower die M and into the recess of the same, in combination with the arm Q lever S and revolving cam G the whole being arranged and operating substantially as described for the purpose specified.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN McCARTY.

Witnesses:

ROBERT PORTER,

HENRY UEBEL.