D. N. Allard,

Horseshoe Machine,

No. 31,941. Patented Apr. 9, 1861.

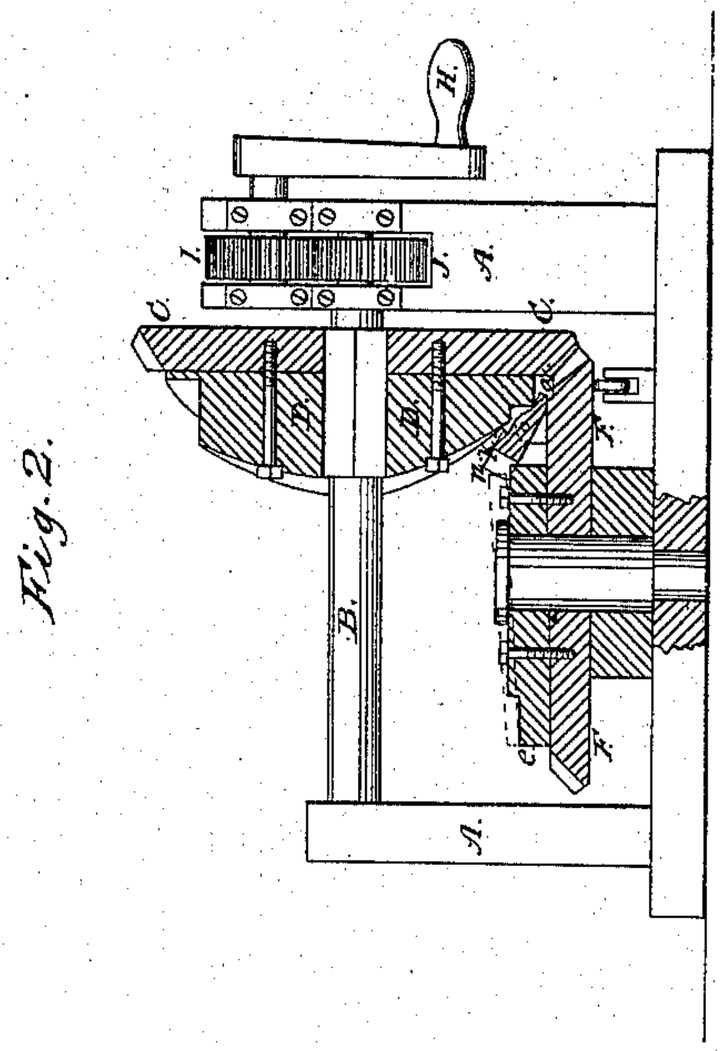

Fig. 2.

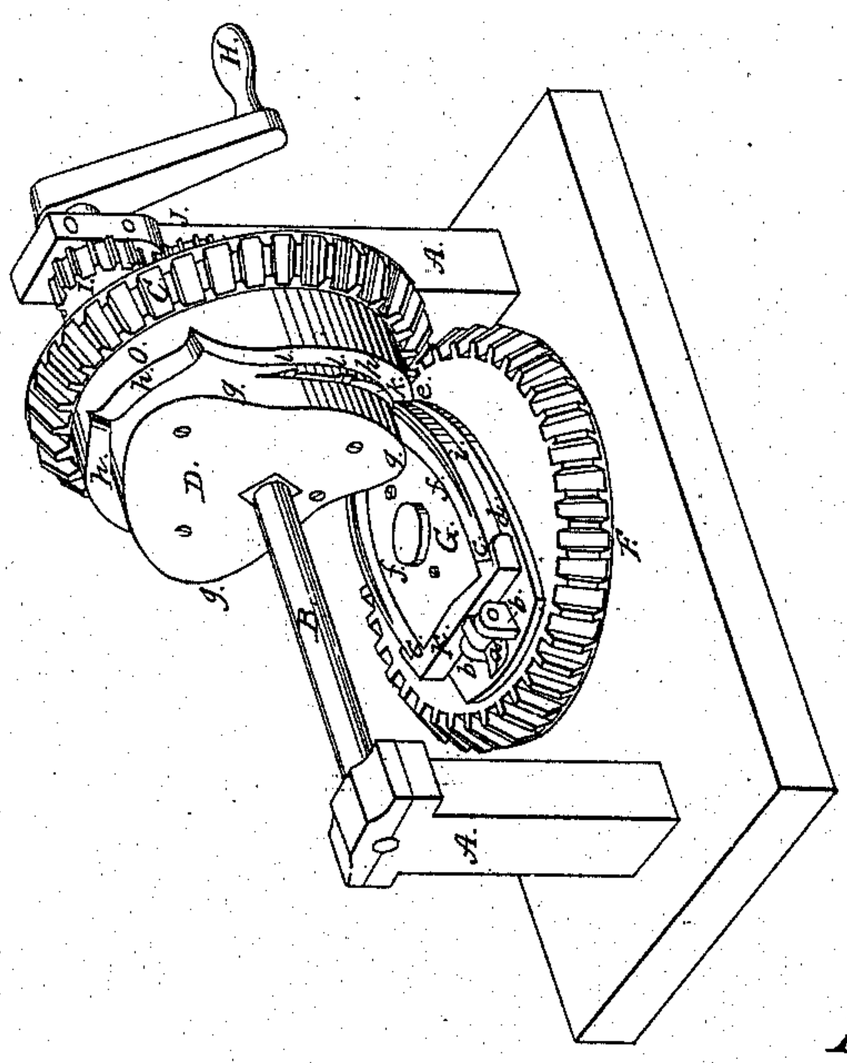

Fig. 1.

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UNITED STATES PATENT OFFICE.

D. N. ALLARD, OF McCONNELSVILLE, OHIO.

HORSESHOE-MACHINE.

Specification of Letters Patent No. 31,941, dated April 9, 1861.

To all whom it may concern:

Be it known that I, D. N. ALLARD, of McConnelsville, in the county of Morgan and State of Ohio, have invented a new and useful Improvement in Horseshoe-Machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1, represents a perspective view of the machine. Fig. 2, represents a longitudinal vertical section through the die blocks, and bevel geared wheels that roll the dies against the blank or shoe.

My invention consists in so combining two die wheels, the axes of which are at right angles to each other, and gearing and operating them together, as that each and every revolution of said die wheels shall form a horse shoe, and tip it up, or loosen it from the die, so as to be readily removed, and allow another blank to be introduced. Said horse shoes being not only bent into form, but upset and swaged out into proper shape, and if preferred, at the same time creased and punched.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A, represents two pillar blocks, which support a horizontal shaft B, carrying a bevel gear wheel C, and a die block D. On the bed E is arranged a second bevel wheel F, that gears with, and is turned by, the bevel gear C; and on this wheel F there is a die block G, which, as well as the die block D, are made removable so as to change them when larger or smaller sized shoes are to be made, each size of shoe, having its own dies, but the wheels may receive any ordinary number of sized dies.

Motion may be communicated to the wheels C, F, through a crank H, and gearing I, J, or by a belt or band, or in any other well known way. Or the first moving power may be applied to the shaft of the wheel F, if most convenient to do so.

On the wheel F beside the die block, there is placed a tipping bar K, that has a projection *a* upon it, by which it is pivoted or hinged to the lugs *b;* the points or heels of the shoe rest in the recesses *c*, *c*, in this tipping bar, and when the bar is thrown up, by a cam on the wheel C, striking the projection *a*, it throws up or loosens the shoe from the die, and makes it easy of removal.

The die block on the wheel F, is of simple form its center portion *f* giving shape to the interior of the shoe, while the other parts *d*, *e*, form the heel and toe of the shoe—the heels being narrowed up and thickened, while the toe portion is spread out, and made thin. The other die block D, is more intricate in form. Its marginal line *g* travels on the center portion *f* of the die block F, and its other cam-line *h* moving against the outside *i* of the said die block F—so that the blank is upset or swaged out so as to completely fill up the space between the lines *f*, *i*, and *g*, *h*, and this space is the exact form of a well made horse-shoe, handsomely and neatly drawn out. It is not simply a bent blank, but a handsomely wrought shoe.

Creasing dies *k*, and punching dies *l*, may be connected with the die block *c*, so as to complete the shoe at a single operation, or, if preferred the creasing and punching may be done on a separate machine.

A plane through the die block D, would show a true circle, while a plane through the other die block F, would represent a portion of an ellipse, and to cause this circle to travel over the ellipse, the cam block D, is cut away as shown in the drawing, to make its line, if spread out, of the same length of the ellipse, or line around the ellipse.

The heel portions *m m* of the shoe, are formed, or rest, in the recesses *n*, *n*, of the tipping bar K, so that when said bar is tipped up, by the part *o* of the cam block D, rolling over it, it will throw up the shoe, and thus loosen or remove it from the die.

Underneath that portion of the wheel F where the pressure or strain comes in bending, upsetting, and swaging the shoe, there is a friction and supporting wheel, to prevent said wheel F, from yielding.

In using the machine, one end of the blank is laid in one of the recesses *n* of the tipping bar K, and by the revolving of the dies, it is immediately caught and pinched between said dies, which also bends it around the die block G, which gives it shape, while the dies swage it into form.

The tipping bar K, performs three functions—it is a gage for inserting the blank—it is a die for forming the heels of the shoe, and is a loosening or delivering device, for raising the finished shoe from the

die block. The blank is cut from a flat bar of suitable size, and is wrought into a shoe by being compressed and drawn down between the dies.

I have represented the die wheels—one as being vertical, and the other as horizontal. It is obvious that they may be inclined in any manner that will leave their shafts or axes at right angles to each other; and the one that moves over the blank may have a slip motion, so as to upset as well as compress the blank. By slip motion, I mean allowing one die a greater speed than the other, which may be done by simply changing the comparative diameters of the gearings, or of the dies.

Having thus fully described the nature and object of my invention, and shown how the same is operated, what I claim therein as new and desire to secure by Letters Patent, is—

1. The combination of a vertical and a horizontal wheel working together, and furnished with dies as herein described, for the purpose of swaging out a horse shoe substantially in the manner set forth.

2. In combination with a vertical and horizontal die wheel, the tipping bar K, for the purpose herein described.

D. N. ALLARD.

Witnesses:
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