W. HORSFALL.

Die for Making Horseshoes.

No. 160,195. Patented Feb. 23, 1875.

Fig. 1.

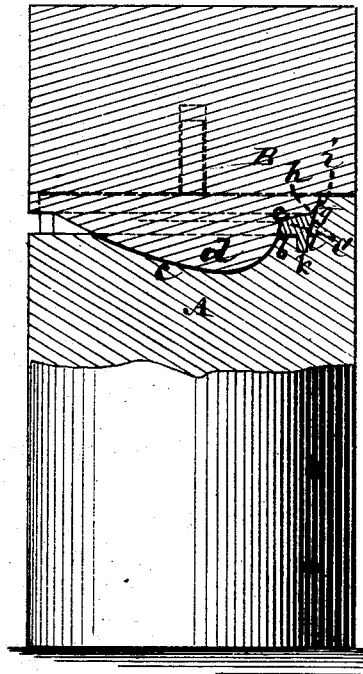


Fig. 2.

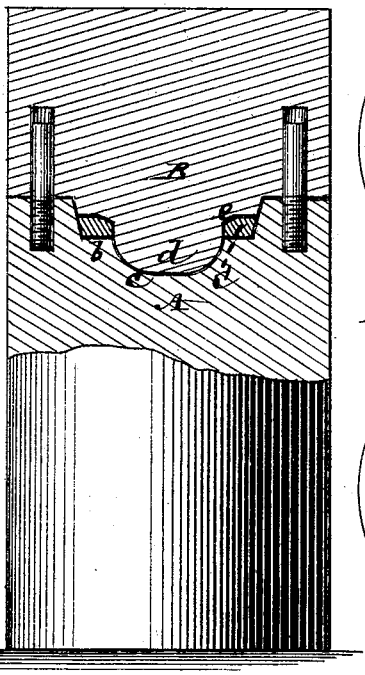


Fig. 3.

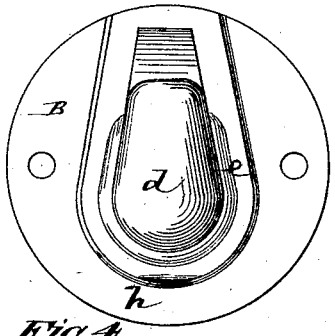


Fig. 4.

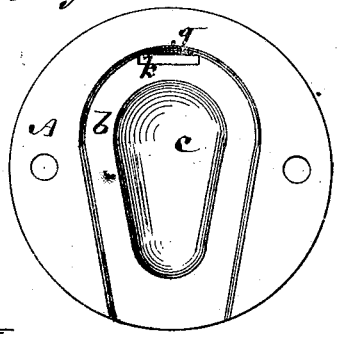


Fig. 7.

Fig. 5.

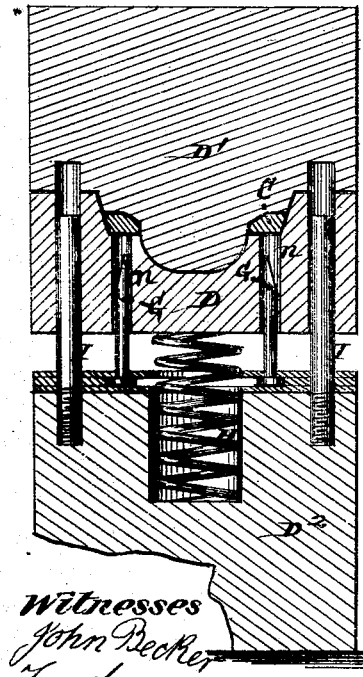


Fig. 6.

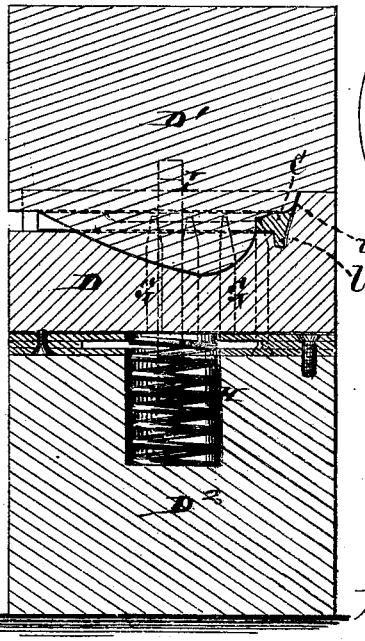


Fig. 9.

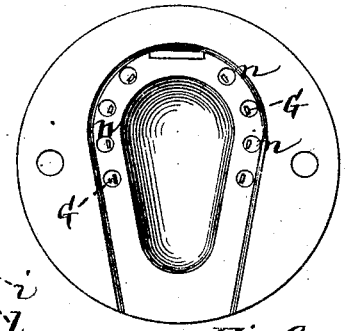
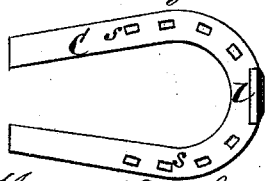


Fig. 8.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM HORSFALL, OF ARMLEY, LEEDS, ENGLAND.

IMPROVEMENT IN DIES FOR MAKING HORSESHOES.

Specification forming part of Letters Patent No. **160,195**, dated February 23, 1875; application filed October 2, 1874.

To all whom it may concern:

Be it known that I, WILLIAM HORSFALL, formerly of Sing Sing, in the county of Westchester and State of New York, but now residing at Armley, Leeds in Yorkshire, England, have invented certain Improvements in the Manufacture of Horseshoes, of which the following is a specification:

This invention relates to the manufacture of horseshoes by means of dies; and consists in a novel construction of the dies and certain combinations of the same for welding on a toe-calk, throwing up lips to form clips, and for piercing or punching the nail-holes in the shoe.

By these improvements I am enabled to make a solid, neat, and perfect shoe at a reduced cost.

In the drawing, Figures 1 and 2 represent partly-sectional elevations, at right angles to each other, of a pair of primary dies in operation on a horseshoe; Fig. 3, an under view of the upper one of said dies; Fig. 4, a top view of the lower one of said dies. Figs. 5 and 6 are partly-sectional elevations, at right angles to each other, and with the parts in different working positions, of a set of finishing-dies in the course of their operation of punching the nail-holes in a shoe. Fig. 7 is a top view of the intermediate one of said dies. Fig. 8 is an under view of a finished shoe, and Fig. 9 a vertical longitudinal section of the same.

The several dies used in my invention it is intended to work in or by power presses or stamps of any suitable construction.

A is a lower or female primary die, having its interior configuration, as at *b*, to conform with the general contour of the shoe, under side downward, and having a lower cavity, *c*, into which a projection, *d*, of an upper male die, B, of converse shape with the lower die, enters to form an inner block for the interior edge of the shoe to bear against when the two dies A and B are brought together to press the shoe blank or form into shape. The die B has also a bevel, *e*, on it to form the usual hollow *f* in the upper surface of the shoe, and with a beveling or cut-away portion, *h*, corresponding with a raised portion, *g*, in the lower die, to form a lip, *i*, for a clip on the upper surface of the toe end of the shoe C. A recess, *k*, is also made in the lower die A, for holding a toe-calk, *l*, when the latter is used.

In the operation I first introduce within the die A a heated shoe blank or form, which may be prepared in any suitable manner by bending a piece of bar-iron. The same is then struck up by the dies A and B into the required general shape and size of the shoe, after which, when a toe-calk is used, a cold steel calk-piece having prongs on its upper edge, is inserted in the recess *k* within the lower die, the shoe replaced while hot, and the upper die B brought down to unite the toe-calk *l*, after which the shoe and calk-piece are brought to a welding heat, and the dies A and B operated to firmly combine them. The shoe, while hot, is then transferred to a middle female section or die, D, of a set of furnishing or nail-hole-punching dies, the upper one, D^1, of which corresponds with the male die B of the primary set, and the intermediate section or female die D with the female die A, excepting that it is pierced by perforations or holes *n*, for stationary steel punches G, carried by a base-section, D^2, of said dies, to enter up through and pierce the nail holes or recesses *s* for the heads of the nails in the under side of the shoe.

Instead of the nail-heads being countersunk in the shoe, a groove may be formed by the dies in the latter for the nail-heads.

The intermediate or female die D is sustained by one or more springs, H, and guides I, connected in any suitable manner with the base-section D^2 of the dies, and so that when the top die or section D^1 is brought down on the shoe, it forces the die D against the pressure of the spring down onto a bearing on the base die-section D^2, and causes the punches G to penetrate the shoe, as required, after which, or as the top die D^1 rises, the middle die D first ascends in common with it, thereby quickly relieving the hot shoe from prolonged contact with the punches, and consequently preventing the latter from becoming unduly heated.

I claim—

1. The one primary die A, provided with

a recess, *k*, for the toe-calk *l*, and, together with its fellow die B, constructed to form one or more lips, *i*, for clips, essentially as herein described.

2. The combination of the primary dies A B, constructed to unite the toe-calk with the shoe, and to form lips for clips on the latter, and the nail-hole-punching die-sections D D^1 D^2 and punches G, constructed to operate substantially as described.

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