

H. D. COWLES.

Manufacture of Horseshoe Nails.

No. 145,336.

Patented Dec. 9, 1873.

Fig. 1.

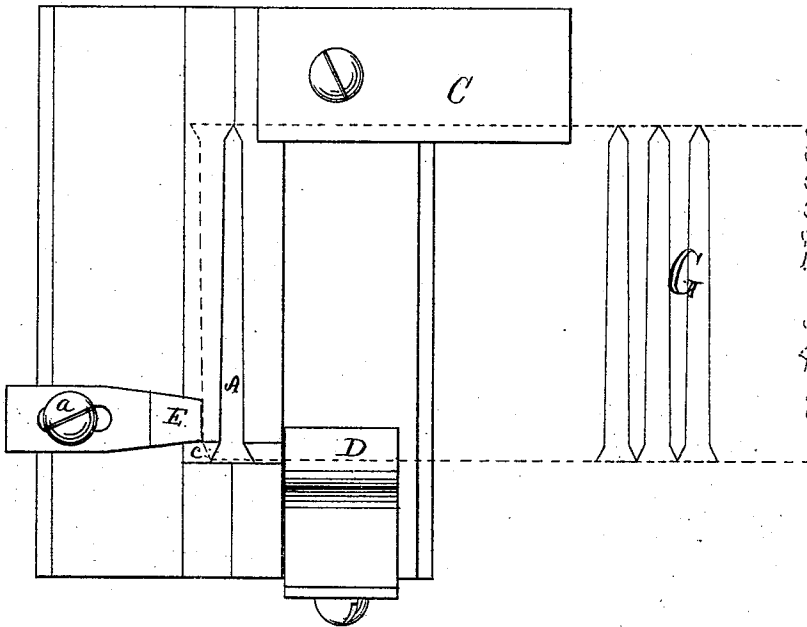


Fig. 2.

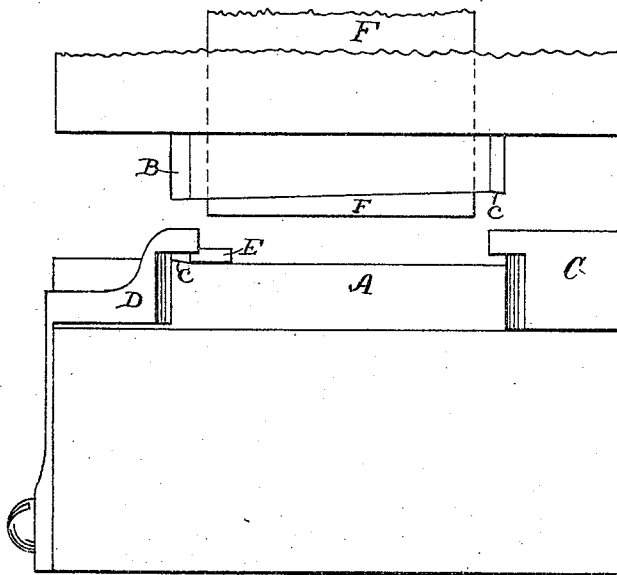


Fig. 3.



Fig. 4.



Witnesses,
James Perry.
C. A. Shepard.

Inventor
Harley D. Cowles.
By James Shepard Atty.

UNITED STATES PATENT OFFICE.

HARLEY D. COWLES, OF MONTREAL, CANADA, ASSIGNOR TO JAMES TERRY, OF TERRYVILLE, CONNECTICUT.

IMPROVEMENT IN THE MANUFACTURE OF HORSESHOE-NAILS.

Specification forming part of Letters Patent No. **145,326**, dated December 9, 1873; application filed June 16, 1873.

To all whom it may concern:

Be it known that I, HARLEY D. COWLES, city of Montreal, district of Montreal, Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in the Manufacture of Nails, Spikes, &c., of which the following is a specification:

In the manufacture of nails, spikes, &c., in accordance with my invention, I employ a single cutting die and punch, corresponding in shape to the contour of the nail produced, said die being provided with gages, as hereafter described, all so arranged that a strip of metal of a width equal to the length of the nail being (after the first cut has been made) placed over the die with the cut end projecting a distance equal to the width of a nail. The portion which projects beyond the die will be severed from the strip of metal at the next operation of the punch, and thereby cut into the proper form for a nail, all as hereafter more fully described.

The face of the punch at the point which, in cutting, acts upon the point of the nail, and the face of the die at the point which acts upon the small end of the strip severed, are beveled or inclined, in order to bring the points of the nails central, as hereafter described.

In the accompanying drawings, Figure 1 is a plan view of the die employed by me in the manufacture of nails. Fig. 2 is a side elevation of the same, and also of the punch which belongs to said die. Fig. 3 is an edge view of the pointed end of a nail as produced by me, and Fig. 4 is a like view of the pointed end of a nail as produced by the ordinary modes.

A designates the die, and B, Fig. 2, its punch. C designates a gage, firmly fixed upon the die-block, with its face at right angles to the longitudinal center of the die, and on a line with its pointed end. D designates a supplementary gage, which I prefer to have yielding or elastic, so as to continually press the metal (which may vary somewhat in width) against the face of the gage C. E is a stop, made adjustable by means of set-screw *a*, which passes through a slot in the body of said stop. F, Fig. 2, is a presser-foot, which is made to slide vertically by the side of the punch B, and is forced downward by means of a spring (not

shown) or a cam, as may be desired. This die is designed for use in an ordinary power-press too well known to require a description.

I select iron of the desired thickness, and cut it into strips equal in width to the length of nails to be produced. These strips are then passed between the gages C and D, (or if the gage D is omitted some other means must be employed to hold the edge of the metal firmly against the face of the gage C,) and one end of the strip of metal is placed over the die A, when the punch descends and a nail is cut and forced into the die, the metal strip being thereby wholly severed, and the portion which passed beyond the die, and is cut off by it, is thrown into the scrap. The strip of metal then (that is, after the first nail is cut) assumes the contour designated by broken lines in Fig. 1. The strip of metal is then passed along until it strikes the stop E, when the portion of it which lies at the left of the die, (see Fig. 1,) is of precisely the same shape as is the die. The punch B is then made to descend, when the presser-foot F, being in advance of the punch, strikes the end of the strip of metal at the left of the die, and holds it in place until after the punch has cut another nail and receded. The presser-foot may be held down by a spring that will yield and allow the punch to descend, in which case the full force of the spring bears upon the metal. I prefer, however, to use a cam, attached to or operated by the press-shaft, that shall throw the presser-foot downward to the desired point and hold it, pressing firmly upon the metal until it is severed by the punch. The punch and die again sever the strip of metal, and as the portion of metal at the left of the die is of the same form as the die, this portion, when thus severed, forms a nail like the one cut in the die, the presser-foot serving to hold it rigidly and immovably in its place while being cut, and thereby making its edges square instead of beveled—as they would be if not held firmly in place.

The nail upon the face of the die is removed from in front of the stop in any proper manner, but preferably by means of a picker operated by means of the press, and the metal strip is again brought to the stop E, when the punch descends and two more nails are produced, as

before described. Thus I am enabled, by means of one punch and die, to produce two nails at each blow of the press.

It is sometimes desirable to produce nails of varying widths, and of the same length. To do so I set the stop E a little nearer the die A, when the nails that are produced upon the face of the die will be slimmer than those cut in the die, and, as they lie outside of the die while the others pass through, it is easy to convey them to separate boxes. The diagram G at the right, in Fig. 1, represents the division of the metal strip into nails of this character. Thus, in addition to producing two nails at each cut, I am, also, enabled to produce different sizes of nails with one-sized die.

If desired, instead of the stop E, an automatic feed, which will feed the metal strip a given distance at each stroke of the press, may be attached thereto.

Upon the face of the die-block I form an incline, *c*, which rises from that portion in which the body of the nail is cut toward the head end. Thus the nail, which is formed upon the face of the die, at the left, is cut with its point upon the highest part of the incline. A like incline, *c*, is also formed upon the face of the punch B at the end which cuts the point of the nail, and with the most prominent part of the incline at the point. In cutting, the metal compresses more at the extreme point than elsewhere, and these inclines divide the compression upon both sides of the nail's point, as shown in Fig. 3, instead of leaving the com-

pression, and, consequently, a bevel upon one side of the point only, as shown in Fig. 4, and as the nails cut by my die would appear if the inclines *c c* were omitted. The incline upon the face of the die is to bring the point of the nail central that is formed thereon, and the incline upon the face of the punch is to bring the point of the nail central that is formed in the die. In case one of these inclines is dispensed with and the other retained, one-half of the nails will have central points, like Fig. 3, and the other half of the nails will have one-sided points, like Fig. 4. These one-sided points are quite common in the ordinary cut-nail, and are very inconvenient and difficult to drive straight, on account of their tendency to draw toward the straight side. By these inclines, as described, I am enabled to produce nails with central points, and thereby they can be driven perfectly straight.

I claim as my invention—

1. The die A and punch B, in combination with the presser-foot F, stop E, and gages C D, all substantially as and for the purpose set forth.

2. In a die and punch for cutting nails, the incline *c*, when arranged in relation to the points of the nails cut by said die and punch, substantially as and for the purpose described.

HARLEY D. COWLES.

Witnesses:

JAMES TERRY,
JAMES SHEPARD.