(No Model.)

H. D. COWLES.

PUNCH AND DIE FOR CUTTING OUT HORSESHOE NAILS.

No. 305,295. Patented Sept. 16, 1884.

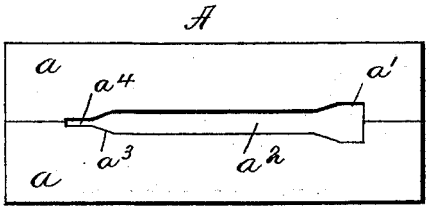


Fig 1

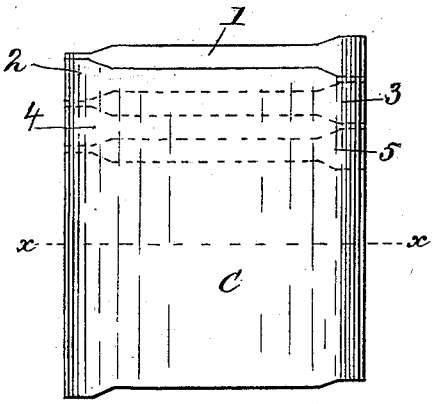


Fig 4

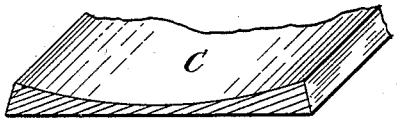
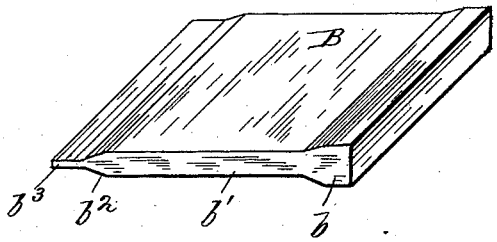


Fig 3

Fig 2



Witnesses
H. C. Cowles
A. M. Best.

Inventor
Harley D. Cowles
By Coburn & Thacher
Attorneys

UNITED STATES PATENT OFFICE.

HARLEY D. COWLES, OF BRIGHTON PARK, ASSIGNOR TO THE NORTH-WESTERN HORSE NAIL COMPANY, OF CHICAGO, ILLINOIS.

PUNCH AND DIE FOR CUTTING OUT HORSESHOE-NAILS.

SPECIFICATION forming part of Letters Patent No. 305,295, dated September 16, 1884.

Application filed November 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, HARLEY D. COWLES, a citizen of the United States, and residing at Brighton Park, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in the Manufacture of Horseshoe-Nails, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a die for use in punching horseshoe-nail blanks from a cold plate; Fig. 2, a perspective view of a punch adapted for use with this die; Fig. 3, a perspective view of a section of the plate from which the blanks are punched, the cross-section being shown taken on the line *x x*, Fig. 4, and Fig. 4 a plan view of the plate with the mode of cutting the nail-blanks therefrom. (Shown in dotted lines.)

My invention relates to the manufacture of horseshoe-nail blanks by punching them out from a cold plate rolled into suitable form. This mode of making the nail-blanks has been attempted before; but usually the blanks have been punched from the plates or strips of metal in such a way as to waste considerable metal; or in cases where a saving of metal has been attempted the blanks have not been entirely severed from the plate.

It is the object of my present invention to punch the blanks from metal strips in such a way as to occasion very little waste, and at the same time to completely sever the nail-blanks from the strips.

I will proceed to describe the mode in which I carry out my present improved process, and will then point out definitely in the claim the special improvements which I believe to be new and wish to protect by Letters Patent.

In the drawings, A represents a die, which in its main features is, like any ordinary punching-die, adapted to cut blanks from strips or sheets of metal, consisting of two parts, *a*, which are joined in the usual way. This die need not be described except in some special particulars, which I will now mention. The opening in the die is of course shaped like the required shape of the blank, having the form of the head a' at one end, the body a^2 along its middle portion, and a triangular point, a^3, at the other end. It is usual in dies of this kind to terminate the die-opening at this point; but I prolong it slightly by making a short and very narrow opening, a^4, extending beyond the point proper of the blank, as shown in Fig. 1 of the drawings.

The punch B is made of a form in cross-section to exactly fit the opening in the die just described—that is, at one edge it has a thick ridge, *b*, like the head of the nail-blank, while the body b' is of a thickness corresponding to the width of the nail-blank, and at the other end has a taper, b^2, corresponding to the point of the blank and the additional feature of a thin fin, b^3, projecting beyond the point-edge of the punch as usually constructed. It will thus be seen that the die and punch correspond in shape to the usual form of horseshoe-nail blanks, with the addition of a thin projecting fin extending from the point proper a distance about equal to the body or main portion of a blank-head in the direction of the length of the blank.

I prepare a metal strip or narrow plate, C, of a width a little greater than the length of a single nail-blank, the excess being about equal to the head, or rather main portion or body of the head, of the blank. This strip of metal is rolled or otherwise shaped into a well-known form, so that in cross-section it represents, in a general way, the form of a nail-blank with a head at each end, as shown in Fig. 3 of the drawings. The width of this strip is the same as the length of the opening in the die, and its general contour, just mentioned above, is well known, and need not be described here more particularly. Now, it is evident that if the strip C be placed over the cutting-die and the punch operated in the usual way, a nail-blank will be cut off of the usual shape of horseshoe-nail blanks, except that it will have a thin little fin sticking out a short distance from the point, and that if the strip be then fed along so that its edge will extend beyond the die-opening on the other face the width of a nail-blank and the punch operated again, two more similar blanks will be produced, one resting on the farther face of the die and the other punched through the die, and both entirely severed from the strip. This operation will be understood from Fig. 4 of the drawings. Suppose the strip is

at one end laid over the opening in the die, and the punch operated, the parts having the relation shown in the drawings, the blank marked 1 will be cut off. Then let the strip be fed forward until it projects onto the farther face of the die, and beyond the die-opening a distance equal to the width of the body of a nail-blank, and the punch operated again, obviously blank 2 will be cut off at the farther edge of the cutting-die and left on the farther face, while blank 3 will be cut off and punched through the die-opening, the strip being cut entirely from edge to edge each time by reason of the narrow extension at the point portion of both die and punch, which has been described before, and the effect of which is fully illustrated in Fig. 4 of the drawings, where the successive cuts are shown by dotted lines extending transversely across the strip. The operation on being repeated will obviously cut off two additional blanks, 4 and 5, of Fig. 4 of the drawings. Now, it will be seen that by this method of punching the blanks from the plate the nail-blanks are produced very rapidly—two at a time—and from a cold plate of metal, from which they are completely severed and without any material waste of metal, for the little fin that is left projecting from the point proper of each blank is hardly worth consideration in this connection, and in the succeeding process of finishing the blanks is readily disposed of.

It is obvious that by properly gaging the foot of the strip blanks may be cut of different size, for if the strip is fed forward so that the portion projecting over onto the face of the die beyond the opening is a little less than the width of the die-opening, evidently two blanks will be cut off of substantially the same shape, but one a little lighter than the other, being of a little less width, and so at one and the same operation blanks of different sizes may be cut from the same stock without any change whatever in the operating mechanism.

It will be understood of course that the die and punch are fitted to any suitable machine or mechanism for holding the die and operating the punch, as described above, suitable gages being provided also to regulate the required feed of the metallic strips. I have not shown any machine or mechanism for this purpose, for the reason that such machinery is extremely common and well known, and requires no description or illustration here to enable any ordinary mechanic familiar with this class of machines to provide the necessary mechanism for the operations herein described.

I am aware that, broadly considered, a similar process has been employed in the manufacture of nails, and Letters Patent No. 145,336, granted to me December 9, 1873, show the application of the process, broadly considered, to the production of ordinary nails; but in that patent, and others showing a similar mode of making nails, it will be noticed that the strip of stock is of a width exactly equal to the length of a nail so that the nails are cut off, heads and points being formed and terminating at each edge of the strip. Now, this mode of cutting will not answer for horseshoe-nail blanks, for it will not make the heads sufficiently heavy for the purpose of horseshoe-nails. If, on the other hand, the cutting is done with a punch and die less in length than the width of the strip, so as to give a sufficient body to the nail-heads, obviously the blanks will be left attached at their edges, and another operation will be required to separate them from each other, and this has been found impractical, for the reason that it increases the expense, and also injures many of the blanks, leaving them in bad condition for finishing. Since the granting of the patent to me mentioned above I have sought to devise some way of applying the main principle of the system of punching nails therein shown to the manufacture of horseshoe-nail blanks, and after repeated experiments have finally devised the mode herein described and illustrated, which I have found by practical use to be entirely successful and satisfactory, and I believe completely solves the problem of making horseshoe-nail blanks by punching from cold metal in a cheap and successful manner.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The cutting-die the opening of which conforms to the shape of a horseshoe-nail blank, and has a short narrow extension, a^4, at the point end thereof, in combination with a die-punch of similar contour in cross-section, whereby horseshoe-nail blanks may be punched and entirely severed from metallic strips, as herein described, and for the purposes set forth.

HARLEY D. COWLES.

Witnesses:
W. C. CORLIES,
A. M. BEST.