(No Model.)

W. W. MINER.

DIE FOR THE MANUFACTURE OF HORSESHOE NAILS.

No. 490,395. Patented Jan. 24, 1893.

Fig. 1.

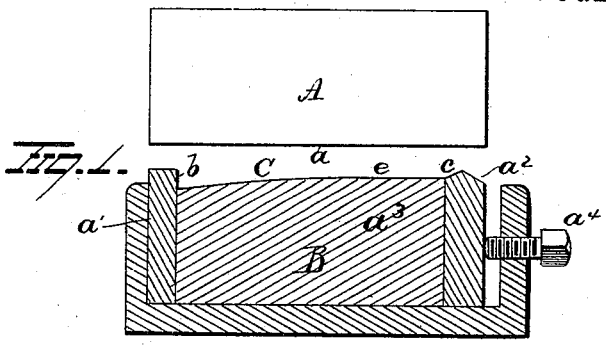


Fig. 2.

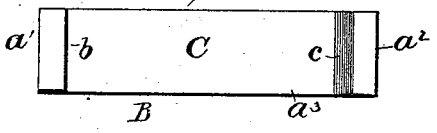


Fig. 6.

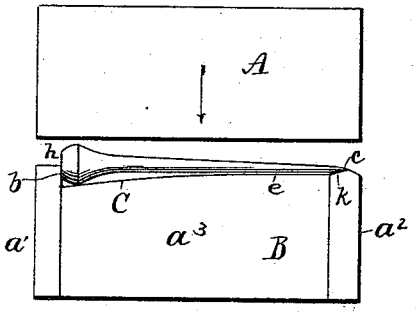


Fig. 3.

Fig. 7.

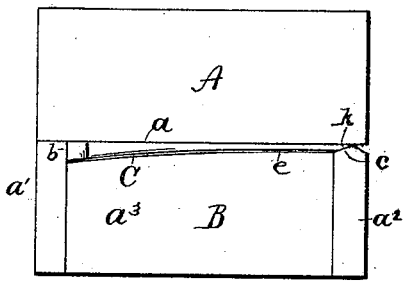


Fig. 4.

Fig. 5.

Fig. 8.

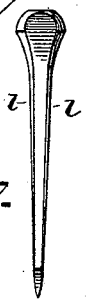
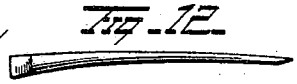


Fig. 9.

Fig. 10.

Fig. 11.

Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM W. MINER, OF NEW HAVEN, ASSIGNOR TO THE NEW PROCESS NAIL COMPANY, OF TORRINGTON, CONNECTICUT.

DIE FOR THE MANUFACTURE OF HORSESHOE-NAILS.

SPECIFICATION forming part of Letters Patent No. 490,395, dated January 24, 1893.

Application filed May 26, 1892. Serial No. 434,492. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. MINER, of New Haven, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Dies for the Manufacture of Horseshoe-Nails; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in dies for the manufacture of horse-shoe nails.

The object of the invention is to produce dies of such form and construction as will serve to flatten a nail blank which is circular in cross-section, and transform it into a finished nail having flattened sides - rounded edges; properly curved throughout its length and beveled at its point. The dies to be of such form as will allow of the ready removal of the flattened and completed nail.

With these ends in view the invention consists in certain features of construction and combinations of parts as will be hereinafter described and pointed out in the claim.

In the accompanying drawings Figure 1 is a view in vertical section of my improved dies. Fig. 2 is a plan view of the lower die. Fig. 3 is a view in side elevation of a nail blank. Fig. 4 is a view in transverse section of the head, and Fig. 5 is a transverse section of the shank of the blank. Fig. 6 shows the blank placed on the die preparatory to being pressed and flattened. Fig. 7 shows the blank after it has been pressed and flattened. Figs. 8 and 9 are side and edge views of the completed nail. Fig. 10 is a transverse section taken through the head of the nail. Fig. 11 a similar view taken through the shank, and Fig. 12, shows an edge view of a nail slightly curved.

A represents the upper and movable die having a plain flat face or surface *a* and B represents the lower and stationary die which is made in three parts viz:—the end pieces a' a^2 and the center piece a^3. Die B is formed with a cavity C having a shoulder or ledge *b* at one end and a ledge or raised portion *c* at the opposite end. The cavity C extends the entire width of the die. Within the deepest portion of the cavity is received the head of the nail blank while the shank of the blank is received within the tapering and gradually reduced portion *e* of the cavity. It will be observed that the lower surface of cavity C is formed on the central piece a^3 of the three part die. The advantage of this construction is that when it is desired to polish this portion of the die, it can be done much more readily and satisfactorily by removing the center piece a^3 and subjecting the latter to the action of a buffing wheel, than it could be done if the die were made in a single piece. Again in the event that the surface of cavity C should become unduly worn or rendered defective; the die can be readily and cheaply repaired by simply renewing the center piece a^3. The three parts of the die may be secured in a frame by means of a set screw a^4, or any other means may be employed for securing them in place.

The nail blank is represented in Figs. 3, 4 and 5 and is preferably made by severing blanks of suitable lengths from a piece of round wire of Siemens and Martin steel and forming a head *f* on one end of the blank by upsetting a portion of the blank in a heading die. The remaining portion of the blank is then swaged to a tapering form circular in cross section thereby producing the tapering shank *g*. The reduction of the shank to a tapering form may be effected in any suitable wire pointing machine, as for instance in the well known Hopson and Brooks or the Dayton wire pointing machines. However I do not restrict myself to any particular method of or machinery for making the blanks. After the blanks have been made in the form described, they are preferably annealed in an air tight muffle, to render them soft and ductile and they are then flattened which operation is performed as follows:—A blank is placed in the cavity C of the lower die B as illustrated in Fig. 6, in which it will be observed that the blank projects above the surface of the die. The flattened surface *h* on the head of the blank rests against the vertical shoulder *b*, while the point of the shank is supported on or over the beveled surface *c*. The upper die being forced downwardly against the blank and lower die operates to flatten the blank on its opposite sides and make the upper side of the nail thus formed, straight

from end to end, while it imparts the desired curve to the lower side of the nail and bevels the point at *k*. The side edges of the nail are formed with rounded edges *l l* owing to the fact that the die does not confine the nail laterally, or in other words there are no side walls to the cavity C by which the nail is prevented from lateral expansion and hence in the process of flattening the edges of the nail retain the smooth rounded surfaces which were imparted to the blank by the swaging process. Hence the completed nail is formed with flattened sides, rounded edges and beveled point, and its entire surface is perfectly smooth and presents a highly finished surface. By making the cavity C without side walls, it not only enables me to produce nails with smooth rounded side edges, but it allows of the quick and easy removal of the flattened nails from the lower die as they may be pushed laterally off from the die either by the operator or by any suitable device arranged to act automatically in doing this work.

The lower surface of the upper die may be made slightly concave and the surface of the lower die slightly convex and thereby impart a slightly curved form to the finished nail as illustrated in Fig. 12.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent is:—

A die for flattening horse shoe-nail blanks comprising a center piece and end pieces detachably secured together, the three part die forming a cavity the lower surface of which is formed on the center-piece and conforms to the contour of the curved side of the nail and extends the entire width of the die, while one of the detachable end pieces forms a wall or ledge against which abuts the head of the nail blank, and the other end piece forms the die surface on which the point of the blank is beveled, in combination with a receptacle for holding the three part die, and means for forcing the parts of the die in snug contact with each other, and for releasing them to enable them to be removed from their receptacle, substantially as set forth.

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

WILLIAM W. MINER.

Witnesses:
S. G. NOTTINGHAM,
C. L. DRURY.