(No Model.) 2 Sheets—Sheet 1.

W. W. MINER.

FEEDING MECHANISM FOR HORSESHOE NAIL MACHINES.

No. 490,397. Patented Jan. 24, 1893.

Fig. 2.

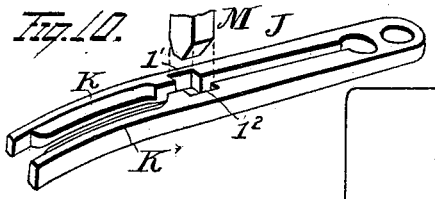
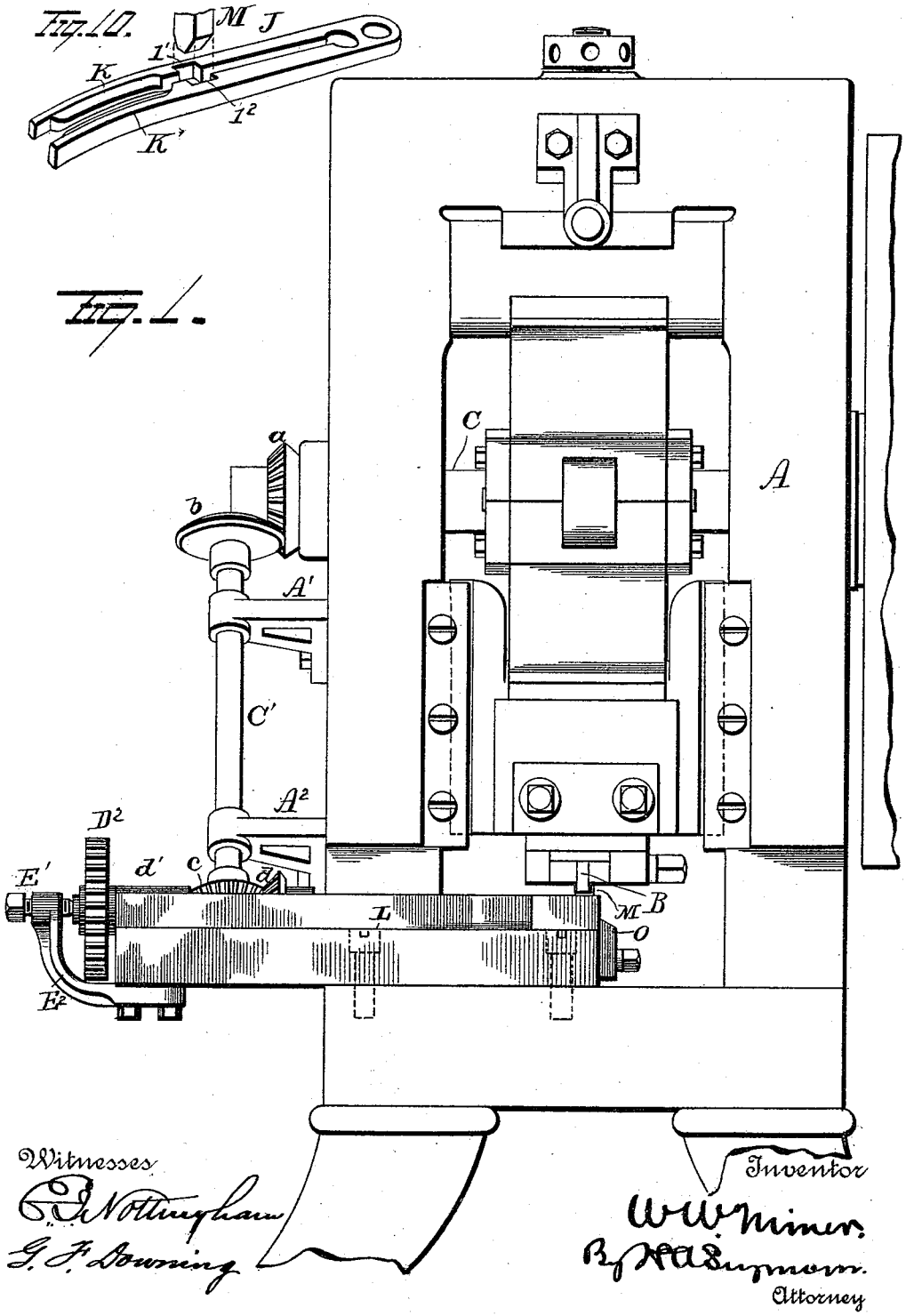


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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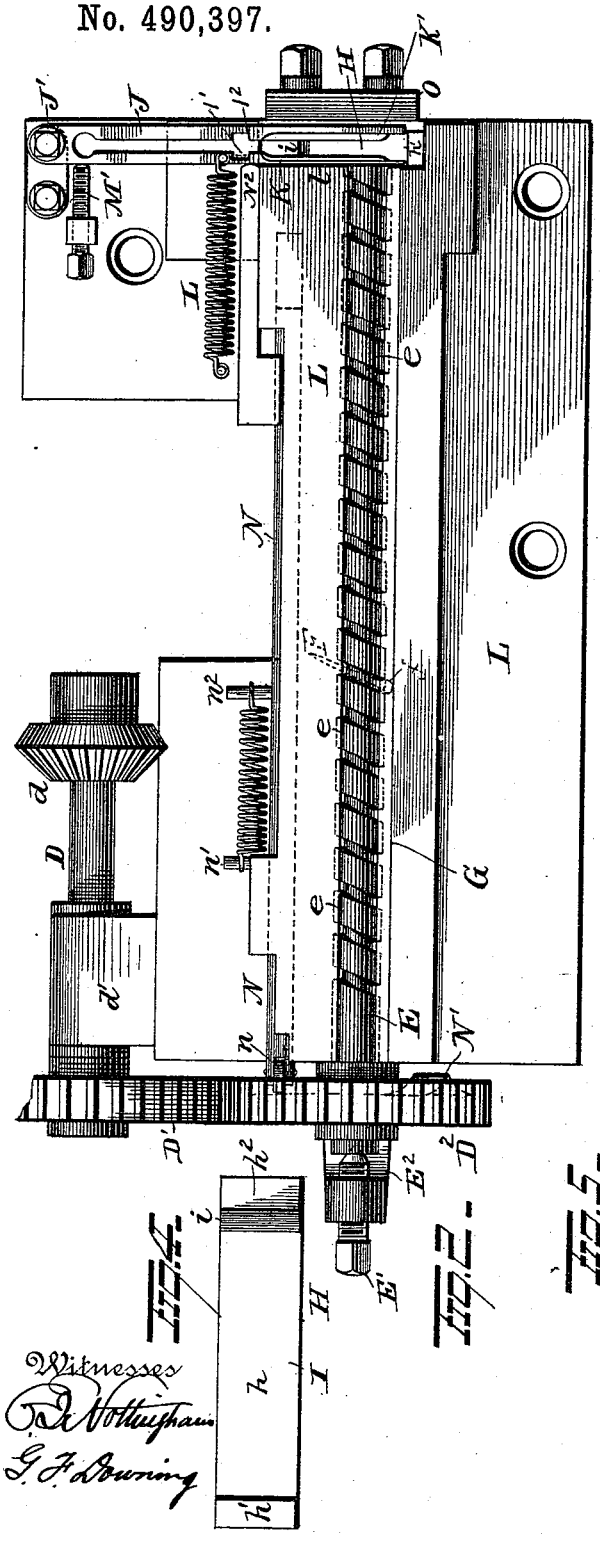

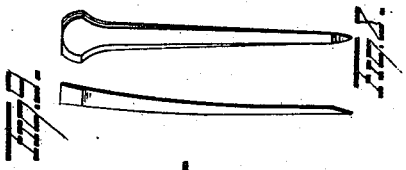

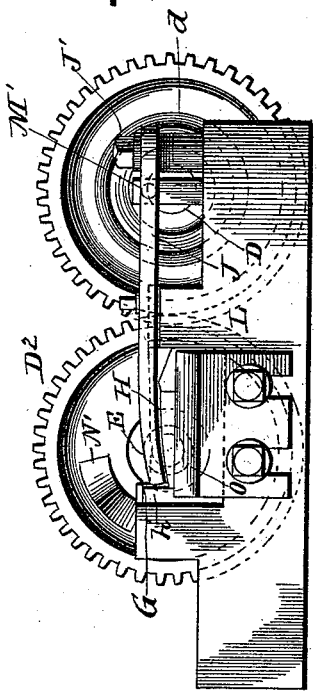

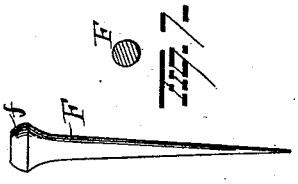

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UNITED STATES PATENT OFFICE.

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

FEEDING MECHANISM FOR HORSESHOE-NAIL MACHINES.

SPECIFICATION forming part of Letters Patent No. 490,397, dated January 24, 1893.

Application filed June 14, 1892. Serial No. 436,678. (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 Feeding Mechanism for Horseshoe-Nail Machines; 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 feeding mechanism for horse shoe nail machines the object being to provide mechanism for automatically feeding horse-shoe nail blanks to flattening dies and for automatically removing the blanks from the dies after the blanks have been flattened.

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

In the accompanying drawings, Figure 1 is a view in front elevation of a power press provided with my improved feeding attachment. Fig. 2 is a plan view of the feeding mechanism. Fig. 3 is an end view of the same. Fig. 4 is a plan view of the lower die. Fig. 5 is a view in side elevation of the horse shoe nail blank. Fig. 6 is a cross section taken through the head of the blank. Fig. 7 is a cross section of the shank of the blank. Fig. 8 is a view in side elevation of the nail and Fig. 9 is an edge view of the same. Fig. 10 is a detached view in perspective of the wedge shaped plunger on the upper die in engagement with spring fingers.

A represents the frame of any suitable construction of press.

B is the upper and movable die, and C is the main shaft.

The mechanism for transmitting motion from the main shaft to the die being old and well known needs no special description.

To the main shaft C is secured a beveled gear a which meshes with a bevel gear b on the shaft C′ which latter is supported in similar bracket bearings A′ A^2. The lower end of shaft C′ has secured thereto a bevel gear c which meshes with a bevel gear d on the shaft D which is supported in the bearing d'. A gear wheel D′ on the outer end of shaft D meshes with a gear wheel D^2 on the feeding screw E the outer end of which is supported on the set screw E′ which is mounted in the bracket E^2. By means of the set screw the feeding screw may be longitudinally adjusted. Screw threads e may be of any desired width or angle of inclination, and within the groove between the threads are placed the horse shoe nail blanks F, which are of the form illustrated in Fig. 5. The heads f of the blanks are placed between the feed screw and the flange or ledge G, which is fixed parallel to the screw and is of such height as to form a guide and retain the blanks in engagement with the feed screw.

H represents the lower and stationary die.

Fig. 4 illustrates a plan view of the die while it is shown in end elevation in Fig. 3.

Die H consists of the central portion h and end pieces h', h^2 which latter may be made in separate pieces or may be made integral with a supporting block and the central portion h removably secured between them. The central portion h and end pieces h', h^2 form a cavity I which extends the entire width of the die. The head of the blank is received on the die so that the head will rest against the end piece h', while the pointed end of the shank will rest upon the beveled face i formed on the end piece h^2.

J represents an oscillating spring arm which is pivoted on the bolt J′. This arm comprises the two spring fingers K K′ which are of such length that they will readily yield and on the release of pressure will resume their original position. The free ends of fingers K K′ rest upon or in close contact with the die H, and together form a sort of guide or receptacle into which the nail blank is fed by the screw, and by which the blank is held in place on the die while the blank is being flattened.

L is a spiral spring one end of which is secured to the frame while the other end is attached to the finger K and serves to pull the latter snugly against the end l of the frame L in which the feed screw is mounted. Fingers K K′ are constructed with the slots l', l^2 which are adapted to receive a wedge shaped plunger M associated with the upper die. A set screw M′ serves as an adjustable stop for the spring arm.

N represents a sliding bar supported in suitable guides. One end of the bar is provided

with an anti-friction roller n which is engaged by a face cam N′ on the gear wheel D^2 while a spiral spring secured at one end to the pin n' fixed to the frame and at its other end to a pin n^2 attached to the sliding bar N serves to retain the latter in a position to be actuated by the face cam. The outer end N^2 of the sliding bar engages the spring arm J and hence when the bar is acted upon by the face cam, it will move the spring arm and cause its fingers K K′ to sweep across the die. An inclined shelf O is adjustably secured to the frame and serves to receive the flattened blanks and guide them into any suitable receptacle.

I will now briefly describe the operation of my improved feeding mechanism. Horse shoe nail blanks are placed in the grooves of the feed screw as indicated by dotted lines in Fig. 2. They may be fed into these grooves automatically by any suitably contrived mechanism, or they may be placed therein by an attendant. The feed screw as it revolves carries forward and deposits upon the die H one of the blanks which drops into the guide or holder formed by the two spring fingers and is thereby retained against displacement. The nail blank rests upon the die with its head abutting against the end piece h and its point resting upon the beveled face i. The upper die B as it is forced downwardly against the blank serves to flatten it on its opposite sides and to transform the blank into a completed nail having a flattened head, shank and beveled point as illustrated in Figs. 8 and 9. When the die B comes in contact with the blank the wedge shaped plunger M enters the slots in the spring fingers and spreads them sufficiently to accommodate the increased width of the blank due to its being flattened. By thus allowing the blank to spread laterally without confining it at its edges, the completed nail is formed with smooth rounded edges throughout its length which feature gives its a highly finished appearance. When the die B has moved upwardly sufficiently to clear the spring fingers, the face cam on gear wheel D^2 will engage the sliding bar N and move it longitudinally and cause it to force the spring fingers outwardly and sweep the flattened blank off from the die and onto the inclined shelf O from which it falls into any suitable receptacle. The instant the blank has been swept from the die, the face cam will have passed out of contact with the sliding bar and allow the spring to retract it while the spring L will retract the spring arm so that it will be in proper adjustment to receive the next succeeding blank in the feed screw. The spring arms do not serve to grasp the blank, but operate simply as guides or as a holder to retain the blank on the die while it is being pressed and flattened and then to remove it from the die.

It is obvious that the die may be made of any desired form and may be widely varied in its construction, and further that the details of construction of the various parts of my improved feeding device may be varied without departing from the spirit of the invention, and hence I would have it understood that I do not restrict my invention to the precise construction and arrangement of parts shown and described, but,

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

1. The combination with dies for flattening horse-shoe nail blanks throughout their entire length, of yielding fingers or guides located between the dies and serving as lateral guides for the blank while it is being flattened, said fingers being of less thickness than that of the flattened blank, and means for actuating said fingers and causing them to remove the blank from the die, substantially as set forth.

2. The combination with dies for flattening horse-shoe nail blanks, of a feed screw for feeding the blanks to the dies, yielding fingers or guides located upon the lower die and parallel therewith said fingers or guides adapted to serve as lateral guides for the blank throughout its length and retain it in position while being flattened, substantially as set forth.

3. The combination with dies for flattening horse-shoe nail blanks, of spring fingers located upon the lower die and constructed to hold the blank in position while being subjected to the action of the upper die, and means for separating the fingers as the blank is flattened, substantially as set forth.

4. The combination with dies for flattening horse-shoe nails, of an oscillating arm provided with yielding fingers which rest upon the lower die and are parallel therewith, said fingers serving as lateral guides for a blank while being flattened, and means for automatically actuating said arm and removing the flattened blank from the die, substantially as set forth.

5. The combination with two flattening dies, of yielding fingers located between the dies and serving as lateral guides for the blank while being flattened; means for automatically feeding the blanks upon the lower die and into the space formed between said fingers and means for automatically actuating said fingers and sweeping the blank off from the die, substantially as set forth.

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

WILLIAM W. MINER.

Witnesses:
CHAS. L. MCNEIL,
J. EVERETT ALDEN.