

F. L. EILER.
NAIL MACHINE.
APPLICATION FILED DEC. 24, 1909.

994,137.

Patented June 6, 1911.

2 SHEETS—SHEET 2.

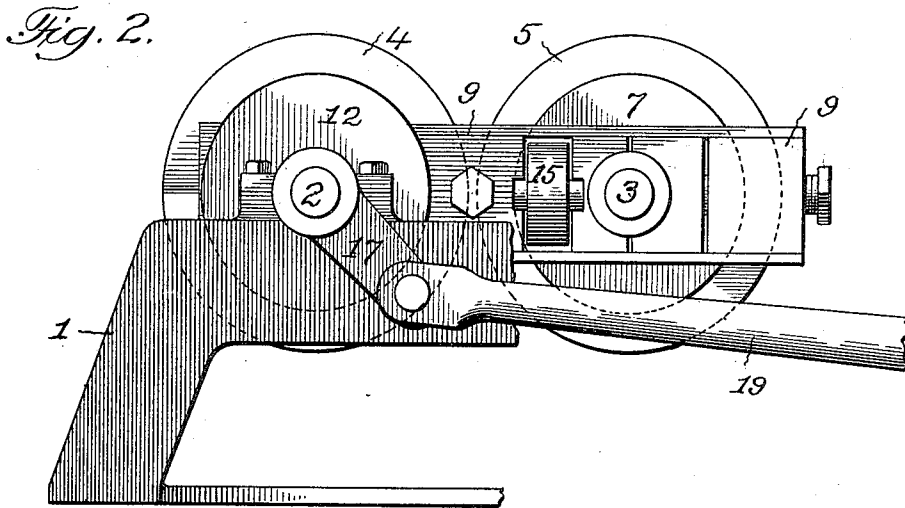


Fig. 3.

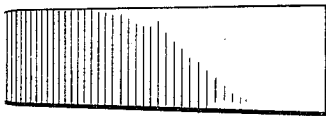


Fig. 4.

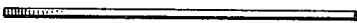


Fig. 5.

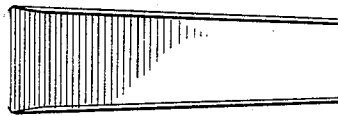


Fig. 7.



Fig. 6.



Fig. 8.

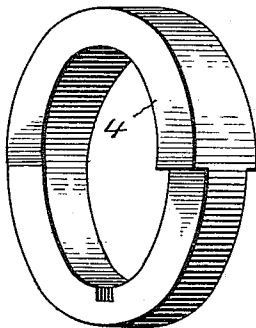
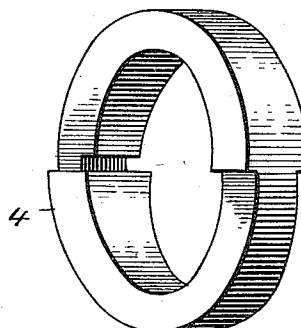


Fig. 9.



Witnesses:

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FRANK L. EILER, OF CHICAGO, ILLINOIS.

NAIL-MACHINE.

994,137.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed December 24, 1909. Serial No. 534,841.

To all whom it may concern:

Be it known that I, FRANK L. EILER, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Nail-Machines, of which the following is a specification.

This invention relates to a machine for making flanged nails having longitudinal side flanges that converge toward each other in a direction from the point of the nail, an example of which is shown in the patent to Tuttle, No. 496,625, dated May 2, 1893. And the present improvement has for its object to provide a simple and efficient structural formation and combination of parts whereby the required flanges are simultaneously swaged or formed upon opposite sides of a flat blank, and a finished nail produced having a uniting web widening from head to point, and side flanges tapering from head to near the point, all as will hereinafter more fully appear.

In the accompanying drawings: Figure 1, is a plan view illustrating the general arrangement of the present mechanism. Fig. 2, is a side elevation, with portions of the main frame removed. Figs. 3 and 4 are views of the nail blank in plan and elevation. Figs. 5, 6 and 7 are views of the finished nail in plan view, end elevation and side elevation. Fig. 8 is a perspective view of one form of anvil ring. Fig. 9 is a similar view of another form of the same.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the main frame or housing provided with a series of journal boxes for the different shafts of the mechanism hereinafter described.

2 and 3 are the anvil carrying shafts journaled in separated relation on the main frame, and which, in the preferred construction shown in the drawing, constitute tracks or slideways for the carriages of the flanging rollers hereinafter described.

4 and 5 are circular anvil rings carried by hubs 6 and 7 keyed or otherwise secured on the shafts 2 and 3 and turning therewith. Said anvil rings may form integral parts of the respective hubs, or be removably secured thereto, as the judgment of the constructor or circumstances may dictate.

In the present improvement the periph-

eries of the anvil rings 4 and 5 are circular and concentric with the axis of rotation, while the opposed ends of each ring have an oblique arrangement to impart a substantially spiral form to the respective end faces of each ring, for the purpose hereinafter set forth. In this connection it may be stated that it is within the province of the present invention to form said ends of the anvil rings with two or more succeeding spiral formations in manner illustrated in Fig. 9 and for reasons hereinafter set forth.

8 and 9 are carriages slidably mounted on the aforesaid shafts 2 and 3 and adapted to have limited lateral reciprocation thereon.

10 and 11 are swaging or flanging rollers journaled on the aforesaid carriages 8 and 9, and arranged symmetrically with relation to the gap between the adjacent circular faces of the aforesaid anvil rings, and at opposite sides of said rings and adjacent to the spirally formed ends thereof, as shown.

12 and 13 are cam disks secured to and turning with the aforesaid shafts 2 and 3 and having cam faces which are of a counterpart formation to that of the spirally formed ends of the anvil rings aforesaid, in order that by means of the intermediate connection hereinafter described, the said cam faces will maintain a constant predetermined distance between the swaging rolls 10 and 11, and the spirally formed faces of said anvil rings 4 and 5, during the operative movements of the mechanisms.

14 and 15 are friction reducing rolls journaled on the carriages 8 and 9 bearing against the cam faces of the disks 12 and 13 to constitute the intermediate connection above referred to.

16 and 17 are crank arms carried by the shafts 3 and 2 aforesaid, and 18 and 19 are pitmen receiving reciprocation from a suitable power source, and adapted to impart oscillation to said crank arms, and in turn a semi-rotary movement to the carrying shafts and anvil rings aforesaid, which is the preferred form of the present invention as illustrated in Figs. 1 and 2. It is however within the scope of the present invention to impart continuous rotation to the carrying shafts and anvil rings, as well as to form said anvil rings with a number of succeeding spirally formed faces in order that a greater number of nails may be formed at each revolution of the mechanism.

The form of the anvil rings used in a

semi-rotary type of the mechanism is shown in Fig. 8, while the form of said rings adapted for a continuous rotary type of the mechanism is shown in Fig. 9 of the drawings.

In the operation of the present mechanism, a plate metal nail blank of the form illustrated in Figs. 3 and 4 is inserted, with its narrow point downward between the peripheries of the anvil rings 4 and 5 and into positive holding and feeding engagement therewith; the time of introduction being at the time when the narrowest parts of the two peripheries are opposed on a diametric line drawn between the respective axes of the pair of anvil rings. With the gradual turning of said anvil rings upon their axis the blank moves lengthwise between the same and its longitudinal edges are swaged or flanged down against the spirally formed faces of the anvil rings, as side flanges upon a central connecting web, and so that with the complete passage of the blank between the anvil rings said blank is formed into a finished nail having a central web portion widening from head to point and side flanges which also taper from head to near the point, as shown in Figs. 5, 6 and 7.

The present mechanism can also be employed in the manufacture of the particular type of nail shown in the before mentioned Tuttle Patent No. 496,625 of May 3, 1893, by a slight initial formation of the nail blank during the cutting of the same, and so that the flanging rollers 10 will flange and swage the blank wholly to one side of the blank

body and form the aforesaid special type of nail.

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

1. In a nail machine, the combination of anvil rings formed with circular peripheries and spirally faced ends, means for supporting said rings in adjacent relation, means for imparting turning movements to said rings, laterally moving carriages in lateral and adjacent relation to the anvil rings aforesaid, swaging rolls journaled on said carriages, and means for imparting lateral movement to said carriages, substantially as set forth.

2. In a nail machine, the combination of a main frame, a pair of shafts journaled in separated relation on said frame, a pair of anvil rings carried by said shafts and formed with circular peripheries and spirally faced ends, means for imparting turning movements to said shafts and rings, laterally moving carriages, swaging rolls journaled on said carriages, and means for imparting lateral movement to said carriages, the same comprising cam disks carried by the shafts aforesaid and intermediate rolls journaled on said carriages, substantially as set forth.

Signed at Chicago, Illinois, this 18th day of December 1909.

FRANK L. EILER.

Witnesses:

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ROBERT BURNS.