

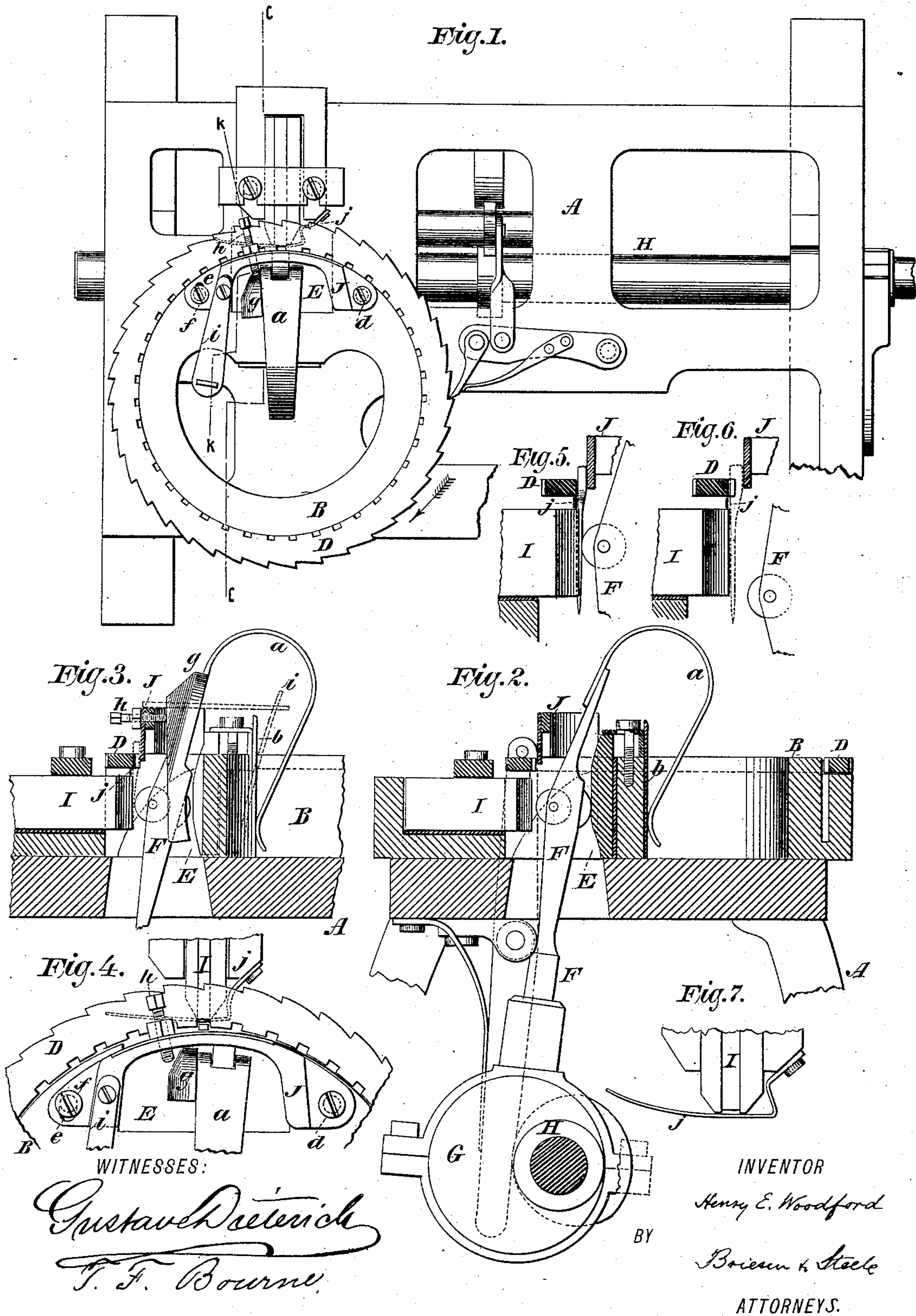
(No Model.)

H. E. WOODFORD.

HORSESHOE NAIL FINISHING MACHINE.

No. 374,227.

Patented Dec. 6, 1887.





# UNITED STATES PATENT OFFICE.

HENRY E. WOODFORD, OF ESSEX, NEW YORK, ASSIGNOR OF ONE-HALF TO  
THE ESSEX HORSE NAIL COMPANY, (LIMITED,) OF SAME PLACE.

## HORSESHOE-NAIL-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 374,227, dated December 6, 1887.

Application filed March 26, 1887. Serial No. 232,471. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY E. WOODFORD, of Essex, Essex county, New York, have invented certain new and useful Improvements in Horseshoe-Nail-Finishing Machines, of which the following is a full, clear, and exact description.

This invention relates to that class of horseshoe-nail-finishing machines in which a stationary anvil and a movable roller-stock are used for swaging or rolling the nails; and it has for its object to provide means for holding the nail while being swaged or rolled and for releasing it to a certain extent after the nail has been rolled to permit of convenience in feeding; also, to provide a guide to safely guide the nails into line with and crowd them out of the matrix on the anvil.

The invention consists in providing a movable guard for the nail-heads to bear against while the nails are being rolled, and means for moving said guard away from the nail-carrier after the rolling has been performed, in order to allow the carrier to feed the nails along without hinderance from the anvil.

The invention also consists in providing the anvil with a spring-guide to guide the nails into position on the anvil, and also to force them outward from the anvil after they have been rolled.

Reference is to be had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a machine provided with my improvements, parts being broken away. Fig. 2 is a sectional view taken on line *c c*, Fig. 1. Fig. 3 is a sectional view taken on line *k k*, Fig. 1. Fig. 4 is an enlarged detail view of part of a machine provided with my improvement for holding the nail against the anvil and nail-carrier and for releasing same at the proper time, said improvement being shown in the releasing-position. Fig. 5 is a sectional view of the anvil, nail-carrier, movable guard, and spring-guide, showing a nail in the act of being rolled, the guard being in position for holding the nail against the carrier and anvil. Fig. 6 is a sectional view similar to Fig. 5, but showing the guard in position for releasing the nail after it has been rolled. Fig. 7 is a detail view of the anvil and

spring-guide for guiding the nails into position on the anvil and for moving them away from the anvil.

A in the drawings represents the frame of a machine embodying my improvements.

B is a bed-ring, which carries the notched nail-carrier D, of suitable construction, which carrier D receives intermittent rotary motion from any suitable mechanism.

The bed-ring B has a cut-away portion, E, through which passes the roller-stock F, which is either mounted upon the cam G, secured to the shaft H, or otherwise connected to receive a laterally and vertically reciprocating motion. The construction and operation of these parts will be more fully understood by reference to my Letters Patent No. 358,099, which shows one mode of moving the roller-stock. The free end of said roller-stock is guided by the spring *a* bearing against the ridge *b*.

I is a stationary anvil secured to the frame A, and opposite the opening E in the bed-ring B. The nails to be rolled are brought opposite the anvil I by means of the notched carrier D, from which they are suspended by their heads in the ordinary manner.

In nail-machines having movable anvils, as in Patent No. 172,660, the nail can be freely carried in line with and away from the anvil while the same is in its retracted position; but when the anvil is stationary, as in my present machine, it is apt to interfere with the free feeding of the nail to and from the anvil. To obviate this difficulty, and to allow the nails to pass freely in line with the anvil and out of the matrix in the same, I provide the movable guard J in place of the stationary guard heretofore employed. This movable guard is best seen in Figs. 1 and 4 in the drawings, and is preferably made the segment of the circle formed by the ring B, and is pivoted thereto at one end, as at *d*. The free end of said guard J is provided with a slot, *e*, through which passes a pin, *f*, secured to the ring B, which pin serves to limit the swinging movement of the guard J. The guard, it will be seen, is above the cut-away portion E.

I prefer to allow the under edge of the guard J to project slightly below the top of carrier D.

The guard J is moved toward the ring D in the following manner: A cam, *g*, is secured to



the roller-stock F, and so arranged as to bear against a projection, *h*, on the guard J. The projection *h* is preferably adjustable to allow for the difference in thickness of nails. In the drawings it is shown as a set-screw; or the cam *g* might be made adjustable and the projection *h* stationary; but I prefer the first-mentioned method. The guard J is drawn inward by a spring, *i*.

To guide the nail into position on the anvil, and to prevent its striking said anvil, I also provide the spring-guide *j*, which is secured to the anvil or frame A, and which guide *j* passes across the front of the anvil, but preferably slightly above its level and below the carrier D.

The operation of my improvements is as follows: The guard J is held back from pressure on the carrier D by the spring *i*, but is near enough to it to prevent the nail from falling out of its notch in said carrier and to allow said nail to have a slight swinging movement. (See Fig. 6.) As the carrier revolves, it brings the nail toward the anvil, which nail first strikes the spring-guide *j*, which guides the nail into position in the front of the anvil. The roller-stock F then begins to descend, and the cam *g* strikes the projection *h* and presses the guard against the inner face of the carrier D, as in Fig. 5, which holds the nail firmly against the carrier and anvil. As the roller-stock still descends, the nail will be pressed into the matrix on the anvil and rolled. After the nail is rolled, the roller-stock sheers off to one side, (as described in my said Patent No. 358,099,) thereby disengaging the cam *g* from the projection *h*, and allowing the guard J to be moved backward by the spring *i*, thereby releasing the nail to a sufficient extent to allow the carrier to feed it along. At the same time the spring *j* pushes the nail out of the matrix in the anvil, leaving it free to be carried on by the carrier. Were it not for making the

guard J movable, the nail would be liable to strike the anvil in feeding toward the same and to be cramped when feeding away from same.

The movable guard J may be used either with or without the spring-guide *j*, and vice versa.

Having now described my invention, what I claim is—

1. In a nail-finishing machine, the movable guard J, for holding the nail in the carrier, in combination with said carrier, as specified.

2. In a nail-finishing machine, the movable guard J, combined with the carrier D and stationary anvil I, substantially as described.

3. The movable guard J and stationary anvil I, in combination with the roller-stock F, adapted to press the guard J against the nail and carrier, substantially as described.

4. The guard J and means for holding same against the nail while being rolled, in combination with means for moving said guard back to allow the nail to freely pass the anvil, as set forth.

5. The movable guard J and projection *h*, combined with the cam *g* on roller-stock F, and with the spring *i*, substantially as described.

6. In a nail-finishing machine, the spring-guide *j*, for guiding the nails into position on the anvil and for ejecting the same from the matrix of the anvil, substantially as described.

7. The movable guard J and means for moving same, in combination with the stationary anvil I and spring-guide *j*, substantially as described.

8. The movable guard J, projection *h*, cam *g*, and roller-stock F, in combination with the spring *i*, stationary anvil I, and spring-guide *j*, as set forth.

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Witnesses:

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