

(No Model.)

F. PHILIPS.  
WIRE NAIL MACHINE.

No. 433,961.

Patented Aug. 12, 1890.

Fig. 1.

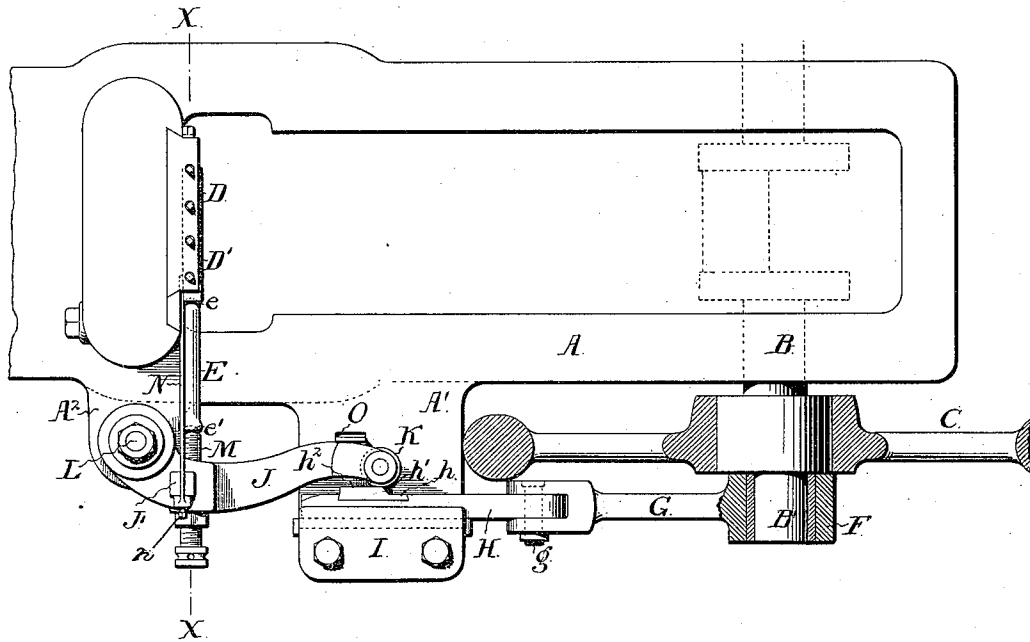
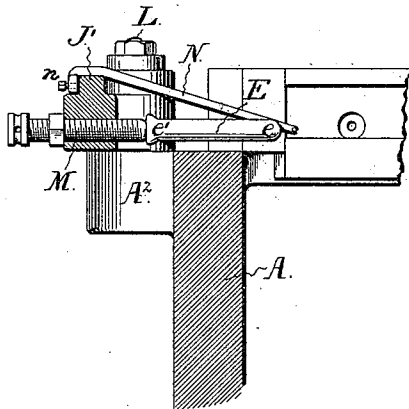


Fig. 2.



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# UNITED STATES PATENT OFFICE.

FERDINAND PHILIPS, OF PHILADELPHIA, PENNSYLVANIA.

## WIRE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,961, dated August 12, 1890.

Application filed December 18, 1888. Serial No. 293,956. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND PHILIPS, a subject of the Emperor of Germany, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Wire-Nail Machines, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the construction of wire-nail machines, and particularly to the mechanism by which the dies or clamps which grasp the wire and hold it during the operation of cutting and heading the nail are actuated.

The general character of the wire-nail machines to which my invention is intended to be applied is shown and described in my patent, No. 353,585, of November 30, 1886, in which patent are shown certain improvements upon the mechanism theretofore used for actuating the gripping-dies. In this improved mechanism, however, as well as in the prior devices, the actuating-cam and cam-roller are found to wear out rapidly, and, by reason of the rapid rotation of the roller, overheating and binding are apt to occur. Other defects which have developed are the tendency of the journal-pins on which the cam-rollers are secured to break under the great pressure to which they are exposed, difficulty in oiling the bearings, and the tendency of the rapidly-rotating surfaces to scatter and throw off the oil. It is with particular reference to these drawbacks of the old construction and with a design of obviating them and at the same time securing as firm or rather a stronger action of the gripping-dies that my present invention was made.

Reference is now had to the drawings which illustrate my invention, and in which—

Figure 1 is a plan view of the bed of a nail-machine, together with the parts of the mechanism to which my invention particularly relates, this view showing my invention in its most complete and perfect form; and Fig. 2 is a vertical section on the line  $xx$  of Fig. 1, with the gripping-dies removed.

A indicates the bed-plate of the machine; B, the main driving-shaft; C, the fly-wheel

secured to the shaft B, and B' an eccentric journal on the end of shaft B.

D is the stationary gripping-die, and D' the moving gripping-die. 55

E is the connecting-rod by which the movable die D' is thrust against the stationary die D.

F is an eccentric strap or ring secured around the eccentric B', and G a connecting-rod extending from the ring F and connected with a sliding bar H at  $g$ , as shown. Upon the sliding bar H is formed a cam-surface consisting of parallel plain faces  $h$  and  $h^2$ , connected by an inclined face  $h'$ . 60

I is a guide in which the sliding bar H moves. This guide should be secured to a projection of the frame A, as is represented at A', Fig. 1. 65

J is a lever pivoted at L to a projecting lug A<sup>2</sup> of the frame A, and having at its free end a cam-roller K, arranged over the cam-surfaces of the sliding bar H. 70

M is an adjusting-screw screwing into the lever J, as shown, and resting at  $e'$  on the die-actuating rod E, which rod rests against the die D' at  $e$ , the connection at  $e$  and  $e'$  being preferably simple contact-joints, as shown. 75

N is a rod secured at one end to the movable die D' and at the other end to the lever J. As shown in the drawings, it is preferable to form a lug J' on lever J, to which the rod N is secured by means of a set-screw  $n$ , so as to be adjustable in length. 80

O indicates a spring, the function of which is to keep the free end of lever J pressed against the cam-surface on bar H. 85

The operation of the mechanism is as follows: As the shaft B rotates, the connecting-rod G moves backward and forward to an extent corresponding to the throw of the cam B', and this motion is of course communicated to the sliding bar H. When the cam-roller K rests on the plain surface  $h$ , the movable die D' is drawn away from the stationary die D by means of the connecting-rod N, and while the dies are in this position the wire is fed between them in the manner described in my former patent. The rotation of the cam then draws the bar H by means of the connecting-rod G toward the shaft B. The inclined surface  $h'$  is thus drawn against the roller K, which, together with the free end of 90 95 100

the lever J, is forced upward, finally resting on the plain surface  $h^2$ . As the end of lever J is thus forced inward toward the frame of the machine, the adjusting-screw M is of course also pressed in and the motion of the lever communicated to the movable die D' through screw M and bar E.

The motions of the cam-roller are in my new device very slow, and the mechanism as a whole at once stronger and more simple than in the old constructions.

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

1. In a wire-nail machine, the combination, with the movable gripping-die D', of a pivoted lever J, a connecting-rod whereby the motion of the lever is communicated to the die, a reciprocating sliding cam-plate H, situated in such relation to the free end of lever J as to

act on it with its cam-surfaces, and mechanism for actuating said cam-plate, substantially as and for the purpose specified.

2. In a wire-nail machine, the combination, with the frame A, of projections A' A<sup>2</sup>, cast therewith, movable and stationary dies D D', a lever J, pivoted at one end to projection A<sup>2</sup> and having its other end extending over projection A', a connecting-rod uniting the lever and movable die, a reciprocating sliding cam-plate H, moving in guides on projection A' and in such relation to the end of lever J as to act on it with its cam-surfaces, and mechanism for actuating said cam-plate, substantially as and for the purpose specified.

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