(No Model.)

A. M. SIMMONS.

NAIL SETTING MACHINE.

No. 602,275. Patented Apr. 12, 1898.

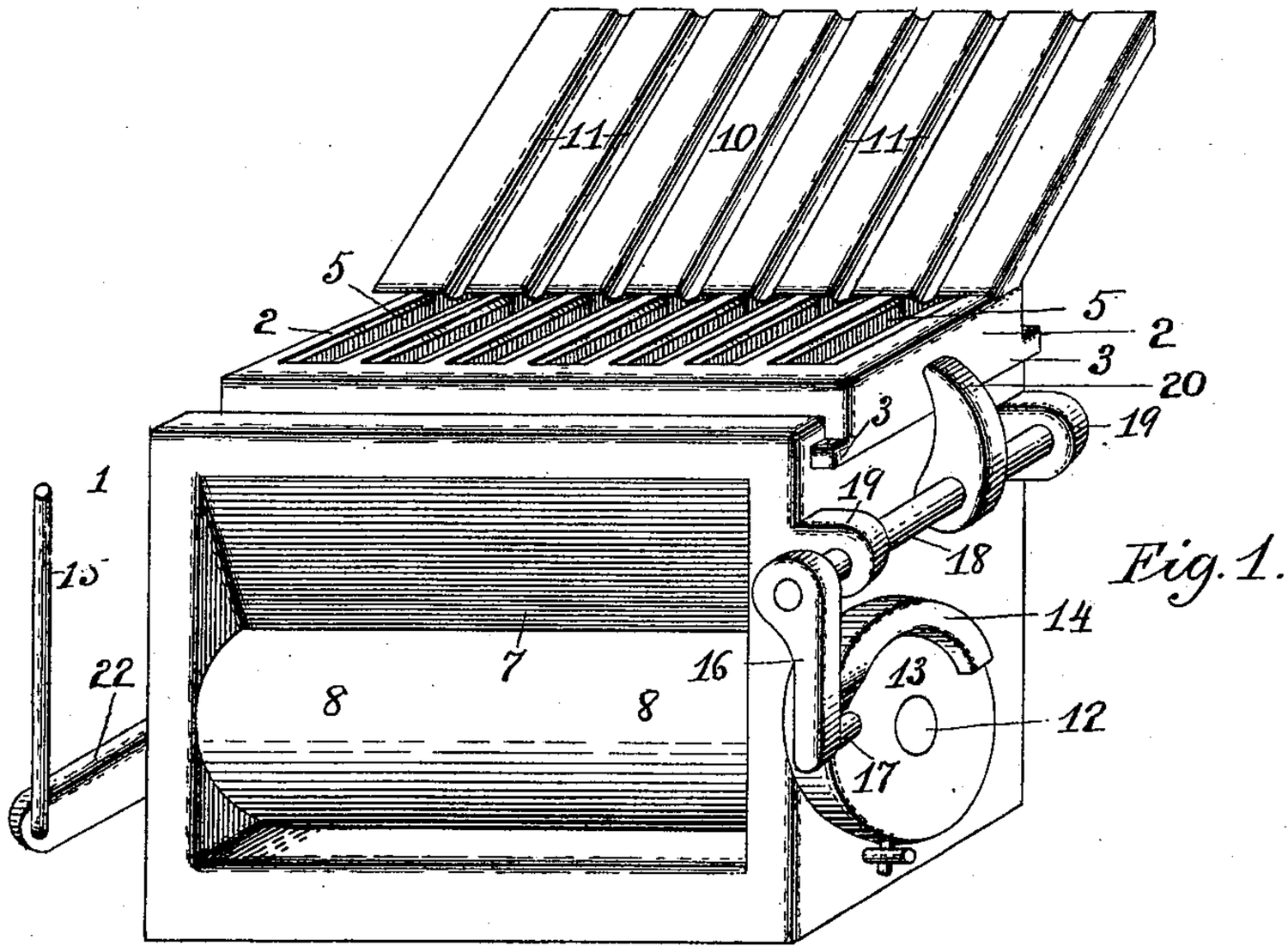

Fig. 1.

Fig. 2.

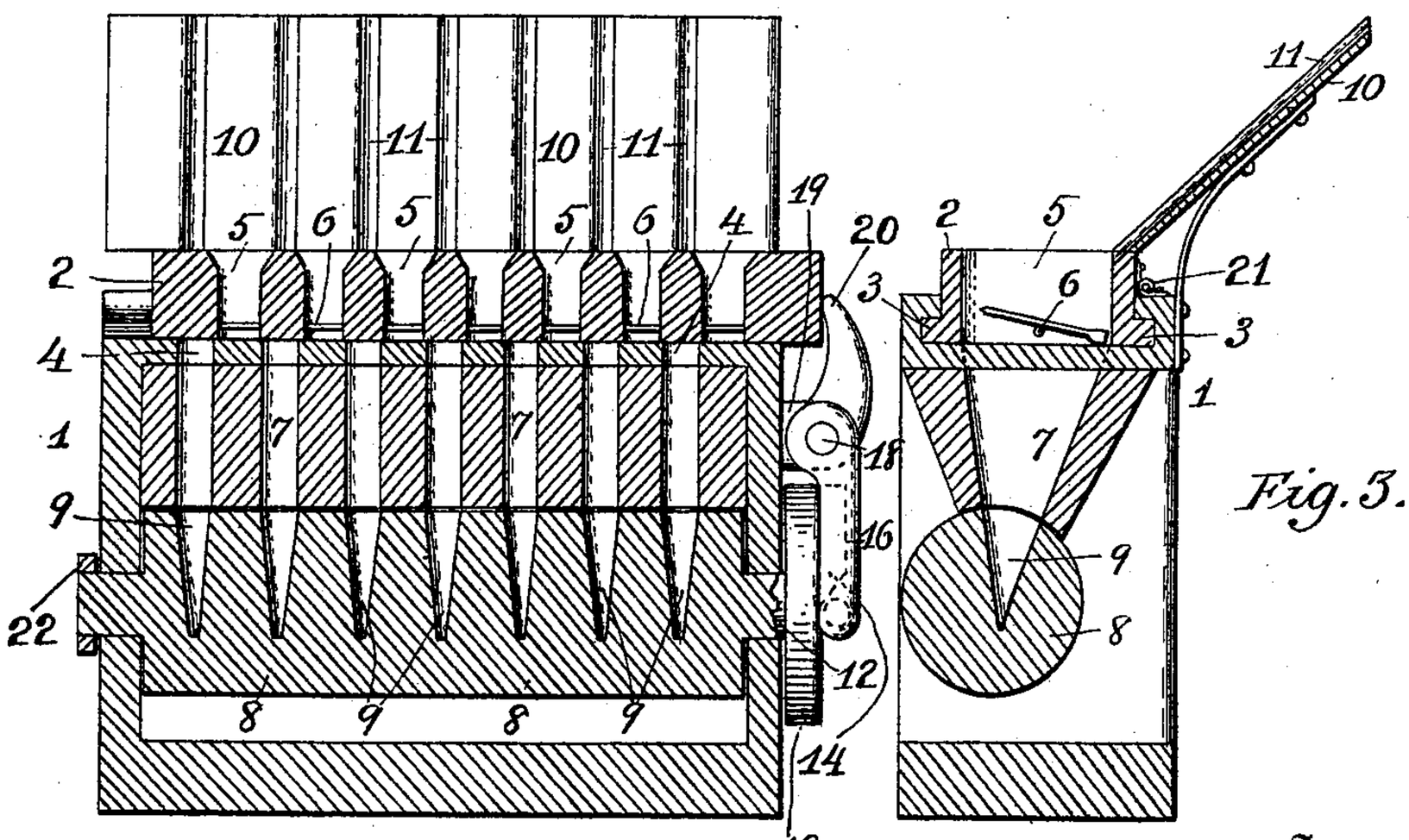

Fig. 3.

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ALONZO M. SIMMONS, OF MARLBOROUGH, MASSACHUSETTS.

NAIL-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 602,275, dated April 12, 1898.

Application filed September 16, 1897. Serial No. 651,898. (No model.)

To all whom it may concern:

Be it known that I, ALONZO M. SIMMONS, of Marlborough, county of Middlesex, and State of Massachusetts, have invented new and useful Improvements in Nail-Setting Machines; and I do 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, reference being had to the figures marked on the accompanying drawings, which form a part of this specification.

Figure 1 is a perspective view of a machine within which my invention is embodied. Fig. 2 is a transverse section of the same. Fig. 3 is a longitudinal section of the machine.

My invention relates to nail-setting machines.

The object of my improvements, more particularly stated, is to provide an improved shuttle device by means of which the nails which are fed thereto will be accurately pointed all in the same direction and delivered with their points downward into a nail-plate or other device used in automatic nailing machinery. This result is effected with absolute precision no matter whether the nails are indiscriminately fed by the shoe or by other delivery apparatus used in connection with the shuttle.

For these purposes my invention consists in the following construction and combination of parts, the details of which will first be fully described, and the features of the novelty then be set forth and claimed.

In the drawings, 1 represents the framing which carries the shuttle-race and the nail-inverting apparatus.

2 represents the shuttle, preferably of rectangular construction, having slides or ways 3, working in corresponding slides in the shuttle-race 4 and adapted to reciprocate therein. By the term "shuttle" is meant the reciprocating slitted slide 2, which forms a temporary arrest for the nails received from the grooved shoe above the same. This shuttle 2 is provided with a series of transverse slits 5, the lengths of which are appropriate to the particular size of the nail used in the machine. As many of these slits 5 are formed in the shuttle as will suit the particular requirements of the nail-setting machine upon which my improvements are used.

Slit 5 in shuttle 2 extends clear through the same from top to bottom, and a pin 6 is preferably used, passing longitudinally through the central lines of the slits and near the bottom of the shuttle.

The shuttle-race 4 is slitted transversely to correspond with the number and size of the slits 5 in the shuttle. Below the race a series of correspondingly-shaped conveyers 7, the end walls of which are contracted downwardly, convey the nail to the slitted oscillating or rotary roller 8.

The shuttle acts to deposit the nail head downwardly, as will be hereinafter explained, converging slits 9 of suitable depth, shape, and number being adapted to receive the nails head downward and by a partial revolution invert the nails and deliver them points downward to the nail-plate or other device. The end walls of slits 9 in roller 8 form a continuation of the similar walls in slits 4, 5, and 7.

10 is the inclined shoe of delivery-board upon which the nails are fed from any intermittent automatic feeding device such as are commonly used. This board is provided with a series of grooves, one for grooves 11 and one for each slit 5 in the shuttle 2.

The rotary or oscillating slitted roller 8 is mounted rotatively in bearings in the frame of standard 1, the axle 12 of which carries at one end a cam-wheel 13, having a cam-face 14 formed upon a portion of its periphery, and an arm or crank 22, at the opposite end of which is pivotally connected an operating-rod 15, connected with the nail-setting machine, so as to impart to said roller 8 an intermittent oscillating movement through a part of a revolution of the roller. Working in conjunction with cam 14 and cam-wheel 13 is an arm 16, carrying a roller or other contact at its outer end and securely keyed to a shaft 18, carried in bearings 19 upon the frame 1 at one end of the shuttle. This shaft 18 carries a tappet or arm 20, which normally bears against one end of the shuttle 2 in contact therewith.

21 is a spring, one end of which is attached to the end of the frame 1 and the other to the

shuttle 2. The spring has a constant tendency to move the shuttle toward the tappet 20, and when the tappet has oscillated the shuttle in one direction and the cam 13 moved away from contact with cam 14 the spring will reciprocate the shuttle in the opposite direction, moving tappet 20 and its connections with it until the cam 14 again comes in action to reverse the movement of the shuttle.

The operation of my shuttle device is as follows: When the nails from the automatic feeding device deliver the same within the grooves 11 of the shoe 10, one nail slides down each groove into the corresponding slit 5 in the shuttle 2 with which it registers. The shuttle then has the slits 5 in such a position that they do not register with the slits in the shuttle-race 4, the slits 5 of said shuttle being moved to one side, so as to come over the partitions between the slits in the shuttle-race. A nail has thus dropped into the bottom of each of the shuttle-slits and is held therein until in the operation of the machine the oscillating or rotary cam 14 through the arm 16, shaft 18, and tappet 20 causes the shuttle to slide and the slits in the shuttle-race to register with each other. A nail lying flat in the bottom of each of the slits 5 has been held therein, being partially supported and tilted by the centrally-disposed pin 6, which passes through each of the slits, the head of the nail being the heavier and being inclined downwardly and the opposite end upwardly. This then is the position of the nail no matter whether the point or the head of the nail was fed into the grooves of the shoe 10. Immediately upon the registering of the slits in the shuttle with those in the shuttle-race each nail tilts upon its pin 6 head first and shoots down through the race and conveyer 7 against the face of the roller 8. In the further operation of the machine the roller 8 is oscillated until the slits 9 register with the conveyer 7, when the nail drops into the slit 9 therein. At the same time the automatic feed has delivered another set of nails into the shuttle. Upon the oscillation of the roller 8 in the opposite direction the nails previously deposited in the slits 9 are carried downward, inverted, and deposited in the nail-plate or other device, while the nails in the shuttle are deposited in the conveyers 7 against the face of the roller ready to be received into the slits 9 when the roller returns to that position.

Instead of the centrally-disposed pins along the bottom of the shuttle they can be dispensed with and the upper face of the shuttle-race, for instance, can be crowned, so that a tilting action will be given to the nail, induced by the weight of its head, so that the nail will be deposited through the race uniformly head downwardly during the operation of the shuttle.

I may also use in place of the roller 8 other mechanism for receiving the nails from the shuttle and inverting the same, so as to deliver them point downward to the heel-plate.

Having described my invention, what I claim, and desire to obtain by Letters Patent, is—

1. The combination of a shuttle provided with a nail-slit, a shuttle-race having a nail-slit, a transverse projection or pin across the nail-slit in the shuttle and means for operating the shuttle.

2. The combination of a shuttle provided with a series of nail-slits, a shuttle-race, transverse pins or projections across said nail-slits, and means for operating the shuttle.

3. The combination of a shuttle having a nail-slit, a transverse pin across said slit, a shuttle-race, a conveyer leading from the shuttle, and means for operating the shuttle.

4. The combination of a shuttle having a nail-slit, having a pin or projection across said slit, a shuttle-race, an oscillating shaft having a nail slit or pocket, a conveyer between the shuttle and the shaft and means for operating the shuttle and shaft.

In testimony whereof I affix my signature in the presence of two witnesses.

ALONZO M. SIMMONS.

Witnesses:
WINFIELD TEMPLE,
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