

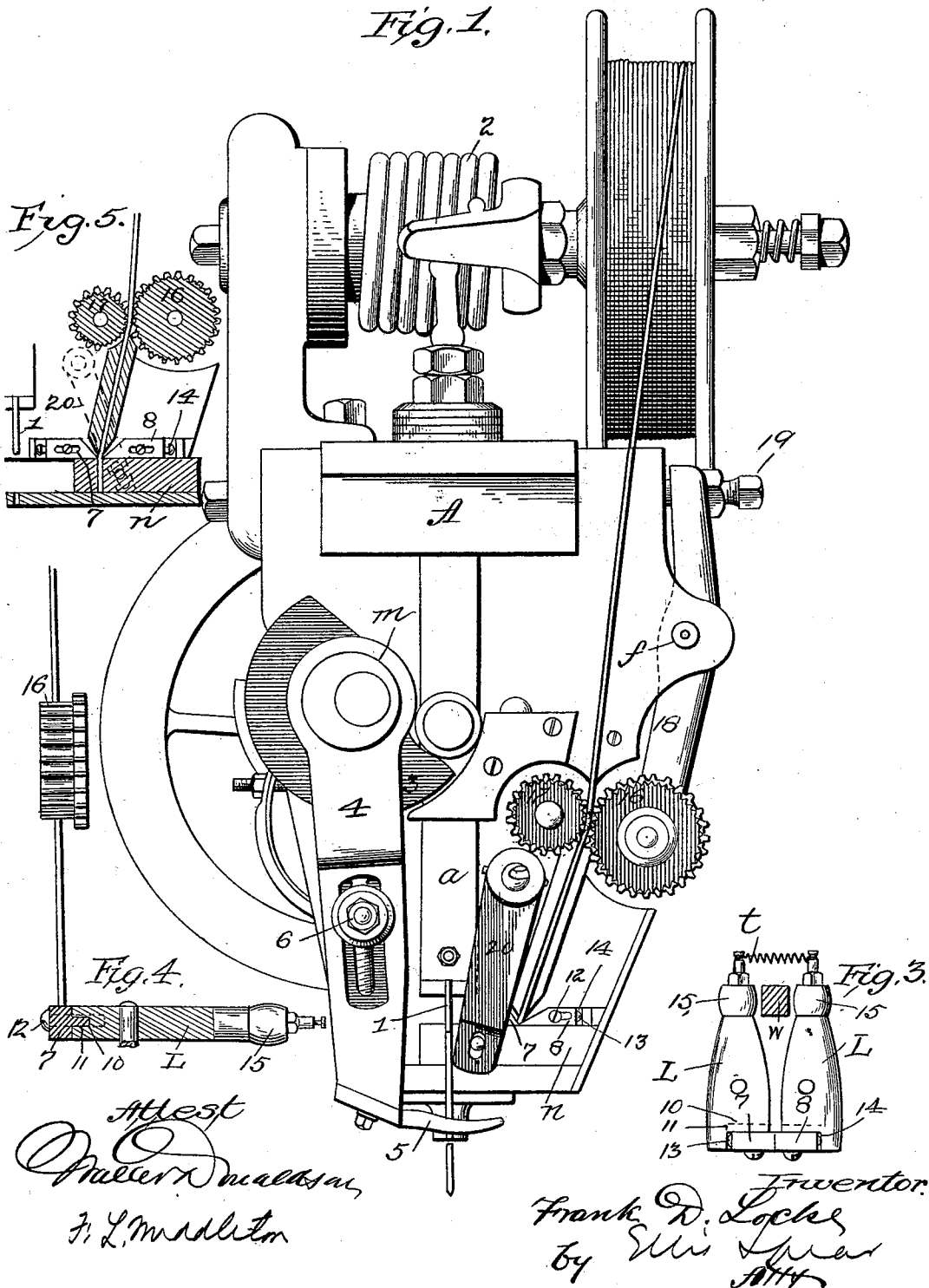
(No Model.)

2 Sheets—Sheet 1.

F. D. LOCKE.
NAILING MACHINE FOR BOOTS OR SHOES.

No. 520,437.

Patented May 29, 1894.



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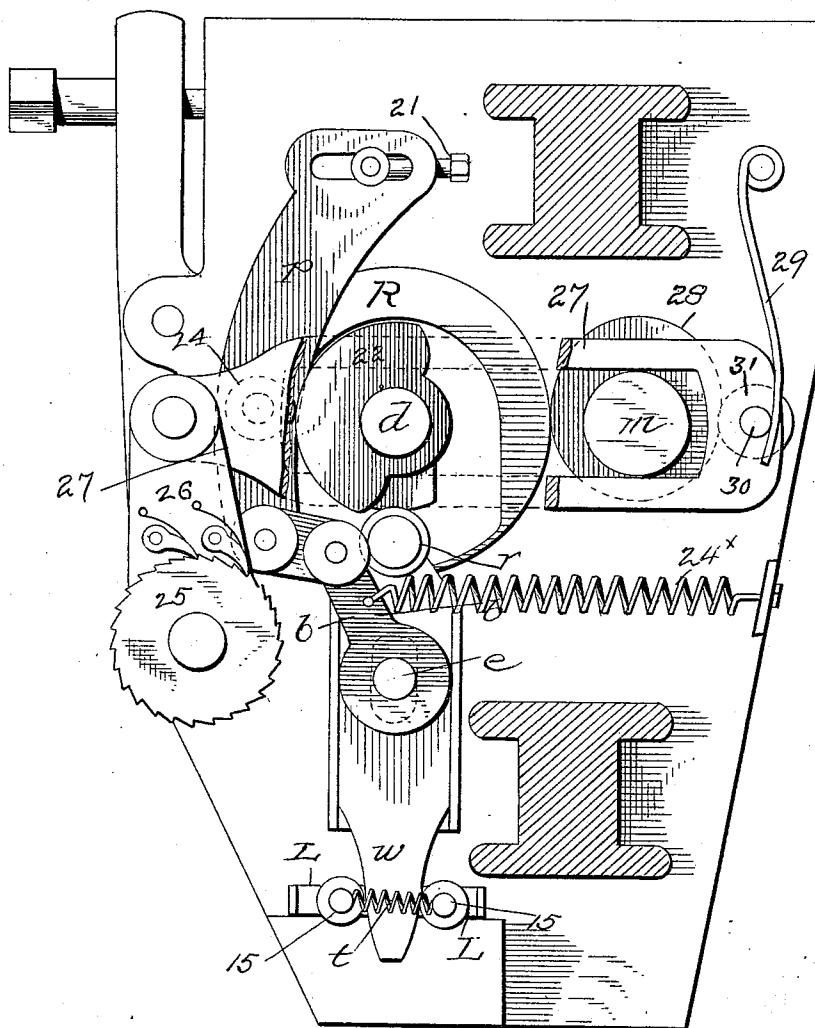
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Fig. 2.



Attest
J. L. Middleton

Inventor
Frank D. Locke
by Eli Spear
Att'y.

UNITED STATES PATENT OFFICE.

FRANK D. LOCKE, OF HUDSON, ASSIGNOR OF ONE-HALF TO ARTHUR H. RICE, OF MARLBOROUGH, MASSACHUSETTS.

NAILING-MACHINE FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 520,437, dated May 29, 1894.

Application filed August 1, 1893. Serial No. 482,095. (No model.)

To all whom it may concern:

Be it known that I, FRANK D. LOCKE, a citizen of the United States of America, residing at Hudson, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Nailing-Machines for Boots or Shoes, of which the following is a specification.

My invention hereinafter set forth, is an improvement in nailing machines for boots and shoes.

It relates to that class of machines in which the nails are formed out of a continuous wire, pointed and severed from the wire, and driven into the sole of the boot or shoe.

It consists in improved details of construction, a part of which are included in the cutting machinery which is constructed and arranged to form an improved shape of nail; for the easy and accurate adjustment of the cutters and their firm clamping to the jaws, and for simplicity and strength.

My invention also includes improved devices for operating the jaws.

It includes also improved mechanism for transferring the nails from the cutting and forming mechanism to the driving mechanism and for moving the boot or shoe automatically as the nails are driven.

My said invention is illustrated in the accompanying drawings, in which—

Figure 1, shows in elevation, the front of the machine. Fig. 2, represents a rear elevation. Fig. 3, shows a view of a detail. Fig. 4, is a sectional view through one of the cutters and part of its lever showing the pivot thereof. Fig. 5, is a sectional view taken longitudinally through the carrier showing the vertical opening therein, for the portion of the wire cut off, the feed rollers being shown in transverse section with their gears showing beyond, and the cutters and plunger are shown in this view also together with the carrier lever in dotted lines.

In the drawings, A represents the head which carries the various mechanisms herein referred to. In this head is a reciprocating plunger α , which carries the driver 1, arranged to directly bear upon the heads of the nails. This plunger is provided with a spring 2, by means of which the force of the blow is sup-

plied. The plunger is raised by means of a cam 3, on a shaft m , which is preferably the main shaft of the machine, and is driven by any suitable means. The cam 3, bears in lifting, upon an antifriction roller on a pin set in the plunger, and is constructed and arranged to release the plunger as soon as the nail is in place underneath the driver. On the main shaft m , is also an eccentric strapped to a lever 4, which carries the feed foot 5, set so as to bear upon the boot or shoe when in place on the jack, and to feed the said boot or shoe step by step as the nails are driven. The pivot 6, of the lever 4, is vertically adjustable on the head and in the lever, so as to vary the throw, and the action of the foot is like that of an ordinary sewing machine. The cutters 7 and 8 are arranged upon the ends of horizontal levers L, pivoted on the head and forming a pair of jaws. Their forward ends are rabbeted as shown in Fig. 3, and the rabbeted part is grooved as shown at 10. The cutters have a tongue 11, which fits in the groove snugly and holds them firmly and accurately in place. The cutters are slotted horizontally, and are held to their seat by means of a binding screw 12, which passes through the slot. In the back end of each cutter is a screw 13, having a kerf on its outer end for adjustment, and this screw bears against the back of the rabbet marked 14. By turning the screw out, wear or the grinding of the cutters may be compensated for as the screw bears against the part 14. In adjusting after grinding the screw is turned out, the cutter gaged, and put in place. The longer ends of the cutter levers are provided with antifriction rollers 15, which bear on a separating wedge w , arranged to vertically reciprocate in guides on the rear of the heads and force apart the rear ends of the levers, thus very forcibly closing the jaws and severing the wire. This wedge is operated intermittingly by means of a pin r in its head, carrying a roller which works in a cam groove of a wheel R on the shaft d . The wheel is set and the groove formed, so as to give a quick movement, and close the jaw as soon as the wire is down in place, and then to release and permit the opening. The shape of the cutting ends is as shown in Fig. 1. The edge is on the lower side, and the bevel

corresponds to that required of the point of the nail.

The cutters are arranged edge to edge, and are at one side, and preferably about one and one-quarter inches from the driver. They rest upon the carrier *n*, and between it and the lower face or shoulder of the head. The levers are drawn together and the jaws opened by means of a spring *t*. The wire is fed down from any suitable reel, under tension, and is drawn by rollers 16 and 17. One of these 17, is pivoted on the head and the other and larger is carried on a lever 18, pivoted on the head at *f*, and provided with a straining screw 19, by means of which the proper pressure is put upon the wire. The wheels are provided with teeth cut transversely on their peripheries, which teeth take hold of the wire and also serrate it on opposite sides. These wheels are both connected by gearing, and both are driven positively. The wire passes from them directly to the cutters. The mechanism for driving the feed wheels for the wire, is arranged to cause them to move intermittingly and immediately after the return of the carrier.

On the shaft of the feed wheel 16 is a ratchet wheel 25, worked by pawls and a lever 26, which is connected to an arm 27 slotted and sliding on the shaft *m*. On this shaft is a cam 28, which works the lever one way, while a spring 29 moves it the other way. This spring 29 bears against a pivot pin 30 mounted in the arm 27 and upon this pivot pin upon the opposite side of the arm 27 is mounted an eccentric disk or roller 31 against which the eccentric 28 bears, and the throw of the arm 27 may thus be varied by rotating the roller 31 to any desired extent. This may be accomplished by any desired means which need not be specified here.

The carrier *n*, is a block of steel arranged to reciprocate on a guide way and in contact on its upper face with the cutter. It contains a cavity or hole made vertically through it, for the nail. When it is back, the hole is directly under the jaws, and when forward, directly under the driver. It reciprocates about one and one-fourth inches. It is moved by an arm 20, on one end of the shaft *e*, which has its bearings in the head. The other end of said shaft projects through the head, and has fixed thereto an arm *b*, connected by a link with a lever *p*, of the third order, and adjustably pivoted at its upper end by means of a movable bearing in a slot and set screw

21, controlling said block. A cam 22 on the shaft *d*, throws intermittingly the lever *p*, by action on roller 24 on stud in the lever. The reverse movement is caused by a spring 24^x. The action is timed to shift one way just before the action of the driver, and the other just before the feed of the wire, and this is caused by the shape and set of the cam, the high and low parts of which are long enough to hold the carrier sufficiently at each end.

The adjustment of the lever *p*, is for the purpose of getting the accurate adjustment of the carrier.

The nails formed from the square wire, are grooved as will be readily understood by the pressure from the corrugated feed rollers on opposite sides, but I have not deemed it necessary to illustrate these corrugations in the present drawings. The bevells are also formed, on the same sides since the bevells of the cutters are at right angles to the plane of the grooved feed wheels. The object of this is to provide a point which can be more favorably upset, and also to cause the compression of the leather, caused by the nail, to fall on the grooved sides of the nail.

The nail point is upset as usual, by striking the steel plate, and it spreads in line with the edge or over the smooth sides of the nail, and the spread is the greater in these directions for the reason that it is prevented by the bevells in the other direction. This gives a more secure hold upon the leather.

I claim—

1. In a nailing machine, the combination with the cutter levers having rabbeted and grooved ends, the slotted cutters carried by said rabbeted ends, adjusting screws located in the rear ends of the cutters and binding screws passing through the slots for securing the cutters in place, substantially as described.

2. In combination with the reciprocating carrier, the rock shaft *e* having an arm pivotally connected to said carrier, an arm *b* also carried by said rock shaft, an adjustable lever *p* having a link connection with said arm *b*, and a cam for operating said lever, substantially as described.

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

FRANK D. LOCKE.

Witnesses:

F. LAZZARO,

C. H. WELCH.