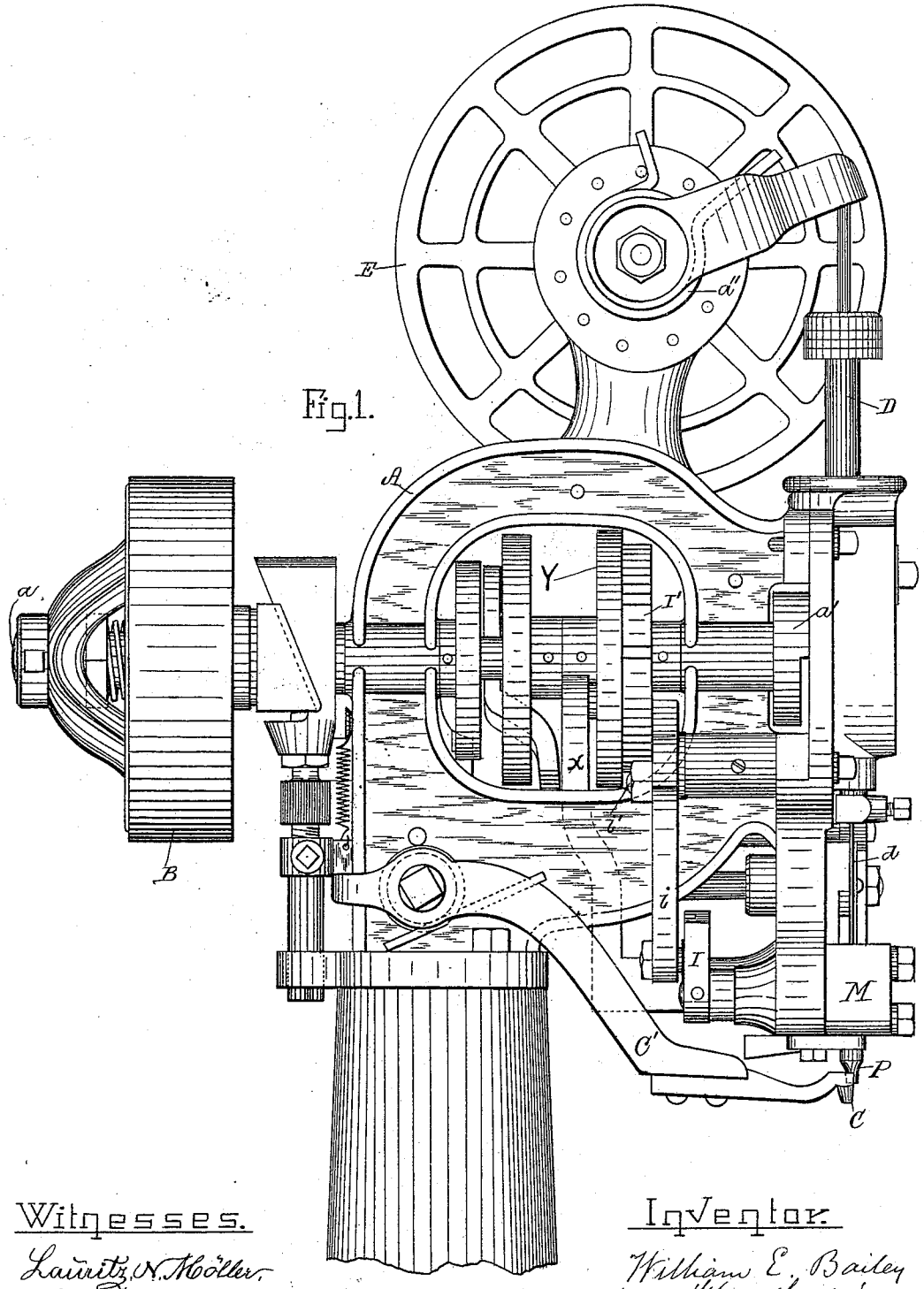
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W. E. BAILEY.

BOOT OR SHOE NAILING MACHINE.

No. 598,890. Patented Feb. 15, 1898.

Fig. 1.



Witnesses.

Laurits N. Möller.

Sydney Harris

Inventor.

William E. Bailey

by Albert Gudrien

his atty.

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W. E. BAILEY.

BOOT OR SHOE NAILING MACHINE.

No. 598,890. Patented Feb. 15, 1898.

Fig. 2.

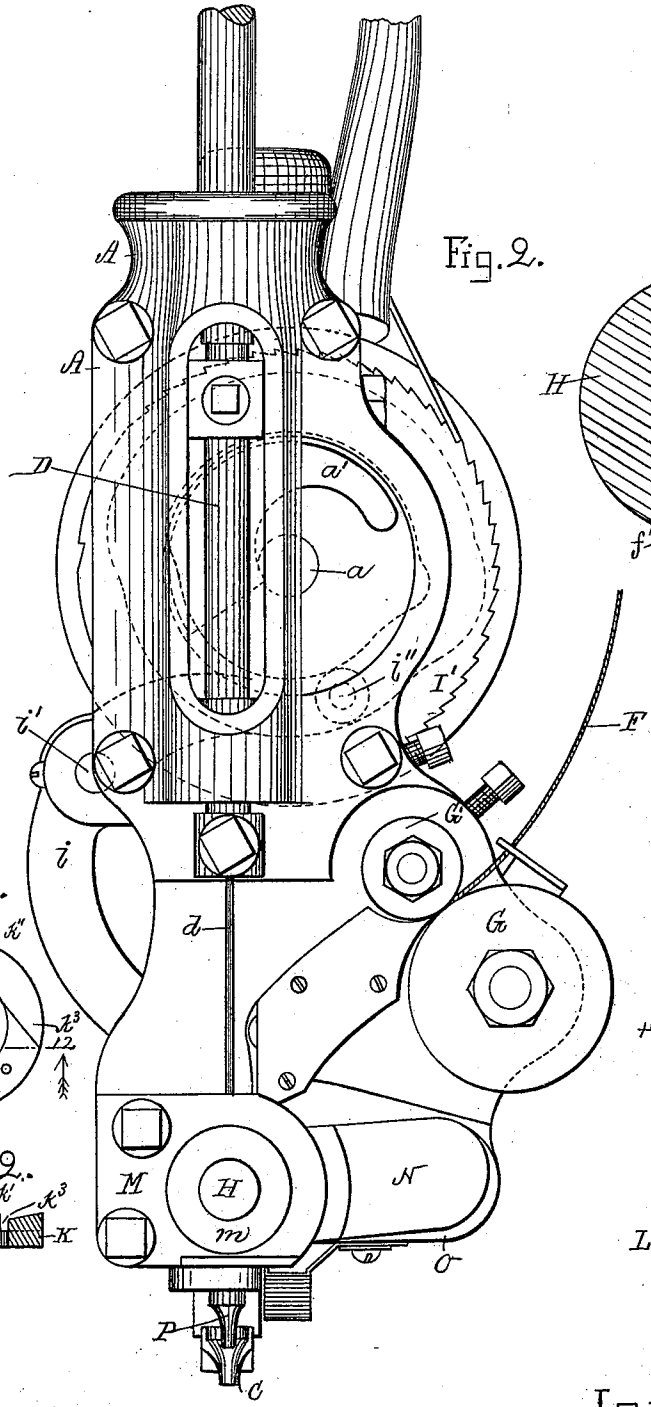


Fig. 20.

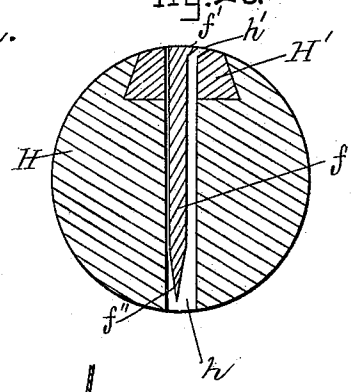


Fig. 11.

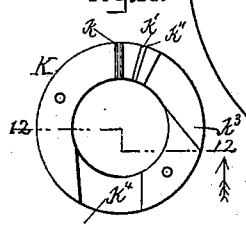


Fig. 12.

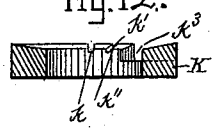


Fig. 13.

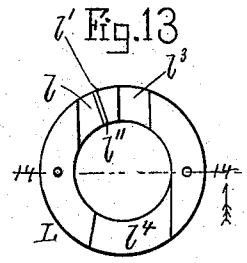
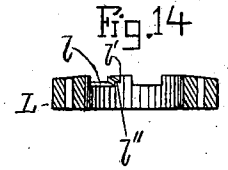


Fig. 14.



Witnesses.

Lauritz N. McLean,
Sydney Harris.

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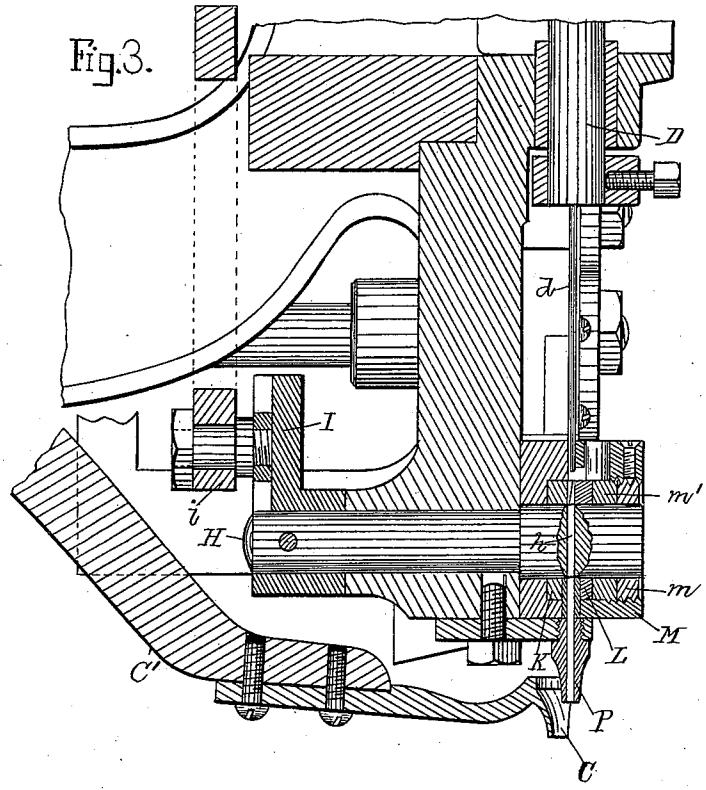
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W. E. BAILEY.

BOOT OR SHOE NAILING MACHINE.

No. 598,890. Patented Feb. 15, 1898.

Fig. 3.



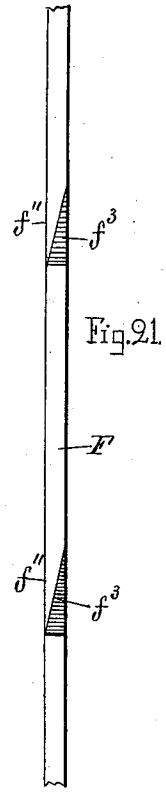


Fig. 21.

Fig. 7.

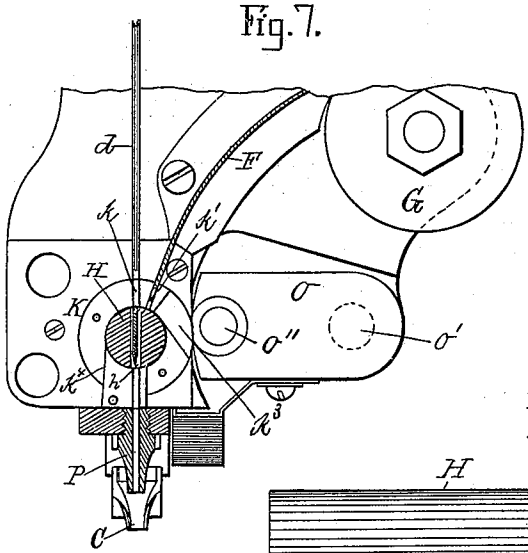


Fig. 10.

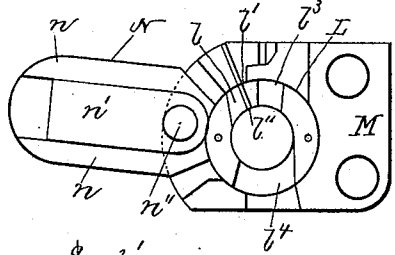


Fig. 8.

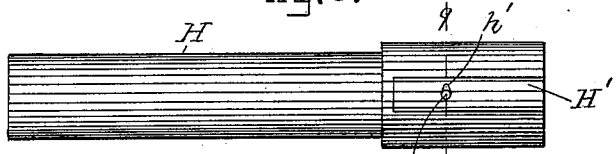
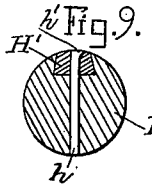


Fig. 9.



Witnesses.

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W. E. BAILEY.

BOOT OR SHOE NAILING MACHINE.

No. 598,890. Patented Feb. 15, 1898.

Fig. 4.

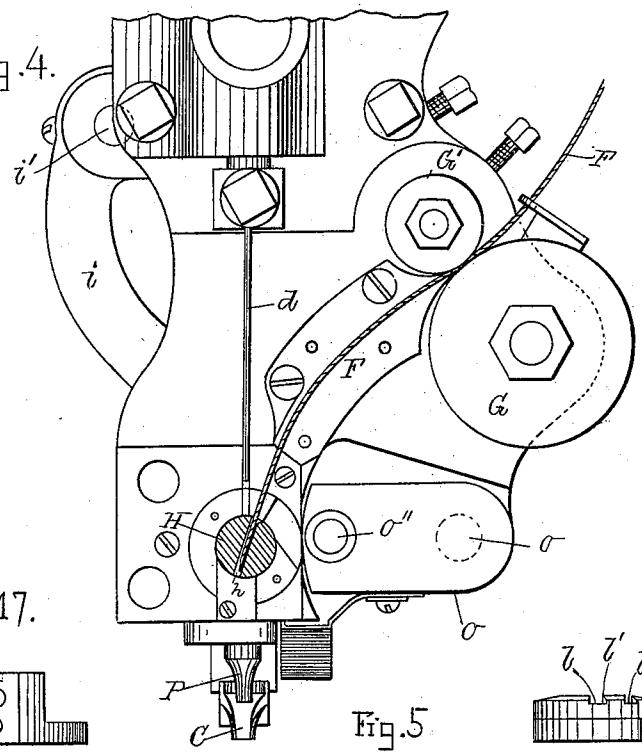


Fig. 17.

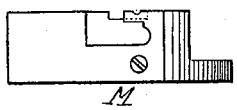
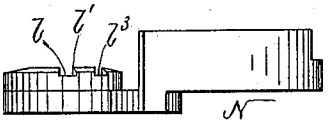


Fig. 5

Fig. 15.



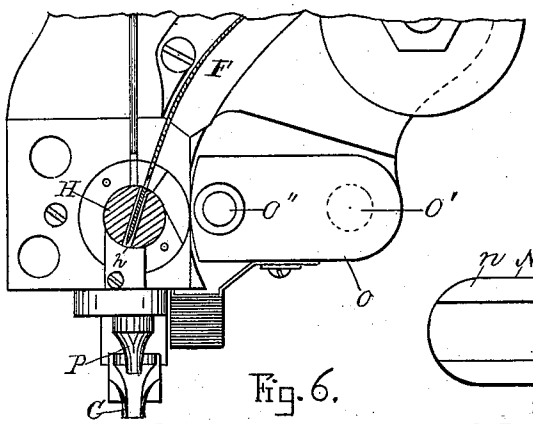


Fig. 18.

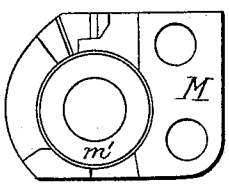


Fig. 6.

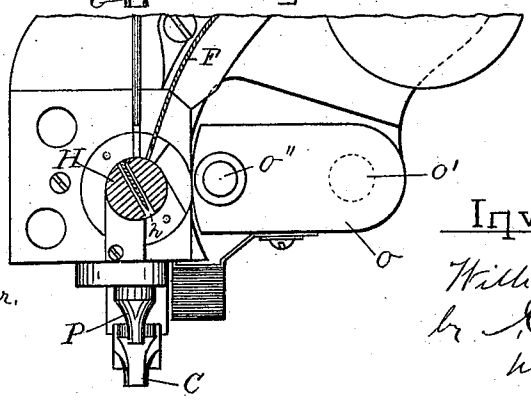


Fig. 16.

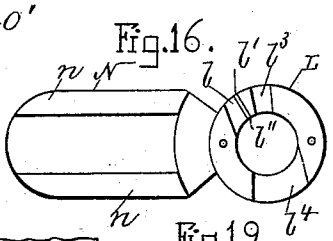
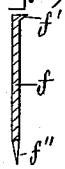


Fig. 19.



Witnesses

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Sydney Harris.

Inventor

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

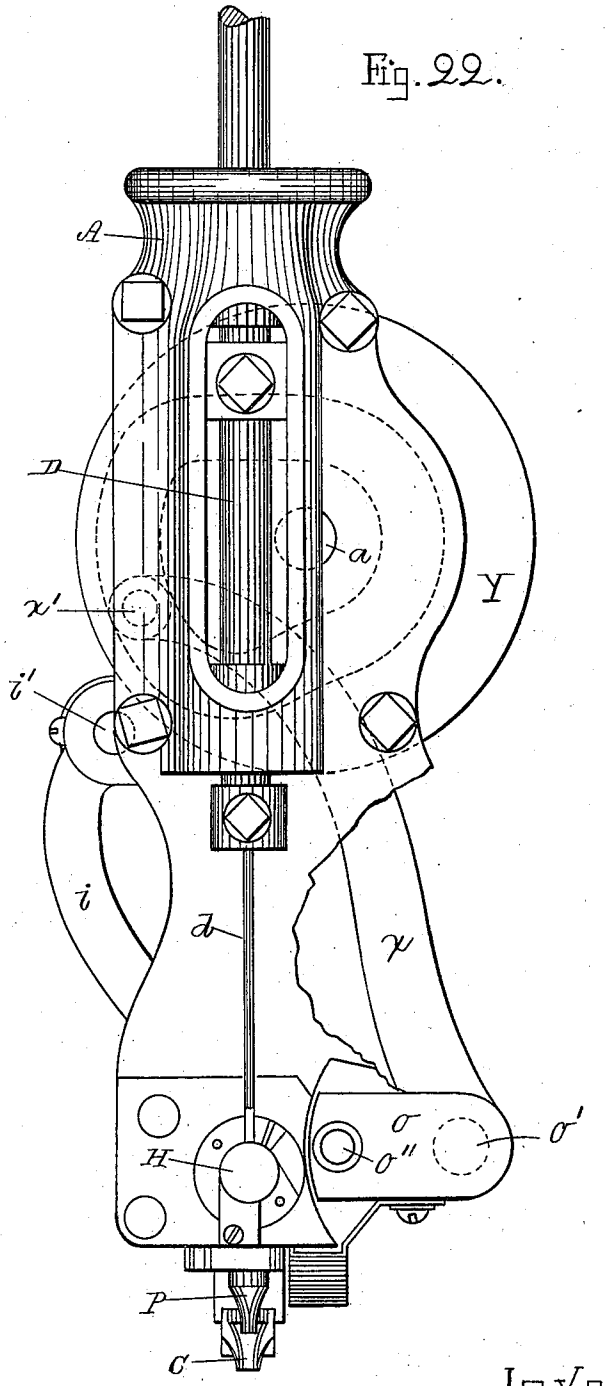
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W. E. BAILEY.

BOOT OR SHOE NAILING MACHINE.

No. 598,890. Patented Feb. 15, 1898.

Fig. 22.



Witnesses.
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Charles A. Harris.

Inventor.
William E. Bailey
by Wm Gerdrim his atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM E. BAILEY, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO THE ESSEX SHOE CO., OF ESSEX, MASSACHUSETTS.

BOOT OR SHOE NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 598,890, dated February 15, 1898.

Application filed February 10, 1897. Serial No. 622,763. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. BAILEY, a citizen of the United States, and a resident of Beverly, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Boot or Shoe Nailing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in machines for making headed and pointed nails from continuously-supplied wire and driving the same into soles and heels of boots and shoes; and it relates particularly to mechanism for automatically severing the wire, pointing and heading the wire nails, and guiding and holding such nails in proper position while being driven, as will hereinafter be more fully shown and described, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of a boot or shoe nailing machine containing my improvements. Fig. 2 represents a front elevation of the same. Fig. 3 represents a central longitudinal section of the lower front portion of the head of the machine. Fig. 4 represents a partial front elevation of the lower portion of the head of the machine, showing the movable cutter-disk removed. Fig. 5 represents a similar view showing the wire nail cut off and severed from the continuously-supplied wire. Fig. 6 represents a similar view showing the nail-carrier shaft rocked so that its nail-receiving perforation is carried beyond a vertical position during the heading of the nail. Fig. 7 represents a similar view showing the nail-carrier shaft and nail held in the perforation therein in position for driving. Fig. 8 represents a detail top plan view of the nail-carrier shaft. Fig. 9 represents a cross-section on the line 9 9, shown in Fig. 8. Fig. 10 represents a detail rear view of the oscillating cutter-carrier, oscillating cutter, and guide. Fig. 11 represents a detail front view of the rear stationary cutter-disk. Fig. 12 represents a cross-section on the line 12 12 shown in Fig. 11. Fig. 13 represents a detail rear view of the movable cutter-disk. Fig. 14 represents a cross-section on the line 14 14 shown in Fig. 13. Fig. 15 represents a detail top plan view of the cutter-carrying lever and movable cutter. Fig. 16 represents a rear view of Fig. 15. Fig. 17 represents a detail top plan view of the guide or bearing for the movable oscillating cutter-disk. Fig. 18 represents a rear elevation of Fig. 17. Fig. 19 represents an enlarged side view of the pointed and headed nail. Fig. 20 represents an enlarged cross-section of the nail-carrier shaft similar to Fig. 9 and showing a headed and pointed nail contained in the shaft perforation in position for driving; and Fig. 21 represents an enlarged side view of the nail-wire, showing the manner of severing it for the formation of the pointed ends previous to driving the nails. Fig. 22 represents a front elevation showing the connection from the rock-shaft O′ to the cam-disk on the rotary driving-shaft.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A represents the frame or head of a wire-nailing machine in bearings, in which is journaled the driving-shaft *a*, which is intermittently rotated by belt power communicated to the loosely-rotating friction-pulley B, said pulley causing the driving-shaft to be rotated one complete rotation and then causing it to stop for every time the shoe is pressed upward against the nipple shield or projection C on the forward end of the pivoted lever C′, (shown in Fig. 1,) as is common in automatic starting and stopping mechanism for machinery of this kind.

I wish to state that I do not claim as my invention any particular automatic starting and stopping mechanism, and it is therefore not necessary to describe such in detail, it being sufficient to state that the machine is started by pressing the work upward against the part C on the forward end of the lever C′, by which the driving-shaft is caused to make one complete revolution, cut off a nail from the continuous wire, drive a nail into the work, and then come to rest until the work is again pressed upward against the forward end of the lever C′, and so on during the operation of the machine.

D is the driver-bar, which is raised upward

by means of a cam a' on the driving-shaft, and forced downward by means of a suitable spring a'', as is common in machines of this kind.

d is the driver, secured to the lower end of the driver-bar, as usual.

E is a reel containing the continuous nail-wire F, which is intermittently fed downward by means of the feed-rollers G G', in the usual manner.

H is the nail-carrier shaft, located in a bearing in the head of the machine and caused to oscillate in said bearing by suitable automatic mechanism during the operation of shaping the nail. The mechanism for oscillating said shaft H may be connected directly or indirectly to the driver-shaft, as may be most practical and convenient, and I wish to state that I do not confine myself to any particular mechanism for imparting an oscillating motion to said shaft H, it being sufficient for this purpose to state that an intermittent oscillating movement is imparted to said shaft during the operation of the machine.

In the drawings I have shown for this purpose a lever I, secured to the rear end of the shaft H and adjustably connected to the lower end of a lever i, pivoted at i', and provided with a pin or pin and roll i'', actuated by a cam-groove in the cam I', attached to the shaft a, as shown in Figs. 1 and 2.

The nail-carrier shaft H is provided with a transverse perforation h, adapted to receive the nail-wire F, from which the nail f is cut off previous to being driven into the sole or heel of the boot or shoe. The upper surface of the nail-carrier shaft H is provided with a longitudinal dovetailed recess in which is inserted the perforated nail-head-forming die H', having a recess or countersunk portion h' at one side thereof for the formation of the head f' of the nail, as represented in Fig. 20. The perforation h in the rock-shaft H and die H' is sufficiently large to enable the headed nail to be driven freely through such perforation, as shown in Fig. 20.

Surrounding the nail-carrier shaft H are two annular disks K L, the former being the stationary rear one and the latter being the oscillating front one. The stationary disk K is preferably made concave to fit against the convex inner side of the movable disk L, as shown.

M is a perforated cap secured to the front of the machine, and in said cap the movable disk L is journaled.

The disk L is held in close contact with the disk K by means of an adjustable nut m, screwed through the cap M, and a washer m', interposed between said nut and the disk L, as shown in Fig. 3.

To the disk L is secured a lever N, to which a rocking motion is imparted from a lever O, secured to a rock-shaft O', journaled in bearings in the head of the machine, said rock-shaft O' being actuated by any suitable mechanism from the driving-shaft of the machine.

To the shaft O' is attached a lever X, provided at its upper end with a pin or pin and roll X', engaging in a side groove on the rotary cam-disk Y, secured to the driving-shaft a, as shown in Fig. 22, and by this arrangement a rocking motion is imparted to the shaft O' and its lever O. Any suitable or well-known mechanism may be used for such purpose without departing from the essence of my invention.

In practice I prefer to arrange between guides n n on the lever N a sliding block n', having a pin n'', adapted to be received in a recess or perforation O'' on the lever O, although any other suitable connecting mechanism between said levers N and O may be used as may be most practical.

The rear stationary disk K has at its upper portion a semicircular recess k, through which the driver d passes during the nail-driving operation. To the right of such groove is a wire-receiving groove k', the right-hand portion of which forms an inclined cutting edge k'', (shown in Figs. 11 and 12,) which in connection with a similar cutting edge on the movable disk L serves to cut the wire F at an angle, so as to produce the pointed end f'' on the wire nail, as shown in Figs. 20 and 21.

k^3 in Figs. 11 and 12 is a clearance-space for the chips f^3, Fig. 21, which are cut off from the wire F during the pointing of the nails.

At the lower portion of the disk K is a clearance-space k^4 for allowing free passage for the driver d during the nail-driving operation.

The movable cutter L has at its upper portion a wire-receiving space l, to the right of which is an inclined cutting edge l', as shown in Figs. 13 and 14, corresponding to the cutting edge k'' on the stationary cutter K, and the said cutting edge l', in connection with the cutting edge k'', serves to cut off the wire in the inclined pointed manner described during the rocking motion of the disk L. In front of the cutting edge l' on the disk L is a ledge or rest l'', (shown in Figs. 13 and 14,) on which the wire is supported during the cutting operation.

l^3 in the upper portion of the movable disk L is a clearance-space for the driver d, and l^4 is a similar clearance-space for the driver in the lower portion of said disk L to permit the driver to move freely up and down during the nail-driving operation.

P is the centrally-perforated nipple or nail driver tube, secured to the lower portion of the head of the machine directly in alinement with the driver, as is common in devices of this kind.

The one-sided head f' on the nail f is formed while the nail-carrier shaft H is being moved toward the position shown in Fig. 6, causing a portion of the upper end of the severed nail to be turned over to one side into the recess h' in the block H' by the conjoint action of the said shaft H and the cutting-disks K and L.

The operation of the machine is as follows: The operator places the shoe or material to be

nailed against the shield C on the lever C′ and presses it upward until the work is brought against the under side of the nipple P, by which the loose friction-pulley B is caused to convey a rotary motion to the driving-shaft, as is common in starting mechanism of this kind. During the first portion of the rotation of the driver-shaft the driver-bar is raised against the influence of its spring sufficiently to raise the driver entirely clear of the disks K L, as shown in Fig. 4, and at the same time the nail-carrier shaft H is rocked to the position shown in Fig. 4 for receiving in its perforation *h* the wire F, which is fed into it the proper distance by the action of the feed-rolls G G′. The movable cutter L is then rocked sufficiently to shear off and point the wire and at or about the same time to form the head of the nail by forcing a portion of the upper end of the severed nail into depression *h′* in the die or block H′, attached to the upper side of the nail-carrier shaft H, as shown in Fig. 5. The nail-carrier shaft is then rocked, so that its hole *h* is carried toward the left beyond the driver, as shown in Fig. 6, and is then turned in an opposite direction to relieve the head of the nail from the recess *h′* in said shaft and so as to bring the hole *h* in alinement with the driver, as represented in Fig. 7, when the driver is automatically released and forced downward by the influence of its spring, causing the now pointed and headed wire nail to be driven into the work, after which the nail-carrier shaft and movable cutter-disk resume their original positions, and so on during the operation of the machine.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a nailing-machine, the combination with a reciprocating driver-bar and driver, of a wire-feeding device, a perforated rocking nail-carrier shaft, a stationary cutting-disk, and a movable rocking cutting-disk for the purpose of automatically severing the wire, pointing and driving the nail into the work substantially as herein set forth and described.

2. In a nailing-machine, the combination with a reciprocating driver-bar and driver of a wire-feeding device, a perforated rocking nail-carrier shaft, having a head-forming recess at the upper portion of its perforation, a stationary and a movable rocking cutting-disk for the purpose of automatically severing the wire, pointing, heading and driving the nail into the work, substantially as herein set forth and described.

3. In a nailing-machine, the combination with a wire-feeding device, of a cutting device for pointing the nails, consisting of a stationary and a movable rocking disk having cutting edges substantially as and for the purpose set forth.

4. In a nailing-machine the combination with a wire-feeding device of a cutting device for pointing the nails, consisting of a stationary and a movable rocking disk having cutting edges and an oscillating nail-carrier shaft having a perforation to receive the wire and a recess at its upper portion for the formation of the head of the nail, substantially as and for the purpose set forth.

5. In a nailing-machine the combination with a wire-feeding device, of a cutting device for pointing the nails, consisting of a stationary and a movable rocking disk having cutting edges and a perforated nail-carrier shaft adapted to rock in such a manner that its nail-receiving perforation shall be swung out of alinement to opposite sides of the driver during the pointing and heading operation of the nail and so as to be held in alinement with the driver during the driving operation, substantially as herein set forth and described.

6. In a nailing-machine the herein-described mechanism for pointing the wire nails consisting of a stationary and a movable cutting-disk having recesses for receiving the driver, cutting edges for shearing off or pointing the nails and clearance-spaces for the driver and chips substantially as herein set forth and described.

7. In a nailing-machine the herein-described mechanism for pointing and heading the wire nails, consisting in combination a movable and a stationary cutting-disk having recesses for receiving the driver, cutting edges for shearing off or pointing the nails, clearance-spaces for the chips and a perforated oscillating nail-carrier shaft having a recess for heading the nails, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 7th day of January, A. D. 1897.

WILLIAM E. BAILEY.

Witnesses:
ALBAN ANDRÉN,
THEKLA ANDRÉN.