

(No Model.)

3 Sheets—Sheet 1.

G. A. AMBLER.
NAILING MACHINE.

No. 586,153.

Patented July 13, 1897.

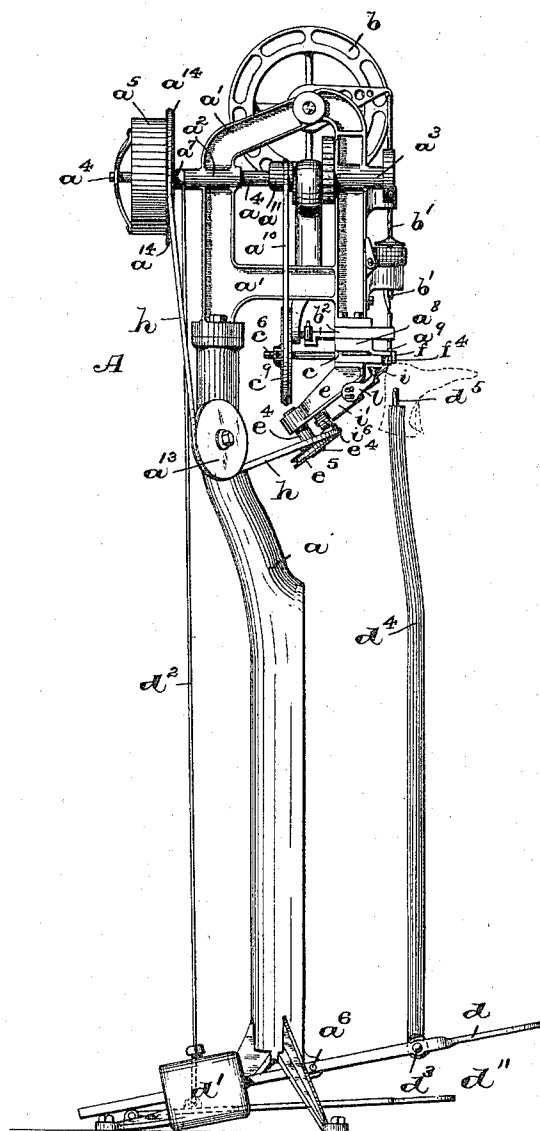


FIG. 1

WITNESSES:

Wm. H. Baufeld Jr.
J. H. Inscoe

INVENTOR:

GEORGE A. AMBLER.

BY

Fred C. Graetzl,
ATTORNEY

(No Model.)

3 Sheets—Sheet 2.

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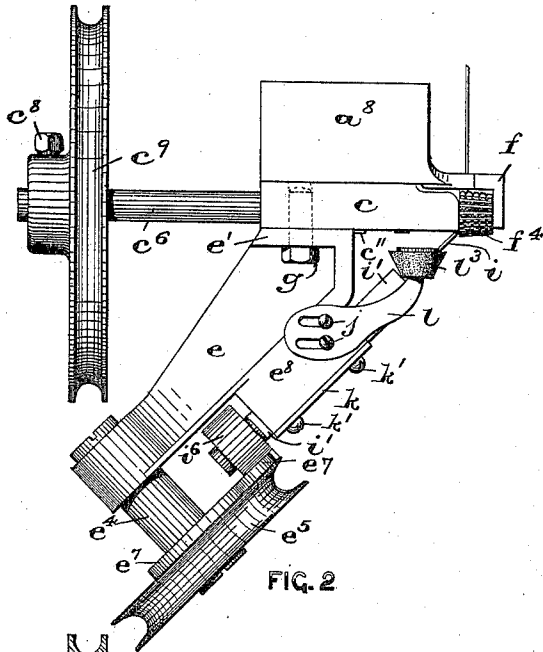


FIG. 2

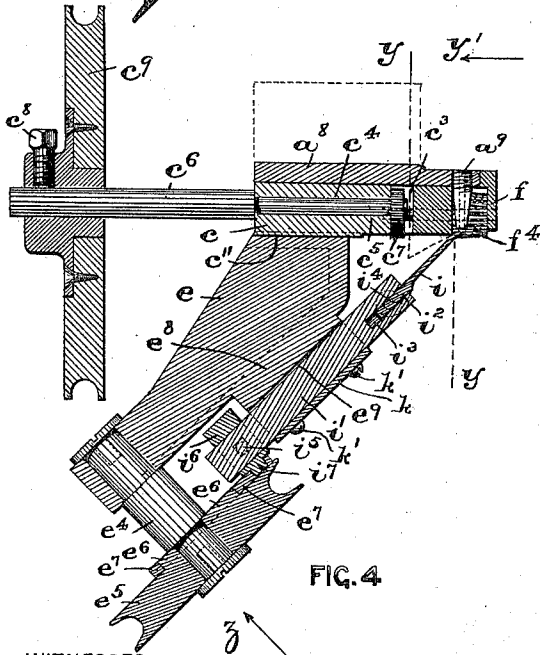


FIG. 4

WITNESSES:

Wm. H. Baupfield Jr.
J. H. C. Imboden

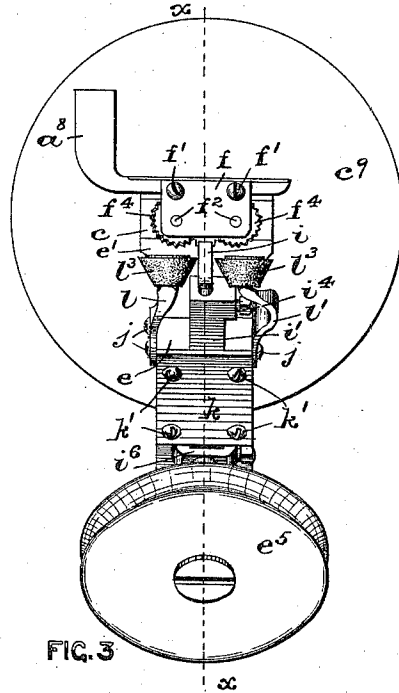


FIG. 3

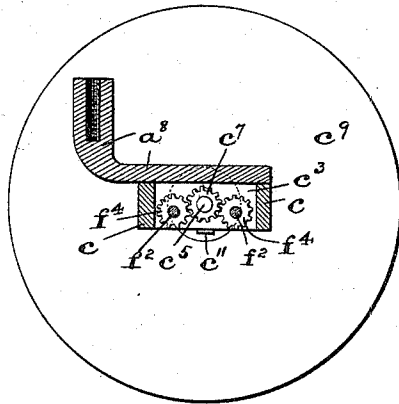


FIG. 5

INVENTOR:

GEORGE A. AMBLER.

BY

Fred C. Fraentzel,
ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE A. AMBLER, OF NEWARK, NEW JERSEY.

NAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 586,153, dated July 13, 1897.

Application filed January 11, 1896. Serial No. 575,109. (No model.)

To all whom it may concern

Be it known that I, GEORGE A. AMBLER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Nailing-Machines; and I do hereby 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 accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in nailing-machines; and it consists in the novel arrangements and combinations of the several parts of mechanism hereinafter fully set forth, and finally embodied in the clauses of the claim.

The invention is fully illustrated in the accompanying sheets of drawings, in which—

Figure 1 is a front elevation of a nailing-machine provided with the mechanism embodying the principles of my invention. Fig. 2 is a side view of my novel form of combined feeding device and cutting mechanism, and Fig. 3 is a front view of the same. Fig. 4 is a vertical section of the combined feeding device and cutting mechanism, taken on line *x* in Fig. 3; and Fig. 5 is a cross-section taken on line *y* in Fig. 4 and looking in the direction of arrow *y'*. Fig. 6 is a bottom view of the feeding device. Fig. 6^a is a cross-section taken on line *u u* in Fig. 6. Fig. 7 is a face view of the cutting or trimming mechanism represented in said Fig. 2, and Figs. 8 and 9 are perspective views of the different forms of gage-rollers adapted to be used in connection with the cutting mechanism. Fig. 10 is a side view of a portion of the standard of a nailing-machine and a modified form of construction of "jack" or standard on which the last and shoe to be nailed are supported.

Similar letters of reference are employed in all the above-described views to indicate corresponding parts.

In said drawings, A represents one of the well-known constructions of nailing-machines, comprising therein a suitable standard *a*, to which is secured a frame *a'* of proper shape to support the various working parts of the machine, said frame being provided

with suitable bearings *a*² and *a*³ for the main shaft or spindle *a*⁴, provided with a loose pulley *a*⁵ for receiving the driving-belt.

The several parts of the structure represented in Fig. 1, which are old, *per se*, are the wire-reel *b*, and the nailing device, of which *b'* is the driver-bar, and *b*² are parts of the mechanism for operating a device for severing the wire to form the nail.

Pivotally connected with the lower portion of the standard *a*, as at *a*⁶, is a foot-lever *d*, having a weight *d'* adjustably arranged thereon, and *d*² is a rod which is operatively attached to a foot-lever *d*¹¹ and is connected with a clutch-collar *a*⁷ on the shaft *a* for operatively connecting said loose pulley *a*⁵ with the shaft *a*, and thereby drive the several parts of the nailing-machine. Pivotally attached, as at *d*³, to said lever *d* is a rod *d*⁴, usually called the "jack," which is held in the left hand of the operator of the machine and is provided at the top with a short post or pivot *d*⁵ for the reception of the ordinary last on which the parts of the shoe are arranged, and can be brought directly into proper position beneath the novel form of feeding device when the soles are to be united to the upper of the boot or shoe or directly in front of the cutting-tool of the "trimming-off" mechanism to cut down the projecting edges of the sole and trim it off properly.

The construction of said feeding device is clearly illustrated in Figs. 2, 3, 4, 5, and 6, and consists, essentially, of a suitable plate or block *c*, secured by means of screws or rivets *c'* (see Fig. 6) to the portion *a*⁸ of the nailing-machine A in such a manner that the forward edge of said plate or block *c* is located directly behind a tubular post *a*⁹, which is secured in said portion *a*⁸ in the manner substantially as illustrated in Fig. 4, and through which post the nail or wire is forced by the driver-bar *b'* in the usual manner. Said block or plate *c* is cut away or grooved out, as at *c*² and *c*³, and is provided with a longitudinally-arranged hole *c*⁴, forming a bearing for the portion *c*⁵ of a spindle or shaft *c*⁶. Said portion *c*⁵ is preferably of a smaller diameter than the main portion of the spindle, whereby an offset or shoulder is formed, as clearly shown in Fig. 4. On the free end of said portion *c*⁵ of the spindle *c*⁶

is a pinion c^7 , which, with the shoulder on said spindle, retains the same in its rotative position in the hole c^4 in said plate or block c , as will be clearly evident from an inspection of Fig. 4. On the opposite end of said spindle c^6 I have secured, preferably by means of a set-screw c^8 , a suitable driving-wheel c^9 , over which I pass a belt a^{10} , which in turn is arranged over a pulley a^{11} on the main driving shaft or spindle a^4 of the machine A, as clearly represented in Fig. 1. In this manner the spindle c^6 rotates the pinion c^7 , as will be understood. Rotatively arranged in bearing portions c^{10} in said plate or block c and in perforations or holes in a bracket f , secured by means of screws f' or in any other well-known manner to the end of the portion a^8 of the machine A, are a pair of short spindles f^2 , each of which is provided with a gear-wheel f^3 , meshing with the pinion c^7 , arranged in the cut-away portion c^3 of the block c , and with suitably corrugated or serrated feed-rollers f^4 , substantially as illustrated in Fig. 6. From the arrangement of said pinion c^7 and the two gear-wheels f^3 it will be evident that the short spindles and hence the feed-rollers f^4 thereon will both turn in the same direction during the operation of the machine. Thus it will be evident that when the shoe on the jack has the edge of the outer sole placed beneath the feed-rollers f^4 the operator can easily hold the shoe in its position on the jack while the feed-rollers f^4 slowly turn the shoe, and the weight d' on the rod d forces the outer edge of the outer sole of the shoe into frictional contact with the corrugated or serrated surfaces of said feed-rollers f^4 , thereby causing the feeding operation, while the nails are driven through the outer sole and into the inner sole of the shoe to unite the several parts of the shoe in the usual and well-known manner.

In lieu of the construction of jack illustrated in Fig. 1 I may use the form shown in Fig. 10. In this instance the standard a of the machine A is provided with a pair of brackets a^{12} , having perforated ends, in which I arrange a rod d^6 , said rod being held in position by means of a collar d^7 , secured thereon by means of a set-screw d^8 and a coiled spring d^9 , which takes the place of the weight d' on the rod d and forces the rod d^4 , pivotally attached, as at d^{10} , upwardly in precisely the same manner as has just been described. Said rod may be provided with a foot-piece d^{12} for lowering the same when necessary.

If desired, I may use in connection with the several parts of the machine a cutting mechanism for trimming off the surrounding edge of the sole as it is being nailed fast. The construction of said cutting mechanism is clearly illustrated in Figs. 2, 3, 4, and 7, and consists, essentially, and as will be more clearly understood from an inspection of said Fig. 7, of a suitable bracket e , having the flanges e' , provided with perforations e^2 . Said

bracket is provided with a groove e^3 , which can be fitted over a correspondingly-arranged rib or projection c^{11} on the under side of the plate or block c (see Fig. 6) and then secured to said block or plate c by means of suitable bolts or screws g , which are screwed into the holes c^{12} in said plate c , as clearly shown in Fig. 2. In a bearing in the lower part of said bracket e I have arranged a spindle e^4 , provided with a grooved wheel e^5 , which is driven by means of a belt h , passing over an idler a^{13} and a suitable pulley-wheel a^{14} on the main shaft a^4 of the machine, substantially as illustrated in Fig. 1, but any other suitable means for operating said wheel e^5 may be employed. As will be seen from Figs. 2, 4, and 7, on one side of said wheel e^5 is a projection e^6 , which is eccentrically arranged in reference to the central axis of said spindle e^4 and has a ring e^7 loosely but operatively arranged thereon, substantially as shown. Said bracket is also provided with a forwardly-extending projection e^8 , which is grooved and forms a suitable guide e^9 for the shank i' of the cutting-tool i . A plate k is secured by means of screws k' or in any other well-known manner over said guide and thereby operatively retains the shank i' of the cutting-tool in said guide.

The cutting-tool i is connected with the shank i' in any well-known manner, but preferably by having its end i^2 arranged in a socket i^3 in the end of said shank i' and then fastened by means of a set-screw i^4 , as will be clearly understood. The lower end of the shank i' is adjustably secured by means of a set-screw i^5 to a collar i^6 , having a teat or projection i^7 , which fits into a hole in said ring e^7 on said eccentric projection, as shown in Fig. 4. To the opposite sides of said bracket e are secured, by means of screws j or otherwise, the adjustable arms l and l' , each of which has a pivotal post or screw l^2 on its end and on which are rotatively arranged certain gage-rollers l^3 , which may be formed as illustrated more particularly in Figs. 8 and 9, but they may be of any other suitable configuration, as will be evident. Said gage-rollers may be made of any suitable material, such as wood, metal, fiber, &c., but I prefer to use a comparatively soft material, such as rubber or the like.

When the outer surface of the outer sole is brought in contact with the feed-rollers f^4 , hereinabove mentioned, said gage-rollers l^3 act as guides to the operator and prevent the sole or shoe from being arranged improperly beneath the feed-rollers, and all nails to be driven into the sole will be equidistant from the surrounding edge of the sole, whereby a finished job is the result. These guides also serve the same purpose when the cutting mechanism is employed, and the rapidly-reciprocating cutter or knife will properly trim the surrounding edge of the outer sole of the shoe, as will be clearly evident.

From the above description it will be seen

that an operative device or attachment has been constructed which can be used on nailing-machines of any well-known construction as a feeding device during the process of joining the soles to the upper of the shoe by means of wire nails, or it may be used solely as a trimmer for cutting down the surrounding edge of the sole of the shoe, or it may be used as a combined feeding and trimming attachment in machines of this class.

In the manufacture of hand-sewed shoes my novel form of attachment, hereinabove described, can be used for tacking the outer sole to the shoe and trimming around the seat of the sole, after which the shoe is ready to be finished.

I am fully aware that many changes may be made in the details of construction and the general arrangements of the several parts of mechanism herein set forth without departing from the scope of my invention. Hence I do not limit my invention to the exact arrangements and combinations of parts as herein described and illustrated.

Having thus described my invention, what I claim is—

1. In a nailing-machine, the combination, with the jack and the nailing device of the machine, of a feeding device for feeding the sole of the shoe beneath said nailing device, and arms, as l and l' , having gage-rollers thereon, and said arms being slotted at their lower ends and provided with screws j , for adjustably securing an arm to each side of said feeding device, substantially as and for the purposes set forth.

2. In a nailing-machine, the combination, with the jack and the nailing device of the machine, of a feeding device, comprising, a plate or block c , means for attaching said plate or block to the machine, a main spindle rotatively arranged in connection with said block, a feed-roller, as f^4 , and a pulley-wheel c^9 on said spindle, and pulley-wheels a^5 and a^{10} on the frame of the machine, for operating said spindle, substantially as and for the purposes set forth.

3. In a nailing-machine, the combination, with the jack and the nailing device of the machine, of a feeding device, comprising, a plate or block c , means for attaching said plate or block to the machine, a main spindle rotatively connected with said block, a pinion on said spindle, a pair of spindles, as f^2 , gear-wheels on said spindles f^2 , meshing with said pinion, and a feed-roller on each spindle f^2 , substantially as and for the purposes set forth.

4. In a nailing-machine, the combination, with the jack and the nailing device of the machine, of a feeding device, comprising, a plate or block c , means for attaching said plate or block to the machine, a main spindle rotatively connected with said block, a pinion on said spindle, a pair of spindles, as f^2 , gear-wheels on said spindles f^2 , meshing with said pinion, a feed-roller on each spindle f^2 , and

a pulley-wheel c^9 on said main spindle, substantially as and for the purposes set forth.

5. The herein-described feeding device, comprising therein, a plate or block c , a main spindle rotatively connected with said block, a pinion on said spindle, a pair of spindles, as f^2 , gear-wheels on said spindles f^2 , meshing with said pinion, and a feed-roller on each spindle f^2 , substantially as and for the purposes set forth.

6. The herein-described feeding device, comprising therein, a plate or block c , a main spindle rotatively connected with said block, a pinion on said spindle, a pair of spindles, as f^2 , gear-wheels on said spindles f^2 , meshing with said pinion, a feed-roller on each spindle f^2 , and a pulley-wheel c^9 on said main spindle, substantially as and for the purposes set forth.

7. In a nailing-machine, the combination, with the operating mechanism of the machine, of a cutting device for trimming the edge of the sole of the shoe, comprising therein, a bracket e , a spindle e^4 , a wheel e^5 on said spindle, a guide in said bracket, a reciprocally-moving cutter in said guide, and means for adjustably connecting said cutter with said wheel, consisting, essentially, of an eccentric connected with said wheel, and a collar and set-screw connecting the one end of said cutter with said eccentric, substantially as and for the purposes set forth.

8. The herein-described cutter mechanism, comprising therein, a bracket e , a spindle e^4 , a wheel e^5 on said spindle, a guide in said bracket, a reciprocally-moving shank in said guide, a cutter connected with said shank and means for connecting said shank with said wheel, consisting essentially, of an eccentric connected with said wheel, and a collar and set-screw connecting the one end of said shank with said eccentric, substantially as and for the purposes set forth.

9. The herein-described cutter mechanism, comprising therein, a bracket e , a spindle e^4 , a wheel e^5 on said spindle, a guide in said bracket, a reciprocally-moving shank in said guide, a cutter connected with said shank, and means for connecting said shank with said wheel, consisting, essentially, of an eccentric connected with said wheel, and a collar and set-screw connecting the one end of said shank with said eccentric, and a pair of arms l and l' , on said bracket having gage-rollers, substantially as and for the purposes set forth.

10. The herein-described cutter mechanism, comprising therein, a bracket e , a spindle e^4 , a wheel e^5 on said spindle, a guide in said bracket, a reciprocally-moving shank in said guide, a cutter connected with said shank, and means for connecting said shank with said wheel, consisting, essentially, of an eccentric connected with said wheel, and a collar and set-screw connecting the one end of said shank with said eccentric, and a pair

of arms *l* and *l'* on said bracket and having gage-rollers, substantially as and for the purposes set forth.

11. In a combined feeding device and trimming mechanism for nailing-machines, in combination, a plate or block *c*, a main spindle rotatively connected with said block, a pair of spindles *f*², a feed-roller on each spindle *f*², means for operating said spindles *f*² from said main spindle, a bracket *e* attached to said block *c*, a spindle *e*⁴, a wheel *e*⁵ on said spindle, a guide on said bracket, a reciprocally-moving cutter in said guide, and means connecting said cutter with said wheel *e*⁵, consisting, essentially, of an eccentric connected with said wheel, and a collar and set-screw, connecting the one end of said cutter with said eccentric, substantially as and for the purposes set forth.
12. In a combined feeding device and trimming mechanism for nailing-machines, in combination, a plate or block *c*, a main spindle rotatively connected with said block, a pinion on said spindle, a pair of spindles *f*², gear-wheels on said spindles *f*², a bracket *e* attached to said block *c*, a spindle *e*⁴, a wheel *e*⁵ on said spindle, a guide on said bracket, a

reciprocally-moving cutter in said guide, and means for connecting said cutter with said wheel *e*⁵, substantially as and for the purposes set forth.

13. In a combined feeding device and trimming mechanism for nailing-machines, in combination, a plate or block *c*, a main spindle rotatively connected with said block, a pinion on said spindle, a pair of spindles *f*², gear-wheels on said spindles *f*², a bracket *e* attached to said block *c*, a spindle *e*⁴, a wheel *e*⁵ on said spindle, a guide on said bracket, a reciprocally-moving cutter in said guide, and means for connecting said cutter with said wheel *e*⁵, consisting, essentially, of an eccentric connected with said wheel, and a collar and set-screw connecting the one end of said cutter with said eccentric, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 8th day of January, 1896.

GEO. A. AMBLER.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.