

No. 679,868.

Patented Aug. 6, 1901.

J. H. SOUTHCOTT.
NAILING MACHINE.

(Application filed Jan. 10, 1900.)

(No Model.)

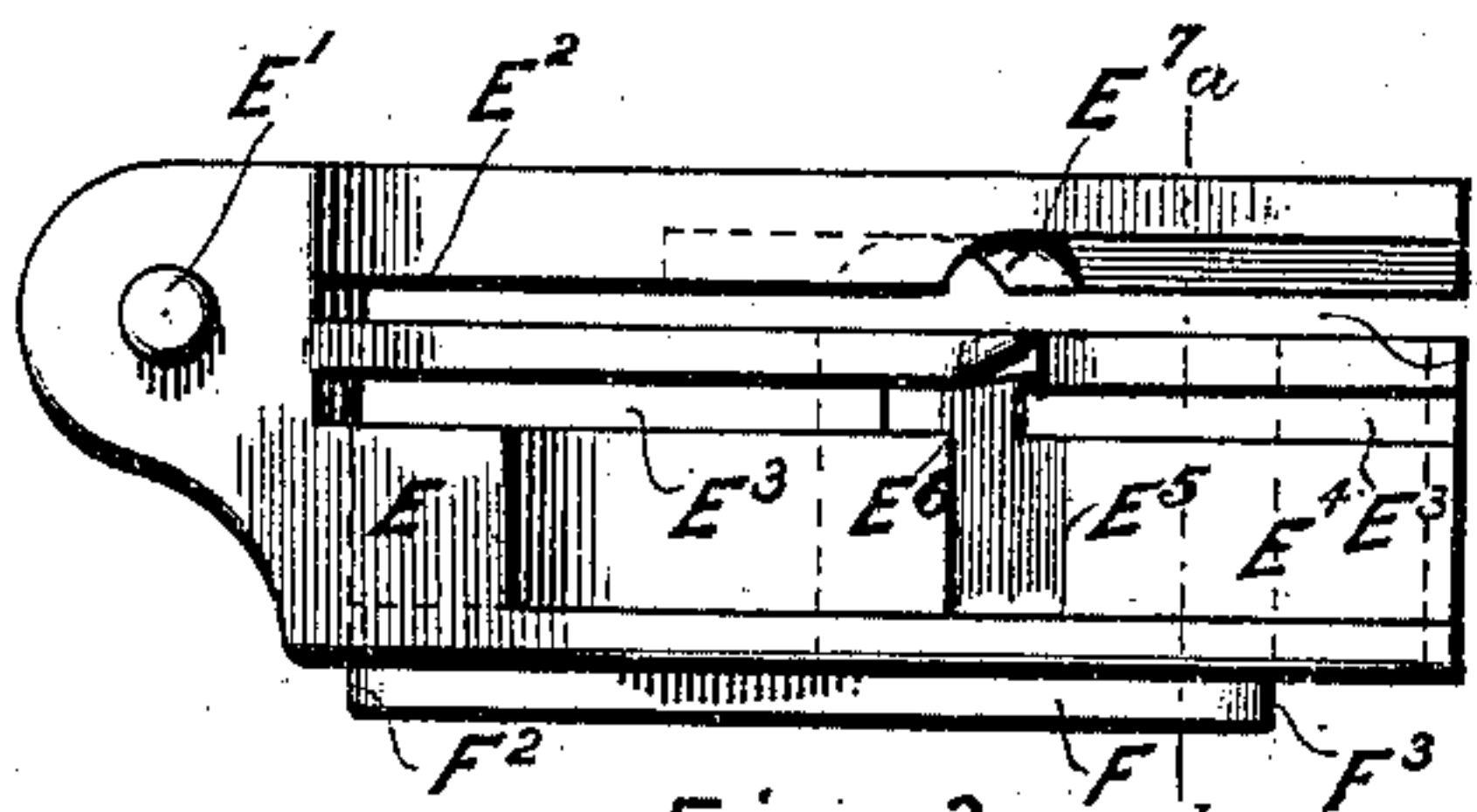


Fig. 3.

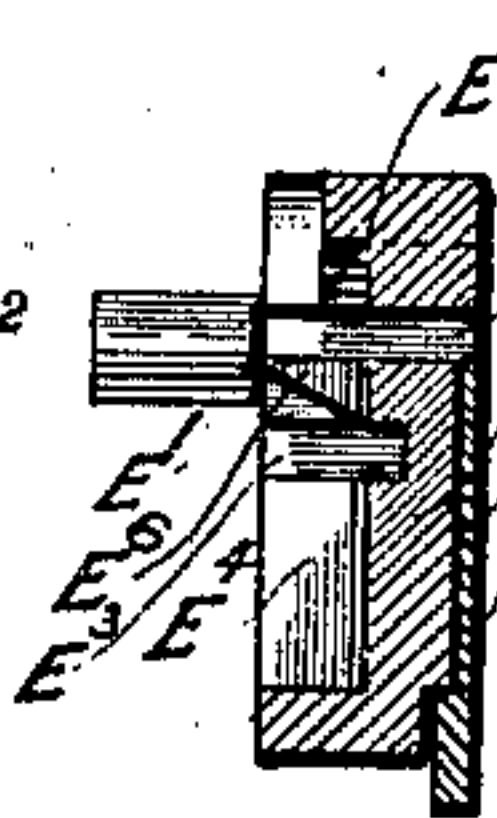


Fig. 5.

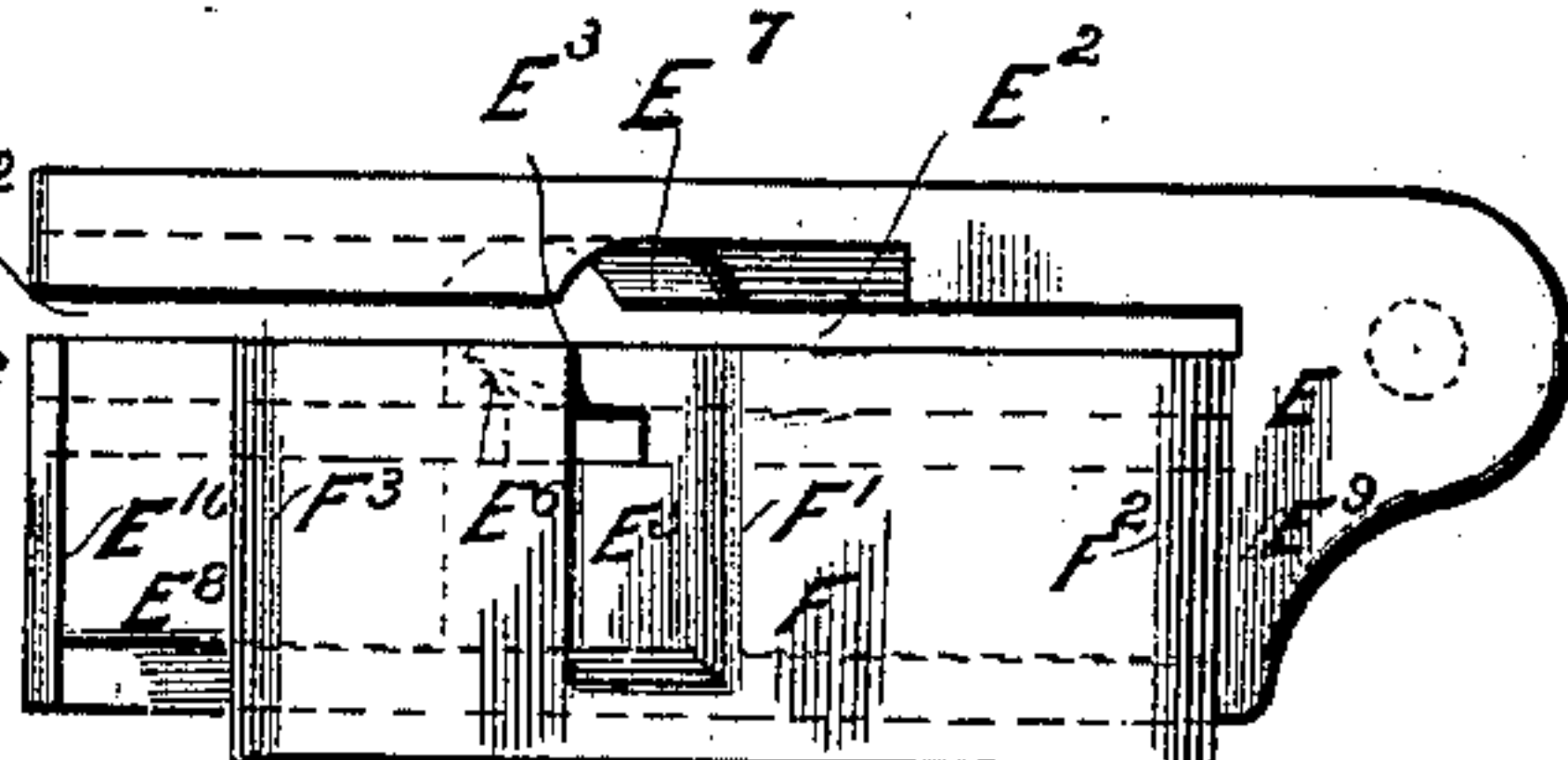


Fig. 6.

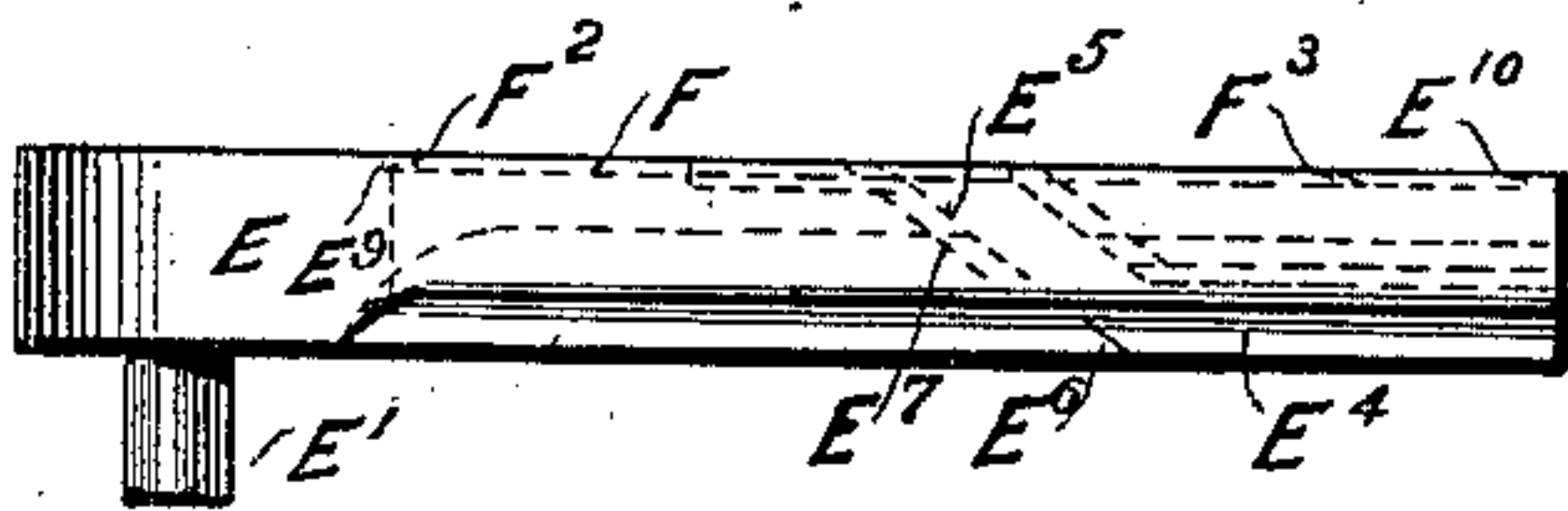


Fig. 4.

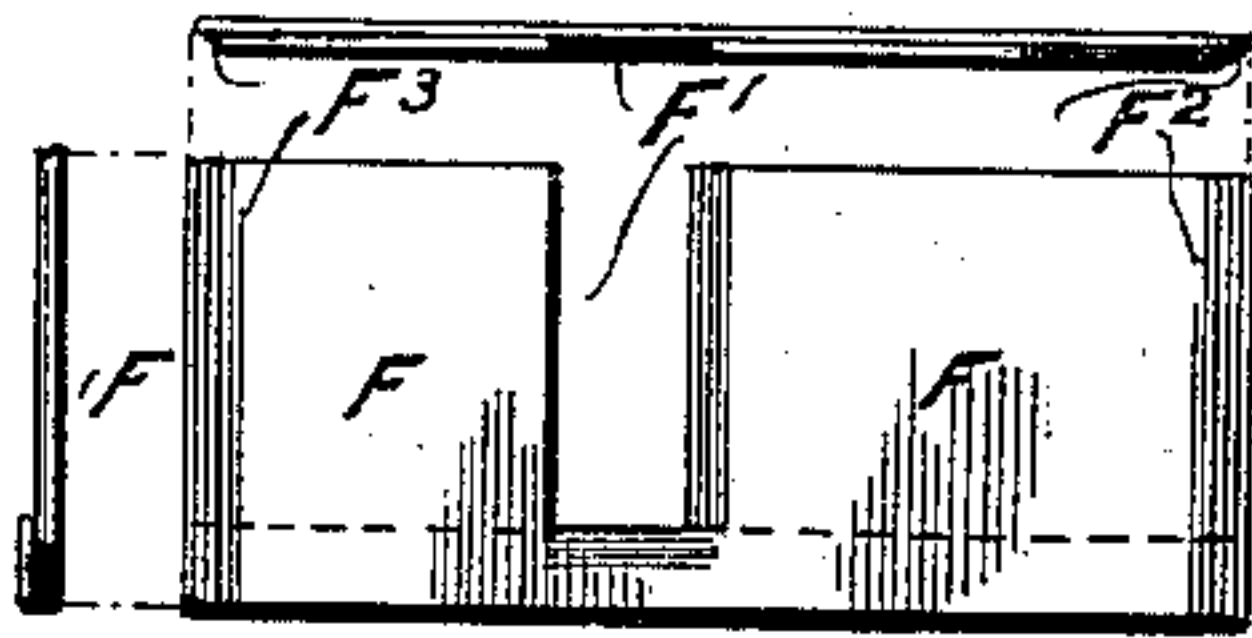


Fig. 7.

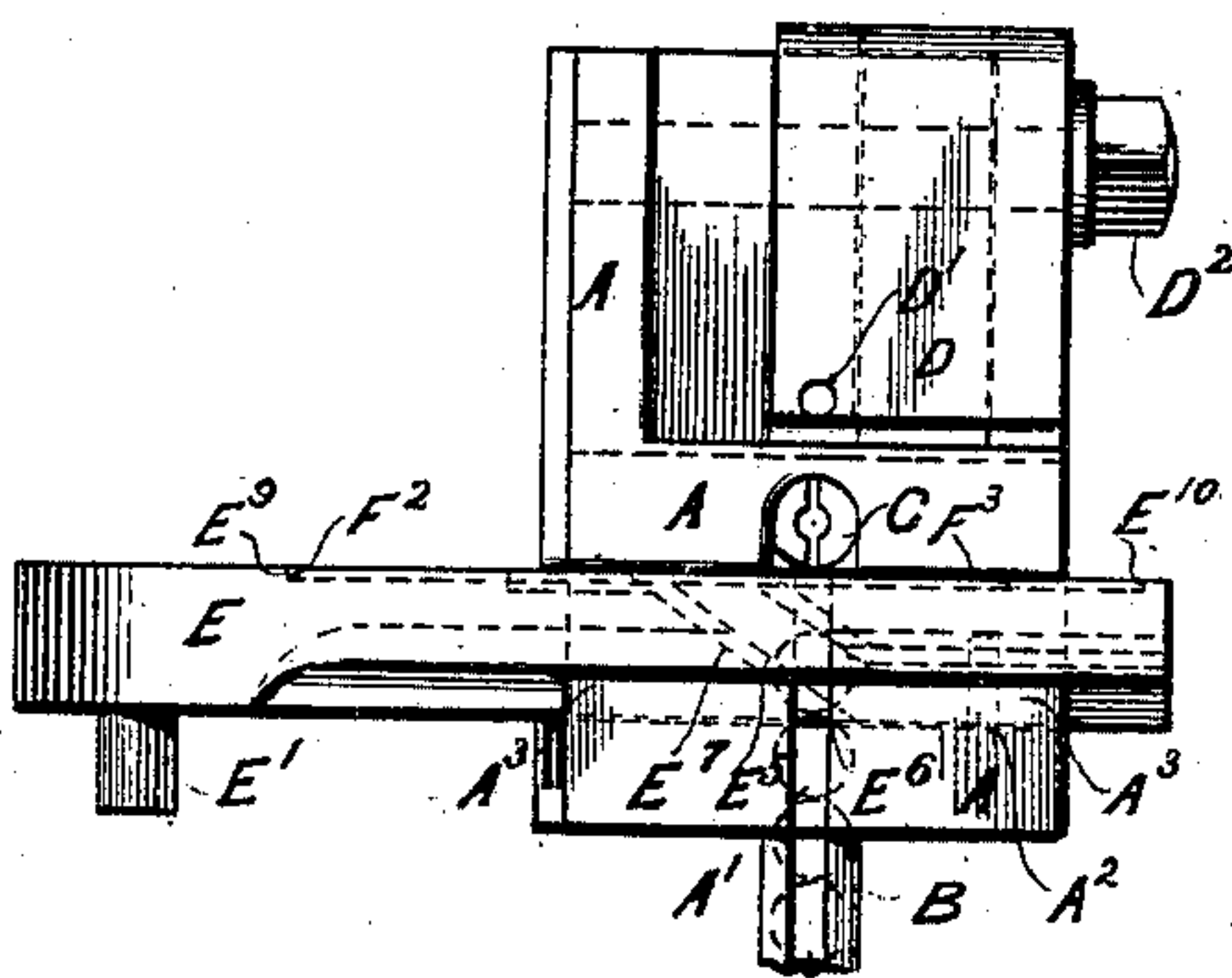


Fig. 1.

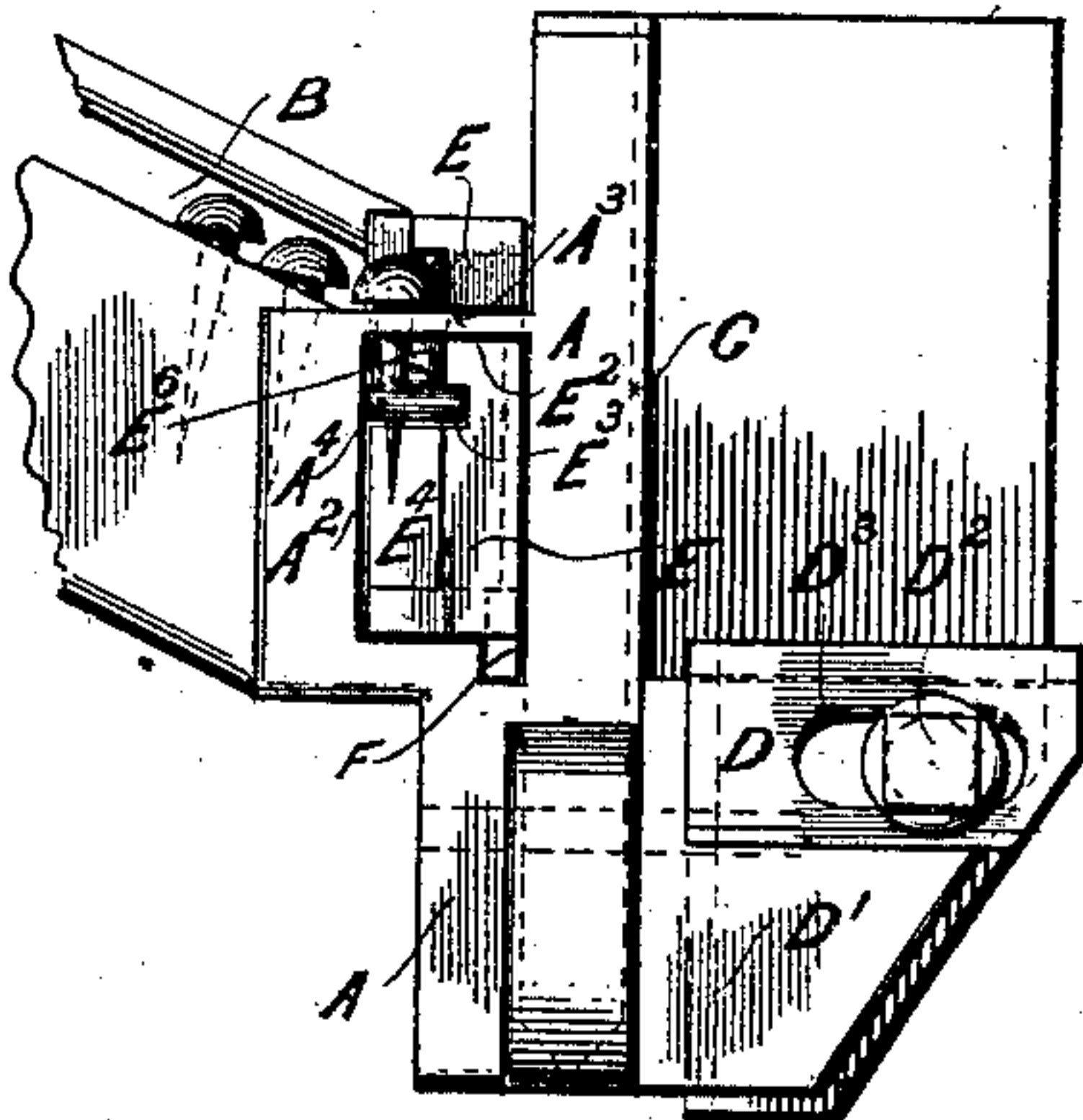


Fig. 2.

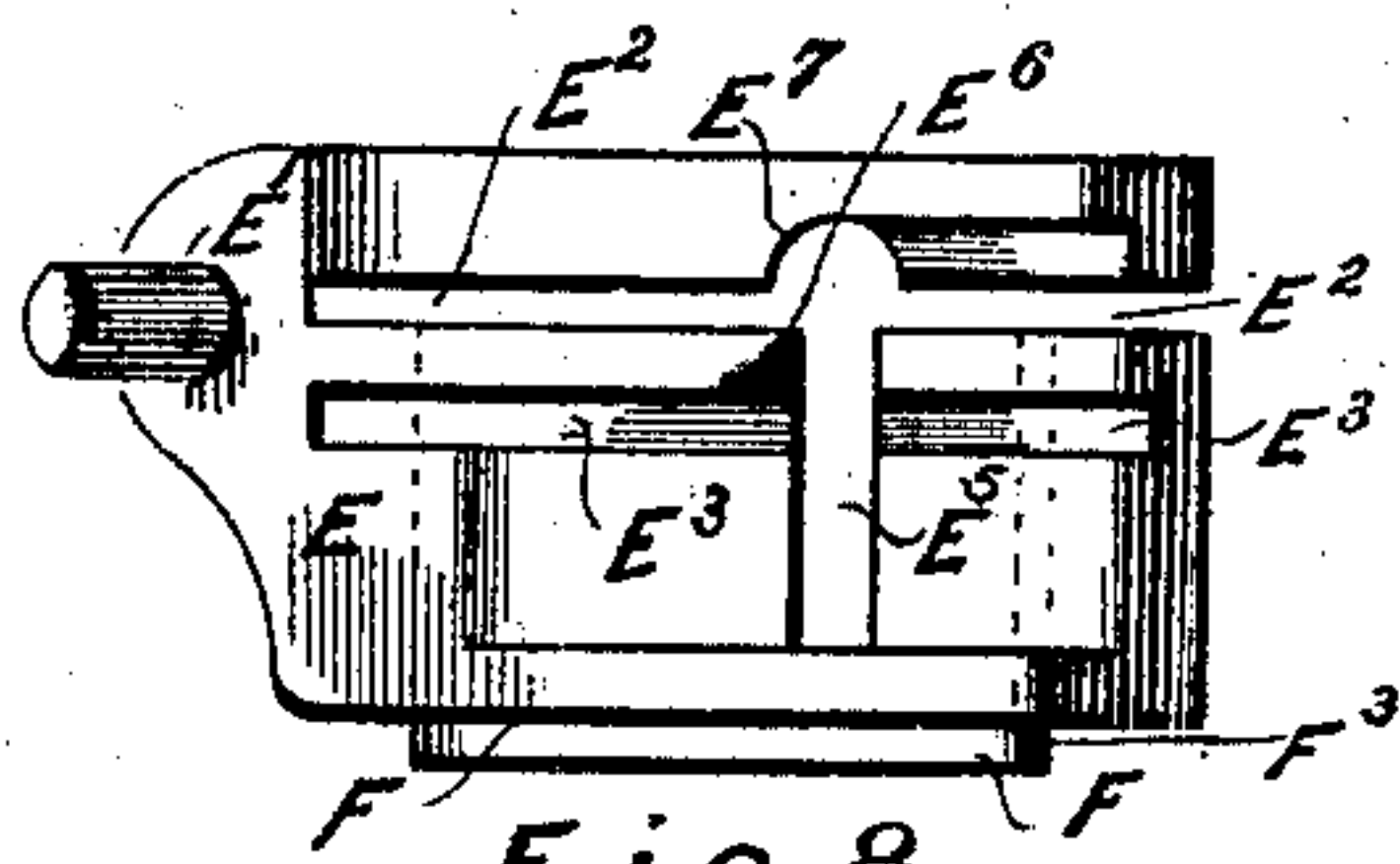


Fig. 8.

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UNITED STATES PATENT OFFICE.

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NAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 679,868, dated August 6, 1901.

Application filed January 10, 1900. Serial No. 972. (No model.)

To all whom it may concern:

Be it known that I, JAMES HENRY SOUTHCOTT, machinist, a subject of the Queen of Great Britain, and a resident of 196 Gilles street, Adelaide, in the Colony of South Australia, have invented new and useful Improvements in Nailing and Riveting Machines, of which the following is a specification.

My invention relates to certain improvements in machines used in the manufacture of boots and shoes, and more particularly to machines for driving nails, rivets, or tacks into the soles of such boots and shoes.

My invention is applicable either for driving the small rivets or tacks for fixing the soles to the uppers or may be also adapted for driving nails having projecting heads into the outside of the soles of boots and shoes.

In this specification my invention will be described as applied to nails; but it will be well understood that it is equally applicable to rivets and tacks, and the term "nails" may be held to include rivets, tacks, and the like.

Hitherto these two operations of nailing and riveting have usually been performed by entirely different machines. It has been found that the machines used for driving small tacks or rivets are not suitable for nails having projecting heads. These nails are usually

irregular in shape and size, and their heads being top-heavy they are liable to turn over before coming under the driver by which they are driven into the boots or shoes. In the machines at present in use the nails or rivets when separated fall by their own weight

into position underneath the driver, by which they are driven into the boot or shoe. The speed of the machine or the rate at which the nails or rivets may be driven is thus

limited to the rate at which the nails or rivets will fall when released.

The object of my invention is to provide a machine by which nails may be driven at a greatly-increased speed, thereby effecting a great saving in time, power, and labor. I accomplish this object by constructing a machine having an improved distributor by

which the nails are separated as delivered from the supply-chute and automatically

forced forward one at a time to the driver-channel. This distributor reciprocates backward and forward as the driver rises and falls and mechanically forces the next nail into position beneath the driver as it rises for a fresh blow. Each nail being thus forced into position at each motion of the distributor, the speed at which the machine is driven is not limited to the rate at which the nails will fall by their own weight. For the purposes of my invention I construct a machine having a reciprocating distributor working at right angles to the nail-delivery chute. This distributor is provided from side to side in one direction with a transverse slot arranged at an angle, through which each nail passes and is forced into the driver-channel. In order to prevent the nails engaging this slot as the latter comes into position upon the backward stroke, I provide a sliding shutter which alternately opens and closes the opening. This sliding shutter is worked backward and forward by the reciprocating motion of the distributor and is so arranged as to keep the outlet of the slot open during the first part of the forward motion and closed during the first part of the backward motion of the distributor. As the driver is raised the nail is forced into position beneath the same and is then driven into the boot or shoe by the downward motion of the said driver.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a plan of the nose or casing of a machine embodying my improvements. Fig. 2 is an end elevation of the same. Fig. 3 is a side view of my improved distributor. Fig. 4 is a plan of the same; Fig. 5, a cross-section of the same on the line *ab*, Fig. 3. Fig. 6 is a back view of the same, showing the sliding shutter. In Fig. 7 are detail views of the sliding shutter. Fig. 8 is a part end view and part side view of the distributor looking direct through the slot, arranged at an angle, through which the nails pass, the direction of view being indicated by arrow 8, Fig. 4. The shading at the right end of Fig. 8 indicates the rear end of body E.

A is the nose or casing of the machine, constructed of steel or other suitable material. This nose or casing A is fitted to the machine as may be required and may be adapted to any suitable device or driving-gear for actuating the driver and awl-bar, all of which being well known and not forming part of this invention I do not propose to describe.

The nails are fed down by a chute B from a supply-hopper in the usual way and pass into a narrow channel or slot A' cut in the casing A. This channel A' is of sufficient width to receive the bodies of the nails, but their heads bear upon the top of the casing, as shown in Fig. 1. The channel A' leads direct to the driver-channel C in such manner that as each nail is fed in by the distributor it passes immediately beneath the driver, by the downward stroke of which it is driven into the boot or shoe. The nose or casing A is further provided with an adjustable awl-guide D, having a channel D', through which the awl passes. This awl-guide D is recessed to fit the casing A and is held in place by a set-screw D² passing through a longitudinal slot D³. The awl-guide may thus be adjusted toward and from the driver-channel C.

In order to separate the nails as delivered from the chute B as they pass into the channel or slot A' and distribute them one at a time to the driver-channel C, the casing A is provided with a recess A², arranged at right angles to the supply-chute B and channel A'. This recess A² extends right through the casing A and is provided with a cover or bridge A³, forming a part of the casing, as shown in the drawings. The recess is further provided with a guide-pin A⁴, engaging a slot in the distributor, as hereinafter described.

Within the distributor-recess A² works the distributor E, by which the nails are separated and delivered one at a time to the driver-channel. This distributor E is driven forward and backward within the recess A² in correspondence with the rising-and-falling motion of the driver within the driver-channel C. For this purpose it is provided with a pin or stud E', by which it is given a reciprocating motion from suitable mechanism operated in the same manner as the driver and awl-bar. The distributor E is provided with a longitudinal slot E², extending right through the same and engaging the cover or bridge A³ of the recess A² within the casing A. It is thus held rigidly in position and affords a suitable guide for the same. As an additional guide the distributor E is provided with a further slot E³, engaging the pin A⁴, arranged within the recess A², as shown in Fig. 2. The reciprocating distributor E is further cut away longitudinally for the greater portion of its length, as shown at E⁴ in Figs. 3, 4, and 5, to decrease its weight, but leaving the projecting point E⁶ to engage and push forward the nails. It also decreases the length of slot E⁵ and leaves the way clear for the passage of nails into slot E⁵.

In order to separate the nails and deliver them one at a time and force them into position in the driver-channel C, the distributor E is provided with a transverse slot E⁵, extending obliquely through the distributor from side to side in such position that as the distributor is reciprocated the end of slot E⁵ toward the chute B passes across the lower end of the chute and the projecting point E⁶ engages the last nail on the forward motion of the distributor. This slot E⁵ is enlarged at its upper portion, as at E⁷, Figs. 5 and 6, for the reception of the heads of the nails as they pass through. As the distributor E moves forward the slot E⁵, set at an angle or obliquely through the distributor, engages the body of the nail below its head and forces it from the channel A' in the casing A into the driver-channel C. The enlarged part E⁷ of slot E⁵ extends obliquely through the distributor in the same direction as the lower part of slot E⁵, and one side of said part E⁷ operates against the head of the nail, pushing it along, while the point E⁶ and lower part of slot E⁵ are operating on the nail-shank. By thus operating on the nail-shank and on the nail-head the nail is caused to move in proper upright or nearly upright position with no danger of being pushed out of position by the action of the distributor. The nails are thus delivered to the driver-channel C upon the forward motion of the distributor E.

In order to prevent the nails engaging the inclined slot E⁵ as the latter comes back into position upon the backward stroke, I provide a sliding shutter which closes the outlet of the slot upon the backward stroke of the distributor E. For this purpose the distributor E is recessed at the back for the greater portion of its length, as at E⁸, having shoulders E⁹ and E¹⁰, respectively, at each end. Within this recess E⁸ works a sliding shutter F, having an opening F', corresponding with the outlet of the slot E⁵, which delivers the nails. This sliding shutter F is made shorter than the recess E⁸, and upon the forward motion of the distributor the end F² engages the shoulder E⁹ at the back, and the shutter is carried forward with it. Upon this forward motion the opening F' coincides with the outlet of the slot E⁵, arranged at an angle, and a nail is allowed to pass through. When the reciprocating distributor E stops to come on the backward stroke, the sliding shutter F, being shorter than the recess E⁸, remains stationary until the shoulder E¹⁰ engages the end F³ of the shutter F. During the period while this shutter F remains stationary the outlet of the slot E⁵ moves back past the corresponding opening F' in the shutter F and is thus effectually closed during the backward motion of the distributor, and nails are thus prevented from working back into the same. Upon the next forward motion of the distributor E the shutter again remains stationary until the shoulder E⁹ again engages the end F² of the shutter F and the opening F' again co-

incides with the outlet of the slot E⁵, thereby allowing another nail to pass through as delivered by the forward motion of the distributor E.

5 Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

10 1. A distributor having a slot E⁵ extending obliquely therethrough from side to side of said distributor, means for reciprocating the distributor, the distributor having a point E⁶ at the front end of slot E⁵, means for delivering nails to the distributor in position to
15 be engaged below their heads and moved forward by point E⁶ into slot E⁵ one side of which slot then engages and moves the nail through, said slot E⁵ having an enlarged part E⁷ for the nail-heads.

20 2. The combination in a nailing-machine, of a delivery-channel for nails, a reciprocating distributor E having an oblique slot E⁵ therethrough, the distributor having a point E⁶ at the forward end of slot E⁵, said slot E⁵
25 having an enlarged part E⁷, for the nail-heads, the side of the distributor on which point E⁶ terminates having a recess E⁴ giving a passage-way for the nail-bodies to slot E⁵.

30 3. The combination in a nailing and riveting machine, of a casing having a delivery-slot and a driver-channel, a reciprocating distributor movable between said slot and channel, the distributor having a slot E⁵ extending obliquely in one direction through the

distributor and adapted to communicate with 35 the slot in the casing, point E⁶ at the forward end of the slot, the distributor having a portion cut away at E⁴ below point E⁶, the distributor having a plurality of guide-slots, and corresponding parts carried by the cas- 40 ing moving in said slots.

4. The combination in a nailing and riveting machine of a casing having a delivery-channel and a driver-channel, a reciprocating distributor movable between said chan- 45 nels, the distributor having a slot E⁵ extending obliquely through the distributor, a sliding shutter movable to close and open slot E⁵, the shutter being moved by the distributor to close the slot E⁵ during movement of the dis- 50 tributer in one direction and to open it during its movement in the opposite direction.

5. The combination of distributor E having oblique slot E⁵ therethrough, and point E⁶ at the forward end of the slot, of means 55 for delivering nails to the distributor, a driver-channel, and a shutter moved by the distributor at the proper times to open and close the slot E⁵, the distributor having a partial movement independent of the shutter while 60 said shutter remains at rest.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES HENRY SOUTHCOTT.

Witnesses:

CHARLES S. BURGESS,
ARTHUR W. BOWEN.