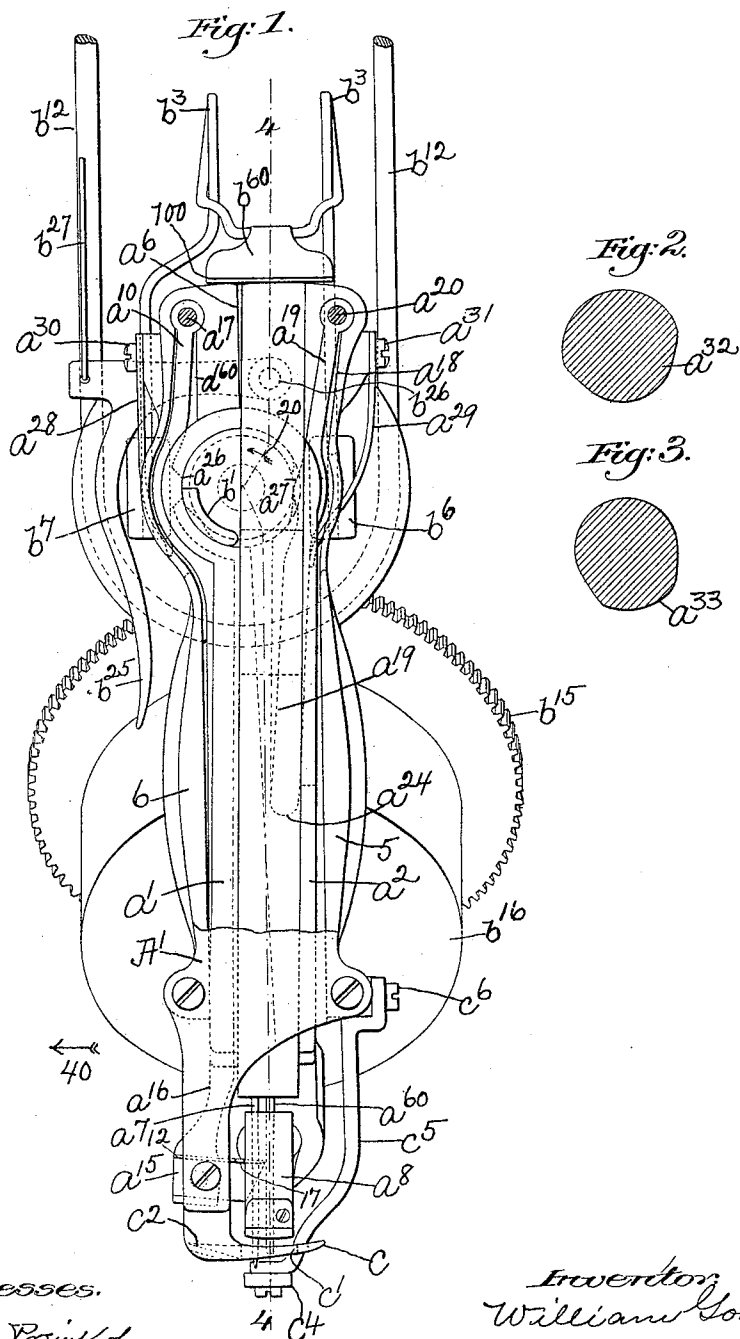


W. GODDU.
NAILING MACHINE.

No. 583,047.

Patented May 25, 1897.



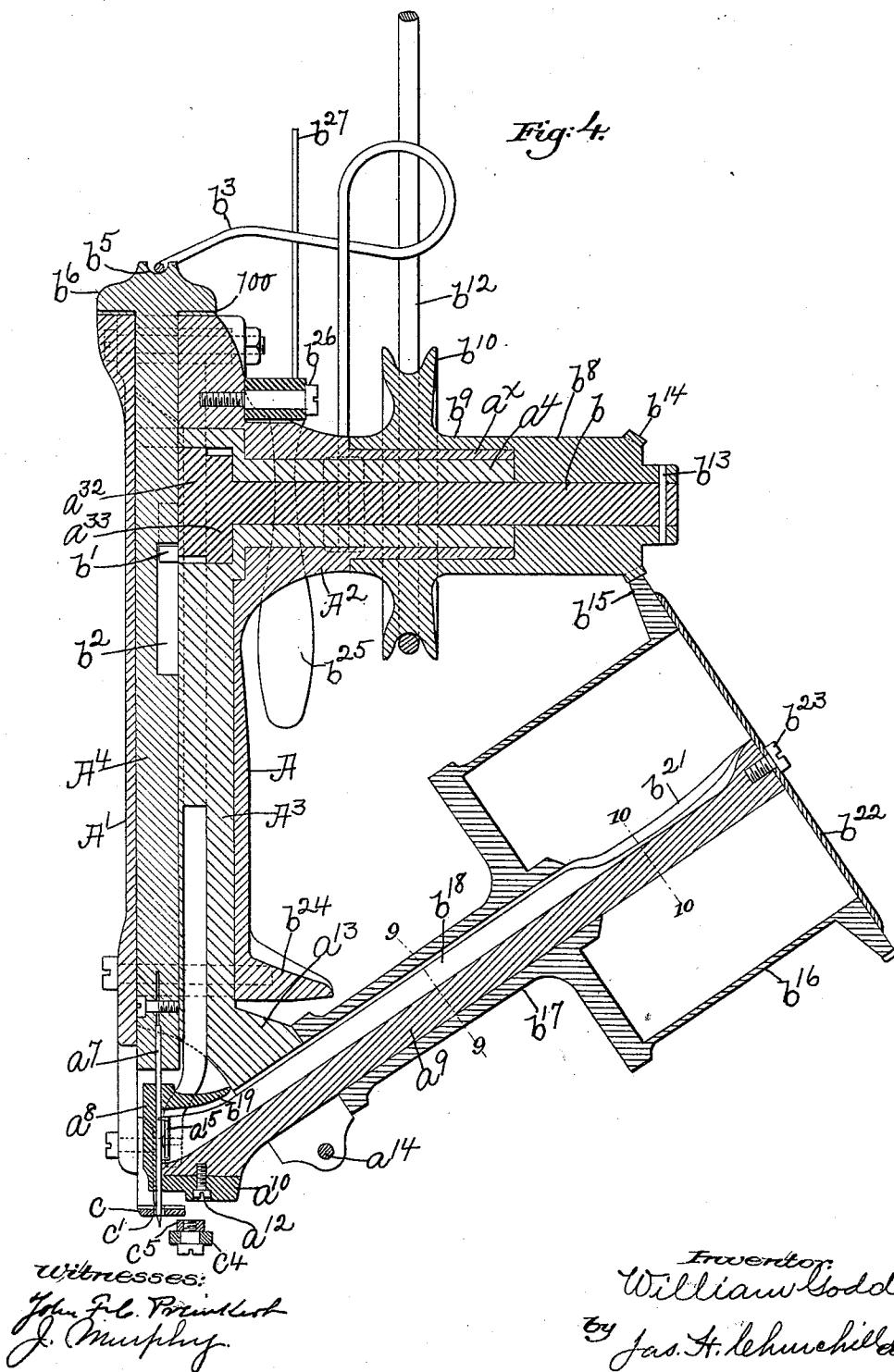
(No Model.)

3 Sheets—Sheet 2.

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(No Model.)

3 Sheets—Sheet 3.

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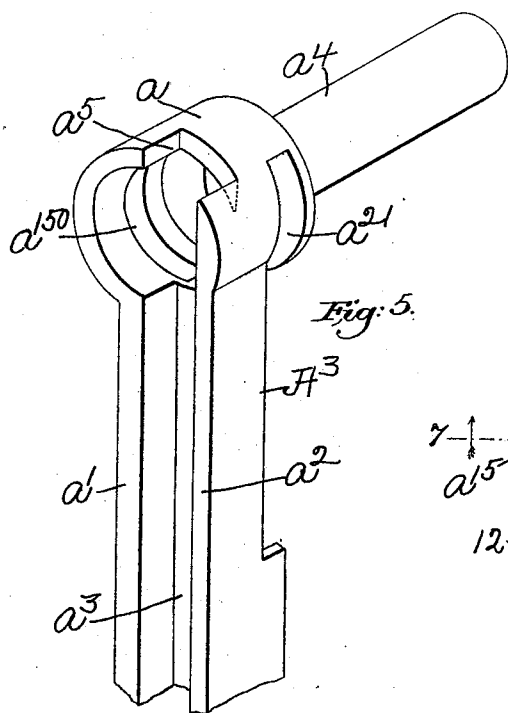


Fig. 5.

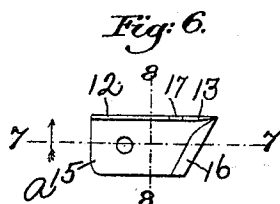


Fig. 6.



Fig. 7.



Fig. 8.

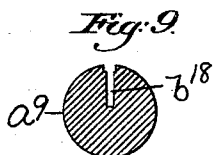


Fig. 9.

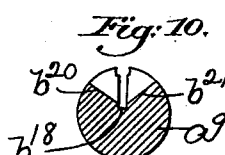


Fig. 10.

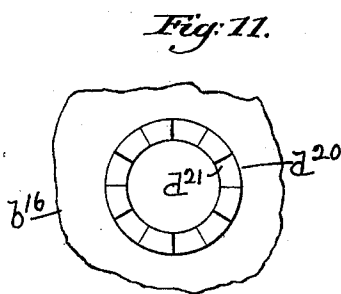


Fig. 11.

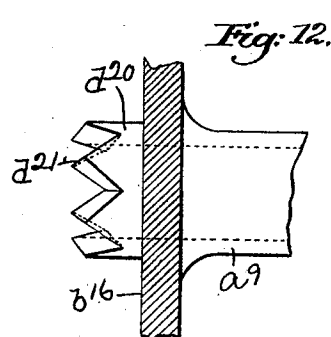


Fig. 12.

Witnesses.

John F. C. P. Smith
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William Goddu
by Jas. H. Churchill atty.

UNITED STATES PATENT OFFICE.

WILLIAM GODDU, OF WINCHESTER, MASSACHUSETTS.

NAILING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 583,047, dated May 25, 1897.

Application filed July 16, 1896. Serial No. 599,401. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GODDU, residing in Winchester, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Nailing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention relates to a machine for driving loose nails.

My present invention has for its object to provide a machine more especially designed and adapted, among other uses, to be employed for nailing welts to the upper and inner sole.

In accordance with this invention the machine is provided with a driver for the nails, carried by a movable or swinging frame which is pivotally supported by a main casing or frame which is itself adapted to turn or swing on the driver-carrying frame to effect a proper and substantially uniform spacing of the nails driven into the welt or other work, the said frames turning or swinging one on the other alternately, as will be hereinafter more fully described.

The movable driver-carrying frame has co-operating with it a raceway for the loose nails and a hopper from which the raceway leads to a nose-piece or driver-guideway, between which and the end of the raceway is interposed a separator for the nails, which separator is pivotally attached to the swinging main frame and is adapted to be automatically operated, as will be described.

The main casing or frame, the driver, and the separator are and may be operated, in a manner as will be described, by means of suitable cams mounted on a shaft which is power-driven, the said driver being moved in one direction by one of the said cams and being moved in an opposite direction by a spring or other suitable medium. The hopper containing the loose nails may and preferably will be mounted upon the raceway to rotate thereon, and is rotated from the main shaft of the power-operated movable nailer. The movable main frame for the machine may have secured to or forming part of it a presser-foot preferably provided with a guide for the welt which is to be laid upon and fastened

to the shoe, and the said frame may be further provided with a guide or gage to insure the welt being laid and fastened to the upper at a uniform distance from the side or edge of the shoe, in a manner as will be described. The complete apparatus is portable, and is adapted to be held in one hand of the operator and guided about a shoe secured on a suitable support, as will be described. These and other features of this invention will be pointed out in the claims at the end of this specification.

Figure 1 is a front elevation of a nailing-machine embodying this invention, the upper portion of the cover or front plate for the main frame being broken away to more clearly show the driver and its supporting-frame; Figs. 2 and 3, sectional details of cams to be referred to; Fig. 4, a vertical longitudinal section of the apparatus shown in Fig. 1 on the line 4 4; Fig. 5, a detail in perspective of the driver-carrying frame broken away; Fig. 6, a detail in elevation of the separator, to be referred to; Fig. 7, a section of the separator shown in Fig. 6 on the line 7 7, looking in the direction of the arrow thereon; Fig. 8, a section on the line 8 8, Fig. 6; Fig. 9, a sectional detail of the raceway, taken about on the line 9 9, Fig. 4; Fig. 10, a sectional detail of the raceway, taken on the line 10 10, Fig. 4; and Figs. 11 and 12, details to be referred to.

In accordance with this invention the main operating parts in my improved instrument are supported or carried by what I prefer to designate as the main framework of the instrument, which framework in the present instance consists, essentially, of an inclosing hollow casing A, provided with a removable front piece or cover A', and having extended from the rear side of the upper end thereof, as herein shown, a tubular hub A². The main or shank portion of the casing A is preferably bulged on its sides 5 6 (see Fig. 1) to afford a more convenient hold for the hand of the operator.

The main framework or casing A contains within it a swinging frame or carrier A³ for a reciprocating driver-bar A⁴. The carrier A³, as herein shown, (see Fig. 5,) consists, essentially, of a hub or cylindrical body a, from which extends a guideway for the lower portion of the driver-bar A⁴, the said guide-

way consisting, as herein shown, of side pieces $a' a^2$, connected by a back piece a^3 , the said side pieces being secured to the hub a , so that the guideway for the driver-bar may be located eccentric to or on one side of the center of the said hub, with the front face of the side pieces $a' a^2$ substantially flush with the front end of the hub a .

The hub a is provided with a cylindrical extension or sleeve a^4 , which fits within the hub A^2 , and an extension a^x thereof of smaller diameter, as herein shown, the sleeve a^4 constituting a pivot upon which the main frame A swings or turns. The hub a of the driver-carrying frame is provided, as herein shown, with a slot or opening a^5 in line with the guideway for the lower end of the driver-bar A^4 , and the upper portion of the main framework or inclosing casing A is also provided with a slot or channel a^6 , constituting a continuation of the slot a^5 in the hub a .

The driver-bar A^4 , in accordance with this invention, is provided at its lower end with a driving-tool a^{60} and preferably with an awl or holding-tool a^7 , which are secured to the lower end of the driver-bar and are adapted to reciprocate in suitable guideways, channels, or slots in a guide or nose-piece a^8 , located below and in line with the driver-bar A^4 and supported in the present instance by a raceway a^9 for the nails.

The nose-piece or guide a^8 is herein shown as provided with a bottom flange or finger a^{10} , extended under the front end of the raceway a^9 and secured thereto by a screw a^{12} . The raceway a^9 is firmly secured to the driver-bar-carrying frame A^3 , so as to move bodily with it, and the said raceway may be secured to the said frame, as herein shown, by means of a split or forked arm a^{13} , through which the said raceway is extended and clamped thereto by a suitable screw a^{14} .

The front end of the raceway a^9 and the inner side of the nose-piece a^8 are made substantially flat or straight and separated from each other to leave a space into which may extend a knife or separator a^{15} , preferably of the construction herein shown and as will be more specifically described.

The separator or knife a^{15} is secured to or forms part of an arm or lever a^{16} , (see dotted lines, Fig. 1,) extended upward within the casing or frame A and within a longitudinal slot in the side a' of the driver-carrying frame, and the said lever at its upper portion is curved to conform to the shape of the hub a , and the curved portion of the lever fits into a peripheral slot a^{150} (see Fig. 5) in the hub a and extends upward beyond the said hub into a slot a^{160} in the main frame or casing A , where it is pivotally secured, as by a pivot-pin or screw-bolt a^{17} . The main casing or frame A is provided on the opposite side of the driver-carrying frame A^3 with a like slot a^{18} , into which is extended the upper end of a lever, link, or bar a^{19} , pivoted to the casing A by a pin or screw-bolt a^{20} , the said lever be-

ing also provided, as herein shown, with a curved portion which fits into a peripheral slot a^{21} in the hub a , and the said lever is pivotally connected at its lower end to the driver-carrying frame A^3 . In the present instance this pivotal connection is effected by providing the rear side of the driver-carrying frame with a socket a^{24} , (see dotted lines, Fig. 1,) into which fits the rounded lower end of the lever a^{19} .

The levers $a^{10} a^{19}$, as herein shown, are respectively provided with nubs or projections $a^{26} a^{27}$, located on their inner sides, and the said nubs or projections are normally extended through the peripheral slots $a^{150} a^{21}$ by means of suitable springs $a^{28} a^{29}$, having one end secured to the casing A on its outside, as by screws $a^{30} a^{31}$, the lower ends of the said springs projecting into and through suitable slots in the sides of the casing A in line with the levers $a^{10} a^{19}$. The levers $a^{10} a^{19}$ are adapted to be moved in opposition to the springs $a^{28} a^{29}$ for a purpose, as will be described, by suitably-shaped cams $a^{32} a^{33}$, secured to or forming part of a shaft b , constituting the main or driving shaft of the apparatus and having bearings in the sleeve a^4 .

The driving-shaft b is further provided with a lifting-cam b' for the driver-bar A^4 , which latter is provided, as herein shown, with a transverse slot or opening b^2 , of a length substantially equal to the diameter of the hub a , and the lifting-cam b' is made, as herein shown, in the form of a curved projection or lug secured to or forming part of the front face of the cam a^{32} , which curved lug or projection is designed to be brought into contact with the upper wall of the slot b^2 to lift the driver-bar A^4 and to retain it in its lifted position for a purpose as will be described.

The driver-bar may be returned to its lowered or normal position by suitable means, herein shown as a spring b^3 , engaging the upper surface of the driver-bar and having its opposite end secured to the frame A in a suitable manner, the said spring being shown as a single piece of wire bent to form a U-shaped front portion which engages a transverse groove b^5 in the upper end or head b^{60} of the driver-bar A^4 , which head in the present instance normally rests on the upper surface of the main casing A and serves as a stop to limit the downward movement of the said driver-bar, the said head being provided with a washer 100 to cushion the blow.

The spring b^3 in the present instance has its opposite ends secured in suitable ears or lugs $b^6 b^7$ on the opposite sides of the hub A^2 of the main frame A .

The main or driving shaft b may be rotated, as herein shown, and for this purpose it has fast on it a hub b^8 , having, as herein shown, a hollow extension or sleeve b^9 , which fits over the extension a^x of the hub A^2 , and the sleeve b^9 has secured to or forming part of it a pulley b^{10} , constituting a driving-pulley for the nailing instrument and about which is passed a

belt b^{12} , connected to a suitable pulley on a main or countershaft. (Not herein shown, but which in practice is located above the said instrument.) The hub b^8 in the present instance is rendered fast on the shaft b by a pin b^{13} , and has secured to or forming part of it a gear or pinion b^{14} , which meshes with a gear or pinion b^{15} , secured to or forming part of a hopper b^{16} , which may be of any suitable or desired construction and which is shown in the present instance as a cylinder provided with a hollow extension or hub b^{17} of circular internal diameter to fit over and revolve upon the cylindrical raceway a^9 , which latter practically forms a stationary shaft or arbor for the revolving hopper. The hollow extension or hub b^{17} also serves as a cover for the greater portion of the length of the slot b^{18} in the raceway and coöperates with and preferably abuts against the forked arm a^{13} , with which coöperates a rearwardly-extended finger b^{19} , attached to the upper end of the nose-piece or guide a^8 to form a complete cover for the slot in the raceway b^{18} its entire length from the hopper to the said nose-piece. The slot b^{18} may be of any suitable shape and depth, according to the size of the nail used, and that portion of the slot within the hopper b^{16} may and preferably will be enlarged transversely for the more ready entrance of the nails into the slot, which enlargement may be effected by beveling the sides of the slot b^{18} , as at b^{20} b^{21} , (see Fig. 10,) which beveled sides gradually decrease in size toward the discharge end or outlet of the hopper, as represented in Fig. 4. The hopper b^{16} may be provided with a detachable cover b^{22} , herein shown as secured to the hopper by a screw b^{23} , extended into the end of the raceway a^9 . The main casing A may be provided with a flange b^{24} , extended from its rear side, as shown in Fig. 4, so as to form a rest for the hand of the operator. The main frame A may also have pivotally attached to it a finger-lever b^{25} , pivoted as at b^{26} , (see Figs. 1 and 4,) and having attached to it a rod b^{27} , which in practice is designed to be suitably connected to a friction or clutch mechanism, (not herein shown, but which governs the shaft to which the shaft b is connected by the belt b^{12}), so that rotation of the shaft b may be controlled as desired by the operator using the instrument herein shown.

The main frame A may and preferably will have secured to it a presser-foot c , provided with a longitudinal slot c' , (see Figs. 1 and 4,) and the said presser-foot at its heel or rear portion may be provided with a slot or opening c^2 , forming a guideway for the passage of the welt. (Not herein shown.)

In order that the instrument may be guided about the edge of the shoe at a uniform distance from its sides, so that the welt may be properly laid, the said instrument is provided with a guide or gage which may and preferably will be made as herein shown, the said gage consisting of a roller c^4 , loosely secured

to an arm c^5 , herein shown as fastened by a screw c^6 to the frame A.

In practice the boot or shoe to be operated upon may be held in a lasting-machine or other support, and the power-driven loose nailer herein shown travels about the edge of the stationary shoe with what may be termed a "progressive," "intermittent," or "step-by-step" movement, and during these successive movements the operating parts are alternately stationary and movable with relation to the main frame A, and vice versa. That is, when the driver-carrying bar A^4 is in its lowered position (shown in Figs. 1 and 4) the driver a^{60} has just finished the insertion of a nail into the welt and the awl or holding-tool a^7 at such time is in the work and consequently holds stationary the driver-carrying bar A^4 , its oscillating frame A^3 , and the parts attached to the said oscillating frame, and while these parts are held temporarily stationary by the holding-tool or awl a^7 the main frame A is turned on the hub a^4 of the oscillating frame A^3 as a center by the cam a^{33} until the side 5 of the frame A is brought in contact with the side a^2 of the frame A^3 , which movement places the frame A in the desired or proper position to permit of the desired or proper spacing of the nails in the welt, and at or about the same time the separator-lever is moved so as to uncover the slot in the raceway, and also at or about the time the frame A is thus moved the awl is withdrawn from the material and the driver-carrying frame A^3 is thus rendered free to be moved or turned on its pivot until the side a' strikes the side 6 of the frame A, and when the frame A^3 is brought into the position just described the driver-bar descends and drives the nail into the stock and at the same time the awl or holding-tool is driven into the material or welt and thereby again renders stationary the driver-carrying bar A^4 and its frame A^3 , as above described.

As shown in Fig. 1, the cam-shaft may be supposed to be revolving in the direction indicated by the arrow 20, and, as represented in said figure, the cam a^{32} has just engaged the nub or projection a^{26} on the separator-lever a^{10} and has moved the said lever backward so as to partially uncover the end of the slot b^{18} in the raceway, and while the awl is still in the welt the cam a^{33} is brought into engagement with the nub a^{27} on the lever a^{19} , and by reason of the fact that the frame A^3 is held stationary by the awl the fulcrum of the lever a^{19} is transferred to the socket a^{24} , thereby leaving the upper end of the said lever free to respond to the action of the cam a^{33} , which forces the lever a^{19} backward or toward the right, (viewing Fig. 1,) and consequently turns the main frame A on the sleeve or hub a^4 as a pivot, the slot a^{18} being of sufficient width to permit of such movement of the lever a^{19} and frame A. As the outer frame A is turned on its pivot its lower

end is moved forward until its side 5 strikes the side a^2 of the frame A^3 , and at such time the main frame is held stationary by the operator engaging the presser-foot firmly with the welt.

When the lower portion of the main frame A is moved forward or in the direction indicated by the arrow 40, Fig. 1, the side 6 of the frame A is carried away from the side a' of the driver-carrying frame A^3 , thereby leaving space for a further movement of the separator-lever a^{10} by the cam a^{32} , which movement of the separator-lever is in the direction of the arrow 40 and by which movement the separator is drawn back to wholly uncover the end of the slot in the raceway. The cam-shaft b continues to revolve and brings the lifting-cam b' into engagement with the upper wall of the slot b^2 , and on the continued rotation of the cam-shaft in the direction indicated by arrow 20, Fig. 1, the driver-bar is moved upward and withdraws the driving-tool a^6 sufficiently from its slot in the nose-piece to permit the separator to carry the nail, partially projecting from the raceway, toward and into the driver-slot in the nose a^8 , which movement of the separator is effected by the spring a^{28} turning the lever a^{10} on its pivot a^{17} after the cam a^{32} has been carried by or removed from engagement with the nub or projection a^{26} on the said lever.

At or about the time the cam a^{32} is removed from engagement with the nub or projection a^{26} on the separator-lever the cam a^{33} is removed from engagement with the nub or projection a^{27} on the lever a^{10} , which action permits the spring a^{29} to turn the driver-bar-carrying frame A^3 on the shaft b as a pivot (theawl being at such time out of the work) and move its lower end toward the side 6 of the frame A , which movement is in an opposite direction to that of the separator-lever.

In order to more effectually transfer the nail from the raceway into the driver-slot in the nose a^8 , I prefer to make the separator in the form of a thin blade, having a top flange 12, beveled, as at 13, to a point, and to provide the said blade with the front edge 16, which is beveled and inclined backward from its pointed upper edge, as clearly shown in Figs. 6, 7, and 8, the flange 12 being extended into a transverse slot or channel in the rear face of the nose-piece a^3 when the separator is moved by its spring a^{28} to transfer the nail from the raceway into the driver-slot.

The flange 12 may and preferably will be provided with a recess or slot 17, which cooperates with the driver-slot and affords a free passage for the driver-tool a^6 when the separator is in the position it occupies when the nail is driven.

The movement of the driver-carrying frame in the direction indicated by the arrow 40, which is effected by the spring a^{29} , places the nose a^3 containing the nail above the welt in the desired or proper position for driving, and at or about the time the nose a^8 is thus posi-

tioned the driver-lifting cam is carried away or removed from engagement with the upper wall of the slot b^2 in the driver-bar, thereby leaving the latter free to be moved with considerable force by the spring b^3 downward in its frame A^3 and drive the nail through the welt and into the inner sole of the shoe. This completes the series of movements, which are repeated in the subsequent operations of driving the nails until the power-driven hand-nailer has traveled around the shoe the desired distance to properly lay and secure the welt onto the upper and inner sole.

During the operation of nailing the welt onto the shoe the hopper b^{16} is revolved by the gears b^{14} b^{15} , and in practice the said hopper may be provided with any suitable devices, such as buckets, (not shown,) by which the loose nails may be carried up above and discharged into the enlarged portion of the raceway, and the said nails may be properly placed in the slot in the raceway and prevented from passing down the same when not in proper position by means of a hub d^{20} , located on the inner side of the hopper and provided with inclined notches forming teeth d^{21} , or in any other suitable manner.

I have herein shown the welt-guide as a part of the presser-foot; but I do not desire to limit my invention in this respect, as the said welt-guide may be carried by the raceway.

During the progressive operations of the nailing instrument herein shown the said instrument is merely steadied, directed, or followed by the hand of the operator.

I claim—

1. In a nailing-machine, the combination of the following instrumentalities: a driver, a driver-bar, a swinging frame in which said driver-bar is movable longitudinally, a raceway attached to said frame to move therewith, a nose-piece for the driver movable with the said frame and raceway, a separator to transfer the nails from the raceway into the said nose, a main frame mounted to turn on the said driver-bar-carrying frame and in which the said driver-bar-carrying frame is itself mounted to swing, a cam-shaft adapted to rotate in said driving-bar-carrying frame and provided with a lifting-cam to act on the driver-bar, a cam to act on the separator, a cam to act on the main frame, and means to pivotally connect the said driver-bar-carrying frame with the main frame, substantially as and for the purpose specified.

2. In a nailing-machine, the combination of the following instrumentalities: a movable main frame, a driver-bar-carrying frame pivotally mounted therein to enable it to move while the main frame is stationary and to permit the main frame to swing or turn while the driver-bar-carrying frame is held stationary, a driver-bar movable longitudinally in its carrying-frame, a driver attached to said bar, a raceway for the nails attached to the driver-bar-carrying frame, a nose-piece co-

operating with the said raceway and provided with a slot or passage in which the driver moves, a separator cooperating with said raceway and nose, and a cam-shaft provided with cams to operate the driver-bar and separator, substantially as described.

3. In a nailing-machine, the combination of the following instrumentalities: a swinging main frame, a driver-bar-carrying frame mounted in said main frame to enable it to be moved while the main frame is stationary and to permit the main frame to be moved while the driver-bar-carrying frame is held stationary, a driver-bar movable longitudinally in its carrying-frame, a driver attached to said bar, a raceway attached to the driver-bar-carrying frame, a guide for the driver cooperating with the said raceway, a separator pivotally attached to the said main frame and cooperating with the raceway and driver-guide, a cam-shaft provided with cams to operate said driver-bar and separator, a hopper mounted to revolve on said raceway, and gearing to connect the said hopper with the cam-shaft, substantially as and for the purpose specified.

4. In a nailing-machine, the combination of the following instrumentalities: a driver, a driver-bar, a swinging frame in which said driver-bar is movable longitudinally, a raceway attached to said frame, a nose or guide for the driver cooperating with said raceway, a swinging main frame supporting said driver-bar and its carrying frame and movable independently of the driver-bar-carrying frame, a separator cooperating with said raceway and driver-guide and pivotally attached to the said main frame, a cam-shaft provided with a lifting-cam for the driver-bar and with a cam to act on the said separator, and means to act on the said driver-bar and separator in opposition to the said cams, substantially as described.

5. In a nailing-machine, the combination of the following instrumentalities: a swinging main frame A provided with a removable cover, a swinging frame A³ mounted to turn or swing within the frame A, a driver-bar carried by the frame A³ and movable longitudinally therein, a lever or bar pivotally attached to said main frame and driver-bar-carrying frame, a raceway for the nails attached to the driver-bar-carrying frame, a nose piece or guide for the driver movable with the driver-bar-carrying frame and cooperating with the said raceway, a separator cooperating with said raceway and nose-piece, a lever pivoted to said main frame and to which the said separator is attached, a cam-shaft provided with a lifting-cam for the driver-bar, a cam to act on the separator-lever, a cam to act on the lever or bar connecting the driver-bar-carrying frame with the said main frame, and means to act in opposition to said cams, substantially as described.

6. In a nailing-machine, the combination

of the following instrumentalities, viz: a reciprocating driver-bar, a swinging frame in which said driver-bar reciprocates, a swinging main frame in which the driver-bar-carrying frame turns, means to connect the said main frame with the driver-bar-carrying frame, a raceway movable with the driver-bar-carrying frame, a separator to remove the nails from the said raceway, and means to effect the operations of the said parts, substantially as described.

7. In a nailing-machine, the combination of the following instrumentalities, viz: a reciprocating driver-bar, a swinging frame in which said driver-bar reciprocates, a main frame adapted to be grasped by the hand of the operator and in which the driver-bar-carrying frame is mounted to turn, a raceway movable with the driver-bar-carrying frame, a separator to remove the nails from the raceway, a lever or link to connect the main frame with the driver-bar-carrying frame, a shaft provided with cams to effect the movement of the said separator, driver-bar, and main frame, and means to effect the movement of the separator and driver-bar in an opposite direction from that in which they are moved by the said cams, and means to act on the driver-bar-carrying frame and move it, substantially as described.

8. In a nailing-machine, the combination of the following instrumentalities, viz: a main frame adapted to be grasped by the hand of the operator, a driver-bar-carrying frame mounted to swing or turn in the said main frame, a link or lever to pivotally connect the main frame with the driver-bar-carrying frame whereby the said main frame may be turned when the driver-bar-carrying frame is held stationary and whereby the driver-bar-carrying frame may turn in the main frame when the latter is held stationary, and means to alternately effect the movements of the said frames in the same direction, substantially as described.

9. In a nailing-machine, the combination of the following instrumentalities, viz: a main frame adapted to be grasped by the hand of the operator, a driver-bar-carrying frame mounted to swing or turn in the said main frame, a link or lever to pivotally connect the main frame with the driver-bar-carrying frame whereby the said main frame may be turned when the driver-bar-carrying frame is held stationary and whereby the driver-bar-carrying frame may turn in the main frame when the latter is held stationary, and means to alternately effect the movements of the said frames in the same direction, a raceway movable with the driver-bar-carrying frame, a separator cooperating with the said raceway and movable in opposite directions to uncover and cover the said raceway, and means to effect the movements of the separator in opposite directions, substantially as described.

10. In a nailing-machine, the combination of the following instrumentalities, viz: a swinging main frame, a driver-bar-carrying frame mounted to turn in said main frame, a
 5 raceway attached to the driver-bar-carrying frame, a hopper mounted on the said raceway to turn thereon, a main shaft carried by the said main frame, and gearing to connect the main shaft with the rotatable hopper, sub-
 10 stantially as described.
11. In a nailing-machine, the combination of the following instrumentalities, viz: a swinging main frame, a driver-bar-carrying frame mounted to turn in said main frame
 15 and provided with a guideway for the driver-bar located eccentric to the center on which the said driver-bar-carrying frame turns, a slot in the main frame in line with the guideway in the driver-bar-carrying frame, a
 20 driver-bar reciprocating in said guideway and slot and provided with a driving-tool and with a holding-tool or awl, a raceway for the nails attached to the driver-bar-carrying frame to move therewith, a nose-piece provided with
 25 passage-ways for the said driver-tool and awl and attached to the raceway to leave a space between the same, a separator movable in said space, a lever to which the said separator is attached pivoted to the main frame, a link
 30 or bar pivotally connecting the main frame with the driver-bar-carrying frame, a cam-shaft provided with a cam to lift the driver-bar, a second cam to act on the separator-

lever, a third cam to act on the link connect- 35
 ing the driver-bar-carrying frame with the main frame, and springs to act in opposition to the said cams, substantially as and for the purpose specified.

12. In a nailing-machine, the combination of the following instrumentalities, viz: a
 40 swinging driver-bar-carrying frame, a swinging main frame pivotally supporting said driver-bar-carrying frame and itself pivoted on said driver-bar-carrying frame, and means to effect alternate movements of the said
 45 frames one on the other and in the same direction, substantially as described.

13. In a nailing-machine, the combination of the following instrumentalities, viz: a
 50 swinging driver-bar-carrying frame, a swinging main frame pivotally supporting said driver-bar-carrying frame and itself pivoted on said driver-bar-carrying frame, a separator-lever pivoted to the swinging main
 55 frame between it and the driver-bar-carrying frame, a driver-bar, and a single cam-shaft provided with cams to effect movements of the said frames and separator-lever all in the same direction, substantially as described.

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

WILLIAM GODDU.

Witnesses:

JAS. H. CHURCHILL,
 J. MURPHY.