

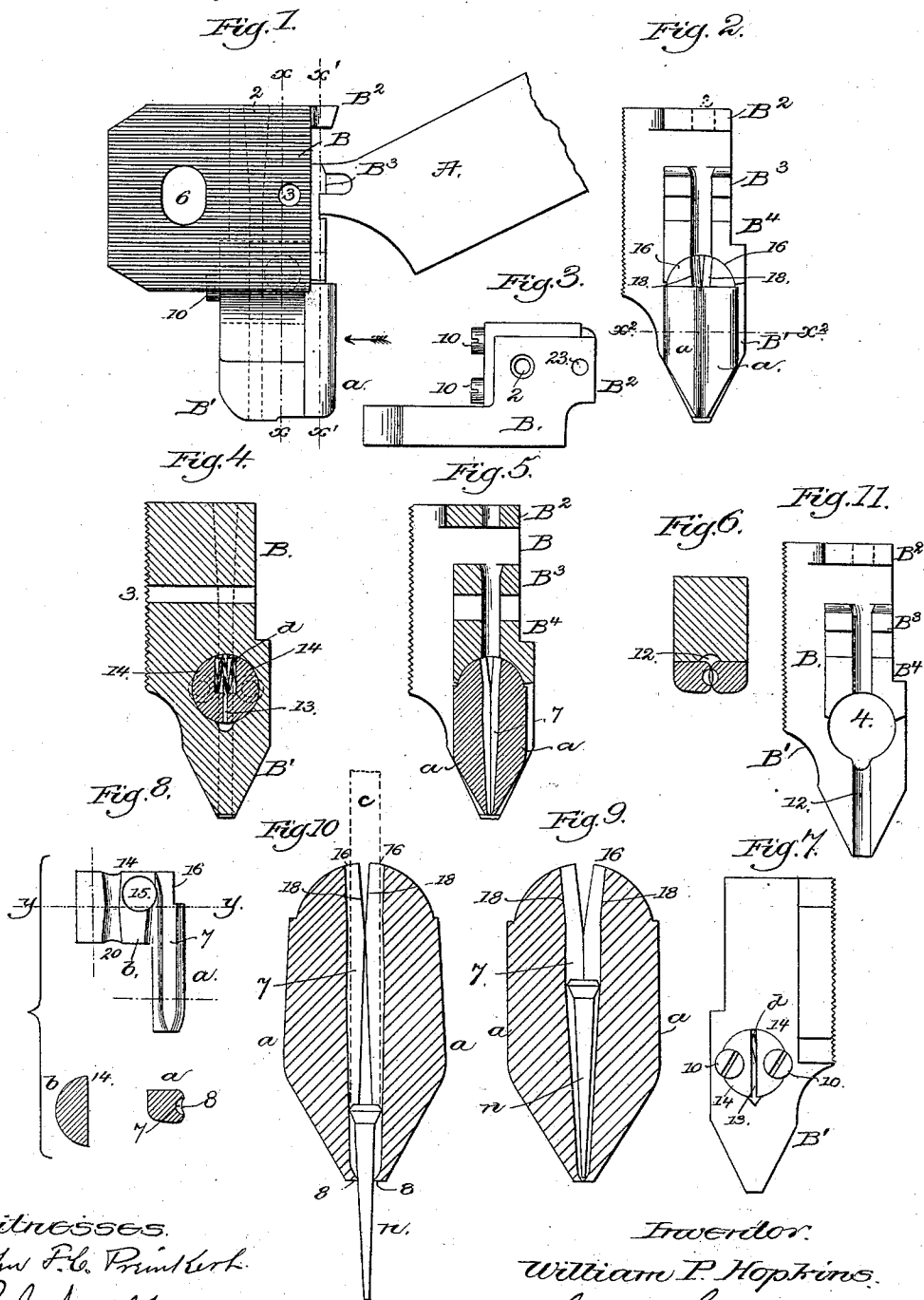
(No Model.)

W. P. HOPKINS.

NAILING MACHINE FOR BOOTS OR SHOES.

No. 331,299.

Patented Dec. 1, 1885.



Witnesses.
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NAILING-MACHINE FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 331,299, dated December 1, 1885.

Application filed December 5, 1884. Serial No. 149,593. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. HOPKINS, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Nailing-Machines for Boots or Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to that class of nailing-machines in which loose nails are delivered from the end of the inclined chute into a driver-passage from which they drop into a rigid nose which rests on the material, from which the nails are driven into the material.

I have herein illustrated my invention as embodied in that class of nailing-machine in which the nose is composed of a block of steel provided with two vertical passages a little distance apart, one of said passages receiving in it the awl which pierces the material, the other passage receiving the nails and the driver, the latter descending upon the head of and driving the nail.

In accordance with my invention I have made the nail holding or directing device in a separate piece and pivoted it upon the side of the nose.

Prior to my invention the driver-passage made in the nose has been provided with spring-jaws and with independently-controlled spring-held fingers to extend into, act against, and hold the nail until the driver in its descent strikes the head of the nail, such jaws or fingers also acting to center the nail. When such independent springs are employed, it frequently happens that one spring yields more than the other and lets the nail tip in the larger space in the nose, and the nail, diverted from its true course, travels or runs at its point and fails to be properly upset.

In my invention the nail-holder and director which receives the nail from the chute, and in which the driver descends, is made as a separate piece from but is pivoted upon the nose which rests on the material, and in which the awl moves.

My improved nail-holder and director herein shown is composed of two rigid arms, grooved at their inner faces and provided at their rear sides with right-angled projections made partially cylindrical, both the said projections en-

tering side by side loosely a horizontal passage bored in the nose and turning together therein, as the holder or director is oscillated. Each right-angled projection at its flat side, or side next the other, is sufficiently cut away as to leave a small space, and between the adjacent walls of the said projections, but located above a line coincident with their centers, I have arranged a spring. The space between the contiguous faces of the right-angled projections permits the arms of the nail-holder and director to be separated a little as a headed nail is driven down between them, the spring referred to acting at its opposite ends on the right-angled projections as stated, compelling each arm to yield in exactly like proportion, and keeping the arms closed upon and so as to hold the nail securely during the whole of the time that it is being driven, absolutely preventing the nail from being tipped to one side as it is being driven. The nail-driver, as it enters the nail holder or director, forces the same to assume true vertical position and compels the nail to be driven straight into the material. The lower ends of the arms of the nail-holder or director are provided with lips, which serve to catch and arrest the point of each nail close to the material before the driver in its descent strikes the head of the nail.

Figure 1 is a rear side elevation of my improved nail holder or director attached to a nose, said figure showing a portion of a nail-chute of usual construction. Fig. 2 is an elevation of the nose and holder, looking at it in the direction of the arrow, Fig. 1. Fig. 3 is a top view of Fig. 2. Fig. 4 is a section in the line $x x$, Fig. 1. Fig. 5 is a section in the line $x' x'$; Fig. 6, a section in the line $x'' x''$, Fig. 2. Fig. 7 is a left-hand side elevation of Fig. 1. Fig. 8 is a detail showing one of the arms of the nail holder or director, looking at it from its inner side, and also two sections thereof in the dotted lines thereon. Figs. 9 and 10, on a larger scale, represent the arms of the nail holder or director in section, with a headed nail in one figure in position ready to be struck by the driver, while in the other figure the nail is shown as partially driven out from between the arms; and Fig. 11 is a view of the block and nose with the nail holder and director shown in Fig. 2 withdrawn.

The driver is shown in Fig. 10 by dotted

lines. The nail-guiding chute A, of usual construction, has its delivery end placed next the face of the block B, as in Fig. 1, the latter having at its under side the contracted nose B', and at its face the lips B², and B³, and B⁴. The awl-passage 2 is made entirely through the block B and its nose, and as said nose in accordance with my invention is not to be bored to form a nail-passage, and is not therefore to be slotted from its outside and grooved for the reception of nail-holding fingers, it is possible to and I have made the nose thinner and smaller than in other machines known to me, wherein an awl and driver are both employed, thus enabling a smaller slot to be made in the presser-plate which is applied to the material about the nose. This reduction in width is shown clearly in Fig. 2. The nail-driver passage 23 is bored through the lip B², and the continuation of the passage is formed by the vertical groove in the projections B³ B⁴. Near the lower end of the projections B⁴ the block B is bored to form a passage or hole, 4, (see Fig. 11,) the circular wall about the said hole falling in the base of the said projection. The holes 3 and 6 are for the reception of screws by which to attach the block B to the head of the nailing-machine in usual manner. The face of the nose (see Figs. 6 and 11) is provided with a groove, 12.

The nail holder and director is composed of two like pieces, stiff and rigid. Each piece consists of an arm, *a*, and a projection, *b*, to extend therefrom at right angles. The arm *a*, a stiff rigid arm, is grooved at its inner face, as at 7, and near the lower end of the said vertical groove I leave a thin lip, 8, which serves to catch the point of and stop the nail *n*, as in Fig. 9, until the driver *c* in its descent, it being actuated in usual manner, strikes the head of the nail to drive it into the material. The projection *b* from the rear side of the arm *a* is semi-cylindrical, or substantially so, (see section, Figs. 4 and 8,) so that the projections *b* of both arms, when placed together and entered loosely into the hole 4 of the block B, are a fit therein. The ends of the projections are tapped to receive screws 10 10, (see Fig. 7,) the heads of the screws acting to prevent the withdrawal longitudinally of the projections *b* from the block, but permitting the said projections to turn therein, as necessity requires. To enable the said projections to turn in the hole 4 in opposite directions as is necessary when a nail is being driven down through the passage between the two rigid arms, as from the position Fig. 9 to Fig. 10, the adjacent flat sides of the arms *b* are cut away sufficiently to afford a small space, 13. The center line of the projections *b* is in the line *y y*, Fig. 8, which leaves portions 14 extended above such center line, and to keep the adjacent grooved faces of the two rigid arms *a a* constantly pressed toward each other in like manner, so as always to yield equal distances, and always hang onto and grasp the body of the nail, while any part of

it is on its way out from between the said arms under the influence of the driver, I have placed between the portions 14 a spiral spring, 70 *d*, one spring by its opposite ends operating in like manner on both projections.

To make a proper receptacle for the spring *d*, the inner side of each projection *b* is provided with a pocket, 15. The portion 16 of the nail holder and director is curved to fit the wall of the hole 4 in the block B at the lower side of the projection B², and the walls 18 of the portion 16 are beveled so as to form an entering-space to the passage between the arms *a a*, which shall be larger than the lower end of the driver-passage formed in the projection B⁴, such construction obviating either the point of the nail catching on or the driver from striking the upper portion, 16, of the nail holder or director. As the driver descends into the space between the inclined walls 18 to act upon the head of and drive a nail, *n*, from between the arms *a a*, the driver is made instrumental in bringing or turning the nail holder into vertical position, or centering it before the driver strikes the head of the nail, and hence it follows that the nail will always be driven straight into the material, and, striking the usual horn on which the material rests, the point of the nail will be correctly upset or clinched, and will not glance or run or protrude laterally. In this my invention it is impossible for one arm to give before the other to the point of the descending nail, or to yield unequally, and this provision enables the nails to be driven unerringly straight into the material, and the two arms, being held together by one and the same spring and subjected to the same force, always hold both sides of the nail just the same, and always grasp and control its movement in a straight line during all the time that the driver acts upon the head of the nail to force it from between the arms *a a*. Reducing the width of the nose B', and consequently of the slot in the usual presser-plate, prevents the horn, when pressed upward, from forcing the material into the said slot and interfering with the easy feeding of the material.

It is essential for good work that the point of the nail be controlled when descending in the material or in the awl-hole therein. This is effected by the arms *a a*, which grasp the nail snugly while it is being driven, hard spots in the leather not diverting the nail from its true course. The lips 8 are slightly cut away, so as to permit the point of the nail to enter between them.

My improved holder and director for the nail holds the same so perfectly that the driver will drive the nail correctly even though the end of the driver is not perfectly square. The inner faces of the arms *a a*, fitting or bearing against the driver, act to strengthen or stiffen the latter as the nail is being clinched by the blow of the driver. The groove 12 between the arms *a a* and the nose permits small metal chips and specks to fall and not clog the movement of the arms *a*. The projections *b b* are

each grooved at 20 for the passage of the awl as it descends in the awl-hole 2.

By controlling the nail as described, so as always to present it in vertical position to be driven, it is possible to drive nails into leather without first making awl-holes for their reception.

I claim—

1. In a boot and shoe nailing machine, the nose-block provided with a horizontal hole, 4, combined with a nail holder or director comprising two arms, *a*, grooved in opposite faces, and of rigid material, and rearward lateral semi-cylindrical projections *b* from said arms, fitted in the said hole in the nose-block and serving as pivots for said arms, substantially as described.

2. The nose-block, combined with the rigid arms *a a* of the nail holder or director, having semi-cylindrical projections *b b*, pivoted in a hole in said block, the opposite faces of said arms having longitudinal grooves which terminate in lips 8 8 at their lowermost end, substantially as and for the purpose described.

3. The nose-block provided with the hole 4, and the rigid grooved arms *a*, having projections *b*, semicircular in cross-section and inserted in the block B, combined with a spring

located between the parts 14 of the said arms, to maintain the arms *a a* pressed toward each other to grasp the nail closely while it is being driven from between the said arms into the material, substantially as described.

4. The nose-block B, grooved at its face for the passage of the driver, and bored at 4, combined with the nail holder or director provided with projections *b* to enter said hole, and having a surface, 16, to enter the hole 4 and fit closely to the concaved lower face of the projection B⁴, substantially as described.

5. The nose-block B, grooved at 12, combined with the pivoted rigid arms *a a*, substantially as described.

6. The nose-block provided with the awl-passage, combined with the nail holder or director having arms *b b*, provided with grooves aligned with the said awl-passage in the nose-block for the passage of the awl between the said arms, substantially as described.

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

WILLIAM P. HOPKINS.

Witnesses:

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W. S. PETERS.