

No. 611,990.

Patented Oct. 4, 1898.

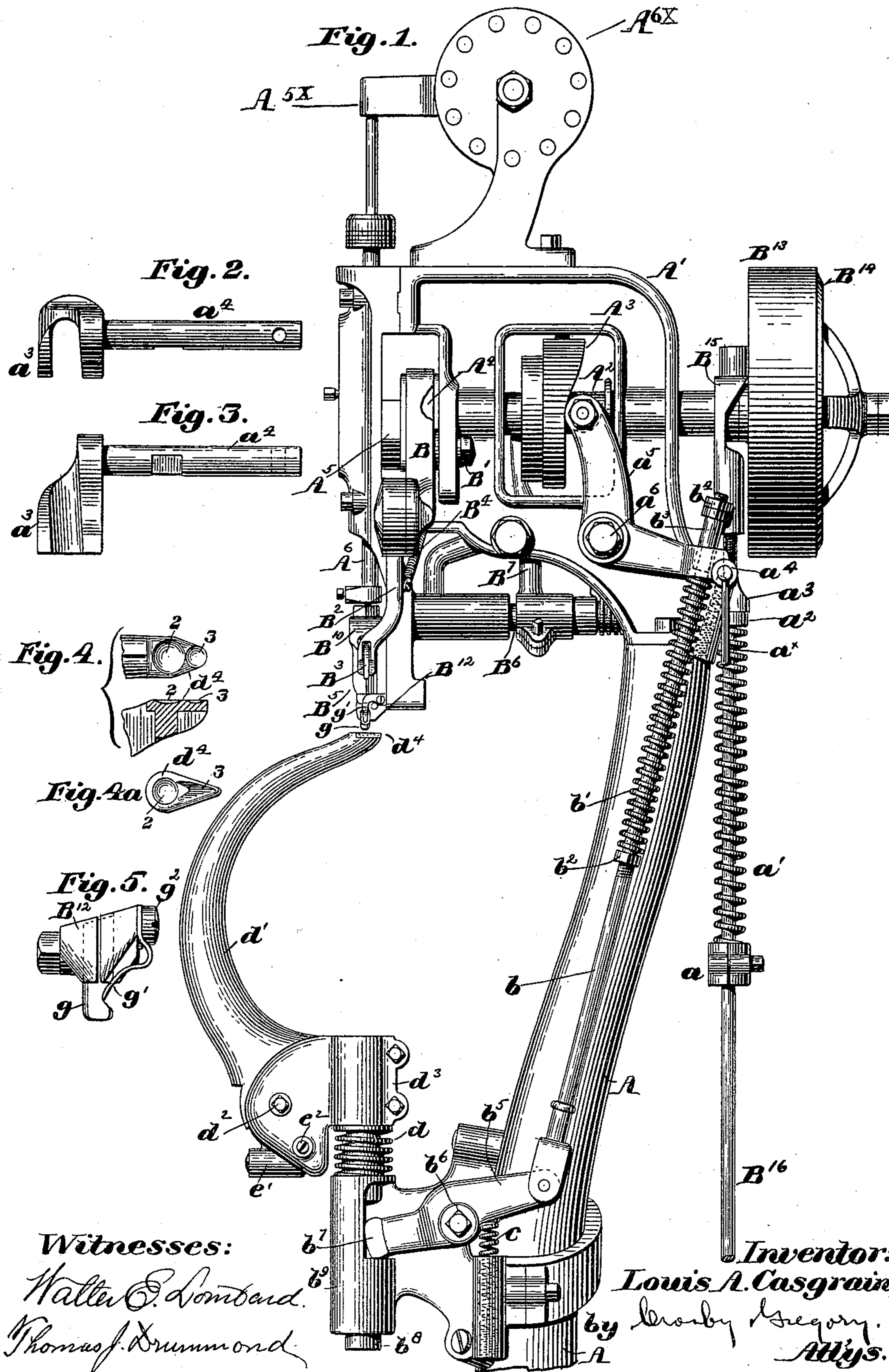
L. A. CASGRAIN.

MACHINE FOR INSERTING METALLIC FASTENINGS.

(Application filed Apr. 18, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

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Thomas J. Drummond.

Inventor:

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No. 611,990.

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2 Sheets—Sheet 2.

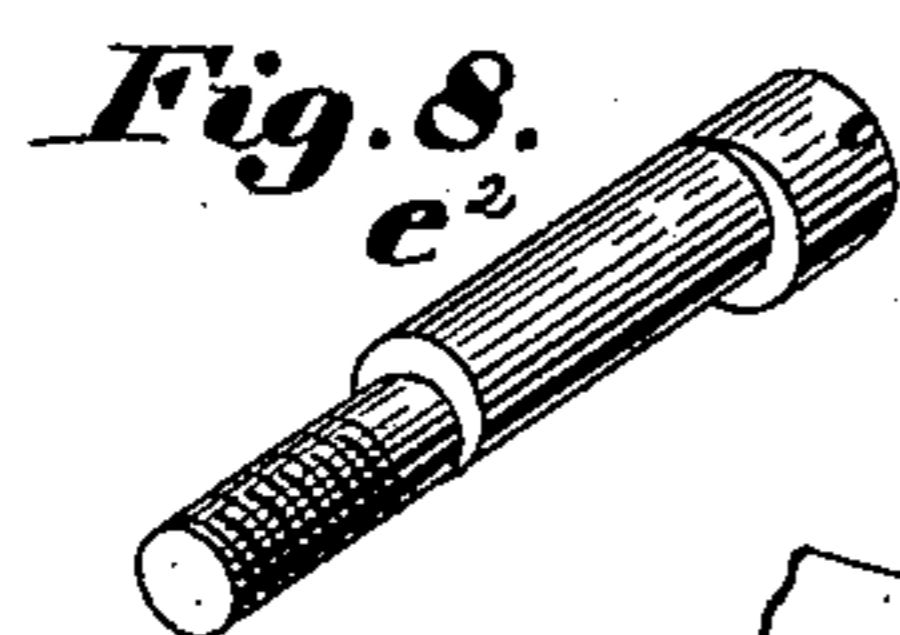
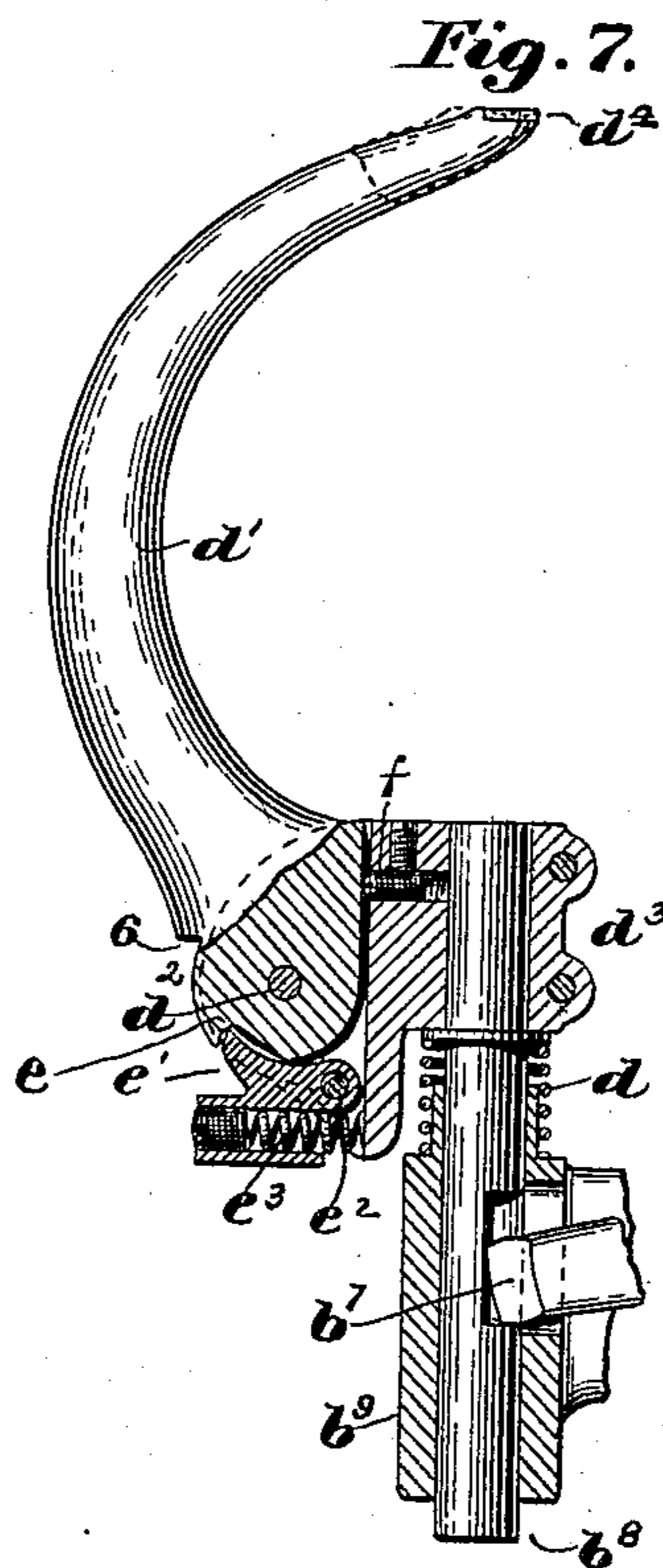
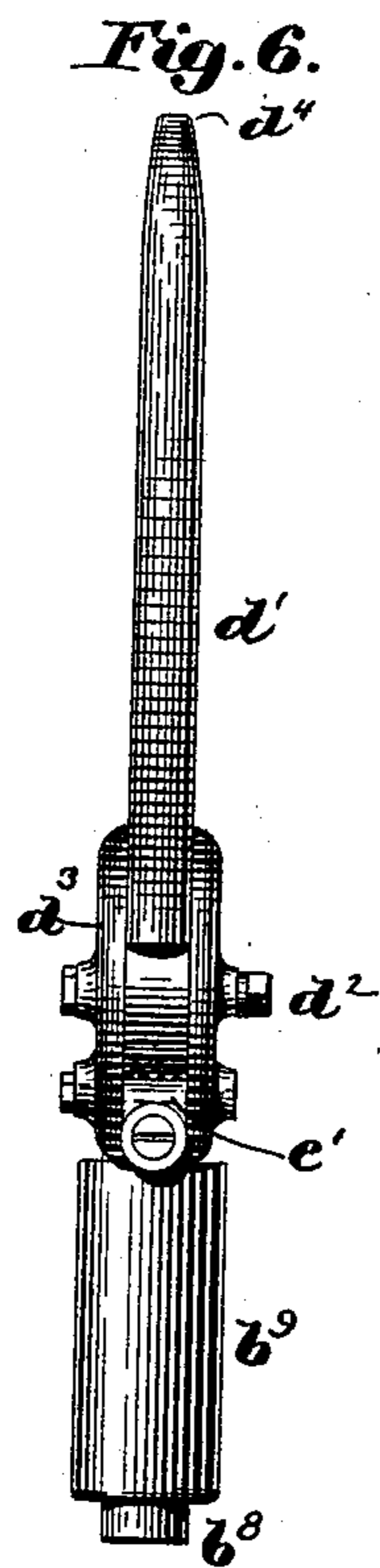
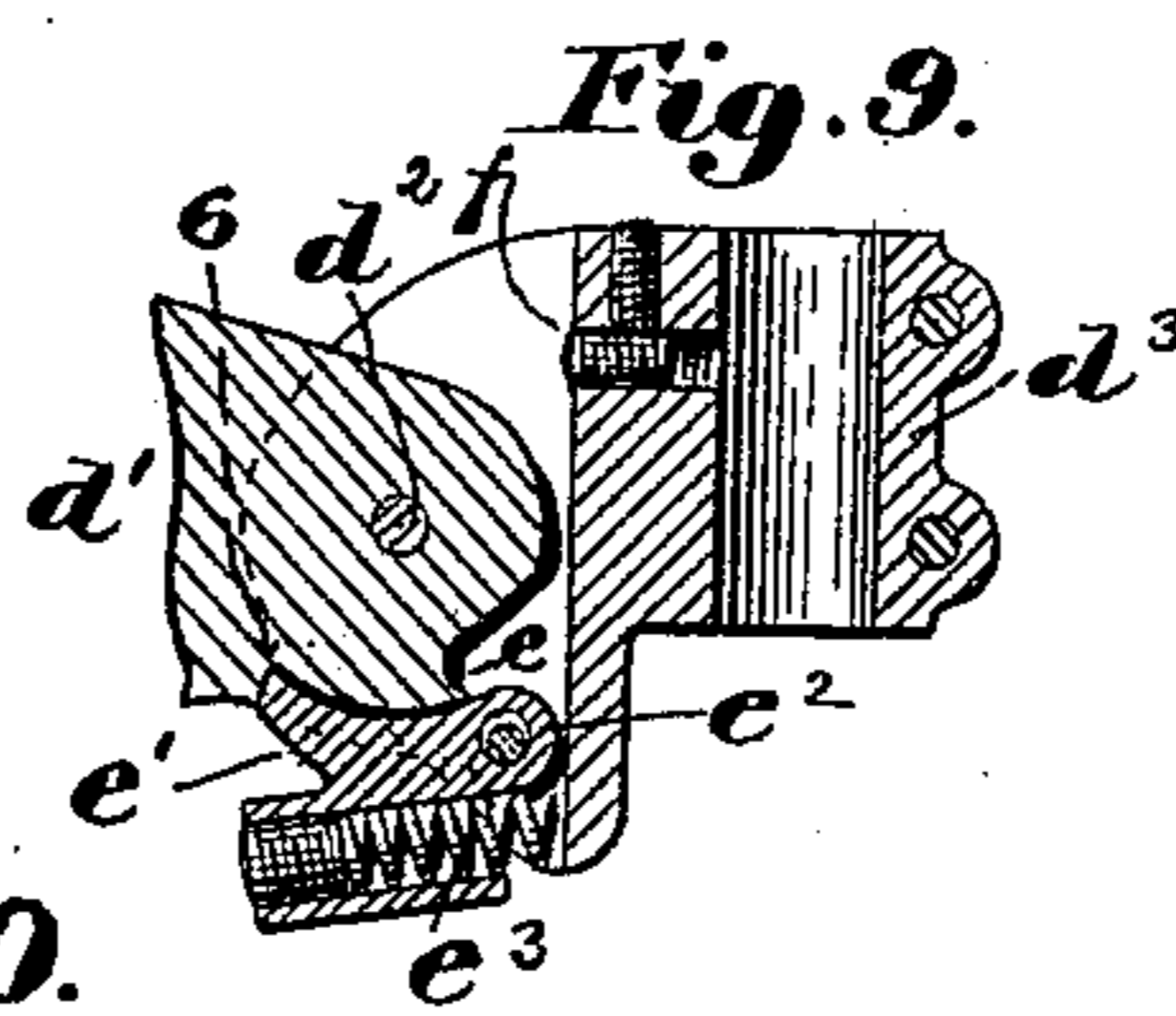
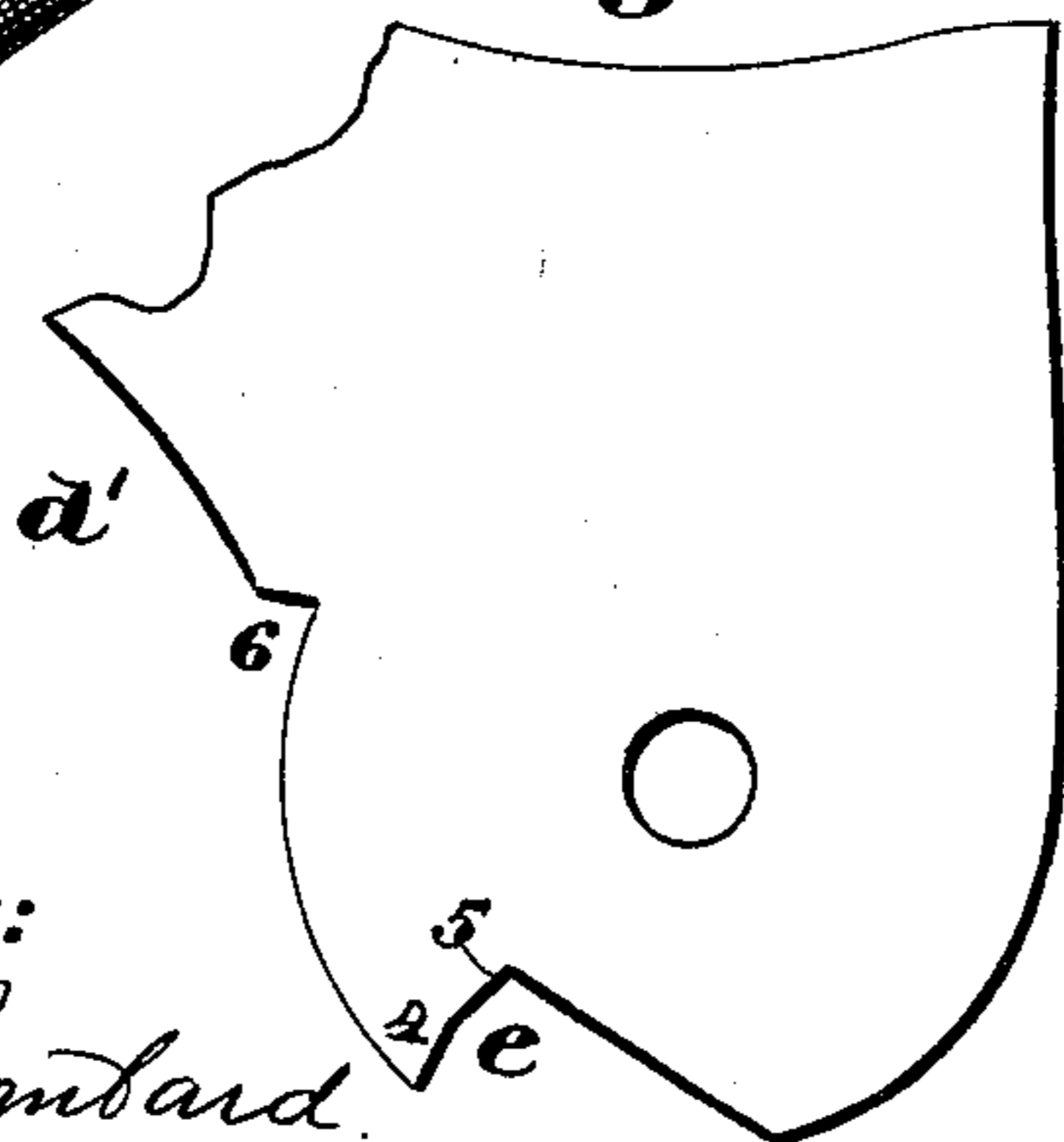


Fig. 10.



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UNITED STATES PATENT OFFICE.

LOUIS A. CASGRAIN, OF WINCHESTER, MASSACHUSETTS, ASSIGNOR TO
JAMES W. BROOKS, PRINCIPAL TRUSTEE, OF PETERSHAM, AND
FRANK F. STANLEY, ASSOCIATE TRUSTEE, OF SWAMPSCOTT, MASSA-
CHUSETTS.

MACHINE FOR INSERTING METALLIC FASTENINGS.

SPECIFICATION forming part of Letters Patent No. 611,990, dated October 4, 1898.

Application filed April 16, 1897. Serial No. 632,464. (No model.)

To all whom it may concern:

Be it known that I, LOUIS A. CASGRAIN, of
Winchester, in the county of Middlesex and
State of Massachusetts, have invented an Im-
5 improvement in Machines for Inserting Metallic
Fastenings, of which the following descrip-
tion, in connection with the accompanying
drawings, is a specification, like letters on the
drawings representing like parts.

10 In machines for inserting metallic fasten-
ings and using a horn inside the shoe to hold
it in place while the fastenings are being
driven to unite the sole and upper great diffi-
culty is experienced in getting the anvil of
15 the horn correctly in position inside the toe
of that class of shoe having what is called
"pointed" or "razor" toes. To adapt a nail-
ing-machine to this class of work, I have pro-
vided a horn which is pivoted on its rising
20 and falling spindle, and the tip or anvil of the
horn is tapered or drawn smaller at one part
and has two clenching-cavities, one being
hereinafter designated as an "auxiliary" cav-
ity. The main cavity is used to clench the
25 nails which go into the sole at all places except
at the point of the toe, the horn being turned
on its pivot by the operator, who grasps the
shoe in his hand just as the nails are to be
driven in the sharper parts of the narrow or
30 pointed toe, the position of the horn being
thereby changed so as to put the second or
auxiliary cavity at the end of the horn in
place to receive and clench the nails entering
the sole at and about the toe.

35 The machine upon which I have chosen to
illustrate my improved horn is adapted to
feed and drive two lengths of string-nails,
substantially as shown in United States Pat-
ent No. 217,865, dated July 29, 1879.

40 Figure 1 in side elevation represents a suffi-
cient portion of a nailing-machine with my
improvements added to illustrate my inven-
tion. Figs. 2 and 3 are enlarged details show-
ing the coupling between the lever and the
rod. Fig. 4 shows the tip or anvil at the end
45 of the horn in different views; Fig. 4^a, a modi-
fied form of tip; Fig. 5, an enlarged detail of
the nose through which the nail is driven.

Figs. 6 and 7 show the horn and its spindle
Fig. 8, an eccentric for adjusting the pawl- 50
carrier; Fig. 9, a detail showing the connec-
tion of the end of the horn with the spindle;
and Fig. 10, an enlarged detail showing the
shape of the shoulder of the horn, against
which the pawl works when the horn is in 55
working position.

The frame consists, essentially, of a stand-
ard A and a head A', the main shaft A², hav-
ing a cam A³, an eccentric A⁴, a driver-bar-
lifting cam A⁵, a driver-bar A⁶, having at its 60
lower end a driver, said driver being de-
pressed by a lever A^{5x}, operated upon by one
end of a spring and connected at its other end
in a suitable hole of a fixed disk A^{6x}, the eccen-
tric-strap B, embracing the eccentric A⁴ and 65
slotted to slide and rock on a stud B', the
arm B², pivotally mounted on the end of said
arm and provided at its lower end with a
feeder and cutter B³, the spring B⁴, connected
with said arm B² and the head, the nail-guide 70
B⁵, having two slots for the reception of a plu-
rality of string-nails having nails of different
length, said guide being fast on one end of a
sliding bar B⁶, having an arm B⁷, which is
acted upon by a cam on the shaft A² to place 75
either length of the said string-nails in line
with the said feeder, and the shield B¹⁰, on
which the feeder slides or moves up and down
in operation, it meeting the head of a string-
nail at the lower end of the shield and feed- 80
ing and driving it into the stock through a
nose grasped in a block B¹², and the con-
stantly-running loose pulley B¹³, the fast pul-
ley B¹⁴, and the starting device shown as a
forked wedge B¹⁵, attached to rod B¹⁶ and 85
adapted to be pulled down to start the main
shaft by the action of the foot of the operator
on a treadle (not shown) located at the floor,
are and may be all as common to said patent,
my present invention not lying in said parts, 90
except in details to be described of the nose
and the operation of the cam A³ to raise and
actuate the horn.

The rod B¹⁶ is provided with a collar a, on
which rests the lower end of a spiral spring 95
a', and a washer a², lying on the top of said

spring, is acted upon by a coupling shown as a U-shaped foot a^3 , fast on a rod a^4 , having a handle a^x , by which to turn it, said rod being mounted in the end of a lever a^5 , pivoted at a^6 , and having at its upper end a roller or other stud which is acted upon by the cam A^3 . When the machine is to be started, the operator puts his foot on a treadle (not shown) and depresses the rod B^{16} , causing the wedge B^{15} to force the fast and loose pulleys in driving contact, and the machine will continue to operate so long as the operator holds the said rod down, and while the machine is running the lever a^5 is actuated and the foot a^3 of the coupling acting on the washer a^2 depresses the spring a^1 . Should, however, the operator release the rod B^{16} , so that it may rise in usual manner to unclutch the loose and fast pulleys, then the lever and its connected foot act on the washer and let the rod B^{16} rise to unclutch the said pulley to stop the machine only when the smaller throw of the cam A^3 , as shown in Fig. 1, is opposite the roller of the lever a^5 , the usual driver-bar-depressing spring by its action aiding in checking the timely rotation of the shaft to leave the roller in the stated position with relation to said cam. In this way provision is made for stopping the machine when the horn is released and down, for the said lever a^5 at that time also acts to depress the horn, as will be described.

While the two pulleys are unclutched, should the operator desire to turn the main shaft for any purpose, as for adjustments, the handle a^x of the coupling described may be turned to remove the foot a^3 from above the washer, and then the shaft A^2 may be turned without the cam A^3 acting to depress the wedge.

The lever a^5 has at its inner side an ear which fits loosely over a rod b , the under side of said ear resting on a spring b^1 , supported on a washer b^2 , the upper side of said ear acting against a sleeve b^3 , adjusted as to its position on said rod by a suitable nut b^4 , the adjustment of said sleeve on said rod determining the normal upward position of the tip of the horn. The lower end of the rod b is jointed to a lever b^5 , pivoted at b^6 and having its end b^7 entering a notch in the horn-spindle b^8 , mounted loosely in a hub b^9 , fast on the standard A . The outer or free end of this lever b^5 is lifted by the lever a^5 , the spring b^1 , and rod b when a nail is to be clenched on the horn to be described, and at such time the said lever b^5 constitutes an abutment for the horn, the only yielding being that in the spring b^1 . A spring c may act on lever b^5 to depress the outer end of the said lever and keep the roller at the end of the lever a^5 against the cam A^3 .

The horn-spindle is surrounded by a spring d , which is strong enough to substantially counterbalance the weight of the horn d^1 , the latter being mounted on a pivot-pin d^2 , held in ears of a head d^3 , clamped suitably on

the upper end of the horn-spindle b^8 . This horn has at its upper end a tip or anvil d^1 , provided with a main clenching-cavity 2 and an auxiliary clenching-cavity 3, the main clenching-cavity serving to clench the nails which are driven into the sole except in the narrow toe, the auxiliary cavity 3 in the smaller or pointed end of the anvil serving to receive and clench the nails which are driven into the narrow or sharp-pointed end of the toe. To enable either of these cavities to be put into operative position, the horn must be pivoted as shown. This horn has a shoulder e , (shown enlarged in Fig. 10,) presenting two surfaces 4 5, against which may act the extremity of a pawl e' , mounted on an eccentric-stud e^2 , screwed into the ears of the head d^3 . The head d^3 has an adjustable forward stop f , (shown as a screw,) against which the horn acts, as in Fig. 7, when the main cavity is in working position under the nail-driver, the pawl at such time acting against the face 5 of the shoulder e . The rotation of the eccentric enables the position of the pawl e' to be changed, the said eccentric being normally so located that the pawl acting on the face 5 will keep the horn against the stop f . The pawl e' has a portion which is bored to receive a spring e^3 , which normally holds the pawl up into its operative position.

When a shoe is on the horn and being nailed, the operator keeps his hands on the shoe, and when the nails are to be driven into the sole of a sharp or pointed shoe the operator draws the shoe and horn toward him, the spring e^3 at such time yielding and letting the end of the pawl pass from the face 5 onto the face 4 of the shoulder e . This change of position of the horn on its pivot puts the auxiliary cavity in working position under the driver. The horn may be turned down out of its operative position, and to do this the pawl e' will be turned down by hand and the down-stop 6 will meet the pawl and retain the horn in the position shown in Fig. 9.

It will be noticed that the horn is pivoted on the spindle by a pivot d^2 , located at one side of the longitudinal center of the horn-spindle, and that the tip of the horn is bent around, so as to occupy when in its working position a position substantially above the center line of said spindle. This horn may, however, be turned aside by the operator when for any reason he desires to get access to the nose of the machine to enable him to temporarily nail upon a last held in his hand or for other purposes.

The nose g , clamped in the block B^{12} , has a longitudinal passage through which the headed end of the nail is driven by the driver, and said nose is cut away at one side, as shown in Fig. 5, to expose the nail-passage, and one end of a suitable spring g^1 , connected to the block B^{12} by a screw g^2 , acts on the nail moving in said passage as it is being driven, thus aiding in insuring uniform driving of the nails from the nose into the sole.

The horn may, if desired, be so adjusted as to leave either cavity in operative position for any desired period.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A horn-spindle, and a horn pivoted thereon and provided at its upper end with two clenching-cavities, one being located nearer the end of the tip of the horn than the other, either of said cavities being adapted to be put into line with the nose of the machine through which the nail is driven into the work supported on the horn, substantially as described.

2. A horn-spindle, and a horn pivoted thereon and provided at its upper end with two clenching-cavities, one being located nearer the end of the tip of the horn than the other, either of said cavities being adapted to be put into line with the nose of the machine through which the nail is driven into the work supported on the horn, said horn having near its pivot, a shoulder, and a locking-pawl engaging said shoulder, substantially as described.

3. A horn-spindle, and a horn pivoted thereon and provided at its upper end with two clenching-cavities, one being located nearer the end of the tip of the horn than the other, either of said cavities being adapted to be put into line with the nose of the machine through which the nail is driven into the work supported on the horn, said horn having near its pivot, a shoulder, and a locking-pawl engaging said shoulder, a frame carrying said pawl and a spring to normally hold said pawl pressed against said shoulder, substantially as described.

4. A horn-spindle, and a horn pivoted thereon and provided at its upper end with two clenching-cavities, one being located nearer the end of the tip of the horn than the other, either of said cavities being adapted to be put into line with the nose of the machine through which the nail is driven into the work supported on the horn, said horn having near its pivot a shoulder, and a locking-pawl engaging said shoulder, and a stop to aline the horn so that the bottom of its main cavity will be kept in line with the nose of the machine, substantially as described.

5. In a nailing-machine, the following instrumentalities, viz: a rotating shaft provided with a cam; a lever actuated by said cam; a horn-spindle having a shoulder; means to support said spindle; a horn carried by said spindle; a spring cooperating with said horn-spindle to substantially counterbalance the weight of said horn; a lever adapted to engage the shoulder of the horn-spindle; a connecting-rod interposed between said two levers; and a spring surrounding said rod to enable the horn under the action of said lever to adapt itself to varying thicknesses of material; said cam being shaped to actuate said devices and keep the horn in its elevated po-

sition when a nail is being driven, substantially as described.

6. In a nailing-machine, the following instrumentalities, viz: a rotating shaft provided with a cam; a lever actuated by said cam; a horn-spindle having a shoulder; means to support said spindle; a horn carried by said spindle; a lever adapted to engage the shoulder of the horn-spindle; a connecting-rod interposed between said two levers, a spring surrounding said connecting-rod and supported at one end by a nut thereon to adapt itself to varying thickness of material combined with an adjustable sleeve carried by said rod; said cam being shaped to actuate said devices and keep the horn in its elevated position when a nail is being driven, substantially as described.

7. A horn-spindle, a horn pivoted thereon at one side of the center line of said spindle and provided with two shoulders near its pivotal point, combined with a pawl which may engage either of said shoulders to operate, substantially as described.

8. A horn-spindle, a horn pivoted thereon at one side of the center line of said spindle and provided with two shoulders near its pivotal point, combined with a pawl which may engage either of said shoulders, said pawl containing a spring to keep its point pressed toward the shoulders of said horn, substantially as described.

9. In a nailing-machine, a horn-spindle having a horn pivoted thereon at one side of the center line of said horn-spindle, means to normally act upon the lower end of said horn below its pivot to maintain the tip of the horn in nailing position, combined with a stop located above the pivotal point of said horn and between said horn and the center line of said horn-spindle to determine the exact position of the clenching-cavity at the tip of the horn with relation to the path of movement of the driver, substantially as described.

10. In a nailing-machine, a spindle, a horn pivoted thereon and provided with two clenching-cavities, said horn having a two-faced notch, combined with a pawl engaging said notch, substantially as described.

11. In a nailing-machine, a spindle, a horn pivoted thereon and provided with two clenching-cavities, said horn having a two-faced notch, combined with a pawl engaging said notch, and with an eccentric to adjust the position of said pawl, substantially as described.

12. In a nailing-machine, a horn-spindle having a shoulder, a horn pivoted on said spindle, a lever to engage said shoulder to lift the horn, a rotating shaft having a cam, a lever actuated by said cam, and a rod connecting said two levers, said rod having a spring, a sleeve and a nut to adjust it, said lever being interposed between said spring and sleeve, substantially as described.

13. In a machine for inserting nails into boots and shoes, the following instrumentalities

ties, viz: a rotatable shaft, a driver-bar and
its attached driver, means carried by said
shaft to operate said driver-bar, a vertically-
movable horn or work-support normally oc-
5 cupying its lowest position when the machine
is stopped, a cam carried by said shaft, a le-
ver actuated by said cam, connections be-
tween said horn and lever, a spring inter-
posed between said connections and lever,
10 said spring being compressed by said lever as
the horn is being lifted to thereby hold the

work up by a yielding pressure, said spring
being relieved from its pressure when the
machine is stopped and the horn is in its
lowest position, substantially as described. 15

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

LOUIS A. CASGRAIN.

Witnesses:

GEO. W. GREGORY,
THOMAS J. DRUMMOND.