4 Sheets—Sheet 1.

F. P. HINDS.

Hand Lasting-Tool for Boots and Shoes.

No. 206,019. **Patented July 16, 1878.**

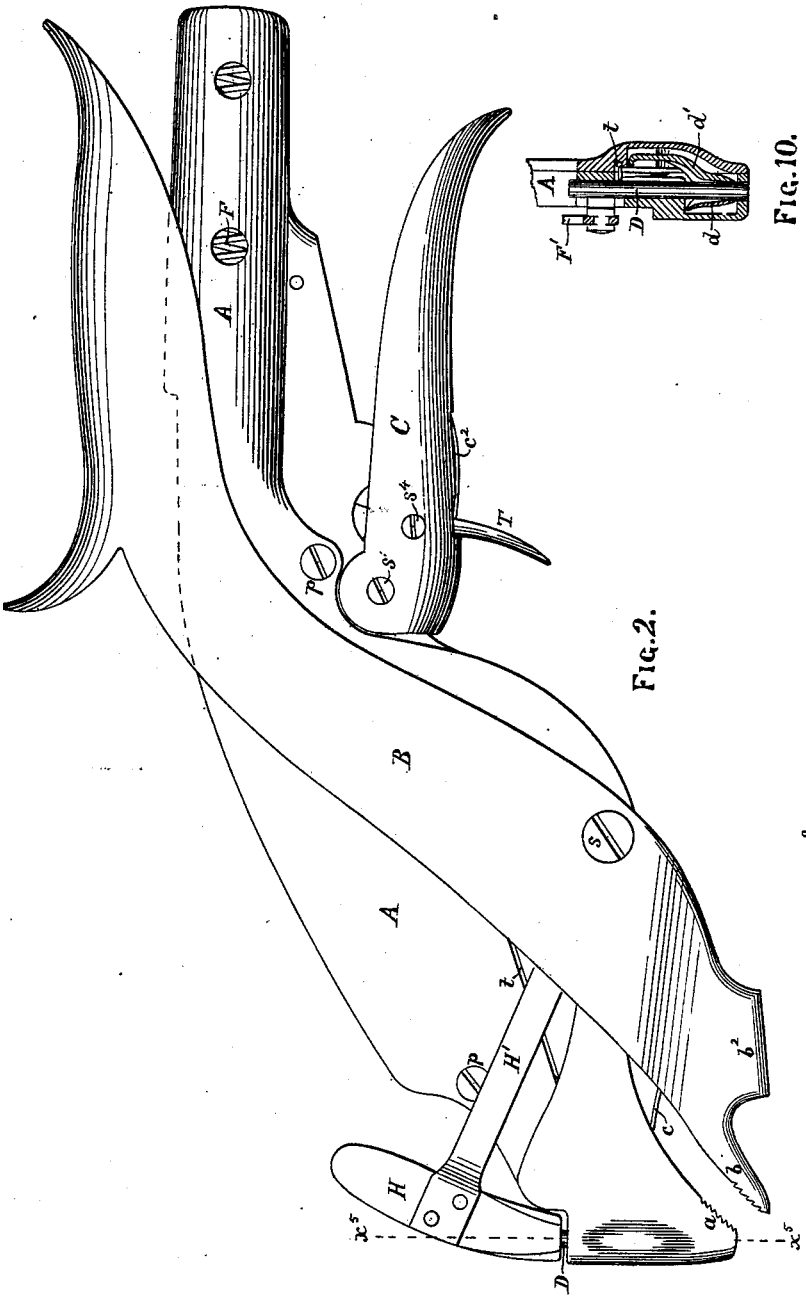

Fig. 2.

Fig. 10.

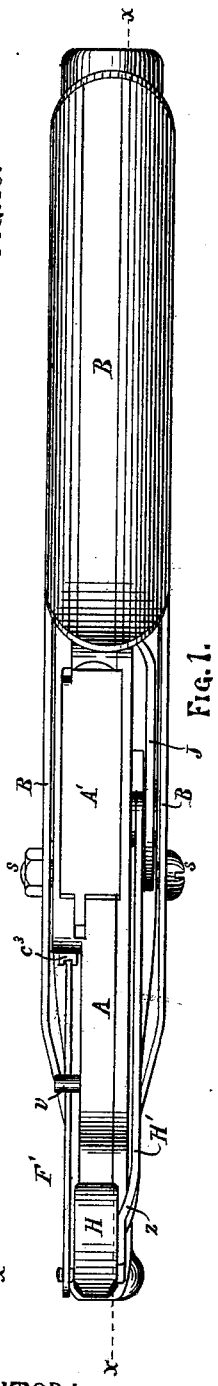

Fig. 1.

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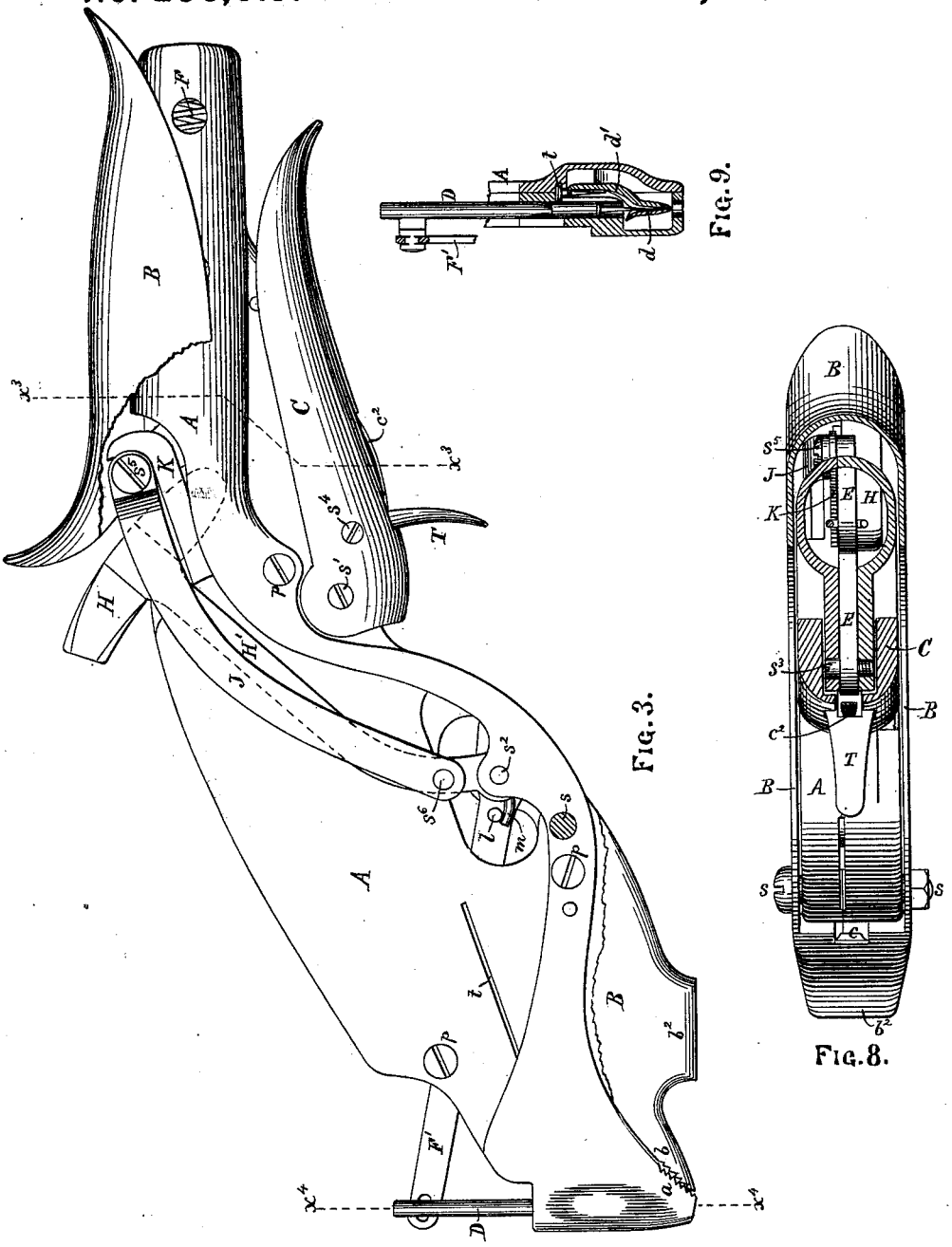

FIG. 3.

FIG. 9.

FIG. 8.

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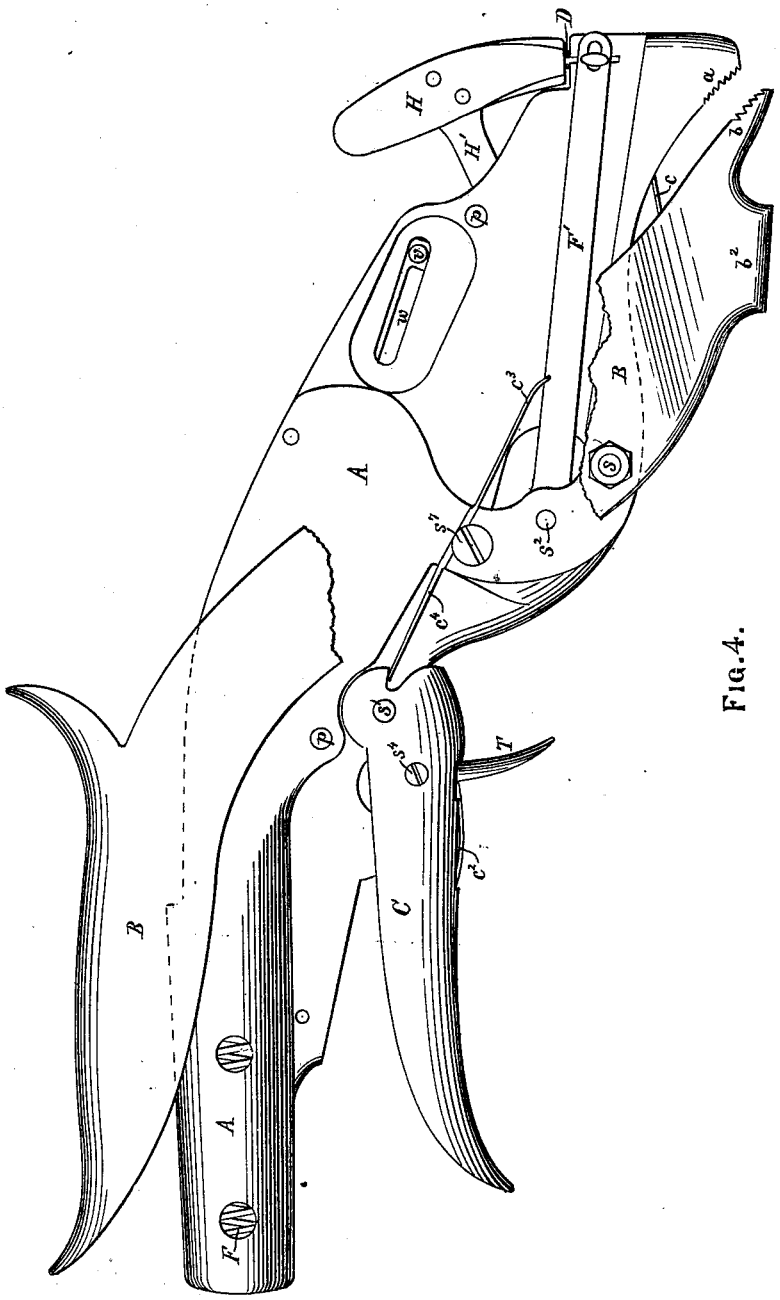

FIG. 4.

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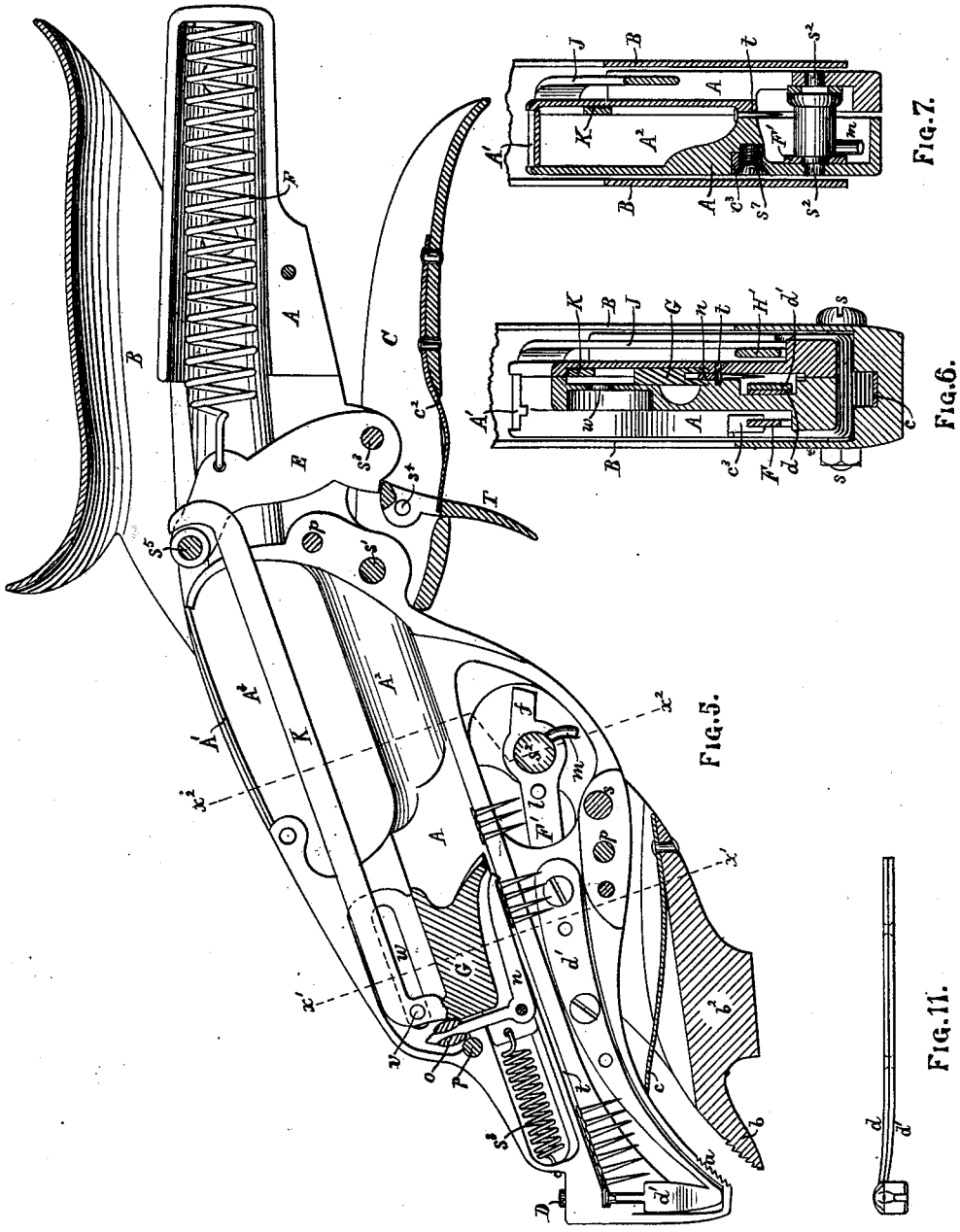

FIG. 5.

FIG. 7.

FIG. 6.

FIG. 11.

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UNITED STATES PATENT OFFICE.

FRANKLIN P. HINDS, OF QUINCY, MASSACHUSETTS, ASSIGNOR OF ONE-HALF HIS RIGHT TO DAVID WHITTEMORE, OF SAME PLACE.

IMPROVEMENT IN HAND LASTING-TOOLS FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **206,019**, dated July 16, 1878; application filed November 20, 1877.

To all whom it may concern:

Be it known that I, FRANKLIN P. HINDS, of Quincy, in the State of Massachusetts, have invented a new and useful Hand-Tool for Lasting Boots and Shoes and for Upholstering or other similar purposes, of which the following is a description:

The invention consists in a self-feeding tack-driving machine and a pair of pinchers, so constructed and arranged that the whole can be held and operated by one hand to grasp and draw to a required position a piece of leather, cloth, or similar flexible material, and then drive a tack through the same in the position to which it has been drawn without losing the grasp.

A part of the invention consists in a self-feeding tack-driving mechanism adapted to be held in the hand, and operated by pulling a trigger to insert and drive a tack in a required position.

The invention consists, further, in certain details of construction hereinafter particularly designated.

Figure 1 is a plan of said tool. Fig. 2 is a side elevation of the same with the hammer thrown down upon the tack-driver. Fig. 3 is the same elevation with the hammer up, the operating-lever of the lower pincher-jaw being broken. Fig. 4 is an elevation from the side opposite to that shown in Figs. 2 and 3, the hammer being down, and the operating-lever of the lower pincher-jaw being broken on this side also. Fig. 5 is a sectional elevation taken on the line x x of Fig. 1, no part of the hammer, however, being shown. Fig. 6 is a sectional elevation on the line x^1 x^1 of Fig. 5, looking from the hammer toward the handle. Fig. 7 is a sectional elevation on the line x^2 x^2 of Fig. 5, looking in the same direction. Fig. 8 is a sectional elevation on the line x^3 x^3 of Fig. 3, looking from the handle toward the hammer. Fig. 9 is a sectional elevation on the line x^4 x^4 of Fig. 3, showing the tack-driver up and a tack held in the spring-fingers ready to be driven. Fig. 10 is a sectional elevation on the line x^5 x^5 of Fig. 2, showing the tack-driver down in the position it occupies after driving a tack. Fig. 11 is a plan of the spring-fingers for holding the tack to be driven.

It is necessary that the tool shall be of a convenient size to handle, and that the parts shall be heavy and strong enough to withstand the strain upon them.

A is the stock or body of the tool. Its forward end forms the upper jaw a of the nippers. B is a slotted casing, within which the stock A is placed, as shown in Figs. 1 and 2, its forward end forming the lower jaw b of the nippers. The two parts A and B are pivoted together at s, and work like an ordinary pair of pinchers, a spring, c, in the jaws keeping them apart when the opposite ends of the parts A and B are not pressed together.

The rear end of the piece B forms the upper handle-piece of the tool. The lower handle-piece is found in a piece, C, pivoted to the stock at s'. This handle-piece C performs other offices; but it is sufficient for the present to state that, with the rear end of the piece B, it forms the handle of the tool. The piece C and the rear end of the piece B are shaped to fit the hand, as shown, and it may be added that in the grasp of the operator the piece B comes between his thumb and hand proper, while his fingers are underneath the piece C. The upper surface of this latter piece is hollowed out to close upon the stock as closely as possible. When the handle-pieces B and C are pressed together in the grasp of the hand, the jaws a and b are closed.

At the forward end of the piece B there is a projection, b^2, to serve as an independent hammer.

The stock A is formed in two parts, separable along the line x x of Fig. 1, the part above said line forming what may be considered a long box, within which is located much of the mechanism of the tool, while the part below is a cover to the box, the two parts being held together by screws p p p.

In the forward end of the stock A—that is, the forward end of the box just mentioned—is located the tack-driving mechanism, consisting of a pair of spring-fingers, d, for holding the tack, and a plunger or driver, D, which has a perpendicularly-reciprocating

motion in a slot, which it accurately fits, as shown more particularly in Figs. 9 and 10.

In Fig. 9 the driver is in the position to which it is lifted when a tack is fed forward to the fingers *d*. In Fig. 10 the driver is in the position to which it descends in order to drive a tack home into the shoe-last. In this respect Fig. 9 corresponds to Fig. 3, and Fig. 10 to Figs. 2 and 4. The driver D is caused to take this last position by a smart blow from a hammer, H, the construction and operation of which are next to be described. It is an ordinary hammer, as shown, with a crooked lever or helve, H′, pivoted to the stock A by a shaft, s^2, to which it is rigidly attached and with which it has a rocking motion. It should be remarked that the stock A is wider or thicker along the under side of the tool than in the upper part of the tool. A slot is cut between the thicker and the thinner part, near the pivot s^2, as shown in Figs. 3, 5, and 6, and the upper surface of the wider part is hollowed out, leaving ears, through which the pivot s^2 passes, so that the helve H′ is confined within the ears. (See Fig. 3.) There is also other mechanism contained in the last-mentioned slot and between the said ears, which will be hereinafter described.

E is a tumbler, pivoted at s^3 between two ears on the stock A, above the handle-piece C. F is the mainspring, lying within the stock A, and having one end attached to the tumbler, as shown. T is the trigger, pivoted at s^4 to the handle-piece C. Its upper corner strikes against a projection on the tumbler, as shown, so that when the handles of the tool are pressed together the tumbler is thrown back to compress the mainspring. The upper part of the trigger T is slotted to permit a spring, c^2, lying and secured within the piece C, to act upon it to keep the trigger in working contact with the tumbler, as shown in Figs. 5 and 8.

The end of the tumbler opposite its pivot s^3 carries a pin, s^5, to which is pivoted one end of a curved link, J, the other end of which is pivoted to the helve H′ at s^6. Both the link J and the helve H′ work between the narrow part of the stock previously mentioned and the casing B, as shown in Fig. 1. (See also Fig. 3.) The hammer-helve is bent laterally, as shown at *z* in Fig. 1, to bring the hammer over the driver D.

When the trigger is pulled it disengages from the tumbler and allows the mainspring to force the tumbler forward. This, through the link J, causes the hammer to give a smart blow upon the driver.

F′ is a lever, at one end so pivoted to the driver as to permit the latter to have a free perpendicular motion, and at the other end having in it a hole, within which the pivot-shaft s^2 turns freely. Near the shaft s^2 the lever F′ has a projecting pin, *l*. The shaft s^2 has a pin, *m*, projecting at right angles to pin *l* on lever F′, and so located with reference to helve H′ and pin *l* that it lifts the lever F′ to raise the driver D just as the helve H′ finishes its backward movement. A light spring, c^3, (see Fig. 4,) presses against the link F′ to force the driver down; but although this spring is weak it acts promptly upon the pulling of the trigger, and, getting ahead of the helve H′, has strength enough to carry the driver down to rest upon the head of the tack before the hammer H strikes its blow. It may be added that the spring c^3 and the spring c^4 consist of one piece of metal, secured at the middle by a screw, s^7, as shown. The office of the spring c^4 is to keep the handle-piece C open from the stock. Its power has to be overcome when the tumbler is forced back.

The link F′ has a stop, *f*, to limit the forward movement of the tack-driver D.

A^2 is a hopper, situated within the box of the stock, as shown at Figs. 5 and 7, for holding the tacks to be driven.

To avoid confusion in the drawings, the hopper is shown empty, although tacks are shown in the chute *t*, leading from the hopper to the slot through which works the driver D.

The hopper has a hinged top, A^1, (see Fig. 1,) which may be raised to fill the hopper with tacks.

G is the agitator, rigidly connected with a hooked rod, K, the bent end of which embraces the pin s^5 on the tumbler. To the forward end of the agitator is attached a spring, s^8, the other end of which is attached to the stock, as shown. The forward end of the agitator is slotted, as shown, and within the slot carries a bell-crank lever, *n*, pivoted, as shown. On one end of the bell-crank lever *n* is a friction-cushion, *o*, of leather, and at the other end is a hook, as shown.

When the tumbler E is thrown back by compressing the handles B and C of the tool, the lower end of the agitator G is drawn along just over the chute *t* into the outlet of the hopper A^2, carrying with it the bell-crank lever *n*. The cushion, pressing against the stock, throws up the hook end of the bell-crank lever *n*, and causes it to pass clear of the chute and any tack-heads in it. When the tumbler E is thrown down or allowed to go forward, the spring s^8 draws back the agitator G, and the cushion *o* throws down the hook end of the bell-crank lever *n*, causing it to draw along the tacks which the agitator may have caused to tumble into the chute.

The chute *t* is open at one side, as shown in Figs. 2 and 3, to allow the operator to see whether there is a sufficient number of tacks in it.

As the agitator will sometimes miss bringing forward tacks in the regular operation of the machine, it is provided with a means of working independently of the tumbler, consisting of a pin, *v*, on the rod K, protruding through and working in a slot, *w*, in the shell of the tool. By moving this pin *v* back and forward a few times in the slot *w*, the chute may be filled with tacks.

It remains to describe the operation of the spring-fingers *d d′*. The finger *d′* has a bowed

projection upward, as shown, the upper end of which crosses the chute *t*. When the driver is raised, as shown in Fig. 9, there is a tack between the fingers *d d'* ready to be driven, and the aforesaid projection keeps the remaining tack backs in the chute. When the driver descends, driving home the tack between the fingers, the spring-fingers *d d'* open, the finger *d* being carried so far back as to permit a second tack to come to the extreme end of the chute *t*, where it hangs by the head, as shown in Figs. 2 and 10, until the driver D is lifted, when the spring-finger carries the tack sidewise into the pathway of the driver, where it assumes the position shown in Fig. 9.

Of the general operation of the tool it is unnecessary to say more than that the nippers are worked in the ordinary way, and that the workman, by pulling the trigger with the forefinger of the hand which grasps the handles of the tool, will drive a tack through the material held in the nippers just in front of the nippers.

For many purposes the outer casing B may be removed, leaving the part of the stock containing the spring F to serve for the upper part of the handle. With this modification the tool will continue to drive tacks in any required position, the tumbler being thrown back by compressing the modified handles—that is, by shutting the part C upon the rear end of the stock—and thrown down by pulling the trigger.

I claim—

1. In a boot and shoe lasting apparatus, the combination, with a pair of nippers and an automatic tack feeding and driving mechanism, of a trigger for operating the driving mechanism, all substantially as shown and described.

2. In a hand lasting-tool, the combination, with the tack feeding and driving mechanism, of a trigger, all substantially as described, and for the purpose set forth.

3. The automatic feeding device, consisting of the hopper A^2, the agitator G, with its bell-crank lever *n* and friction-cushion *o*, the chute *t*, and spring-fingers *d d'*, in combination with the driver D, substantially as described, with any suitable means for operating the driver and for giving the agitator a reciprocating motion.

4. The spring-fingers *d d'*, operating to close the chute and to present a tack to the driver, substantially as described.

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Witnesses:
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