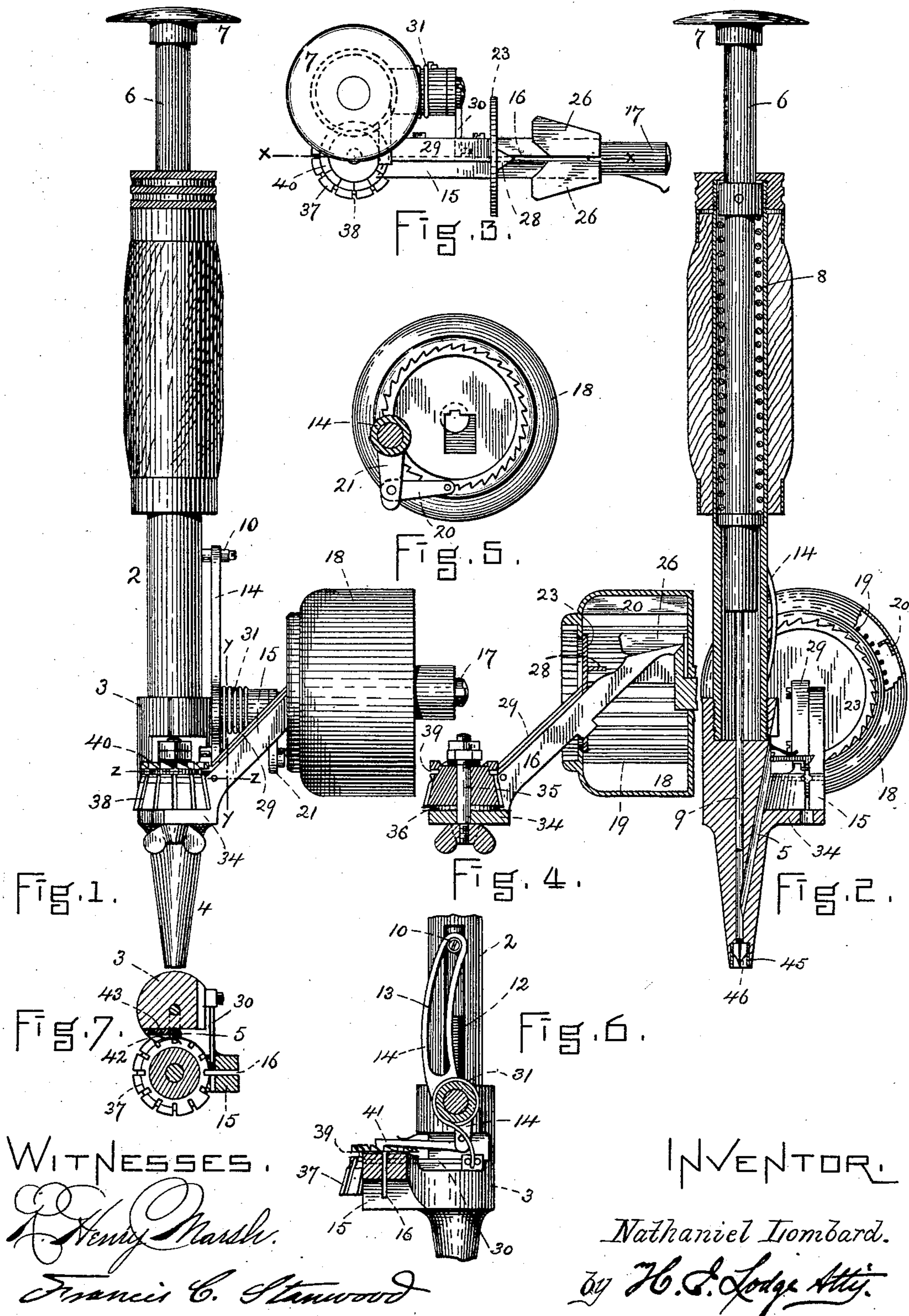


(No Model.)

N. LOMBARD.
HAND TACKING IMPLEMENT.

No. 481,653.

Patented Aug. 30, 1892.



UNITED STATES PATENT OFFICE.

NATHANIEL LOMBARD, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ORLANDO E. LEWIS, OF SAME PLACE.

HAND TACKING IMPLEMENT.

SPECIFICATION forming part of Letters Patent No. 481,653, dated August 30, 1892.

Application filed September 10, 1891. Serial No. 405,290. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL LOMBARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Hand Tacking Implements; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to machines termed "tackers," employed to drive tacks by hand in the process of lasting boots or shoes. The primary features of said machines are embodied in a reciprocating plunger, a receptacle for containing the tacks, and means for assembling and delivering the tacks in proper position to be driven into the boot or shoe upon descent of the plunger.

My invention consists, partly, in the combination of the clearer by which each tack is separately delivered to a feed-cylinder, with a spring acting on the said clearer, a shaft on which the said spring is wound, a lever connected to the said shaft, and the tack-driving plunger, which has a pin-and-slot connection with the said lever, whereby each descent of the plunger will actuate the clearer by increasing the tension of the spring, and the latter will be braced, supported, and held in position by the said shaft.

My invention further consists in the combination, with the other necessary parts of the implement, of a rotary tack-receptacle provided with a series of buckets arranged about its internal periphery and with a series of rods concentrically arranged between the said buckets and the center of the receptacle, the said rods being in proximity to the said buckets and serving to retain a portion of the contents of the latter for more even distribution.

The said invention also consists in certain additional features of distribution herein-after more particularly set forth and claimed.

The drawings accompanying this specification represent, in Figure 1, a side elevation

of a hand tacking implement embodying my invention. Fig. 2 is a sectional end elevation with the feed-cylinder removed. Fig. 3 is a plan with the tack-receptacle off. Fig. 4 is a vertical section on line *x x*. Fig. 5 is a view of the inner side of the tack-receiver in elevation, showing the filling-aperture. Fig. 6 is a section on line *y y* of the implement in part. Fig. 7 is a horizontal section on line *z z*.

The cylinder, tube, or barrel through which the tack-driving plunger operates is usually held in an approximately vertical position while in use and is provided with a hand-grasp. The barrel or cylinder is composed of three parts, an upper tube portion 2, a head or intermediate casting 3, as a support for the various operating parts, and a lower terminal or nose 4, which is tapered and provided with a branch delivery-tube 5, through which the tacks are passed from the feed-cylinder into the plunger-tube at a point below the extremity of said plunger when the latter is at rest. (See Fig. 2.)

The plunger consists of a cylindrical shaft or rod 6, surmounted by a weight or knob 7, while a spring 8 serves to lift and cause its retreat after the insertion of a tack. The lower portion of the plunger consists of a small steel rod 9, which is preferably of a length equal to the casting and nose of the tube. A pin 10, transversely of said plunger and affixed thereto, reciprocates within a longitudinal aperture 12 in the tube and projects therebeyond to engage a slot 13 within a rocker-arm 14. The latter is mounted upon a stud (see Fig. 6) inserted in the casting or head.

The mechanism for receiving and assembling the tacks individually in a similar position is as follows: Laterally of the head 3 and obliquely positioned (see Figs. 1 and 3) is an extension arm or bracket 15, longitudinally and vertically slotted, forming thereby the feed-duct 16. Said bracket terminates in a short cylindrical piece or arbor 17, upon which is detachably secured a revoluble cylinder or tack-receiver 18. This latter is interiorly fitted with a series of concentrically-arranged rods 19 and a number of buckets 20, the said rods being in proximity to the said buckets, but nearer the center of the re-

ceptacle, whereby a more even distribution of the contents is obtained, said tacks being lifted by the buckets, which are enabled to retain a portion of their contents by means of the rods 19. Hence the receiver is self-balanced and readily revolves. Rotation and feed movement are obtained by means of a pawl 20, operated by the lever 21, which is attached to the rocker-arm 14. Said pawl is arranged to engage with ratchet-teeth cut in the raised edge of the tack-receptacle. (See Fig. 5.) The latter is closed upon the outer end, but open upon the inner end for the purpose of renewing the supply of tacks. This filling-aperture is closed (see Fig. 4) by a disk 23, preferably circular, which is fixed upon the bracket. Hence when the tack-receptacle is in place the disk 23 closes one end and the arbor 17 fills the tubular boss on which the receiver revolves. The escape of tacks is thus prevented, except through the proper feed-duct 16. To insure that each tack is properly placed in said duct and all assembled with their points down to continuously pass through said duct, I have arranged at the end of the bracket 15 two converging similar plates 26 26, one on either side of the feed-duct. Said plates fit closely against the outer end of the receiver to prevent tacks wedging in between. Moreover, that part of the bracket between said plates and the disk 23 is wedge-shaped or beveled from the median line. Thus as the tack-receiver revolves numbers of the tacks are continuously dropping upon the inclined plates. Those that are properly positioned with their bodies in alignment with the slot drop into the latter and now hang pendant by their heads, which are wider than the feed-duct. The others, not so presented, impinging upon said plates and also upon the wedge or convex surface of the metal composing the feed-duct, fall off into the bottom of the receiver as rejected and are then in readiness to be lifted again on the buckets for a fresh presentation against the plates 26. Immediately upon their entrance within the feed-duct the tacks are compelled to slide to the lower end of said duct, owing to its inclination. When the latter is full and to prevent the rejected tacks from jamming or entering the aperture in the closing-disk 23, where the accepted tacks pass out from the receiver, I have provided an inwardly-projecting deflector 28. (See Figs. 3 and 4.) This is a triangular piece of metal with the apex directed inwardly of the receiver and above the duct 16, being so adjusted that the rejected tacks strike upon it, and, aided by the sloping surface of the bracket, compels every rejected tack to drop into the bottom of the receiver. In this way the duct is kept clear and the tacks properly assembled in the duct are free to pass along, and no cessation in the delivery of the tacks can occur. That portion of the duct exteriorly of the hopper is fitted with a shield 29 to prevent the jar or vibrations of the tool

incidental to the operation of the plunger from dislodging the tacks now resting in said feed-duct.

At the lower or discharge end of the duct and closing the same (see Fig. 7) I have positioned a clearer 30, which acts as a cut-off, and consists in a pointed finger or rod, which plays freely in the casting 3 and has its rear end fitted to engage the free end of a spring 31. The function of this reciprocating clearer is to keep the tacks free to move in the feed-duct. Hence the lower edge of said clearer is straight, while its upper surface is beveled at the end. Hence when the clearer advances it pushes back all the tacks in the duct and allows the lowermost tack to enter the feed-cylinder, since the end of the duct projects beyond the clearer sufficiently to admit one tack therebeneath. Said spring 31 in the present instance is coiled about the hub of the rocker-arm and its fixed end attached thereto. It is evident that said cut-off is reciprocated by the varying tension of its spring occasioned by the rocker-arm. As a consequence said cut-off, should its active end strike a tack in lieu of passing between two of them, as its duty requires, is not harmed, since the spring yields. This independent mounting of the cut-off is an important feature in my invention.

Having thus described the driving element or plunger and the several parts whereby the tacks are properly assembled and positioned to be then driven by said plunger, I will now describe the mechanism by which said tacks are taken separately from the delivery end of the feed-duct 16 and conveyed to the receiving end of the delivery-tube 5, from whence they pass to the nose of the plunger tube or terminal 4. This is effected by means of a revoluble feed-cylinder adapted to be removed at any time, and constitutes an important feature of the implement.

Laterally of the casting or head 3, and forming an offset which connects the bracket 15 therewith, is a flat lip 34, (see Fig. 2,) fitted with a slot, in which enters an upright spindle 35, having a shoulder 36, which acts as a seat therefor, while the lower screw-threaded end receives a thumb-nut. Upon said spindle is mounted a feed-cylinder 37, preferably frusto-conical in shape to more readily receive the bodies of the tacks, which are contained in a series of longitudinal slots 38, cut in said cylinder. At the upper extremities of said slots is formed an annular groove 39 to create a ledge upon which the heads of the tacks rest and likewise to permit a switch 42 (see Fig. 7) to project within and thus engage the head of each tack as it arrives opposite the receiving end of the delivery-tube 5. Said switch consists of a bent spring, which is affixed to a block 43, removably mounted in the head 3. Rotation and intermittent feed movement of said cylinder are obtained by means of a ratchet-wheel 40, which surmounts said cylinder and is engaged by a pawl 41, (see

Fig. 6,) the rear end of which is hung upon the lower extremity of the rocker-lever, it being understood that the pivot of said lever is at some distance from its lower end.

Proper tension to hold the feed-cylinder, except when movement is desired, is created by means of a spring medium—as a rubber gasket—and adjusting-nuts, which screw upon the upper extremity of the spindle 35. (See Fig. 4.) It is to be understood that the slots 38 in the cylinder are so spaced that when one opposite the feed-duct is receiving a tack another opposite the delivery-tube 5 is discharging a tack.

Within the nose or lower end of the plunger-tube is tightly fitted a sleeve 45, to which are fastened opposite spring clips or holders 46, the function of the latter being to provide a yielding gate to close the end of the plunger-tube and likewise to grasp and hold in proper position any tack not yet driven, but which has been discharged from the feed-cylinder. This mechanism is requisite, since every time a tack is driven by the implement upon retreat of the plunger a second tack enters the lower end of the terminal 4. To prevent the escape of this undriven tack and at the same time to hold it in place in case the tool is not retained in an upright position, I have provided such instrumentalities.

The operation of the various elements hereinbefore described when united and co-operating as a complete implement is as follows: The assumption is made that the tack-receiver is supplied with tacks, some of which have been properly positioned and assembled in the feed-duct, while the feed-cylinder is charged and in readiness to deliver a tack, one of the latter already having been discharged into the delivery-tube, and is now held by the spring-clips 46. With this premise I will instance that the terminal 4 is placed upon the boot or shoe in process at a point where a tack is required. A blow upon the knob 7 forces the plunger by a quick action to expel the tack at the end of the plunger-tube and drive it home. Upon descent of the plunger the arm or lever 14 is oscillated, and such movement performs three operations. One is to rotate the feed-cylinder by means of the pawl 41 and thereby to present an empty slot 38 in front of the feed-duct 16 and bring a slot containing a tack in alignment with the delivery-tube 5. The second revolves the hopper by its pawl 20 and lever 21 to provide for proper assembling of the tacks therein, while the third is to advance the clearer by increased tension of the spring 31 to thrust the tacks in the feed-duct back and allow the lowermost tack therein to drop into the empty slot in the feed-cylinder. Upon retreat of the plunger the tack conveyed to the delivery-tube 5 and thrust therein by the switch 42 enters the plunger-tube and is grasped and held by the yielding mediums 46 in the nose thereof until the plunger again descends. Successive reciprocations of the plunger consequently provide

for the proper assembling of the tacks, delivery of the same to the feed-cylinder, discharge from the latter into the plunger-tube, and final insertion into a boot or shoe.

What I claim is—

1. In a tacking implement, a reciprocating plunger, the tube in which it works, and a feed-duct forming part of the devices for supplying tacks below the said plunger, in combination with a clearer reciprocating across the said feed-duct to force out the lower tack alone, a spring bearing against this clearer, a shaft on which this spring is wound, and a slotted lever connected to this shaft and receiving a stud on the said plunger in order that the descent of the latter may rock the said shaft and increase the tension of the said spring, thereby causing the latter to operate the said clearer, substantially as set forth.

2. In a tacking implement, a tack-receiver, a revoluble feed-cylinder, and a duct leading from the said receiver to the said cylinder, in combination with a clearer reciprocating across the said duct to force out one tack at a time, a spring acting on the said clearer, a lever arranged to increase the tension of the said spring when rocked in one direction, a shaft on which the said spring is wound and to which the said lever and spring are connected, and a tack-driving plunger having a sliding connection with the said lever to effect the motion of the said clearer when the said plunger is depressed to drive a tack, substantially as described.

3. In a tacking implement, a reciprocating plunger, in combination with a tack-containing receptacle, connections between the said receptacle and the said plunger for causing the rotation of the former by the stroke of the latter, and devices for conducting the tacks from the said receptacle to the space below the said plunger, the said receptacle being provided with a series of buckets extending inward and also with a concentrically-arranged series of rods which are nearer the center of the receptacle than said buckets and are arranged to enable the said buckets to retain a part of their contents long enough to effect a more even distribution thereof, substantially as set forth.

4. In a tacking implement, a reciprocating plunger, a plunger-tube, and a feed-cylinder connected therewith, in combination with a tack-containing receptacle adapted to be revolved intermittently by the action of the said plunger, a series of rods arranged concentrically within said receptacle, and a series of buckets between the said rods and the inclosing shell of the receptacle, the said rods being in such proximity to the said buckets as to enable the latter to retain a part of their contents and distribute the latter more evenly as the receptacle revolves, substantially as set forth.

5. In a tacking implement, a tack-driving plunger, in combination with a tack-recepta-

le rotated thereby and a duct for conveying
the tacks from the said receptacle, a clearer re-
ciprocating across the said feed-duct to force
out one tack at a time, a spring acting on the
5 said clearer, a lever arranged to increase the
tension of the said spring when rocked in one
direction, a shaft on which the said spring is
wound and to which the said lever and spring
are connected, a sliding connection between
10 said lever and said plunger to effect the mo-
tion of said clearer when the said plunger is
depressed, and a fixed inclined inwardly-pro-

jecting deflector 28, arranged within the said
receptacle in proximity to the said duct, but
outside of the same and operating, when the 15
feed-duct is full, to turn away the rejected
tacks, substantially as set forth.

In testimony whereof I affix my signature in
presence of two witnesses.

NATHANIEL LOMBARD.

Witnesses:

H. E. LODGE,

FRANCIS C. STANWOOD.