

(No Model.)

2 Sheets—Sheet 1.

N. LOMBARD.
TACKING MACHINE.

No. 539,065.

Patented May 14, 1895.

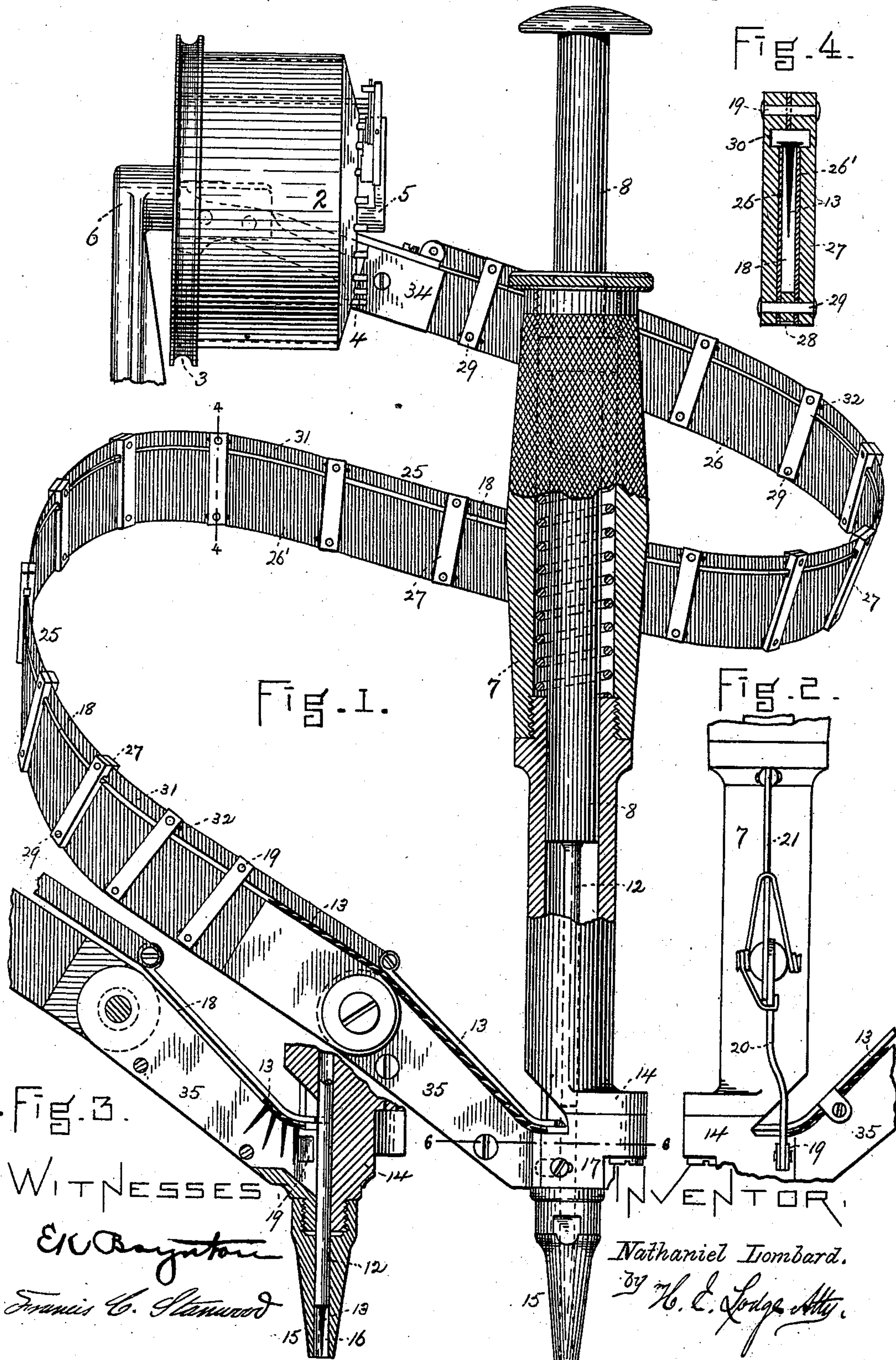


Fig. 3.

WITNESSES

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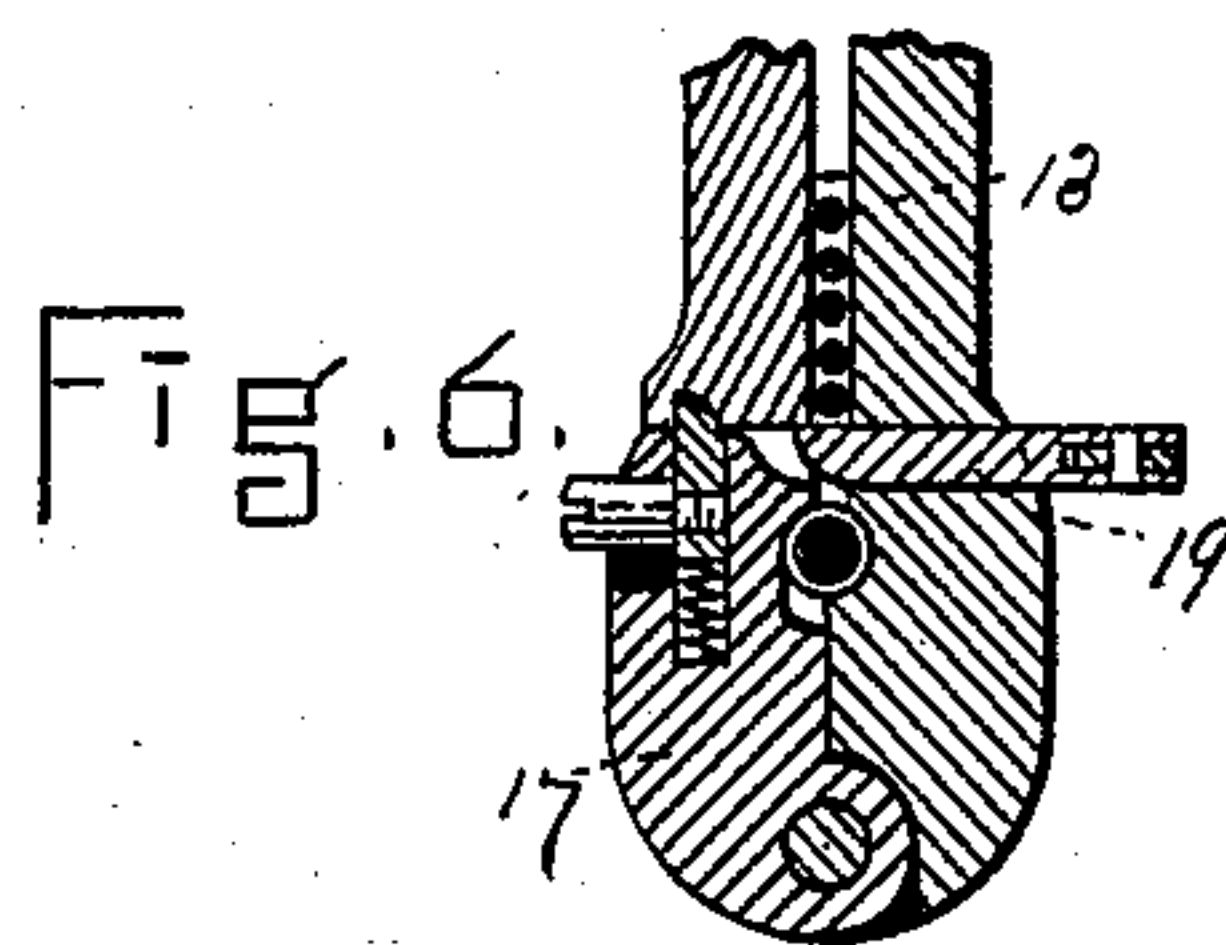
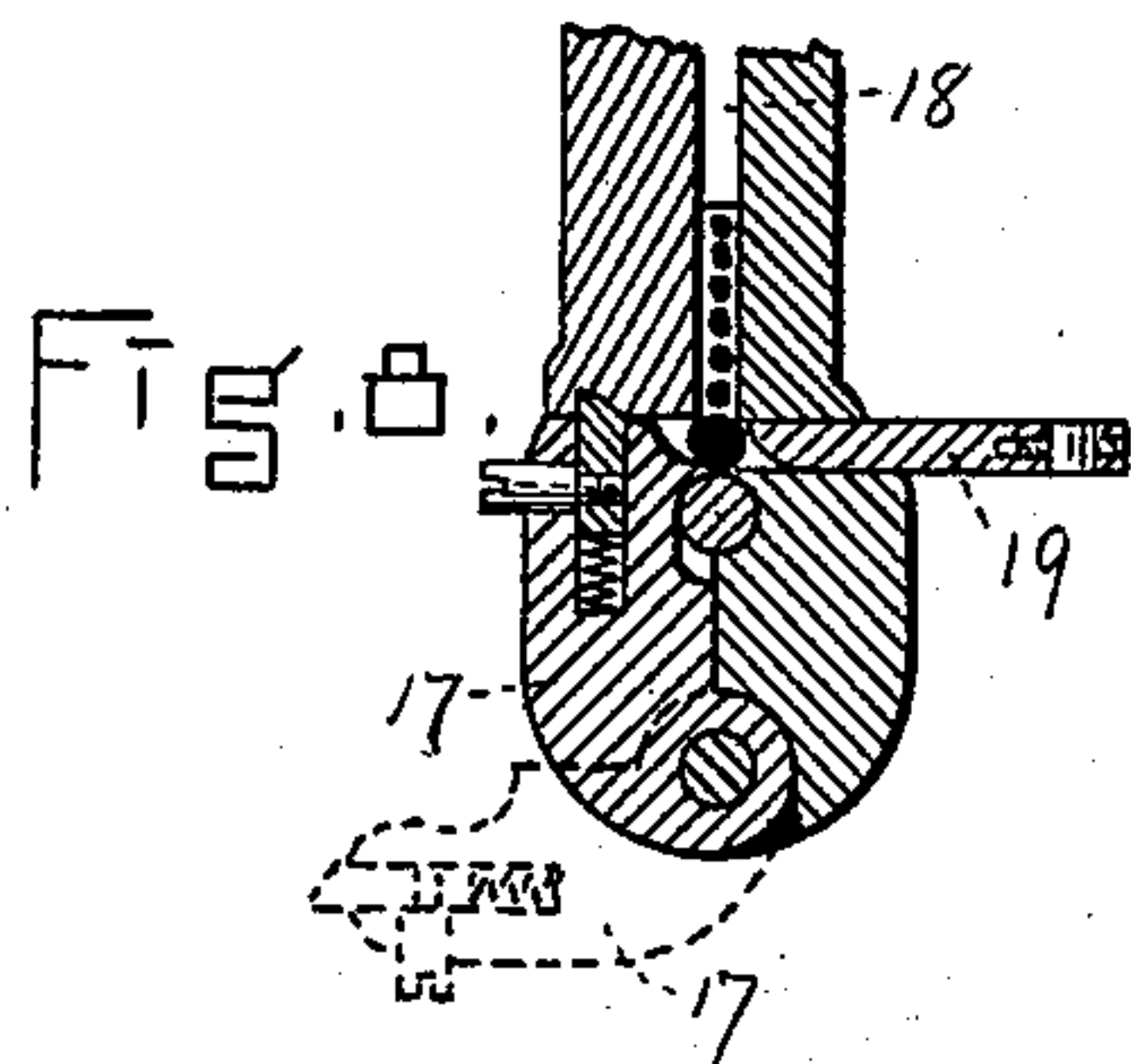
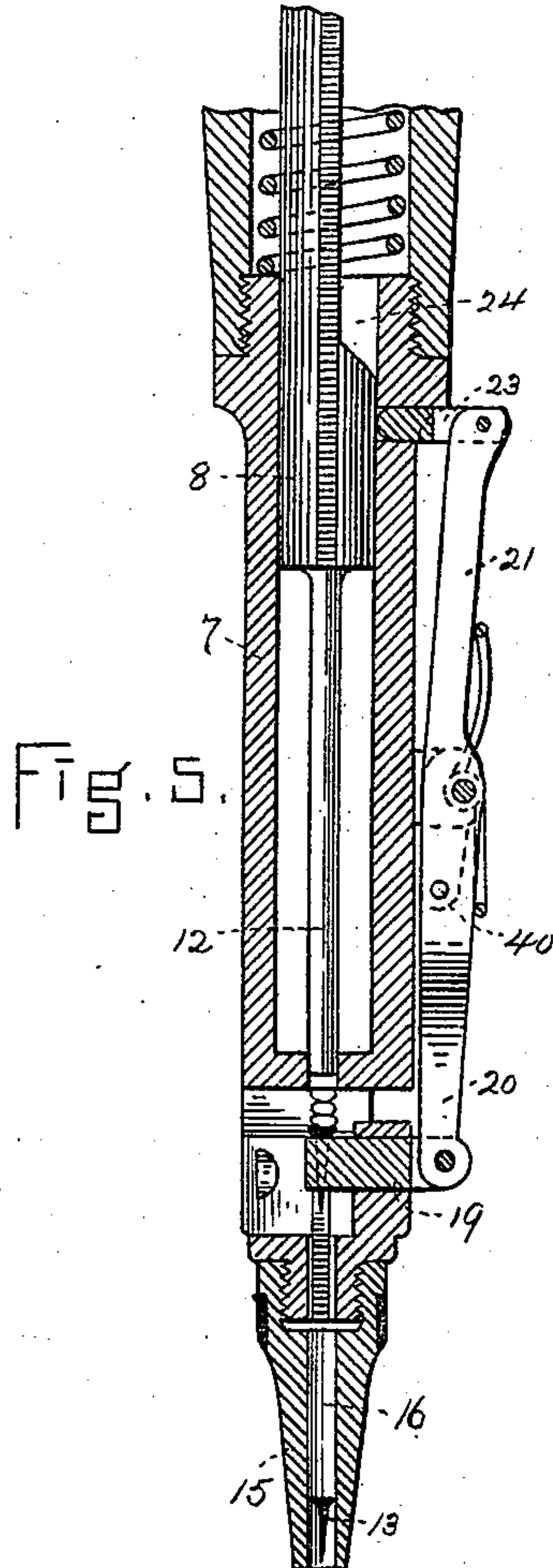
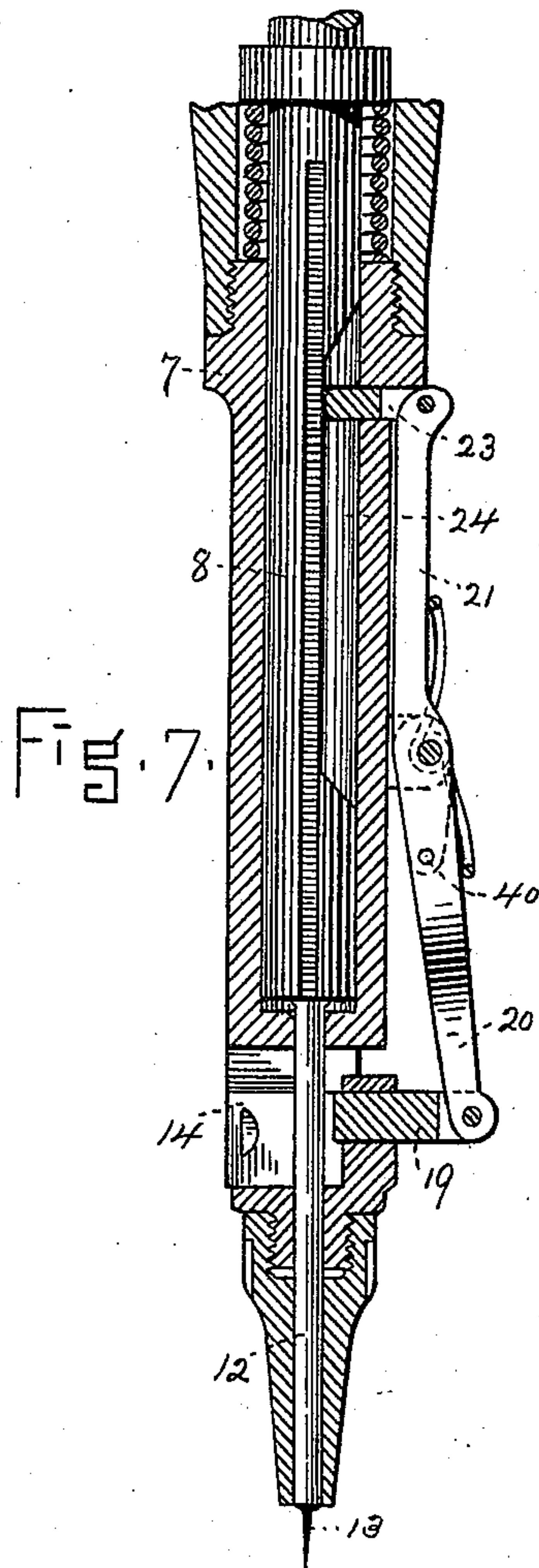
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UNITED STATES PATENT OFFICE.

NATHANIEL LOMBARD, OF BOSTON, MASSACHUSETTS.

TACKING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 539,065, dated May 14, 1895.

Application filed May 4, 1894. Serial No. 510,063. (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 Tacking-Machines; 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 improvements in hand tackers, or that class of apparatus employed in the lasting of boots and shoes.

My improvements relate particularly to the arrangement of parts by which the instrumentalities, as a group, and comprising the mechanism for driving the tacks is made lighter, furthermore is better balanced, and lastly may be changed in position more readily.

The class of apparatus to which my invention pertains, includes means for holding a mass of tacks, means for assembling the same, mechanism for driving them and discharging them one by one beneath the plunger, and further in devices by which the tacks may be driven into the desired spot.

My invention is embodied in the means by which the tacks properly assembled are delivered and fed to a hollow tube which contains the plunger.

The object of my invention is to relieve the tacker proper from the receiver which contains a mass of unassembled tacks. Hence I have mounted said receiver on a fixed support, and then connected it with the tacker by a flexible chute whereby every possible motion is permitted said tacker. Thus the operator is free to move it wherever he may desire, while the apparatus is very much lighter and is perfectly balanced.

The drawings represent, in Figure 1, a full-sized elevation of a hand-tacker embodying my invention. Fig. 2 is a side elevation of the compound lever for operating the gate for single delivery of the tacks. Fig. 3 is a vertical central section in part of the tacker, showing the junction of the chute with the plunger-tube. Fig. 4 is a transverse vertical

section on line 4 4, Fig. 1, showing the construction of the chute. Fig. 5 is a vertical longitudinal section of the plunger-tube, showing the gate closed. Fig. 6 is a transverse horizontal section of the same on line 6 6, Fig. 1. Fig. 7 is a vertical longitudinal section of the plunger-tube with the gate open and the plunger in operation. Fig. 8 is a horizontal section of the same.

The tacker herein shown comprises three groups of parts: first, means for assembling the tacks; secondly, means for holding the tacks so assembled and delivering them when wanted, and, thirdly, mechanism for driving the tacks and delivering them one by one as they are used.

The means for assembling the tacks comprise a stationary closed vessel 2 adapted to contain an agitator or tack-receiver for continuous rotation by any suitable means; in the present instance by a pulley, 3, while a series of pins 4 project from said agitator on one side. These pins are arranged to actuate a rocking arm 5 which extends interiorly of the vessel, and is mounted on the fixed post 6. By means of this arm 5 the tacks contained in the vessel 2 are assembled and arranged in a uniform position within the conveyer or chute 25.

The full and complete method of assembling tacks by means of the elements above referred to is fully set forth and described in United States Letters Patent No. 481,653, issued in my name on the 30th day of August, 1892, but as the art of assembling the tacks constitutes no part of my present invention, further description is unnecessary.

The third group of parts comprises a cylinder or plunger tube 7 adapted to contain a plunger 8, centrally therein, capable of longitudinal reciprocation and this plunger is spring actuated at 10 to normally hold it in an upraised position as shown in Fig. 1. The lower portion of the plunger consists of a slender steel rod 12 in diameter about equal to that of the head of a tack, which fastening devices are indicated at 13. The upper portion of the plunger tube is roughened exteriorly to enable the operator to grasp and hold it firmly, while the lower extremity or foot consists of an enlargement or boss 14 to which is removably attached a nose piece 15 tapered

in order to enable a tack to be more accurately positioned. This boss contains a central bore 16 in alignment with the plunger while the feed passage 18 in the chute connects therewith. One side of the boss consists of a swinging plate 17 held in place by a spring catch, by means of which access is had to the spot where the tacks are delivered to the plunger. This is to enable repairs to be made or a tack removed, if by accident one should become misplaced.

Transversely across the mouth of the feed passage 18 is located a gate 19 which is adapted to be withdrawn at each descent of the plunger and thus to allow escape of a single tack. This tack is then kept in position until the extremity of the plunger has passed by in its retreat movement, when the tack is allowed by gravity to drop into the bore 16 of the foot, while just prior to the escape of this tack, the gate returns and moves across the mouth of the feed passage 18 closing the latter and pushing off the tack which is now in readiness to enter the feed tube. To time the to-and-fro movement of the gate, I have affixed a bracket to the plunger tube and pivoted thereupon two levers 20, 21 spring-actuated. The free end of the upper lever is furnished with a pivotal finger 23 which enters the walls of the cylinder and engages a cam slot 24, which is cut in the plunger, while the free end of the lower lever is equipped with the gate 19 likewise pivotally attached. When the upper lever is thrown out by its finger 23 meeting the full portion of the plunger, it will be seen that the lower arm 20 is pushed inwardly with the result that the gate is closed. In lieu of making this lever a simple one I have divided it into the arms 20, 21, which are interconnected at 40. This is very necessary in view of the fact that the tacks at times may become displaced when should the plunger descend, some of the parts must necessarily be broken.

The second group of parts in which is embodied the gist of my invention comprises such elements as are necessary to receive the assembled tacks and hold them in readiness for delivery to the plunger.

My object is to relieve the tacker proper from the weight of the first group of parts to wit: the closed vessel and means for assembling the tacks, and at the same time enable such tacks to be delivered to the tacker, while the operator is free to turn the said tacker proper in any position easily and quickly. To this end I have formed a flexible chute or feed spout 25 which is adapted to unite the vessel 2 with the tacker. This chute is of such construction that as before stated, its flexibility enables the tacker to be passed anywhere over the boot or shoe, while the tacks properly assembled are prevented from escaping in any way whatsoever except through the proper channels, while the free advance movement of said tacks occurs in a positive manner. Preferably this chute con-

sists of several bands of steel in the present instance two parallel bands 26, 26' which are held united by transverse straps or bars 27. The feed channel or duct created by the separation of the bands 26, 26' is created by means of a block 28 of suitable thickness through which the bolts 29 pass. See Fig. 4. The upper inside surface of the bars is cut away at 30 just above the upper edge of the bands in order to allow the heads of the tacks which slide upon said edges to pass freely between said bars. The bolt holes in the bands are longitudinally slotted in order to permit the two bands to slip upon each other when flexure takes place. To prevent escape of the tacks after they are assembled and enter the chute, a single band 31 (see Fig. 4) is aligned above the feed passage 18 and is secured by the bolts 19 which are employed to fasten the upper ends of the bars together. This band is likewise slotted at 32 to permit movement of the bolts whenever the chute is bent. The ends of this flexible chute are fastened to rigid brackets 34, 35 which project respectively from the tack assembling vessel and the lower extremity of the plunger tube. As before premised, upon retreat of the plunger to its fullest extent, a tack is permitted to enter the bore 16 of the nose piece 15 in readiness for the advance of said plunger when such act occurs; but in order to simplify the parts and still hold the tack within the nose piece until the said tack is forced out at the proper time, I have made the nose-piece as a permanent magnet. In this way the tack is retained in the tube 16 and in readiness for insertion in the proper place by means of the plunger.

In the operation of the gate it will be seen when the plunger is retracted the finger 23 bears against the full portion of the plunger and the gate is kept closed. Conversely when the finger 23 enters the slot caused by the tension of the spring on the lever 21, the gate is drawn back and so maintained until the plunger has again reached the position shown in Fig. 5.

What I claim is—

1. The combination with a group of parts for assembling tacks and mounted upon a stationary support, and a group of parts adapted for receiving and driving tacks, and universally movable with respect to the stationary assembling group of parts and over the object to be tacked, of an open flexible chute having a longitudinal slit adapted to hold the assembled tacks and convey them from the stationary group of parts to the movable group of parts, the ends of said chute being positively attached respectively to the tack-assembling and to the tack-driving mechanism, substantially as and for purposes explained.

2. In combination with mechanism for assembling tacks, and mechanism for inserting or driving the same, an interconnecting con-

veyer therebetween, and comprising two flexible bands non-contiguous to form an open feed passage, and a flexible band thereabove, said conveyer permitting swinging movement of the tack-driving mechanism in any direction about the assembling mechanism, as specified.

3. In combination with elements for assembling tacks, and elements for driving the same, a movable chute comprising two flexible lower bands in parallelism but non-contiguous, a third flexible upper band aligned above the space between the two lower bands, and mechanism for uniting the three bands, as likewise devices for interlocking the bands at intervals longitudinally to permit sliding movement of the several parts on each other due to flexure, said driving elements and the chute being adapted for universal movement about the elements which assemble the tacks, substantially as set forth.

4. In combination with two flexible parallel bands, a series of blocks at intervals therebetween, a single upper band aligned over the space between said parallel bands, a series of transverse bars, bolts through the sin-

gle band, and bars and bolts through the lower parts of the parallel bands and bars, together with elongated holes in the bands by which to allow the said bands to have sliding adjustment longitudinally of the bolts upon flexure of said band, substantially as stated.

5. The combination with a vessel for assembling tacks, a plunger tube for universal movements thereabout, and an open flexible chute permanently attached at its ends respectively to said vessel and plunger-tube, and formed with a slit for its entire length as a conveyance for the tacks from said vessel to the plunger tube, of a plunger secured to one end of the chute and adapted to swing about the vessel, and a sliding gate actuated by said plunger and adapted to deliver tacks from the chute upon each reciprocation of the plunger, substantially as explained.

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

NATHANIEL LOMBARD.

Witnesses:

A. O. LOMBARD,

H. E. LODGE.