F. L. MacKENZIE.

MACHINE FOR INSERTING FASTENINGS.

APPLICATION FILED JAN. 2, 1912.

1,106,393.

Patented Aug. 11, 1914.

2 SHEETS—SHEET 1.

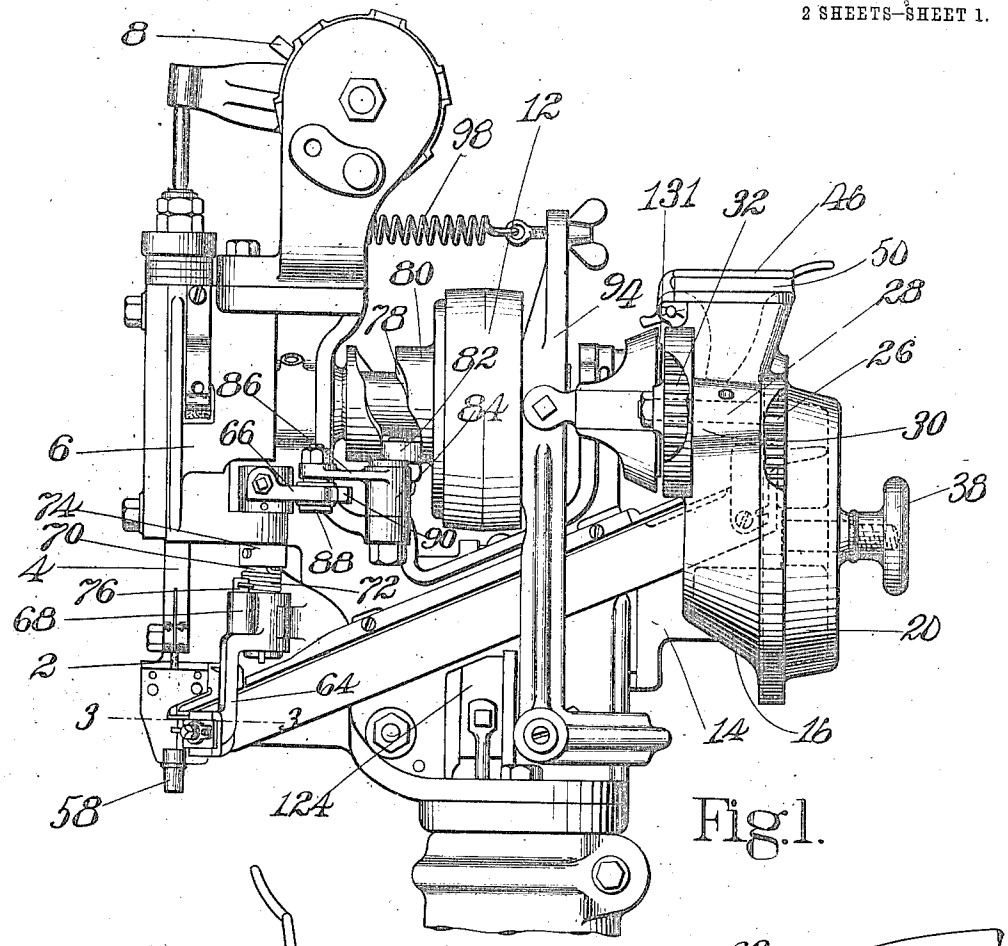


Fig. 1.

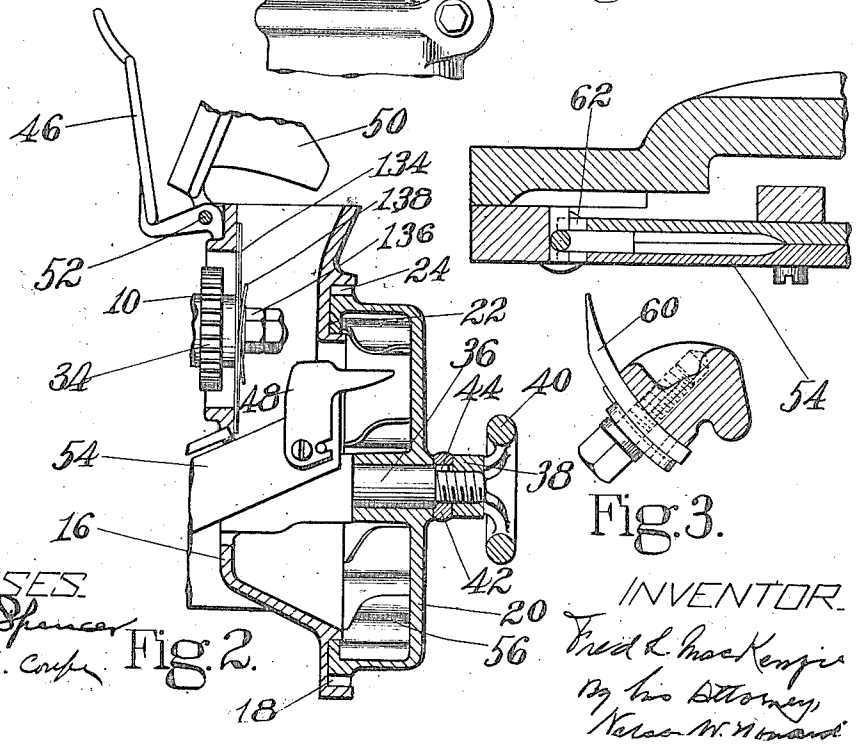


Fig. 2.

Fig. 3.

WITNESSES.

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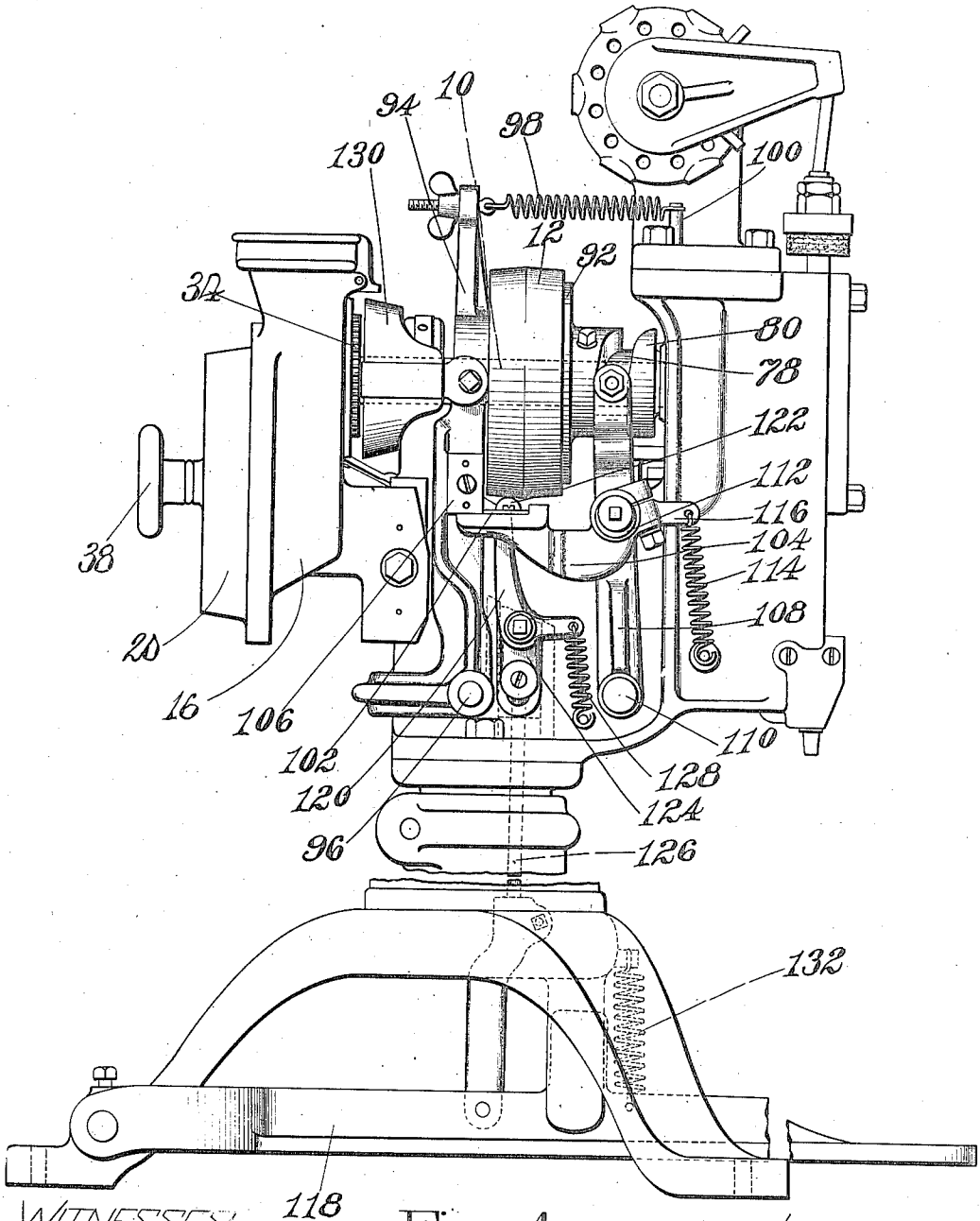


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR INSERTING FASTENINGS.

1,106,393. Specification of Letters Patent. Patented Aug. 11, 1914.

Application filed January 2, 1912. Serial No. 668,962.

To all whom it may concern:

Be it known that I, FRED L. MacKENZIE, a citizen of the United States, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Machines for Inserting Fastenings, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for inserting previously formed fastenings and is herein shown as embodied in a machine especially adapted to insert headed tacks of the kinds used in the manufacture of boots and shoes. Machines of this type comprise usually fastening inserting mechanism, a container or pot into which the tacks or other fastenings are thrown in bulk, a raceway which serves to conduct the tacks supported by their heads from the pot to a point adjacent to the inserting mechanism, and a separator operating intermittently to separate the endmost tack from the line in the raceway and to deliver it to the inserting mechanism.

An object of the invention is to provide improved fastening delivering mechanism for a machine for inserting previously formed fastenings, and particularly to provide an improved tack pot or container and improved separating mechanism.

The tacks used in the manufacture of boots and shoes have usually comparatively sharp points and it is therefore important that any mechanism for handling these tacks and delivering them to the inserting mechanism shall be so constructed and shall operate in such manner that the points do not become bent, dulled or broken. Tack pots as hitherto constructed have been of two general types, those having a stationary container in which a paddle wheel or other tack lifting device operates to stir the tacks up, and throw them upon the raceway, and those having a rotary container which is itself provided with blades whereby as it rotates it carries the tacks around with it until they fall by gravity upon the raceway or upon the tack receiving table which serves to guide the tacks into the raceway. It will be apparent that the rotary tack pot is the preferable form of tack pot for handling sharp-pointed tacks, since there is less liability of the tacks becoming cramped between a stationary part and a moving part. In rotary tack pots as hitherto constructed, however, this liability to injury of the tacks by reason of their becoming wedged between a stationary part and a moving part has not been entirely obviated.

A particular object of the present invention is to provide a tack pot which shall be so constructed that there is no opportunity for the tacks to become injured.

Other objects of the invention are to provide improved means for driving the tack pot and novel means for introducing the tacks into the tack pot whereby clogging of the raceway is avoided.

In the accompanying drawings,—Figure 1 is a side elevation of the head of the machine, viewed from the right of an operator facing the machine; Fig. 2 is a sectional detail showing the novel features of construction of the tack pot; Fig. 3 is a detail sectional view, illustrating the operation of the separator, and Fig. 4 is a broken side elevation of the side of the machine opposite to that shown in Fig. 1, this view illustrating especially the mechanism for controlling the starting and stopping of the machine.

The fastening inserting mechanism of the illustrated machine comprises a driver 2 carried by a driver bar 4 arranged to slide vertically in a guideway in the front part of the head 6, the driver bar 4 being lifted against the tension of a driving spring 8 by a lifting cam, not shown, upon the front end of the main driving shaft 10, this cam being of ordinary construction. The driving shaft 10 is driven from a loose pulley 12 which may be clutched to the shaft at the will of the operator by suitable clutch mechanism hereinafter more fully described.

The improved tack holding means, which constitutes one of the principal features of the present invention, is carried upon a bracket 14 attached to the rear end of the machine head and comprises a stationary hopper portion 16 provided with an annular groove 18 in which the rotary member or tack pot 20 travels. The rotary member 20 of the tack holding means has a vertical flange 22 which is received in the groove 18. This flange fits snugly the inner curved wall of the groove 18, thereby providing a joint between the rotary and stationary parts of the tack holding means into which the tacks

will not gravitate and into which there is practically no tendency for them to work their way. Also received in the groove 18 is a gear 24 by which the tack pot is driven, this gear being formed integral with the outer surface of the tack pot and meshing with a pinion 26 carried upon the rear end of a short shaft 28 having a bearing 30 cast integral with the hopper 16. The shaft 28 at its inner end carries a gear 32 meshing with a pinion 34 upon the rear end of the driving shaft 10. The tack pot 20 turns upon a stationary shaft 36 carried by the hopper 16 and is confined upon said shaft by a screw-threaded nut 38 provided with a hand wheel 40, this nut pressing against the tack pot a washer 42 provided with a groove which receives a stud 44 upon the shaft whereby the washer is held against rotation.

The hopper is provided with a cover 46. In order to introduce the tacks into the hopper in such manner that they will not fall upon the raceway or upon the feeding table 48, the machine being usually stationary at the time the tacks are put into the hopper, a funnel 50 is provided which conducts the tacks to one side of the raceway and causes them to drop directly into the bottom of the hopper. This prevents the raceway from being clogged at the time when the raceway clearing mechanism is not operating. For convenience in assembling the machine and for convenience in examining the various parts, the funnel 50 is preferably formed as a separate piece which is hinged to the hopper at 52, the hinge for the cover 46 and the hin[illegible] for the funnel having a common piv[illegible] The raceway clearing mechanism her[illegible]wn comprises a disk 134 clamped up[illegible]ear end of the shaft 10 and having ber[illegible]om its surface two tongues 138 wh[illegible]n the rotation of the disk with the sha[illegible]end to knock off from the top of the[illegible]y near the point where the tacks pas[illegible]th the cover plate any of the tacks wh[illegible]e become lodged crosswise or have bec[illegible]herwise displaced in or upon the rac[illegible]

T[illegible]eway is shown at 54, the feeding tab[illegible]eing attached to the end of the rac[illegible]ithin the hopper, this table ten[illegible]ck into the rotary tack pot 20 and rece[illegible]he tacks from the blades 56 upon the in[illegible]surface of said pot as the tacks are carri[illegible] over the table during the rotation of the pot. The raceway conducts the tacks to a point adjacent to the inserting mechanism where they are separated one at a time and delivered to the tack receiving throat 58 to be driven by the driver 2 into the work.

The illustrated separating mechanism comprises a separating blade 60 curved to correspond with the curvature of its path of movement, this blade entering a slot 62 at the lower end of the raceway 54 and operating to engage the shank of the endmost tack in the raceway and press it against the driver which is normally in its lowermost position. The separating blade 60 is carried by a depending arm 64 of a separator lever, the two arms of said lever having a yielding connection between them whereby one arm 66 may be moved positively while the other accommodates itself to the movement of the tack and the driver. The arm 64 is provided with a hub 68, loosely mounted upon the lower end of a rock-shaft 70 to the upper end of which the arm 66 is rigidly connected. The hub 68 is forked to embrace one of the bearings of the shaft 70 whereby the arm 64 is held against movement lengthwise of the shaft 70. The movement of the rock-shaft 70 is transmitted to the hub 68 and the arm 64 by a spring 72, coiled about the shaft 70 and having one end connected to a collar 74 clamped upon the shaft 70 and its other end bearing against a stud 76 upon the upper end of the hub 68.

The arm 66 is oscillated through connections with a cam groove 78 in a cam wheel 80 upon the main shaft 10, comprising a cam roll 82 entering said cam groove 78 and carried upon one arm of a bell-crank lever 84 pivoted upon the machine frame, the other arm 86 of said bell crank carrying a roll 88 which enters a slot 90 in the arm 66. The separator operating movement of the arm 66 is substantially continuous, but the movement of the separator will not be continuous owing to the fact that during the first part of its movement it presses the tack against the driver 2. While the driver is rising to release the tack and until the separator 60 is permitted to move again, the spring 72 will be put under tension by the continued movement of the arm 66 and the separator will thus be constantly given a tendency to move so that it will constantly hold the tack against the driver and will move the tack into the driver passage as soon as it is permitted to do so.

The means for controlling the starting and stopping of the machine is of the type shown in the patent to Woodward, No. 389,275, September 11, 1888, except that the means herein shown is controlled from the treadle and has no provision for limiting the machine to a single operation for one actuation. The pulley 12 is moved along the shaft into engagement with a clutch cone 92 by a lever 94 fulcrumed at 96 upon the machine head and extending to opposite sides of the shaft 10, the movement of the lever 94 in the clutch engaging direction being effected by means of a spring 98 adjustably connected at one end to said lever and at its other end to a stud 100 upon the machine head. The lever 94 is normally

held in its clutch releasing position by a catch plate 102 upon a latch 104, the catch plate engaging a second catch plate 106 upon the lever 94. The latch 104 is carried by a lever 108 fulcrumed at 110 upon the machine head, the latch being adjustable upon said lever by means of an eccentric 112. At its upper end the lever 108 carries a cam roll which enters the cam groove 78 in the cam disk 80. The latch 104 is normally held in operative relation to the lever 94 by a spring 114 connected to an extension 116 of said latch and to the machine head.

To move the catch plate 102 out of operative relation to the catch plate 104, connections are provided to a treadle 118 whereby the latch 104 may be turned about its pivotal connection with the lever 108. The illustrated connections comprise a bell-crank 120 provided with a hook 122 which hooks over a stud, not shown, upon the rear face of the latch 104, the bell crank 120 being pivoted upon a slide 124 connected by a rod 126 to the treadle 118, this slide extending from one side of the head to the other, as shown in Figs. 1 and 4. A spring 128 tends to keep the hook 122 in engagement with the stud upon the latch 104. When the operator releases the treadle after the machine has been actuated, the latch 104 will move upward until the catch plate 102 engages the catch plate 106. If at this time the lever 108 is near the right-hand end of its movement, viewing Fig. 4, the catch plate 102 will move into such position that as the lever 108 is moved toward the left upon the continued rotation of the shaft 10, the lever 94 will be moved toward the left in Fig. 4, carrying with it the pulley 12 out of engagement with the clutch member 92. This movement of the lever 94 will move the hollow frustum of a cone 130, more fully shown in the patent above referred to, into engagement with a frustum 131 upon the shaft 10, also more fully shown in said Letters Patent. The treadle 118 is normally held in its raised position by a spring 132.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a machine of the class described, a tack pot arranged to rotate about a horizontal axis, a hopper arranged to introduce the tacks into one side of the tack pot, said hopper and said tack pot being provided with vertical abutting faces, and means for rotating said tack pot comprising a peripheral gear forming a flange upon said tack pot having a face substantially flush with the aforementioned vertical face, said hopper being provided with a groove in which the abutting portion of said tack pot is confined together with said peripheral gear.

2. In a machine of the class described, a tack pot arranged to rotate about a horizontal axis, a hopper arranged to introduce the tacks into one side of the tack pot, said hopper and said tack pot being provided with vertical abutting faces and said hopper being provided with a groove in which the abutting portion of said tack pot is confined, and means for rotating said tack pot comprising a peripheral gear also received in said groove and a pinion engaging said gear and confined in an enlargement of said groove.

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

FRED L. MacKENZIE.

Witnesses:

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LAURA M. GOODRIDGE.