

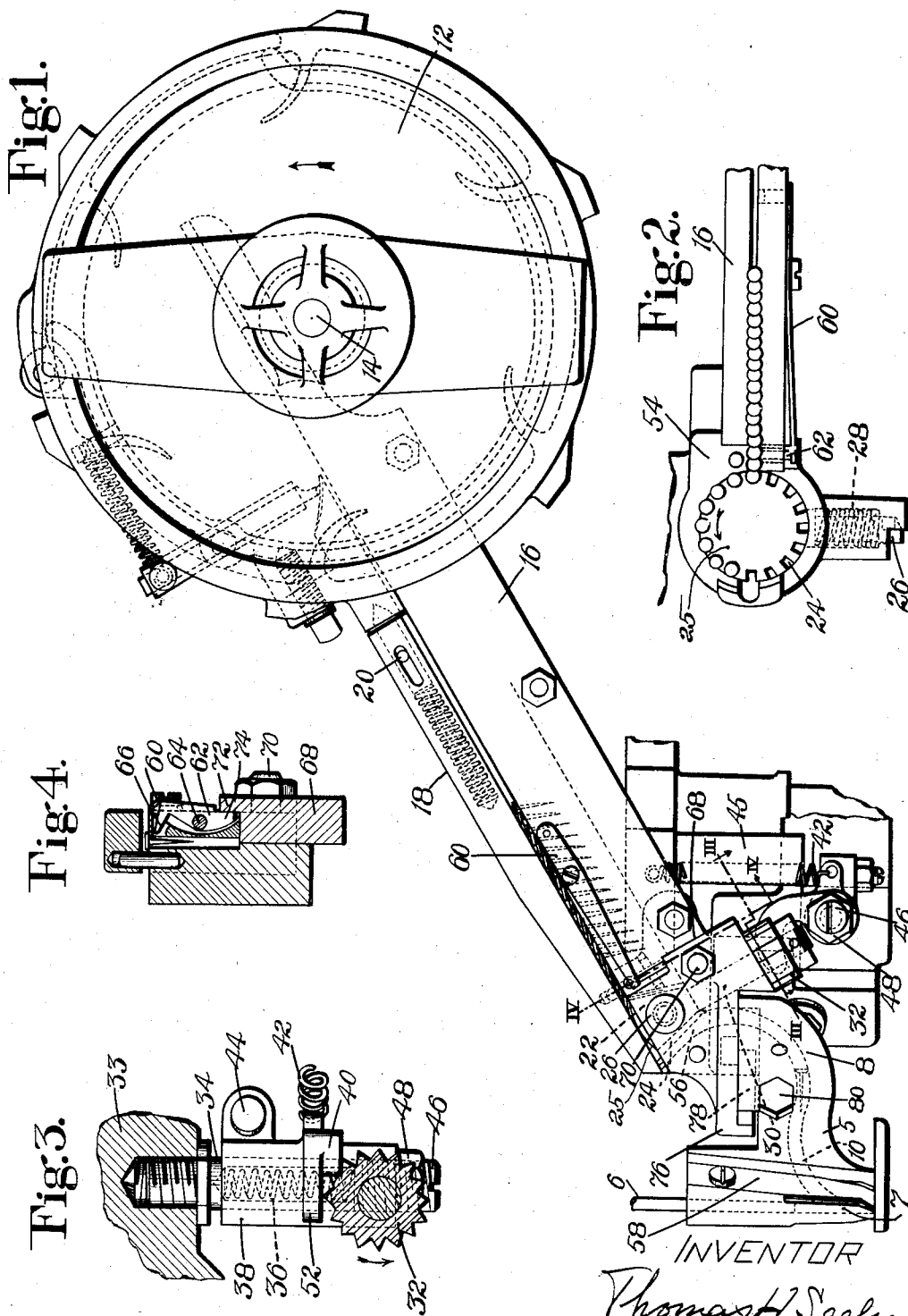
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TACK HANDLING MECHANISM

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UNITED STATES PATENT OFFICE

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TACK HANDLING MECHANISM

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This invention relates to mechanisms for handling tacks or other headed metallic fastenings. This tack handling mechanism is adapted for general use and is illustrated as embodied in a hand method lasting machine such as that disclosed in my copending application Serial No. 380,897, filed May 12, 1920 of which this application is a division.

Objects of this invention are generally to improve tack handling mechanisms and to provide an improved construction thereof which will be effective and reliable in its operation.

To this end, the illustrated mechanism is provided with a rotary separator which is frusto-conical in shape to permit tacks to be delivered to the separator from an inclined raceway without change in the inclination of the tack stems. This construction ensures a reliable separation of the tacks from the raceway by the separator. In the construction illustrated, the top face of the separator is convex in shape and is substantially parallel to the under surface of the tack heads. This top face therefore supports the tack heads and tends to cause the stem of the tack being separated to enter the slot in the separator, thus contributing to the efficient action of the separator. The separator, due to its conical shape and to its convex top face, presents the tacks to a tack delivery passage at such an angle to the vertical that the tacks readily drop off into the tack passage thus facilitating the removal of the tacks from the separator. The rotary separator is as illustrated rotated step by step by a novel mechanism including a pawl and, to ensure the proper alinement of the slots with the raceway, the separator is in the illustrated construction provided with a friction device for preventing movement of the separator except that imparted to it by the pawl.

The illustrated machine includes other novel features in combination with parts, all of which will be hereinafter fully described in connection with the accompanying drawings which show one embodiment of the various new features and novel combinations of the parts.

In the drawings,

Fig. 1 is a side elevation of the tack supplying mechanism, the tack separator, and portions of the tack carrier;

Fig. 2 is a plan view in detail of the tack feeding and separating mechanism;

Fig. 3 is an enlarged sectional detail on the line III—III of Fig. 1; and

Fig. 4 is an enlarged sectional detail on the line IV—IV of Fig. 1.

The tack carrier 5 has mounted in the front portion thereof a driver bar to the lower end of which is connected a driver 6. The driver 6 is adapted to be restricted in a driver passage 7 formed in the end portion of the tack carrier. The driver bar is given its lifting movement by a cam as is usual in a device of this type. Connecting with the driver passage 7 of the tack carrier 5 is a passageway 8 which is provided with a tack seat 10 adapted to support a tack delivered to it from a tack supplying mechanism. A tack pot 12, of the usual construction is shown as mounted on a shaft 14 about which the tack part is rotated through a gearing connection which is not shown. Extending from the tack pot is a raceway 16 to which tacks are delivered and by which they are directed toward the tack separating position.

The raceway 16 may be of usual construction and provided with an overlying plate 18 which may be detachably secured in place by a spring-impelled catch 20. At the lower end of the raceway is a separator which successively separates a single tack from the end of the raceway and presents it for transfer to the tack carrier. The separator consists of a conical head portion 22 having a series of tack carrying slots 24 each of which is adapted to be brought opposite to the end of the raceway successively as the separator is turned step by step. When one of the slots or openings 24 of the separator is in front of or in line with the column of tacks in the raceway, the lowermost tack will move into the opening and the head thereof will rest upon the top portion of the separator, while the pointed end of the tack will enter the slot 24. The axis of the conical head portion 24 of the separator as illustrated is at right

angles to the direction of extent of the raceway and the angle which the slotted conical faces of the separator makes with its axis is such that the tack receiving slots 24 are
 5 parallel to the stems of the tacks as they hang in the raceway with their heads shingled over each other. With this arrangement, the lowermost tack in the raceway can enter one of the slots 24 by bodily gravitational
 10 movement without any change in the direction of its stem which is nearly vertical, that is, the tack enters the slot at its natural hanging angle. The top face 25 of the conical head is made slightly convex to afford a support
 15 for the head of the tack, which support is substantially parallel to the lower face of the tack head in the position of the tack when it enters the slot 24 and tends to cause the tack stem to swing toward the slot. To prevent over-running of the separator 24 as it is
 20 turned, there is a friction plug 26 shown in Fig. 2 normally pressed inwardly against the separator by a spring 28.

The conical head portion 22 of the separator has projecting therefrom a downwardly extending stem or shaft 30 to the lower end of which is secured an actuating ratchet 32. Secured to a portion of a frame 33 is a pin 34, the outer end portion of which is formed with a seat for the reception of a spring 36.
 30 Mounted for turning movement on the exterior of the pin 34 is a sleeve 38 carrying a pawl 40 which is normally under the influence of a spring 42 tending to turn the pawl in a direction to actuate the ratchet 32 and thus move the separator in its operating step-by-step movement. The sleeve 38 has an abutment or projection 44 which is adapted to be struck by a moving part 45 of the machine to which the tack handling mechanism may be attached to impart to the sleeve 38 and the
 40 pawl 40 a backward stroke. Accurate alignment of the notches in the separator with the raceway is important and the sleeve 38 is provided with a stop screw 46 and a check nut 48 which limits the active stroke of the pawl 40 by limiting the inward sliding movement of the sleeve 38 on the pin 34 by engagement of the inner rim of the adjustment screw
 45 46 with the end portion of the pin 34. When the sleeve 38 is turned backwardly or counterclockwise, viewing Fig. 1, the spring 36 moves the sleeve 38 outwardly until a pawl arm 52 engages teeth of the ratchet 32 and acts as a stop. At this time, the acting part of the pawl will be opposite the next tooth in the ratchet and when the spring 42 is permitted to act, the pawl and the sleeve 38 will be given movement in the active stroke or counterclockwise, viewing Fig. 3, to effect a step-by-step movement of the separator. Opposite the line of tacks, a separator casing 54 is provided with a tack passage into which a tack will be delivered on each step movement of the separator. When a separated

tack by reason of the rotation of the separator reaches a point opposite to the raceway, it will be seen that by reason of the conical form of the separator and the inclination of its axis, the tack is in a position sharply inclined to the vertical and when no longer supported by the casing surrounding the separator must fall off into the tack passage 56. This action of the tack is further facilitated by the convex top surface 25 of the separator on which the tack head is resting at the time of its release, since the part of said surface on which the head of the tack then rests is downwardly and outwardly directed at such an angle that the tack head must slide off into the tack passage. The timing of the parts is such that when the tack carrier 5 moves backwardly, the passageway 8 in the tack block which communicates with the driver passage will be brought into coincidence with the tack passage 24 in the tack separator casing and the tack will be permitted to fall by gravity into the position indicated by Fig. 1. The construction and timing of the parts is such that when the tack carrier moves forwardly toward the shoe, the tack passage 8 in the tack carrier will contain a tack which will be supported in the conduit or passageway with its head facing rearwardly as indicated in Fig. 1.

Adjacent to the driving passage in the tack carrier are secured tack holding springs 58. The lower ends of the springs converge toward each other to insure that a tack which reaches the driving passage shall be held in position ready for the action of the driver.

When the tack separator is to be removed from the end of the tack raceway 16 for any reason, it is desirable that the line of tacks then in the raceway shall not run out of the raceway. To this end, the raceway has secured to the side thereof near the lower portion a spring 60 which acts upon the upper end of a stop 62 pivotally mounted on the side of the raceway at 64 and having a finger or end portion 66 adapted to be projected across the path of the tacks when the stop 62 is permitted to respond to the action of the spring. To permit the separator to be removed the casing thereon is provided with a cap piece 68 which is held in position by a securing bolt 70. The cap piece 68 has a lip portion 72 which, when the cap is in position holding the separator in place, overlies the lower end portion 74 of the stop 62 and maintains the end 66 of the stop out of the path of the tacks in the raceway. If, however, the cap piece 68 is removed, the stop 62 is permitted to move in response to the spring 60 into the path of the tacks and arrest them.

It is of importance that when the cap piece 68 is removed from the separator a series of tacks shall not pass downwardly into the ducts or passages in the nail raceway. The cap piece 68 is provided with a forward ex-

tension 76 which underlies a flange 78 formed as a part of a tack carrier and containing one half of the duct or passageway 8. The cap or flange piece on the tack carrier is appropriately held in place to complete the passageway 8 by means of a securing bolt 80. It will thus be seen that the upwardly extending flange on the cap or covering plate 78 overlies the flange 76 of the separator cap 68, the result being that before the separator cap can be removed the cap carrying the flange in which is formed one half of the duct or passageway 8 must be removed so that any tacks falling from the separator when the cap 68 is removed will not drop into or lodge in the ducts or tack passages of the tack carrier.

In accordance with the illustrated embodiment of the invention, the tacks which are supported on the tack carrier as the latter moves toward the shoe are to be moved into tack driving position by air pressure. The sudden impulse of the air pressure exerted upon a tack in the tack passage of the tack carrier serves to transfer effectively the tack from its seat or support 10 on the carrier to driving position and enables the workman to effect the delivery of the tack to the first operation of the tack driving mechanism.

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

1. In a machine for handling fastenings, the combination of an inclined raceway, a rotary member having a plurality of slots to receive fastenings from the raceway, a pin at right angles to the axis of the rotary member, a longitudinally movable sleeve mounted on the pin having means for rotating the member step by step, means for adjusting the length of the step-by-step movement of the member to cause accurate alinement of the slots with the raceway, and a friction device for preventing movement of the rotary member except that imparted to it by movement of the pawl in one direction.

2. In a machine for handling fastenings, the combination of an inclined raceway, a rotary member having a plurality of slots to receive tacks from the raceway, a toothed wheel on the rotary member having a number of teeth equal to the number of slots in the rotary member, a pin at right angles to the axis of the rotary member, a longitudinally movable sleeve on said pin for rotating the separator step by step, a pawl carried by said sleeve and acting to advance the toothed wheel step by step, one tooth at a time, upon back and forth turning movement of the sleeve, a spring operating to turn the sleeve in one direction, a stop for limiting the longitudinal movement of the sleeve to effect accurate alinement of the slots with the raceway, and a friction device acting on the rotary member to prevent overthrow and reverse

movement of the rotary member by the pawl.

3. In a machine for handling fastenings, the combination of a raceway, a rotary member having a plurality of slots to receive tacks from the raceway, a toothed wheel on the rotary member, a pin at right angles to the axis of the rotary member, a sleeve on said pin, a pawl carried by said sleeve and engaging the toothed wheel, the relation of the parts being such that as the sleeve is turned to cause the pawl to turn the wheel the sleeve will move longitudinally of the pin, and a screw threaded into the sleeve and arranged to engage the end of the pin to limit the longitudinal movement of the sleeve and hence the movement of the pawl.

4. In a machine for handling fastenings, the combination of a raceway, a rotary member having a plurality of slots to receive tacks from the raceway, a toothed wheel on the rotary member, a pin at right angles to the axis of the rotary member, a sleeve on said pin, a pawl carried by said sleeve and engaging the toothed wheel, the relation of the parts being such that as the sleeve is turned to cause the pawl to turn the wheel the sleeve will move longitudinally of the pin, and adjustable means to limit longitudinal movement of the sleeve.

5. In a machine for handling fastenings, the combination of an inclined raceway, a rotary separator having a plurality of slots each to receive a tack from the raceway, a longitudinally movable sleeve for rotating the separator step by step, and a stop for limiting the longitudinal movement of the sleeve, said stop being adjustable to vary the limit of the movement of the sleeve and to effect accurate alinement of the slots with the raceway.

6. In a machine for handling fastenings, the combination of an inclined raceway, a rotary separator having a plurality of slots each to receive a tack from the raceway, a longitudinally movable sleeve having means for rotating the separator step by step, friction means for preventing movement of the separator not imparted by said means for rotating it, and means for limiting the longitudinal movement of the sleeve to determine the length of the step-by-step movement of the separator to secure accurate alinement of the slots with the raceway during the periods of rest of the separator.

7. In a machine for handling fastenings, the combination of an inclined raceway adapted to support a line of tacks with their stems hanging in a direction slightly inclined to the vertical, a frusto-conical separator having slots formed in its conical surface to receive tacks from the raceway and having a convex upper face to support the tack head, a portion of said face being outwardly and downwardly inclined, means for supporting and rotating said separator in such relation

to the end of the raceway that a tack will enter each slot in the separator as it is presented to the raceway, said convex surface of the separator supporting the tack without change in the inclination of the tack stem, and a casing surrounding the separator and having a tack passage to which each separated tack is presented, after a partial rotation of the separator in a position so sharply inclined to the vertical that it will fall off the separator into the passage, such falling being facilitated by the outwardly and downwardly inclined portion of the convex surface of the separator on which the tack head rests.

In testimony whereof I have signed my name to this specification.

THOMAS H. SEELY.

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