

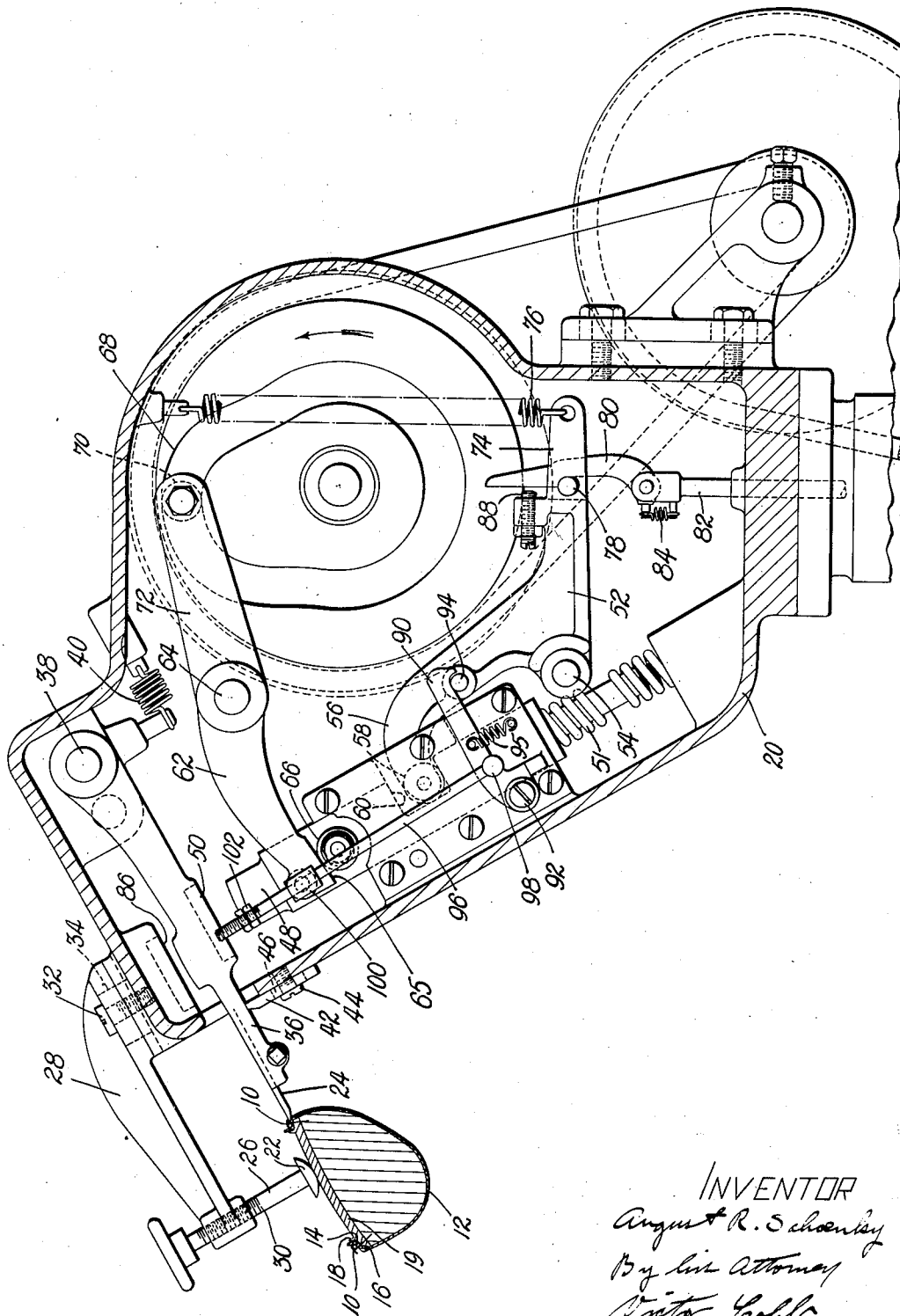
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FASTENING PULLING MACHINE

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FASTENING PULLING MACHINE

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This invention relates to fastening pulling machines and is herein illustrated as embodied in a machine for pulling lasting tacks from shoes.

In the manufacture of some types of shoes, fastenings, such as tacks, are commonly used for temporarily securing the upper of a shoe to the last. Usually these tacks are later removed by tack pulling machines which commonly comprise a tool oscillated continuously at high speed. In one method of lasting shoes, the toe portion of the shoe upper is drawn tightly over the last and held in position by a wire extending about the toe portion and holding the upper against a rib on the insole, the wire being secured in place by tacks driven through the lasted over margin of the upper and the insole and into the last with the heads of the tacks bearing down on the wire or with the wire twisted about the shanks of the tacks. Difficulty has been experienced in pulling such tacks by machines heretofore constructed, by reason of the fact that the deeply driven tacks cannot be readily positioned in engagement with the tool without likelihood of damaging finished portions of the shoe upper adjacent to the tacks.

Accordingly, it is an object of the present invention to provide an improved fastening pulling machine which will facilitate the rapid location of fastenings relatively to a tool and the removal of the fastenings from the shoe without injury thereto.

To this end, and as illustrated, I have provided an improved fastening pulling machine in which there is a fastening pulling tool, which is normally stationary and is so arranged that a fastening can be readily located in pulling position in engagement with the tool, and mechanism operable subsequently to cause a pulling movement of the tool.

These and other features of the invention will be apparent from the following specification when taken in connection with the accompanying drawing and are pointed out in the claims.

The drawing shows a view in side elevation of the head of a fastening pulling machine embodying my invention.

The illustrated machine is especially adapted to pull deeply embedded fastenings, such as lasting tacks 10, driven into the bottom of a lasted shoe 12 temporarily to secure a toe wire 14 in position to hold the lasted over margin of the upper 16 of the shoe tightly against a rib 18 on an insole 19.

The machine comprises a frame 20 carrying a work rest 22 in the form of a button against which the bottom of the shoe 12 can be located with one of the tacks 10 therein in operative relation to a claw or chisel-like tack pulling tool 24 which is arranged to be actuated by mechanism, presently to be described, to pull the

tack.

The work rest 22 is carried by a shank 26, extending through a bracket 28 secured to the upper portion of the frame 20, and having screw threads 30 by which the work rest can be adjusted heightwise of the tool 24. The bracket 28 is preferably secured to the frame by screws 32 extending through an elongated slot 34 by means of which the bracket can be adjusted laterally on the machine to locate the work rest 22 in desired position outwardly of the tool 24.

The tool 24 is secured to a tack puller lever 36 which is mounted on a pivot 38 and is normally forced by a spring 40 against an abutment in the form of a plate 42 which contacts the under side of the lever 36 to hold the lever stationary, with the tool in predetermined position heightwise of the work rest 22. This position of the tool can readily be adjusted by varying the height of the plate which is held in adjusted position by a screw 44 extending through a slot 46 in the plate.

This construction is such that the tool is normally at rest with the under side of the tack puller lever 36 in engagement with the upper edge of the plate 42. With the tool stationary, a shoe can readily be moved into position in engagement with the work rest 22 such that the head of a tack is in engagement with the tool ready for the pulling of the tack.

The tool 24, in its tack pulling movements, is actuated by a plunger 48 arranged to be forced against a leather buffer 50, on the under side of the tack puller lever 36, by a spring 51 which is normally held in compressed condition by a control lever 52. The control lever 52 is mounted up on a pivot 54 and has a free end 56 carrying a roll 58 which enters a recess 60 in the side of the plunger and engages the lower wall of the recess to hold the plunger in retracted position with the spring 51 compressed.

The plunger 48 is withdrawn to its inoperative or retracted position by a lever 62 pivoted at 64 on the frame and having at its outer end a flat surface 65 arranged to engage a roll 66 on the plunger to effect a downward movement of the plunger during operation of a cam 68, which engages a roll 70 carried by a tail 72 of the lever 62.

In order to release the plunger to effect operation of the tool 24, I have provided manually actuated mechanism which will now be described. The control lever 52 has an outer portion 74 to which is connected a spring 76 normally operative to rotate the lever 52 in a direction to force the roll 58 into engagement with the plunger 48. The outer portion 74 carries a pin 78 arranged to be engaged by a pawl 80 pivotally mounted upon the upper end of a

treadle rod 82, there being a spring 84 for forcing the pawl 80 in a direction to engage the pin 78. When the treadle rod 82 is depressed, the pawl acting upon the pin 78 rotates the control lever 52 in a clockwise direction moving the roll 58 out of the recess 60, thus releasing the spring 51 which drives the plunger upwardly into engagement with the tack puller lever 36, thereby effecting a rapid movement of the tool 24 in a heightwise direction to remove the tack 10. Upward movement of the tack puller lever 36 is limited by a buffer 86 secured to the upper portion of the frame 10.

Further movement of the pawl 80, after the lever 52 has moved sufficiently to release the spring 51, causes the end of the pawl to engage a stop 88 which pushes the pawl off the pin 78, thus disconnecting the treadle rod from the control lever and permitting the return of the lever 52 to its stop position by means of the spring 76. This prevents a second operation of the plunger 48 until the treadle rod is released and returned to its original position by a spring or other suitable means, not shown.

Mechanism is provided to prevent tripping of the control lever 52 during such time as the surface 65 of the lever 62 is in the path of movement of the roll 66 on the plunger 48. This mechanism comprises a latch 90 pivoted at 92 on the frame and arranged to engage a pin 94 on the control lever 52, there being a spring 95 normally operative to force the latch against the pin. The latch is arranged to be released at the proper time by a rod 96 having its lower end pivoted at 98 on the latch, and its upper end extending loosely through a lug 100 carried at the free end of the lever 62. During downward movement of the free end of the lever 62 in loading the spring 51, the end of that lever moves along the rod 96 without releasing the latch 90 but, near the completion of the return or upward movement of the end of the lever 62 the latter engages a nut 102 on the end of the rod 96 and moves the rod in a direction to pull the latch off the pin, thus rendering the control lever 52 operable upon depression of the treadle rod.

In the operation of the machine, a shoe, such as the shoe 12, is presented bottom-up to the work rest 22, and the shoe is moved along the rest to present one of the tacks 10 to the end of the tool 24, which at this time is stationary, thus facilitating the location of the tack in pulling position. The operator then depresses the treadle rod 82, rotating the control lever 52 in a clockwise direction to remove the roll 58 from the recess 60 in the plunger 48, thus permitting the spring 51 to force the plunger upwardly into engagement with the lever 36 delivering thereto a sharp blow which will effect a pulling movement of the tack pulling tool 24. After the tack is pulled, the cam 68 causes the lever 62 to retract the plunger 48 and the spring 76 rotates the control lever in a counterclockwise direction, moving the roll 58 into the recess 60, thereby locking the plunger in retracted position. The spring 40 rotates the lever 36 until the latter engages the abutment 42 and the tack pulling tool is again in stationary position ready to operate on another tack. If the treadle 82 is depressed at a time when the end of the lever 62 is in the path of the plunger 48, operation of the control lever is prevented by the latch 90 which

is moved into inoperative position by the rod 96 only after the cam 68 has moved the lever 62 out of the path of the roll 66 and the plunger.

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

1. A fastening pulling machine comprising a normally stationary fastening pulling tool mounted for heightwise movement, a spring pressed plunger constructed and arranged to effect operation of the pulling tool, power operated means for retracting the plunger, a control member normally operative to lock the plunger in retracted position, and means for causing the control member to release the plunger.

2. A fastening pulling machine comprising a work rest, a fastening pulling tool movable heightwise of the work rest, a plunger constructed and arranged to actuate the fastening pulling tool, a spring for urging the plunger in a direction to actuate the tool, means for retracting the plunger, a control member normally operative to maintain the plunger in retracted position, and manually operated means for causing the control member to release the plunger.

3. A fastening pulling machine comprising a work rest, a fastening pulling tool movable heightwise of the work rest, a spring pressed plunger for moving the tool to effect a fastening pulling operation, cam operated means for retracting the plunger, a control lever normally operative to hold the plunger in retracted position, manually operable means for actuating the control lever to release the plunger, and a latch for preventing operation of the control lever while the retracting means is in operation.

4. A fastening pulling machine comprising a work rest, a fastening pulling tool mounted for movement heightwise of the work rest, a spring pressed plunger for actuating the tool, a lever for retracting the plunger, a control member constructed and arranged to engage the plunger normally to hold the plunger in retracted position, means to move the control member to disengage the same from the plunger, a latch normally operative to prevent disengagement of the control member, and a connection between the latch and the lever to release the latch subsequently to the retraction of the plunger.

5. A fastening pulling machine comprising a frame, a work rest carried by the frame, a lever pivotally mounted on the frame, a fastening pulling tool carried by the lever, an abutment on the frame, a spring normally operative to force the lever into engagement with the abutment to position the lever with the tool stationary in predetermined position heightwise of the work rest, and a spring pressed plunger operative to move the lever in a direction heightwise of the work rest to pull a fastening from work presented to the work rest.

6. A fastening pulling machine comprising a frame, a tool carrier mounted for movement heightwise of the frame, a fastening pulling tool on the carrier, an abutment on the frame, means normally operative to force the carrier against the abutment to hold the tool stationary, and mechanism for moving the carrier in a direction away from the abutment to effect a fastening pulling movement of the tool.

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