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C. N. SPINNEY ET AL

TACK PULLING MACHINE

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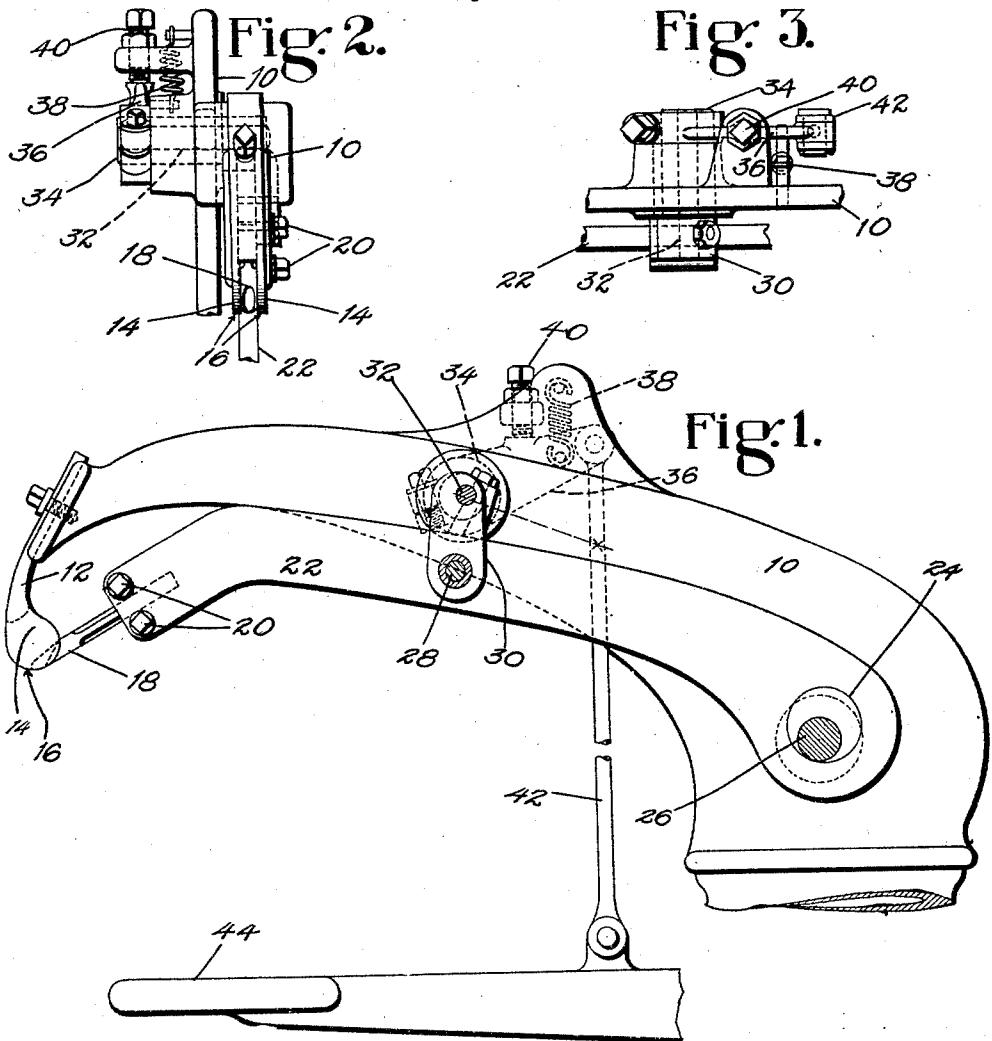
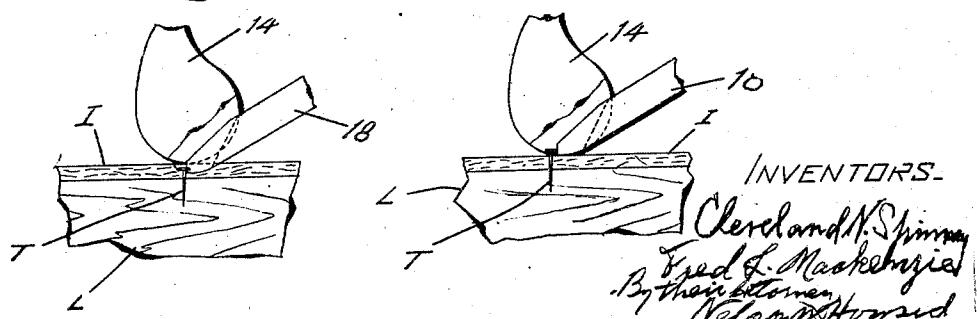


Fig. 4.

Fig. 5.



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CLEVELAND N. SPINNEY, OF HARRISBURG, PENNSYLVANIA, AND FRED L. MACKENZIE, OF BEVERLY, MASSACHUSETTS, ASSIGNORS TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## TACK-PULLING MACHINE.

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Our invention relates to apparatus for removing tacks from work into which they have been driven as a temporary securing means; for example, those holding the insoles of shoes in place upon their lasts during the lasting operation.

The movable member by which tacks are pulled commonly is associated with a member which contacts with the work and furnishes a guard. Ordinarily, the tacks are not fully driven, or the heads are not depressed below the surface of the work; and under such conditions, it is effective to operate the pulling member close to the work-engaging surface of the guard. With this relation, the pulling member may be caused to engage and draw tacks from work held against the guard without digging into and mutilating the work-surface. But if a tack is driven deeply, this fixed member may prevent the proper action of the pulling tool by holding the work too far from the path of the latter.

An object of the invention is to furnish an efficient organization, by which tacks may be pulled with certainty, regardless of the extent to which they are driven, and by which a positive and unvarying resistance is opposed to the pulling stress. For the accomplishment of this object, we have provided a pulling member, as an oscillatory claw, which is not only movable to produce the tack-drawing action, which may be in co-operation with a contact member or guard, but which is also independently movable. This last-mentioned movement may take place during the pulling movement of the pulling member and may vary its relation to the contact member, which is preferably fixed in position. By such an adjustment with respect to the contact-surface, the effective stroke of the pulling member is increased, so that it may better engage the heads of tacks driven close to or embedded in the work. For the purpose of this adjustment, we have herein illustrated a horizontal pivotal support for the pulling member variable in position, as by an eccentric action, this eccentric support being controlled by a treadle for actuation by the operator at such times as the increased digging effect or projection of the pulling member beyond the guard is desired.

One of the several embodiments which the invention may assume is illustrated in the accompanying drawing, in which

Fig. 1 shows, in broken side elevation, a 55 tack-pulling machine to which our improvements are applied;

Fig. 2 is a partial front elevation, looking from the left in Fig. 1;

Fig. 3 is a broken top plan view particularly illustrating the support of the pulling arm; while

Figs. 4 and 5 show, in side elevation, the relation existing between the work, the guard and the pulling member for normal operation 65 and for the deeper digging action, respectively.

At the forward extremity of an overhanging frame-arm 10 is mounted fixedly a guard member 12 provided with spaced walls 14, 14, the lower rounded edges 16, 16 of which furnish contact-surfaces. Against these surfaces the bottom of an insole I or other work may be pressed, and over them advanced to receive the action of a claw or pulling member 18 upon tacks T, which are shown in Figs. 4 and 5 of the drawings as securing the insole to a last L. The pulling member or tool 18 is clamped by screws 20 in a downwardly and outwardly inclined position at the forward 70 divided end of a lever 22, which, at its opposite extremity, is driven to oscillate the tool between the guard-walls 14 by an eccentric 75 24 or other power-actuated means carried by a shaft 26 journaled in the frame. Between the eccentric and tool, the arm is suspended 80 at 28 by a link 30, which is, in turn, supported upon a spindle 32 extending horizontally across the frame. Mounted to turn in the frame is a sleeve 34 having eccentric to its 85 axis a horizontal opening, which receives the spindle 32. To the end of the sleeve opposite the link 30 is attached an arm 36 drawn by a spring 38, joining it to the frame, against a stop-screw 40 threaded vertically through a 90 lug projecting at one side of the frame. A connecting-rod 42 is pivoted to the outer end of the arm 36 and to a treadle 44 movable upon the frame.

When the arm 36 is against the stop-screw 100 40, the axis of the spindle 32 preferably lies substantially in a horizontal plane passing through the axis of the sleeve 34. At this time, the tool 18, in its oscillation under the influence of the eccentric 24, moves in a generally elliptical path, giving a combined forward and upward movement toward and away from the operator. The lowest extrem-

ity of the path of movement is in proximity to the surfaces 16, 16 of the guard as the tool moves into the space between the forks of said guard. This normal relation may be varied, as desired, by an adjustment of the screw 40. The operator, resting the bottom of an insole I, from which the securing tacks T are to be drawn, against the surfaces 16, moves said tacks successively into the field of operation of the tool, as is particularly illustrated in Fig. 4 of the drawings. Said tool engages and pulls them during its upward stroke in the usual manner. Observing that a tack is more deeply driven, as appears in Fig. 5, so that the guard would prevent the tool in its normal position from passing under the head, the operator depresses the treadle 44. The arm 36 is thereby dropped, rotating the sleeve 34, and lowering the spindle 32. This, in turn, carries down the link 30, and consequently the supporting point 28 of the pulling lever, locating the engaging end of the tool below the surfaces 16 of the guard. The relation is now as appears in Fig. 5, and at this time firmer upward pressure by the operator causes the tool to force the insole material away from the head of the tack and to reach the under side of said head to effectively accomplish its withdrawal. However the tool is positioned by the eccentric support, the guard is always securely fixed in position, so the work is held by it against upward movement, to resist the pull of the tool. This immobility of the guard also minimizes the vibration transmitted from the tool through the work to the hands of the operator. As to the support of the lever 22, the tendency to rotate the eccentric by the pulling action is negligible, being easily opposed by the spring 38 in the normal position, and by the pressure of the operator's foot upon the treadle 44 in the digging stroke of the tool.

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

1. In a tack-pulling machine to which work may be manually presented by an operator, a member movable toward and away from the operator to pull tacks, and means arranged to move the pulling member independently of its pulling movement during the operation of the machine.
2. In a tack-pulling machine, a movable pulling member, means for imparting to the member a combined forward and upward pulling movement, and means operable during the pulling movement and arranged to adjust the position of the pulling member.
3. In a tack-pulling machine, a member movable about a horizontal axis to pull tacks, a member co-operating with the pulling member and contacting with the work, and means arranged to control the position of said axis to vary the relation of the pulling

member to the contact member independently of the pulling movement.

4. In a tack-pulling machine, a forked guard provided with a surface for contact with the work, a pulling member oscillatable into the space between said forks, power means for driving the pulling member, and operator-controlled means for varying the path of movement of said member during its pulling movement to change its relation to the contact-surface of the guard.

5. In a tack-pulling machine, a frame, a guard fixedly mounted on the frame for contact with the work, a pulling member movable in an approximately elliptical path in proximity to the guard to pull tacks from the work, and means operable during the operation of the machine arranged to adjust the relation to the guard of the tool.

6. In a tack-pulling machine, a movable support, a pulling member movably carried upon said support, means for imparting to the member a pulling movement upon the support in a closed path extending toward and away from the operator, and means arranged to vary the position of the support and thereby the relation of the pulling member to the work.

7. The combination with an oscillatory tack-pulling claw, of driving means for said claw, a guard adjacent to which the claw oscillates, and means adjustable during the operation of the machine arranged to change the path of movement of the claw to vary the relation of the claw to the guard.

8. In a tack-pulling machine, a pulling member, a guard co-operating therewith and having a surface for contact with the work, means for imparting to the member its pulling movement, and means arranged to adjust the pulling member toward and from the contact-surface of the guard while the machine is in operation.

9. The combination with a pulling member, of means for imparting to said member its pulling movement, and an eccentric support for the member.

10. The combination with a tack-pulling member, of means for imparting to said member its pulling movement, an eccentric support for the member, and treadle-connections arranged to move the support.

11. In a tack-pulling machine, a frame, a guard carried thereby, a sleeve having a bearing in the frame and provided with an eccentric opening, a spindle carried in the opening, a link suspended upon the spindle, a pulling lever pivoted upon the link and extending into proximity with the guard, and driving means acting upon the lever.

12. In a tack-pulling machine, a frame, a guard carried thereby, a sleeve having a bearing in the frame and provided with an eccentric opening, treadle-connections arranged to turn the sleeve, a spindle carried in

the opening, a link suspended upon the spindle, a pulling lever pivoted upon the link and extending into proximity with the guard, and driving means acting upon the lever.

5 13. In a tack-pulling machine, an oscillatory tack-pulling claw, a link for supporting said claw, driving means for said claw, a guard adjacent to which the claw oscillates, and means arranged to change the position of 10 the supporting link independently of the movement of the tack-pulling claw, thereby to change the relation of the claw to the guard.

14. In a tack-pulling machine, a frame, a 15 guard carried thereby, a horizontally disposed spindle, an eccentric support for said spindle in said frame, a tack-pulling member pivotally supported from said spindle, means for imparting a tack-pulling movement toward and away from the guard to 20 said tack-pulling member, and operator-controlled means for varying the position of said eccentric support.

25 15. In a tack-pulling machine, a frame, a guard carried by said frame having a surface for contact with the work, a tack-pulling member, means for imparting to said member an oscillatory movement in an approximately elliptical path toward and away from the guard, and means arranged to adjust the pulling member toward and from the 30 contact surface of the guard operative dur-

ing the tack-pulling movement of said member.

16. In a tack-pulling machine, the combination of a movable support, a tack-pulling member carried by the support, means for imparting to the tack-pulling member movement relatively to the support in a curved path toward the tack to be pulled and then 40 in a direction lengthwise of the tack to pull the tack from the work, a treadle, and connections between the treadle and the support arranged to cause displacement of the treadle to move the support and thereby to change 45 the relation of the tack-pulling member to the work.

17. In a tack-pulling machine, the combination of a movable tack-pulling member, 50 means for imparting to said member a combined forward and upward pulling movement, a treadle, and connections from the treadle to the tack-pulling member arranged to cause displacement of the treadle to change the path of movement of the tack-pulling 55 member.

In testimony whereof I, the said CLEVELAND N. SPINNEY, have signed my name to this specification.

CLEVELAND N. SPINNEY.

In testimony whereof I, the said FRED L. MACKENZIE, have signed my name to this specification.

FRED L. MACKENZIE.