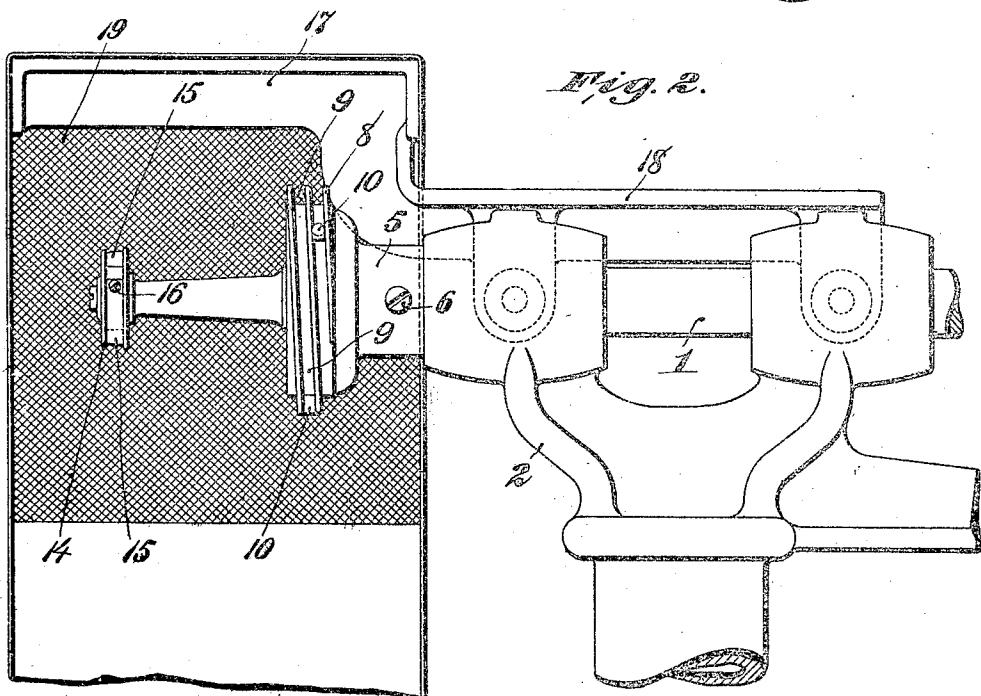
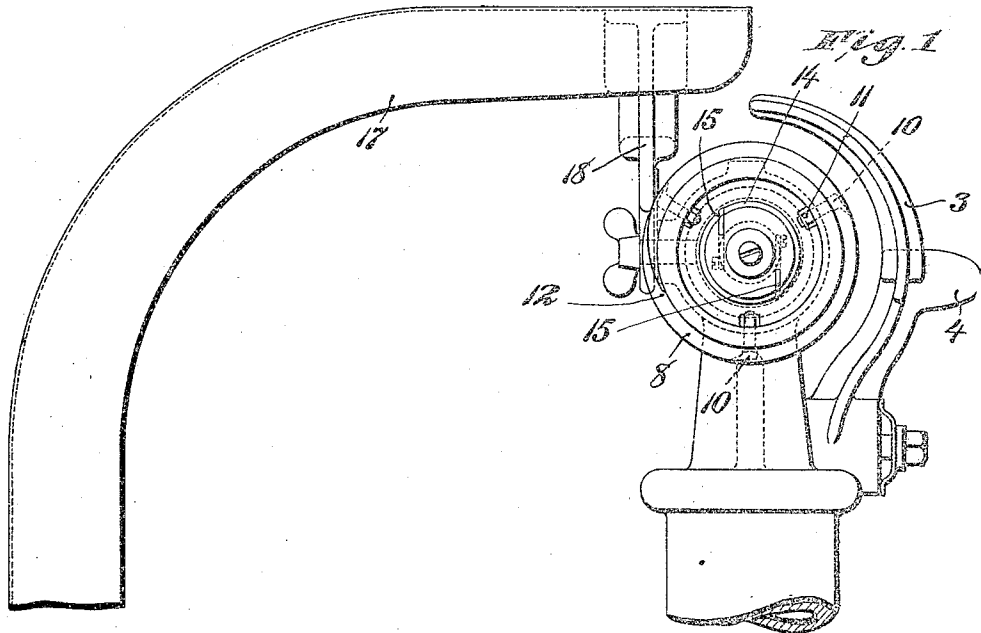


L. V. MILLER.
TACK PULLING MACHINE.
APPLICATION FILED NOV. 30, 1908.

931,946.

Patented Aug. 24, 1909

2 SHEETS—SHEET 1.



Witnesses:

E. Wurdemann
M. L. Gilman

Inventor:

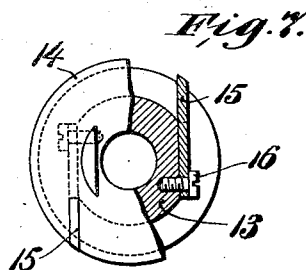
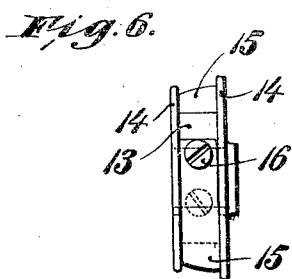
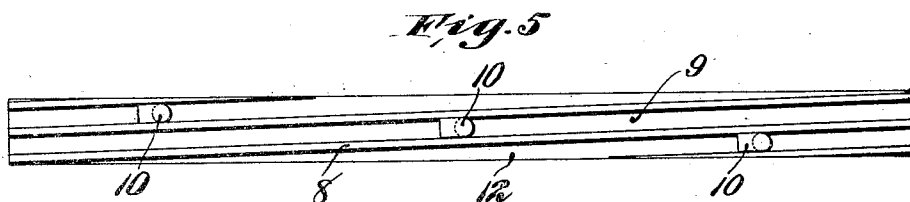
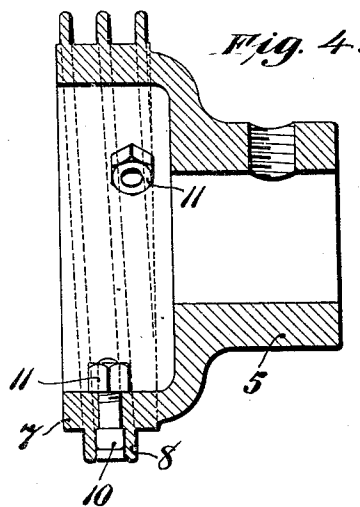
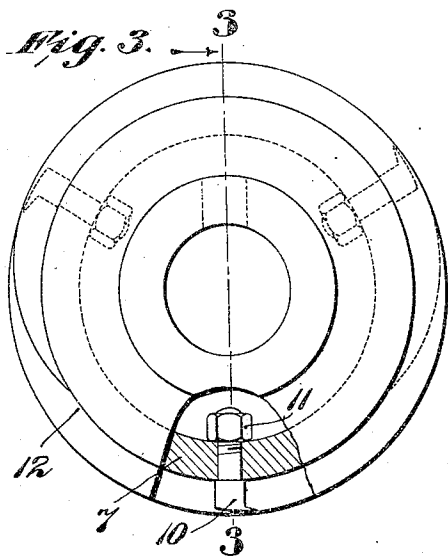
Leslie V. Miller
by his Attorneys
Phillips Van Curen & Fisk

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2 SHEETS—SHEET 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

LESLIE V. MILLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TACK-PULLING MACHINE.

931,946.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed November 30, 1908. Serial No. 465,303

To all whom it may concern:

Be it known that I, LESLIE V. MILLER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tack-Pulling 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.

The present invention relates to machines for pulling tacks from a lasted shoe.

The principal object of the present invention is to produce a tack pulling machine comprising a rotary tack pulling wheel the blades of which will not deface or otherwise injure the shoe upper and to which the tacks can be fed transversely.

Another object of the present invention is to produce a tack pulling machine comprising a tack pulling wheel having a plurality of tack pulling blades arranged to act successively on a tack and separated from each other a greater angular distance about the periphery of the wheel than has heretofore been possible.

Other objects of the invention are to improve the construction of tack pulling machines which comprise a rotary tack pulling wheel and render them more certain and efficient in operation.

With the above objects in view a feature of the present invention contemplates the provision of a rotary tack pulling wheel having one or more tack pulling blades at its periphery and shaped or constructed to form a guard for the shoe upper at each end of the blade or blades and to provide a recess extending transversely of the wheel to permit a tack to be fed transversely to the wheel into the path of the blade or blades. This feature of the invention broadly considered may be embodied in any suitable construction of wheel which provides a guard for the shoe upper at each end of the blade and a recess to admit a tack fed transversely to the wheel. In the simplest and most efficient construction which has as yet been devised, however, the periphery of the wheel is provided with a groove and the tack pulling blade or blades extend across this groove so that the wall or rib at each side of the groove forms a guard for the shoe upper. This groove opens into the recess in the

wheel which admits the tack into the path of the tack pulling blade, and guides the tack to the blade so that it is engaged by the center of the blade and pulled from the shoe without liability of being bent over to one side of the path of the blade.

Another feature of the present invention contemplates the provision of a rotary tack pulling wheel provided with a spiral groove on its periphery across which the tack pulling blades extend. This spiral groove may extend more than once around the wheel and thus the tack pulling blades can be separated by greater angular distances than would be possible with the same number of blades arranged in a straight groove extending but once around the wheel. The wheel can therefore be made smaller and rotated at a higher rate of speed without decreasing the intervals between successive operations of the blades. Also a narrow groove can be used so that the upper is protected by the walls of the groove from injury by the blades and at the same time the blades, although narrow, extend collectively over as great a portion of the shoe as would a long blade. According to this feature of the invention the tack pulling wheel may or may not be provided with a recess to admit a tack fed transversely to the wheel into the path of the blades since the spirally grooved wheel can be used to advantage in extracting a tack presented radially to the wheel as will be obvious to those skilled in the art. It is preferred, however, to arrange the spiral groove so that it opens on the face or end of the wheel and thereby forms a recess to receive the tack. When the spiral groove is arranged in this manner a lasted shoe can be pressed against the periphery of the wheel, which then forms a guide and support for the shoe, and moved transversely to the wheel to bring the projecting tacks successively into the path of the tack pulling blades.

The several features of the present invention will be clearly understood from an inspection of the accompanying drawings in which—

Figure 1 is a view in end elevation of a tack pulling machine embodying the same in their preferred form. Fig. 2 is a view in side elevation of the machine illustrated in Fig. 1. Fig. 3 is an end view partly in section of the improved rotary tack pulling wheel for pulling the lasting tacks. Fig. 4

is a sectional view of the wheel illustrated in Fig. 3, taken on the line 3-3, of said figure. Fig. 5 is a diagrammatic view showing the development of the grooved periphery of the wheel illustrated in Figs. 3 and 4. Fig. 6 is a view in side elevation of a tack pulling wheel adapted for pulling insole tacks and Fig. 7 is a view in end elevation partly in section of the wheel illustrated in Fig. 6.

The machine in which the several features of the present invention have been embodied, in addition to the wheel for pulling the side or lasting tacks from a shoe, is also provided with a wheel of smaller diameter adapted to pull the sole tacks which secure the insole to the last. These two wheels are secured to a horizontal rotary shaft 1 journaled in the upper portion of a suitable frame 2 and provided at its rear end with fast and loose pulleys. To shift the driving belt from one of these pulleys to the other, a forked belt-shifter 3 is provided pivotally mounted at its lower end upon a bracket projecting from the frame of the machine and provided with a hand piece 4 by which it can be conveniently moved by the operator. The insole tack pulling wheel is secured to the extreme forward end of the shaft 1 and the wheel for pulling the side or lasting tacks is secured to the shaft at a convenient distance from the insole tack pulling wheel to enable the operator to readily present the shoe to either wheel.

The wheel for pulling the side or lasting tacks comprises a hub 5 which is secured to the shaft 1 by means of a set screw 6, and a rim 7 projecting from the hub longitudinally of the shaft. The peripheral face of the wheel is provided with a rib 8 which extends spirally around the wheel somewhat less than three times, so that a spiral groove 9 is formed by the rib extending somewhat less than twice around the wheel. The tack pulling blades 10 are mounted in this groove at angular distances of about 240° and are secured to the wheel by means of nuts 11 engaging screw threads on the shanks of the blades which extend radially through the rim. The spiral arrangement of the rib forms an opening or recess 12 at the side of the wheel into which a projecting lasting tack can be fed transversely to the wheel so as to enter the groove and be engaged by the first tack pulling blade. The first tack pulling blade is located a short distance from the end of the groove so that when the blade engages a tack the upper of the shoe is protected from injury by the rib or wall of the groove at each end of the blade. To prevent the end of the rib from injuring the upper, it begins at the peripheral surface of the rim of the wheel and rises gradually to its full height. In operation the shoe is pressed upwardly against the wheel and the spiral rib forms a support and guide

for the shoe. The shoe is moved to feed the tacks transversely across the wheel and as each tack engages the side of the rib it is guided thereby and finally enters the groove so as to be engaged by the first tack pulling blade. If this blade fails to completely remove the tack, the tack remains in engagement with the groove and after the wheel has made $\frac{2}{3}$ of a revolution the tack is engaged by the second blade. If this blade fails to remove the tack, the third blade is caused to engage the tack after the wheel has made another $\frac{2}{3}$ of a revolution. To cause the three blades to act successively on the tack, approximately two complete revolutions of the tack pulling wheel is required. If desired, the tack can be presented radially to the wheel. In such case the rim of the wheel presents a wide surface against any portion of which the tack may be pressed. When the tack is presented in this manner it rests against the spiral rib until, during the rotation of the wheel, the groove engages the tack, when the tack will be guided accurately into engagement with one of the blades.

The wheel for pulling sole tacks, with which the machine is provided, consists of a central hub 13 secured to the shaft, a flat disk 14 at each end of the hub projecting radially beyond the hub to form radial flanges, and two tack pulling blades 15 seated in slots in the flanges and secured to flattened portions of the hub by screws 16. The tack pulling blades extend substantially flush with or slightly beyond the radial flanges and are adapted to pass beneath the head of a sole tack when the sole of a shoe is pressed upwardly against the flanges of the wheel. The flanges of the wheel form a support or guide over which the shoe sole can be conveniently moved to bring sole tacks into proper position with relation to the tack pulling blades. During this movement of the shoe it is conveniently pressed against one flange only so that the blades do not engage the sole until the tack is in position. To enable the shoe to be moved while in a substantially horizontal position, and also to enable the shoe to be more conveniently manipulated without being brought into contact with the wheel for pulling side tacks, the outer flange of the wheel is preferably made smaller than the other flange so that the wheel as a whole is somewhat frusto conical in appearance.

The tacks pulled from the shoe by the tack pulling wheels are thrown from the wheels with considerable force. To collect these tacks a combined guard and chute 17 is provided which is located at one side of the wheels and extends over the wheels. This chute is supported on a bracket 18 secured to the upper portion of the machine frame. The upper portion of one of the

walls of this chute is formed of a screen¹⁹ to prevent the chute from excluding the light from the wheels to an objectionable extent.

5 I claim—

1. A rotary tack pulling wheel provided with a peripheral groove, with a tack pulling blade extending across said groove, and with a recess to admit a tack fed transversely to the wheel into the path of the blade.

10 2. A rotary tack pulling wheel provided with a tack pulling blade at its periphery, with a guard for the shoe upper at each end of the blade, and with a recess to admit a
15 tack fed transversely to the wheel into the path of the blade.

3. A rotary tack pulling wheel provided with a spiral groove on its periphery and with a plurality of tack pulling blades extending across said groove.

20 4. A rotary tack pulling wheel provided with a spiral groove on its periphery opening into a recess to receive a tack fed transversely to the wheel and with a tack pulling blade extending across said groove.

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

LESLIE V. MILLER.

Witnesses:

HENRY B. M. BERENTSON,

A. A. PHELPS,

THEODORE SMITH.