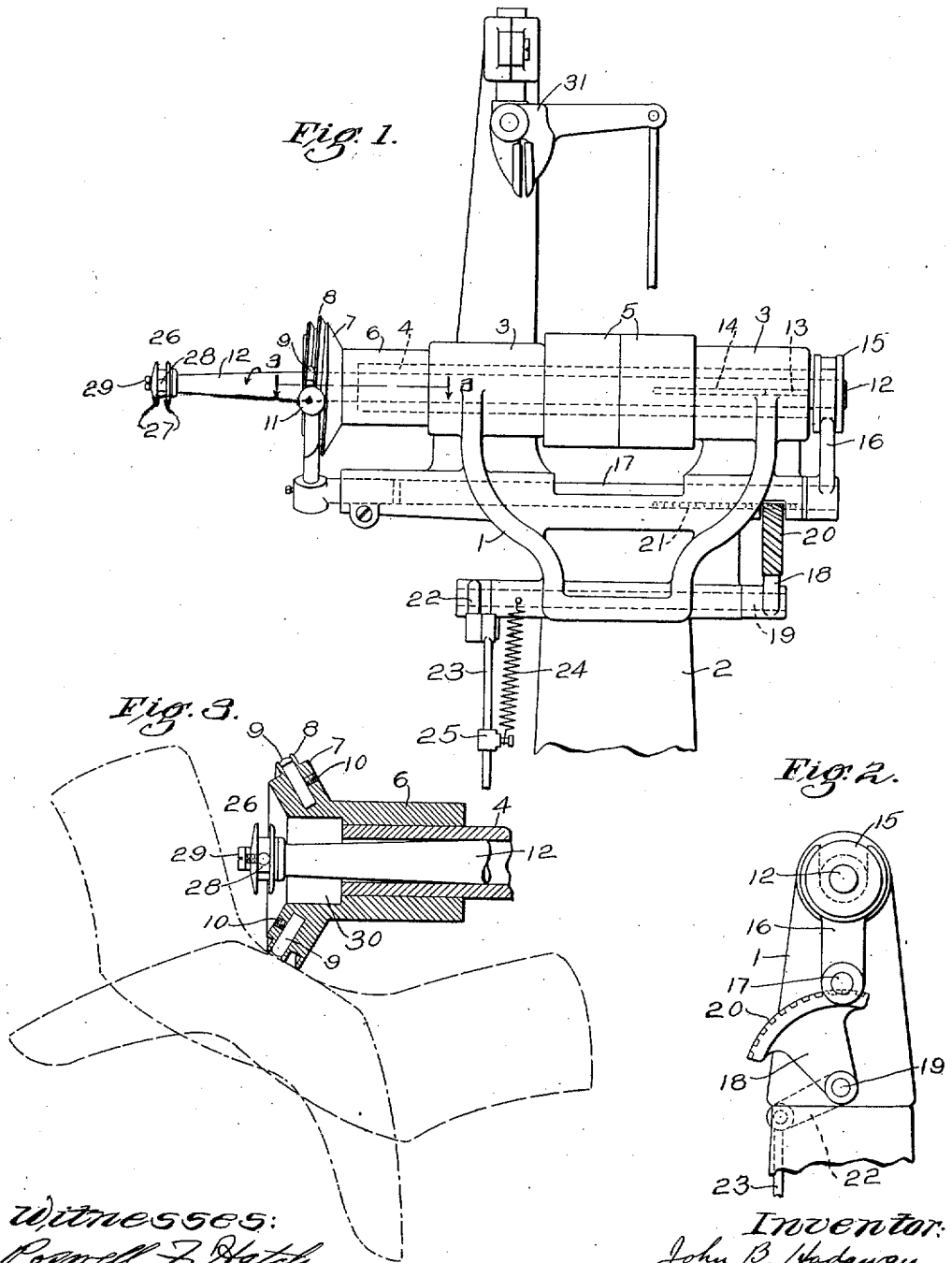


J. B. HADAWAY.
TACK PULLING MACHINE.
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Witnesses:
Rosenell F. Hatch.
Thomas G. Ogden

Inventor:
John B. Hadaway
by his Attorneys
Phillips, Han, Cooney & Clark
Fred O. Clark

UNITED STATES PATENT OFFICE.

JOHN B. HADAWAY, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TACK-PULLING MACHINE.

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To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, 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.

This invention relates to machines for pulling tacks from lasted shoes and is an improvement on the tack pulling machine shown in United States Letters Patent to Miller, No. 931,946, dated Aug. 24, 1909.

In tack pulling machines of the character disclosed by the Miller patent, there is provided a relatively large rotary tool to pull the side-tacks, and a relatively small rotary tool to pull the sole-tacks. These two tools are mounted for rotation upon axially alined shafts. It has been found in operating the Miller machine, that when pulling the side-tacks at the shank by the large tool, the heel or toe of a high heeled shoe will strike either the machine frame or the shaft carrying the small tool, and thus interfere with a proper positioning of the shoe for pulling a tack to the best advantage.

The object of the present invention is to provide a tack pulling machine of the Miller type having the two tack pulling tools so arranged that a high heeled shoe may be readily manipulated about the side-tack pulling tool by the operator without interference by adjacent parts of the machine. In accordance with this object, one feature of the present invention comprises a side-tack pulling tool which is of general frusto-conical form, the work engaging surface of the tool being the surface of the cone which is arranged with its apex directed away from the frame of the machine. This permits a shoe having a high instep to be properly positioned for pulling tacks at one side of the shank without its heel part coming into contact with the tool carrying shaft.

To prevent the heel portion of the shoe from striking the shaft carrying the sole-tack pulling tool when the tacks at the other side of the shank are being pulled, this tool is so mounted that it can be normally nested within the side-tack pulling tool. This leaves an unobstructed space at the end of

the side-tack pulling tool so that the shoe can be freely manipulated in this space without engagement with any of the machine parts. Means is provided for moving the two tools relatively longitudinally of the operating shaft to separate the sole-tack pulling tool from the side-tack pulling tool and bring it into operative position.

Another feature of the invention therefore comprises a tack pulling machine having sole and side-tack pulling tools normally held in close relation to each other, with means for separating the tools when it is desired to pull sole-tacks. Preferably, the sole-tack pulling tool is advanced by the operator through a treadle connection and is retracted by a spring.

The preferred form of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the tack pulling machine; Fig. 2 is an end elevation showing particularly the means for projecting the small tool into operative position; and Fig. 3 is a section on the line 3—3 on Fig. 1, with the sole-tack pulling tool in its normal retracted position.

In the illustrated embodiment of the invention, a frame 1 is mounted on a column 2 and provides bearings 3 for a hollow shaft 4. Pulleys 5, one of which is fixed to the shaft 4, provide means for driving the shaft from a suitable source of power. The hub 6 of a side-tack pulling tool 7 is secured to the end of the hollow shaft 4. A channel guide such as is illustrated in United States Letters Patent to Miller, No. 897,003, dated Aug. 25, 1908, is shown at 11 (Fig. 1).

The side-tack pulling tool 7 is of general frusto-conical form, as is shown in Figs. 1 and 3, and it has a helical guard flange 8 standing vertical to the surface of the tool. It is evident from Fig. 3, in which two positions of a shoe are shown in broken lines, that if the surface of the tool was a right cylinder, as in the Miller Patent No. 931,946, the heel part of a shoe with a high instep would strike the hub 6 or the bearing 3 when operating at the shank. With the frusto-conical tool herein shown, a shoe may be freely moved into any desired position, however sharp the curve of its shank may be, without danger of contacting with parts of the machine. Tack pulling blades 9 of any desired form are secured at

intervals between the convolutions of the guard flange 8. These blades are preferably adjustable for wear and may be secured by any suitable means as set screws

5 10. This tool operates in all respects in a similar manner to the side-tack pulling tool of the Miller Patent No. 931,946.

For convenience in pulling tacks driven in corners formed by the upper and the sole, and to facilitate the extraction of tacks which are driven flush with the sole, a special tool is provided which is usually considerably smaller in diameter than the side-tack pulling tool 7. This tool is indicated at 26 and is secured to the end of a solid shaft 12, which has a bearing inside the hollow shaft 4. The tool 26 is substantially the same as the sole-tack pulling tool of the Miller Patent No. 931,946, and as 20 illustrated, consists of two guard flanges 27 having a tack pulling blade 28 adjustably held between them by an axial set screw 29. The shaft 12 is connected to be rotated by the shaft 4 by a key 13 and a spline 14, 25 which, however, permits free longitudinal movement. A spool 15 is secured to one end of the shaft 12 and is engaged by a forked arm 16 fixed on a slide rod 17 mounted in suitable bearings in the lower 30 portion of the frame 1. A segmental gear 18, fixed to a rock shaft 19, is provided with angular teeth 20 which engage the teeth of a rack 21 on the rod 17. This constitutes a skew gear and rack by means of 35 which a rotation of the rock shaft 19 produces a longitudinal movement of the rod 17. An arm 22, secured to the other end of the shaft 19, is connected by a rod 23 to a treadle (not shown). A spring 24, fixed to 40 the rod 23 at 25, lifts the rod and normally holds the shaft 12, through the connections described, in its retracted position, as shown in Fig. 3. Upon depression of the treadle the shaft 12 is projected forward into 45 operative position, as shown in Fig. 1. The hub of the tool 7 may be bored out, if desired, as at 30 (Fig. 3), to permit the tool 26 to be retracted wholly within the tool 7.

Anchor tack pincers may be provided, if 50 desired, as indicated at 31, they being operated by a treadle in the usual manner.

With the tool 26 nested within the tool 7, as in Fig. 3, the operator will be enabled to pull the side-tacks at the shank with ease 55 and rapidity, obtaining just the proper position of the shoe for all tacks, and without danger of any part of the machine interfering with the free manipulation of the shoe. When he wishes to pull the sole-tacks, he 60 will depress the treadle and advance the

tool 26 to its operative position, as shown in Fig. 1.

Having explained the nature and object of the invention and specifically described one embodiment thereof, what is claimed 65 as new, is:—

1. A tack pulling machine having, in combination, a side-tack pulling tool, a sole-tack pulling tool means for normally nesting the sole tack pulling tool within the 70 side-tack pulling tool, and means for separating the two tools to render the sole-tack pulling tool operative, substantially as described.

2. A tack pulling machine having, in 75 combination, a rotary side-tack pulling tool mounted on a hollow shaft, a rotary sole-tack pulling tool mounted on a shaft having a bearing in said hollow shaft, and means for producing relative longitudinal move- 80 ments of the shafts to increase and decrease the distance between said tools, substantially as described.

3. A tack pulling machine having, in combination, a pair of tack pulling tools 85 normally nested within one another, one of the tools being arranged to remove the tacks from a shoe which is fed lengthwise of the axis of the tool, and means under the control of the operator for separating the tools, 90 substantially as described.

4. A tack pulling machine having, in combination, a side tack pulling tool arranged to remove the tacks from a shoe which is fed lengthwise of the axis of the 95 tool, a sole tack pulling tool nested within the first mentioned tool, and means for separating the tools to render the sole tack pulling tool operative, substantially as described. 100

5. A tack pulling machine having, in combination, a frusto-conical tack pulling tool having a spiral groove on its periphery, and tack pulling blades extending across said groove at intervals, substantially as de- 105 scribed.

6. A tack pulling machine having, in combination, a rotary side-tack pulling tool of frusto-conical form having radially arranged tack pulling blades, an axially mounted rotary sole-tack pulling tool, means for normally holding the latter tool nested within the former, and means for advancing the latter tool at the will of the operator, substantially as described. 110

JOHN B. HADAWAY.

Witnesses:

CHESTER E. ROGERS,
LAURA M. GOODRIDGE.