

UNITED STATES PATENT OFFICE.

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TACK-PULLING MECHANISM FOR BOOT AND SHOE SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 329,357, dated October 27, 1885.

Application filed October 6, 1884. Serial No. 144,818. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. BRAINARD, of Brockton, county of Plymouth, State of Massachusetts, have invented an Improvement in Tack-Pulling Mechanism for Boot and Shoe Sewing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of a mechanism whereby the lasting-tacks may be automatically drawn or pulled out preparatory to stitching the welt to the upper and the inner sole of a welted boot or shoe.

Figure 1, in side elevation, represents a sufficient portion of an ordinary wax-thread sewing-machine to enable my invention to be understood. Fig. 2 is a section in the line *x*, looking from the left; Fig. 3, a section taken through the shank of a lasted shoe, showing the position of the welt-gage and tack-puller; Fig. 4, a top view, enlarged, of the welt-gage; Fig. 5, a detail of the tack-puller; and Fig. 6 is a left-hand end view of Fig. 4.

The frame-work *A* of the machine, the awl-bar *A'*, awl *A²*, presser-bar *A³*, shaft *A⁴*, cam *A⁵* thereon, and thread-guide-actuating lever *A⁶*, moved by the cam, are all as common in wax-thread sewing-machines for boot and shoe work. Upon the usual post, *B*, is mounted a sole-support, *B'*, of common form, the upper end of which enters the base of the channel in and supports the sole. The welt *c*, extended through the welt-gage *D*, will preferably be channeled or grooved longitudinally, as in my application Serial No. 137,670, and a presser-foot, such as therein shown, will enter the said channel and press the welt close to the upper and the latter against the sole and the sole on the sole-support *B'*. Herein I have omitted the said presser-foot, to avoid confusion in the drawings. The welt-gage is secured to the end of a bar, *D²*, attached to the frame-work, as usual, by the screws *D³*.

The parts so far described are not herein claimed. The upper *a*, drawn usually by hand-operated pinchers about the last *b* and inner sole, *c²*, thereon, is secured to the said inner sole by headed tacks; but in the shank the tacks are usually or frequently driven into the up-

per and last near the edge of the inner sole. The upper must be held firmly in position with relation to the last and channeled inner sole and welt-gage while the stitch is being made, to attach the welt to the upper, and the lip of the inner sole and the tacks which hold the upper must be drawn out singly, sufficiently in advance of the point where the stitch is to be made, so as not to interfere with making the stitch, and in practice the tacks should be drawn from a quarter to half an inch in advance of the stitch-making point. These tacks are now drawn by hand, but to do this automatically is the object of my invention. I have provided a tack-puller, consisting, essentially, of a lip or claw, *e*, at the end of a plate, *e'*, the width of the lip or claw being sufficient to overlap one or more stitches. The plate *e'*, as herein shown, is slotted, as at *e²*, to receive two studs, *2 2*, connected with part of the welt-gage, the said studs having under their heads, preferably, suitable washers, (shown in Figs. 3 and 5,) to aid in guiding and supporting the said plate and claw as it is reciprocated close to the under side of the welt-gage by the connecting-rod *f*, adjustably joined with the lever *g* by a screw, *f³*, in a block, *f'*, attached to the rod *f* by a screw, *3*, the screw *f³*, inserted through a slot, *4*, of the lever *g*, receiving on it the thumb-nut *f²*. The lever *g*, substantially U shape and pivoted at *g'*, is actuated by the long stud *h* at the lower end of the lever *A⁶*. I have added such pin to the said lever and cut a hole, *h²*, in the frame-work to permit the pin to engage the lever *g*. As the cam *A⁵* is rotated to move the lever *A⁶* and the usual thread-guide connected with it, the pin *h*, moved by the said lever, also moves the lever *g* and reciprocates the tack-pulling device, so that the claw *e* is pushed forward over the heads of the tack or tacks immediately under the welt-guide into the position shown in Fig. 3, and as the tack-puller is thereafter moved to the right the tack or tacks *t* under it will be drawn or pulled out of the upper, so as to be out of the way of the needle and awl and the stitch to be made by the needle and thread. In Fig. 3 the tacks *t* are shown as holding the upper to the last, as the section is taken at the shank, but about the ball and ends of the inner sole the tacks enter the upper and the inner

sole. The lip or claw of the tack-puller is beveled or inclined away from the sole, so that as the tack-puller is pushed forward under the welt-guide the said puller will act as a wedge and not displace but spring over and engage the head of the tack preparatory to pulling the tack out. The forward movement of the tack-puller is always sufficient to carry the lip or claw close to and against the vamp, thus enabling the puller to catch the heads of the tacks notwithstanding they may have been driven for different lengths into the upper and last.

Instead of the screw 3, to fasten the block *f'* to the rod *f*, I may provide the rod each side the block with an adjustable collar or nut. The rod *f* at the point *m* is provided with a joint or hinge, whereby the rear end of the rod connected with the lever *g* may rise and fall as the said lever is vibrated in the arc of a circle without correspondingly raising or lowering the welt-guide.

I claim—

1. A boot and shoe sewing machine provided with a stationary welt-guide, and a tack-puller borne by said guide on its lower face, and a reciprocating rod deriving motion

for operating said tack-puller from the main shaft of the machine, substantially as described.

2. The combination, with a boot or shoe sewing machine, of a stationary welt-guide, a tack-puller attached to the lower side of said guide by a slot and screws, and a rod attached to said tack-puller and reciprocated from the main shaft of the sewing-machine, substantially as described.

3. The reciprocating tack-puller, having a lip or claw and placed close to the under side of the welt-guide, combined with the welt-guide, support *B'*, and sewing mechanism, and with means, substantially as described, to move the tack-puller, for the purposes set forth.

4. In a sewing-machine, a welt-guide combined with a tack-puller provided with a beveled lip or claw and adapted to slide under and close to the welt-guide, to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM S. BRAINARD.

Witnesses:

G. W. GREGORY,

B. J. NOYES.