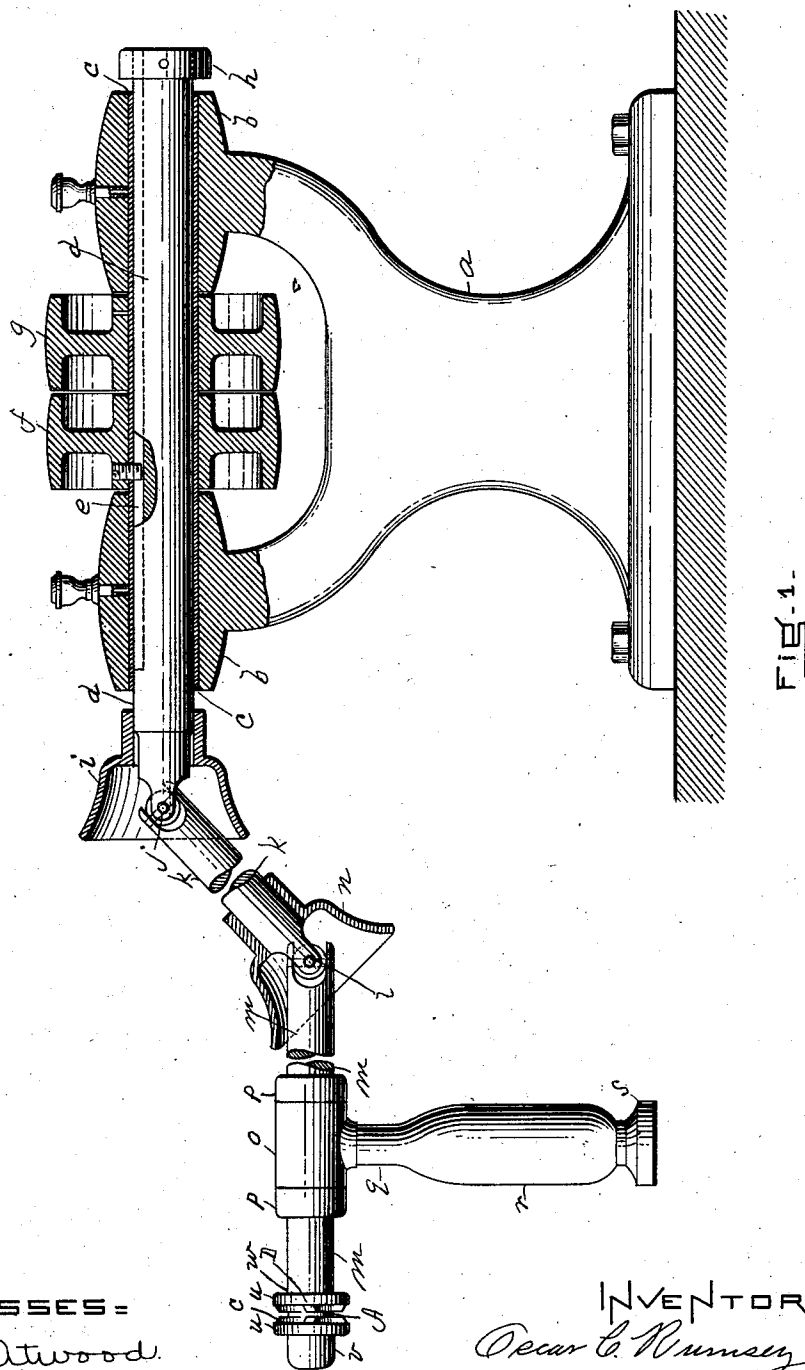


O. C. RUMSEY.
 INSOLE TACK PULLING MACHINE.
 APPLICATION FILED JUNE 24, 1911.

1,021,894.

Patented Apr. 2, 1912.

2 SHEETS-SHEET 1.



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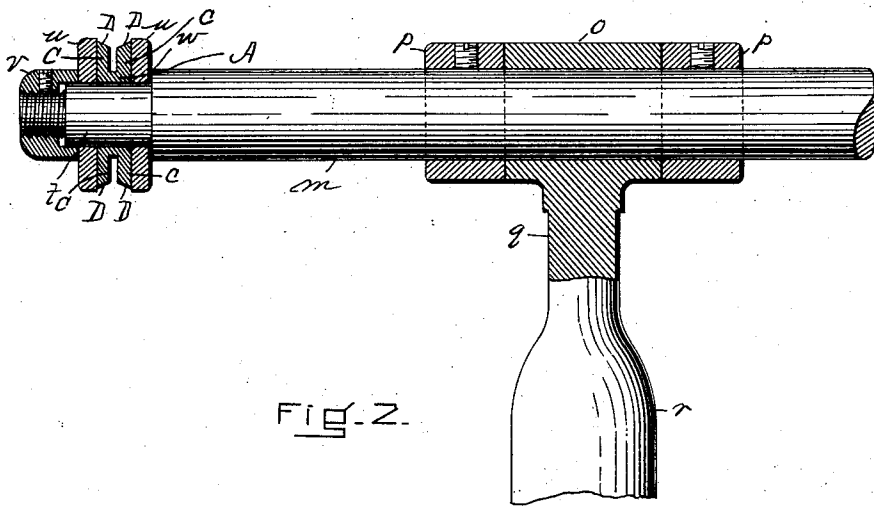


FIG. 2.

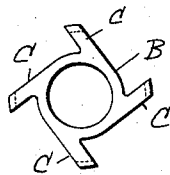


Fig. 3.

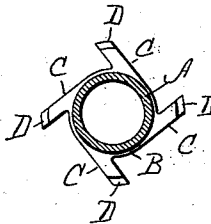


Fig. 4.

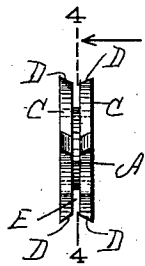


FIG. 5.

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INSOLE-TACK-PULLING MACHINE.

1,021,894.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed June 24, 1911. Serial No. 635,205.

To all whom it may concern:

Be it known that I, OSCAR C. RUMSEY, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in Insole-Tack-Pulling Machines, of which the following is a specification.

This invention relates to a new and improved mechanism for extracting the tacks or nails by means of which the inner soles of boots and shoes are secured to lasts, and the uppers are attached to the inner sole and last, the device having also means by which the uppers and inner soles can be retacked.

A principal object of the invention is to enable the machine to extract the tacks in lines which are substantially or approximately radial with the circular extractor or tack-puller and longitudinal with the tacks themselves, and to lift the tacks by their heads out of position rather than to knock them out of place by sidewise blows against the bodies of the tacks.

The invention relates to a certain new and improved extractor, and to novel constructions and arrangements of parts whereby the extractor is operated and the efficiency of the machine improved.

The nature of the invention is fully described below, and illustrated in the accompanying drawings, in which:—

Figure 1 is a view partly in elevation and partly in longitudinal section of an insole-tack-pulling machine embodying my invention—certain portions being broken out. Fig. 2 is a longitudinal vertical section of that end of the machine which contains the extractor or tack-puller, the spindle being shown in elevation. Fig. 3 is a side view of the extractor removed. Fig. 4 is a vertical section of the same, taken on line 4—4, Fig. 5. Fig. 5 is an edge view of the extractor. Similar letters of reference indicate corresponding parts.

The frame *a* of the machine is provided with journal-boxes *b* and with a sleeve *c* extending from one box to the other, said sleeve containing a shaft *d* splined at *e* thereto. Between the journal-boxes fast and loose pulleys *f* and *g* are mounted on the sleeve whereby rotation is imparted to the sleeve and shaft in the ordinary manner. A suitable collar *h* is provided on one end

of the shaft, and to the other end a flaring guard *i* is secured within which the shaft *d* is connected by a universal joint *j* with one end of a link *k* whose opposite end is connected by a universal joint *l* with the adjacent end of the spindle *m*, a guard *n* similar to the guard *i* extending from that end of the link over the joint *l*.

The spindle *m* has bearings in a box *o* held in position by collars *p*, and said box *o* is integral with the shank *q* of a handle *r* whose lower or outer end is formed into a head *s* which constitutes a tack-hammer. The outer end of the spindle is provided with an extension *t* (Fig. 2) of smaller diameter than the spindle, and mounted on said extension are circular disk-shaped guards *u*, one being next the shoulder *w* and the other being next a nut *v* screwed on the outer end of said extension.

Mounted on the extension *t* between the guards *u* is my improved extractor, which is held in position to rotate with the spindle *m* by said guards, one of which is forced against the outer side of the extractor by the nut *v* and the other between the extractor and the shoulder *w*—the extractor and guards being held friction-tight between the shoulder and the nut and rigid with the spindle. This extractor consists of the central tubular and annular barrel *A* and two opposite flanges *B* integral with the barrel, said flanges each being provided with a plurality (preferably four) of tangential lifting-fingers *C*, the adjacent lifting-fingers on each flange extending at substantially right angles with each other, and the lifting-fingers on the two flanges corresponding in shape, size and direction, whereby the extractor consists of four pairs of lifting-fingers. The lifting-fingers in each pair are provided with beveled ends *D*, the bevels being inward or toward each other, as well illustrated in Figs. 2 and 5. Thus there remains between each pair of lifting-fingers *C* a space *E* which extends around the barrel or main portion *A*, such space being large enough to receive the shank or body portion of a tack but too small to receive the head of the tack.

In practical operation, the operator supports the machine by grasping the handle *r* and applies it to the portion of the inner sole which contains the tacks which secure the sole to the last. By means of the con-

nection of the pulley *f* with the power, the shaft *d* is being rapidly rotated, and similar rotation is communicated by means of the universal joints *j*, *l* and link *k* to the spindle *m* which, of course, rotates the extractor. As the extractor is moved along the line of tacks, the guards move over the sole on opposite sides of the tacks, the shanks or body portions of the tacks enter the space *e* between the lifting-fingers *c*, and said pairs of lifting-fingers in their rapid rotation pass under the heads of the tacks and quickly lift them out of position in the last without involving any blow upon the shank of the tacks which would tend to break off said shanks. The lifting produced by these tangential fingers is doubtless on a somewhat curved line, but such curved line is approximately radial with the extractor and very nearly in line with the shank of the tack. Thus this extractor does not knock the tack off by a blow against the shank but lifts it off by means of the head of the tack, thus extracting the tack in a mechanical manner and in such a way that it cannot break or be knocked down.

By means of the construction of my machine in connection with the extractor it can perform its work without turning around the shoe, and by means of the hammer-head *s* applied to the end of the handle the last can be retacked.

The principal functions of the guards *u* are to prevent the extractor being forced into the leather whereby the leather may be injured or cut, and to force the leather downward away from the head of the tack. The guards however are not in themselves considered new in this invention.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is:—

1. In a tack-pulling machine for the purpose described, a spindle, mechanism for rotating the spindle, and an extractor mounted on the spindle and comprising a tube or barrel and lifting-fingers tangential with the periphery of the barrel and rigid therewith, said lifting-fingers being arranged in pairs and the two fingers constituting a pair extending from the periphery of the barrel next the opposite edges thereof leaving a space between the fingers of each pair broad enough to receive the shank or body of a tack but too narrow to receive the head thereof, whereby when the extractor is rotated the tack is lifted from position in a substantially longitudinal line.

2. In a tack-pulling machine for the purpose described, a spindle, mechanism for rotating the spindle, and an extractor mounted

on the spindle and comprising a tube or barrel and lifting-fingers tangential with the periphery of the barrel and rigid therewith, said lifting-fingers being arranged in pairs and the two fingers constituting a pair being straight and parallel and beveled toward each other at their outer ends and extending from the periphery of the barrel next the opposite edges thereof leaving a space between the fingers of each pair broad enough to receive the shank or body of a tack but too narrow to receive the head thereof, whereby when the extractor is rotated the tack is lifted from position in a substantially longitudinal line.

3. In a tack-pulling machine for the purpose described, a spindle, mechanism for rotating the spindle, and an extractor mounted on the spindle and comprising a tube or barrel and lifting-fingers tangential with the periphery of the barrel and rigid therewith, said lifting-fingers being arranged in pairs which are at right angles with the adjacent pairs and the two fingers constituting a pair extending from the periphery of the barrel next the opposite edges thereof leaving a space between the fingers of each pair broad enough to receive the shank or body of a tack but too narrow to receive the head thereof, whereby when the extractor is rotated the tack is lifted from position in a substantially longitudinal line.

4. In a tack-pulling machine for the purpose described, a spindle, means for supporting the spindle, mechanism for rotating the spindle, a hammer-head rigid with the means for supporting the spindle, and an extractor mounted on the spindle and comprising a tube or barrel and lifting-fingers extending from the periphery thereof, for the purpose set forth.

5. In a tack-pulling machine for the purpose described, a driving shaft supported in a suitable frame, a spindle and means for supporting the same, a link intermediate of the driving shaft and the spindle and connected with both by universal joints, a handle extending from the means for supporting the spindle, a hammer-head extending from the outer end of said handle, and an extractor mounted on the spindle and comprising a tube or barrel and lifting-fingers extending from the periphery thereof.

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

OSCAR C. RUMSEY.

Witnesses:

HENRY W. WILLIAMS,
M. A. ATWOOD.