

J. B. HADAWAY.
TACK PULLING MACHINE.
APPLICATION FILED SEPT. 9, 1906.

1,011,773.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.

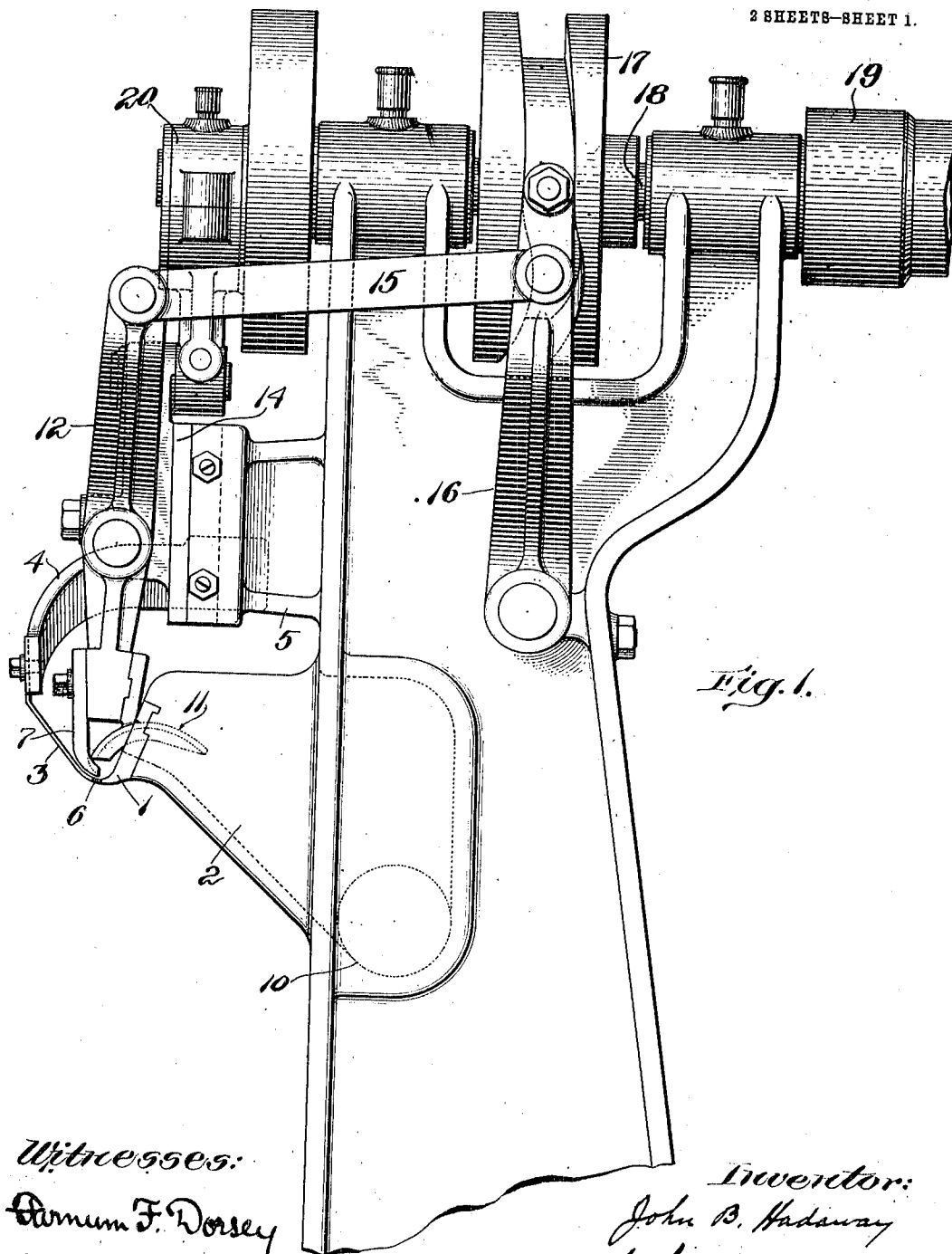


Fig. 1.

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Inventor:
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2 SHEETS—SHEET 2.

Fig. 2.

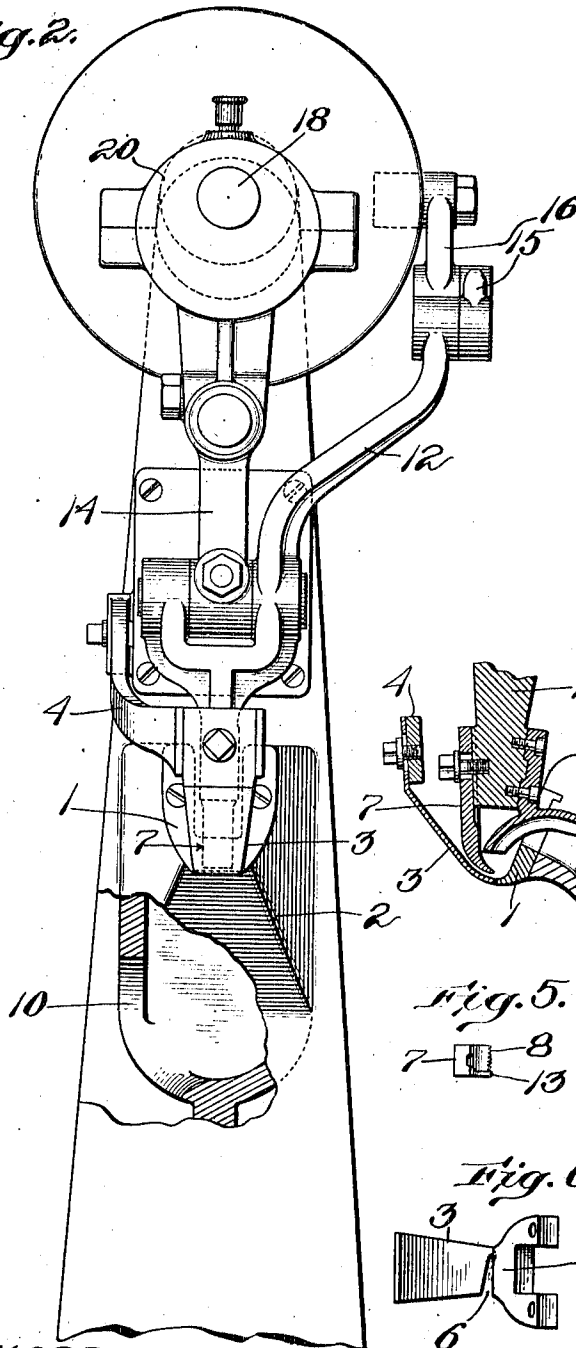


Fig. 4.

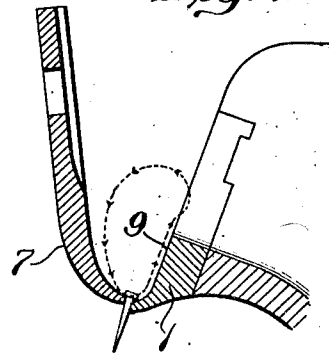


Fig. 3.

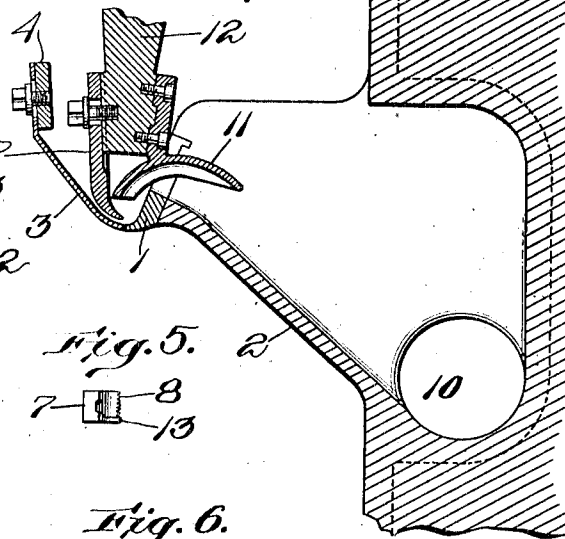


Fig. 5.

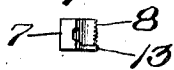
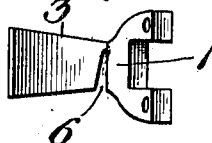


Fig. 6.



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UNITED STATES PATENT OFFICE.

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

TACK-PULLING MACHINE.

1,011,773.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed September 9, 1905. Serial No. 277,653.

To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Brockton, in the county of Plymouth 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.

The present invention relates to tack pulling machines and more particularly to tack pulling machines provided with tools or devices adapted to engage the projecting lasting tacks of a lasted shoe and remove the tacks from the shoe.

The objects of the present invention are to provide a tack pulling machine adapted for operation upon a lasted shoe, having improved means for guiding and supporting the shoe during the operation of the tack pulling devices so that any liability of injury to the upper of the shoe is avoided, and the tacks are properly positioned for engagement by the tack pulling device or devices.

Other objects of the invention are to provide a simple and efficient tack pulling mechanism which will act with certainty to engage the projecting lasting tacks and remove them from the shoe, to provide simple and efficient means whereby the tacks after being removed from the shoe are ejected from the tack pulling device or devices, to provide means whereby tacks which may be thrown from the tack pulling devices while being removed from the shoe are directed away from the tack pulling devices, to provide means by which a tack which is not in position to be engaged properly by the tack pulling devices is deflected so as to be moved into proper position, or moved to a position in which it will not be engaged by the tack pulling devices, and in general to improve and simplify the organization, construction and mode of operation of the various parts of tack pulling machines.

With these objects in view a feature of the present invention contemplates the provision in a tack pulling machine of means for engaging the upper on opposite sides of a projecting lasting tack, constructed and ar-

anged to guide the tack into position to be acted upon by the tack pulling device or devices, these means being preferably work supports arranged to form a throat the sides of which engage a projecting lasting tack and guide the tack into position as the shoe is presented to the machine. One of these work supports is preferably rigidly or unyieldingly mounted and is arranged to bear against the shoe upper outside of the line of lasting tacks, while the other work support is arranged to yield and constitutes a yielding downhold arranged to bear against the shoe upper inside of the line of lasting tacks. With this construction and arrangement of the work supports the support which bears against the upper inside of the line of tacks is allowed to yield when the shoe is forced against the unyielding work support, and the shoe can be manipulated to cause the unyielding work support to force the upper outside of the line of tacks firmly against the sole, in order to enable the tack pulling device to engage a tack which has been driven deeply into the last.

The improved tack pulling mechanism of the present invention comprises a tack pulling jaw which is actuated to engage a projecting lasting tack and remove the tack from the shoe, and a stationary jaw arranged to engage the tack and support it against the thrust of the tack pulling jaw, and in the specific embodiment of the invention hereinafter described the stationary jaw also forms the unyielding work support above referred to, which bears against the shoe upper outside of the line of lasting tacks. The stationary jaw engages the opposite side of the tack from the tack pulling jaw and supports the tack when the tack pulling jaw moves into engagement therewith. In order to hold the tack in engagement with the tack pulling jaw while the tack is being removed from the shoe, the stationary jaw is preferably extended parallel with the path of movement of the tack pulling jaw and thus the complete removal of the tack from the shoe is insured. The surface of the jaw which extends parallel with the path of movement of the tack pulling jaw forms a guide which holds the tack in engagement with the tack pulling jaw and any guide which acts to hold the tack in the jaw during its tack pulling movement

is considered to be the equivalent of this guiding surface.

In accordance with a feature of the present invention an ejecting movement is imparted to the tack pulling tool after the tack has been removed from the shoe, this movement of the tool being so timed with relation to the operation of the tool, and being in such a direction as to forcibly eject the tack from the tool. While this feature of the invention, broadly considered, contemplates imparting any suitable movement to the tool which will forcibly eject the tack, in the preferred form of the invention an abrupt lateral movement is imparted to the tool shortly after the point of the tack has been moved out of engagement with the shoe upper.

It is desirable in tack pulling machines that the tack pulling tool be operated at a high rate of speed. When so operated, however, a tack is occasionally thrown from the tool during its tack pulling movement, and in order that tacks so thrown from the tool may be directed away from the tool, a feature of the present invention contemplates the provision of a guard plate arranged to intercept the tacks and deflect them away from the tool. This guard plate may be constructed and arranged in any suitable manner, but in order that the plate may be located as close as possible to the tool it is preferably mounted to move with the tack pulling tool.

The ejecting movement which is imparted to the tack pulling tool may be relied upon alone to eject the tack from the tool. In the illustrated embodiment of the invention hereinafter described, however, a stationary ejector is provided against which the tack is brought by the ejecting movement of the tool, and which acts to tilt the tack and aid in dislodging it from the tool. The provision in a tack pulling machine of a stationary ejecting device arranged to engage a tack during the movement of the tack pulling tool and remove the tack from the tool is believed to be new, and is considered to constitute a feature of the present invention. In the specific embodiment of the invention the stationary ejecting device is formed by the upper edge of the stationary jaw and the tack pulling jaw in its ejecting movement moves across the upper edge of the stationary jaw.

In accordance with another feature of the present invention the tack pulling jaw is provided with a tack deflecting device arranged to engage the head of a lasting tack and deflect the tack if it is not in proper position to be engaged by the tool, this deflecting device in the preferred form of the invention hereinafter described, consisting of a projecting tack deflecting rib at one end of the working face of the tack pulling jaw.

In the operation of tack pulling jaws as heretofore constructed it has been found that a tack is occasionally engaged by the extreme end of the work-engaging face of the jaw and is thrown sidewise from the jaw as it is removed. The provision of a tack deflector on the tack pulling jaw effectively prevents this action, a tack which is in position to be engaged by the extreme end of the working face of the jaw being deflected so as either not to be engaged by the jaw or so as to be engaged by the jaw and pulled in the proper manner from the shoe.

In addition to the features of invention above referred to, the present invention also consists in certain devices, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art, from the following description.

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

Figure 1 is a view in side elevation of a tack pulling machine embodying the same in their preferred form; Fig. 2 is a view in front elevation of the machine with a portion of the frame broken away to show the construction of the delivery chute; Fig. 3 is a detail sectional view illustrating the construction and arrangement of the downhold, the stationary jaw, the tack pulling jaw, the guard plate and the delivery chute; Fig. 4 is a detail view of the tack pulling jaw and the stationary jaw, indicating in dotted lines the path of movement of the tack pulling jaw; Fig. 5 is a plan view of the tack pulling jaw; and Fig. 6 is a plan view of the downhold and stationary jaw.

The stationary jaw is indicated at 1 and is rigidly secured to a projecting portion 2 of the machine frame.

The yielding downhold is indicated at 3 as consisting of a thin metal plate secured so as to be capable of vertical adjustment to an arm 4 rigidly secured to or forming a part of a projection 5 from the machine frame above the projection 2.

The adjacent edges of the jaw 1 and downhold 3 are arranged at an angle to each other as indicated in Fig. 6 to form a throat 6, the edges of which engage the sides of a lasting tack when a shoe is presented to the machine and guide the tack into position to be engaged by the tack pulling jaw. The shoe upper is engaged by the stationary jaw and downhold upon opposite sides of the lasting tack, and the jaw and downhold thus constitute work supports for guiding the shoe and holding it in position during the operation of removing the lasting tacks. As will be apparent from an inspection of Fig. 6, the shoe upper is also engaged by the downhold 3 directly in the line of tacks, the

downhold 3 being provided with a portion at the end of the throat 6 which extends across the line of lasting tacks and serves to prevent the upper from bulging up into the throat between the stationary jaw and the downhold. The shoe is presented to the machine with the line of lasting tacks extending parallel with the tack-engaging edge of the stationary jaw so that the stationary jaw bears upon the upper outside of the line of lasting tacks and the downhold bears upon the upper inside of the lasting tacks, the upper on both sides of the line of tacks being held out of the path of movement of the tack pulling jaw, and each tack being guided into position to be engaged by the jaw as the shoe is fed by the operator. The downhold 3 which bears against the upper inside of the line of tacks is capable of yielding vertically so that the shoe can be forced against the stationary jaw 1 with sufficient pressure to bring the edge of the jaw beneath the head of a lasting tack which has been driven more deeply than usual into the last.

The tack pulling jaw is indicated at 7 and is provided with a working face or edge 8 adapted to engage a projecting lasting tack. The tool is actuated to cause its working face to move in the path indicated in dotted lines in Fig. 4, the tool moving downwardly and inwardly toward the lower edge of the stationary jaw to engage the lasting tack below the head of the tack, and then moving upwardly to withdraw the tack from the shoe. As the tool moves into engagement with the tack the tack is supported against the thrust of the tool by the lower edge of the stationary jaw, and while the tack is being pulled from the shoe it is held in engagement with the working face of the tack pulling jaw by the surface 9 of the stationary jaw, which extends parallel with the movement of the working face of the tack pulling jaw and forms a stationary guide for the tack. After the working face of the tack pulling jaw has moved above the upper edge of the stationary jaw, it is given an abrupt lateral movement over the upper edge of the jaw, which lateral movement forcibly ejects the tack from the tack pulling jaw. The movement of the tack pulling jaw over the upper edge of the stationary jaw brings the tack into engagement with the edge of the stationary jaw and the tack is thereby tilted and dislodged from the working face of the tack pulling jaw, the ejecting action of the upper edge of the stationary jaw in connection with the lateral ejecting movement of the tack pulling jaw causing the tack to be ejected with absolute certainty.

The projection 2 from the frame of the machine is hollow, being open at its upper end and provided at its lower end with a

discharge opening 10 so that a chute is formed to receive the lasting tacks extending into close proximity to the stationary jaw and tack pulling jaw. The tacks are ejected directly from the tack pulling jaw into the chute and are delivered from the chute into a receptacle placed to receive them.

The tack pulling jaw is operated at a high rate of speed, and in order to direct tacks, which may be thrown from the tack pulling jaw during its tack pulling movement, away from the jaw and into the chute, a guard plate 11 is provided which, as shown, extends across the path of movement of the working face of the jaw and projects into the chute. The tack pulling jaw is secured so as to be capable of vertical adjustment upon the lower end of a lever 12, and in order that the guard plate 11 may be as close as possible to the working face of the tack pulling jaw at all times, it is also secured to the lower end of the lever so as to move with the tack pulling jaw.

The deflector upon the tack pulling jaw is indicated at 13 and, as clearly illustrated in Figs. 1 and 5, consists of a rib at one end of the working face of the jaw, the rib extending above the working face of the jaw a sufficient distance to engage the head of the tack, and being provided with bevels at its end to cause a tack, the head of which is engaged by the rib, to be deflected into or outside of the path of movement of the jaw.

To impart the desired movements to the working face of the tack pulling jaw, reciprocating and oscillating movements are imparted to the lever 12. The lever is pivotally mounted upon a slide 14 mounted to reciprocate in vertical guideways in the projection 5 of the machine frame, and is connected at its upper end by a link 15 to a lever 16 pivotally mounted upon the frame of the machine and provided with a cam roll engaging the groove of a cam 17 secured upon the driving shaft 18 of the machine. The driving shaft 18 is rotated constantly during the operation of the machine by means of a belt passing over the driving pulley 19 and is provided at its forward end with an eccentric surrounded by an eccentric strap 20 connected to the slide 14. The eccentric and strap impart reciprocating movements to the slide 14 and the cam 17 through the lever 16 and link 15 impart oscillating movements to the lever 12, and these oscillating and reciprocating movements are so timed with relation to each other that the working face of the tool is caused to move in the path indicated by the dotted lines in Fig. 4.

The operation of the machine has been indicated in connection with the description given above of the construction and arrangement of its various parts and will be readily

understood by those skilled in the art without a separate description thereof.

The nature and scope of the present invention having been indicated; and a machine embodying the various features thereof in their preferred form having been specifically described, what is claimed is:

1. A tack pulling machine having in combination, a tack pulling device, means for actuating said device to engage a projecting lasting tack and remove the tack from the shoe, and means engaging the upper on opposite sides of the tack constructed and arranged to guide the tack transversely to the plane of movement of the tack pulling device into position to be acted upon by the tack pulling device.
2. A tack pulling machine having in combination, a tack pulling device, means for actuating said device to engage a projecting lasting tack and remove the tack from the shoe, and work supports engaging the upper on opposite sides of the tack provided with a throat to guide the tack transversely to the plane of movement of the tack pulling device into position to be acted upon by the tack pulling device.
3. A tack pulling machine having, in combination, a tack pulling jaw having an inward movement to engage a tack projecting from a lasted shoe and an upward movement at an angle to the inward movement substantially in the direction of the length of the tack to withdraw the tack, a stationary jaw provided with a tack supporting surface extending parallel to the path of movement of the tack pulling jaw arranged to engage the tack and support the tack against the thrust of the tack pulling jaw, and means for actuating the tack pulling jaw in a plane substantially at right angles to the tack engaging surface of the stationary jaw to engage a projecting lasting tack and remove the tack from the shoe.
4. A tack pulling machine, having in combination, a stationary jaw arranged to bear against a shoe upper outside of the line of lasting tacks, a tack pulling jaw movable in a plane substantially at right angles to the line of lasting tacks from within the line of tacks toward the stationary jaw and means for actuating the tack pulling jaw to engage a projecting lasting tack and remove the tack from the shoe.
5. A tack pulling machine having in combination, a tack pulling device, means for actuating said device to engage a projecting lasting tack and remove the tack from the shoe, an unyielding work support arranged to bear against the shoe upper outside of the line of lasting tacks and a yielding downhold arranged to bear against the upper inside of the line of lasting tacks.
6. A tack pulling machine, having in combination, a tack pulling jaw, means for act-

uating the jaw to engage a projecting lasting tack and remove the tack from the shoe, a stationary jaw arranged to engage the tack and support the tack against the thrust of the tack pulling jaw, and a downhold arranged to bear against the shoe upper on the opposite side of the tack from the stationary jaw, said downhold and stationary jaw having their adjacent edges at an angle to each other to guide the tack into position to be acted upon by the tack pulling jaw.

7. A tack pulling machine, having in combination, a tack pulling tool, means for actuating the tool to remove a projecting lasting tack from a shoe, and a guard plate arranged to direct a tack thrown from the tool during its tack pulling movement away from the tool.

8. A tack pulling machine, having in combination, a tack pulling tool, means for actuating the tool to remove a projecting lasting tack from a shoe, and a guard plate mounted to move with the tack pulling tool arranged to direct a tack thrown from the tool during its tack pulling movement away from the tool.

9. A tack pulling machine having, in combination, a tack pulling jaw having an inward movement to engage a tack projecting from a lasted shoe and an upward movement at an angle to the inward movement substantially in the direction of the length of the tack to withdraw the tack, a stationary jaw arranged to support a tack against the thrust of the tack pulling jaw and hold the tack in engagement with the tack pulling jaw until removed from the shoe, and means for actuating the tack pulling jaw in a plane substantially at right angles to the tack engaging surface of the stationary jaw to engage a projecting lasting tack and remove the tack from the shoe in the direction of its length.

10. A tack pulling machine, having in combination, a tack pulling jaw, a stationary jaw arranged to support a tack against the thrust of the tack pulling jaw and hold the tack in engagement with the tack pulling jaw until removed from the shoe, and means for actuating the tack pulling jaw to remove a projecting lasting tack from a shoe and impart a lateral movement to the tack pulling jaw across the stationary jaw to dislodge the tack from the tack pulling jaw.

11. A tack pulling machine, having in combination, a tack pulling device, a stationary ejecting device for removing a tack from the tack pulling device, and means for actuating the tack pulling device to remove a projecting lasting tack from a shoe and bring the tack into engagement with the ejecting device.

12. A tack pulling machine, having in combination, a tack pulling jaw provided with a tack deflecting device arranged to

engage the head of a tack above the jaw and means for actuating the jaw to engage a projecting lasting tack and remove the tack from the shoe.

5 13. A tack pulling machine, having in combination, a tack pulling jaw provided at one end of its tack engaging face with a projecting tack deflecting rib arranged to engage the head of a tack and means for actuating the jaw to engage a projecting lasting
10 tack and remove the tack from the shoe.

14. A tack pulling machine having, in combination, a tack pulling jaw, a guide extending parallel to the movement of said
15 jaw substantially in the direction of the length of the tack while in the shoe arranged to hold the tack in engagement with the tack pulling jaw until removed from the shoe, and means for actuating the tack pulling jaw in a plane substantially at right angles to the tack engaging
20 surface of the guide to engage a projecting lasting tack and remove the tack from the shoe.

15 15. A tack pulling machine, having in combination, a tack pulling tool, means for actuating the tool to remove a projecting lasting tack from a shoe and for forcibly ejecting the tack outside of the path of
30 movement of the tool, and a chute to receive the tack ejected from the tool.

16. A tack pulling machine, having, in combination, a tack pulling tool operating in a plane transverse to the direction in
35 which a tack is fed to the tool, means for actuating the tool to engage a projecting lasting tack and remove the tack from the shoe, and a support located opposite the face of the tack pulling tool, constructed and arranged to hold the tack in engagement with
40 the tool during the tack pulling operation.

17. A tack pulling machine, having, in combination, a tack pulling device, means for actuating said device to engage a projecting lasting tack and remove the tack
45 from the shoe, and means engaging the upper on opposite sides of the tack and extending across the line of tacks, constructed and arranged to guide the tack transversely to
50 the plane of movement of the tack pulling

device into position to be acted upon by the tack pulling device.

18. A tack pulling machine having, in combination, a tack pulling device, work supports engaging the upper on opposite
55 sides of the tack provided with a throat to guide the tack into position to be acted upon by the tack pulling device, and means for actuating the tack pulling device in a plane transverse to said throat to engage a projecting lasting tack and remove the tack
60 from the shoe.

19. A tack pulling machine having, in combination, a tack pulling jaw, a stationary jaw arranged to engage a tack and support the tack against the thrust of the tack
65 pulling jaw, a downhold arranged to bear against the shoe upper on the opposite side of the tack from the stationary jaw, said downhold and stationary jaw having their adjacent edges at an angle to each other to guide the tack into position to be acted upon by the tack pulling jaw, and means for actuating the tack pulling jaw in a plane
70 transverse to the guide-way formed by the adjacent edges of the tack pulling and stationary jaws to engage a projecting lasting tack and remove the tack from the shoe.

20. A tack pulling machine having, in combination, a tack pulling jaw operating in
80 a plane transverse to the direction in which a tack is fed to the jaw, a jaw cooperating with the tack pulling jaw and arranged to engage the opposite side of the tack, and means for actuating the tack pulling jaw.

21. A tack pulling machine having, in combination, a tack pulling jaw operating in a plane transverse to the direction in which a tack is fed to the jaw, a stationary jaw arranged to engage the tack and support the
85 tack against the thrust of the tack pulling jaw, and means for actuating the tack pulling jaw to engage a projecting lasting tack and remove the tack from the shoe.

In testimony whereof I affix my signature, 95
in presence of two witnesses.

JOHN B. HADAWAY.

Witnesses:

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