Jan. 18, 1927. 1,614,628

C. F. PYM

TACK PULLING MACHINE

Filed July 3, 1922

Fig. 2.

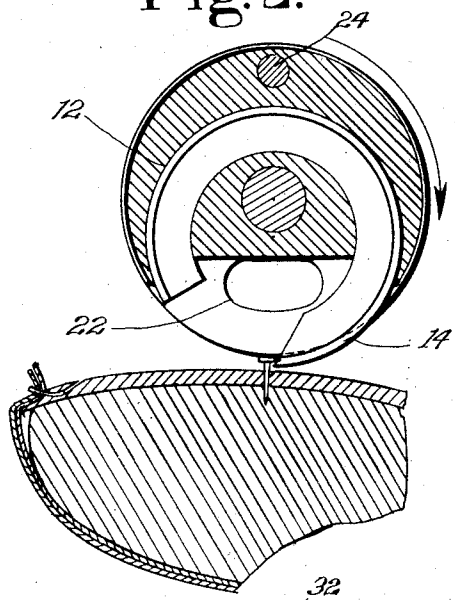
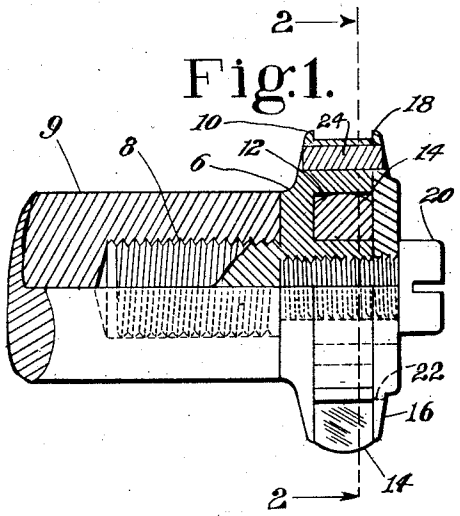


Fig. 1.



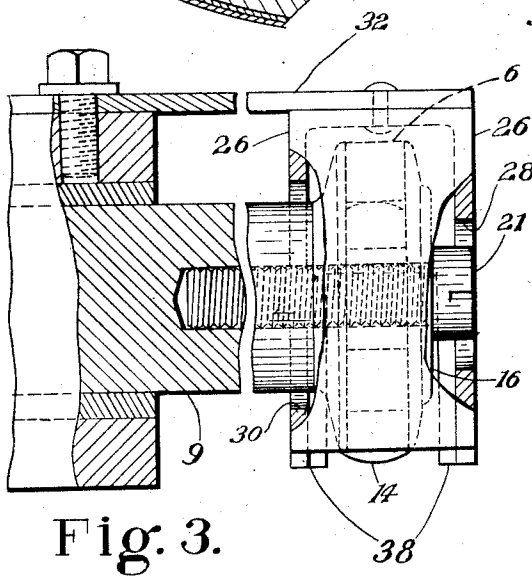
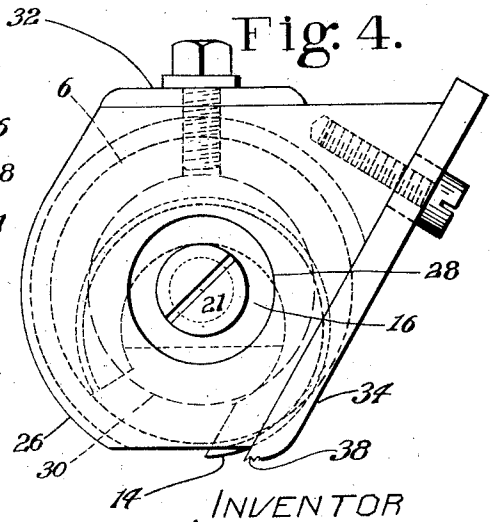


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES F. PYM, OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TACK-PULLING MACHINE.

Application filed July 3, 1922. Serial No. 572,429.

This invention relates to machines for pulling tacks and is herein illustrated as embodied in a tack pulling machine having a rotary tool with a transverse tack pulling edge by which lasting and other tacks are extracted from shoes.

The tack engaging edge of the tack pulling blade of a machine of this character becomes worn or nicked in the course of its use and it is necessary from time to time to regrind and sharpen it. In this way the substance of the pulling blade is gradually reduced. Accordingly blades of this kind are so mounted that they may be adjusted to compensate for the loss of material and to bring their tack engaging edges back into proper relation to the parts in which they are mounted and to the work.

With this in view it is an object of the present invention to provide a tack puller of this character which shall be simple and inexpensive to manufacture, efficient in operation, and which at the same time shall possess the feature of adjustability of the tack pulling blade to compensate for wear thereof over a considerable period; so that the blade will have a long life and will need only infrequent renewal. To this end, the invention provides a rotary tack pulling tool having an adjustably mounted tack pulling blade the body of which is arcuate and is of substantially uniform cross-section throughout a major portion of its length.

Rotary tack pullers of the character disclosed herein are commonly used to pull tacks by which the soles of turn shoes and the insoles of other types of shoes are attached to lasts during the earlier operations in the manufacture of shoes. These tacks are frequently driven in so far that their heads are flush or in some cases slightly below the surface of the insole. Under these circumstances the pulling operation usually entails more or less cutting or tearing of the insole.

Accordingly it is a further object of the present invention to provide a construction which will permit the extraction of tacks which are driven in so far that their heads are sunk beneath the surface of the insole or other article, and which may be relied upon to do this with a minimum mutilation of the work. With this object in view a feature of the invention comprises the combination with a rotary tack pulling tool of a resiliently mounted housing or guard therefor arranged normally to prevent the tack pulling tool from biting into the work but yieldable as by pressure applied through the work to permit the pulling means of the tool to enter beneath the head of the tack with a minimum cutting of the surface of the work when necessary to permit the extraction of a deeply driven tack.

With the above and other objects and features in view, the invention will now be described with reference to the accompanying drawings, which illustrate preferred embodiments thereof, and pointed out in the subjoined claims.

Fig. 1 is a side elevation, partly in cross section, of a rotary tack pulling tool embodying the present invention;

Fig. 2 is a cross section on the line 2—2 of Fig. 1 showing also the operative relation of the tool to a tack to be pulled from a lasted shoe;

Fig. 3 is a side elevation, partly in section, and Fig. 4 is an end view of a tack pulling tool having a yieldingly mounted guard to facilitate the extraction of deeply driven tacks.

The tool of Figs. 1 and 2 is provided with a hub 6 formed with a screw-threaded shank 8 arranged to be received in a threaded hole of a rotary shaft 9. Hub 6 is formed with a guard flange 10 and with a circular groove 12 eccentric with respect to the axis of rotation of the tool, and arranged to receive a tack pulling blade 14, the body of which is arcuate in form from end to end and illustrated as curved through about three hundred degrees, being uniform in cross-section through the major portion of its length. This blade is clamped in position in the groove by a cap plate 16, the periphery of which is formed as a guard flange 18 of the same diameter as guard flange 10. Since the groove 12 is closed at its outer side by the cap plate, there is furnished a passage to receive the blade, which passage opens only at its ends between the guard flanges. A screw 20 threaded into an

opening in hub 6 clamps the cap plate 16 of the arcuate tack pulling blade 14 to the hub 6.

As clearly shown in Fig. 1, the tack pulling blade 14 is approximately rectangular in cross section with its outer surface, however, convex so that the tack pulling edge of the plate, formed by cutting or grinding the end of the blade at an acute angle, is convex and of a form readily to engage the head of a tack to be pulled.

As illustrated cap plate 16 is formed with an opening 22 to permit the escape of débris from the space between the tack pulling blade, the cap plate and the hub, and to assist in assembling the parts of the tool the cap plate 16 and the hub 6 may conveniently be provided with registering holes arranged to receive a pin 24.

With a tack pulling blade of the character illustrated and conforming in shape to groove 12, it is apparent from a consideration of Fig. 2 that very substantially more than half of the substance of the blade may be worn away by repeated grindings before the blade will be so short that it can no longer be secured in position and must be replaced by a new blade.

As illustrated in Figs. 3 and 4, the tack pulling tool is formed without the guard flanges 10 and 18 of Figs. 1 and 2 but is otherwise similar to the construction of those figures, except that a single screw 21 is used both to clamp the tack pulling blade 14 to the hub and to clamp the hub to the drive shaft 10. It is provided, however, with a housing or guard casing 26 suitably apertured as at 28, 30 to permit the assembling of the device and supported independently of the rotary tack puller by a moderately stiff and resilient spring member 32, illustrated as a leaf spring secured by suitable screws to the bearing of shaft 9. Suitable clearance is provided between the rotary tack pulling tool and the casing 26 to permit the latter to yield upwardly under pressure applied by the shoe without contacting with the tack pulling member so that deeply embedded tacks may be extracted. At the same time housing 26 is normally operative to prevent the blade 14 from digging into the work when such action is not necessary.

As illustrated, one wall of the housing 26 is formed as a work rest 34 secured to the remainder of the housing as by an adjustable screw and slot connection, and this work rest is roughened at its lower end 38. The work may conveniently be rested against this, and rocked about it as a fulcrum, as it is manipulated to present the tacks to the pulling tool.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A rotary tack pulling tool having an adjustably mounted tack pulling blade the body of which is arcuate and is of substantially uniform cross-section throughout a major portion of its length.

2. A rotary tack pulling tool having a circular eccentric with respect to its axis of rotation, and an arcuate tack pulling blade conforming in shape to and secured in said groove.

3. A tack pulling tool having a blade the body of which is arcuate in form from end to end with the outer surface of the blade convex throughout the length of the body.

4. A rotary tack pulling tool having a circular guard flange and a tack pulling tool formed on an arc and so disposed that the inner and outer walls of any portion of its body are at one side of the axis of rotation, said tool being clamped eccentrically with respect to said guard flange.

5. A rotary tack pulling tool having a pair of guard flanges and a peripherally closed passage opening at its end between the flanges, and an arcuate tack pulling blade eccentrically clamped in the passage and extending between the guard flanges.

6. A rotary tack pulling tool having a pair of guard flanges, one of the guard flanges being formed upon a member having an eccentric groove therein, and an arcuate tack pulling blade adjustably clamped in said groove between the guard flanges.

7. A tack pulling machine having, in combination, a rotary tack pulling tool a leaf spring, and a guard for the tack pulling tool carried by the leaf spring and arranged normally to prevent the tack pulling tool from digging into the work, but yieldable to facilitate the extraction of deeply driven tacks.

8. A tack pulling machine having, in combination, a rotary tack pulling tool, a guard therefor and a spring arranged to carry and support the guard and normally to hold the guard in position to prevent the tack pulling tool from digging into the work but yieldable to permit the tack pulling tool to dig into the work to extract deeply driven tacks.

9. A tack pulling machine having, in combination, a shaft, a bearing member therefor, a rotary tack pulling tool carried by the shaft, a guard member in which the tack pulling tool is mounted, and a spring secured at one end to the bearing member, and carrying at its other end the guard member normally in position to prevent the tack pulling tool from digging into the work but yieldable to permit relative movement of the tack pulling tool and the guard to facilitate the extraction of deeply driven tacks.

10. A rotary tack pulling tool having a circular guard flange and an arcuate tack pulling blade having a curvature of at least one hundred and eighty degrees adjustably

clamped eccentrically with respect to said guard flange.

11. A tack pulling machine having, in combination, a rotary tack pulling tool, and a casing provided with an adjustable wall for contact with the work.

12. A tack pulling machine having, in combination, a tack pulling tool, and a yieldingly mounted guard therefor arranged to prevent the tack pulling tool from digging into the work and having one of its walls formed as a work rest adjustable in a direction towards and from the work.

In testimony whereof I have signed my name to this specification.

CHARLES F. PYM.

CERTIFICATE OF CORRECTION.

Patent No. 1,614,628. Granted January 18, 1927, to

CHARLES F. PYM.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 93, for the word "through" read "throughout"; page 2, line 71, claim 2, after "circular" insert the words "passage closed at its outer side and"; same page, line 99, claim 7, after the word "tool" insert a comma; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 30th day of August, A. D. 1927.

Seal.

M. J. Moore,
Acting Commissioner of Patents.

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