

(No Model.)

W. TIRRELL.
PREPARING OUTSOLES FOR BOOTS OR SHOES.

No. 539,835.

Patented May 28, 1895.

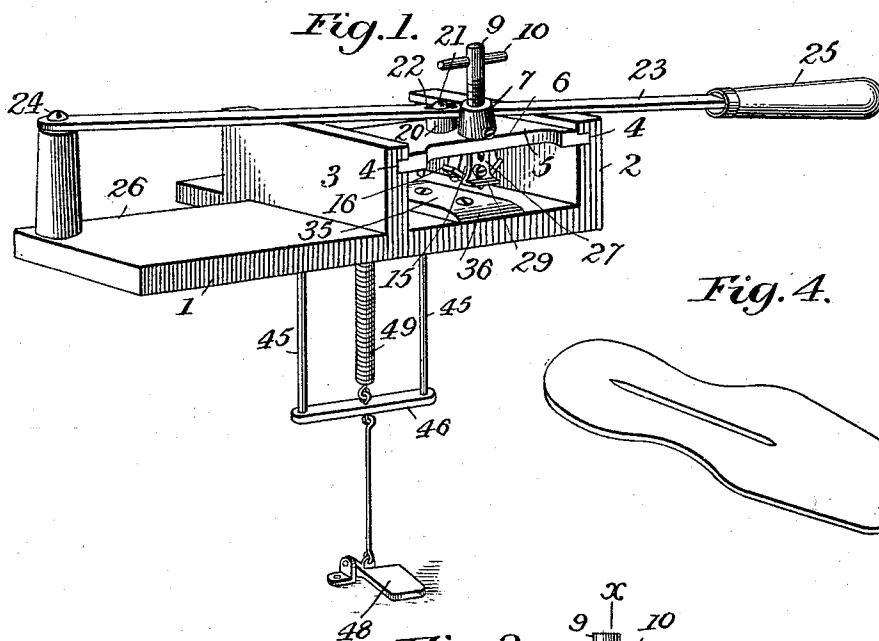
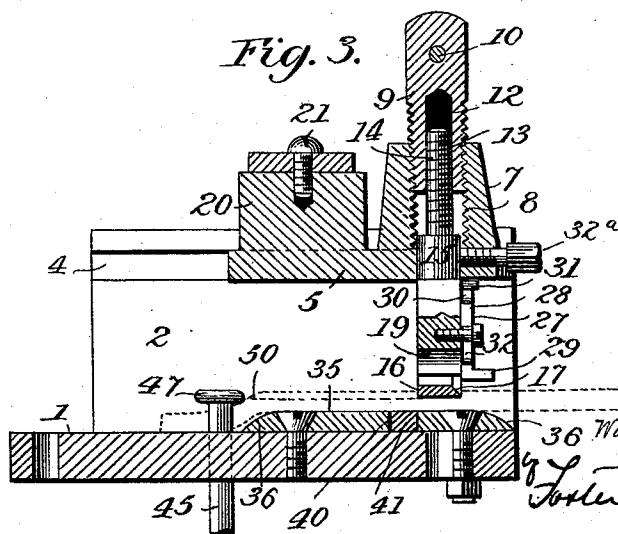
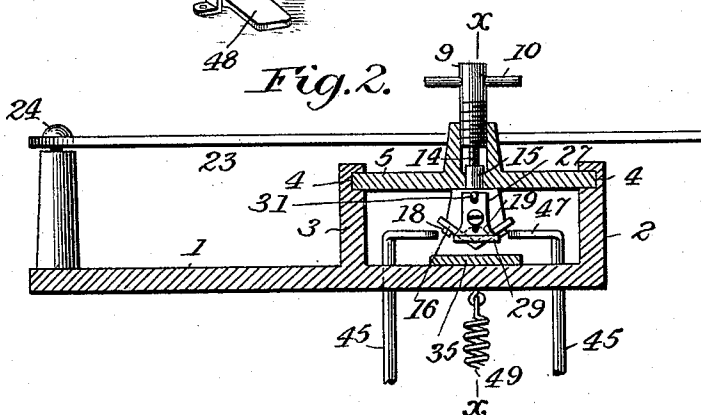


Fig. 4.



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PREPARING OUTSOLES FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 539,835, dated May 28, 1895.

Application filed February 7, 1895. Serial No. 537,651. (No model.)

To all whom it may concern:

Be it known that I, WARREN TIRRELL, 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 Preparing Outsoles for Boots or Shoes, of which the following is a specification.

This invention relates to certain new and useful improvements in machines for grooving boot and shoe soles; and it consists substantially in such features of arrangement, construction, and combinations of parts as will hereinafter be more particularly described.

In the construction or manufacture of what are known as "roof" shanks for boot and shoe soles, a groove is formed in the under inner surface of the shank portion of the sole, beginning at a point intersecting the heel portion, and terminating at or near the ball portion of the sole. Heretofore the grooves have been formed by hand with a knife, and as is obvious the labor attendant upon the operation is necessarily very great, besides consuming considerable time and adding very much to the cost of manufacture.

The object of my invention is to provide a machine by which the grooving of the soles is performed most economically and efficiently, and one in which the cost of manufacture is comparatively limited and the labor reduced to a minimum; besides securing absolute uniformity in the shape and length of the grooves, substantially as will hereinafter more fully appear when taken in connection with the accompanying drawings, in which—

Figure 1 is a view in perspective representing a machine constructed and arranged in accordance with my invention. Fig. 2 is a vertical sectional elevation taken through the machine by which certain parts are more clearly represented. Fig. 3 is a vertical longitudinal sectional elevation taken on the line *xx* of Fig. 2, the said view being somewhat enlarged by which to more clearly indicate the construction and arrangement of parts. Fig. 4 is a detail perspective view of the shank portion of a shoe-sole comprising a groove as cut or formed by my improved machine.

My improved machine is capable of being

constructed in a great variety of ways, but in practice I preferably construct the same of a suitable base-plate 1, of proper dimensions or size, and which may be supported upon a table, bench, or other similar support, or which itself may be formed or provided with supporting legs. Extending upwardly from said base at one end thereof is an upright or standard 2, while also extending upwardly in like manner from the base, and at a suitable distance from the first is an additional upright or standard 3, the said standards or uprights being preferably arranged in the manner shown, although it is evident that the particular position which they occupy relatively to the base is immaterial, since they might be made to extend therefrom at any point. Said standards are formed or provided on their inner faces or surfaces near the upper edges, with corresponding longitudinal channels or grooves 4, 4, which channels or grooves receive and support the side edges of a longitudinally movable slide or plate 5, which is adapted to be moved back and forth in the manner to be hereinafter explained. While I have preferably shown the said movable slide or plate as supported within grooves in the sides of the uprights or standards, it is evident that other means of support could be provided for the said slide or plate, but preferably I resort to the construction shown and described. The said slide or plate 5, is preferably rectangular in form, or approximately so, and formed or provided on the upper surface thereof adjacent its forward edge 6, is a hollow post or bearing 7, which is screw-threaded interiorly at 8, and within which works an elongated nut 9, which is screw-threaded on its exterior surface to fit the bearing, and which is provided at or near its upper end with a cross piece or rod 10, extending transversely through the same to furnish a convenient means for turning the nut to adjust the knife about to be described.

I desire to state at this point that while certain preferred devices or elements are herein employed for effecting the adjustment of the knife so as to regulate the depth of groove, I do not wish to be understood as limiting myself thereto, since my invention is intended to comprehend broadly any means for effecting such adjustments. Preferably, however,

I employ the devices such as will now be more specifically referred to.

The nut 9, referred to, is bored out centrally at 12, and is formed interiorly with a screw-thread 13, with which engages the correspondingly screw-threaded shank 14, projecting upwardly from a block 15, to which latter the knife or cutter 16, is secured through the medium of which the cutting or grooving of the shank of the sole is effected. The elongated nut 9, when turned in one direction or the other will cause the shank of the block or knife to be turned correspondingly and consequently the depth or penetration of the knife is thereby altered or adjusted. The said knife or cutter is formed preferably of steel, and is of a V-shape and formed with a cutting edge 17, at the point of angle thereof, but it is obvious that instead of so forming the knife it may be made of different shapes to conform to the particular shape or character of the groove which it is intended the knife shall form in the leather or sole. The under side of the block 15, hereinbefore referred to is beveled in conformity with the shape of the knife, and the said knife is detachably secured to said block by means of screws 18, and the block is formed on its under side with a reversely V-shaped notch 19, (see dotted lines Fig. 2,) which facilitates the escape of the shaving or that much of the stock of the leather which is removed in the formation of the groove. By thus making the knife or cutter detachable or removable it can readily be replaced by another whenever it is desired.

Formed with or secured to the upper surface of the movable plate or slide 5, and preferably to the rear of the hollow post or bearing 7, is an additional post 20, which receives a screw 21, passing through an elongated opening 22 formed in an operating hand lever 23, which is pivoted at 24 to the post mounted on the base-plate, while its free end is formed or provided with a handle 25. This construction forms a movable connection between the operating hand lever and the movable slide or plate, but it is obvious that instead of the specific means shown for this purpose the desired connection could be effected in various other ways. By virtue of the elongated opening 22, in said operating hand lever 23, the said movable plate is permitted to move back and forth longitudinally in the grooves 4, of the uprights or standards 2, and 3, whenever the said hand lever is grasped by the hand of the operator, and turned on its pivot. Normally the position of the hand lever is in a line parallel with the edge 26 of the base plate, and consequently the positions of the knife and sliding plate are such as to enable the desired cutting or grooving of the leather of the soles in the manner hereinafter explained.

In order that the depth of the groove in the leather may be properly regulated I employ in connection with the knife or cutter what

may be termed either a gage or presser-foot 27 which consists of a plate 28, provided with a foot 29 at right angles thereto, the said plate being provided with an opening 30 which receives a projecting pin 31, on the outer side of the block hereinbefore referred to, and an elongated opening 32, which receives a set screw for maintaining said gage or presser-foot in the positions to which it may be brought. The opening 30, as well as the opening 32 permits of the desired vertical adjustment of said gage or presser foot, and it is evident that the latter will serve to bear upon the sole and hold it downwardly in place while the knife or cutter is performing its function in gouging or cutting out the leather.

It is to be remarked at this point that the hollow post or bearing 7 is provided in its side with a set screw 32^a, which serves to hold the shank 14 in place whenever the desired adjustments of the knife have been effected.

Secured to the base plate between the uprights or standards 2 and 3 is a plate 35, which at each end is beveled or rounded off in tapering manner as indicated at 36. This plate is secured in place by means of suitable screws or rivets, and preferably the same is separated at 40, and provided with a filling piece 41, so that by removing said filling piece and setting the parts of the plate closer together grooves of different lengths may be formed in the same machine.

It is necessary in the use and operation of my improved machine that the inner end of the sole be held down into place firmly upon the base-plate, and for this purpose while various means could be employed, I preferably resort to the clamp such as is indicated in Figs. 1 and 2. This clamp consists of two rods 45 united at their lower ends by a cross piece 46, while their upper ends project through the base plate from beneath, and are turned at right angles toward each other at 47, a suitable treadle 48 being employed together with a spring 49, the tendency of which is to maintain the clamp in an elevated position, and which latter is brought down upon the sole by the foot of the operator. The sole of the shoe having been laid upon the plate 35, with the inner end thereof drawn down over the inner beveled edge of said plate, substantially as shown in Fig. 3, it is obvious that by adjusting the knife or cutter to bring it in a plane lower than the upper surface of the said sole, the said knife will cut into or penetrate the sole at the point 50, assuming of course that the knife is started from its extreme backward position, and then as the movement of the hand lever is continued forward or in the direction of the operator the leather will continue to be cut in such manner that by the time the knife has reached the outer end of the plate the groove will have been completed. It is to be understood that while the groove is being thus cut in the sole or leather the operator for convenience continues to hold the outer end of the

sole downwardly over the outer beveled edge of the plate in like manner as the inner end thereof is held by the clamp, and consequently by the time the knife has reached the forward edge of the base plate there will be no further portion or surface of the sole for the knife to operate upon and in this way the length of the groove in the sole is limited or regulated. It is not absolutely necessary, however, that the outer end of the sole be held downwardly over the forward edge of the plate by the operator, for when the knife reaches the bevel 36, said knife will cease to have any cutting effect upon the sole by reason of the fact that the remaining portion of the sole having no support beneath it will be turned downwardly over the end of the plate by the pressure of the knife itself, and in this way, the length of the groove in the sole is limited.

In operation the hand-lever is grasped and moved in such manner as to carry the slide or plate at the farthest position from the operator. The proper adjustments of the knife and the gage or presser-foot having been made, the sole is laid upon the plate 35, and the clamp drawn downwardly upon the inner end thereof by pressing the foot upon the treadle. Then the outer end of the sole is taken hold of by one hand of the operator and turned down over the outer beveled edge of said plate 35, whereupon the hand lever is drawn toward the operator, the knife entering and leaving the sole in the manner hereinbefore described. It is apparent that a great many soles can be thus prepared in a short space of time, and that much time and labor is saved as compared with the methods heretofore resorted to for a similar purpose.

It is apparent that a great many immaterial changes could be resorted to in the practice of my invention, and therefore

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim—

1. In a machine for grooving leather soles, the combination of the plate secured to the base and having its ends rounded off or be-

eled, means for depressing and holding one end of the sole in a plane lower or beneath the upper surface of the plate, a movable knife constructed to penetrate the leather and form a groove therein, and means for operating said knife, substantially as described.

2. In a machine for grooving leather soles, the combination of the plate having its ends rounded off or beveled, a clamp located in proximity to the inner end of said plate, mechanism for operating the clamp by pressure of the foot, a movable V-shaped knife for penetrating the sole, the gage carried by the knife, and an operating handle, substantially as described.

3. In a machine of the character named, the combination of the plate 35, the clamp, the movable slide provided with the hollow interiorly screw-threaded post, the nut working in said post and having a screw-threaded bore, the V-shaped knife having a threaded shank entering said bore, and an operating handle for the plate, substantially as described.

4. In a machine of the character named, the combination of the movable slide carrying the knife, the plate beveled at each end, and the spring actuated clamp and treadle, said clamp being composed of rods having their ends turned inwardly at right angles, substantially as described.

5. The combination with the base formed or provided with the standards having grooves in their inner faces, the slide working in said grooves, a V-shaped knife or cutter carried by the slide, the plate having its ends beveled off, the clamp operating at the inner end of said plate and the operating handle pivoted to a post on the base and movably connected to the slide, substantially as described.

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

WARREN TIRRELL.

Witnesses:

WALDO E. GEARY,
STEPHEN M. COAN.