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DEVICE FOR OPERATING ON SHOES

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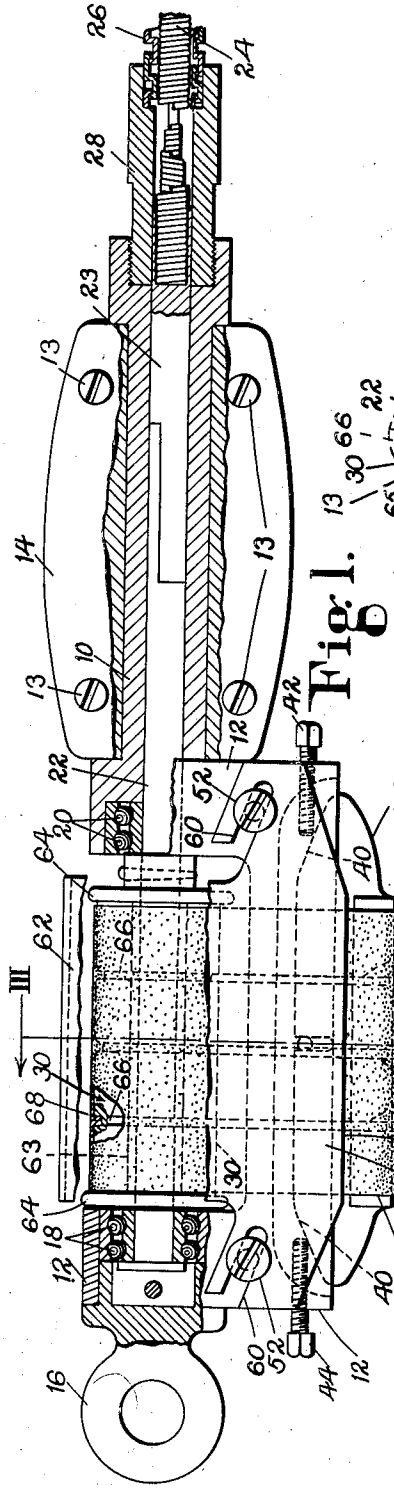


Fig. 1.

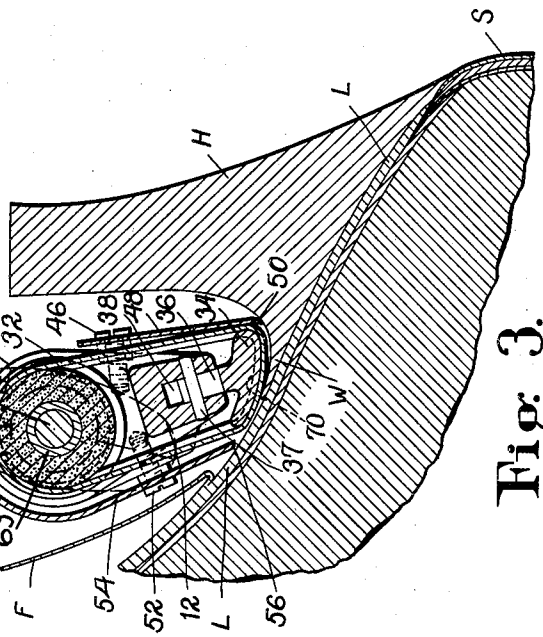


Fig. 3.

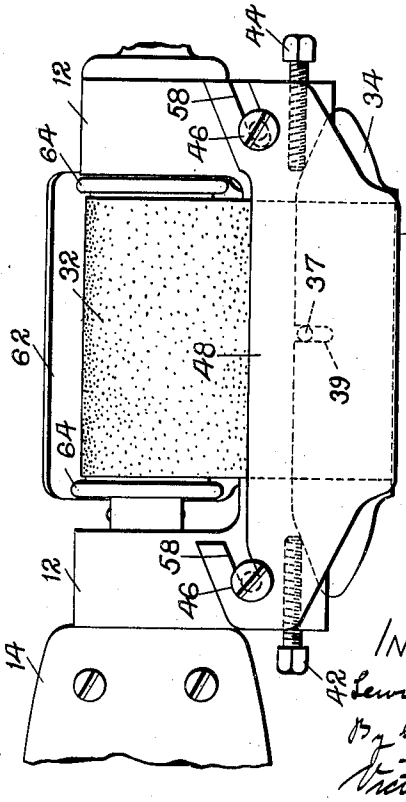


Fig. 2.

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DEVICE FOR OPERATING ON SHOES

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6 Claims. (Cl. 51—170)

This invention relates to devices for operating on shoes and is herein illustrated and described as embodied in an apparatus for smoothing down the under surface of a shoe at the junction of the sole with the breast lip of an attached Louis heel to cause the surface of the lip to merge smoothly into the surface of the sole.

In the manufacturing of shoes with Louis heels, the heel is attached after the attaching of the sole and the heel breast is then usually covered with a flap of thin leather which in most cases is split from and is continuous at its forward end with the material of the sole. In high grade work the sole is frequently notched to receive the forwardly extending lip of the heel and to bring the surface of the lip approximately to the level of the sole at the junction of the lip with the sole. However, in practice this result is never obtained with sufficient accuracy, the forward edge of the lip being either sunk slightly below or projecting slightly above the level of the sole. In the manufacture of medium and lower grade shoes such notching of the sole is usually omitted in view of the fact that the heel breast lip tapers forwardly to a relatively thin edge. In any case it is desirable to smooth down the junction of the sole with the lip by the removal of material from either the sole or the lip in order to avoid any unsightly break in the continuity of the under surface of the shoe in that vicinity after the flap has been laid. This heretofore has been accomplished by a hand rasping or scouring operation which is time-consuming and fatiguing to the operator and which, furthermore, if carelessly done, may result in gouging out leather from the shank portion of the sole, thus leaving a groove which may be visible in the finished shoe.

It is an object of the present invention to provide a device for performing the above-mentioned operation accurately, quickly and without damaging the shoe or requiring the exercise of much skill or the expenditure of much effort on the part of the operator. In accordance with a feature of the invention, there is provided an abrading tool for operation upon the under surface of a shoe in the vicinity of the junction of the sole with the breast lip of an attached Louis heel, and a pair of gages each having a relatively narrow blunt edge for engaging the heel lip and the sole to limit the scouring action of the tool upon the removal of sufficient material from the lip or from the sole to render the adjacent surfaces of the lip and of the sole continuous. In the illustrated device the tool consists of an abrading belt running over a form block having a shape which is nearly complemental (having a slightly greater curvature for purposes of clearance) to the desired longitudinal curvature of the shoe at the locality under consideration. The illustrated device is portable for convenience of operation upon shoes supported on stationary last spindles, the tool being driven by a flexible cable.

These and other features of the invention, as well as certain details of construction and combination of parts, will be described as embodied in an illustrated device and pointed out in the appended claims.

In the drawing,

Fig. 1 is a front elevation, partly in section, of the improved device;

Fig. 2 is a rear elevation of a portion of the improved device; and

Fig. 3 is a cross-section taken on the line III—III of Fig. 1 showing the improved device in operation upon a shoe.

The several parts of the improved device are all mounted upon a supporting structure comprising a sleeve 10 and a yoke 12 extending from the sleeve 10 and integral therewith. Adjustably secured to the sleeve 10 is a hand grip 14 which the operator grasps in manipulating the device. The hand grip 14 is elliptical in cross section and is composed of two sections clamped together about the sleeve 10 by screws 13 which may be loosened to change the position of angular adjustment of the hand grip about the sleeve 10 to suit the natural grasp of the individual operator. At the end of the yoke 12 opposite the hand grip 14 is a ring 16 rigidly secured to the yoke 12. The ring 16 is grasped by the other hand of the operator when using the device and when the device is not in use it serves as a convenient means of hanging the device upon a hook. Journaled in bearings 18 and 20 in the yoke 12 is a shaft 22. This shaft extends partly through the sleeve 10 within the hand grip 14 and is coupled to a terminal 23 of a flexible driving shaft 24 which enters the opposite end of the sleeve 10. The flexible shaft 24 is provided with a flexible sheathing 26 having a rigid end portion 28 which is threaded into a suitable recess in the end of the sleeve 10. The far end of the shaft 24 (not shown) may be driven from any convenient source of power.

Secured upon the shaft 22 between the bearings 18 and 20 is a pulley 30 which drives an abrading belt 32 of sheet material which, in the

illustrated device, consists of emery cloth. The belt 32 passes over a form block 34 which supports it against the pressure of the work and about which the belt travels in two runs leading to and from the pulley respectively, the two runs of the belt being close to each other to enable them to enter the space between a high heel and the bottom of the forepart of a highly arched shoe. The block 34 has a smooth surface 35 offering a minimum of friction to the belt. This belt-supporting surface is in the form of a sector of a non-circular cylinder, being nearly complemental in cross section to the desired longitudinal curvature of a shoe in the vicinity of the junction of the sole with the breast lip of an attached wood heel but having a slightly greater curvature for purposes of clearance. The block 34 is provided with a tongue 36 which extends into a slot 38 formed in the yoke 12. The block 34 is thus supported against movement transverse to the axis of the pulley 30 by the slot 38 and it is held against endwise movement relatively to the pulley 30 by a pin 37 secured in the yoke 12 and extending across the slot 38 and engaging a recess 39 in the tongue 36. The inner edge of the tongue 36 is beveled or inclined relatively to the axis of the pulley adjacent to each of the ends of the tongue at localities indicated by the reference character 40 in Fig. 1. Threaded into the two ends of the yoke 12 and engageable with the respective beveled portions 40 of the tongue are two screws 42 and 44 which may be turned to urge the form block 34 outwardly of the slot 38 and away from the pulley 30 thereby serving not only to support the form block in the yoke 12 against the pressure of the work but also as a means to adjust and equalize the tension of the abrading belt 32.

Secured to the yoke 12 by a pair of screws 46 is a thin plate 48 of sheet metal having a blunt gaging edge 50 extending transversely of the belt 32 and engageable with the wood of the lip of the heel. Also secured to the yoke 12 by a pair of screws 52 is another thin plate 54 of sheet metal having a blunt gaging edge 56 extending transversely of the belt 32 and engageable with the leather of the shank of the shoe. The plate 48 has formed in it a pair of parallel slots 58 for accommodating the screws 46 respectively, the slots 58 being inclined to the edge 50 to provide for fine adjustment of the plate 48. The plate 54 has likewise formed in it a pair of parallel slots 60 for accommodating the screws 52 respectively, the slots 60 being inclined to the gaging edge 56 to provide for fine adjustment of the plate 54. The plate 54 extends upwardly from its gaging edge 56 to shield the sole and particularly the heel breast flap from the abrading belt 32, the upper portion (indicated by the reference numeral 62) of the plate 54 being curved partially around the pulley 30.

The pulley 30 comprises a hub 63 upon which is vulcanized a sleeve 65 of rubber. The hub 63 has a pair of end flanges 64 for guiding the belt 32 in a longitudinal path. However, unless the form block 34 is accurately adjusted by the screws 42 and 44 to bring its belt-supporting surface into parallel relation to the axis of the pulley 30 the belt 32 will tend to creep sidewise. To insure against this and also to improve the traction of the pulley upon the belt, there are formed in the rubber sleeve 65 several circumferential grooves 66. The belt 32 is molded to provide ribs 68 extending from its under surface and disposed longitudinally with respect to the path of movement of the belt. These ribs engage the grooves 66 respectively to hold the belt against lateral movement. The rubber of the sleeve 65 yields to enable the ribs to enter the grooves 66 which are sufficiently narrow to cause the sleeve to pinch the ribs. The upper edges of the grooves may be slightly beveled to facilitate entering of the ribs. This pinching action of the rubber sleeve enables the pulley to drive the belt against the drag of the abrasive surface upon the work. The form block 34 has grooves 70 to accommodate the ribs 68, thereby helping to maintain the belt in its proper path of travel. The grooves 66 and 70 are deeper than the height of the ribs and the grooves 70 are wide enough to provide running clearance for the ribs. The fabric or other sheet material of which the belt 32 is made should preferably be molded to form the ribs 68 before the application of emery or other grit to its working surface. The crease on the working surface of the belt will thus be covered with glue and abrasive and will not interrupt the continuity of the working surface.

The operation of the device is illustrated in Fig. 3 wherein is shown a shoe S supported upon a last which may be mounted upon a bench spindle (not shown). The shoe S is provided with a leather sole L from which has been split a heel breast flap F. A wood heel H having a lip W has been attached to the shoe against the rear portion of the sole L. Before the breast flap F is cemented upon the breast surface of the heel H the forward edge of the lip W is to be smoothed off to render the adjacent surfaces of the lip and of the shank continuous with each other. To accomplish this the operator grasps the hand grip 14 of the improved device with one hand and the ring 16 with the other and holds the device in the position shown in Fig. 3, moving the device forwardly and rearwardly to bring the abrading belt into engagement with all projecting material, and tilting the device to the right and the left as may be required by the transverse curvature of the under surface of the shoe at the locality of operation. When the hand grip 14 is adjusted about the axis of the sleeve 10 as previously described the operator will naturally tend to hold the device in proper operating position. The plates 48 and 54 are so adjusted as to prevent the gaging edges 50 and 56 from simultaneously engaging the shoe until the desired operation has been completed. During the performance of the operation one or the other of the gaging edges may engage the shoe or neither of them may engage it. When, however, the two gaging edges simultaneously engage the wood W of the lip and the leather L of the shank portion of the sole at the same time, further approach of the form block 34 toward the shoe will be prevented.

The operation will be the same in the case of a shoe having a sole notched to receive the heel lip and in which the forward edge of the heel lip is sunk below the level of the sole. In that case, however, material will be scoured from the sole rather than from the heel lip.

In either case the gaging edges 50 and 56 will limit the operation of the abrading belt to the removal from the heel lip or from the sole of enough material to render the surface of the lip and the surface of the sole smoothly continuous with each other. Even if the operator should carelessly hold the device in operating position longer than necessary, there will be no danger of scouring a groove into the relatively soft leather L adjacent to the hard wood W, usually maple, of the heel lip.

It will be observed that the gage plates **48** and **54** both function as belt guards by covering (or substantially covering, in the case of the plate **48**) the adjacent runs of the abrading belt **32**.

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

1. A device for operating on shoes comprising an abrading tool for removing material from the under surface of a shoe in the vicinity of the junction of the sole with the breast lip of an attached Louis heel, a support for said tool, a pair of relatively thin plates of sheet metal having gaging edges engageable with the heel lip and the sole of the shoe respectively to limit the operation of the abrading tool to the removal from the lip or from the sole of enough material to render the surfaces of the lip and the sole smoothly continuous with each other, and a pair of screws for clamping each of said plates to said support, each of said plates having formed in it two substantially parallel slots to accommodate the clamping screws for that plate, said slots being inclined to the gaging edge of the plate to facilitate adjustment of the gaging edge relatively to the abrading tool.

2. A device for operating on shoes comprising an abrading belt for removing material from the under surface of a shoe in the vicinity of the junction of the sole with the breast lip of an attached Louis heel, a driving pulley for said belt, a support for said pulley, means for driving said pulley, means for supporting said belt against the pressure of the work, a pair of relatively thin plates between which said abrading belt operates, said plates having gaging edges engageable with the heel lip and the sole of the shoe respectively to limit the operation of the abrading tool to the removal from the lip or from the sole of enough material to render the surfaces of the lip and the sole smoothly continuous with each other, the plate which engages the sole extending to and partially around said driving pulley to protect the unlaid heel breast flap from the adjacent run of the abrading belt, two substantially parallel slots in each of said plates, said slots being inclined to the gaging edge of the plate to facilitate adjustment of the gaging edge relatively to the abrading tool, and a pair of screws extending through said slots and clamping each of said plates to said support.

3. A device for operating on shoes comprising an abrading belt for removing material from the under surface of a shoe in the vicinity of the junction of the sole with the breast lip of an attached Louis heel, said abrading belt having one surface coated with abrasive and having a plurality of longitudinal ribs extending from its opposite surface, a driving pulley for said belt having a belt-engaging portion of rubber in which is formed a plurality of grooves of sufficient width to enable the rubber to yield to receive said ribs and to pinch the ribs thereby increasing the traction of the pulley on the belt and guiding the belt in a longitudinal path, means for supporting said belt against the pressure of the work, and gaging means engageable with the under surface of the shoe for controlling the position of the said belt-supporting means to limit the operation of the belt to the removal from the lip or from the sole of enough material to render the surfaces of the lip and of the sole smoothly continuous with each other.

4. A device for operating on shoes comprising an abrading belt, means for supporting said abrading belt against the pressure of the work, and a pulley for driving said abrading belt, said abrading belt being composed of sheet material having one surface coated with abrasive and being molded to form longitudinal ribs extending from its opposite surface, and said pulley having a belt-engaging portion of rubber in which is formed a groove of sufficient width to enable the rubber to yield to receive the rib of said belt and to pinch the rib thereby increasing the traction of the pulley on the belt and guiding the belt in a longitudinal path.

5. A device for operating on shoes comprising a yoke, a pulley journaled in said yoke, an abrading belt driven by said pulley, a form block for supporting said abrading belt against the pressure of the work, said form block having a tongue and said yoke having a slot into which said tongue extends to hold the form block against movement about the axis of said pulley, means for holding said form block against endwise movement with respect to said pulley, said tongue having a pair of surfaces inclined relatively to the axis of said pulley, and a pair of screws threaded in said yoke and engaging said inclined surfaces respectively to urge said form block outwardly of said slot and away from said pulley to tension the abrading belt and to enable the tension at the opposite sides of the abrading belt to be equalized.

6. A device for smoothing the under surface of a shoe in the vicinity of the junction of the sole with the breast lip of a wood heel attached to the shoe, comprising an abrading belt, a pulley for supporting and driving said belt, a yoke for supporting said pulley, a support for holding said belt against the work, said support being constructed and arranged to support said belt in two runs leading to and from said pulley respectively, the two runs of said belt being close to each other to enable them to enter the space between a high heel and the bottom of the forepart of a highly arched shoe, a slot in said yoke, a tongue on said support extending into said slot, screws for adjusting the distance between said support and said pulley, and a pair of relatively thin plates outside of and close to the two runs of said belt, each of said plates having a blunt edge extending transversely of the adjacent run of the belt for engaging the under surface of the shoe to limit the depth of the abrading operation performed by said belt, said support extending far enough to expose a portion of said belt slightly beyond said edges for unobstructed operation upon the under surface of the shoe.

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