J. BUCKLE.

HEEL FINISHING MACHINE.

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1,048,647. Patented Dec. 31, 1912.

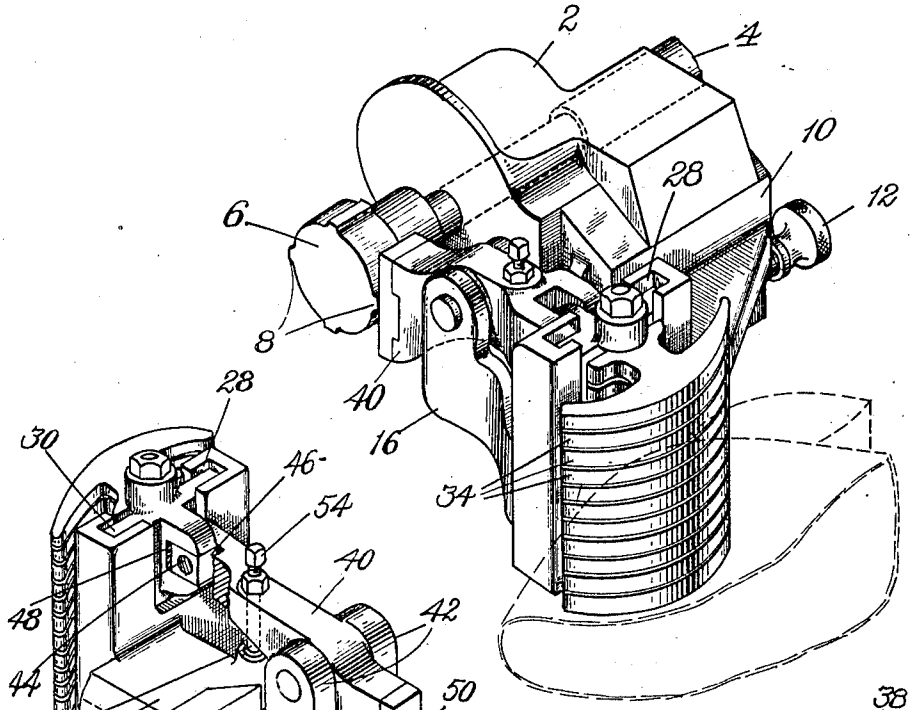

Fig. 1.

Fig. 2.

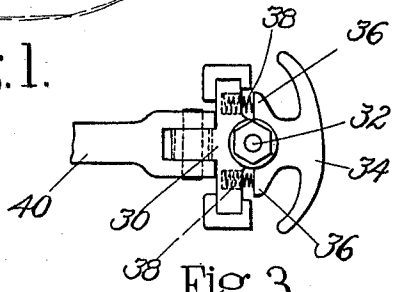

Fig. 3.

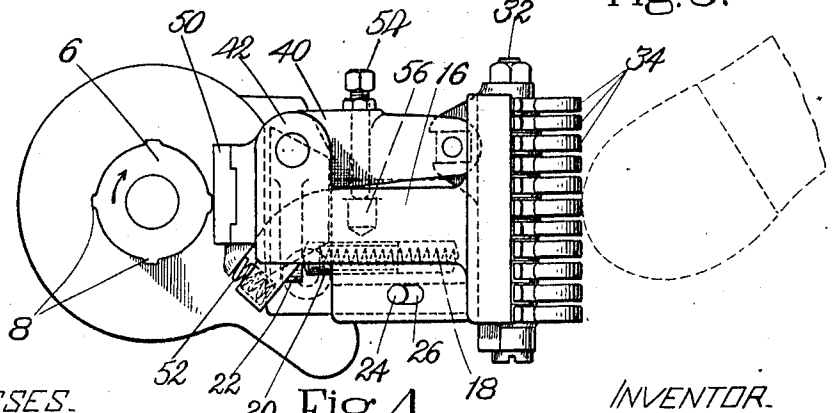

Fig. 4.

WITNESSES.

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HEEL-FINISHING MACHINE.

1,048,647. Specification of Letters Patent. **Patented Dec. 31, 1912.**

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To all whom it may concern:

Be it known that I, JOHN BUCKLE, a subject of the King of Great Britain, residing at Beverly, in the county of Essex and State of Massachusetts, have invented certain Improvements in Heel-Finishing Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to machines for performing the finishing operation upon the edges and tread faces of shoe bottoms and is herein disclosed embodied in a machine for finishing the heel edges of shoes.

The invention aims particularly to provide an improved tool and driving means therefor which will expedite the finishing operation, which will give a superior finish to the surface operated upon, and which will be capable of operating upon heels differing considerably in shape, style, and size.

The invention will be readily understood from the following description of one embodiment thereof, reference being made to the accompanying drawings, in which—

Figure 1 is a perspective view of a tool and operating mechanism therefor, constructed in accordance with this invention; Fig. 2 is a perspective view looking at the back of the tool and parts of the mechanism shown in Fig. 1; Fig. 3 is a plan view of the tool and its holder; and Fig. 4 is an end elevation of the tool and mechanism shown in Fig. 1.

Referring to the drawings, 2 indicates a part of the machine frame supporting a rotatable shaft 4, upon which a rotary driving member 6 is mounted, this member being provided with a plurality of projections 8 extending from its periphery. The frame 2 has a dove-tailed guideway formed therein to receive a block 10 which may be adjusted in a direction parallel to the shaft 4 by means of an adjusting screw 12. Upon the forward end of the block 10 a dove-tailed projection 14 is formed and a support or slide 16 is mounted upon this projection for movement in a direction at right angles to the shaft 4. The slide 16 is normally held away from the shaft 4 by means of a spiral spring 18 which is positioned in a hole drilled in the dove-tail 14 and presses a thimble 20, sliding freely within the hole, against a stop 22 fast on the block 10. Movement of the slide 16 under the influence of the spring 18 is limited by a pin 24, which is fixed in the block 10 but projects through a slot 26 in the slide 16.

The slide 16 has a vertical guideway 28 formed in its forward portion to receive a heel burnishing tool. This tool comprises a holder 30 provided on its upper and lower ends with bosses to support a bolt 32 upon which a series of burnishing elements 34 are threaded. Each of these elements is approximately T-shaped, the shank of the T being drilled to receive the bolt 32, and the cross-bar of the T being curved to present a convex outer face for engagement with the work. Small projections 36 extend laterally from opposite sides of the shank and are engaged by spiral springs 38 seated in sockets in the holder 30 and acting to maintain each element yieldingly in a predetermined central position but permitting it to rock about the bolt 32 when the work is pressed against the work rubbing face of the element.

The tool holder 30 and the tool are vibrated rapidly up and down in the guideway 28 by means of a lever 40 fulcrumed in trunnions 42 that are formed integral with the slide 16. This lever is forked at its forward end and the forked portions support a short stud 44 carrying loosely a block 46 which is mounted in a slideway 48 formed in the back of the tool holder 30. The rearward end of the lever 40 has a hardened block 50 set thereinto, which is arranged to be struck by the projections 8 on the rotating member 6 and thereby to move the lever 40 about its fulcrum. This movement will be transmitted through the block 46 to the tool holder 30, causing it to move upwardly in the guideway 28. A compression spring 52, set into a socket formed in the slide 16, acts upon the rearward end of the lever 40 in opposition to the action of the rotating member 6. Consequently, as soon as one of the projections 8 passes out of contact with the member 50, the spring 52 will move the lever 40 about its fulcrum, depressing its forward end and, therefore, causing the tool holder to move downwardly in the guideway

28. The weight of the tool and tool holder aids the spring 52 in producing this movement. It will be evident that the result of this arrangement will be to produce a rapid up and down movement of the tool in the guideway 28. The downward movement of the lever 40 is limited by a bolt 54 which is threaded through the lever, its lower end being positioned to strike a leather buffer or cushion 56 set into the slide 16.

When the burnishing tool is not operating upon a heel, the spring 18 moves the slide 16 and the parts supported thereon forward as far as the pin 24 and the slot 26 will allow it to go. In this position the block 50 on the lever 40 is just outside the path of movement of the projections 8 on the driving member 6 and, consequently, no motion is imparted to the lever or the burnishing tool. As soon, however, as a heel is pressed against the tool, the slide 16 is moved backwardly against the tension of the spring 18, bringing the block 50 into the path of movement of the projections 8 and thus causing the tool to be set in motion. When the heel is removed from contact with the tool, the spring 18 immediately moves the slide 16 forward again, carrying the block 50 out of the path of movement of the projections 8.

In using this machine, the operator usually presses a heel against the tool somewhat to one side of the plane of the pivot bolt 32 so that the burnishing elements 34 may rock freely on their pivots and adjust themselves to the contour of the heel edge. Before presenting the heel to the operation of the tool it usually is treated with some of the common heel finishing compounds. The rapid vibratory movement of the tool in a direction substantially parallel to the surface of the heel rubs this finishing material into the stock and lays down the nap on the edge of the heel. The heel later is subjected to the action of a revolving pad and a brush which give it the desired polish. The tool may be heated in any convenient manner.

The yielding movement of the slide 16 with the tool is of advantage, not only in interrupting the driving connection between the member 6 and the tool, but also in causing the tool to be pressed yieldingly against the heel at all times during the burnishing operation, even though the heel be so presented to the tool that the burnishing elements do not rock on their pivots. It is well understood by those skilled in this art that the provision of a yielding movement of the burnishing tool produces a better finish upon the work and also lightens the labor of holding the heel against the tool.

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

1. In a machine of the class described, a tool comprising a holder, a series of rigid burnishing elements mounted in said holder for rocking movement under pressure of the work, and means for vibrating said holder.

2. In a machine of the class described, a holder, a series of burnishing elements mounted in said holder for yielding movement under pressure of the work, and means for supporting the holder to enable it to yield when the work is pressed thereagainst.

3. In a machine of the class described, a tool comprising a holder, a series of burnishing elements, each pivotally mounted between its ends in said holder, and means for yieldingly holding said elements in predetermined positions but enabling them to be moved by the work out of said positions.

4. In a machine of the class described, a tool comprising a holder, a series of burnishing elements pivotally mounted in said holder, each of said elements being substantially T-shaped and having a work-rubbing face, and springs acting upon said elements upon opposite sides of their pivots to hold the elements yieldingly in a predetermined position.

5. In a machine of the class described, the combination of a tool comprising a holder, and a series of burnishing elements mounted in said holder for yielding movement under pressure of the work, means for vibrating said tool, a support for said tool and a mounting for said support, enabling it to move with the tool when the work is pressed thereagainst.

6. In a machine of the class described, the combination of a tool, a driving member, mechanism operated by said member to vibrate said tool in a plane substantially parallel to the surface upon which it operates, and means supporting said mechanism for movement out of operative relationship to said driving member when the work is removed from the tool.

7. In a machine of the class described, the combination of a tool, a rotary driving member, mechanism operated by said member to vibrate said tool in a plane substantially parallel to the surface upon which it operates, and means operating to move said mechanism out of operative relationship to said member when the work is removed from contact with the tool.

8. In a machine of the class described, the combination of a tool, a driving member, mechanism operated by said member to vibrate said tool in a plane substantially parallel to the surface upon which it operates, and means whereby the driving connection between said member and said tool is interrupted automatically when the work is removed from contact with the tool.

9. In a machine of the class described, the combination of a tool comprising a holder, a series of heel burnishing elements each mounted for rocking movement in said

holder, means acting on said elements to hold them yieldingly in predetermined positions, a support having a guideway in which said holder is mounted, and means for vibrating said holder in said guideway.

10. In a machine of the class described, the combination of a tool, a rotary driving member, a lever connected with said tool to move the same and extending adjacent to said rotary member, and a support for said lever and tool mounted for movement by the pressure of the work against the tool to move the lever into or out of the path of movement of said member.

11. In a machine of the class described, the combination of a tool, a support having a guideway in which said tool is mounted, a lever carried by said support, a rotary driving member having projections to engage and move said lever and thereby to move the tool in its guideway, a spring carried by said support and operating on said lever in opposition to said driving member, a mounting for said support enabling the support to move to carry said lever into or out of operative relationship to said driving member, and means acting on said support to hold it normally out of operative relationship to said driving member.

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

JOHN BUCKLE.

Witnesses:
ELMER B. GRUSH,
NORMAN C. HUSSEY.