April 18, 1939. F. BRUNI 2,154,971

SHOE SOLE AND HEEL EDGE TRIMMING AND FINISHING TOOL

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Fig. 2a.

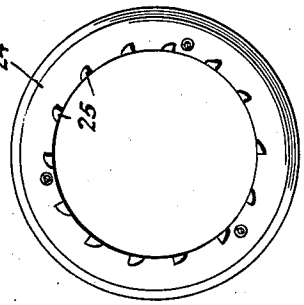


Fig. 3.

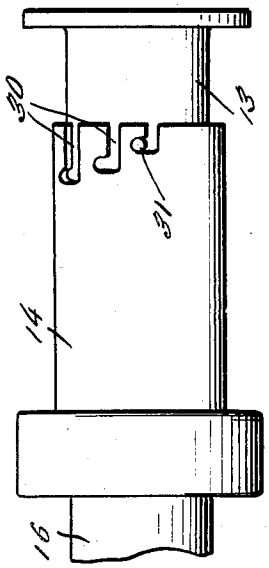


Fig. 1.

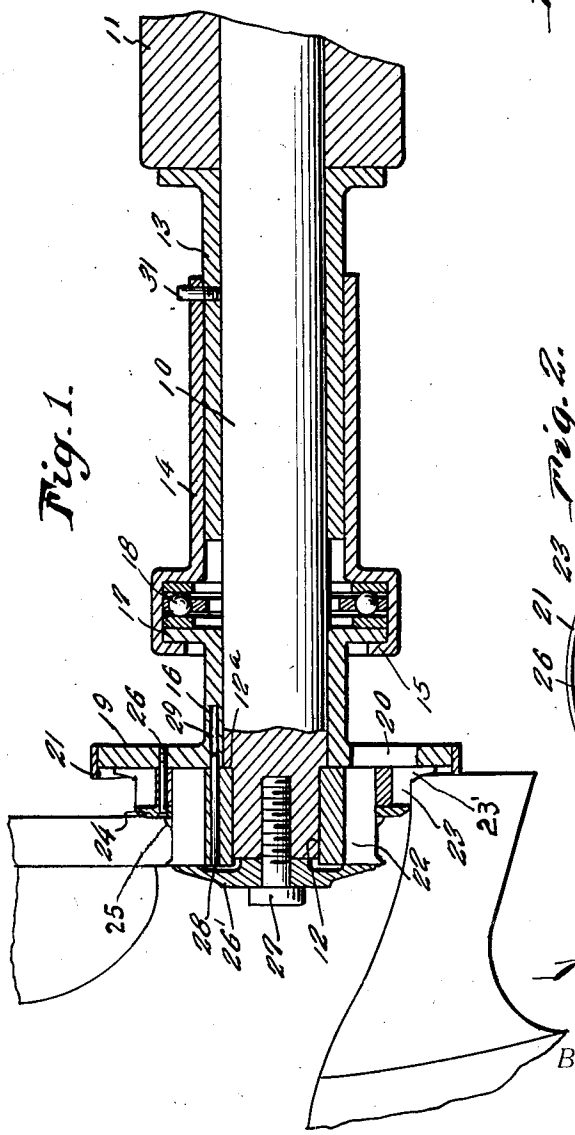
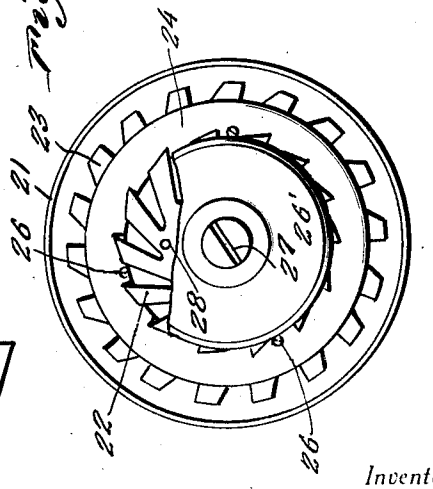


Fig. 2.



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SHOE SOLE AND HEEL EDGE TRIMMING AND FINISHING TOOL

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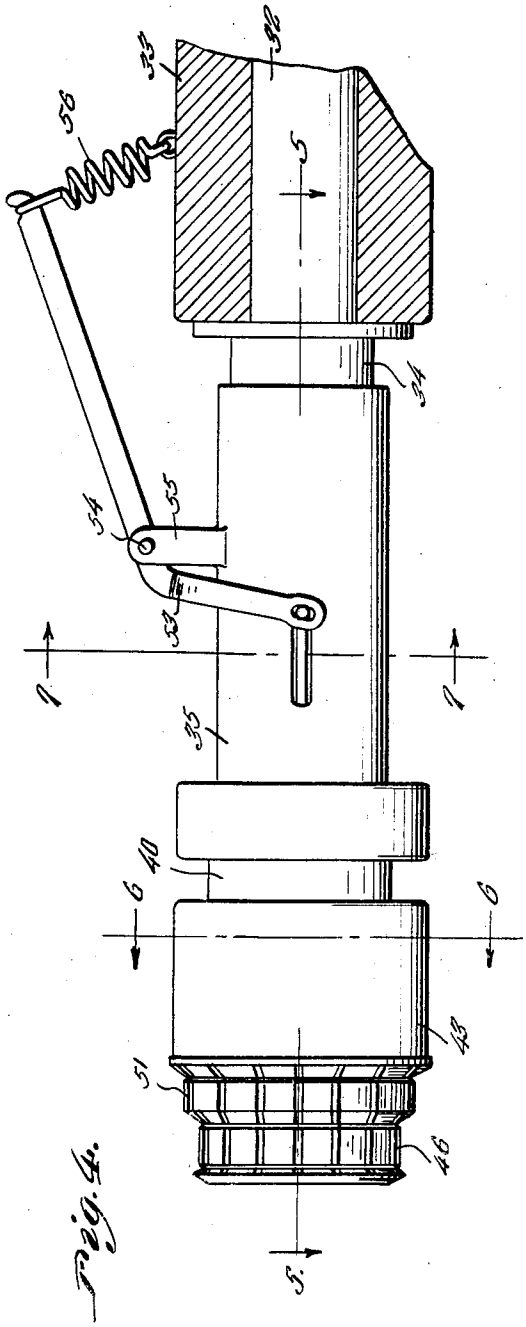


Fig. 4.

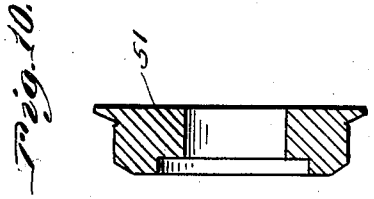


Fig. 10.

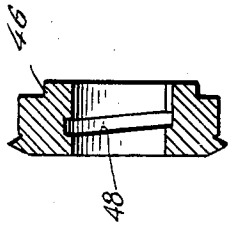


Fig. 9.

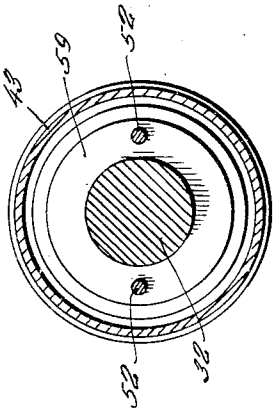


Fig. 6.

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Fig. 5.

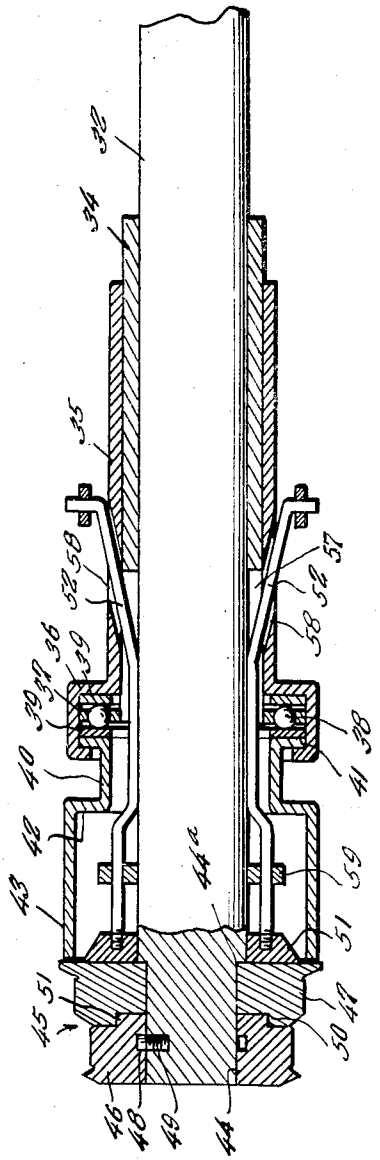


Fig. 7.

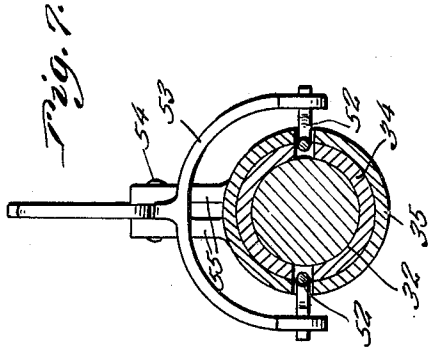
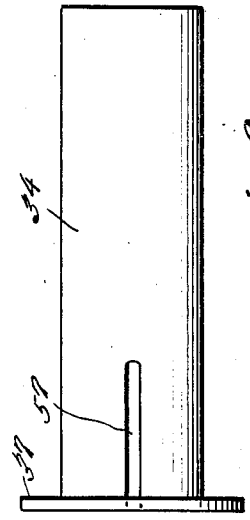


Fig. 8.



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UNITED STATES PATENT OFFICE

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SHOE SOLE AND HEEL EDGE TRIMMING AND FINISHING TOOL

Fausto Bruni, New Brunswick, N. J.

Application March 16, 1937, Serial No. 131,229

4 Claims. (Cl. 12—77)

This invention relates to tools for trimming and also finishing the edges of shoe soles and heels; and the invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:—

Figure 1 is a longitudinal sectional view through a shoe sole and heel edge trimming tool embodying the features of the present invention.

Figure 2 is an end elevational view of the tool with certain parts broken away.

Figure 2a is a view of the guard member and its teeth for beveling the sole.

Figure 3 is a fragmentary plan view of a portion of a tool showing the adjustment means therefor.

Figure 4 is an elevational view of a shoe sole and heel finishing or burnishing tool.

Figures 5, 6 and 7 are detail sectional views taken substantially on the lines 5—5, 6—6, and 7—7 respectively of Figure 4.

Figure 8 is an elevational view of a sleeve member forming part of the invention.

Figure 9 is a sectional view through the sole edge finisher.

Figure 10 is a similar view through the heel edge finisher or burnishing element.

Referring to the drawings more in detail, it will be seen that in Figures 1 to 3, inclusive I have illustrated the invention as applied to a shoe sole edge and heel trimming tool. In accordance with the present invention this tool is adapted to be used in conjunction with a conventional shoe machine which latter includes among other parts an operating shaft 10 rotatably mounted in a bearing a portion of which is shown in the drawings and indicated by the reference numeral 11. The shaft 10 is reduced at the free end thereof as at 12. The structure just described is conventional to shoe machines used for trimming and finishing the edges of shoe soles and heels.

In accordance with the present invention there extends from the bearing 11 a fixed sleeve 13 through which the shaft 10 extends and sleeved on the member 13 is a tubular member 14 which at one end is diametrically enlarged, and at said diametrically enlarged end is provided with an internal channel 15.

Sleeved on the end of the shaft 10 is a collar 16 which at one end is provided with a flange 17 that engages in the channel 15 and bears against a suitable thrust bearing assembly arranged within the channel 15 and indicated generally by the reference numeral 18. At its outer or opposite end the member 16 is provided with an integral disc or flange 19 that at intervals is provided with openings 20 through which the cuttings pass so as to keep the teeth of the cutter element hereinafter referred to clean so that they will not become clogged by the cuttings.

Secured to the periphery of the disc 19 in any suitable manner is an annular relatively narrow guard band 21.

Sleeved on the reduced end 12 of the shaft 10 is a cutting tool 22 particularly designed for cutting or trimming the edges of the shoe soles, as shown in Figure 1, the cutting element 22 being shown as provided with radially projecting relatively spaced teeth which, as is common with the teeth of cutters used in the cutting and trimming of shoe soles, are undercut and suitably relieved to provide suitable cutting edges or faces.

Sleeved on to the cutter 22 is a heel edge cutter or trimmer 23 which is of an axial length materially less than the axial length of the cutter 22 and is adapted to be adjusted axially relative to the cutter 22 as may be required depending upon the thickness of the sole being trimmed by the cutter 22.

Also, disposed about the cutter 22 and against the forward end of the cutter 23 is an annular guard 24 provided on its outer face thereof with beveled teeth 25 suitably adapted for slightly bevelling off the lower edge of the shoe sole as it is being trimmed by the cutter 22, and as shown in Figure 1.

The cutter 23 and guard 24 are secured to the disc 19 at intervals through the medium of screws or other fastening devices 26.

The cutter 22 is clamped on the reduced end 12 of the shaft 10 between the shoulder 12a formed by the reduced end 12 of the shaft and a rand guide 26'. The rand guide 26' comprising a disc-like body having an aperture in the center thereof receiving a headed screw 27 that is threaded into the reduced end of the shaft 10 to clamp the guide 26' in place.

Also to retain the elements, 19, 24 and 25 against rotative movement relative to the cutter element 22 said cutter element 22 at intervals is provided with elongated pins 28 that engage in elongated sockets 29 provided therefor in the member 16 as shown in Figure 1.

From the above, it will also be apparent that the members 14, 16, 19, cutter 23 and member 24 are shiftable axially on the shaft 10 so as to adjust the cutting element 23 and member 24 axially relative to the cutting element 22, and for securing the elements 23 and 24 at the de-

sired axial adjustment relative to the cutting element 22 there are provided at the inner end of the sleeve member 14 a series of bayonet slots 30, graduated in length as shown, while on the member 13 there is provided a pin 31 adapted to be engaged in a selected slot 30.

It will also be apparent that the elements 26, 28, 24, 23 and 16 rotate with the shaft 19 relative to the member 14 for effecting the desired trimming of the edge of the shoe sole or heel as the case may be. The heel trimming teeth 23 are formed with outwardly extending beveled parts 23' at their inner ends for beveling the lower portion of the side edge of the heel being trimmed by these teeth or cutters 23.

In Figures 4 to 10, inclusive, there are illustrated certain features of the invention as applied to a shoe sole and heel edge burnishing or finishing tool, and thus referring more specifically to the structure as shown in Figures 4 to 10, inclusive, it will be seen that the operating shaft of the conventional shoe machine is indicated by the reference numeral 32 while the bearing thereof is indicated therefor by the reference numeral 33 in Figure 4.

Also, in this form of the invention as best illustrated in Figure 4 there extends forwardly from the bearing 33 a fixed tubular member 34 on which is sleeved a member 35 diametrically enlarged at one end and at said one end provided with an internal channel 36. At one end thereof of the member 34 is provided with an outstanding apertured flange 37 (see Figure 8) which accommodates in the apertures thereof balls or anti-friction elements 38 (see Figure 5). At opposite sides of the flange 38 are bearing races 39.

Also disposed about the shaft 32 but of a materially greater diameter than the shaft 32 is a collar member 40 which at one end is provided with a flange 41 accommodated within the channel 36. At its relatively opposite end the collar member 40 is provided with an annular flange or disc 42 that has integral with the periphery thereof, and extending forwardly therefrom a relatively wide guard band 43.

The shaft 32 at the free end thereof is reduced as at 44.

In accordance with the present invention a burnishing or finishing tool indicated generally by the reference numeral 45 is provided, and in accordance with the present invention is separated on a line at right angles to its axis to provide two complemental head sections 46 and 47, respectively. The section 46 serves as a burnishing tool for the edge of a shoe sole while the section 47 serves as a burnishing or finishing tool for the edge of a shoe heel.

The section 47 is confined on the reduced end 44 of shaft 32 between a shoulder 44a formed at the reduced end of the shaft and the burnishing tool or tool section 46, which latter is provided with an internal spiral groove 48 that accommodates a locking pin 49 on the reduced end 44 of shaft 32 in a manner to cause the tool section 46 to shift axially inwardly of the shaft to become tight thereon and to bind the tool section 47 on the shaft between the tool section 46 and the shoulder 44a. At their meeting faces the tool sections 46, 47 are formed complemental to one another, the tool section 47 being provided with a recess 50 and the tool section 46 being provided with a cylindrical extension 51 that fits snugly within the recess 50. It will thus be seen that the tool 45 will rotate with the shaft 32.

To cause the sections of the tool 45 to become heated, thereby increasing the efficiency of the tool, during use thereof, there is accommodated within the confines of the guard member 43, and slidably arranged on the shaft 32 a disc 51.

For moving the disc 51 into and out of frictional contact with the inner side of the tool section 47 there is provided a pair of arm members or links 52 which at one end are threadedly engaged with the disc 51 and at a relatively opposite end are provided to engage apertures in the ends of the arms of a fork 53 that straddles the member 35.

The fork 53 is pivoted as at 54 between a pair of upstanding lugs 55 on the member 35 and the shank of the hook is engaged by one end of a spring 56 which at its other end is anchored to the bearing 33 as shown in Figure 4. It will thus be seen that spring 56 when engaged with the hook equipped end of the shank of fork 53 will act on the fork to swing the same in a clockwise direction to exert a push on the arms 52 and thereby force the disc 51 into frictional contact with the tool section 47 to generate heat for the tool while it is being driven with the shaft 32 and is being used for finishing off the edge of a shoe sole or a shoe heel as the case may be.

To accommodate the arms 52 member 34 is provided with suitable slots 57 and member 35 is provided with suitable slots 58.

Also and as shown in Figure 5 the ends of the arms 52 secured to the disc 51 extend through apertures provided therefor in a guide ring 59 loose on the shaft 32 and arranged within the confines of the rim or guard member 43.

It is thought the manner in which the burnishing tool is assembled, and operates, will be clear to those skilled in the art without a more detailed description; it being apparent, for example, that in assembling members 14 and 16, flange 17 of the collar member 16 is placed within the diametrically enlarged end of the tubular member 14 after which said end of the member 14 at the terminal thereof is suitably turned inwardly to provide the internal channel 15 accommodating therein the flange 17 together with the bearing 18 which latter is of course placed within the enlarged end of the member 14 prior to the insertion of the flange 17 therein.

In substantially the same manner are sleeve member 35 and collar member 40 assembled together.

Having thus described the invention, what is claimed as new is:—

1. In combination with an operating shaft, one end of said shaft being reduced, radial toothed tools mounted on the reduced end of the shaft to rotate therewith, a sleeve member disposed about said shaft and provided at one end with a diametrically enlarged head having an internal channel, a collar member interposed between said tool and said sleeve and provided at one end with a lateral flange engaging in the channel of said head, and a thrust bearing arranged in said channel between said flange and one side of the channel.

2. In a device of the character described, the combination of an operating shaft, a bearing in which a portion of said shaft is journaled, a tubular member extending forwardly from said bearing and through which said shaft extends, said shaft being provided at one end with a reduced portion, tool elements clamped on the reduced portion of said shaft to rotate with the shaft, a sleeve member fitting snugly on said tubular member pro-

vided at one end with a diametrically enlarged head equipped with an internal channel, a collar disposed about the shaft between said tool and said sleeve, said collar being provided at one end with an outstanding flange arranged in the channel of said head, a thrust bearing arranged in said channel between said flange and one side of the channel, said collar being provided at its opposite end with an outstanding disc, and a guard rim projecting forwardly from the periphery of said disc.

3. In a device of the character described, the combination of an operating shaft, a bearing in which a portion of said shaft is journaled, a tubular member extending forwardly from said bearing and through which said shaft extends, said shaft being provided at one end with a reduced portion, tool elements clamped on the reduced portion of said shaft to rotate with a shaft, a sleeve member fitting snugly on said tubular member provided at one end with a diametrically enlarged head equipped with an internal channel, a collar disposed about the shaft between said tool and said sleeve, said collar being provided at one end with an outstanding flange arranged in the channel of said head, a thrust bearing arranged in said channel between said flange and one side of the channel, said collar being provided at its opposite end with an outstanding disc and a guard rim projecting forwardly from the periphery of said disc, said tool elements including a rand guide, sole and heel edge trimmers respectively, and a sole edge bevelling tool.

4. In a device of the character described, the combination of an operating shaft, a bearing in which a portion of said shaft is journaled, a tubular member extending forwardly from said bearing and through which said shaft extends, said shaft being provided at one end with a reduced portion, tool elements clamped on the reduced portion of said shaft to rotate with the shaft, a sleeve member fitting snugly on said tubular member provided at one end with a diametrically enlarged head equipped with an internal channel, a collar disposed about the shaft between said tool and said sleeve, said collar being provided at one end with an outstanding flange arranged in the channel between said flange and one side of the channel, said collar being provided at its opposite end with an outstanding disc, and a guard rim projecting forwardly from the periphery of said disc, said tool including sole and heel edge burnishing elements respectively.

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