Aug. 19, 1930. H. A. DAVENPORT 1,773,261

LEVELING MACHINE

Filed Oct. 17, 1928

Fig. 2.

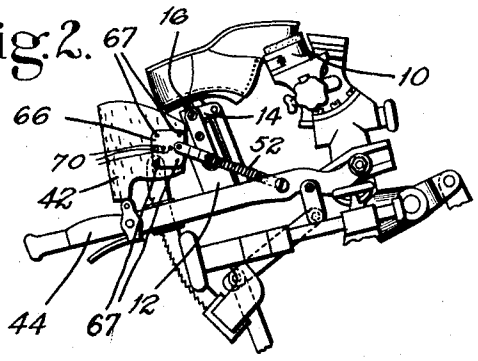
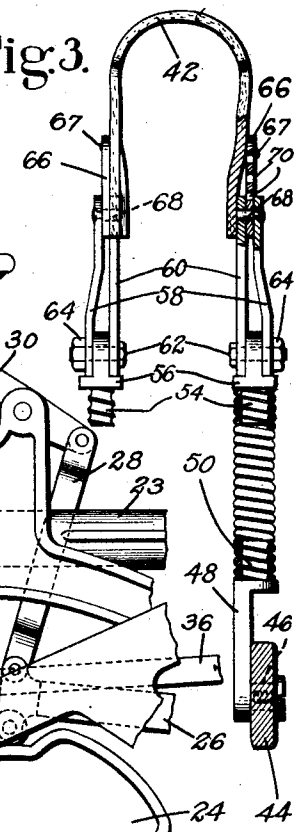


Fig. 3.



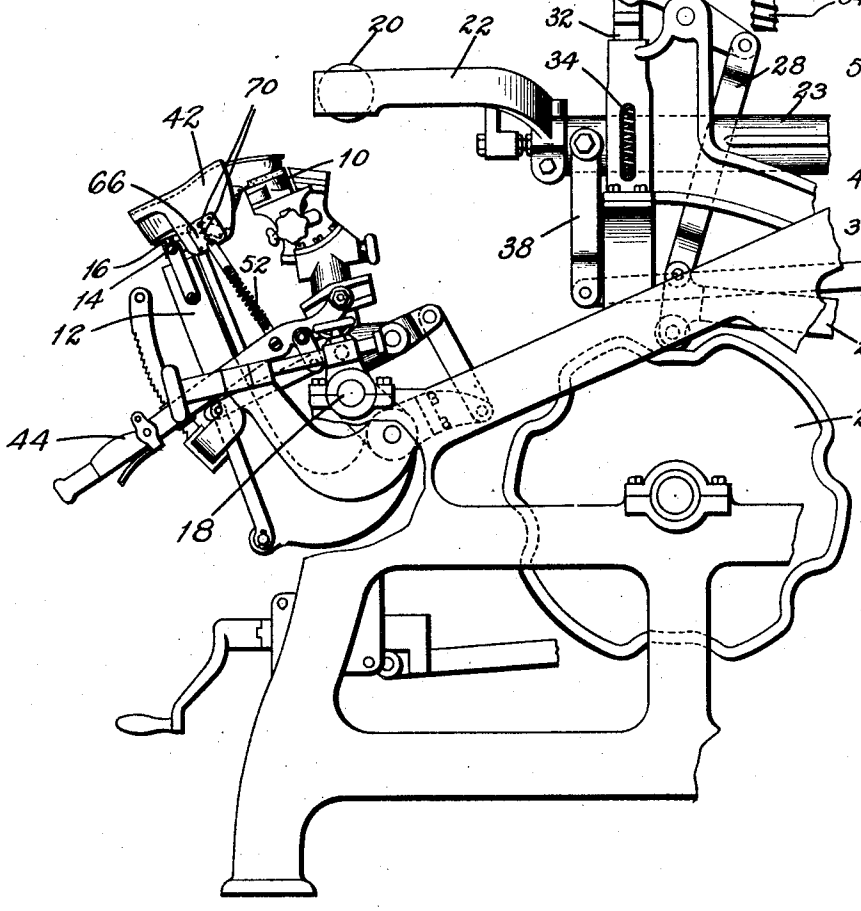


Fig. 1.

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UNITED STATES PATENT OFFICE

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LEVELING MACHINE

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This invention relates to machines for applying shaping or leveling pressure to the bottoms of shoes. In leveling machines of a well-known type a roll is thus used to apply the pressure, usually for the purpose of shaping the outsole of the shoe, but sometimes also to prepare the bottom of the shoe to receive the outsole. In some of its aspects the invention is of more particular utility as applied to machines of the roll type, and it is accordingly so illustrated herein, but it is to be understood that it is not thus limited in its applicability.

In machines of the above-mentioned type it is sometimes the practice to interpose between the leveling roll and a portion, at least, of the bottom of the shoe a saddle of flexible material, such as leather, to transmit the pressure of the roll to the shoe, as shown, for example, in United States Letters Patent No. 1,263,361, granted on April 23, 1918 upon an application of W. C. Baxter. In such an organization the ends of the saddle at the opposite sides of the shoe are connected to a lever whereby the saddle is drawn tightly over the bottom of the shoe, the connections being such that the saddle may be moved at will between an idle position beyond the rear end of the shoe and an operative position over the bottom of the shoe. An object of the present invention is to provide improved saddle-controlling mechanism such as to facilitate movement of the saddle from its idle position into operative relation to each shoe. For the purpose in view the construction shown comprises means for maintaining the opposite end portions of the saddle in such relation to each other and to the shoe that when the saddle is in its idle position it has substantially the shape of an arch located in the same general relation to the shoe widthwise of the latter as when the saddle is positioned over the bottom of the shoe, thus permitting the saddle to be readily moved into position over the shoe simply by swinging it forwardly. More particularly, the controlling means illustrated comprises metal plates secured against the outer faces of the end portions of the saddle, and mechanism for holding these plates and the ends of the saddle adjacent thereto against any substantial tipping movement laterally of the shoe, the plates, as shown, and consequently the end portions of the saddle, being thus maintained in substantially parallel relation to each other in predetermined planes extending heightwise and lengthwise of the shoe in the idle position of the saddle and in its movement to operative position. The flexible saddle may thus be much more quickly and easily manipulated than if it were free to assume various shapes and positions when off the shoe.

The invention further provides improved means for effecting an adjustment to compensate for stretch of a saddle in use. For the purpose in view, each of the above-mentioned metal plates in the construction shown is provided with a plurality of holes at different distances respectively from the extreme end of the saddle, and the saddle-controlling means connected to each plate comprises members arranged to overlap the plate on its opposite sides respectively to control the plate in the manner above described and provided with a pin adapted to enter any one of the holes in the plate.

The novel features of the invention will now be more particularly described by reference to the accompanying drawings and thereafter pointed out in the claims.

In the drawings,

Fig. 1 is a view in side elevation of a portion of a leveling machine including saddle-controlling means constructed in accordance with the present invention and showing the saddle in operative position over the bottom of a shoe;

Fig. 2 shows a portion of the structure illustrated in Fig. 1, with the saddle in its idle position at the rear of the heel end of the shoe; and

Fig. 3 is a view, partly in elevation and partly in section, illustrating in greater detail the construction of the saddle-controlling mechanism.

The leveling machine to which the invention is herein shown as applied is a machine of a well-known type characteristic features of which are shown and described in various

prior United States Letters Patent, including especially Letters Patent No. 1,667,761, granted on May 1, 1928 upon a joint application of E. E. Winkley and myself. Accordingly, only such parts of the machine as it is necessary to refer to for an understanding of the invention are illustrated and will be described in detail.

Machines of the type above referred to include in their organization a shoe-supporting jack comprising a toe rest 10 and a heel post 12, the latter having pivotally mounted thereon a tipping block 14 provided with a pin 16 adapted to enter the spindle hole of the last. The jack, as a whole, is mounted for swinging movements in directions lengthwise of the shoe about the axis of a rock shaft 18, and such movements are imparted to the jack automatically by power-operated means not herein shown in detail. In this manner the shoe is carried forwardly and rearwardly under a leveling roll 20 supported on a roll carrier 22 mounted on a holder 23 which is movable in a vertical plane to carry the roll into position to operate on the shoe or to raise it from the shoe. Initially the roll carrier 22 is held in upraised position, as illustrated in Fig. 1, by mechanism not shown in detail but disclosed in the above-mentioned Letters Patent No. 1,667,761. For moving the roll carrier downwardly to carry the roll into operative position in automatically determined time relation to the movements of the jack, and for controlling the pressure of the roll on the shoe in the course of the leveling operation, there is provided a cam wheel 24 having on its periphery a plurality of cams arranged to act through a lever 26, a link 28 and a lever 30 upon a plunger 32 which by its downward movement acts through a spring 34 upon a lever 36 connected by a link 38 to the holder 23 upon which the roll carrier 22 is mounted. For further information with reference to the details of the construction thus far described, reference may be made to the Letters Patent hereinbefore mentioned.

For transmitting the pressure of the roll 20 to the bottom of the shoe in machines of the type illustrated, it has been the practice frequently to use a saddle 42 of flexible material such as leather, such a saddle usually covering only the heel-seat and shank portions of the bottom of the shoe, as herein shown, but sometimes also being extended to cover the entire bottom of the shoe. The saddle is of such length laterally of the shoe that its opposite end portions extend heightwise of the shoe at the opposite sides of the latter, and the saddle is applied tightly across the bottom of the shoe through connections between its opposite ends and a hand lever 44, in the same general manner as illustrated in Letters Patent No. 1,263,361 hereinbefore mentioned. In the construction shown the hand lever 44 is arranged to control alternatively either the saddle 42 or the tipping block 14 in accordance with the disclosure of Letters Patent No. 1,719,158 granted on July 2, 1929 upon an application of E. E. Winkley and myself.

The hand lever 44 is forked so that portions thereof are positioned at opposite sides of the heel post 12 of the jack, as illustrated in the above-mentioned Letters Patent No. 1,263,361, and connected to each of the opposite side portions of the lever by means of a pivot stud 46 (Fig. 3) is an L-shaped member 48 provided on its upper end with a stud 50 threaded to connect it to the lower end of a spring 52, the upper end of this spring being connected to another threaded stud 54 formed on the lower end of a block 56. For purposes of this invention the connections between each of the blocks 56 and the corresponding end of the saddle 42 comprise bars 58 and 60 the lower ends of which are secured to the block 56 by means of a bolt 62 and a nut 64 while their upper ends are in spaced relation such as to permit them to overlap the opposite sides respectively of a plate 66 which is secured at its four corners against the outer face of the end portion of the flexible saddle 42 by means of rivets 67. It will thus be seen that the plate 66 is so connected to the saddle as to permit the bar 60 to be inserted between the saddle and the plate in the manner illustrated in Fig. 3. For connecting the bars 58 and 60 to the plate 66 the bar 58 has fast thereon a pin 68 adapted to extend through a hole 70 in the plate 66 and into a corresponding hole in the bar 60. In the construction shown each plate 66 has therein a plurality of such holes 70 located respectively at different distances from the extreme end of the saddle, so that as the saddle stretches in use the pin 68 may be inserted in different holes to compensate for the stretch, thus permitting the hand lever 44 to be positioned initially at the proper height to render it effective to apply the saddle to the shoe with the force required. It will be understood that in making such an adjustment it is only necessary to remove the nut 64 and the bar 58, and, after bringing the hole in the bar 60 into alignment with the proper hole 70 in the plate 66, to replace the bar 58 with its pin 68 extending into these aligning holes and then secure it in position by the nut.

The pivotal connections 46 between the members 48 and the opposite side portions of the forked hand lever 44 permit the saddle 42 to be swung either to an idle position at the rear of the heel end of the shoe, as illustrated in Fig. 2, or to an operative position over the bottom of the shoe, as illustrated in Fig. 1. In such swinging movements of the saddle the springs 52 are sufficiently stiff to remain straight and thus to swing in definite planes extending heightwise of the shoe.

Furthermore, the connections provided between these springs and the ends of the saddle, comprising the bars 58 and 60 and the plates 66 connected thereto, are such as to hold the plates and the adjacent end portions of the saddle at all times against any substantial tipping movement laterally of the shoe, the plates and the ends of the saddle thus being maintained, in the idle position of the saddle and in its movement to operative position, in substantially parallel relation to each other in predetermined planes extending heightwise and lengthwise of the shoe and at a distance apart at least as great as the width of the heel end of the shoe. When the saddle is in its idle position beyond the rear end of the shoe, as shown in Fig. 2, it is accordingly maintained substantially in the shape of an arch located in the same general relation to the shoe widthwise of the latter as when the saddle is in operative position over the shoe. The saddle may therefore be readily moved into position over the shoe simply by swinging it forwardly.

After the saddle has been swung forwardly over the shoe it is applied tightly to the shoe by depression of the hand lever 44 which acts yieldingly through its connections to the ends of the saddle. As the saddle is thus applied the plates 66 are permitted to turn about the axes of the pins 68 to facilitate the proper conformation of the saddle to the shoe.

Having described the 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, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism movable to permit the saddle to be carried from an idle position beyond an end of the shoe to an operative position over the bottom of the shoe, said controlling mechanism being constructed to maintain the saddle when in its idle position substantially in the shape of an arch located in substantially the same relation to the shoe widthwise of the latter as when the saddle is positioned over the bottom of the shoe.

2. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism comprising devices connected to the opposite end portions of the saddle at the sides of the shoe and so constructed as to hold said end portions of the saddle at all times against any substantial tipping movement laterally of the shoe while permitting movement of the saddle from an idle position beyond an end of the shoe to an operative position over the bottom of the shoe.

3. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe and supporting the saddle for swinging movement from an idle position at the rear of the shoe to an operative position over the bottom of the shoe, said controlling mechanism being so constructed as to maintain the end portions of the saddle in substantially parallel relation to each other and at a distance apart at least as great as the width of the heel end of the shoe in the movement of the saddle between said different positions.

4. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe and so constructed as to permit movement of the saddle from an idle position at the rear of the shoe to an operative position over the bottom of the shoe, said controlling mechanism comprising metal plates secured to the end portions of the saddle and devices for preventing any substantial tipping movement of said plates laterally of the shoe in the movement of the saddle between said different positions.

5. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe and so constructed as to permit swinging movement of the saddle from an idle position at the rear of the shoe to an operative position over the bottom of the shoe, said controlling mechanism comprising metal plates secured to the opposite end portions of the saddle and devices for maintaining said plates in substantially parallel relation to each other in predetermined planes extending heightwise and lengthwise of the shoe in the idle position of the saddle and in its movement to operative position.

6. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe, said controlling mechanism comprising metal plates secured to the outer faces of the end portions of the saddle and members mounted for swinging movements to carry the saddle lengthwise of the shoe and so connected to said plates as to prevent any substantial tip-

ping movement of the plates laterally of the shoe.

7. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe, said controlling mechanism comprising members mounted for swinging movements to permit the saddle to be carried from an idle position at the rear of the shoe to an operative position over the bottom of the shoe, metal plates secured to the end portions of the saddle, and pivotal connections between said members and plates arranged to permit turning movement of the plates relatively to said members about axes extending laterally of the shoe while preventing any substantial tipping movement of the plates laterally of the shoe.

8. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe and movable to present the saddle either in an idle position beyond an end of the shoe or in an operative position over the bottom of the shoe, said controlling mechanism comprising metal plates secured to the end portions of the saddle and members constructed to effect operative connections with said plates adjustably at different points on the plates while preventing any substantial tipping movement of the plates laterally of the shoe in all positions of the saddle.

9. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe for pulling the saddle tightly against the bottom of the shoe, said mechanism comprising plates secured to the opposite ends of the saddle, members arranged to overlap each plate on its opposite sides respectively, and means for connecting said members to the plates in different adjusted relations.

10. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe for pulling the saddle tightly against the bottom of the shoe, said mechanism comprising plates secured to the opposite ends of the saddle and each having a plurality of holes therein, members arranged to overlap each plate on its opposite sides respectively, and a pin for connecting each plate adjustably to the members associated therewith by one or another of said holes selectively.

11. In a machine of the class described, the combination with a shoe support, a leveling tool, and a flexible saddle for transmitting the pressure of said tool to the bottom of a shoe on said support, of saddle-controlling mechanism connected to the end portions of the saddle at the opposite sides of the shoe for pulling the saddle tightly against the bottom of the shoe, said mechanism comprising plates secured to the opposite ends of the saddle and each having a plurality of holes therein, and members arranged to overlap each plate on its opposite sides respectively, one of the members associated with each plate extending between the plate and the portion of the saddle adjacent to the plate and having a hole therein adapted to register with any one of the holes in the plate, and the other member having a pin secured thereto and adapted to extend through any one of the holes in the plate and into the hole in the first-named member.

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

HERMAN A. DAVENPORT.