Feb. 15, 1938. J. S. KAMBORIAN 2,108,670

APPARATUS FOR LASTING SHOES

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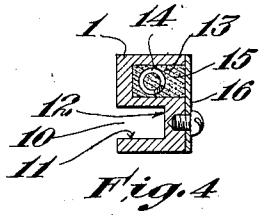


Fig. 4

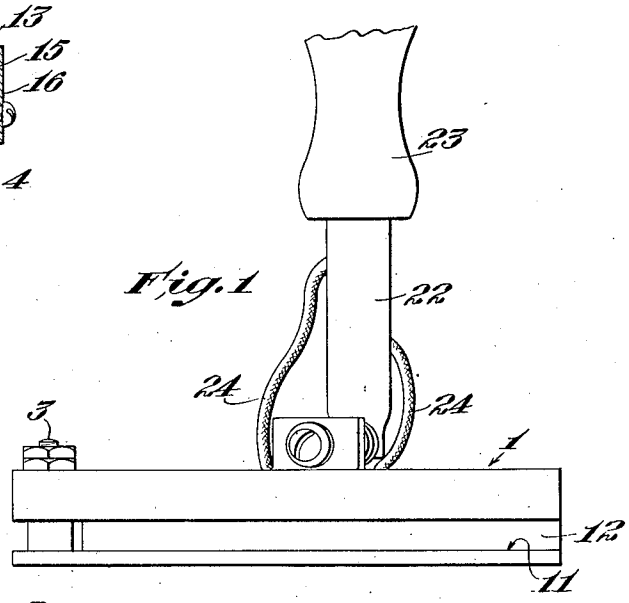


Fig. 1

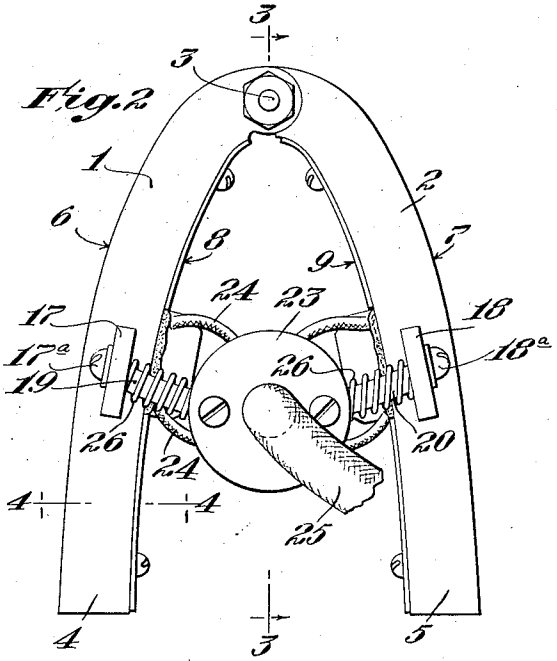


Fig. 2

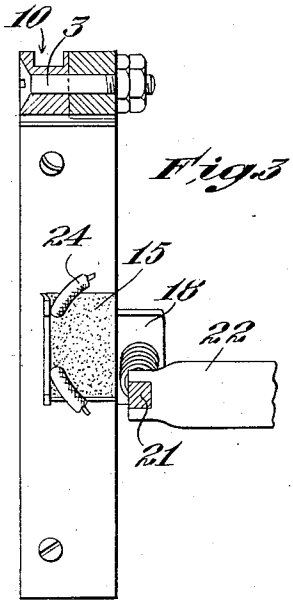


Fig. 3

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Fig. 5

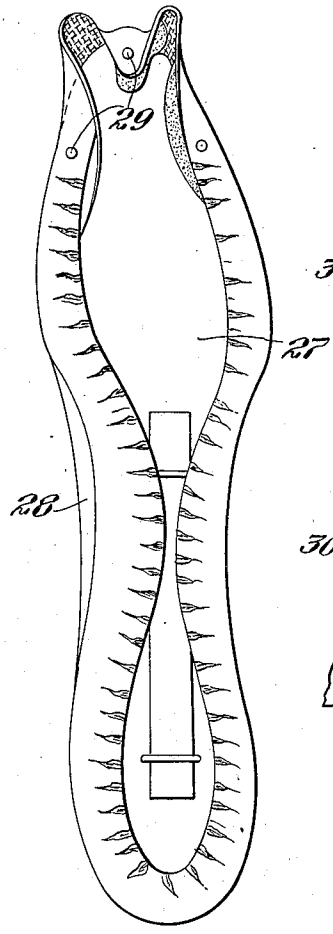


Fig. 6

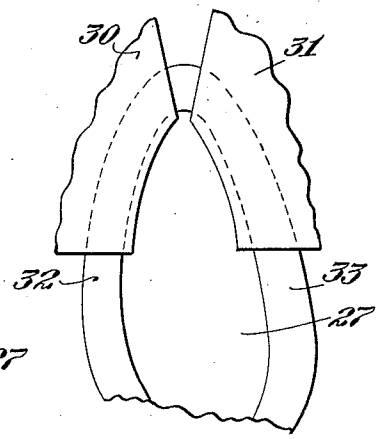


Fig. 7

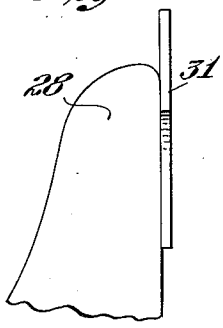


Fig. 8

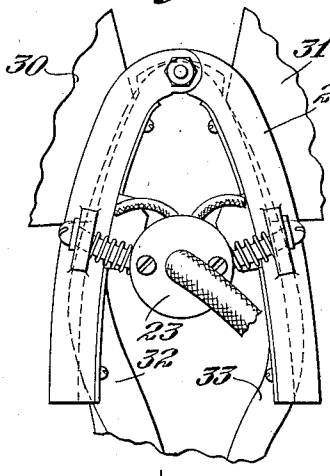


Fig. 9

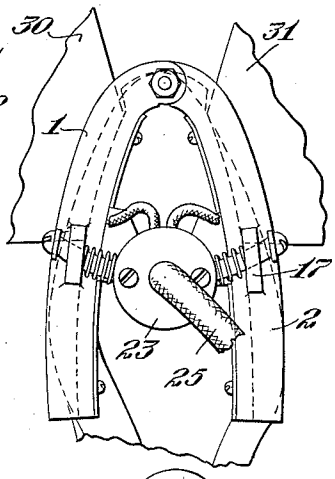


Fig. 11

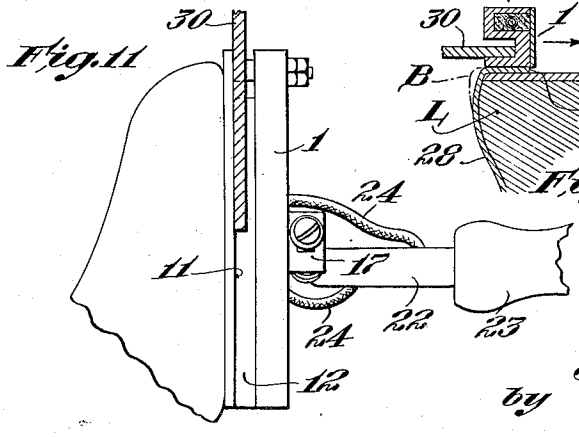
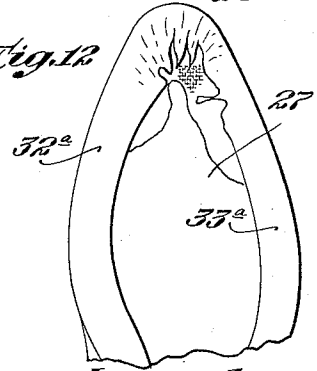


Fig. 10

Fig. 12



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Patented Feb. 15, 1938

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UNITED STATES PATENT OFFICE

2,108,670

APPARATUS FOR LASTING SHOES

Jacob Simon Kamborian, West Newton, Mass., assignor to Northern Machine Co., Inc., Waltham, Mass., a corporation of Massachusetts

Application June 7, 1935, Serial No. 25,407

11 Claims. (Cl. 12—107)

This invention pertains to shoe manufacture and relates more particularly to apparatus for use in lasting shoes. The patent to Kamborian No. 1,919,660, dated July 25, 1933, discloses an appliance, in the nature of a presser device, useful in lasting shoes in accordance with a process in which the marginal wiped-in portion of the upper is united to the insole by the use of cementitious material and wherein such marginal portion of the upper is subjected to heavy flattening compression with or without heat while the cementitious material is setting. As disclosed in the aforesaid patent, the pressure-applying device is so designed as to cover substantially the entire forepart of the shoe bottom, transversely from one edge to the other, and in manufacturing shoes in accordance with most usual methods such an appliance is highly desirable since it adequately integrates the bottom material across the entire width at the toe and forepart.

However, certain recent developments in shoe manufacture make it undesirable to compact or integrate the bottom material at the central part of the shoe bottom during the lasting operation, and an object of the present invention is to provide an appliance of the general type of that disclosed in the above patent and capable of exerting the desired pressure adjacent to the margin of the shoe bottom so as to flatten and compact the wiped-in upper material and cause the latter to adhere securely to the insole along the margin of the latter, but which will not compress the bottom material intermediate said margins.

A further object of the invention is to provide an appliance useful, without manual adjustment, in lasting shoes of a wide range of widths and sizes. A further object is to provide an appliance of this general type which, in applying the pressure to the marginal material, will concomitantly exert a component of force tending positively to draw the upper material snugly over the outer edge of the insole so as to avoid any looseness or bulging of the upper material at this point.

Another object is to provide a simple, durable and inexpensive appliance of the class described which is easy to manufacture and which does not require that the wipers of the bed-lasting machine (if such appliance be used as an adjunct to such a machine) be lifted to an excessive amount from the wiped-in margin of the upper to permit application of the improved appliance.

Other objects and advantages of the invention will be apparent from consideration of the further and more detailed description and by reference to the accompanying drawings in which

Fig. 1 is a side elevation of the improved appliance substantially to full size but with the upper portion of the handle broken away;

Fig. 2 is a plan view of the device shown in Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 2, with the handle broken away;

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a bottom view showing an insole and upper assembled on a last, the upper having been pulled over ready for lasting;

Fig. 6 is a fragmentary bottom plan showing the forward portion of the shoe of Fig. 5 as it appears substantially at the completion of the toe wiping operation, showing the bed-lasting wipers advanced over the shoe bottom;

Fig. 7 is a side elevation of the toe portion of a shoe illustrating the relative position of the wiper and bottom surface of the shoe at the completion of the wiping operation;

Fig. 8 is a bottom view of the forepart of the shoe showing the improved lasting appliance disposed in position upon the wiped-in margin of the upper material, the wipers being retracted and slightly raised from the shoe bottom;

Fig. 9 is a view similar to Fig. 8, but showing the wipers partially advanced and the improved lasting appliance somewhat contracted in width by the action of the wipers;

Fig. 10 is a fragmentary transverse section through the last and shoe, illustrating the stretching and wiping-in action of the improved lasting appliance due to its contraction in width during use;

Fig. 11 is a fragmentary elevation showing one of the wipers in section and illustrating the relative location of the wiper and shoe bottom when the improved appliance is in use; and

Fig. 12 is a fragmentary bottom view of the shoe showing the appearance of the toe and forepart at the completion of the lasting operation as practiced by the use of the improved appliance.

Referring to the drawings, the improved lasting appliance is shown as of substantially horseshoe shape in plan (Fig. 2) comprising the elongate curved members 1 and 2, said members being hinged together adjacent to the toe end of the device by means of the hinge pin or bolt 3. By reason of this hinge connection at the forward ends of the members 1 and 2, their rear or free ends 4 and 5 may be moved toward and from each other, thus to vary the effective width

of the appliance. The members 1 and 2 are provided with the curved outer surfaces 6 and 7, respectively, and the curved inner surfaces 8 and 9. Each member is preferably of substantially uniform width from end to end, and the width of each member is such that it will cover the wiped-in marginal portion of a shoe upper but will not extend inwardly to any substantial extent beyond the inner edge of the wiped-in marginal material. The members 1 and 2 are of stiff rigid construction; for example, these members may be of steel, brass, or the like, and each member preferably is provided with a substantially flat under surface devoid of any spurs, teeth or other projections which might penetrate or injure the inner sole. However, while these under surfaces are substantially flat, it is contemplated that they may be roughened, knurled, or otherwise made frictional, if desired, so as to obtain a firm frictional grip upon the wiped-in upper material.

The outer lateral surface of each of the members 1 and 2 preferably is provided with an elongate groove or recess 10 (Fig. 4) preferably disposed nearer to the flat bottom surface of the curved member than to the top thereof, such groove having a bottom wall 11 and an inner vertical abutment wall 12. Preferably the upper part of each member 1 and 2 is furnished with a cavity 13 (Fig. 4) within which is arranged an electrical resistance coil 14 preferably embedded in insulating material 15, for example asbestos, the heating coils and insulating material being retained in position by means of removable plates 16.

The members 1 and 2 preferably are furnished with upstanding ears 17 and 18 at points substantially midway between their ends, and each of these ears is furnished with a guide aperture adapted respectively to receive the end portions 19 and 20 of a bridge member 21 (Figs. 2 and 3). These end portions 19 and 20 are adapted to slide freely in the guide openings in the ears so as not to interfere with the relative movement of the rear ends 4 and 5 of the curved members. The bridge member 21 provides a support for the shank 22 of a handle 23, the latter preferably being of insulating material so that it will not become too hot for comfortable use in handling the implement.

Flexible electrical conductors 24 lead from the heating coils 14 of the respective members 1 and 2 into the hollow shank 22 and thence upwardly to a flexible electrical conductor 25 (Fig. 2) connected to the handle 23 and leading to any convenient source of electrical current. Preferably, in order normally to keep the device in its maximum extended position, coil springs 26 (encircling the ends 19 and 20 of the bridge member) are arranged to bear at their inner ends against the shank 22 of the handle and at their outer ends against the inner surfaces of the ears 17 and 18. To prevent undue expansion of the device under the action of the springs, screws 17a, 18a may be arranged to engage threaded openings in the ends of the members 19 and 20, respectively, the heads of the screws normally engaging the outer surfaces of the ears 17 and 18.

Referring to Figs. 5 to 12 inclusive, the numeral 27 indicates the insole of a shoe assembled (upon a last L) with the upper 28. In Fig. 5 the upper is shown as having been pulled over and as being held in pulled-over position by means of the tacks 29. In performing the operation of lasting in accordance with the contemplated method, wherein the improved appliance is to be used, the shoe is first assembled and pulled over as indicated in Fig. 5. The last is then mounted in a bed-lasting machine having lasting wipers 30 and 31 of well known type, and these wipers are then so manipulated as to wipe in the margin of the upper at the toe portion at least of the shoe so that at the completion of the wiping-in operation the parts occupy substantially the position shown in Fig. 6 with the marginal portions 32 and 33 of the upper disposed flat against the bottom surface of the insole and with the upper stretched taut about the toe portion of the last.

If the wipers themselves are not adequate to wipe in the forepart of the upper, the forepart and sides may be lasted in accordance with other methods or by other means whereby the margins are temporarily held in contact with the under surface of the insole. In this position of the parts the wipers occupy substantially the relation to the bottom of the shoe shown in Fig. 7.

Having proceeded in this manner, the wipers 30 and 31 are now retracted, as indicated in Fig. 8, and if the lasting is to be completed in the bed-lasting machine, the improved appliance is now immediately placed upon the shoe bottom so that the members 1 and 2 overlap the wiped-in marginal material and the wipers 30 and 31, having first been raised slightly, are immediately advanced so that their inner edges enter the grooves 10 in the lateral surfaces of the members 1 and 2. If it be preferred to complete the lasting operation in another machine, the shoe may first be transferred to such other machine and the improved appliance disposed in position on the wiped-in material, and then elements (functioning in this respect similarly to the wiper members 30 and 31) are actuated to complete the operation.

Assuming that the wipers are to be used and that the wipers have first been raised slightly as above suggested, for example, at the same time that they are retracted, so that they may enter the grooves in the members 1 and 2, the wipers are now advanced to the position shown in Fig. 9, their inner edges engaging the abutment surfaces 12, thereby to some extent pressing the members 1 and 2 toward each other. At the same time the wipers are moved downwardly with substantial force, thereby to press the members 1 and 2 firmly against the wiped-in marginal material.

At some time in the operation the opposed surfaces of the margin of the upper and of the insole are made sticky or adhesive; for example, rubber latex may be introduced between these surfaces just before the improved lasting appliance is disposed upon the margins, or the adhesive may be introduced at an earlier period or, if desired, adhesive which is normally dry but which becomes sticky upon the application of heat may be used.

Assuming that the members 1 and 2 have been heated, the downward pressure of these members, with the concomitant inward movement of the members, as indicated by the arrows in Fig. 10, not only compresses and flattens the marginal material, but also exerts a wiping-in or tensioning action on such margins, which tends to prevent any slight outward bulging of the upper such as indicated in dotted lines at B (Fig. 10) and which sometimes is occasioned when it is attempted to flatten the marginal material by straight downward pressure alone.

This composite downward pressure and inward

tensioning action draws the upper material very firmly about the last and about the edge of the insole and compresses the upper material and holds it in this condition until the adhesive has substantially set. The net result is to leave the marginal upper material very firmly secured to the insole and in a substantially flat condition, as indicated at 32a, 33a (Fig. 12). Obviously any usual intermediate steps, such as that of cutting out surplus lining,—shaving off a portion of the wiped-in material at the toe, the removal of temporary lasting tacks, or the like, may be performed at desirable points in the process, all in accordance with well known practice.

While I have herein disclosed one desirable embodiment of the invention by way of example, I wish it to be understood that the invention is not necessarily limited to the specific construction and arrangement of parts herein shown, nor to the materials suggested, nor to the proportions of parts illustrated, but that any equivalent means falling within the scope of the appended claims is to be regarded as within the purview of the invention.

I claim:

1. A pressure applying tool for use in a lasting machine including last supporting means and actuating devices movable toward the last bottom and also toward the median line of the last from opposite sides of the latter, said pressure applying tool comprising a pair of complemental curved elongate narrow members each shaped to conform substantially to the contour of the margin of one side of the forepart and toe portion of an insole, means so uniting said members as to permit them to move toward and from each other thereby to vary the effective width of the tool, means for heating said curved members, each of said members having a substantially flat bottom surface and being devoid of provision for attaching it to the insole, each member having a recess for the reception of one of said actuating devices of the lasting machine, whereby the constituent curved members of the pressure applying tool may be moved toward the bottom of a shoe mounted on the last and concomitantly caused to approach each other thereby to flatten and wipe in the margins of the shoe upper.

2. A presser device for use in a lasting machine having means for supporting a last, and wipers movable toward the last bottom and also laterally toward the median line of the last from opposite sides of the latter, said presser device being of substantially horseshoe shape in plan, a handle for manipulating the device, said device comprising a pair of complemental members each curved to conform substantially to the contour of the margin of one side of the toe portion at least of an insole, said members being hinged together adjacent to the toe end of the device, each of said members having a substantially flat under surface devoid of insole penetrating elements and an elongate groove in its outer lateral surface for the reception of the edge of the respective wipers of the lasting machine, whereby, by concomitant inward and downward movement of the wipers when their edges are in said grooves, the curved members are caused to approach each other and to approach the bottom of the insole thereby to flatten the wiped-in marginal material of the upper and to exert a wiping-in action thereupon and means for heating said curved members.

3. A presser device for use in a lasting machine having means for supporting a last, and wipers movable toward the last bottom and also laterally toward the median line of the last from opposite sides of the latter, said presser device being free for removal from the shoe when the shoe is removed from the lasting machine, said device being of substantially horseshoe shape in plan and comprising a pair of complemental members each curved to conform substantially to the contour of the margin of one side of the toe portion at least of an insole, said members being hinged together adjacent to the toe end of the device, each of said members having an elongate groove in its outer lateral surface for the reception of the edge of the respective wipers of the lasting machine, whereby, by concomitant inward and downward movement of the wipers when their edges are in said grooves, the curved members are caused to approach each other and to approach the bottom of the insole thereby to flatten the wiped-in marginal material of the upper and to exert a wiping-in action thereupon, spring means tending to swing said curved members apart, means for heating said curved members, and a handle for manipulating the device.

4. A presser device for use in a lasting machine having means for supporting a last, and wipers movable toward the last bottom and also laterally toward the median line of the last from opposite sides of the latter, said presser device being free for removal from the shoe when the shoe is removed from the lasting machine, said device being of substantially horseshoe shape in plan and comprising a pair of relatively movable elongate curved members hinged together adjacent to the toe end of the device, a handle for use in manipulating the device, resilient means tending to spread the free ends of said members apart, each member having surfaces engageable by the under surfaces and inner edges respectively of the lasting machine wipers, whereby, upon concomitant inward and downward movement of the wipers, said curved members are caused to compress the marginal wiped-in portion of the upper and simultaneously to exert a wiping and tensioning action thereupon.

5. A presser device for use in lasting shoes, said device comprising members each curved to conform substantially to the contour of a portion of the outer edge of an insole, each of said members being of a width sufficient substantially to cover the marginal portion of the shoe upper which overlaps the under surface of the insole, connections including a transverse bridge member so uniting said members as to permit them to move toward and from each other, a handle carried by the bridge member, and spring means tending to move said members away from each other, each of said members having a groove in its outer surface for the reception of an actuating element.

6. A presser appliance of substantially horseshoe shape for use in lasting shoes, said device comprising two curved members hinged together adjacent to one end, each of said members being curved to conform substantially to the contour of a portion of the outer edge of an insole, each of said members having a substantially flat under surface devoid of insole penetrating elements, heating means operative to heat each of said members substantially from one end to the other, bridge means extending from one of said members to the other at a point intermediate the hinge means and the free ends of the members, and a handle carried by said bridge means.

7. A presser device of substantially horseshoe

shape for use in lasting shoes, said device comprising two curved members hinged together adjacent to one end, each of said members being curved to conform substantially to the contour of a portion of the outer edge of an insole, each of said members having a substantially flat under surface devoid of insole penetrating elements, heating means operative to heat each of said members, each of said members having, at a point intermediate its ends, a part provided with a guide opening, a bridge member having its opposite ends arranged to slide in said guide openings respectively, spring means tending to swing the free ends of said curved members apart, and a handle carried by the bridge member.

8. A presser device of substantially horseshoe shape for use in lasting shoes, said device comprising two curved members hinged together adjacent to one end, said members being curved to conform substantially to the contour of a portion of the outer edge of an insole, each of said members having a substantially flat under surface devoid of insole penetrating elements, heating means operative to heat each of said members, a bridge extending from one of said curved members to the other, the bridge being so connected to at least one of said curved members as to permit relative movement of the bridge and said latter member, spring means associated with the bridge and tending to swing the free ends of the curved members apart, and a handle secured to the bridge.

9. A presser device of substantially horseshoe shape for use in lasting the toe and forepart of a shoe, said device comprising two complemental curved elongate members, each member being shaped to conform substantially to the contour of one side of the forepart and toe portion of an insole, each of said members having a substantially flat under surface, means hingedly uniting said members adjacent to the toe end of the device, each of said members having a groove in its outer lateral surface for the reception of an actuating device, said groove being closely adjacent to the flat under face of the member, spring means tending to swing the free ends of the curved members apart, and handle supporting means intermediate the front and rear ends of the device.

10. A presser device of substantially horseshoe shape for use in lasting the toe and forepart of a shoe, said device comprising two complemental curved elongate members, each member being shaped to conform substantially to the contour of one side of the forepart and toe portion of an insole, each of said members having a substantially flat under surface, means hingedly uniting said members adjacent to the toe end of the device, each of said members having a groove in its outer lateral surface for the reception of an actuating device, each of said curved members having an elongate chamber, an electrical heating element within each chamber, means for supplying current to each of said heating elements, and a handle for use in manipulating the device.

11. A presser device of substantially horseshoe shape for use in lasting the toe and forepart of a shoe, said device comprising two complemental curved elongate members, each member being shaped to conform substantially to the contour of one side of the forepart and toe portion of an insole, means hingedly uniting said members adjacent to the toe end of the device, each of said members having an upstanding apertured ear at a point intermediate its ends, a bridge member curved concentrically with the axis of the hinge means, said bridge member having its ends arranged to slide in the apertures in the respective ears, a handle secured to the bridge member at a point intermediate the ends of the latter, coiled springs interposed between the handle and each of said ears respectively, said springs tending to move the curved members away from each other, and means for limiting such movement.

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