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S. A. EDDINS

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SHOE TREE

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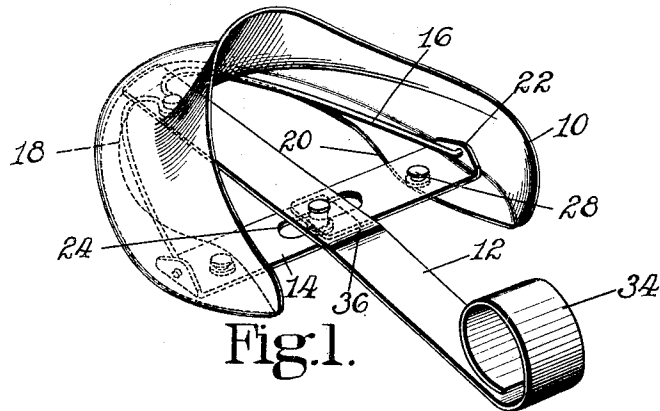


Fig. 1.

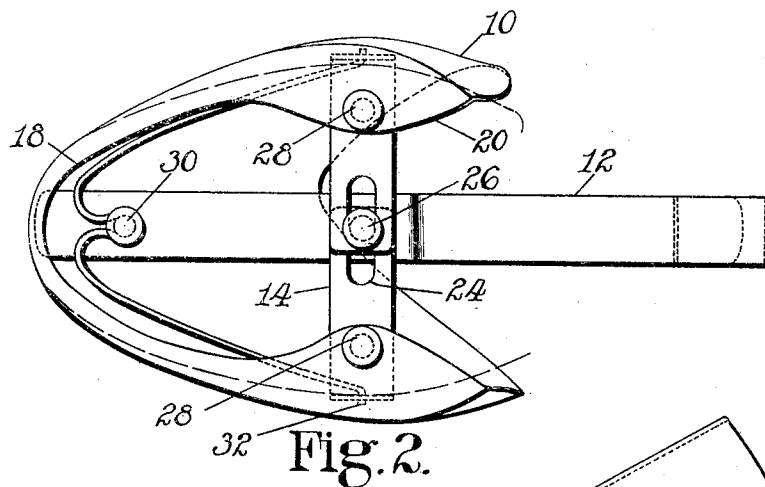


Fig. 2.

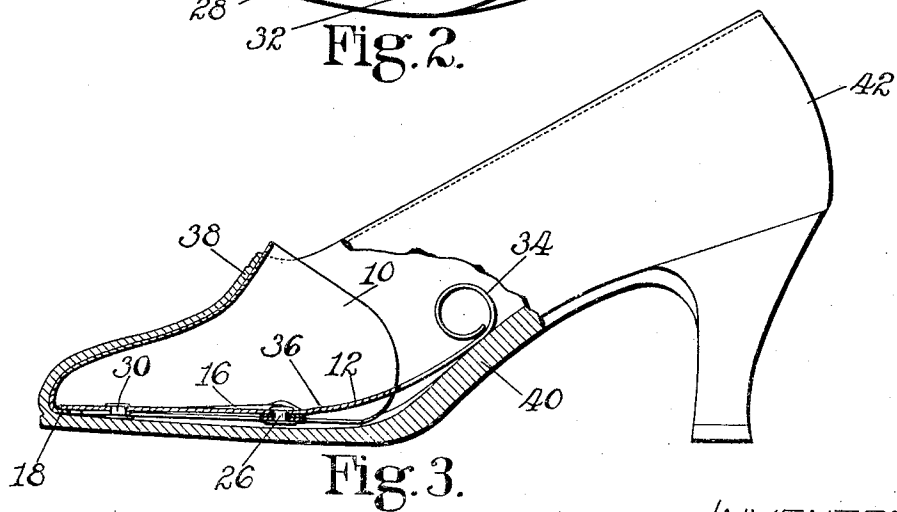


Fig. 3.

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UNITED STATES PATENT OFFICE

SEXTUS A. EDDINS, OF QUINCY, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO O. A. MILLER TREEING MACHINE COMPANY, OF PORTLAND, MAINE, A CORPORATION OF MAINE

SHOE TREE

Application filed June 6, 1930. Serial No. 459,525.

This invention relates to shoe trees and is herein illustrated as embodied in a tree for use in restoring and maintaining the shapes of shoes after they have been worn and during periods of disuse.

The most cheaply constructed shoe trees are of such a size that they can be inserted in substantially any woman's shoe, being provided with relatively small toe pieces and with resilient heel pieces which can be flexed to fit a shoe of any length. Obviously, the toe piece of such a tree cannot be expected truly to fit a shoe and acts principally as a pusher to stretch the shoe longitudinally. On the other hand, while shoe trees are provided each of which is constructed and shaped accurately to fit a shoe of a particular size and shape, satisfactory use of such trees necessitates the carrying by the retailer of a large stock of trees and the possession by the user of different trees for each pair of differently shaped shoes with the added disadvantage that the trees are likely to become substantially useless when other styles of shoes are purchased. Moreover, such trees are costly, and, unless care is taken to fit them properly to the shoes in which they are to be used, are not satisfactory. For these reasons, their use is not widespread.

Many forms of light shoe trees are now available in which the toe piece is constructed of sheet pyroxylin which is molded to shape and most of these are so constructed that the toe piece is open at the bottom and has an inturned bottom flange. Shoe trees made in this fashion have the merit of lightness and flexibility and have some inherent resiliency forcing the sides of the toe piece into contact with the forepart of the shoe to fill it. It is desirable, however, to supplement the natural resiliency of a pyroxylin toe piece in order to force the sides of the tree harder against the sides of the shoe to insure proper treeing action. On the other hand, there is danger that the toe piece may be broken by being expanded or contracted beyond its natural elastic limit.

In view of the foregoing, the present invention aims to provide an improved shoe tree, relatively inexpensive in construction,

which will be expansible to fit a plurality of sizes of shoes but which will be constructed so as to protect the tree against breakage. To this end, the invention provides an expansible tree having provision for rigidly limiting relative in-and-out movement of the sides of the toe piece. As illustrated, the tree is constructed of flexible material such as pyroxylin and is protected against injury, as when it is crowded into a shoe of a size smaller than that for which it is intended, by means comprising an extensible bridge. This bridge is shown as having superposed elements which are rigidly secured at their outer ends to inturned bottom flanges at the sides of the toe piece and are slotted at their inner ends and interconnected so that inward and outward movements of the sides of the toe piece are positively limited. Preferably and as illustrated, an expanding spring is provided within the toe piece, the force of which is added to the inherent resiliency of the toe piece itself to insure that the toe piece properly fills out the forepart of the shoe and exerts sufficient pressure on the sides of the shoe to preserve its shape. This spring, as illustrated, has outturned ends which are positioned in upstanding perforated ears at the outer ends of the bridge. With this arrangement there is no danger that the spring will distort or destroy the material of the toe piece by pressure thereagainst, and there is no opportunity for friction between the spring and the sides of the toe piece as would be the case if it rested directly against the inner side thereof. Also it will be noted that the central portion of the illustrated spring is looped around a stud near the forward end of a longitudinal member of flat spring steel. This serves to prevent lateral displacement of said forward end and at the same time forms an anchorage for the spring so that it may not readily be displaced in the tree.

Shoe trees are usually provided with a longitudinal member, sometimes called a heel piece, which extends the length of the shoe and presses against the inside of the rear end of the shoe so as thereby to push the toe piece into contact with the toe end of the shoe. The illustrated embodiment of my invention

is rendered less expensive and more efficient by the provision of a longitudinal member which is secured, between its ends, to a bridge extending across the tree and has its forward end resting on an intumed bottom flange at the toe end of the tree and its rear end positioned to bear against and be flexed by the arched shank portion of the shoe so as thereby to raise the toe piece firmly into contact with the instep of the shoe and by firm frictional engagement with the bottom of the shoe to prevent rearward movement of the tree in the shoe. This longitudinal member, in the illustrated construction, passes above the extensible bridge and is loosely riveted thereto by the fastener which passes through the slots of the two portions of said bridge. The rear end of the illustrated longitudinal member is curled upwardly to form a finger piece by means of which the tree may be inserted in or withdrawn from the shoe and as illustrated the end is curled over to form a loop so as thereby to protect the shoe against damage by said end. Also as illustrated, the longitudinal member is bent downwardly at an intermediate point to bring the curled rear end below the level of the bottom of the toe piece so as thereby to increase the force with which the rear end is held against the shank portion of the shoe, or conversely, to increase the force with which the toe piece is raised against the instep portion of the shoe.

Considering the invention in another aspect, it will be seen that it provides a shoe tree comprising a pyroxylin toe piece and a skeleton comprising the longitudinal member, the bridge members, and the expanding spring. The skeleton may be pre-assembled and then in the course of manufacture of the tree associated with the molded pyroxylin toe piece in proper position and secured thereto by means of rivets.

In the drawing,

Fig. 1 is a perspective view of the shoe tree viewed from the open rear end of the toe piece;

Fig. 2 is a bottom view thereof; and

Fig. 3 is a view of a shoe containing such a tree taken partly in longitudinal section through the toe of the shoe and the tree, and illustrates the force exerted to lift the toe piece by the upwardly flexed rear end of the longitudinal member.

The illustrated shoe tree comprises a flexible toe piece 10 which is molded into shape from sheet material such as pyroxylin, and a metallic skeleton structure comprising a longitudinal center member 12, an extensible bridge 14, and an expanding spring 16. The toe piece 10, as illustrated, has an intumed bottom flange 18 extending around the open bottom of the toe piece, this flange being enlarged at the sides as shown at 20 to facilitate the securing thereto of the extensible bridge

14. This bridge 14 is made of a pair of flat metal pieces having upturned perforated ears 22 at their outer ends and slotted at 24 at their adjacent ends to receive a rivet 26 passing through the longitudinal member 12 and said slots, and headed loosely to allow free inward and outward movement of the members of the bridge 14. The outer ends of the bridge are rigidly attached to the flanges 20 by rivets 28 and are in alignment with one another in the normal or expanded condition of the tree which is illustrated in Figs. 1 and 2. As a result, contraction of the tree will have substantially no tendency to displace the longitudinal member 12 lengthwise of the shoe tree and hence there will be no danger of disturbing the relation of the forward end of said member with the flange 18. It will be noted that any drawing back of said longitudinal member which might be caused by a contraction of the tree with certain positioning of the bridge members 14 would be apt to pull the forward end of the member 12 over the edge of the flange so that it no longer would bear upon the tree but upon the bottom of the shoe. On the other hand, if there is too much forward displacement of the longitudinal member on contraction of the tree, the forward end of said member will bear against the inner side of the toe piece and may bind to such an extent that it will not rest upon the bottom flange of the tree. The natural resiliency of the flexible toe piece 10 is supplemented by the expanding spring 16. The central portion of this spring is looped about a rivet 30 on the under side of and near the forward end of the longitudinal member 12 and the arms of the spring are curved forwardly and outwardly and then rearwardly from this rivet and provided with outturned ends 32 entering perforations in the ears 22 of the bridge members. This manner of assembly gives complete freedom of movement to the spring arms. Thus the flexible toe piece may be compressed or expanded within the limits prescribed by the slots 24 of the bridge member, so that said toe piece will completely fill the toe end of a shoe in which the tree is inserted. Danger of breaking the toe piece of the tree is minimized by the controlling effect of the slots 24 and it is noted that the arrangement of the spring, positioned as it is out of contact with the toe piece, gives a maximum freedom of action of said spring, as there is no frictional resistance to its movements as would be the case if it rubbed against the celluloid toe piece. There is, further, no direct pressure against the pyroxylin toe piece and hence no tendency to distort the same.

Insertion of the toe piece in a shoe or its withdrawal therefrom is facilitated by a loop 34 formed by curling the rear end of the longitudinal member upwardly. This loop

also avoids damage to the insole of the shoe by providing a curved bearing portion for the rear end of the longitudinal member.

When the tree has been inserted in a shoe, the rear end of the longitudinal member is flexed upwardly, as shown in Fig. 3, so that the toe piece is lifted firmly against the instep of the shoe and at the same time the forward end of the longitudinal member rests on the inturned flange 18 at the bottom of the toe piece and exerts pressure on the toe end of the sole to straighten it lengthwise and to stretch it back to the shape imparted to it by its last. A shoe tree of this construction avoids the necessity of the long heel piece common in most shoe trees and bearing against the inside of the counter portion of the heel end of the shoe, and provides a light, inexpensive shoe tree, occupying a minimum amount of space when not in use.

The longitudinal member passes above the slotted ends of the bridge 14 at the point where said member is secured to the bridge by the rivet 26, and as a result there is less distortion of the bridge and of the flanges of the shoe tree and less interference with the free action of the expanding spring 16 than as if the longitudinal member 12 were positioned beneath the bridge 14, when said longitudinal member is bent upwardly by contact with the shank portion 40 of the shoe 42. The longitudinal member 12 is given a slight downward bend at 36 to compensate for its elevation above the bottom of the flanges 20 and to increase the lifting tendency of said longitudinal member upon the tree. In the manufacture of such trees the metallic skeleton, comprising the longitudinal member 12, the bridge members 14, and the spring 16, may be completely assembled as a unit and then attached to the inturned bottom flanges 20 of the toe piece 10 by the rivets 28, thus greatly facilitating the manufacture of the article. A tree of this description does not have to be made in a large number of sizes in order to fit well all sizes of shoes because it is not necessary for the looped end 34 of the longitudinal member to bear upon the shoe in any exact position, and further because the flexibility of the toe piece and the expansible construction provided by the bridge member 14 and the spring 16 allows the toe piece to fit a large number of sizes of shoes. Consequently it is only necessary for a seller of such trees to stock them in small, medium, and large sizes, and there is less danger that a customer will secure a size unsuited to the shoe in which it is to be employed. Furthermore, a pair of trees purchased for shoes of a particular width will still be serviceable in case the user desires to employ them for shoes of a different style which have a slightly different width. The spring 16 with its outturned ends entering the perforation in the ears 22 of the bridge

members, and its circular portion looped around the rivet 30, prevents lateral displacement of the forward end of the longitudinal member 12, thus holding this member in a position where it will operate as desired and will not bind against the inner surface of the toe piece.

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

1. A shoe tree arranged to fill the forward end of a shoe comprising an expansible toe piece adapted to be compressed laterally as it is inserted in a shoe, and extensible means rigidly secured to the toe piece and positioned transversely of the toe piece constructed and arranged to permit and at the same time to limit relative in-and-out movement of the sides of the toe piece.

2. A shoe tree arranged to fill the forward end of a shoe comprising a toe piece constructed of resilient material whereby it may be compressed laterally as it is inserted in a shoe, and means rigidly secured to the toe piece constructed and arranged to permit a relative movement of the sides of the toe piece and constructed and arranged positively to limit both the contraction and expansion of the side walls of the tree.

3. A shoe tree adapted to fill the forward end of a shoe comprising a flexible toe piece open at the bottom and having inturned bottom flanges, spring means for forcing out the side walls of the toe piece to cause it to fill the forepart of a shoe, and means engaged by the spring means and secured to said bottom flanges constructed and arranged to permit the contraction and expansion of the side walls while limiting expansion thereof.

4. In a shoe tree, a flexible toe piece open at the bottom and having inturned bottom flanges, a spring for expanding said toe piece, and means interconnecting said inturned bottom flanges constructed and arranged to allow a limited expansion of said toe piece under the action of said spring, said means being constructed and arranged also to form abutments for the spring to prevent distortion of the toe piece.

5. In a shoe tree, a flexible toe piece having inturned bottom flanges, overlapping bridge members secured one to each of said bottom flanges and slotted at their inner ends, and a fastener interconnecting the slotted portions of said bridge members whereby both excessive inward and outward movements of the sides of the toe piece are prevented.

6. In a shoe tree, a toe piece constructed of flexible material and provided with inturned bottom flanges, a bridge extending across the ball of the toe piece and secured to said bottom flanges, said bridge comprising overlapped slotted members slidably interconnected loosely by a fastener, the ends of said slotted members being respectively

secured rigidly to opposite bottom flanges substantially in alinement when the toe piece is expanded.

7. In a shoe tree, a flexible toe piece open at the bottom and having inturned opposite bottom flanges, and a bridge for interconnecting said bottom flanges comprising flat metal strips riveted at their outer ends to said opposite bottom flanges and slotted at their inner ends, said inner ends being positioned in overlapped relation and connected to permit a limited inward and outward movement of the sides of the flexible toe piece.

8. A shoe tree comprising a flexible toe piece open at the bottom, a member by means of which the tree is inserted in or withdrawn from a shoe, an extensible bridge secured to the toe piece and extending across the open bottom thereof, said bridge having upturned ears at its outer ends, and a spring for expanding the toe piece laterally to cause it to fill the forepart of the shoe, said spring being secured to said member and having its ends bearing against said upturned ears.

9. A shoe tree comprising a flexible toe piece, an extensible bridge secured to and extending transversely of the toe piece and provided with upturned ends, a longitudinal member secured to said tree for inserting or withdrawing the tree, and a spring for expanding the tree, an intermediate portion of which spring is secured to the forward end of said longitudinal member and the end portions of which are flexed and bear against said upturned ends of the bridge.

10. A shoe tree comprising a flexible toe piece having inturned bottom flanges, an extensible bridge connecting said flanges and provided with upturned perforated end portions, and a longitudinal member secured to said bridge having a spring secured thereto near the forward end of the toe piece, said spring having outturned ends inserted in the perforated end portions of the bridge thereby to expand the toe piece.

11. A shoe tree comprising a toe piece having an inturned bottom flange, a bridge extending transversely of said toe piece, and a member extending lengthwise of said toe piece secured to an intermediate portion of said bridge with its forward end resting on said inturned bottom flange at the toe end of the tree, said member extending rearwardly to a position above the shank portion of a shoe when the tree is inserted in the shoe and having its end curved to prevent contact of said end with the shoe.

12. In a shoe tree, a toe piece having an inturned bottom flange, a bridge extending transversely of said toe piece, a member extending lengthwise of said toe piece and positioned above said bridge and secured to an intermediate portion thereof with its forward end resting on said inturned bottom flange at the toe end of the tree, said member

extending rearwardly far enough to rest upon the shank portion of a shoe when the tree is inserted in the shoe.

13. In a shoe tree, a flexible toe piece having an inturned bottom flange at the forward end and at the sides of the toe piece, a bridge member secured to the side portions of said flange, a longitudinal member disposed with its forward end resting on the end portion of the flange and having a fastener passing through said bridge member, and means for preventing lateral movement of the forward end of the longitudinal member.

14. In a shoe tree, a flexible toe piece, a bridge comprising overlapping portions secured at their outer ends to the sides of said toe piece and slotted at their overlapping inner ends, the overlapping portions of said bridge being constructed and arranged to be in alinement when the toe piece is expanded, and a longitudinal member passing over said bridge member and having a fastener extending through said slotted ends.

15. In a shoe tree, a flexible toe piece, a bridge comprising overlapping portions secured at their outer ends to the sides of said toe piece and slotted at their overlapping inner ends, and a longitudinal member passing over said bridge and having a fastener extending through said slotted ends, said longitudinal member being bent downwardly from the plane of the bottom of the shoe tree to the rear of said bridge.

16. A shoe tree comprising a flexible toe piece designed substantially to fill the forepart of a shoe, means for limiting the contraction and expansion of the toe piece, and a resilient longitudinal member rigidly secured to said toe piece through said means and extending rearwardly to engage the upwardly arched shank portion of a shoe so as to be flexed thereby and to exert a lifting action on the instep portion of the toe piece to cause it to plump out the forepart of the shoe.

17. In a shoe tree, a toe piece designed substantially to fill the forepart of a shoe, and a resilient member of flat strip metal rigidly secured at one portion to said toe piece and having another portion resting on a part of said toe piece to extend lengthwise thereof, the rear end of said longitudinal member being curved to form a loop which bears, when the tree is inserted in the shoe, against the upwardly arched shank portion of the shoe so as thereby to hold the tree against displacement.

18. In a shoe tree, a flexible toe piece designed substantially to fill the forepart of a shoe, a transverse bridge of flat strip metal secured to the sides of said toe piece, and a resilient member of flat strip metal rigidly secured to said bridge and having its forward end resting on said toe piece, said

resilient member extending lengthwise of the tree, the rear end of the flat resilient member being curved to form a substantially closed loop preventing contact of the end with the shoe.

19. In a shoe tree, a flexible toe piece having an inturned bottom flange adjacent to the forward end of the toe piece and the sides thereof, slotted bridge members secured to the side portions of said flange, a longitudinal member of flat spring metal resting on the toe portion of the flange and passing above said slotted bridge members, and a fastener extending through said longitudinal member and the slots of said bridge members, said longitudinal member extending rearwardly far enough to rest upon the shank portion of the shoe thereby to lift the instep portion of the toe piece when the tree is inserted in a shoe.

20. In a shoe tree, a toe piece having an inturned bottom flange at the forward end and at the sides of the toe piece, slotted bridge members secured to said side portions of said flange and provided with upturned perforated end portions, a longitudinal member passing over said bridge members and having a fastener extending through the slots thereof, the forward end of said longitudinal member resting on the flange at the toe end of the tree and extending rearwardly far enough to rest upon the shank portion of a shoe in which the tree is inserted, and a spring secured at an intermediate portion thereof to the forward part of said longitudinal member, the flexed outer ends of said spring being outturned to enter the perforations of said upturned portions of the bridge members whereby said toe piece is expanded by said spring and lateral flexings of the sides of the toe piece are limited both inwardly and outwardly by the engagement of said fastener member with the slots of said bridge members.

21. In a shoe tree, a toe piece having an inturned bottom flange, a bridge secured to said toe piece, and a longitudinal member secured to said bridge with its forward end resting on said inturned bottom flange, said longitudinal member being bent downwardly from the plane of the bottom of the shoe tree at a point between said bridge member and its rear end and having its rear end curled to form a loop.

22. In a shoe tree, a toe piece designed substantially to fill the forepart of a shoe, a bridge between the sides of said toe piece, and a resilient longitudinal member secured to said bridge and arranged to bear downwardly against the forward end of the toe piece, said longitudinal member being curved to form a loop at its rear end, which loop in use rests upon the shank portion of the shoe and serves as a finger piece to facilitate the insertion and withdrawal of the tree.

23. In a shoe tree, a toe piece designed substantially to fill the toe end of a shoe, a bridge between the sides of said toe piece, a resilient longitudinal member secured to said bridge and arranged to bear downwardly against the forward end of the toe piece, said longitudinal member being curved downwardly for contact with the bottom of the shoe at the shank portion and having an end portion which is curved to form a loop, said loop serving as a finger piece to facilitate the insertion and withdrawal of the tree.

24. In a shoe tree, a flexible toe piece, and a metallic skeleton structure for said toe piece comprising an extensible bridge, a longitudinal member, an intermediate portion of which is secured to and supports said bridge, and an expanding spring the central portion of which is secured to said longitudinal member and the diverging ends of which are secured to the ends of said bridge.

25. A metallic skeleton structure adapted to be incorporated in a shoe tree having a flexible toe piece with inturned side and toe flanges, said skeleton structure comprising a transverse bridge of flat strip material the ends of which are adapted to be secured to the side flanges of the toe piece, and a longitudinal member secured to said bridge between its ends and extending substantial distances to the front and to the rear of the bridge, thereby adapting said member to rest at one end on the toe flange of the toe piece and at the other end on the shank portion of a shoe in which the tree is used.

26. A metallic skeleton structure adapted to be incorporated in and secured to a shoe tree having a flexible toe piece, said skeleton structure comprising an expansible bridge, a longitudinal member an intermediate portion of which is secured to said bridge, and an expanding spring an intermediate portion of which is secured to said longitudinal member and the diverging ends of which are secured to said bridge.

27. A shoe tree having a flexible toe piece open at the bottom and provided at the bottom with inturned side and toe flanges, a loop spring having its ends connected to said side flanges to expand the toe piece, an expansible bridge of flat strips connecting said side flanges, and a longitudinal member secured to an intermediate part of said bridge having its forward end overlying said toe flange and extending rearwardly to a position above the shank portion of a shoe when the tree is inserted in the shoe.

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

SEXTUS A. EDDINS.