June 14, 1949. L. KESSLER 2,473,207

SHOE TREE

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Fig. 1

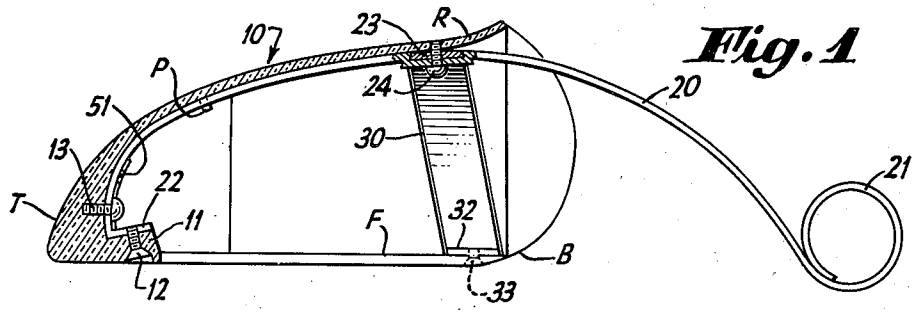


Fig. 2

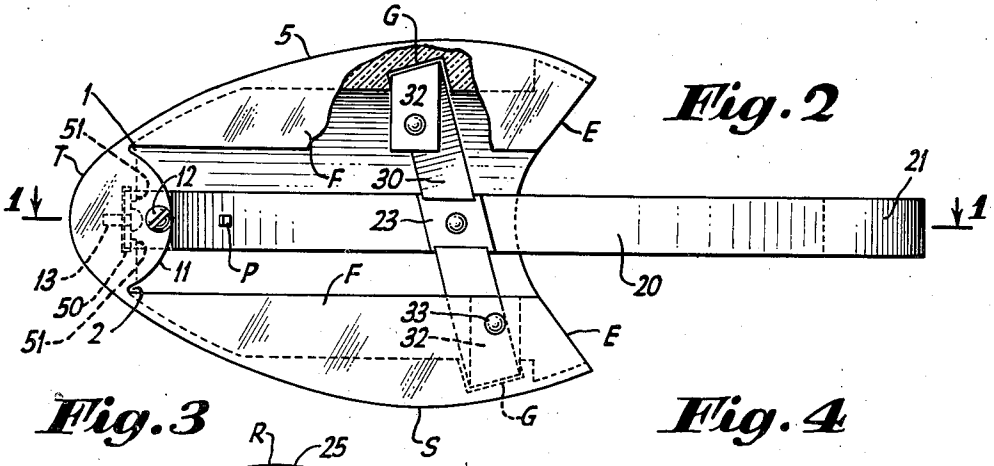


Fig. 3

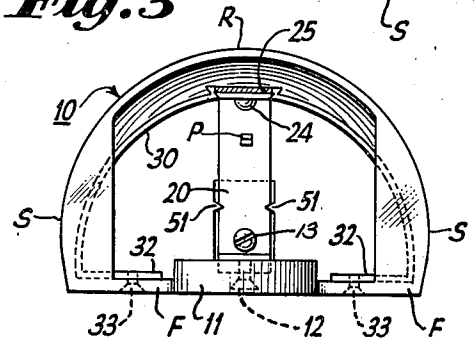


Fig. 4

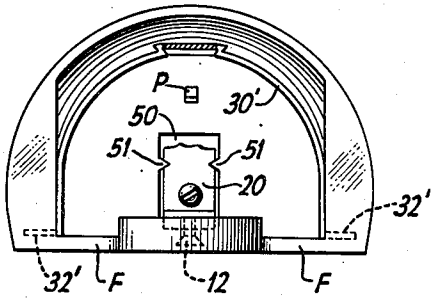


Fig. 5a

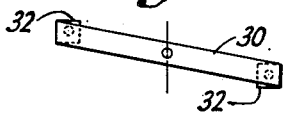


Fig. 5b

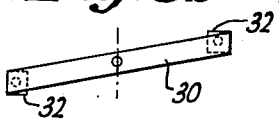


Fig. 6a

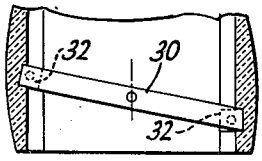
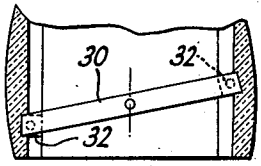


Fig. 6b



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SHOE TREE

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Fig. 7

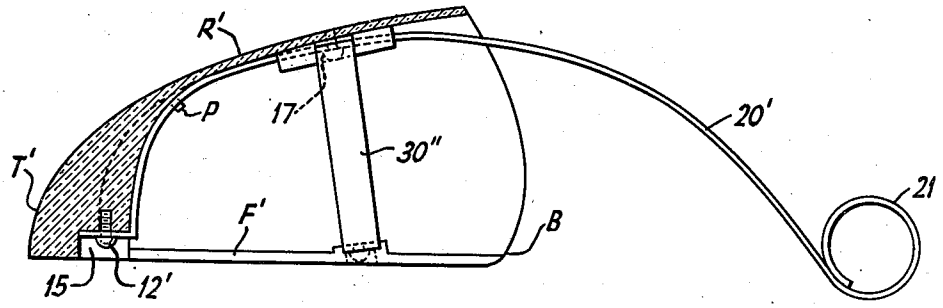


Fig. 8

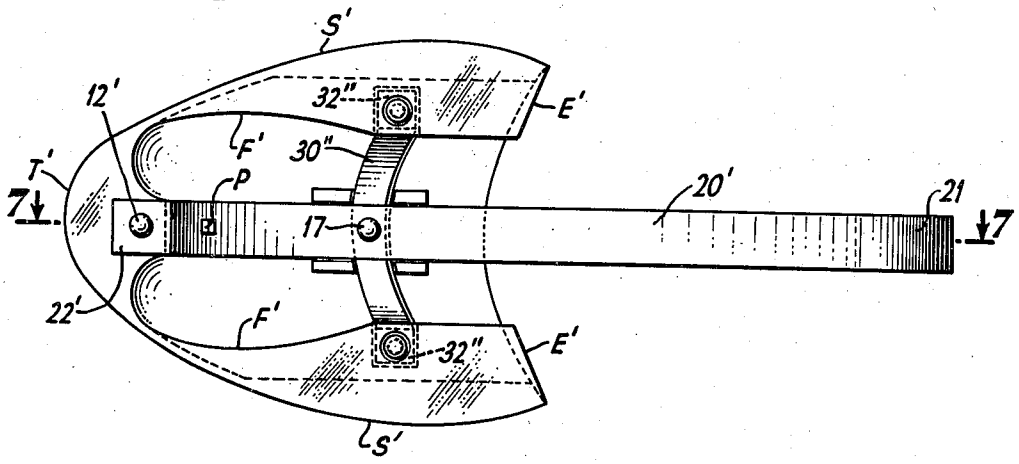
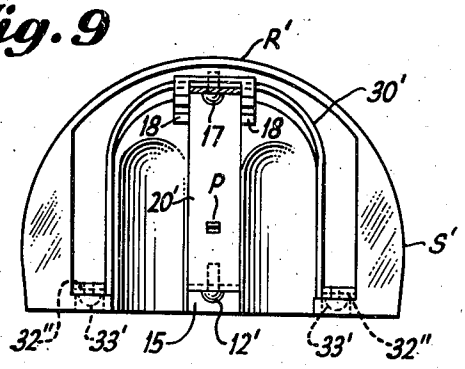


Fig. 9



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SHOE TREE

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7 Claims. (Cl. 12—128.4)

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My present invention relates to shoe trees generally, and more specifically to a novel shoe tree constructed to contact the forepart or toe section of a woman's shoe so as to conform to the vamp thereby to maintain its original shape.

An important object of my invention is to provide a shoe tree consisting of a hollow compressible shell serving as a toe piece and a long resilient metallic stem provided with a cross spring whose ends are secured to flanges projecting from the inside rim of the shell; the shell and its associated components coacting to preserve the fit and appearance of the shoes and providing better wear and comfort.

Another important object of my present invention is to provide shoe trees for women's shoes, wherein special attention is given to shape the hollow shell toe piece so as to fit inside of shoes properly thereby conforming to the respective vamps; the shoe tree shape being fashionably designed to appeal to the feminine taste.

Another object of my invention is to provide a pair of improved shoe trees of the plastic hollow shell toe piece type; the toe pieces being deliberately designed to conform perfectly to the average woman's shoe vamps and being kept securely in place by a simple pair of longitudinal and lateral spring elements.

Still another object of my invention is to provide an improved and novel shoe tree of light weight, simple construction and positive action.

Specifically my present shoe tree consists of a hollow toe piece made of a shell of plastic or resilient material. The toe piece is provided with a longitudinal stem or spring which has a lateral, or cross, spring secured thereto. The stem functions as a handle to permit insertion of the toe piece into the toe section of a woman's shoe by compressing the side walls of the shell. When the shell is positioned within the shoe vamp, the cross spring pressure against the shell walls keeps the outer surfaces of the shell in contact with the side walls of the vamp. The longitudinal stem or spring is arched against the roof of the hollow shell, and its coiled end is flexed against the arched or shank portion of the shoe. Thus, the pressure against the shank of the shoe causes the shell to push forward, and remain inside the shoe at the very tip of the toe section. While the coiled end of the longitudinal spring flexes against the shank, the stem or spring forces the shell up against the inner face of the vamp roof thereby keeping the vamp shape in its original form. Thus, the side walls and roof of the vamp are forced towards the original shape by the simple

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two components, viz., the longitudinal spring or stem and its lateral cross spring, and coaction with the compressible hollow shell.

Manifestly, my invention may be varied in shapes, materials, attachments and modes of manufacturing. Generically, my shoe tree comprises a compressible hollow toe piece and a pair of crossed expansible spring members functioning to cause expansion of the toe piece side walls and roof, and one of the crossed spring members being a handle for the shoe tree.

Still other features of my invention will become clear as the description proceeds. In the drawings:

Fig. 1 shows a central longitudinal section through a shoe tree designed to fit a left shoe;

Fig. 2 is a bottom view of the mate shoe tree;

Fig. 3 is a view of a shoe tree from the open rear end thereof;

Fig. 4 shows a view similar to Fig. 3, but of a modified form of shell flange;

Figs. 5*a* and 5*b* respectively show the top views of cross springs for right and left shoe tree center stems;

Figs. 6*a* and 6*b* show respective modifications of Figs. 5*a* and 5*b*; and

Figs. 7, 8 and 9 show views respectively corresponding to those of Figs. 1, 2 and 3, but the former being those of a modification.

Throughout the different figures of the accompanying drawings similar parts are designated by the same reference characters, while equivalent parts have been given the same reference characters with prime designations. Referring to Figs. 1, 2 and 3 in more detail, the shoe tree of the invention comprises a hollow shell, preferably made of plastic material, a longitudinally arranged resilient metallic stem or spring **20** secured to the shell, and a metallic resilient cross-spring **30** attached at its center to the longitudinal stem **20** at a point intermediate its ends. It is to be noted that the point of attachment is actually slightly off-center with respect to cross-spring **30** due to the lack of symmetry of each shell.

Shell **10** is designed for insertion into the front part or toe section of a lady's shoe in order to aid in maintaining the original shape of the shoe and thus preserve the fit and appearance of the shoe. This shell may be made of a molded plastic, such as flexible pyroxylin, or other suitable flexible material, and includes a toe end portion T, spaced side walls S, and a roof R. The side walls S are compressible, and are provided with inturned bottom flanges F which are designed to have a curvature angle conforming to the inner sole of

the shoe. This curvature angle of the flanges F allows for proper fit of the shell inside the shoe and permits insertion into or withdrawal from the shoe without undue force or friction. These flanges F terminate at points of inflection 1 and 2 to permit the desired flexing action of the shell. The roof R is designed to press against the vamp of the shoe and has an upward sweep or shape which may extend beyond the throat of the shoe in which the shell is to be used. The side wall sections S, S of the shell are made thinner than the toe end portion T to permit suitable flexing and to provide an inherently expansible quality which will enable the shell to fit different sizes of shoes. It will be understood that a too heavy side wall section will unduly restrict the desired compressing action of shell. Further, the toe end portion T is reinforced and so constructed as to absorb at points 1 and 2 (note Fig. 2) the strain caused during compression of the shell, and this reinforced toe portion graduates in thickness as it aproaches the side walls S.

The flanges F are cut away somewhat at their ends E, as shown, to prevent these ends from contacting the shank or arched part of the shoe when the shell is inserted therein. Similarly, the shell is also cut away at B at such an angle as to prevent the shell from contacting the shank or arched portion of the shoe. If this were not done, the shell could not be inserted easily or properly into a shoe, and would tend, during use, to raise the rear upwards thus causing undue strain against the shoe instep.

An inspection of Figs. 2 and 3 will show that the side walls S, S are rather heavy at the sides and graduate in thickness into the more general and thinner section of the major portion of the shell. The side walls are also provided with respective recesses or grooves G for accommodating a cross-spring 30 whose purposes are described later in the description.

In order to enable the shell to be pushed forward into the shoe and maintained in the desired position within the shoe, there is provided a longitudinal stem or spring member 20 of spring-like metallic ribbon material which at one end is secured to the toe end portion T of the shell, and at the other end 21 is curled over as shown so as to protect the shoe from damage by this end. Stem or spring member 20 is provided at the toe end of the shell with a flange 22 which rests upon a pedestal or raised portion 11 provided on the underside of the toe end portion T. A suitable countersunk tap screw or rivet 12 fastens the flange 22 of the stem to the pedestal 11, while another screw or rivet 13 fastens the adjacent rising portion of the stem 20 to the toe end portion T. It should be noted that the toe end portion T is thicker than the side walls S, and that it is provided with a locating recess, groove or channel 50 at the location of rivet 13 to enable proper anchorage of the stem or spring member 20 at the toe portion. The edges of this channel or groove 50 are provided with spaced tests or projections 51 to hold the toe end of stem or spring member 20 in place. The stem member 20 is slid behind these projections 51.

An inspection of Fig. 1 will show that there is an upward sweep of the stem 20 which engages the inside roof R and exerts upward pressure against it.

The stem 20 is also provided with an aperture in the upward sweeping portion which contacts the roof R of the shell for enabling entry of a centering pin P fastened to the ceiling of the roof R. This pin P anchors the spring-like longitudinal spring member 20 to the roof of the shell, and is preferably made of plastic so that the application of heat thereto after it is in proper position will force some of the plastic material to spread on the underside of the spring 20.

The upper part of the longitudinal spring 20 is recessed at 23 for accommodating the spring-like cross-wise metallic ribbon 30. This recessed portion 23 is also provided with a hole into which an eyelet or rivet 24 or other suitable fastening means can be inserted for passing through a correspondingly located hole in the cross-spring 30. The cross-spring 30 has a part 25 which locks into the recess 23 of the stem 20.

The primary purpose of cross-spring 30 is to exert cross pressure against the inner side walls S when the shell is within the vamp of the shoe and to keep the outside of the shell in contact with the inner vamp sides of the shoe.

The cross-spring 30 is provided at both its ends with lips 32 which are turned in toward each other and fastened to the bottom flanges F of the side walls of the shell by means of countersunk screws or rivets 33. Eyelets or flattened head rivets may, also, be used. It should be noted that one lip 32 of cross-spring 30 is turned at an angle to one side of a plane through the spring 30 while the other lip 32 is turned at an angle to the other side of this same plane. Since the widest sweep of a shoe is on the outside, the cross-spring 30 should have an upward swing whose left-hand lip is away from the viewer, and right-hand lip toward the viewer for a right foot shell, and vice versa for a left foot shell, as seen from the rear of the shell. The side portions of cross-spring 30 make an angle of approximately 15 degrees with respect to a line perpendicular to the center member 20.

The side portions of cross-spring 30 rest in grooves G of the side walls S of the shell and are thus prevented from shifting in position toward the front or rear of the shell.

Since the side portions of the cross-spring 30 conform to and engage the side inner walls of the shell 10, there is no undue strain on the screws 33 which secure the lips 32 to the shell.

From what has been stated above, it will be evident that the shoe tree of the invention is insertable into a shoe by first compressing the sides of the shell. When the shell is positioned within the shoe, the curled end 21 of the center member is positioned to bear against and be flexed by the arched shank or upsweep portion of the shoe and by firm functional engagement with the bottom of the shoe to prevent rearward movement of the tree in the shoe. The pressure against the stem 20 causes the shell to push forward and stay inside the shoe and at the extreme front portion at the toes. That portion of the stem which is inside the shell forces the roof of the shell up against the inside ceiling of the vamp, thereby holding up the vamp section of the shoe. The side walls of the shell are forced outwards by the cross-spring 30. The shoe tree thus maintains the original shape of the shoe and prevents distortion.

In Fig. 4 is shown a modification of the shoe tree of Figs. 1, 2 and 3, the difference primarily being in the construction of the cross-spring 30' which is provided with lips 32' at its ends extending outwardly instead of toward each other. These outwardly extending lips 32' are designed to slip into slots provided in the side walls of the shell instead of being anchored by screws. It

is, also, possible to provide straps molded in the plastic, or otherwise formed therein, to retain the lips 32' securely.

Figs 5a and 5b respectively show the top views of cross-springs 30 for right and left shoe trees. These views clearly indicate the different angles which the oppositely located lips 32 make with the plane of the main portion. The different positionings of the cross-springs 30 are also indicated for the different shoe trees of a single pair.

Figs. 6a and 6b show respective modifications of the cross-springs of Figs. 5a and 5b, the essential difference being that one lip of each cross-spring in Figs. 6a and 6b makes a different angle with respect to the main portion than the other lip of same spring. These cross-springs are shown positioned in grooves in the side walls of the shell. The grooves in the side walls of the shell of Figs. 6a and 6b are shaped to conform to the angles made by the lips of the cross-springs.

Figs. 7, 8 and 9 are views corresponding to those of Figs. 1, 2 and 3 but of a modification of the shoe tree of the invention.

The flexible shell of Figs. 7, 8 and 9 has a toe end portion T', side walls S' having flanges F' and a roof R'. The toe end portion T' is recessed as at 15 for accommodating a flange 22' of the longitudinal stem 20'. This flange 22' is fastened to the toe piece by means of a screw or rivet 12'. The side walls S' are relatively heavy and graduate downward in thickness. These side walls have grooves on the sides thereof for accommodating the side portions of cross-spring 30''. The ends of cross-spring 30'' are provided with lips 32'' which are secured to the sides of the shell by screws 33'. Since the grooves in the side walls S' are especially formed, there is no special angle which the cross-spring 30'' need make relative to the stem 20', and hence each lip 32'' at the end of the cross-spring makes a right angle with respect to a plane through the length of the cross-spring.

Projecting from the ceiling of roof R' near the rear of the shell is an arrangement of flanges for attachment to the longitudinal stem or spring 20' and also to the cross-spring 30''. This arrangement is fastened to the roof R' and also to both stem 20' and cross-spring 30'' by means of a screw 17', and is of such construction as to prevent any shifting in position of the stem 20' or cross-spring 30'' relative to one another. From an inspection of Fig. 9, it will be seen that flange arrangement is somewhat U-shaped with the trough or base of the U adjacent the ceiling of roof R' and apertured for the reception of the screw 17. The short legs of the U designated 18 are in the form of flanges sufficiently spaced apart to enable the stem 20' to pass therebetween. The top of the cross-spring 30'' passes between the base of the U-shaped member and the ceiling of the roof R'. It will be noted that the flanges F' in Fig. 8 terminate towards the toe portion in a manner equivalent to that shown in Fig. 2. This construction permits ready flexing of the side walls relative to the toe portion.

It should be understood that the invention is not limited to the precise constructions shown in the drawings, since various changes can be made in details without departing from the spirit and scope thereof.

What I claim is:

1. A shoe tree comprising a hollow compressible shell serving as a toe piece, said shell being closed on top and front but open at the bottom and in the rear, a flexible longitudinal stem having one end thereof located at the toe end of said shell and curved to rise in the interior of the shell, said stem extending rearwardly of said shell to a position above the shank portion of a shoe when the tree is inserted into the shoe, and a flexible arched cross-spring secured at an intermediate point to the curved portion of said stem at a location within and near the rear of said shell, said shell having opposed inturned flanges, said flanges terminating adjacent said toe end with spaced points of inflection to provide increased compressibility of said shell, the ends of said cross-spring being fastened to the flanges of said shell.

2. A shoe tree comprising a hollow compressible shell having oppositely disposed inturned flanges, cross-spring having its ends secured to said flanges and a central portion which is curved upwards in the interior of said shell, and a longitudinal stem member fastened at an intermediate portion to said cross-spring and curved downwardly at one end to be fastened to the front of said shell and curved downwardly at the other end to terminate in a loop, said loop being designed to rest upon the shank portion of the shoe into which it may be inserted and said flanges terminating adjacent the toe portion of the shell with points of inflection located on either side of said one end of the stem member thereby to provide increased compressibility of the shell.

3. A shoe tree comprising a hollow compressible shell having an open rear and a roof which has an upward sweep extending from the extreme toe portion, said toe portion being provided with a vertical locating channel, a longitudinally extending resilient metal stem having one end thereof located in said channel at said toe portion of said shell and terminating at its other end in a smooth surface adapted to rest upon the shank portion of a shoe, said stem being arched in the interior of said shell and having an upward sweeping portion in contact with the upward sweeping front portion of said shell, and a curved resilient cross-spring having its ends secured to spaced flanges provided at the bottom of said shell, and an intermediate portion raised above said ends and secured to said longitudinally extending stem at a location within said shell.

4. A shoe tree comprising a hollow compressible shell having oppositely disposed inturned flanges at the bottom and a top which has an upward sweep extending from the extreme front portion of said shell, a longitudinally extending resilient metal strip having a flange at one end fastened to the extreme front portion of said shell and terminating at its other end in a smooth surface adapted to rest upon the shank portion of a shoe, said shell being thicker at the extreme front portion than on the top, said thicker portion having a groove therein, said strip being arched upwardly in the interior of said shell and having an upward sweeping portion resting in said groove, and a resilient metal cross-strip arranged at an angle to said first strip, said cross-strip having its ends secured to said inturned flanges and an intermediate portion raised above said ends and secured to said longitudinally extending strip at a location within said shell.

5. A shoe tree comprising a hollow compressible shell having oppositely disposed inturned flanges at the bottom and a top which has an upward sweep extending from the extreme front portion of said shell, a longitudinally extending resilient metal strip having a flange at one end fastened to

the extreme front portion of said shell and terminating at its other end in a smooth surface adapted to rest upon the shank portion of a shoe, said shell being thicker at the extreme front portion than on the top, said thicker portion having a groove therein, said strip being arched upwardly in the interior of said shell and having an upward sweeping portion resting in said groove, and a resilient metal cross-strip arranged at an angle to said first strip, said cross-strip having its ends secured to said inturned flanges and an intermediate portion raised above said ends and secured to said longitudinally extending strip at a location within said shell, said cross-member making an angle of approximately 15° with said longitudinal strip and having sides which rest in grooves in the sides of said shell.

6. A shoe tree comprising a hollow compressible shell having a top which has an upward sweep extending from the extreme front portion, a longitudinally extending metal strip having an inturned flange resting on and secured to a raised lip on the bottom of the front portion of said shell, the other end of said strip terminating in a smooth surface adapted to rest upon the shank portion of a shoe, said extreme front portion of the shell being thicker than the top of the shell, said thicker portion having a groove therein, said strip being arched upwardly in the interior of said shell and having an upward sweeping portion resting in said groove, and a cross-member in the form of a resilient metal strip arranged at an angle to said longitudinally extending strip, said

cross-member having its ends secured to spaced points on the bottom of said shell and having an arched central portion secured to said longitudinally extending strip at a location within said shell, the sides of said cross member resting in grooves in the sides of said shell.

7. A shoe tree comprising a hollow compressible shell having side walls, a roof and opposed inturned flanges, an arched longitudinal resilient metallic stem having one end thereof located in a channel provided at the toe end of said shell, an arched resilient metallic cross-spring arranged substantially in a plane at 90° to the plane of said stem, means securing the ends of said cross-spring to said opposing flanges at the bottom of said shell, means for securing together the arched portions of said stem and cross-spring, the opposite end of said metallic stem terminating in a coil adapted to bear against the shank of a shoe, and said stem being arched upwardly in the interior of the shell.

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