

Feb. 28, 1939.

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2,149,102

FOOTWEAR PROTECTING DEVICE

Filed March 13, 1936 .

2 Sheets-Sheet 1

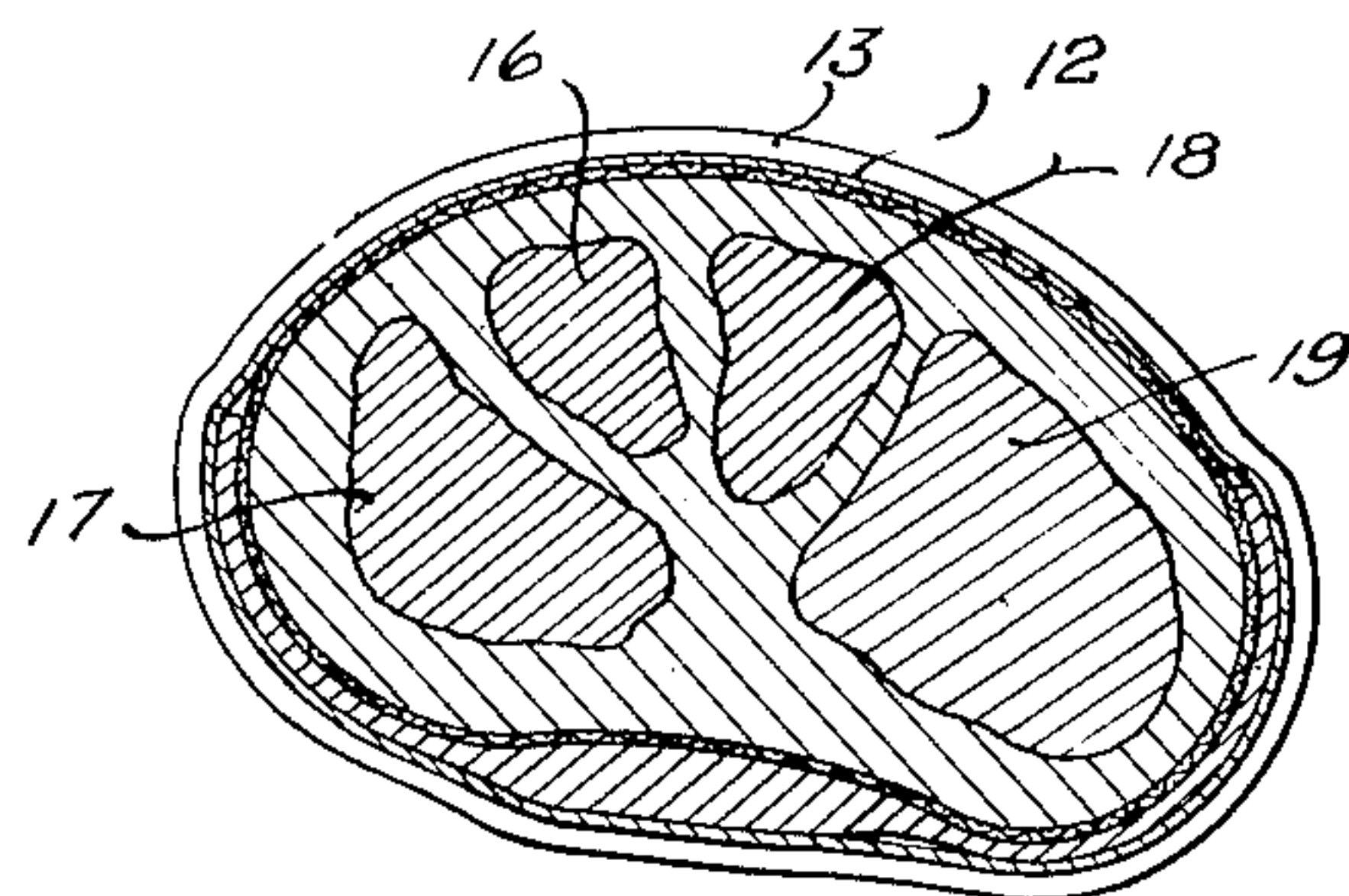
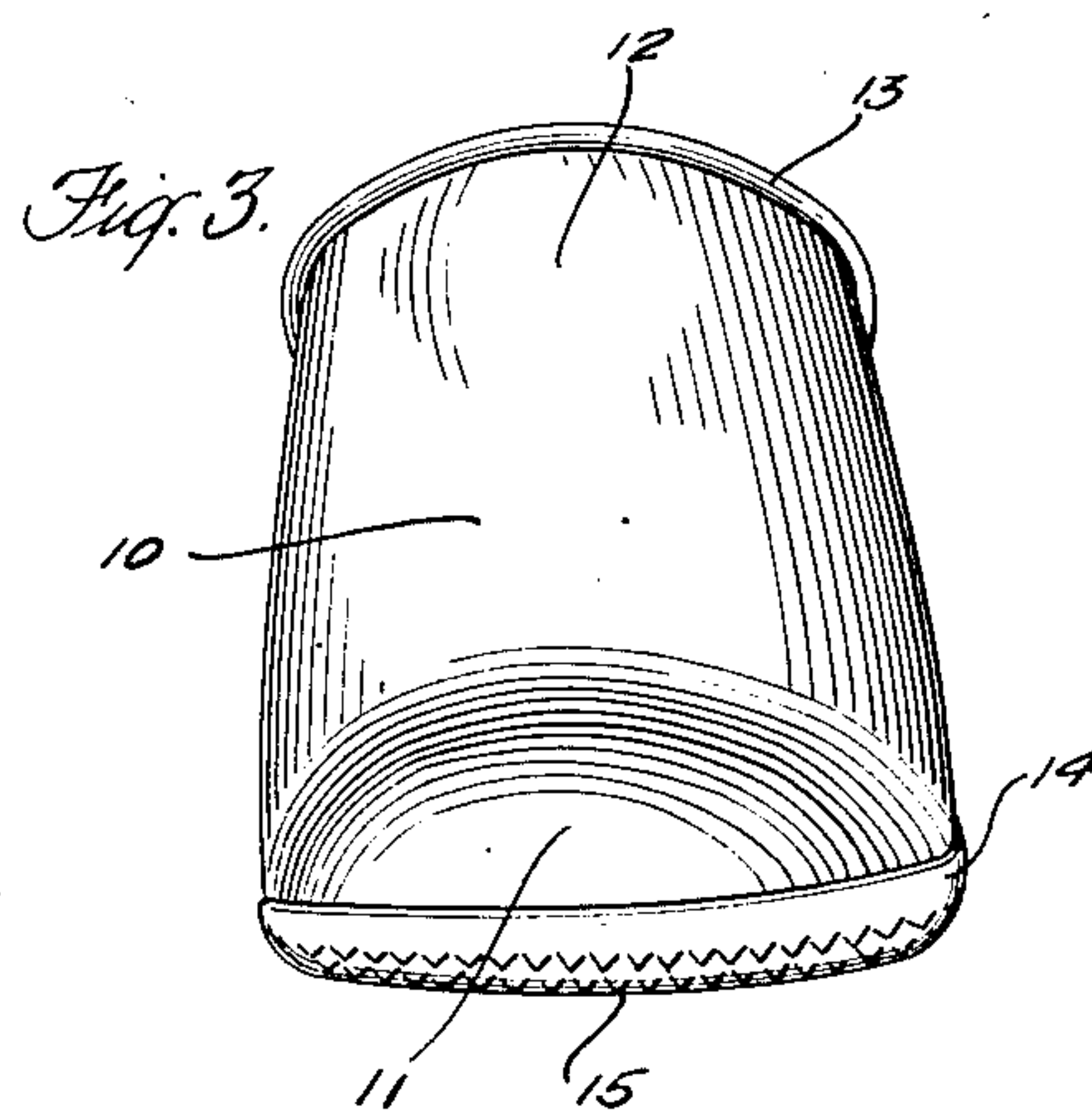
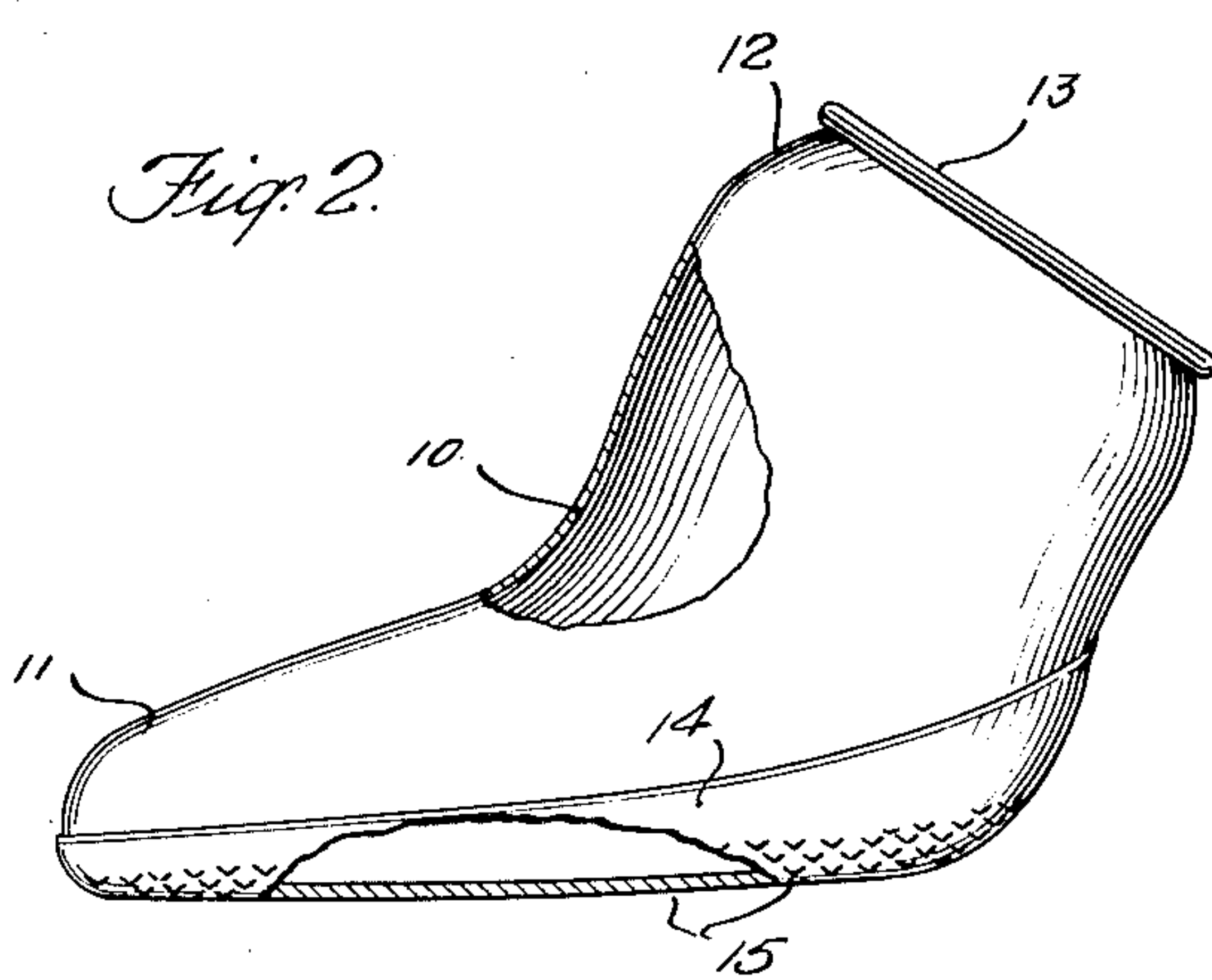
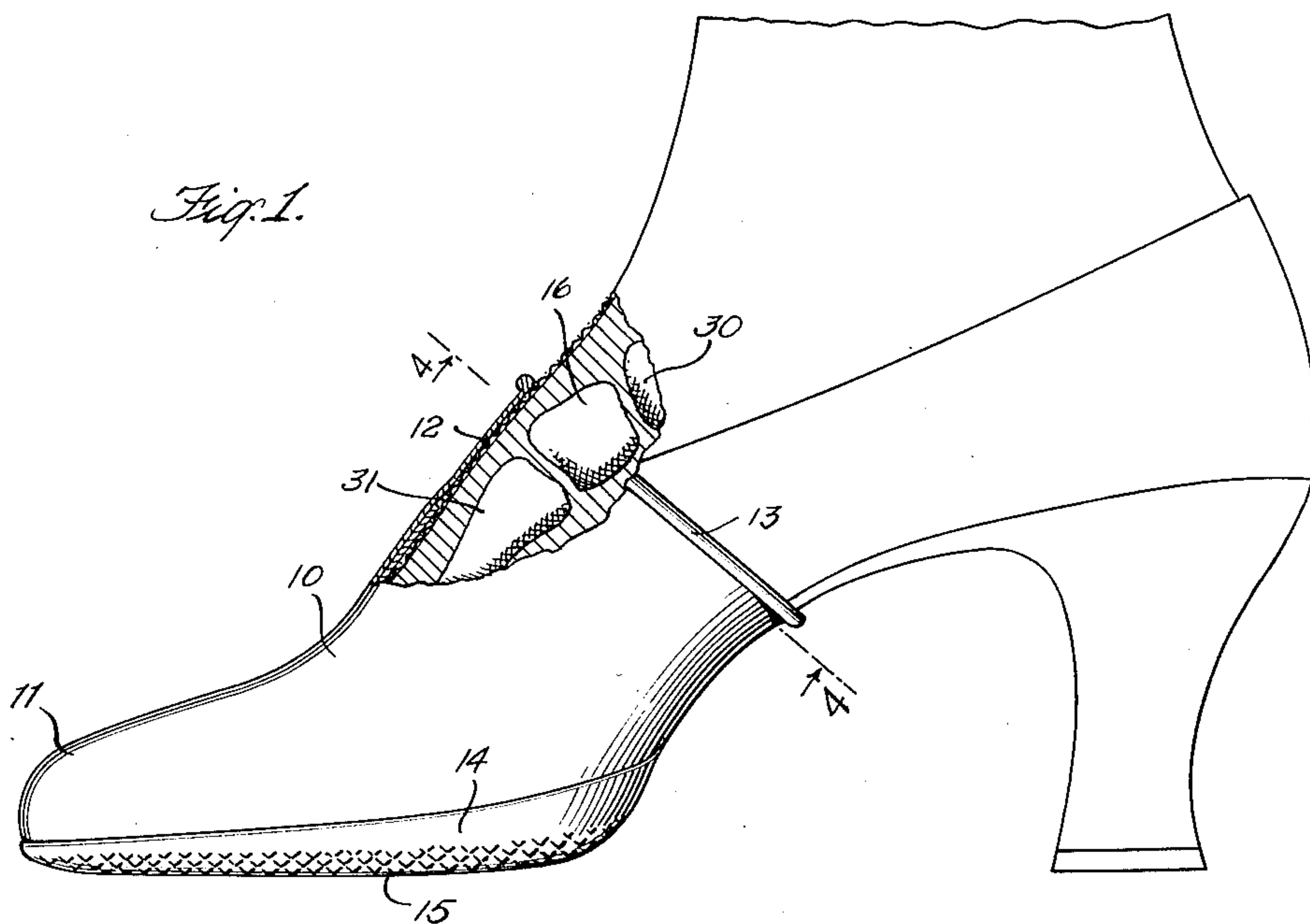


Fig. 4.

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Fig. 5.

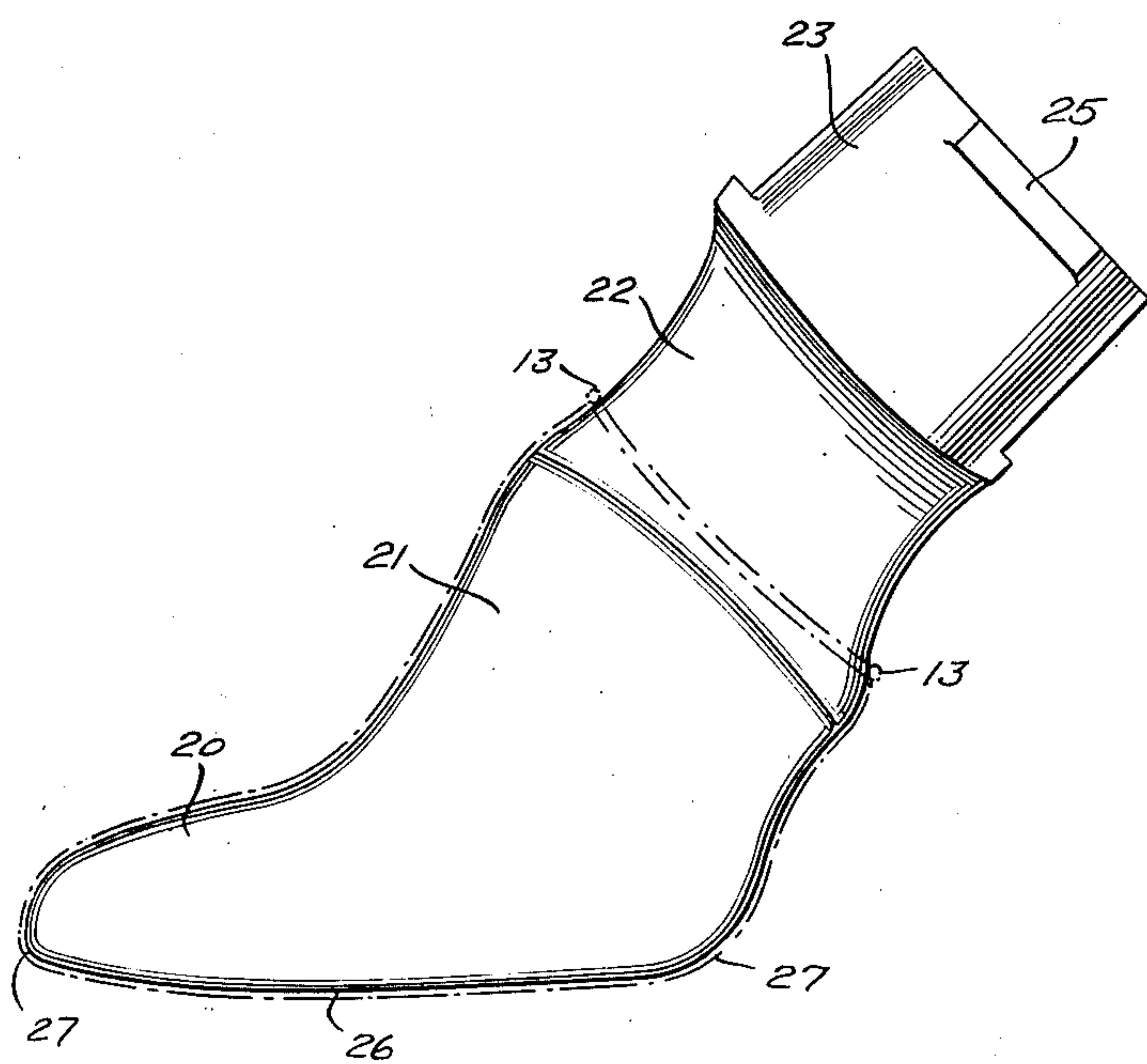
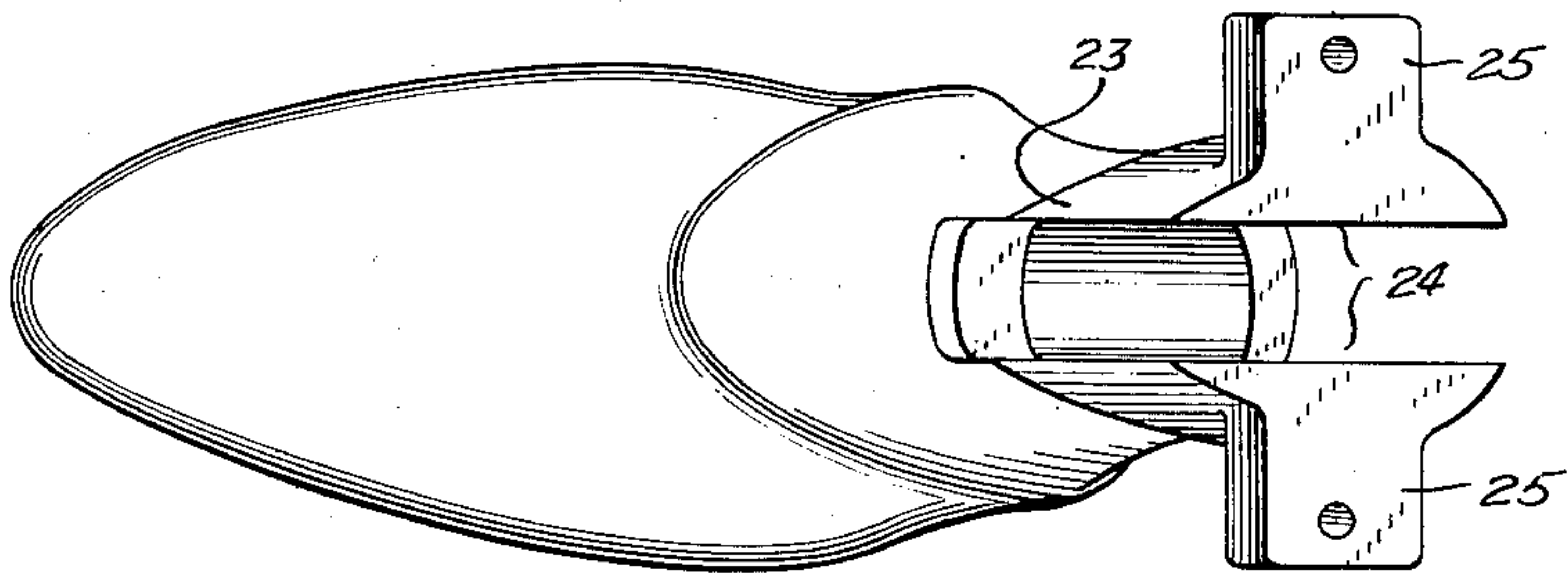


Fig. 6.

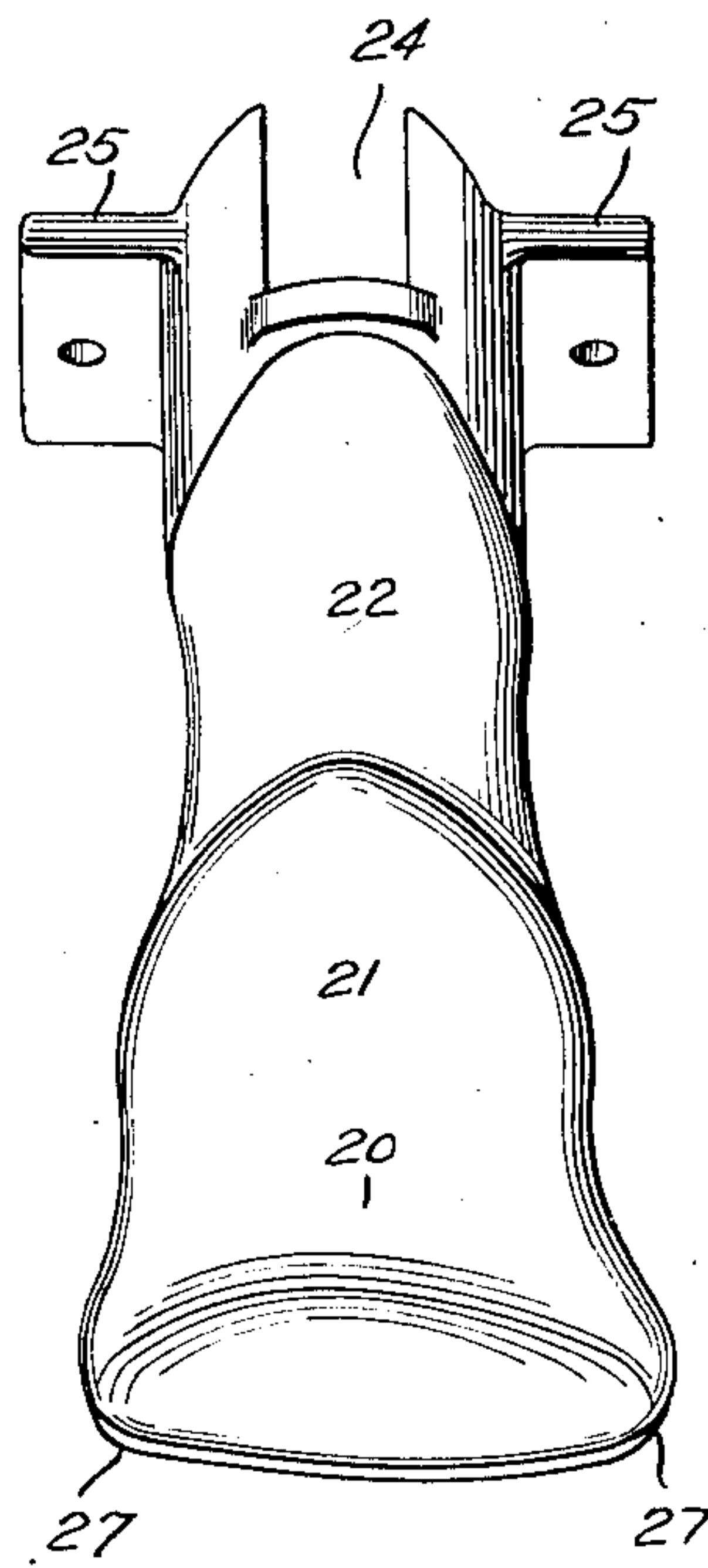


Fig. 7.

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UNITED STATES PATENT OFFICE

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FOOTWEAR PROTECTING DEVICE

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Application March 13, 1936, Serial No. 68,625

2 Claims. (Cl. 36—7.4)

This invention relates to footwear protecting devices and more particularly pertains to overshoes and the like.

The invention provides a novel overshoe of latex which will snugly fit the shoe and foot of the wearer to afford a neat appearance, and is so thin and light in weight, although of adequate durability, that it may be folded, rolled or compressed into such a small space that a pair of the overshoes may be carried in a small pouch, on the person, or in a lady's hand bag.

The invention also provides a novel method of and apparatus for making overshoes.

The invention in all of its aspects, will be understood from the following description when considered in connection with the accompanying drawings forming a part thereof, and in which:

Fig. 1 is a side elevational view with parts in section, of a lady's left foot and shoe having thereon a preferred form of overshoe embodying the invention;

Fig. 2 is a side elevational view, with parts in section, of the overshoe as it appears before being placed on a shoe;

Fig. 3 is a front elevational view;

Fig. 4 is a transverse sectional view taken on line 4—4 of Fig. 1;

Fig. 5 is a top plan view of a preferred form of mold for making overshoes embodying the invention, the form shown being shaped to provide a left foot overshoe;

Fig. 6 is a side elevational view of the mold showing an overshoe thereon in dotted lines; and

Fig. 7 is a front elevational view of the mold.

Like characters of reference refer to the same or similar parts throughout the several views.

The overshoe selected for illustration is a lady's overshoe which envelops the entire forepart only of the foot and shoe of the wearer. The overshoe consists of a one-piece tube 10 of vulcanized latex of uniform thickness excepting the thickened sole portion, which is closed at the forward and lower, or toe end 11, and is open at the upper, arch or instep end 12. The overshoe is shaped when made, to have a form, like or similar to, the forepart of the foot and shoe of the wearer. The upper, arch or instep end portion 12 is provided with an integral reinforcing bead 13 which is formed somewhat smaller than the normal size of the corresponding parts of the foot and shoe of the wearer, as indicated in the drawings. The area embraced by the bead 13 is smaller than the area embraced by an approximately parallel section of the overshoe about an inch or so below the bead, and the arch portion tapers out-

wardly from the bead to the aforesaid section about an inch below the bead. This arrangement ensures that the upper end portion of the overshoe will securely grip the shoe and foot of the wearer and will remain in place secure against slipping or accidental removal. The sole portion 14 of the overshoe is thicker, as indicated more particularly in Fig. 2, than the other portions thereof to provide greater durability, and extends upwardly from the bottom of the overshoe at all sides and terminates in an even and continuous line on the vertically extending portions of the front, sides and rear of the overshoe. The sole extends upwardly at the rear of the overshoe somewhat more than at the other portions thereof. The bottom of the sole portion 15 is roughened, impressed or otherwise formed to provide an anti-skid tread.

The entire overshoe is produced from vulcanized latex without the use of fabric or other reinforcing materials. It has been found that an adequate thickness for the body portion of the overshoe, that is, all portions excepting the sole 14 and the bead 13, is approximately 0.020 inch and for the soles, approximately 0.040 inch. Other thicknesses, either greater or less than those indicated, may be found adequate in some instances. The upper portion 12 of the overshoe is of sufficient length to enclose about half of the instep of the foot of the wearer and about half of the arch of the foot as indicated in Fig. 1. The upper end of the smaller neck portion 12 is so positioned that the bead 13 thereon lies on the foot or shoe of the wearer over the mid-cuneiform, inner and external cuneiform and cuboid bones 16, 17, 18 and 19 respectively, which form a slight protrusion or ridge across the arch of the foot of the wearer, as indicated in Figs. 1 and 4 of the drawings, so that the bead will be positioned just above this ridge to afford a better grip of the overshoe on the foot and shoe. Bones of the foot disposed above and below the mid-cuneiform bone 16 are also shown in Fig. 1 and are designated 30 and 31.

The overshoes are produced by adequate dipping of a suitable mold or form in a bath of liquid latex. A suitable mold for the purpose is illustrated in Figs. 5, 6 and 7 of the drawings. The mold is of one-piece tubular form and is shaped in its lower portion to provide a toe section 20 and a connecting arch section 21, both of which have a configuration like, or similar to, the corresponding parts of the foot and shoe of the wearer. The arch section 21 connects at its upper end to a neck section 22 of smaller transverse

cross-sectional area than the arch portion. The lower and upper portions of the neck section 22 are of gradually tapering configuration which provides a mold surface for this section of approximately hour-glass form. The dimensions of the arch section 21 and the neck section 22 are such that the bead 13 of the finished overshoe will be positioned on the lower portion of the neck section about as indicated in Fig. 6, to provide the contracted upper end portion of the finished overshoe previously described. The upper end of the neck section 22 connects with a supporting section 23 provided with a slot 24 and opposed flanges 25 by means of which the mold may be mounted on a carrying or operating member. The portions 27 of the mold which connect the bottom surface 26 with the sides of the toe portion are rounded as clearly shown in the drawings to provide a smooth curve connecting the bottom and side portions. The mold is preferably made of cast aluminum, but other metals or materials may be employed for the mold, if desired.

The preferred method of making the overshoe herein disclosed, will be described in connection with the making of a single overshoe, but it will be understood, of course, that any desired number of overshoes may be produced simultaneously, depending upon the facilities available. The mold, such as the form shown in Figs. 5, 6 and 7, is first warmed to a suitable temperature, after which it is dipped into a bath of liquid latex compound of suitable composition, until the upper portion of the neck section 22 of the mold is submerged. The exact depth to which the mold is dipped will depend upon the thickness desired for the bead 13, as will presently appear. The mold is thereafter slowly and steadily withdrawn from the latex bath, after which it is inverted and kept in motion in the atmosphere until the liquid latex adhering thereto has set or dried to the extent desired. Just before the latex taken up on the mold at the time of the first dipping is thoroughly dried and while it is still in a damp condition, the mold with the latex from the first dipping, is dipped a second time in the liquid latex bath to the same depth to which it was dipped previously and is permitted to remain in the bath until the desired thickness of latex on the mold is attained. When this point is reached, the mold is slowly and steadily withdrawn after which the latex is set or dried to the desired extent on the mold in the manner heretofore described. While the latex is drying on the mold after the second dip, the top portion of the overshoe adhering to the neck section 22 of the mold is rolled down, by hand or otherwise, to provide the bead 13 at the top of the overshoe. The finished bead should be positioned in substantially the location indicated in Fig. 6 of the drawings, that is to say, above the upper end of the arched portion 21 of the mold and on the neck section 22 of the mold so that the bead and the extreme upper portion of the completed overshoe will encompass a smaller area than the portion of the overshoe about one inch or so below the bead. This arrangement will cause the bead and upper portion of the overshoe to cling to the shoe and foot of the wearer and to snugly fit the same to provide a neat appearance. The thickness of the bead will depend, of course, upon the amount of latex which is rolled into the bead and such amount will depend upon the depth to which the mold is submerged in the liquid latex bath. After the bead is formed and the latex is dried, the mold with the partly formed overshoe

thereon is dipped in the latex bath to provide the increased thickness for the sole of the overshoe. For this purpose, it is preferable to use a machine or mechanism constructed so that the mold and partly formed overshoe will be dipped only to the extent desired to form the sole and so that the upper edge of the portion of the sole which adheres to the vertically extending side portions of the overshoe will be even and present a neat appearance. In forming the sole, the mold and overshoe are permitted to remain in the latex bath until the desired thickness of sole is built up, after which they are withdrawn and set or dried to the desired extent previously described in connection with the first and second dippings. Immediately thereafter, the sole is impressed with a suitable design to provide a non-skid tread for the sole. Thereafter the mold and overshoe is placed on a suitable drying rack preferably in a heating room and permitted to remain therein until all visible moisture has been evaporated. When such visible moisture has been evaporated, the mold and overshoe are placed in an oven and subjected to a temperature of about 145° F. until the overshoe is thoroughly dried. Thereafter the overshoe is subjected to a hot water cure at a temperature between 200 and 205° F. for approximately one half hour. After this cure, the overshoe is again placed in the aforesaid oven and is thoroughly dried and somewhat cooled since the temperature of the oven is below the temperature of the hot water curing bath. At this stage the mold and overshoe thereon are dipped in a talc or soapstone bath to remove the tackiness from the overshoe. Thereafter the overshoe and mold are rinsed in water, after which the overshoe is stripped from the mold and is placed on a drying pin where it is allowed to remain preferably for a period of about twelve hours, so that it will be thoroughly dried. The overshoe is now completed and is ready for inspection and packing.

Suitable pigment of desired color may be mixed with the latex solution to provide any color for the overshoes.

Overshoes embodying the invention are so thin that a pair may be folded and carried in a flat water-proof pouch measuring only 4¾ inches long by 2¾ inches wide. When a pair of the overshoes are inserted in the pouch, the pouch of the size indicated will be approximately only 1¼ inches thick. A pair of these overshoes produced in accordance with the method herein disclosed weighs but one ounce and with a pouch of the character indicated, the total weight is but slightly over an ounce. Nevertheless, the overshoes possess sufficient durability for many wearings due to the thickened sole portion. Additionally, the upper portions of the overshoes are of sufficient durability so that they will not tear upon being placed on or removed from the shoes for which they are intended. The bead at the top of each overshoe provides a reenforcement for this portion and additionally functions to cause the overshoe to firmly grip the shoe and foot of the wearer so that there is no danger of the overshoe slipping off while being worn. The size of the overshoe may be varied as desired, but it has been found that three different sizes are in general sufficient for the trade. These sizes are designated small, medium and large. The shape and the several dimensions of the overshoes may of course be varied as desired.

Since changes may be made in the form of overshoe herein disclosed and in the apparatus and method by which the overshoe is produced

without departing from the principles of the invention, it will be understood that no intention is entertained to limit the invention excepting by the scope of the appended claims.

5 What is claimed is:

1. An overshoe consisting essentially of a continuous, thin envelope of vulcanized latex normally of the general configuration of the forward part only of a shoe and having a fore-portion and an instep portion integral with each other, said fore-portion having a thickened latex sole integral therewith and extending onto the lower part of the instep portion, the instep portion being of generally tubular form with a substantially restricted upper end and joining the top of the fore-portion with a curve of comparatively short radius to thereby facilitate the folding of the instep portion upon the fore-portion, said restricted upper end being smooth throughout and terminating in a rolled bead, the overshoe being of substantially uniform thinness throughout excepting for said sole and rolled bead.

2. An overshoe consisting essentially of a con-

tinuous, thin envelope of vulcanized latex normally of the general configuration of the forward part only of a shoe and having a fore-portion and an instep portion integral with each other, said fore-portion having a thickened latex sole integral therewith and extending upwardly from the bottom of the fore-portion onto the vertically disposed parts of the fore-portion adjacent the bottom thereof, the instep portion being of generally tubular form with a substantially restricted upper end and joining the top of the fore-portion with a curve of comparatively short radius to thereby facilitate the folding of the instep portion upon the fore-portion, the axis of the instep portion being disposed at an angle to the sole of the fore-portion greater than 45° and less than 90°, said restricted upper end being smooth throughout and having an integral reinforcing bead at the upper portion thereof, the overshoe being of substantially uniform thinness throughout excepting for said sole and reinforcing bead.

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