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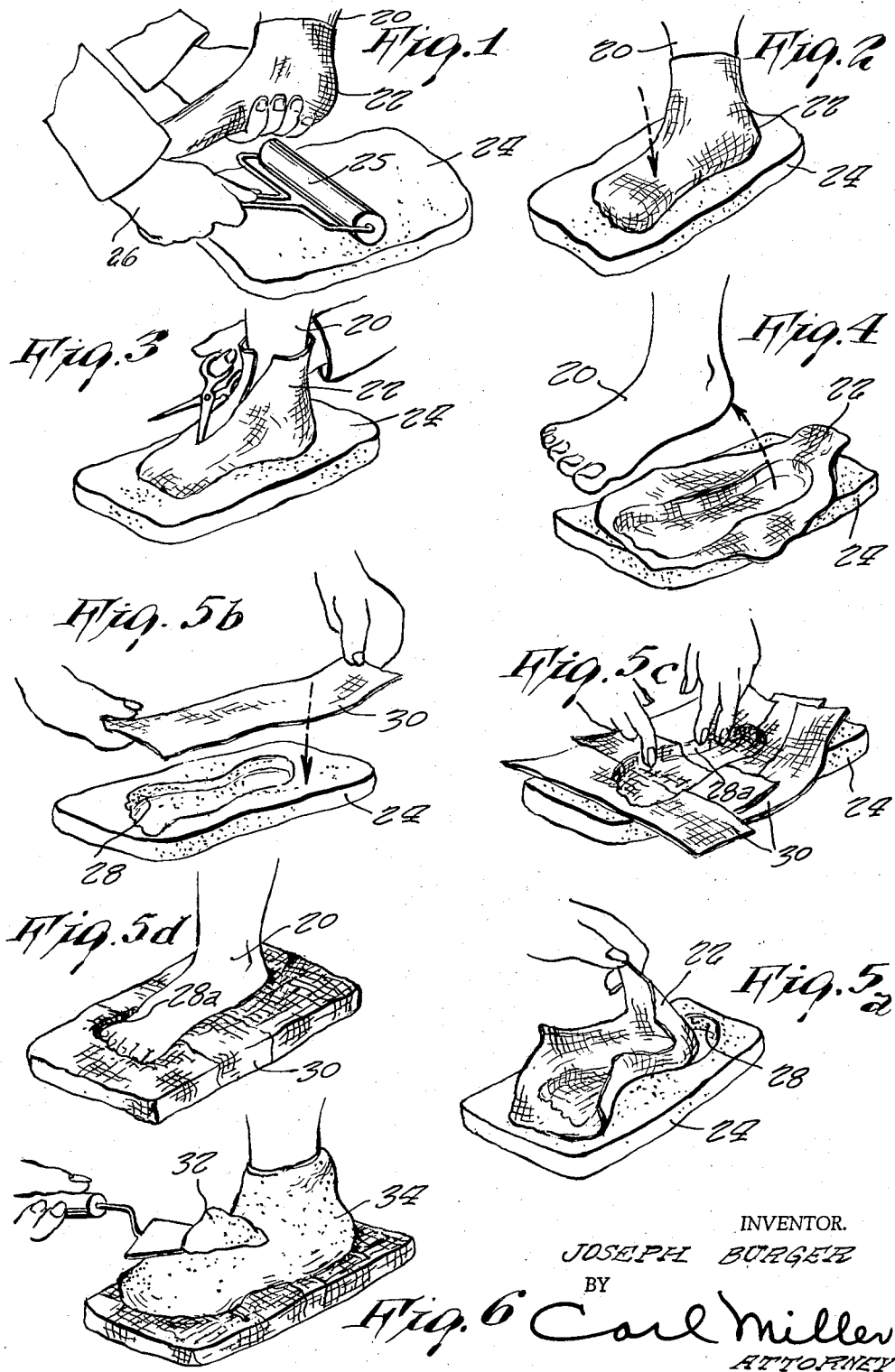
J. BURGER

2,907,067

METHOD OF MAKING A CAST PREPARATORY TO MAKING A SHOE

Filed Aug. 19, 1957

3 Sheets-Sheet 1



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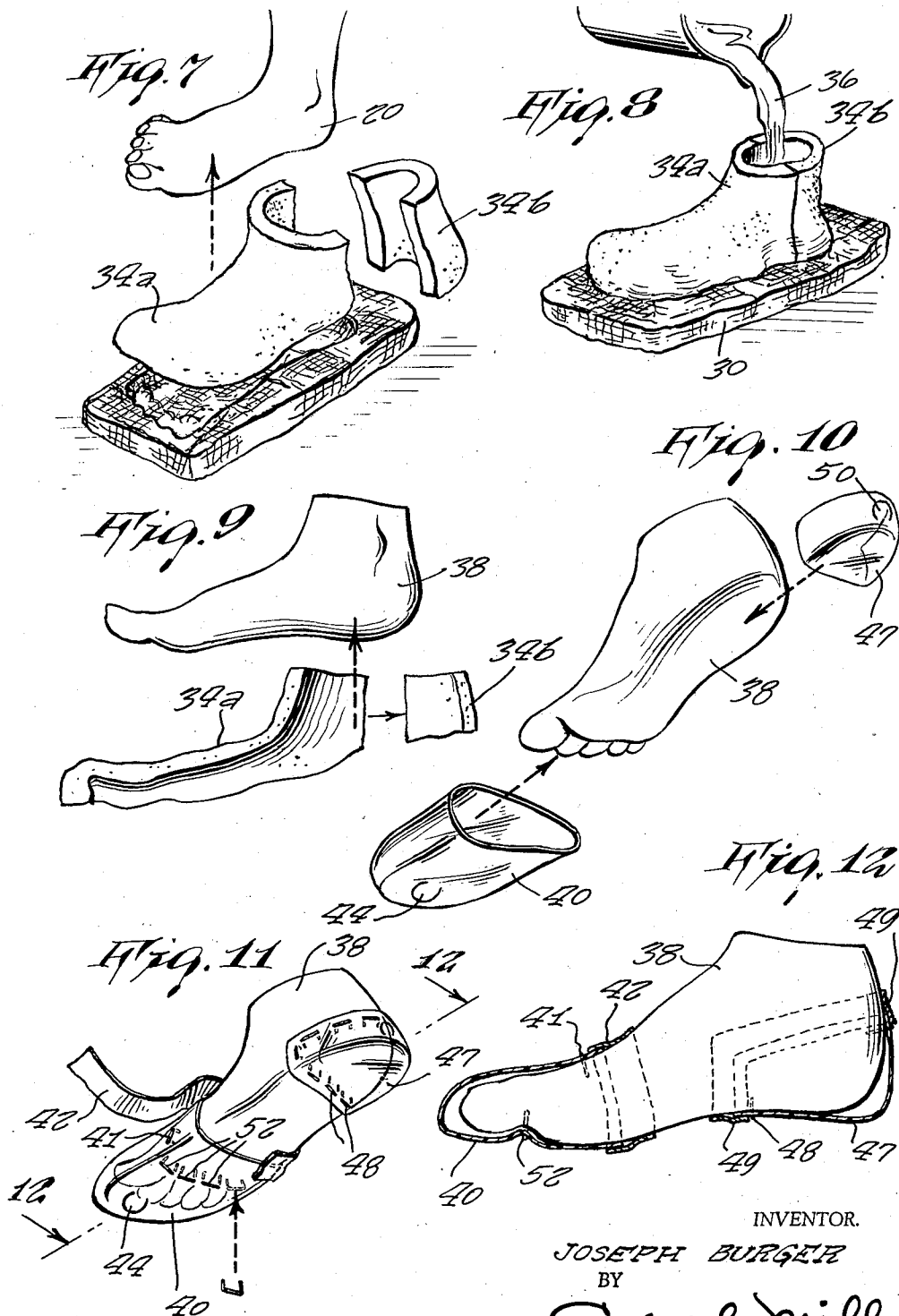
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METHOD OF MAKING A CAST PREPARATORY TO MAKING A SHOE

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3 Sheets-Sheet 2



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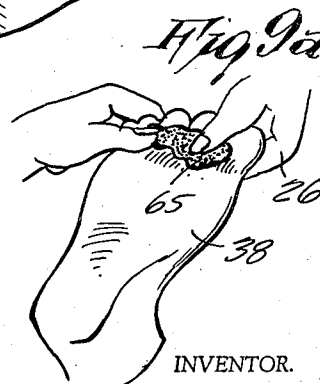
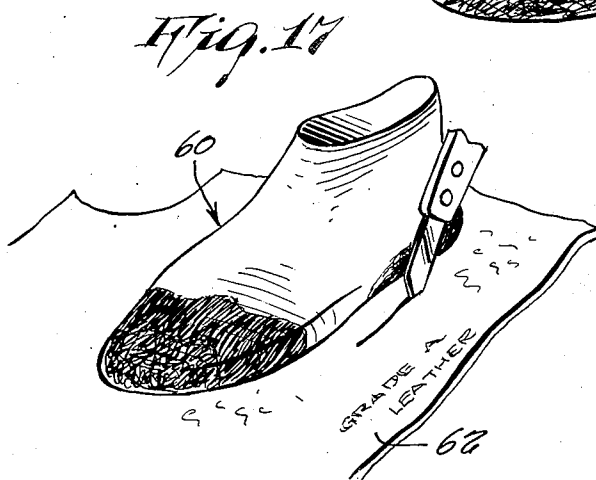
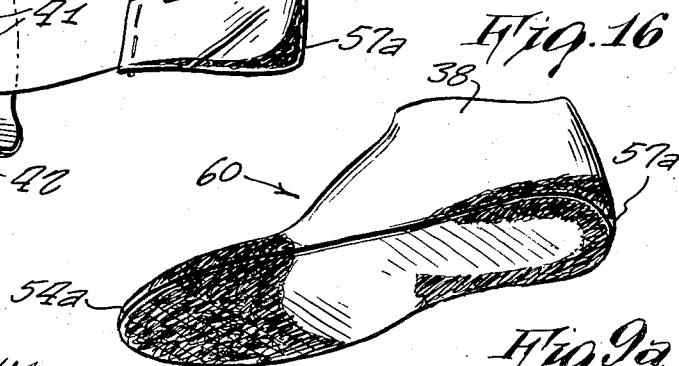
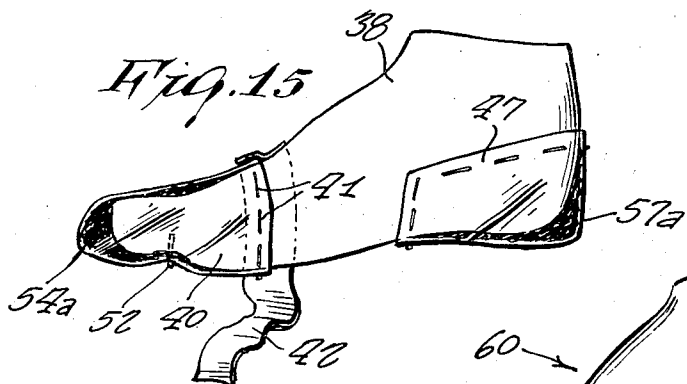
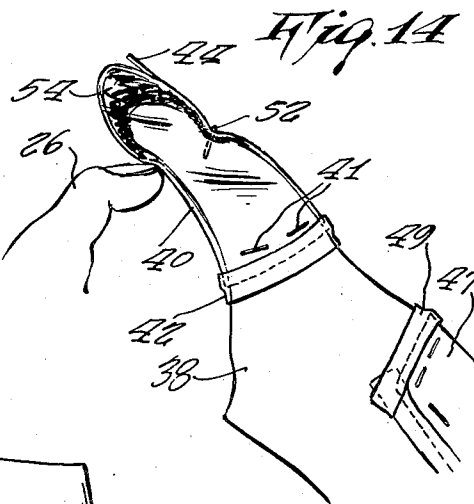
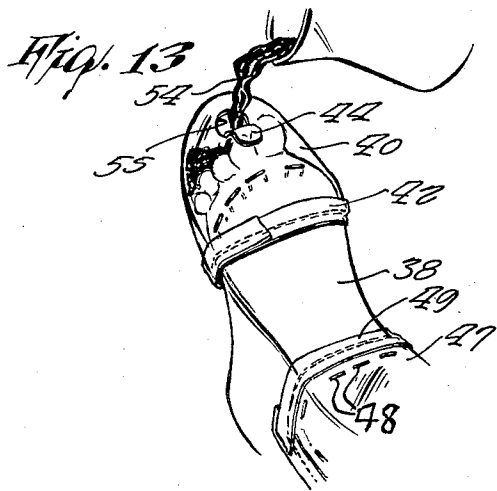
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METHOD OF MAKING A CAST PREPARATORY TO MAKING A SHOE

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3 Sheets-Sheet 3



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METHOD OF MAKING A CAST PREPARATORY TO MAKING A SHOE

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7 Claims. (Cl. 18—5.1)

This invention relates to making and preparing a cast of the foot in such a way that the shoe made over it will have a conventional external appearance at the toe and heel and yet be anatomically correct inside so that it may be worn in comfort.

An object of the present invention is to enable the technician or operator to make a cast of the subject foot in a definite weight bearing position and to maintain and control the position of the foot during the casting period so as to achieve the arial contours of the foot in the casts rather than the flattened contours that would ordinarily occur when making a cast in a weight bearing position.

Another object of the present invention is to provide a method for taking casts at different angles and elevation bilaterally and simultaneously while the subject is standing as is ordinarily required in the case of an individual that has one leg shorter than the other.

A further object of the present invention is to provide a method for taking the casts of the feet in the positions that they are to assume in the finished shoe.

A still further object of the present invention is to provide a method for taking a cast of a foot in a yielding material so that the completed cast has the plantar curves that are a duplicate of those found within the shoe made from the cast so provided.

Still another object of the present invention is to provide a method of making a cast of a foot in which the operator can restrict the motion of the foot during the casting operation and can decide the particular position to be cast, as for example in pronated feet the casts of the feet should ordinarily be taken in an improved position, namely supination.

An additional object of the present invention is to provide a method for taking a plaster cast of the subject while the subject is standing and within a minimum of time so as to enable the completion of that cast in either the sitting or standing position whereby the effort required to remain still does not become burdensome.

Still a further object of the present invention is to provide for the elongation within the finished shoe that is necessary for the forward thrust and slippage of the toe and heel as the feet are raised in walking.

Another object is to provide means for adding to the toe and heel portion of the cast so as to impart a conventional appearance to the finished shoe when made from these casts while not disturbing the anatomy of the remainder of the cast so as to produce an uncompromised contour of the feet within the shoes.

All of the foregoing and still further objects and advantages of this invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing, wherein:

Figures 1 to 4 are perspective views illustrating preliminary steps in the practice of the method of the present invention;

Figures 5a, b, c, d illustrate sequential operations during an intermediate step;

Figures 6 to 9 are perspective views showing still fur-

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ther steps followed in accordance with the present invention in producing the partially finished casting;

Figure 9a is a perspective view illustrating a modified form of construction;

5 Figure 10 is an exploded perspective view showing the manner in which the casting is prepared for final forming by means of toe and heel shells made in accordance with the present invention;

Figure 11 is a perspective view showing the shells in proper position;

10 Figure 12 is a longitudinal cross sectional view taken along line 12—12 of Figure 11;

Figures 13 to 15 are perspective views showing the manner in which the final forming of the casting takes place;

15 Figure 16 is a perspective view of a completely finished casting made in accordance with the present invention; and

20 Figure 17 is a perspective view illustrating one manner in which the casting is used to manufacture a finished shoe.

Referring now to the drawing, and more particularly to Figures 1 to 4 thereof, the initial steps of the present method are illustrated wherein the foot 20 for which the finished shoe is to be made, is first covered with a fabric stocking or stockinette 22. A pad of yieldable clay 24 is prepared by the operator 26 by rolling with a roller 25. Following this, the covered foot 20 is depressed into the pad 24 and while it is embedded therein, as shown in Figure 3, the stocking 22 is cut open at the top so that the foot 20 may be removed therefrom without disturbing the contours impressed through the stocking.

30 The fabric 22 may then be conveniently removed to expose the mold cavity 28 which is an exact reproduction of the covered foot. As is shown in Figures 5b and 5c, strips of plaster gauze 30 are then placed within the cavity 28 to define a thickness corresponding substantially to the thickness of the stocking 22 originally worn by the subject so that the true size and shape of the foot is accurately reproduced. This modified cavity 28a will then snugly and properly receive the foot 20 which is then placed therein, as shown in Figure 5d. With the foot in this position, plaster 32 is applied to the upper portions of the foot and the material permitted to set, to provide a casting 34 of the upper portions of the foot immediately adjacent to the impression 28a made by the lower part of the foot in the fabric covered clay pad.

40 After the plaster has set, the cast 34 is fractured adjacent to the ankle so as to provide a forward portion 34a and a rear portion 34b to permit the removal of the foot 20 therefrom. These portions 34a, b are then reassembled with the clay base, as shown in Figure 8, and plaster 36 poured into the mold cavity. After this material has set, the partially finished casting 38a which is an exact reproduction of the subject foot may be removed therefrom for finishing in accordance with additional steps of the present method.

50 While an exact reproduction of the subject foot has been made in the desired position, it is also necessary to provide for sufficient room within the shoe to permit the natural forward thrust and slippage during the movement of the feet while walking. In accordance with the present invention, a flexible, preferably transparent or translucent toe shell 40 of conventional exterior configuration is applied to the toe portion of the casting 38 and secured in place thereon by means of staples 41 and tape 42 which will prevent liquid that is inserted therein from oozing outwardly along the edges thereof. As is more clearly shown in Figures 10 and 11, the toe shell is provided with a flap 44 which may be manually rotated to provide access to the interior of the shell 40. A heel

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shell 47 is also provided which is secured to the heel portion of the casting 38 by means of staples 48 and similar tape 49. This shell 47 also is provided with an access opening flap 50 for similar reasons. At this point, it is necessary to provide for the grasp of the toes. As is shown in Figure 12, this can be accomplished by the application of additional staples 52 to that portion of the casting. On the other hand, with reference to Figure 9a, such can also be provided by inserting a clay filler 65 into the deep crevices formed by the grasp of the toes on the casting 38 prior to placing the toe shell 40 in place.

Referring now to Figures 13 to 17, a plastic material is poured into the access openings formed by the flaps 44, 50 in the toe and heel shells respectively, and the material is worked by hand, as shown by Figure 14, before it sets so as to completely fill the cavity between the respective shells and the casting as is visible through the transparent or translucent shell. Any air bubbles in the mixture are readily discharged through the access openings of the shells so that a smooth and continuous surface may be provided. After this material has set, the additional portions 54a, 57a formed thereby define with the main casting 38 the exact size and shape of the shoe interior to be constructed therefrom. This new casting unit 60 with the toe and heel shell removed may then be used as an exact pattern from which the leather 62 may be cut, in a manner to make the shoe.

The advantages of the present invention may now be recognized. Normally, the foot is cast in plaster of Paris in its fluid state and the operator has a difficult time in controlling the subject foot in a chosen position or elevation in the fluid plastic, so that such casting is inaccurate; more often than not each foot will result in a different cast, so that bi-laterally they are not the same. By using the foregoing method in accordance with the present invention, the operator can not only choose each position for each foot, but he can match them up as well, because by impacting the clay pad beneath the toes, the heels and the arches, he can determine and control the impressions in the clay pads for both feet and he is able to match them up since they are side by side. Another advantage is that by lining the clay impression with wet plaster gauze and allowed to dry, the operator will obtain a plaster of Paris hard shell surface and cavity that will not distort easily, as would be in the case in the event that wet plaster is poured upon the clay directly since the clay would water out.

While this invention has been described with particular reference to the construction shown in the drawing, it is to be understood that such is not to be construed as imparting limitations upon the invention, which is best defined by the claims appended hereto.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A method of making a casting of a human foot comprising the steps of: covering the foot with a layer of fabric, making an impression of the sole of the covered foot in a yieldable clay pad, lining the impression in the

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pad with wet plaster strips substantially equal in thickness to the fabric layer on the foot to reduce the size of the cavity to the identical size and shape of the foot with the fabric layer removed, removing said fabric layer from said foot and placing the bare foot within said reduced cavity, making a plaster mold of the portions of the foot outside of said reduced cavity by applying plaster to those portions of the foot while said foot is in said reduced cavity, removing said plaster mold from said portions of said foot and assembling it with said pad to define a single mold cavity corresponding to the exact shape of the human foot, introducing plaster into said reduced cavity defined by said assembled mold, treating said casting after it has set to allow for normal toe and heel movement within the footwear to be manufactured from said casting by securing a flexible transparent shell in enveloping and spaced relationship with each of the toe and heel portions of said casting.

2. The method according to claim 1, comprising the further step of filling the interior of said shell with a mold material to enlarge said casting to the size of said combined casting and shells.

3. A method as set forth in claim 2, comprising the further step of forming the grasp of the toes in the finished casting.

4. The method according to claim 3, wherein said grasp is formed by deforming the toe shell in the vicinity thereof to prevent the build up of said mold material therein.

5. The method as set forth in claim 3, wherein said grasp is formed by applying an insert of dissimilar material to the crevice formed by the grasp of the toes preparatory to applying said toe shell thereto.

6. A shoe making cast comprising a yieldable mold, plaster gauze lining said mold having plantar contours imparted to the mold by at least the partial weight bearing of the subject's operator positioned foot, removable flexible toe and heel shells secured to the respective portions of a cast, and plastic material filling the space between said shells and said cast to enlarge said respective portions of said cast a predetermined amount.

7. An individual shell for one of the toe and heel portions of a casting of a human foot comprising a flexible transparent casing open at one end for partially receiving said casting therein, and the opposite end of said shell having a movable tab defining an access opening for pouring a mold material therein, said tab normally forming a continuous surface with said casing and being selectively displaceable outwardly thereof.

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