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Patented Sept. 30, 1902.

H. H. BECKWITH.

BOX TOE.

(Application filed Nov. 29, 1901.)

(No Model.)

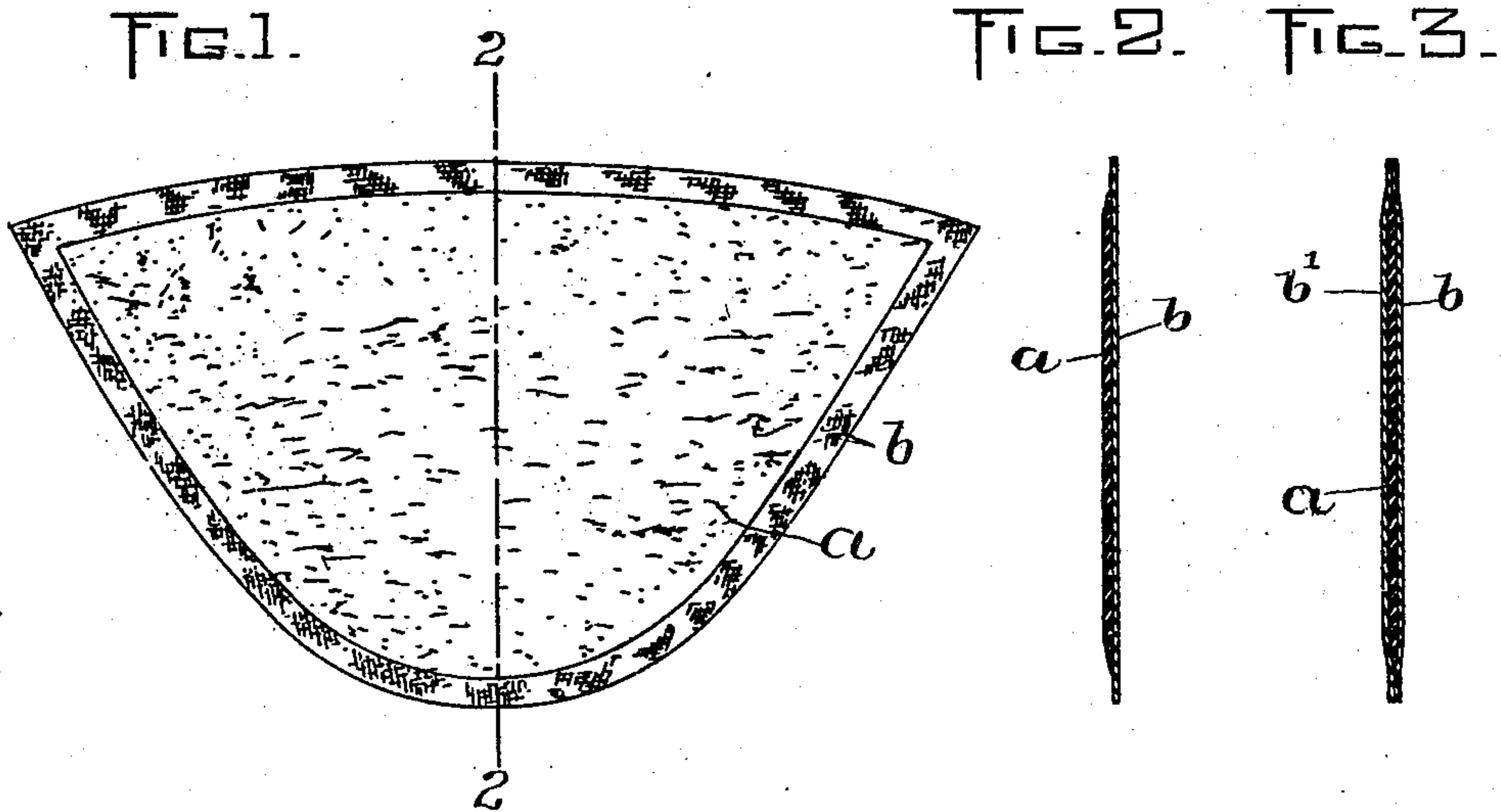
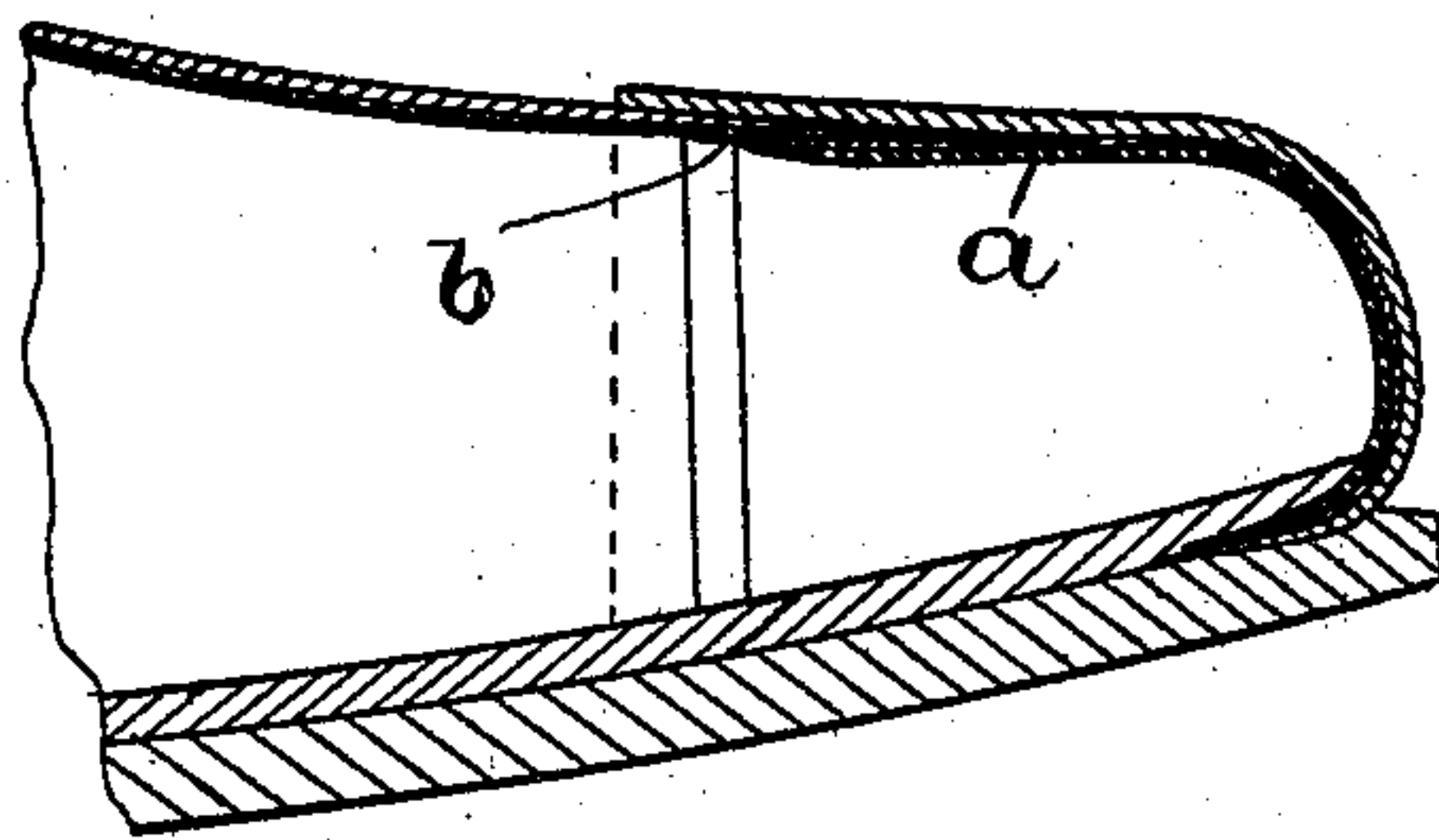


FIG. 4.



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BOX-TOE.

SPECIFICATION forming part of Letters Patent No. 710,239, dated September 30, 1902.

Application filed November 29, 1901. Serial No. 84,076. (No model.)

To all whom it may concern:

Be it known that I, HARRY H. BECKWITH, of Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Box-Toes, of which the following is a specification.

This invention relates to box-toes for boots and shoes such as are commonly supplied in the shape of flat blanks of the proper form adapted to be incorporated into the boot or shoe by the lasting operation.

The invention has for its object to produce a box-toe or box-toe blank adapted when lasted into a boot or shoe to conform perfectly to the shape of the toe portion of the last and to retain the shape imparted to it by the lasting operation without being affected or losing its shape by the action of moisture and which shall be practically resilient or springy, so that if indented by external pressure it will assume its normal shape by its own resilience.

The invention consists in a box-toe comprising a layer of cork and one or more confining layers of greater tensile strength than the cork, such as textile fabric or thin leather, the confining layer when only one is used being secured to the outer surface of the cork layer, so that when the box-toe is lasted in the confining layer will prevent the cork from breaking or cracking during the lasting operation. When two confining layers are employed, one is to be secured to the outer surface and the other to the inner surface of the cork layer.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side view of a box-toe blank embodying my invention. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a section similar to Fig. 2, showing two confining layers. Fig. 4 is a sectional view of the toe portion of a boot or shoe in which there is incorporated a box-toe embodying my invention.

The same reference characters indicate the same parts in all the figures.

In carrying out my invention I make a box-toe blank, preferably of the shape shown in Fig. 1, by assembling a layer *a* of cork and a confining layer *b* of a suitable flexible material having greater tensile strength than cork, the layer *b* being, for example, canvas, buck-

ram, or other textile fabric, or a thin leather skiving, said layers being cemented or otherwise firmly secured together. The confining layer *b* is secured to the outer surface of the cork layer *a* and constitutes the external surface of the box-toe when the latter is lasted, as shown in Fig. 4, the said layer *b* bearing against the inner surface of the toe portion of the upper.

In Fig. 3 I show an inner layer *b'*, cemented to the inner surface of the cork layer *a*. I have here shown the confining layer or layers of greater area than the cork layer. I do not limit myself to this relative proportion of the layers, as the cork layer may, if desired, be of the same area as the confining layer or layers. The confining layer when made of canvas or other textile fabric is preferably saturated with sizing, which enables the blank to be made extremely flexible by wetting the confining layer before the molding or lasting operation. The subsequent drying of the sizing helps to retain the form imparted by the lasting operation. A box-toe thus constructed is adapted to be readily lasted with the upper of a boot or shoe and when lasted affords the toe portion of the upper the desired support.

The improved box-toe is proof against any moisture that may find its way through the upper, so that its shape is not impaired by any wetting to which the boot or shoe may be subjected. The elasticity of the cork layer enables the box-toe when indented by external pressure to resume its original shape when the pressure is removed. The cork is more durable and retains its elasticity longer than leather or canvas, which materials are largely employed in box-toes. A boot or shoe having a box-toe comprising a cork layer is, moreover, more comfortable to the foot than one the box-toe of which is composed of either leather, canvas, or rubber.

The cork layer is preferably made from so-called "composition" cork—that is to say, pieces of cork pressed together and held by a suitable adhesive, such as glue. Composition cork is a well-known article of manufacture and is usually made in blocks which may be sliced into thin sheets or veneers suitable for the layer *a*. The layer thus produced is cheaper and for this purpose more desirable

than a layer of natural cork cut from a slab of cork in its natural condition or as it comes from the tree, because it is tougher and more elastic, and therefore much less liable to crack 5 or break when bent or molded to the shape shown in Fig. 4. A thin sheet of composition cork is also more dense than a thin sheet of natural cork and is therefore more nearly waterproof. This cork layer is adapted to be 10 skived as readily as leather, and in practice I reduce the margin of the blank by skiving the cork layer after it has been secured to a confining layer.

I may employ a cork layer which is composed in part of matter other than cork—as, 15 for example, a mixture of about sixty per cent. of cork and about forty per cent. of linseed-oil. Any composition in which cork predominates may be used without departing 20 from the spirit of my invention.

The term “cork” as used in the following claims is intended to refer either to natural cork or to any suitable composition in which cork predominates.

25 Cork is a better non-conductor of heat, cold, and moisture than any material heretofore used in a box-toe, and this quality, together with its elasticity, which enables it to be molded without breaking or cracking, to re- 30 tain its molded form, and to return thereto after being indented or pressed out of shape, makes my invention particularly desirable.

I am aware that it has been proposed to make a box-toe having a layer of vulcanized 35 rubber. Cork is, however, more desirable in this relation than rubber, because it is adapted, particularly when combined with a sized confining layer of fabric, to conform more accurately than rubber to the shape of the toe 40 portion of the upper when the blank in a moistened condition is placed upon and pressed closely against the said toe portion during the lasting operation.

I find that a cork and fabric box-toe retains 45 the shape of the last with absolute fidelity and, unlike rubber, has no tendency to spring away from or lose the shape imparted to it by the last. This result is due in part to the moldable nature of the cork and fabric structure when it is in a moist condition and in 50 part to the fact that the cork has not a sufficient tendency to spring away from the shape which it receives from the last to cause it to overcome the holding force of the sized confining layer when the latter has been dried 55 stiff.

Another advantage of cork over rubber is the fact that it can be skived and otherwise 60 formed by ordinary leather-cutting machinery, so that its employment does not increase the expense of manufacture, but, on the other hand, decreases such expense, because the

composition cork costs less than leather. Rubber, on the other hand, cannot be advantageously skived by a leather-skiving machine, so that a rubber layer reduced to a thin 65 edge at its margin would have to be molded before vulcanization, thus involving much more expense in time and labor.

I find that when a layer of cork backed by 70 a layer of fabric is molded into an approximately concavo-convex form, like that of a box-toe, the curvature imparted to the cork layer by the operation of conforming it to the toe portion of a last causes the compression 75 of the inner portion of the thickness of the cork layer, so that the crevices that may exist in the cork are closed at the inner surface of the cork layer, and the resilience of the cork is increased. This result is due to the 80 fact that the outer portion of the cork is prevented by the cloth layer from stretching and cracking, so that the reduction of the area of the inner surface of the molded box-toe results in the compression of the inner portion 85 of the cork.

The closing of the crevices in the cork makes the box-toe impervious to water, while the increased resilience due to the compression of the inner portion of the cork layer enables 90 the box-toe when in use to spring outwardly after the removal of an indenting pressure.

I claim—

1. As an article of manufacture, a moldable box-toe blank comprising a layer of cork 95 skived at its margin, and a confining layer of fabric secured to the outer surface of the cork layer, whereby when the blank is molded on the toe portion of a last, the outer portion of the cork layer is prevented from cracking and 100 its inner portion is compressed to close the crevices in the cork layer and increase its resilience, so that the molded box-toe is rendered impervious to water and is adapted to spring outwardly after receiving an indent- 105 ing pressure.

2. A moldable box-toe blank comprising a layer of cork and a confining layer of fabric saturated with a sizing composition and secured to the outer surface of the cork layer, 110 the cloth layer being adapted to prevent the outer portion of the cork layer from cracking and to cause the compression of the inner portion of the cork layer, while the sizing composition enables the molded box-toe as a 115 whole to permanently retain the shape of the toe portion of a last.

In testimony whereof I have affixed my signature in presence of two witnesses.

HARRY H. BECKWITH.

Witnesses:

W. S. HAMM,
C. F. BROWN.