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BOX TOE STIFFENER

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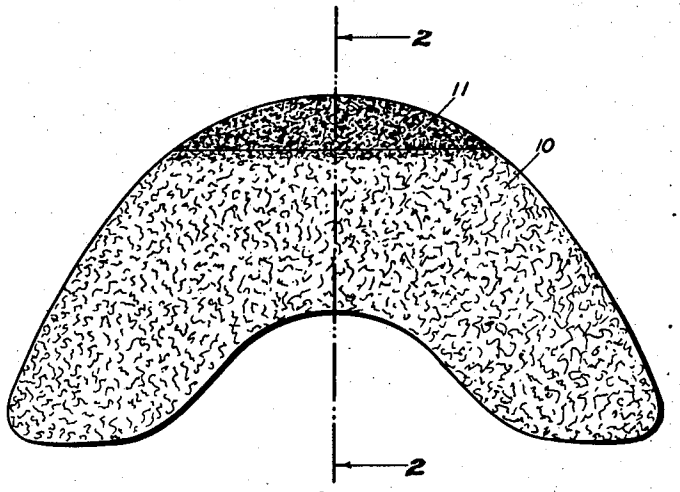


Fig. 1

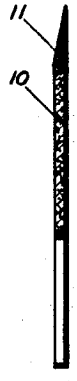


Fig. 2

INVENTORS

Walter H. Heaton & William J. Vaccaro.

BY

Kenway & Witter

Attys.

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BOX TOE STIFFENER

Walter H. Heaton, Franklin, Mass., and William J. Vaccaro, Springvale, Maine, assignors to Beckwith Manufacturing Company, Dover, N. H., a corporation of New Hampshire

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4 Claims. (Cl. 36—77)

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This invention comprises a new and improved box toe stiffener of the thermoplastic type and is characterized by having a tip portion of limited area which is non-adhesive and will not adhere to other parts of the upper during the shoe-making process.

It is customary in bed-lasting shoes having flat insoles, as distinguished from the ribbed insoles of welt shoes, for the operator first to wipe the assembled plies of the toe portion of the upper over the insole once or twice to preform the toe of the shoe. Then he retracts the wipers and turns upwardly the plies of the upper with his thumb, separating the box toe doubler and lining—all three of these plies being in laminar engagement at this stage of the shoemaking process. He then trims away a portion of this material at the toe end of the upper so that upon resuming toe wiping there will be less bulk of upper material upon the toe end of the insole. In such conventional shoes as are fitted with a doubler, which is a fabric ply located between the box toe and the leather, this practice is easily carried out and offers the operator no problem since the doubler prevents adhesion of the box toe to the flesh surface of the outer or leather integument of the upper. However, since skeleton constructions are popular, many shoes are today made without doublers and in that case the box toe lies in direct contact with the flesh face of the upper leather. Under these conditions the box toe adheres to the upper after the primary wiping by the operator and separation for the toe trimming step becomes difficult, causing loss of time, imperfect work and annoyance to the operator.

The present invention contemplates a thermoplastic box toe stiffener coated or otherwise provided with an adhesive retarding or preventing material throughout its tip area; for example, in a segment at the tip of the stiffener approximately ½" in width at its widest point. The uncoated or untreated area of the box toe stiffener will remain adhesive in the lasting operation, but the treated tip portion will not adhere to the upper leather during the primary wiping and consequently the operator can easily and expediently prepare the toe for trimming.

These and other features of our invention will be best understood and appreciated from the following description of a preferred embodiment thereof, selected for purposes of illustration and shown in the accompanying drawing, in which—

Fig. 1 is a plan view of a stiffener, and

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

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The present invention may be usefully embodied in any box toe stiffener which has the property of being rendered pliable at a moderate heat, which sets readily after being molded and is sufficiently stiff and resilient to maintain the original shape of the shoe under all usual conditions of heat and moisture in wear.

By way of example the stiffener may comprise a body of fibrous material, such as wool felt, or its equivalent, which may be readily saturated or impregnated with the stiffening compound. That compound may comprise resin, wax, asphaltum, rubber or other hydrocarbon blended to have a softening point which will permit the impregnated body to become soft, adhesive and easily molded at a moderate temperature—say 160° to 210° F.

After the sheet is impregnated with the stiffening compound and has cooled and hardened, it is cut into blanks of the desired shapes and sizes, and if desired one or more edges may be skived or otherwise reduced in thickness.

The blank 10 of Fig. 1 is of the character described and of a shape widely used in shoe manufacturing at the present time. Its forward edge is convex in outline and its rear edge has a compound curvature including a concave central portion. The thermoplastic impregnating compound, in this illustrative case, may comprise:

	Pounds
Rosin	4,400
Copal	700
Hydrated lime	115
Hard wax, montan or candelilla	1,000
China-wood oil	150

An alternative formula for suitable thermoplastic compound is as follows:

	Parts
Rosin	50
Limed rosin	15
Rubber scrap	10
Stearic resin	5
Hard wax	20

Having prepared the stiffener blank, which as a whole is thermoplastic and has latent adhesive properties, we now proceed to coat a limited portion of the tip area, for example the segment 11, with a heat resistant compound which is permanently non-adhesive. This may be readily effected by dipping the toe end of each blank into, or brushing it with, a solution of silicate of soda and a filler or extender of inert powder. One suitable compound may be made by mixing 5 gals. of silicate of soda with 100 lbs. of fine clay,

and then diluting the mixture with water until it forms 50 gals. Instead of fine clay we may employ bentonite, infusorial earth, or any other inert pigment. The compound thus formed is of low viscosity and when dried forms a very thin film on the treated surfaces of the stiffener and to some extent fills the interstices which exist in its fibrous surface.

Instead of a silicate base mixture we may employ Celluloid ethyl cellulose, cellulose acetate, carboxymethyl cellulose, polyvinyl alcohol, or other solution that will deposit upon the fibrous blank a permanently non-adhesive film. The non-adhesive film may be applied to one or to both surfaces of the stiffener, it being essential only that the surface deposited next to the leather integument of the upper be thus coated.

The stiffener of our invention is employed exactly as stiffeners heretofore used in the conventional manufacture of shoes. When the toe end of the upper is heated preparatory to the pulling-over or toe lasting operations, the blank as a whole becomes plastic and easily moldable. It also becomes adhesive throughout its entire area, except for the coated tip portion which has been protected by the permanently non-adhesive compound and which, therefore, exhibits no tendency to adhere to any portion of the upper.

Having thus disclosed our invention and described in detail a preferred embodiment thereof, we claim as new and desire to secure by Letters Patent:

1. A box toe stiffener comprising a felt body saturated with a thermoplastic compound of

resin, wax and hydrocarbons, and being thereby rendered thermoplastic and adhesive as a whole, and having a curved tip portion of its area coated with a non-adhesive compound of silicate of soda and finely divided clay.

2. A box toe stiffener comprising a fibrous body impregnated throughout with a thermoplastic compound having latent adhesive properties, and having a heat-resistant, permanently non-adhesive coating as both faces of a segment including the tip of the stiffener, whereby the stiffener as a whole may be molded while hot and at the same time present adjacent adhesive and non-adhesive surface areas.

3. A box toe stiffener comprising a normally hard fibrous body impregnated throughout with a resinous thermoplastic compound having latent adhesive properties, and having a tip portion of convex outline which is coated with a compound of silicate of soda and an inert powder, the stiffener being moldable as a whole at a moderate temperature and adhesive only in its uncoated area.

4. A box toe stiffener comprising a normally hard and stiff fibrous body impregnated with a resinous thermoplastic compound having latent adhesive properties, and having on one surface of its tip portion a permanently non-adhesive coating, whereby the stiffener may be molded at a moderate temperature in box toe shape without adhering to the leather of the upper at the tip of the shoe.

WALTER H. HEATON.
WILLIAM J. VACCARO.