

J. DE S. BROWN & W. A. STUBBS.

BOX TOE FOR BOOTS AND SHOES.

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1,037,426.

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Fig. 1.

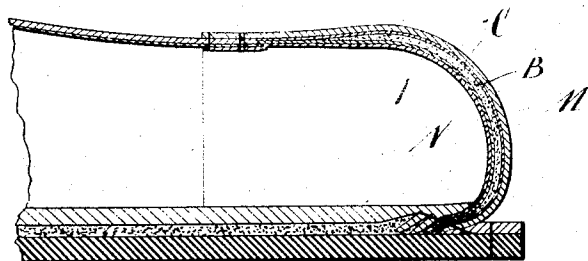


Fig. 2.

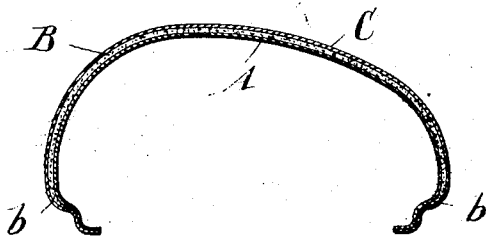


Fig. 3.

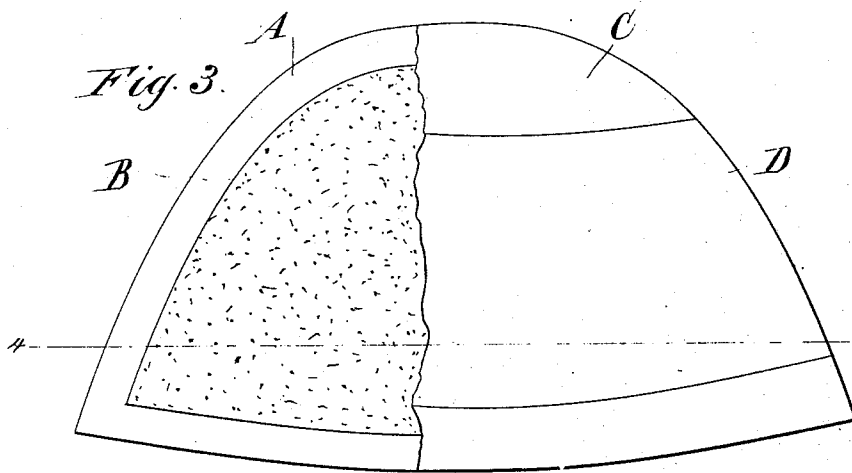
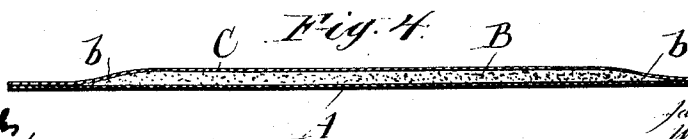


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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BOX-TOE FOR BOOTS AND SHOES.

1,037,426.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JAMES DE S. BROWN and WILLIAM A. STUBBS, citizens of the United States, residing in the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Box-Toes for Boots and Shoes, of which the following is a specification.

Toe-boxes have been made of various materials and are usually softened or rendered pliable for the lasting operation by supplying moisture thereto, and the required stiffness obtained by the application of "toe-gum" to the box and lining pieces and by the subsequent evaporation of the moisture and hardening of the gum. The drying process necessarily requires considerable time, and the successful application of the toe-gum depends entirely upon the skill of the laster and the care exercised in supplying just the right quantity properly placed upon the surfaces. If too much gum be applied the over-plus exudes through the stitches and perforations in the vamp and tip under the lasting strains and thus disfigures the shoe, or stains the leather of the vamp or tip unless protective pieces are employed between those portions and the box. If the gum be insufficiently supplied or unevenly and improperly placed, the ungummed portions lack stiffness, and the inner lining wrinkles or falls, and when the utmost care is exercised in distributing the gum the latter is often displaced by the pressure upon the toe in the bed-lasting machine, resulting in the formation of soft spots in the box.

The objects of the present invention are to provide a toe-box complete in itself, carrying its own adhesive material properly applied and distributed, and adapted to soften by heat and quickly to stiffen when cooled, thereby effecting a great saving in the time required for hardening and in the time and labor of the laster in gumming, beside improving the quality of the finished article by insuring uniform stiffness and proper adhesion to the tip or vamp and lining, avoiding exudation or staining, and obviating the necessity for the extra pieces employed in preventing the escape of excess gum.

A further object of the invention is to provide a box of simple and economical construction having the qualities of extreme pliability when warmed and great stiffness

when cooled and which shall be unaffected by moisture either from without or from within the shoe.

The invention consists in certain novel features by which the above objects are attained to be hereinafter described and pointed out in the claims.

The accompanying drawings form a part of this specification and show the improved toe-box.

Figure 1 is a central longitudinal section through the toe portion of a shoe equipped with the improved box. Fig. 2 is a transverse section through the box alone, in approximately the position it occupies in the shoe. Fig. 3 is a face view of the box in the flattened condition before incorporation with the shoe, and which for convenience of description we term a "box-blank", with a portion of the outer covering removed to show the interior. Fig. 4 is a section on the line 4-4 in the preceding figure.

Similar letters of reference indicate the same parts in all the figures.

A is a base-piece of suitable fabric, preferably canton flannel with the pile side uppermost, and cut to the proper shape to form a toe-box. Upon this base is spread a filling B composed preferably of finely shredded or comminuted leather and a heavy viscous solution of gum serving as a binder, forming while warm a plastic mass capable of being spread in a thin layer. Upon this mass is applied a cover-piece C of canton flannel with the pile side next and adhering to the mass. A narrow margin of each of the pieces A and C extends beyond the mass to permit stitching, and the mass while soft is preferably slightly beveled on all portions of its margin, as at *b*.

Dammar gum possesses the required characteristics of softening when warmed and making the desired plastic mass when mixed with the fibred leather, and hardening sufficiently when cooled. The blank thus filled is preferably dipped in a solution of such gum to saturate the margins and outer faces of the pieces A and C to impart the required stiffness to them. The toe-box thus made is unaffected by moisture and remains stiff and unaffected by heat until a temperature of from 110 to 120 degrees Fahrenheit is reached. The best temperature for successful working in the lasting operation is about 140 degrees at which the blank immediately

becomes exceedingly pliable and may be stretched upon the last with greatest facility. The blank with the tip and linings is lightly secured to the last while stiff and is then with the last placed in a steam bath of the proper temperature which softens the blank, mainly at and about the margins thereof as the last serves to protect the main body portion which is softened only enough to permit it to be shaped to the toe of the last but not sufficiently to permit the filling to flow or change position under the lasting strains. In the complete form of the invention the blank is provided on one or both faces with a band or broad stripe D of the same or other gum having the qualities of softening with heat and becoming strongly adhesive. This partial coating performs the function of adhering strongly to the adjacent inner face of the tip M of the shoe or to the upper face of the tip-lining N, or, if coated on both sides, to both such faces. By applying the coating D to the blank in the process of making the latter, the exact amount necessary may be applied and in the exact location desired, thus avoiding any excess likely to damage the shoe, and insuring proper adhesion to the adjacent surfaces.

The slight protection afforded by the last in the heating process aids in maintaining the body of the box and avoids the formation of thin spots due to movement or flowing of the filling under pressure and insures the desired uniformity over the whole box surface in the finished shoe, a result that cannot be attained in boxes softened by moisture. Heat may be supplied by other means than the steam chamber, as by dipping in hot water with the last or by laying both on a heated surface.

We claim:—

1. The toe-box described, comprising two pieces of fabric with a filling between them consisting of comminuted material and a binder of gum adapted to soften when heated to permit it to be shaped as required in the lasting operation, and to stiffen when cooled to retain such shape.

2. The toe-box described, comprising two pieces of fabric with a filling between them consisting of comminuted leather and a binder of gum adapted to soften when heated to permit it to be shaped as required in the lasting operation and to stiffen when cooled to retain such shape.

3. The toe-box described, comprising two pieces of fabric with a filling between them consisting of comminuted material and a binder of gum adapted to soften when heated to permit it to be shaped as required in the lasting operation and to stiffen when cooled to retain such shape, and an exterior coating of material rendered adhesive by such heating.

4. The toe-box described, comprising two pieces of fabric with a filling between them consisting of comminuted leather with a binder of gum adapted to soften when heated to permit it to be shaped as required in the lasting operation and to stiffen when cooled to retain such shape, and a coating of material applied in the form of a stripe on the exterior of such box and rendered adhesive by such heating.

5. As a new article of manufacture, the toe-box described, in flat form, consisting of two pieces of fabric and a filling between them consisting of comminuted leather and a binder of gum adapted to soften when heated to permit the box to be shaped as required in the lasting operation, and to stiffen when cooled to retain such shape, and an exterior coating of adhesive material adapted to soften when heated and to adhere and stiffen when cooled, whereby said box is complete in itself and conditioned when heated for incorporation in a shoe without further treatment.

In testimony that we claim the invention above set forth we affix our signatures, in presence of two witnesses.

JAMES DE S. BROWN.
WILLIAM A. STUBBS.

Witnesses:

CHARLES R. SEARLE,
HELEN V. RICE.