May 14, 1929. E. H. WESTPHAL 1,712,600

METHOD OF AND APPARATUS FOR TEMPERING SHOE PARTS

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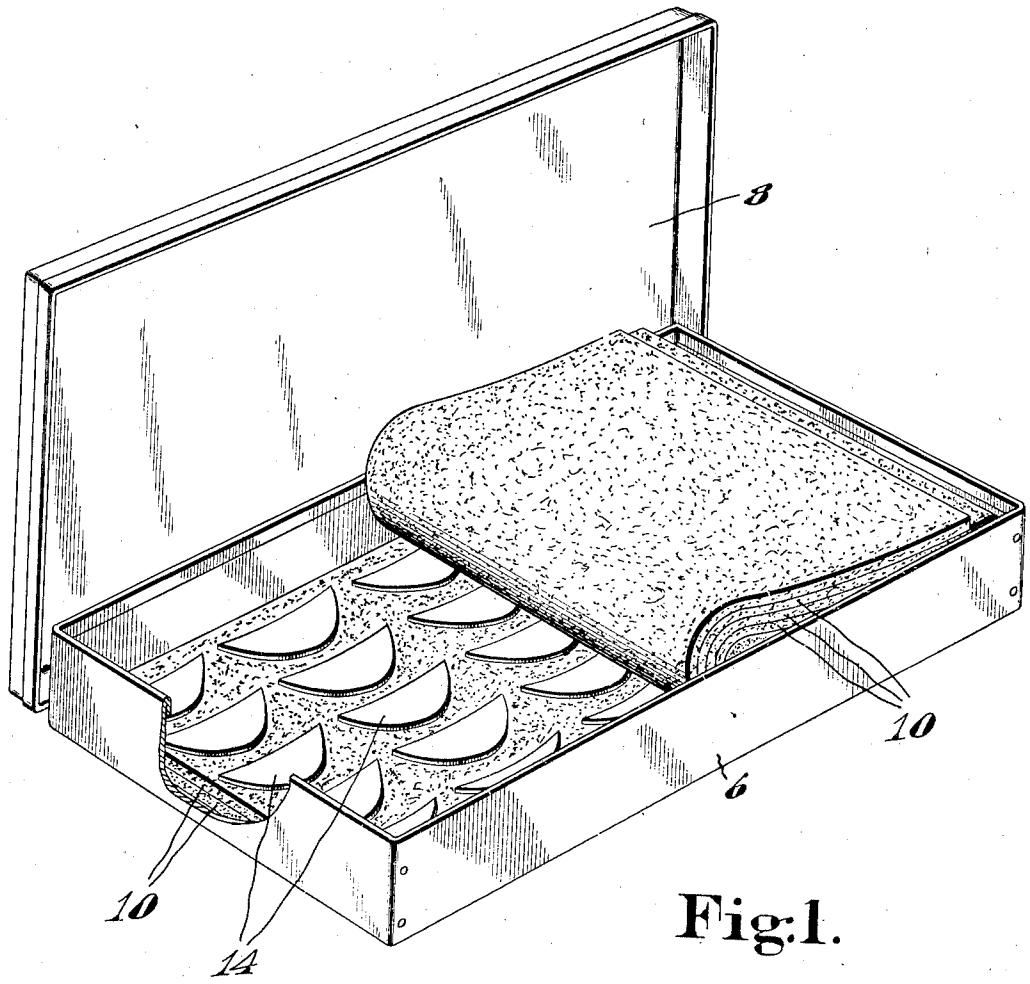


Fig:1.

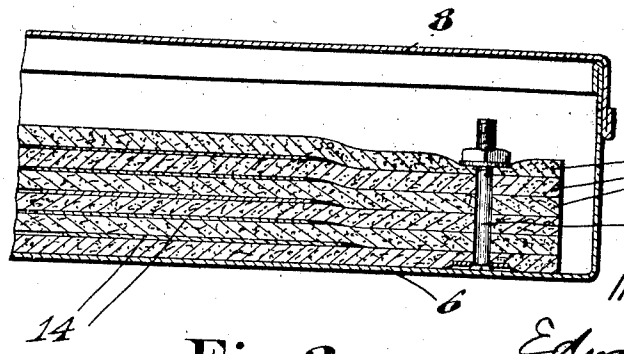


Fig:2.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND APPARATUS FOR TEMPERING SHOE PARTS.

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This invention relates to a method of handling shoe-parts of the type which require treatment with a softening liquid and to apparatus adapted for carrying out the method.

In the manufacture of boots and shoes, it is common to make use of shoe-parts which must be softened by being treated with a volatile solvent prior to incorporating them in shoe uppers and shaping them upon lasts during the pulling-over and lasting operations. For example, one such shoe-part which has gone into extensive use is a toe stiffener which consists of a fabric base impregnated with celluloid. The procedure for preparing such a stiffener for insertion in a shoe is to dip it into a mixture of alcohol and acetone, or other volatile solvent in order to render it sufficiently soft so that it may be given its final shape during the pulling-over and lasting operations.

In the methods of sofening toe stiffeners of the type referred to, as heretofore practised, considerable difficulty has been experienced in securing the requisite softness or temper. If such a stiffener is not left in contact with the softening liquid for a sufficient length of time, the stiffener will be improperly tempered, that is, all the celluloid material in the stiffener will not be sufficiently softened in such manner as to render it fully effective in contributing to the rigidity of the box-toe of the shoe into which it is placed. If, on the other hand, the stiffener has been immersed or otherwise brought into contact with the softening liquid for too long a time, or after immersion has been allowed to drain for a considerable period of time, some of the dissolved celluloid material may be drained out of the stiffener to such an extent that the latter will not be effective in producing the rigidity required for a perfect box-toe. When stiffeners are too soft there is also considerable difficulty in removing the shoe from the last because some of the material has permeated through the lining of the box and clings to the last. Under such conditions a shoe is also liable to damage by reason of the solution penetrating the leather and staining it.

Another difficulty which has arisen when handling large numbers of stiffeners is that they become glazed upon exposure to the air before they can be used. This condition prevents the desired adhesion of the stiffener to the lining and to the leather when the shoe is lasted and results in an imperfect box-toe.

Accordingly, the present invention is concerned with an improved method of tempering shoe-parts and maintaining them in tempered condition, and with an apparatus designed for use in carrying out the method.

In one aspect, the invention consists in a method of tempering shoe-parts which comprises treating them with a softening liquid and arranging them between layers of absorbent material which previously have been treated with the liquid.

Conveniently, the shoe-parts may be dipped in a softening liquid and placed in a box between layers of felt which have been impregnated with the liquid. After the spaces between the sheets of the material are filled, the box is closed. The felt maintains the shoe-parts in the desired softened condition, but prevents excessive draining of the celluloid material from the shoe-parts. When it is desired to use the softened stiffeners, the cover of the box is raised, a sheet or sheets of felt may be folded back and stiffeners removed as required, the remaining stiffeners being kept covered and thus protected from the air.

In another aspect the invention provides an apparatus which comprises holding and separating means of absorbent material for a plurality of treated shoe-parts constructed and arranged to maintain the parts in softened condition while in the apparatus, said means being arranged to permit the removal of some of the parts without exposing the remainder of them to the air. To this end, there may be provided a receptacle and a plurality of layers of absorbent material positioned therein, adapted to receive the shoe-parts between them, the box when closed being adapted to confine within it the fumes of the softening liquid.

Referring to the accompanying drawings,

Fig. 1 is a perspective of a box containing a plurality of layers of absorbent material and embodying the invention, and

Fig. 2 is a cross-section through the box showing the arrangement of the sheets.

The invention is illustrated herein in connection with the treating of box-toe stiffeners.

The illustrated apparatus comprises a box 6 which may be made of any suitable material such as galvanized iron, is rectangular in shape, and is provided with a close-fitting cover 8. The box is liquid-tight and adapted when closed to prevent fumes of liquid from escaping. Positioned in the box is a plurality of sheets or layers 10 of absorbent material, illustrated as felt, held together at one end by means of one or more bolts 12 (Fig. 2). The absorbent layers are of sufficient thickness to retain a considerable quantity of softening solution.

The method of the present invention may be carried out as follows:—

The absorbent layers are treated with softening fluid, such as a mixture of alcohol and acetone or other volatile liquid, and placed in the box. The operator then dips a stiffener such as 14 in the softening solution, places it on the upper side of the lowest layer of absorbent material, the remaining layers being folded back after the manner shown in Fig. 1. This process is repeated until the upper surface of the lowest layer is covered with a single layer of stiffeners. Then each of the succeeding layers, except the top layer, is similarly covered with a layer of stiffeners, and the cover is put on the box to prevent the escape of fumes of the liquid. The box with the treated stiffeners is then allowed to stand for a short time to permit the liquid to permeate thoroughly the stiffeners positioned therein to soften them. The liquid adhering to the stiffeners when dipped is sufficient to produce the requisite softening, if permitted to stand without draining. The impregnated layers prevent such draining but do not materially add to the liquid in the stiffeners.

When the pulling-over operator wishes to use a toe stiffener, he lifts the cover of the box and turns back the top layer of felt part way which gives him easy access to as many of the softened toe stiffeners as desired without exposing those in the remaining layers to the air. The layers are turned back as the stiffeners are used, exposing successively fresh layers of stiffeners, the box being kept covered as much as possible. In this way escape of the fumes of the softening fluid is reduced to a minimum and the danger of air-glazing is eliminated.

It has been found that the use of felt in the manner described is effective in preventing loss of softening solution due to evaporation and at the same time prevents the loss of the celluloid material in the stiffeners now prevalent in processes in which the stiffeners are drained before being used. The stiffeners may be kept in boxes and maintained in softened condition ready for use for an indefinite period of time.

Although the invention has been described in connection with the softening of the toe stiffeners for shoes, it should be understood that in various respects the invention is not limited in the scope of its application to use in connection with these particular shoe-parts, or to embodiment in the particular apparatus illustrated.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. The method of tempering shoe-parts containing a stiffening substance which is soluble in a volatile liquid which comprises treating them with the liquid and arranging the treated shoe parts between layers of material treated with the liquid.

2. The method of tempering shoe-parts containing a substance which is soluble in a volatile liquid which comprises treating them with the liquid, placing the treated shoe parts in a receptacle between layers of sheet material which have been treated with the liquid and then closing the receptacle to confine the fumes of the liquid within the receptacle.

3. The method of tempering shoe-parts which comprises treating them with softening liquid and arranging the treated shoe parts in layers between sheets of absorbent material which previously have been treated with the liquid.

4. The method of tempering shoe-parts which require treatment with a volatile softening liquid prior to their incorporation in boots and shoes, which comprises dipping the shoe-parts in the softening liquid, placing the treated shoe parts in a receptacle between layers of sheet material which have been treated with the liquid, repeating this procedure until the desired number of shoe-parts have been dipped and the receptacle contains a series of layers of shoe-parts separated by layers of sheet material and then closing the receptacle to confine the fumes of the liquid within the receptacle.

5. An apparatus for handling shoe-parts which have been treated with softening liquid comprising a receptacle, a plurality of layers of absorbent material impregnated with the liquid and adapted to receive shoe-parts between the layers positioned in the receptacle, and means for retaining the layers in such position that the shoe-parts between two layers may be more or less exposed without exposing the shoe-parts between other layers.

6. An apparatus for handling shoe-parts which have been treated with a softening

liquid comprising a receptacle and a plurality of layers of absorbent material impregnated with the liquid positioned in the receptacle, and means for fastening the layers together in such manner that the free portions of one layer may be lifted to expose more or less the layer next to it.

7. The method of tempering shoe parts containing a stiffening substance which is soluble in a volatile liquid which comprises dipping the shoe parts in the liquid and arranging the dipped shoe parts between thick layers of absorbent material impregnated to less than its saturation point with liquid solvent.

In testimony whereof I have signed my name to this specification.

EDWARD H. WESTPHAL.