Jan. 2, 1940. D. I. HASKELL 2,185,995

SHOE MANUFACTURE

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FIG. 1.

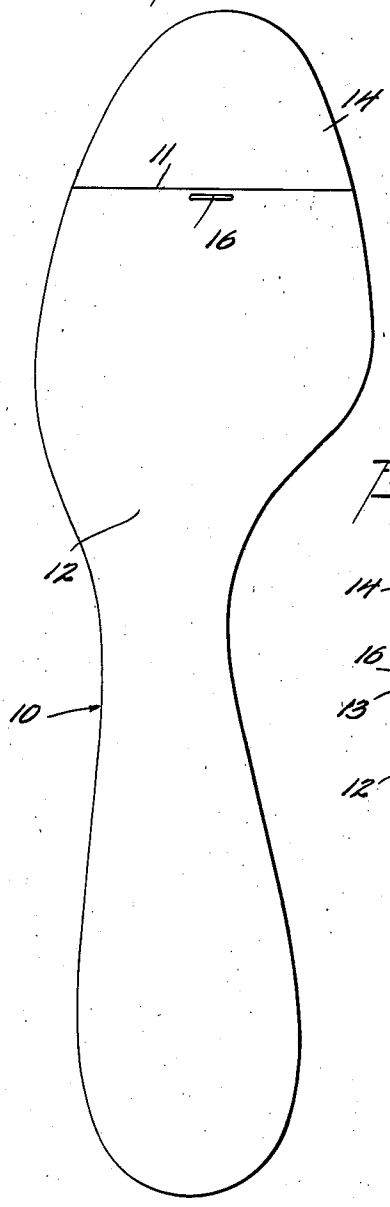


FIG. 3.

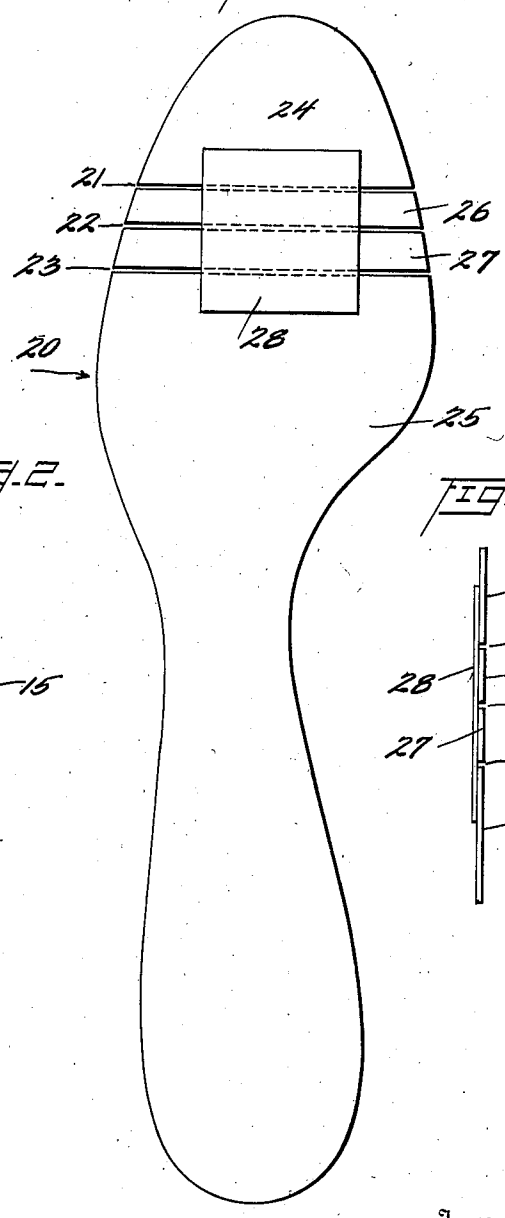


FIG. 2.

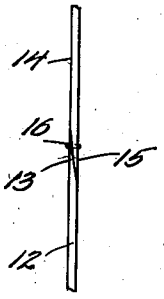


FIG. 4.

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SHOE MANUFACTURE

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4 Claims. (Cl. 12—142)

The present invention relates generally to shoes for men, women, or children and is more particularly directed to an inner sole for such shoes and to a method of manufacturing shoes, the object being to enhance the flexibility of the shoe.

Considerable discomfort to the wearer of the shoe flows from the relative stiffness of the ball and toe portion of the sole of the shoe. This stiffness flows in large part from the inflexibility of the inner sole to the shoe and from the fact that, as the sole of the shoe is flexed, the inner sole, being on the inside of the curve, is subjected to great crowding. In many instances it has been observed that the inner soles of the shoes under conditions of wear buckle and corrugate, thereby rendering the shoe quite uncomfortable after only a short time of wear. It is the object of the present invention to eliminate this tendency of the inner sole to corrugate and buckle and thereby to greatly enhance the flexibility of the entire sole of the shoe, and thereby increase the comfort of the shoe and enhance its life.

The present invention accomplishes this end by so constructing a shoe that parts of the inner sole are permitted to have relative movement to each other during flexing and unflexing. To accomplish the end of the present invention such relative movement need be so slight that it is not at all felt by the foot.

In accordance with the present invention such relative movement of the parts of the inner sole is obtained by dividing the inner sole into two or more parts and more particularly by dividing the fore part of the innersole into two or more parts. While the inner sole is attached alongside its peripheral portions to the inturned portion of the upper and to the outer sole by any customary method such as by tacking, sewing, or cementing, nevertheless, the fact that the adjacent portions of the innersole are separated into two or more parts, they have a freedom of motion more or less independent of the edge portions, so that they may move to and from each other, thus totally eliminating the buckling effect, rendering the inner sole more yieldable and substantially eliminating its resistance to flexure.

In one form of the invention disclosed herein the inner sole is slit or cut into two parts by a line transversely thereof so as to separate the toe portion from the ball portion of the innersole. In another embodiment of the invention shown herein the forward end of the ball portion of the innersole is slit by two or three or more transverse slots. In each of these constructions the slot may be made in such a manner as to actually remove some material from the innersole, or, such cuts may be conducted without removal of such material.

In the drawing:

Fig. 1 is a plan view of an innersole embodying one form of the invention;

Fig. 2 is a side elevation of the forward portion of the inner sole;

Fig. 3 is a plan view of an inner sole constituting another embodiment of the invention; and

Fig. 4 is a side elevation of the forward portion of the inner sole.

In Fig. 1, 10 indicates an innersole which is cut transversely along the line 11, this cut 11 being preferably disposed within the zone between the toe portion of the innersole and the ball portion of the innersole. In the preferred embodiment shown herein this cut, as will be observed in Fig. 2, is made diagonally of the thickness of the material and preferably without causing the removal of any material. It will thus be seen that in a cut of this nature the main body portion 12 of the innersole is provided with a feathered edge portion 13 and the toe portion 14 is provided with a feathered edge 15 which overlap in order to hold the parts 12 and 14 in assembled relation and facilitate the handling of the innersole both before and during the manufacture of the shoe; the two parts are preferably held together by the staple 16 which as shown is disposed approximately in the middle of the slot and holds the feathered edge portions 13 and 15 together.

In the manufacture of the shoe the innersole shown herein is applied to the last in the customary way taking care, however, that the head of the staple 16 is exposed to view. After the innersole is tacked onto the last bottom and after the upper is lasted, the staple 16 is removed. It will be understood that after the shoe is completed the portions 12 and 14 of the innersole are free to move relative to each other and this is particularly true of the ball portion of the innersole which in actual flexure under use tends to move forward. The feathered or skived forward edge 13 of the ball portion of the innersole will easily climb up on the feathered edge portion 15 of the toe portion 14. This it will be understood will reduce the resistance of the innersole to flexure and will eliminate the buckling effect.

While the embodiment of the invention shown in Fig. 1 contains only one slit, it is obvious that if desired two or more such slits may be provided.

The embodiment shown in Fig. 3 differs from that shown in Fig. 1 in that instead of the material of the innersole being merely slit transversely of the ball portion, a certain but very small quantity of material is actually removed from the innersole during such operation. In this instance the cuts or slots may be made directly across the material. Thus, as shown in Fig. 3 the innersole 20 has three slots 21, 22, and 23 each having a substantial width such as a thirty-second or a sixteenth of an inch and

separated from each other by perhaps a quarter of an inch. As a result of this operation the innersole comprises the toe portion 24, the main body portion 25, and the intermediate relatively narrow portions 26 and 27, the portions being preferably separated from each other by a small but observable distance of a thirty-second or a sixteenth of an inch as set forth above. These slots or cuts 21, 22, and 23 should preferably be performed by any suitable machine, care being taken, however, that as these cuts are made the different portions are not displaced, and immediately after such cutting operation and without disturbing the arrangement of the parts, a piece of adhesive tape 28 is applied to the innersole as shown.

In the manufacture of the shoe, the innersole is attached to the bottom of the last in the customary way taking care, however, that before any other materials such as the filler or the outersole are placed over the innersole, the adhesive tape 28 is removed.

In the present invention the innersole consists of two or more parts divided by slits, slots, or cuts extending transversely of the innersole in the zone between the toe and ball portions of the innersole, the slits, slots or cuts being so made that the adjacent portions can have relative movement toward and away from each other without any buckling or any other injury or deformation of such parts. Thus, in the form shown in Fig. 1 the free skived edges of the adjacent parts permit and facilitate free movement of one part toward and onto the other without any crowding or injury. In the form shown in Fig. 3, the parts are free to move toward each other by reason of the spacing between the parts. The staple of Fig. 1 or the tape of Fig. 3, (and it will be understood that if desired an adhesive tape may also be employed in Fig. 1 in lieu of the staple), serve to hold the parts of the innersole temporarily united while the innersole is being processed or while the shoe is being built. These temporary uniting devices are removed during the processing of the shoe soon after the innersole is tacked on the last and before the device is covered by other parts of the shoe. The uniting device such as the staple or tape or the like should preferably be disposed on the face of the innersole which is exposed during the lasting operation, although it will be understood that it may be on the other face of the innersole, in which case the temporary uniting means will be removed when the shoe is taken off the last.

While in the form of Fig. 1 only one slit is shown, it will be understood that if desired, two or more such slits may be employed. Similarly, in the form shown in Fig. 3 only one or two slots may be employed. The number of slits, slots, or cuts employed may depend upon the size of the shoe, upon the quality of the innersole materials or upon other considerations.

The flexibility of the shoe in which the present invention is employed flows from the freedom of the ball portion of the innersole to move forwardly with flexure. The present invention, therefore, permits the employment for innersoles of cheaper, or more rigid materials, or materials that can withstand greater wear. By means of the present invention, therefore, the quality of flexibility can be imparted to the shoe without increasing its cost of manufacture and perhaps by somewhat decreasing its cost.

It is known in the trade that it is desirable to have relatively rigidity in the innersole from the back up to the ball portion. It is also desirable to have rigidity in the toe portion of the innersole. Flexibility is desirable only in the ball portion of the shoe. By the present invention flexibility is obtained in the ball portion by the structure of the forward part of the ball portion or of the zone between the ball and toe portions, which permits the ball portion or parts thereof to move forward under flexure. The present invention, therefore, permits the improvement of the shoe without increasing its cost in that it permits rendering the shoe more rigid where rigidity is required and more flexible where flexibility is desired.

The slits, slots, or cuts in the embodiment shown in Figs. 1 and 3 may under some circumstances be made after the customary innersole has been tacked on the bottom of the last of the shoe and before the upper is lasted.

Having thus described my invention, I claim:

1. The method of making shoes comprising the steps of supplying an innersole having, in the zone between the tip and the widest part of the forepart, portions movable longitudinally to and from each other and carrying temporary means affixed to said forepart for preventing such relative movement, the free outer edges of such adjacent portions being in alignment, mounting said innersole on a last, attaching an upper to the marginal portion of said innersole, attaching an outersole to the marginal portion of said upper, and removing the said temporary means.

2. The method of making shoes comprising the steps of supplying an innersole having, in the zone between the tip and the widest part of the forepart, portions severed from each other transversely of the innersole thereby rendering the same movable longitudinally to and from each other and carrying temporary means affixed to said forepart for preventing such relative movement, the free outer edges of such adjacent portions being in alignment, mounting said innersole on a last, attaching an upper to the marginal portion of said innersole, attaching an outersole to the marginal portion of said upper, and removing the said temporary means.

3. An innersole having a substantially continuous marginal portion for attachment to the marginal portion of an upper, the forepart having portions capable of movement to and from each other longitudinally of the innersole, the free outer edges of such adjacent portions being in alignment, and readily removable means attached to said forepart and bridging the space between said portions for preventing such relative movement of said portions during the making of a shoe incorporating the innersole.

4. An innersole having a substantially continuous marginal portion for attachment to the marginal portion of an upper, the forepart having portions severed from each other transversely of the innersole and capable of movement to and from each other longitudinally of the innersole, the free outer edges of such adjacent portions being in alignment, and readily removable means attached to said forepart and bridging the space between said portions for preventing such relative movement of said portions during the making of a shoe incorporating the innersole.

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