Aug. 18, 1953 AKIRA OTSUKA 2,648,854

MANUFACTURE OF SHOES

Filed Oct. 13, 1950

Fig. 1

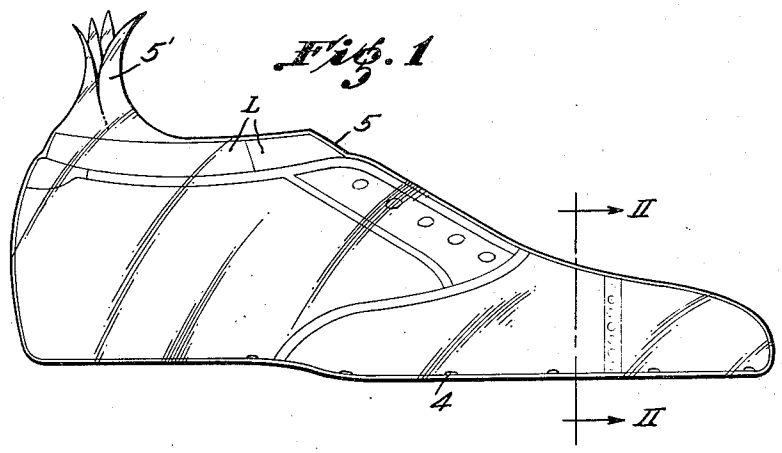
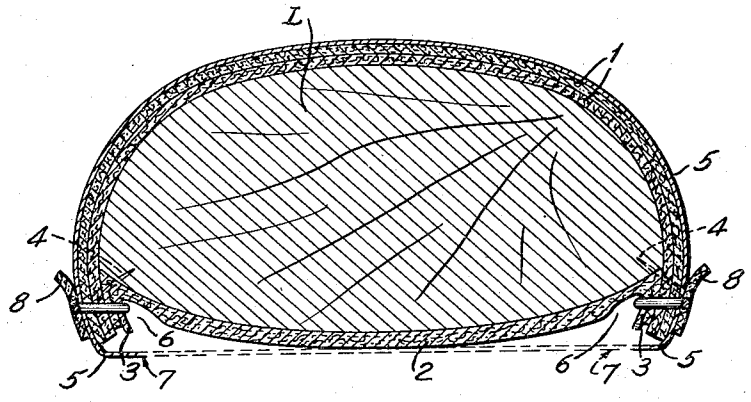


Fig. 2



Inventor
AKIRA OTSUKA

By H. J. Sanders
Attorney

Patented Aug. 18, 1953 2,648,854

UNITED STATES PATENT OFFICE

2,648,854

MANUFACTURE OF SHOES

Akira Otsuka, Meguro-ku, Tokyo, Japan

Application October 13, 1950, Serial No. 189,940
In Japan February 22, 1950

1 Claim. (Cl. 12—142)

1

This invention relates to improvements in the manufacture of shoes.

In the ordinary method, an upper (including a box toe, counter etc. depending on locations) is lasted to a last and insole by means of a lasting machine in the well-known manner, that is, they are temporarily nailed together by a series of nails. Then, a lip, or rib, which has already been formed on said insole, the lower edge of the upper and a welt are welted together by means of a welting machine. On the other hand, however, the sewing needle of the welting machine, which extends beyond the nails used for the temporary nailing, breaks down actually very often in collision with those nails, while too much absorption in the prevention of such break-down will result in the failure of products, necessitating re-sewing and reducing operating efficiency.

On the other hand, shoes should preferably have cheap wrappers which are easy to fix and will prevent stains and outside damages during their working processes and before they arrive at consumers in the market.

The object of this invention is to provide an improved method of manufacturing shoes, wherein a separate means for securing lasted parts is provided which can safely be sewed in together at the time of welting, so that said nails which prove outstanding obstacles in welting as above mentioned can be drawn out before welting, this means being made to act also as said preferable wrappers, and thus shoes provided with superior wrappers can be manufactured easily and efficiently.

In the present invention an upper lasted to a last and insole is inserted into a nearly enclosed sack the film of which tends to contract at higher temperatures without splitting or folding in itself, said film contracting under heat down to the whole outer surface of said contents so as to maintain them in lasted condition at normal temperatures, enabling drawing out nails used in lasting, before welting, and forming a protective wrapper of the shoe in close contact therewith.

In the description of this invention reference is had to the accompanying drawings, of which:

Figure 1 is a perspective view showing parts of a shoe to be made, inserted in a sack which will provide a securing means of the contents and form a wrapper of the shoe, according to the invention.

Figure 2 is a sectional view on a large scale taken substantially on the line II—II of Figure 1 showing a welted shoe after nails are drawn out, the parts being suitably exaggerated, for illustration.

2

In the drawings, an upper 1 is lasted to last L and insole 2. The lower edge of upper 1 comes down to a lip, or rib, 3 provided at the outer peripheral edge of insole 2 located at the bottom of last L, where said upper 1 is temporarily fixed to insole 2 and last L by means of nails 4. In Fig. 2 nails 4 are already drawn out in practice according to this invention, but shown in dotted line. According to this invention, the parts of a shoe thus assembled is enclosed loose in sack 5 made for example of stabilized rubber hydrohalide, allowing a little communication with the atmosphere through edge 5' which is not to be sealed tightly. When the whole assembly is heated up to 70°–80° C. in the atmosphere by means of steam, the film of sack 5 of stabilized rubber hydrohalide will contract without causing cracks or folds in itself due to its characteristics, resulting in a very uniform and fine close contact with the outer surface of the contents by eliminating air layers among them, through said small clearance at edge 5' of sack 5. However, due to its characteristics, said film will not adhere to the shoe, and no chemical change will be caused to the component members of the shoe. The film of sack 5 thus comes in close contact with the whole outer surface of the contents. However, it will not be automatically in contact with the insides of hollows, that is, a space will remain at a position like 6. When the assembly is restored to the normal temperatures in the atmosphere, the film will set as it is, compressing the contents firmly inwards in every direction due to its own tensile force. This process of making a close contact of the film by heating is very simple and can be completed in a matter of 10 to 20 seconds, without requiring any skill. Here the duty of said nails 4 is over, and they can be drawn out by breaking through film 5 by means of pincers. There is no fear of causing cracks and splits from the edge of the small holes opened at this time and of growth of them, due to the characteristics of the stabilized rubber hydrohalide although said film compresses the contents in every direction.

Then the assembly together with the film is welted in a welting machine in the well-known manner and a welt 8 is stitched to the assembly. (At this time, the film is automatically cut off inside the insole lip, or rib, at 7 by the channel guide of the welting machine.) However, no

cracks or splits will be caused at all on the upper leather side of the seam as just mentioned above. After that, a bottom filler is fitted in space **6**. Then the well-known process will be adopted, and the upper part of film **5** will finally be cut off to take the last out, without causing any cracks or splits in the film itself. Thus the outer surface of the shoe over the upper leather will remain covered by the film of stabilized rubber hydrohalide in close contact. The shoes can thus be well protected from stains and outside damages until the sack is removed. Since stabilized rubber hydrohalide is highly proof against water, oil and chemicals, is inert to the component members of the shoe and is semi-transparent, operators can work them without worry. As it readily reveals the contents, it is very convenient and handy. The film is especially suitable for shoes with white and other thin colored leather, linen or fabric upper members.

Though stabilized rubber hydrohalide has been taken up here as the material for such sacks, any other materials of similar characteristics can be safely used.

In general the requirements of the film of such sack can be enumerated as follows:

(1) It should have the characteristics of automatically contracting down to the shape of any contour under steam or heat without causing cracks, folds or splits.

(2) It should have a considerable mechanical strength at normal temperatures and should have no tendency toward easily allowing the growth of cracks and splits from the small holes, etc.

(3) It should be highly proof against water, oil and chemicals and should be inert to the component members of the shoes.

(4) It should have the nature of being formed to the shape of the sack.

(5) It should be cheap enough to be applied to mass production. Though the above embodiment has been shown and described by the Goodyear welt method of manufacturing shoes, it will be understood that this invention can be applied to any other method of manufacturing shoes, such as McKay or cemented processes, and it is clear that it can be applied not only to leather shoes but also to linen and fabric ones as previously mentioned.

I claim:

A method of manufacturing shoes which consist in fastening a shoe upper to a last and insole, inserting the assembly loosely in a sack of stabilized rubber hydrohalide without completely cutting off communication of the sack interior with the atmosphere, steam-heating the stabilized rubber hydrohalide to a temperature and for a time sufficient to shrink same to closely embrace the surface of the contained assembly without causing cracking, restoring the assembly to normal atmospheric temperature and removing the fastenings, welting the upper while enclosed by the stabilized rubber hydrohalide sack, and thereafter removing the last.

AKIRA OTSUKA.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,168,651	McCoy	Aug. 8, 1939
2,182,022	Griswold	Dec. 5, 1939
2,385,257	Cavallito	Sept. 18, 1945