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GB 1489204
GB 1443855
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GB 1387268
GB 1356738
GB 1307615
GB 1173846
(58) Field of search **A3B**
(71) Applicant
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(54) **Improvements relating to articles of footwear**

(57) An article of footwear which is moulded of synthetic plastics material is provided with an insert H of natural fibrous sheet material (e.g. a piece of leather or material woven of natural fibres) moulded onto the upper of the footwear article in the region of each instep lace opening to prevent stretching and provide anchorage for the fixing of metal eyelets. The insert may be positioned on the outer side of the upper as shown and provide a styling feature, or it may be positioned on the inner side.

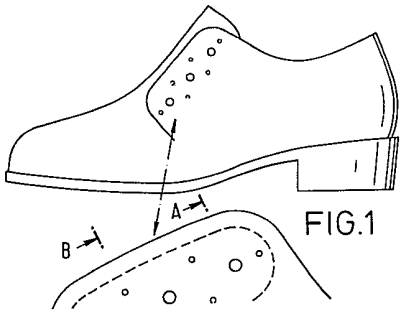

FIG.1

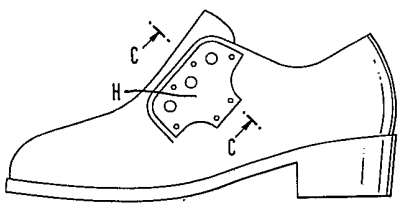

FIG.5

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The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

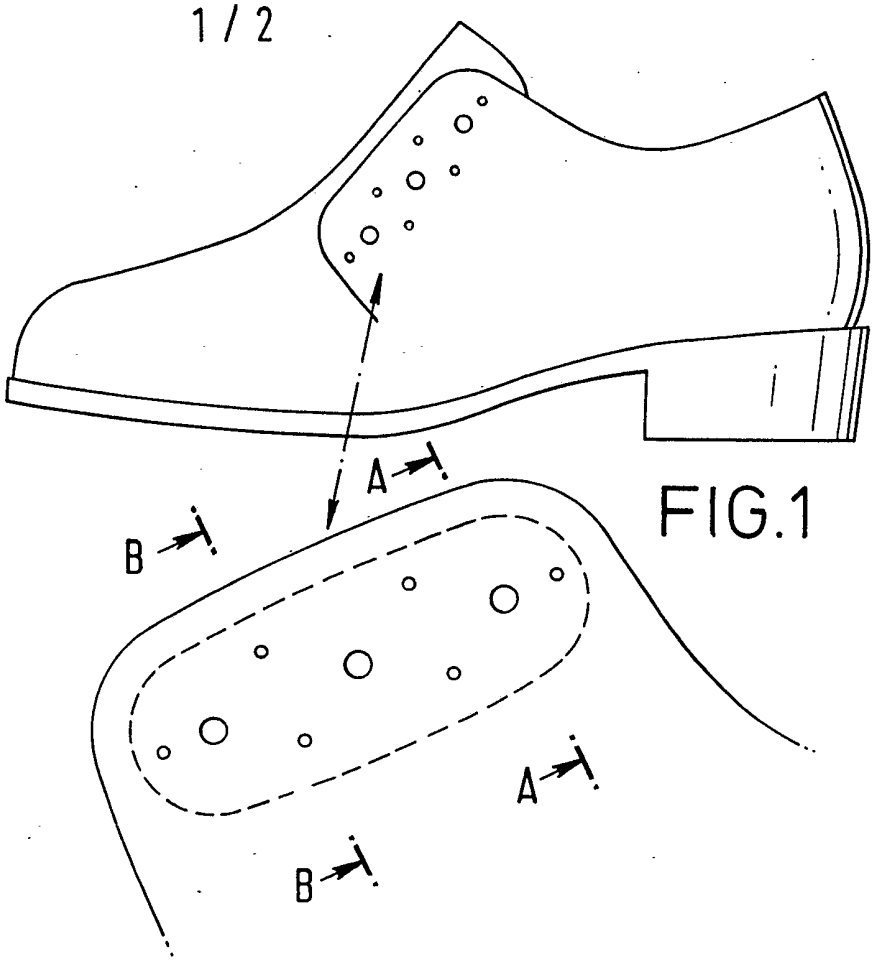

FIG.1

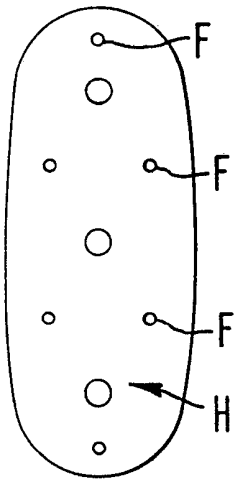

FIG. 4

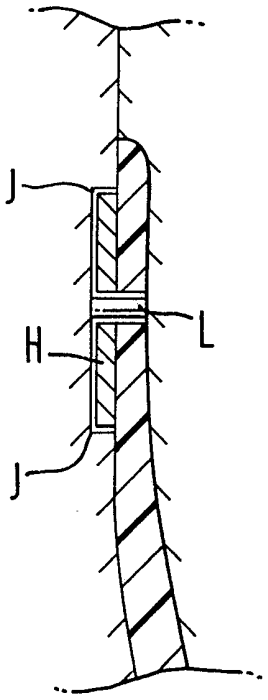

FIG. 2

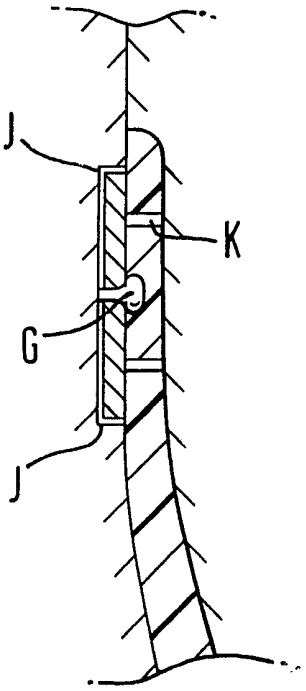

FIG. 3

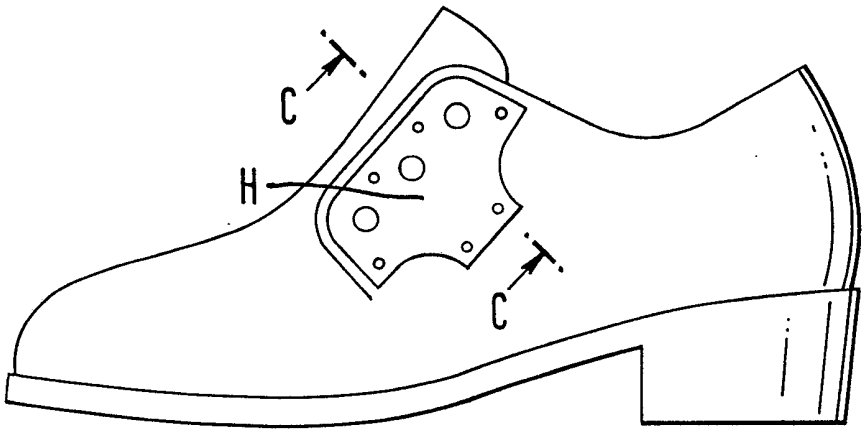

FIG.5

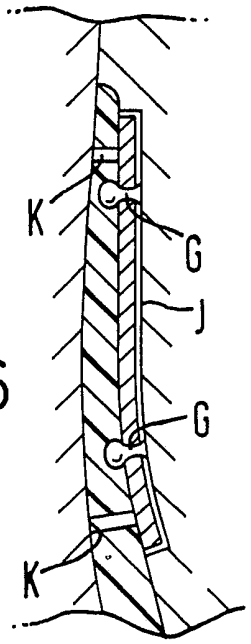

FIG.6

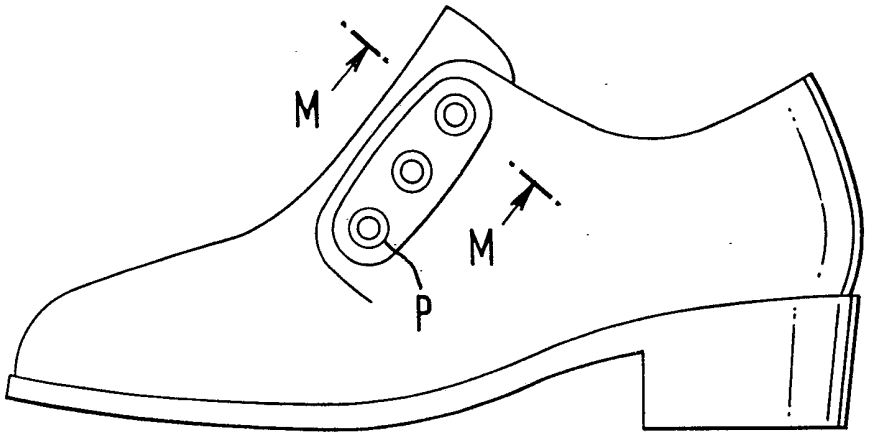

FIG.7

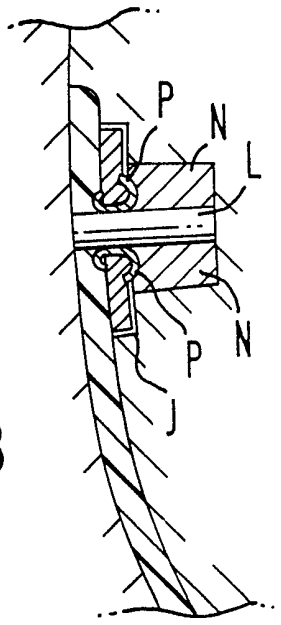

FIG.8

SPECIFICATION

Improvements relating to articles of footwear

This invention relates to articles of footwear that are wholly injection moulded of synthetic plastics usually polyvinyl chloride and its object is to prevent the upper from stretching, wearing or tearing in the region of the lace holes at the instep opening.

Previously injection moulded uppers have been eyeletted with single or two-piece metal eyelets which easily pull out during wear, or the area around the lace holes is reinforced with a pre-moulded integral thermo-plastic insert which is not highly abrasion resistant and the friction caused by the lace passing through the lace holes can cause this thermoplastic insert to gradually wear away. These known plastic reinforcements have to be pre-moulded from a substantially more expensive material than polyvinyl chloride such as polyurethane using additional high cost moulds and injection moulding machinery. In accordance with this invention, there is provided an article of footwear moulded of synthetic plastics material and having an insert of natural fibrous sheet material moulded onto the upper of the footwear in the region of the instep lace opening to prevent stretching and provide anchorage for the fixing of metal eyelets.

The insert may be pre-cut from a sheet of the natural fibrous material, for example, leather or material woven from natural fibres. Such inserts are inexpensive and enable more durable normal permanent metal eyelets to be used without the need for additional expensive moulds and machinery.

Embodiments of the invention will now be described by way of examples only with reference to the accompanying drawings in which:

Figure 1 is a side elevation of one style of shoe with the reinforcement positioned inside the shoe;

Figure 2 is a section of one side of the upper and its mould on the line AA of Figure 1;

Figure 3 is a section of one side of the upper and mould on the line BB of Figure 1;

Figure 4 is a front elevation of the leather insert;

Figure 5 is a side elevation of a second style of shoe with the reinforcement positioned on the outside of the shoe;

Figure 6 is a section of one side of the upper and its mould on the line CC of Figure 5;

Figure 7 is a side elevation of a shoe with a leather reinforcement that has had ferrous metal eyelets affixed prior to moulding onto the upper;

Figure 8 is a section of one side of the upper and its mould on the line MM of Figure 7.

The leather insert H is pre-cut from a sheet of leather and may be as shown in Figure 4 pre-punched with holes corresponding with the known pins L positioned on the mould that form the eyelet holes in the finished shoe or these holes can be pierced after the shoe is moulded. Each leather insert can also have other locating holes F to correspond with pins G on one side of the mould to ensure accurate location in the mould. Preferably these locating pins G have heads that are greater in diameter than the diameter of the holes F over which the insert is forced to ensure that the insert 4 is held securely in the mould whilst injection takes place.

To improve the comfort of the shoe and give an increased style content the insert H can be of a different colour to the upper and be positioned on the outside of the upper as in Figure 5. To mould the inserts onto the upper (whether onto the inside as in Figures 1-3 or on the outside as in Figures 5 and 6), the mould is opened and the inserts which have been pre-coated with a suitable adhesive on the flesh side are placed onto the eyelet pins L and/or the pins G and at the same time into a recess J in the mould which is provided to suit the shape and thickness of the insert. The mould is then closed and when this closing takes place pins K on the opposite side of the mould come into use and ensure that the insert is pressed firmly down inside the recess whilst injection takes place. The number and positioning of the pins K is determined by the curvature of the mould in that area of the shoe where the insert is to be moulded onto the uppers. When the mould is closed the plastic material is injected into the mould thus moulding the upper with the leather insert bonded onto its surface. The article is removed from the mould and metal eyelets can be affixed. It may not be necessary to affix metal eyelets for instance where the insert is used to prevent stretch or improve stitch-tear resistance in order to securely attach additional parts onto the upper.

Alternatively the leather reinforcement can have ferrous metal eyelets P affixed in positions corresponding to the known eyelet pins L on the mould as shown in Figure 8. The reinforcement is placed over the pins L into the recess J whereupon permanent magnets N positioned around the base of each pin firmly hold the reinforcement in position whilst injection of the upper takes place. By this means the leather reinforcement can be moulded onto the inside or the outside of the upper.

In this manner certain parts of the shoe can be reinforced to prevent stretch and tearing, additionally where the insert is on the outside and of a different colour to the upper two colour uppers can be produced thereby giving the shoes the novelty of more desirable selling and marketing features at a greater cost saving than known previously in the art. Further by using highly absorbent inserts on the inside of the shoe in say but not restricted to the insole area this will considerably improve water vapour absorbtion in moulded plastic footwear of this type whilst increasing comfort and reducing the risk of fungicidal and/or bacterial infection to the wearer. This invention is not restricted to any particular type or style of footwear in which the uppers are moulded from plastics material for the size thickness and shape of the natural fibre insert together with recesses in the mould to accommodate said insert can be easily adapted to suit one or more of the foregoing requirements at very low cost.

CLAIMS (Filed on 5/10/83)

1. An article of footwear moulded of synthetic plastics material and having an insert of natural fibrous sheet material moulded onto the upper of the

footwear article in the region of each instep lace opening to prevent stretching and provide anchorage for the fixing of metal eyelets.

2. An article of footwear as claimed in claim 1, in which each insert comprises a piece of leather or material woven from natural fibres.

3. An article of footwear as claimed in claim 1 or 2, in which insert is positioned on the inside of the upper.

4. An article of footwear as claimed in claim 1 or 2, in which each insert is positioned on the outside of the upper and provides a styling feature.

5. A method of manufacturing an article of footwear as claimed in any preceding claim, comprising placing each insert of natural fibrous sheet material into a recess in mould for the article of footwear, which recess is in a region corresponding to the instep lace opening of the article of footwear, closing the mould and forming the article of footwear by injection of synthetic plastics material such that the insert becomes moulded onto the upper.

6. A method as claimed in claim 5, in which each insert is pre-cut from a sheet of leather or material woven from natural fibres.

7. A method as claimed in claim 5 or 6, in which each insert is located in its recess by pins on the mould engaging within holes pre-cut through the insert.

8 A method as claimed in claim 7, in which at least some of the pins have enlarged heads to hold the insert in position.

9. A method as claimed in claim 7, in which at least some of the pins are provided with magnets and engage within holes of the insert which are provided already with ferrous eyelets, to hold the insert in position.

10. An article of footwear substantially as herein described with reference to Figures 1-4, 5 and 6 or 7 and 8 of the accompanying drawings.

11. A method of manufacturing an article of footwear, which method is substantially as herein described with reference to Figures 1-4, 5 and 6 or 7 and 8 of the accompanying drawings.

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