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54 **Process for the manufacturing of footwear, and footwear obtained through this process.**

57 The manufacturing process of footwear 1 entails the preparation of a vamp 2, followed by that of a mid-sole 3, provided with its facing of seats 6.

The mid-sole 3 is attached by stitching to the vamp 2 and then a strip 5 is formed, with a facing provided with raised layers 8 corresponding to the seats 6, this strip then becomes part of the sole 4 during its manufacturing.

The vamp 2 is initially attached to the sole 4, by pairing together the mid-sole 3 and the strip 5. Lastly the sole is finally stitched to the vamp.

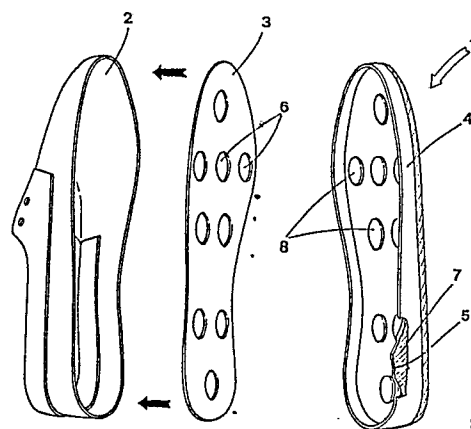


Fig. 1

Description

PROCESS FOR THE MANUFACTURING OF FOOTWEAR, AND FOOTWEAR OBTAINED THROUGH THIS PROCESS

This invention lies within the scope of the technological sector of the shoe manufacturing industry, being particularly involved in a manufacturing process for the kind of footwear that may either be used for sports purposes or in combination with informal dress.

Usually the manufacture of this kind of footwear first entails a vamp being made, with a mid-sole stitched to it, then the outer surface of the mid-sole being glued to the vamp surface of a sole made of a material such as rubber.

A stiff inner insole, made either of plastic material (synthetic resin) or of pressed cardboard or even wood which is usually called the heel-sole is initially inserted inside the sole in such a way as to remain close to the upper surface of the afore-mentioned sole.

The purpose of this insole or heel-sole, extending from the area of the footwear corresponding to the heel to just beyond the plantar arch is to make the footwear sufficiently rigid.

The edge of the sole is then stitched to the vamp to reinforce the join between the component parts of the footwear.

Obviously the glueing of the mid-sole with its attached vamp, to the sole will require a series of operations that will have a negative effect upon the overall manufacturing costs of the footwear.

The glue does, in fact, have to be applied first to the upper surface of the sole, and then to the outer surface of the mid-sole.

In the event that the type of glue being used, might have to be heated before sticking, then both the sole and the mid-sole with its attached vamp, will have to be placed in a stove for a previously determined length of time.

Subsequently the vamp is positioned above the sole, and the mid-sole is subjected to a previously determined amount of pressure so that the glue will stick efficiently.

Lastly the edge of the vamp is stitched to the upper edge of the sole, thus finally reinforcing the joining of the latter two parts.

The disadvantages caused by the complexity of this kind of procedure are obvious, the main ones being those of the large number of operations entailed in the process described.

The use of glues requires sophisticated equipment that has to be especially set up and involves many hours of work, particularly while waiting for the glue to stick and then for it to dry.

Finally it seems obvious that once the initial join has been made with the glue, the sole and the vamp cannot easily be separated; another negative aspect of the process described above being the fact that it is irreversible.

The aim of this invention is to propose a manufacturing process for sports shoes, which by virtue of its being a technical procedure that is both easy and cheap to manufacture, consists of a series of operations that are less complicated than those of

the previously described process, thus offering considerable improvements in the production of said articles in terms of both the time and costs involved in their manufacture. A further aim of this invention is to propose a procedure whereby each of the operations being carried out is reversible.

The above-mentioned aim can be achieved by a manufacturing process for footwear, of the kind consisting of a vamp, a mid-sole attached to said vamp once its lower part is closed, and a sole which will initially be attached to said vamp by being joined to said mid-sole, and later on by its edge being stitched to said vamp; this process is characterised by the fact that it entails the following operations: the manufacture of said vamp, the manufacture of said mid-sole and said sole respectively, complete with parts that can be matched together thus joining or separating said sole to the mid-sole, simply by means of pressure; the attaching by stitching of said mid-sole to said vamp; the joining by simple pressure of said sole to said mid-sole with said vamp attached to it; and the stitching of the edge of said sole to said vamp.

Those characteristics of this invention, which do not emerge in what has just been said, are about to receive due explanation with close reference to the enclosed drawings as follows:

- Fig. 1 is a diagram of a vamp, a mid-sole and a sole manufactured according to this invention;

- Fig. 2 is a diagram of the vamp with the mid-sole attached to it;

- Fig. 3 is a diagram of a completed footwear;

- Fig. 4 is an enlarged view, A, of a part of Fig. 3;

- Fig. 5 is a diagram of a vamp, a mid-sole and a sole manufactured according to a special process which is a variation of this invention;

- Fig. 6 is a diagram of the vamp with the mid-sole attached to it as in Fig. 5;

- Fig. 7 is a diagram of the completed footwear in Fig. 5;

- Fig. 8 is an enlarged view, B, of a part of Fig. 7.

With reference to the numbers in the above-mentioned figures, number 1 indicates the footwear that we are proposing to manufacture by this process.

Figure 1, in particular, shows a vamp 2, a mid-sole 3, and the sole 4 of the footwear 1.

The vamp 2 has been manufactured according to known procedures from leather or some other material that is usually used in the manufacture of footwears.

According to this procedure the mid-sole 3 is obtained by placing a number of seats 6 on one of its facings, in such a way that they are uniformly distributed over the surface of the latter.

Consequently the mid-sole is attached by stitching to the lower edge of the vamp 2 and the facing of the seats 6 faces outwards.

The sole 4 is made of synthetic resin, and is

obtained by pouring this material in the liquid state into a suitably shaped die containing a stiffened inner insole 7, or heel-sole, made from a material such as plastic.

A strip 5, with the same surface and shape as the mid-sole 3, is then made with the raised layers 8, on one of its facings, corresponding to the seats 6.

The seats and the raised layers may obviously take on whatever shape proves best on each separate occasion.

An example of this can be seen in the drawings where the seats and raised layers shown are cylindrical-shaped.

The strip 5 then becomes a single integral part of the sole 4 during manufacture of the latter, and the facing with the raised layers faces outwards.

This may, for example, be inserted inside the die used to make the sole, prior to pouring in the material in its liquid state, and positioned immediately above the insole, 7.

The next stage of the procedure entails attaching the sole 4 to the mid-sole 3, and consequently also to the vamp 2, this being done by virtue of the joining together of the two facings of the strip 5 and the mid-sole 3 respectively, featuring the raised layers 8 and the seats 6, by inserting the latter inside said seats 6 through the simple exertion of pressure.

Finally the edge of the sole 4 is stitched to the vamp 2 to fix the join.

In terms of a different manufacturing process shown in figures 5-8, the mid-sole could be made from one of the two component parts of a velcro strip fastening (this is not shown since it is known).

As is known velcro is a material consisting of two sides, which are correspondingly paired by simple pressure, and which is used as a means of rapidly joining together or separating strips of cloth or similar things.

The mid-sole 13 is made by cutting a corresponding surface from one of the two component parts of the velcro, and it is then stitched to the vamp 12, with the lower part of the vamp closed and with the facing to be matched to the remaining part of the velcro facing outwards.

The strip 15, on the other hand, which has the same surface and shape as the mid-sole 13, is made from the other component side of the velcro strip and becomes a single integral part of the sole 14 during its manufacture.

The strip 15 may, for example, be inserted inside the die used to make the sole, prior to pouring in the material in its liquid state, and positioned immediately above the plastic insole.

The next stage of the procedure entails the attaching of the sole 14 to the mid-sole 13 and consequently to the vamp 12, attached to it, this being done by joining together the two sides of velcro 5 forming the mid-sole 13 and the strip 15, respectively, by simply exerting pressure.

Finally, the edge of the sole 14 is stitched to the vamp 12 to fix the join.

Obviously this means that it is possible to join the two sides of velcro in a single operation by the cutting of the two joined parts, which can then be separated later on.

A further manufacturing process entails the manufacture of the mid-sole and the strip with the use of polyurethane.

The polyurethane is attached to the sole and the two parts of polyurethane are joined together by heating the afore-mentioned parts.

The advantages of the process described above are obvious, and may be summed up as follows:

- Rapid execution of joining operations between sole, 4, and vamp 2. The latter parts are rapidly and securely joined together by simply attaching the mid-sole to the strip integral to the sole, by a slight exertion of pressure. In this way the glueing operations to the upper surface of the sole and the mid-sole are eliminated, as are the heating operations with the sole and vamp in the oven. What is more, the need for the mid-sole and the sole to be subjected to pressure for a predetermined length of time has also been eliminated. All this considerably reduces the manufacturing costs of the footwear.

- Joining operations between the vamp and the sole are practical and easy to carry out. Regardless of whether joining operations between the two parts take place with the raised layers and their corresponding seats, or by using the velcro strip or even with polyurethane, it is a simple operation which does not involve any complicated equipment to apply the glue with or high temperatures before the latter will stick. Once the sole has been attached to the vamp, they are ready for subsequent operations in the manufacture of the footwear. Furthermore, joining operations between the sole and the vamp are not irreversible as is the case when glue is used. This means that the vamp and the sole can still be separated before final stitching.

- Safety. The use of glues which are often toxic, is avoided in joining operations between the vamp and the sole.

- Economic viability. The above-mentioned advantages will directly or indirectly result in considerable savings in the overall costs of manufacturing the footwear.

The above description is intended to be seen purely for the purposes of an example and is not binding.

Any variations is possible in the way the procedure is carried out or in the manufacturing process for the joining together of the sole and the mid-sole, that may, for example, be obtained by any method of fitting them together differing from the one that has been described.

Claims

- 1) Process for the manufacturing of footwear, this footwear being of the kind consisting of a vamp (2), a mid-sole (3), attached to said vamp (2), to close its lower part, and a sole (4), which is initially to be attached to said vamp (2) by being joined together to said mid-sole (3), and finally by its edge being stitched to said vamp (2); the said process being characterised in that it entails the following stages: the manufacturing of said vamp (2); the manufacturing of said

mid-sole (3) and of said sole (4) respectively comprising parts (6, 8) which are correspondingly matched so that said sole (4) can be joined to or separated from the said mid-sole (3) by the simple exertion of pressure; the joining together by stitching of said mid-sole (3) to said vamp (2); the attaching, by simple pressure, of said sole (4) to said mid-sole (3), attached to said vamp (2); and the stitching of the edge of said sole (4) to said vamp (2).

2) Process for the manufacturing of footwear, this footwear being of the kind consisting of a vamp (12), a mid-sole (13), attached to said vamp (12) to close its lower part, and a sole (14) which is initially to be attached to said vamp (12) by joining it together to said mid-sole (13), and finally by the stitching of its edge to said vamp (12); the said process being characterised in that it entails the following stages: the manufacturing of said vamp (12); the manufacturing of said mid-sole (13) from one of the two parts that may be correspondingly matched together, and of a strip (15) from the remainder of said parts; the joining together by stitching of said mid-sole (13) to said vamp (12); the manufacturing of a sole (14) with said strip (5) attached above it; the joining together of said sole (14) and said vamp (12) after the matching of said strip (15) to said mid-sole (13); and the stitching of the edge of said sole (14) to said vamp (12).

3) Process according to claim 1 characterised in that said parts (6, 8) consist of a number of seats (6) made on the facing of said mid-sole (3) that will be facing outwards, and by a number of raised layers (8) corresponding to said seats (6) made on the facing of a strip (5) that will be facing outwards and which forms an integral part of and will be above said sole (4).

4) Process according to claim 2 characterised in that said mid-sole (13) and strip (15) are respectively made from the two sides that make up a velcro strip fastening.

5) Process according to claim 2 characterised in that said mid-sole (13) and strip (15) are made by using polyurethane which is heated at the moment of the joining of said mid-sole (13) to said strip (15).

6) Footwear made according to the method described in claim 1, the said footwear being of the kind comprising a vamp (2), a mid-sole (3), attached to said vamp (2) to close its lower part, and a sole (4) attached to said vamp (2) by joining together with said mid-sole (3), and also by the stitching of its edge to said vamp (2); said footwear (1) being characterised in that the said mid-sole (3) and said sole (4) are respectively completed by parts (6, 8) which may be correspondingly matched.

7) Footwear made according to the method described in claim 2, the said footwear being of the kind comprising a vamp (12) a mid-sole (13) attached to said vamp (12) to close its lower part, and a sole (14) attached to said vamp (12) by joining together with said mid-sole (13) by the stitching of its edge to said vamp (12); the

said footwear being characterised in that said mid-sole (13) and said sole (14) are respectively made up of two corresponding parts, which may be matched together.

8) Footwear according to claim 6 characterised in that said parts (6, 8) consist of a number of seats (6) made on said mid-sole (3), and of a number of corresponding raised layers (8) made on a facing of a strip (5) which forms an integral part of and will be above said sole (4).

9) Footwear according to claim 7 characterised in that said parts making up said mid-sole (13) and strip (15) are respectively made of the two sides of a velcro strip fastening.

10) Footwear according to claim 7 characterised in that said parts making up said mid-sole (13) and strip (15) are made of polyurethane.

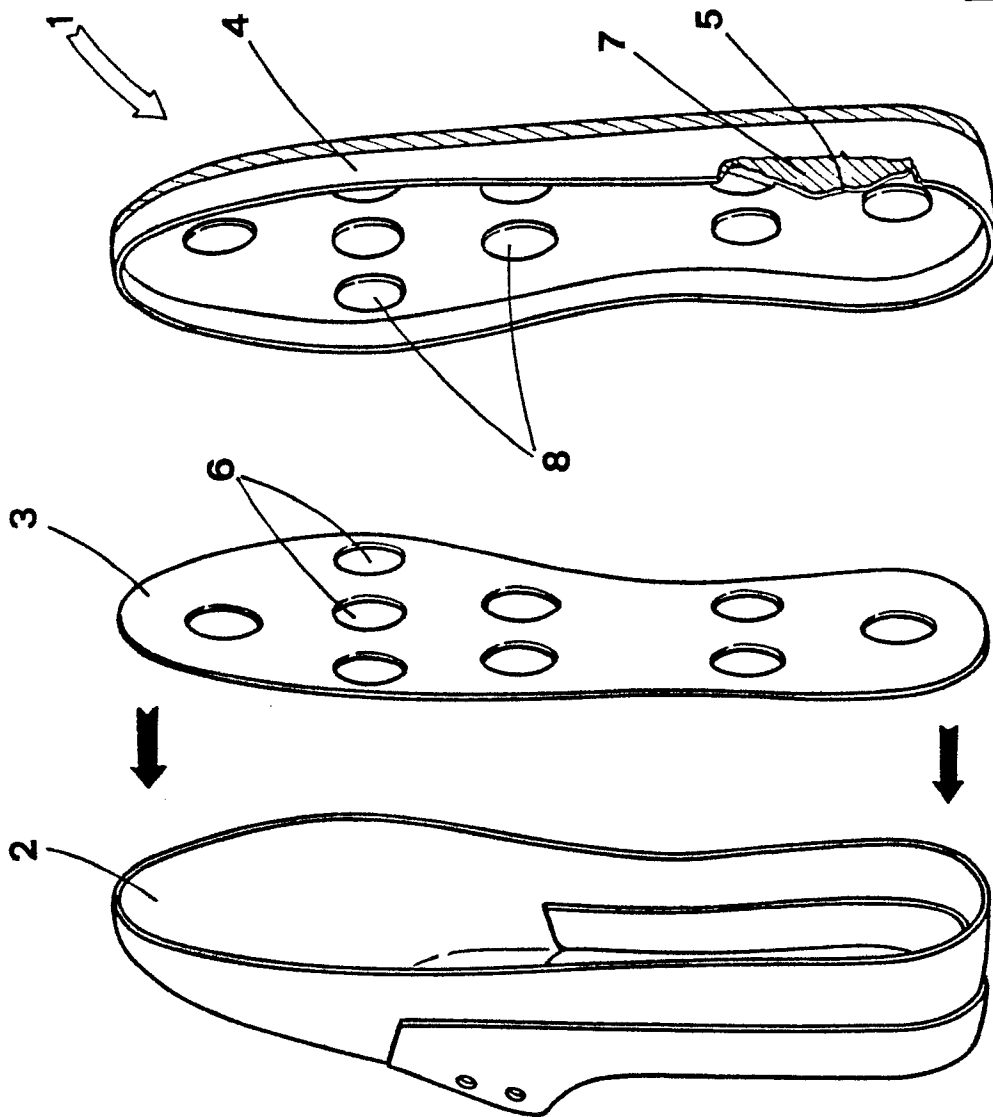


Fig.1

Fig. 2

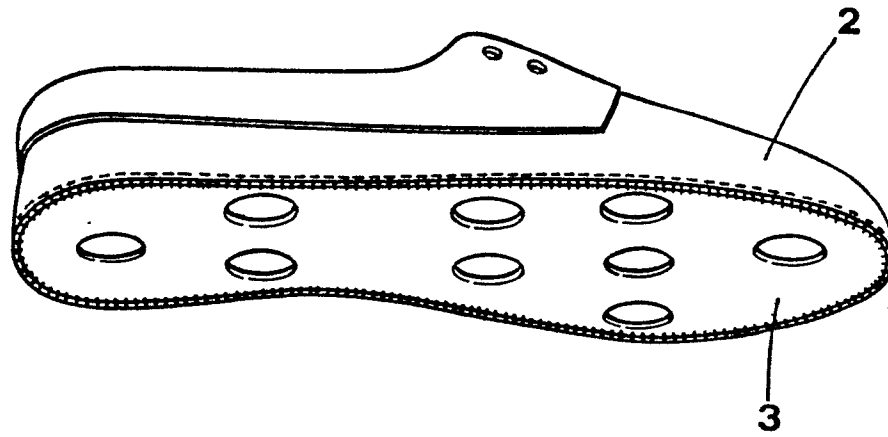


Fig. 3

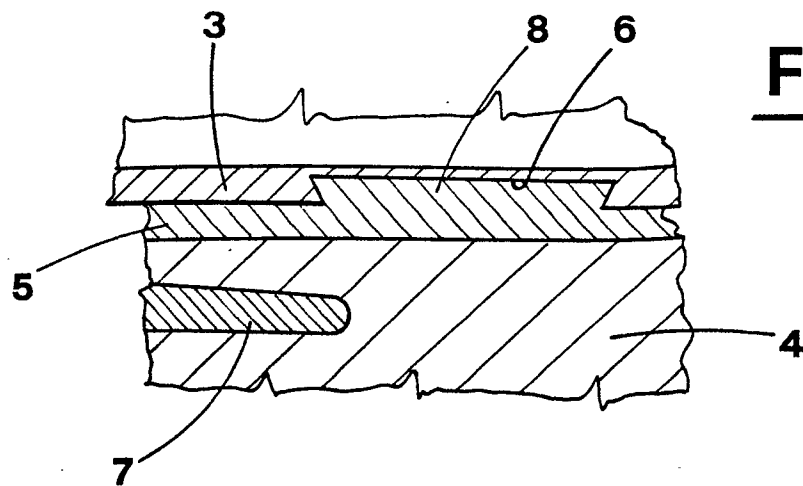
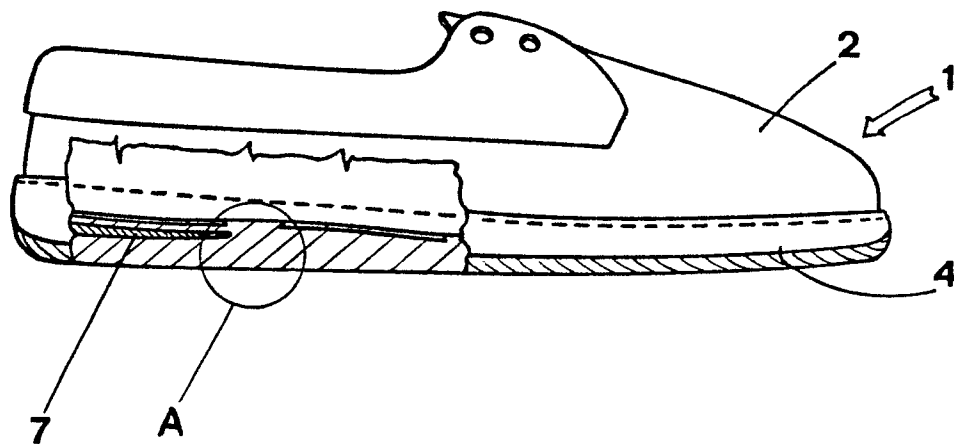


Fig. 4

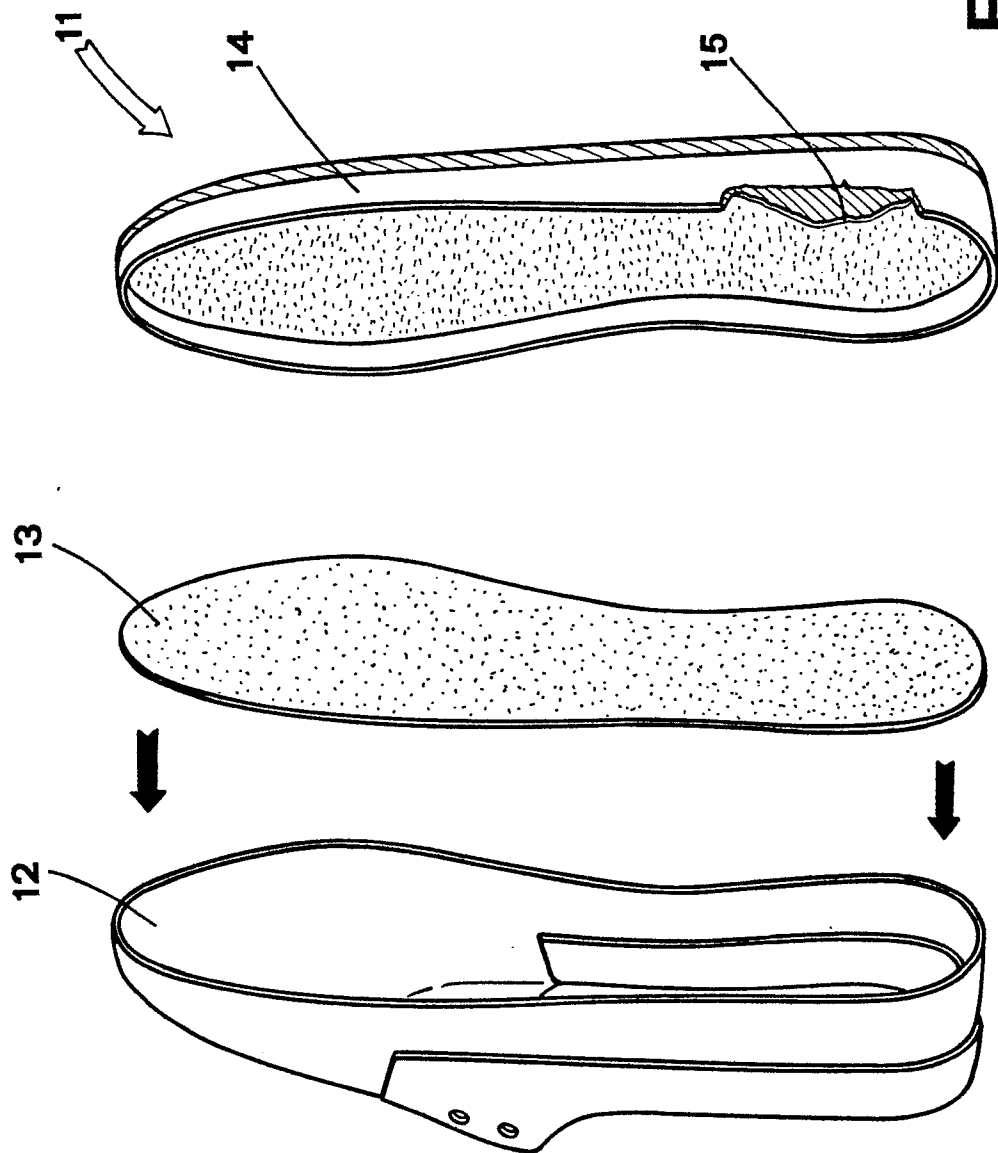


Fig. 5

Fig. 6

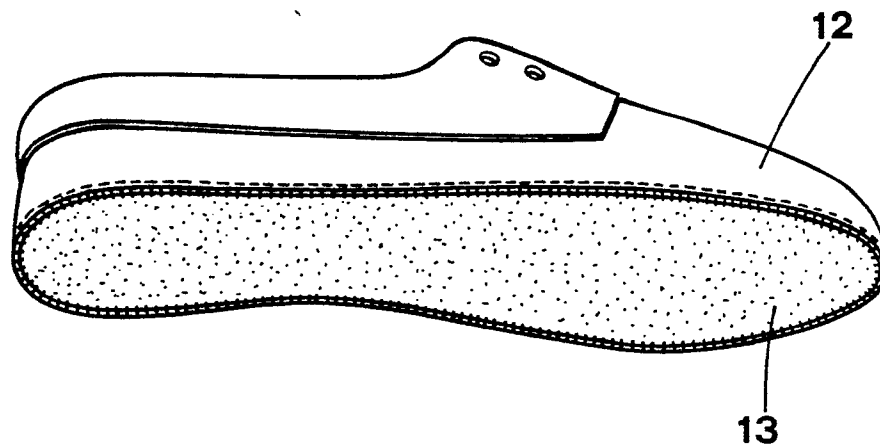


Fig. 7

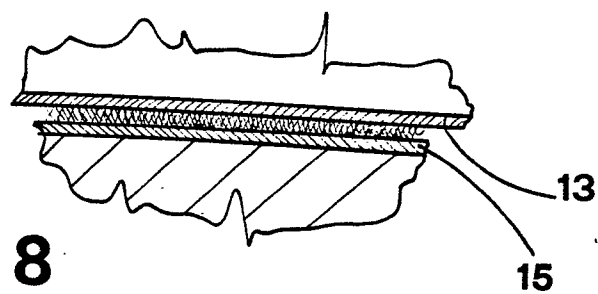
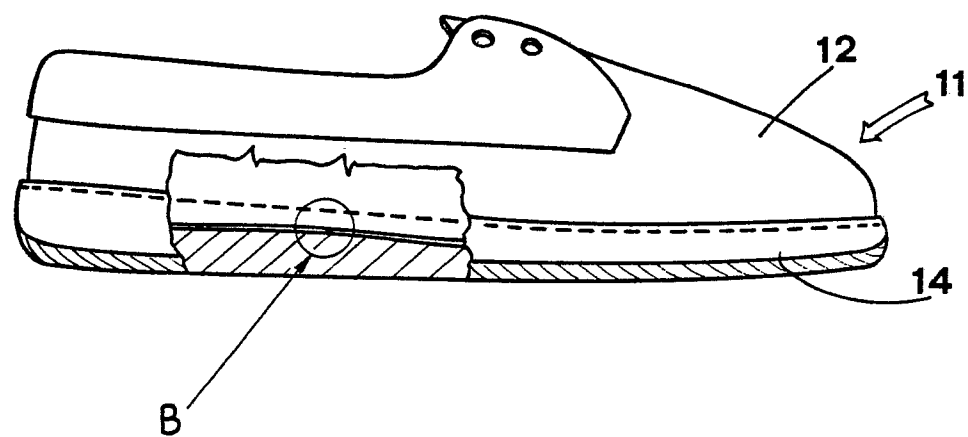


Fig. 8