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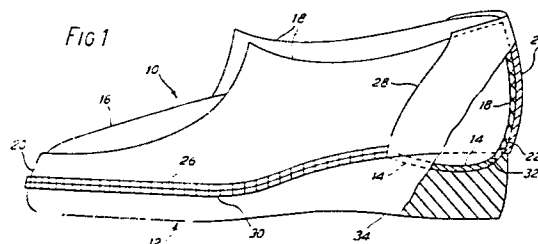
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⑤④ Article of footwear.

⑤⑦ A shoe or other article of footwear has an upper (10), an insole (14) secured at its periphery to the upper and a moulded sole (12) bonded to the insole. At the heel, the edges of the insole and upper meet in a butt join (32) which is secured by zig-zag overstitching so that there are no internal contours rendering the shoe uncomfortable or preventing the heel of the shoe from giving full and uniform support.



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ARTICLE OF FOOTWEAR

This invention relates to articles of footwear.

Shoes or other articles of footwear have been produced with an upper, an insole secured at its periphery to the upper and a moulded sole bonded to the insole. The sole may be bonded to the insole either during the course of the moulding operation itself or subsequently, with adhesives. An example of this construction is shown in British Patent Application No. 2023997 where outwardly turned edges of the upper and the insole are joined by stitching or thonging to provide a welt extending completely around the shoe, this welt being an important decorative feature.

It has been found with shoes having this external welt that there is formed not only an internal hollow at the welt, but also a distinct internal ridge above the hollow where the upper begins to turn outwardly into the welt. These internal contours are not of great consequence in the forepart of the shoe, but at the heel - which is the heaviest loaded part of the foot - the contours lead to a lack of uniform support which may be felt, particularly in walking, and may also lead to discomfort.

It is an object of this invention to provide an article of footwear which, whilst retaining certain advantageous features of previous constructions, offers more uniform support to the heel and hence greater comfort.

Accordingly, the present invention consists in an article of footwear comprising an upper, an insole secured at its periphery to the upper and a moulded sole bonded to insole, characterised in that around the heel portion of the article the respective edges of the insole and the upper are secured together with their edge faces in contact, so providing an inwardly smooth heel cup.

Advantageously, the moulded sole incorporates a concave heel well into which said heel cup is received with

the sole overlying the contacting edges of the upper and the insole behind the heel.

Preferably, the sole is bonded around the back of the heel portion of the article to both the upper and the insole.

This invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 is a diagrammatic view, partly in section, of a shoe according to the present invention.

Figure 2 is a view of the heel part of the shoe shown in Figure 1, at an intermediate stage of manufacture.

Figure 3 is a diagrammatic view of the part of the insole of the shoe shown in Figure 1.

The shoe shown in the drawings generally comprises a leather upper 10, a moulded plastic sole 12 and a leather insole 14.

The upper includes a front and tongue piece 16 stitched between two side pieces 18 which are joined at a front seam 20 and a back seam 22. The back seam 22 is formed as a butt join with zig-zag over stitching and the side pieces 18 are shaped in the region of the seam so that the upper curves slightly inwardly at the lower edge of the heel portion. A strip 24 at the lower edge of each side piece 18 is roughened at the heel, before the back seam 22 is formed, to provide an area of the upper 10 that can be firmly bonded by adhesive to the sole 12 as will be more fully described. Around the forepart and waist of the shoe, the upper is provided with an integral flange 26 which is turned outwardly in the finished shoe and which is pre-punched to enable it to be joined by thonging to the insole. At the heel, the upper is completed by an outside quarter 28 stitched to the side pieces 18 and covering the back seam 22.

The front seam 20 and the attachment and shape of the front and tongue piece 16 are all conventional and need not be described further.

5       The insole 14 is of soft leather with a suede finished lower surface. Around the forepart and waist, the insole 14 has an integral flange 30 prepunched to register precisely with the prepunched flange 26 of the upper. Around the heel, the insole is shaped to mate as a butt join with the heel part of the upper and is secured to the  
10       upper through zig-zag stitching at heel seam 32.

      The sole 12 is moulded from a synthetic polymer, eg foamed polyurethane, with a wedge heel 34 and a contoured foot bed. The foot bed is generally concave in transverse section and, in addition, curves upwardly at the rear of  
15       the heel to provide a heel well bounded on both sides and in the rear. In the finished shoe, the insole is bonded to the footbed with adhesive in a manner which will be made clear in the following description of the precise method of manufacture.

20       As a first step, the front and tongue piece 16 and the two side pieces 18 - already roughened along strip 24 - are stitched together forming a partial upper. The heel portions of the upper and of the insole are then aligned with their respective edge faces in contact to form a butt  
25       joint, and are secured together with zig-zag stitching along heel seam 32. This produces a shaped heel cup which is inwardly smooth. Next, the pre-punched flanges around the waist and fore-part of the upper and insole are secured together by thonging to form an external welt and, to  
30       complete the upper, the outer quarter 28 is stitched around the heel. It is important to note that the lower edge of the outer quarter 28 lies significantly above the heel seam 32 and leaves exposed a roughened area of strip 24.

At either side of the shoe, the lower edge of the quarter 28 lines up with the underside of the external welt with the rearmost extremities of the welt on either side being tucked under the quarter for neatness.

5           In the final stage of manufacture, the completed upper/insole assembly is bonded by adhesive to the contoured footbed of the sole. The insole is pressed into the roughened footbed, after application of adhesive, with the underside of the external welt and the lower edge of the 10 outer quarter together providing a line around the shoe facilitating accurate positioning. Since the heel seam lies for the most part significantly beneath the quarter, the sole overlies the contacting edges of the upper and insole and the roughened strip 24 of the side pieces 18 is 15 bonded to the sole in this region. Over the insole, the suede finish enables an excellent adhesive bond to be made with the roughened footbed of the sole.

A principal advantage of the described shoe is that the smooth heel cup provides full and uniform support for 20 the heel unimpaired by any internal ridges or hollows. Since the exterior surface of the heel cup has no protruding welt it can be fitted inside the well formed at the heel of the footbed enabling the sole to contribute to the horizontal support of the heel thus further improving the 25 comfort of the shoe.

The positioning of the butt join at the heel between the upper and the insole is critical if the highest standards of comfort and support are to be met, although under certain circumstances lower standards may be 30 acceptable. If the join is too high, that is to say if the insole extends too far upwardly, there will be a tendency for the leather of the insole to ruck or pleat as it is brought into the heel seam. If the join is too low, the

seam might be felt under the heel.

5 In a modification which is not illustrated, the  
zig-zag stitched butt join between the upper and the  
insole is extended forwardly to the waist of the shoe, the  
external welt remaining around the fore-part. Whilst  
the avoidance of internal ridges and hollows is not felt to  
be quite as important in the waist of the shoe as it is in  
the heel, it nevertheless represents an improvement which  
may in certain types of shoe be pronounced, a particular  
10 instance being where an instep support is incorporated.

It should be understood that this invention has  
been described by way of example only and a wide variety of  
modifications are possible without departing from the scope  
of the invention.

15 Thus, the upper and insole need not necessarily be  
secured at the heel with a zig-zag stitched butt join,  
provided that whatever method of attachment is selected,  
the edge faces of the upper and insole remain in contact.  
Obviously, a different pattern of stitching could be  
20 employed and the butt join could also be replaced by a skived  
join with plain stitching at the centre of the join passing  
through the skived portions of both the upper and insole.  
Moreover, under certain circumstances it may be possible to  
replace the stitching by adhesive, although care must be  
25 taken to provide the necessary bond strength. Around the  
waist and forepart of the shoe the described thonging could  
be replaced by machine stitching.

In other modifications, the shape of the upper and  
sole can be varied, possibly to provide articles of  
30 footwear other than shoes. Yet further modifications will  
be apparent to those skilled in the art.

CLAIMS

1. An article of footwear comprising an upper, an insole secured at its periphery to the upper and a moulded sole bonded to the insole, characterised in that around the heel portion of the article the  
5       respective edges of the insole and the upper are secured together with their edge faces in contact, so providing an inwardly smooth heel cup.
2. An article of footwear according to Claim 1, characterised in that the moulded sole incorporates a  
10       concave heel well into which said heel cup is received with the sole over-lying the contacting edges of the upper and insole behind the heel.
3. An article of footwear according to Claim 2, characterised in that the sole is bonded around the back of  
15       the heel portion of the article to both the upper and the insole.
4. An article of footwear according to any one of the preceding claims, characterised in that the respective edges of the insole and the upper meet in a butt join.
- 20       5. An article of footwear according to any one of the preceding claims, characterised in that the respective edges of the insole and the upper are secured together by zig-zag or similar stitching.
6. An article of footwear according to any one of the preceding claims, characterised in that the lower surface of  
25       the insole is suede finished to promote adhesion to the sole.
7. An article of footwear according to any one of the preceding claims, characterised in that the respective edges  
30       of the insole and the upper are secured together with their edge faces in contact, additionally at the waist of the article.

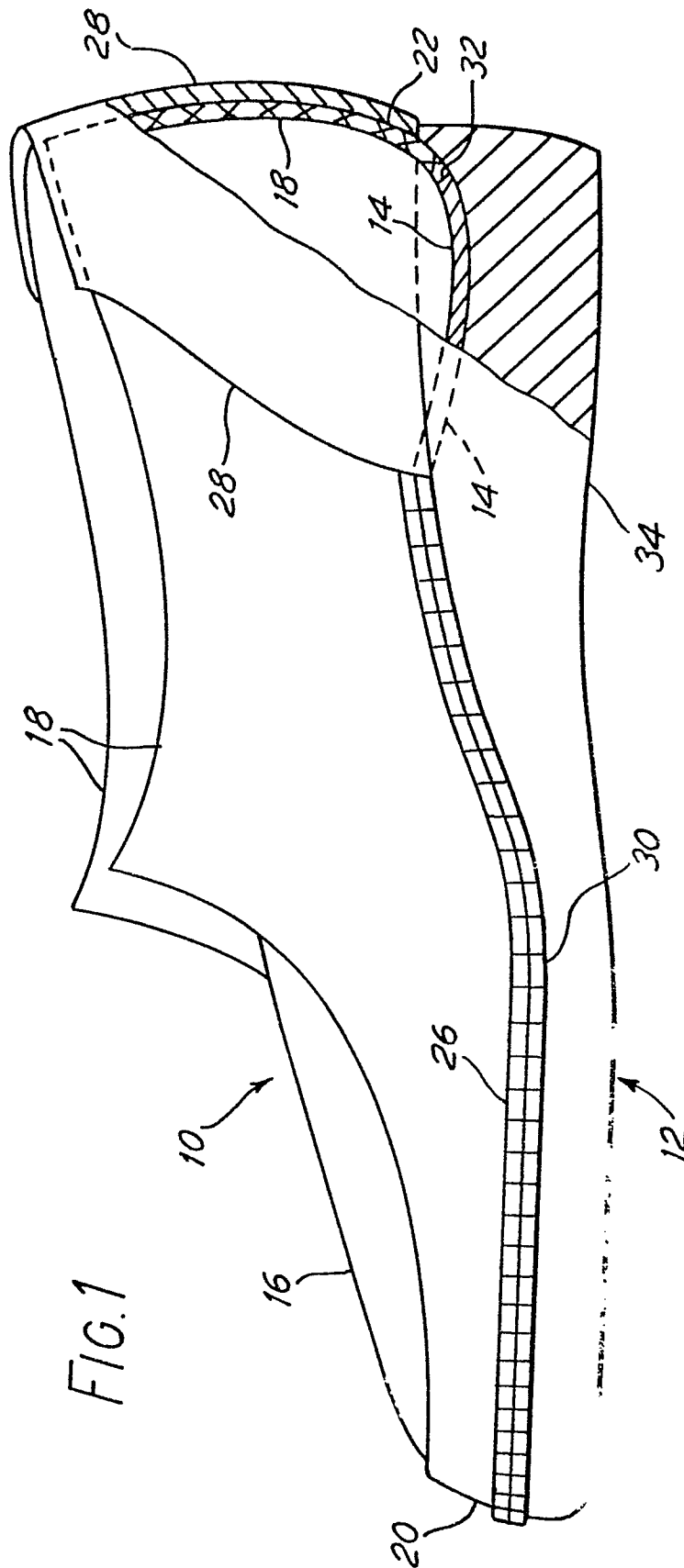


FIG. 2

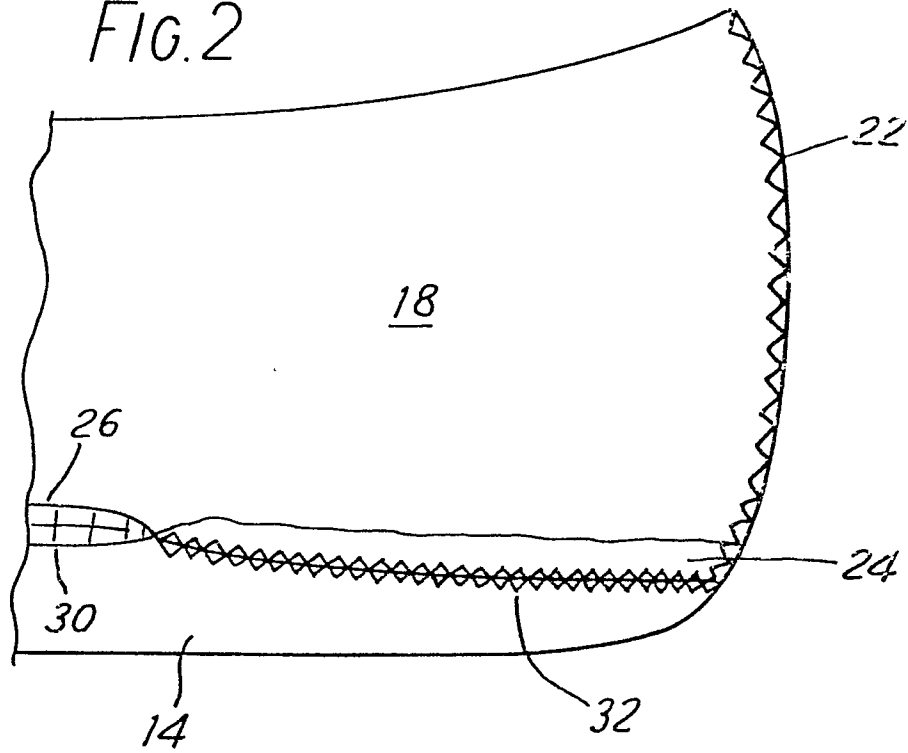
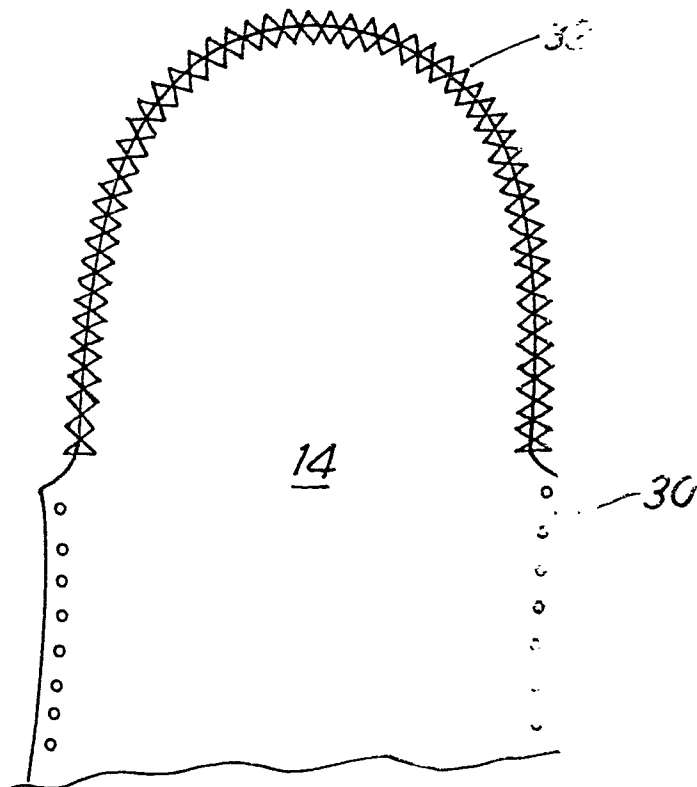


FIG. 3





| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                     |                                                                               |                                                                                                                                                                                                                                                                                       |                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Category                                                                                                                                                                                                                | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim                                                                                                                                                                                                                                                                     | CLASSIFICATION OF THE APPLICATION (Int. Cl. <sup>3</sup> ) |
| X                                                                                                                                                                                                                       | FR-A-2 044 706 (LEMM)<br><br>& GB - A - 1 301 147<br><br>---                  | 1, 3, 4,<br>5, 7                                                                                                                                                                                                                                                                      | A 43 B 9/00                                                |
| X                                                                                                                                                                                                                       | US-A-4 156 947 (M.NADLER)<br><br>---                                          | 1, 3, 4,<br>5, 7                                                                                                                                                                                                                                                                      |                                                            |
| A, D                                                                                                                                                                                                                    | GB-A-2 023 997 (A.RADFORD)<br><br>---                                         |                                                                                                                                                                                                                                                                                       |                                                            |
| A                                                                                                                                                                                                                       | US-A-3 821 827 (M.NADLER)<br><br>---                                          |                                                                                                                                                                                                                                                                                       |                                                            |
| A                                                                                                                                                                                                                       | GB-A-1 466 859 (M.COTTON)<br><br>-----                                        |                                                                                                                                                                                                                                                                                       |                                                            |
|                                                                                                                                                                                                                         |                                                                               |                                                                                                                                                                                                                                                                                       | TECHNICAL FIELDS<br>SEARCHED (Int. Cl. <sup>3</sup> )      |
|                                                                                                                                                                                                                         |                                                                               |                                                                                                                                                                                                                                                                                       | A 43 B                                                     |
| The present search report has been drawn up for all claims                                                                                                                                                              |                                                                               |                                                                                                                                                                                                                                                                                       |                                                            |
| Place of search<br>THE HAGUE                                                                                                                                                                                            |                                                                               | Date of completion of the search<br>27-05-1982                                                                                                                                                                                                                                        | Examiner<br>DECLERCK J. T.                                 |
| <b>CATEGORY OF CITED DOCUMENTS</b>                                                                                                                                                                                      |                                                                               |                                                                                                                                                                                                                                                                                       |                                                            |
| X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |                                                                               | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>-----<br>& : member of the same patent family, corresponding document |                                                            |