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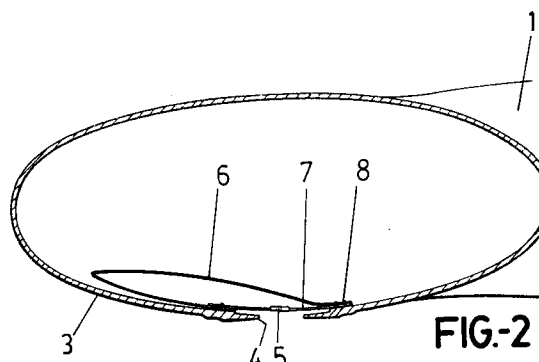
(11) Publication number:

0 538 537 A1

(12)

EUROPEAN PATENT APPLICATION(21) Application number: **91500115.0**(51) Int. Cl.⁵: **A43C 11/12, A43B 1/10,
A43B 3/02**(22) Date of filing: **22.10.91**(43) Date of publication of application:
28.04.93 Bulletin 93/17(84) Designated Contracting States:
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E-28006 Madrid (ES)(54) **Process for the manufacture of sealed boots.**

(57) The process, specifically for boots with a zip (5) on the leg (3), is based on the fixing of said zip (5) to the inside fold (6) by sewn seams (8), followed by the impregnation of said marginal areas with a thermofusible substance and concluding with the formation of the body-fold (1-3) assembly of the boot, as a single piece, in an injection process which is done directly on the zip-fold (5-6) unit, i.e. by placing said unit in the injection mould. In said injection operation, if incorporated, an inside lining is fitted to the body-leg assembly of the boot.

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PURPOSE OF THE INVENTION

This invention refers to a new process for the manufacture of sealed boots of the sort commonly known as "gumboots" and more specifically of boots of one height or another with a zip in the leg to make it easier to put the boot on and take it off, with the fundamental aim of ensuring that this type of boot is better sealed.

BACKGROUND TO THE INVENTION

There are many activities carried out on very wet floors, which may even be flooded or with frequent splashing, making it highly recommendable for such activities to use sealed boots, specifically those based on polyvinyl chloride, thermoplastic gum or any other material suitable for creating a barrier against the damp.

Generally, the leg of such boots extends close to the user's knee level to offer suitable protection. Normally, the leg of such boots is completely closed to ensure the seal, involving significant difficulties when it comes to putting them on: therefore, more recently, this type of boot has been fitted with a side zip largely affecting the leg and which, when open, makes it much easier to put the boot on and take it off.

However, the zip constitutes a point of loss of seal for the boot since, until now, with existing manufacturing procedures, boots of this type are made in an autoclave, i.e. by the vulcanization of two parts, the sole and the leg, suitably welded together, and the zip then welded to the leg. However, the welding of the zip to the leg has proved inadequate for ensuring the seal in this area.

Therefore, this type of zipped boot, made with existing procedures, ensures greater comfort of use thanks to the introduction of the zip itself, but at the cost of a loss of seal.

DESCRIPTION OF THE INVENTION

The process proposed in this invention has been designed to completely resolve the problem outlined above so as to provide a zipped boot which, in addition to the advantages of the zip, also ensures that the boot is virtually completely sealed or hermetic.

To do this, more specifically, the process set forth has an initial operative phase in which the zip is simply sewn to the classical fold inside the boot.

Once the zip is secured to the fold, in a second operative phase, the zip is then impregnated along its margins or textile sections, where it is secured to said fold, with a thermofusible material which, once thermofused, provides the appropriate seal or hermetic characteristics.

The body of the boot is then finally formed, with a single piece, in an injection procedure with the zip-fold unit in the mould, so that the boot material is injected directly on to the margins of the fold and zip thereby perfectly joining them to the leg of the boot, at the same time as the join is sealed by the thermofusion process and subsequent solidification of the substance with which the zip had previously been impregnated.

Clearly, this operative injection phase can be done as described or by including a lining in the mould, like a stocking, which covers the inside surface of the body of the boot.

DESCRIPTION OF THE DRAWINGS

As a complement to the description being given and to help in a better understanding of the characteristics of the invention, these Specifications are accompanied by a set of drawings forming an integral part hereof, and which, by way of illustration and without limitation, show the following:

Figure 1 is a perspective view of a sealed boot made according to the manufacturing process which is the subject of this invention.

Figure 2 is a transversal cross-section of said boot.

A PREFERENTIAL DESIGN FOR THE INVENTION

From these figures, it can be seen how a boot made using the manufacturing process advanced here has a body (1) which is anatomically shaped, with the classic reliefs (2), forming the sole as such and extended upwards with the leg (3) which has a cut (4) for preference on the inside, where a zip (5) is fitted which closes said cut when the boot is in use: in addition, said cut (4) has an internal fold (6) of a size which enables the leg (3) to be deformed as the boot is put on and taken off, i.e. when the zip (5) is open.

With this basic structure, the process advanced here begins, as already pointed out, by fixing the margins or textile areas (7) of the zip (5) to the fold (6) by sewn seams (8) as shown in detail in figure 2, so that said fold (6), which tends to fold over on itself in the rest position, overlaps on one side over that margin (7) of the zip (5) and inside it, while the opposite side overlaps the margin of the zip on the opposite side, i.e. on its outside, so as to help the fold to crease in the correct position.

Once the zip (5) and fold (6) have been fixed along said sewn seams (8), the zip is impregnated with a thermofusible substance.

The assembly made up of the zip (5) and fold (6) is placed in a mould where an single-piece injection operation takes place, to form the body (1) of the boot and its leg (3).

In this injection phase, thanks to the heat of the material making up the boot itself, e.g. PVC, plus that of the heating of the mould on the zip-fold assembly, the thermofusible material with which said zip was impregnated melts, filling all the interstices of the textile material forming the margins (7) of said zip (5) and which, once cooled, creates a virtually hermetic barrier in this area between the leg (3) of the boot and its internal fold (6), and so extending these hermetic characteristics to the boot as a whole, notwithstanding the presence of the zip.

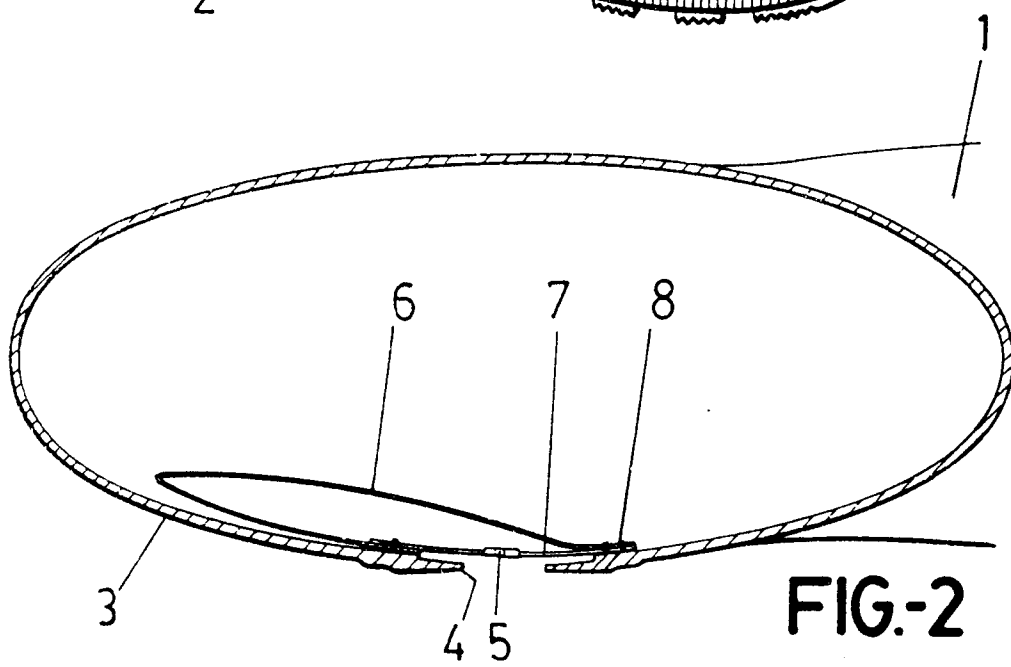
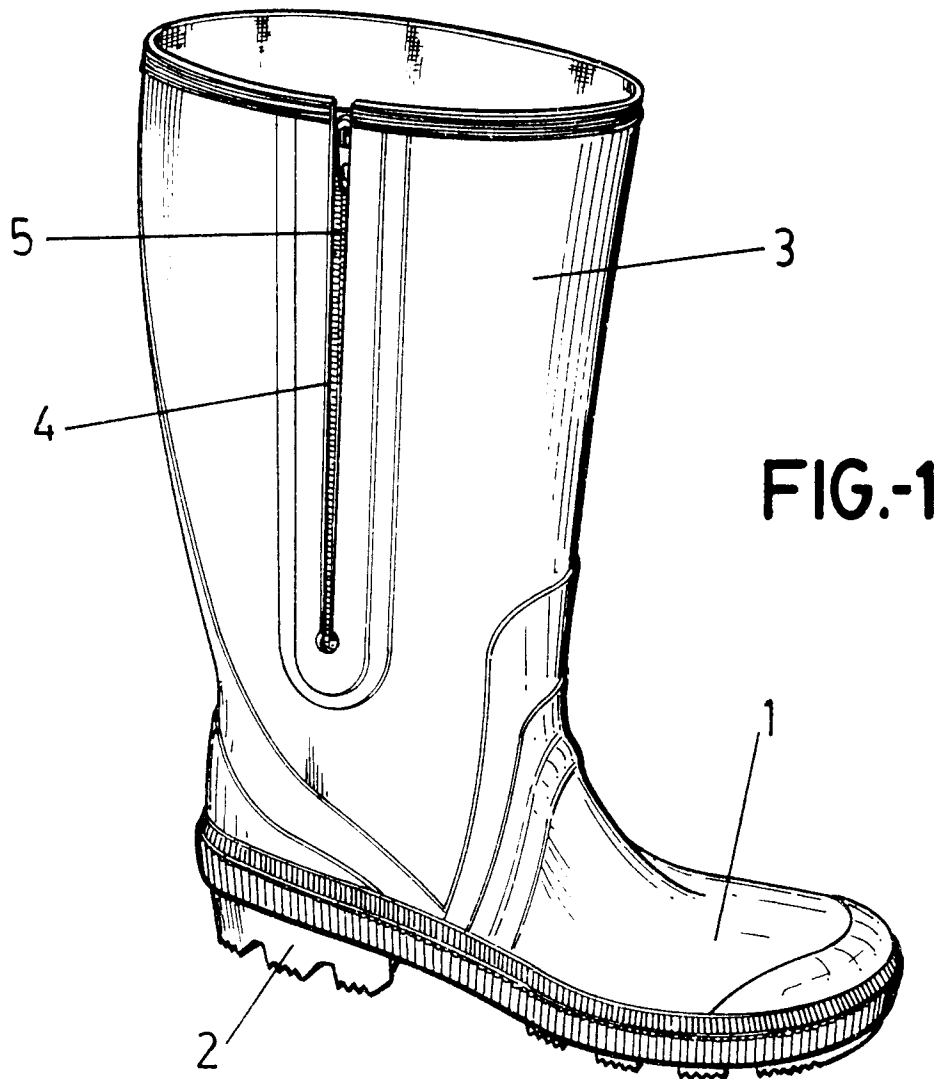
It is not felt necessary to extend this description in order for any expert in the field to grasp the scope of the invention and the benefits arising from it.

The materials, form, size and arrangement of the elements may be varied, provided that this does not involve an alteration to the essence of the invention.

The terms of these Specifications must be interpreted in all cases broadly, without limitation.

Claims

1. A process for the manufacture of sealed boots, specifically of boots fitted with a side zip making it easier to open the leg, wherein, essentially, the following operative phases occur:
 - The fixing of the margins or textile areas of the zip to the inside fold of the boot, specifically by sewn seams.
 - The impregnation of said zip margins with a thermofusible substance which is hermetic in the solid state.
 - The formation of the boot as such, in a single piece, by direct injection on to the zip-fold assembly, which is placed in the injection mould concerned.





European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 91 50 0115

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.5)
Y	US-A-3 059 352 (CLASON) * column 1, line 10 - line 55 * * column 2, line 70 - column 3, line 5; figures 3, 4 *	1	A43C11/12 A43B1/10 A43B3/02
Y	CH-A-620 103 (RIGON SPA) * page 2, left column, line 34 - line 62; claims; figures *	1	
A	US-A-2 895 149 (ABERNETHY)	1	
A	BE-A-534 895 (PIRELLI SPA)		
A	US-A-1 834 582 (GRIFFITHS)		
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A43C A43B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 MAY 1992	Examiner SOEDERBERG J. E.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			