



## Description

### Technical Field

**[0001]** The present invention concerns the technical sector relative to the production of footwear and specifically of plastic footwear, such as clogs, sandals and similar.

**[0002]** In particular, this invention concerns the specific production of footwear in antistatic plastic material, made by pressure casting and commonly used by health workers in hospitals or closed health structures, where the bacterial hygienic control is very important. Despite this particular purpose, this footwear has also conquered a wider public, beyond that specific sector, thanks to its comfortable and practical use. It has the main characteristic to be simply manufactured, in this specific case with a single material, with surfaces easy to clean and accurately disinfect, features that, together with the above-mentioned comfort, make it essential in the clothing of hospital personnel or anyone standing for many hours during the day.

**[0003]** This product is perfect in rooms with specific bacterial hygienic needs, such as certain hospital wards and obviously the operating theatres. It's certainly easier to clean and sterilize footwear homogeneously manufactured, stamped, with no seams and no porous or absorbing materials, or however shaped so that it creates few bends or small gaps, natural receptacles of impurity, which make the cleaning and sterilizing operations more complex.

### Background Art

**[0004]** Nowadays, this footwear is almost totally made in plastic material, by pressure casting, except for the strap, which is made apart, in a second manufacturing phase, and then soldered to the inner surface of the footwear, while, when put on, it passes on the back over the heel and is closed by a buckle on the external side of the same footwear.

**[0005]** Unfortunately, this manufacturing technology necessarily alters the above-mentioned characteristics of uniform and simple maintenance when cleaning the product, by overlapping different materials, creating bends and small gaps possible receptacles of germs and bacteria. In addition, the fastening of the buckle on the external part of the footwear is often made of metal, like in the common shoes with similar type of fastening. Which eventually involves an inevitable oxidation of the footwear and makes it not suitable for certain purposes when it's necessary to eliminate all the infecting agents.

**[0006]** Furthermore, the current manufacturing technology, generally designed for the production in a single body of the footwear, needs a different manufacturing process for strap and buckle, involving more and different working phases, since it's later necessary to apply the buckle to the inside. This process can be carried out ei-

ther by seam, with the above-described hygienic consequences, or by soldering, with the technological need to find materials anyway compatible with casting. Which not only involves a further manufacturing process generating costs, but it's also always still subject, like all the varied components, to possible divisions, cuts, breaks or manufacturing imperfections that make it a critical point of resistance in time. As a matter of fact, the buckle cannot be realized with the same material as the footwear, because the soft plastic wouldn't realize a firm clasp of the strap, coming out from its place and so leaving the foot free. Therefore, the buckle must be made of more rigid plastic that, being different from the plastic used for the footwear, cannot be soldered to it, but must be closed by other means and principally by a metal rivet subject to wear and tear, oxidation and other technical problems.

**[0007]** From the opposite side of the footwear, the one holding the fastening, the use of the metal buckle, naturally subject to corrosion, not only endangers the total safety of the footwear, but this accessory also needs a separate element, fixed to the external side of the clog, which involves all the problems already described in the rough fastening of the buckle.

**[0008]** In practice, this drawback is confirmed by the fact that the fastening strap is often ignored or removed, if existing, or even eliminated at all by choosing a different kind of footwear without it.

**[0009]** It is also known the patent application no. PI2005U000008 filed in the name of the same owners and relative to a footwear in plastic made by pressure casting that comprises the following features made in a sole cast of pressure casting: a back shoestring and a button to be inserted into the buttonhole of a buckle made in a stiffer plastic within which the open part of said shoestring stops. Therefore this solution has the shoestring made in pressure casting resolving this way the problems relative to the possible detachment of the shoestring from the shoe, other than other problems related to the processing and the excessive cost for this attaching job.

**[0010]** However the above solution does not resolve the technical problem relative to the mobility of the shoestring and to the possibility to remove it or, eventually, to change it in case of wearing, as in that case it would be necessary to buy a new footwear, being the shoestring incorporated to it.

### Disclosure of invention

**[0011]** This invention aims at solving the above-mentioned and other drawbacks, supplying footwear made by plastic pressure casting, comprising protruding elements to which on one side it can be fasten an end of the shoestring, and on the other side a plastic buckle, being these protruding elements made in a sole body with the same shoe.

**[0012]** Particularly the invention provides that these protruding elements, called pins hereinafter in the description, are made with the same plastic pressure cast-

ing with which the shoe is made.

**[0013]** The advantages that derive from this invention essentially consist in what follows. It is possible to eliminate the metal parts and make a shoe that is completely made in plastic; it is well fitting, and equally easy washing and sterilizing, given exactly its constructive homogeneity; the costs are reduced by eliminating the welding, seam or re-fastening through rivets processing, using almost for the whole fastening device, the same plastic material used for producing the same shoe. Moreover, this shoe made in a sole cast, entails less risks of breaking in critical parts, which on the other hand happens more often when it is assembled with different supports. Another advantage is given by the fact that the sting becomes more movable and in this way it can be substituted as the strap, and it can eventually be made in a plastic material different from the one used to make the shoe. An important advantage of the shoe is given by the presence of the pins at the ends of the shoe, at the back part of the foot, which allow the fastening of the string and/or buckle and which are made in the same pressure die casting with which is made the shoe, eliminating all the risks relative to the formation of the rust.

**[0014]** These and further advantages, aims and features of the present invention, will be better understood by every experts of the field with the description that follows and with the enclosed drawings, given as a practical exemplification of the invention but not to be considered in a restraining manner.

**[0015]** Reduced to its basic structure and referring to the figures of the attached drawings, a shoe made in a mono-block plastic material, preferably a clog, comprises at least two pins (5) on the side of the foot insertion zone made in the same mono-block of the shoe, within which is bound a string and/or a buckle.

**[0016]** The pin (5) has a mushroom shape and comprises a shank (8) and a head (9), being this shank (8) incorporated with the body of the shoe (1).

**[0017]** Advantageously the height of the shank (8) corresponds to the thickness of the string (2) and/or of the body of the buckle (3).

**[0018]** Advantageously the wideness of the head (9) is greater respect the opening of the buttonhole (6) (7) of the buckle and/or string, in a way that once is inserted on this head, it can go through and be blocked underneath the head without exiting easily.

**[0019]** Advantageously the shoe is made in an elastically deformable plastic.

**[0020]** The shoe is made by plastic mono-block pressure die-casting.

**[0021]** The shoe comprises a string (2) that presents at least a buttonhole (7) on one of its ends. This buttonhole (7) is inserted to the pin (5) placed on the shoe, on the opposite side of the one where is inserted the pin (6) of the buckle (3).

**[0022]** The shoe comprises a string (3) that presents at least a buttonhole (6) on its end that is opposite to the fastening zone (10). This buttonhole (6) is inserted to the

pin (5) placed on the shoe, on the opposite side of the one where is inserted the pin (7) of the string (2).

**[0023]** Advantageously the string (2) is made in a plastic material.

**[0024]** Advantageously the buckle (3) is made in a plastic material.

**[0025]** The buckle (3) is made in a mono-block plastic material, comprising at least a notch to block the string and at least one buttonhole (6) that is inserted on the pin (5).

**[0026]** The pin (5) made by pressure die casting along with the shoe can have any shape as long as it allows the insertion into the buttonhole (6) (7) obtained on the buckle and/or on the string. This pin can have a circular, squarely, hexagonal or any other shape as long as is made in a sole cast with the shoe. The pin is made by a body and a protruding head with greater dimensions that the body, but, thanks to the elastic material with which is made, is perfectly inserted into the buttonhole (6) (7), protruding then out of it and blocking the buckle or the string.

**[0027]** Advantageously the string and/or the buckle are removable, and can be separated from the shoe by removing the buttonhole (6) (7) from the pin (5).

**[0028]** The invention, thanks to its prerogative to be made in a sole cast, entails many advantages in terms of costs, by avoiding further welding, or seaming processing of the closing device. The same prerogative, guarantees a safer and longer lasting of the shoe, eliminating the critical points that are created when different materials are joint together.

**[0029]** Also the string and the buckle are made with different castings and can be easily inserted and removed in the case we want to wear the shoe unfastened or when on of the two elements is broken and must be substituted.

**[0030]** Advantageously, the uniqueness of the material that is used, together with the possibility given by the producing technology to make the invention in the same piece, allow to the same to eliminate the angles, recesses, "shaded" or hard to reach section, in a way to obtain easily a perfect bacteriological cleaning of the shoes, making them optimal for the specific usage, and for any other usage is requested.

**[0031]** Moreover the invention is characterized to be made entirely in plastic, without any parts in iron or metal, allowing to proceed nimbly for its sterilization.

**[0032]** A shoe made in a mono-block plastic material, preferably a clog, comprises at least two pins (5) on the side of the foot insertion zone made in the same mono-block of the shoe, within which is bound, also in a not permanent way, at least a string and/or on the opposite side, a buckle;

**[0033]** The pin (5) has a mushroom shape and comprises a shank (8) and a head (9), being this shank (8) incorporated with the body of the shoe (1) from where it begins.

**[0034]** The height of the shank (8) corresponds to at least

to the thickness of the string (2) and/or of the body of the buckle (3).

[0035] The wideness of the head (9) is greater respect the opening of the buttonhole (6) (7) obtained on the body of the buckle and/or string, in a way that once is inserted on this head, it can go through and be blocked underneath the head without exiting easily.

[0036] The shoe is made in an elastically deformable plastic material.

[0037] The shoe is made by plastic mono-block pressure die-casting.

[0038] The shoe comprises at least a string (2) that presents at least a buttonhole (7) on one of its ends. This buttonhole (7) is inserted to one of the pins (5) placed on the shoe;

[0039] The pin (5) on which the buttonhole (7) is inserted is opposite to the one in which is inserted the buttonhole (6) of the buckle (3).

[0040] The string (3) presents at least a buttonhole (6) on its end that is opposite to the fastening zone (10). This buttonhole (6) is inserted to the pin (5) placed on the shoe;

[0041] The pin (5) on which the buttonhole (6) is inserted is opposite to the one in which is inserted the buttonhole (7) of the buckle (2).

[0042] The string (2) is made in a plastic material.

[0043] The buckle (3) is made in a plastic material.

[0044] The buckle (3) is made in a mono-block plastic material, comprising at least a notch to block the string and at least one buttonhole (6) that is inserted on the pin (5).

[0045] The pin (5) made by pressure die casting along with the shoe can have any shape as long as it allows the insertion into the buttonhole (6) (7) obtained on the buckle and /or on the string.

[0046] The string and/or the buckle are removable, and can be separated from the shoe by removing the buttonhole (6)(7) from the pin (5).

[0047] The shoe is made by plastic pressure die-casting.

[0048] The buckle (3) is made in a sole piece in a plastic material that is harder in respect to the one used for the shoe.

[0049] The shape and sizes of the pin (5) are proportional to the one of the buttonhole (6) (7) in a way to consent an easy insertion of this last one on the head (9) of the same pin, underneath which the buttonhole is blocked.

[0050] Practically, the processing's details can anyway vary in an equivalent manner in the shape, sizes, and disposition of the elements, in the nature of the material used, without leaving the solution's area adopted and therefore remaining within the restrictions of the protection to the undertaken patent for industrial invention.

#### Brief description of drawings

[0051]

Fig. 1 shows an external lateral view of the shoe (1). On this side there is the pin (5), made with casting together with the shoe and on which it is inserted the buttonhole (6) of the buckle (5), which constitutes an independent piece made in a plastic material that is least flexible but more resistant. In the drawing the buckle (3) results fastened to the string (2) that is inserted in its part containing the fastener (10), opposite to the one (4) on which the buttonhole is obtained.

Fig. 2 shows still the shoe (1) viewed from the opposite side, where is highlighted the other pin (5), made with casting together with the shoe and on which it is inserted the buttonhole (7) of the buckle (2).

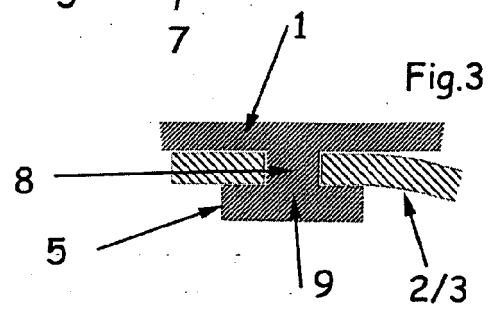
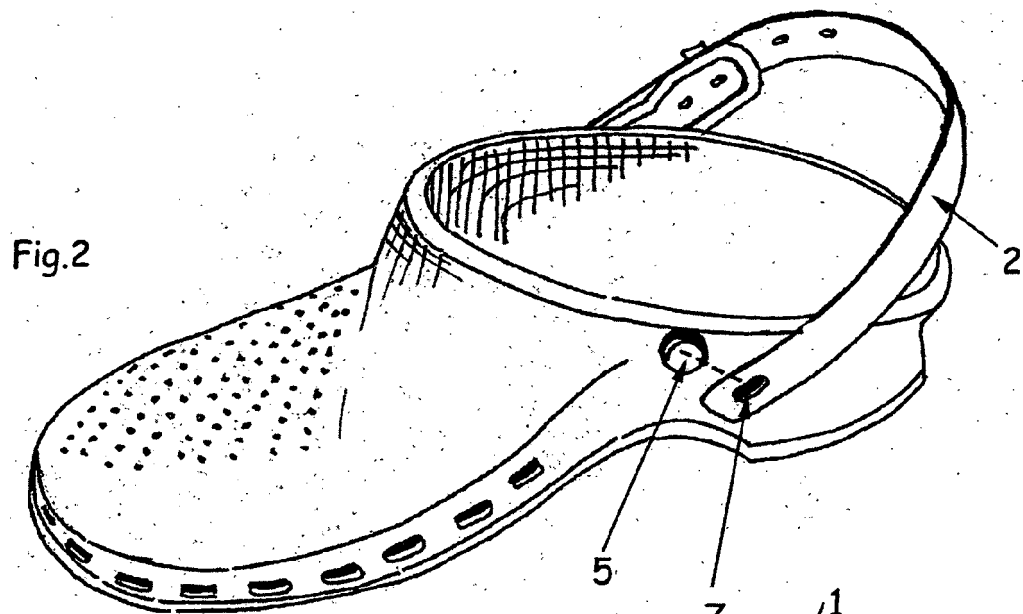
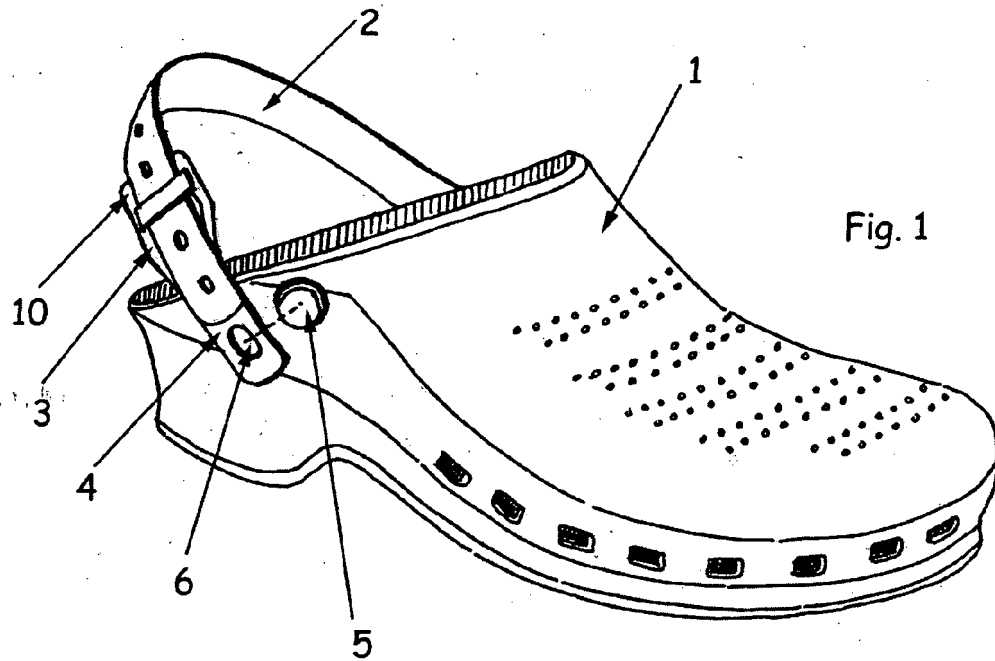
Fig. 3 shows, enlarged and in section, the pin (5) with the head (9) and the shank (8), both integral to the shoe (1). Moreover it is highlighted the string (2) or the body of the buckle (3) inserted underneath the head (9).

#### Claims

1. A shoe made in a mono-block plastic material, preferably with a clog shape, **characterized by** the fact that it comprises at least two pins (1) on the side of the foot insertion's zone made in the same mono-block of the shoe, within which is bound, also in a not permanent way, at least a string and/or on the opposite side, a buckle;
2. A shoe as claimed in claim 1 **characterized by** the fact that the pin (5) has a mushroom shape and comprises a shank (8) and a head (9), being this shank (8) incorporated with the body of the shoe (1) from where it begins.
3. A shoe as claimed in one or more of the previous claims from 1 to 2 **characterized in that** the height of the shank (8) corresponds at least to the thickness of the string (2) and/or to the body of the buckle (3).
4. A shoe as claimed in one or more of the previous claims from 1 to 3 **characterized in that** the thickness of the shank (9) is greater respect the opening of the buttonhole (6) (7) obtained on the body of the buckle and/or string, in a way that once is inserted on this head, it can go through and be blocked underneath the head without exiting easily.
5. A shoe as claimed in one of the previous claims from 1 to 4 **characterized by** the fact that is made in an elastically deformable plastic material.
6. A shoe as claimed in one of the previous claims from 1 to 5 **characterized by** the fact that is made by plastic mono-block pressure die-casting.

7. A shoe as claimed in one of the previous claims from 1 to 6 **characterized by** the fact that comprises at least a string (2) that presents at least a buttonhole (7) on one of its ends. This buttonhole (7) is inserted to one of the pins (5) placed on the shoe; 5
8. A shoe as claimed in claim 7 **characterized by** the fact that the pin (5) on which is inserted the buttonhole (7) is opposite to the one in which is inserted the buttonhole (6) of the buckle (3). 10
9. A shoe as claimed in one of the previous claims from 1 to 8 **characterized by** the fact that comprises at least a buckle (3) that presents at least a buttonhole (6) on its end that is opposite to the o the fastening zone (10). This buttonhole (6) is inserted to the pin (5) placed on the shoe; 15
10. A shoe as claimed in claim 7 **characterized by** the fact that the pin (5) on which is inserted the buttonhole (6) is opposite to the one in which is inserted the buttonhole (7) of the string (2). 20
11. A shoe as claimed in one of the previous claims from 1 to 10 **characterized by** the fact that the string (2) is made in a plastic material. 25
12. A shoe as claimed in one of the previous claims from 1 to 11 **characterized by** the fact that the buckle (3) is made in a plastic material. 30
13. A shoe as claimed in one of the previous claims from 1 to 12 **characterized by** the fact that the buckle (3) is made in a mono-block plastic material, comprising at least a notch to block the string and at least one buttonhole (6) that is inserted on the pin (5). 35
14. A shoe as claimed in one of the previous claims from 1 to 13 **characterized by** the fact that the pin (5) made by pressure die casting along with the shoe can have any shape as long as it allows the insertion into the buttonhole (6) (7) obtained on the buckle and /or on the string. 40
15. A shoe as claimed in one of the previous claims from 1 to 14 **characterized by** the fact that the string and/or the buckle are removable, and can be separated from the shoe by removing the buttonhole (6) (7) from the pin (5). 45
16. A shoe as claimed in one of the previous claims from 1 to 15 **characterized by** the fact that is made in a plastic pressure die-casting. 50
17. A shoe as claimed in one of the previous claims from 1 to 16 **characterized by** the fact that the buckle (3) is made in a sole piece in a plastic material that is harder in respect to the one used for the shoe; 55
18. A shoe as claimed in one or more of the previous claims from 1 to 17 **characterized in that** the shape and sizes of the pin (5) are proportional to the one of the buttonhole (6) (7) in a way to consent an easy insertion of this last one on the head (9) of the same pin, underneath which the buttonhole is blocked.

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European Patent  
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# EUROPEAN SEARCH REPORT

Application Number  
EP 07 02 1711

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 1 712 146 A (PATENT PRODUCTION S R L [IT]) 18 October 2006 (2006-10-18) * paragraph [0009] - paragraph [0024]; figures *	1-18	INV. A43B1/14 A43B3/12
Y	US 2003/009909 A1 (CHEN JIAN QIAO [US]) 16 January 2003 (2003-01-16) * paragraph [0023] - paragraph [0024]; figure 3 *	1-18	
Y	US 5 852 885 A (FERNIANI ALDO [IT]) 29 December 1998 (1998-12-29) * column 1, line 43 - column 3, line 26; figures *	1-18	
A	US 3 925 915 A (COLLI J LOUISE) 16 December 1975 (1975-12-16) * column 1, lines 44-64; figures *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A43B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 12 February 2008	Examiner Herry, Manuel
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> <p>&amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 02 1711

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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12-02-2008

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US 2003009909	A1	16-01-2003	NONE	
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