

Description

[0001] The present invention relates to the technical field concerning manufacturing of footwear of leather or other similar materials.

[0002] Among different types of footwear, there are those known as IDEAL or SAN CRISPINO, in which the upper edge is folded outwards and stitched to the insole to obtain an assembly, to which a related sole is stitched afterwards.

[0003] According to a known procedure, the insole is positioned on a last and fastened thereto by nails fitted into the last. The upper is placed on and fastened to the last in a similar way.

[0004] After the pre-assembling, the edges of the upper and insole are stitched together, therefore the previously applied nails must be removed in order to free the last.

[0005] It is obvious that the above procedure requires long time, is laborious and difficult and consequently, it results in high costs which affect the total production cost of the so obtained footwear.

[0006] According to another known technique, the upper is stitched to the insole by suitable stitching machines (STROBEL or others), without using a last.

[0007] Since the perimeter extension of the upper is longer than the insole's one, it is necessary to make up for this excess during stitching by different forward movement of the two pieces.

[0008] This operation is known as curling, and the curled part is usually situated in the shoe toe area in order to obtain a first curving of the upper, that is a cap conformation of the fore area which creates the room for the toes.

[0009] In order to stitch the upper to the insole, it is necessary to mark reference points on both pieces along their edges. After the stitching has been completed, these points should match if the stitching has been performed correctly.

[0010] If, for any reason, the reference points do not match, the two pieces will be assembled in a defective way and the upper will be twisted with respect to the insole

[0011] This imperfection is clearly seen from the folds of the upper leather, in the area in which the excessive material has accumulated.

[0012] Obviously, the above mentioned defect can be more or less serious; those less serious can be remedied by a subsequent stretching of the upper, which is performed by mounting the group upper-insole on a heat-last.

[0013] The more or less satisfying result often depends on the operator's ability, however there are some particular cases, in which the upper has reinforcements which increase the thickness and stiffness of some areas, for instance the toe and sides, which makes it difficult, even for a very skilled operator, to make the reference points match.

[0014] It is to be specified that the stretching is to be performed in any case, therefore also on the correctly stitched upper-insole assembly, in order to complete and stabilize the upper curving.

[0015] At this point, the upper-insole assembly is ready to be joined to the sole to finish the shoe.

[0016] The above joining can be obtained in different ways, for example by gluing or stitching, or by a known technique, according to which the sole material is injected into a mould, in which the group upper-insole has been previously positioned, fitted on a suitable aluminium last.

[0017] According to this technique, the upper-insole assembly is joined to the sole by curing, which is the best for the joining strength.

[0018] However, the unavoidable heating of the upper and the last during molding, can cause a disadvantage: actually, removing the still hot upper from the last can make reappear all the defects which have been eliminated by the previous stretching.

[0019] In this case, a product, if not rejected, has poor quality, and consequently it is classified as the second or third choice and anyway positioned among lower quality products.

[0020] In order to avoid this disadvantage, it would be necessary to wait that the last-upper-sole assembly cools, or to add a suitable step, in which the shoe is cooled before being removed, but in either one case or in the other, the production costs increase, which not always can be accepted.

[0021] The object of the present invention is to propose a method for assembling an upper with an insole, which uses the last but avoids nailing the upper and insole to the last before stitching.

[0022] Another object of the present invention is to propose a method which avoids the use of reference marks and which prevents the stitched upper from being twisted with respect to the insole.

[0023] A further object of the present invention is to obtain a product of high and constant quality, independently from the upper constructive characteristics and the operator's ability.

[0024] The characteristic features of the present invention will be pointed out in the following description in accordance with the contents of claims, and with reference to the enclosed drawings, in which:

- Figures 1 and 2 are respectively lateral and top views of the first step of the method;
- Figures 3 and 4 are respectively lateral and top views of the second step of the method;
- Figures 5 and 6 are respectively lateral and top views of the third step of the method;
- Figure 7 is a lateral view of the fourth step of the method;

- Figure 8 is a lateral view of the fifth step of the method.

[0025] With reference to the above described figures, the reference numeral 1 indicates an insole aimed at being assembled, by stitching, to an upper 4, according to a configuration known to those skilled in the art, as IDEAL, in which the lower edge 40 of the upper 4 is folded outwards and is placed upon the corresponding outer edge 10 of the insole 1.

[0026] The method described later can be also applied to the SAN CRISPINO configuration, which differs from the IDEAL configuration only by the fact that the lower edge of the upper is not arranged flush with the edge of the insole, but rather protrudes from the insole and must be over-folded.

[0027] In the first step of the proposed method, the insole 1 is positioned on a support 2 according to a predetermined orientation (Figures 1 and 2).

[0028] In order to facilitate the correct positioning of the insole 1, the support 2 is equipped with at least two centering pins 20, which are introduced into corresponding holes 11, made for this purpose in the insole 1.

[0029] The support 2 rotates on an axis W, orthogonal to the insole 1: according to a preferred solution, the insole 1 is arranged horizontally, and consequently the axis W is vertical.

[0030] In a second step of the method, a shoe last 3 is placed on the insole 1, suitably centered with respect thereto (Figures 3 and 4).

[0031] The centering of the last 3 is correctly performed by means of a pair of reference holes 30, into which the centering pins 20, protruding from the insole 1, are introduced.

[0032] In a third step of the method, the lower edge 40 of the upper 4 is folded outwards and then fastened with fastening means 5, e.g. a plurality of pliers means 50 arranged radially with respect to the upper 4.

[0033] In this way, the edge 40 is fastened in a series of points, which are close to each other and regularly spaced apart along the upper 4 edge (Figures 5 and 6).

[0034] In a fourth step of the method, the upper 4 is fitted onto the last 3, placing the relative lower edge 40 over the corresponding outer edge 10 of the insole 1 (Figure 7).

[0035] According to the proposed method, when being fastened, the lower edge 40 is advantageously inclined downwards, to optimize the adherence of the upper 4 to the last 3 (Figure 5).

[0036] For this purpose, the pliers means 50 are suitably shaped.

[0037] When the upper 4 is completely fitted onto the last 3, the pliers means 5 hit the outer edge 10 of the insole 1, which is thus folded downwards and positioned almost parallel to the lower edge 40 of the upper 4, clamped by the pliers means 50 (Figures 7 and 8).

[0038] The stitching is performed close to the last 3, in the strip of the edges 40, 10 situated between the pli-

ers means 50 and the last 3; the upper prong 51a and the lower prong 51b of the pliers means 50 are shaped and applied in such a way, as to leave the above strip free.

[0039] Needle means 6 can include a rotating hook 60, or crochet, situated below the needle 6 and aimed at cooperating with the latter, operated in turn to move axially alternately, in order to form stitches.

[0040] The crochet 60 acts as the lower support for the outer edge 10 of the insole 1, by means of a plate 61, not shown in detail, since it is known.

[0041] The plate 61 can be motionless or can move parallel to the needle 6 axis.

[0042] The needle 6 are operated in suitable step and position relation with the support 2 rotation, in order to perform stitching, which joins the upper 4 with the insole 1.

[0043] The stretching of the stitching threads, performed by the needle means 6 during stitches forming, tightens the edges 40, 10 one against the other, thus closing the opening which remains between them due to the presence of the lower prongs 51b of the pliers means 50 (Figure 8).

[0044] According to the method, the needle 6 passes through the edges 40, 10 substantially orthogonal thereto, in order to optimize their perforation, as well as to protect the needle.

[0045] The above mentioned downward inclination of the edges 40, 10 is particularly advantageous for obtaining the above purpose, because it allows to stitch in a position very close to the edge of the last 3 and, at the same time, it allows more room beside the upper 4 to be free for positioning the needle 6 therein.

[0046] The advantages of the proposed method with respect to the traditional procedures appear obvious from the above description.

[0047] In particular, it is to be pointed out that no nails are needed to fasten the insole 1 and the upper 4 to the last 3, and using a suitable type of the latter, it is possible to leave it mounted for the subsequent step of the upper 4 stretching, which results in obvious time saving, because fitting and removing of the form is difficult, when the upper is already stitched to the insole.

[0048] Moreover, no reference marks are needed on the upper 4 and on the insole 1, due to the presence of the last 3, which shapes the upper 4, and due to the pre-assembling performed by the fastening means 5.

[0049] The modern technologies of the components and of the electronic movement controls allow to overcome problems deriving from the construction of a stitching machine, which carries out the proposed method and whose work is precise and reliable.

[0050] It is even not risky to say that a plurality of complementary robotized devices can be used to automate manual steps of positioning of the insole, the last and the upper.

[0051] The proposed method allows to obtain a product of high and constant quality, which barely depends

on the constructive features of the upper and/or the operator's ability.

[0052] In particular, the upper-insole assembly obtained in this way is optimum to be used with the procedure mentioned in the introductory note, according to which the sole is injected directly on the upper-insole assembly.

Claims

1. Method for assembling, by stitching, an upper with a relative insole, **characterized in that** it includes:

positioning said insole (1) on a support (2), which rotates on an axis (W), orthogonal to the insole (1);

positioning of a shoe last (3) on said insole (1), centered with respect to the latter;

folding outwards the lower edge (40) of the upper (4) and fastening it with fastening means (5);

fitting said upper (4) onto said last (3), placing said lower edge (40) onto the corresponding outer edge (10) of said insole (1);

stitching said edges (40,10) of the upper (4) and the insole (1).

2. Method, according to claim 1, **characterized in that** said insole (1) is arranged horizontal on said support (2).

3. Method, according to claim 1, **characterized in that** the insole (1) is located on the support (2) with a predetermined arrangement obtained by introducing at least two centering pins (20), made in the support, into corresponding holes made in the insole (1) and **in that** said centering of the last (3) with respect to the insole (1) is obtained by introducing the centering pins (20) into corresponding reference holes (30) made in the last (3).

4. Method, according to claim 1, **characterized in that** said lower edge (40) is fastened at a plurality of points, close to each other and regularly spaced apart along the edge of said upper (4), by a plurality of pliers means (50) arranged radially with respect to the upper (4).

5. Method, according to claim 1 or 4, **characterized in that**, when being fastened, said lower edge (40) is inclined downwards, **in that** the outer edge (10) is folded downwards, when said upper (4) is fitted onto said last (3), and **in that** said edges (40,10)

are maintained in this position during the stitching operation

6. Method, according to claim 1 or 5, **characterized in that** said edges (40,10) of the upper (4) and the insole (1) are stitched together by needle means (6) operated in step and position relation with the support (2) rotation, said needle means (6) being arranged in such a way that, during the stitching, the needle (6) passes through said edges (40,10) substantially orthogonal thereto.

7. Method, according to claim 1 or 4, **characterized in that** the stitching is performed close to said last (3), in a strip of said edges (40,10), situated between said pliers means (50) and said last.

FIG.1

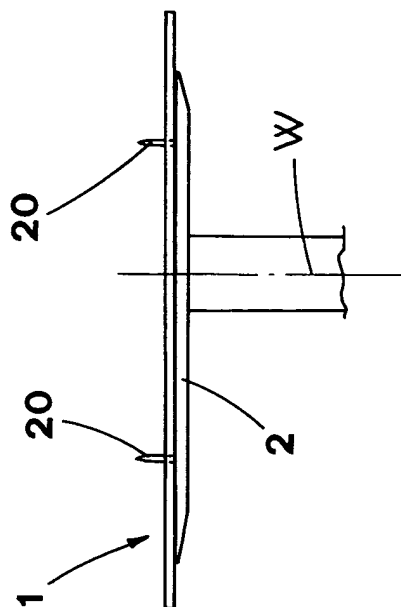


FIG.3

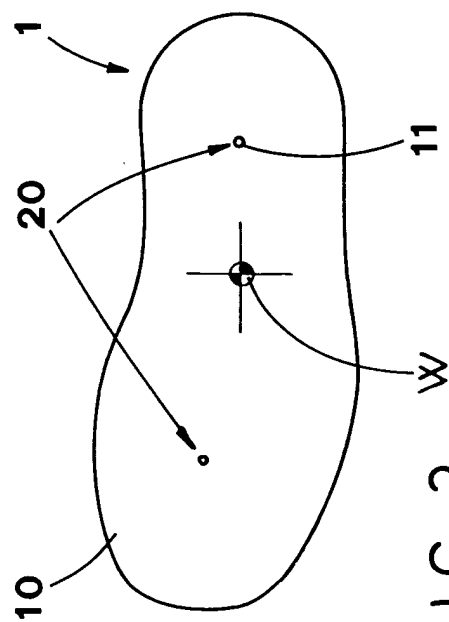
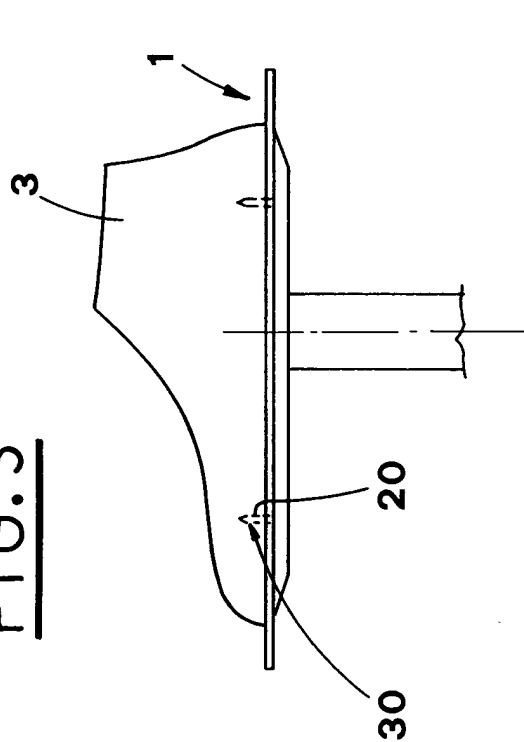


FIG.2

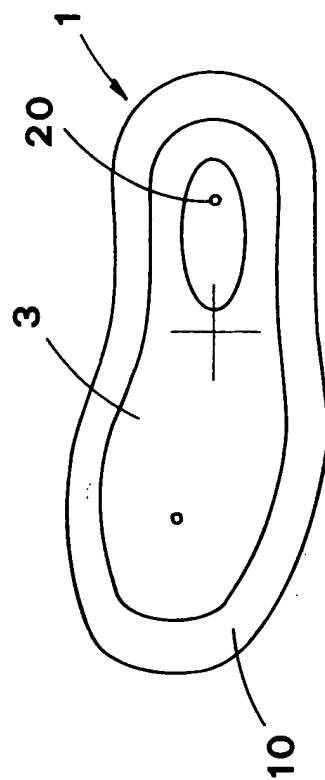


FIG.4

FIG. 5

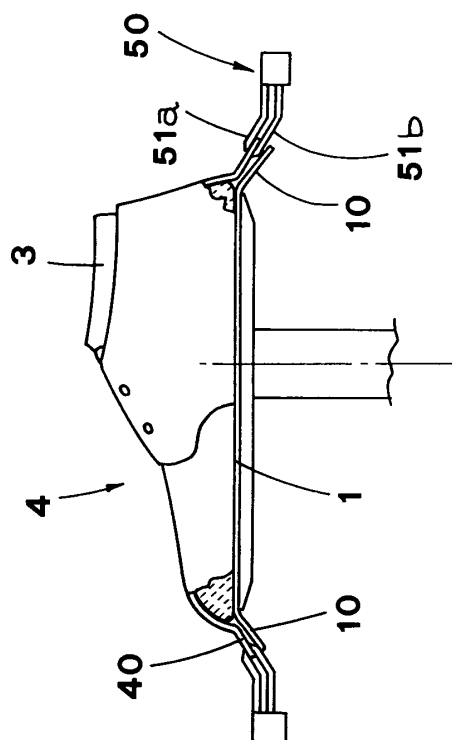
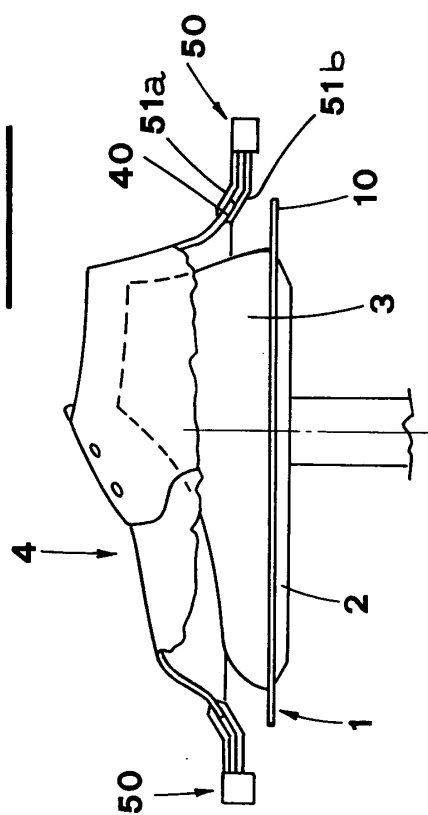


FIG. 7

FIG. 6

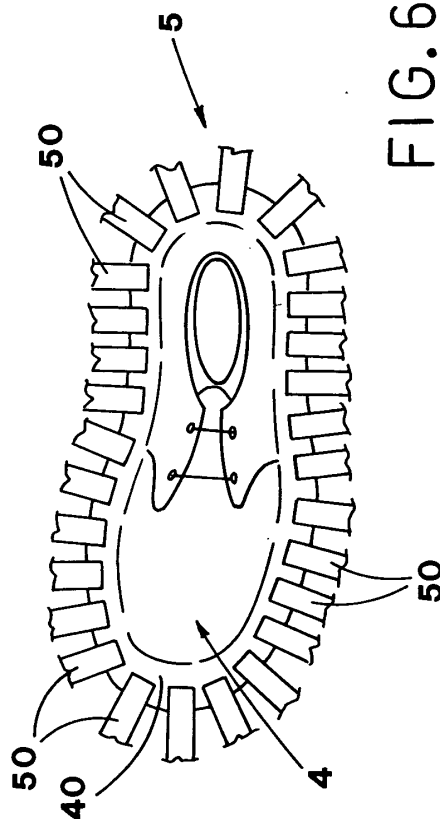
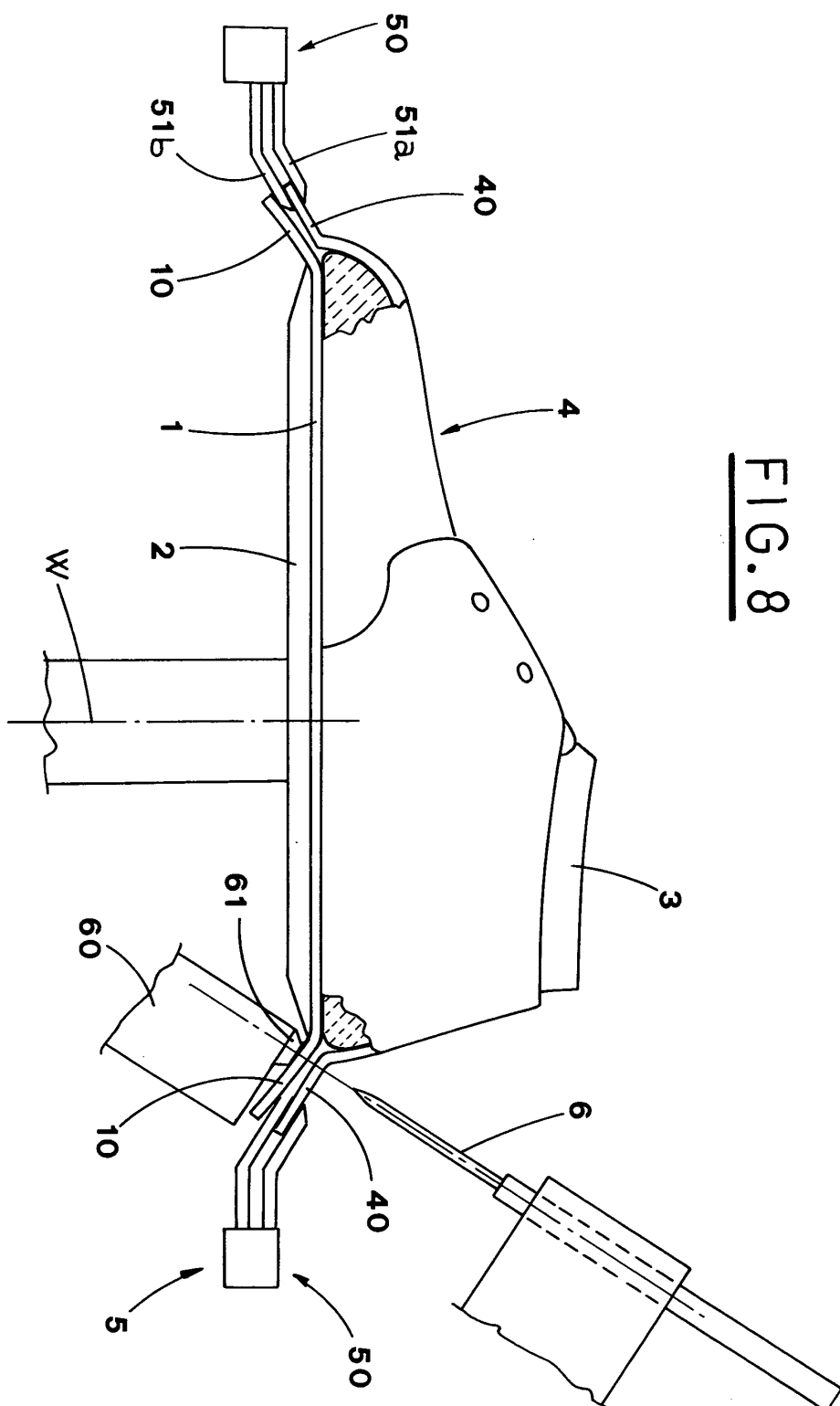


FIG. 8





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 03 00 6818

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	EP 0 641 526 A (PRODOMO SA) 8 March 1995 (1995-03-08) * column 3, line 48 - column 4, line 11; figure 1 *	1	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 22 July 2003	Examiner Cianci, S
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