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(54) **A footwear having a lace fastening**

(57) Footwear having a lace fastening is described and comprises an opening (5) having a first edge and a second edge (5a, 5b) which are juxtaposed and which each have a plurality of lacing eyes (10a, 11a; 10b, 11b), between which at least one lace (12, 13) of the fastening extends, and a tongue-form flap (6) extending along the edges (5a, 5b) at the location of the opening (5). The footwear also comprises at least one lace-locking device (15) secured to the flap (6) in a position between the edges (5a, 5b), so that respective ends of the at least one lace (12, 13) that extend through corresponding end lacing eyes (11a, 11b) of the fastening are locked in the device (15) with a selected tensioning in order consequently to close the fastening with the desired degree of tightening.

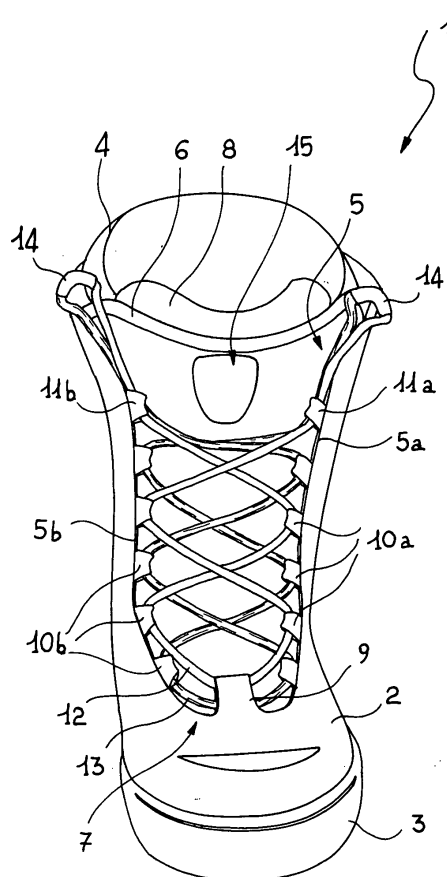


Fig. 1

Description

[0001] The present invention relates to footwear having a lace fastening in accordance with the preamble of the main claim.

[0002] The invention is applicable particularly, although not exclusively, to the technical field of sports footwear, such as footwear for snowboarding, trekking, skating and the like, in which the upper is typically in the form of an elongate ankle-boot having a front lace fastening suitable for guaranteeing quick and effective tightening and equally quick and effective loosening, in addition to ensuring homogeneous closure along the edges of the access opening of the footwear.

[0003] In order to close the fastening, the known solutions generally provide for one or more constricting devices that are suitable for locking the ends of the laces and that are fitted to the lateral flanks of the upper or are free relative thereto.

[0004] A principal object of the invention is to provide footwear having a lace fastening in which the fastening is rendered more effective in ensuring improved locking of the foot with respect to the footwear, in particular when the edges of the footwear are tightened together with the central tongue on the user's foot.

[0005] A further object is to render the locking of the lace ends quick and reliable and the loosening thereof equally quick and easy.

[0006] Yet another object is to produce footwear which ensures that the fastening is tightened even in the absence of knotting between the ends of the laces, for an easier operation of closing and opening the fastening.

[0007] Those objects and others too, which will appear hereinafter, are achieved by the invention by footwear produced in accordance with the appended claims.

[0008] Other features and advantages of the invention will become clearer from the following detailed description of a preferred embodiment thereof illustrated by way of non-limiting example with reference to the appended drawings, in which:

- Figure 1 is a perspective view of footwear produced in accordance with the invention,
- Figure 2 is a perspective view of a detail of the footwear of Figure 1,
- Figure 3 is a top view of the detail of Figure 2,
- Figures 4 and 5 are sectional views taken on the lines IV-IV and V-V, respectively, of Figures 3 and 4,
- Figures 6 to 8 are perspective diagrammatic views of the footwear of the previous Figures in various operative fastening positions.

[0009] Referring to the mentioned drawings, footwear produced in accordance with the present invention is generally indicated 1. The footwear 1 is of the type used for the sport of snowboarding, but it will be appreciated

that the invention is applicable equally effectively to the production of footwear of other types.

[0010] The footwear 1 comprises an upper 2 with a sole 3 and an opposed entrance 4 for the fitting-on of the footwear. An opening 5 is formed in the upper 2 and its juxtaposed edges are indicated 5a, 5b. A flap in the form of a tongue 6 extends from the lower portion 7 of the opening 5 as far as the entrance 4 and is optionally provided with padding 8. 9 indicates a first lacing eye provided in the opening 5 at the location of the lower portion 7 thereof. Respective pluralities of lacing eyes are also fitted in corresponding and facing positions on the respective edges 5a, 5b. By convention, the lacing eyes on the edge 5a are all marked 10a, while the lacing eyes on the edge 5b are all marked 10b, except for the pair of end lacing eyes of the fastening (at the location of the entrance 4) which are marked 11a, 11b, respectively, for each corresponding edge.

[0011] One or more laces of the fastening extend through the above-mentioned lacing eyes. In the example described, the fastening provides for a pair of laces 12, 13, the arrangement of which between the lacing eyes may be, for example, of the same type as that described in Italian patent application PD2003A000083 in the name of the same applicant, to which reference should be made for any details not expressly mentioned herein. It will be appreciated that the footwear 1 can provide for the engagement in the lacing eyes 9, 10a,b and 11a,b of a single lace in accordance with arrangements of a conventional type, although the configuration described represents a preferred choice.

[0012] In the selected configuration, the two laces 12, 13 extend through alternate lacing eyes of the two series of lacing eyes in a manner such that, between two lacing eyes of the same edge through which the first lace extends, there is at least one lacing eye of the same edge through which the second lace extends. Both of the laces 12, 13 also extend through the lacing eye 9, which is in the form of a double channel, and through the two end lacing eyes 11a, 11b. In the configuration described, it is also provided that the free extremities of the laces 12, 13 are joined to each other at the ends to form a closed loop in which those extremities form respective grips 14 suitable for facilitating the pulling and tightening of the fastening.

[0013] According to a principal feature of the invention, the footwear 1 comprises a lace-locking device 15 for locking the ends of the laces 12, 13. To be more precise, the lace-locking device 15 is secured to the tongue-form flap 6 in a position between the edges 5a, 5b, in a region close to the entrance 4 for the fitting-on of the footwear.

[0014] The lace-locking device 15 comprises two respective juxtaposed portions 16a, 16b which are substantially plate-shaped and which are joined centrally by an intermediate narrowed portion 16c so that the portions 16a,b have respective surfaces 17a, 17b, which face each other along at least part of the outer contour

of the intermediate portion 16c and which define respective grooves for accommodating and locking the laces of the fastening, as will emerge in detail in the further course of the description.

[0015] The portions 16a-c of the device 15 are advantageously produced in one piece with one another, for example by moulding plastics material, and may also be integral with a further widened plate-shaped base 18 which extends from the side of the portion 16 and which is provided for securing the lace-locking device 15 to the tongue 6.

[0016] A pair of opposite groove portions 19a, 19b extending substantially in a direction parallel with the direction of the extension of the edges 5a, 5b are defined between the surfaces 17a, 17b. Those groove portions are also connected to each other by a third groove portion 19c directed transversely to the direction of the extension of the edges 5a, 5b. It follows that the groove portions 19a-c are extensions of one another in accordance with a substantially "U"-shaped overall extension configuration of the groove, with the opposite portions 19a,b connected at one of their ends by the portion 19c.

[0017] At the location of the opposite end of the portions 19a,b, the lace-locking device has a widely curved depression 19d which extends over the portions 16a-c of the device. 20 indicates tooth-like formations projecting into the groove portions 19a, 19b and acting as means for keeping the lace accommodated in the corresponding groove portion, those means being provided in order to prevent the lace from coming out of the groove when the fastening is open, with the laces not tensioned.

[0018] In particular, pairs of projecting tooth-like formations 20 are provided in a position facing each other inside the corresponding groove portion. At the stage of closing the fastening, the ends of the laces 12, 13 are tensioned by pulling actions exerted by way of the grips 14 until the desired tension is reached. Subsequently, the ends of the laces exiting from the respective end lacing eye 11a, 11b are brought in the direction towards the corresponding opposed edge 5b, 5a in order to engage the groove portion 19c and subsequently the groove portion 19a, 19b opposite the edge from which the lace exits. In practice, the laces exiting from the lacing eye 11a are engaged and locked by surface friction in the groove portions 19c and 19b, while the laces exiting from the lacing eye 11b are engaged and locked in the groove portions 19c and 19a. Figures 6 to 8 show clearly in succession the fastening stages described above. It should be noted that the extension of the groove portions 19a-c associated with the ends of the laces 12, 13 is such as to provide a surface for relative locking by friction sufficient to keep the laces tensioned in the lace-locking device with the selected fastening tension without therefore requiring any further application of knots or bows between the ends of the opposite laces. This therefore advantageously results in greater practicality and ease for the user in the operations of closing and

opening the fastening. In that case, the free ends of the laces, beyond the locking portions of the device 15, can simply be placed in a suitable pouch (not shown) formed, for example, in the portions of the upper that are close to the edges 5a, 5b of the footwear, at the location of the entrance 4. Alternatively, however, those ends could be knotted together and placed at the location of the depression at the top of the lace-locking device.

[0019] It will also be observed that the depth of the grooves is chosen in such a manner as to permit the accommodation of two or more laces, each of which is lockable by surface friction against the walls of the groove, in order to ensure the closure of the fastening irrespective of the number of laces of the selected configuration.

[0020] It should also be observed that, owing to the fact that the lace-locking device is secured to the tongue 6 of the footwear, during the tightening of the fastening, both the footwear edges and the tongue are tightened at the same time on the user's foot, giving efficient and improved locking of the footwear.

[0021] In addition, the provision of only a single lace-locking device arranged to lock all of the laces exiting from the end lacing eyes of the fastening permits advantageous structural simplifications and ease of use for the user, at the same time ensuring reliability and efficiency in closing the fastening.

[0022] The invention therefore achieves the proposed objects, obtaining the above-mentioned advantages over the known solutions.

Claims

1. Footwear having a lace fastening, comprising an opening (5) having a first edge and a second edge (5a, 5b) which are juxtaposed and which each have a plurality of lacing eyes (10a, 11a; 10b, 11b) between which at least one lace (12, 13) of the fastening extends, and a tongue-form flap (6) extending along the edges (5a, 5b) at the location of the opening (5), **characterised in that** it comprises at least one lace-locking device (15) secured to the flap (6) in a position between the edges (5a, 5b), so that respective ends of the at least one lace (12, 13) which extend through corresponding end lacing eyes (11a, 11b) of the fastening are locked in the said device (15) with a selected tensioning in order consequently to close the fastening with the desired degree of tightening.
2. Footwear according to claim 1, comprising a single lace-locking device (15) provided to lock the ends of each lace (12, 13) of the fastening extending through the respective end lacing eye (11a, 11b).
3. Footwear according to claim 2, wherein the flap (6)

extends from a lower portion (7) of the opening (5) in the direction towards an entrance (4) for the fitting-on of the footwear and the lace-locking device (15) is secured to the flap (6) in the vicinity of that entrance (4).

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4. Footwear according to one or more of the preceding claims, wherein the ends of the laces (12, 13) of the fastening that exit from the end lacing eye (11a, 11b) of one of the edges (5a, 5b) are lockable in the said device (15) independently of the ends of the laces (12, 13) that exit from the corresponding end lacing eye (11a, 11b) of the other edge. 10
5. Footwear according to one or more of the preceding claims, wherein the lace-locking device (15) comprises at least one groove which is provided to accommodate and retain one or more lace portions extending through the respective end lacing eye (11a, 11b) of the fastening on each of the opposed edges (5a, 5b). 15 20
6. Footwear according to claim 5, wherein portions (19a, 19b, 19c) of the at least one groove are provided which are extensions of one another with a substantially "U"-shaped overall extension configuration. 25
7. Footwear according to claim 5, wherein the at least one groove comprises a pair of opposite groove portions (19a, 19b) directed substantially parallel with the edges (5a, 5b), the portions being connected to each other by a further portion (19c) directed transversely to the edges (5a, 5b). 30 35
8. Footwear according to one or more of claims 5 to 7, wherein the action of retaining the lace (12, 13) under tension in the corresponding groove portion (19a, 19b, 19c) is achieved exclusively by surface friction action. 40
9. Footwear according to one or more of the preceding claims, wherein auxiliary retaining means are provided on the groove portions (19a, 19b) in order to prevent the lateral escape of the lace (12, 13), in particular in the absence of locking of the lace by surface friction in the lace-locking device. 45
10. Footwear according to claim 9, wherein the auxiliary means comprise tooth-like formations (20) projecting into the groove portions (19a, 19b). 50

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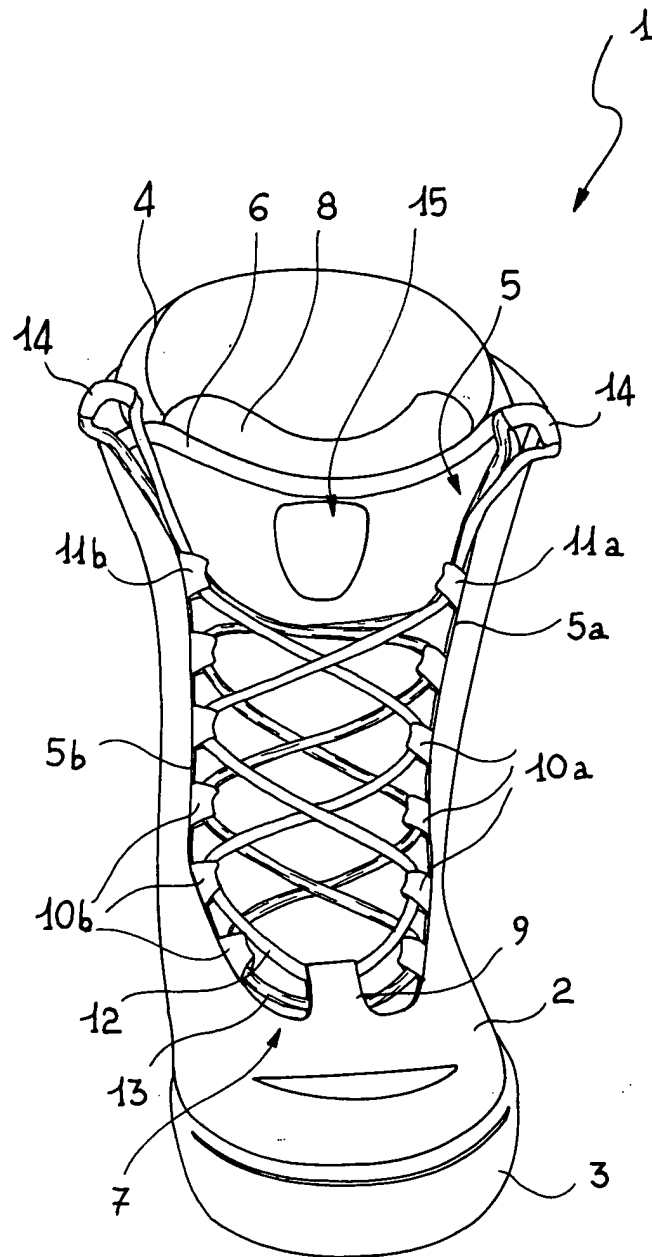


Fig. 1

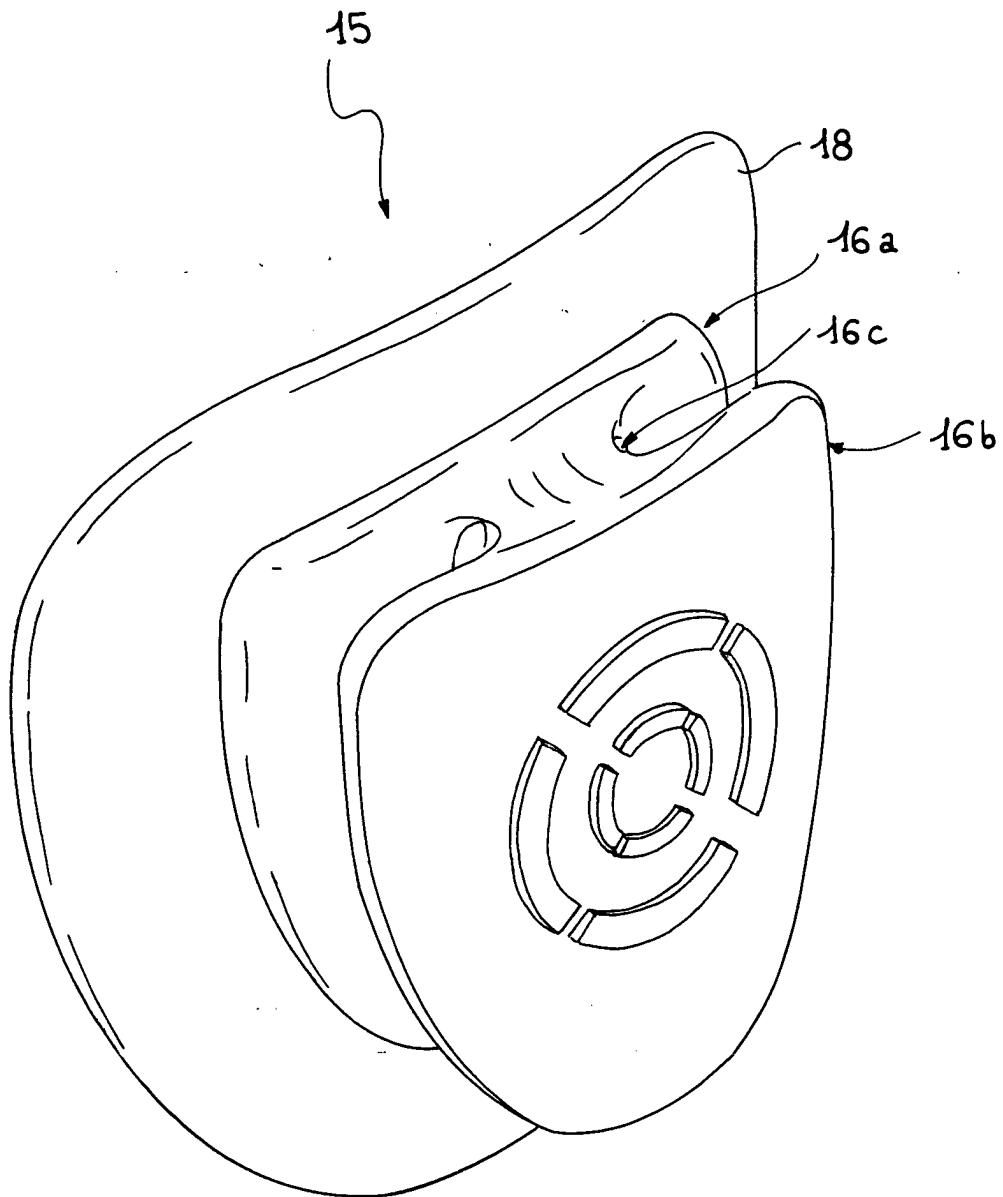


Fig. 2

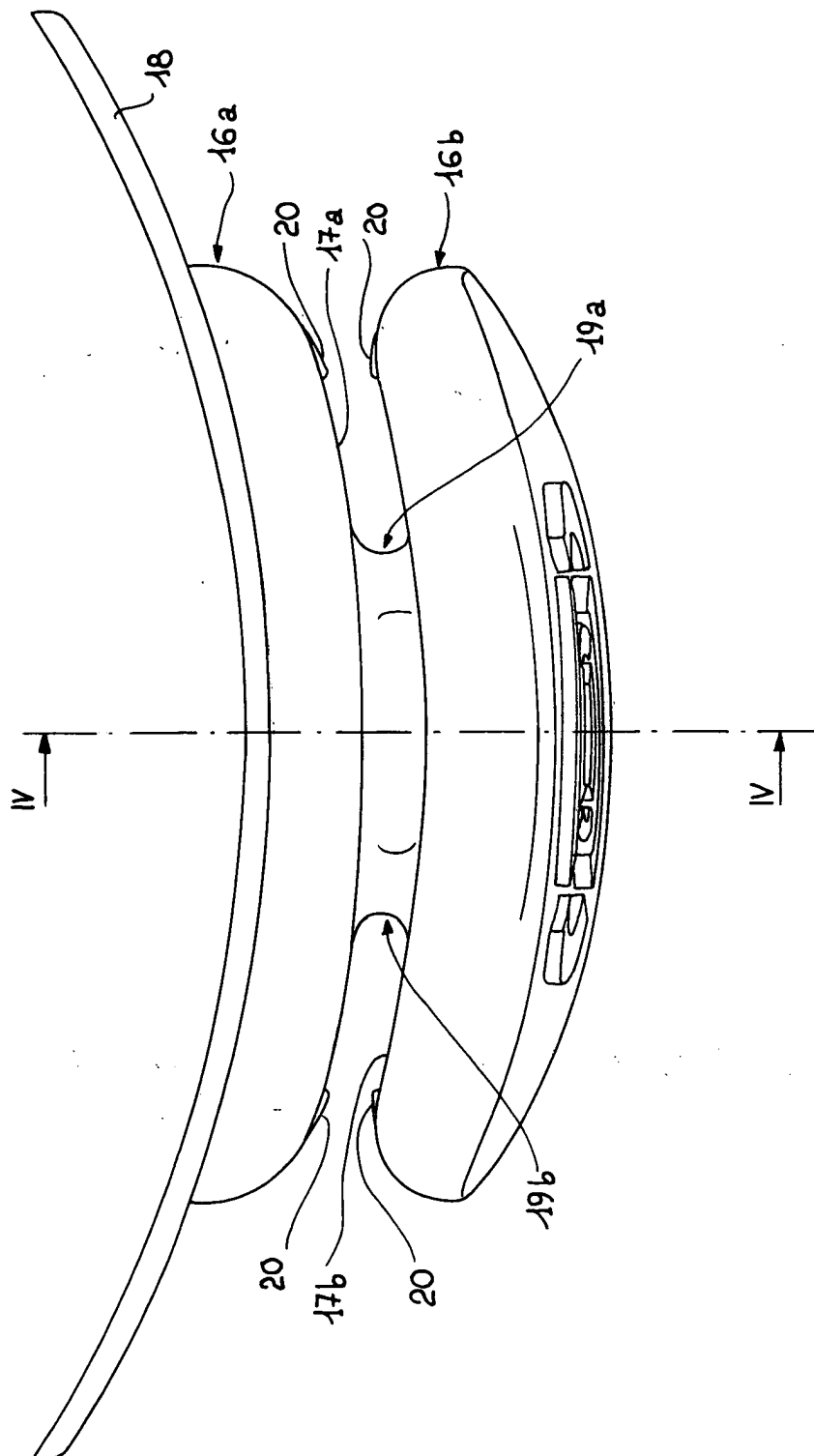


Fig. 3

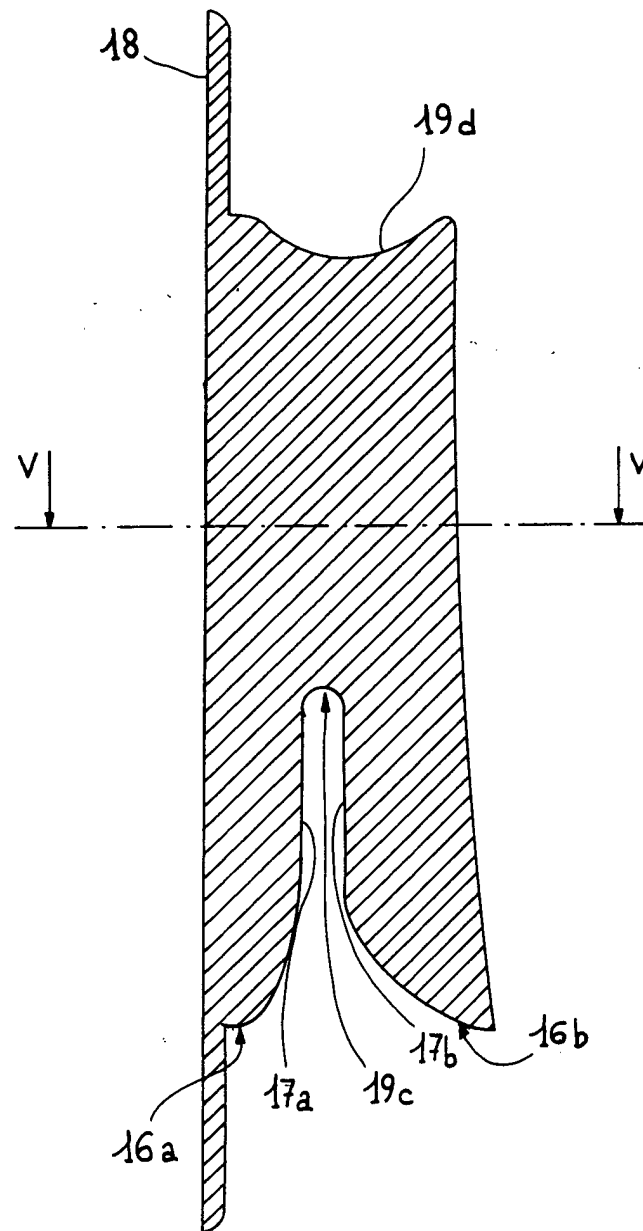


Fig. 4

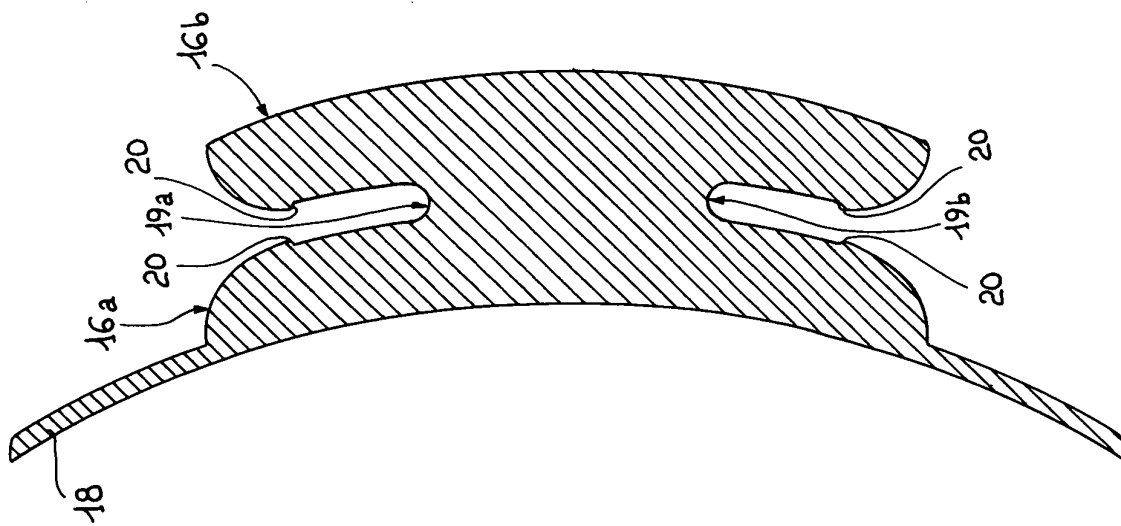


Fig. 5

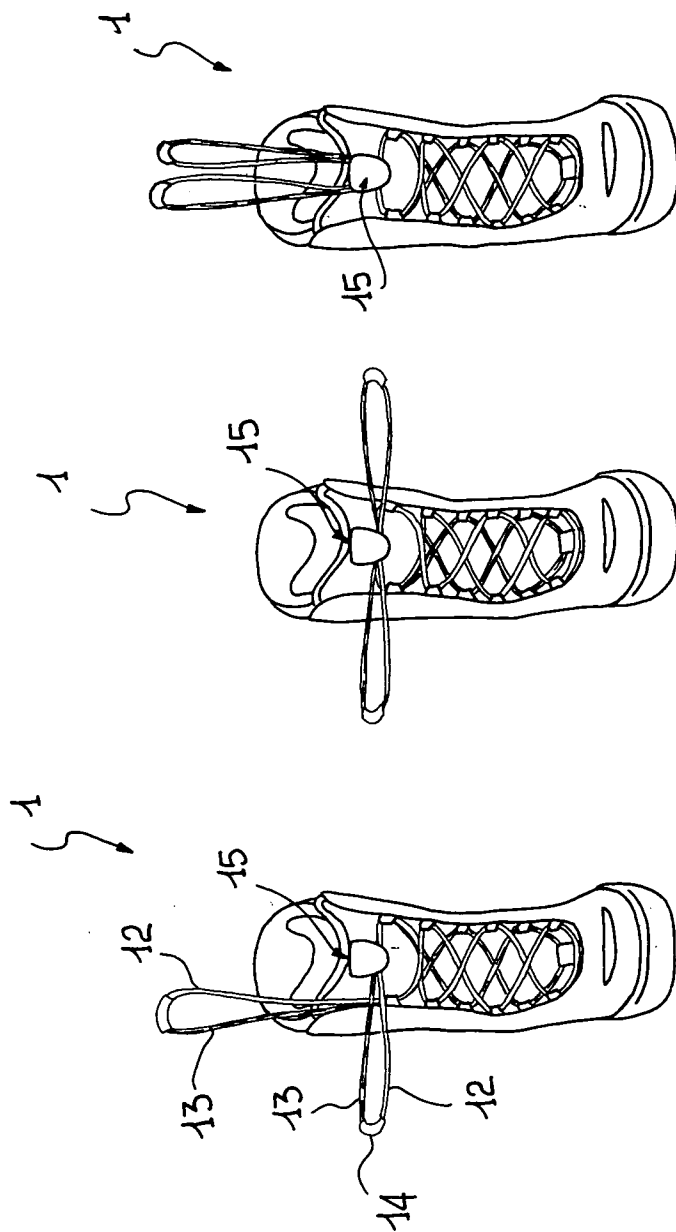


Fig. 8

Fig. 7

Fig. 6



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 02 2997

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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)
P,X	WO 03/103432 A (K 2 CORP) 18 December 2003 (2003-12-18) * page 5, line 9 - line 32; figures 1,3,4 *	1-10	A43C11/20 A43C7/08
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Place of search Munich		Date of completion of the search 14 January 2005	Examiner Vesin, S
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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