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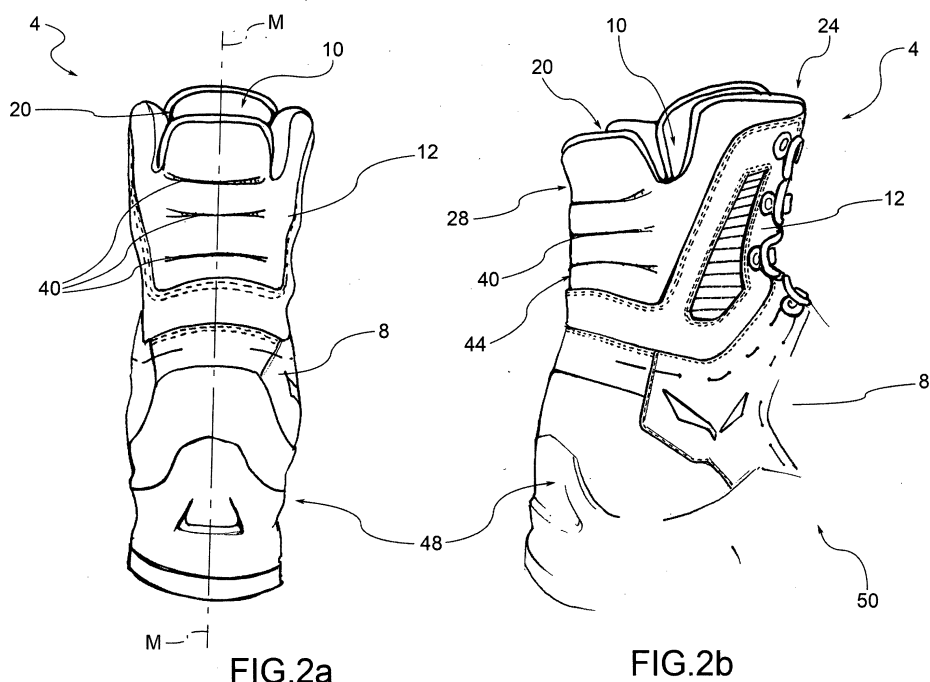
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(54)

SPORTS SHOE, IN PARTICULAR FOR TREKKING OR HIKING, AND RELATIVE MANUFACTURING METHOD

(57) A sports shoe (4) comprising an upper (8) that delimits a housing space (10) of a foot, the upper being provided with an upper portion (12) adapted to embrace the malleolus-tibial portion of the foot, a collar (16) associated with the upper portion so as to define an access portion (20) to the housing space. The collar extends from a front portion (24) facing a dorsal portion of the foot, to a rear portion (28) facing an Achilles tendon of the foot. The collar in correspondence with the rear portion comprises at least two edges (32',32 ") separated by at least one discontinuity (36) and facing each other, wherein said at least two edges are at least partially alongside each other and are locked in said configuration of partial superimposition, by locking means (40), in such a way as to place the edges in traction and obtain a pre-crimping of the rear portion according to a concave profile (44), relative to a direction of observation external to the shoe, from the side of the rear portion.



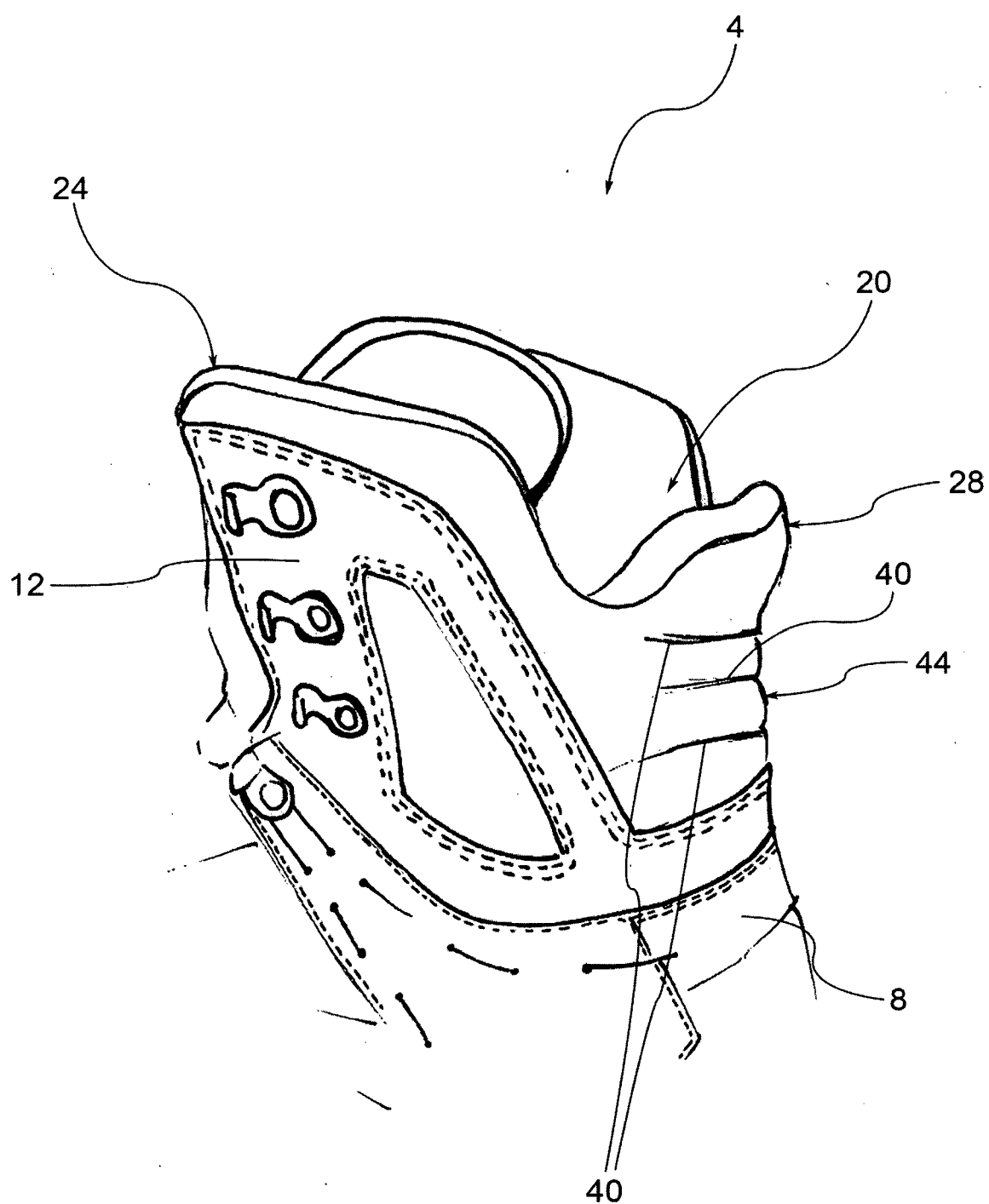


FIG.2c

Description

FIELD OF APPLICATION

[0001] The present invention relates to a sports shoe, in particular for trekking or hiking, and relative manufacturing method.

STATE OF THE ART

[0002] The increased performance required in sporting activities, in particular for trekking and hiking in low, medium and high altitudes, requires an improvement in the movement of the ankle, especially in the descent phase, without thereby altering the characteristics of stability and security offered by boots.

[0003] To obtain this increase in the antero-posterior movement of the leg with respect to the foot some variants of the collar have been developed in the prior art, i. e. the upper part of the shoe upper which surrounds the ankle area of the user and which delimits the access opening of the user's foot inside the shoe.

[0004] A particularly critical portion of the collar is the rear portion which interfaces with the user's Achilles tendon.

[0005] Indeed, said rear portion must allow a wide range of movement of the ankle, so that in descent the leg can move as freely as possible at the rear. At the same time the aforesaid collar needs to lock and support the leg with respect to the movements on the frontal anatomic plane; this function is very delicate in that the collar must also avoid creating pressure points all over the area of the leg in question which would make the shoe very uncomfortable and tiring to use. The collar must also laterally support the malleolus-tibial portion of the foot, maintaining rigidity and torsion.

PRESENTATION OF THE INVENTION

[0006] The solutions of the prior art are aimed at increasing the deformability of the rear part of the collar through the creation of facilitated deformation zones, i. e. more easily deformable portions in order to accommodate the anteroposterior rotational movement of the foot.

[0007] Said portions are obtained for example by means of preformed dies with localised, high frequency welding to reduce the resistant cross-section of the collar, localised weakening of the fabric/material which form lines of weakening and thus of preferential deformation of said collar.

[0008] It is also known of, for example, to make collars provided with gusset inserts which allow a greater elastic deformability thanks to the extensibility/compressibility of such gussets.

[0009] These solutions are however not optimal for achieving the right balance of comfort and leg support.

[0010] In fact, the weakening portions constitute pressure points for the user's ankle; moreover where there

are no pressure points, the known solutions do not guarantee the necessary rigidity and therefore support to the ankle and to the user's leg.

[0011] As a result the solutions of the prior art are focused on obtaining preferential elastic deformation zones which, however, constitute a compromise, often not very effective, between the comfort of the user and the foot support function.

[0012] The purpose of the present invention is to overcome the drawbacks and limitations mentioned with reference to the prior art.

[0013] Such drawbacks and limitations are resolved by a sports shoe according to claim 1 and by a manufacturing method of a sports shoe according to claim 13.

[0014] Other embodiments of the shoe according to the invention are described in the subsequent claims.

DESCRIPTION OF THE DRAWINGS

[0015] Further characteristics and advantages of the present invention will be more clearly comprehensible from the description given below of its preferred and non-limiting embodiments, wherein:

Figure 1 is a comparative side view of a sports shoe according to the prior art, to the left in the figure, and a sports shoe solution according to the present invention, to the right in the figure;

Figures 2a, 2b, 2c are views, from different angles, of a sports shoe according to the present invention; Figures 3a, 3b, 3c, 3d, 3e, 3f, 3g represent a plurality of possible embodiments of collars of a sports shoe according to the present invention;

Figures 4-5 represent front views of a collar in assembly steps according to the present invention;

Figures 6-7 are side views of subsequent assembly steps of a collar according to the present invention; Figures 8a-8b-8c are views of possible unions of collar edges according to embodiment variants of the present invention;

Figure 9 shows a cross-section view of a collar according to a further embodiment of the present invention;

Figure 10 shows a front view of a collar according to a further embodiment of the present invention.

[0016] The drawings are however, a part of the working and aesthetic opportunities of the present invention, and should therefore not be considered as normally executive or reductive of the possibility of embodiment of said invention.

[0017] The elements or parts of elements common to the embodiments described below will be indicated using the same reference numerals.

DETAILED DESCRIPTION

[0018] With reference to the aforementioned figures,

reference numeral 4 globally denotes a sports shoe, in particular for trekking or hiking.

[0019] It should be pointed out that for the purposes of the present invention the uses of the shoe are indicative and not exhaustive, meaning any type of sports shoe.

[0020] Furthermore, the present invention should not be limited to a specific type of material of the shoe.

[0021] The sports shoe 4 comprises an upper 8 that delimits, at least partially, a housing space 10 of a foot of a user, the upper 8 being provided with an upper portion 12 suitable to embrace an area of the foot near the malleolus-tibial portion.

[0022] The sports shoe 4 further comprises a collar 16 associated to the upper portion 12 so as to define an access portion 20 to said housing space 10, said collar 16 being shaped to embrace, at least partially, the malleolus-tibial portion of a user's foot.

[0023] The collar 16 extends from a front portion 24 facing a dorsal portion of the foot, to a rear portion 28 facing an Achilles tendon of the foot.

[0024] Advantageously, the collar 16, in correspondence with the rear portion 28, comprises at least two edges 32', 32'' separated by at least one discontinuity 36 and facing one another.

[0025] According to one embodiment, said discontinuity 36 may be made by means of a cut of zero thickness, i.e. without removal of material, but sufficient to create a separation or discontinuity between said at least two edges 32', 32'' (figure 10).

[0026] Said at least two edges 32', 32'' are at least partially brought near to each other and are locked in a configuration of partial juxtaposition, by locking means 40, so as to place said edges 32', 32'' in traction and obtain a pre-crimping of the rear portion 28 according to a concave profile 44, relative to a direction of observation external to the shoe 4, from the side of the rear portion 28 of the collar 16.

[0027] According to one embodiment, said at least two edges 32', 32'' are at least partially overlapped and are locked in a configuration of partial overlap, by locking means 40, so as to place said edges 32', 32'' in traction and obtain a pre-crimping of the rear portion 28 according to a concave profile 44, relative to a direction of observation external to the shoe, from the side of the rear portion 28 of the collar 16.

[0028] According to a possible embodiment, said locking means 40 comprise a seam.

[0029] For example, said seam is a linear straight stitch (figure 8b), back stitch or zigzag type stitch (figure 8c).

[0030] According to further embodiments, the locking means comprise a thermo-taping, heat welding (figure 8a) or ultrasonic welding.

[0031] The discontinuity 36 may comprise a hole and/or a cut (figure 3).

[0032] Said discontinuity 36 may be made according to a plurality of shapes, sizes and positions with respect to the collar 16. Some examples, indicative and non-limiting, of embodiment variants of the discontinuity 36 are

illustrated in figure 3.

[0033] For example, the at least one discontinuity 36 is arranged symmetrically with respect to a median plane M-M of the shoe 4, positioned along a longitudinal direction that extends from a heel 48 to a tip 50 of the shoe 4.

[0034] It is also possible to provide that the collar 16 comprises at least one discontinuity 36 arranged asymmetrically with respect to a median plane M-M of the shoe 4, positioned along a longitudinal direction that extends from the heel 48 to the tip 50 of the shoe 4.

[0035] The position, size and shape of the discontinuities 36 may be varied depending on the type of concave profile 44 to be obtained on the rear portion 28 of the collar 16.

[0036] Preferably, at least one discontinuity 36 has a main transverse extension 52 between opposite transverse ends 58 of the discontinuity 36, said main transverse extension 52 being incident with respect to said median plane M-M of the shoe 4.

[0037] According to one embodiment, the discontinuity 36 has a width 60 varying along its main transverse extension 52, the width 60 being greater in the vicinity of the median plane M-M of the shoe 4 and lesser in the vicinity of said opposite transverse ends 56, 58. The width 60 is defined as the distance between the edges 32', 32'' measured perpendicular to said main transverse extension 52.

[0038] However, the difference between the edges 32', 32'' may in one embodiment, be nil, i.e. equal to 0, and by varying the depth of the seam it is possible to alter the crimping of the rear portion 28 of collar 16.

[0039] Preferably, the edges 32', 32'' are at least partially superimposed so as to identify an overlapping portion 64 having a height 68 variable along its prevailing transverse width 72 between the opposite transverse ends 56, 58 of the discontinuity 36, said height (68) being greater in the vicinity of the median plane (M-M) of the shoe 4 and lesser in the vicinity of the opposite transverse ends 56, 58 of the discontinuity 36.

[0040] According to one embodiment, the collar 16 has a central edge 76 and two side edges 80 so as to assume an overall W" shape in correspondence with an upper area thereof 82 which delimits said access portion 20 to the housing space 10. The central edge 76 interfacing with the Achilles tendon of the foot and the side edges 80 interfacing with side/medial parts of the leg. The separation between the central edge 76 and side edges 80 is realised by means of recesses 84 of the collar 16 which have the function of ensuring a constant pressure on the upper part of the leg in question by the upper portion of the boot, and to obtain a constant lateral median containment, without having an increase in pressure on the malleoli and lateral/medial parts of the leg upon reaching maximum plantar flexing of the ankle.

[0041] Furthermore, according to one embodiment, the collar 16 comprises a padding 88, for example also provided with a relative inner lining, on the inner side of the collar 16, directly facing the housing space 10, so as

to improve user comfort.

[0042] The manufacturing method of a sports shoe according to the present invention will now be described

[0043] In particular, said method of manufacture of a sports shoe 4, in particular for trekking or hiking, comprises the steps of:

[0044] - preparing an upper 8 that delimits, at least partially, a housing space 10 of a foot of a user, the upper 8 being provided with an upper portion suitable to embrace an area of the foot near the malleolus-tibial portion,

[0045] - preparing a collar 16 associated with the upper portion 12 so as to define an access portion 20 to said housing space 10, said collar 16 being shaped to embrace, at least partially, the malleolus-tibial portion of a user's foot,

[0046] - the collar 16 extending from a front portion 24 facing a dorsal portion of the foot, to a rear portion 28 facing an Achilles tendon of the foot,

[0047] The method being characterised in that it comprises the steps of:

[0048] - producing on the collar 16, in correspondence with the rear portion 28, at least one discontinuity 36 so as to identify at least two edges 32', 32" separated and facing one another,

[0049] - bringing together at least partially said at least two edges 32', 32" and locking them in said configuration of partial juxtaposition, by locking means 40, so as to place said edges 32', 32" in traction and obtain a pre-crimping of the rear portion 28 according to a concave profile 44, relative to a direction of observation external to the shoe 4, from the side of the rear portion 28 of the collar 16.

[0050] The method may comprise the step of overlapping at least partially said at least two edges 32', 32" and locking them in said configuration of partial overlap, by locking means 40, so as to place said edges 32', 32" in traction and obtain a pre-crimping of the rear portion 28 according to a concave profile 44, relative to a direction of observation external to the shoe 4, from the side of the rear portion 28 of the collar 16.

[0051] The locking step of the edges 32', 32" with the locking means 40 may comprise a seam and/or thermo-taping, heat-welding and/or ultrasonic welding.

[0052] As may be appreciated from the description, the sports shoe according to the invention makes it possible to overcome the drawbacks of the prior art.

[0053] In particular, the present invention does not set out to create solutions in which the collar has weakened portions with facilitated deformation which would not provide the best performance in terms of comfort or in terms of support to the foot.

[0054] Instead, the present invention solves the technical problem by providing a collar having a preformed portion, i.e. arched, as a function of the natural anatomy of the rear portion of the foot, in correspondence with the Achilles tendon.

[0055] Thanks to the fact that this portion is preformed with respect to the anatomy of the foot, first of all correct

support is given to the foot. In addition, this configuration improves the comfort of the shoe because it befits the natural rotation-posterior tibial malleolus. At the same time, it also ensures the elastic effect accompanying the anterior-posterior rotation of the foot: in fact, during the anterior rotation the portion of the Achilles tendon is detached from the rear portion of the collar, while during the posterior rotation there is a direct contact between the portion of the Achilles tendon and the rear portion of the collar. The rear portion of the collar is already crimped according to a generic anatomical curvature of the foot and thus presents a good yielding and propensity to bend further back, naturally accommodating the posterior rotation of the foot. During the subsequent forward rotation said collar naturally tends to return to its rest configuration, and therefore to rotate forward again, again newly accommodating and supporting the Achilles tendon area. In fact, thanks to the fact that the collar is preformed according to the natural curvature of the Achilles tendon, the collar is no longer a passive element limited to yielding elastically under the thrust action of the foot, as occurs in the solutions of the prior art which provide predefined weakening lines.

[0056] Instead, the collar of the present invention is an active support element that yields elastically under the thrust of the leg in its rotation backwards and, at the same time, anatomically supports the leg in its forward rotation.

[0057] Moreover, no pressure points are created drastically reducing the comfort of the shoe.

[0058] Moreover, thanks to the at least partial overlap of the edges of the collar it is possible to obtain collars having a much more accentuated curvature or thrust compared to the solutions of the prior art. This way it is possible to reproduce more faithfully the actual anatomy of the Achilles tendon, not otherwise obtainable with the known high-frequency welds of the prior art: obviously considerably increasing the comfort.

[0059] Furthermore, as seen, the collar preferably has a "W" shape in the upper area, from the rear side, so as to ensure a constant pressure on the upper part of the leg in question by the upper portion of the boot. This shape makes it possible to obtain a constant mean lateral containment, without having an increase in pressure on malleoli and lateral/medial parts of the leg upon reaching maximum plantar flexing of the ankle.

[0060] This way a further improvement of the comfort of the footwear is achieved without sacrificing the support function of the foot and ankle by said footwear.

[0061] A person skilled in the art may make numerous modifications and variations to the solutions described above so as to satisfy contingent and specific requirements while remaining within the sphere of protection of the invention as defined by the following claims.

Claims

1. Sports shoe (4), in particular for trekking or hiking,

comprising

- an upper (8) that delimits, at least partially, a housing space (10) of a foot of a user, the upper (8) being provided with an upper portion (12) suitable to embrace an area of the foot near the malleolus-tibial portion,
 - a collar (16) associated to the upper portion (12) so as to define an access portion (20) to said housing space (10), said collar (16) being shaped to embrace, at least partially, the ankle of the foot of a user,
 - the collar (16) extending from a front portion (24) facing a dorsal portion of the foot, to a rear portion (28) facing an Achilles tendon of the foot, **characterised in that**
 - the collar (16), in correspondence to the rear portion (28), comprises at least two edges (32',32'') separated by at least one discontinuity (36) and facing one another,
 - wherein said at least two edges (32',32'') are at least partially brought near to each other and are locked in said configuration of partial juxtaposition, by locking means (40), so as to place said edges (32',32'') in traction and obtain a pre-crimping of the rear portion (28) according to a concave profile (44), relative to a direction of observation external to the shoe (4), from the side of the rear portion (28) of the collar (16).
2. Sports shoe (4) according to claim 1, wherein said at least two edges (32',32'') are at least partially overlapped with each other and are locked in said configuration of partial superimposition, by locking means (40), in such a way as to place said edges (32',32'') in traction and obtain a pre-crimping of the rear portion (28) according to a concave profile (44), relative to a direction of observation external to the shoe (4), from the side of the rear portion (28) of the collar (16).
 3. Sports shoe (4) according to claim 1 or 2, wherein said locking means (40) comprise a seam.
 4. Sports shoe (4) according to claim 3, wherein said seam is a linear straight stitch, back stitch or zigzag type stitch.
 5. Sports shoe (4) according to any of the preceding claims, wherein said locking means (40) comprise thermo-taping, heat-welding or ultrasonic welding.
 6. Sports shoe (4) according to any of claims 1 to 5, wherein said at least one discontinuity (36) comprises a hole and / or a cut.
 7. Sports shoe (4) according to any of the preceding claims, wherein said at least one discontinuity (36) is arranged symmetrically with respect to a median plane (M-M) of the shoe (4), disposed along a longitudinal direction that extends from a heel (48) to a tip (50) of the shoe (4).
 8. Sports shoe (4) according to any of the preceding claims, wherein the collar (16) comprises at one discontinuity (36) arranged asymmetrically with respect to a median plane (M-M) of the shoe (4), disposed along a longitudinal direction that extends from a heel (48) to a tip (50) of the shoe (4).
 9. Sports shoe (4) according to any of the preceding claims, wherein at least one discontinuity (36) has a prevailing transverse extension (52) between opposite transverse ends (56,58), said prevailing transverse extension (52) being incident with respect to a median plane (M-M) of the shoe (4), disposed along a longitudinal direction that extends from a heel (48) to a tip (50) of the shoe (4).
 10. Sports shoe (4) according to claim 9, wherein said discontinuity (36) has an amplitude (60) variable along its prevailing transverse extension (52), the amplitude (60) being greater close to the median plane (M-M) of the shoe (4) and lesser in the vicinity of said opposite transverse ends (56,58), wherein the amplitude (60) is the distance between the edges (32',32'') measured along the perpendicular to said prevailing transverse extension (52).
 11. Sports shoe (4) according to any of the preceding claims, in which said edges (32',32'') are at least partially superimposed so as to identify an overlapping portion (64) having a height (68) variable along its prevailing transverse width (72) between opposite transverse ends (56,58) of the discontinuity (36), said height (68) being greater in the vicinity of a median plane (M-M) of the shoe (4), disposed along a longitudinal direction which extends from a heel (48) to a tip (50) of the shoe (4), and lesser in the vicinity of the opposite transverse ends (56,58) of the discontinuity (36).
 12. Sports shoe (4) according to any of the preceding claims, wherein the collar (16) has a central edge (76) and two side edges (80) so as to assume an overall shape of a "W" in correspondence with its upper area (82) that delimits said access portion (20) of the housing space (10), the central edge (76) interfacing with the Achilles tendon of the foot, the side edges (80) interfacing with side/medial parts of leg.
 13. Method of manufacture of a sports shoe (4), in particular for trekking or hiking, comprising the steps of:
 - preparing an upper (8) that delimits, at least partially, a housing space (10) of a foot of a user,

the upper (8) being provided with an upper portion (12) suitable to embrace an area of the foot near the malleolus-tibial portion,

- preparing a collar (16) associated to the upper portion (12) so as to define an access portion (20) to said housing space (10), said collar (16) being shaped to embrace, at least partially, the malleolus-tibial portion of a user,
- the collar (16) extending from a front portion (24) facing a dorsal portion of the foot, to a rear portion (28) facing an Achilles tendon of the foot,

the method **characterized in that** it comprises the steps of:

- producing on the collar (16), in correspondence to the rear portion (28), at least one discontinuity (36) so as to identify at least two edges (32', 32'') separated and facing one another,
- bringing together at least partially said at least two edges (32', 32'') and locking them in said configuration of partial juxtaposition, by locking means (40), so as to place said edges (32', 32'') in traction and obtain a pre-crimping of the rear portion (28) according to a concave profile (44), relative to a direction of observation external to the shoe (4), from the side of the rear portion (28) of the collar (16).

- 14.** Method of producing a sports shoe (4) according to claim 13, comprising the step of overlapping at least partially said at least two edges (32', 32'') and locking them in said configuration of partial superimposition, by locking means (40), so as to place said edges (32', 32'') in traction and obtain a pre-crimping of the rear portion (28) according to a concave profile (44), relative to a direction of observation external to the shoe (4), from the side of the rear portion (28) of the collar (16).

- 15.** Method of producing a sports shoe (4) according to claim 13 or 14, wherein said step of locking of the edges (32', 32'') with the locking means (40) comprises a seam, thermo-taping, heat-welding and/or ultrasonic welding.

- 16.** Method of producing an athletic shoe (4) according to any of claims 13 to 15, comprising the step of producing a shoe (4) according to any of claims 1 to 12.

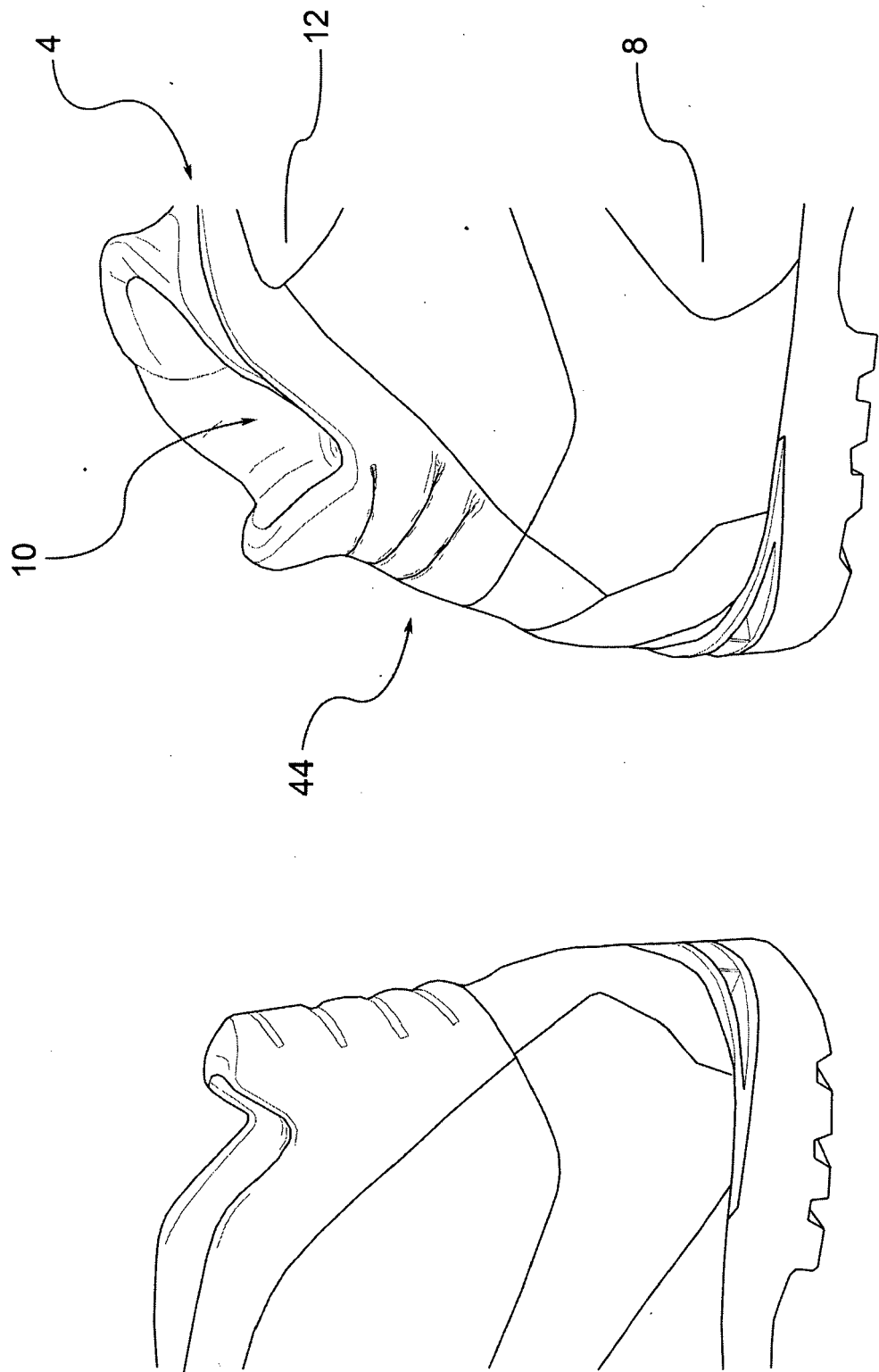
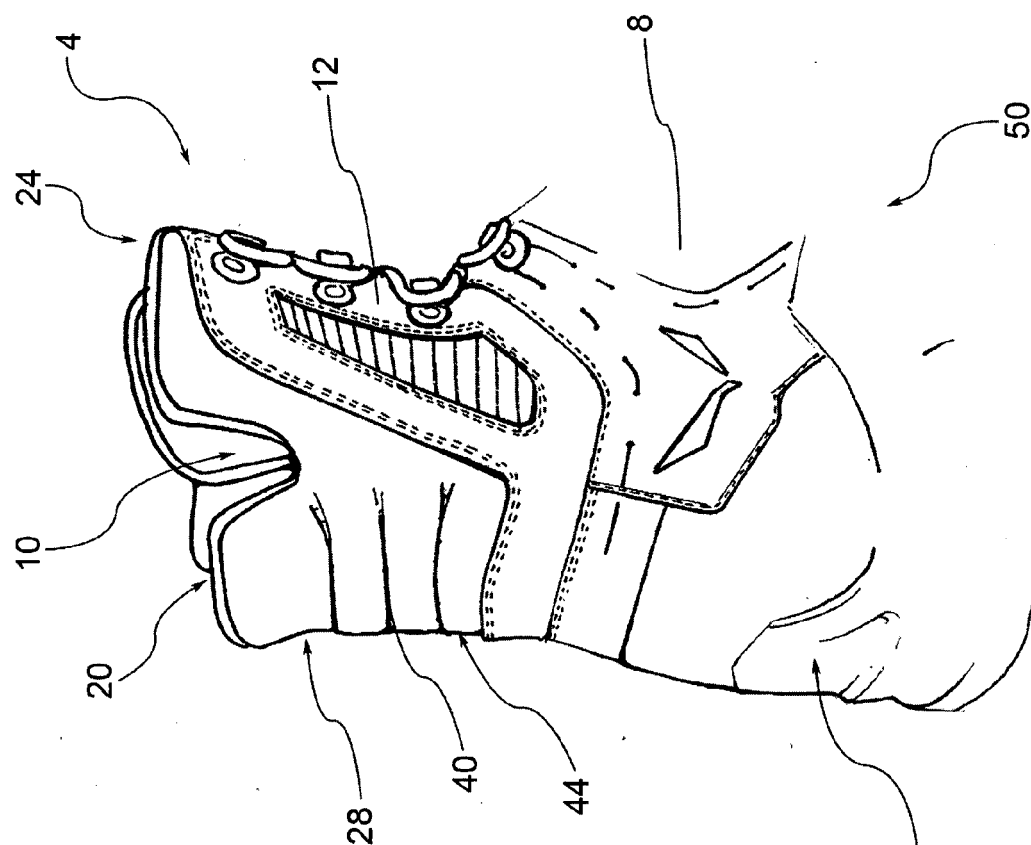
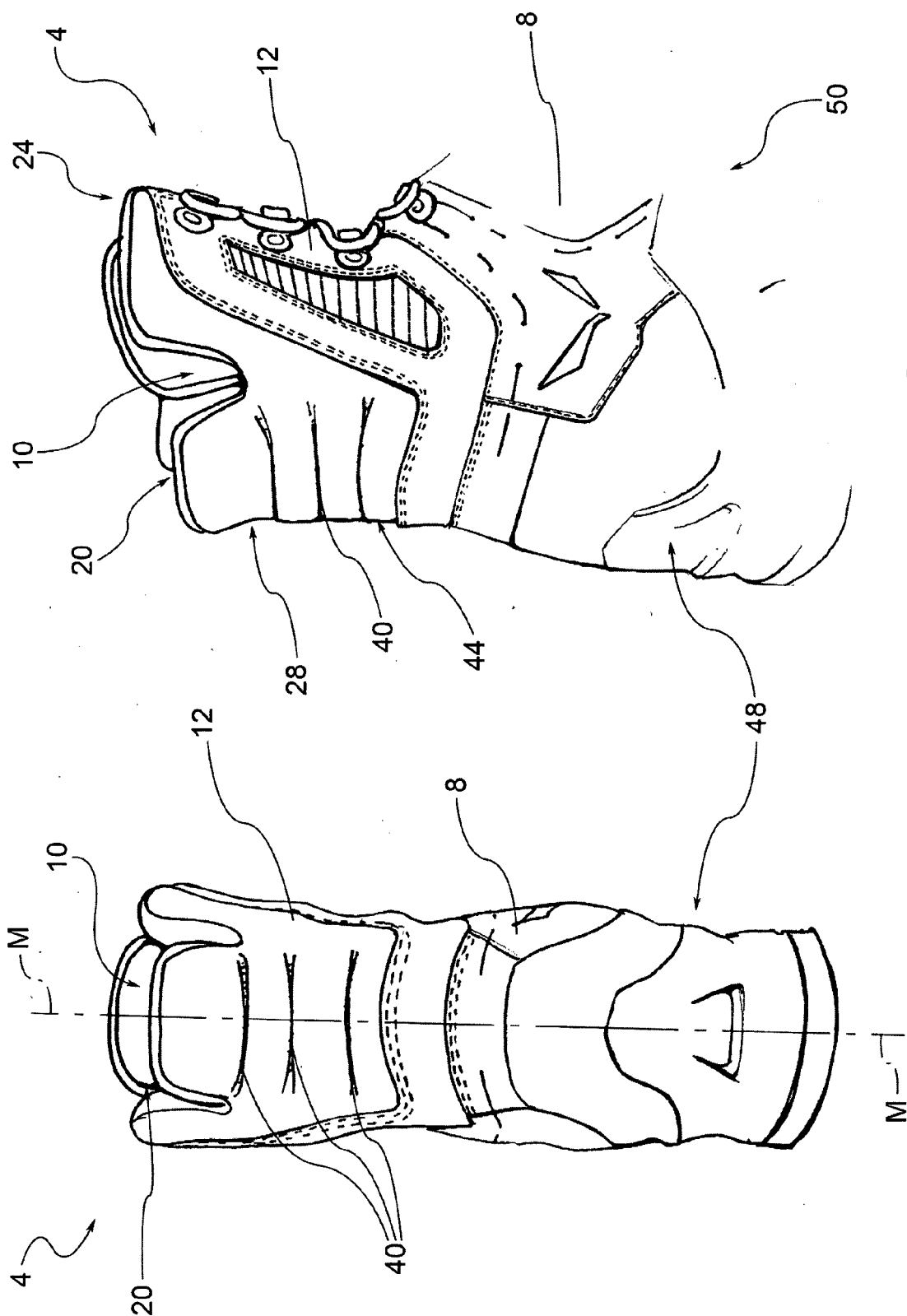


FIG.1



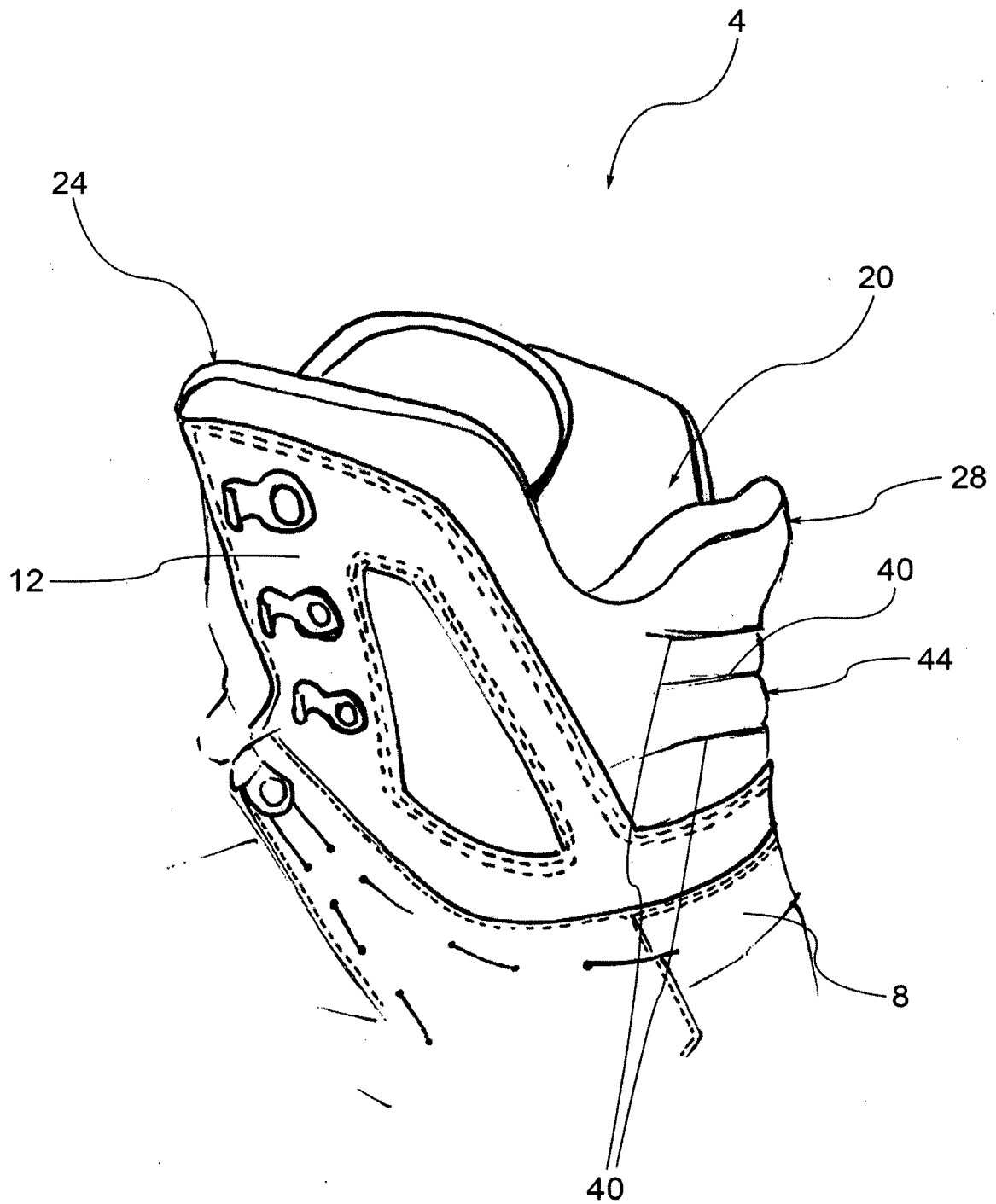
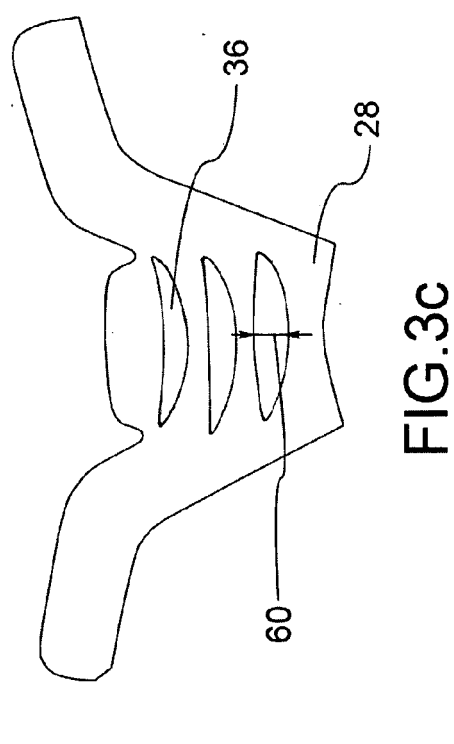
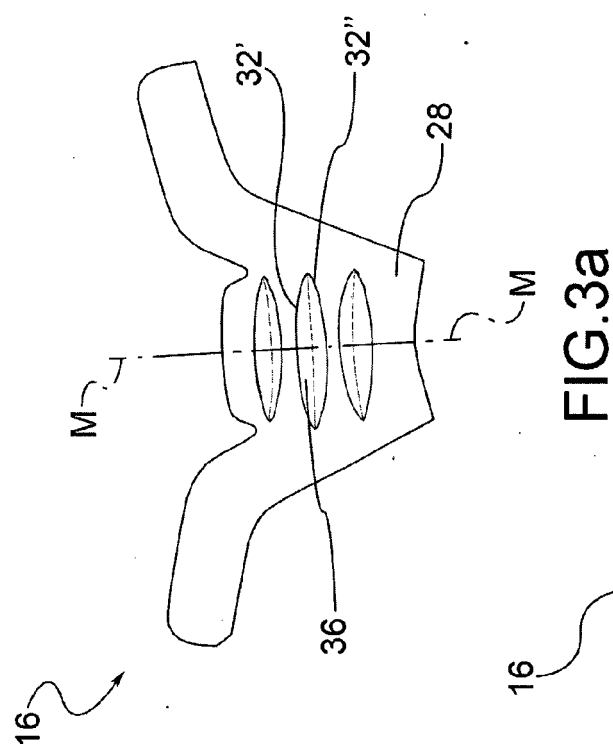
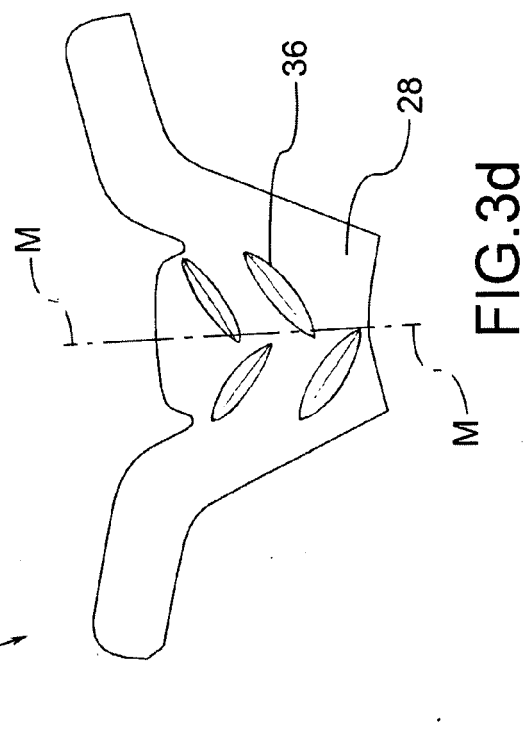
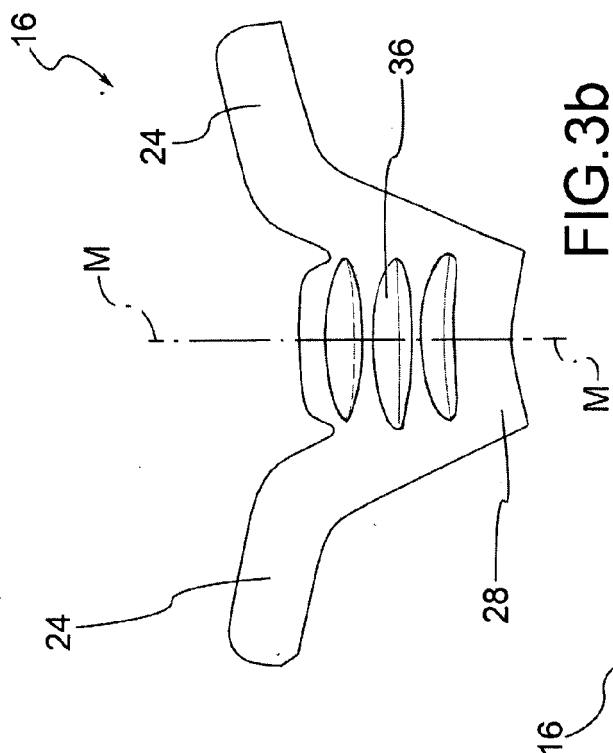
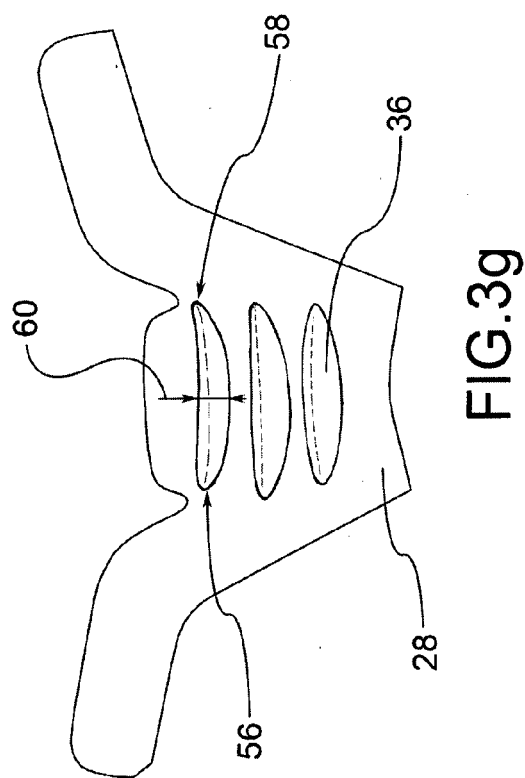
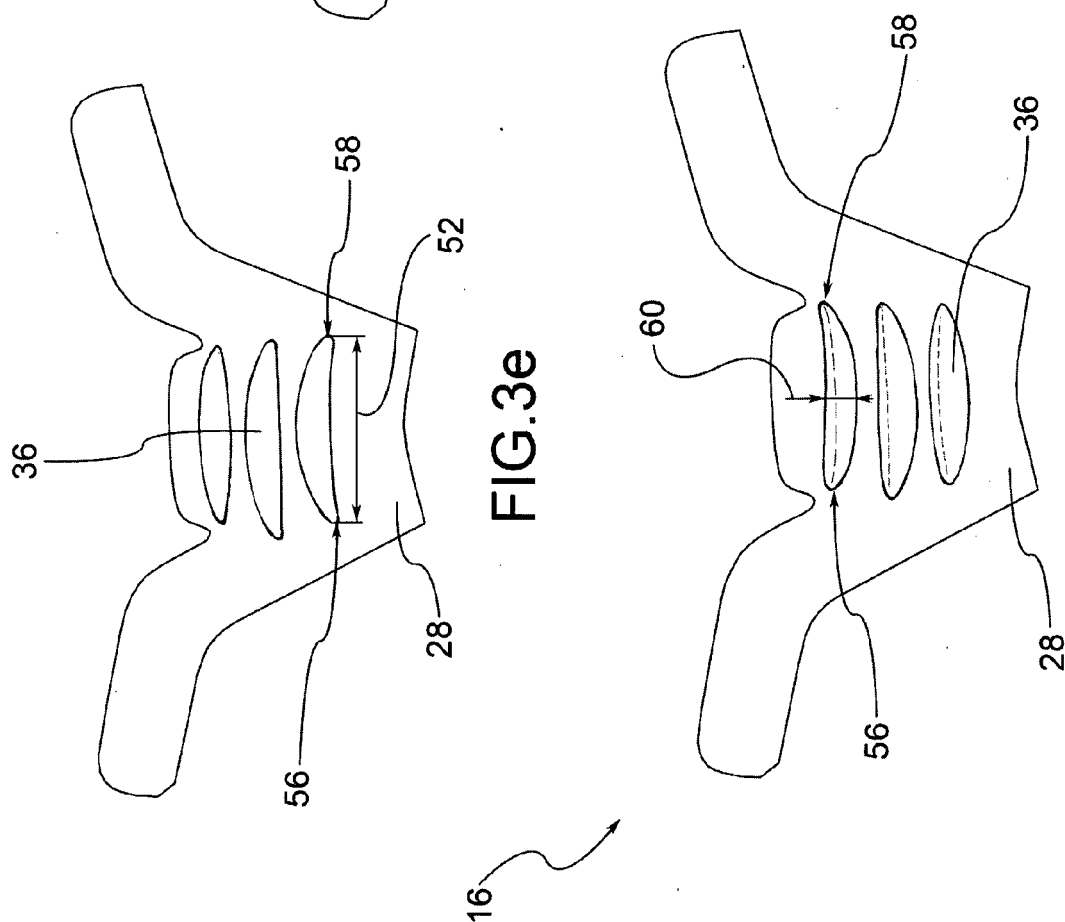
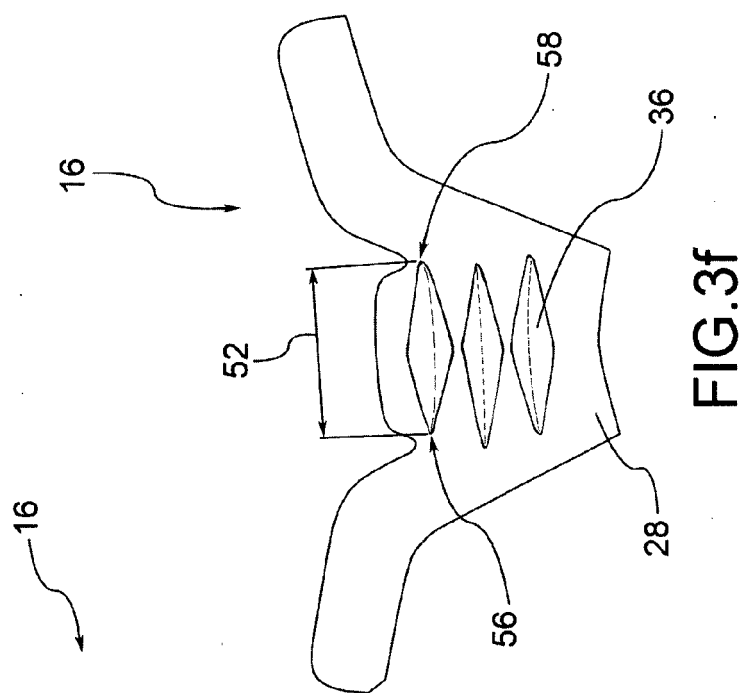


FIG.2c





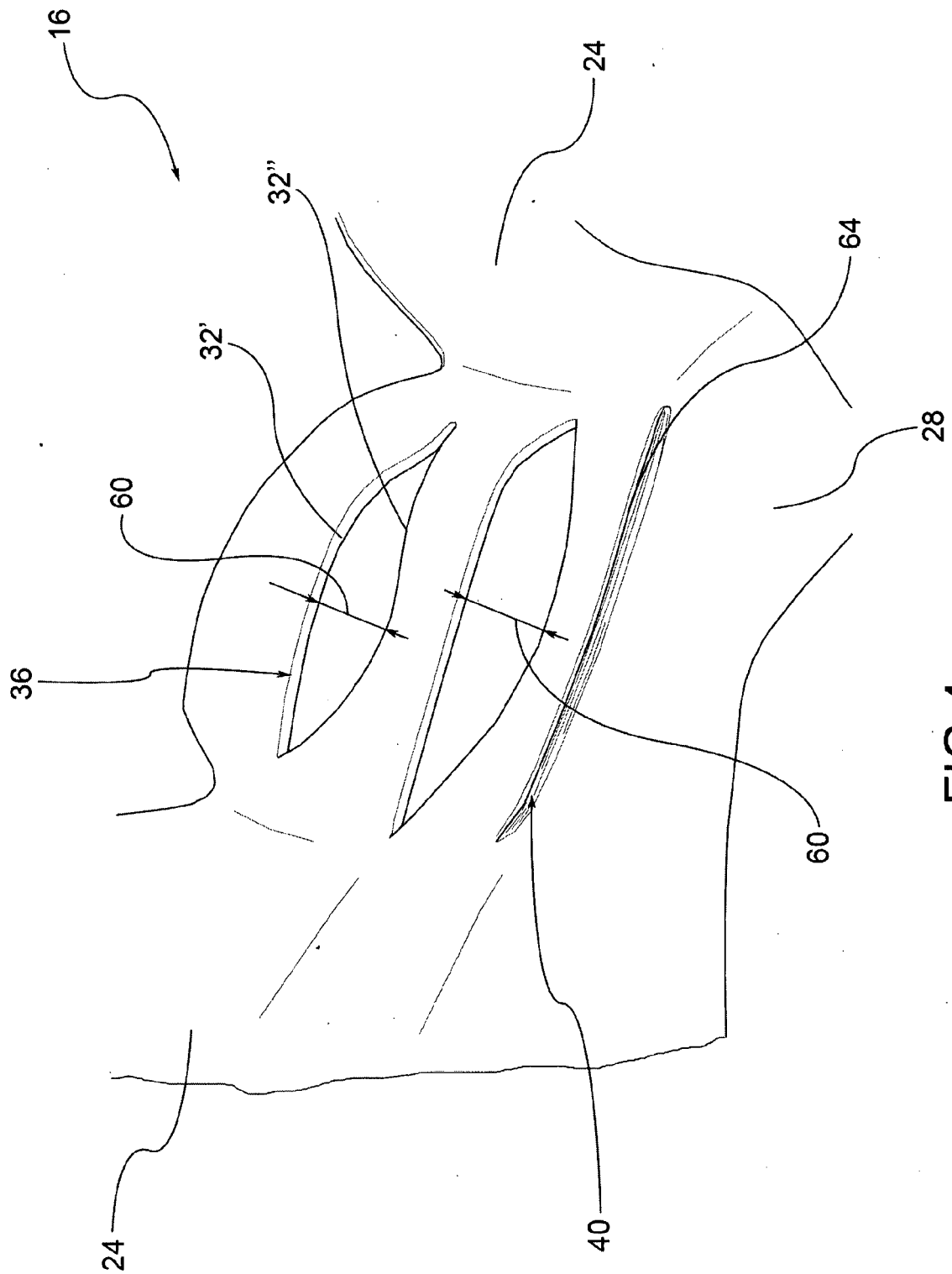


FIG.4

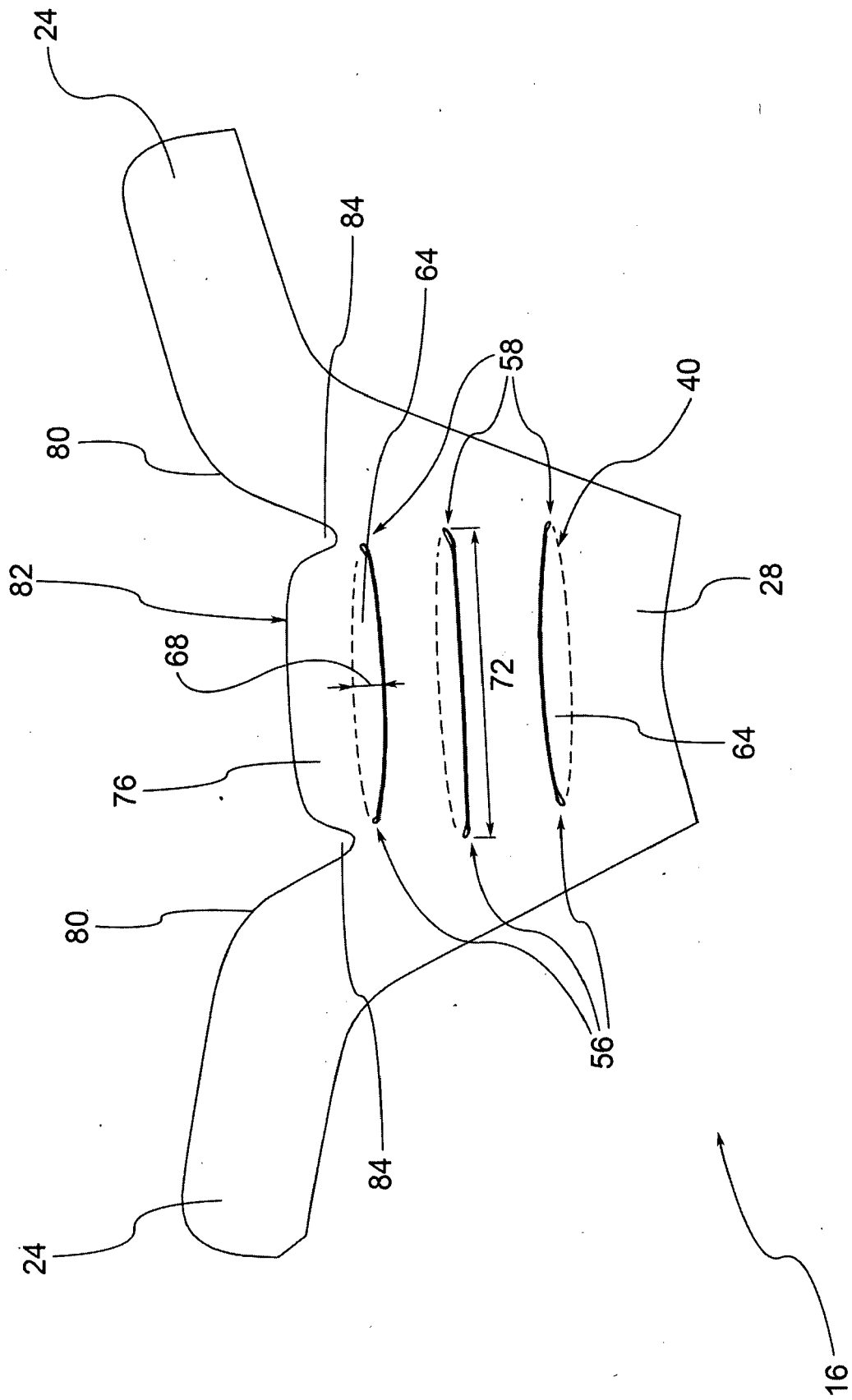


FIG. 5

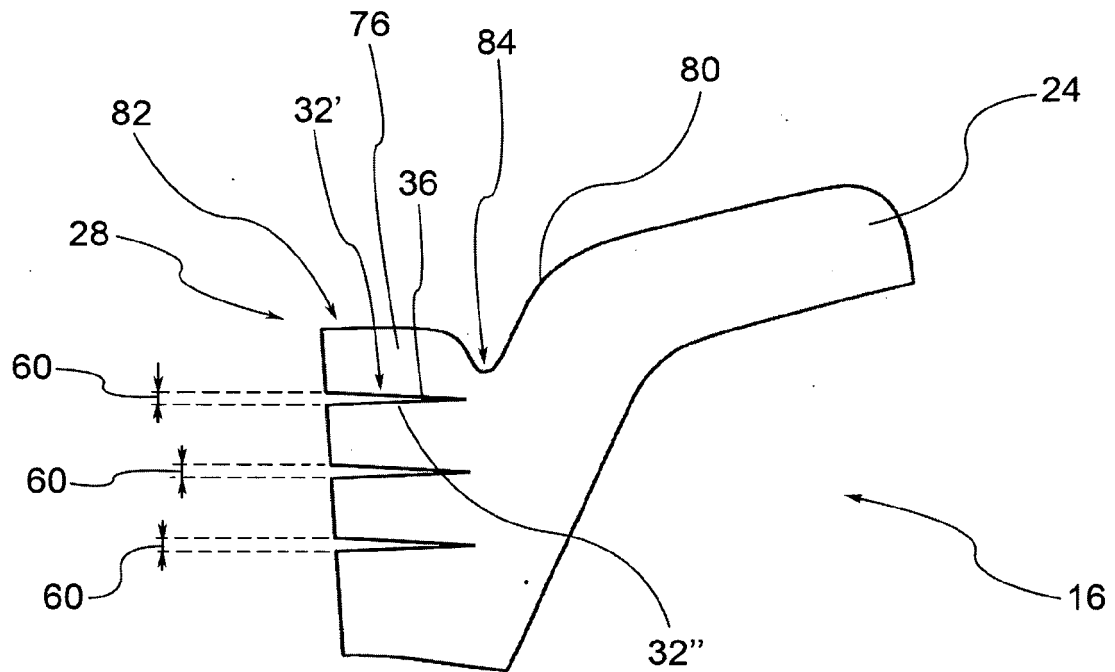


FIG. 6

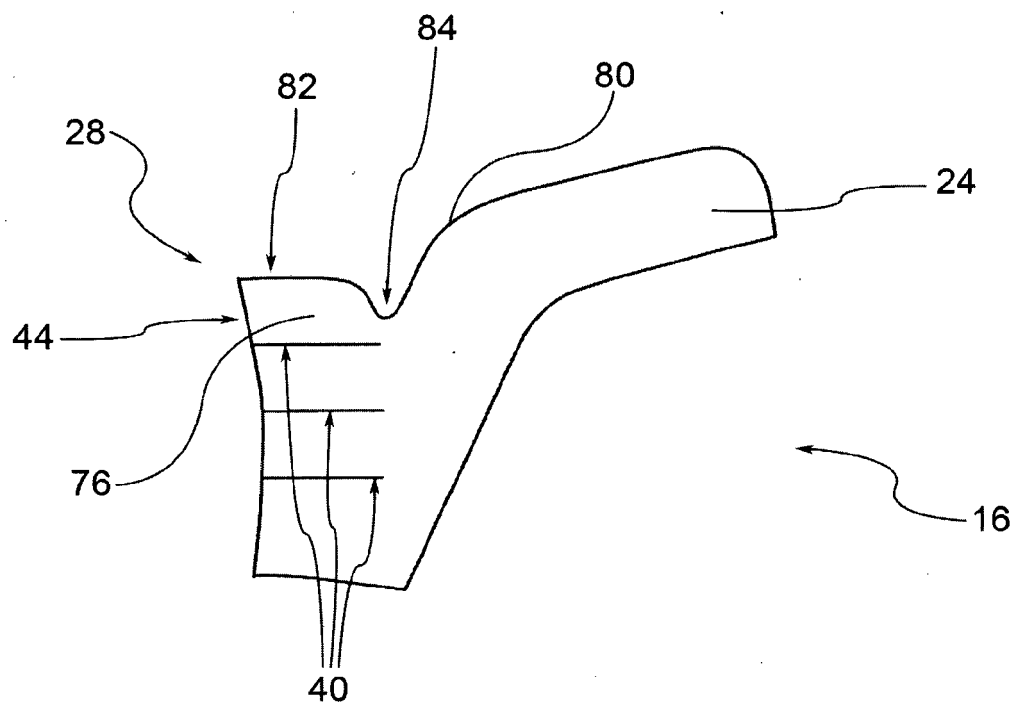
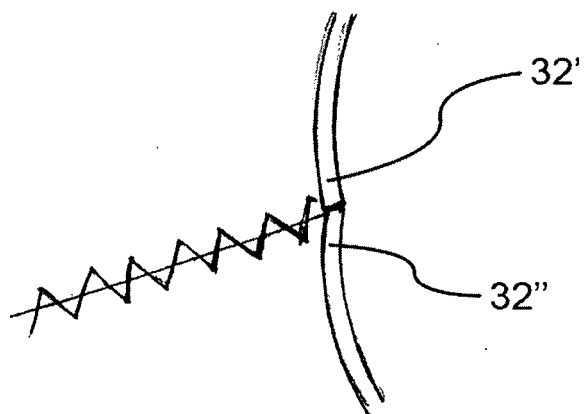
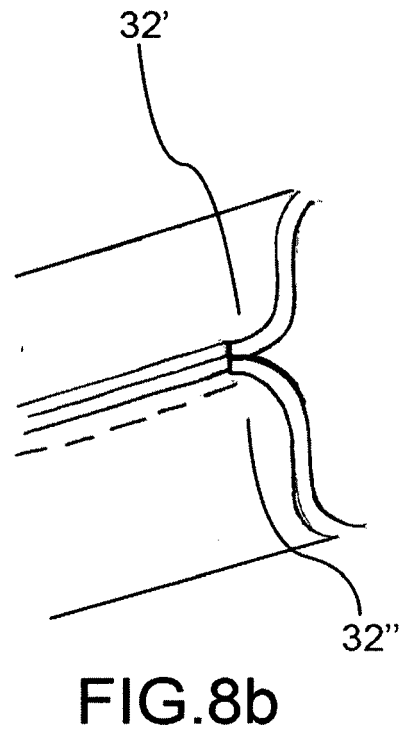
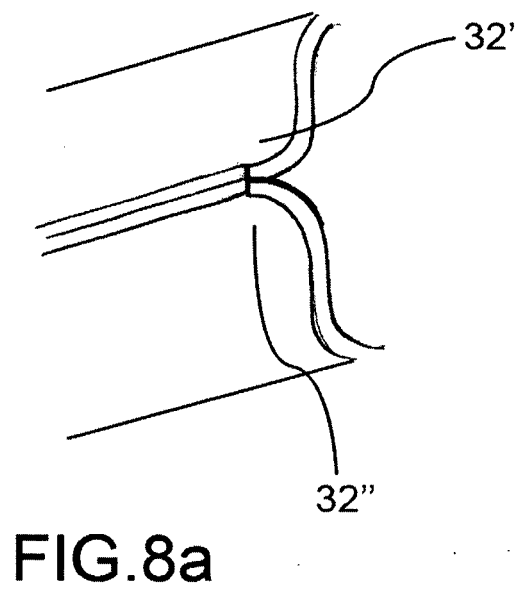


FIG. 7



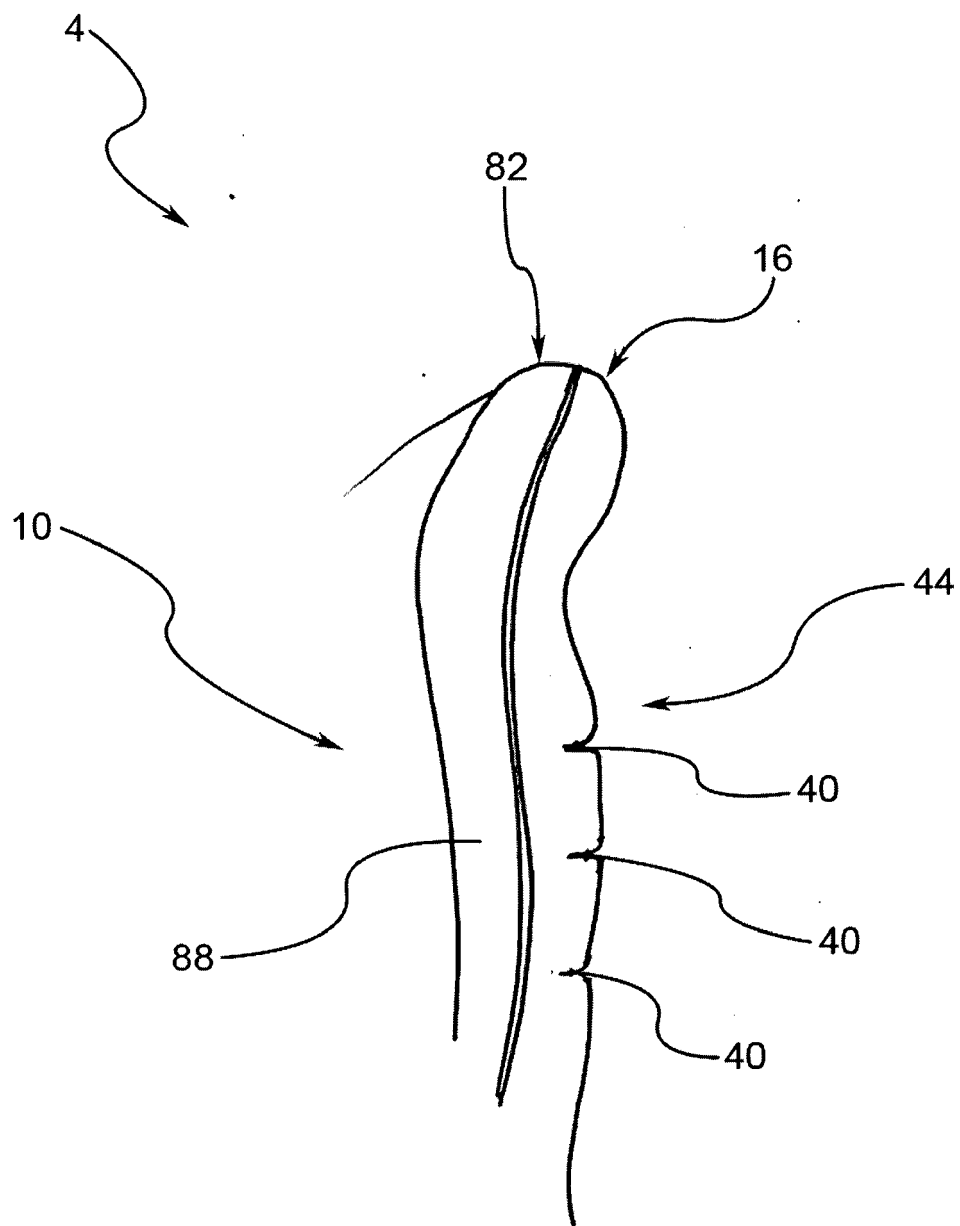


FIG.9

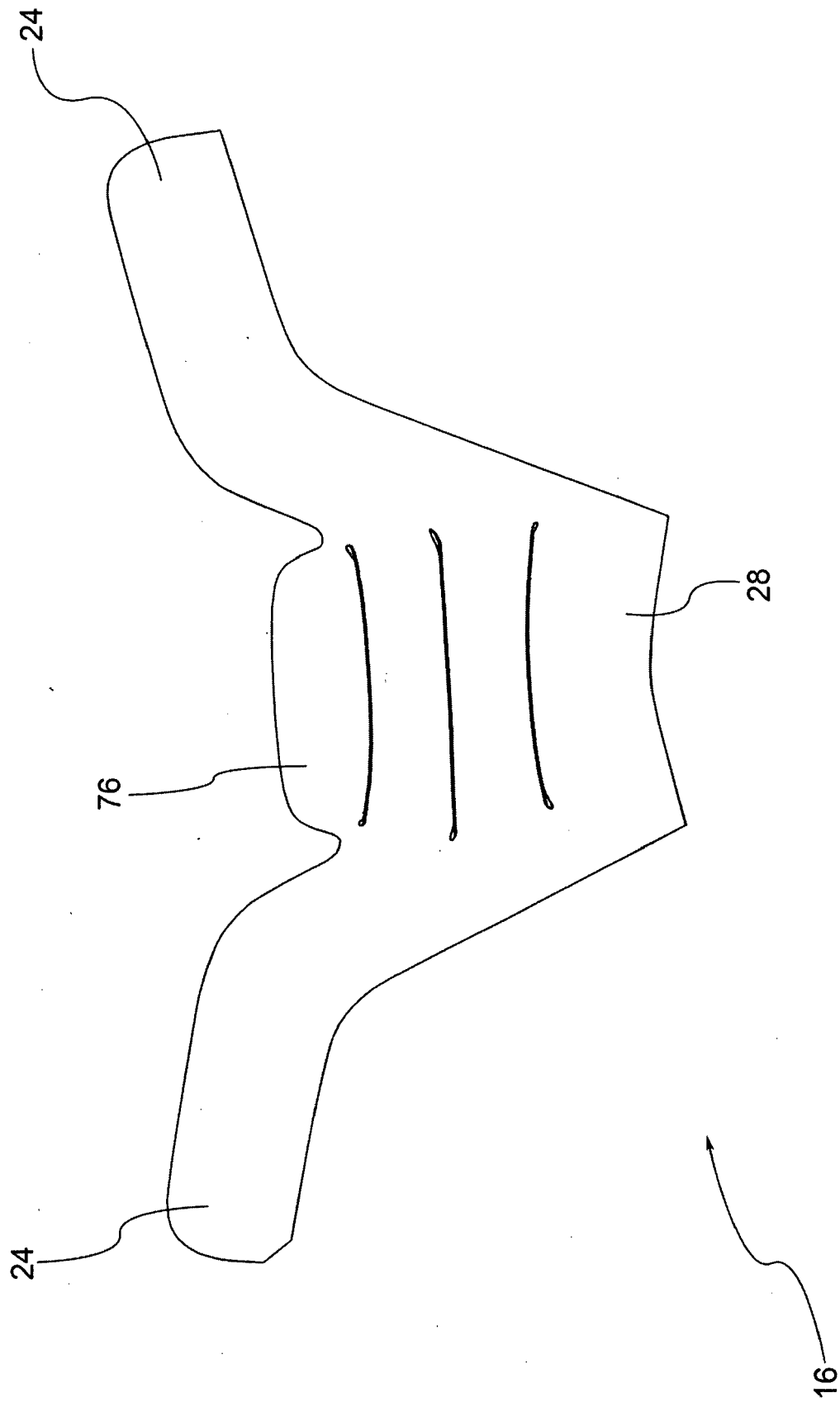


FIG.10



EUROPEAN SEARCH REPORT

 Application Number
 EP 16 00 1527

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 94/03079 A1 (FILA USA INC [US]) 17 February 1994 (1994-02-17) * the whole document *	1-16	INV. A43B7/20
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			TECHNICAL FIELDS SEARCHED (IPC)
			A43B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 November 2016	Examiner Espeel, Els
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