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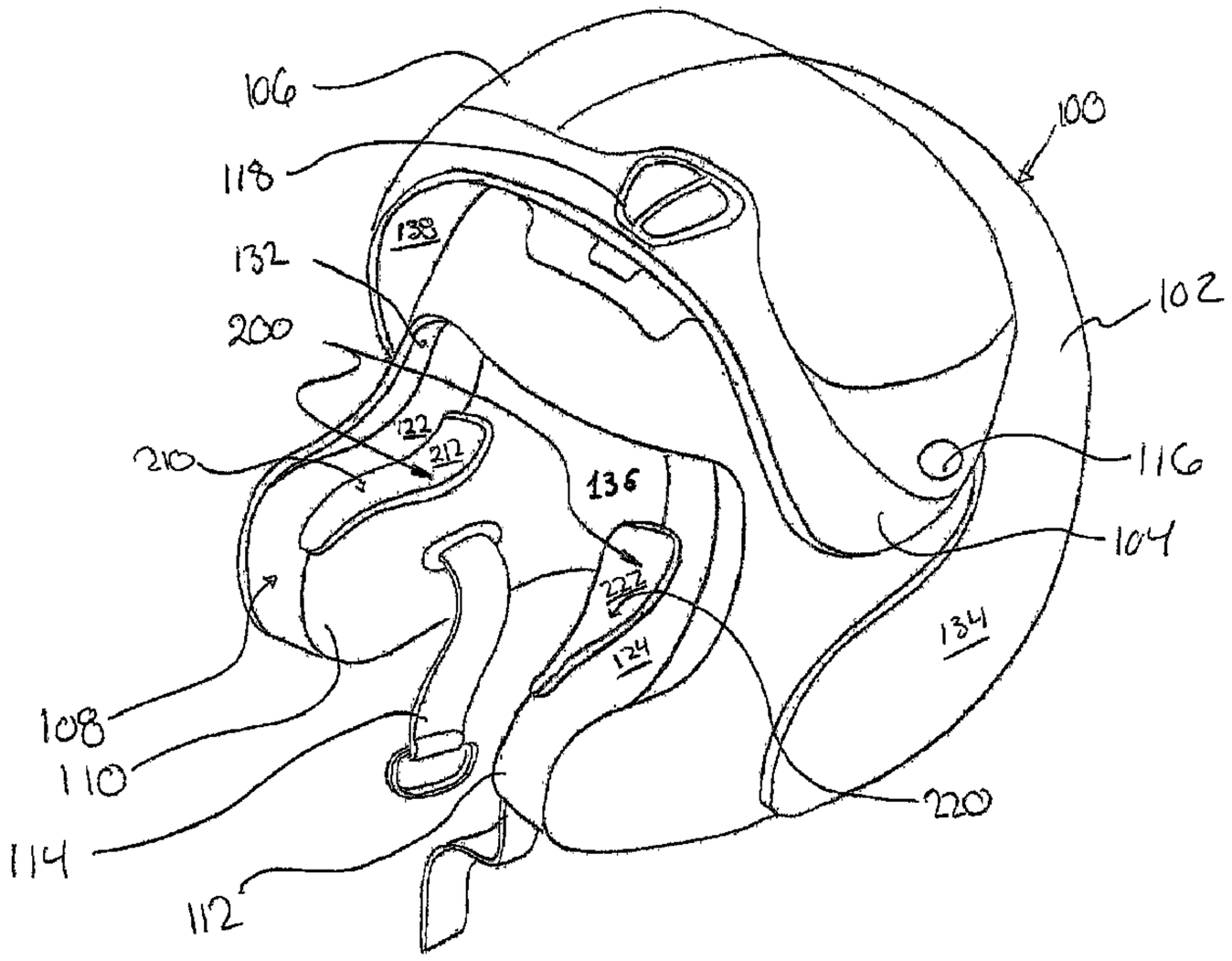
(54) Titre : COUSSINETS DE CONTROLE D'AIR ET SYSTEME DESTINE A UN CASQUE ET CASQUE EQUIPE DESDITS COUSSINETS

(54) Title: AIR CONTROL PADS AND SYSTEM FOR AN HELMET AND HELMET EQUIPPED WITH SAME



(57) Abrégé/Abstract:
An air control pad for an helmet is provided. The helmet for use with the air control pad comprises an outer shell having an inside surface facing a head of a person when wearing the helmet, an inner liner surrounding the head of the user when wearing the

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(57) Abrégé(suite)/Abstract(continued):
helmet and operatively mounted to the helmet outer shell, a chin bar disposed below the face visor, the chin bar having an inside surface facing toward the person when wearing the helmet and a breath guard. The inner liner generally having an inner face forming a curved surface for receiving the head of the user when wearing the helmet and a substantially transparent face visor attached to the helmet outer shell. The air control pad is preferably embodied as a flexible element extending upwardly and/or inwardly from the helmet inner liner on the right and/or left inner side of the face visor or goggles. The flexible element is configured to be in contact with the face edge of the breath guard and the inner liner.

File number: 9265-107
Date: 2017-01-03

Air control pads and system for an helmet and helmet equipped with same

Abstract

An air control pad for an helmet is provided. The helmet for use with the air control pad comprises an outer shell having an inside surface facing a head of a person when wearing the helmet, an inner liner surrounding the head of the user when wearing the helmet and operatively mounted to the helmet outer shell, a chin bar disposed below the face visor, the chin bar having an inside surface facing toward the person when wearing the helmet and a breath guard. The inner liner generally having an inner face forming a curved surface for receiving the head of the user when wearing the helmet and a substantially transparent face visor attached to the helmet outer shell. The air control pad is preferably embodied as a flexible element extending upwardly and/or inwardly from the helmet inner liner on the right and/or left inner side of the face visor or goggles. The flexible element is configured to be in contact with the face edge of the breath guard and the inner liner.

File number: 9265-107
Date: 20170103

Title of the Invention

Air control pads and system an helmet and helmet equipped with same.

Cross-Reference to Related Applications

[0001] There are no cross-related applications.

Field of the Invention

[0002] The present invention generally relates to helmet for motor vehicles and motorsports, particularly to an internal helmet padding for mounting onto an inner side of an impact absorbing liner in the helmet.

Background of the Invention

[0003] A safety helmet for riding a vehicle is constituted by fitting an impact absorbing liner comprising styrene foam or the like to an inner side of an outer shell and fixedly adhering an interior body (cushion pad) formed by covering a surface of a cushion material made of foamed urethane or the like by a cloth compatible with the skin at a predetermined portion on an inner side of the impact absorbing liner.

[0004] The interior body impact absorbing liner, is usually constituted by forming a core material of a rigid plate in a ring-like shape and by covering it with a cushion material which is itself covered by a cloth in those areas which are in direct contact with a human head.

[0005] The difference between a high quality helmet and a lower quality helmet often resides in the ability of the helmet to control visor or goggle fogging. Fogging is generally mitigated by controlling the air circulation within the helmet, particularly by creating a hermetic breath box. Known helmets often comprise breath guards to aid in limiting the

user's breath vapor from flowing upwardly and reaching the helmet visor or goggles. Breath guards are useful but lack the ability to provide an adequate fit for several users in part due to the particular configuration of such users head, cheeks, nose and/or chin.. Particularly, it has been found that breath vapor may flow between the breath guard and the inner liner about the user's cheeks (See element 320, Figs. 1 and 2).

[0006] Even in the presence of a high quality helmet equipped with a good breath guard, it remains that breath vapor is still able to reach the helmet's visor or goggles . Some helmet have gone all the way to providing a sealed breath box where the user needs to wear an air mask for optimal breath control.

[0007] However, air masks are known to be of lower comfort to the user. Furthermore, not all users desire having an air mask on their face while wearing an helmet. There is thus a need for an helmet that has an improved breath box for breath control while limiting the need for the user to wear an air mask.

Summary of the Invention

[0008] The shortcomings of the prior art are generally mitigated by providing a flexible cheek cushion between the helmet cushion pad or inner liner and the breath guard.

[0009] According to an aspect of the present invention, it is disclosed an air control pad for an helmet. The helmet for use with the air control pad generally comprises an outer shell, an inner liner, a substantially transparent face visor, a chin bar and a breath guard. The outer shell generally has an inside surface facing a head of a person when wearing the helmet. The inner liner generally surrounds the head of the user when wearing the helmet and is mounted to the helmet outer shell. The inner liner generally has an inner face forming a curved surface for receiving the head of the user when wearing the helmet. The face visor is preferably substantially transparent and attached to the helmet outer shell. The chin bar is disposed below the face visor. The chin bar generally has an inside surface facing toward the person when wearing the helmet. The breath guard generally extends from the inside surface of the chin bar toward the face of the user when wearing the helmet forming a

breath guard face edge. The air control pad preferably is a flexible element extending upwardly and/or inwardly from the helmet inner liner on the right or left inner side of the face visor, the flexible element being configured to be in contact with the face edge of the breath guard and the inner liner.

[0010] According to an aspect of the present invention, there is disclosed an air control pad that is cushioned between an helmet breath guard, the helmet inner liner and the face of a user when wearing the helmet. The air control pad is preferably made from a flexible/deformable material capable of adapting to the shape of the user.

[0011] According to an aspect of the present invention, there is disclosed an air control pad made from polymeric materials.

[0012] According to an aspect of the present invention, the air control pad is configured to improved air control within the helmet breath box. The air control pad aims at reducing breath vapor flow from the helmet breath box to the goggles or face visor, thus preventing the formation of fogging. As such, the air control pad in combination with the helmet breath guard and inner liners aims at constraining the user's breath vapor in the helmet breath box.

[0013] According to an aspect of the present invention, there is disclosed a method of mitigating the presence of breath vapor flow from the breath box to the helmet visor or goggles. The method comprising the step of inserting an air control pad between the breath guard and inner liner while preferably maintaining contact with the user's face when wearing the helmet.

[0014] Other and further aspects and advantages of the present invention will be obvious upon an understanding of the illustrative embodiments about to be described or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

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Brief Description of the Drawings

[0015] The above and other aspects, features and advantages of the invention will become more readily apparent from the following description, reference being made to the accompanying drawings in which:

[0016] Figure 1 is a front perspective view of a prior art helmet.

[0017] Figure 2 is a front perspective view of the prior art helmet of fig. 1 wherein the chin bar is raised.

[0018] Figure 3 is a front perspective view of an helmet having the chin bar and visor raised according to an embodiment of the present invention.

[0019] Figure 4 is a front perspective view of the helmet of Fig. 3, wherein the chin bar is in closed position and the visor is raised.

[0020] Figure 5 is a rear perspective view of the helmet of Fig. 4.

Detailed Description of the Preferred Embodiment

[0021] A novel air control pad for the interior liner 108 of helmet 100 and method of controlling air vapor in helmets will be described hereinafter. Although the invention is described in terms of specific illustrative embodiments, it is to be understood that the embodiments described herein are by way of example only and that the scope of the invention is not intended to be limited thereby.

Definition

[0022] Unless specified otherwise, the use of the term helmet herein refers to helmets for motor vehicle such as UTV, ATV, OHV, snowmobile, motocross and the like. Helmets used broadly includes full face type helmets and modular helmet, full face having a rotatably mounted chin bar 104 with a visor 106 or goggles mounted thereto. Though the invention may be used with motocross type ("MX helmets") the use of the term helmet should not be understood as referring to MX helmets unless specified as such.

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General description

[0023] According to an embodiment, now referring to Figs. 3-5, the air control pad 210, 220 is shown mounted to a helmet 100. Helmets 100 generally comprise an outer shell 102, an inner liner 108, a substantially transparent face visor or goggles 106, a chin bar 104, a breath guard 120 and a chin strap 114 for securing the helmet 100 to the user's head. The helmet 100 outer shell 102 generally has an inside surface 132 facing a head of a person when wearing the helmet 100 and an outer side 134 facing outwardly. The inner liner 108 is typically configured to surround the head of the user when wearing the helmet 100 with right and left front portion 110, 112 extending below the visor 106 opening 130. The inner liner 108 is mounted to the helmet outer shell 102, the inner liner 108 having an inner face 136 forming a curved surface for receiving the head of the user when wearing the helmet 100. The inner liner 108 in combination with the outer shell 102 aims at mitigating the impacts sustained by the helmet 100 wearer. The substantially transparent face visor 106 sometimes referred to as goggles is generally rotatably secured to the helmet outer shell 102 using the rotation element 116 or in modular helmet 100, attached to the chin bar 104 with rotating element 116 and rotating therewith. The chin bar 104 is generally disposed below the face visor 106. The chin bar 104 having an inside surface 138 facing toward the person when wearing the helmet 100. The breath guard 120 generally extends from the inside surface of the chin bar 104 toward the face of the user when wearing the helmet 100 forming a breath guard 120 face edge 150. The air control pads 210, 220 are generally made from a flexible element which in use extends upwardly and/or inwardly from the helmet inner liner 108 on the right or left inner side of the face visor. The air control pads are configured to be in contact with the face edge 150 of the breath guard 120 and the helmet's inner liner 108 as well as with the user's cheek. The air control pads could also be integral with the inner liner 108 but should preferably be made of a less rigid substance.

Description of the air pad as shown

[0024] In the present embodiment, still referring to Fig. 3, the air control pads 210, 220 are shown mounted in a modular type helmet 100, a helmet 100 having a chin bar 104 rotatably mounted to the helmet outer shell 102, the chin bar 104 having the visor 106 rotatably mounted thereto and rotating therewith. In modular helmets 100, upward movement of the

chin bar 104 clears the face of the user when wearing the helmet 100. As such, upward movement of the chin bar 104 entails upward movement of the visor 106 mounted thereto. According to embodiment of the present invention, the air control pads 210, 220 are positioned on the upper interior edge 122, 124 of the inner liner about the upper portion 140 of the chin bar 104 and lower portion of the visor 106 opening.

[0025] According to an embodiment, in use, the air control pads 210, 220 are configured to be compressed between the face edge 150 of the breath guard 120 and the upper surface 122, 124 of the inner liner 108 and/or the face of the user when wearing the helmet 100 limiting the ability of breath vapor to reach the visor 106 and condense thereon.

Description of the air pad system

[0026] According to an embodiment, the air control pads 210, 220 are used as a pair in an air control pad system 200. The air control pad system 200 generally comprises a pair of right and left control pads 210, 220 for mitigating the breath vapor flow to the visor 106 or goggles thus reducing the occurrences of fogging in the visor 106 or goggles. The right and left airs control pads 210, 220 are preferably located on the right and left sides of the helmet 100 about the inner liner 108 in proximity to the user's cheeks when wearing the helmet 100. According to the preferred embodiment, the right and left air control pads 210, 220 are generally respectively in contact with the user's right and left cheeks when wearing the helmet 100. In addition, the right and left air control pads 210, 220 are in contact with the helmet 100 breath guard 120. According to the preferred embodiment, the right and left air control pads 210, 220 are in contact with the breath guard's 120 face edge 150. Other embodiments of the air control pad system 200 for a helmet 100 may have the right and left control pads 210, 220 in contact with the underside 126, 128 of the helmet breath guard 120.

[0027] According to an embodiment, the surface of the left and right control pads 210, 220 which is in contact with the breath guard 120 cover around 30% of the total surface of the breath guard 120 defined as being the surface between the outer left side and the outer right side of the breath guard 120.

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[0028] According to a preferred embodiment of the present invention, the air control pads 210, 220 are made from air tight fabric or material that once in contact with the user's face and the breath guard 120 seals the breath box and prevent breath vapor from flowing upward and reaching the visor 106. As such, in the preferred embodiment, the breath guard 120, the inner liner 108, the air control pads 210, 220 and the face of the user form an air tight barrier preventing the upward flow of air to the helmet 100 visor 106.

[0029] According to an embodiment, the air control pads 210, 220 are made from a deformable material covered by a flexible, yet preferably airtight covering material. Understandably, though preferred, air-tight covering fabric is not essential for the air control pad 210, 220. Other embodiments, could be designed with a material that allows air through in its inoperative state, uncompressed state, but once compressed by both the user face and the breath guard 120 face edge 150, the material is rendered dense enough to prevent the breath vapor from easily flowing through thus providing an adequate level of air blocking ability between the breath guard 120 and the user's face. Yet, the material or fabric used for making the air control pads 210, 220 should be adequate for skin contact and preferably temperature insensitive, at least for the portion of the air control pad that is designed to be in contact with the user's face. Understandably, the underside of the air control pad 210, 220, the portion that is designed to be in contact with the inner liner 108 may be made from other material as to permit adherence to the inner liner 108 when used or sold with or separately as add-ons to an existing helmet 100.

[0030] According to an embodiment, the air control pads 210, 220 may be designed to be attached to an existing helmet 100 post purchase. In such a retrofitting embodiment, the helmet 100 owner would preferably acquire air control pads 210, 220 having a quick attach securing element. The quick attach element may be any system that allows to retrofit the air control pads 210, 220 by securing them to the inner liner 108 of an existing helmet 100. A non-limitative example of quick attachment element is the use of Velcro™ elements on the air control pads 210, 220 and inner liner 108. The Velcro™ elements could be glued, stitched or otherwise attached to the inner liner 108 of the helmet 100 to complement the

other the Velcro™ elements positioned on the underside of the air control pads 210, 220. As such, the underside of the air control pads 210, 220 could be provided with the hook anchoring element of Velcro™, while the inner liner 108 fabric could act with or without alteration as the softer complementary loop Velcro™ element thus providing the adequate adherence between the helmet inner liner 108 upper edge and the underside of the air control pads 210, 220.

[0031] According to an embodiment, the air control pads 210, 220 are provided as add-ons to existing helmets 100. The air control pads 210, 220 may thus be provided in distinct sizes to fit the various user face sizes and provide an alternative to users desiring the smaller possible air control pads 210, 220 while also obtaining the air control effect of the air control pads 210, 220.

[0032] According to an embodiment, depending on the size of the inner liner 108, the size of the air control pads 210 and 220 varies from 20% to 50% of the size of the inner liner 108.

[0033] According to an embodiment, there is disclosed an helmet 100 with air control pads 210, 220 mounted therein. The helmet 100 comprises air control pads 210, 220 mounted to or integral with the inner liner 108. The air control pads 210, 220 may be secured to the inner liner 108 by stitching, glue or via any other suitable means of mounting the air control to the inside of the helmet 100 while maintaining its air control ability.

[0034] According to yet another embodiment, the air control pads 210, 220 could be embodied as air pockets made from air tight fabric positioned about the upper edge of the inner liner 108. The air control pads 210, 220 according to this embodiment could be customized to the user's face configuration. Other configurations of the air control pads 210, 220 could have an integrated air pump system to fill the air pocket upon wearing the helmet 100. In such an embodiment, securing of the helmet 100 to the user head or lowering of the chin bar 104 could automatically actuate an air control pad system 200 in which air is pumped in the air control pads 210, 220 until adequate air control is obtained. The

actuation of the air pump system could be automatic or manual. Therefore, some embodiments of the helmet 100 air control pad could have a manual pump for inflating the air pads until the user deems the helmet 100 adequately mitigates the breath vapor flow from the user's mouth and/or nose to the visor.

[0035] According to yet another embodiment, the air control pad 210, 220 could be made from mildly compressible, yet deformable material such as gel-like substances that generally occupy a defined volume but which may be displaced to take different form. In such an embodiment, the pressure of the user's face against the air control pads 210, 220 would deform the gel like air control pads 210, 220 to adapt them to the user's face, yet allow the air control pads 210, 220 gel to fill the otherwise unoccupied space between the breath guard 120 and inner liner 108.

[0036] According to another embodiment, the air control pad is configured to be inserted between the breath guard 120 and the inner liner 108 of an MX helmet. According to this embodiment, the air control pads are designed to control breath vapor from flowing upwardly and potentially generating fogging in the user's visor or goggles. The use of air control pads may also be desired in MX helmet to increasing the efficiency of an MX helmet breath box. According to an embodiment, the air control pads 210, 220 outer surface or at least the surface of the air control pads that is to be in contact with the face of the user when wearing the helmet 100 may be recovered with textile material. Covering the air control pads 210, 220 with textile may improve the user comfort when wearing the helmet 100.

[0037] According to another embodiment, the air control pads 210 and 220 may be integrated to the breath guard 120, such as but not limited to being mounted to the inside of the chin bar 104.

[0038] According to an embodiment of the present invention, a method of using the air control pads 210, 220 is disclosed. The method comprises the step of upwardly rotating the chin bar 104 to its secured non-operational position. The method further comprises the step

of securing a right and a left air control pads 210, 220 to the right and left upper surface 122, 124 of the inner liner 108 about the portion in contact with the cheek of the user when wearing the helmet 100.

[0039] The method further comprising the step of downwardly rotating the chin bar 104 to its secured operational position (see Fig. 4).

[0040] According to an embodiment, a method of controlling breath vapor flow to the visor is disclosed, the method comprising the step of inserting air control pads 210, 220 between inner liner 108 on the side facing the head of the user and the breath guard 120 so that it becomes compressed against the user's face when wearing the helmet 100.

[0041] While illustrative and presently preferred embodiments of the invention have been described in detail hereinabove, it is to be understood that the inventive concepts may be otherwise variously embodied and employed and that the appended claims are intended to be construed to include such variations except insofar as limited by the prior art.

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Claims

1) An air control pad for a helmet, the helmet comprising:

an outer shell having an inside surface facing a head of a person when wearing the helmet;

an inner liner surrounding the head of the user when wearing the helmet and mounted to the helmet outer shell, the inner liner having an inner face forming a curved surface for receiving the head of the user when wearing the helmet;

a substantially transparent face visor attached to the helmet outer shell;

a chin bar disposed below the face visor, the chin bar having an inside surface facing toward the user when wearing the helmet; and

a breath guard comprising a breath guard face edge which is in contact with the face of the user when wearing the helmet, the breath guard extending from the inside surface of the chin bar toward the breath guard face edge;

the air control pad being made of a flexible element extending upwardly and/or inwardly from the helmet inner liner on the right or left inner side of the face visor, the flexible element being configured to be in contact with the face edge of the breath guard and the inner liner.

2) The air control pad of claim 1, the air control pad being configured to be compressed between the face edge of the breath guard and the upper surface of the inner liner and/or the face of the user when wearing the helmet limiting the ability of breath vapor to reach the visor.

3) The air control pad of claim 1, the air control pad being an integral part of the helmet.

4) The air control pad of claim 3, wherein the air control pad is an integral part of the breath guard.

5) The air control pad of claim 2, the air control pad being made from a deformable material covered by an airtight covering material.

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6) The air control pad of claim 1, the air pad control being removably secured to the inner liner.

7) The air control pad of claim1, the air pad control being adapted to be mounted to pre-existing helmets.

8) The air control pad of claim1, wherein the air control pad is selected from a plurality of air control pads having various sizes to fit various users' faces.

9) The air control pad of claim 1, the air control pad having an integrated air pump system to fill the air control pad upon wearing the helmet.

10) The air control pad of claim 1, the air control pad being made by a compressible material in a way to have a defined volume while being adapted to adopt different forms.

11) The air control pad of claim 1, the air control pad being configured to be inserted between the breath guard and the inner liner of the helmet.

12) The air control pad of claim 1, wherein the contact area of the air control pads with the face edge of the breath guard is approximately 30% of the total surface of the breath guard.

13) A method of using the air control pad of claim 1, the method comprising:

- upwardly rotating a chin bar of a helmet to its secured non-operational position;
- securing a right control pad to the right side of an inner liner of the helmet about a portion being in contact with a user's cheek when wearing the helmet;
- securing a left control pad to the left side of an inner liner of the helmet about a portion being in contact with a user's cheek when wearing the helmet;

- downwardly rotating the chin bar of the helmet to its secured operational position.

14) The method as claimed in claim 13, the method further comprises the step of inserting air control pads between the inner liner of the helmet on the side facing the head of a user and the breath guard such as to be compressed against the user's face when wearing the helmet.

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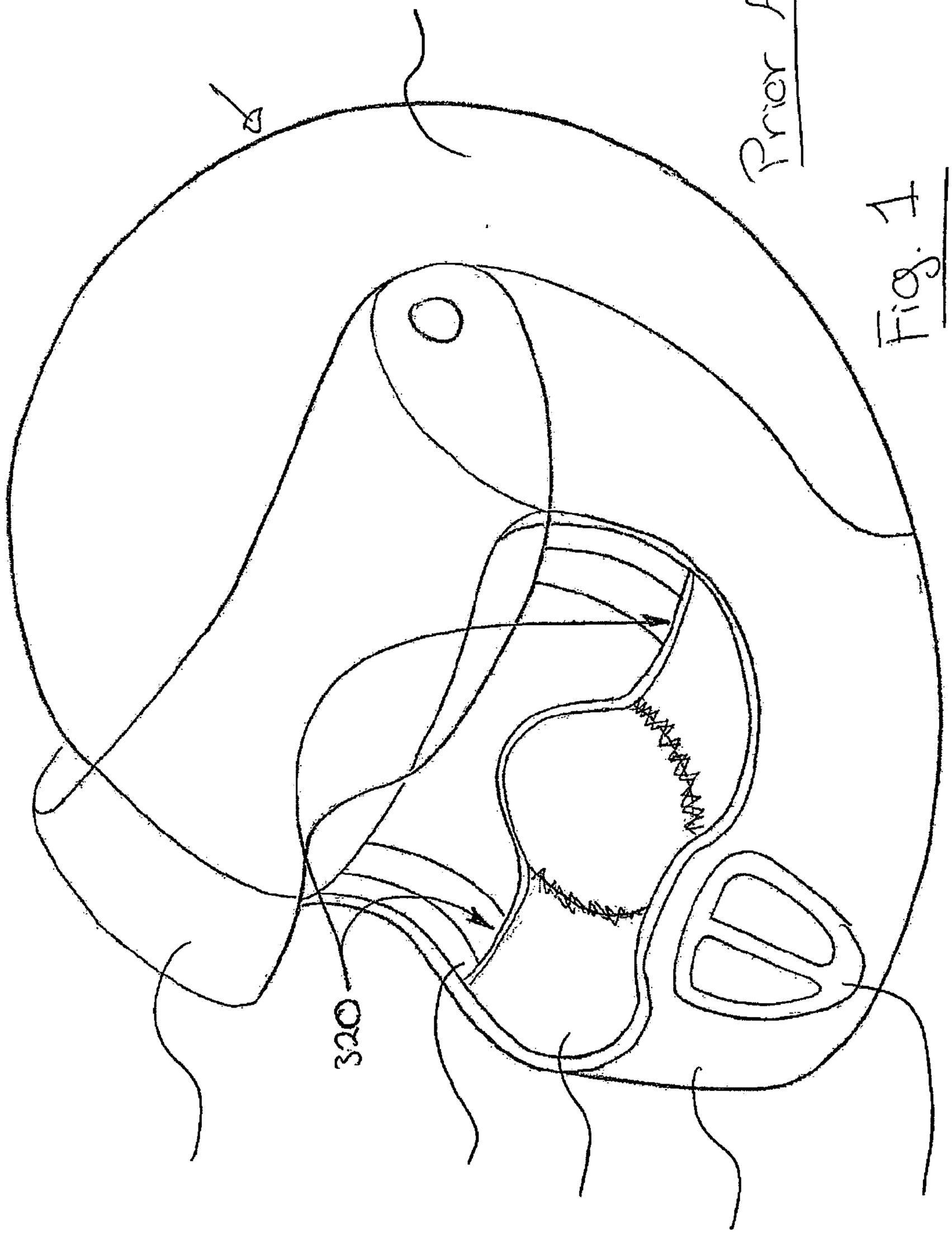
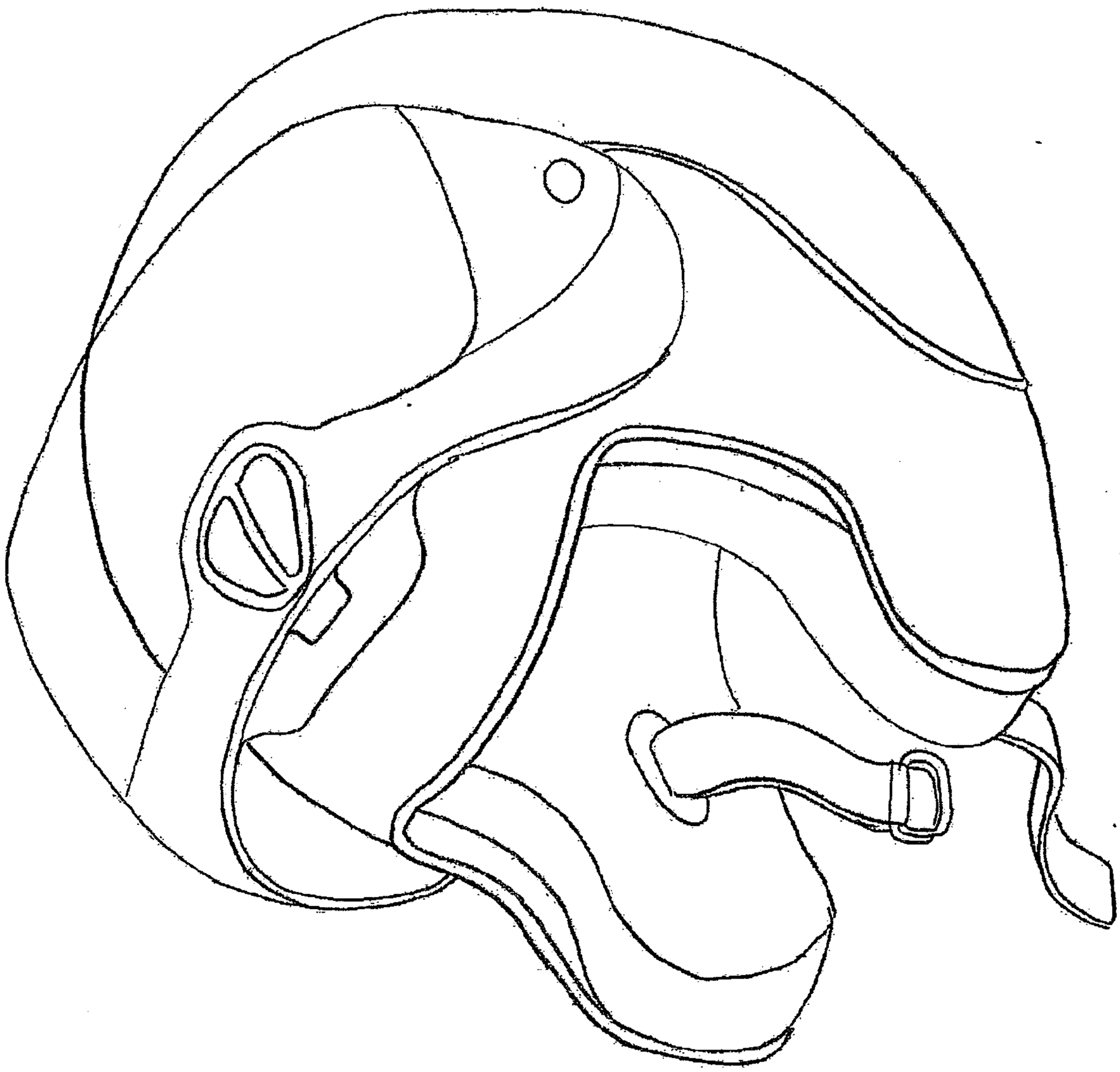


Prior Art
Fig. 1



Prior Art
Fig. 2

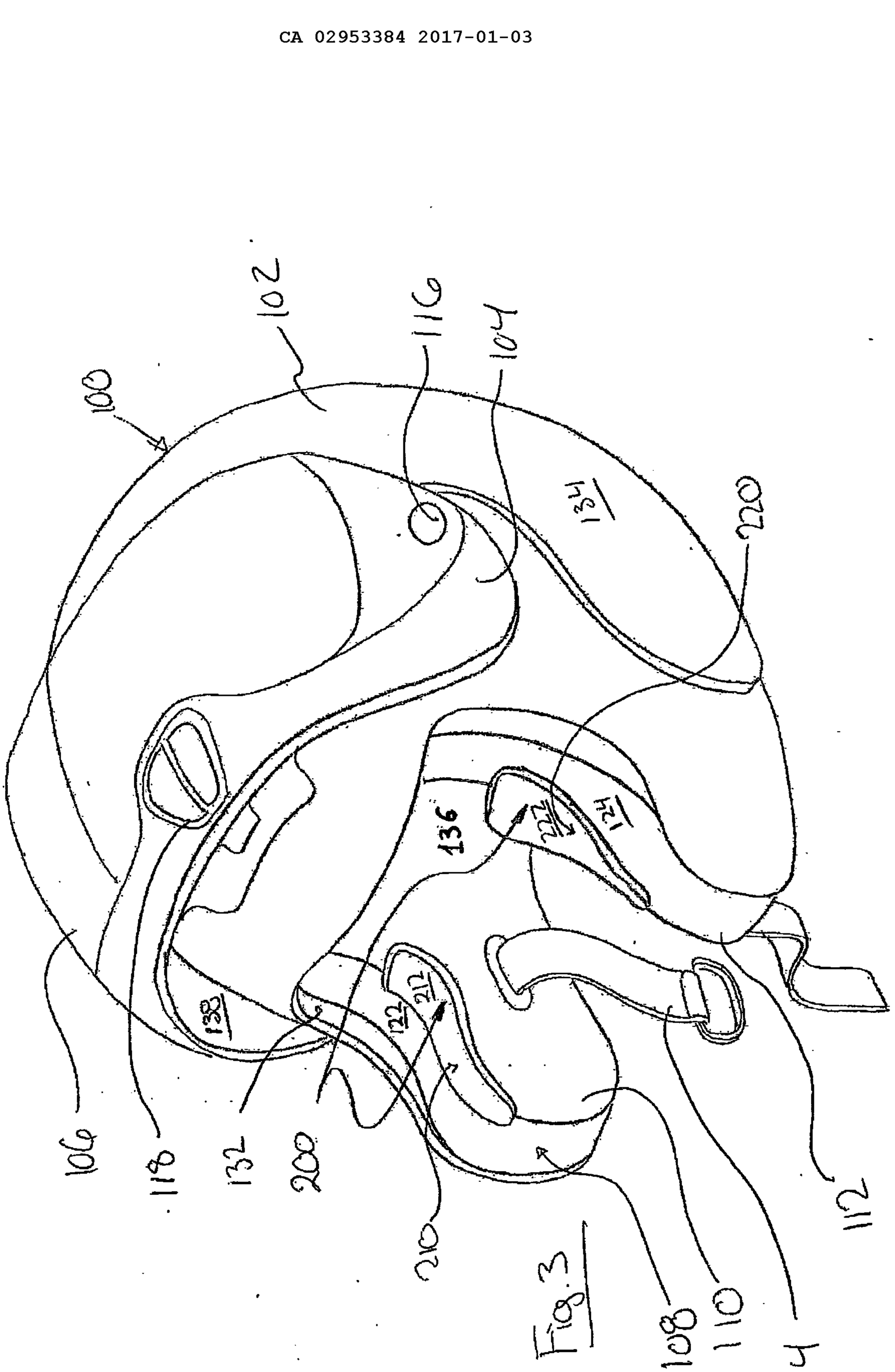

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Fig. 3

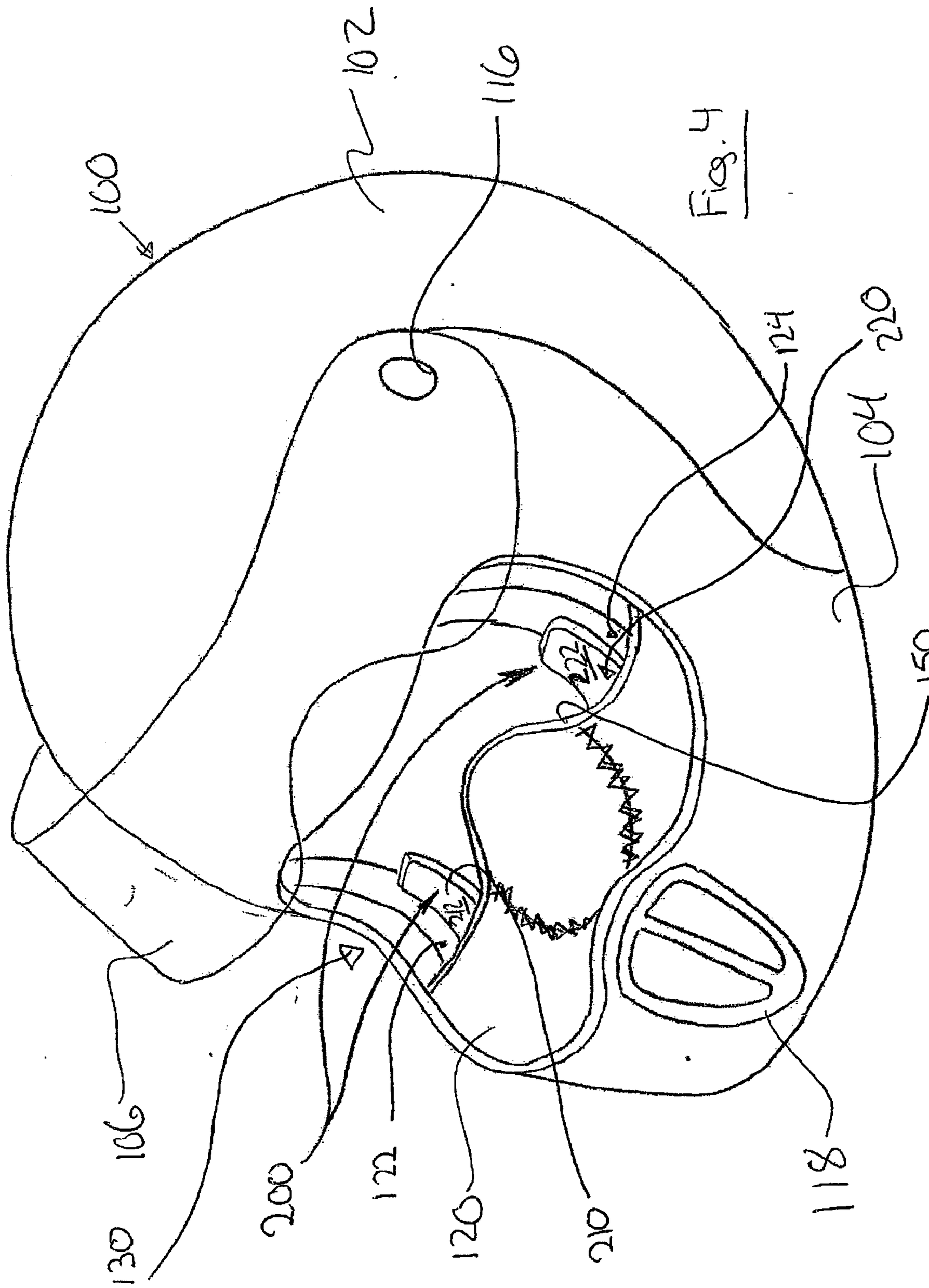


Fig. 4

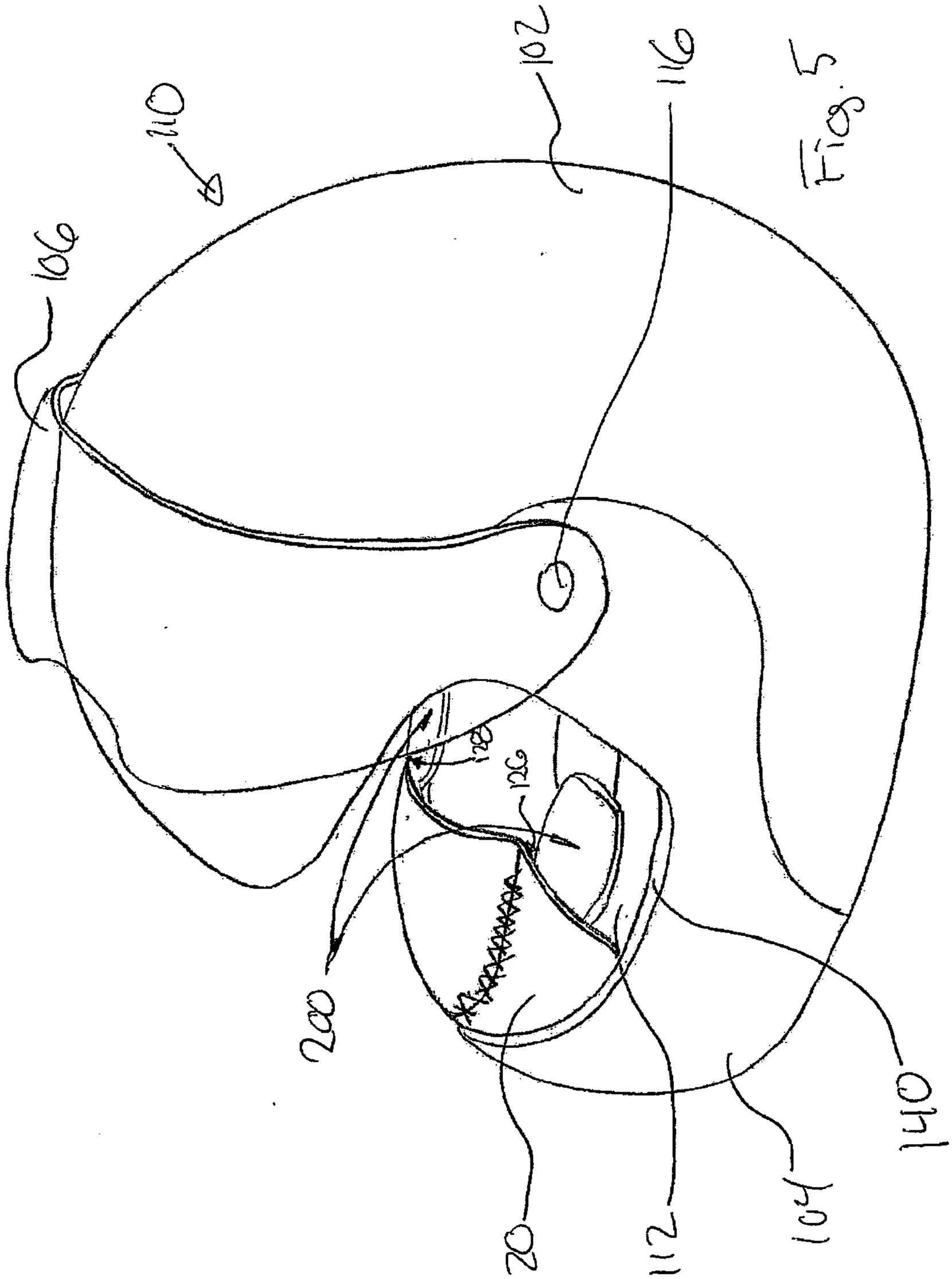
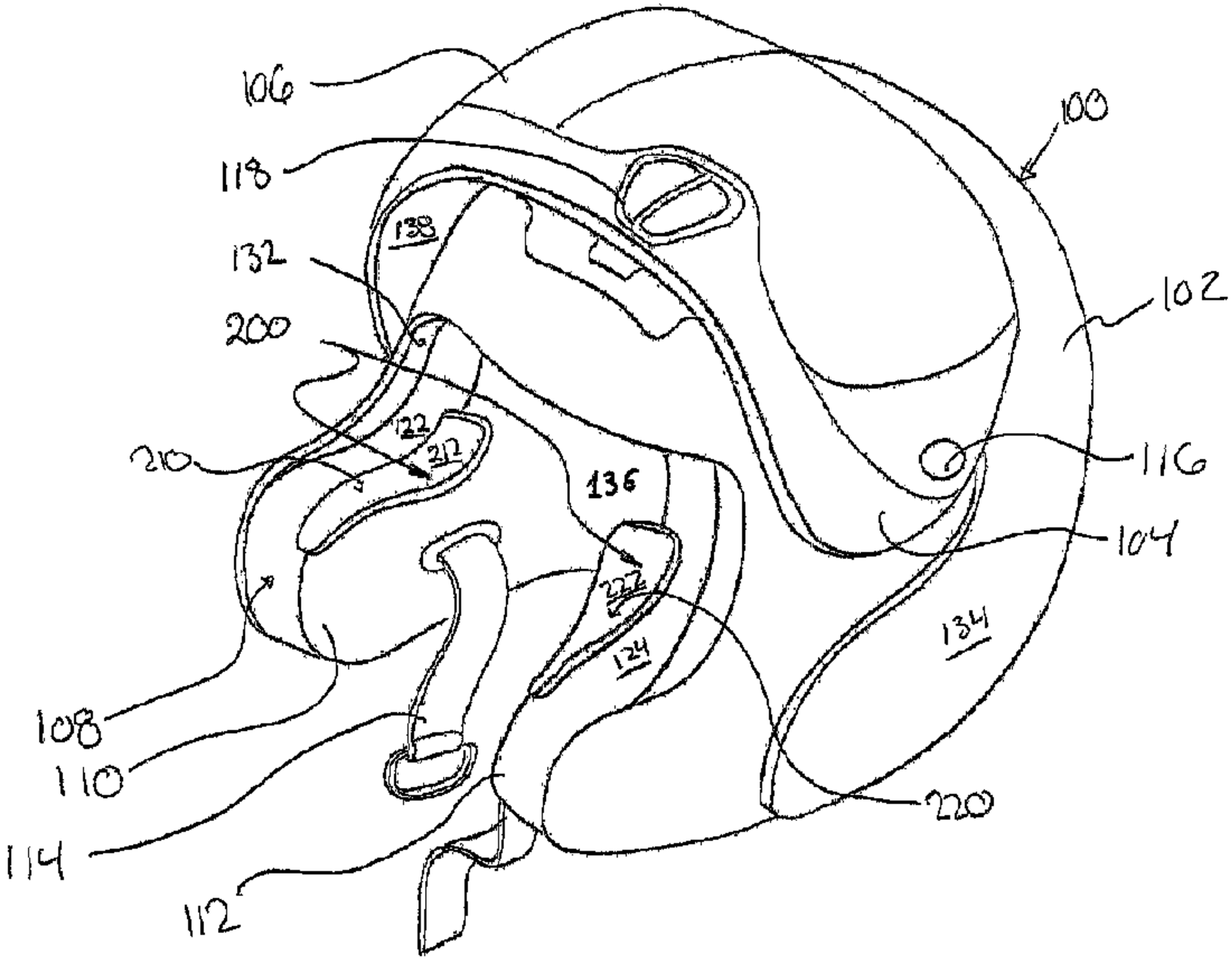


Fig. 5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