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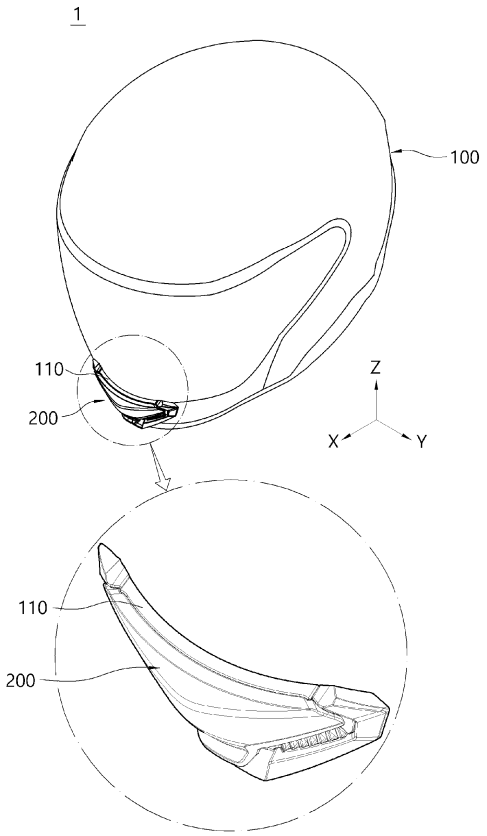
(54) **HELMET**

(57) A helmet is provided. A helmet according to an aspect of the present invention includes: a helmet body including a ventilation hole which is formed through one side thereof and enables a fluid to communicate between an inner space thereof and the outside; a base member covering the ventilation hole and including a through-hole which is formed through one side thereof and enables a fluid to communicate between the inner space of the helmet body and the outside; and a cover covering the through-hole, wherein the cover: reciprocates between a first position at which the cover is disposed so as to close the through-hole and a second position which is adjacent to the first position and at which the through-hole is opened by the cover; and is pivotally rotatable at the second position around a rotation shaft positioned at one side of the cover so that the other side of the cover is spaced apart from the helmet body.

FIG. 1



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Description

Technical Field

[0001] The present invention relates to a helmet, and more particularly, to a helmet provided to cover a wearer's head to protect the wearer's head from external impact.

Background Art

[0002] In the case of a two-wheeled vehicle, there is a very high risk that the impact will be transmitted to the passenger as it is in the event of an accident. In addition, new types of personal mobility (PM), such as electric kickboards, single wheels, and two wheels (hoverboards), which are widely distributed in recent years, do not have the means to protect passengers in the event of an accident. Accordingly, it is essential for passengers of personal mobility, including two-wheeled vehicles, to wear a safety helmet for riding, that is, a helmet to protect their heads.

[0003] In general, a helmet includes a helmet body that protects the wearer's head from external impact and various attachment elements attached to the helmet body. With the recent increase in personal mobility and the increase in demand for helmets, research on elements that can keep the internal environment of the helmet body comfortable when wearing a helmet is increasing in the helmet production industry.

[0004] As an element provided to keep the internal environment of the helmet body comfortable, a through-hole through which external air may be introduced into the inner space is common. However, if only the through-hole is provided, there is a problem that not only is part of the wearer's head exposed to the outside through the through-hole, but also foreign substances may enter the inner space of the helmet body if it rains or snows.

[0005] In particular, in the case of a through-hole formed in the front, the amount of air introduced may vary depending on the direction in which the wearer's face is directed, so there is a need for a structure in which air can be smoothly introduced even when the wearer bows his or her head while driving.

Disclosure

Technical Problem

[0006] The present invention aims to solve the above problems, and the present invention is directed to providing a helmet capable of introducing air into a helmet body.

[0007] In addition, the present invention is directed to providing a helmet capable of increasing the amount of air introduced into the helmet body.

[0008] The problems of the present invention are not limited to those mentioned above, and other problems not mentioned will be clearly understood by those of ordinary skill in the art from the following description.

Technical Solution

[0009] A helmet according to an aspect of the present invention may include: a helmet body including a ventilation hole which is formed through one side thereof and enables a fluid to communicate between an inner space thereof and the outside; a base member covering the ventilation hole and including a through-hole which is formed through one side thereof and enables a fluid to communicate between the inner space of the helmet body and the outside; and a cover covering the through-hole, wherein the cover: reciprocates between a first position at which the cover is disposed so as to close the through-hole and a second position which is adjacent to the first position and at which the through-hole is opened by the cover; and is pivotally rotatable at the second position around a rotation shaft (I) positioned at one side of the cover so that the other side of the cover is spaced apart from the helmet body.

[0010] In this case, an area capable of fluid communication through the through-hole may be widened as the cover pivotally rotates at the second position.

[0011] In this case, the base member may further include a first guide rail formed on one side of the through-hole of the base member and extending in a movement direction of the cover; a first support surface formed on one side of the first guide rail to face the other side; and a second support surface formed on the other side of the first guide rail to face one side, and the helmet may further include a movable member configured to reciprocate between the first support surface and the second support surface along the first guide rail, and on one side of which the cover is pivotally and rotatably coupled, and configured to reciprocate together with the cover.

[0012] In this case, the movable member may include a pair of first guide protrusions protruding from both side surfaces of the movable member, respectively, and the base member may include a pair of second guide rails extending in the extension direction of the first guide rail to support one surface of the pair of first guide protrusions, respectively.

[0013] In this case, a central portion of the first guide rail may protrude toward the movable member, and the movable member may further include a protruding portion protruding toward the first guide rail.

[0014] In this case, a central portion of the first guide rail may be formed to be convex toward the movable member, one side of the protruding portion of the movable member may be formed to be concave so as to correspond to one side of the central portion of the first guide rail in a state where the cover is located in the second position, and the other side of the protruding portion of the movable member may be formed to be concave so as to correspond to the other side of the central portion of the first guide rail in a state where the cover is located in the

first position.

[0015] In this case, the movable member may be supported by the other side of a central portion of the first guide rail, and by the first support surface in a state where the cover is located in the first position, and the movable member may be supported by one side of the central portion of the first guide rail, and by the second support surface in a state where the cover is in the second position, and the first guide rail may be configured to be elastically deformed so that the movable member moves in the up-down direction.

[0016] In this case, the movable member may include a pair of coupling protrusions protruding from both side surfaces of the movable member, respectively; and a pair of first locking protrusions protruding from both side surfaces of the movable member, respectively, on one side of the pair of coupling protrusions, and the cover may include a pair of coupling holes into which the pair of coupling protrusions are inserted, respectively, so that the cover pivotally rotates around the rotation shaft (I); and a pair of second locking protrusions in which one side is supported by one side of the first locking protrusion in a state where the cover is located in the second position.

[0017] In this case, the cover may further include at least one support portion placed on one side of the coupling hole and protruding from the inner surface of the cover so as to support one surface of the base member in a state where the cover is pivotally rotated.

[0018] In this case, the cover may further include a third support surface on the inner surface of the cover, the third support surface extending in the extension direction of the first guide rail, and the base member may further include a support protrusion protruding from one surface of the base member to prevent pivot rotation of the cover by moving along the third support surface according to the movement of the movable member and being spaced apart from the coupling protrusion in a state where the movable member is moved to the first position.

[0019] In this case, the support protrusion may be arranged side by side with the coupling protrusion in a direction in which the rotation shaft (I) is extended so that the cover is pivotally rotatable in a state where the movable member is moved to the second position.

[0020] In this case, the cover may further include a support body formed on the inner surface of the cover; and a second guide protrusion protruding from one side of the support body in the extension direction of the rotation axis; and the base member may further include a first guide slit extending in a movement direction of the cover to guide the second guide protrusion in a process in which the second guide protrusion is inserted and the cover reciprocates between the first position and the second position, and a second guide slit extending in the pivot rotation direction from the other side of the first guide slit to guide the second guide protrusion in a process in which the cover pivotally rotates at the second position. In this case, the support body may be formed to be spaced apart from the rotation shaft.

Advantageous Effects

[0021] The helmet according to an exemplary embodiment of the present invention can introduce air into a helmet body by including a through-hole and a cover for opening and closing the through-hole.

[0022] In the helmet according to an exemplary embodiment of the present invention, the cover is opened over two steps in the process of opening and closing the through-hole, thereby increasing the amount of air introduced into the helmet body. Advantageous effects of the present invention are not limited to the above-described effects, and should be understood to include all effects that can be inferred from the configuration of the invention described in the description or claims of the present invention.

Description of Drawings

[0023]

FIG. 1 is a perspective view illustrating a closed state of a helmet according to an exemplary embodiment of the present invention.

FIG. 2 is a perspective view illustrating a first open state of a helmet according to an exemplary embodiment of the present invention.

FIG. 3 is a perspective view illustrating a second open state of a helmet according to an exemplary embodiment of the present invention.

FIG. 4 is an exploded perspective view of a helmet according to an exemplary embodiment of the present invention viewed from one direction.

FIG. 5 is an exploded perspective view of a helmet according to an exemplary embodiment of the present invention viewed from another direction.

FIG. 6 is a front view illustrating a state in which a cover is removed in the first open state of a helmet according to an exemplary embodiment of the present invention.

FIG. 7 is a cross-sectional view illustrating a cross section taken along line A-A of FIG. 6 in a closed state.

FIG. 8 is a partial cross-sectional view illustrating a cross section taken along line D-D of FIG. 6 in a state in which the cover of the helmet according to an exemplary embodiment of the present invention is coupled.

FIG. 9 is a cross-sectional view illustrating a cross section taken along line B-B of FIG. 6 in the closed state.

FIG. 10 is a cross-sectional view illustrating a cross section taken along line B-B of FIG. 6 in the first open state.

FIG. 11 is a cross-sectional view illustrating a cross section taken along line B-B of FIG. 6 in the second open state.

FIG. 12 is a cross-sectional view illustrating a cross

section taken along line C-C of FIG. 6 in the first open state.

FIG. 13 is a cross-sectional view illustrating a cross section taken along line C-C of FIG. 6 in the second open state.

Modes of the Invention

[0024] Hereinafter, exemplary embodiments of the present invention will be described in detail so that those of ordinary skill in the art can readily implement the present invention with reference to the accompanying drawings. The present invention may be embodied in many different forms and is not limited to the embodiments set forth herein. In the drawings, parts unrelated to the description are omitted for clarity of description of the present invention, and throughout the specification, same or similar reference numerals denote same elements.

[0025] Terms and words used in the present specification and claims should not be construed as limited to their usual or dictionary definition. They should be interpreted as meaning and concepts consistent with the technical idea of the present invention, based on the principle that inventors may appropriately define the terms and concepts to describe their own invention in the best way.

[0026] Accordingly, the embodiments described in the present specification and the configurations shown in the drawings correspond to preferred embodiments of the present invention, and do not represent all the technical idea of the present invention, so the configurations may have various examples of equivalent and modification that can replace them at the time of filing the present invention.

[0027] It should be understood that the terms "comprise or include" or "have" or the like when used in this specification, are intended to describe the presence of stated features, numbers, steps, operations, elements, components and/or a combination thereof but not preclude the possibility of the presence or addition of one or more other features, numbers, steps, operations, elements, components, or a combination thereof.

[0028] The presence of an element in/on "front", "rear", "upper or above or top" or "lower or below or bottom" of another element includes not only being disposed in/on "front", "rear", "upper or above or top" or "lower or below or bottom" directly in contact with other elements, but also cases in which another element being disposed in the middle, unless otherwise specified. In addition, unless otherwise specified, that an element is "connected" to another element includes not only direct connection to each other but also indirect connection to each other.

[0029] FIG. 1 is a perspective view illustrating a closed state of a helmet according to an exemplary embodiment of the present invention. FIG. 2 is a perspective view illustrating a first open state of a helmet according to an exemplary embodiment of the present invention. FIG. 3 is a perspective view illustrating a second open state of a helmet according to an exemplary embodiment of the present invention.

[0030] FIG. 4 is an exploded perspective view of a helmet according to an exemplary embodiment of the present invention viewed from one direction. FIG. 5 is an exploded perspective view of a helmet according to an exemplary embodiment of the present invention viewed from another direction. FIG. 6 is a front view illustrating a state in which a cover is removed in the first open state of a helmet according to an exemplary embodiment of the present invention.

[0031] Hereinafter, a helmet 1 according to an exemplary embodiment of the present invention will be described with reference to the accompanying drawings. In this case, the direction at which the X-axis of FIG. 1 is directed is defined as the front direction, the direction at which the Y-axis is directed is defined as the left direction, and the direction at which the Z-axis is directed is defined as the upward direction. The helmet 1 according to an exemplary embodiment of the present invention includes a helmet body 100, a base member 110, a cover 200, and a movable member 300.

[0032] As shown in FIGS. 1, 2 and 3, the helmet body 100 is formed in a spherical shape to surround a user's head. However, the shape of the helmet body 100 is not limited as long as it may surround the user's head. The helmet body 100 is worn on the user's head and protects the user's head from external impact.

[0033] Since the helmet body 100 is formed to cover all of the user's head to protect the user's head, air communication between the inside and the outside of the helmet body 100 was difficult when the user wore the helmet body 100. For this reason, when the user sweats, there is a problem that the humidity and temperature of the internal space of the helmet body 100 rise and cause discomfort to the user.

[0034] To overcome this, a ventilation hole is formed on one side of the helmet body 100 of the helmet 1 according to an exemplary embodiment of the present invention so that the inner space of the helmet body 100 can fluidly communicate with the outside. In this case, there is no limit to the position where the ventilation hole is formed. In the present embodiment, it is described that the ventilation hole is formed at a position corresponding to the user's mouth, that is, at the front lower side of the helmet body 100.

[0035] As shown in FIGS. 1, 2, and 3, the base member 110 is formed to cover the ventilation hole described above. The base member 110 is coupled to the cover 200 to be described later to provide a structure capable of opening and closing the ventilation hole.

[0036] In this case, the base member 110 may be formed separately from or integrally formed with the helmet body 100. In the present embodiment, as shown in FIGS. 1, 2, and 3, it is described that the base member 110 is formed separately from the helmet body 100.

[0037] Since the base member 110 is formed separately from the helmet body 100, even if the shape of the

helmet body 100 is designed differently, the versatility of the base member 110 and the cover 200 to be described later may be increased by using the base member 110 in combination.

[0038] As shown in FIG. 4, a through-hole 105 is formed on one side of the base member 110 so that the inner space of the helmet body 100 can fluidly communicate with the outside. Accordingly, external air is introduced into the inner space of the helmet body 100 through the through-hole 105 and the ventilation hole of the helmet body 100.

[0039] In this case, the location and shape where the through-hole 105 is formed is not limited as long as external air can move to the inner space through the through-hole 105 and the ventilation hole. In the present embodiment, as shown in FIG. 4, it is described that it is formed to extend in the lateral direction at the front central portion of the base member 110.

[0040] As shown in FIG. 6, the through-hole 105 may be provided in the plural number. There is no limit to the number of through-holes 105, and in the present embodiment, it is described that two through-holes 105 disposed side by side in the lateral direction are formed.

[0041] As shown in FIG. 1, the cover 200 is disposed in front of the base member 110. The cover 200 reciprocates between the first position shown in FIG. 1 and the second position shown in FIG. 2. In addition, the cover 200 reciprocates and rotates between the second position shown in FIG. 2 and the third position shown in FIG. 3.

[0042] As shown in FIGS. 1 and 2, the first position and the second position are arranged in the up-down direction along the front surface of the helmet body 100. That is, the cover 200 reciprocates and moves in the up-down direction over the base member 110.

[0043] As shown in FIG. 1, the cover 200 closes the through-hole 105 formed in the base member 110 while in the first position. In this case, hereinafter, it is described that a state in which the cover 200 is located at the first position is defined as a closed state.

[0044] As shown in FIG. 2, the cover 200 primarily opens the through-hole 105 formed in the base member 110 by moving to the second position. In this case, hereinafter, it is described that a state in which the cover 200 is located at the second position is defined as a first open state.

[0045] As shown in FIG. 3, the cover 200 may increase an inflow amount of air introduced into the through-hole 105 by rotating to the third position. In this case, hereinafter, it is described that a state in which the cover 200 is located at the third position is defined as a second open state.

[0046] To describe the second open state in more detail, as shown in FIGS. 3 and 6, the cover 200 rotates around the rotation shaft I positioned at the lower end of the cover 200 in the second position. Accordingly, when the cover 200 rotates and reaches the third position, the upper end of the cover 200 is disposed spaced apart from the helmet body 100, thereby widening the cross-sectional area through which external air may be introduced into the helmet body 100 through the through-hole 105.

[0047] FIG. 7 is a cross-sectional view illustrating a cross section taken along line A-A of FIG. 6 in a closed state. FIG. 8 is a partial cross-sectional view illustrating a cross section taken along line D-D of FIG. 6 in a state in which the cover of the helmet according to an exemplary embodiment of the present invention is coupled. FIG. 9 is a cross-sectional view illustrating a cross section taken along line B-B of FIG. 6 in the closed state. FIG. 10 is a cross-sectional view illustrating a cross section taken along line B-B of FIG. 6 in the first open state. FIG. 11 is a cross-sectional view illustrating a cross section taken along line B-B of FIG. 6 in the second open state. FIG. 12 is a cross-sectional view illustrating a cross section taken along line C-C of FIG. 6 in the first open state. FIG. 13 is a cross-sectional view illustrating a cross section taken along line C-C of FIG. 6 in the second open state.

[0048] Hereinafter, a structure in which the cover 200 may reciprocate between the first position and the second position will be described. As shown in FIGS. 4 and 6, a first guide rail 120 is formed on one side of the through-hole 105 of the base member 110.

[0049] In this case, if the cover 200 may open and close the through-hole 105, the position where the first guide rail 120 is formed is not limited. In the present embodiment, it is described that it is formed at the lower side of the through-hole 105.

[0050] As shown in FIG. 6, the first guide rail 120 extends in the up-down direction, which is a movement direction in which the cover 200 reciprocates between the first position and the second position.

[0051] In this case, as shown in FIGS. 4 and 6, the movable member 300 is disposed on the front surface of the first guide rail 120. The movable member 300 moves in the up-down direction along the first guide rail 120.

[0052] As shown in FIG. 8, the first guide rail 120 may be formed to have a predetermined width. In this case, the movable member 300 may have a groove, corresponding to the width of the first guide rail 120, formed on the rear surface of the first guide rail 120 so that it smoothly reciprocate the first guide rail 120. Accordingly, the movable member 300 may move in the up-down direction while the first guide rail 120 is inserted into the groove.

[0053] The cover 200 is pivotally coupled to the movable member 300, and the movable member 300 reciprocates between the first position and the second position together with the cover 200. In this case, the coupling between the movable member 300 and the cover 200 will be described later.

[0054] As shown in FIG. 7, a first support surface 106 formed to face downward is formed on the upper side of the first guide rail 120. The first support surface 106 supports the upper end of the movable member 300 while the movable member 300 moves upward along the first guide rail 120 to prevent the movable member 300 from leaving the first guide rail 120 upward.

[0055] As shown in FIG. 7, a second support surface 108 formed to face upward is formed on the lower side of the first guide rail 120. The second support surface 108 supports the lower end of the movable member 300 while the movable member 300 moves downward along the first guide rail 120 to prevent the movable member 300 from leaving the first guide rail 120 downward.

[0056] As the first support surface 106 and the second support surface 108 are formed on the base member 110, the movable member 300 may reciprocate between the first support surface 106 and the second support surface 108. In this case, the position of the movable member 300 becomes the first position of the movable member 300 while the movable member 300 is in contact with the first support surface 106, and the position of the movable member 300 becomes the second position of the movable member 300 while the movable member 300 is in contact with the second support surface 108.

[0057] Meanwhile, as shown in FIGS. 4, 6, and 8, first guide protrusions 310 protrude from both sides of the movable member 300, respectively. That is, the first guide protrusion 310 is formed as a pair. The pair of first guide protrusions 310 are formed symmetrically.

[0058] In this case, as shown in FIGS. 4, 6, and 8, a second guide rail 130 is formed on the base member 110 to support the front surface as one side 312 of the pair of first guide protrusions.

[0059] As shown in FIG. 8, the second guide rail 130 extends in the extension direction of the first guide rail 120. Accordingly, the rear surface of the movable member 300 is supported on the front surface of the first guide rail 120, and the front surface of the first guide protrusion 310 is supported on the rear surface of the second guide rail 130.

[0060] The movable member 300 reciprocates between the first position and the second position along the first guide rail 120 and the second guide rail 130. In this process, the movable member 300 does not deviate rearward thanks to the first guide rail 120, and does not deviate forward thanks to the second guide rail 130.

[0061] The movable member 300 maintains a stopped state in a state in which it is located at the first position, and the movable member 300 moves to the second position only when the movable member 300 is pressed downward by a predetermined force or more.

[0062] To this end, as shown in FIG. 7, the central portion 122 of the first guide rail is formed to protrude forward. In this case, the central portion 122 of the first guide rail is formed to be convex forward so that the movable member 300 can move smoothly from the first position to the second position or from the second position to the first position.

[0063] In other words, the upper end of the movable member 300 is supported by the first support surface 106 while the movable member 300 is located at the first position, and a portion of the lower end of the movable member 300 is supported by the central portion 122 of the first guide rail, so that it can be maintained stopped at the first position.

[0064] In addition, the lower end of the movable member 300 is supported by the second support surface 108 while the movable member 300 is located at the second position, and a portion of the upper end of the movable member 300 is supported by the central portion 122 of the first guide rail, so that it can be maintained stopped at the second position.

[0065] As shown in FIG. 7, the movable member 300 includes a protruding portion 302 protruding rearward to more stably maintain a stopped state at the first position and a stopped state at the second position. The protruding portion 302 is formed to protrude from the rear surface of the movable member 300 toward the first guide rail 120.

[0066] In this case, the upper side as one side 304 of the protruding portion is formed to correspond to the lower side portion of the central portion 122 of the first guide rail with the movable member 300 located at the second position. That is, as shown in FIG. 7, when the central portion 122 of the first guide rail is formed to be convex, one side 304 of the protruding portion is formed to be concave to correspond thereto.

[0067] Conversely, the lower side as the other side 306 of the protruding portion is formed to correspond to the upper side portion of the central portion 122 of the first guide rail with the movable member 300 located at the first position. That is, as shown in FIG. 7, when the central portion 122 of the first guide rail is formed to be convex, the other side 306 of the protruding portion is also formed to be concave to correspond thereto.

[0068] Meanwhile, as described above, since the movable member 300 firmly maintains a stopped state at the first position or the second position by the first support surface 106 and the second support surface 108 and the central portion 122 of the first guide rail, the first guide rail 120 is formed to be elastically deformable rearward so as to press the movable member 300 by a predetermined force or more to move it to the first position or the second position.

[0069] In this case, in order to help the elastic deformation of the first guide rail 120, the central portion 122 of the first guide rail may be formed so that the front side thereof protrudes forward and the rear side thereof is concave.

[0070] Meanwhile, as shown in FIG. 6, the movable member 300 includes a pair of coupling protrusions 320 protruding from both side surfaces of the movable member 300, respectively. The coupling protrusion 320 extends in a cylindrical shape and becomes a rotation axis of the cover 200.

[0071] As shown in FIG. 5, the cover 200 includes a coupling hole 206 in which the coupling protrusion 320 is inserted and coupled. The coupling hole 206 is formed in a pair so that the pair of coupling protrusions 320 may be inserted, respectively. If the coupling hole 206 is coupled to the coupling protrusion 320 so that the cover 200 can pivot around the coupling protrusion 320 as an axis, there is no limitation on the shape formed in the cover 200. In

the present embodiment, as shown in FIG. 5, a pair of support walls protruding from the inner surface 204 of the cover are penetrated in the lateral direction, respectively, thereby forming a coupling hole 206.

[0072] The coupling hole 206 is formed at the lower end of the inner surface 204 of the cover so that the rotation shaft I of the cover 200 is disposed on the lower end side of the cover 200. Accordingly, the upper end of the cover 200 may be spaced apart from the base member 110 by the pivot rotation of the cover 200. Meanwhile, as shown in FIG. 9, the cover 200 includes a third support surface 208 extending in the extension direction of the first guide rail 120 on the inner surface 204 of the cover. In this case, a support protrusion 170 protruding toward the cover 200 and guiding the third support surface 208 is formed on the base member 110. As shown in FIGS. 9 and 10, the support protrusion 170 guides the third support surface 208 with the support protrusion in contact with the third support surface 208 while the cover 200 moves from the first position to the second position with the movable member 300.

[0073] In this case, as shown in FIG. 9, in the closed state where the cover 200 is located at the first position, the support protrusion 170 is located at the lower end of the third support surface 208, and the coupling protrusion 320 of the movable member 300 is positioned to be spaced apart above the support protrusion 170. Accordingly, while the support protrusion 170 supports the lower end of the third support surface 208, the cover 200 cannot rotate with the coupling protrusion 320 as a rotation axis in a direction in which the upper end of the cover 200 is spaced apart from the helmet body 100. In this case, the rotation of the cover 200 in the opposite direction will be described in detail in the description of a first guide slit 150 and a second guide protrusion 250 to be described later.

[0074] On the other hand, as shown in FIG. 10, the support protrusion 170 is located at the upper end of the third support surface 208 in the first open state where the cover 200 is located at the second position. Accordingly, as shown in FIG. 6, the support protrusion 170 and the coupling protrusion 320 are arranged side by side in a direction where the rotation shaft I of the cover 200 is extended.

[0075] Accordingly, as shown in FIG. 11, in the second open state in which the cover 200 rotates and moves to the third position, the support protrusion 170 cannot prevent the rotation of the cover 200, and the cover 200 can pivot in a direction in which the upper end of the cover 200 is spaced apart from the helmet body 100.

[0076] In this case, as shown in FIG. 11, a fourth support surface 209 formed by bending toward the movable member 300 is formed at the upper end of the third support surface 208. The fourth support surface 209 is formed to have a predetermined distance from the rotation shaft I of the cover 200 while the movable member 300 is located at the second position.

[0077] In this case, the outer circumferential surface of the cover 200 side also has the shape of a part of the circumference with the predetermined distance as a radius so that the support protrusion 170 also corresponds to the shape of the fourth support surface 209. Accordingly, as shown in FIGS. 10 and 11, during the pivot rotation of the cover 200, the support protrusion 170 is supported by the fourth support surface 209 to stably guide the pivot rotation of the cover 200.

[0078] Meanwhile, as shown in FIG. 9, a first guide slit 150 extending in the extension direction of the first guide rail 120 is formed in the base member 110. The first guide slit 150 may be formed by penetrating or depressing in a lateral direction. The extension length of the first guide slit 150 is formed equal to the distance by which the cover 200 reciprocates between the first position and the second position. As shown in FIG. 5, a second guide protrusion 250 inserted into and guided by the first guide slit 150 is provided in the cover 200. The second guide protrusion 250 is integrally formed with the cover 200. Accordingly, the cover 200 is guided together by the second guide protrusion 250.

[0079] To explain this in more detail, as shown in FIG. 5, a support body 240 protruding from one side of the inner surface 204 of the cover is formed on the inner surface 204 of the cover. The support body 240 is formed at a position corresponding to the position of the first guide slit 150.

[0080] There is no limitation on the shape of the support body 240. The second guide protrusion 250, which may be inserted in the lateral direction into the first guide slit 150, protrudes from an end of the support body 240. Accordingly, the cover 200 is coupled to the first guide slit 150 through the second guide protrusion 250. As shown in FIG. 5, the first guide slit 150, the support body 240, and the second guide protrusion 250 formed on the support body 240 may be formed as a pair. In this case, a pair of support bodies 240 are formed outside a pair of first guide slits 150, and a pair of second guide protrusions 250 may be inserted into the pair of first guide slits 150, respectively, by protruding inward.

[0081] Accordingly, the coupling of the first guide slit 150 and the second guide protrusion 250 may be firmly maintained by supporting the outer surfaces of the pair of first guide slits 150 with the inner surfaces of the pair of support bodies 240.

[0082] As shown in FIG. 9, the first guide slit 150 not only guides the movement in the up-down direction of the second guide protrusion 250, but also prevents the cover 200 from rotating at the first position. That is, since the cover 200 is supported by the second guide protrusion 250 at the first position, the cover 200 cannot be pivotally rotated.

[0083] To this end, the first guide slit 150 and the second guide protrusion 250 are formed so that the second guide protrusion 250 is not disposed on the rotation shaft I of the cover 200 while the cover 200 is located at the first position.

[0084] Meanwhile, as shown in FIG. 10, when the cover 200 moves to the second position, the second

guide protrusion 250 moves to the lower end of the first guide slit 150 along the first guide slit 150.

[0085] As shown in FIG. 11, since the cover 200 must be able to rotate from the second position to the third position, a second guide slit 160 is formed at the lower end of the first guide slit 150 so that the second guide slit 160 guides the second guide protrusion 250 in a process in which the cover 200 pivotally rotates in a direction in which the upper end of the cover 200 is spaced apart from the helmet body 100. The second guide slit 160 is formed to be connected to the first guide slit 150. That is, the second guide protrusion 250 may continuously move along the first guide slit 150 and the second guide slit 160.

[0086] Accordingly, as shown in FIG. 9, in the closed state, the second guide protrusion 250 is positioned at the upper end of the first guide slit 150. As shown in FIG. 10, in the first open state, the second guide protrusion 250 moves to the lower end along the first guide slit 150. As shown in FIG. 11, in the second open state, it moves forward along the second guide slit 160.

[0087] In this case, the second guide slit 160 extends in the circumferential direction around the rotation shaft I to guide the second guide protrusion 250. That is, the second guide slit 160 may be formed as a part of a circumference centered on a rotation shaft. However, when the width of the second guide slit 160 is formed larger than the diameter of the second guide protrusion 250, the second guide slit 160 may be formed in a straight line without being bent.

[0088] The pivot rotation angle of the cover 200 is determined according to the extension length of the second guide protrusion 250. That is, the second guide slit 160 supports the front side of the second guide protrusion 250 in the second open state to prevent over-rotation of the cover 200.

[0089] Meanwhile, as shown in FIG. 5, the cover 200 may further include a support portion 230 protruding from the inner surface 204 of the cover. The support portion 230 supports the front surface of the base member 110 in the second open state. Accordingly, the lower end of the cover 200 is supported by the base member 110, thereby preventing over-rotation of the cover 200.

[0090] In this case, as shown in FIG. 5, the support portion 230 is disposed below the coupling hole 206 of the cover 200. Accordingly, while the cover 200 is in the second open state, the upper end of the cover 200 is prevented from over-rotating by the second guide slit 160 supporting the second guide protrusion 250, and the lower end of the cover 200 is prevented from over-rotating by the support portion 230.

[0091] Meanwhile, as shown in FIG. 5, the movable member 300 has a first locking protrusion 330 protruding in the protruding direction of the coupling protrusion 320 on the upper side of the coupling protrusion 320. The first locking protrusion 330 may be formed to extend in the up-down direction by a predetermined length. In this case, a second locking protrusion 210 is disposed outside the first locking protrusion 330. The second locking protrusion 210 is formed to protrude from the inner surface 204 of the cover. If the second locking protrusion 210 may be formed outside the first locking protrusion 330, the structure is not limited. In the present embodiment, it is formed to protrude from a side surface of the first locking protrusion 330 of the partition wall protruding from the inner surface 204 of the cover.

[0092] As shown in FIG. 12, in the closed state or the first open state of the cover 200, the second locking protrusion 210 is disposed in rear of the first locking protrusion 330. Accordingly, one front side of the second locking protrusion 210 is in contact with one rear side of the first locking protrusion 330.

[0093] At this time, as shown in FIGS. 9 and 12, the cover 200 is supported by the support protrusion 170 and the second locking protrusion 210 to maintain the closed state or the first open state. To explain this in detail, the third support surface 208 on the lower part of the cover is supported by the support protrusion 170 based on the rotation axis, and the second locking protrusion 210 on the upper part of the cover is supported by the first locking protrusion 330 based on the rotation axis, whereby the cover 200 maintains the closed state or the first open state.

[0094] On the other hand, as shown in FIG. 13, in the second open state, the second locking protrusion 210 is disposed in front of the first locking protrusion 330. Accordingly, one rear side of the second locking protrusion 210 is in contact with one front side of the first locking protrusion 330.

[0095] In this case, the first locking protrusion 330 and the second locking protrusion 210 are elastically formed so that the second locking protrusion 210 can move forward by crossing the first locking protrusion 330. In this case, it may be an elastic deformation of the first locking protrusion 330 and the second locking protrusion 210, and the support wall supporting the first locking protrusion 330 and the second locking protrusion 210 may be formed in a beam shape that is elastically deformed.

[0096] At this time, as shown in FIGS. 11 and 13, the cover 200 is supported by the support portion 230, the second guide protrusion 250 and the second locking protrusion 210 to maintain the second open state. To explain this in detail, the support portion 230 on the lower part of the cover is supported by the front surface of the base member 110 based on the rotation axis, and the second locking protrusion 210 on the upper part of the cover is supported by the first locking protrusion 330 based on the rotation axis, whereby the cover 200 maintains the second open state.

[0097] As shown in FIGS. 12 and 13, the first locking protrusion 330 and the second locking protrusion 210 may be formed as a pair, respectively. In this case, the first locking protrusion 330 and the second locking protrusion 210 are formed such that the first locking protrusion 330 protrudes outward and the second locking protrusion 210 protrudes inward.

[0098] Hereinafter, the introduction of air according to the position of the cover 200 will be described with reference to FIGS. 9, 10, and 11.

[0099] As shown in FIG. 9, in the closed state, the cover 200 closes the through-hole 105 formed in the base member 110. Therefore, external air cannot be introduced into the helmet body 100.

[0100] As shown in FIG. 10, in the first open state, the cover 200 moves downward together with the movable member 300 to open the through-hole 105 and form a cross section S1, which is an inflow path of air.

[0101] On the other hand, as shown in FIG. 11, in the second open state, as the cover 200 pivots, the upper end of the cover 200 moves forward. While the wearer is looking forward, the front projection cross section of the inflow path of air does not increase significantly even in the second open state.

[0102] However, referring to FIGS. 10 and 11, the wearer generally bends his or her head at a certain angle while driving, so as the wearer bends his or her head, the front projection cross section S2 of the inflow path of air becomes wider than the front projection cross section S1 in the first open state. That is, more air may be introduced than the first open state.

[0103] As described above, preferred embodiments according to the present invention have been examined, and it is obvious to those skilled in the art that the present invention can be embodied in other specific forms without departing from the spirit or scope of the present invention in addition to the above-described embodiments. Therefore, the above-described embodiments are to be construed as illustrative rather than restrictive, and accordingly, the present invention is not limited to the above description and may be modified within the scope of the appended claims and their equivalents.

Claims

1. A helmet, comprising:

a helmet body including a ventilation hole which is formed through one side thereof and enables a fluid to communicate between an inner space thereof and
the outside;
a base member configured to cover the ventilation hole and include a through-hole which is formed through one side thereof and enable a fluid to communicate between the inner space of the helmet body and the outside; and
a cover configured to cover the through-hole,
wherein the cover: reciprocates between a first position at which the cover is disposed so as to close the through-hole and a second position which is adjacent to the first position and at which the through-hole is opened by the cover; and is pivotally rotatable at the second position around a rotation shaft positioned at one side of the cover so that the other side of the cover is spaced apart from the helmet body.

2. The helmet of claim 1, wherein an area capable of fluid communication through the through-hole is widened as the cover pivotally rotates at the second position.

3. The helmet of claim 1, wherein the base member further comprises:

a first guide rail formed on one side of the through-hole of the base member and extending in a movement direction of the cover;
a first support surface formed on one side of the first guide rail to face the other side; and
a second support surface formed on the other side of the first guide rail to face one side,
the helmet further comprising:
a movable member configured to reciprocate between the first support surface and the second support surface along the first guide rail, and on one side of which the cover is pivotally and rotatably coupled, and configured to reciprocate together with the cover.

4. The helmet of claim 3, wherein the movable member comprises a pair of first guide protrusions protruding from both side surfaces of the movable member, respectively, and
wherein the base member comprises:
a pair of second guide rails extending in the extension direction of the first guide rail to support one surface of the pair of first guide protrusions, respectively.

5. The helmet of claim 4, wherein a central portion of the first guide rail protrudes toward the movable member, and
wherein the movable member further comprises a protruding portion protruding toward the first guide rail.

6. The helmet of claim 5, wherein a central portion of the first guide rail is formed to be convex toward the movable member,

wherein one side of the protruding portion of the movable member is formed to be concave so as to correspond to one side of the central portion of the first guide rail in a state where the cover is located in the second position, and
wherein the other side of the protruding portion of the movable member is formed to be concave so as to correspond to the other side of the central portion of the first guide rail in a state where the cover is located in the first position.

7. The helmet of claim 4, wherein the movable member is supported by the other side of a central portion of the first guide rail, and by the first support surface in a state where the cover is located in the first position, and the movable member is supported by one side of the central portion of the first guide rail, and by the second support surface in a state where the cover is in the second position, and wherein the first guide rail is configured to be elastically deformed so that the movable member moves in the up-down direction.

8. The helmet of claim 3, wherein the movable member comprises:

a pair of coupling protrusions protruding from both side surfaces of the movable member, respectively; and
a pair of first locking protrusions protruding from both side surfaces of the movable member, respectively, on one side of the pair of coupling protrusions, and wherein the cover comprises:

a pair of coupling holes into which the pair of coupling protrusions are inserted, respectively, so that the cover pivotally rotates around the rotation shaft; and
a pair of second locking protrusions in which one side is supported by one side of the first locking protrusion in a state where the cover is located in the second position.

9. The helmet of claim 8, wherein the cover further comprises:
at least one support portion placed on one side of the coupling hole and protruding from the inner surface of the cover so as to support one surface of the base member in a state where the cover is pivotally rotated.

10. The helmet of claim 8, wherein the cover further comprises:

a third support surface on the inner surface of the cover, the third support surface extending in the extension direction of the first guide rail, and
wherein the base member further comprises:
a support protrusion protruding from one surface of the base member to prevent pivot rotation of the cover by moving along the third support surface according to the movement of the movable member and being spaced apart from the coupling protrusion in a state where the movable member is moved to the first position.

11. The helmet of claim 10, wherein the support protrusion is arranged side by side with the coupling protrusion in a direction in which the rotation shaft is extended so that the cover is pivotally rotatable in a state where the movable member is moved to the second position.

12. The helmet of claim 1, wherein the cover further comprises:

a support body formed on the inner surface of the cover; and
a second guide protrusion protruding from one side of the support body in the extension direction of the rotation axis,
wherein the base member further comprises:

a first guide slit extending in a movement direction of the cover to guide the second guide protrusion in a process in which the second guide protrusion is inserted and the cover reciprocates between the first position and the second position, and
a second guide slit extending in the pivot rotation direction from the other side of the first guide slit to guide the second guide protrusion in a process in which the cover pivotally rotates at the second position.

13. The helmet of claim 12, wherein the support body is formed to be spaced apart from the rotation shaft.

FIG. 1

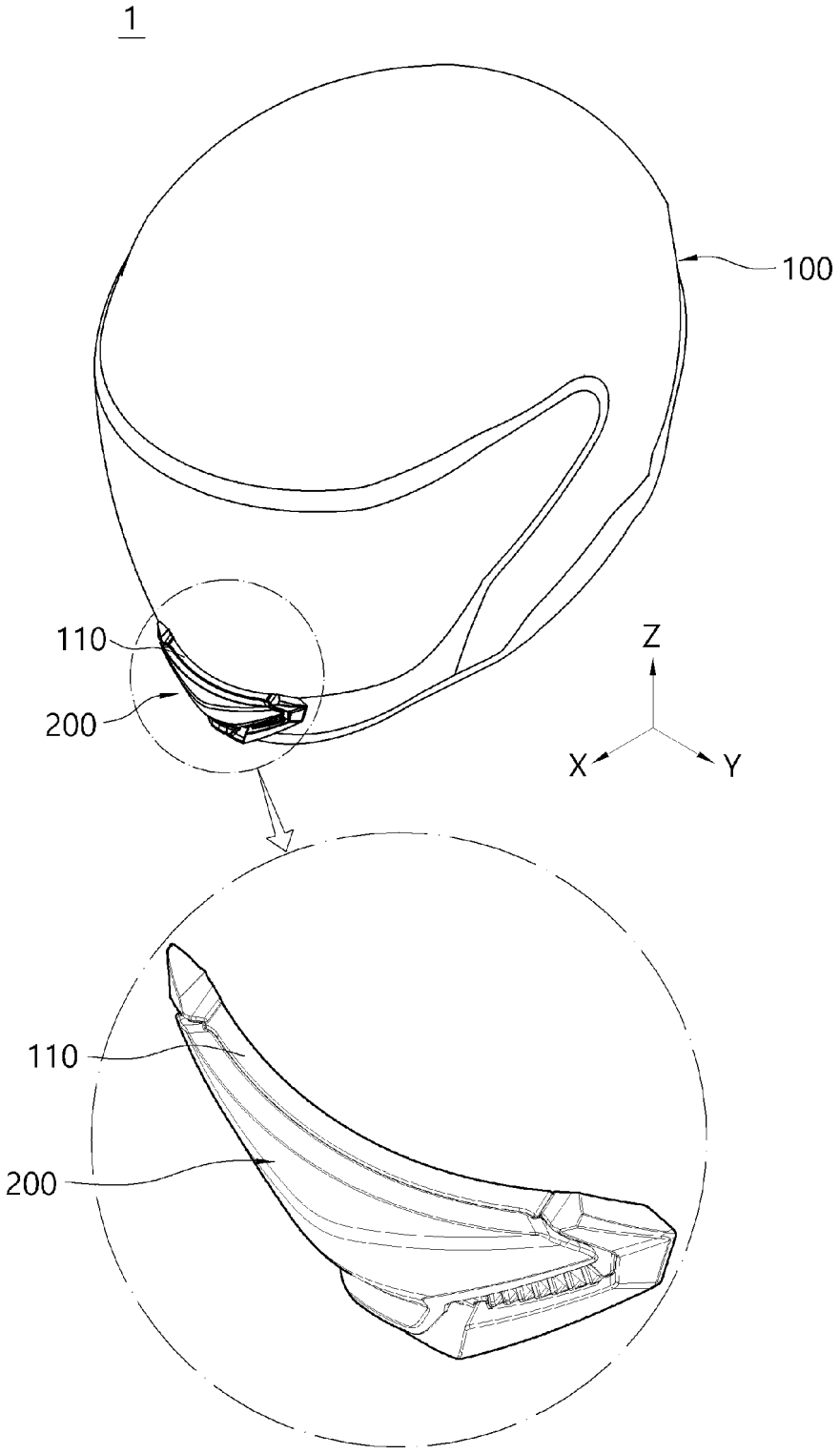


FIG. 2

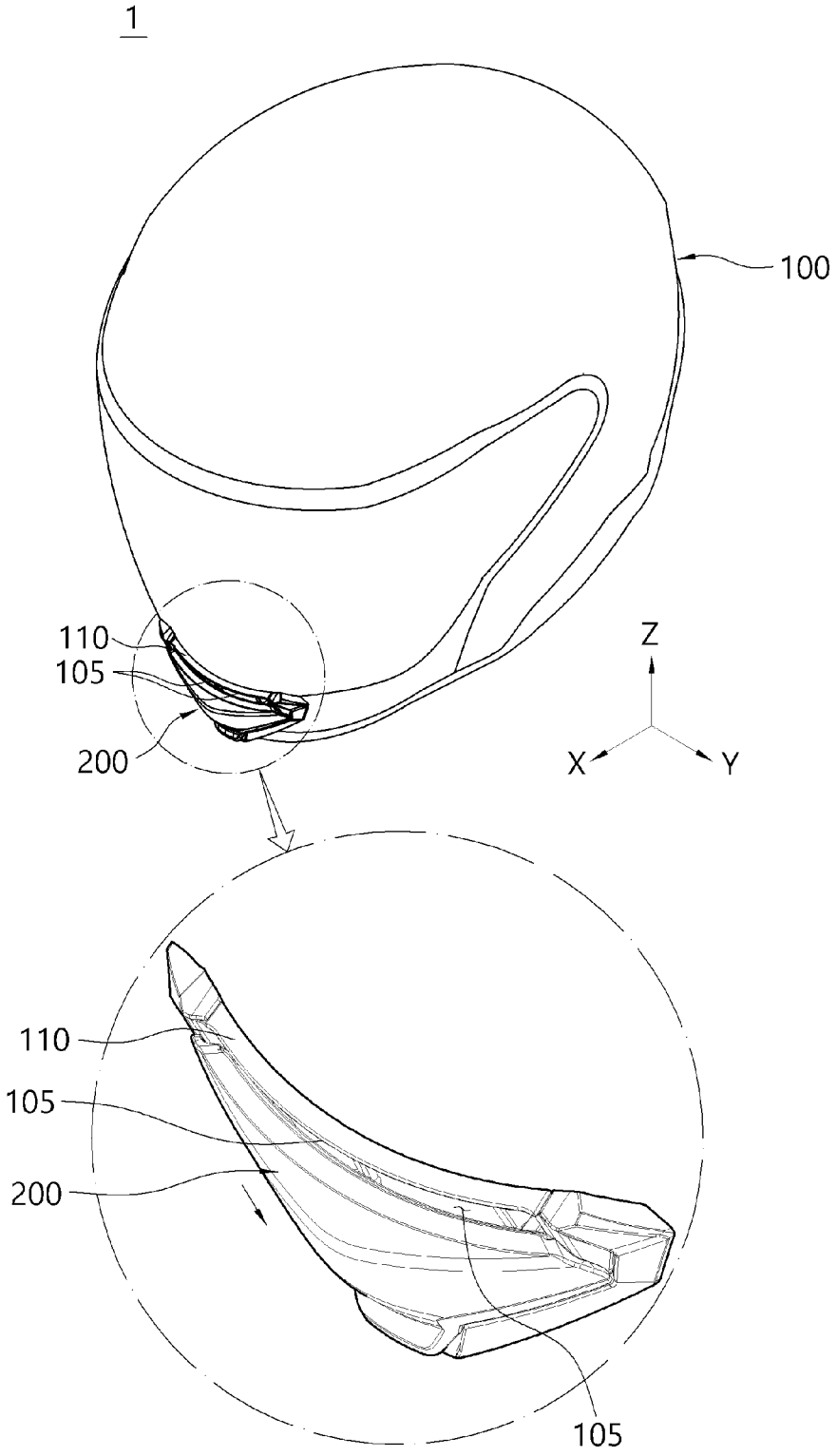


FIG. 3

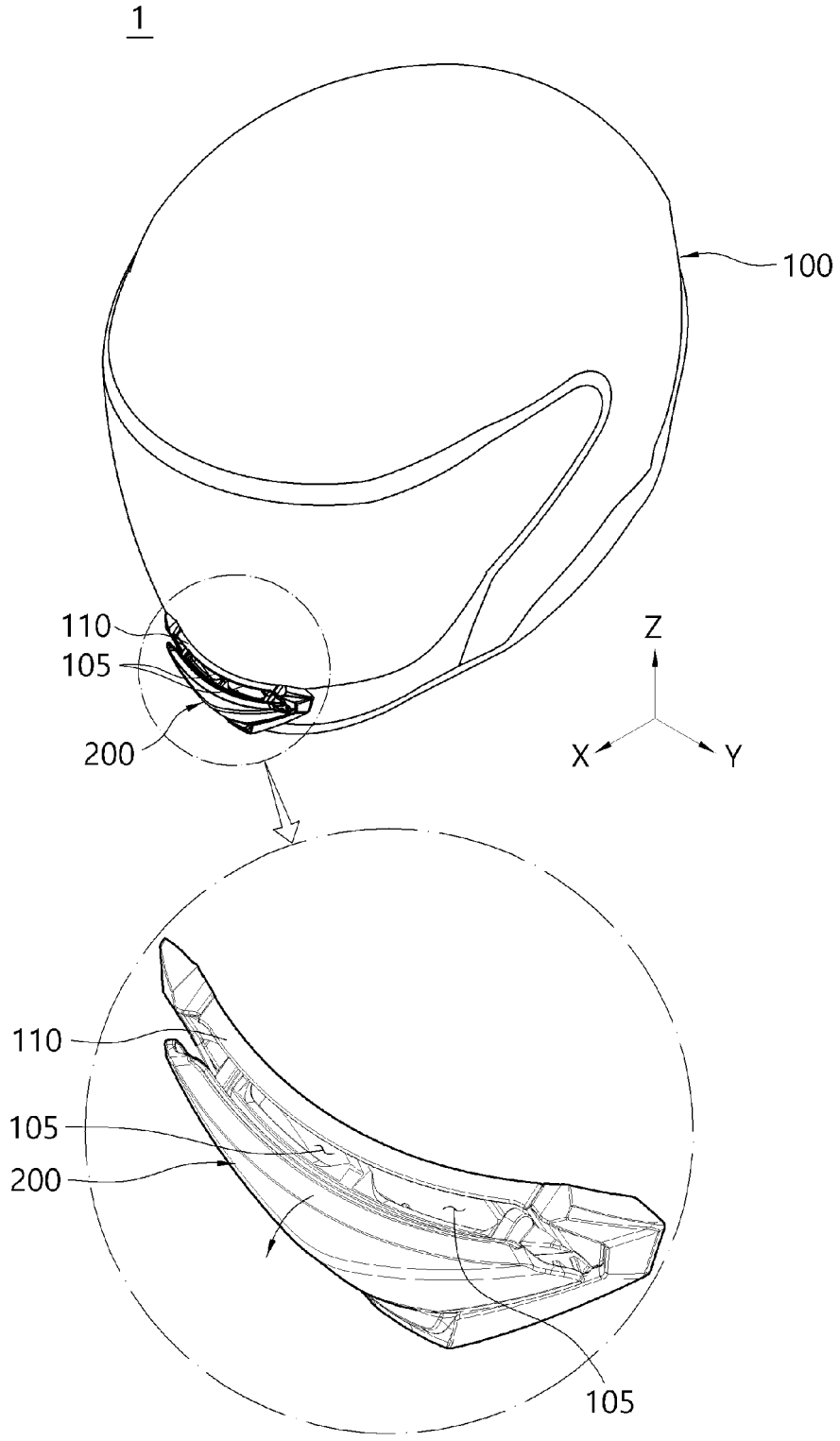
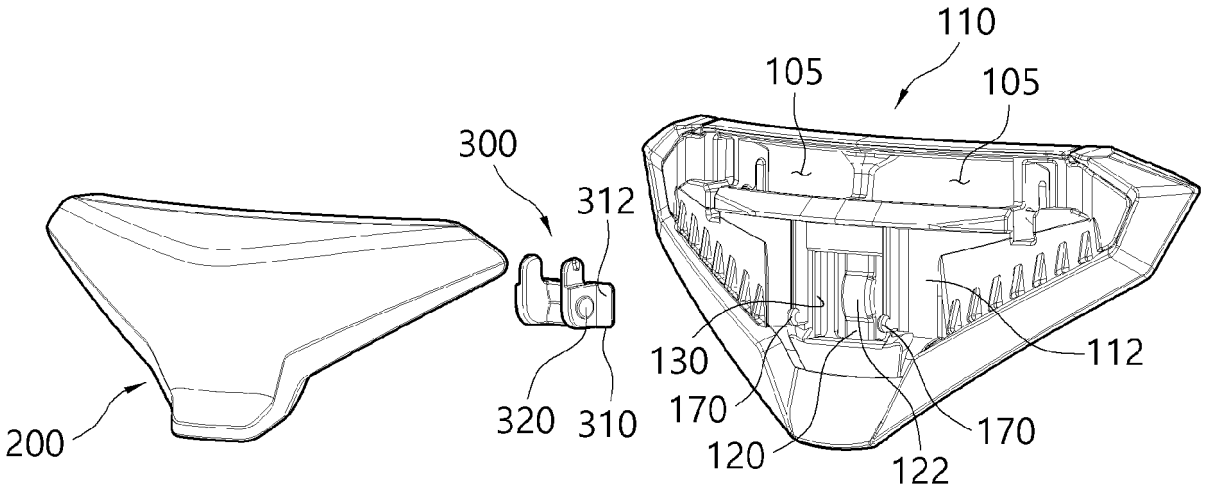


FIG. 4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200

FIG. 5

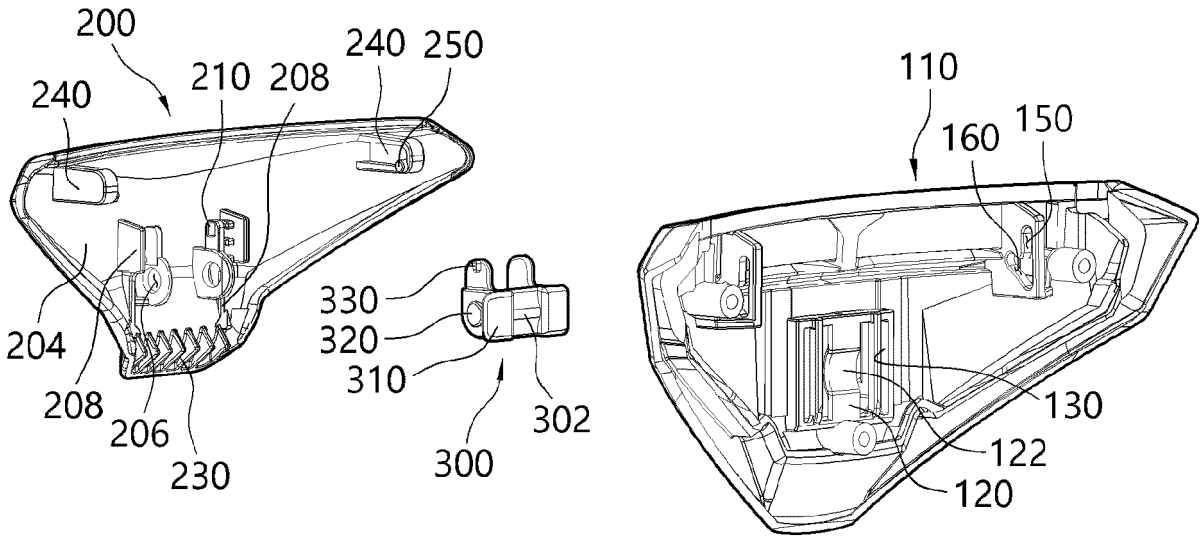
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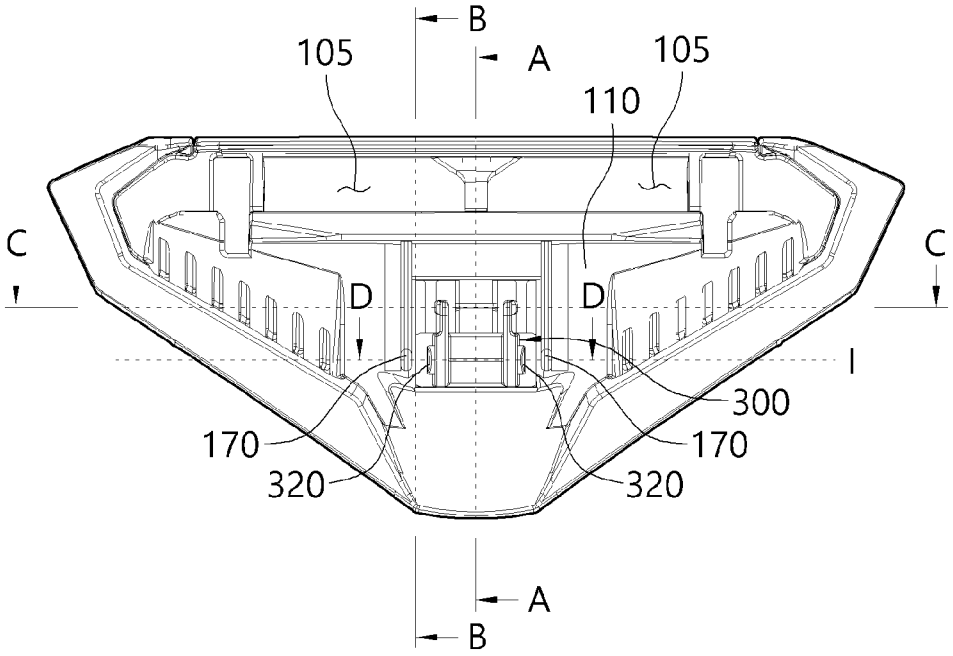
FIG. 6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105
110
C
C
D
D
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170
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A
B

FIG. 7

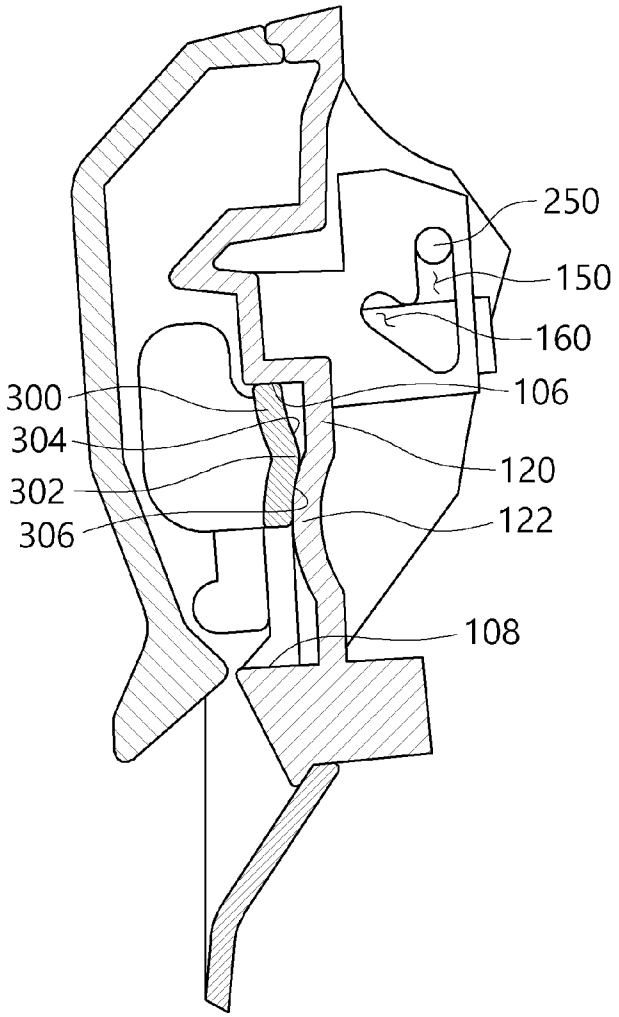
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FIG. 8

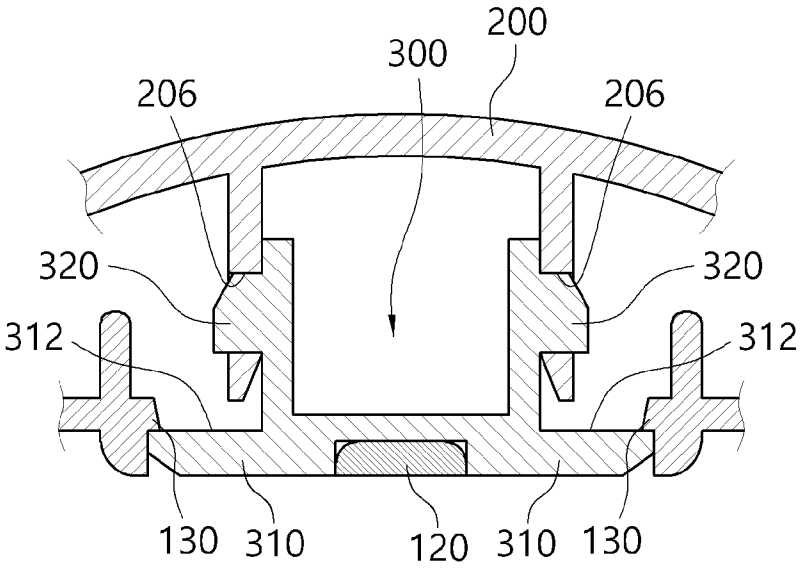
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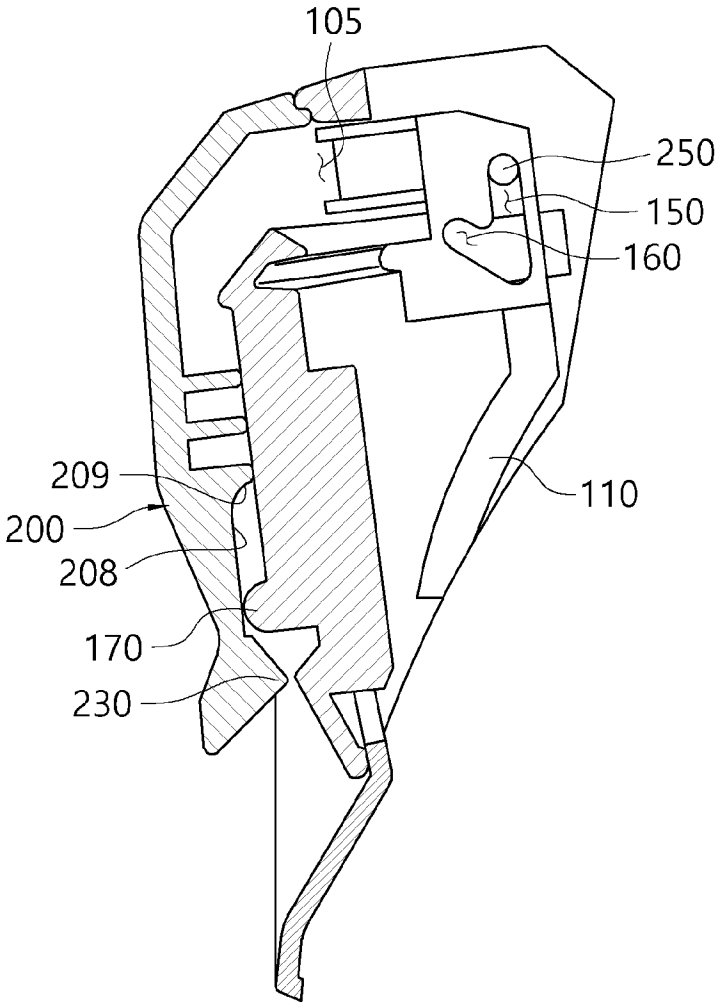
FIG. 9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110

FIG. 10

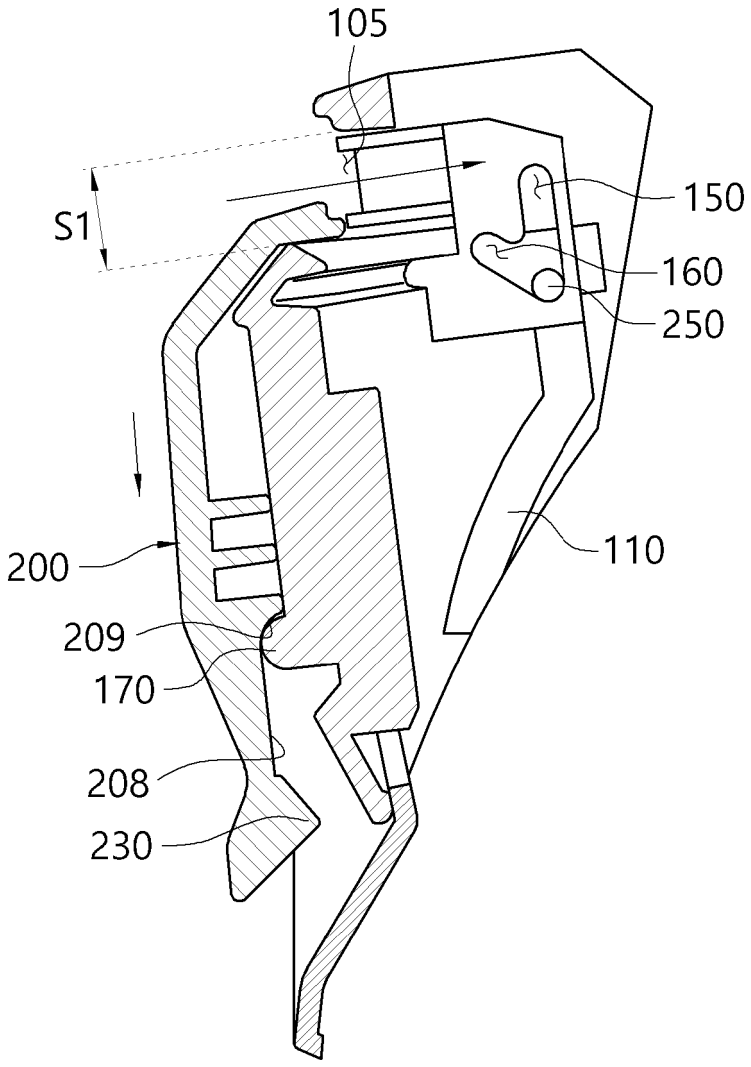


FIG. 11

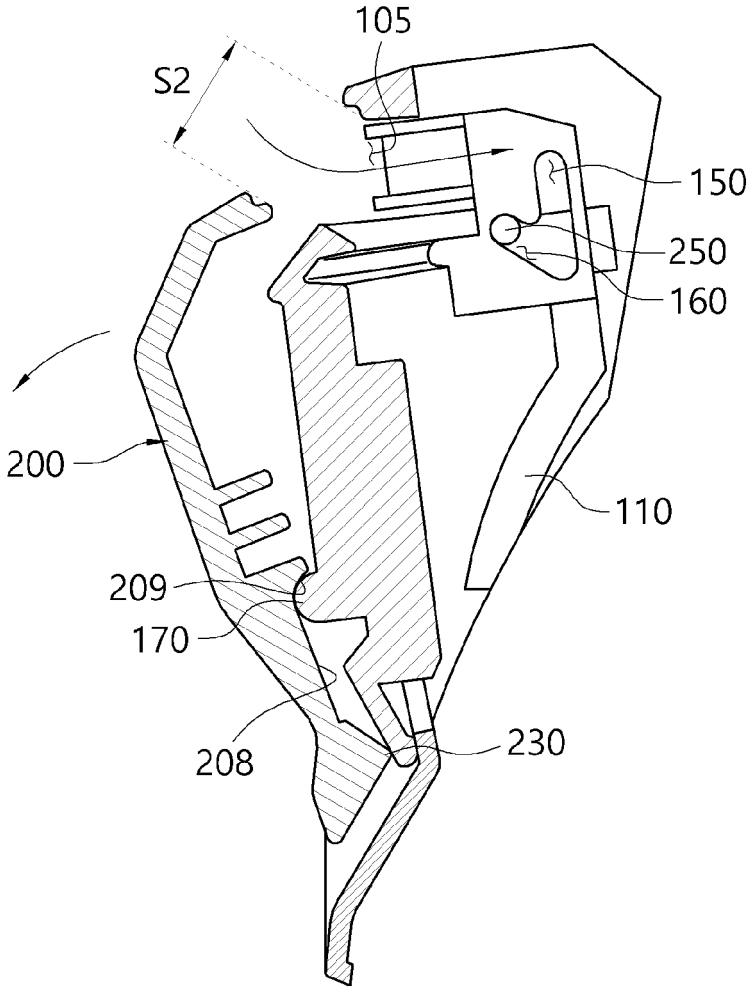


FIG. 12

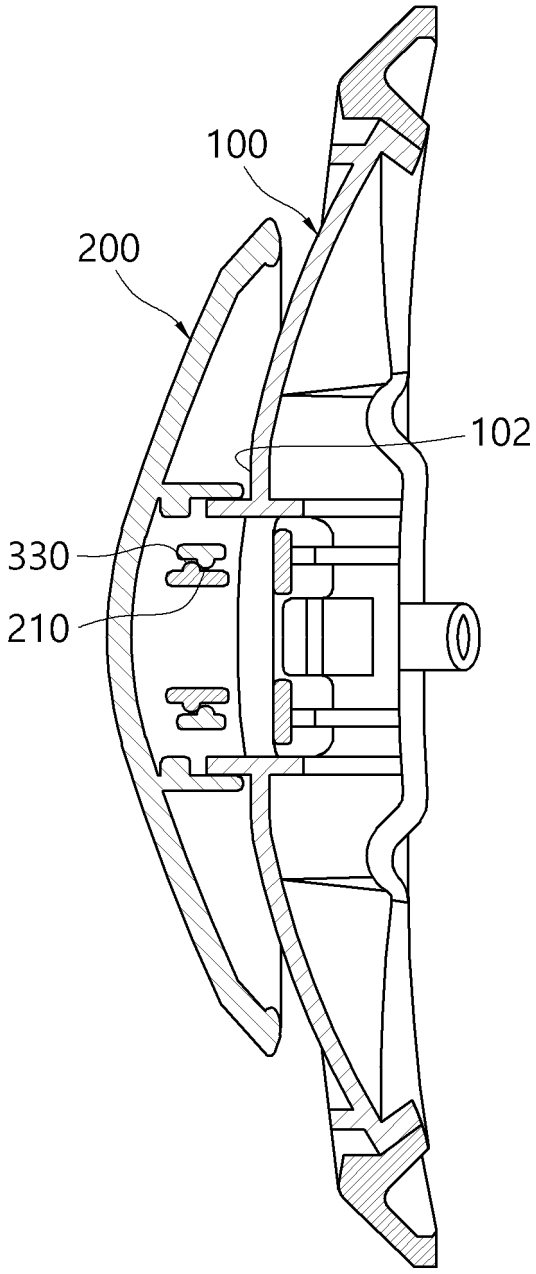
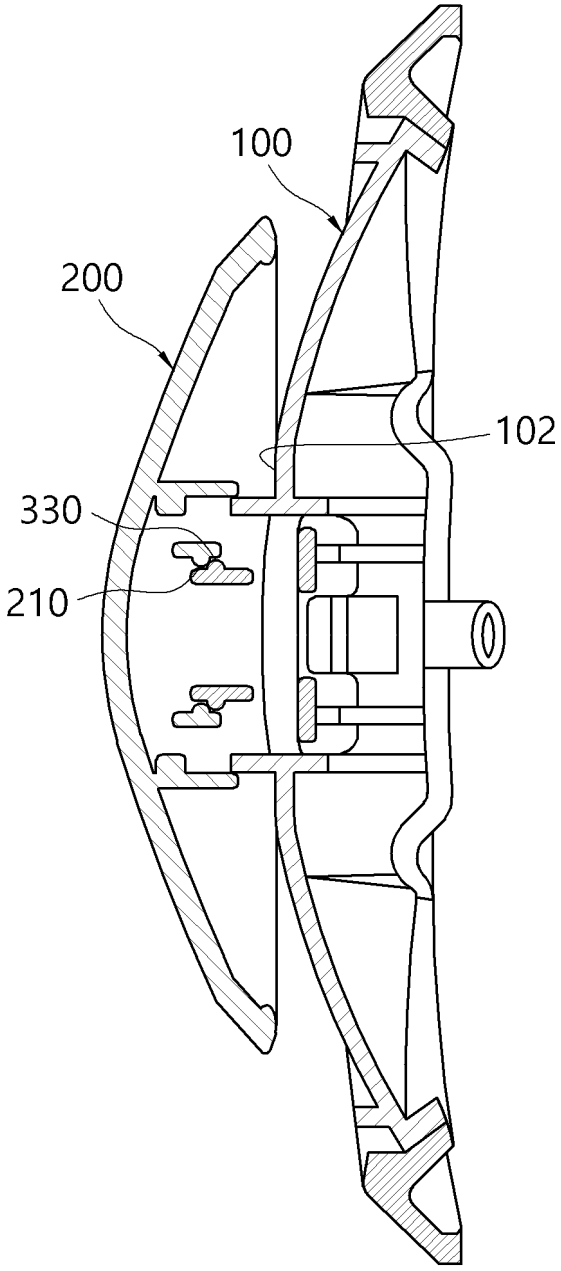


FIG. 13



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2023/003395

A. CLASSIFICATION OF SUBJECT MATTER

A42B 3/28(2006.01)i; **A42B 3/06**(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A42B 3/28(2006.01); A42B 3/00(2006.01); A42B 3/04(2006.01); A42B 3/24(2006.01)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models: IPC as above
Japanese utility models and applications for utility models: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS (KIPO internal) & keywords: 헬멧(helmet), 본체 통풍홀(body ventilation hole), 베이스 관통홀(base penetrating hole), 피벗회전 커버(pivotally rotating cover), 가이드 레일(guide rail), 지지면(supporting surface), 가이드 돌기(guide protrusion), 가이드 슬릿(guide slit)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-2007-0101086 A (ARAI HELMET, LTD.) 16 October 2007 (2007-10-16) See paragraphs [0055] and [0074]-[0076]; claims 1 and 3; and figures 3-4.	1-2
A		3-13
A	KR 10-2004-0011330 A (ARAI HELMET, LTD.) 05 February 2004 (2004-02-05) See entire document.	1-13
A	WO 2018-011050 A1 (LAZER SPORT NV) 18 January 2018 (2018-01-18) See entire document.	1-13
A	KR 10-2004-0083683 A (HJC CO., LTD.) 06 October 2004 (2004-10-06) See entire document.	1-13
A	US 2007-0050894 A1 (TSURUMI, Masayuki) 08 March 2007 (2007-03-08) See entire document.	1-13

☐ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 June 2023	**22 June 2023**
Name and mailing address of the ISA/KR **Korean Intellectual Property Office** **Government Complex-Daejeon Building 4, 189 Cheongsa-ro, Seo-gu, Daejeon 35208** Facsimile No. **+82-42-481-8578**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2023/003395

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
KR 10-2007-0101086 A	16 October 2007	AT 442063 T	15 September 2009
		CN 101053449 A	17 October 2007
		CN 101053449 B	04 April 2012
		EP 1844671 A1	17 October 2007
		EP 1844671 B1	09 September 2009
		JP 2007-277770 A	25 October 2007
		JP 4125761 B2	30 July 2008
		KR 10-1086689 B1	24 November 2011
		TW 200738183 A	16 October 2007
		TW I321455 B	11 March 2010
		US 2007-0238405 A1	11 October 2007
		US 7413506 B2	19 August 2008
KR 10-2004-0011330 A	05 February 2004	CN 1471873 A	04 February 2004
		CN 1471873 B	26 May 2010
		EP 1386550 A1	04 February 2004
		EP 1386550 B1	05 September 2007
		JP 2004-124346 A	22 April 2004
		JP 3875650 B2	31 January 2007
		KR 10-0895454 B1	07 May 2009
		KR 10-0961504 B1	08 June 2010
		KR 10-2004-0011392 A	05 February 2004
		US 2004-0019956 A1	05 February 2004
		US 6931670 B2	23 August 2005
WO 2018-011050 A1	18 January 2018	EP 3269267 A1	17 January 2018
		EP 3269267 B1	27 March 2019
KR 10-2004-0083683 A	06 October 2004	CN 1268246 C	09 August 2006
		CN 1531880 A	29 September 2004
		EP 1462017 A1	29 September 2004
		KR 10-0468348 B1	27 January 2005
		US 6763526 B1	20 July 2004
US 2007-0050894 A1	08 March 2007	EP 1754422 A1	21 February 2007
		EP 1754422 B1	02 September 2009
		JP 2007-051397 A	01 March 2007
		JP 4848155 B2	28 December 2011
		US 7735158 B2	15 June 2010

Form PCT/ISA/210 (patent family annex) (July 2022)