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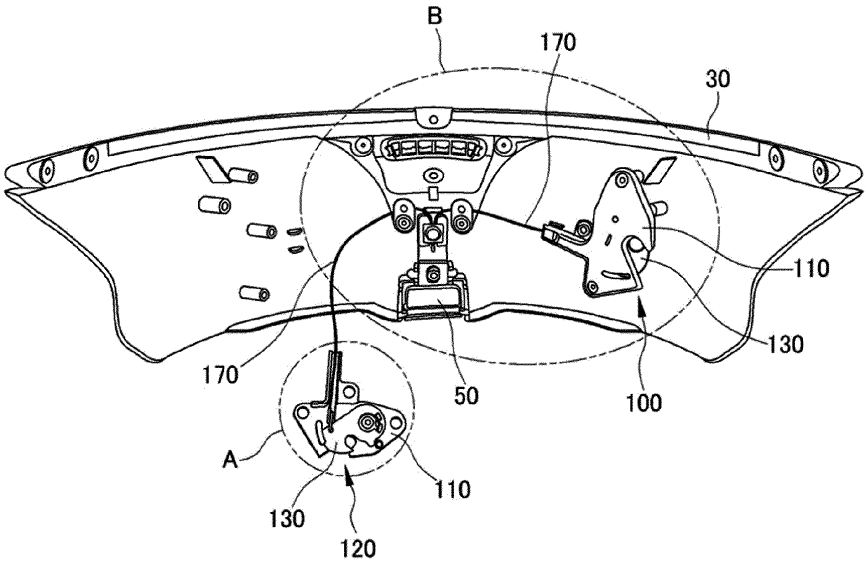
(54) DEVICE FOR OPENING/CLOSING CHIN PROTECTOR AND HELMET COMPRISING SAME

(57) Provided is a jaw protector opening apparatus including a helmet body, a jaw protector pivotally provided with respect to a helmet body to protect the jaw of a wearer, a release button provided at one side of the jaw protector to release coupling with the helmet body to allow the jaw protector to be pivotal, and a fixing/releasing unit provided in the jaw protector, the fixing/releasing unit releasing the coupling with the helmet body in association with the release button when the release button is operated. Here, the jaw protector opening apparatus provided at a helmet may have a reduced size, and a safety protector for the safe of a wearer may be sufficiently provided in the helmet. In addition, there is also provided a helmet including the jaw protector opening apparatus.

FIG. 3



EP 2 762 021 A1

Description

Technical Field

[0001] The present disclosure relates to a jaw protector opening apparatus and a helmet having the apparatus, and more particularly, to a jaw protector opening apparatus capable of opening a jaw protector while protecting the head of a wearer, and a helmet having the apparatus.

Background Art

[0002] When riding a two-wheeled vehicle such as a motorcycle, a rider should wear a helmet for protecting the head of the rider.

[0003] A shield is installed at the front of the helmet so that the range of vision of the wearer is not disturbed by wind power generated at the front when the vehicle is running and also a respiratory trouble may be solved.

[0004] Meanwhile, the general helmet configured as above includes a jaw protector installed at a lower side of the front end of the helmet in order to protect the jaw of the wearer.

[0005] Both ends of the jaw protector are fixed to both sides of a helmet body, and the jaw protector fixed to the helmet is firmly fixed so as not to deviate from the helmet.

[0006] However, in a state of wearing the helmet, the wearer is not able to talk with other persons, have drink or smoke. In addition, the jaw protector of such a general helmet has buffer material provided in its outer body, and a fixed portion serving as an axis of the center of gravity is installed at the center of the helmet body. Therefore, when a wearer wears the helmet, the load of the jaw protector is applied to the front side of the wearer, which greatly deteriorates the wearing sensation of the helmet.

[0007] Korean Patent Application No. 10-2003-0096273 (entitled "a helmet having an openable jaw protector) discloses a helmet having an openable jaw protector to solve the above problem.

[0008] The jaw protector of the helmet disclosed in Korean Patent Application No. 10-2003-0096273 includes a hinge mechanism and a locking mechanism so that the jaw protector may be opened or fixed.

[0009] However, in case of the jaw protector disclosed in Korean Patent Application No. 10-2003-0096273, the hinge mechanism and the locking mechanism for fixation to the helmet or opening from the helmet have complicated structures and thus occupy a great space in the jaw protector. Accordingly, the jaw protector including such components has a great size, and thus a space required for providing a safety device such as a cushion member in the helmet is relatively reduced.

Disclosure

Technical Problem

[0010] The present disclosure is directed to providing a jaw protector opening apparatus, which may reduce a size of the jaw protector opening apparatus provided at a helmet and sufficiently provide a safe protector for a wearer in the helmet, and a helmet having the apparatus.

Technical Solution

[0011] In one general aspect, the present disclosure provides a jaw protector opening apparatus, which includes: a helmet body; a jaw protector pivotally provided with respect to a helmet body to protect the jaw of a wearer; a release button provided at one side of the jaw protector to release coupling with the helmet body to allow the jaw protector to be pivotal; and a fixing/releasing unit provided in the jaw protector, the fixing/releasing unit releasing the coupling with the helmet body in association with the release button when the release button is operated, wherein the fixing/releasing unit includes: a fixed plate fixed to an inner side of the jaw protector; a pivoting lever pivotally coupled to one side of the fixed plate so as to be coupled to the helmet body when the release button is released; an elastic body interposed between the pivoting lever and the fixed plate to restore the pivoting lever to an initial location when the pivoting lever is released; and a cable for connecting the release button and the release button so that the pivoting lever pivots when the release button is pulled. In another aspect, the present disclosure also provides a helmet including the jaw protector opening apparatus.

Advantageous Effects

[0012] The present disclosure may provide a jaw protector opening apparatus, which may reduce a size of the jaw protector opening apparatus provided at a helmet and sufficiently provide a safe protector for a wearer in the helmet, and a helmet having the apparatus.

Description of Drawings

[0013]

Fig. 1 is a perspective view showing a helmet according to an embodiment of the present disclosure.
Fig. 2 is a side view showing that a jaw protector of the helmet of Fig. 1 is opened.
Fig. 3 is a front view showing an inner configuration of the jaw protector according to an embodiment of the present disclosure.
Fig. 4 is an enlarged view showing Portion A of Fig. 3.
Fig. 5 is an enlarged view showing Portion B of Fig. 3.
Fig. 6 is a front view showing a fixing/releasing unit and a protection cover together with the jaw protector of Fig. 1.

Best Mode

[0014] Hereinafter, embodiments of the present disclo-

sure will be described in detail with reference to the accompanying drawings so as to be easily implemented by those having ordinary skill in the art. However, the present disclosure can be implemented in various ways, without being limited to the embodiments. In addition, in the drawings, features having no relation with the disclosure are not depicted for clear explanation, and like reference numerals denote like elements throughout the specification.

[0015] In the specification, when describing that any portion is "connected" to another portion, this connection includes not only "direct connection" but also "electric connection" by which both portions are connected via another element. In addition, when describing that any element "includes" a component, this means that the element does not exclude another component but can further include any other component.

[0016] First, referring to Figs. 1 to 3, a jaw protector opening apparatus and a helmet having the same according to the present disclosure includes a helmet body 10, a jaw protector 30 pivotally coupled to the helmet body 10, a release button 50 provided at one side of the jaw protector 30, and a fixing/releasing unit 100 provided in the jaw protector 30.

[0017] The jaw protector 30 is pivotally coupled to the helmet body 10 to protect portions around the jaw of the wearer. The jaw protector 30 is pivotally coupled to the helmet body 10 in order to allow a wearer to open the jaw protector 30 if necessary.

[0018] Accordingly, the release button 50 is provided at one side of the jaw protector 30, at the center of a lower side of the jaw protector 30 in this embodiment, to release the coupling between the jaw protector 30 and the helmet body 10 so that the jaw protector 30 may be opened.

[0019] For example, the release button 50 may release the coupling between the jaw protector 30 and the helmet body 10 by pulling, and the release button 50 may be hinged to the jaw protector 30 to pivot by a predetermined angle when the release button 50 is pulled.

[0020] The fixing/releasing unit 100 provided in the jaw protector 30 is connected to the release button 50 so that, when the release button 50 is pulled, the fixing/releasing unit 100 releases the coupling between the jaw protector 30 and the helmet body 10 in association with the release button 50 to open the jaw protector 30.

[0021] The fixing/releasing unit 100 associated with the release button 50 will be described in more detail with reference to Figs. 3 to 6. The fixing/releasing unit 100 includes a fixed plate 110 coupled to the inner side of the jaw protector 30, a pivoting lever 130 pivotally coupled to one side of the fixed plate 110, an elastic body 150 connected to the pivoting lever 130 to restore the location of the pivoting lever 130, and a cable 170 for connecting the pivoting lever 130 and the release button 50.

[0022] The fixed plate 110 is coupled to the inner side of the jaw protector 30 as described above, and a coupling hole 111 may be formed therein for the coupling with the jaw protector 30 by a coupling member.

[0023] In addition, a hinge protrusion 113 is formed so that the pivoting lever 130 may be pivotally hinged, and a hooking protrusion 115 is also formed to prevent the pivoting lever 130 from deviating from the fixed plate 110 when pivoting.

[0024] Moreover, a coupling groove 117 is formed in one side of the fixed plate 110 so that a coupling protrusion 11 provided at the helmet body 10 may be inserted therein when the jaw protector 30 and the helmet body 10 are coupled.

[0025] Meanwhile, the hooking protrusion 115 may not only prevent the pivoting lever 130 from deviating but also guide the pivoting lever 130 to rotate when the pivoting lever 130 is pivoting.

[0026] The pivoting lever 130 is coupled to a side of the fixed plate 110 which is oriented to the inner side of the jaw protector 30, and when being completely assembled, the pivoting lever 130 is just partially exposed, and the pivoting lever 130 is not entirely exposed due to the fixed plate 110.

[0027] In addition, the pivoting lever 130 has a hole for the coupling to the hinge protrusion 113 of the fixed plate 110, and a hooking portion 131 is formed at one side thereof to be hooked by the coupling protrusion 11 provided at the helmet body 10.

[0028] In other words, the coupling protrusion 11 of the helmet body 10 is inserted into the coupling groove 117 of the fixed plate and is simultaneously hooked by the coupling protrusion 11 at a position where the hooking portion 131 of the pivoting lever 130 coupled to the fixed plate 110 overlaps with the coupling groove 117 of the fixed plate.

[0029] In addition, the hooking portion 131 contacting the coupling protrusion 11 may be formed to have a curved circumference. Referring to Figs. 4 and 5, the coupling protrusion 11 may be inserted into the coupling groove 117 and the hooking portion 131 by pushing the curved circumference of the hooking portion 131 (see Fig. 5) to pivot the hooking portion 131 when the jaw protector 30 and the helmet body 10 are coupled.

[0030] Therefore, in order to allow the hooking portion 131 to easily pivot by the pushing force of the coupling protrusion 11, its circumference contacting the coupling protrusion 11 may have a curved shape as described above.

[0031] A process of coupling the coupling protrusion 11 of the helmet body 10 to the coupling groove 117 and the hooking portion 131 will be described later in more detail.

[0032] Meanwhile, in this embodiment, the elastic body 150 for restoring the location of the pivoting lever 130 may employ a torsion spring.

[0033] The torsion spring is frequently used for a device which rotates by a predetermined angle and then restores its original location. In this embodiment, the pivoting lever 130 rotates by a predetermined angle and then restores its original location in association with the

operation of the release button 50, and thus the elastic body 150 may employ a torsion spring.

[0034] The elastic body mostly uses a tensile spring or a compression spring, and in an existing jaw protector fixing device, a tensile spring or a compression spring is used. However, in the tensile spring and the compression spring, a spring is wound spirally based on the operating direction of the elastic force and thus has a predetermined radius perpendicular to the operating direction of the elastic force, different from the torsion spring employed in the present disclosure. Therefore, the tensile spring and the compression spring demand a sufficient space for the elastic body, which makes it difficult to have a slim design.

[0035] Meanwhile, the torsion spring has a very small thickness in a direction perpendicular to the rotating direction in which the elastic force is applied, which needs a very small space for the elastic body and accordingly allows a slim design.

[0036] In addition, in order to apply an elastic force with respect to a pivoting direction of the pivoting lever 130 by means of a tensile spring or a compression spring, a mechanism for converting a linear motion of the tensile spring or the compression spring into a rotary motion with respect to the rotation axis of the pivoting lever 130 is separately required. Therefore, the tensile spring or the compression spring may not be disposed integrally with the pivoting lever 130, which makes it difficult to have a simple structure.

[0037] However, if the elastic body 150 employs a torsion spring as in this embodiment, since the torsion spring makes a rotary motion in the arrowed direction as shown in Fig. 4, the pivoting lever 130 may be directly rotated without performing a process of converting a linear motion into a rotary motion. For example, the torsion spring may be disposed to overlap with the rear surface of the pivoting lever 130 with respect to the rotation axis of the pivoting lever 130.

[0038] At this time, one side of the torsion spring may be connected to the pivoting lever 130 so that an elastic force is transferred in the rotating direction of the pivoting lever 130, and the other end of the torsion spring may be connected to the fixed plate 110 so that the torsion spring is supported by the fixed plate 110 to transfer an elastic force to the pivoting lever 130. For example, referring to Figs. 4 and 5, the torsion spring may be disposed at the rear side of the pivoting lever 130, the other side has a ring shape and is inserted into a hole (not shown) of the fixed plate 110, and its one side has a ring shape and is hooked by the protrusion of the pivoting lever 130.

[0039] In addition, if a tensile spring or a compression spring is used in the fixing/releasing unit 100 of this embodiment, since the spring is not so strong, the spring may lost its elasticity if it is used many times for a long time.

[0040] Therefore, in this embodiment of the present disclosure, since the torsion spring is used, the fixing/releasing unit 100 may have a slim design and the helmet may have a sufficient inner space, thereby ensuring a protector such as a cushion member to be installed more safely.

[0041] The elastic body 150 employing a torsion spring is provided at the hinge protrusion 113 by which the pivoting lever 130 is hinged to the fixed plate 110, and one of the fixed plate 110 and the pivoting lever 130 is hooked by the pivoting lever 130.

[0042] Finally, as described above, the cable 170 is configured to connect the pivoting lever 130 and the release button 50.

[0043] Therefore, if the release button 50 is pulled, the cable 170 pulls one side of the pivoting lever 130 according to the release button 50 so that the pivoting lever 130 pivots based on the hinged portion.

[0044] The initial location of the pivoting lever 130 is defined as a location when the hooking portion 131 of the pivoting lever 130 overlaps with the coupling groove 117 of the fixed plate 110, and if the release button 50 is pulled so that the cable 170 pulls the pivoting lever 130, the hooking portion 131 of the pivoting lever 130 pivots to a position not overlapping with the coupling groove 117 of the fixed plate 110.

[0045] A hooking hole 133 is formed at one side of the pivoting lever 130 so that the cable 170 for connecting the release button 50 is hooked thereto, and one side of the cable 170 is bent into, for example, a "U" shape so as to be hooked by the hooking hole 133 (see Fig. 4).

[0046] In addition, if the fixing/releasing unit 100 is provided at the jaw protector 30 as shown in Fig. 6, the protection cover 70 for protecting the fixing/releasing unit 100 may be coupled to the jaw protector 30.

[0047] Since the protection cover 70 is formed not to disturb the coupling between the fixing/releasing unit 100 and the coupling protrusion 11, even though the protection cover 70 is coupled to the jaw protector 30, the fixing/releasing unit 100 may be partially exposed as shown in the figures.

[0048] A process of opening the jaw protector 30 including the fixing/releasing unit 100 configured as above will be described below.

[0049] A wearer who wears the helmet pulls the release button 50 provided at one side of the jaw protector 30 in order to open the jaw protector 30 pivotally coupled to the helmet body 10.

[0050] The jaw protector 30 includes the fixing/releasing unit 100 therein, and the coupling protrusion 11 of the helmet body is hooked by and fixed to the fixing/releasing unit 100.

[0051] If the wearer pulls the release button 50 provided at one side of the jaw protector 30, the cable 170 connected to the release button 50 pulls the pivoting lever 130 of the fixing/releasing unit in association with the pulling operation of the release button 50.

[0052] The coupling protrusion 11 of the helmet body 10 is hooked by the coupling groove 117 of the fixed plate 110, and the hooking portion 131 of the pivoting lever 130 is fixed to overlap with the coupling groove 117. Thus,

if the cable 170 pulls the pivoting lever 130, the pivoting lever 130 rotates to spread the hooking portion 131 of the pivoting lever 130, which overlaps with the coupling groove 117, and thus the coupling protrusion 11 deviates from the coupling groove 117.

[0053] In addition, if the coupling protrusion 11 deviates from the hooking portion 131 and the coupling groove 117, the wearer returns the release button 50 to its original location, and the pivoting lever 130 is restored to the initial location at which the hooking portion 131 overlaps with the coupling groove 117, by the elastic body 150 interposed between the pivoting lever 130 and the fixed plate 110, namely the torsion spring 150 in this embodiment of the present disclosure.

[0054] By doing so, the coupling protrusion 11 of the helmet body 10 is released from the fixing/releasing unit 110 of the jaw protector 130, and the jaw protector 30 may pivot to open the helmet body 10.

[0055] In order to couple the opened jaw protector 30 to the helmet body 10 on the contrary, the wearer pivots the jaw protector 30 to a coupling location and gives a strong pressure thereto. If so, the coupling protrusion 11 of the helmet body 10 moves into the coupling groove 117 of the fixed plate 110 while pushing the hooking portion 131 of the pivoting lever 130.

[0056] In other words, as shown in Fig. 5, if the coupling protrusion 11 pushes the hooking portion 131 of the pivoting lever 130 in the a direction in contact with the hooking portion 131, the hooking portion 131 pivots in the b direction by the pushing force of the coupling protrusion 11.

[0057] In addition, if the coupling protrusion 11 is perfectly adhered to the coupling groove 117, the hooking portion 131 pivots and is restored by the torsion spring 150 to the initial location where it is overlapped with the coupling groove 117, and at this time, the hooking portion 131 prevents the coupling protrusion 11 from deviating from the coupling groove 117.

[0058] By doing so, the coupling protrusion 11 of the helmet body 10 is fixed to the fixing/releasing unit 100 and the jaw protector 30 is fixed to the helmet body 10.

[0059] Since the helmet having the jaw protector fixing apparatus according to the embodiment of the present disclosure may open the jaw protector, a helmet wearer may eat food by opening only the jaw protector without taking off the helmet. In addition, if required, a user may more easily wear or take off the helmet by opening the jaw protector.

[0060] In addition, since the fixing/releasing unit provided for fixing or releasing the jaw protector includes the elastic body employing a torsion spring, the fixing/releasing unit may have a slim design.

[0061] In particular, if the fixing/releasing unit has a slim design, the helmet may have a sufficient inner space, and thus a protector such as a cushion member for the safety of the wearer may be installed in an easy and safe way, thereby improving the safety of the helmet.

[0062] The above disclosure is just for illustration only, and a person having ordinary skill in the art will understand that the present disclosure may be easily modified without departing from the spirit or scope of the present disclosure. Therefore, the embodiments disclosed herein should be understood as examples, not limitative, in every aspect. For example, any component explained as a single form may be distributed as various elements, and any components explained as a distributed may also be implemented as a single form.

[0063] The scope of the present disclosure is defined by the appended claims, and all changes or modifications derived from the meaning and scope of the claims or their equivalents should be interpreted as falling into the scope of the present disclosure.

Industrial Applicability

[0064] The present disclosure is directed to an opening apparatus for opening or closing a jaw protector and has industrial applicability since the opening apparatus may be applied to a helmet for a motorcycle, a protecting instrument for leisure or the like.

Claims

1. A jaw protector opening apparatus, comprising:

a release button provided at one side of a jaw protector, which is pivotally provided with respect to a helmet body to protect the jaw of a wearer, the release button being operated to release coupling with the helmet body to allow the jaw protector to be pivotal; and

a fixing/releasing unit provided in the jaw protector, the fixing/releasing unit releasing the coupling with the helmet body in association with the release button when the release button is operated,

wherein the fixing/releasing unit includes:

a fixed plate fixed to an inner side of the jaw protector;

a pivoting lever pivotally coupled to one side of the fixed plate so as to be coupled to the helmet body when the release button is released;

an elastic body interposed between the pivoting lever and the fixed plate to restore the pivoting lever to an initial location when the pivoting lever is released; and

a cable for connecting the release button and the release button so that the pivoting lever pivots when the release button is pulled.

2. The jaw protector opening apparatus according to claim 1,

wherein the elastic body is a torsion spring for applying an elastic force with respect to a pivoting direction of the pivoting lever.

3. The jaw protector opening apparatus according to claim 1,
wherein a hooking protrusion is formed at one side of the fixed plate to prevent the pivoting lever from deviating from the fixed plate.

4. The jaw protector opening apparatus according to claim 1,
wherein a coupling groove is formed in one side of the fixed plate so that a coupling protrusion included in the helmet body is inserted therein,
wherein one side of the pivoting lever has a hooking portion, and
wherein when the coupling protrusion is inserted into the coupling groove and the hooking portion, the coupling protrusion and the coupling groove overlap with each other and the jaw protector is fixed to the helmet body.

5. The jaw protector opening apparatus according to claim 4,
wherein the hooking portion has a circumference with a curved shape in contact with the coupling protrusion, and
wherein the coupling protrusion is inserted into the coupling groove and the hooking portion by pushing the circumference of the hooking portion and pivoting the hooking portion.

6. The jaw protector opening apparatus according to claim 1,
wherein the pivoting lever is provided at one side of the fixed plate, which is oriented to the inner side of the jaw protector, not to be exposed.

7. The jaw protector opening apparatus according to claim 1, further comprising a protection cover coupled to the inner side of the jaw protector so that the fixing/releasing unit provided in the jaw protector is not damaged.

8. A helmet, comprising:

a helmet body;
a jaw protector pivotally provided at the helmet body to protect the jaw of a wearer;
a release button provided at one side of the jaw protector and operated to release the coupling with the helmet body so as to allow the jaw protector to be pivotal; and
a fixing/releasing unit provided in the jaw protector, the fixing/releasing unit releasing the coupling with the helmet body in association with the release button when the release button is operated,
wherein the fixing/releasing unit includes:

a fixed plate fixed to an inner side of the jaw protector;
a pivoting lever pivotally coupled to one side of the fixed plate so as to be coupled to the helmet body when the release button is released;
an elastic body interposed between the pivoting lever and the fixed plate to restore the pivoting lever to an initial location when the pivoting lever is released; and
a cable for connecting the release button and the release button so that the pivoting lever pivots when the release button is pulled.

FIG. 1

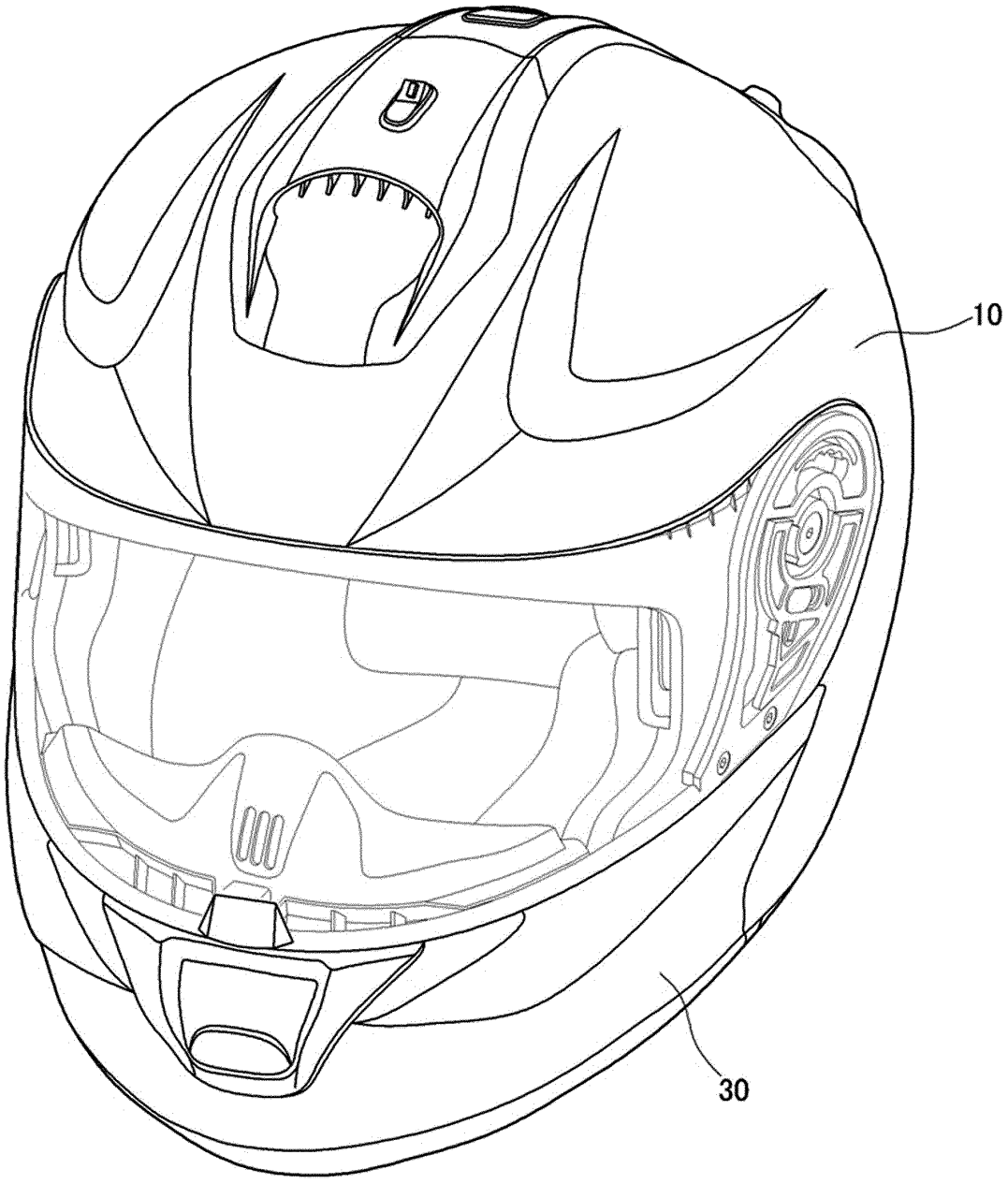


FIG. 2

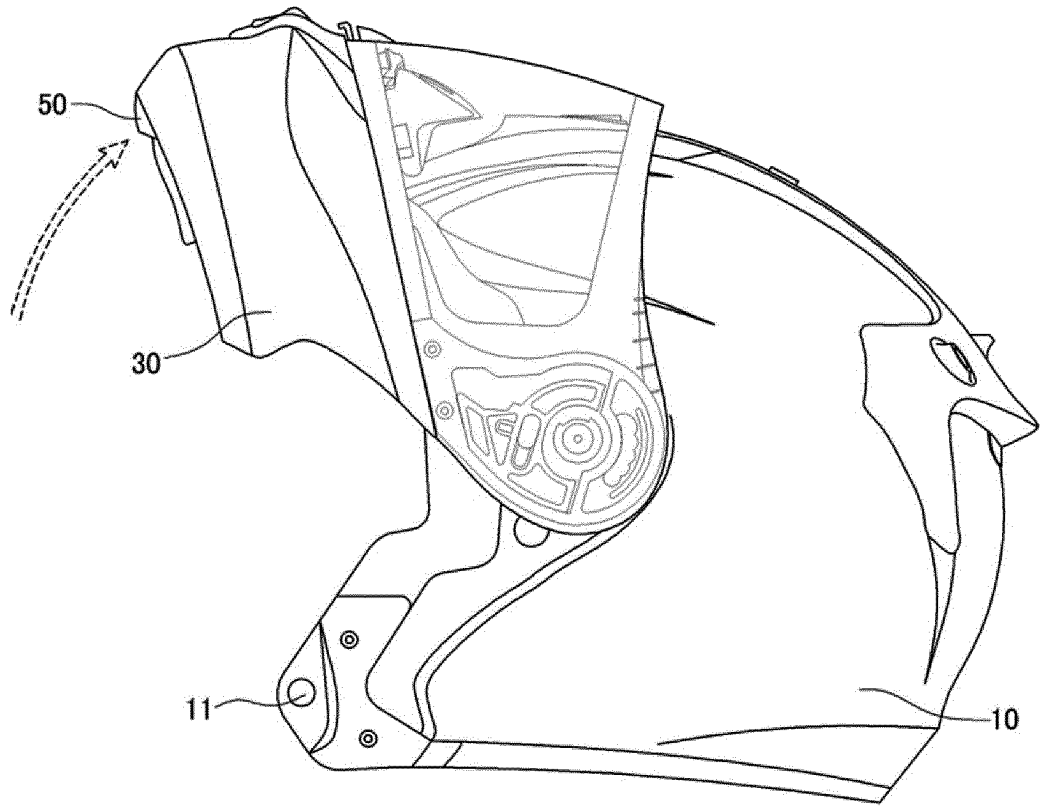


FIG. 3

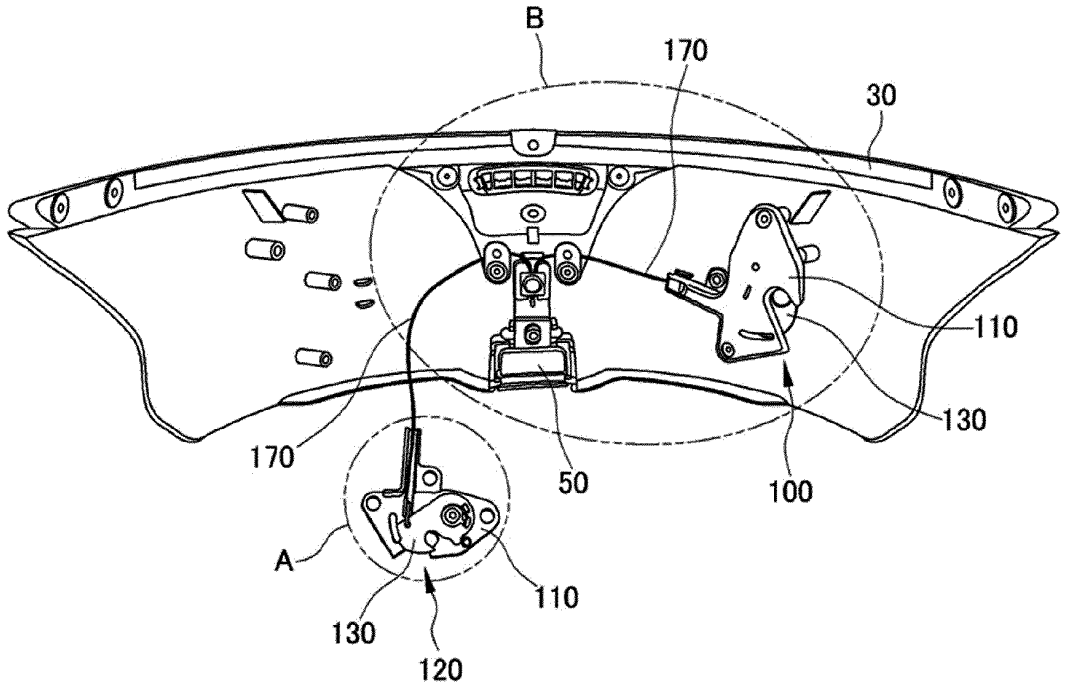


FIG. 4

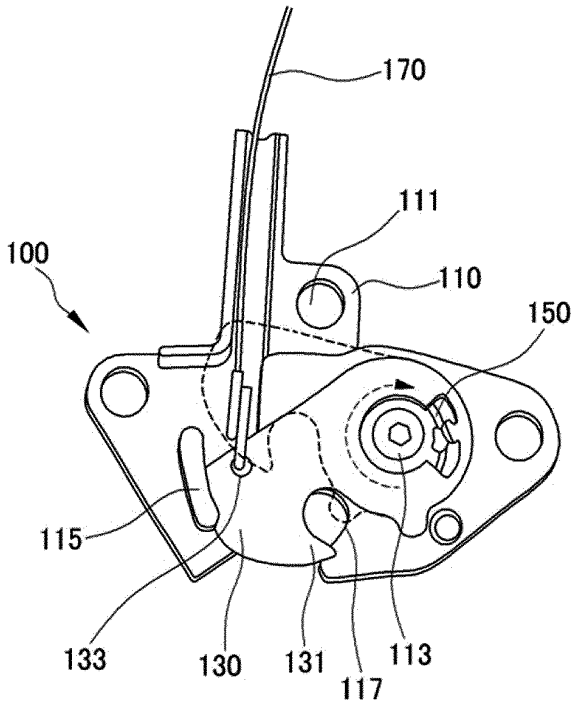

170
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FIG. 5

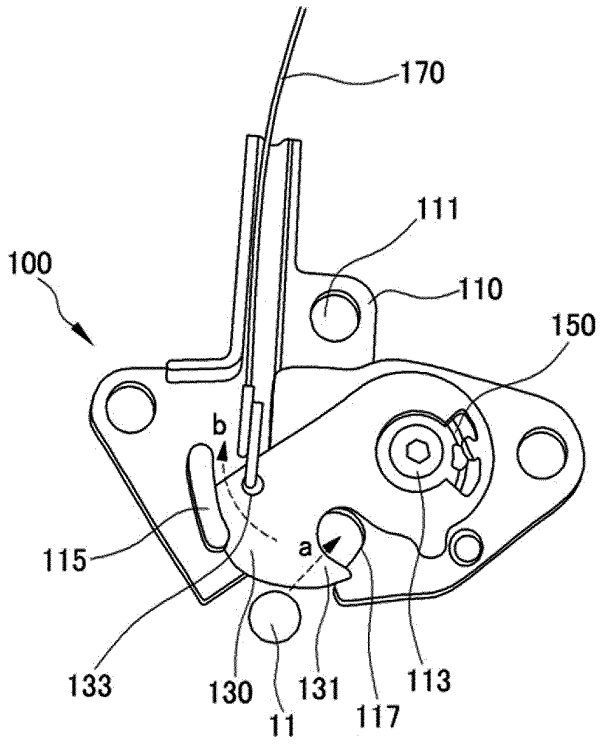
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FIG. 6

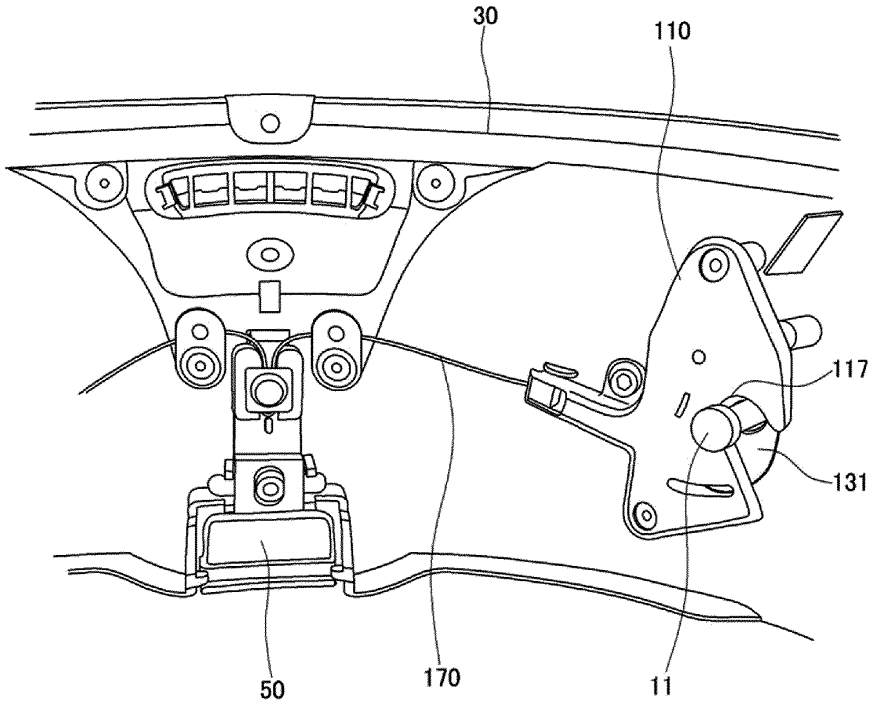
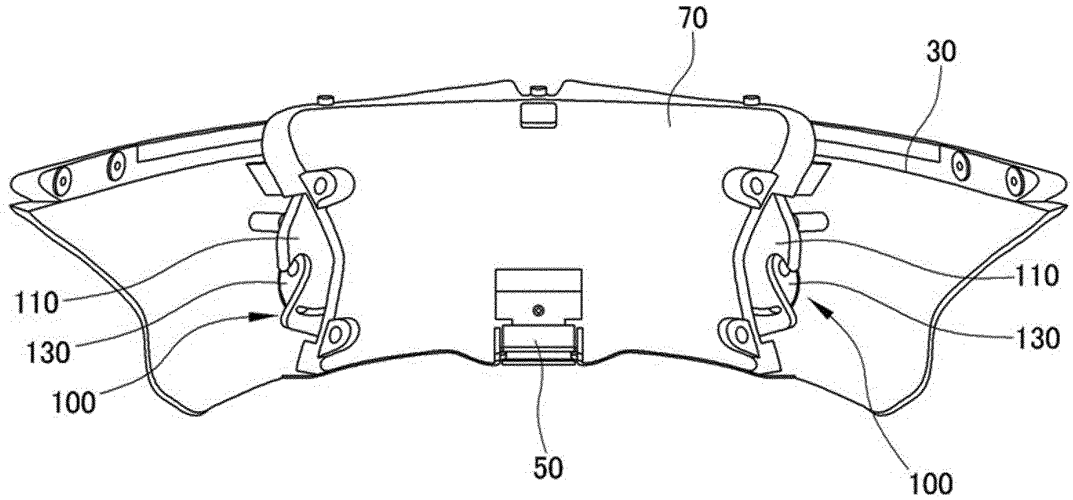


FIG. 7



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2011/007111

A. CLASSIFICATION OF SUBJECT MATTER

A42B 3/04(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 3/04; A42B 1/08; A42B 3/22; A42B 3/00; A42B 3/18

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: helmet, safety helmet, jaw, elasticity, button, handle, coupling, release

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-0649945 B1 (HJC CORP.) 27 November 2006 See abstract, claims 1-2, figures 1-3.	1,2,8
Y	JP 2000-096334 A (SHOEI:KK) 04 April 2000 See abstract, claim 5, figures 1-22.	1,2,8
A	US 2005-0015861 A1 (GAFFORIO LUCA et al.) 27 January 2005 See abstract, claims 1-20, figures 1-7.	1-8
A	KR 10-0659171 B1 (HJC CORP.) 19 December 2006 See abstract, claims 1-5, figures 1-6.	1-8

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

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 JUNE 2012 (25.06.2012)	**25 JUNE 2012 (25.06.2012)**

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2011/007111

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