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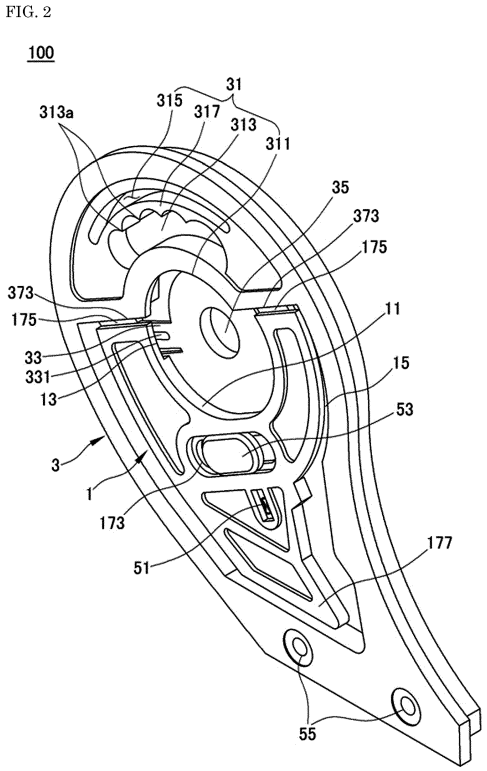
(54) COUPLING DEVICE FOR HELMET SHIELD AND HELMET COMPRISING SAME

(57) Provided is a shield coupling apparatus for a helmet, which includes: a sliding member protruding on an inner side surface of a shield and having a lower groove formed at one side of a circumference thereof to surround a combining protrusion having a flange, the sliding member being coupled to an elastic member; and a base member coupled to the elastic member and disposed to be slidable in a direction along which the sliding member compresses the elastic member, the base member having an upper groove formed to surround an upper portion of the combining protrusion, the base member having a rotation guiding unit for allowing the shield to rotate stage by stage, wherein the sliding member accommodates the flange in an accommodation groove formed in the lower groove by means of sliding so that the combining protrusion is pivotally mounted, wherein the rotation guiding unit includes: a rotation slot having a plurality of partitioning protrusions formed at an inner surface thereof so that a rotation slot coupling protrusion protruding on an inner side surface of the shield is coupled to one of partitioned regions; and a buffering slot formed to be spaced apart from the inner surface of the rotation slot by a predetermined interval.

FIG. 2



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Description

Technical Field

[0001] The present disclosure relates to a shield coupling apparatus for a helmet, and a helmet including the same.

Background Art

[0002] A driver of a two-wheeled vehicle such as a motorcycle wears a helmet for safe reason to protect the head. Generally, such a helmet includes a helmet body having a front opening and configuring an appearance of the helmet, and a shield for shielding the driver from a wind blowing in the front while the vehicle is running and ensuring the driver's sight.

[0003] Korean Patent Registration No. 10-0568946 discloses a shield coupling apparatus for a helmet (hereinafter, referred to an 'existing shield coupling apparatus for a helmet') in which a shield is rotatably mounted to a helmet body.

[0004] However, the existing shield coupling apparatus for a helmet is configured so that many components such as a base plate, a mounting plate, a locker, two springs or the like are combined complexly, which increases the size of the apparatus and deteriorates productivity, operation stability, solidity, usability or the like.

Disclosure

Technical Problem

[0005] The present disclosure is directed to providing a shield coupling apparatus for a helmet, which may have a small design due to a simpler configuration and ensure productivity, operation stability, solidity, usability and maintainability, and a helmet including the apparatus.

Technical Solution

[0006] In one general aspect, the present disclosure provides a shield coupling apparatus for a helmet, which includes: a sliding member protruding on an inner side surface of a shield and having a lower groove formed at one side of a circumference thereof to surround a combining protrusion having a flange, the sliding member being coupled to an elastic member; and a base member coupled to the elastic member and disposed to be slidable in a direction along which the sliding member compresses the elastic member, the base member having an upper groove formed to surround an upper portion of the combining protrusion, the base member having a rotation guiding unit for allowing the shield to rotate stage by stage, wherein the sliding member accommodates the flange in an accommodation groove formed in the lower groove by means of sliding so that the combining protrusion is pivotally mounted, wherein the rotation guiding unit includes: a rotation slot having a plurality of partitioning protrusions formed at an inner surface thereof so that a rotation slot coupling protrusion protruding on an inner side surface of the shield is coupled to one of partitioned regions; and a buffering slot formed to be spaced apart from the inner surface of the rotation slot by a predetermined interval.

[0007] In another aspect, the present disclosure provides a helmet, which includes: a helmet body; a shield coupling apparatus as described above; and a shield rotatably mounted to the shield coupling apparatus.

Advantageous Effects

[0008] According to the technical solution of the present disclosure, since a shield may rotate stage by stage just by forming a buffering slot and a rotation slot having a partitioning protrusion in a base member, the productivity, solidity and operation stability of the apparatus may greatly improved.

[0009] According to the technical solution of the present disclosure, since a sliding member, an accommodation groove, an elastic member and an elastic piece are organically combined so that a flange may be selectively accommodated in the accommodation groove just with a simple manipulation, the shield may be easily attached and detached. In addition, since the shield may stably maintain its mounted state once the flange is accommodated in the accommodation groove, the shield may ensure mounting stability together with easy attachment/detachment.

[0010] According to the technical solution of the present disclosure, since it is possible to attach or detach the shield and rotate the shield stage by stage just with a simple combination, the shield coupling apparatus for a helmet may have a reduced size in comparison to an existing one.

[0011] According to the technical solution of the present disclosure, since a shield and a jaw protector may coaxially rotate with respect to a single axis by matching a rotation center of the shield coupling apparatus for a helmet according to the present disclosure with respect to a helmet body with a rotation center of the shield with respect to the shield coupling apparatus for a helmet according to the present disclosure, the helmet may have a simpler and more convenient structure.

[0012] According to the technical solution of the present disclosure, since base member may be separated from the jaw protector, it is less needed to perform an injection process with a high pressure, and it is not required to mask the base member when the jaw protector is painted, thereby allowing easier fabrication. In addition, the base member may be made of a material with suitable strength, regardless of the material of the jaw protector, and it allows easier exchange and maintenance, thereby ensuring good usability.

Description of Drawings

[0013]

Fig. 1a is a side view showing a helmet according to an embodiment of the present disclosure.

Fig. 1b is a side view showing a shield and a jaw protector of the helmet according to an embodiment of the present disclosure, which are rotated upwards with respect to a helmet body.

Fig. 2 is a perspective view showing a shield coupling apparatus for a helmet according to an embodiment of the present disclosure.

Fig. 3 is an exploded perspective view showing a shield coupling apparatus for a helmet according to an embodiment of the present disclosure.

Fig. 4 is a perspective view obliquely showing an inner surface of one side of a shield of the helmet according to an embodiment of the present disclosure.

Fig. 5a is a front view showing a shield just before the shield is mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure.

Fig. 5b is a front view showing the shield just after the shield is mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure.

Fig. 5c is a front view showing the shield mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, which is rotated downwards.

Fig. 6a is a rear view showing the shield just after the shield is mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure.

Fig. 6b is a rear view showing the shield mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, which is rotated downwards.

Fig. 7a is a rear view showing an elastic piece employed in the shield coupling apparatus for a helmet according to an embodiment of the present disclosure before the elastic piece is coupled into an accommodation groove.

Fig. 7b is a rear view showing the elastic piece employed in the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, which is coupled into the accommodation groove.

Fig. 8a is a side view showing a helmet according to an embodiment of the present disclosure from which the shield and the shield coupling apparatus for a helmet according to an embodiment of the present disclosure are removed.

Figs. 8b and 8c are side views for illustrating that a limiting protrusion employed in the shield coupling apparatus for a helmet according to an embodiment of the present disclosure is coupled to a rotation limiting slot formed in the helmet body to limit a rotation range of the jaw protector.

Fig. 9 is a perspective view for illustrating a pivoting shaft instrument installed at a helmet body coupler of the base member to mount the shield coupling apparatus for a helmet according to an embodiment of the present disclosure to the helmet body.

Best Mode

[0014] Hereinafter, embodiments of the present disclosure 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.

[0016] In addition, when describing that any member is located "on" another member, this includes not only a case in which any member contacts another member but also a case in which any other element is interposed between both members.

[0017] 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. Terms "about", "substantially" or the like used in the specification of the present disclosure means a value or a range close to the value when an inherent allowable error is proposed, and intended to prevent an accurate or absolute value from being unfairly used by an unscrupulous infringer for better understanding of the present disclosure. The terms "... step" or "step of ..." used in the specification of the present disclosure does not means "step for ...".

[0018] In the specification of the present disclosure, the expression "combinations thereof" included in a Markush type phrase means at least one mixtures or combination selected from the group consisting of components written in the Markush type phrase, and this means that one or more selected from the group consisting of these components is included.

[0019] In addition, any features or configurations obvious to those having ordinary skill in the art will be explained briefly or not explained.

[0020] Fig. 1a is a side view showing a helmet according to an embodiment of the present disclosure, and Fig. 1b is a side view showing a shield and a jaw protector of the helmet according to an embodiment of the present disclosure, which are rotated upwards with respect to a

helmet body. Also, Fig. 2 is a perspective view showing a shield coupling apparatus for a helmet according to an embodiment of the present disclosure, and Fig. 3 is an exploded perspective view showing a shield coupling apparatus for a helmet according to an embodiment of the present disclosure. In addition, Fig. 4 is a perspective view obliquely showing an inner surface of one side of a shield of the helmet according to an embodiment of the present disclosure.

[0021] A shield coupling apparatus 100 for a helmet according to an embodiment of the present disclosure (hereinafter, referred to as 'the shield coupling apparatus of this embodiment') is used for rotatably mounting a shield 200 to a helmet. Here, the helmet may be not only a helmet 1000 according to an embodiment of the present disclosure as shown in Fig. 1a, but also another kind of helmet to which the shield coupling apparatus 100 of this embodiment may be mounted. However, in the following description, the helmet is exemplarily the helmet 1000 according to an embodiment of the present disclosure.

[0022] Fig. 5a is a front view showing a shield just before the shield is mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, Fig. 5b is a front view showing the shield just after the shield is mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, and Fig. 5c is a front view showing the shield mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, which is rotated downwards.

[0023] In addition, Fig. 6a is a rear view showing the shield just after the shield is mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, and Fig. 6b is a rear view showing the shield mounted to the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, which is rotated downwards.

[0024] Moreover, Fig. 7a is a rear view showing an elastic piece employed in the shield coupling apparatus for a helmet according to an embodiment of the present disclosure before the elastic piece is coupled into an accommodation groove, and Fig. 7b is a rear view showing the elastic piece employed in the shield coupling apparatus for a helmet according to an embodiment of the present disclosure, which is coupled into the accommodation groove.

[0025] Further, Figs. 8b and 8c are side views for illustrating that a limiting protrusion employed in the shield coupling apparatus for a helmet according to an embodiment of the present disclosure is coupled to a rotation limiting slot formed in the helmet body to limit a rotation range of the jaw protector, and Fig. 9 is a perspective view for illustrating a pivoting shaft instrument installed at a helmet body coupler of the base member to mount the shield coupling apparatus for a helmet according to an embodiment of the present disclosure to the helmet body.

[0026] The shield coupling apparatus 100 of this embodiment includes a sliding member 1.

[0027] Referring to Figs. 2 to 7b, a lower groove 11 protruding on an inner side surface of a shield 200 is formed at the sliding member 1 to surround a lower portion of a combining protrusion 210 having a flange 211 at one side of its circumference.

[0028] In addition, referring to Fig. 3, the sliding member 1 is coupled to an elastic member 51. The elastic member 51 is also coupled to a base member 3, and by means of the elastic member 51, the sliding member 1 is disposed on the base member 3 to be slidable in a direction of compressing the elastic member 51.

[0029] Referring to Figs. 5a, 5b, 7a and 7b as an example, the elastic member 51 is compressed when the sliding member 1 moves as shown in Figs. 5a and 7a, and the elastic member 51 may be coupled to the sliding member 1 and the base member 3 when the sliding member 1 moves as shown in Figs. 5b and 7b so that the elastic member 51 is elongated. In more detail, referring to Figs. 3, 7a and 7b, one end of the elastic member 51 may be coupled to an elastic member coupling protrusion 171 provided at the sliding member 1, and the other end may be coupled to an elastic member coupling protrusion 371 provided at the base member 3.

[0030] Referring to Fig. 4, the combining protrusion 210 protrudes on the shield 200 which is rotatably mounted to the shield coupling apparatus 100 of this embodiment as described above, and a flange 211 is provided at the combining protrusion 210. The sliding member 1 accommodates the flange 211 in an accommodation groove 13 formed in the lower groove 11 by means of sliding so that the combining protrusion 210 of the shield 200 may be pivotally mounted.

[0031] For example, the accommodation groove 13 may be formed at a rear surface of the lower groove 11, as shown in Figs. 2, 3, 7a and 7b. In addition, the lower groove 11 may be shaped to surround the lower portion of the combining protrusion 210 and the entire flange 211 provided at the combining protrusion, for example to have a track form as shown in the figures. At this time, the sliding direction of the sliding member 1 may be a longitudinal direction of the track-type lower groove 11, and the accommodation groove 13 may be formed to correspond to the longitudinal direction as shown in Figs. 2, 3, 7a and 7b so that the flange 211 may be selectively accommodated by means of sliding of the sliding member 1.

[0032] In detail, referring to Figs. 5a and 5b, in a state where the sliding member 1 is slid in a left direction on the base member 3, the combining protrusion 210 and the flange 211 of the shield 200 are disposed between the lower groove 11 and the upper groove 311 (see Fig. 5a). Next, as the sliding member 1 is slid in a right direction on the base member 3, the flange 211 is accommodated in the accommodation groove 13 (see Fig. 5b).

[0033] By doing so, the combining protrusion 210 may be rotatably coupled between the lower groove 11 and the upper groove 311 not to deviate therefrom.

[0034] Further, the sliding member 1 may include an auxiliary flange guide groove 15 for accommodating an auxiliary flange 251, which is provided at one side of a circumference of an auxiliary protrusion 250, by means of sliding in order to prevent the auxiliary protrusion 250 protruding on an inner side surface of the shield 200 from deviating.

[0035] Referring to Fig. 4, the auxiliary protrusion 250 having the auxiliary flange 251 may protrude on the inner side surface of the shield 200 to which the shield coupling apparatus 100 of this embodiment is rotatably mounted, in addition to the combining protrusion 210 having the flange 211. The auxiliary flange guide groove 15 may have an arc shape along the circumference of the sliding member 1 in order to successively accommodate the auxiliary flange 251 when the shield 200 is rotating. Referring to Figs. 2, 3, 5b and 5c as an example, the auxiliary flange guide groove 15 may be formed at a partial rear surface of the circumference of the sliding member 1.

[0036] In detail, referring to Figs. 5a to 5c, a portion of the sliding member 1 which accommodates the auxiliary flange 251 provided at the auxiliary protrusion 250 has an arc shape. After the sliding member 1 is slid in a right direction on the base member 3 so that the flange 211 is accommodated accommodation groove 13 as shown in Fig. 5b, if the shield 200 rotates as shown in Fig. 5c, the auxiliary protrusion 250 rotates along the circumference of the sliding member 1, and the auxiliary flange 251 provided at the auxiliary protrusion 250 may rotate along the auxiliary flange guide groove 15 formed in the rear surface of the circumference of the sliding member 1.

[0037] The flange 211 of the combining protrusion 210 described above is accommodated in the accommodation groove 13, and the auxiliary flange 251 of the auxiliary protrusion 250 is accommodated in the auxiliary flange guide groove 15. In this way, the shield coupling apparatus 100 of this embodiment may be coupled to the shield 200 more stably and more securely.

[0038] In addition, the sliding member 1 may include a sliding control unit 177. Referring to Figs. 5a and 5b, when the shield coupling apparatus 100 of this embodiment is mounted to the shield 200, a lower portion of the sliding member 1, which is not hid by the shield 200 but exposed, may be a sliding control unit 177. For example, in a state where the shield coupling apparatus 100 of this embodiment as shown in Fig. 5b is mounted to the shield 200, if the sliding control unit 177 is pushed so that the sliding member 1 slides as shown in Fig. 5a, the shield 200 may be separated from the shield coupling apparatus 100 of this embodiment. In this way, the sliding control unit 177 may be provided for sliding control of the sliding member 1 in order to attach or detach the shield 200.

[0039] Moreover, referring to Figs. 2, 3 and 5a to 5c, a member coupling unit mounting hole 173 may be formed in the sliding member 1. The member coupling unit 53 is coupled to the base member 3 through the member coupling unit mounting hole 173, and the sliding member 1 mounted between the member coupling unit 53 and the base member 3 may slide along a path formed by the member coupling unit mounting hole 173.

[0040] In addition, the shield coupling apparatus 100 of this embodiment includes a base member 3.

[0041] Referring to Figs. 2 to 7, the sliding member 1 is disposed at the base member 3 to be slidable in a direction of compressing the elastic member 51, and an upper groove 311 surrounding an upper portion of the combining protrusion 210 is formed therein. In addition, as described above, the base member 3 is coupled to the elastic member 51.

[0042] In addition, the base member 3 has a rotation guiding unit 31 for guiding the shield 200 to rotate stage by stage. In detail, referring to Figs. 2, 3 and 5a to 7b, the rotation guiding unit 31 includes a rotation slot 313 and a buffering slot 315.

[0043] Referring to Fig. 4, a rotation slot coupling protrusion 230 may protrude on the inner side surface of the shield 200 which is rotatably mounted to the shield coupling apparatus 100 of this embodiment. Referring to Figs. 5a to 6b, the rotation slot 313 of the base member 3 has a plurality of partitioning protrusions 313a formed in the inner surface thereof so that the rotation slot coupling protrusion 230 is coupled to one of partitioned regions. In other words, the slot region formed by the rotation slot 313 is partitioned by the plurality of partitioning protrusions 313a, and each of such partitioned regions may be shaped so that the rotation slot coupling protrusion 230 may be coupled thereto.

[0044] In addition, the buffering slot 315 is formed to be spaced apart from an inner surface of the rotation slot 313 at which the plurality of partitioning protrusions 313a is formed, by a predetermined interval. Here, the predetermined interval may be set to ensure elastic deformation of a buffering member 317 between the buffering slot 315 and the rotation slot 313 so that the rotation slot coupling protrusion 230 may move while pushing the plurality of partitioning protrusions 313a, respectively, when the shield 200 is rotating.

[0045] For example, for the shield 200 to move downwards as shown in Figs. 5c and 6b in a state of being rotated upwards as shown in Figs. 5b and 6a, the rotation slot coupling protrusion 230 of the shield 200 coupled to the rotation slot 313 should move over the partitioning protrusion 313a. In other words, the buffering member 317 between the buffering slot 315 and the rotation slot 313 may have a thickness which ensures elastic deformation outwards so that when a force for rotating rotate the shield 200 is applied, the rotation slot coupling protrusion 230 may move to an adjacent partitioned region while pushing the partitioning protrusion 313a formed in the inner surface of the rotation slot 313 outwards.

[0046] In an existing technique, a complicated buffering device must be attached so that the shield 200 may rotate subsequently only when a user applies a suitable force, which makes the entire apparatus complicated. However, in the shield coupling apparatus 100 of this embodiment, the shield 200 may easily rotate stage by

stage just by forming the buffering slot 315 and the rotation slot 313 having the partitioning protrusion 313a in the base member 3, without attaching any separate complicated buffering device thereto. Therefore, it is possible to greatly improve productivity, solidity and operation stability of the apparatus.

[0047] In addition, referring to Figs. 2, 3, 5a, 5b, 7a and 7b, the base member 3 may include an elastic piece 33 for elastically pressing the rear surface of the sliding member 1. The elastic piece 33 may be elastically moved and coupled to the accommodation groove 13 when being sliding in a direction of compressing the elastic member 51 of the sliding member (see Figs. 5a and 7b). In addition, the elastic piece 33 may be released from the accommodation groove 13 when an external force from the front is applied thereto (see Figs. 5b and 7a). Referring to Figs. 5a and 5b, the external force from the front may mean a force applied when the flange 211 of the combining protrusion 210 presses the elastic piece 33.

[0048] For example, in a normal state, the elastic piece 33 elastically presses the rear surface of the sliding member 1 as shown in Fig. 7a, and if the sliding member 1 slides by a predetermined distance in a direction of compressing the elastic member 51 as shown in Fig. 7b, the elastic piece 33 is elastically moved toward the accommodation groove 13 so that its end is coupled to the accommodation groove 13 by means of engagement. On the contrary, the elastic piece 33 coupled to the accommodation groove 13 as shown in Fig. 5a deviates from the accommodation groove 13 again by a pressing force of the flange 211 provided at the combining protrusion 210 of the shield 200, and accordingly the sliding member 1 slides in a direction along which the elastic member 51 is elongated (to restore elasticity) as shown in Fig. 5b.

[0049] In other words, in a state where the elastic piece 33 is coupled to the accommodation groove 13, the combining protrusion 210 of the shield 200 may be mounted between the lower groove 11 and the upper groove 311. At this time, if the flange 211 of the combining protrusion 210 presses the elastic piece 33 together with this mounting operation, the elastic piece 33 deviates from the accommodation groove 13. If the elastic piece 33 deviates, the sliding member 1 slides in a direction along which the compressed elastic member 51 is elongated again, and by means of the movement of the sliding member 1, the flange 211 is accommodated in the accommodation groove 13 from which the elastic piece 33 deviates, thereby completely mounting the shield 200 to the shield coupling apparatus 100 of this embodiment.

[0050] On the contrary, if the sliding member 1 is moved in a direction of compressing the elastic member 51 (from the state of Fig. 5b to the state of Fig. 5a), the flange 211 accommodated in the accommodation groove 13 deviates from the accommodation groove 13, and thus the shield 200 may be released from the shield coupling apparatus 100 of this embodiment. For reference, a user may detach the shield 200 by moving the sliding member 1 through the sliding control unit 177 described above in a direction of compressing the elastic member 51.

[0051] Since the sliding member 1, the accommodation groove 13, the elastic member 51 and the elastic piece 33 are organically combined as described above, the flange 211 may be accommodated in the accommodation groove 13 by just a simple manipulation. Therefore, the shield 200 may be easily attached to or detached from the shield coupling apparatus 100 of this embodiment, and once the flange 211 is accommodated in the accommodation groove 13, the shield 200 may stably maintain its mounted state. Therefore, the present disclosure may allow easy attachment and detachment and also ensure mounting stability.

[0052] In addition, a flange guide groove 311a may also be formed in the upper groove 311 to accommodate the flange 211 of the combining protrusion 210 in order to prevent the combining protrusion 210 from deviating when the shield 200 is rotating. In other words, in order to prevent the flange 211 from deviating outwards even when the shield 200 rotates in a state where the flange 211 is accommodated in the accommodation groove 13 as shown in Fig. 6a, the flange guide groove 311a may be formed in the upper groove 311 as shown in Fig. 6b. As shown in Figs. 6a and 6b as an example, the flange guide groove 311a may be formed to have an arc shape along the rear surface of the upper groove 311 so as to successively accommodate the flange 211 when the shield 200 is rotating.

[0053] Moreover, referring to Figs. 3, 7a and 7b, a sliding slot 373 for guiding a sliding path of the sliding member 1 may be formed in the base member 3. Corresponding to the sliding slot 373 of the base member 3, the sliding member 1 may include a slot coupling member 175 which is slidably coupled to the sliding slot 373. The sliding member 1 may slide more stably with respect to the base member 3 through the sliding slot 373 and the slot coupling member 175.

[0054] Meanwhile, referring to Figs. 1a and 1b, the helmet 1000 according to an embodiment of the present disclosure may further include a jaw protector 410 mounted to a helmet body 400. The base member 3 of the shield coupling apparatus 100 of this embodiment may be coupled to the jaw protector 410, and the base member 3 may be rotatably mounted to the helmet body 400 in a state of being coupled to the jaw protector 410. Referring to Figs. 1a and 1b, the jaw protector may rotate vertically with respect to the helmet body 400 through the base member 3.

[0055] Referring to Figs. 1a to 3, a helmet body coupler 35 may be formed at the base member 3 so as to be rotatably mounted to the helmet body 400. In detail, the base member 3 may be rotatably mounted to the helmet body 400 by coupling the helmet body coupler 35 to a pivoting shaft instrument 411.

[0056] At this time, a center of the helmet body coupler 35 may be coincided with a rotation center of the combining protrusion 210 of the shield 200, which is mounted to be surrounded by the lower groove 11 and the upper

groove 311. In other words, the rotation center of the shield coupling apparatus 100 of this embodiment with respect to the helmet body 400 may be matched with the rotation center of the shield 200 with respect to the shield coupling apparatus 100 of this embodiment, and by doing so, the shield 200 and the jaw protector 410 may coaxially rotate with respect to a single axis.

[0057] The jaw protector 410 and the shield coupling apparatus 100 of this embodiment may be fabricated as an integral form, but may be separately fabricated and then fixed to each other by coupling. In detail, the jaw protector 410 and the shield coupling apparatus 100 of this embodiment may be combined by coupling a coupling unit (not shown) to a jaw protector coupler 55 formed at the base member 3 as shown in the figures.

[0058] For example, in the case the base member 3 is injected integrally with the jaw protector 410, a high pressure for applying a suitable pressure in a normal direction of the base member 3 is required so as to inject the base member 3 into a desired shape. However, if the shield coupling apparatus 100 of this embodiment is separately provided, the jaw protector 410 may be fabricated separate from the shield coupling apparatus 100 of this embodiment, and thus the above high pressure is not required for injecting the jaw protector 410, thereby ensuring easier fabrication.

[0059] Moreover, if the base member 3 is integrated with the jaw protector 410, when the jaw protector 410 is painted, the base member 3 should be masked. However, if the shield coupling apparatus 100 of this embodiment is separately provided, when the jaw protector 410 is painted, the shield coupling apparatus 100 of this embodiment need not be masked, thereby ensuring much easier fabrication.

[0060] In addition, since the shield coupling apparatus 100 of this embodiment may easily cause a malfunction due to frequent rotating, by providing the shield coupling apparatus 100 of this embodiment in a separated type, the shield coupling apparatus 100 of this embodiment may be made of a material different from the jaw protector 410, suitably for a demanded strength, thereby solving the above problem. Moreover, if the shield coupling apparatus 100 of this embodiment is provided in a separated type, it may be easily exchanged and maintained, thereby ensuring excellent usability.

[0061] In addition, referring to Figs. 6a to 7b, a limiting protrusion 57 may be provided at the rear surface of the base member 3.

[0062] Also, referring to Fig. 8a, the helmet body 400 may include a rotation limiting slot 431 formed along a circumference of the helmet body coupler 35 so that the limiting protrusion 57 is inserted therein to limit a rotation range of the base member 3, and a limiting protrusion buffering slot 433 formed to be spaced apart from the inner surface of the rotation limiting slot 431.

[0063] Referring to Figs. 8b and 8c as an example, since the limiting protrusion 57 is rotatable just between the other end of the rotation limiting slot 431 as shown in Fig. 8b and one end of the rotation limiting slot 431 as shown in Fig. 8c, the rotation range of the base member 3 may be limited through such a coupling relationship between the limiting protrusion 57 and the rotation limiting slot 431.

[0064] Since the rotation range of the base member 3 is limited by the limiting protrusion 57 and the rotation limiting slot 431, the jaw protector 410 rotatably mounted to the helmet body 400 by means of the shield coupling apparatus 100 of this embodiment may not excessively rotate upwards above the state of Fig. 8c.

[0065] In addition, referring to Fig. 8b, the limiting protrusion 57 may be inserted into the rotation limiting slot 431 so as to press the inner surface of the rotation limiting slot 431 toward the limiting protrusion buffering slot 433. Here, in order to insert the limiting protrusion 57 into the rotation limiting slot 431 so that the inner surface of the rotation limiting slot 431 is pressed toward the limiting protrusion buffering slot 433, the limiting protrusion 57 does not protrude at a position accurately engaged with the rotation limiting slot 431 on the rear surface of the base member 3 but protrudes at a position slightly biased from the rotation limiting slot 431 toward the limiting protrusion buffering slot 433.

[0066] By doing so, when the limiting protrusion 57 is inserted into the rotation limiting slot 431, the limiting protrusion 57 does not exactly correspond to the rotation limiting slot 431. Thus, the limiting protrusion 57 presses the inner surface of the rotation limiting slot 431 toward the limiting protrusion buffering slot 433, and a member between the rotation limiting slot 431 and the limiting protrusion buffering slot 433 may be deformed as much as the limiting protrusion 57 is biased toward the limiting protrusion buffering slot 433.

[0067] In addition, referring to Figs. 8a to 8c, a hooking groove 431a shaped to be engaged with the limiting protrusion 57 may be formed in the inner surface of the rotation limiting slot 431. For example, if the shield coupling apparatus 100 of this embodiment rotates as shown in Fig. 8c, the limiting protrusion 57 is engaged with the hooking groove 431a which is depressed in a direction of applying a pressing pressure to the inner surface of the rotation limiting slot 431.

[0068] By means of this engagement, unless a rotating force over a predetermined level is applied to the jaw protector 410, the shield coupling apparatus 100 of this embodiment may be fixed in a state of Fig. 8c. By maintaining this fixed state, it is possible to prevent the jaw protector 410 lifted as shown in Fig. 8c with respect to the helmet body 400 from abruptly moving down, and thus the jaw protector 410 may rotate more safety with respect to the helmet body 400.

[0069] Hereinafter, the mounting, rotating and detaching process of the shield 200 with respect to the shield coupling apparatus 100 of this embodiment will be exemplarily described with reference to the drawings.

[0070] First, the shield 200 is disposed so that the combining protrusion 210 of the shield 200 as shown in Fig.

4 is placed between the upper groove 311 and the lower groove 11 of the shield coupling apparatus 100 of this embodiment as shown in Fig. 5a. At this time, the shield 200 is disposed so that the flange 211 of the shield 200 of the combining protrusion 210 is placed at a location corresponding to the elastic piece 33 provided at the base member 3.

[0071] Next, if the flange 211 gives an external force to press the elastic piece 33, the elastic piece 33 coupled to the accommodation groove 13 as shown in Fig. 7b deviates from the accommodation groove 13 as shown in Fig. 7a, and the sliding member 1 also slides in a direction along which the elastic member 51 is elongated (to restore elasticity). By means of the sliding of the sliding member 1, the flange 211 is accommodated in the accommodation groove 13 as shown in Figs. 5b and 6a, and accordingly it is possible to prevent the combining protrusion 210 from deviating from the shield coupling apparatus 100 of this embodiment.

[0072] At this time, unless a user gives a predetermined force to rotate the shield 200, the shield 200 will not rotate since the rotation slot coupling protrusion 230 of the shield 200 is fixed to a region partitioned by the partitioning protrusion 313a of the rotation slot 313.

[0073] If a user gives a predetermined force to rotate the shield 200, the rotation slot coupling protrusion 230 may move to an adjacent partitioned region while pushing the partitioning protrusion 313a to an outer side where the buffering slot 315 is formed, and accordingly the shield 200 rotates stage by stage. At this time, the buffering member 317 may have suitable thickness, material or the like in consideration of the predetermined force which is applied by the user to rotate the shield 200.

[0074] In addition, when the shield 200 is mounted, if the shield 200 rotates, the flange 211 accommodated in the accommodation groove 13 as shown in Fig. 6a deviates from the accommodation groove 13 as shown in Fig. 6b and moves along the flange guide groove 311a having an arc shape formed at the rear surface of the upper groove 311, thereby continuously preventing it from deviating by the flange guide groove 311a.

[0075] If the shield 200 repeatedly rotates stage by stage, the shield 200 is completely rotated downwards as shown in Figs. 5c and 6b, and this state may be regarded as the shield 200 perfectly covers the front opening of the helmet body 400 as shown in Fig. 1a.

[0076] On the contrary, if a user gives a predetermined force to move the shield 200 upwards in a state of Figs. 5c and 6b so that the front opening of the helmet body 400 covered by the shield 200 is opened again, the shield 200 may rotate upwards stage by stage while the rotation slot coupling protrusion 230 pushes the partitioning protrusion 313a outwards, which may come to the state of Figs. 5b and 6a.

[0077] In this state, if the sliding control unit 177 exposed below the shield 200 as shown in Fig. 5b is manipulated to be pushed in a direction of compressing the elastic member 51, the flange 211 accommodated in the accommodation groove 13 is exposed out again, and the shield 200 may be detached. At this time, as the shield 200 is detached, the elastic piece 33 may be elastically moved again and coupled to the accommodation groove 13 from which the flange 211 deviates, as shown in Fig. 7b.

[0078] Meanwhile, hereinafter, a helmet 1000 according to an embodiment of the present disclosure will be described. However, since the helmet includes the shield coupling apparatus 100 according to an embodiment of the present disclosure, any component whose configuration is identical or similar to the component described above is denoted by the same reference symbol and not described in detail here.

[0079] The helmet 1000 according to an embodiment of the present disclosure (hereinafter, referred to as 'the helmet of this embodiment') includes a helmet body 400 and a shield 200. The helmet 1000 includes the shield coupling apparatus 100 for a helmet according to an embodiment of the present disclosure as described above.

[0080] As shown in Fig. 1, the shield 200 is rotatably mounted to the shield coupling apparatus 100 for a helmet according to an embodiment of the present disclosure. However, since the helmet body 400 and the shield 200 are generally obvious to those having ordinary skill in the art and thus not described in detail here, and the features and operations of the helmet body 400 and the shield 200 of the helmet 1000 have been explained above with respect to the shield coupling apparatus 100 for a helmet according to an embodiment of the present disclosure and thus not described in detail here.

[0081] In addition, the helmet 1000 of this embodiment may further include a jaw protector 410 mounted to the helmet body 400. At this time, the base member 3 of the shield coupling apparatus 100 for a helmet according to an embodiment of the present disclosure may be coupled to the jaw protector 410 and rotatably mounted to the helmet body 400.

[0082] In addition, a helmet body coupler 35 may formed at the base member 3 of the shield coupling apparatus 100 for a helmet according to an embodiment of the present disclosure so as that the base member 3 may be rotatably mounted to the helmet body 400.

[0083] At this time, a center of the helmet body coupler 35 may be coincided with a rotation center of the combining protrusion 210 of the shield 200 which is mounted to be surrounded by the lower groove 11 and the upper groove 311.

[0084] In addition, referring to Figs. 1a, 1b and 8a to 9, the helmet 1000 of this embodiment may include a pivoting shaft instrument 420 for rotatably mounting the base member 3 of the shield coupling apparatus 100 of this embodiment to the helmet body 400.

[0085] In detail, referring to Fig. 9, the pivoting shaft instrument 420 may include a first engaging portion 421 having a first engaging protrusion 421a, a second engaging portion 423 having a second engaging protrusion 423a, and an engagement unit 425 for coupling the first

engaging portion 421 and the second engaging portion 423 through the helmet body coupler 35 in a state where the base member 3 is disposed between the first engaging portion 421 and the second engaging portion 423. As shown in Fig. 9 as an example, the engagement unit 425 may be a bolt having a male thread, and the second engaging portion 423 may have a groove at which a female thread corresponding to the bolt is formed.

[0086] In other words, Fig. 9 is a schematic view and not depicts the shield coupling apparatus 100 of this embodiment, but the shield coupling apparatus 100 of this embodiment may be rotatably mounted to the helmet body 400 by inserting the first engaging portion 421 and the second engaging portion 423 into the helmet body coupler 35 of the base member 3 and fixing them through the engagement unit 425.

[0087] In addition, the first engaging portion 421 and the second engaging portion 423 may be engaged so that the second engaging protrusion 423a is interposed between the first engaging protrusions 421a. Moreover, the protruding ends of the first engaging protrusion 421a and the second engaging protrusion 423a may have a convex shape, which may reduce a contact area between them and thus minimize resistance when the shield coupling apparatus 100 of this embodiment rotates.

[0088] In addition, a limiting protrusion 57 may be provided at the rear surface of the base member 3.

[0089] Moreover, the helmet body 400 may include a rotation limiting slot 431 formed along a circumference of the helmet body coupler 35 so that the limiting protrusion 57 is inserted therein to limit a rotation range of the base member 3, and a limiting protrusion buffering slot 433 formed to be spaced apart from the inner surface of the rotation limiting slot 431.

[0090] For example, the limiting protrusion 57 may be inserted into the rotation limiting slot 431 so as to press the inner surface of the rotation limiting slot 431 toward the limiting protrusion buffering slot 433. At this time, a hooking groove 431a shaped to be engaged with the limiting protrusion 57 may be formed in the inner surface of the rotation limiting slot 431.

[0091] 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.

[0092] 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

[0093] The present disclosure relates to a shield coupling apparatus for a helmet, and a helmet including the same, has industrial applicability since the present disclosure may be applied to a helmet for a motorcycle, a protecting instrument for leisure or the like.

Claims

1. A shield coupling apparatus for a helmet, comprising:

a sliding member protruding on an inner side surface of a shield and having a lower groove formed at one side of a circumference thereof to surround a combining protrusion having a flange, the sliding member being coupled to an elastic member; and

a base member coupled to the elastic member and disposed to be slidable in a direction along which the sliding member compresses the elastic member, the base member having an upper groove formed to surround an upper portion of the combining protrusion, the base member having a rotation guiding unit for allowing the shield to rotate stage by stage,

wherein the sliding member accommodates the flange in an accommodation groove formed in the lower groove by means of sliding so that the combining protrusion is pivotally mounted,

wherein the rotation guiding unit includes:

a rotation slot having a plurality of partitioning protrusions formed at an inner surface thereof so that a rotation slot coupling protrusion protruding on an inner side surface of the shield is coupled to one of partitioned regions; and

a buffering slot formed to be spaced apart from the inner surface of the rotation slot by a predetermined interval.

2. The shield coupling apparatus for a helmet according to claim 1,

wherein the predetermined interval is set to ensure elastic deformation of a buffering member between the buffering slot and the rotation slot so that when the shield is rotating, the rotation slot coupling protrusion moves while pushing the plurality of partitioning protrusions, respectively.

3. The shield coupling apparatus for a helmet according to claim 1,

wherein the base member has an elastic piece for elastically pressing a rear surface of the sliding member,

wherein when the sliding member slides to compress

the elastic member, the elastic piece elastically moves to be coupled to the accommodation groove, and when an external force from the front is applied, the elastic piece is released from the accommodation groove, and
wherein the external force from the front is applied when a flange of the combining protrusion presses the elastic piece.

4. The shield coupling apparatus for a helmet according to claim 1,
wherein the upper groove has a flange guide groove formed to accommodate a flange of the combining protrusion in order to prevent the combining protrusion from deviating when the shield is rotating.

5. The shield coupling apparatus for a helmet according to claim 4,
wherein the sliding member includes an auxiliary flange guide groove for accommodating an auxiliary flange, which is provided at one side of a circumference of an auxiliary protrusion, by means of sliding in order to prevent the auxiliary protrusion protruding on an inner side surface of the shield from deviating, and
wherein the auxiliary flange guide groove has an arc shape along a circumference of the sliding member to accommodate the auxiliary flange when the shield is rotating.

6. The shield coupling apparatus for a helmet according to claim 1,
wherein the base member has a sliding slot formed to guide a sliding path of the sliding member, and
wherein the sliding member includes a slot coupling member slidably coupled to the sliding slot.

7. The shield coupling apparatus for a helmet according to claim 1,
wherein the base member is coupled to a jaw protector and rotatably mounted to a helmet body.

8. The shield coupling apparatus for a helmet according to claim 7,
wherein a helmet body coupler is formed at the base member so that the base member is rotatably mounted to the helmet body, and
wherein a center of the helmet body coupler is coincided with a rotation center of a combining protrusion of the shield which is mounted to be surrounded by the lower and upper grooves.

9. A helmet, comprising:

a helmet body;
a shield coupling apparatus as defined in the claim 1; and
a shield rotatably mounted to the shield coupling apparatus.

10. The helmet according to claim 9, further comprising a jaw protector mounted to the helmet body,
wherein the base member is coupled to the jaw protector and rotatably mounted to the helmet body.

11. The helmet according to claim 10,
wherein a helmet body coupler is formed at the base member to be rotatably mounted to the helmet body, and
wherein a center of the helmet body coupler is coincided with a rotation center of a combining protrusion of the shield which is mounted to be surrounded by the lower and upper grooves.

12. The helmet according to claim 9,
wherein a limiting protrusion is provided at a rear surface of the base member,
wherein the helmet body includes:

a rotation limiting slot formed along a circumference of the helmet body coupler so that the limiting protrusion is inserted therein to limit a rotation range of the base member; and
a limiting protrusion buffering slot formed to be spaced apart from an inner surface of the rotation limiting slot,

wherein the limiting protrusion is inserted into the rotation limiting slot to press the inner surface of the rotation limiting slot toward the limiting protrusion buffering slot, and
wherein a hooking groove shaped to be engaged with the limiting protrusion is formed at one side of the inner surface of the rotation limiting slot.

FIG. 1a

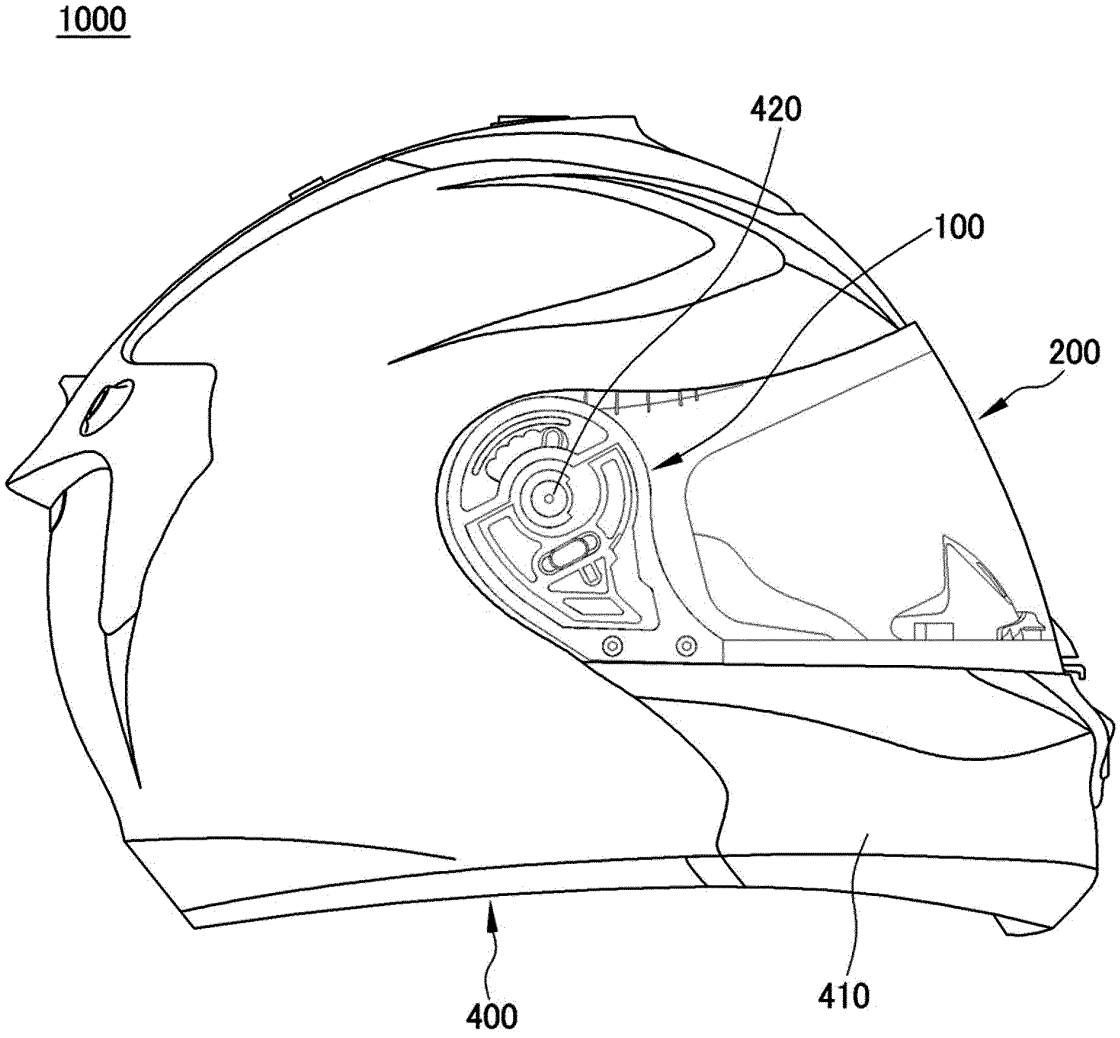

FIG.1b

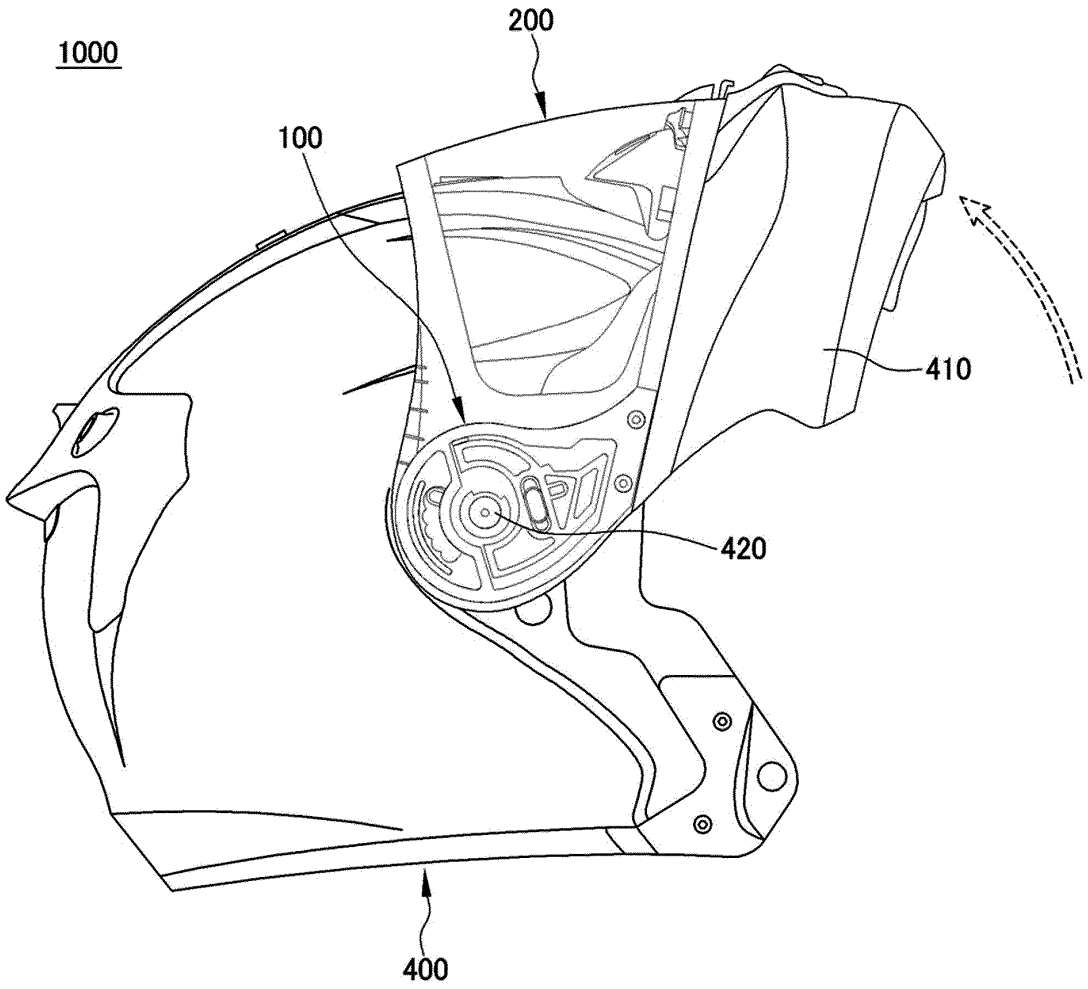

FIG. 2

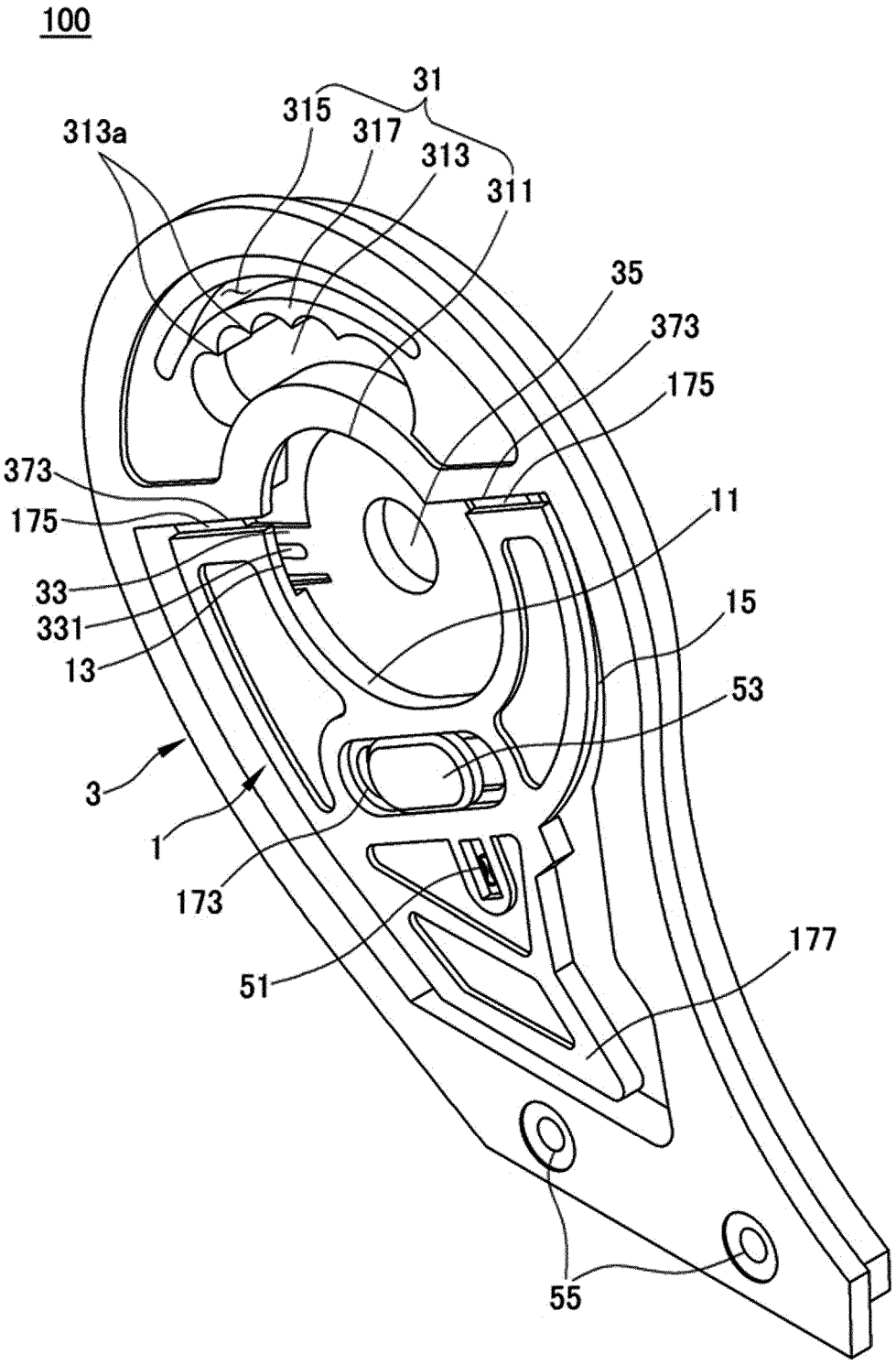
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FIG. 3

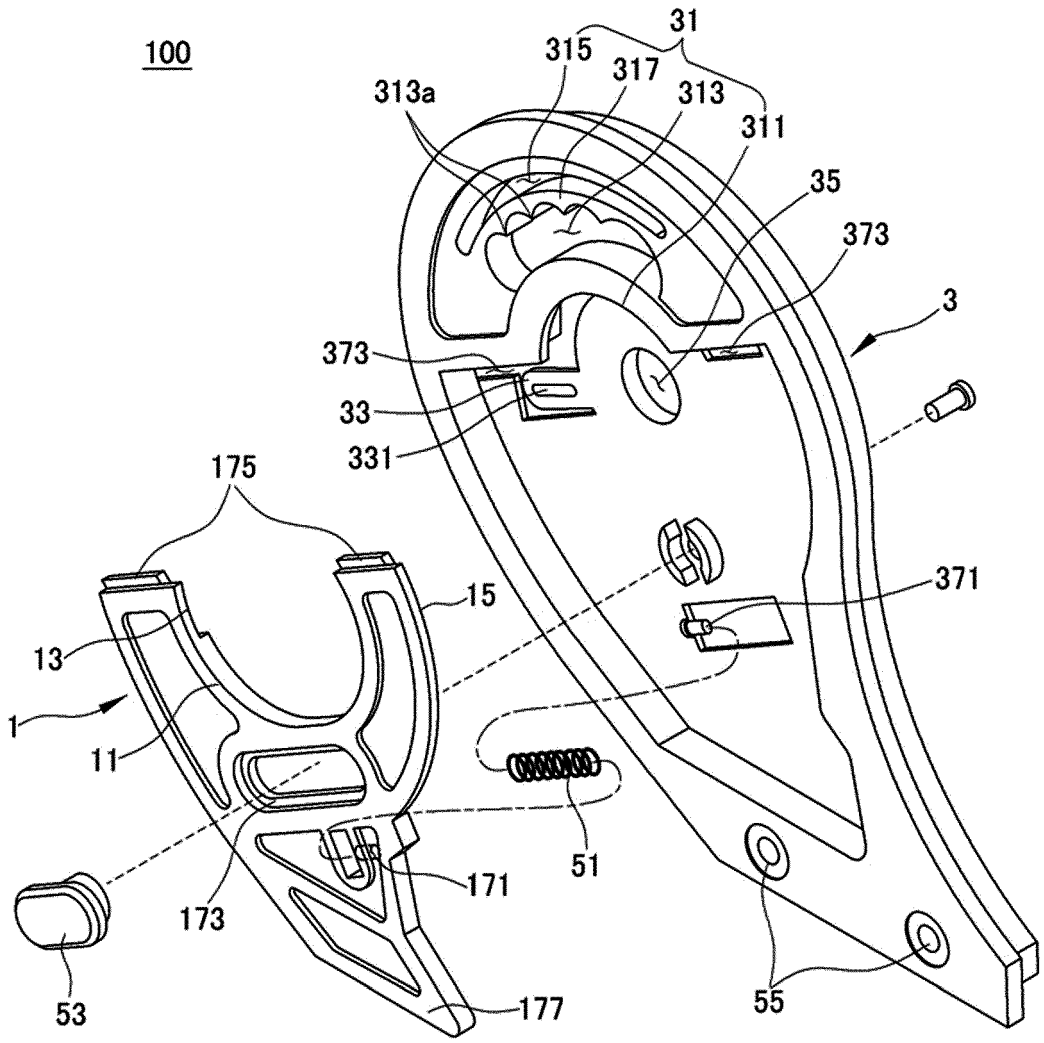
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FIG. 4

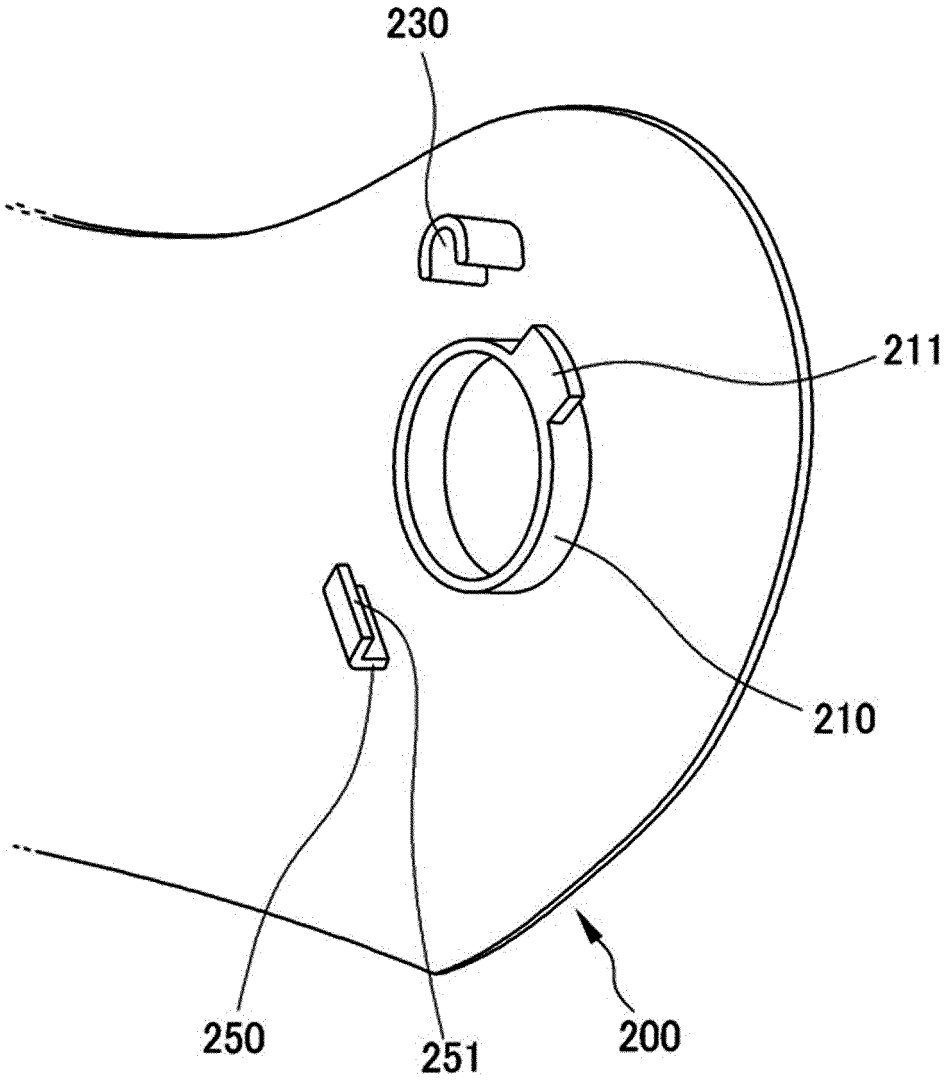

FIG.5a

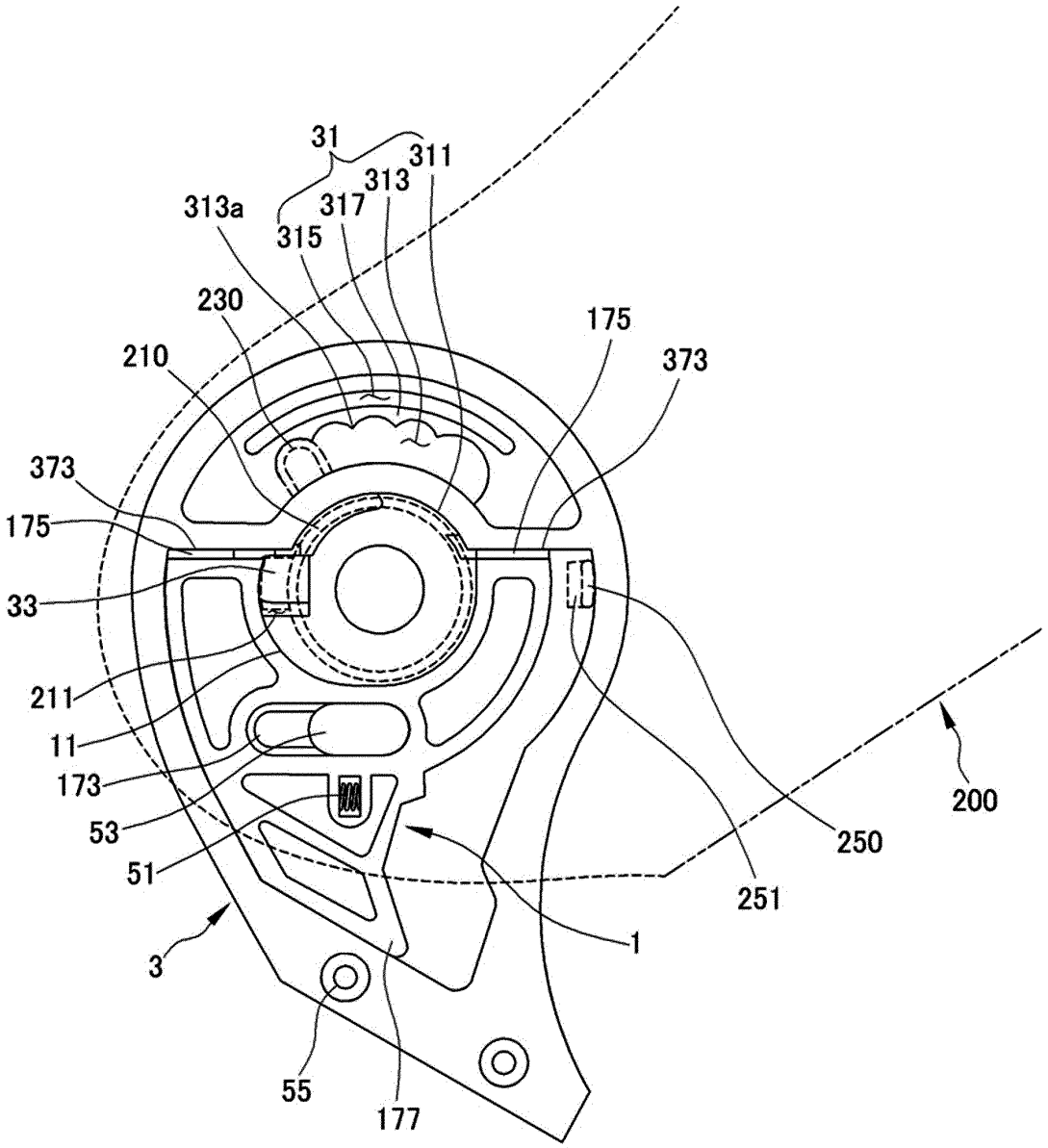
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FIG.5b

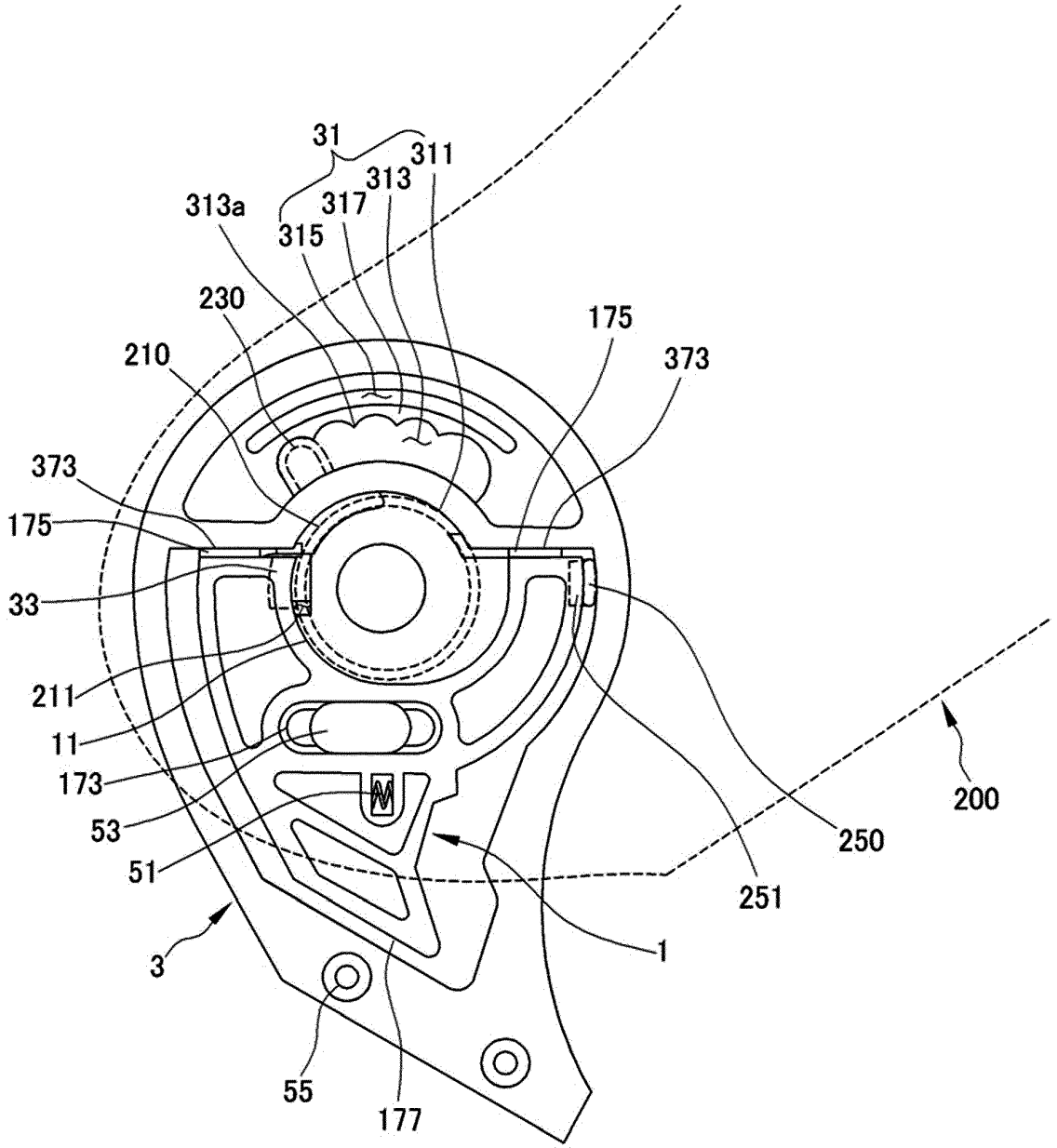
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FIG.5c

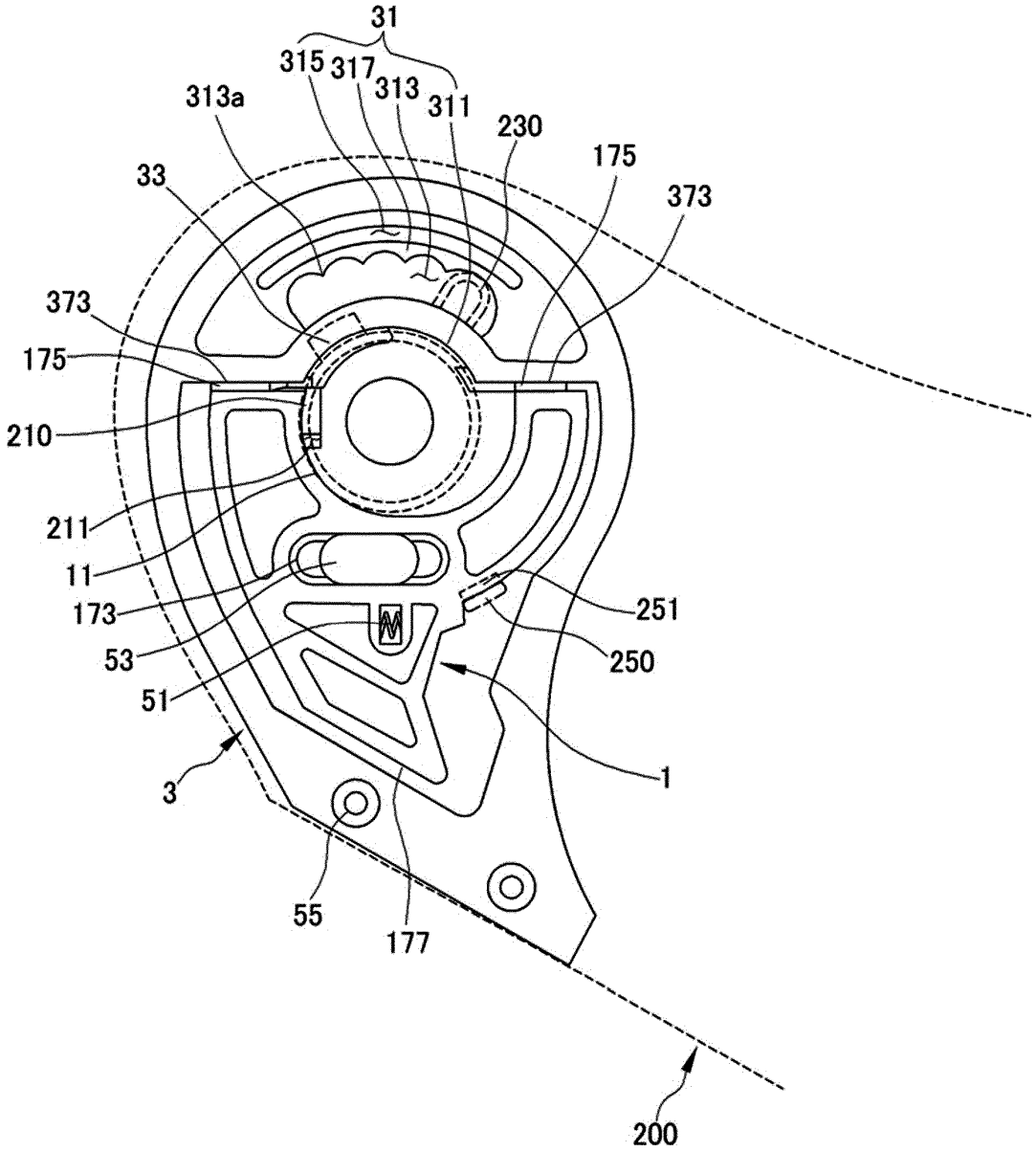
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FIG. 6a

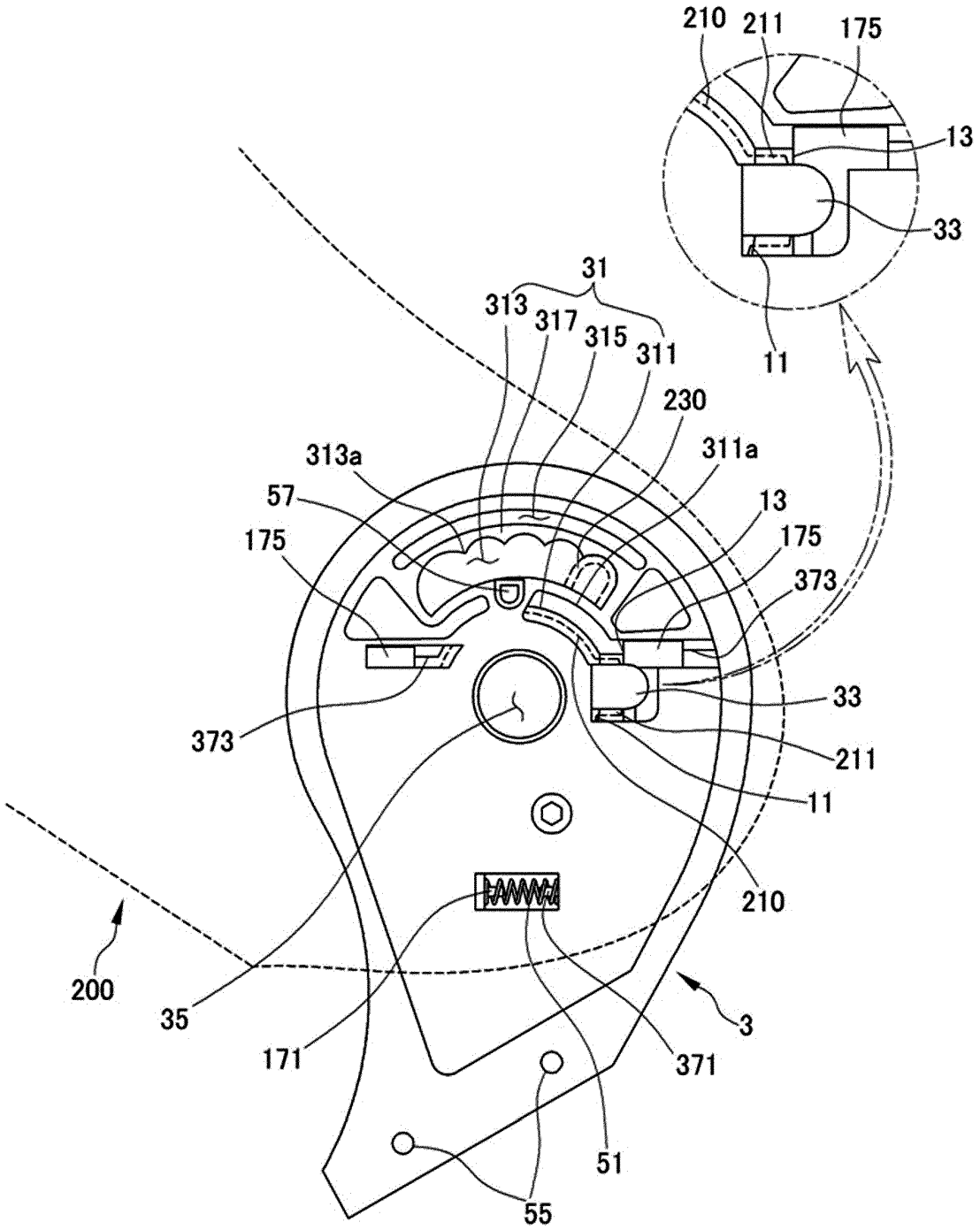
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FIG. 6b

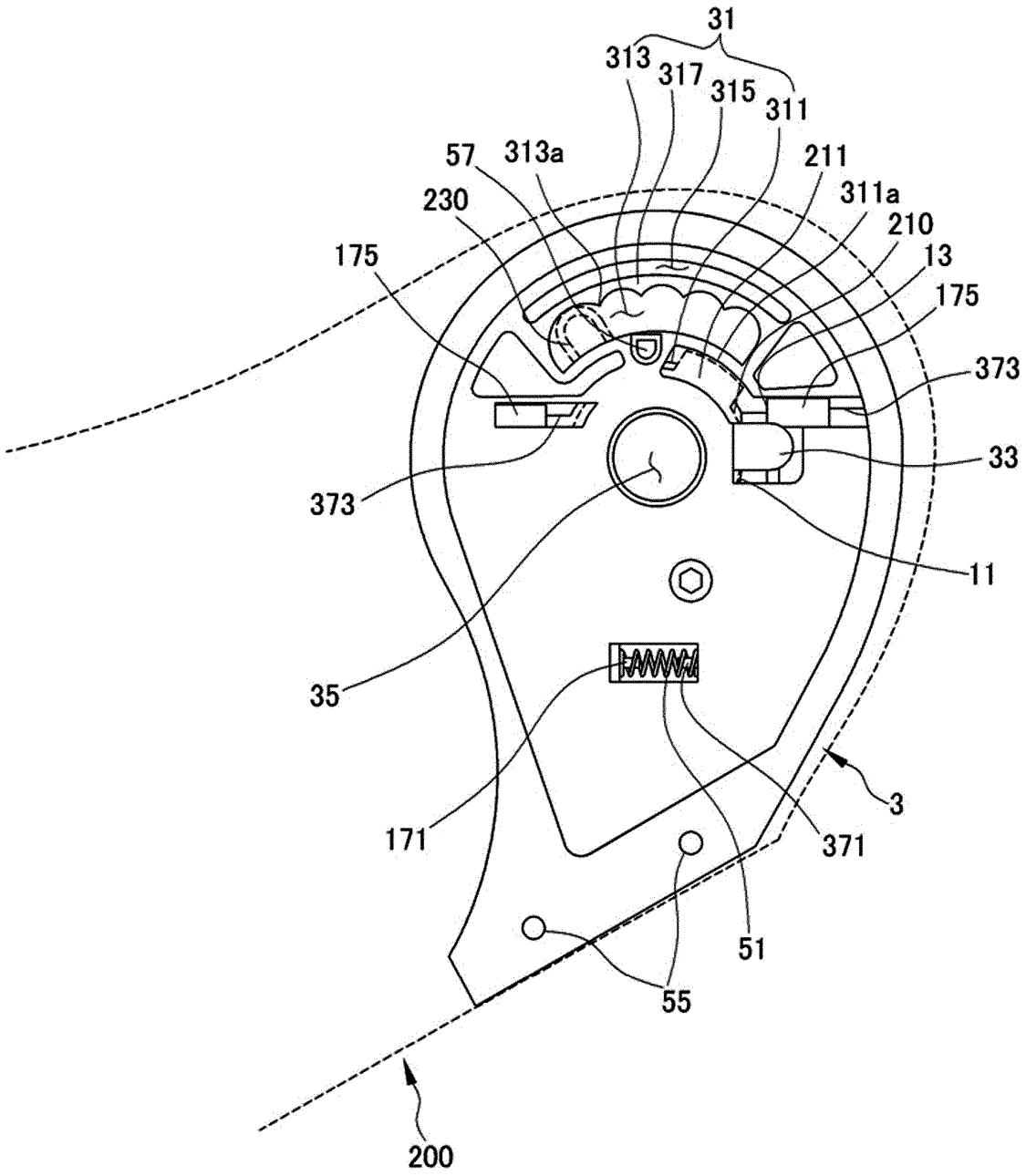
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FIG. 7a

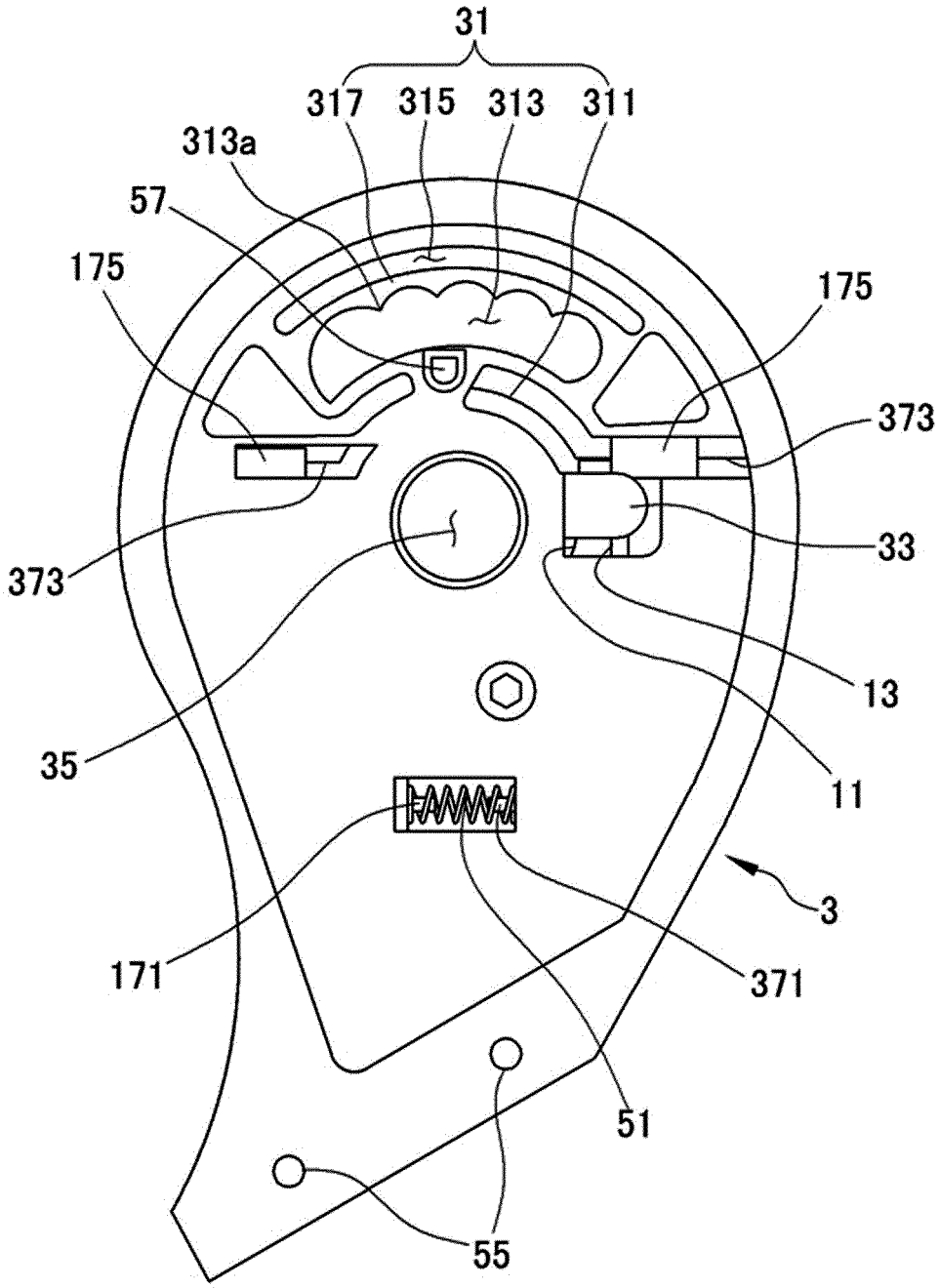
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FIG. 7b

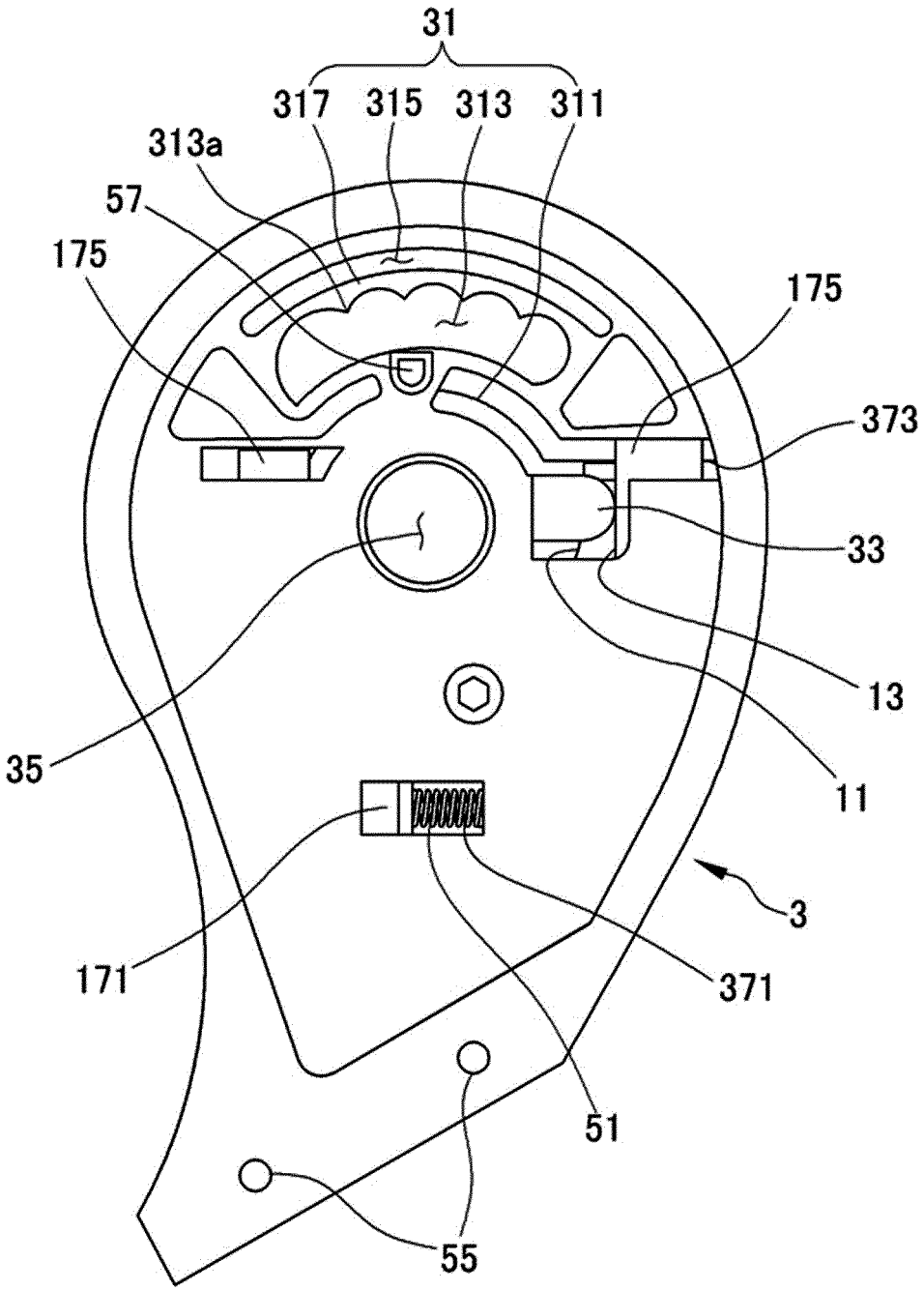


FIG.8a

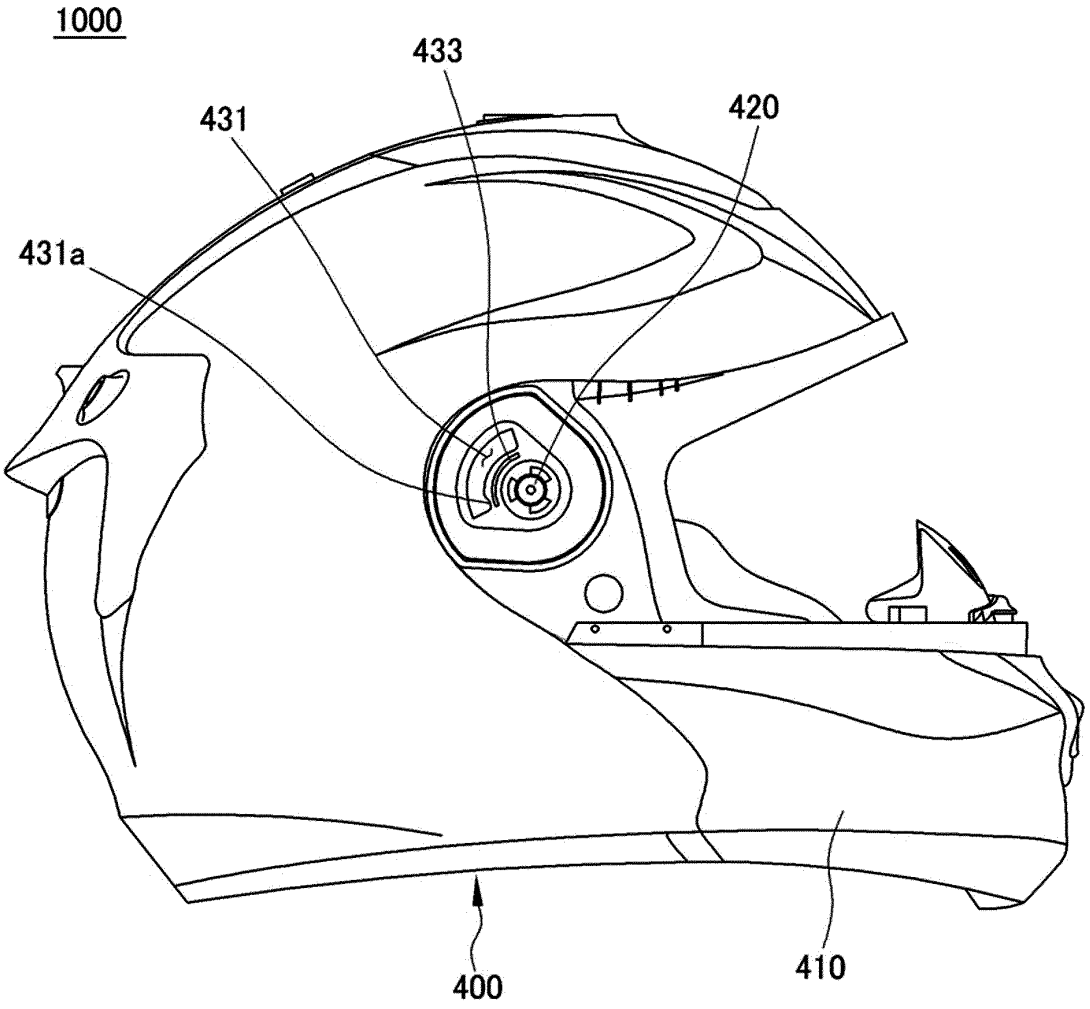


FIG.8b

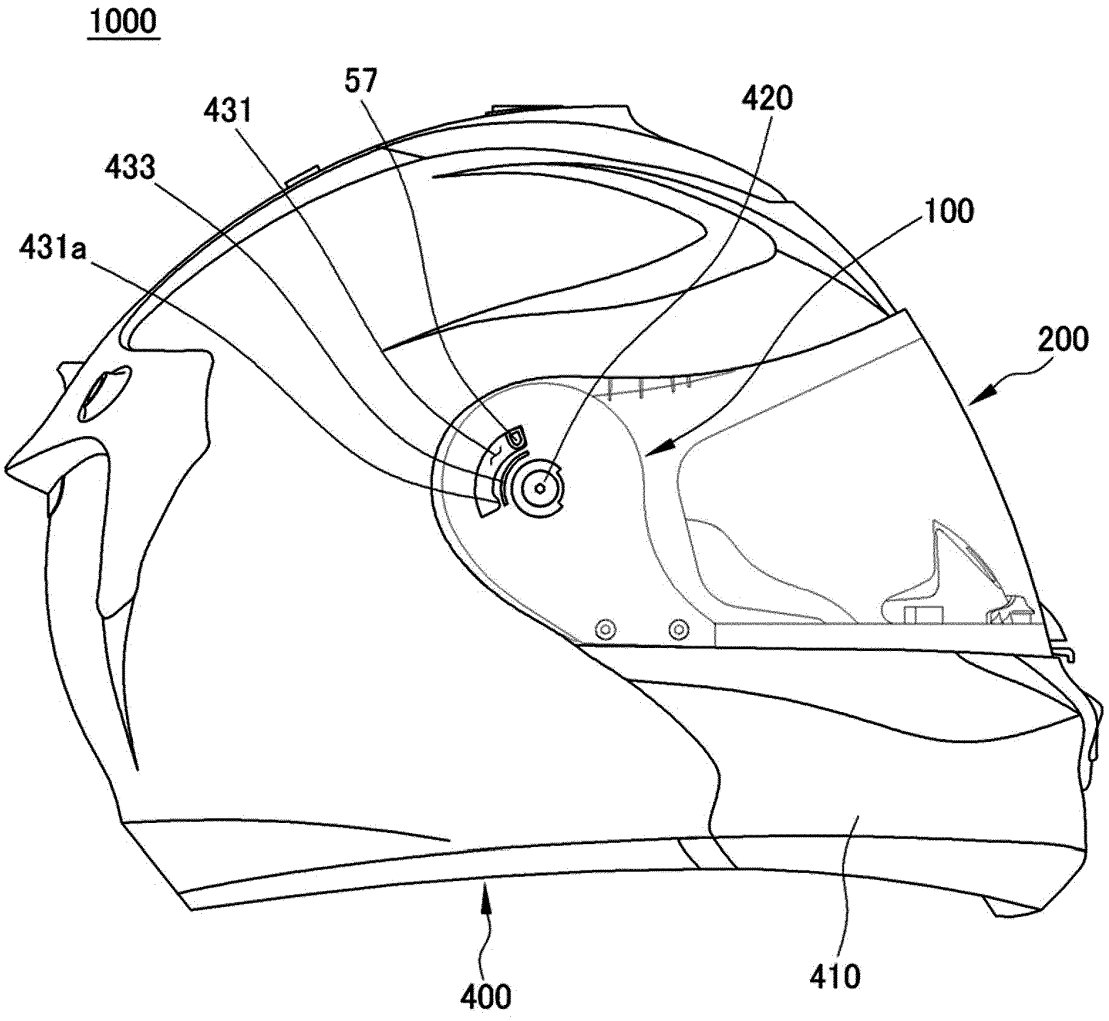


FIG.8c

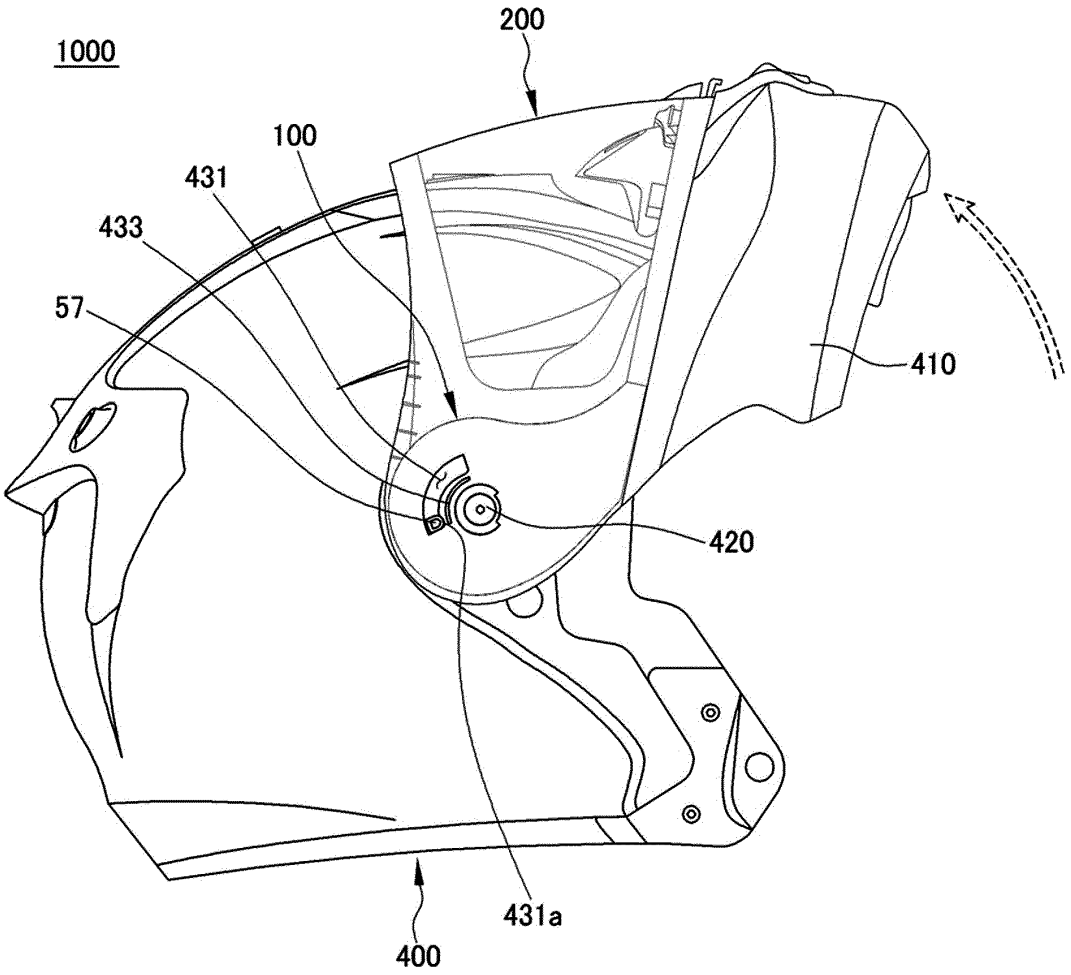
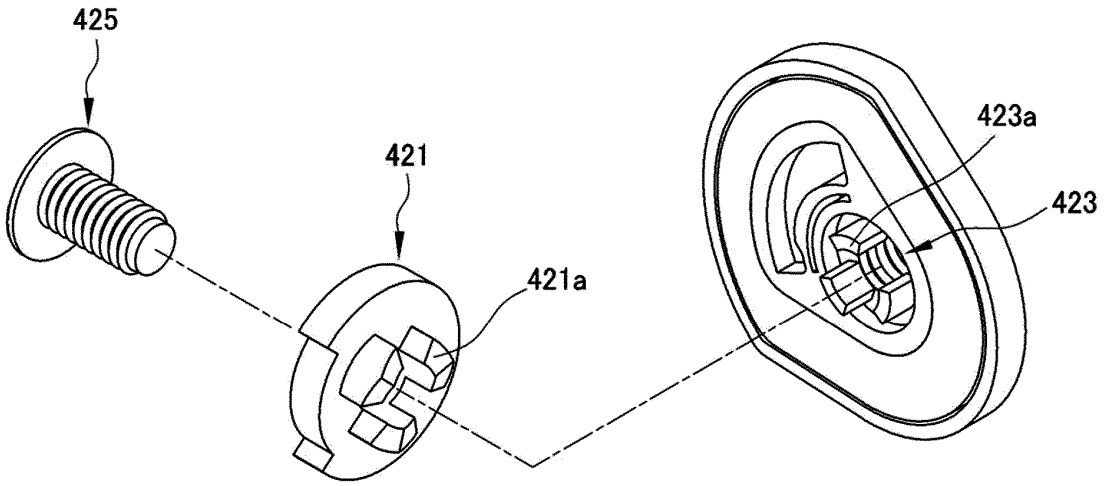


FIG. 9



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2011/007270

A. CLASSIFICATION OF SUBJECT MATTER

A42B 3/18(2006.01)i, 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 3/18; A42B 1/08; A42B 3/04; A42B 3/22

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, shield, slide

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003-0182717 A1 (KWANG-MOON CHOI et al.) 02 October 2003 See abstract, claim 1 and figures 1-7	1-12
A	JP 2002-294511 A (ARAI HELMET LTD) 09 October 2002 See abstract, claim 1 and figures 1-14	1-12
A	EP 1856999 A2 (SHOEI CO., LTD.) 21 November 2007 See abstract, claim 1 and figures 1-23	1-12
A	KR 10-0568946 B1 (HJC CORP.) 10 April 2006 See abstract, claims 1-11 and figures 1-14	1-12
A	KR 10-0403482 B1 (KBC COR.CO.) 30 October 2003 See abstract, claim 1 and figures 1-4	1-12

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

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"O" document referring to an oral disclosure, use, exhibition or other means
"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
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"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
29 JUNE 2012 (29.06.2012)	**29 JUNE 2012 (29.06.2012)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
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