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(54) **BUCKLE FOR HELMET**
SCHNALLE FÜR HELM
BOUCLE POUR CASQUE

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(73) Proprietor: **HJC Corp.**
Seoul 03722 (KR)

(72) Inventor: **Kim, Sung Kwang**
17048 Gyeonggi-do (KR)

(74) Representative: **V.O.**
P.O. Box 87930
Carnegieplein 5
2508 DH Den Haag (NL)

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a buckle for a helmet.

Description of the Related Art

[0002] A buckle for a helmet is used with sports helmets including motorcycle helmets, ski helmets, and the like, and is a device employed for the fastening/unfastening, length-adjustment or the like of a band provided to the helmets. As such, the buckle for the helmet needs to firmly fix the band fastened thereto and to enable the easy operation thereof upon the fastening/unfastening or length-adjustment of the band.

[0003] As disclosed in the following prior art patent document, the invention entitled "Buckle Device for Length Adjustment" is present in the prior art. This prior art discloses the configuration in which a lever 230 is used to fasten or unfasten a band strap 110 or to adjust the length of the band strap 110. Specifically, according to the prior art, when the lever 230 is pulled in the direction opposite the direction in which the band strap 110 is introduced, the lever 230 is rotated along with a catcher 220 about a shaft, causing teeth 221 of the catcher 220 to be disengaged from gear-teeth 111 of the band strap 110. In this way, the fastening of the catcher 220 and the band strap 110 is released.

[0004] However, because the prior art relates to a pull type device for pulling the lever 230, the user may have difficulty in operation while riding a motorcycle or enjoying sports, such as skiing.

[Prior Art Document]

[Patent Document]

[0005] (Patent Document 1) KR10-1430435 B1 Further, EP 0 772 983 A1 discloses a locking device for chin-straps of safety helmets for motorcyclists comprising a base for taking a toothed chin-strap provided with a terminal for restraining the chin-strap, an oscillating ratchet provided at the bottom with engagement teeth and a "C"-shaped front profile and a cam-shaped oscillating control lever having a convex arched upper profile.

SUMMARY OF THE INVENTION

[0006] Therefore, the present invention has been made in view of the above problems, and it is an object of the present invention to provide a buckle for a helmet, which is of a push type in which a locking unit is pivotally rotated as a user pushes an operating unit, whereby the fastening of the locking unit and a band unit may be re-

leased.

[0007] In accordance with an aspect of the present invention, to accomplish the above and other objects, there is provided a buckle for a helmet, including a band unit provided with a first toothed portion including one or more teeth and recesses, a base unit for guiding sliding of the band unit when the band unit is introduced or retracted, a locking unit pivotally rotatably fastened to one side of the base unit, the locking unit being provided on one surface thereof, which faces the band unit, with a second toothed portion including one or more teeth and recesses so as to correspond to the first toothed portion, the second toothed portion being pushed toward the band unit, and an operating unit fastened to an opposite side of the base unit so as to be linearly movable toward the locking unit, the operating unit serving to pivotally rotate the locking unit so that the second toothed portion is moved away from the band unit when it is moved toward the locking unit so as to apply a pressure to the locking unit.

[0008] The locking unit is provided on one end thereof, which faces the operating unit, with a first slope, and on one end thereof, which faces the locking unit, with a second slope, and wherein, when the user pushes the operating unit as to linearly move toward the locking unit, the second slope may slide on the first slope to thereby push one surface of the locking unit, causing the locking unit to be pivotally rotated.

[0009] In addition, a first recess among the teeth and recesses of the first toothed portion, which meets the teeth and recesses of the second toothed portion firstly when the band unit is introduced into the base unit, may have a width that is smaller than a width of a first tooth among the teeth and recesses of the second toothed portion, which meets the teeth and recesses of the first toothed portion firstly when the band unit is introduced into the base unit, and may have a width that is the same as or greater width than a width of a second tooth among the teeth and recesses of the second toothed portion, which meets the teeth and recesses of the first toothed portion secondly when the band unit is introduced into the base unit.

[0010] In addition, the buckle may further include an elastic member provided between the base unit and the locking unit for providing elastic force so as to allow the second toothed portion to be pushed toward the band unit.

[0011] In addition, the elastic member may be a torsion spring, and one end of the torsion spring may be caught by an elastic support portion of the base unit, and a remaining end of the torsion spring is caught by the locking unit.

[0012] In addition, the base unit may include a bottom wall extending in a plate shape so as to correspond to the band unit, and a pair of sidewalls extending from opposite sides of the bottom wall so as to face each other, the locking unit being pivotally rotatably fastened to one end of each sidewall, and the operating unit being movably fastened to a remaining end of the sidewall.

[0013] In addition, the sidewall may have a first fastening hole formed in the one end thereof, the locking unit may have a second fastening hole formed therein at a position corresponding to the first fastening hole, and a first fastening pin may be inserted through the first fastening hole and the second fastening hole.

[0014] In addition, the sidewall may have a third fastening hole formed in the remaining end thereof, the operating unit may have a fourth fastening hole formed therein at a position corresponding to the third fastening hole, and a second fastening pin may be inserted through the third fastening hole and the fourth fastening hole. In addition, the fourth fastening hole may have a width in a given direction that is greater than a diameter of the second fastening pin in order to allow the operating unit to be movable toward the locking unit relative to the base unit.

[0015] In addition, the sidewall may have a guide groove formed in the remaining end thereof so as to be indented toward the locking unit, and the operating unit may have a guide protrusion inserted into the guide groove so as to move along the guide groove.

[0016] In addition, the base unit may further include a guide member for extending from an end of the bottom wall to which the band unit is introduced, and the guide member may be tilted from the end of the bottom wall in a direction opposite a direction in which the sidewalls extend from the bottom wall.

[0017] Features and advantages of the present invention will become clearer from the following detailed description with reference to the accompanying drawings.

[0018] The terms or words used in the specification and claims of the present invention should not be interpreted using typical or dictionary limited meanings, and should be constructed as meanings and concepts conforming to the technical spirit of the present invention based on the principle that the inventors can appropriately define the concepts of the terms to explain the present invention in the best manner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view illustrating a buckle for a helmet in accordance with an embodiment of the present invention;

FIG. 2 is an exploded perspective view illustrating the buckle for the helmet in accordance with the embodiment of the present invention;

FIG. 3 is a plan view illustrating the buckle for the helmet in accordance with the embodiment of the present invention;

FIGS. 4A and 4B are sectional views illustrating the buckle for the helmet in accordance with the embod-

iment of the present invention;

FIGS. 5A to 5C are plan views illustrating the initial process of fastening the buckle for the helmet in accordance with the embodiment of the present invention;

FIGS. 6 to 10 are sectional views illustrating the operation of the buckle for the helmet in accordance with the embodiment of the present invention; and FIG. 11 is a side view illustrating a buckle for a helmet in accordance with another embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0020] The objects, specific advantages and novel features of the present invention will become clearer from the following detailed description in conjunction with the accompanying drawings and the exemplary embodiments. In the specification, with regard to reference numerals added to constituent elements illustrated in the respective drawings, it is to be noted that the same constituent elements are designated by the same reference numerals even when they are depicted in different drawings. In addition, the terms "first", "second", "one end", "the other end", etc. are used simply to distinguish any one element from other elements, and the elements are not limited by the terms. In the following description of the present invention, a detailed description of known functions incorporated herein will be omitted when it may make the subject matter of the disclosure rather unclear.

[0021] Fundamentally, a buckle for a helmet in accordance with the embodiments of the present invention is used in sports helmets including motorcycle helmets, ski helmets, or the like, and is a device employed for the fastening/unfastening, length-adjustment or the like of a band provided in the helmets.

[0022] Hereinafter, the exemplary embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0023] FIG. 1 is a perspective view illustrating a buckle for a helmet in accordance with an embodiment of the present invention, and FIG. 2 is an exploded perspective view illustrating the buckle for the helmet in accordance with the embodiment of the present invention.

[0024] As illustrated in FIGS. 1 and 2, the buckle for the helmet, designated by reference numeral 100, in accordance with the embodiment of the present invention includes a band unit 300 provided with a first toothed portion 340 including one or more teeth and recesses, a base unit 400 for guiding the sliding of the band unit 300 when the band unit 300 is introduced or retracted, a locking unit 500 pivotally rotatably fastened to one side of the base unit 400, the locking unit 500 being provided on one surface thereof, which faces the band unit 300, with a second toothed portion 540 including one or more teeth and recesses so as to correspond to the first toothed portion 340, the second toothed portion 540 being adapted to be pushed toward the band unit 300, and an oper-

ating unit 600 fastened to the other side of the base unit 400 so as to be movable toward the locking unit 500, the operating unit 600 being configured to pivotally rotate the locking unit 500 so that the second toothed portion 540 is moved away from the band unit 300 when the operating unit 600 is moved toward the locking unit 500 so as to apply a pressure to the locking unit 500.

[0025] The band unit 300 may be fastened to the locking unit 500 and may be comprised of a main body 310, a mounting piece 320, and a third fastening pin 330, for example. Here, the main body 310 may take the form of a curved plate so as to be introduced into or retracted from the base unit 400 under the guidance of the base unit 400, and may include, for example, an introduction portion 313, an extending portion 315, and a detent 317. At this time, the introduction portion 313 is located at one end of the main body 310, and thus is a portion that is initially introduced into the base unit 400. In addition, both corners of the introduction portion 313 may be rounded for the easy introduction of the band unit 300 to the base unit 400. In addition, the extending portion 315 extends from the introduction portion 313 to the detent 317, and is provided with the first toothed portion 340 on one surface (i.e. the upper surface) thereof, which faces the locking unit 500. Here, the first toothed portion 340 includes one or more teeth and recesses. That is, the first toothed portion 340 includes teeth 343 and recesses 341, which are successively arranged in combination. At this time, the first toothed portion 340 may be engaged with the second toothed portion 540 of the locking unit 500. Meanwhile, the detent 317 may obliquely extend from the extending portion 315 and may serve to limit the introduction of the band unit 300 to the base unit 400. Specifically, when the inclined portion of the detent 317 comes into contact with an elastic support portion 440 of the base unit 400 as the extending portion 315 is introduced into the base unit 400, the introduction of the band unit 300 to the base unit 400 is limited. In addition, the mounting piece 320 is configured so as to be connected to, for example, a band or a belt to thereby be mounted to a helmet. The mounting piece 320 may be pivotally rotatably fastened to the detent 317 of the main body 310 using the third fastening pin 330.

[0026] The base unit 400 serves to guide the sliding of the band unit 300 when the band unit 300 is introduced or retracted and also serves to support the locking unit 500 and the operating unit 600. Here, the base unit 400 may include a bottom wall 410 and sidewalls 420. At this time, the bottom wall 410 may extend to have a plate shape so as to correspond to the band unit 300, and the sidewalls 420 may extend in a pair from opposite sides (i.e. the longitudinal rims) of the bottom wall 410 so as to face each other. The locking unit 500 is pivotally rotatably fastened to one of the sidewalls 420 (located in the direction in which the band unit 300 is introduced), and the operating unit 600 is movably fastened to the other one of the sidewalls 420 (located in the direction opposite the direction in which the band unit 300 is intro-

duced). More specifically, a first fastening hole 421 is formed in one end of each of the sidewalls 420, a second fastening hole 521 is formed in the locking unit 500 at the position corresponding to the first fastening hole 421, and a first fastening pin 423 is inserted through the first fastening hole 421 and the second fastening hole 521. As such, the locking unit 500 may be pivotally rotatably fastened to one end of the respective sidewalls 420 using the first fastening pin 423, which is a rotation axis. In addition, a third fastening hole 425 is formed in the other end of each of the sidewalls 420, a fourth fastening hole 625 is formed in the operating unit 600 at a position corresponding to the third fastening hole 425, and a second fastening pin 427 is inserted through the third fastening hole 425 and the fourth fastening hole 625. At this time, although the diameter of the third fastening hole 425 may correspond to the diameter D of the second fastening pin 427, as illustrated in FIGS. 3 and 4, the width W4 of the fourth fastening hole 625 in a given direction (i.e. the direction in which the band unit 300 is introduced) may be greater than the diameter of the second fastening pin 427. When the width W4 of the fourth fastening hole 625 in the given direction is greater than the diameter D2 of the second fastening pin 427 as described above, the operating unit 600 may be fastened to the other sidewall 420 so as to be linearly moved toward the locking unit 500 relative to the base unit 400. In addition, as illustrated in FIG. 1, a guide groove 429 is formed in the other end of each of the sidewalls 420 (i.e. the end located in the direction opposite the direction in which the band unit 300 is introduced) so as to be indented toward the locking unit 500 (in the direction in which the band unit 300 is introduced), and a guide protrusion 629 may be formed on the operating unit 600 so as to be inserted into and linearly moved along the guide groove 429. In conclusion, the operating unit 600 may be guided by the guide groove 429, in which the guide protrusion 629 is inserted, and by the second fastening pin 427, which is inserted in the fourth fastening hole 625, when the operating unit 600 is linearly moved toward the locking unit 500 relative to the base unit 400.

[0027] In addition, the base unit 400 is connected to, for example, a band or a belt to thereby be mounted to a helmet. To this end, the base unit 400 may include a connection portion 430 for the connection of the band or the belt. Here, the connection portion 430 may extend from the other end of each sidewall 420 (i.e. the end located in the direction opposite the direction in which the band unit 300 is introduced) so as to be away from (i.e. downward from) the operating unit 600. In addition, the base unit 400 may include the elastic support portion 440, by which one end of an elastic member 510 for providing the locking unit 500 with elastic force is caught. Here, the elastic support portion 440 may extend so as to connect the ends of the sidewalls 420 (i.e. the ends located in the direction in which the band unit 300 is introduced) to each other.

[0028] The locking unit 500 serves to fix the band unit

300 or to enable the introduction or retraction of the band unit 300. As described above, the locking unit 500 is pivotally rotatably fastened to one side of the base unit 400 using the first fastening pin 423. Here, because the locking unit 500 is disposed so as to be spaced apart from the bottom wall 410 of the base unit 400 (see FIG. 4A), the band unit 300 may be introduced or retracted through the space between the bottom wall 410 of the base unit 400 and the locking unit 500. In addition, the locking unit 500 is provided on the surface thereof, which faces the band unit 300 (i.e. the lower surface), with the second toothed portion 540, which corresponds to the first toothed portion 340 of the band unit 300. Here, the second toothed portion 540 includes one or more teeth and recesses. That is, as illustrated in FIG. 2, the second toothed portion 540 includes teeth 543 and recesses 541, which are successively arranged in combination. At this time, as illustrated in FIG. 4A, because the elastic member 510 of the locking unit 500 applies elastic force to the band unit 300 via the first fastening pin 423, which is a rotation axis, the second toothed portion 540 of the locking unit 500 may be pushed toward the band unit 300, thereby being engaged with the first toothed portion 340 of the band unit 300. Meanwhile, the teeth 543 of the second toothed portion 540 and the teeth 343 of the first toothed portion 340 may be inclined so as to correspond to each other. Accordingly, when the user attempts to introduce the band unit 300 into the band unit 400, the locking unit 500 is pivotally rotated by a prescribed angle about the first fastening pin 423, which is a rotation axis, so as to allow the band unit 300 to be moved into the base unit 400. However, when the user attempts to retract the band unit 300 from the base unit 400, the locking unit 500 cannot be pivotally rotated about the first fastening pin 423, and thus the first toothed portion 340 and the second toothed portion 540 remain fastened to each other, whereby the band unit 300 cannot be moved outward from the base unit 400. It is to be noted that the band unit 300 may be moved outward from the base unit 400 when the band unit 300 is pivotally rotated using the operating unit 600 so as to release the fastening of the first toothed portion 340 and the second toothed portion 540. A detailed description related to this will follow.

[0029] Meanwhile, the elastic member 510 may be provided between the base unit 400 and the locking unit 500 to apply the elastic force required to push the second toothed portion 540 toward the band unit 300. Here, the elastic member 510 may be a torsion spring, for example. At this time, the torsion spring 510 may be located in a recessed portion 530 (see FIG. 2), which is formed in the side surface of the locking unit 500 facing each sidewall 420, so that the first fastening pin 423 is inserted through the torsion spring 510. One end of the torsion spring 510 may be caught by the elastic support portion 440 of the base unit 400 and the other end of the torsion spring 510 may be caught by one end of the recessed portion 530 of the locking unit 500. As such, the torsion spring 510 may provide elastic force to pivotally rotate the locking

unit 500 so that the second toothed portion 540 is pushed toward the band unit 300.

[0030] Meanwhile, FIGS. 5A to 5C are plan views illustrating the initial process of fastening the buckle for the helmet in accordance with the embodiment of the present invention. As illustrated in FIGS. 5A to 5C, a first recess 342 among the teeth and recesses of the first toothed portion 340, which meets the teeth and recesses of the second toothed portion 540 firstly when the band unit 300 is introduced into the base unit 400, may have a smaller width $W1$ than the width $W2$ of a first tooth 544 among the teeth and recesses of the second toothed portion 540, which meets the teeth and recesses of the first toothed portion 340 firstly when the band unit 300 is introduced into the base unit 400 ($W1 < W2$). In addition, the width $W1$ of the first recess 342 may be equal to or greater than the width $W3$ of a second tooth 545 among the teeth and recesses of the second toothed portion 540, which meets the teeth and recesses of the first toothed portion 340 secondly when the band unit 300 is introduced into the base unit 400 ($W1 = W3$ or $W1 > W3$). That is, the first recess 342 located at the foremost position of the first toothed portion 340 may have a smaller width $W1$ than the width $W2$ of the first tooth 544 located at the foremost position of the second toothed portion 430 ($W1 < W2$), may have the same width $W1$ as the width $W3$ of the second tooth 545 located next to the first tooth 544 ($W1 = W3$), or may have a greater width $W1$ than the width $W3$ of the second tooth 545 ($W1 > W3$). Through this configuration, the first tooth 544 is not engaged with the first recess 342 (see FIG. 5B), but the second tooth 545 is engaged with the first recess 342 (see FIG. 5C). Accordingly, because the band unit 300 and the locking unit 500 are fastened to each other using two recesses and two teeth (see FIG. 5C), rather than using only one recess and one tooth (see FIG. 5B), firm fastening between the band unit 300 and the locking unit 500 may be realized. At this time, various configurations may be adopted in order to achieve a width of the first recess 342 that is smaller than the width of the first tooth 544 ($W1 < W2$), a width of the first recess 342 that is the same as the width of the second tooth 545 ($W1 = W3$), or a width of the first recess 342 that is greater than the width of the second tooth 545 ($W1 > W3$). For example, as illustrated in FIG. 5, in order to limit the width $W1$ of the first recess 342, bosses 342a may protrude from both width-direction ends of the first recess 342. At this time, the distance $W1$ between the bosses 342a may be smaller than the width $W2$ of the first tooth 544, or may be equal to or greater than the width $W3$ of the second tooth 545. It is to be noted that this configuration is given by way of example and that the scope of the present invention should not be limited to this configuration.

[0031] The operating unit 600 (see FIG. 1) serves to pivotally rotate the locking unit 500 so as to release the engagement of the first toothed portion 340 and the second toothed portion 540. As described above, the operating unit 600 is fastened to the other side of the base

unit 400 via, for example, the second fastening pin 427 and the guide protrusion 629, so as to be linearly moved toward the locking unit 500. Here, because the operating unit 600 is disposed so as to be spaced apart from the bottom wall 410 of the base unit 400 (see FIG. 4A), the band unit 300 may be introduced or retracted through the space between the bottom wall 410 of the base unit 400 and the operating unit 600. In addition, as illustrated in FIG. 4B, when the operating unit 600 is moved toward the locking unit 500 so as to apply a pressure to the locking unit 500, the second toothed portion 540 of the locking unit 500 may cause the locking unit 500 to be pivotally rotated away from the band unit 300. Specifically, the operating unit 600 and the locking unit 500 may be disposed in substantially the same plane. Here, a first slope 550 may be formed on one end of the locking unit 500 that faces the operating unit 600, and a second slope 650 may be formed on one end of the operating unit 600 that faces the locking unit 500 so as to correspond to the first slope 650. At this time, the first slope 550 of the locking unit 550 may face the bottom wall 410 of the base unit 400, and the second slope 650 of the operating unit 600 may face the direction opposite the bottom wall 410 of the base unit 400. As such, when the user pushes the operating unit 600 so as to linearly move the operating unit 600 toward the locking unit 500, the second slope 650 of the operating unit 600 slides on the first slope 550 of the locking unit 500 to thereby push one surface (i.e. the lower surface provided with the second toothed portion 540) of the locking unit 500, thereby causing the locking unit 500 to be pivotally rotated away from the band unit 300. When the locking unit 500 is pivotally rotated away from the band unit 300 as described above, the first toothed portion 340 of the band unit 300 is disengaged from the second toothed portion 540 of the locking unit 500, whereby the band unit 300 is freely movable. However, when the user no longer applies a pressure to the operating unit 600, as illustrated in FIG. 4A, the locking unit 500 is pivotally rotated closer to the band unit 300 by the elastic force provided to the locking unit 500, whereby the first slope 550 of the locking unit 500 pushes the second slope 650 of the operating unit 600, allowing the operating unit 600 to be linearly moved in the direction opposite the locking unit 500. When the locking unit 500 is pivotally rotated closer to the band unit 300 as described above, the first toothed portion 340 of the band unit 300 and the second toothed portion 540 of the locking unit 500 are again engaged with each other, whereby the band unit 300 may be fixed.

[0032] As described above, the helmet buckle 100 in accordance with the present embodiment may be of a push type so that the user simply releases the fastening of the locking unit 500 and the band unit 300 by applying a pressure to the operating unit 600, and therefore may advantageously allow the user who is riding a motorcycle or is enjoying skiing to easily operate the buckle 100.

[0033] FIGS. 6 to 10 are sectional views illustrating the operation of the buckle for the helmet in accordance with

the embodiment of the present invention. The operation of the helmet buckle 100 in accordance with the embodiment of the present invention will now be described with reference to FIGS. 6 to 10.

[0034] First, FIGS. 6 to 8 illustrate the process of introducing the band unit 300 into the base unit 400. When the introduction portion 313 of the band unit 300 passes through the space between the bottom wall 410 of the base unit 400 and the elastic support portion 440 to thereby be inserted into the space between the bottom wall 410 of the base unit 400 and the locking unit 500 and the space between the bottom wall 410 of the base unit 400 and the operating unit 600, the second toothed portion 540 of the locking unit 500 is engaged with the first toothed portion 340 formed on the main body 310 of the band unit 300, thus causing the band unit 300 to be moved into the base unit 400. At this time, when the first toothed portion 340 of the band unit 300 passes over the second toothed portion 540 of the locking unit 500, the locking unit 500 is pivotally rotated about the first fastening pin 423. More specifically, the locking unit 500 may be repeatedly pivotally rotated away from the band unit 300 (see FIG. 7) and may then be pivotally rotated toward the band unit 300 by the elastic force of the elastic member 510 (see FIG. 8).

[0035] Next, FIGS. 9 and 10 illustrate the process of retracting the band unit 300 from the base unit 400. As illustrated in FIG. 9, when the user pushes the operating unit 600 toward the locking unit 500, the operating unit 600 is linearly moved toward the locking unit 500, causing the second slope 650 of the operating unit 600 to slide on the first slope 550 of the locking unit 500 to thereby push one surface (i.e. the lower surface provided with the second toothed portion 540) of the locking unit 500, whereby the locking unit 500 may be pivotally rotated away from the band unit 300 about the first fastening pin 423. When the locking unit 500 is pivotally rotated as described above, the fastening between the first toothed portion 340 of the band unit 300 and the second toothed portion 540 of the locking unit 500 may be released. Thereafter, as illustrated in FIG. 10, when the band unit 300 is pulled, the band unit 300 may sequentially pass through the space between the bottom wall 410 of the base unit 400 and the operating unit 600 and the space between the bottom wall 410 of the base unit 400 and the locking unit 500, thereby being retracted through the space between the bottom wall 410 of the base unit 400 and the elastic support portion 440.

[0036] FIG. 11 is a side view illustrating a buckle for a helmet in accordance with another embodiment of the present invention. As illustrated in FIG. 11, a buckle for a helmet, designated by reference numeral 200, in accordance with another embodiment of the present invention may include a guide member 700 provided on the base unit 400. Here, the guide member 700 extends from one end of the bottom wall 410 of the base unit 400 to which the band unit 300 is introduced. At this time, the guide member 700 is tilted from the end of the bottom

wall 410 in the direction (i.e. in the downward direction) opposite the direction (i.e. the upward direction) in which the sidewalls 420 extend from the bottom wall 410. That is, the guide member 700 may extend so as to be tilted downward from the end of the bottom wall 410. Through the provision of the guide member 700, the user may more easily introduce the band unit 300 into the base unit 400.

[0037] As is apparent from the above description, the present invention may provide a push-type buckle for a helmet in which a locking unit is pivotally rotated when a user pushes an operating unit, whereby the fastening of the locking unit and a band unit may be released. This advantageously allows the user to easily operate the buckle while riding a motorcycle or enjoying sports, such as skiing.

[0038] Although the embodiments of the present invention have been described above in detail, it is clear that the above description is merely given to concretely describe the present invention and the present invention is not limited thereto, and that alterations or improvements thereof are possible by those skilled in the art within the scope of the present invention.

[0039] The simplified alterations and modifications of the present invention fall within the scope of the present invention, and the concrete protection range of the present invention will be made clear by the accompanying claims.

Claims

1. A buckle for a helmet, comprising:

a band unit (300) provided with a first toothed portion (340) including one or more teeth and recesses;
 a base unit (400) for guiding sliding of the band unit (300) when the band unit (300) is introduced or retracted;
 a locking unit (500) pivotally rotatably fastened to one side of the base unit (400), the locking unit (500) being provided on one surface thereof, which faces the band unit (300), with a second toothed portion including one or more teeth and recesses so as to correspond to the first toothed portion (340), the second toothed portion (540) being pushed toward the band unit (300); and
 an operating unit (600) fastened to an opposite side of the base unit (400) so **characterized in that** the operating unit (600) is linearly movable toward the locking unit (500), the operating unit (600) serving to pivotally rotate the locking unit (500) so that the second toothed portion (540) is moved away from the band unit (300) when it is moved toward the locking unit (500) so as to apply a pressure to the locking unit (500), wherein the locking unit (500) is provided on one

end thereof, which faces the operating unit (600), with a first slope (550), wherein the operating unit (600) is provided on one end thereof, which faces the locking unit (500), with a second slope (650), and wherein, when a user pushes the operating unit (600) as to linearly move toward the locking unit (500), the second slope (650) slides on the first slope (550) to thereby push one surface of the locking unit (500), causing the locking unit (500) to be pivotally rotated.

2. The buckle according to claim 1, wherein a first recess (342) among the teeth and recesses of the first toothed portion (340), which meets the teeth and recesses of the second toothed portion (540) firstly when the band unit (300) is introduced into the base unit (400), has a width that is smaller than a width of a first tooth (544) among the teeth and recesses of the second toothed portion (540), which meets the teeth and recesses of the first toothed portion (340) firstly when the band unit (300) is introduced into the base unit (400), and has a width that is the same as or greater width than a width of a second tooth (545) among the teeth and recesses of the second toothed portion (540), which meets the teeth and recesses of the first toothed portion (340) secondly when the band unit (300) is introduced into the base unit (400).

3. The buckle according to claim 1, further comprising an elastic member (510) provided between the base unit (400) and the locking unit (500) for providing elastic force so as to allow the second toothed portion (540) to be pushed toward the band unit (300).

4. The buckle according to claim 3, wherein the elastic member (510) is a torsion spring, and wherein one end of the torsion spring is caught by an elastic support portion (440) of the base unit (400), and a remaining end of the torsion spring is caught by the locking unit (500).

5. The buckle according to claim 1, wherein the base unit (400) includes:

a bottom wall (410) extending in a plate shape so as to correspond to the band unit (300); and a pair of sidewalls (420) extending from opposite sides of the bottom wall (410) so as to face each other, the locking unit (500) being pivotally rotatably fastened to one end of each sidewall (420), and the operating unit (600) being movably fastened to a remaining end of the sidewall (420).

6. The buckle according to claim 5, wherein the sidewall (420) has a first fastening hole (421) formed in the one end thereof, the locking unit (500) has a second

fastening hole (521) formed therein at a position corresponding to the first fastening hole (421), and a first fastening pin (423) is inserted through the first fastening hole (421) and the second fastening hole (521).

7. The buckle according to claim 5, wherein the sidewall (420) has a third fastening hole (425) formed in the remaining end thereof, the operating unit (600) has a fourth fastening hole (625) formed therein at a position corresponding to the third fastening hole (425), and a second fastening pin (427) is inserted through the third fastening hole (425) and the fourth fastening hole (625), and wherein the fourth fastening hole (625) has a width in a given direction that is greater than a diameter of the second fastening pin (427) in order to allow the operating unit (600) to be movable toward the locking unit (500) relative to the base unit (400).
8. The buckle according to claim 5 wherein the sidewall (420) has a guide groove (429) formed in the remaining end thereof so as to be indented toward the locking unit (500), and wherein the operating unit (600) has a guide protrusion (629) inserted into the guide groove (429) so as to move along the guide groove (429).
9. The buckle according to claim 5, wherein the base unit (400) further includes a guide member (700) for extending from an end of the bottom wall (410) to which the band unit (300) is introduced, and wherein the guide member (700) is tilted from the end of the bottom wall (410) in a direction opposite a direction in which the sidewalls (420) extend from the bottom wall (410).

Patentansprüche

1. Eine Schnalle für einen Helm, umfassend:

eine Bandeinheit (300), die mit einem ersten gezahnten Abschnitt (340) versehen ist, der einen oder mehrere Zähne und Aussparungen enthält; eine Basiseinheit (400) zum Führen des Gleitens der Bandeinheit (300), wenn die Bandeinheit (300) eingebracht oder zurückgezogen wird;

eine Verriegelungseinheit (500), die schwenkbar drehbar an einer Seite der Basiseinheit (400) befestigt ist, wobei die Verriegelungseinheit (500) an einer Oberfläche davon vorgesehen ist, die der Bandeinheit (300) zugewandt ist, mit einem zweiten gezahnten Abschnitt, der einen oder mehrere Zähne und Aussparungen aufweist, um dem ersten gezahnten Abschnitt (340) zu entsprechen, wobei der zweite gezahnte Ab-

schnitt (540) in Richtung der Bandeinheit (300) gedrückt wird; und

eine Bedieneinheit (600), die an einer gegenüberliegenden Seite der Basiseinheit (400) befestigt ist, **dadurch gekennzeichnet, dass** die Bedieneinheit (600) linear in Richtung der Verriegelungseinheit (500) bewegbar ist, wobei die Bedieneinheit (600) dazu dient, die Verriegelungseinheit (500) zu drehen, so dass der zweite gezahnte Abschnitt (540) von der Bandeinheit (300) wegbewegt wird, wenn er in Richtung der Verriegelungseinheit (500) bewegt wird, um einen Druck auf die Verriegelungseinheit (500) auszuüben,

wobei die Verriegelungseinheit (500) an einem Ende davon, das der Bedieneinheit (600) zugewandt ist, mit einer ersten Neigung (550) versehen ist,

wobei die Bedieneinheit (600) an einem Ende davon, das der Verriegelungseinheit (500) zugewandt ist, mit einer zweiten Neigung (650) versehen ist, und

wobei, wenn ein Benutzer die Bedieneinheit (600) drückt, um sich linear in Richtung der Verriegelungseinheit (500) zu bewegen, die zweite Neigung (650) auf der ersten Neigung (550) gleitet, um dadurch eine Oberfläche der Verriegelungseinheit (500) zu drücken, wodurch bewirkt wird, dass die Verriegelungseinheit (500) schwenkbar gedreht wird.

2. Schnalle nach Anspruch 1, wobei eine erste Aussparung (342) zwischen den Zähnen und Aussparungen des ersten gezahnten Abschnitts (340), der zuerst auf die Zähne und Aussparungen des zweiten gezahnten Abschnitts (540) trifft, wenn die Bandeinheit (300) in die Basiseinheit (400) eingebracht wird, eine Breite aufweist, die kleiner ist als eine Breite eines ersten Zahns (544) zwischen den Zähnen und Aussparungen des zweiten gezahnten Abschnitts (540), der zuerst auf die Zähne und Aussparungen des ersten gezahnten Abschnitts (340) trifft, wenn die Bandeinheit (300) in die Basiseinheit (400) eingebracht wird, und eine Breite aufweist, die gleich oder größer als eine Breite eines zweiten Zahns (545) unter den Zähnen und Aussparungen des zweiten gezahnten Abschnitts (540) ist, der dann auf die Zähne und Aussparungen des ersten gezahnten Abschnitts (340) trifft, wenn die Bandeinheit (300) in die Basiseinheit (400) eingebracht wird.
3. Schnalle nach Anspruch 1, die ferner ein elastisches Element (510) umfasst, das zwischen der Basiseinheit (400) und der Verriegelungseinheit (500) vorgesehen ist, um eine elastische Kraft bereitzustellen, um zu ermöglichen, dass der zweite gezahnte Abschnitt (540) in Richtung der Bandeinheit (300) gedrückt wird.

4. Schnalle nach Anspruch 3, wobei das elastische Element (510) eine Torsionsfeder ist, und wobei ein Ende der Torsionsfeder von einem elastischen Stützabschnitt (440) der Basiseinheit (400) erfasst wird, und ein verbleibendes Ende der Torsionsfeder von der Verriegelungseinheit (500) erfasst wird. 5
5. Schnalle nach Anspruch 1, wobei die Basiseinheit (400) Folgendes umfasst: 10
- eine Bodenwand (410), die sich in einer Plattenform erstreckt, um der Bändeinheit (300) zu entsprechen; und
- ein Paar Seitenwände (420), die sich von gegenüberliegenden Seiten der Bodenwand (410) erstrecken, um einander zugewandt zu sein, wobei die Verriegelungseinheit (500) schwenkbar drehbar an einem Ende jeder Seitenwand (420) befestigt ist, und die Bedieneinheit (600) beweglich an einem verbleibenden Ende der Seitenwand (420) befestigt ist. 20
6. Schnalle nach Anspruch 5, wobei die Seitenwand (420) ein erstes Befestigungsloch (421) aufweist, das in einem Ende davon ausgebildet ist, und die Verriegelungseinheit (500) ein zweites Befestigungsloch (521) aufweist, das in einer Position ausgebildet ist, die dem ersten Befestigungsloch (421) entspricht und ein erster Befestigungsstift (423) durch das erste Befestigungsloch (421) und das zweite Befestigungsloch (521) eingebracht ist. 25
7. Schnalle nach Anspruch 5, wobei die Seitenwand (420) ein drittes Befestigungsloch (425) aufweist, das in ihrem verbleibenden Ende ausgebildet ist, und die Bedieneinheit (600) ein viertes Befestigungsloch (625) aufweist, das in einer Position ausgebildet ist, die dem dritten Befestigungsloch (425) entspricht, und ein zweiter Befestigungsstift (427) durch das dritte Befestigungsloch (425) und das vierte Befestigungsloch (625) eingebracht ist, und wobei das vierte Befestigungsloch (625) in einer gegebenen Richtung eine Breite aufweist, die größer ist als ein Durchmesser des zweiten Befestigungsstifts (427), um zu ermöglichen, dass die Bedieneinheit (600) in Richtung der Verriegelungseinheit (500) relativ zur Basiseinheit (400) bewegbar ist. 30
8. Schnalle nach Anspruch 5, wobei die Seitenwand (420) eine Führungsnut (429) aufweist, die an ihrem verbleibenden Ende so ausgebildet ist, dass sie in Richtung der Verriegelungseinheit (500) eingekerbt ist wobei die Bedieneinheit (600) einen Führungsvorsprung (629) aufweist, der in die Führungsnut (429) eingesetzt ist, um sich entlang der Führungsnut (429) zu bewegen. 35
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9. Schnalle nach Anspruch 5, wobei die Basiseinheit (400) ferner ein Führungselement (700) umfasst, um sich von einem Ende der Bodenwand (410) zu erstrecken, in die die Bändeinheit (300) eingebracht ist, und wobei das Führungselement (700) vom Ende der Bodenwand (410) in eine Richtung geneigt ist, die einer Richtung entgegengesetzt ist, in der sich die Seitenwände (420) von der Bodenwand (410) erstrecken. 5
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Revendications

1. Attache pour casque comprenant :

une unité de bande (300) pourvue d'une première partie dentée (340) comportant une ou plusieurs dents et des évidements ;

une unité de base (400) pour guider le glissement de l'unité de bande (300) quand on introduit ou retire l'unité de bande (300) ;

une unité de blocage (500) fixée à rotation et à pivotement sur un côté de l'unité de base (400), l'unité de blocage (500) étant pourvue, sur une de ses surfaces, qui se trouve en face de l'unité de bande (300), d'une deuxième partie dentée comportant une ou plusieurs dents et des évidements afin d'être en correspondance avec la première partie dentée (340), la deuxième partie dentée (540) étant poussée vers l'unité de bande (300) ;

une unité d'actionnement (600) fixée sur un côté opposé de l'unité de base (400), **caractérisée en ce que** l'unité d'actionnement (600) est mobile linéairement vers l'unité de blocage (500), l'unité d'actionnement (600) servant à faire tourner de façon pivotante l'unité de blocage (500) de telle manière que la deuxième partie dentée (540) s'éloigne de l'unité de bande (300) quand elle est déplacée vers l'unité de blocage (500) afin d'appliquer une pression à l'unité de blocage (500),

dans laquelle l'unité de blocage (500) est pourvue, sur une de ses extrémités, qui se trouve en face de l'unité d'actionnement (600), d'une première pente (550),

dans laquelle l'unité d'actionnement (600) est pourvue sur une de ses extrémités, qui se trouve en face de l'unité de blocage (500), d'une deuxième pente (650), et

dans laquelle, quand un utilisateur pousse l'unité d'actionnement (600) pour la déplacer linéairement vers l'unité de blocage (500), la deuxième pente (650) glisse sur la première pente (550) pour pousser de ce fait une surface de l'unité de blocage (500), en provoquant la rotation pivotante de l'unité de blocage (500).

2. Attache selon la revendication 1, dans laquelle un premier évidement (342) parmi les dents et évidements de la première partie dentée (340), qui rencontre les dents et évidements de la deuxième partie dentée (540) en premier quand l'unité de bande (300) est introduite dans l'unité de base (400), a une largeur qui est inférieure à une largeur d'une première dent (544) parmi les dents et évidements de la deuxième partie dentée (540), qui rencontre les dents et évidements de la première partie dentée (340) en premier quand l'unité de bande (300) est introduite dans l'unité de base (400), et a une largeur qui est la même ou une largeur supérieure à une largeur d'une deuxième dent (545) parmi les dents et évidements de la deuxième partie dentée (540), qui rencontre les dents et évidements de la première partie dentée (340) en deuxième quand l'unité de bande (300) est introduite dans l'unité de base (400).
3. Attache selon la revendication 1, comprenant en outre un élément élastique (510) placé entre l'unité de base (400) et l'unité de blocage (500) pour fournir une force élastique afin de permettre à la deuxième partie dentée (540) d'être poussée vers l'unité de bande (300).
4. Attache selon la revendication 3, dans laquelle l'élément élastique (510) est un ressort de torsion, et dans laquelle une extrémité du ressort de torsion est retenue par une partie de support élastique (440) de l'unité de base (400), et une extrémité restante du ressort de torsion est retenue par l'unité de blocage (500).
5. Attache selon la revendication 1, dans laquelle l'unité de base (400) comprend :
- une paroi inférieure (410) qui s'étend en une forme plate afin d'être en correspondance avec l'unité de bande (300) ; et
- une paire de parois latérales (420) qui s'étendent depuis des côtés opposés de la paroi inférieure (410) de manière à être en vis-à-vis, l'unité de blocage (500) étant fixée à rotation et à pivotement à une extrémité de chaque paroi latérale (420), et l'unité d'actionnement (600) étant fixée de façon mobile à une extrémité restante de la paroi latérale (420).
6. Attache selon la revendication 5, dans laquelle la paroi latérale (420) a un premier trou de fixation (421) formé dans sa première extrémité, l'unité de blocage (500) a un deuxième trou de fixation (521) formé dans celle-ci en une position qui correspond au premier trou de fixation (421), et une première goupille de fixation (423) est insérée dans le premier trou de fixation (421) et dans le deuxième trou de fixation (521).
7. Attache selon la revendication 5, dans laquelle la paroi latérale (420) a un troisième trou de fixation (425) formé dans son extrémité restante, l'unité d'actionnement (600) a un quatrième trou de fixation (625) formé dans celle-ci en une position qui correspond au troisième trou de fixation (425), et une deuxième goupille de fixation (427) est insérée dans le troisième trou de fixation (425) et dans le quatrième trou de fixation (625), et dans laquelle le quatrième trou de fixation (625) a une largeur dans une direction donnée qui est plus grande qu'un diamètre de la deuxième goupille de fixation (427) afin de permettre à l'unité d'actionnement (600) d'être mobile vers l'unité de blocage (500) par rapport à l'unité de base (400).
8. Attache selon la revendication 5, dans laquelle la paroi latérale (420) a une rainure de guidage (429) formée dans son extrémité restante de manière à être dentée vers l'unité de blocage (500), et dans laquelle l'unité d'actionnement (600) comporte une protubérance de guidage (629) insérée dans la rainure de guidage (429) afin de se déplacer le long de la rainure de guidage (429).
9. Attache selon la revendication 5, dans laquelle l'unité de base (400) comporte en outre un élément de guidage (700) destiné à s'étendre depuis une extrémité de la paroi inférieure (410) sur laquelle l'unité de bande (300) est introduite, et dans laquelle l'élément de guidage (700) est incliné depuis l'extrémité de la paroi inférieure (410) dans une direction opposée à une direction dans laquelle les parois latérales (420) s'étendent depuis la paroi inférieure (410).

FIG. 1

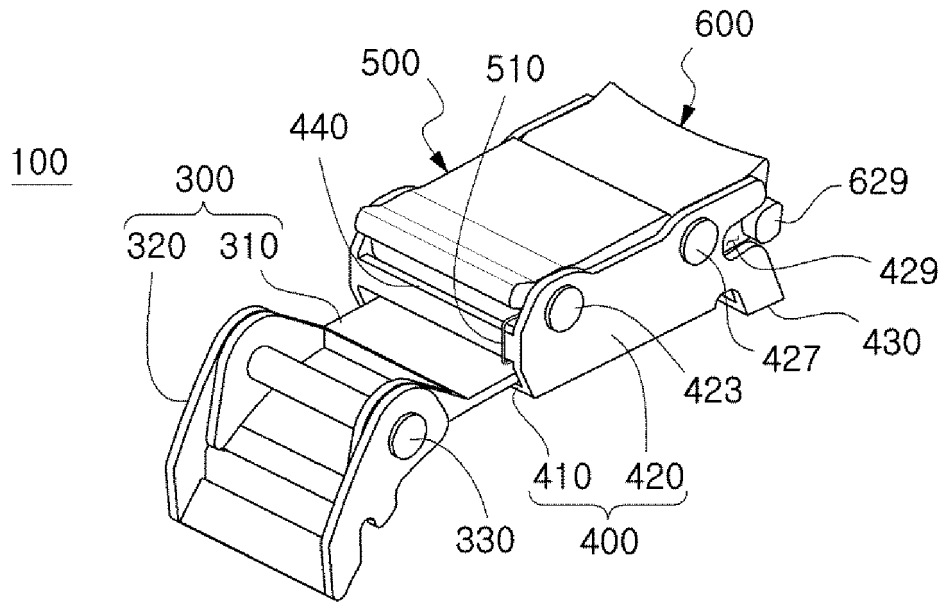


FIG. 2

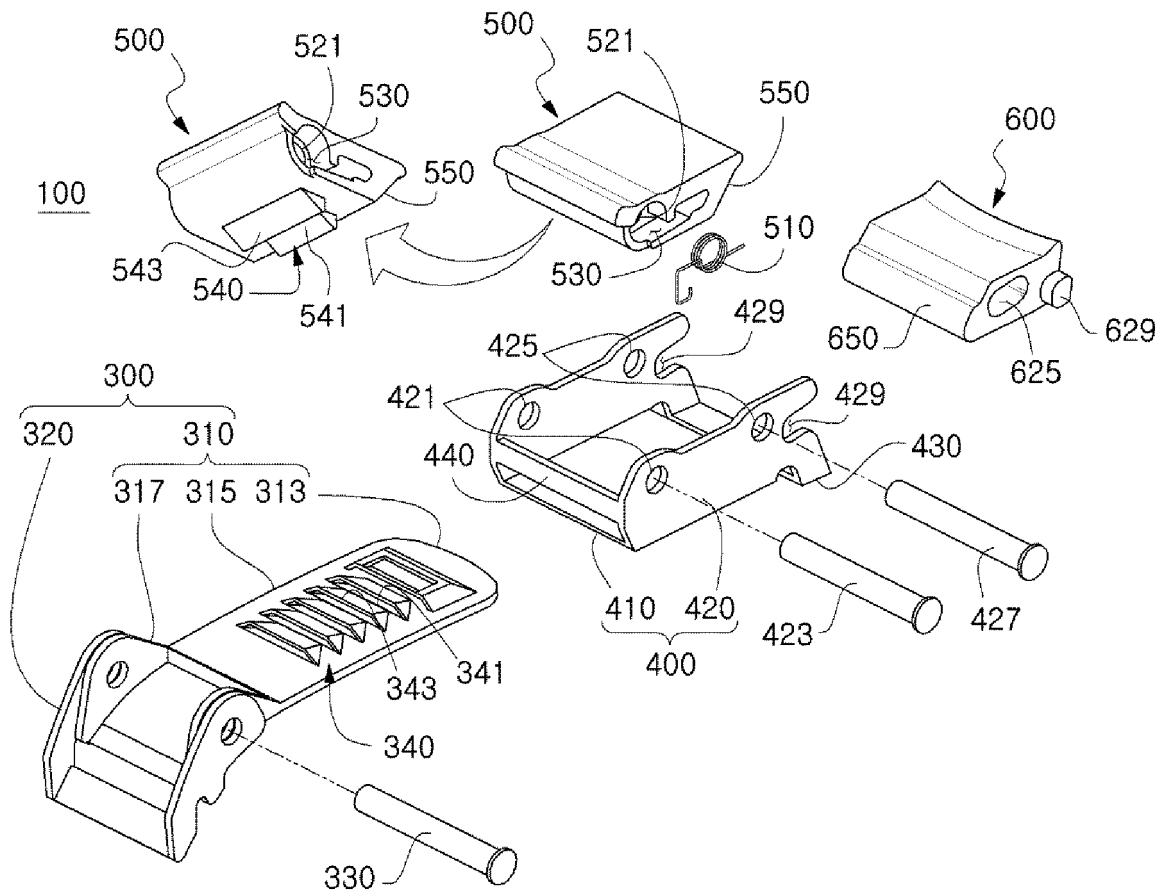


FIG. 3

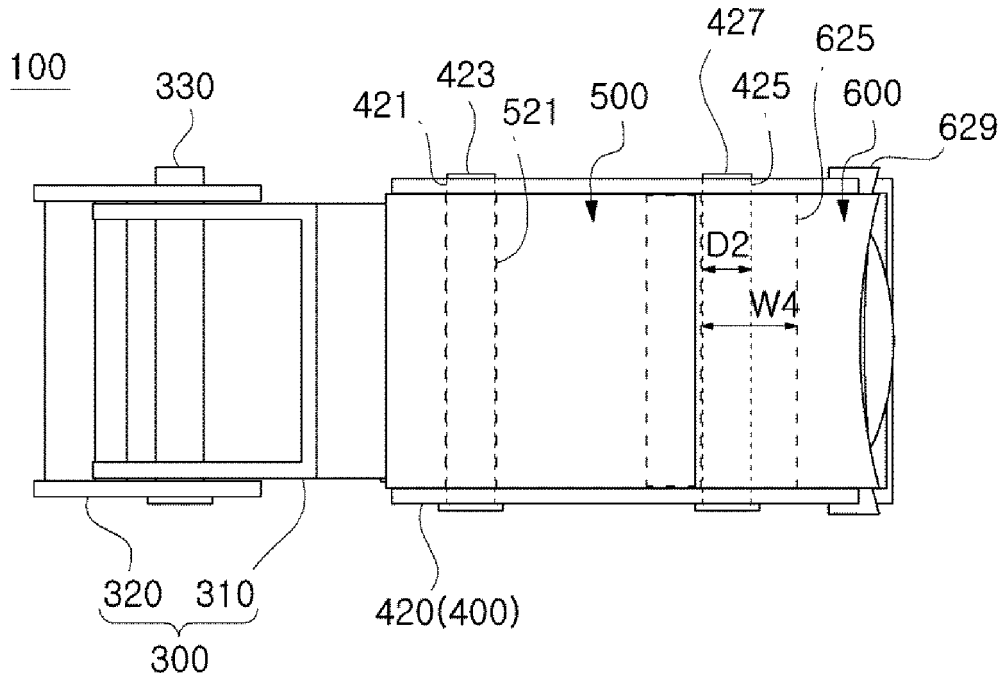


FIG. 4A

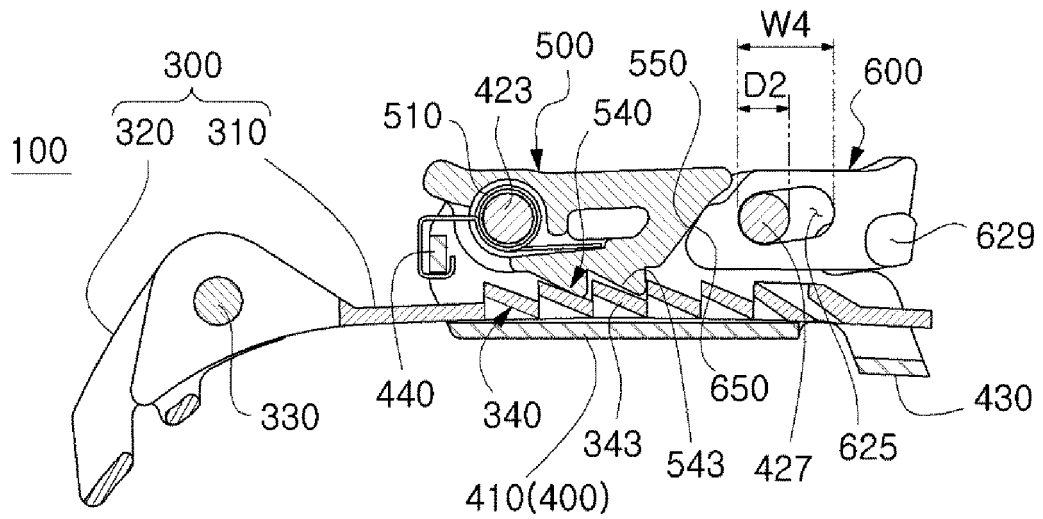


FIG. 4B

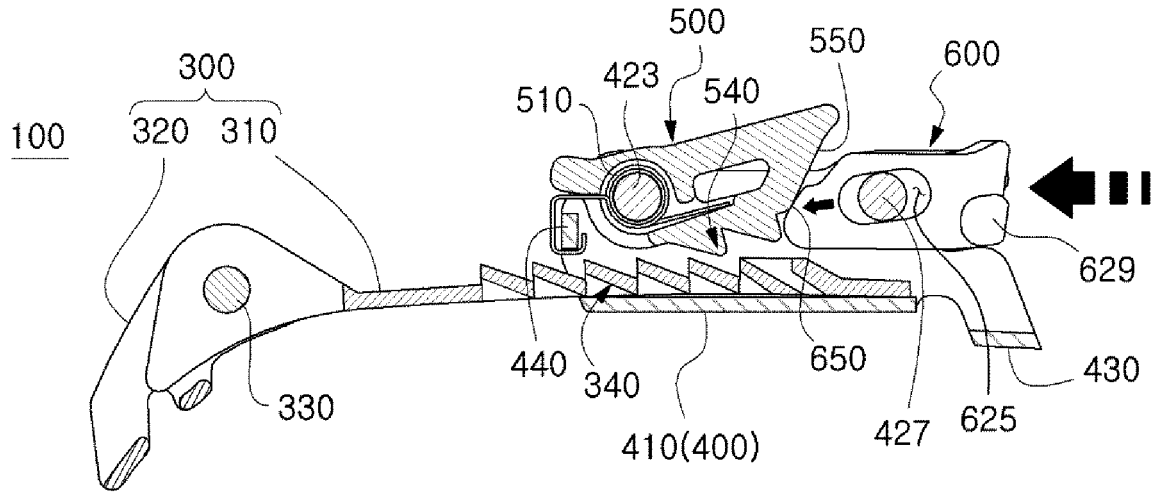


FIG. 5A

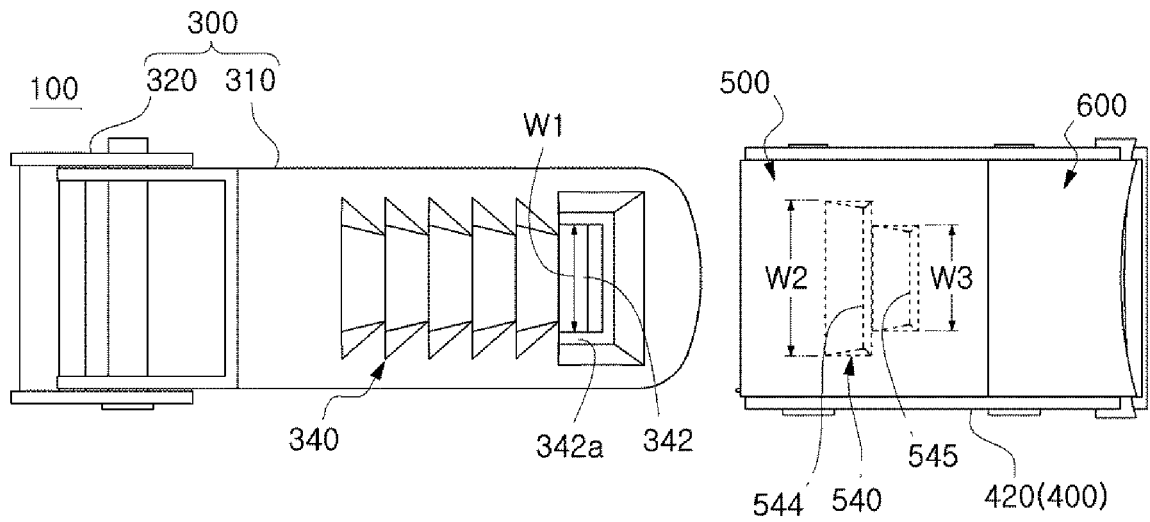


FIG. 5B

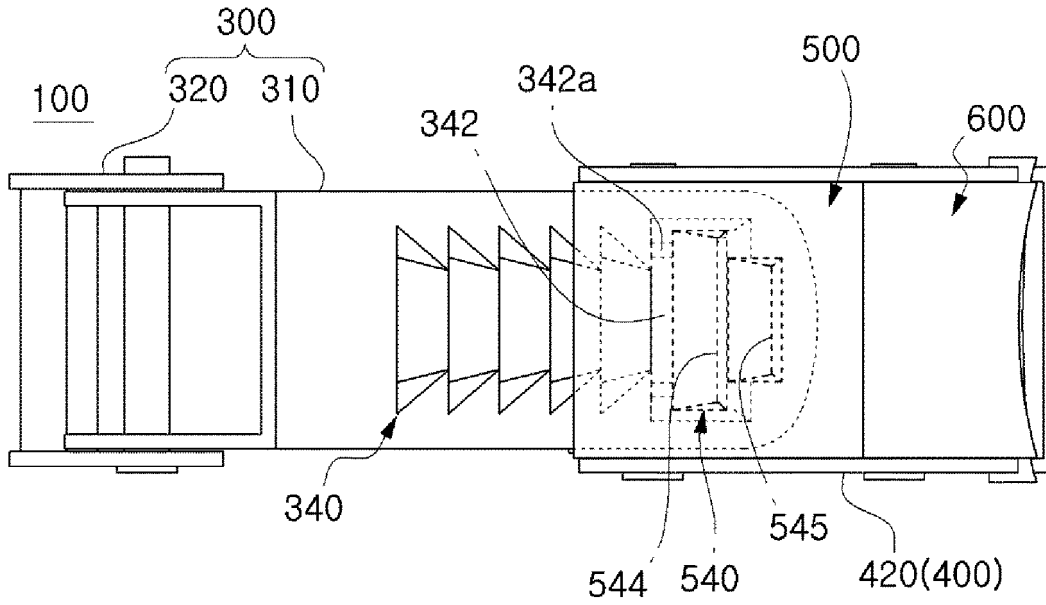


FIG. 5C

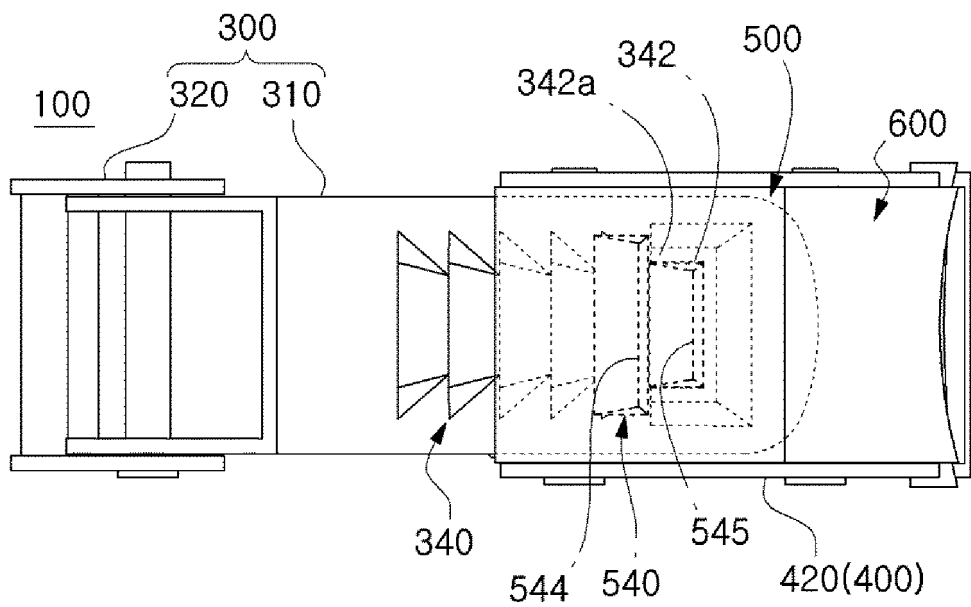


FIG. 6

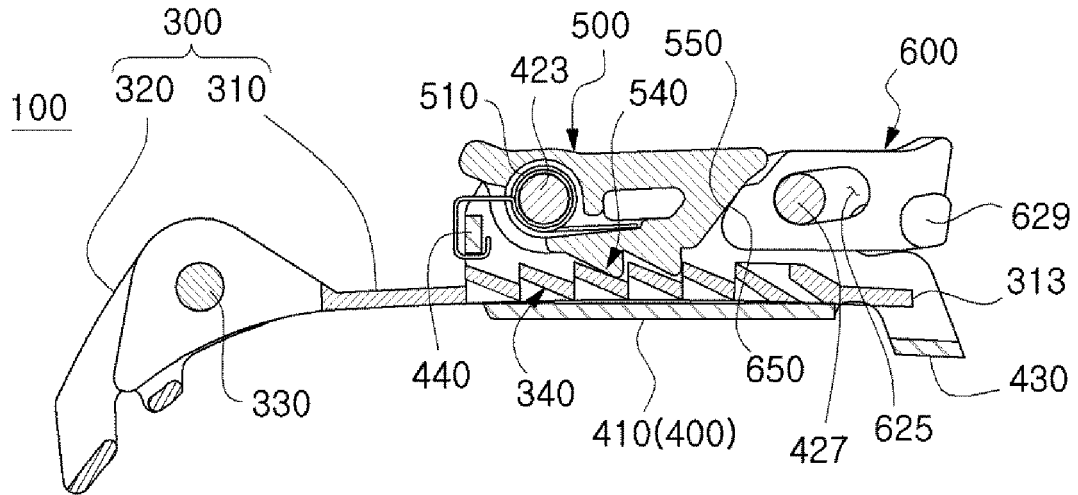


FIG. 7

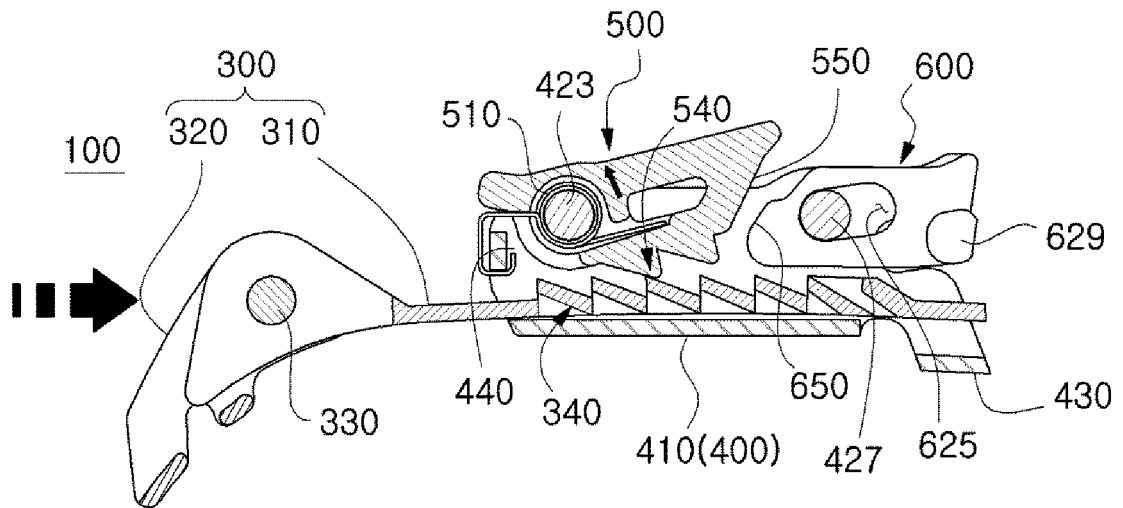


FIG. 8

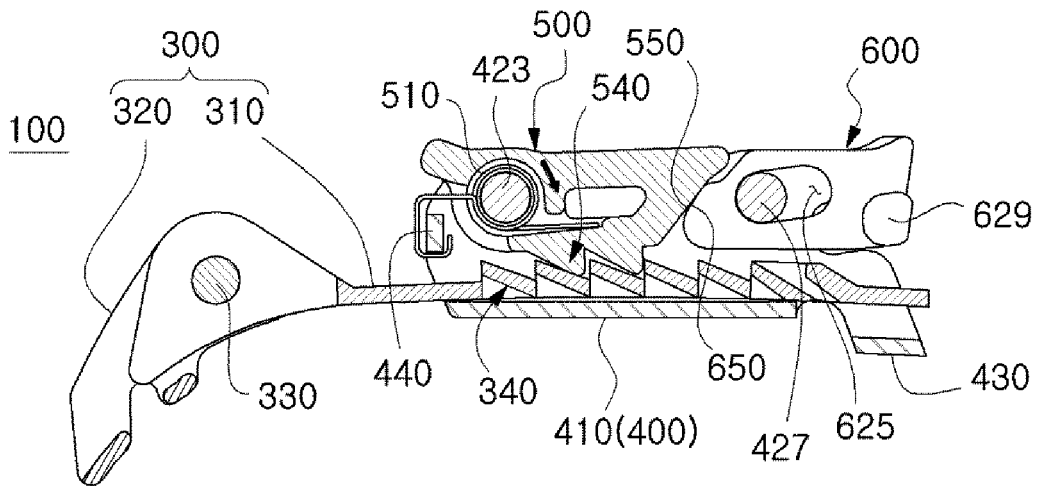


FIG. 9

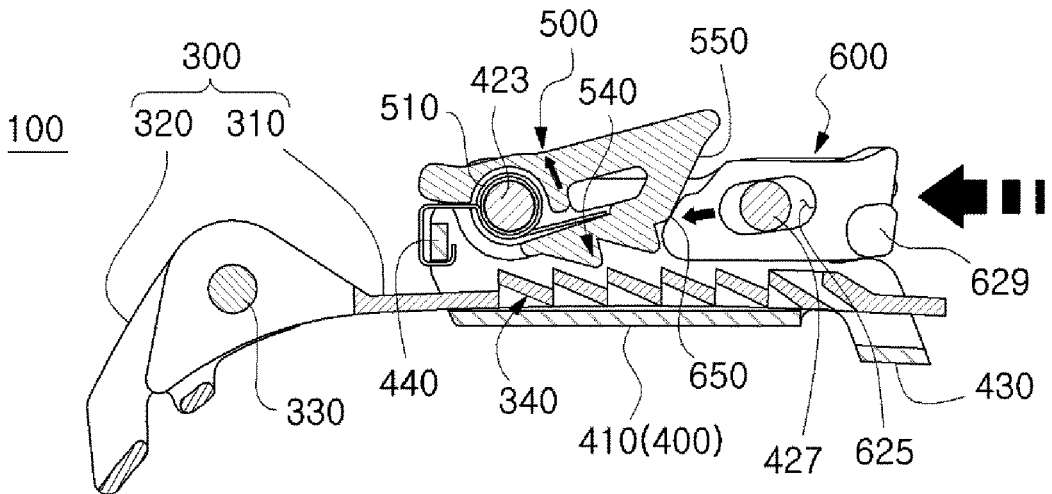


FIG. 10

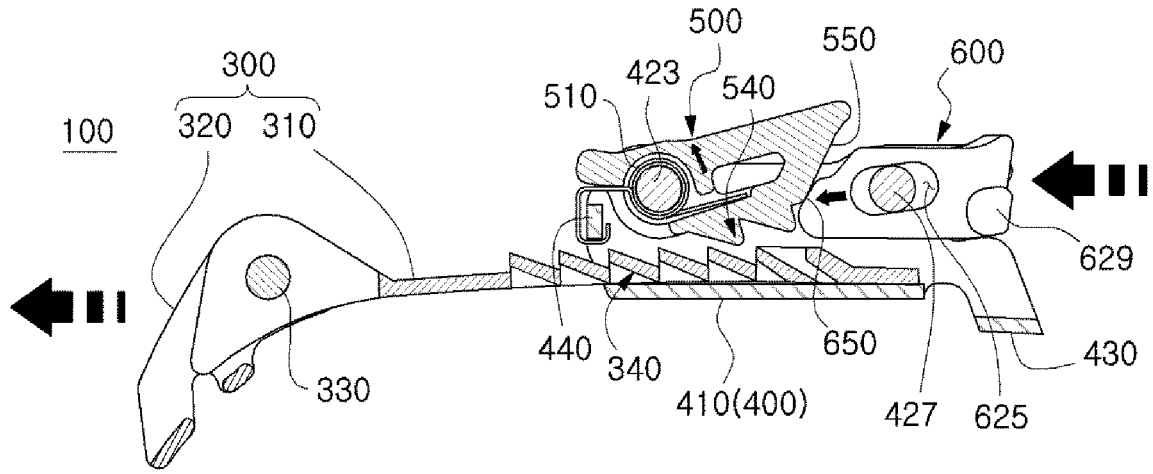
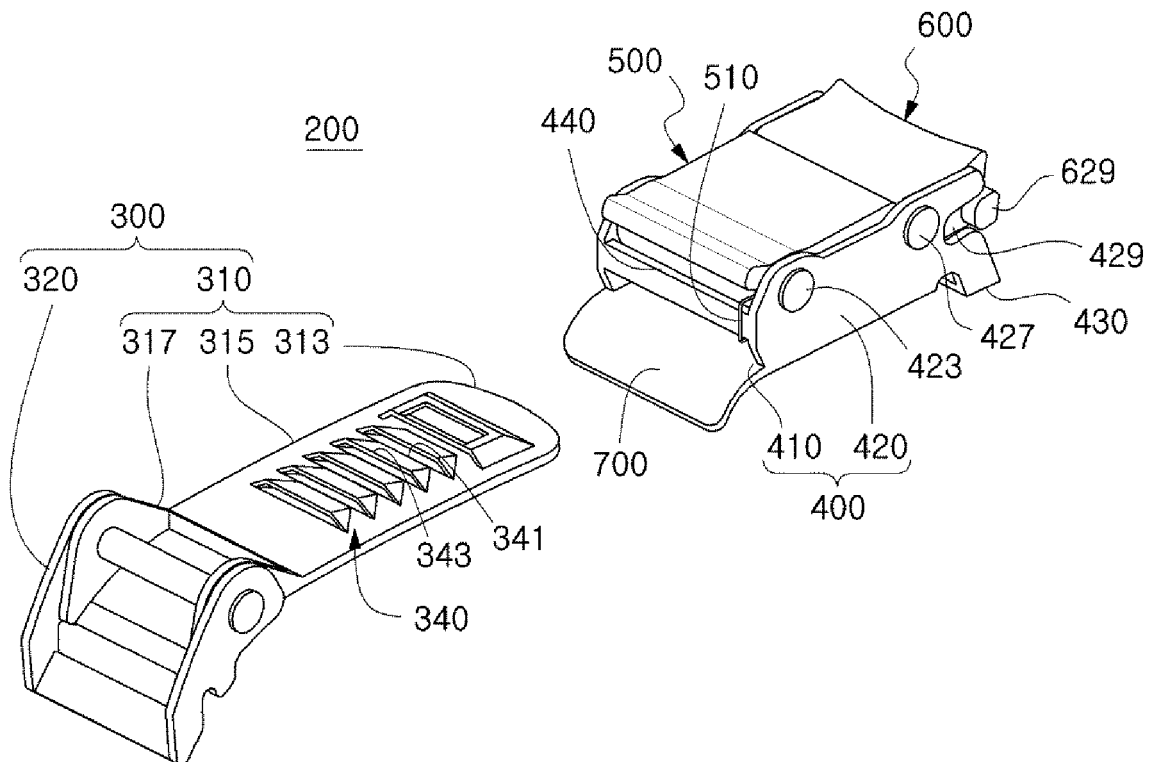


FIG. 11



REFERENCES CITED IN THE DESCRIPTION

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- EP 0772983 A1 [0005]