

(19)



(11)

EP 3 238 558 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.11.2017 Bulletin 2017/44

(51) Int Cl.:
A42B 3/08 (2006.01)

(21) Application number: **16171960.4**

(22) Date of filing: **30.05.2016**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(71) Applicant: **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)

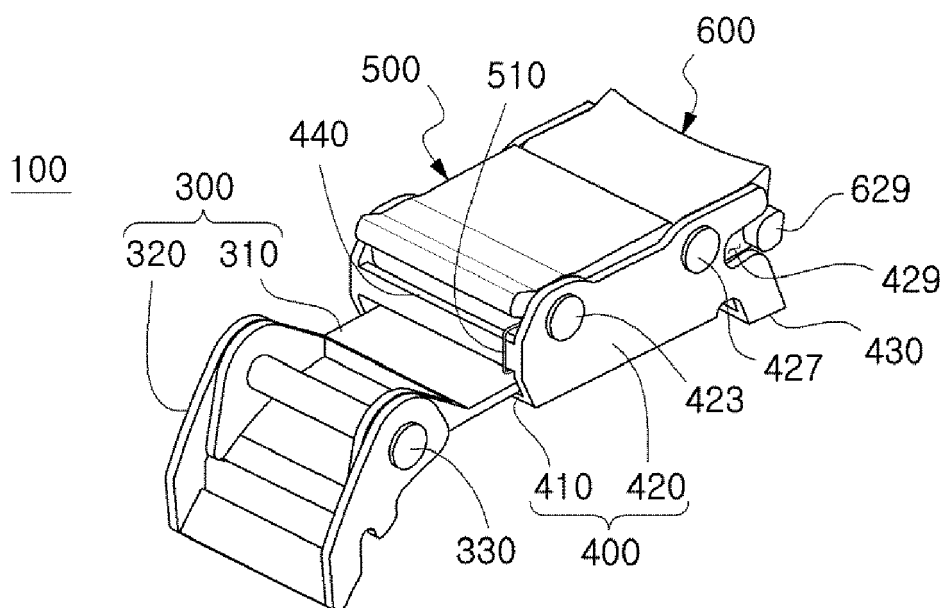
(30) Priority: **26.04.2016 KR 20160050651**

(54) **BUCKLE FOR HELMET**

(57) Disclosed is a buckle (100) for a helmet, including a band unit (300) provided with a first toothed portion (340), a base unit (400) for guiding sliding of the band unit when the band unit is introduced or retracted, a locking unit (500) 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 (540) so as to correspond to the first

toothed portion, the second toothed portion being pushed toward the band unit, and an operating unit (600) fastened to an opposite side of the base unit so as to be 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.

FIG. 1



EP 3 238 558 A1

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

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 released.

[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 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] In addition, the locking unit may be provided on one end thereof, which faces the operating unit, with a first slope, the operating unit may be provided on one end thereof, which faces the locking unit, with a second slope, and when the operating unit is moved 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 fas-

tening 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 embodiment 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 operating 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 introduced). 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 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 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.

2. The buckle according to claim 1, wherein the locking unit is provided on one end thereof, which faces the operating unit, with a first slope, wherein the operating unit is provided on one end thereof, which faces the locking unit, with a second slope, and wherein, when the operating unit is moved toward the locking unit, the second slope slides on the first slope to thereby push one surface of the locking unit, causing the locking unit to be pivotally rotated.

3. The buckle according to claim 1, wherein 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, has 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 has 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.

4. The buckle according to claim 1, further comprising 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.

5. The buckle according to claim 4, wherein the elastic member is a torsion spring, and wherein one end of the torsion spring is caught by an elastic support portion of the base unit, and a remaining end of the torsion spring is caught by the locking unit.

6. The buckle according to claim 1, wherein the base unit includes:

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.

7. The buckle according to claim 6, wherein the sidewall has a first fastening hole formed in the one end thereof, the locking unit has a second fastening hole formed therein at a position corresponding to the first fastening hole, and a first fastening pin is inserted through the first fastening hole and the second fastening hole.

8. The buckle according to claim 6, wherein the sidewall has a third fastening hole formed in the remaining end thereof, the operating unit has a fourth fastening hole formed therein at a position corresponding to the third fastening hole, and a second fastening pin is inserted through the third fastening hole and the fourth fastening hole, and wherein the fourth fastening hole has 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.

9. The buckle according to claim 6 wherein the sidewall has a guide groove formed in the remaining end thereof so as to be indented toward the locking unit, and wherein the operating unit has a guide protrusion inserted into the guide groove so as to move along the guide groove.
10. The buckle according to claim 6, wherein the base unit further includes a guide member for extending from an end of the bottom wall to which the band unit is introduced, and wherein the guide member is tilted from the end of the bottom wall in a direction opposite a direction in which the sidewalls extend from the bottom wall.

5

10

15

20

25

30

35

40

45

50

55

FIG. 1

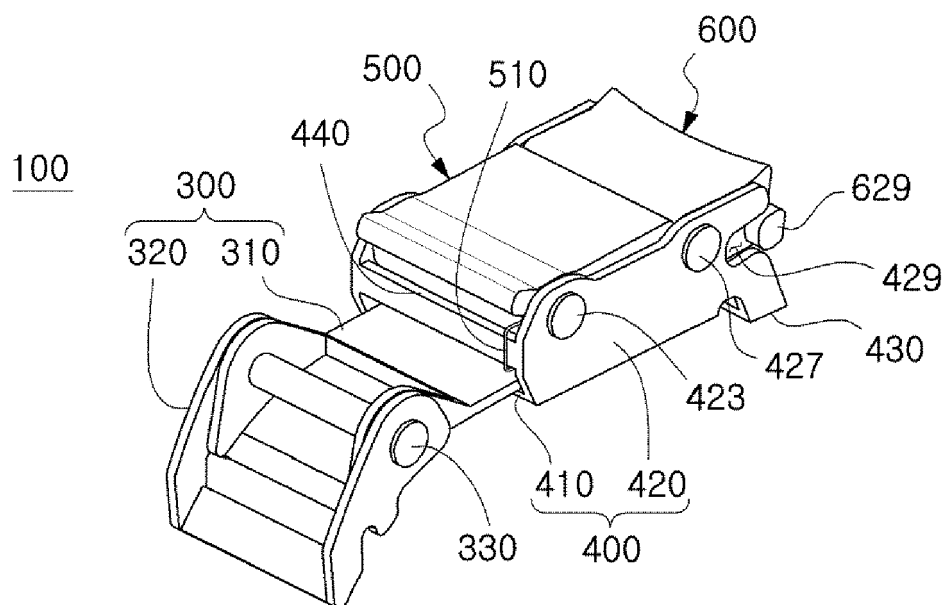


FIG. 2

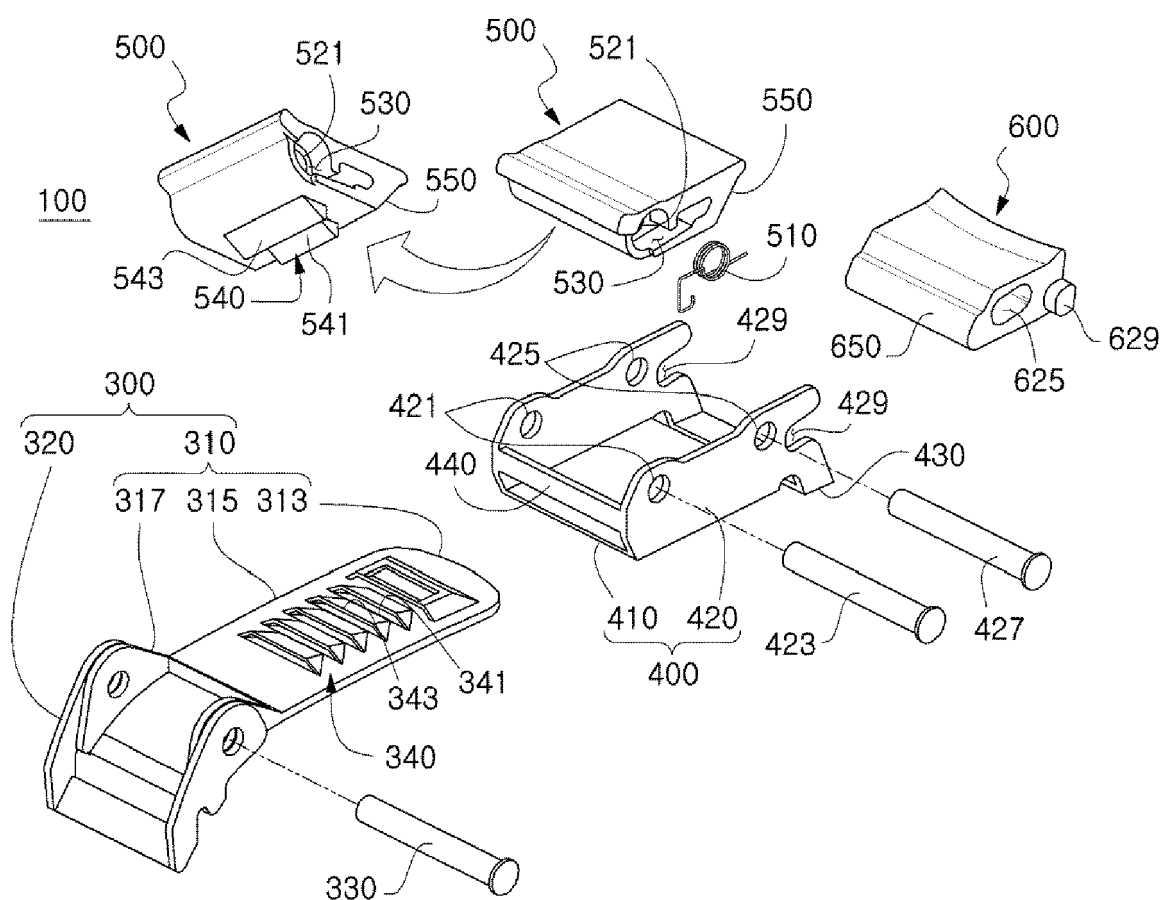


FIG. 3

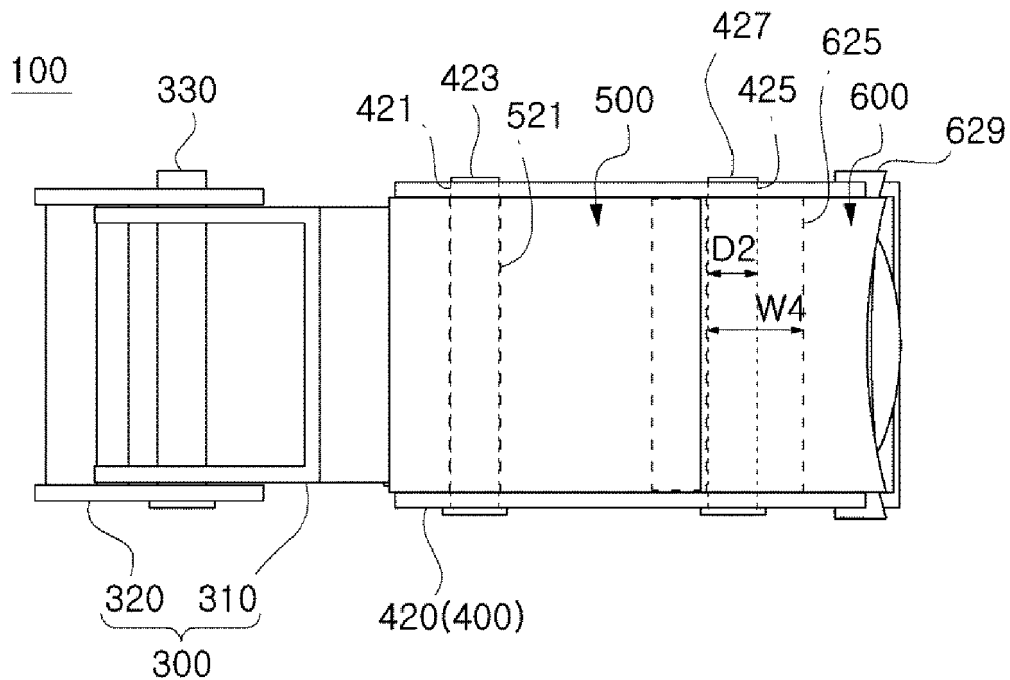


FIG. 4A

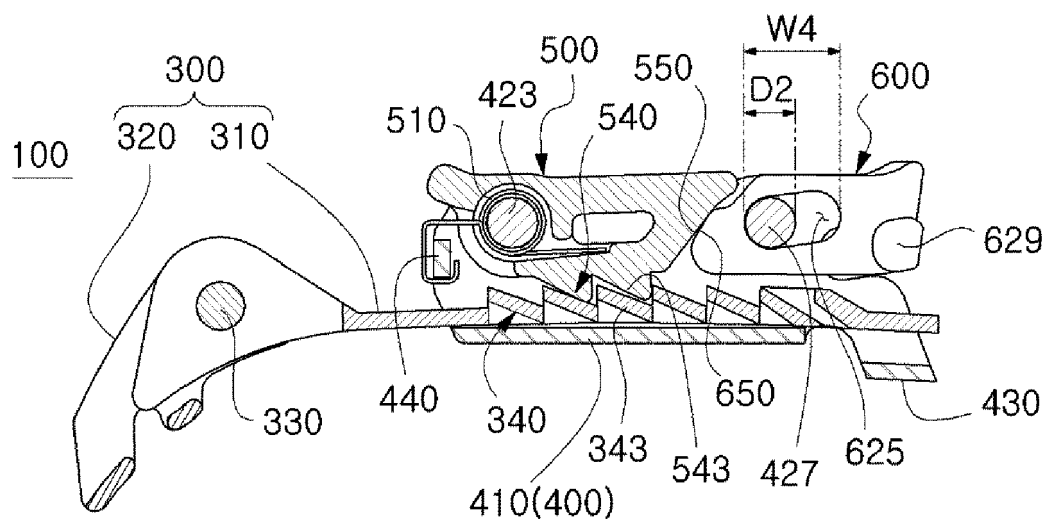


FIG. 4B

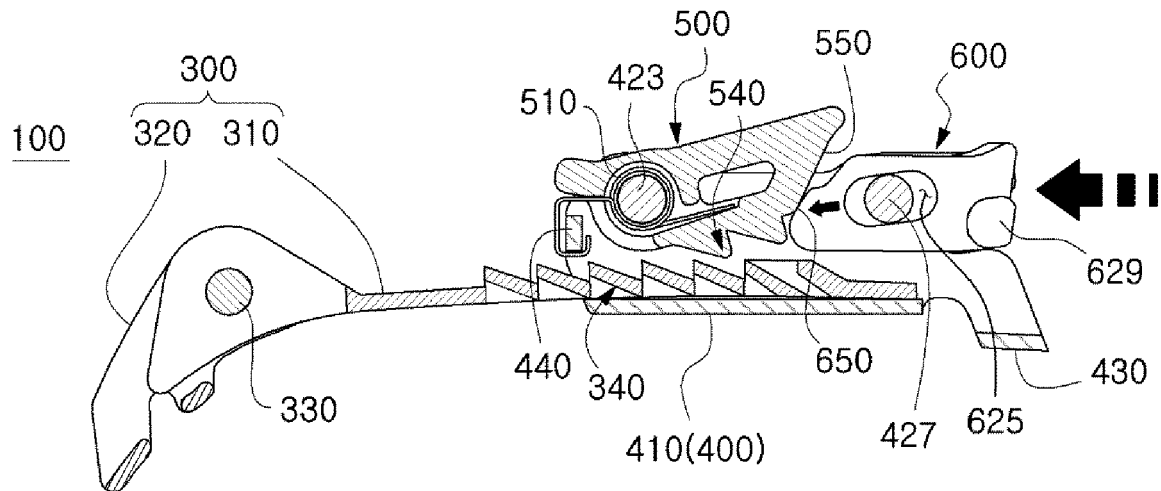


FIG. 5A

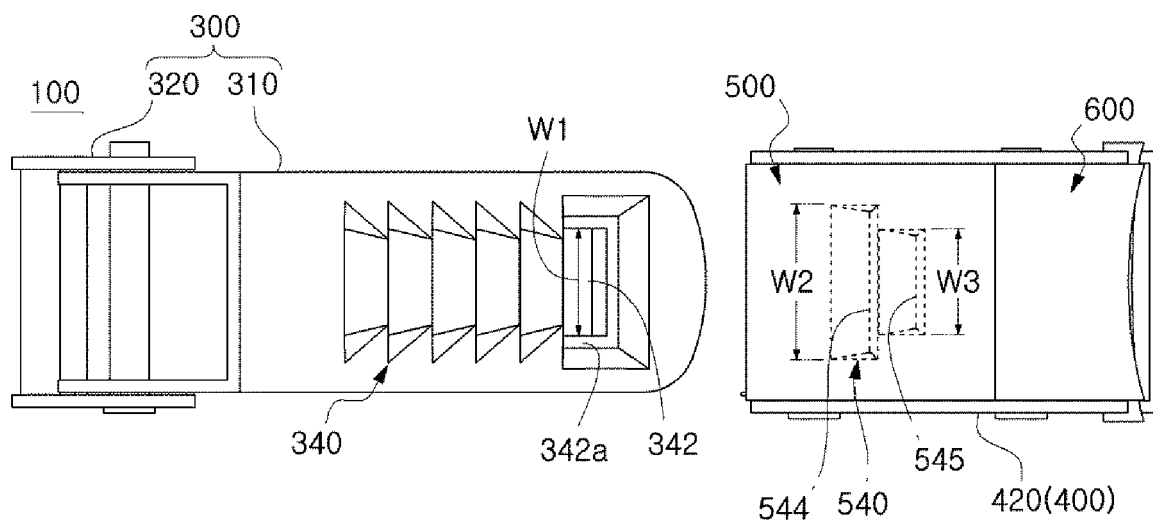


FIG. 5B

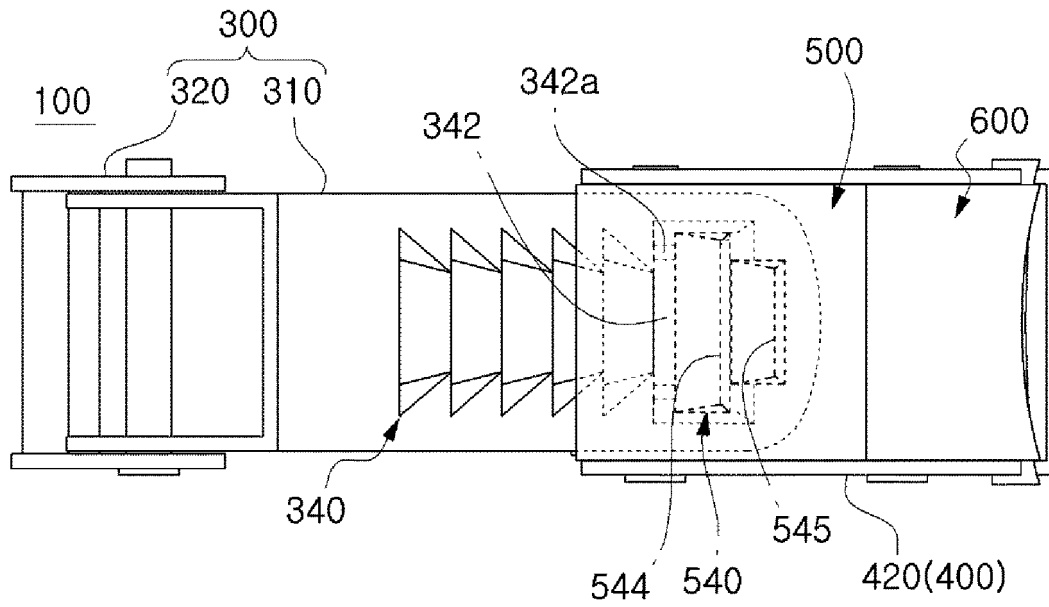


FIG. 5C

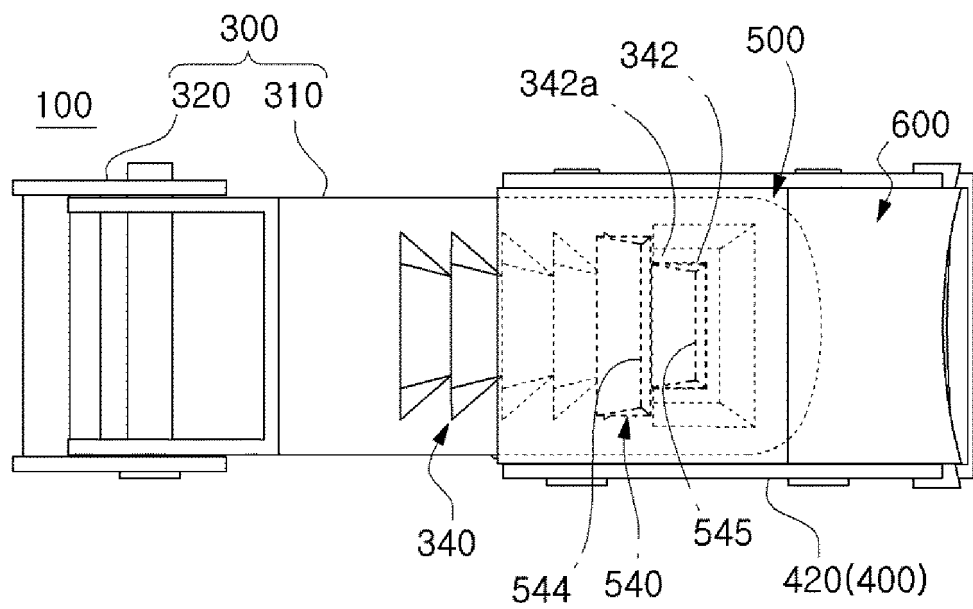


FIG. 6

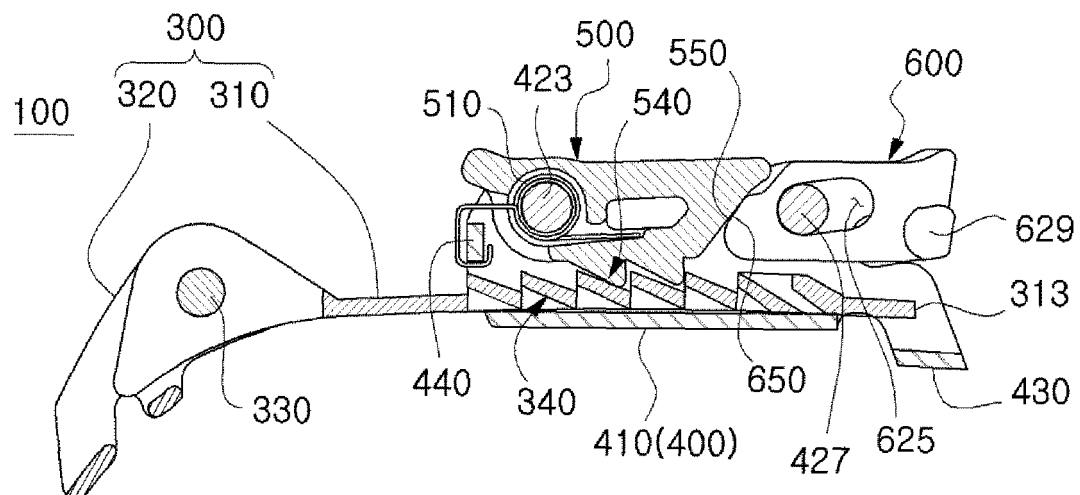


FIG. 7

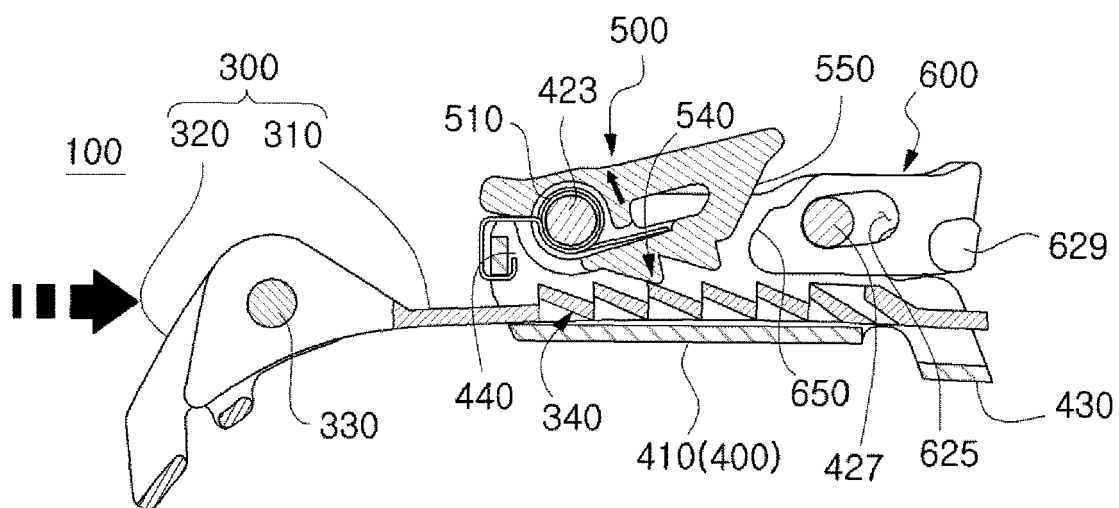


FIG. 8

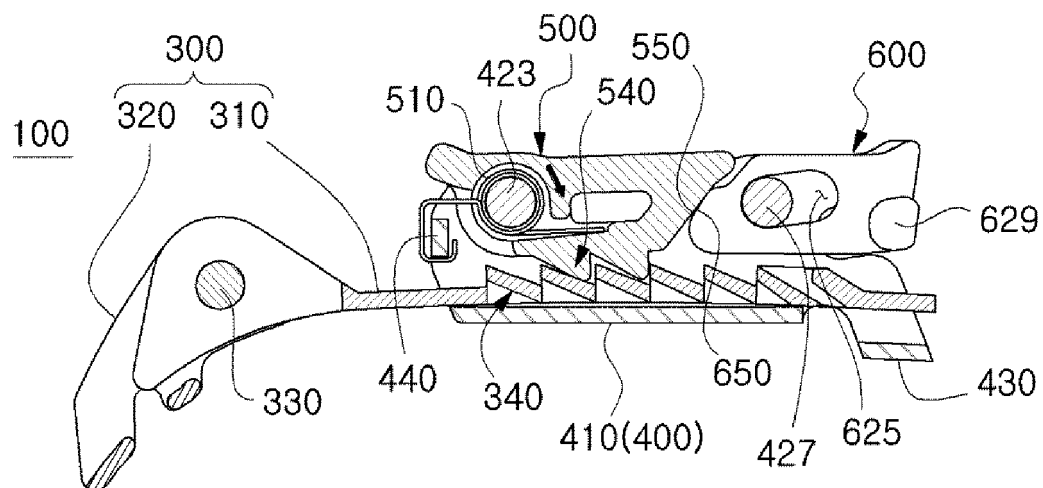


FIG. 9

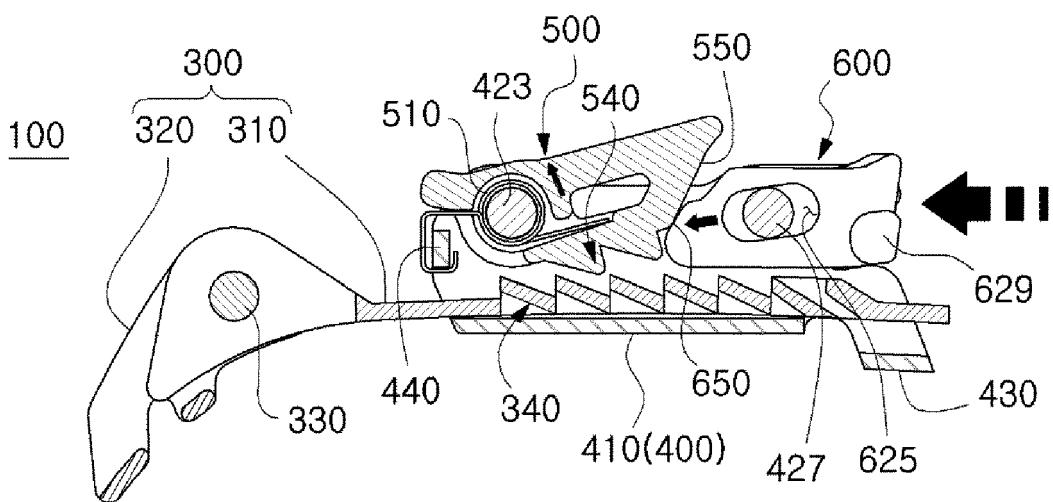


FIG. 10

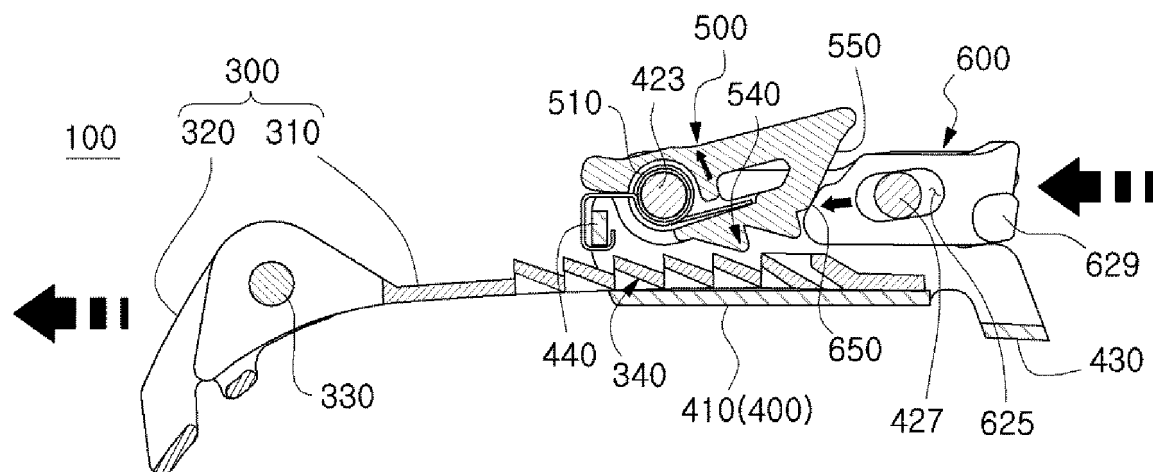
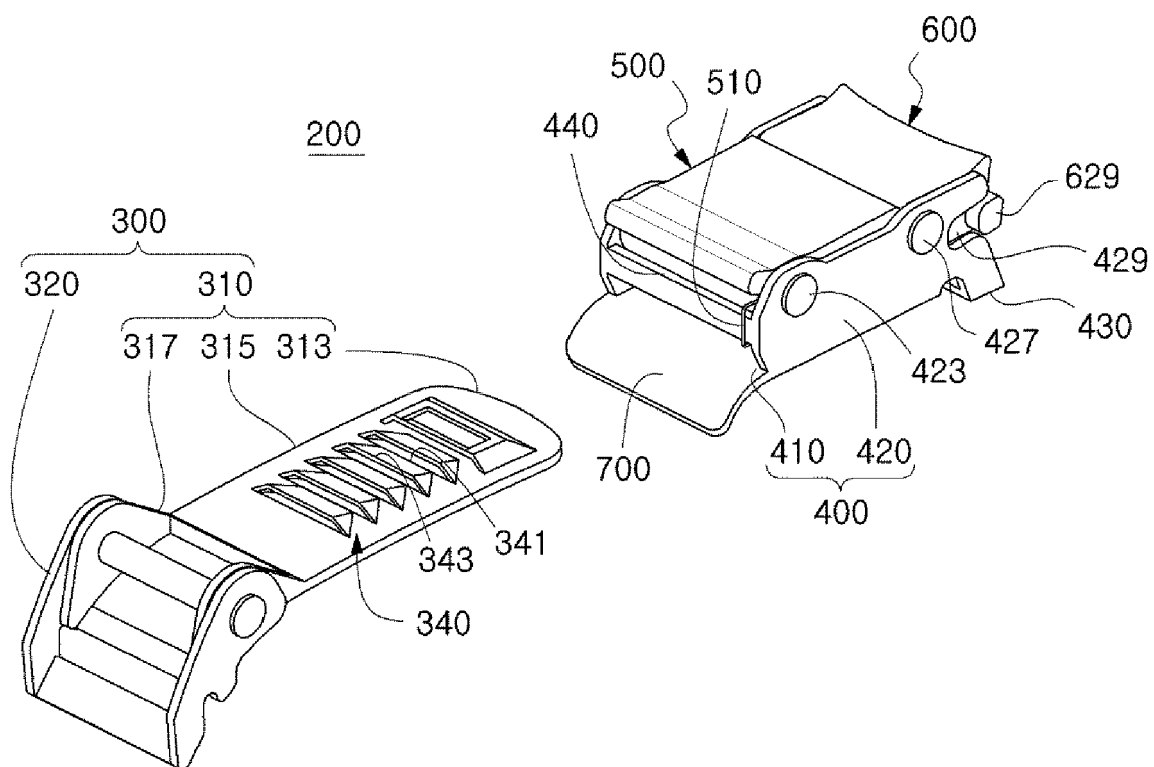


FIG. 11





EUROPEAN SEARCH REPORT

 Application Number
 EP 16 17 1960

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 0 772 983 A1 (E D C SARL [FR]) 14 May 1997 (1997-05-14)	1-7	INV. A42B3/08
A	* column 5, lines 7-44; figure 2 * -----	8-10	
A	US 4 683 620 A (Valsecchi Carlo [IT] ET AL) 4 August 1987 (1987-08-04) * column 5, lines 27-46; figures 3-5 * -----	1-10	
A,P	EP 3 017 714 A1 (JNT KOREA CO LTD [KR]) 11 May 2016 (2016-05-11) * paragraphs [0049] - [0051]; figures 5,6 * -----	1-10	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A42B A43C A63B
Place of search		Date of completion of the search	Examiner
The Hague		13 September 2016	D'Souza, Jennifer
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 1
 EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 17 1960

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

13-09-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0772983 A1	14-05-1997	DE 69517180 D1	29-06-2000
		DE 69517180 T2	22-02-2001
		EP 0772983 A1	14-05-1997
		ES 2145892 T3	16-07-2000

US 4683620 A	04-08-1987	AT 385639 B	25-04-1988
		CA 1221829 A	19-05-1987
		FR 2563978 A1	15-11-1985
		JP S60234680 A	21-11-1985
		US 4683620 A	04-08-1987

EP 3017714 A1	11-05-2016	EP 3017714 A1	11-05-2016
		KR 101430435 B1	14-08-2014
		WO 2015147476 A1	01-10-2015

ORM P0459

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- KR 101430435 B1 [0005]