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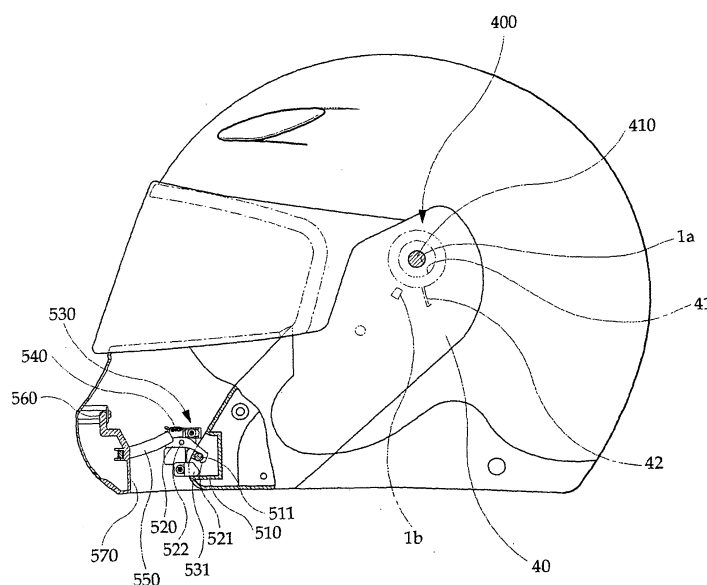
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(54) **Helmet having removable jaw guard**

(57) A helmet having a removable jaw guard is disclosed. In the helmet having a removable jaw guard, the locking means comprises a pair of left and right locking brackets 510 attached symmetrically to both insides of the helmet body 1 and having locking bars 511 respectively, latches 520 on both the left and right sides engaged with the locking bars 511 of the locking brackets 510,

latch plates 530 on which the latches 520 are fitted rotatably at a predetermined angle by a pivot 522, a return spring 540 of which one end is connected to the upper end of the latch 520 and the other end is connected to the latch plate 530, a connecting bar 550 in which the extending portions 551 of both ends are connected to the ends of latches 520, and an unlock lever 570 to pull the middle of the connecting bar 550 forward.

【Fig. 5】



Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a helmet having a removable jaw guard, and more specifically to a helmet having a removable jaw guard in which the locking mechanism of the jaw guard is improved so that open/close operation is further facilitated and the helmet can be taken off without damage in case of emergency.

2. Description of the Related Art

[0002] In general, motorcycle riders must wear a safety helmet to protect the head and the front of helmet should have a shield installed to prevent sight obstruction and breathing difficulty due to the wind blowing from front during driving. In such helmets, there is such a kind of helmet of which the jaw guard can be opened and closed.

[0003] In order to open and close the jaw guard in such a helmet, it needs a hinge mechanism as well as a locking mechanism for keeping it closed.

[0004] As a conventional helmet provided with such devices, there is a patent described below for which the applicant of the present invention filed on December 24, 2003.

[0005] Namely, in the Korean Patent Laid-Open No. 10-2005-64696 (2005. 06. 29) titled "A helmet having a removable jaw guard," a helmet provided with a locking mechanism was disclosed. As shown in Figs. 1 and 2, the locking mechanism F500 includes a pair of locking brackets F510 which are attached symmetrically to both of the insides of the helmet body F1 and have locking slot F511; sliders F520 on both left and right sides provided such that one end can enter into the locking slot F511 of the locking brackets F510; guide plates F530 attached to the inside of the jaw guard to prevent the breaking away of the sliders F520 while guiding the sliding of them; springs F540 connected between guide plates for the return of the sliders F520; a connecting bar F550 arranged in arc shape along the middle inside of the jaw guard F4 while the both ends are connected to the ends of left and right sliders F520 so as to simultaneously operate the sliders F520 on both left and right sides; and an unlock lever F570 which crosses lengthwise to pull the middle portion of the connecting bar F550 to front, while the upper end of which is connected by the hinge lever F560 to the inside of the jaw guard F4 and the lower end of which is extended downward so as to be partly exposed below the jaw guard F4.

[0006] But in the jaw guard of the above patent, opening is possible after the locked slider F520 is completely off the locking slot F511, and because the direction of the slider F520 breaking away does not correspond to the direction of opening the jaw guard, it has a drawback that locking is not released unless the unlock lever F570

is operated all the way to the end.

[0007] Such a drawback has a problem that the helmet cannot be taken off the wearer unless the helmet is broken in case of accident.

5 **[0008]** Also, the conventional jaw guard is manufactured with a certain amount of weight to ensure sufficient durability, so sometimes opening cannot be maintained by the hooking mechanism alone for control of pivot angle when it was rotated upward, necessitating additionally a stop means at the position opened and lifted to the maximum.
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SUMMARY OF THE INVENTION

15 **[0009]** Accordingly, it is an object of the present invention to provide a helmet having a removable jaw guard which can be taken off without breaking the helmet in case of emergency, by providing it with a hinge mechanism for preventing slipping down when opened by providing a separate auxiliary hooking jaw and rotating it upward, and a locking mechanism for releasing more easily the locking of the locking latch in the opening direction of the jaw guard.
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[0010] In accordance with the present invention, there is provided a helmet having a removable jaw guard which is opened and closed by a hinge means for protecting the wearer by covering part of an opening of a helmet body, and which has a locking means for maintaining the locking condition, the locking means comprising: a pair of left and right locking brackets attached symmetrically to both insides of the helmet body and having locking bars respectively; latches on both the left and right sides engaged with the locking bars of the locking brackets; latch plates on which the latches are fitted rotatably at a predetermined angle by a pivot; a return spring of which one end is connected to the upper end of the latch and the other end is connected to the latch plate so as to return latches to the original position when unlocked; a connecting bar in which the extending portions of both ends are connected to the ends of latches and are arranged in arc shape along the front inside of the jaw guard in order to operate simultaneously the latches on both the left and right sides; and an unlock lever which is crossed longitudinally to pull the middle of the connecting bar forward, and of which the upper end is connected to the inside of the jaw guard by a hinge lever and the lower end is extended downward to be partly exposed below the jaw guard.
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[0011] Preferably, the hook of the latch rotates within a predetermined range of angle around the pivot, and rotates upward in the direction of the rotation of the jaw guard during unlocking.
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[0012] Preferably, the hinge means comprising hinge holes formed on the side of the helmet body corresponding to the shaft holes formed on the left and right extending portions of the jaw guard, hooking protuberances formed on the inside of the shaft holes, support holes formed in the hinge holes, and a screw shaft inserted into
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the hinge holes 1a to maintain open condition.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] Other objects and aspects of the present invention will become apparent from the following description of embodiments with reference to the accompanying drawings in which:

Fig. 1 is a perspective view showing a conventional removable jaw guard;

Fig. 2 is a longitudinal sectional view of a helmet showing the installation of the conventional removable jaw guard.

Fig. 3 is a perspective view showing a helmet having a removable jaw guard according to the present invention;

Fig. 4 is an exploded perspective view showing the main configuration of the removable jaw guard according to the present invention;

Fig. 5 is a partially sectional view of a helmet showing the installation of the removable jaw guard according to the present invention;

Fig. 6 is an enlarged sectional view showing the locking of the removable jaw guard according to the present invention;

Fig. 7 is an enlarged sectional view showing the unlocking of the removable jaw guard according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0014] Below will be described in detail a helmet having a removable jaw guard according to the present invention with reference to the accompanying drawings.

[0015] Fig. 3 is a perspective view showing a helmet having a removable jaw guard according to the present invention, Fig. 4 is an exploded perspective view showing the main configuration of the removable jaw guard according to the present invention, Fig. 5 is a partially sectional view of a helmet showing the installation of the removable jaw guard according to the present invention.

[0016] First, a helmet having a removable jaw guard of the present invention comprises a helmet body 11 provided in front with an opening 2 for the face, a jaw guard 4 provided for protecting the jaw of the wearer by covering part of the opening 2 of the helmet body 1, and a shield 3 for shielding the remaining portion of the opening 2 above the jaw guard 4.

[0017] In such a helmet, the jaw guard of the present invention has a hinge mechanism and the locking mechanism improved.

[0018] As shown in Figs. 4 and 5, the locking means 500 comprises locking brackets 510, a latch 520, latch plates 530, a connecting bar 550 and an unlock lever 570.

[0019] Each of the locking brackets 510 attached symmetrically to both insides of the helmet body 1 has a locking bar 511. The latch 520 attached to either inside of

the jaw guard 4 is engaged with the locking bar 511 of the locking bracket 510.

[0020] Also, a latch plate 530 is fixed on either inside of the jaw guard 4, and the latch 520 is mounted pivotably on the latch plate 530 by the pivot 522. And, one end of the latch 520 includes the hook 521 engaged with the locking bar 511, and to the other end is connected a return spring 540 for providing return force. One end of the return spring 520 that returns the latches 520 to the original position during unlocking is connected to the upper end of the latch 520 and the other end is connected to the latch plate 530.

[0021] As shown in Fig. 4, the connecting bar 550 for operating both the left and right sides simultaneously is automatically connected to the end of the latch 520 through an extending portion 551 of both ends. This connecting bar 550 is arranged in arc shape along the inside of the jaw guard 4.

[0022] And the unlock lever 570 is placed so as to be crossed longitudinally to pull the middle of the connecting bar 550 forward. The upper end of the unlock lever 570 is connected to the inside of the jaw guard 4 by the hinge lever 560, and the lower end thereof is extended downward to be partly exposed below the jaw guard 4.

[0023] During unlocking operation, the latch 520 moves pivotably upward in the rotary direction of the jaw guard 4 around the pivot 522, so that the engaging of the hook 521 and the locking bar 511 are released.

[0024] At the lower end of the latch plate 530 is formed an inserted portion 531 to maintain the locking condition with support force.

[0025] The locking mechanism 500 configured like this is locked when the wearer pulls down the jaw guard 4 to wear and is unlocked when he pulls the unlock lever 570 forward to raise the jaw guard 4. This will be described in detail with reference to Figs. 6 and 7.

[0026] First, when the wearer pulls down the jaw guard 4 forward to close the jaw guard 4, as shown in Fig. 6, the hooks 521 of the latches 520 on both the left and right sides that were rotated downward by the return spring 540 are hooked on the locking bar 511, and at the same time, the inserted portion 531 of the locking plate 530 is inserted below it, so the locked condition is maintained firmly.

[0027] When the jaw guard is lifted in this condition, as shown in Fig. 7, the unlock lever 570 is pulled outward to release the hooked condition of the latch 520.

[0028] Namely, since the unlock lever 570 being pulled has its upper end connected by the hinge lever 560, a slight rotary force is induced forward, and this rotary motion pulls the middle of the connecting bar 550 connected crosswise.

[0029] When the connecting bar 550 is pulled forward, since its both ends are connected to each of the latches 520 placed on both the left and right sides of the jaw guard 4, as shown in Fig. 7, it rotates the hook 521 upward.

[0030] Since the hook 521 is drawn off from the locking

bar 511 of the locking bracket 510 as the latch 520 is being lifted up like this, the jaw guard 4 can be rotated upward by using the hinge bolt 410 of the hinge mechanism 400 as a hinge shaft.

[0031] At this time, the direction in which the hook 521 is drawn off plays an important role for safety.

[0032] Namely, as shown in Fig. 7, since the direction in which the hook 522 is drawn off is the same as the direction in which the jaw guard 4 is to be opened, the jaw guard can be opened by force in case of emergency.

[0033] Meanwhile, the jaw guard 4 of the present invention can have the hinge means 400 maintained in open condition, as shown in Figs. 4 and 5.

[0034] For this, the shaft holes 41 formed on the left and right extending portions of the jaw guard 4 are matched with the hinge holes 1a formed on the side of the helmet body 1 and connected to the screw shaft 410, while a hook protuberance 42 is formed on the inside of the shaft hole 41 and a support protuberance 1b is formed in the hinge hole 1a. Therefore, when the hook protuberance 42 is hooked over the support protuberance 1b, it becomes possible to maintain that condition.

[0035] And when the jaw guard 4 is dropped down, the latches 520 on both the left and right sides are returned to the original position by the spring 540, so the hook 521 is inserted again into the locking bar 511 of the locking bracket 510 to be locked again.

[0036] As described above in detail, the present invention is convenient to use because the hinge structure of the jaw guard is maintained in open condition as hook protuberance and support protuberance, and the locking structure can be unlocked more easily because, when the latch for locking is drawn off the hooking jaw, the hook is to be pivoted in the opening direction of the jaw guard.

[0037] Especially, since such a hook pivoting direction makes it possible to take off the helmet even if the locking structure won't function properly due to damage in an emergency, casualties can be minimized in an accident.

[0038] Although the present invention has been described in connection with the exemplary embodiments illustrated in the drawings, it is only illustrative. It will be understood by those skilled in the art that various modifications and equivalents can be made to the present invention. Therefore, the true technical scope of the present invention should be defined by the appended claims.

Claims

1. A helmet having a removable jaw guard which is opened and closed by a hinge means for protecting the wearer by covering part of an opening of a helmet body, and which has a locking means for maintaining the locking condition, the locking means comprising:

a pair of left and right locking brackets 510 attached symmetrically to both insides of the hel-

met body 1 and having locking bars 511 respectively;

latches 520 on both the left and right sides engaged with the locking bars 511 of said locking brackets 510;

latch plates 530 on which said latches 520 are fitted rotatably at a predetermined angle by a pivot 522;

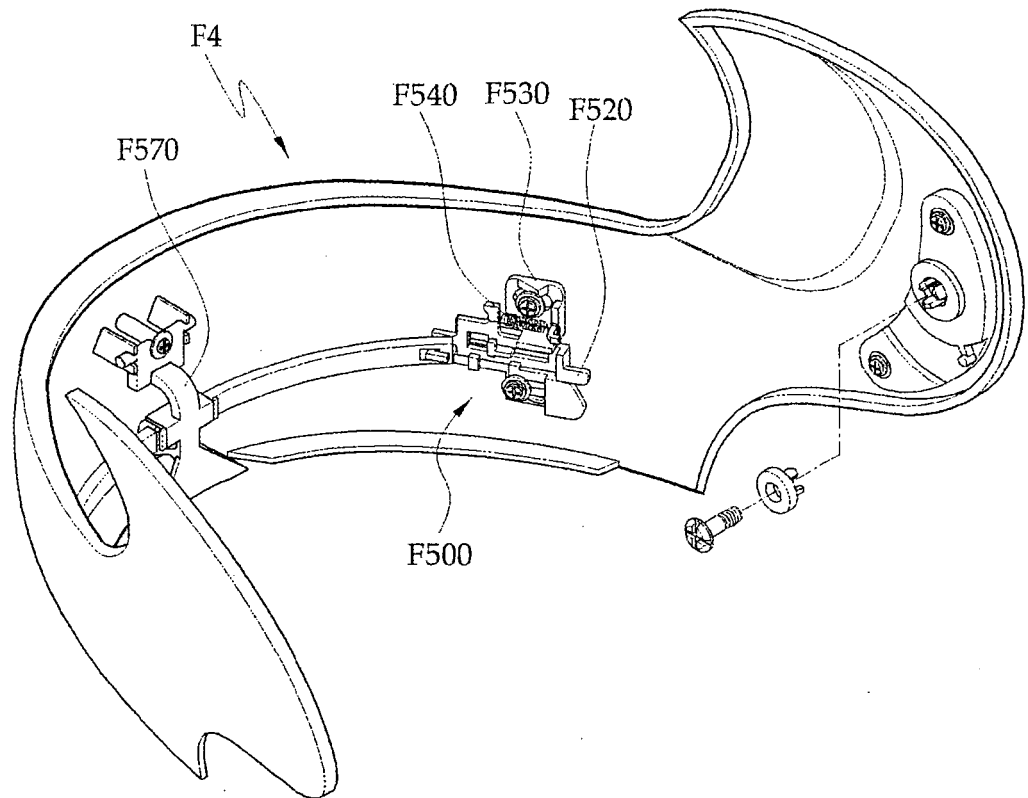
a return spring 540 of which one end is connected to the upper end of said latch 520 and the other end is connected to said latch plate 530 so as to return latches 520 to the original position when unlocked;

a connecting bar 550 in which the extending portions 551 of both ends are connected to the ends of latches 520 and are arranged in arc shape along the front inside of said jaw guard 4 in order to operate simultaneously said latches 520 on both the left and right sides; and

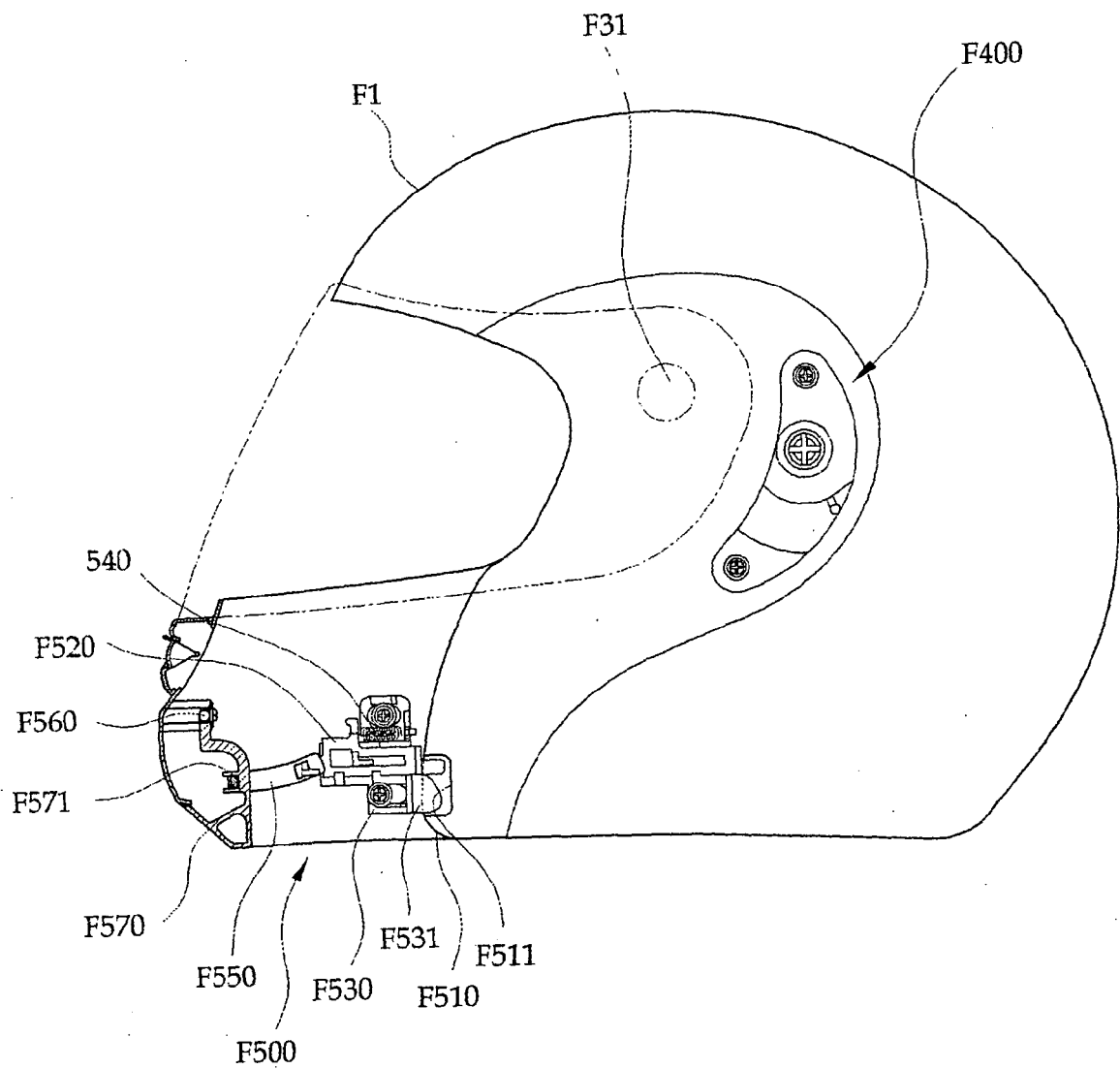
an unlock lever 570 which is crossed longitudinally to pull the middle of said connecting bar 550 forward, and of which the upper end is connected to the inside of said jaw guard 4 by a hinge lever 560 and the lower end is extended downward to be partly exposed below said jaw guard 4.

2. The helmet according to claim 1, wherein the hook 521 of said latch 520 rotates within a predetermined range of angle around said pivot 522, and rotates upward in the direction of the rotation of the jaw guard 4 during unlocking.
3. The helmet according to claim 1, wherein the hinge means comprising hinge holes 1a formed on the side of said helmet body 1 corresponding to the shaft holes 41 formed on the left and right extending portions 40 of said jaw guard 4, hooking protuberances 42 formed on the inside of said shaft holes 41, support holes 1b formed in said hinge holes 1a, and a screw shaft 410 inserted into said hinge holes 1a to maintain open condition.

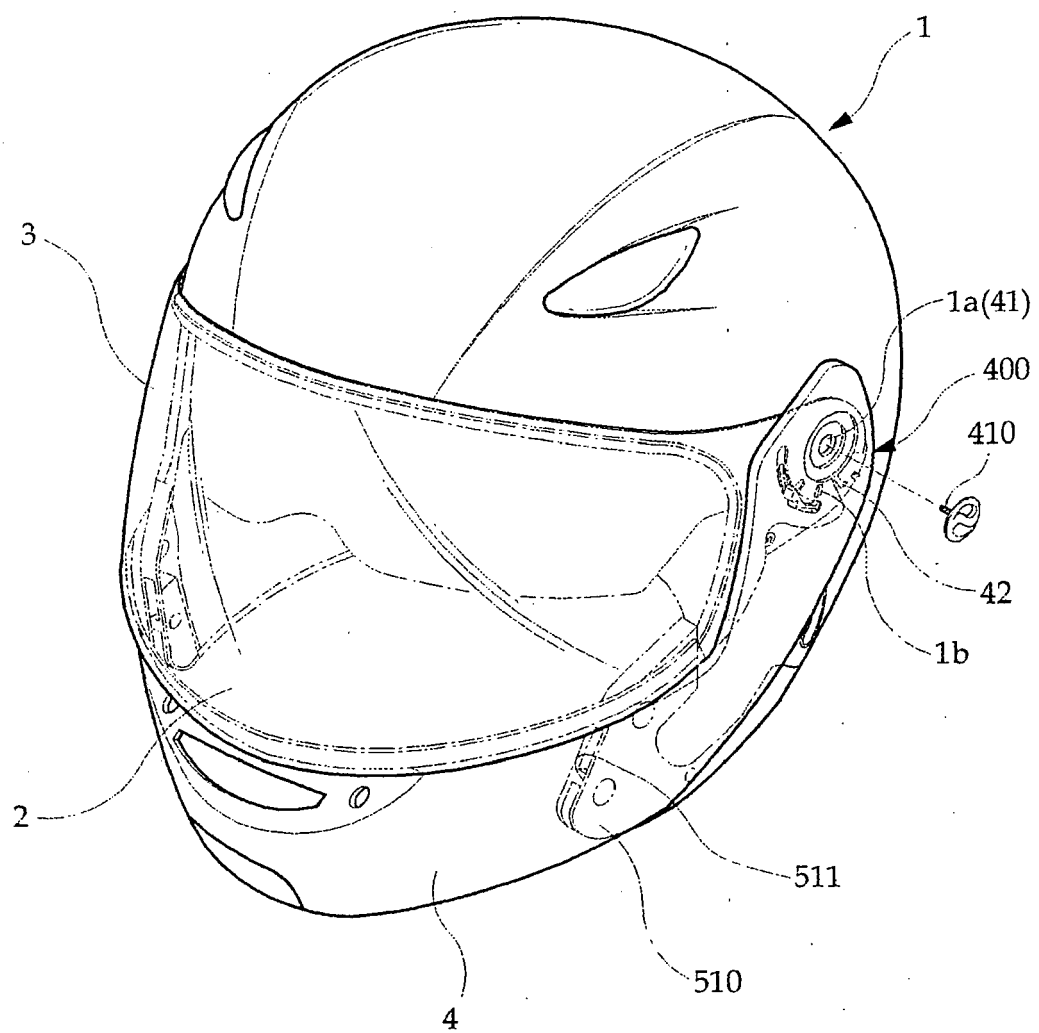
【Fig. 1】 Prior Art



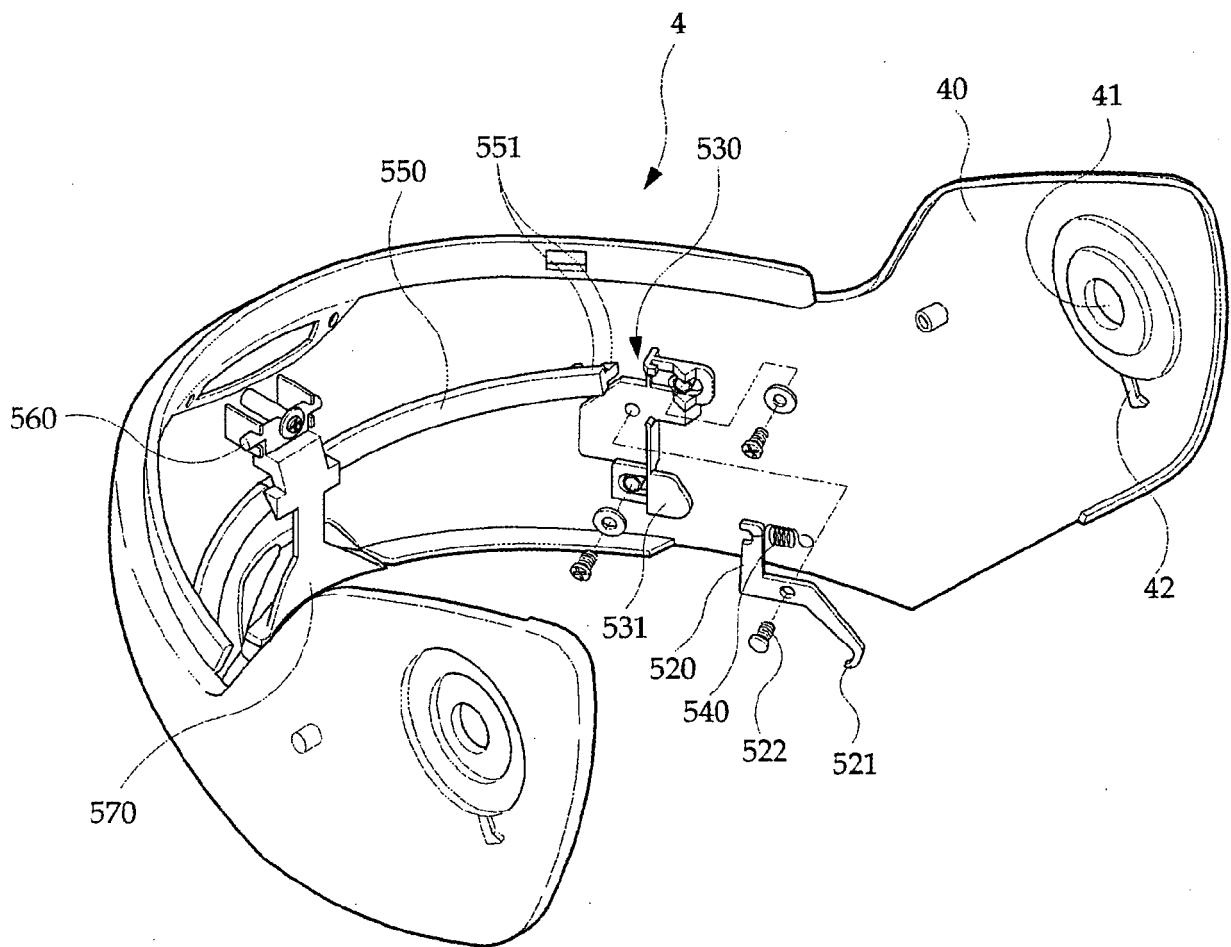
【Fig. 2】 Prior Art



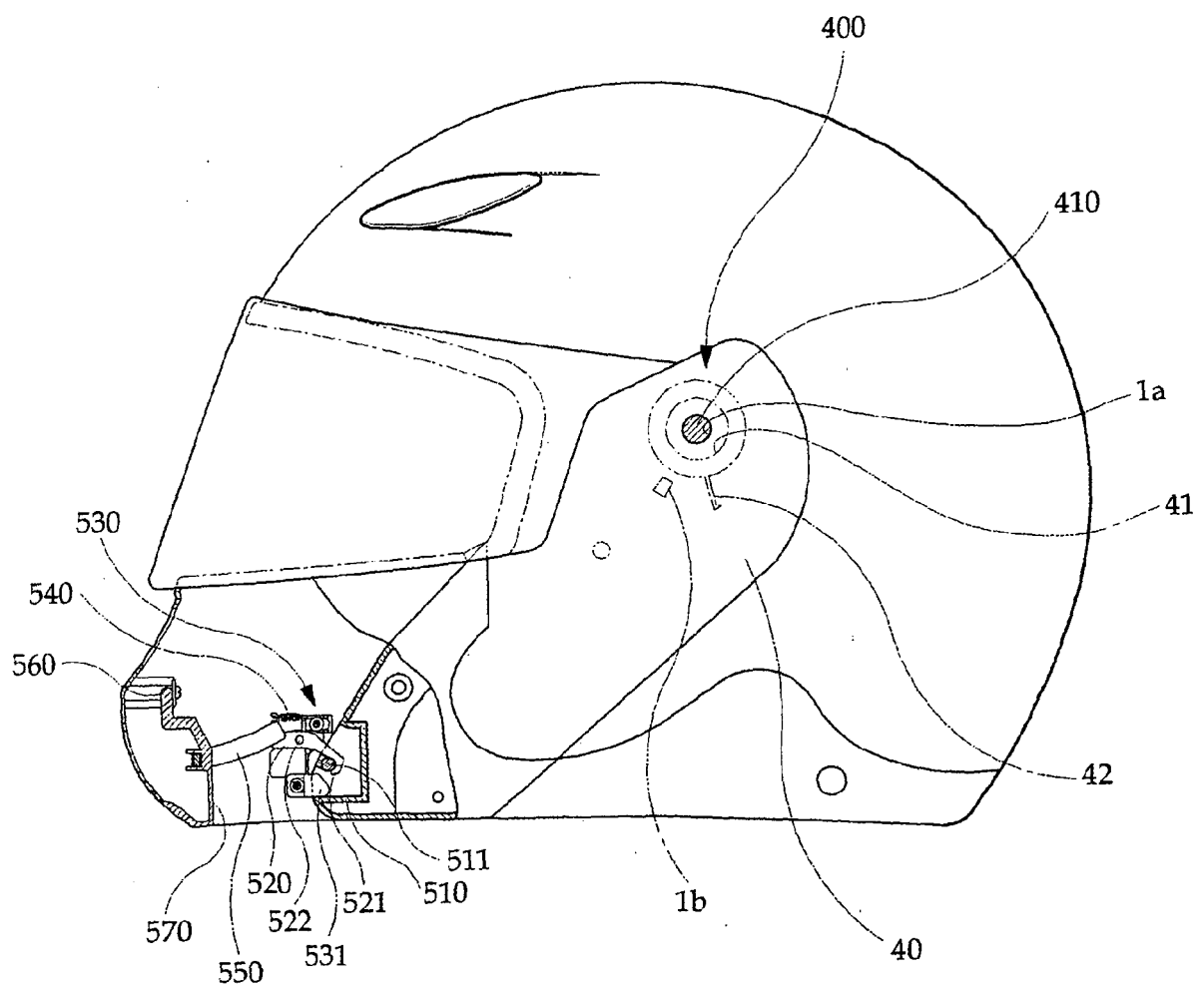
【Fig. 3】



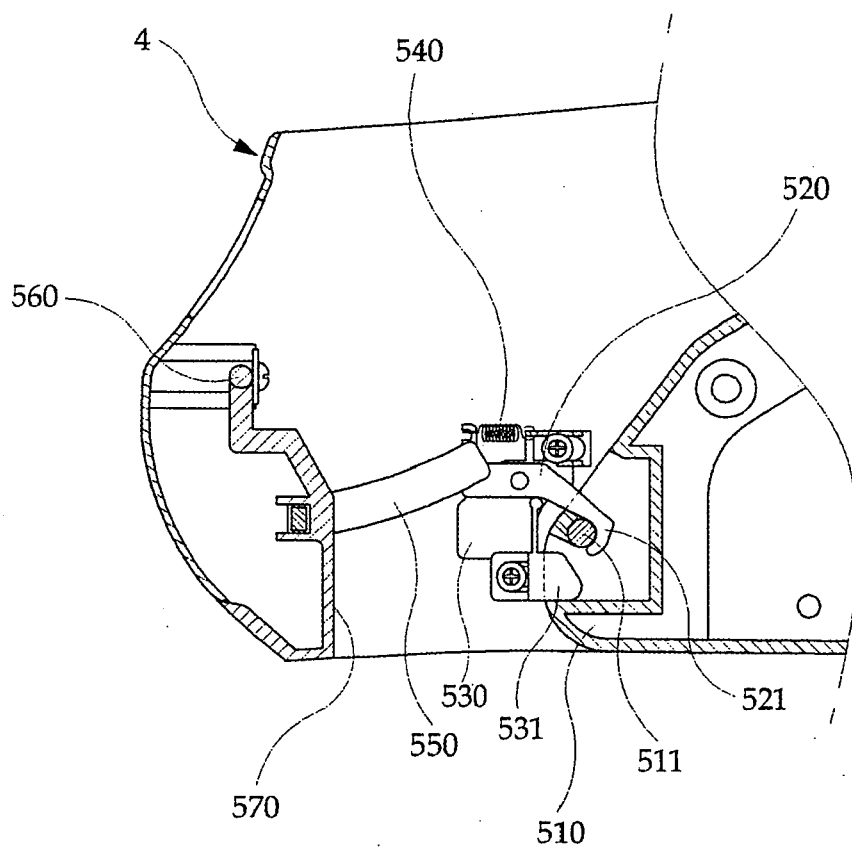
【Fig. 4】



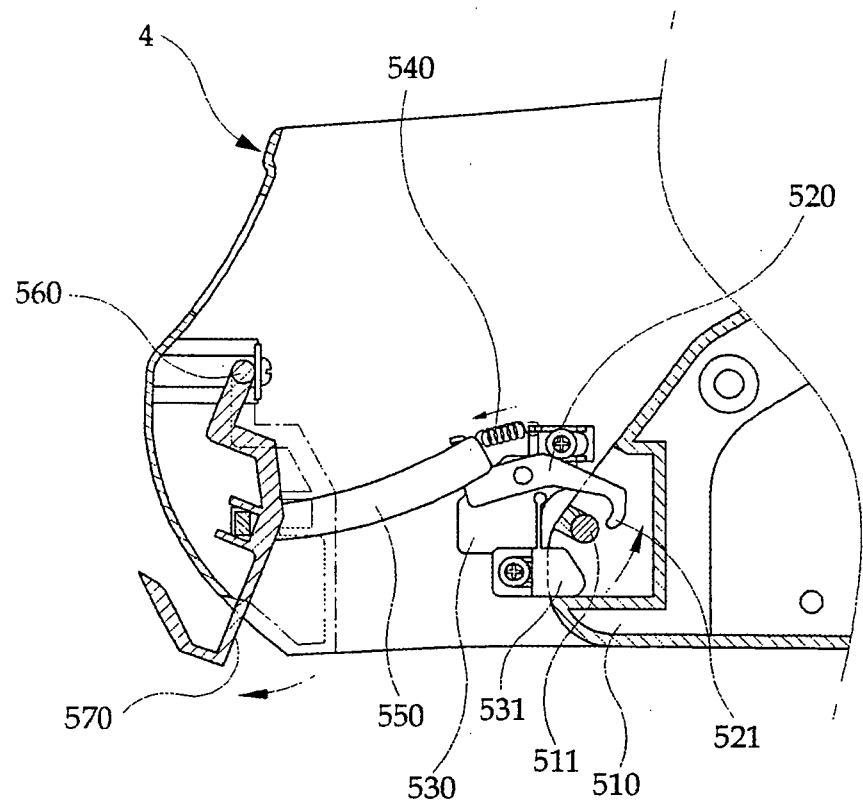
【Fig. 5】



【Fig. 6】



【Fig. 7】





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EUROPEAN SEARCH REPORT

Application Number
EP 06 00 1322

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	DE 102 34 330 A1 (SCHUBERTH WERK GMBH [DE]) 5 February 2004 (2004-02-05) * paragraph [0022] - paragraph [0027]; figures 1-3 *	1-3	INV. A42B3/32
Y	EP 0 972 461 A1 (SHOEI CO LTD [JP]) 19 January 2000 (2000-01-19) * paragraph [0032] - paragraph [0037]; figures 4,17 *	1-3	
Y,D	EP 1 547 480 A (HJC CO LTD [KR]) 29 June 2005 (2005-06-29) * paragraph [0027] - paragraph [0053] *	1-3	
A	US 2003/182716 A1 (WU DE-REN [TW]) 2 October 2003 (2003-10-02) * paragraph [0016] - paragraph [0020]; figures 3,4 *	1-3	
A	DE 299 20 802 U1 (LUNG HUEI SAFETY HELMET CO [TW]) 2 March 2000 (2000-03-02) * the whole document *	1-3	TECHNICAL FIELDS SEARCHED (IPC)
A	EP 1 106 090 A2 (HONG JIN CROWN CORP LTD [KR] HONG JIN CROWN CO LTD [KR]) 13 June 2001 (2001-06-13) * the whole document *	1-3	A42B
A	EP 0 895 726 A1 (LOCATELLI ANTONIO [IT]) 10 February 1999 (1999-02-10) * paragraph [0014] - paragraph [0017] *	1-3	
A	EP 1 500 340 A (OPTICOS S R L [IT]) 26 January 2005 (2005-01-26) * the whole document *	1-3	
		-/--	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 February 2007	Examiner Hannam, Martin
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	

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Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 00 1322

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 197 28 483 A1 (IND SYSTEM CONSULTING & INVEST [IE]) 4 February 1999 (1999-02-04) * column 3, line 9 - column 4, line 19; figures 1-3 * -----	1-3	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 February 2007	Examiner Hannam, Martin
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			

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EPO FORM 1503 03.82 (P04C01)

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

EP 06 00 1322

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
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14-02-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 10234330	A1	05-02-2004	NONE	
EP 0972461	A1	19-01-2000	DE 69911693 D1 DE 69911693 T2 JP 2000096334 A	06-11-2003 05-08-2004 04-04-2000
EP 1547480	A	29-06-2005	CN 1636475 A KR 20050064696 A US 6892400 B1	13-07-2005 29-06-2005 17-05-2005
US 2003182716	A1	02-10-2003	NONE	
DE 29920802	U1	02-03-2000	US 6212689 B1	10-04-2001
EP 1106090	A2	13-06-2001	CA 2327605 A1 KR 20010054381 A US 2002129440 A1	06-06-2001 02-07-2001 19-09-2002
EP 0895726	A1	10-02-1999	AT 221327 T DE 69806866 D1 DE 69806866 T2 ES 2133253 T1 IT M1971917 A1 PT 895726 T	15-08-2002 05-09-2002 12-12-2002 16-09-1999 08-02-1999 31-10-2002
EP 1500340	A	26-01-2005	AU 2004202801 A1 CA 2471503 A1 JP 2005042287 A US 2005015861 A1	10-02-2005 25-01-2005 17-02-2005 27-01-2005
DE 19728483	A1	04-02-1999	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- KR 10200564696 [0005]