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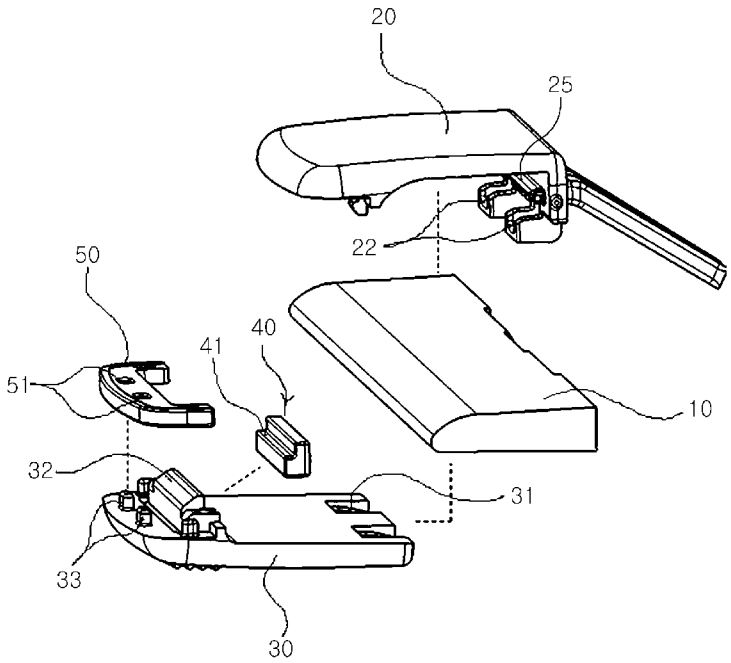
(54) Title: STRUCTURE FOR MOUNTING WING KNOB FOR VEHICLE AIR VENT



(57) Abstract: Disclosed is a structure for mounting a wing knob for a vehicle air vent which includes a plurality of vanes (10), upper knobs (20) and lower knobs (30) respectively encompassing the vanes (10), rubber members (40) for reducing friction noise between the upper knobs (20) and the lower knobs (30), and decoration members (50) coupled between the upper knobs (20) and the lower knobs (30) so as to add decorative esthetic sense, characterized in that: the upper knob (20) has holding pieces (22) at the lower portion of an opening (21) of the upper knob (20); the rubber member (40) has a stepped shoulder (41); the decoration member (50) has fitting grooves (51); and the lower knob (30) is integrally provided with a hook (31) to be held by the holding pieces (22), a holding projection (32) held by the shoulder portion (41), and hook pieces (33) fitted into the fitting grooves (51) of the decoration member (50), wherein the wing knob is prevented from being detached from the vanes.

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Description

Title of Invention: STRUCTURE FOR MOUNTING WING KNOB FOR VEHICLE AIR VENT

Technical Field

[1] The present invention relates to a structure for mounting a wing knob for a vehicle air vent, wherein the knob is prevented from being detached from vanes when the knob is carelessly pulled or applied with a shock in use.

Background Art

[2] In general, cold air or warm air is discharged to the inside of a vehicle through air vents provided to a dashboard for cooling or heating a vehicle room.

[3] Such an air vent includes a plurality of horizontal wings provided to the front end portion of a housing and freely rotatable in the vertical direction so as to control an air discharge direction upwards or downwards, and a plurality of vertical wings provided at the rear portion of the horizontal wings and freely rotatable so as to control the air discharge direction to the left or right, wherein the vertical wings also can block the supply of the discharge air.

[4] In the air vent of a vehicle as above, the horizontal wings are connected to each other through a link so as to operate in association, and the vertical wings are also connected to each other through a link so as to operate in association, wherein the supply of discharge air also can be blocked by sealing discharge holes with the plurality of horizontal wings.

[5] Further, a wing knob is provided to the vane so as to control the wind direction of the air vent.

[6] Fig. 1 and Fig. 3 show the structure of such a prior art wing knob.

[7] That is, a knob rear part 1 has an opening provided in a forward direction so as to be coupled with a knob front part 2 in a state, in which a vane 3 is received in an open groove portion in the forward direction thereof. Also, the knob rear part 1 is coupled with a decoration member 4 for providing decorative esthetic sense at the rear portion thereof.

[8] At this time, a knob rubber member 5 is interposed between the knob rear part 1 and the vane 3. The knob rear part 2 is provided with a hook 8 at the front portion thereof so as to be held by the knob front part 1 and prevented from being detached therefrom, as shown in Fig. 2.

[9] Further, the decoration member 4 is integrally provided with a holding protrusion 6 inwardly and the knob rear part 2 is integrally provided with a holding projection 7 such that the holding protrusion 6 is held by the holding projection 7 and prevented

from being detached therefrom, as shown in Fig. 3.

[10] **PRIOR ART DOCUMENT**

[11] **PATENT DOCUMENT**

[12] [Patent Document 1]: Korean Utility Model Publication No. 20-0452765

Disclosure of Invention

Technical Problem

[13] Meanwhile, according to the prior art wing knob structure,the knob rear part 1 and the knob front part 2 as well as the decoration member 4 are all likely to be detached.

[14] That is, detachment force is typically applied in a direction from the vane 3 to the decoration member 4, wherein the direction that the knob rear part 1 and knob front part 2 are coupled to each other by the hook 8 coincides with the direction that the detachment force is applied.

[15] In addition, the decoration member 4 also maintains the attachment thereof in a state, in which the direction that the holding protrusion 6 coupled to the knob rear part 1 is coupled to the holding projection 7 coincides with the direction that the detachment force is applied. Therefore, if the coupling force of the hook 8 or the coupling force between the holding protrusion 6 and the holding projection 7 becomes weak, each part becomes likely to be detached even when a small shock or force is applied, thereby causing problems in quality such as the detachment of the wing knob.

[16] If the wing knob is detached, the wind direction conversion which is one of the main functions of the air vent becomes impossible, resulting in the consumer complaints.

[17] The present invention is derived in consideration of the above disadvantages and any other problems, and has an objective to provide a structure for mounting a wing knob for a vehicle air vent, wherein each part is coupled to be locked in a direction perpendicular to the direction that a shock or force is applied, thereby preventing the detachment of each part in advance.

[18] The present invention has another objective to provide a structure for mounting a wing knob for a vehicle air vent, which can prevent the failure of the wind direction conversion of the air vent due to the detachment of the knob which is the troublesome problem of the air vent.

Solution to Problem

[19] In order to achieve the above and any other objectives of the present invention, according to the present invention, there is provided a structure for mounting a wing knob for a vehicle air vent, which includes a plurality of vanes 10 arranged at predetermined intervals for controlling the wind direction of an air vent, upper knobs 20 and lower knobs 30 respectively provided for encompassing the vanes 10 at upper and lower portions thereof so as to control the angles of the vanes 10, rubber members 40

in contact with the vanes 10 to reduce friction noise in a state, in which the rubber members 40 are received between the upper knobs 20 and the lower knobs 30, and decoration members 50 are coupled between the upper knobs 20 and the lower knobs 30 in a state, in which the upper knobs 20 and the lower knobs 30 are assembled as single bodies, so as to add decorative esthetic sense, characterized in that:

[20] the upper knob 20 has holding pieces 22 formed at the lower portion of an opening 21 provided at one side of the upper knob 20;

[21] the rubber member 40 has a shoulder 41 formed to be stepped;

[22] the decoration member 50 has fitting grooves 51; and

[23] the lower knob 30 is integrally provided with each of a hook 31 to be held by the holding pieces 22 in a state, in which the lower knob 30is moved forwards through the opening 21, a holding projection 32 held by the shoulder portion 41 of the rubber member 40, and hook pieces 33 fitted into the fitting grooves 51 of the decoration member 50 and held therein.

[24] Further, it is preferable that the vane 10 is formed with a groove portion 11 and the upper knob 20 has a fitting projection 25 to be fitted into the groove portion 11 of the vane 10 such that the vane 10 and the upper knob 20 are maintained in a perfect coupling state while being assembled.

Advantageous Effects of Invention

[25] According to the present invention in the above configuration, the upper knob 20, the lower knob 30 and the decoration member 50 are coupled to be respectively locked in a direction perpendicular to a direction that a shock or force is applied, such that each of the parts can be prevented from being detached.

[26] Therefore, the failure of the wind direction conversion of the air vent due to the detachment of the knob, which is the troublesome problem of the air vent, can be prevented, thereby improving the marketability and reliability.

Brief Description of Drawings

[27] Fig. 1 is a disassembled perspective view showing the configuration of a prior art wing knob,

[28] Fig. 2 is a longitudinal sectional view showing the assembled state of Fig. 1,

[29] Fig. 3 is a cross sectional view showing the assembled state of Fig. 1,

[30] Fig. 4 is a disassembled perspective view showing the configuration of a wing knob according to the present invention, and

[31] Fig. 5 is a longitudinal sectional view showing the assembled state of Fig. 4.

Mode for the Invention

[32] Hereinafter, a wing knob of an air vent according to a preferred embodiment of the present invention will now be described with respect to the configuration in detail with

reference to the accompanied drawings.

[33] Fig. 4 is a disassembled perspective view showing the configuration of a wing knob according to the present invention, wherein an upper knob 20 and a lower knob 30 are divided in the vertical direction and assembled with each other in a state, in which a vane 10, a rubber member 40 and a decoration member 50 are positioned between the upper knob 10 and the lower knob 30.

[34] Fig. 5 is a longitudinal sectional view showing the assembled state of each part.

[35] A plurality of vanes 10 for controlling the wind direction of the air vent is arranged at predetermined intervals and wing knobs are coupled thereto so as to control the direction of the vanes 10.

[36] The wing knob includes the upper knob 20 and the lower knob 30 which are assembled with each other as a single body, the rubber member 40 and the decoration member 50.

[37] The upper knob 20 and the lower knob 30 are formed in a shape, in which the upper knob 20 and the lower knob 30 are divided in the vertical direction and respectively provided at the upper and lower portions of the vane 10 so as to encompass the vane 10.

[38] The rubber member 40 is inserted into an internal portion defined by the upper knob 20 and the lower knob 30, which are made from synthetic resin materials, and is in contact with the end surface of the vane 10 in the insertion state, thereby improving the touch and reducing the friction noise when operating the wing knob.

[39] The decoration member 50 is provided between the upper knob 20 and the lower knob 30 in a state, in which the upper knob 20 and the lower knob 30 are assembled with each other as a single body, wherein the outside end portion of the decoration member 50 is exposed to the outside so as to provide decorative esthetic sense.

[40] In some cases, the parts of the wing knob structured as above are possibly detached in the lengthwise direction of the vane 10, that is, towards the decoration member 50 when a shock or operation force is applied thereto in a state, in which the wing knob is mounted on the vane 10.

[41] The present invention is to prevent the generation of such a case in advance, wherein a coupling part is formed to be perpendicular to the lengthwise direction of the vane 10, that is, the detachment direction of the decoration member 50.

[42] That is, the upper knob 20 has holding pieces 22 formed at the lower portion of an opening 21 which is open at one side.

[43] The holding pieces 22 are injection-molded at two positions spaced from each other as shown in Fig. 4.

[44] The rubber member 40 has a shoulder portion 41 which is formed to be stepped in an approximate "L" shape as shown in Fig. 5.

[45] The decoration member 50 has fitting grooves formed at two positions spaced from each other at a predetermined interval.

[46] Meanwhile, the lower knob 30 is integrally formed with a hook 31 such that the hook 31 is held by the holding pieces 22 in a state, in which the lower knob 30 is moved forwards through the opening 21. Further, the lower knob 30 has a holding projection 32 formed to be folded upwards at an assembling position for the rubber member 40 so as to be held by the shoulder portion 41.

[47] Furthermore, the lower knob 30 is integrally formed with hook pieces 33 at positions corresponding to the fitting grooves 51 of the decoration member 50 such that the hook pieces 33 are fitted into the fitting grooves 51 and then held by the fitting grooves 51.

[48] In the wing knob according to the present invention as above, the vane 10, the rubber member 40 and the decoration member 50 are positioned between the upper knob 20 and the lower knob 30 and then the hook 31 is moved forwards through the opening 21 in a state, in which the lower knob 30 is slightly inclined in the direction of arrow "a" in Fig. 5.

[49] In sequence, the lower knob 30 is slightly pulled in the direction of arrow "b" in Fig. 5 (in the decoration member direction) and then slightly lifted and moved forwards.

[50] Then, the hook 31 is held by the holding pieces of the upper knob 20 and the holding projection 32 of the lower knob 30 is held by the shoulder portion 41 of the rubber member 40.

[51] Further, the hook pieces 33 of the lower knob 30 are fitted into the fitting grooves 51 of the decoration member 50 so as to be held by the fitting grooves 51 of the decoration member 50.

[52] At this time, the holding projection 32 of the lower knob 30 can be held by the shoulder portion 41 of the rubber member 40 by the elastic force of the rubber member 40 which is made from a soft rubber material.

[53] Therefore, the hook 31 and the hook pieces 33 are held at positions perpendicular to the detachment direction, that is, the exposure direction of the decoration member 50, such that the parts are prevented from being detached even if a shock or force is applied in the detachment direction.

[54] Meanwhile, it is preferable that the vane 10 is provided with a groove portion 11 and the upper knob 20 is provided with a fitting protrusion 25 so as to be fitted into the groove portion 11 such that the vane 10 and the upper knob 20 are maintained in a perfect coupling state as being assembled with each other.

Industrial Applicability

[55] The present invention is applied to the technique relating to the wing knob provided to an air vent. In particular, the present invention is applied to a technique for

improving the quality of the wing knob so as to prevent the detachment of the wing knob while a user operates the same.

[56] The embodiments described above are to be understood as a few illustrative examples of the present invention and the present invention is not limited to the embodiments and the drawings. It will be understood by those skilled in the art that various modifications, combinations and changes may be made to the embodiments without departing from the scope of the present invention.

[57]

[58] Brief Explanation of Reference Symbols

[59] 10 Vanes 20 Upper knob

[60] 21 Opening 22 Holding pieces

[61] 30 Lower knob 31 Hook

[62] 32 Holding projection 33 Hook pieces

[63] 40 Rubber member 41 Shoulder portion

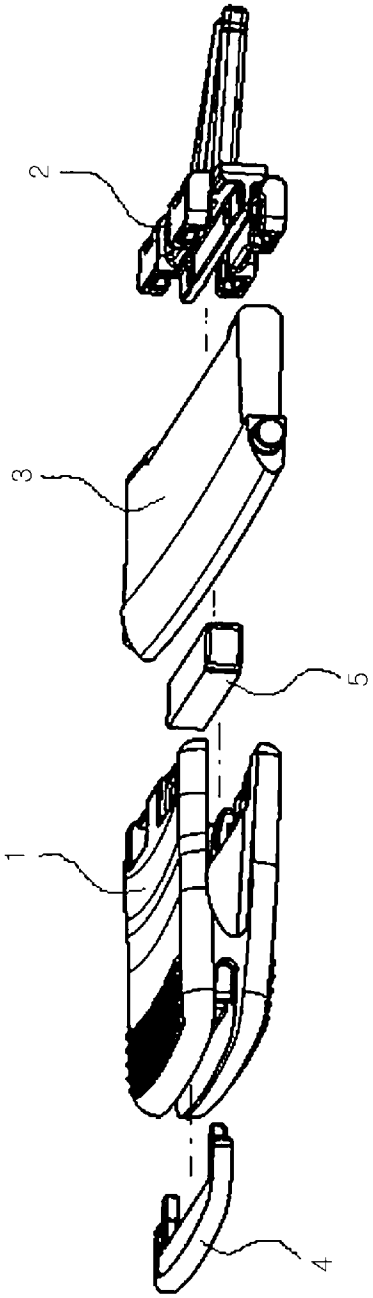
[64] 50 Decoration member 51 Fitting grooves

Claims

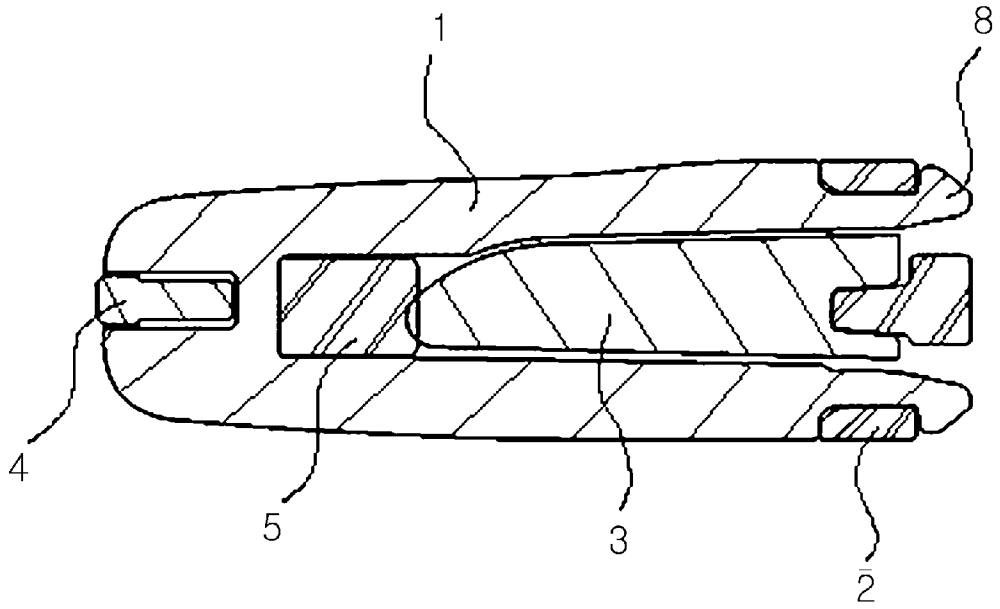
[Claim 1] A structure for mounting a wing knob for a vehicle air vent which includes a plurality of vanes (10) arranged at predetermined interval for controlling the wind direction of an air vent, upper knobs (20) and lower knobs (30) respectively provided for encompassing the vanes (10) at upper and lower portions thereof so as to control the angles of the vanes(10), rubber members (40) for reducing friction noise in contact with the vanes (10) in a state, in which the rubber members (40) are received between the upper knobs (20) and the lower knobs (30), and decoration members (50)are coupled between the upper knobs (20) and the lower knobs (30) in a state, in which the upper knobs (20) and the lower knobs (30) are assembled as single bodies, so as to add decorative esthetic sense, characterized in that:
the upper knob (20) has holding pieces (22) formed at the lower portion of an opening (21) provided at one side of the upper knob (20);
the rubber member (40) has a shoulder (41) formed to be stepped;
the decoration member (50) has fitting grooves (51); and
the lower knob (30) is integrally provided with each of a hook (31) to be held by the holding pieces (22) in a state, in which the lower knob (30) is moved forwards through the opening (21), a holding projection (32) held by the shoulder portion (41) of the rubber member (40), and hook pieces (33) fitted into the fitting grooves (51) of the decoration member (50) and held therein.

[Claim 2] A structure for mounting a wing knob for a vehicle air vent according to claim 1, wherein the vane (10) is formed with a groove portion (11) and the upper knob (20) has a fitting projection (25) to be fitted into the groove portion (11) of the vane (10) such that the mutual coupling state can be maintained.

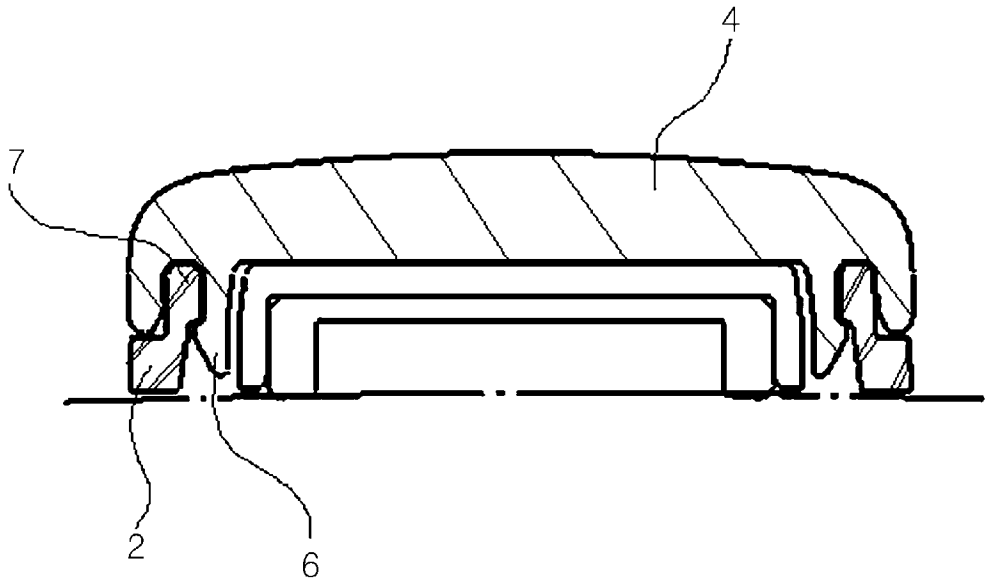
[Fig. 1]



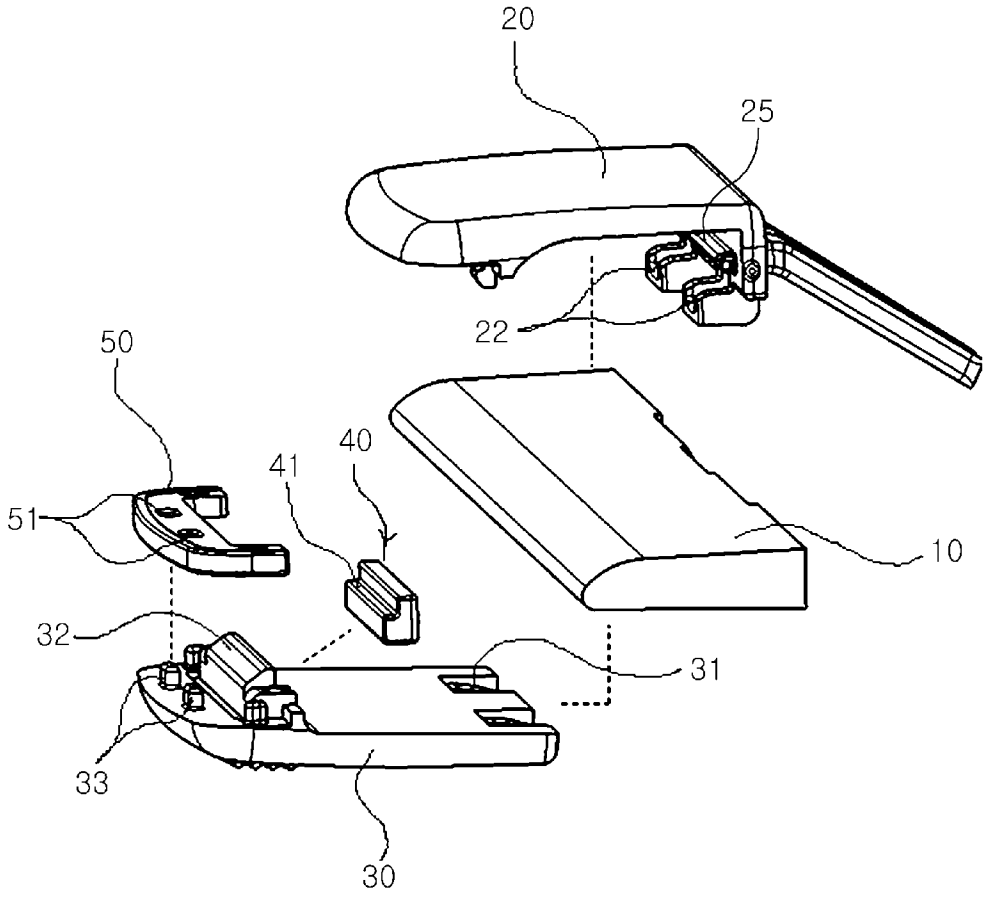
[Fig. 2]



[Fig. 3]



[Fig. 4]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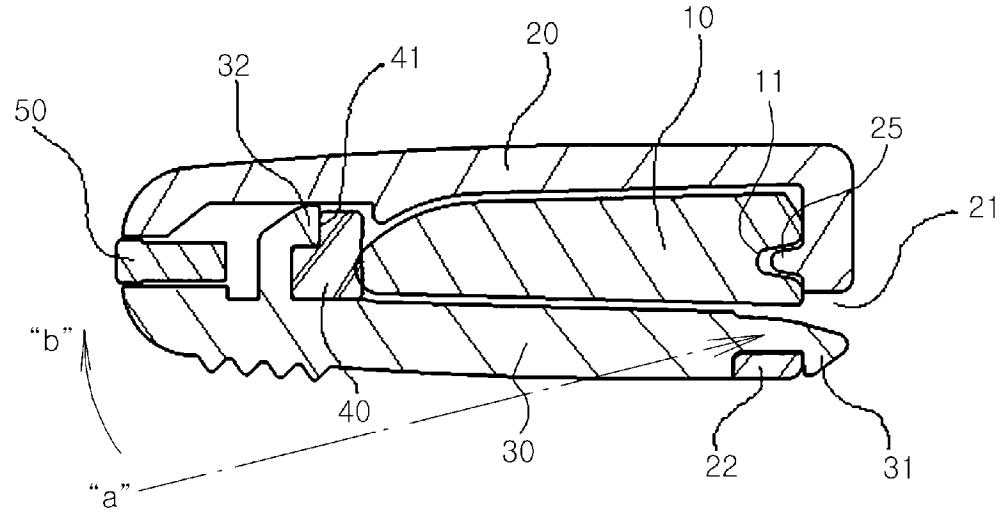
[Fig. 5]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INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2014/011916

A. CLASSIFICATION OF SUBJECT MATTER

B60H 1/00(2006.01)i, B60H 1/34(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60H 1/00; B60H 1/34; F24F 13/15

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: air vent, dial, knob, projection, decoration

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 3176607 U (HAWA PLASTICS CO.,LTD.) 28 June 2012 See paragraphs [0020], [0028]-[0034], and figures 8-10.	1-2
Y	JP 2009-115434 A (HOWA KASEI KK) 28 May 2009 See paragraphs [0030], [0031], and figures 5, 6.	1-2
A	JP 2009-113632 A (HOWA KASEI KK) 28 May 2009 See abstract, and figure 5.	1-2
A	KR 10-0833164 B1 (TRW CONTROLS & FASTENERS INC.) 28 May 2008 See claims 1, 3, and figure 4.	1-2

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 March 2015 (24.03.2015)	**24 March 2015 (24.03.2015)**

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2014/011916

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 3176607 U	28/06/2012	None	
JP 2009-115434 A	28/05/2009	None	
JP 2009-113632 A	28/05/2009	None	
KR 10-0833164 B1	28/05/2008	None	