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(54) **Vehicle interior component including indicator**

(57) Provided is a vehicle interior component that includes a component main body 10 and an indicator 20, the vehicle interior component enabling the component main body 10 to reliably hold the indicator 20, and effectively preventing the indicator 20 from being shaken. The component main body 10 includes an indicator holding portion 16, and the indicator 20 is inserted into the indicator holding portion 16 in a predetermined insertion direction and held therein. The indicator holding portion 16 includes a front side holding portion 13 into which the held projections 26 can be stuck in the insertion direction and that hold the held projections 26 by the held projections 26 being stuck thereinto, and a back side holding portion 18, which restrains the indicator 20 from behind at the position in which the held projections 26 are stuck thereinto.

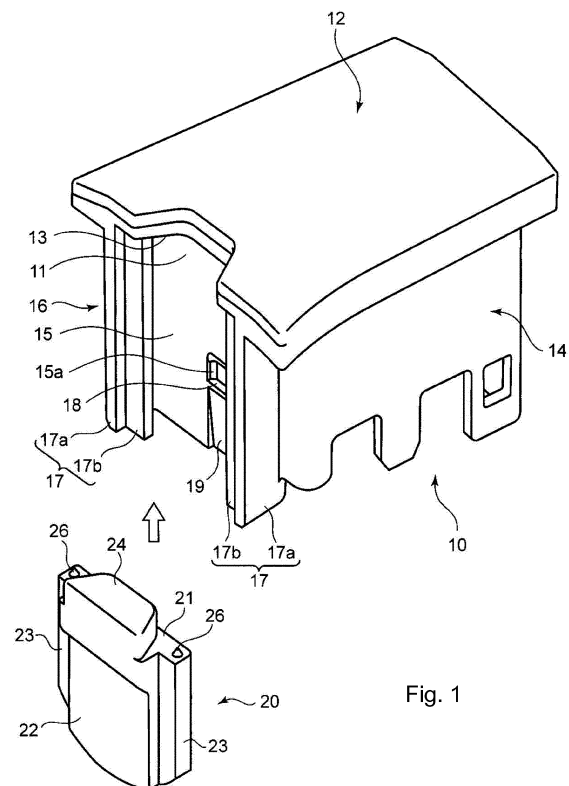


Fig. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to an interior component that is provided on, for example, an interior panel of a vehicle, such as an automobile, and includes an indicator for indicating the interior component.

BACKGROUND ART

[0002] Conventionally, as such interior components that are provided on interior panels or the like of automobiles, interior components are known that include an indicator capable of indicating the place where the interior component is arranged.

[0003] FIG. 8 illustrates a pushbutton that is disclosed in JP 2010-225324A as an example of such an interior component. The pushbutton includes a button main body 80 and an indicator 90.

[0004] The button main body 80 includes an operation wall 82, which is exposed on the front side of the panel and is subjected to a pressing operation by a finger or the like, and a side wall 84, which extends rearward from a peripheral border of the operation wall 82. An indication window 83 is provided passing through the operation wall 82. An indicator holding wall 86 that is cylindrical in shape extends rearward from the circumference of this window 83. The indicator holding wall 86 includes, at appropriate positions, latch holes 88 that pass through the indicator holding wall 86 in its thickness direction.

[0005] The indicator 90 is made from a material such as acrylic resin that is capable of guiding light, and held by the indicator holding wall 86. Specifically, this indicator 90 includes an elongate indicator main body 92 and can be inserted into the indicator holding wall 86, an indicating portion 93 that projects further forward from the top surface of the indicator main body 92, and a pair of held projections 94 that project laterally from the posterior part of the side surface of the indicator main body 92. The indicating portion 93 has such a shape that it can be inserted from behind into the window 83 of the button main body 80, and in the state in which the indicating portion 93 is inserted into the window 83, the held projections 94 are fitted into the latch holes 88 of the indicator holding wall 86, so that the indicator 90 is fixed on the indicator holding wall 86.

[0006] Directly behind the indicator 90, a light emitting element 100 for illumination is arranged that is mounted on a circuit board (not shown). Light that is emitted by the light emitting element 100 is guided to the indicating portion 93 through the indicator main body 92 of the indicator 90, thereby illuminating a particular area of the operation wall 82.

[0007] JP 2010-225324 A is an example of related art.

[0008] The indicator 90 is held only by inserting the indicating portion 93 into the indication window 83 and by fitting the held projections 94 into the latch holes 88

of the indicator holding wall 86. Therefore, the indicator 90 is liable to be shaken in the indicator holding wall 86. Such shaking may cause an abnormal noise, for example when the vehicle is driving. Further, in recent years, it has been proposed to mount the indicator on an outside surface of the component main body due to design requirements or the like. However, since in such a type of interior component, the indicator cannot be held in an enclosed manner as in the case using the indicator holding wall 86 illustrated in FIG. 8, it becomes difficult to stably mount the indicator, and there is the risk that the indicator comes off.

SUMMARY OF THE INVENTION

[0009] In view of such circumstances, it is an object of the present invention to provide a vehicle interior component that includes a component main body and an indicator that is mounted thereon, the vehicle interior component enabling the component main body to reliably hold the indicator, and effectively preventing the indicator from being shaken, without making the configuration significantly more complex.

[0010] The present invention provides a vehicle interior component including a component main body that includes an indicator holding portion; and an indicator that is made from a material capable of guiding light and has a shape that allows the indicator to be held by the indicator holding portion after being inserted into the indicator holding portion in a predetermined insertion direction. The indicator has a front side surface that faces forward in the insertion direction, and held projections that project further forward at a plurality of locations on the front side surface and are tapered. The indicator holding portion includes a front side holding portion that is made from a material into which the held projections can be stuck in the insertion direction and hold the held projections that are stuck therein, and a back side holding portion that restrains the indicator from behind, with respect to the insertion direction, at a position in which the held projections are stuck into the front side holding portions, preventing the held projections from disengaging from the front side holding portions.

[0011] In this interior component, by a combination of sticking of the held projections of the indicator into the front side holding portions of the indicator holding portion, and in this stuck state, restraining of the indicator from behind by the back side holding portion, it is possible to stably hold the indicator in the indicator holding portion, without using any complicated configuration. Furthermore, the sticking of the plurality of held projections into the front side holding portions prevents the relative displacement between the held projections and the front side holding portions, thereby effectively preventing the shaking of the indicator in the indicator holding portion. It is also possible to accommodate variations in size of the indicator, depending on the extent of the sticking.

[0012] As a specific configuration of the interior com-

ponent according to the present invention, it is suitable that the component main body includes an indicating wall that is arranged so as to be exposed on the front side of an interior panel, and that has an indication window, the indicator holding portion is provided on the rear side of the indication window, extending from the rear surface of the indicating wall in a depth direction thereof, and has such a shape that the indicator is inserted into the indicator holding portion in the longitudinal direction of the indicator holding portion, and the indicator emits light toward the front side of the indicating wall through the indication window in the state in which the indicator is inserted into the indicator holding portion.

[0013] In this case, it is suitable that the indicator includes: an indicator main body that has a shape that allows it to be inserted into the indicator holding portion from the rear side of the indicating wall and includes the front side surface, which faces the rear surface of the indicating wall; and an indicating portion that projects further forward in the insertion direction from the front side surface of the indicator main body and is shaped so as to be fitted into the indication window, and the held projections project from the front side surface at a plurality of locations surrounding the indicating portion, and are stuck into the rear surface of the indicating wall. According to this configuration, since the indicator main body and the indicating portion of the indicator are inserted into the indicator holding portion and the indication window from the rear side of the indicating wall, the shapes of the indication window and the indicating portion can be set with a higher degree of freedom than, for example, an interior component in which an indicator is inserted into an indicator holding portion from the front side of the indicating wall. It is also possible to use the indicating wall as the front side holding portions into whose rear surfaces the held projections stick.

[0014] Furthermore, since in this configuration, a combination of sticking of the held projections into the front side holding portions, and restraining of the indicator by the back side holding portion makes it possible to reliably hold the indicator as described above, even if the indication window and the indicating portion are requested to be arranged at an end of the indicating wall due to the design, for example, it is possible to meet the request while reliably holding the indicator and preventing shaking. Specifically, it is suitable that the indication window is located at an end of the indicating wall, the indicator holding portion includes: a holding wall that extends rearward from a location inward of the indication window; and restraining portions that protrude from an external side of the holding wall and are configured to restrain the indicator from both sides in a width direction of the indicator, which is a direction perpendicular to the insertion direction and perpendicular to the normal to the holding wall, so that the indicator can be inserted from the rear side of the indicating wall along the holding wall, the held projections of the indicator are located on both sides in the width direction of the indicator, the indicating portion be-

ing arranged between the held projections, and the back side holding portion is formed in the holding wall.

[0015] According to this configuration, although the indicator is arranged at an end of the indicating wall on its rear side, in other words, outside the holding wall extending from the rear surface of the indicating wall, it is possible to stably hold the indicator by the holding wall, the restraining portions that project from the external sides of the holding wall, the held projections sticking into the rear surface of the indicating wall, and the back side holding portion restraining the indicator from behind.

[0016] It is preferable that the indicator including the held projections be made from a material that has a higher Rockwell hardness than that of the front side holding portions. Held projections that are made from such a material can be stuck into the front side holding portions more reliably so as to be held by the front side holding portions.

Advantageous effects of Invention

[0017] As described above, according to the present invention, it is possible to provide a vehicle interior component that includes a component main body and an indicator that is mounted thereon, the vehicle interior component enabling the component main body to reliably hold the indicator, and effectively preventing the indicator from being shaken, without making the configuration significantly more complex.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018]

FIG. 1 is an exploded perspective view illustrating a pushbutton that is an interior component according to an embodiment of the present invention.

FIG. 2 is a front view illustrating the state in which the pushbutton is integrated into an interior panel.

FIG. 3 is a cross-sectional view taken along the line III-III of FIG. 2.

FIG. 4 is a cross-sectional view taken along the line IV-IV of FIG. 2.

FIG. 5 is an enlarged view of the portion V of FIG. 4.

FIGS. 6(a) and 6(b) are perspective views each illustrating a specific example of a shape of a held projection of an indicator that is included in the pushbutton.

FIG. 7 is an enlarged view of the portion VII of FIG. 3.

FIG. 8 is a front cross-sectional view illustrating a conventional pushbutton.

EMBODIMENTS OF THE INVENTION

[0019] Hereinafter, a preferable embodiment of the present invention will be described with reference to FIGS. 1 to 7. A vehicle interior component according to this embodiment is a pushbutton that is incorporated into

an interior panel 2 as illustrated in FIGS. 2 and 3, and includes a button main body 10, which is a component main body, and an indicator 20. However, the present invention is not limited to such a pushbutton, and may also be applicable, for example, to a dial knob that is operated in a rotating manner or to a component that only functions to indicate but is not operated.

[0020] The button main body 10 includes an indicating wall 12 and a peripheral wall 14.

[0021] The indicating wall 12 is a wall that is arranged in a through hole 4 provided in an appropriate position in the interior panel 2 (see FIGS. 2 and 3) so as to be exposed on the front side, and an indication window 11 is provided on part of the indicating wall 12. In this embodiment, the indicating wall 12 has a substantially rectangular shape, when seen from the front, and the indication window 11 is provided at an end in its longitudinal direction, the indication window 11 having a cut-out shape that is opened outward. However, in the present invention, the location of the indication window is not specifically limited, and the indication window may be, for example, a through hole that is provided in the middle of the indicating wall.

[0022] The peripheral wall 14 extends rearward (downward in FIGS. 1 and 3, and leftward in FIG. 4) from a location on the rear surface of the indicating wall 12 that is slightly inside the outer rim of the indicating wall 12, and has a shape of a substantially quadrangular prism as a whole. In other words, an outer peripheral portion of the indicating wall 12 has a portion that projects outward from the external sides of the peripheral wall 14, and the indication window 11 is provided in part of this outer peripheral portion.

[0023] The button main body 10 is further provided with an indicator holding portion 16 for holding the indicator 20 on the rear side of the indication window 11 (the lower side in FIGS. 1 and 3, and the left side in FIG. 4). The indicator holding portion 16 of this embodiment is configured to extend in the depth direction, that is, to the rear from the rear surface of the indicating wall 12, and to have such a shape that the indicator 20 is inserted into the indicator holding portion 16 in the longitudinal direction of the indicator holding portion 16 (that is, the depth direction) from the rear side of the indicating wall 12 (the lower side in FIGS. 1 and 3, and the left side in FIG. 4). The specific configuration of the indicator holding portion 16 will be described later.

[0024] The indicator 20 exhibits its indication function by emitting light toward the front side of the indicating wall 12 through the indication window 11. Specifically, on the rear side of the interior panel 2, a circuit board 30 as illustrated in FIG. 3 is arranged on which a light emitting element 32, that is, a light source is mounted, and the entire indicator 20 is made from a material that has a light guiding functionality to be able to guide the light emitted by the light emitting element 32 towards the indication window 11.

[0025] The indicator 20 includes an indicator main

body 22, an indicating portion 24, and a pair of projections 26 that are to be held, as an integrated component.

[0026] The indicator main body 22 is shaped so as to be inserted into the indicator holding portion 16 from the rear side of the indicating wall 12, and has a front side surface 21 that is located on the front side in its insertion direction, and faces the rear surface of the indicating wall 12. Further, both sides of the indicator main body 22 in the width direction of the indicator are recessed further inward than the other portions, and serve as restrained portions 23. These restrained portions 23 extend in a direction that is parallel to the insertion direction.

[0027] The indicating portion 24 has a cross-section that is smaller than that of the front side surface 21 and has such a shape that it can be fitted into the indication window 11. The indicating portion 24 projects further forward in the insertion direction from an appropriate position of the front side surface 23. In this embodiment, the indicating portion 24 is provided in the central portion of the indicator in its width direction. "Width direction of the indicator" refers here to a direction that is perpendicular to the insertion direction in which the indicator 20 is inserted into the indicator holding portion 16, and perpendicular to the normal to the holding wall 15 that will be described later. The indicating portion 24 emits the light that has been guided from the light emitting element 32 through the indicator main body 22 toward the front side (the upper side in FIGS. 1 and 3, and the right side in FIG. 4) of the indicating wall 12.

[0028] The held projections 26 are provided at a plurality of positions surrounding the indicating portion 24, that is, in this embodiment, positions on the both sides across the indicating portion 24 in the width direction of the indicator, and project forward from the front side surface 23. The held projections are tapered such that their cross-sectional area is reduced towards the tip. "Tapered" may refer to a shape that is sharpened to some extent that the held projections 26 can be stuck into the indicating wall 12 when they are pressed against the rear surface of the indicating wall 12 in the insertion direction. Within this extent, the tapered top may be slightly rounded. Further, the shape of the held projection 26 is not limited to any specific shape and may be, for example, a cone as illustrated in FIG. 6(a) or a pyramid as illustrated in FIG. 6(b).

[0029] The indicator 20 is preferably made from a material that has the above-explained light guiding functionality, and a higher Rockwell hardness than that of the material from which the indicating wall 12 is made. For example, if the entire button main body 10 including the indicating wall 12 is made from polycarbonate, it is preferable that the indicator 20 be made from a methacrylate resin.

[0030] On the other hand, the indicator holding portion 16 includes front side holding portions 13, a holding wall 15, and a pair of restraining portions 17 that project from the holding wall 15, the holding wall 15. A back side holding portion 18 is formed in the holding wall 15.

[0031] The front side holding portions 13 are portions into which both held projections 26 of the indicator 20 inserted into the indicator holding portion 16 are stuck in the insertion direction, and that hold the projections 26 due to the held projections 26 being stuck into the front side holding portions 13. In this embodiment, the portions of the indicating wall 12 that are located on both sides thereof across the indication window 11 in the width direction of the indicator correspond to the front side holding portions 13.

[0032] The holding wall 15 is a wall that extends rearward from a location on the rear surface of the indicating wall 12 that is located directly inward of the indication window 11. In this embodiment, the holding wall 15 is part of the peripheral wall 14 and located directly inward of the indication window 11 in the peripheral wall.

[0033] The restraining portions 17 project from the external side of the holding wall 15 and extend in the insertion direction so as to guide the indicator 20 in the insertion direction while restraining it from the both sides in the width direction of the indicator, in other words, so as to let the indicator 20 move along the holding wall 15. The two restraining portions 17 of this embodiment are respectively shaped so as to embrace the two restrained portions 23 of the indicator 20. Specifically, each restraining portion 17 includes, as an integrated component, a base wall 17a, which projects from the external side of the holding wall 15 in a direction normal thereto, and an embracing wall 17b, which projects inward from the base wall 17a in the width direction of the indicator. The embracing walls 17b restrain the restrained portions 23 of the indicator 20 from the side opposing the holding wall 15. This embracing wall 17b can be omitted if appropriate.

[0034] The back side holding portion 18 is a portion that restrains, from behind, the back end portion (the lower end portion in FIGS. 1 and 3) of the indicator 20 that is inserted up to the point where the held projections 26 are stuck into the front side holding portions 13, preventing the held projections 26 from disengaging from the front side holding portions 13. In this embodiment, the back side holding portion 18 is provided in the back end portion (the lower end portion in FIGS. 1 and 3) of the holding wall 15 and between the two restraining portions 17. Specifically, in the back end portion of the indicator main body 22, a latching projection 28 projects on the holding wall 15 side from the inside surface of the indicator main body 22, that is, from the surface that faces the holding wall 15, on the other hand, a recess 15a into which the latching projection 28 can be fitted is provided on the outside surface of the holding wall 15. A step-like portion of the recess 15a that limits the lower end thereof corresponds to the back side holding portion 18. Further, the part of the outside surface of the holding wall 15 that is located rearward with respect to the recess 15a (on the bottom side in FIGS. 1 and 3) is an inclined surface 19 that is receded further inward (rightward in FIG. 3) of the button main body 10 when following it to the rear end of the holding wall 15, so as to guide the latching projec-

tion 28 into the recess 15a.

[0035] With this the pushbutton, that is, this interior component, the insertion of the indicator 20 into the indicator holding portion 16 makes it easy to mount the indicator 20 on the button main body 10 and to reliably hold it, and prevents the indicator 20 from being shaken.

[0036] Specifically, when the indicator 20 is inserted into a lower end opening (an opening enclosed by the holding wall 15 and two restraining portions 17) of the indicator holding portion 16 from the lower side (the rear side of the indicating wall 12), with the indicating portion 24 of the indicator 20 at the front, the indicator 20 advances in the insertion direction (in the direction towards the indicating wall 12) along the holding wall 15, while being restrained and guided by the two restraining portions 17, and ultimately reaches a position where the indicating portion 24 of the indicator 20 is fitted into the indication window 11 and the two held projections 26 abut against the rear surface of the front side holding portions 13 (the portions on both sides of the indication window 11) of the indicating wall 12. When, from this position, the indicator 20 is further pushed in the insertion direction, the two held projections 26 are stuck into the front side holding portions 13, thereby being held by the front side holding portions 13.

[0037] On the other hand, as the indicator 20 is inserted, the latching projection 28 of the indicator 20 slides on the inclined surface 19 provided in the holding wall 15, and is fitted into the recess 15a at the position in which the two held projections 26 are stuck into the front side holding portions 13. Accordingly, the back side holding portion 18, which is a step-like portion that limits the lower end of the recess 15a, restrains the latching projection 28 from behind, preventing the held projections 26 from disengaging from the front side holding portions 13.

[0038] Therefore, with this pushbutton, by the combination of sticking the held projections 26 into the front side holding portions 13, and in the stuck state, restraining of the indicator 20 from behind by the back side holding portion 18, it is possible to stably hold the indicator 20 in the indicator holding portion 16, without using any complicated configuration. Furthermore, the sticking on the front side prevents the relative displacement between the held projections 26 and the front side holding portions 13 (in particular, a directional displacement perpendicular to the sticking direction), thereby effectively preventing the indicator 20 in the indicator holding portion 16 from being shaken. Depending on the extent of the sticking, it is also possible to accommodate variations in size of the indicator 20.

[0039] Note that in the present invention, the insertion direction in which the indicator 20 is inserted into the indicator holding portion 16 is not limited to the above-explained direction, that is, a direction from the rear side of the indicating wall 12 toward the indicating wall 12. For example, a configuration is also possible in which the indicator is inserted into the indicator holding portion from

the front side of the indicating wall through the indication window. Also in this case, the indicator can have, on its front side in the direction in which it is inserted, a front side surface and the held projections, and the indicator holding portion can include, on its front side in the insertion direction, the front side holding portions into which the held projections can be stuck. In this case, however, the entire indicator should have such a shape that it can be inserted into the indication window, that is, the indicator should have a cross-sectional area that is smaller than that of the indication window. In contrast, the configuration in which the indicator 20 is inserted into the indicator holding portion 16 from the rear side of the indicating wall 12, as in this embodiment, has the advantage that it is possible to freely set the shapes of the indication window 11 and the indicating portion 24 that is fitted therein. There is a further advantage that it is possible to use part of the indicating wall 12 as the front side holding portions 13 into whose rear surfaces the held projections 26 are stuck.

[0040] As described above, in the present invention, the location of the indication window 11 is not limited, and the location of the indicator holding portion 16 can be set according to the location of the indication window 11. For example, even if the indication window is arranged in the central portion of the indicating wall, as in the configuration illustrated in FIG. 8, it is possible to configure the indicator holding portion on the rear side of the indication window. However, the effect of the present invention is particularly remarkable when the indicator 20 is mounted at an end of the button main body 10, as in the foregoing embodiment. That is, although the indicator 20 is arranged at an end of the indicating wall 12 on its rear side, in other words, outside the holding wall 15 that extends from the rear surface of the indicating wall 12, it is possible to stably hold the indicator 20 by the combination of the holding wall 15, the restraining portions 17 that project from the external sides of the holding wall, the held projections 26 stuck into the rear surface of the front side holding portions 13 of the indicating wall 12, and the back side holding portion 18 restraining the indicator 20 from behind.

List of Reference Numerals

[0041]

- 2 Interior panel
- 10 Button main body
- 11 Indication window
- 12 Indicating wall
- 13 Front side holding portion
- 15 Holding wall
- 16 Indicator holding portion
- 17 Restraining portion
- 18 Back side holding portion
- 20 Indicator
- 21 Front side surface

- 22 Indicator main body
- 24 Indicating portion
- 26 Held projection
- 28 Latching projection

Claims

1. A vehicle interior component comprising:

a component main body (10) that includes an indicator holding portion (16); and an indicator (20) that is made from a material capable of guiding light and has a shape that allows the indicator (20) to be held by the indicator holding portion (16) after being inserted into the indicator holding portion (16) in a predetermined insertion direction, the indicator (20) having a front side surface (21) that faces forward with respect to the insertion direction, and held projections that project further forward at a plurality of locations on the front side surface (21) and that are tapered, the indicator holding portion (16) including: a front side holding portion (13) that is made from a material into which the held projections can be stuck in the insertion direction and that holds the held projections that are stuck therein; and a back side holding portion (18) that restrains the indicator (20) from behind, with respect to the insertion direction, at a position in which the held projections are stuck into the front side holding portion (13), preventing the held projections from disengaging from the front side holding portion (13).

2. The vehicle interior component according to claim 1, wherein the component main body (10) includes an indicating wall (12) that is arranged so as to be exposed on the front side of an interior panel, and that has an indication window, the indicator holding portion (16) is disposed on the rear side of the indication window, extending from the rear surface of the indicating wall (12) in a depth direction thereof, and has such a shape that the indicator (20) is inserted into the indicator holding portion (16) in the longitudinal direction of the indicator holding portion (16), and the indicator (20) is arranged to emit light toward the front side of the indicating wall (12) through the indication window in a state in which the indicator (20) is inserted into the indicator holding portion (16).

3. The vehicle interior component according to claim 2, wherein the indicator (20) includes: an indicator main body (22) that has a shape that allows it to be inserted into the indicator holding portion (16) from the rear side of the indicating wall (12) and that includes the

front side surface (21), which faces the rear surface of the indicating wall (12); and an indicating portion (24) that projects further forward in the insertion direction from the front side surface (21) of the indicator main body (22) and is shaped so as to be fitted into the indication window, and the held projections project from the front side surface (21) at a plurality of locations surrounding the indicating portion (24), and are stuck into the rear surface of the indicating wall (12).

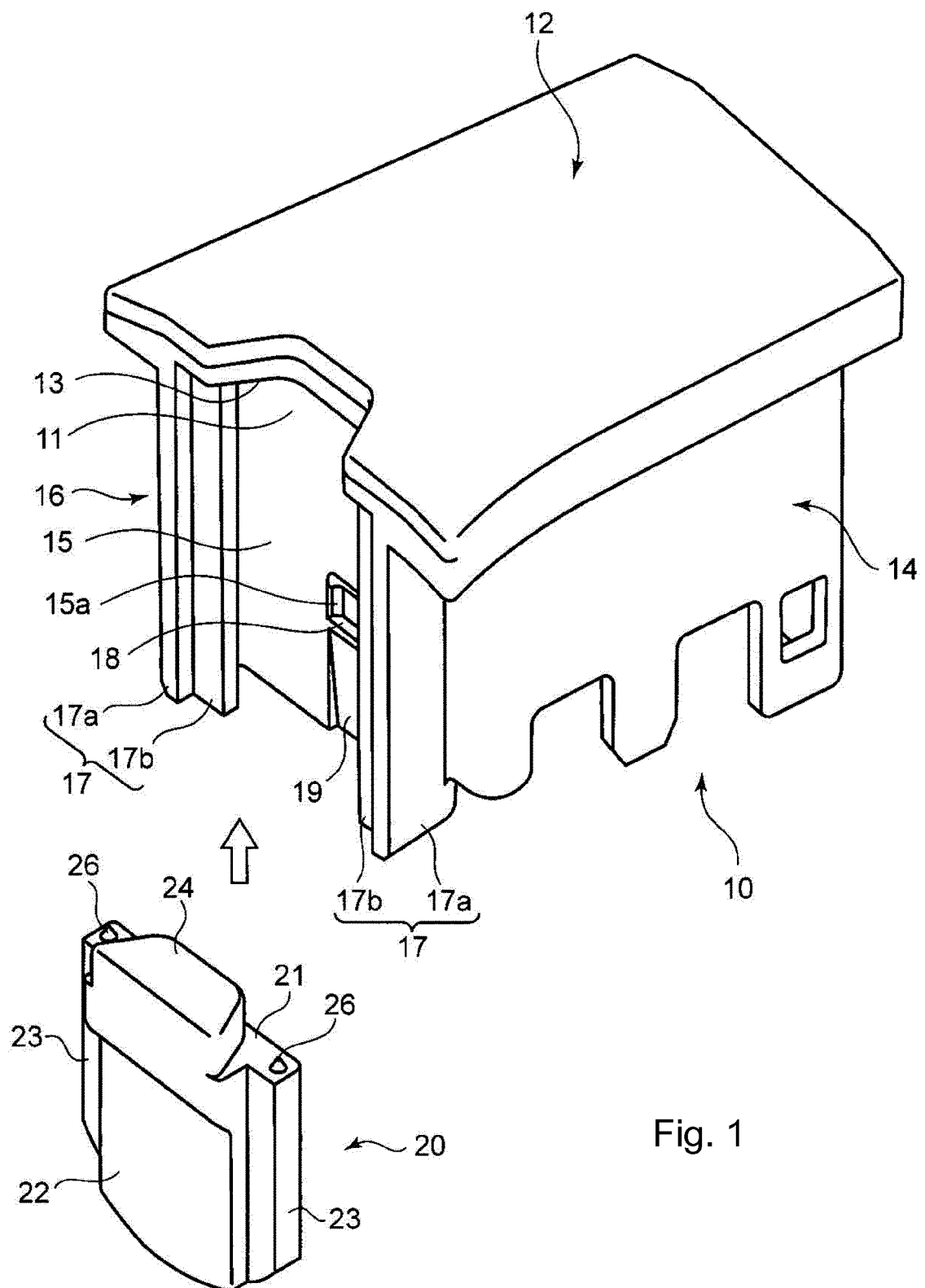
4. The vehicle interior component according to claim 3, wherein the indication window is located at an end of the indicating wall (12), the indicator holding portion (16) includes: a holding wall (15) that extends rearward from a location inward of the indication window; and restraining portions that protrude from an external side of the holding wall (15) and are configured to restrain the indicator (20) from both sides in a width direction of the indicator (20), which is a direction perpendicular to the insertion direction and perpendicular to the normal to the holding wall (15), so that the indicator (20) can be inserted from the rear side of the indicating wall (12) along the holding wall (15), the held projections of the indicator (20) are located on both sides in the width direction of the indicator (20), the indicating portion (24) being arranged between the held projections, and the back side holding portion (18) is formed in the holding wall (15).
5. The vehicle interior component according to any one of claims 1 to 4, wherein the indicator (20) including the held projections is made from a material that has a higher Rockwell hardness than that of the front side holding portion (13).

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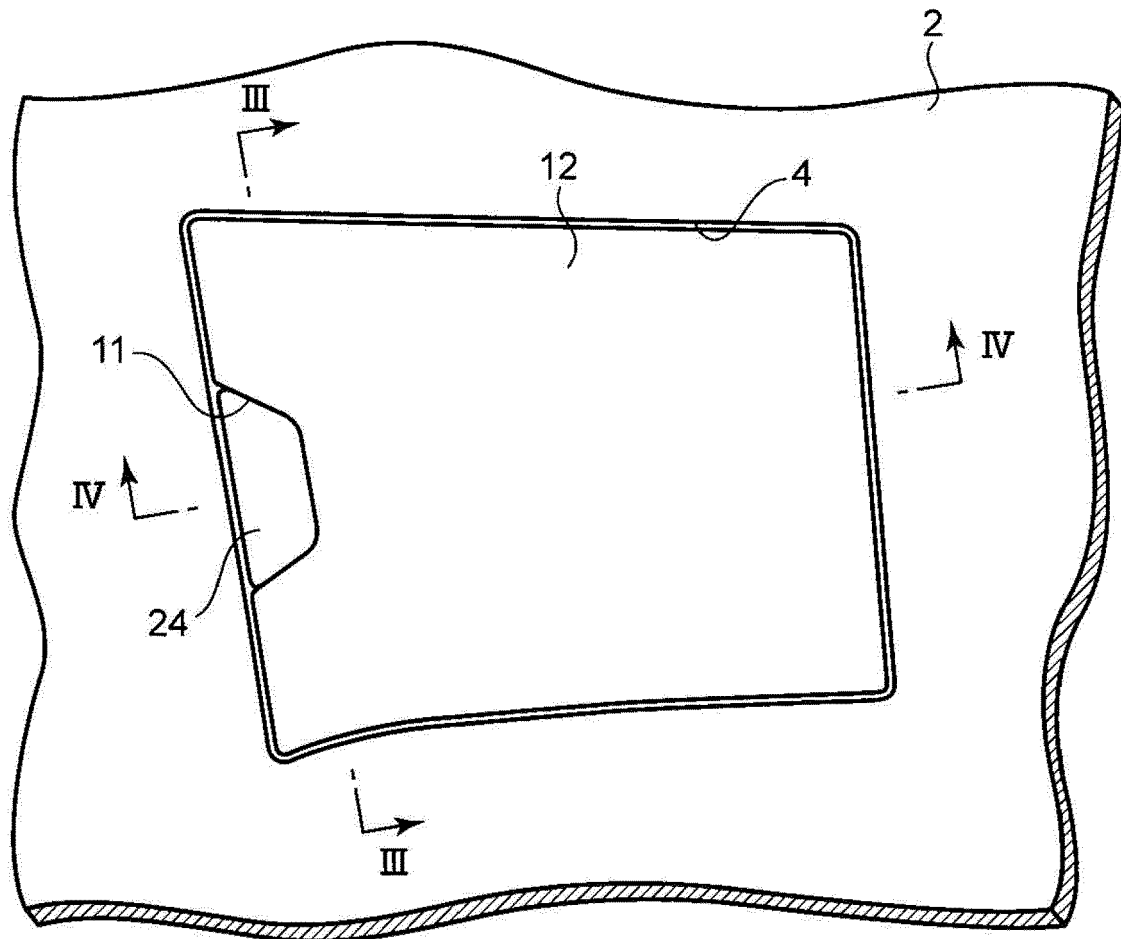
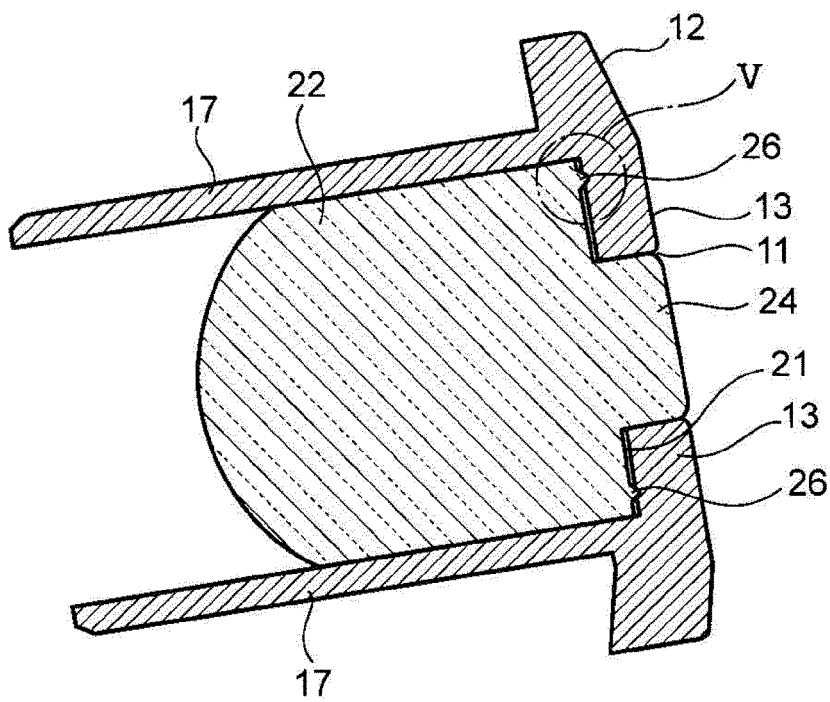
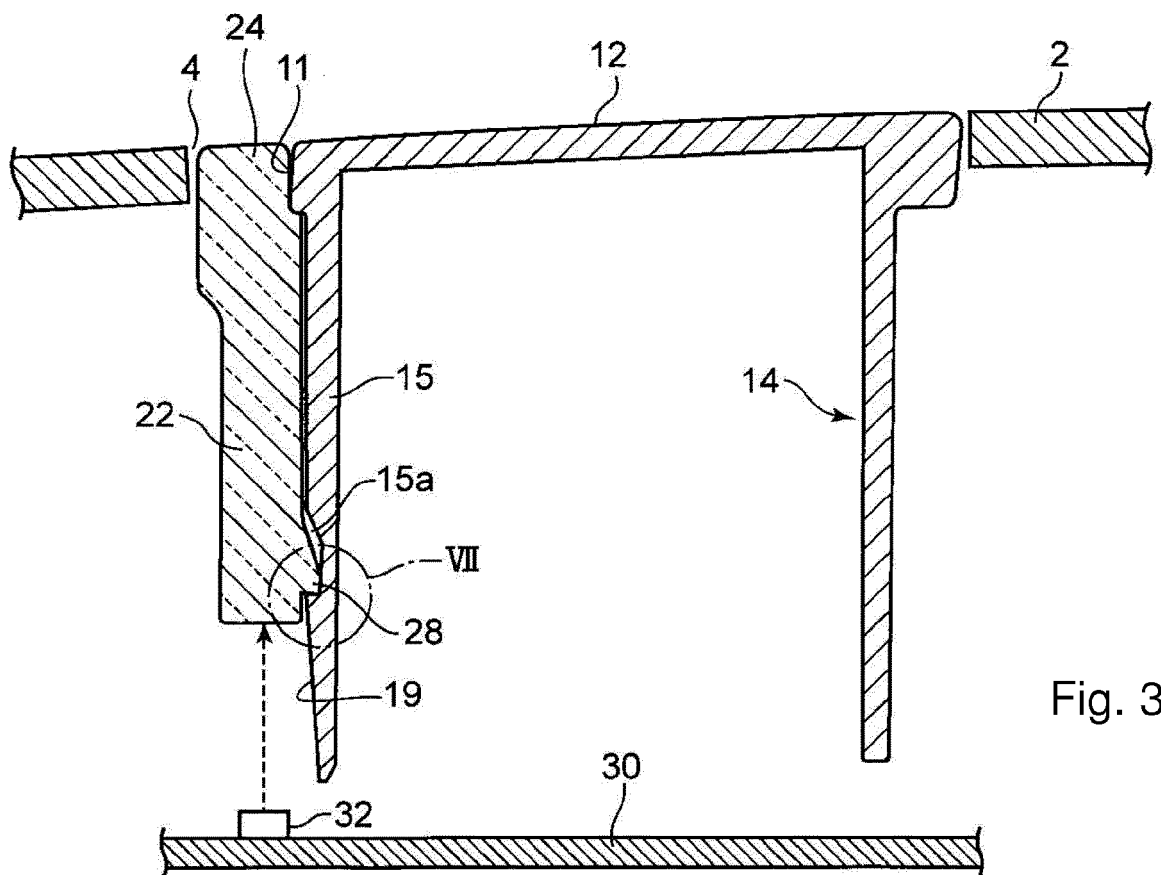


Fig. 2



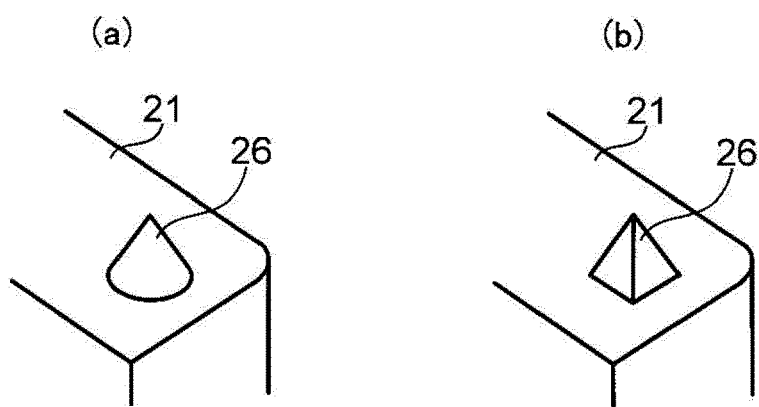
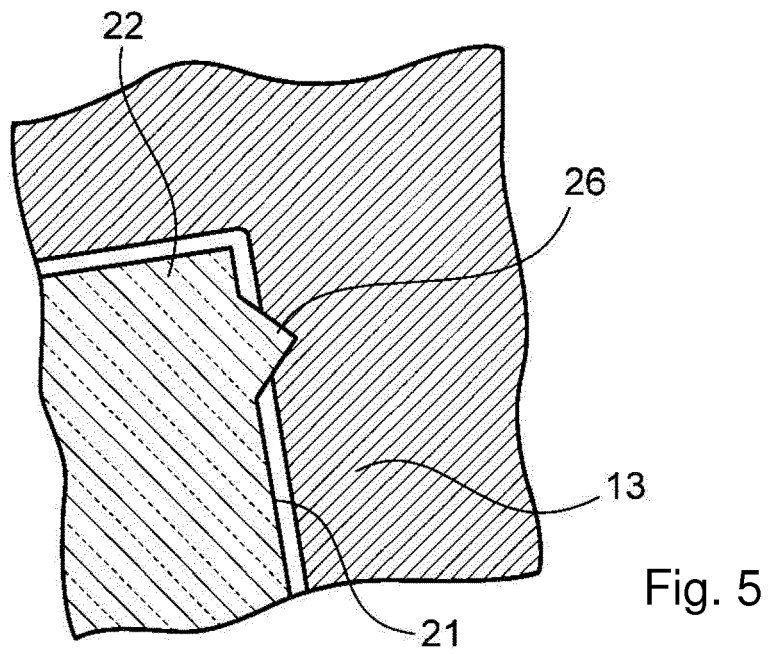


Fig. 6

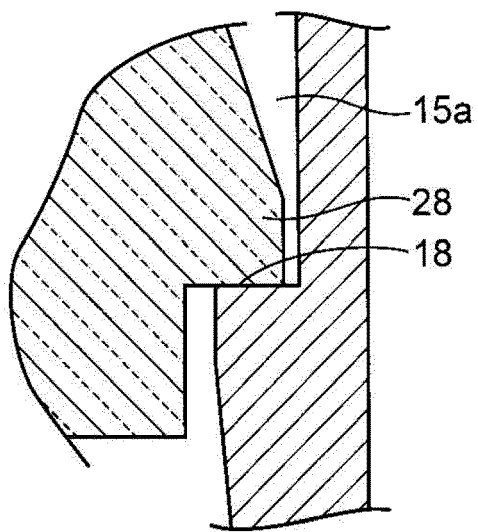


Fig. 7

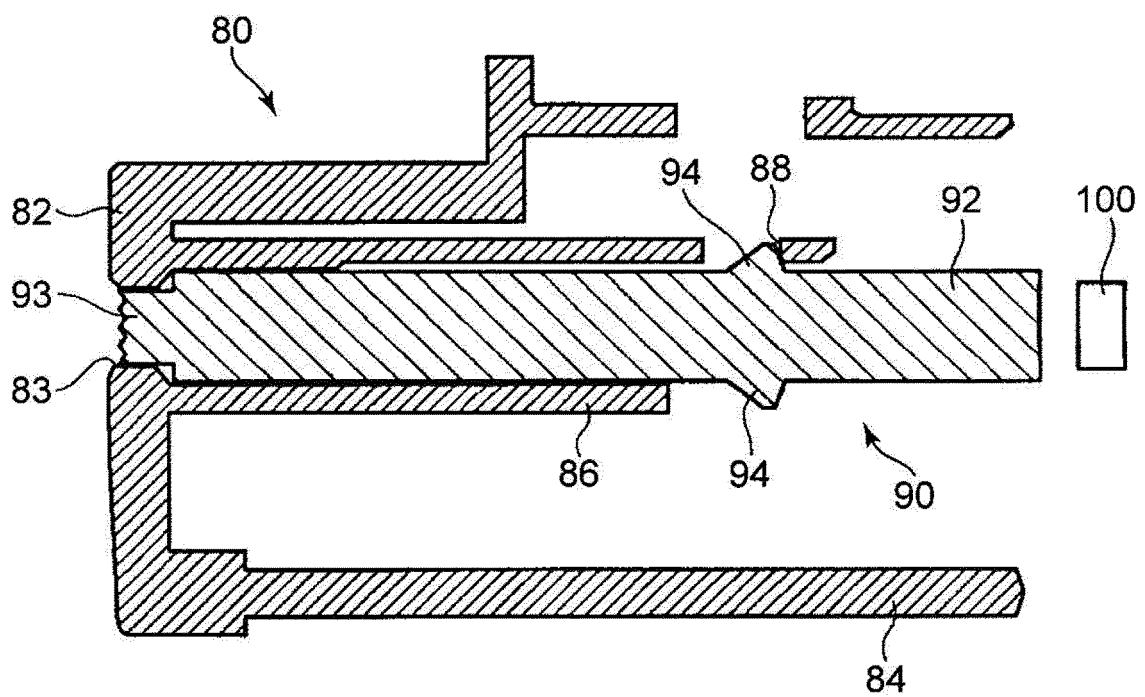


Fig. 8



EUROPEAN SEARCH REPORT

Application Number
EP 13 16 0653

DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 11 July 2013	Examiner Socher, Günther
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 03.92 (P04C01)

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

EP 13 16 0653

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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