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Iwasaki(10) **Pub. No.: US 2011/0119875 A1**(43) **Pub. Date: May 26, 2011**(54) **CLIP-MOUNTING SEAT AND VEHICLE
INTERIOR COMPONENT****Publication Classification**(51) **Int. Cl.**
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(52) **U.S. Cl.** **24/458**(57) **ABSTRACT**(76) **Inventor:** **Takashi Iwasaki**, Gahanna, OH
(US)(21) **Appl. No.:** **12/808,696**(22) **PCT Filed:** **Mar. 31, 2008**(86) **PCT No.:** **PCT/US2008/058954**§ 371 (c)(1),
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A clip-mounting seat for mounting a clip to a vehicle interior component is disclosed. The clip includes a pillar-shaped axial portion. The clip-mounting seat includes a clip seating section, the clip seating section having an engaging hole for engagingly receiving the axial portion of the clip, and a pair of guide edge portions extending to the engaging hole from a side of the clip seating section to thereby form a tapered silt for allowing the axial portion of the clip to be slid along the pair of guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole.

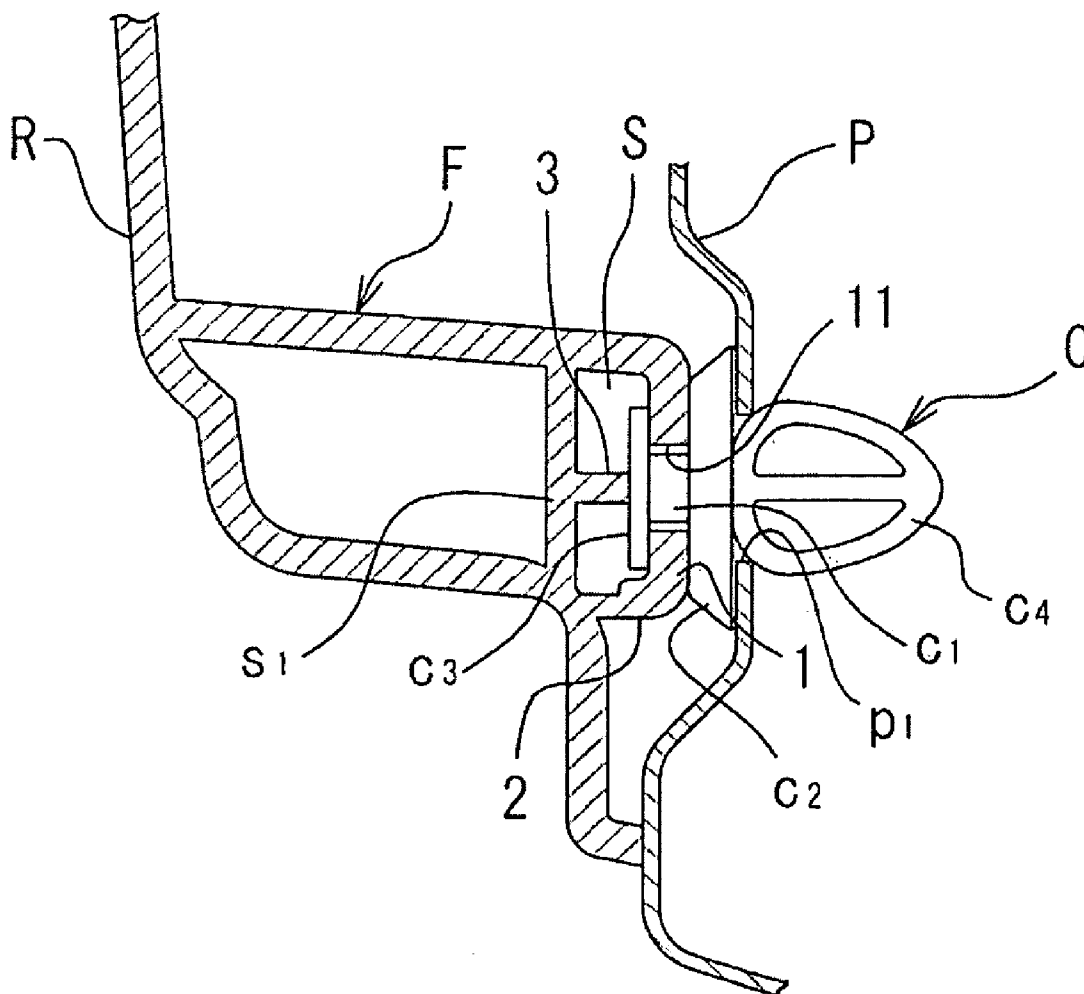


FIG. 1

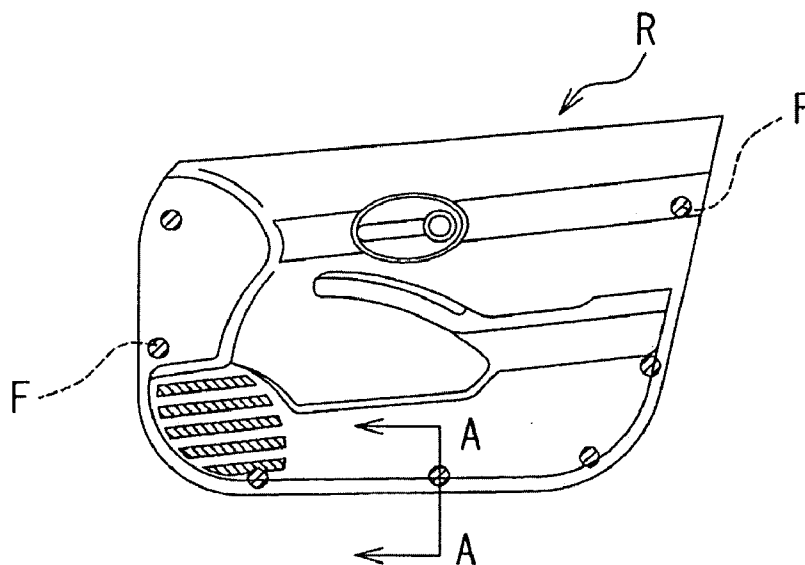


FIG. 2

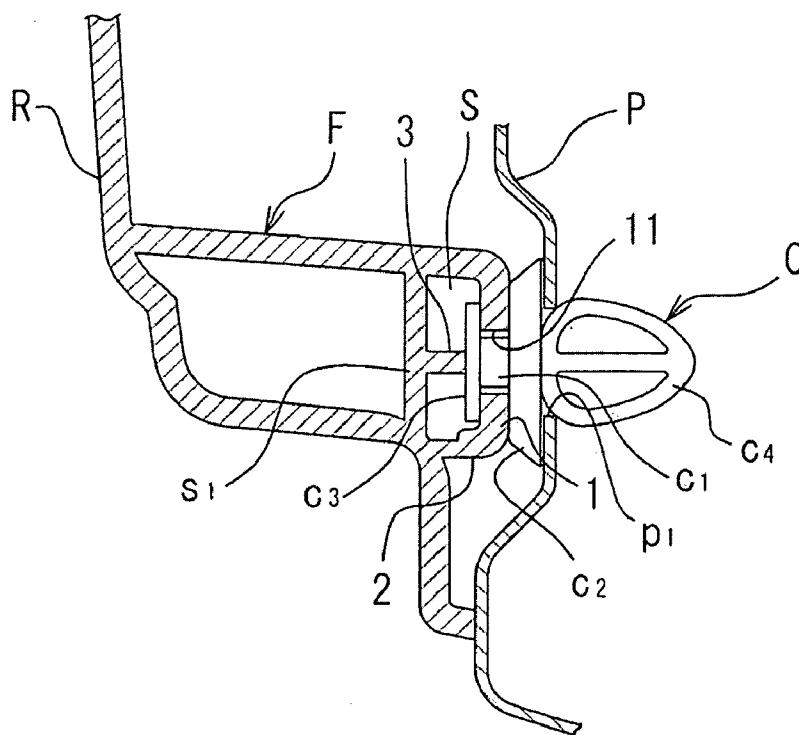


FIG. 3

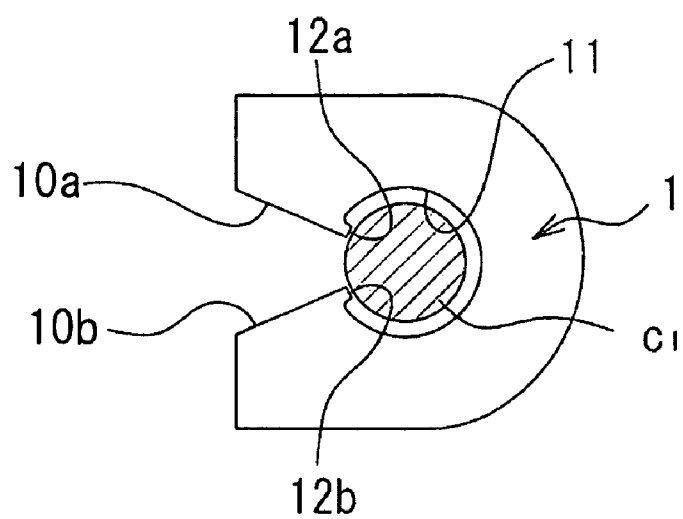


FIG. 4

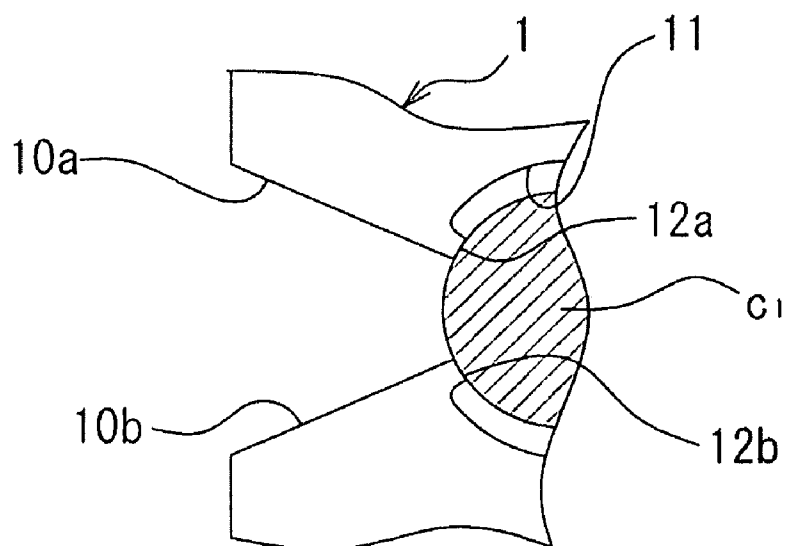


FIG. 5

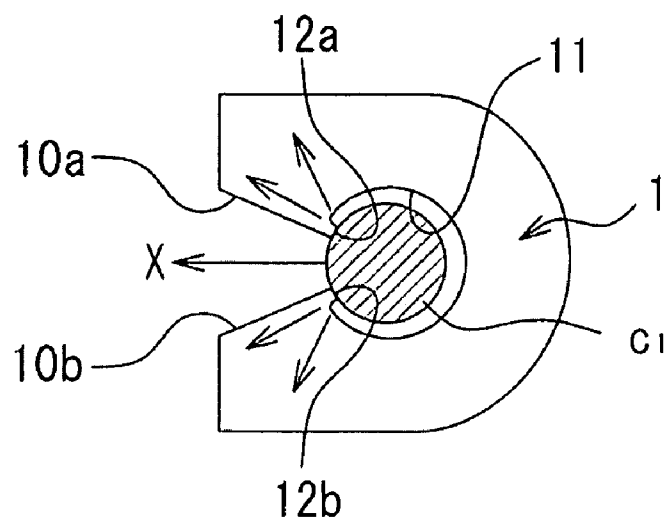


FIG. 6

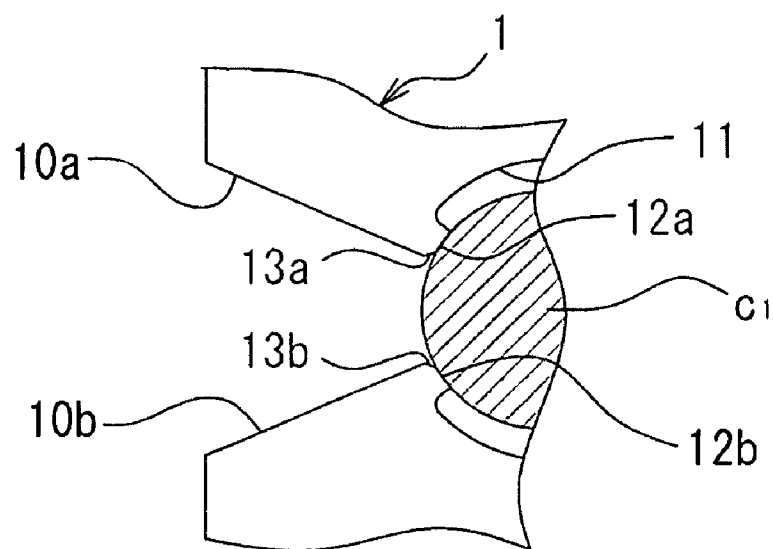


FIG. 7

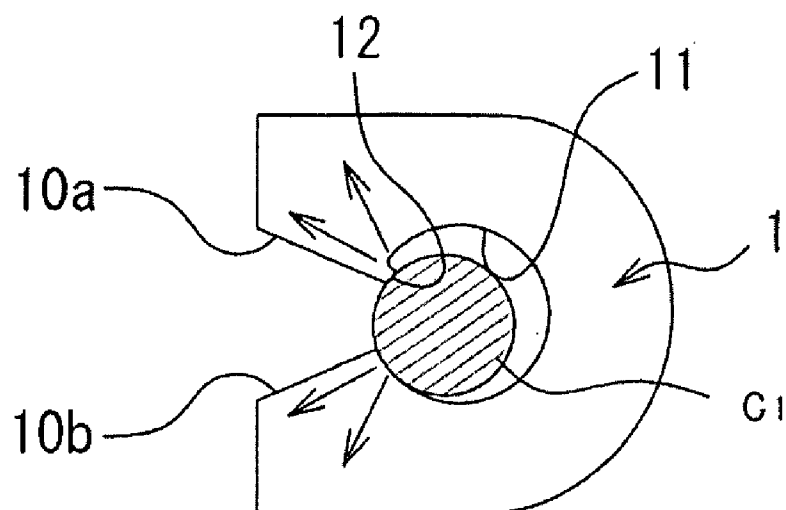


FIG. 8

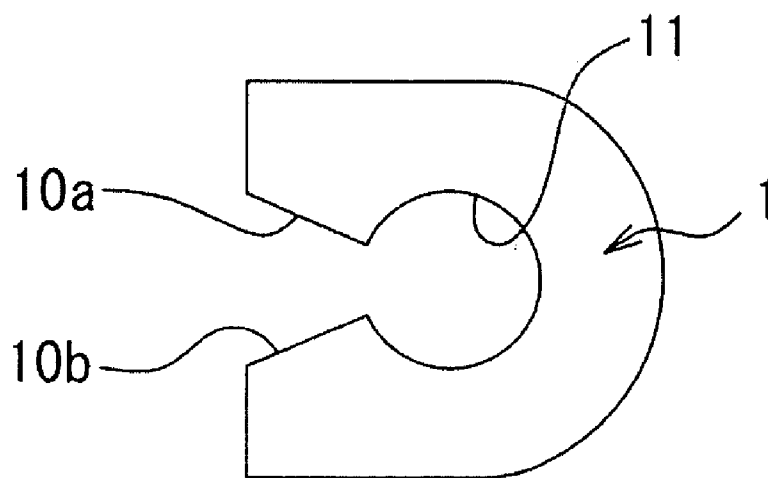


FIG. 9

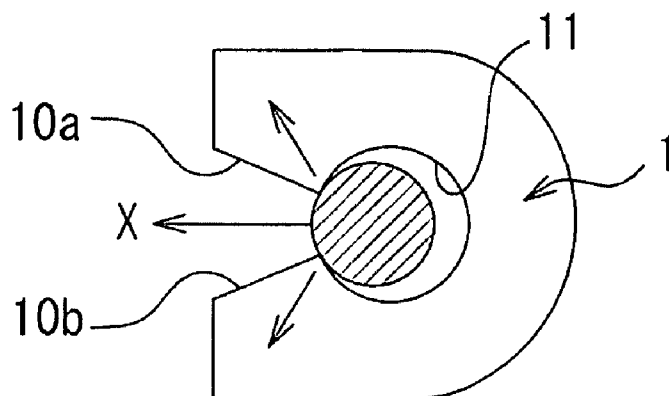


FIG. 10

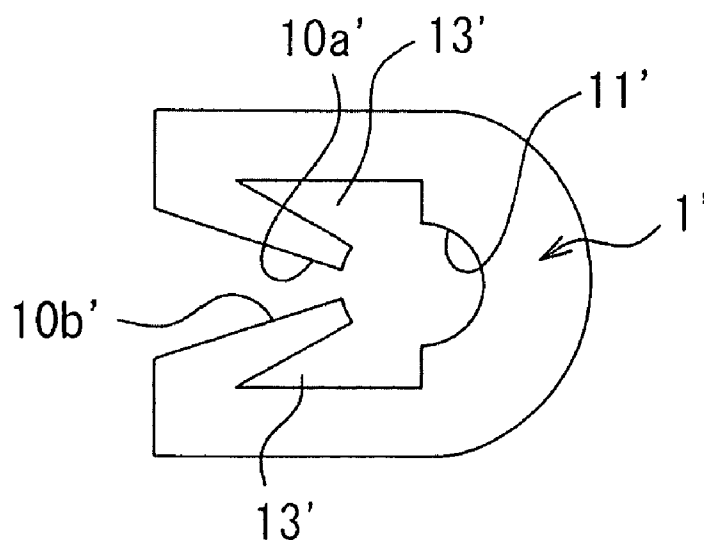
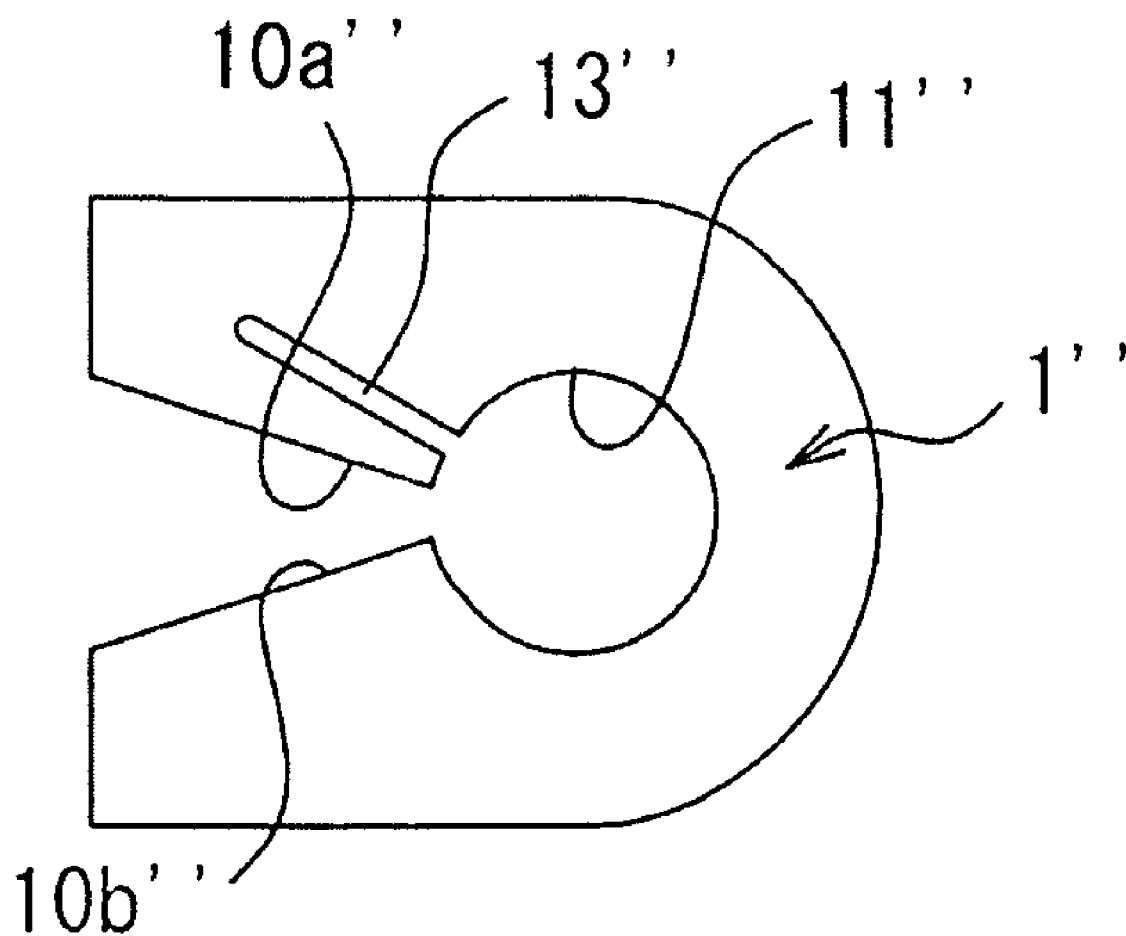


FIG. 1 1



CLIP-MOUNTING SEAT AND VEHICLE INTERIOR COMPONENT

FIELD OF THE INVENTION

[0001] The present invention relates mainly to a clip-mounting seat which is used to mount a clip on an inner surface side of a vehicle interior component, the vehicle interior component being adapted to be opposingly fixed to a vehicle body panel by the clip.

BACKGROUND OF THE INVENTION

[0002] Generally, in a vehicle interior component such as a door lining, a rear corner panel, etc., a plurality of anchor-shaped clips are provided at an inner surface of the vehicle interior component. The clips are press-fitted into stop holes formed in a panel surface of a vehicle body panel, whereby the vehicle interior component is opposingly fixed to the vehicle body panel.

[0003] More particularly, the clips are provided at the inner surface of the vehicle interior component via clip-mounting seats which are provided at the inner surface of the vehicle interior component. The clip-mounting seats of the vehicle interior component include seating sections on which the clips are to be seated (hereinafter referred to as "clip seating sections"). The clips include base sections, and tip end portions which are protruded from the base sections and are to be press-fitted into the stop holes of the vehicle body panel. The clips are provided at the inner surface of the vehicle interior component with portions of the base sections thereof being seated on the clip seating section of the vehicle interior component.

[0004] Referring now to FIGS. 8 and 9, the conventional clip-mounting seat will be discussed hereinafter in order to facilitate understanding of the present invention. As shown in FIG. 8, the conventional clip-mounting seat includes the clip seating section 1 on which the clip (not shown) is to be seated and which has an engaging hole 11 for engagingly receiving a pillar-shaped axial portion of the clip, and guide edge portions 10a, 10b for allowing the axial portion of the clip to be slid along the guide edge portions 10a, 10b and allowing the axial portion of the clip to be guided into the engaging hole 11.

[0005] The guide edge portions 10a, 10b extend inwardly from a side portion of the clip seating section 1, to thereby form a tapered slit having an inner end smaller in size than an outer diameter of the axial portion of the clip. The engaging hole 11 is formed into a substantially circular shape having a size which is larger than the outer diameter of the axial portion of the clip and allows the clip to be capable of being shifted so as to positionally match a corresponding stop hole of the vehicle body panel when the vehicle interior component is to be fixed to the vehicle body panel. The engaging hole 11 continues from inner ends of the guide edge portions 10a, 10b.

[0006] The clips which are provided at the vehicle interior component through the clip-mounting seats constructed as discussed above will be easily removed from the vehicle interior component during transportation of the vehicle interior component and/or fixing of the vehicle interior component to the vehicle body panel. The removal of the clips is brought about by a reason for which, when loads applied in such a direction X (indicated in FIG. 9 by an arrow) that the clips are disengaged from the clip seating sections of the

clip-mounting seats is applied to the clips, the loads are concentrated on the inner ends of the guide edge portions 10a, 10b of the clip seating sections, to thereby cause the guide edge portions 10a, 10b to be operatively opened relative to each other.

[0007] Moreover, there are also proposed clip-mounting seats which, as shown in FIGS. 10 and 11, include clip seating sections 1', 1" having engaging holes 11', 11" and guide edge portions 10a', 10b', 10a'', 10b'' and in the clip seating sections 1', 1" of which notched portions 13' and 13'' are provided so as to extend along the guide edge portions 10a', 10b' and 10a'' from the engaging holes 11', 11'', whereby the guide edge portions 10a', 10b' and 10a'' are adapted to serve as leaf-spring-shaped arms which are elastically deformable (Japanese Utility Model Application Laid-Open No. Sho. 52-137411 and Japanese Patent Application Laid-Open No. Hei. 6-270675).

[0008] With each of the conventional clip-mounting seats, the axial portion of the clip is slid along the guide edge portions 10a', 10b' (10a'', 10b'') and easily guided into the engaging holes 11' (11''). However, when a load in such a direction that the clip is disengaged from the engaging hole 11' (11'') is applied to the clip and concentrated on inner ends of the guide edge portions 10a', 10b' (10a'', 10b''), the guide edge portions 10a', 10b' (10a'', 10b'') are easy to be opened relative to each other. Therefore, each of the conventional clip-mounting seats fails to exert the function of preventing the disengagement of the clip from the clip-mounting seat. Moreover, the notched portions 13', 13'' are formed by cutting the clip seating sections 1', 1'', so that the guide edge portions 10a', 10b', 10a'' are easy to be broken and rigidity of the clip seating sections 1', 1'' is decreased.

SUMMARY OF THE INVENTION

[0009] The present invention has been made with a view to overcoming the foregoing problems of the prior art clip-mounting seats.

[0010] It is therefore an object of the present invention to provide a clip-mounting seat which includes a clip seating section having an engaging hole for engaging an axial portion of a clip, and guide edge portions for allowing the axial portion of the clip to be guided along the guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole, wherein rigidity of the clip seating section is not decreased and disengagement of the clip from the clip seating section can be positively prevented.

[0011] It is another object of the present invention to provide a vehicle interior component provided with a plurality of clip-mounting seat as stated above.

[0012] In accordance with one aspect of the present invention, there is provided a clip-mounting seat for mounting a clip to a vehicle interior component. The clip includes a pillar-shaped axial portion. The clip-mounting seat includes a clip seating section, the clip seating section having an engaging hole for engagingly receiving the axial portion of the clip, and a pair of guide edge portions extending to the engaging hole from a side of the clip seating section to thereby form a tapered slit for allowing the axial portion of the clip to be slid along the pair of guide edge portions and allowing the axial portion of the clip to be guided into the engaging hole. The tapered slit has an inner end smaller in size than an outer diameter of the axial portion of the clip. The engaging hole is formed into a substantially circular shape having a size larger than the outer diameter of the axial portion of the clip; and the

engaging hole continuing from inner ends of the guide edge portions. At least one of the guide edge portions is provided with a protruding piece projecting into the engaging hole from an inner end of the at least one of the guide edge portions. The protruding piece includes a tip end surface having a width that allows the tip end surface to be operatively come surface-contact with the axial portion of the clip.

[0013] In the clip-mounting seat, the at least one of the guide edge portions is provided with the protruding piece which includes the tip end surface having the width that allows the tip end surface to be operatively come surface-contact with the axial portion of the clip, so that even if the clip is moved by a load applied in such a direction that the clip is disengaged from the engaging hole of the clip-mounting seat, the protruding piece operatively comes into surface-contact with the axial portion of the clip, the load that has the tendency to cause the clip to be disengaged from the engaging hole can be positively received by the protruding piece and can be distributed, the clip is shifted to a region of the engaging hole which is adjacent the guide edge portion that is not provided with any protruding piece, and the axial portion of the clip does not come into point-contact with the inner end of the guide edge portion **10b**. Therefore, the guide edge portions are hard to be opened relative to each other. Thus, it is possible to prevent the clip from being disengaged from the clip-mounting seat without allowing rigidity of the clip seating section to be decreased.

[0014] Each of the guide edge portions may be provided with the protruding piece. In this case, even if the clip is moved by a load applied in such a direction that the clip is slid along the guide edge portions and disengaged from the engaging hole, the tip end surfaces of the protruding pieces operatively come into surface-contact with the axial portion of the clip, whereby the load that has the tendency to cause the clip to be disengaged from the engaging hole can be effectively received by the protruding pieces and can be distributed, so that the guide edge portions can be positively prevented from being opened relative to each other.

[0015] The tip end surface of the protruding piece may be formed into a circular arc-shape so as to fit around the axial portion of the clip. In this case, the protruding piece can positively fit around the axial portion of the clip.

[0016] According to a further aspect of the present invention, there is provided a vehicle interior component which is provided with a plurality of clip-mounting seats as set forth above. Transportation of the vehicle interior component can be performed without causing any inconvenience and fixing of the vehicle interior component to a vehicle body panel can be easily performed without causing any inconvenience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] FIG. 1 is a schematic perspective view of a door lining at which a plurality of clip-mounting seats according to the present invention are provided;

[0018] FIG. 2 is a schematic sectional view of the door lining of FIG. 1, taken on a plane indicated in FIG. 1 by a line A-A;

[0019] FIG. 3 is a schematic side view of a clip-mounting seat according to the present invention;

[0020] FIG. 4 is a schematic enlarged fragmentary side view of the clip-mounting seat of FIG. 3;

[0021] FIG. 5 is a schematic side view of the clip-mounting seat of FIG. 3, which is of assistance in explaining a situation where a clip is prevented from being disengaged from the clip-mounting seat;

[0022] FIG. 6 is a schematic enlarged fragmentary side view of a modification of the clip-mounting seat of FIG. 3;

[0023] FIG. 7 is a schematic side view of another modification of the clip-mounting seat of FIG. 3, which is of assistance in explaining a situation where a clip is prevented from being disengaged from the modification;

[0024] FIG. 8 is a schematic side view of a conventional clip-mounting seat;

[0025] FIG. 9 is a schematic side view of the conventional clip-mounting seat, which is of assistance in explaining a situation where a clip is disengaged from the conventional clip-mounting seat;

[0026] FIG. 10 is a schematic side view of another conventional clip-mounting seat; and

[0027] FIG. 11 is a schematic side view of still another conventional clip-mounting seat.

DETAILED DESCRIPTION

[0028] Referring now to FIGS. 1 and 2, there is illustrated a vehicle interior component R, for example, a door lining, in which a plurality of clip-mounting seats F according to the present invention for supporting anchor-shaped clips that are used in order to cause the door lining R to be opposingly fixed to a panel surface of a vehicle body panel, for example, a door panel P are disposed at predetermined intervals along peripheral edge portions of an inner surface of the door lining R except an upper edge portion of the inner surface of the door lining R.

[0029] As shown in FIG. 2, each of the clip-mounting seats F (only one clip-mounting seat F is shown in FIG. 2) comprises a clip seating section 1, a peripheral wall section 2 standing up from the inner surface of the door lining R and defining a space S in which a portion of a base section of a corresponding clip C is to be received, and a rising rib 3 rising up from a bottom plate s1 of the space S for stoppingly supporting the base section of the clip C. The clip seating section 1 of the clip-mounting seat F is formed with an engaging hole 11. In the illustrated example, the door lining R and the clip-mounting seats F are formed integrally of, for example, polypropylene resin by injection molding.

[0030] Each of the clips C (only one clip C is shown in FIG. 2) comprises the base section having a pillar-shaped axial portion c1, a first flange portion c2 and a second flange portion c3 connected to the first flange portion c2 through the pillar-shaped axial portion c1, and an anchor-shaped tip end portion c4. The clip C is adapted to be mounted through a corresponding clip-mounting seat F to the inner surface of the door lining R, with the axial portion c1 thereof being engagingly received in the engaging hole 11 of the clip-mounting seat F, with the first flange portion c2 thereof being seated on the clip seating section 1 of the clip-mounting seat F, with the first and second flange portions c2, c3 thereof interposingly holding the clip seating section 1 of the clip-mounting seat F, and with the second flange portion c3 thereof being stoppingly supported by the rising rib 3 of the clip-mounting seat F. The door lining having the clips mounted through the clip-mounting seats F to the inner surface thereof is opposingly fixed to the door panel P by causing the anchor-shaped

tip portions **c4** of the clips to be press-fitted into through-holes **p1** (only one through-hole **p1** is shown in FIG. 2) which are formed in the door panel **P**.

[0031] The clip seating section **1** of each of the clip-mounting seats **F** according to the present invention is basically similar to that of the clip-mounting seat which is shown in FIG. 8. Referring now to FIG. 3, there is illustrated the clip seating section **1** of the clip-mounting seat **F** according to the present invention. In FIG. 3, elements of the clip seating section **1** of the clip-mounting seat **F** of the present invention that are substantially similar to those of the clip seating section shown in FIG. 8 are denoted by the same reference numerals. As shown in FIG. 3, the clip seating section **1** of the clip-mounting seat **F** according to the present invention is formed into a substantially U-shape as viewed from the side and has the engaging hole **11** and a pair of guide edge portions **10a**, **10b** extending to the engaging hole **11** for allowing the pillar-shaped axial portion **c1** of a corresponding clip to be slid along the guide edge portions **10a**, **10b** and allowing the pillar-shaped axial portion **c1** of the clip **C** to be guided into the engaging hole **11**.

[0032] The guide edge portions **10a**, **10b** extend inwardly from a side portion of the clip seating section **11**, to thereby form a tapered slit having an inner end smaller in size than an outer diameter of the axial portion **c1** of the clip. The engaging hole **11** is formed into a substantially circular shape having a size larger than the outer diameter of the axial portion **c1** of the clip **C**, and continues from inner ends of the guide edge portions **10a**, **10b**.

[0033] In addition to the basic structure of the clip seating section **1**, the clip seating section **1** of the clip-mounting seat **F** according to the present invention has protruding pieces **12a**, **12b** projecting into the engaging hole **11** from the inner ends of the guide edge portions **10a**, **10b**. Each of the protruding pieces **12a**, **12b** is provided with a tip end surface which has a width that allows the tip end surface to come into surface-contact with the axial portion **c1** of the clip. Each of the protruding pieces **12a**, **12b** is formed in such a manner that one side of the protruding piece extends linearly from a corresponding guide edge portion **10a** (or **10b**). As shown in FIG. 4, the tip end surfaces of the protruding pieces **12a**, **12b** are formed into circular arc-shapes so as to fit around the axial portion **c1** of the clip.

[0034] In the clip seating section **1** of the clip-mounting seat that is constructed as discussed above, even if the clip is moved by a load applied in such a direction **X** (indicated in FIG. 5 by an arrow) that the clip is slid along the guide edge portions **10a**, **10b** and disengaged from the engaging hole **11**, the tip end surfaces of the protruding pieces **12a**, **12b** operatively come into surface-contact with the axial portion **c1** of the clip, whereby the load that has the tendency to cause the clip to be disengaged from the engaging hole **11** can be effectively received by the protruding pieces **12a**, **12b** and can be distributed, so that the guide edge portions **10a**, **10b** can be positively prevented from being opened relative to each other. By this, it is possible to prevent the clip from being disconnected from the clip seating section of the clip-mounting seat, without allowing rigidity of the clip seating section **1** to be decreased.

[0035] As long as the protruding pieces **12a**, **12b** can operatively come into surface-contact with the axial portion **c1** of the clip at the tip end surfaces thereof, the sides of the protruding pieces are not formed so as to extend linearly from the guide edge portions **10a**, **10b** and may be formed so as to have

slope regions **13a**, **13b** which are inclined to the engaging hole **11** from the inner ends of the guide edge portions **10a**, **10b** as shown in FIG. 6. In this case, it is possible to cause an interval between the inner ends of the guide edge portions **10a**, **10b** not to become much narrower than a required level.

[0036] While it is preferable that the protruding pieces are provided at both the inner ends of the guide edge portions **10a**, **10b**, the protruding piece **12a** and the protruding piece **12b** are not necessarily provided at the inner end of the guide edge portion **10a** and the inner end of the guide edge portion **10b**, respectively. As shown in FIG. 7, a protruding piece **12** may be provided at any one of the inner ends of the guide edge portions **10a**, **10b** (in the example shown in FIG. 7, the protruding piece **12** is provided at the inner end of the guide edge portion **10a**). In this case, even if the clip is moved by a load applied in the direction that the clip is slid along the guide edge portions **10a**, **10b** and disengaged from the engaging hole **11**, the protruding piece **12** also operatively comes into surface-contact with the axial portion **c1** of the clip at a tip end surface thereof having a circular arc-shape, whereby the load that has the tendency to cause the clip to be disengaged from the engaging hole **11** can be positively received by the protruding piece **12** and can be distributed, the clip is shifted to a region of the engaging hole **11** which is adjacent the guide edge portion **10b** that is not provided with any protruding piece, and the axial portion **c1** of the clip does not come into point-contact with the inner end of the guide edge portion **10b**, so that the guide edge portions **10a**, **10b** are hard to be opened relative to each other.

[0037] As discussed above, the door lining **R** (FIG. 1) has the clips mounted to the inner surface thereof through the clip-mounting seats which facilitate preventing of disengagement of the clips therefrom, so that transportation of the door lining **R** can be performed without causing any inconvenience and fixing of the door lining to the vehicle body panel such as the door panel **P** (FIG. 1) can be easily performed without causing any inconvenience.

[0038] While the case where the clip seating section of the clip-mounting seat has the substantially U-shape as viewed from the side has been discussed above, the shape of the clip seating section of the clip-mounting seat may be a substantially square-shape as viewed from the side. Moreover, while the clip-mounting seat has the peripheral wall section **2** standing up from the vehicle interior component, it may have a pair of opposing plates standing up from the inner surface of the vehicle interior component, in lieu of the peripheral wall section **2**. In this case, the opposing plates are interconnected by the clip seating section **1** and the bottom plate **s1**. Moreover, while the case where the entire clip-mounting seats are formed integrally with the door lining has been discussed above, the clip-mounting seats which are formed separately from the door lining may be mounted to the door lining.

[0039] The terms and expressions which have been employed are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding any equivalents of the features shown and described, or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

What is claimed is:

1. A clip-mounting seat for mounting a clip to a vehicle interior component, said clip including a pillar-shaped axial portion, said clip-mounting seat including a clip seating section; said clip seating section having an engaging hole for

engagingly receiving said axial portion of said clip, and a pair of guide edge portions extending to said engaging hole from a side of said clip seating section to thereby form a tapered slit for allowing said axial portion of said clip to be slid along said pair of guide edge portions and allowing said axial portion of said clip to be guided into said engaging hole; said tapered slit having an inner end smaller in size than an outer diameter of said axial portion of said clip; said engaging hole being formed into a substantially circular shape having a size larger than said outer diameter of said axial portion of said clip; and said engaging hole continuing from inner ends of said guide edge portions; wherein at least one of said guide edge portions is provided with a protruding piece projecting into said engaging hole from an inner end of said at least one of said guide edge portions, said protruding piece including a tip end surface having a width that allows said tip end surface to be operatively come surface-contact with said axial portion of said clip.

2. A clip-mounting seat as set forth in claim 1, wherein each of said guide edge portions is provided with said protruding piece.

3. A clip-mounting seat as set forth in claim 1, wherein said tip end surface is formed into a circular arc-shape so as to fit around said axial portion of said clip.

4. A clip-mounting seat as set forth in claim 2, wherein said tip end surface is formed into a circular arc-shape so as to fit around said axial portion of said clip.

5. A vehicle interior component having a plurality of clip-mounting seats as set forth in claim 1 or 2.

6. A vehicle interior component having a plurality of clip-mounting seats as set forth in claim 3 or 4.

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