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### VEHICLE REAR STRUCTURE

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#### Abstract

The vehicle rear structure includes a rear seat cushion, a wire assembly, a clip, and a closed cross-section portion disposed at a front portion of the rear floor panel. The rear seat cushion is attached to the rear floor panel by inserting a downward protruding portion into the clip. The clip is attached to the closed cross-section portion and has a distal end extending into the closed cross-section portion. The closed cross-section portion includes an abutment surface with which a side surface of the distal end portion of the clip contacts.

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## Background/Summary

### CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to Japanese Patent Application No. 2024-24431 filed on Feb. 21 2024, which is incorporated herein by reference in its entirety including the specification, claims, drawings, and abstract.

### TECHNICAL FIELD

[0002] The present disclosure relates to a vehicle rear structure including a rear seat cushion and a rear floor panel.

### BACKGROUND

[0003] JPA 2007-296903 discloses a structure of a rear seat for a vehicle. JPA 2007-296903 discloses a structure in which a part of a wire assembly disposed inside a rear seat cushion is formed as a lower protruding portion protruding downward from a lower surface of the rear seat cushion, and the rear seat cushion is attached to a rear floor panel by inserting the lower protruding portion into a resin clip attached to the rear floor panel.

### SUMMARY

[0004] When the vehicle collides forward, the rear seat cushion moves toward the front of the vehicle while rotating so that the rear portion is lifted. For this reason, a rotation moment that attempts to rotate with respect to the rear floor panel is applied to the resin clip (see FIG. 6). In the structure of the rear seat described in JPA 2007-296903, the resin clip may be detached from the rear floor panel due to the rotation moment, and the rear seat cushion may be detached from the rear floor panel.

[0005] Accordingly, an object of the present disclosure is to prevent a rear seat cushion from being detached from a rear floor panel at the time of a front collision.

[0006] In accordance to an aspect of the present disclosure, a rear seat cushion; a wire assembly disposed inside the rear seat cushion and having a downward protruding portion protruding downward from a lower surface of the rear seat cushion at a front portion of the rear seat cushion; a clip attached to a rear floor panel to hold the downward protruding portion; and a closed cross-sectional portion of a rectangular cross section disposed at the front of the rear floor panel and extending in a vehicle width direction. The rear seat cushion is attached to the rear floor panel by inserting the downward protruding portion into the clip. The clip has a head portion attached to an upper plate constituting a part of the closed cross-sectional portion and a tip portion extending into the closed cross-sectional portion. The closed cross-sectional portion includes an abutment surface with which a side surface of the tip portion of the clip contacts. The closed cross-sectional portion includes an abutment surface with which a side surface of the tip portion of the clip contacts. The abutment surface is disposed rearward to the clip.

[0007] Accordingly, since the rotation moment applied from the rear seat cushion at the time of the front collision is received by the abutment surface, the rotation of the clip is suppressed, and the clip can be suppressed from being detached from the rear floor panel. Therefore, it is possible to prevent the rear seat cushion from being detached from the rear floor panel at the time of the front collision.

[0008] In the vehicle rear structure of the present disclosure, the abutment surface may be a surface of a bracket attached to a rear plate constituting a part of the closed cross-sectional portion.

[0009] As described above, by adding the bracket to the rear floor panel, it is possible to easily suppress the rotation of the clip, and it is possible to suppress the separation of the rear seat cushion from the rear floor panel at the time of the front collision.

[0010] In the vehicle rear structure of the present disclosure, the closed cross-sectional portion may include a rear plate provided with a protrusion protruding toward the front of the vehicle, and the

abutment surface may be a front surface of the protrusion.

[0011] Accordingly, the rotation of the clip can be suppressed with a small number of parts.

According to the present disclosure, it is possible to suppress detachment of the rear seat cushion from the rear floor panel at the time of a front collision.

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## Description

### BRIEF DESCRIPTION OF DRAWINGS

[0012] FIG. 1 is a plan view showing a vehicle cabin of a vehicle having a vehicle rear structure according to an embodiment;

[0013] FIG. 2 is a plan view showing a wire assembly disposed inside a rear seat cushion of the vehicle rear structure of the embodiment;

[0014] FIG. 3 is a perspective view showing a downward protruding portion of the wire assembly shown in FIG. 2, and is a detailed perspective view of a portion B shown in FIG. 2;

[0015] FIG. 4 is a cross-sectional view showing the vehicle rear structure of the embodiment, and is a cross-sectional view taken along line A-A of FIG. 1;

[0016] FIG. 5 is a detailed cross-sectional view of a portion C shown in FIG. 4;

[0017] FIG. 6 is an explanatory view showing movement of a rear seat cushion when a vehicle having a vehicle rear portion structure according to the prior art collides forward.

### DESCRIPTION OF EMBODIMENTS

[0018] Hereinafter, a vehicle rear structure **100** according to an embodiment will be described with reference to the drawings. First, a configuration of a vehicle **200** including a vehicle rear structure **100** will be described with reference to FIG. 1. Note that FR, UP, and RH shown in the drawings indicate a front side, an upper side, and a right side of the vehicle **200** including the vehicle rear structure **100**, respectively. The opposite directions of FR, UP, and RH indicate the rear side, the lower side, and the left side, respectively. Hereinafter, in a case where the front-rear direction, the left-right direction, and the up-down direction are simply used, the front-rear direction, the left-right direction, and the up-down direction of the vehicle **200** are indicated unless otherwise specified.

[0019] As shown in FIG. 1, the vehicle **200** includes a floor panel **60**, a rear floor panel **40**, and a rear seat **10**. The floor panel **60** constitutes a front portion of a floor of the vehicle cabin. A front seat (not shown) is mounted on the floor panel **60**. The rear floor panel **40** constitutes a rear portion of the floor of the vehicle cabin. The rear seat **10** is mounted on the rear floor panel **40**. The rear seat **10** includes a rear seat cushion **11** on which an occupant sits, and a rear seat back **12** that supports the back of the occupant.

[0020] The vehicle rear structure **100** includes a rear seat cushion **11**, a wire assembly **20**, a clip **50**, a rear floor panel **40**, and a bracket **45**.

[0021] As shown in FIG. 2, the rear seat cushion **11** is provided with a pad **15** made of a foamed resin and constituting a seat portion. A wire assembly **20** is disposed in the pad **15** to reinforce the seat.

[0022] The wire assembly **20** includes a front upper wire **21**, a front lower wire **22**, a front fixing wire **23**, a rear upper wire **31**, a rear lower wire **32**, a rear fixing wire **33**, a rear cross wire **34**, and a center wire **35**. The front fixing wire **23** fixes the front portion of the rear seat cushion **11** to the rear floor panel **40**. The rear fixing wire **33** fixes the rear portion of the rear seat cushion **11** to the body.

[0023] The front upper wire **21** is a substantially U-shaped wire having a central portion extending in the vehicle width direction, left and right end portions curved toward the vehicle rear side, and left and right leg portions **21A** extending toward the vehicle rear side. The front lower wire **22** is a substantially U-shaped wire disposed below the front upper wire **21** and having a leg portion **22A** extending rearward of the vehicle. The rear upper wire **31** is a substantially U-shaped wire in which

two leg portions **31A** extend from the vehicle rear side toward the vehicle front side. The rear lower wire **32** is a substantially U-shaped wire disposed below the rear upper wire **31** and having two leg portions **32A** extending from the rear of the vehicle toward the front of the vehicle. A rear end portion of the leg portion **21A** of the front upper wire **21** and a rear end portion of the leg portion **22A** of the front lower wire **22** are connected to a front end portion of the leg portion **32A** of the rear lower wire **32**. The left and right rear lower wires **32** are connected to each other by a rear cross wire **34**. The center wire **35** is a substantially U-shaped wire having two leg portions **35A** that extend in the vehicle width direction at the rear of the center of the rear seat cushion **11** and extend toward the front of the vehicle at positions slightly deviated to the left and right from the center in the vehicle width direction. A front end portion of the center wire **35** is connected to the front upper wire **21**. An end portion of the rear upper wire **31** on the vehicle center side is connected to the center wire **35**.

[0024] As shown in FIG. 3, the front fixing wire **23** includes an upper connecting portion **24** connected to the front upper wire **21**, a lower connecting portion **26** connected to the front lower wire **22**, and a U-shaped downward protruding portion **25** disposed between the upper connecting portion **24** and the lower connecting portion **26**. The downward protruding portion **25** includes two leg portions **25A** and a curved lower end portion **25B** connecting the two leg portions **25A**. As shown in FIG. 4, the downward protruding portion **25** protrudes downward from the lower surface of the rear seat cushion **11**. The downward protruding portion **25** is inserted into a clip **50** attached to the rear floor panel **40** and fixed to the rear floor panel **40**.

[0025] As shown in FIGS. 1 and 4, the rear floor panel **40** includes a flat plate portion **41** disposed at the rear and a closed cross-sectional portion **42** disposed at the front. The rear seat cushion **11** is placed on the upper surface of the flat plate portion **41**.

[0026] The closed cross-sectional portion **42** is a rectangular closed cross-sectional portion composed of an upper plate **42A**, a lower plate **42B**, a front plate **42C**, and a rear plate **42D**. The closed cross-sectional portion **42** extends in the vehicle width direction and constitutes a frame member of the body. A lower end of the front plate **42C** of the closed cross-sectional portion **42** is connected to the floor panel **60**. A hole **42E** is provided in the upper plate **42A** of the closed cross-sectional portion **42**. The clip **50** is attached to the hole **42E**.

[0027] As shown in FIG. 5, the clip **50** includes a head portion **51**, a tip portion **52**, an engaging claw **53**, a wire hole **54**, and a wire lock portion **55**. The head portion **51** is a portion larger than the size of the hole **42E** and is fixed to the upper plate **42A**. The tip portion **52** is a portion extending downward from the head portion **51**. The outer dimension of the tip portion **52** is slightly smaller than the inner dimension of the hole **42E**, and is inserted into the closed cross-sectional portion **42** from the hole **42E**. The tip portion **52** is inserted into the closed cross-sectional portion **42** from the hole **42E** and extends toward the inside of the closed cross-sectional portion **42**. The engaging claw **53** is a portion formed between the tip portion **52** and the head portion **51**. The outer dimension of the engaging claw **53** is slightly larger than the inner dimension of the hole **42E**. An engaging groove **53A** is formed between the engaging claw **53** and the head portion **51**. The engaging groove **53A** engages with the peripheral edge of the hole **42E** to fix the head portion **51** of the clip **50** to the closed cross-sectional portion **42**.

[0028] A wire hole **54** into which the downward protruding portion **25** is inserted is provided in the head portion **51** and the tip portion **52**. A wire lock portion **55** protruding from an inner surface of the wire hole **54** is provided at a lower portion of the wire hole **54**. The wire lock portion **55** locks the lower end portion **25B** of the downward protruding portion **25**. When the downward protruding portion **25** is inserted into the wire hole **54** of the clip **50** and the lower end portion **25B** is inserted beyond the wire lock portion **55**, the lower end portion **25B** is held by the clip **50**.

[0029] A bracket **45** is attached to the rear plate **42D** of the closed cross-sectional portion **42**. A surface **45A** of the bracket **45** on the vehicle front side is disposed on the vehicle rear side of the tip portion **52** in the closed cross-sectional portion **42**, and extends along a side surface of the tip

portion **52**. As will be described later, the surface **45A** constitutes an abutment surface with which the side surface of the tip portion **52** comes into contact when the vehicle **200** collides forward and the rear end **51A** of the head portion **51** of the clip **50** is rotated so as to be lifted.

[0030] Next, the movement of the rear seat cushion **11** when the vehicle **200** including the vehicle rear structure **100** according to the embodiment collides forward will be described with reference to FIGS. **4** and **5**. As indicated by an arrow **91** in FIG. **4**, when the vehicle **200** collides forward, the rear seat cushion **11** attempts to move toward the front of the vehicle while rotating counterclockwise so that the rear portion thereof is lifted. Therefore, as indicated by an arrow **92** in FIG. **5**, a rotation moment that attempts to rotate counterclockwise with respect to the rear floor panel **40** is applied to the clip **50**. Due to this rotation moment, the rear end **51A** of the head portion **51** of the clip **50** is lifted, and the tip portion **52** tends to rotate counterclockwise toward the vehicle rear side. However, as indicated by an outlined arrow **93** in FIG. **5**, when the clip **50** rotates counterclockwise, the rear side surface of the tip portion **52** contacts the surface **45A**. Thus, the rotational moment applied to the clip **50** is received by the rear plate **42D**. Therefore, the clip **50** does not rotate with respect to the rear floor panel **40**, and the rear end portion of the engaging claw **53** of the clip **50** can be prevented from coming off from the hole **42E**. Therefore, it is possible to suppress the rear seat cushion **11** from being detached from the rear floor panel **40**.

[0031] Next, the movement of the rear seat cushion **11** when the vehicle **210** including the vehicle rear structure **110** of the prior art that does not include the bracket **45** collides forward will be described with reference to FIG. **6**. The vehicle rear structure **110** has the same structure as the vehicle rear structure **100** described above except that it does not include the bracket **45**.

[0032] When the vehicle **210** collides forward, as indicated by an arrow **94** in FIG. **6**, the rear seat cushion **11** moves toward the front of the vehicle while rotating counterclockwise so that the rear portion thereof is lifted. At this time, a counterclockwise rotation moment is applied to the clip **50**. A chain line in FIG. **6** indicates the rear seat cushion **11** when rotated. Therefore, the rear end portion of the engaging claw **53** of the clip **50** is disengaged from the hole **42E**, and the clip **50** is disengaged from the rear floor panel **40**. Then, the rear seat cushion **11** is detached from the rear floor panel **40** together with the clip **50**.

[0033] On the other hand, in the vehicle rear structure **100** of the embodiment, as described with reference to FIGS. **4** and **5**, since the rotation of the clip **50** is suppressed by the bracket **45** and the clip **50** is suppressed from coming off the rear floor panel **40**, it is possible to suppress the rear seat cushion **11** from coming off the rear floor panel **40**.

[0034] In the above description, the bracket **45** is provided on the rear plate **42D** of the closed cross-sectional portion **42**. However, other configurations may be employed. For example, the rear plate **42D** may be provided with a protrusion protruding toward the front of the vehicle, and the side surface of the tip portion **52** may abut against the front surface of the protrusion. In this case, the front surface of the protrusion constitutes an abutment surface.

## Claims

**1.** A vehicle rear structure comprising: a rear seat cushion; a wire assembly disposed inside the rear seat cushion and having a downward protruding portion protruding downward from a lower surface of the rear seat cushion at a front portion of the rear seat cushion; a clip attached to a rear floor panel to hold the downward protruding portion; and a closed cross-sectional portion of a rectangular cross section disposed at the front of the rear floor panel and extending in a vehicle width direction, wherein the rear seat cushion is attached to the rear floor panel by inserting the downward protruding portion into the clip, the clip has a head portion attached to an upper plate constituting a part of the closed cross-sectional portion and a tip portion extending into the closed cross-sectional portion, the closed cross-sectional portion includes an abutment surface with which a side surface of the tip portion of the clip contacts, and the abutment surface is disposed rearward

to the clip.

2. The vehicle rear structure according to claim 1, wherein the abutment surface is a surface of a bracket attached to a rear plate constituting a part of the closed cross-sectional portion.

3. The vehicle rear structure according to claim 1, wherein the closed cross-sectional portion includes a rear plate provided with a protrusion protruding toward the front of the vehicle, the abutment surface is a front surface of the protrusion.

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