



(51) International Patent Classification:

B60R 16/02 (2006.01) **B60N 2/06** (2006.01)
H02G 11/00 (2006.01)

(21) International Application Number:

PCT/JP2012/061311

(22) International Filing Date:

20 April 2012 (20.04.2012)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2011-094909 21 April 2011 (21.04.2011) JP

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

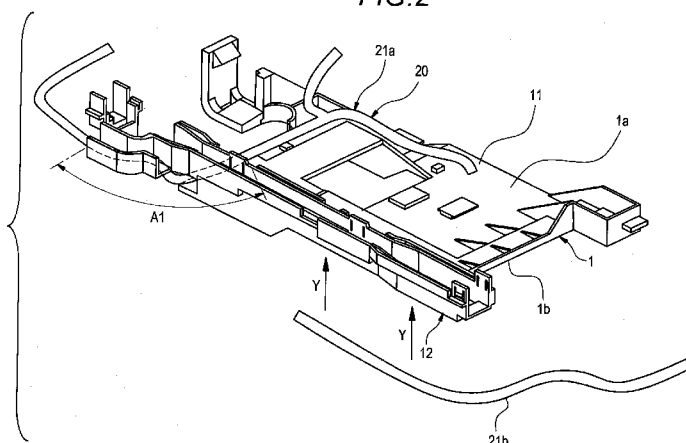
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: ELECTRONIC COMPONENT MOUNTING PLATE

FIG.2



(57) Abstract: An electronic component mounting plate (1) is formed as a predetermined plate-like structure, for being attached in a lower space (30) of a seat of a vehicle. The electronic component mounting plate includes a first component mounting portion (11) formed on a top surface (1a) of the mounting plate (1) that is adapted for facing a bottom surface of the seat in a state of being attached in the lower space of the seat, and having an earlier-attached electronic component (21a) assembled thereto before the attachment, and a second component mounting portion (12) formed on a bottom surface (1b) of the mounting plate (1) that is adapted for being exposed to a floor side of the vehicle in the attached state, and having a later-attached electronic component (21b) assembled thereto to be additionally mounted on the electronic component mounting plate after the attachment.



DESCRIPTION

ELECTRONIC COMPONENT MOUNTING PLATE

5 Technical Field

The present invention relates to an electronic component mounting plate that is formed as a predetermined plate-like structure through resin molding and equipped with a component mounting part having electronic components assembled thereto and that is attached in a lower space of a seat
10 of a vehicle.

Background Art

Figs. 4 and 5 show an electronic component mounting plate 100 in a related art.

15 The electronic component mounting plate 100 is disclosed in Patent Literature 1. The electronic component mounting plate 100 is a resin-molded body formed as a predetermined plate-like structure through resin molding. A mounting plate top surface 101 that is one surface of the electronic component mounting plate 100, as shown in Fig. 5, includes a
20 component mounting part 110.

The component mounting part 110 is a part to which electronic components 120 are assembled. For example, a wire harness 121, an electronic circuit device 122 connected with the wire harness 121, and the like correspond to the electronic components 120 assembled to the
25 component mounting part 110.

In the case of the illustrated example, the component mounting part 110 includes a harness wiring portion 111 where the wire harness 121 is wired, and a device arrangement portion 112 where the electronic circuit device 122 is arranged. The device arrangement portion 112 has a box-like structure with its top open, and an opening portion thereof is covered with a detachable cover 113.

As shown in Fig. 4, the electronic component mounting plate 100 in the related art is attached in the lower space 130 of the seat of the vehicle with a surface equipped with the component mounting part 110 turned up.

The lower space 130 of the seat is a space secured below a seat skeleton 140 of the vehicle.

In other words, the electronic component mounting plate 100 in the related art is attached in the lower space 130 of the seat so that the mounting plate top surface 101 to which the electronic components 120 are assembled faces a bottom surface of the seat of the vehicle.

Citation List

Patent Literature

Patent Literature 1: JP-A-2010-36667

Summary of Invention

Technical Problem

The electronic component mounting plate 100 disclosed in Patent Literature 1 is usually attached in the lower space 130 of the seat after assembling of the electronic components 120 is completed.

In the meantime, as vehicle-mounted electronic components, a later-attached electronic component such as optional equipment may be present, which is required to be assembled to the electronic component mounting plate 100 through later attachment after the attachment process of the electronic component mounting plate 100 is completed.

However, in the electronic component mounting plate 100 in the related art, it is hard for a user to visually recognize the component mounting part 110 from the outside because the component mounting part 110 for assembling the electronic components 120 is covered with the bottom surface of the seat of the vehicle. Therefore, there is a problem that the assembling workability of the later-attached electronic component is bad, and the maintenance work of the later-attached electronic component cannot be simplified.

An object of the invention is to solve the above problems and to provide an electronic component mounting plate in which the assembling work of a later-attached electronic component or the maintenance work of the later-attached electronic component is easy even after being attached in a lower space of a seat secured below the seat of a vehicle.

Solution to Problem

The present invention is achieved by some aspects including at least one of the following configurations:

(1) An electronic component mounting plate which is formed as a predetermined plate-like structure through resin molding, for being attached in a lower space of a seat of a vehicle, the electronic component mounting

plate including: a first component mounting portion formed on a top surface of the electronic component mounting plate that is adapted for facing a bottom surface of the seat in a state of being attached in the lower space of the seat, and having an earlier-attached electronic component assembled thereto before attachment in the lower space of the seat; and a second component mounting portion formed on a bottom surface of the electronic component mounting plate that is adapted for being exposed to a floor side of the vehicle in a state of being attached in the lower space of the seat, and having a later-attached electronic component assembled thereto to be additionally mounted on the electronic component mounting plate after attachment in the lower space of the seat.

(2) The electronic component mounting plate according to configuration (1), wherein the second component mounting portion is formed with a wiring groove that accommodates a later-attached wire harness as the later-attached electronic component so as not to protrude from a plane of the bottom surface of the electronic component mounting plate towards the floor side of the vehicle.

(3) The electronic component mounting plate according to configuration (2), wherein a circuit that constitutes the later-attached wire harness is a circuit for which handling is prescribed at a level higher than a predetermined value in terms of safety standards of the vehicle.

(4) The electronic component mounting plate according to configuration (2), wherein a circuit that constitutes the later-attached wire harness is a circuit with a high frequency of attachment and detachment due to maintenance.

According to the above configuration (1), the electronic component mounting plate includes the first component mounting portion on the top surface, and the second component mounting portion on the bottom surface. The second component mounting portion is mounted for attachment of the later-attached electronic component, and is exposed to the floor side of the vehicle in the state of being attached in the lower space of the seat secured below the seat. Therefore, even after the electronic component mounting plate is assembled in the lower space of the seat, one can easily confirm the attachment location of the later-attached electronic component or an assembled later-attached electronic component, and the assembling work of the later-attached electronic component or the maintenance work of the later-attached electronic component can be made easy.

According to the above configuration (2), the later-attached wire harness assembled to the second component mounting portion of the mounting plate bottom surface is wired within the wiring groove, and does not protrude to the floor side of the vehicle.

Therefore, the later-attached wire harness assembled to the second component mounting portion is not soiled due to rubbing of a floor surface or the like of the vehicle, and high protective performance for the later-attached wire harness can be obtained.

Additionally, the plate-like structure of the electronic component mounting plate becomes a three-dimensional structure due to the wiring groove formed in the second component mounting portion for the wiring of the later-attached wire harness, and it is possible to secure high rigidity for the electronic component mounting plate.

According to the above configuration (3), the circuit in which handling is prescribed at a level higher than a predetermined level in terms of safety standards of the vehicle is protected by the wiring groove. Therefore, reliability for maintaining the safety standards is improved.

5 According to the above configuration (4), the circuit with a high frequency of attachment and detachment due to the maintenance or the like is accommodated in the wiring groove that is excellent in the assembling work or the maintenance work. Therefore, the work burden caused by the attachment and detachment of the circuit can be reduced, and excellent
10 maintainability can be obtained.

Advantageous Effects of Invention

According to the electronic component mounting plate, the electronic component mounting plate includes the first component mounting portion on
15 the top surface, and the second component mounting portion on the bottom surface. The second component mounting portion is mounted for attachment of the later-attached electronic component, and is exposed to the floor side of the vehicle in the state of being attached in the lower space of the seat secured below the seat. Therefore, even after being attached in the
20 lower space of the seat, one can easily confirm attachment location of the later-attached electronic component or an assembled later-attached electronic component, and the assembling work of the later-attached electronic component or the maintenance work of the later-attached electronic component can be made easy.

Brief Description of Drawings

Fig. 1 is a perspective view showing the arrangement of an electronic component mounting plate in a lower space of a seat according to an embodiment of the invention.

5 Fig. 2 is an enlarged perspective view of the electronic component mounting plate shown in Fig. 1.

Fig. 3 is a cross-sectional view showing the shape of a wiring groove of a second component mounting portion in the electronic component mounting plate shown in Fig. 2.

10 Fig. 4 is a perspective showing an arrangement of an electronic component mounting plate in a related art.

Fig. 5 is an enlarged perspective view of the electronic component mounting plate shown in Fig. 4.

15 Description of Embodiments

An exemplary embodiment of an electronic component mounting plate according to the invention will be described in detail with reference to the drawings.

20 Figs. 1 to 3 show an electronic component mounting plate according to an embodiment of the invention. Fig. 1 is a perspective view showing the arrangement of the electronic component mounting plate in a lower space of a seat according to the embodiment, Fig. 2 is an enlarged perspective view of the electronic component mounting plate shown in Fig. 1, and Fig. 3 is a cross-sectional view showing the shape of a wiring groove of a second
25 component mounting portion in the electronic component mounting plate

shown in Fig. 2.

The electronic component mounting plate 1 according to the embodiment is formed as a predetermined plate-like structure through resin molding. Additionally, the electronic component mounting plate 1 is formed
5 with a component mounting part 10 to which electronic components 20 are assembled, and is attached in a lower space 30 of a seat of a vehicle.

The lower space 30 of the seat, as shown in Fig. 1, is a space that is secured below a seat skeleton 40 that is a skeletal structure of a seat (not shown) of the vehicle.

10 A wire harness 21, a circuit board or an electronic circuit device (not shown) connected with the wire harness 21, and the like correspond to the electronic components 20. The wire harness 21 attached to the component mounting part 10, as shown in Fig. 2, can be classified broadly into an earlier-attached wire harness 21a and a later-attached wire harness 21b.

15 The earlier-attached wire harness 21a is, for example, a wire harness as standard equipment on the vehicle, and is assembled to the component mounting part 1 before the electronic component mounting plate 1 is attached in the lower space 30 of the seat. A portion of the earlier-attached wire harness 21a is pulled toward a mounting plate bottom surface 1b from a
20 mounting plate top surface 1a via a through hole (not shown) formed in the electronic component mounting plate 1, if necessary. In the earlier-attached wire harness 21a shown in Fig. 2, the part of a section A1 shown by a broken line is a part wired toward the mounting plate bottom surface 1b.

The later-attached 21b is, for example, a wire harness of optional
25 equipment, and is assembled to the electronic component mounting plate 1

after the electronic component mounting plate 1 is attached in the lower space 30 of the seat.

The component mounting part 10 is a part on the electronic component mounting plate 1 to which the electronic components 20 are assembled. In the present embodiment, as shown in Figs. 2 and 3, the electronic component mounting plate 1 includes a first component mounting portion 11 and a second component mounting portion 12 as the component mounting part 10.

The first component mounting portion 11, as shown in Fig. 3, is a component mounting portion formed on the mounting plate top surface 1a that faces the bottom surface of the seat in the state of being attached in the lower space 30 of the seat. The electronic components 20 as standard equipment, such as the earlier-attached wire harness 21a, are attached to the first component mounting portion 11 before the electronic component mounting plate 1 is attached in the lower space 30 of the seat.

The second component mounting portion 12, as shown in Fig. 3, is a component mounting portion formed on the mounting plate bottom surface 1b that is exposed to the floor side of the vehicle in the state of being attached in the lower space 30 of the seat. Later-attached electronic components, such as the later-attached wire harness 21b to be additionally mounted on the electronic component mounting plate 1 after the electronic component mounting plate 1 is attached in the lower space 30 of the seat, are attached to the second component mounting portion 12.

In the present embodiment, as shown in Fig. 3, the second component mounting portion 12 is formed with a wiring groove 13 that accommodates

the later-attached wire harness 21b as the later-attached electronic component so as not to protrude towards the floor side of the vehicle.

In the present embodiment, the wiring groove 13 is a groove having a horizontally open U-shaped cross-section with its opening turned toward the floor of the vehicle, or a groove having a vertically open U-shaped cross-section.

In the present embodiment, the later-attached wire harness 21b is pushed into the wiring groove 13 from the lower side of the mounting plate bottom surface 1b as indicated by an arrow Y in Fig. 2, and is thereby wired at the wiring groove 13.

In the electronic component mounting plate 1 of the present embodiment, a circuit that constitutes the later-attached wire harness 21b wired at the wiring groove 13 is, for example, a circuit, such as a circuit for a seat belt switch or a circuit for an airbag, for which handling is prescribed at a level higher than a predetermined value in terms of safety standards of the vehicle, or a circuit with a high frequency of attachment and detachment due to maintenance or the like.

In the electronic component mounting plate 1 of the embodiment described above, as shown in Fig. 3, the component mounting part 10 includes the first component mounting portion 11 of the mounting plate top surface 1a and the second component mounting portion 12 of the mounting plate bottom surface 1b. The second component mounting portion 12 is mounted for attachment of the later-attached electronic component, and is exposed to the floor side of the vehicle in the state of being assembled in the lower space 30 of the seat secured below the seat. Therefore, even after

being assembled in the lower space 30 of the seat, one can easily confirm the attaching location of the later-attached electronic component or an assembled later-attached electronic component, and the assembling work of the later-attached electronic component or the maintenance work of the later-attached electronic component can be made easy.

Additionally, in the electronic component mounting plate 1 of the embodiment described above, the later-attached wire harness 21b to be assembled to the second component mounting portion 12 of the mounting plate bottom surface 1b, as shown in Fig. 3, is wired within the wiring groove 13 and does not protrude toward the floor of the vehicle.

Therefore, the later-attached wire harness 21b assembled to the second component mounting portion 12 is not soiled due to rubbing of a floor surface or the like of the vehicle, and high protective performance for the later-attached wire harness 21b can be obtained.

Additionally, the plate-like structure of the electronic component mounting plate 1 becomes a three-dimensional structure due to the wiring groove 13 formed in the second component mounting portion 12 for the wiring of the later-attached wire harness 21b, and it is possible to secure high rigidity for the electronic component mounting plate 1.

Moreover, in the electronic component mounting plate 1 of the embodiment described above, a circuit that constitutes the later-attached wire harness 21b is a circuit for which handling is prescribed at a level higher than a predetermined value in terms of safety standards of the vehicle. Since the circuit is protected by the wiring groove 13, reliability for maintaining the safety standards is improved.

Additionally, in the electronic component mounting plate 1 of the embodiment described above, in a case where a circuit that constitutes the later-attached wire harness 21b is a circuit with a high frequency of attachment and detachment due to maintenance or the like, the circuit is
5 accommodated in the wiring groove 13 that is excellent in assembling work or maintenance work. Therefore, the work burden caused by the attachment and detachment of the circuit can be reduced, and excellent maintainability can be obtained.

In addition, the electronic component mounting plate 1 is not limited
10 to the aforementioned embodiment, and appropriate alterations, improvements, or the like can be made.

For example, although the aforementioned embodiment shows a component in which the wire harness 21 is wired as the component mounting part 10, the electronic component mounting plate can be equipped with
15 various kinds of component mounting parts for assembling a substrate (not shown) for control, or other electronic circuit devices.

The present application is based upon and claims the benefit of Japanese Patent Application No. 2011-94909 filed on April 21, 2011, the contents of which are incorporated by reference in its entirety.

20

Industrial Applicability

The electronic component mounting plate according to the invention is useful for being attached, for example, in a lower space of a seat of a vehicle which one can hardly recognize visually from outside.

25

Reference Signs List

- 1: ELECTRONIC COMPONENT MOUNTING PLATE
- 10: COMPONENT MOUNTING PART
- 11: FIRST COMPONENT MOUNTING PORTION
- 5 12: SECOND COMPONENT MOUNTING PORTION
- 13: WIRING GROOVE
- 20: ELECTRONIC COMPONENT
- 21: WIRE HARNESS
- 21a: EARLIER-ATTACHED WIRE HARNESS
- 10 21b: LATER-ATTACHED WIRE HARNESS
- 30: LOWER SPACE OF SEAT
- 40: SEAT SKELETON

CLAIMS

1. An electronic component mounting plate which is formed as a predetermined plate-like structure through resin molding, for being attached
5 in a lower space of a seat of a vehicle, the electronic component mounting plate comprising:

a first component mounting portion formed on a top surface of the electronic component mounting plate that is adapted for facing a bottom surface of the seat in a state of being attached in the lower space of the seat,
10 and having an earlier-attached electronic component assembled thereto before attachment in the lower space of the seat; and

a second component mounting portion formed on a bottom surface of the electronic component mounting plate that is adapted for being exposed to a floor side of the vehicle in a state of being attached in the lower space of the
15 seat, and having a later-attached electronic component assembled thereto to be additionally mounted on the electronic component mounting plate after attachment in the lower space of the seat.

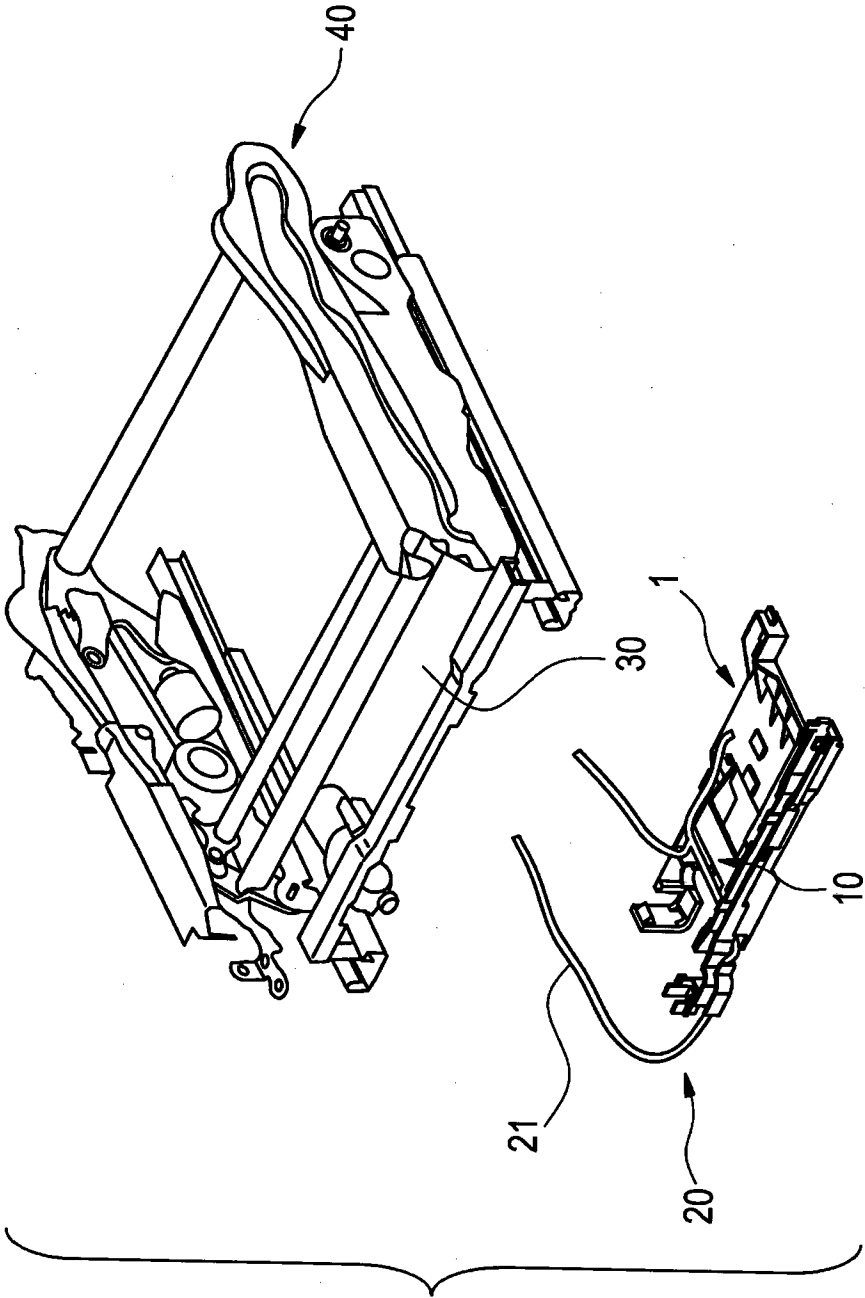
2. The electronic component mounting plate according to claim 1,
20 wherein the second component mounting portion is formed with a wiring groove that accommodates a later-attached wire harness as the later-attached electronic component so as not to protrude from a plane of the bottom surface of the electronic component mounting plate towards the floor side of the vehicle.

3. The electronic component mounting plate according to claim 2,
wherein a circuit that constitutes the later-attached wire harness is
a circuit for which handling is prescribed at a level higher than a
predetermined value in terms of safety standards of the vehicle.

5

4. The electronic component mounting plate according to claim 2,
wherein a circuit that constitutes the later-attached wire harness is
a circuit with a high frequency of attachment and detachment due to
maintenance.

FIG.1



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FIG.2

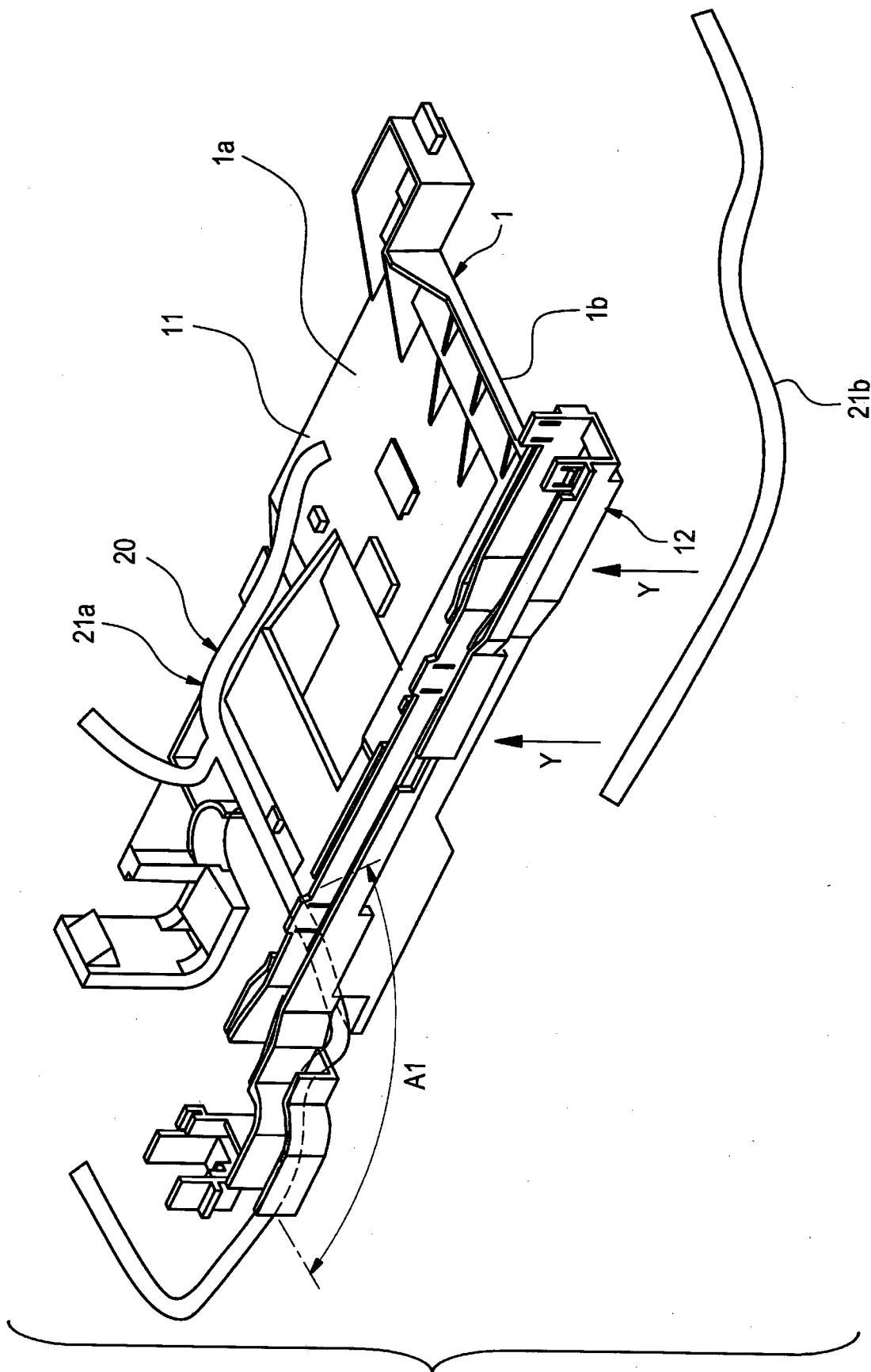
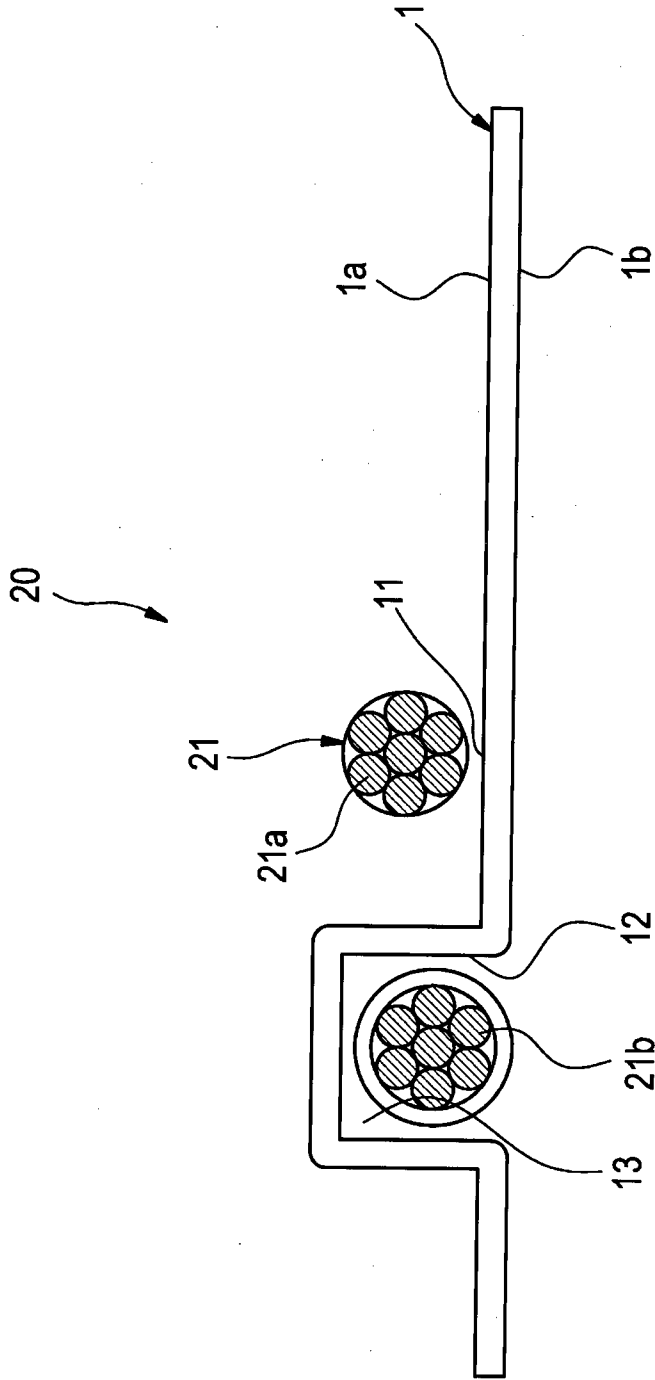
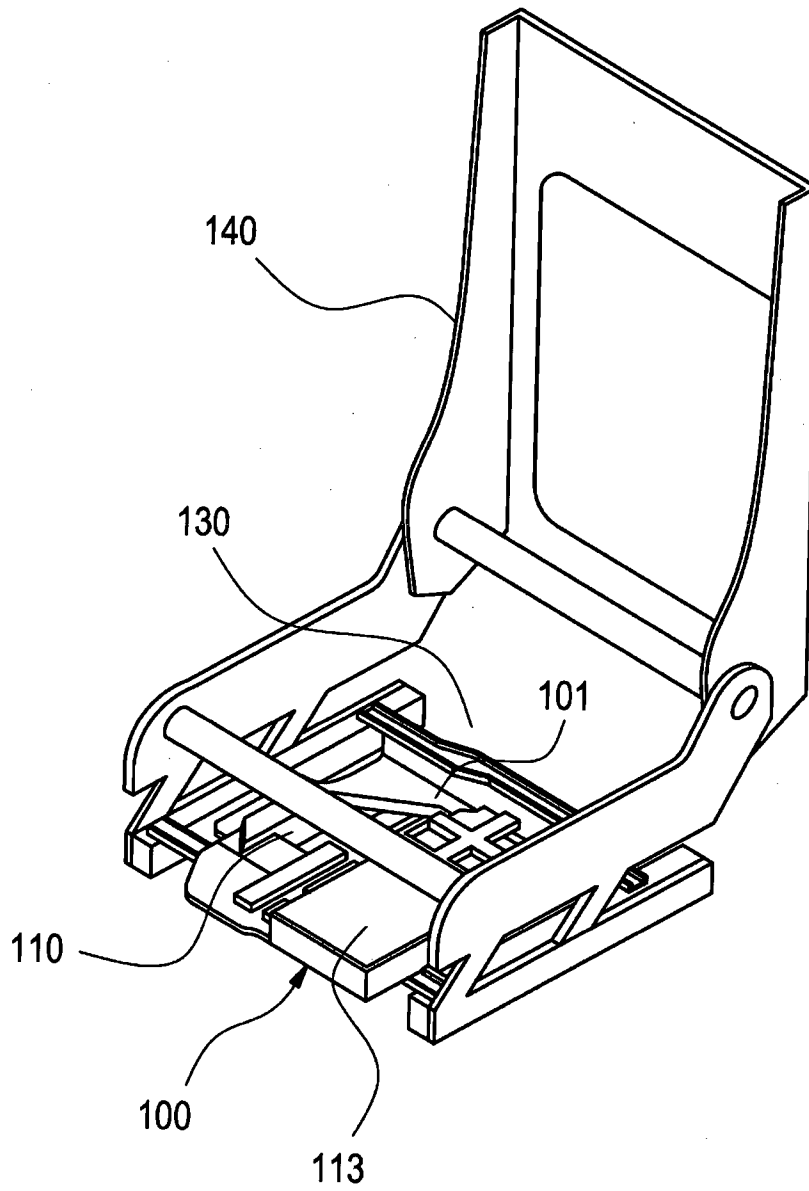


FIG.3



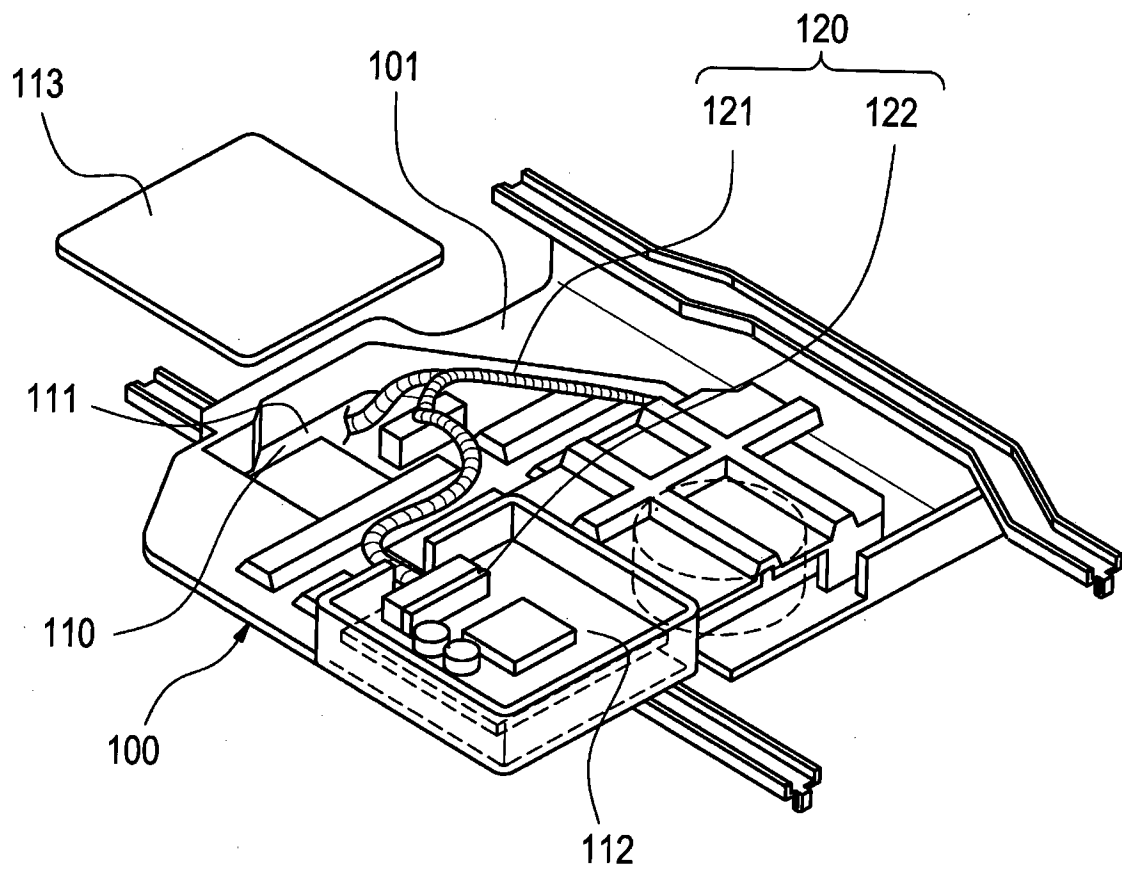
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FIG. 4



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FIG. 5



INTERNATIONAL SEARCH REPORT

International application No
PCT/JP2012/061311

A. CLASSIFICATION OF SUBJECT MATTER

INV. B60R16/02 H02G11/00 B60N2/06
ADD.

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)

B60N B60R H02G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2010 036667 A (TOYOTA BOSHOKU CORP; YAZAKI CORP) 18 February 2010 (2010-02-18) cited in the application	1
A	abstract; figures 1-5 -----	2
A	US 6 429 544 B1 (SASAKI ATSUSHI [JP] ET AL) 6 August 2002 (2002-08-06) column 10, line 9 - column 11, line 30; figure 5 -----	1
A	DE 203 07 185 U1 (VOLKSWAGEN BORDNETZE GMBH [DE]) 24 July 2003 (2003-07-24) page 9, line 26 - page 13, line 17; figures 1-4 -----	1
A	JP 11 198690 A (FURUKAWA ELECTRIC CO LTD) 27 July 1999 (1999-07-27) abstract; figures 1-4 -----	1
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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

13 July 2012

Date of mailing of the international search report

26/07/2012

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/JP2012/061311

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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