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(54) **Fuse connection structure of bus bar and electric connection box provided with same**

Sicherungsanschlussanordnung für Stromschiene und elektrisches Verbindungsgehäuse mit einer solchen Anordnung

Ensemble de bornes de connexion de fusible pour barre omnibus et boîtier de connexion électrique avec un tel ensemble

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Description

[0001] This invention relates to a fuse connection structure of a bus bar by which after a fusible portion of the bus bar melts, a post-mounting fuse is mounted on the bus bar, and the invention also relates to an electric connector box provided with this fuse connection structure.

[0002] Fig. 7 shows a conventional fuse connection structure of a bus bar and an electric connection box provided with this fuse connection structure shown in Unexamined Japanese Patent Publication Sho. 57-151141.

[0003] This electric connection box 61 has a plurality of bus bar wiring boards 63 received in layers within a synthetic resin-made casing (connection box body) 62. A narrow fusible portion 65 is formed between two strip-like bus bars 64 on the uppermost bus bar wiring board 63, and a pair of fuse terminal inserting connection portions 66 are formed at opposite ends of the fusible portion 65, respectively, and the inserting connection portions 66 are continuous with ends of the bus bars 64, respectively.

[0004] A pair of slit-like fuse terminal-inserting holes 67 are formed through an upper wall of the casing 62, and an opening 68 is formed through this upper wall, and is disposed between the pair of holes 67, and the fusible portion 65 is exposed to the exterior through this opening 68. After the fusible portion 65 between the bus bars. 64 melts, a post-mounting fuse 69 is mounted on the outer surface of the upper wall of the casing 62, and tab terminals of the post-mounting fuse 69 are passed respectively through the holes 67, and are inserted respectively into the inserting connection portions 66 to be connected thereto. Each inserting connection portion 66 has a contact spring piece portion, and resiliently contacts the tab terminal of the post-mounting fuse 69

[0005] With this fuse connection structure, after the fusible portion 65, connected to the bus bars, melts upon application of an excess current, the external post-mounting fuse 69 is mounted on the casing to substitute for the fusible portion 65 between the two bus bars 64, thereby obviating the need for exchanging the bus bar wiring board 63.

[0006] However, when the electric connection box 61, provided with the conventional post-mounting fuse 69, is mounted on a vehicle, there has been encountered a problem that a contacted condition of the post-mounting fuse 69 is adversely affected by vibrations or the like during the travel of the vehicle, and also the post-mounting fuse 69 is liable to be withdrawn.

[0007] Another problem is that since a barrel portion (body portion) of the post-mounting fuse 69 is disposed on the outer side of the casing 62, the post-mounting fuse 69 is liable to be affected by water, dust and others, and therefore in order to prevent this, a cover must be provided on the outer side of the casing 62 to protect the post-mounting fuse 69 from water, dust and others.

[0008] A further problem is that the size of the electric connection box is increased not only by the use of the cover but also by the use of the post-mounting fuse 69 since the post-mounting fuse 69 considerably projects upwardly from the. casing 62. And besides, a plurality of post-mounting fuses 69 are mounted on the upper wall of the casing 62, and therefore other ordinary electrical parts, such as fuses and relays, can not be mounted on the upper wall of the casing 62, which has invited a problem that a connection circuit form (specification) is limited. DE 295 20 691 U1 discloses a bus bar assembly having connection portions provided at one side portion and the other side portion of the bus bar; a notch formed in an intermediate plate portion of said bus bar, and said plate portion having a fusible portion extending across said notch; and a pair of hole portions for mounting a post-mounting fuse, the pair of said hole portions formed through said plate portion, and being disposed at opposite sides of said notch, respectively, and said post-mounting fuse being thread-fastened and connected to said hole portions. In view of the foregoing problems, it is an object of this invention to provide a fuse connection structure of a bus bar in which a contacted condition of a fuse will not be adversely affected by vibrations of a vehicle and others, and also the fuse is protected from water, dust and others, and besides the increase of the size of an electric connection box due to the use of the fuse is prevented, and furthermore other ordinay parts such as a fuse can be mounted without any problem. Another object is to provide an electric connection box provided with this fuse connection structure.

[0009] A first aspect of the present invention has been achieved by a bus bar assembly comprising: a first bus bar with a fuse connection structure, the fuse connection structure including: connection portions provided at one side portion and the other side portion of the bus bar; a notch formed in an intermediate plate portion of said bus bar, and said plate portion having a fusible portion extending across said notch; and a pair of hole portions for mounting a post-mounting fuse, the pair of said hold portions formed through said plate portion, and being disposed at opposite sides of said notch, respectively, and said post-mounting fuse being thread-fastened and connected to said hole portions; and a second bus bar, covered with an insulating portion which has a plurality of projections, wherein said second bus bar is fixed to said one side portion and the other side portion of said bus bar by the projections of the insulating portion, wherein distal end portions of the projections are passed respectively through holes formed through the first bus bar.

[0010] With this construction, after the fusible portion of the bus bar is melted by an excess current or the like, the post-mounting fuse is fastened and connected to the intermediate plate portion by bolts and nuts. The bolts are passed respectively through the hole portions in the plate portion, and are threaded respectively into the nuts at the rear side of the bus bar. The post-mounting fuse is firmly fixed to the bus bar by thread fastening. Even when the fusible portion at the intermediate portion of the

bus bar melts, the second bus bar firmly holds the one and other side portions of the bus bar against separation from each other, and therefore the pair of hole portions in the intermediate plate portion will not be displaced out of position, and also the pitch of the two hole portions will not be changed, so that the efficiency of the post-mounting fuse-mounting operation can be enhanced.

[0011] The bus bar fuse connection structure of a second aspect of the present invention, depending from the first aspect of the present invention, is provided in that the post-mounting fuse has a pair of holes whose pitch is equal to a pitch of the pair of hole portions.

[0012] With this construction, each bolt is passed through the corresponding hole in the post-mounting fuse and the corresponding hole portion in the bus bar, and is firmly tightened by the corresponding nut.

[0013] According to a third aspect of the present invention, there is provided an electric connection box including a fuse connection structure of a bus bar as defined in any one of the first or second aspect of the present invention, provided in that the fuse connection structure is provided within a connection box body of the electric connection box, and an opening is formed in the connection box body, and is disposed in opposed relation to the intermediate plate portion.

[0014] With this construction, the post-mounting fuse is mounted on the bus bar, disposed within the connection box body, through the opening in the connection box body. The opening is covered with a cover or the like. The post-mounting fuse and the bus bar are received within the connection box body, and are safely protected from rain water, dust and others. The post-mounting fuse is held in intimate contact with the plate portion of the bus bar, and therefore will not occupy a large space, so that the connection structure has a compact and space-saving design. And besides, the connection portions of the one and other side portions of the bus bar are disposed in fusible link mounting portions and fuse mounting portions provided within the connection box body, so that in addition to the post-mounting fuse, fusible links and fuses are connected to the bus bar.

[0015] The electric connection box of a fourth aspect of the present invention, depending from the third aspect of the present invention, is provided in that the opening is sealingly closed by a projecting cover plate of a cover.

[0016] With this construction, simultaneously when the cover is attached to the connection box body, the opening in the connection box body is closed by the cover plate of the cover, thereby protecting the post-mounting fuse within the opening from water and dust. Merely by removing the cover from the connection box body, the post-mounting fuse can be easily mounted on and removed from the bus bar.

[0017] The electric connection box of a fifth aspect of the present invention, depending from the third or fourth aspect of the present invention, is provided in that a guide wall, holding fastening connection-purpose nuts, is provided within the connection box body.

[0018] With this construction, the nuts are beforehand held on the guide wall, and the nuts are disposed at the rear side of the bus bar, and the bolts are passed through the respective holes from the front side of the bus bar, and the post-mounting fuse is fastened and connected to the bus bar. The nuts are held on the guide wall, and the bus bar is fixed to these nuts, so that the bus bar is integrally connected to the guide wall. The guide wall is inserted into a space between the bus bar and the second bus bar, so that the bus bar, while guided and properly positioned, is smoothly mounted in the connection box body.

[0019] The electric connection box of a sixth aspect of the present invention, depending from any one of the third to fifth aspect of the present invention, is provided in that the pair of hole portions for mounting the post-mounting fuse serve also as mounting portions for external connection terminal-connected wires.

[0020] With this construction, the hole portions in the bus bar serve as the post-mounting fuse-mounting holes and also as the external circuit connection holes, and therefore when the post-mounting fuse is to be mounted on (or connected to) the bus bar, the terminal-connected wires, pre-installed on the bus bar, are once disconnected therefrom, and then the post-mounting fuse and terminals of the terminal-connected wires are simultaneously fastened to the bus bar, and therefore it is not particularly necessary to provide holes for the exclusive use for the post-mounting fuse.

[0021] In the first aspect of the present invention, the post-mounting fuse is firmly fixed to the bus bar by thread fastening, and therefore the fixed condition of the post-mounting fuse will not be loosened by vibrations of a vehicle or others, and also the contacted condition of the post-mounting fuse will not be adversely affected, thereby always ensuring circuit breaking characteristics. Even when the fusible portion at the intermediate plate portion of the bus bar melts, the pair of hole portions in the bus bar will not be displaced out of position, and therefore the post-mounting fuse can be positively thread-fastened and connected to the bus bar efficiently and smoothly. In the second aspect of the present invention, the post-mounting fuse and the bus bar are more firmly fixed and connected to, each other by the bolts passing through the two, so that the vibration-withstanding ability and electrical connection ability are further enhanced.

[0022] In the third aspect of the present invention, the post-mounting fuse can be easily mounted on the bus bar through the opening in the connection box body, and when the opening is closed, the post-mounting fuse is safely protected from water drops, dust and others, so that the reliability of connection of the post-mounting fuse is enhanced. And besides, the post-mounting fuse is held in intimate contact with the plate portion of the bus bar, and therefore will not occupy a large space, so that the connection structure, as well as the electric connection box, can be formed into a compact design. Furthermore, the connection portions of the one and other side portions

of the bus bar are disposed in the fuse mounting portions and others provided within the connection box body, so that in addition to the post-mounting fuse, the fuses and others are connected to the bus bar, and therefore various circuit connection forms can be obtained.

[0023] In the fourth aspect of the present invention, simultaneously when the cover is attached to the connection box body, the opening is closed, thereby safely protecting the post-mounting fuse, and besides by removing only the cover, the post-mounting fuse can be easily mounted on the bus bar, and therefore the efficiency of mounting and removal of the post-mounting fuse relative to the electric connection box is enhanced.

[0024] In the fifth aspect of the present invention, the time and labor, required for holding each nut with the hand are saved, and therefore the operation for fastening the post-mounting fuse can be easily carried out efficiently. And besides, the nuts are disposed within the dead space between the bus bar and the second bus bar, and thus the dead space is effectively utilized, so that the connection structure, as well as the electric connection box, can be formed into a compact and space-saving design.

[0025] In the sixth aspect of the present invention, the post-mounting fuse can be mounted on the bus bar, utilizing the mounting holes for the external connection terminal-connected wires, and therefore it is not particularly necessary to provide holes for the exclusive use for the post-mounting fuse, and the structure is simplified, and besides the cost is reduced.

[0026] In the accompanying drawings:-

Fig. 1 is an exploded, perspective view showing one preferred embodiment of an electric connection box of the present invention provided with a bus bar fuse connection structure of the invention.

Fig. 2 is a longitudinal cross-sectional view of one example of a main cover of the electric connection box (A right half portion and a central portion of the main cover of Fig. 1 are cut at a front side portion thereof, while a left half portion thereof is cut at a central portion thereof.).

Fig. 3 is a perspective view showing one example of a bus bar assembly to be received within the main cover.

Fig. 4 is a plan view of the bus bar assembly.

Fig. 5 is a front-elevational view showing one example of a power supply bus bar of the bus bar assembly.

Fig. 6 is a perspective view showing one example of an insulating array bus bar of the bus bar assembly.

Fig. 7 is a perspective view showing one example of an electric connection box provided with conventional post-mounting fuses.

[0027] Fig. 1 shows one preferred embodiment of an electric connection box of the present invention provided with a bus bar fuse connection structure of the invention.

[0028] This electric connection box 1 comprises a synthetic resin-made main cover (connection box body) 2, a bus bar assembly 3 inserted into the main cover 2 from the lower side thereof to be disposed in a vertical posture therein, a post-mounting fuse 4 to be mounted on the bus bar assembly 3, a synthetic resin-made connector block 5 which is attached to the lower side of the bus bar assembly 3, and is received within the main cover 2, a synthetic resin-made lower cover (cover) 6 attached to the lower side of the main cover 2, and a synthetic resin-made upper cover (not shown) attached the upper side of the main cover 2.

[0029] In Fig. 1, reference numeral 7 denotes fusible links for a large current, reference numeral 8 denotes fuses for a small current, reference numeral 9 denotes a relay, and a reference numeral 10 denotes a relay holder.

[0030] As shown in Fig. 2 which is a longitudinal cross-sectional view of the main cover 2, the lower side of the main cover 2 is completely open to provide an opening 11, and a partition wall 12, extending in a longitudinal direction of the main cover is disposed at a central portion of the opening 11. A receiving space (receiving portion) for receiving the bus bar assembly 3 (Fig. 1) is provided on the front side of the partition wall 12, that is, at a front half portion of the main cover 2, and a plate-like guide wall 13 for the bus bar assembly 3 extends downwardly from an upper wall of the main cover 2, and is disposed within the receiving space provided intermediate the front and rear sides of the main cover. A pair of holding grooves 15 for respectively holding post-mounting fuse-fixing nuts 14 (Fig. 1) are formed in the guide wall 13.

[0031] In Fig. 2, reference numeral 16 denotes a connector housing, reference numeral 43 fusible link-mounting portions, reference numeral 44 denotes fuse mounting portions, and reference numeral 19 a relay mounting portion.

[0032] As shown in Fig. 1, the main cover 2 has a rectangular opening 20 (for mounting the post-mounting fuse) formed in a front wall 29 thereof, and this opening 20 is opposed to guide wall 13 disposed inwardly thereof. The post-mounting fuse 4 is mounted on the bus bar assembly 3 (disposed within the main cover) through the opening 20.

[0033] The post-mounting fuse 4 is fixedly secured to a front bus bar 22 of the bus bar assembly 3 by a pair of bolts 21 and the pair of nuts 14 . The guide wall 13, having the nuts 14, is inserted between the front and rear bus bars 22 and 23, and in this condition (in which the bus bar assembly 3 is positioned relative to the guide wall 13) the bolts 21 are tightened.

[0034] Simultaneously when the lower cover 6 is attached to the main cover 2, a cover plate 24 of the lower cover 6 is slidably engaged in a guide groove (not shown), formed in a peripheral edge of the opening 20, to close the opening 20, so that the post-mounting fuse 4 is completely covered by this cover plate, and is concealed within the main cover 2. Of course, the mounting of the post-mounting fuse 4 on the bus bar assembly is effected after

a fusible portion (fuse portion) 25 of the bus bar 22 is melted.

[0035] Figs. 3 and 4 show one example of the bus bar assembly 3. The bus bar assembly 3 comprises the front-side power supply bus bar (first bus bar) 22, and the rear-side insulating array bus bar (second bus bar) 23. The front-side power supply bus bar 22 of a one-piece construction is formed from an electrically-conductive metal sheet, and the fusible portion 25 is formed at a central plate portion 27 of this bus bar 22, and the post-mounting fuse 4 is mounted on that portion of the bus bar 22 disposed above this fusible portion 25.

[0036] As shown also in Fig. 5, the central plate portion 27 of the power supply bus bar 22 has a notch 28 extending in an upward-downward direction (i.e., in a direction of the height of the bus bar), and the narrow fusible portion 25 extends obliquely across the notch 28. A pair of right and left bolt insertion holes (hole portions) 30 are formed through the central plate portion 27, and are disposed above the fusible portion 25. A pair of stamped-out projecting piece portions 31 for respectively preventing eyelet terminals 55 (Fig. 1) (of external connection terminal-connected wires 54) from rotation are formed at the central plate portion 27, and are disposed, respectively at right and left sides of the fusible portion 25, and are disposed below the holes 30.

[0037] As shown in Fig. 3, the post-mounting fuse 4 includes a pair of right and left plate-like connecting portions (electrode portions) 32 formed of an electrically-conductive metal, a fusible portion 33 extending between the pair of connecting portions 32, and an insulating portion 34 covering the fusible portion 33. The pair of connecting portions 32 have bolt insertion holes 35, respectively, and the pitch of the holes 35 is equal to the pitch of the holes 30 formed in the bus bar 22.

[0038] This post-mounting fuse 4 is given merely as one example, and can have any other suitable shape in so far as it has the pair of bolt insertion holes 35 and the fusible portion 33. For example, the pair of projecting piece portions 31 of the bus bar 22 support the pair of connecting portions 32 of the post-mounting fuse 4, respectively, so as to position the bolt insertion holes 35 relative to the bolt insertion holes 30, respectively, so that the operation for passing and tightening each bolt 21 (Fig. 1) can be effected easily. The pair of connecting portions 32 are held in intimate contact with the front surface of the central plate portion 27.

[0039] As shown in Figs. 3 and 4, the central plate portion 27 of the power supply bus bar 22 is projected outwardly through stepped portions 36, and a wide gap (space) 37 is formed between the plate portion 27 and the insulating array bus bar 23. The guide wall 13 of the main cover 2 (Fig. 1), having the nuts 14, is fitted into this gap 37.

[0040] As shown in Figs. 3 and 5, the power supply bus bar 22 includes the central plate portion 27 having the fusible portion 25 and the post-mounting fuse-mounting portion, and a plate-like right half portion (designated by reference numeral 26 for convenience) and a plate-like left half portion (designated also by reference numeral 26 for convenience) which extend from the plate portion 27.

[0041] The right half portion 26 of the power supply bus bar 22 includes a tab terminal (connection portion) 38 formed at a right end thereof, and tab terminals (connection portions for fusible link connecting purposes) 39 formed at an upper end or edge thereof . The left half portion 26 includes tuning fork-like gripping terminals (connection portions for fuse connecting purposes) 40 formed at an upper end or edge thereof, a tab terminal (connection portion for fusible link connecting purposes) 41 formed at a left end portion thereof, and a hole (connection portion for eyelet terminal connecting purposes) 42 formed through the left end portion thereof.

[0042] The pair of right and left holes 30, formed through the central plate portion 27, also function as mounting portions to which the eyelet terminals 55 of the terminal-connected wires 54 (serving as a power circuit of a battery) are thread-fastened and connected, respectively. The terminal-connected wires 54 are beforehand thread-fastened and connected to the hole portions 30, respectively, and when the post-mounting fuse 4 is to be mounted on the bus bar, the terminal-connected wires 54 are once disconnected from the respective hole portions 30, and then the eyelet terminal 55 of each terminal-connected terminal 54 and the mating connecting portion 32 of the post-mounting fuse 4 are both fastened to the corresponding hole portion 30 by the bolt 21 and nut 14.

[0043] The bus bar body 26 except the terminal portions 38 to 41 is formed into a plate-like shape, and the projecting terminal portions 38 to 41 are disposed in a plane in which the bus bar body 26 lies. The terminal portions 38 to 41 and the connecting-purpose hole portions 30 and 42 serve as connection portions for the fuses 8 (Fig. 1), the fusible links 7 and the wires.

[0044] The tab terminal 38 at the right end of the bus bar 22 is disposed within the connector housing 16 of the main cover 2 (Fig. 2), and the fusible link-connecting purpose tab terminals 39 are disposed within the respective fusible link mounting portions 43, and the fuse-connecting purpose gripping terminals 40 are disposed within the respective fuse-mounting portions 44 of the main cover 2.

[0045] Fig. 6 shows one example of the insulating array bus bar (second bus bar) 23 of the bus bar assembly 3. The insulating array bus bar 23 comprises a plurality of strip-like bus bar bodies 44' , and an insulative resin portion (insulating portion) 45 covering the bus bar bodies 44'. The bus bar bodies 44' have tab terminals 46 and 48 to 50 and gripping terminals 47 formed at their end portions.

[0046] As shown in Fig. 3, the tab terminals 46 at a right half portion of the bus bar 23 are disposed within the respective fusible link-mounting portions 43 (Fig. 1) in opposed relation respectively to the tab terminals 39 of the power supply bus bar 22. The gripping terminals

47 at a left half portion of the bus bar 23 are disposed within the respective fuse-mounting portions 44 (Fig. 1) in opposed relation respectively to the gripping terminals 40 of the power supply bus bar 22.

[0047] The tab terminals 48 to 50 of the insulating array bus bar 23 are disposed in the connector block 5 of Fig. 1, and are connected to connectors of a wire harness (not shown) . The connector block 5 includes a plurality of connector housings 49, and a plurality of terminal insertion holes 50 formed through a horizontal base wall thereof.

[0048] The insulative resin portion 45 of the insulating array bus bar 23 of Fig. 6 has a plurality of cylindrical projections 51, and distal end portions of the projections 51 are passed respectively through holes 52 formed through the power supply bus bar 22 of Fig. 5, and are thermally fastened thereto, thereby fixing the two bus bars 22 and 23 to each other as shown in Figs. 3 and 4. It is outside the scope of the invention as defined in the appended claims but useful for understanding the present invention that the insulating array bus bar 23 can be arranged in parallel relation to the power supply bus bar 22 without being fixed thereto and that instead of the insulating array bus bar 23, wires and terminals, connected to these wires, can be used.

[0049] There can be provided a construction in which the bolt insertion holes 30 are formed through the central plate portion 27 of the power supply bus bar 22 (Fig. 3), while the holes 35 are not formed in the post-mounting fuse 4, and the right and left electrode portions 32 of the post-mounting fuse 4 are connected to the plate portion 27 by the bolts 21 (Fig. 1) holding these electrode portions 32 therebetween. Instead of forming the holes 35 in the post-mounting fuse 4, slit-like notches can be formed in the post-mounting fuse 4.

Claims

1. A bus bar assembly comprising:

   a first bus bar (22) with a fuse connection structure, the fuse connection structure including:

   connection portions (38,39,40,41,42) provided at one side portion and the other side portion of the bus bar (22) ;
   a notch (28) formed in an intermediate plate portion (27) of said bus bar (22), and said plate portion (27) having a fusible portion (25) extending across said notch (28); and
   a pair of hole portions (30) for mounting a post-mounting fuse (4), the pair of said hole portions (30) formed through said plate portion (27), and being disposed at opposite sides of said notch (28), respectively, and said post-mounting fuse (4) being thread-fastened and connected to said hole portions (30);
   and
   a second bus bar (23), covered with an insulating portion (45) which has a plurality of projections (51), wherein said second bus bar is fixed to said one side portion and the other side portion of said bus bar (22) by the projections (51) of the insulating portion (45),
   wherein distal end portions of the projections are passed respectively through holes formed through the first bus bar.

2. The bus bar assembly according to claim 1, wherein said post-mounting fuse (4) has a pair of holes (35) whose pitch is equal to a pitch of said pair of hole portions (30).

3. An electric connection box comprising:

   a bus bar with a fuse connection structure as defined in any one of claims 1 or 2;
   a connection box body (2) accommodating said fuse connection structure; and
   an opening (20), formed in said connection box body (2), disposed in opposed relation to said intermediate plate portion (27).

4. An electric connection box according to claim 3, wherein said opening (20) is sealingly closed by a projecting cover plate (24) of a cover (6).

5. An electric connection box according to claim 3 or claim 4, wherein said connection box (1) has a guide wall (13) holding fastening connection-purpose nuts (14), therein.

6. An electric connection box according to any one of claims 3 to 5, wherein said pair of hole portions (30) for mounting said post-mounting fuse (4) serve as mounting portions for external connection terminal-connected wires (54).

Patentansprüche

1. Sammelschienenanordnung, die Folgendes umfasst:

   eine erste Sammelschiene (22) mit einer Sicherungsanschlussstruktur, wobei die Sicherungsanschlussstruktur Folgendes einschließt:

   Anschlussabschnitte (38, 39, 40, 41, 42), die an einem Seitenabschnitt und dem anderen Seitenabschnitt der Sammelschiene (22) bereitgestellt werden,
   eine Kerbe (28), die in einem dazwischen-

liegenden Plattenabschnitt (27) der Sammelschiene (22) ausgebildet wird, und wobei der Plattenabschnitt (27) einen schmelzbaren Abschnitt (25) aufweist, der sich über die Kerbe (28) erstreckt, und
ein Paar von Lochabschnitten (30) zum Montieren einer Nachmontage-Sicherung (4), wobei das Paar von Lochabschnitten (30) durch den Plattenabschnitt (27) ausgebildet wird und entsprechend an gegenüberliegenden Seiten der Kerbe (28) angeordnet ist und die Nachmontage-Sicherung (4) mit einem Gewinde an dem Paar von Lochabschnitten (30) befestigt und mit diesem verbunden ist, und
eine zweite Sammelschiene (23), die mit einem isolierenden Abschnitt (45) bedeckt ist, der eine Vielzahl von Vorsprüngen (51) aufweist, wobei die zweite Sammelschiene durch die Vorsprünge (51) des isolierenden Abschnitts (45) an dem einen Seitenabschnitt und dem anderen Seitenabschnitt der Sammelschiene (22) befestigt ist,
wobei distale Endabschnitte der Vorsprünge entsprechend durch Löcher geführt sind, die durch die Sammelschiene geformt sind.

2. Sammelschienenanordnung nach Anspruch 1, wobei die Nachmontage-Sicherung (4) ein Paar von Löchern (35) aufweist, dessen Abstand gleich einem Abstand des Paares von Lochabschnitten (30) ist.

3. Elektrischer Anschlusskasten, der Folgendes umfasst:

eine Sammelschiene mit einer Sicherungsanschlussstruktur, nach einem der Ansprüche 1 oder 2,
ein Anschlusskastengehäuse (2), das die Sicherungsanschlussstruktur aufnimmt, und
eine Öffnung (20), die in dem Anschlusskastengehäuse (2) geformt ist, die in gegenüberliegender Beziehung zu dem dazwischenliegenden Plattenabschnitt (27) angeordnet ist.

4. Elektrischer Anschlusskasten nach Anspruch 3, wobei die Öffnung (20) abdichtend durch eine vorspringende Abdeckplatte (24) einer Abdeckung (6) verschlossen ist.

5. Elektrischer Anschlusskasten nach Anspruch 3 oder Anspruch 4, wobei der Anschlusskasten (1) eine Führungswand (13) aufweist, die Muttern (14) mit Befestigungsanschlusszweck darin aufnimmt.

6. Elektrischer Anschlusskasten nach einem der Ansprüche 3 bis 5, wobei das Paar von Lochabschnitten (30) zum Montieren der Nachmontage-Sicherung (4) als Montageabschnitte für mit einem Anschluss verbundene externe Verbindungsdrähte (54) dient.

Revendications

1. Ensemble de barres omnibus comprenant :

une première barre omnibus (22) avec une structure de connexion de fusible, la structure de connexion de fusible comportant :

des portions de connexion (38, 39, 40, 41, 42) prévues au niveau d'une portion de côté et de l'autre portion de côté de la barre omnibus (22) ;
une encoche (28) formée dans une portion de plaque intermédiaire (27) de ladite barre omnibus (22), et ladite portion de plaque (27) ayant une portion de fusible (25) s'étendant à travers ladite encoche (28) ; et
une paire de portions de trou (30) pour monter un fusible de montage sur montant (4), la paire desdites portions de trou (30) étant formée à travers ladite portion de plaque (27), et étant disposée sur des côtés opposés de ladite encoche (28), respectivement, et ledit fusible de montage sur montant (4) étant vissé et connecté auxdites portions de trou (30) ; et
une seconde barre omnibus (23), couverte d'une portion isolante (45) qui comporte une pluralité de saillies (51), dans lequel ladite seconde barre omnibus est fixée à ladite première portion de côté et à l'autre portion de côté de ladite barre omnibus (22) par les saillies (51) de la portion isolante (45),
dans lequel des portions d'extrémité distale des saillies sont passées respectivement à travers des trous formés à travers la première barre omnibus.

2. Ensemble de barres omnibus selon la revendication 1, dans lequel ledit fusible de montage sur montant (4) comporte une paire de trous (35) dont le pas est égal à un pas de ladite paire de portions de trou (30).

3. Boîtier de connexion électrique comprenant :

une barre omnibus avec une structure de connexion de fusible telle que définie à l'une quelconque des revendications 1 ou 2 ;
un corps de boîtier de connexion (2) logeant ladite structure de connexion de fusible ; et une ouverture (20), formée dans ledit corps de boîtier de connexion (2), disposée en relation opposée à ladite portion de plaque intermédiaire

(27).

4. Boîtier de connexion électrique selon la revendication 3, dans lequel ladite ouverture (20) est fermée de façon étanche par une plaque de couvercle saillante (24) d'un couvercle (6).

5. Boîtier de connexion électrique selon la revendication 3 ou la revendication 4, dans lequel ledit boîtier de connexion (1) a une paroi de guidage (13) maintenant des écrous à des fins de raccordement de fixation (14), à l'intérieur.

6. Boîtier de connexion électrique selon l'une quelconque des revendications 3 à 5, dans lequel ladite paire de portions de trou (30) pour monter ledit fusible de montage sur montant (4) sert de portions de montage pour des fils électriques à borne connectée de connexion externe (54).

FIG. 1

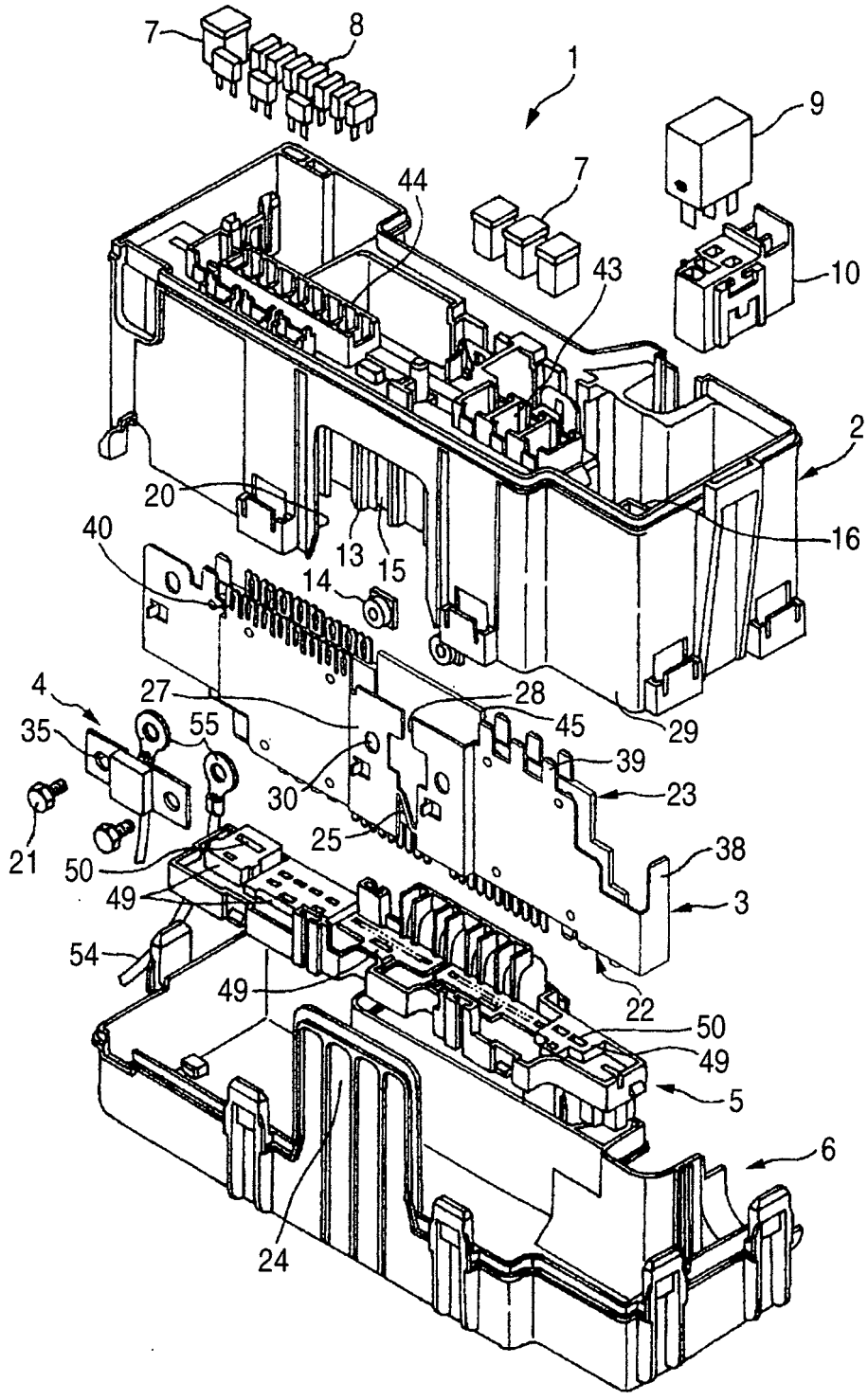

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FIG. 2

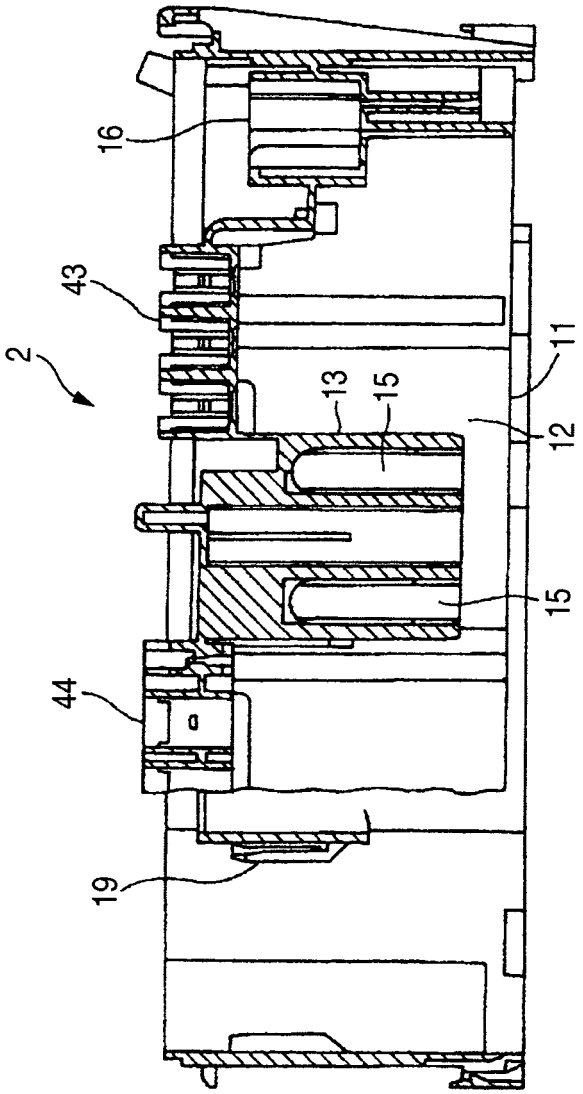


FIG. 3

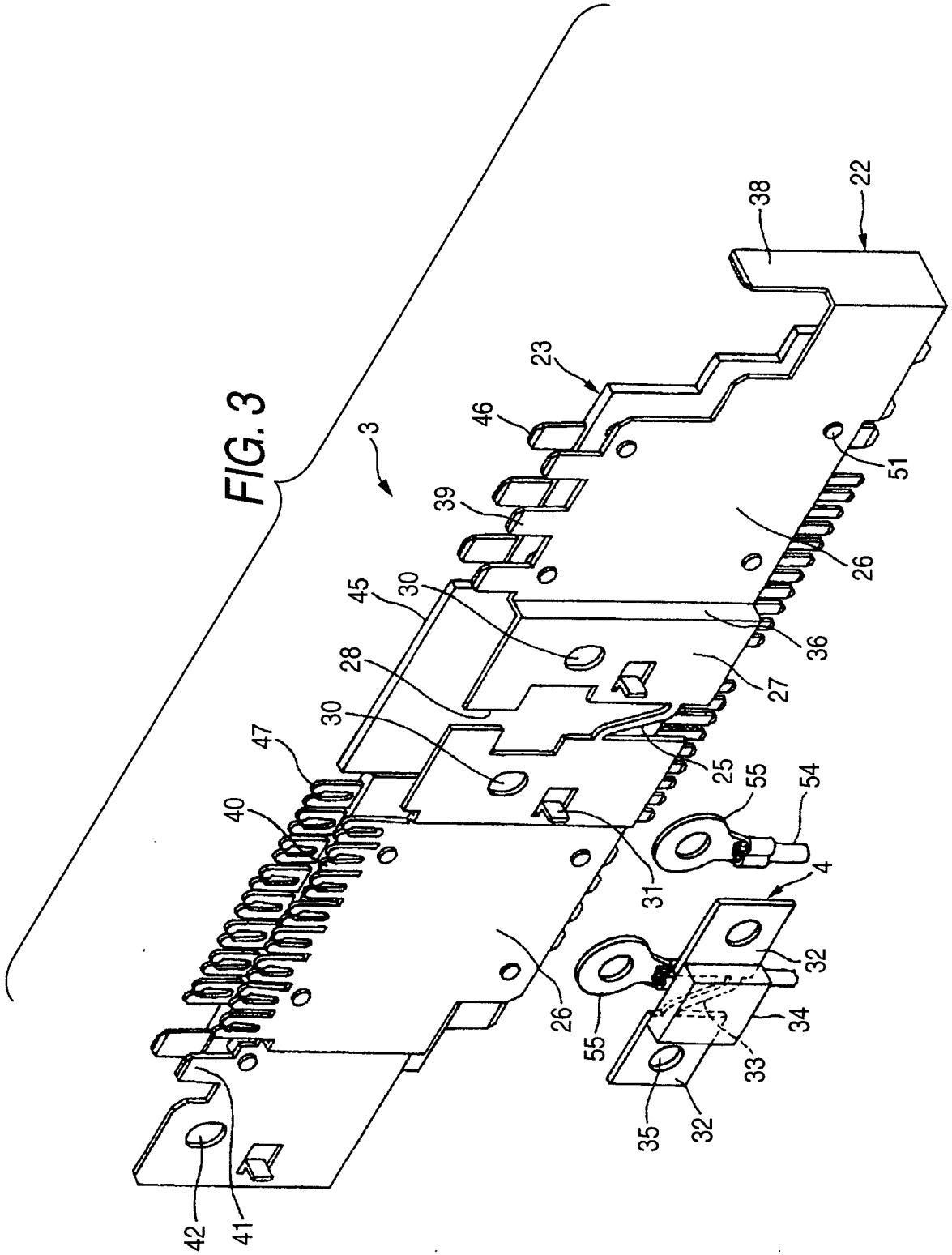

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FIG. 4

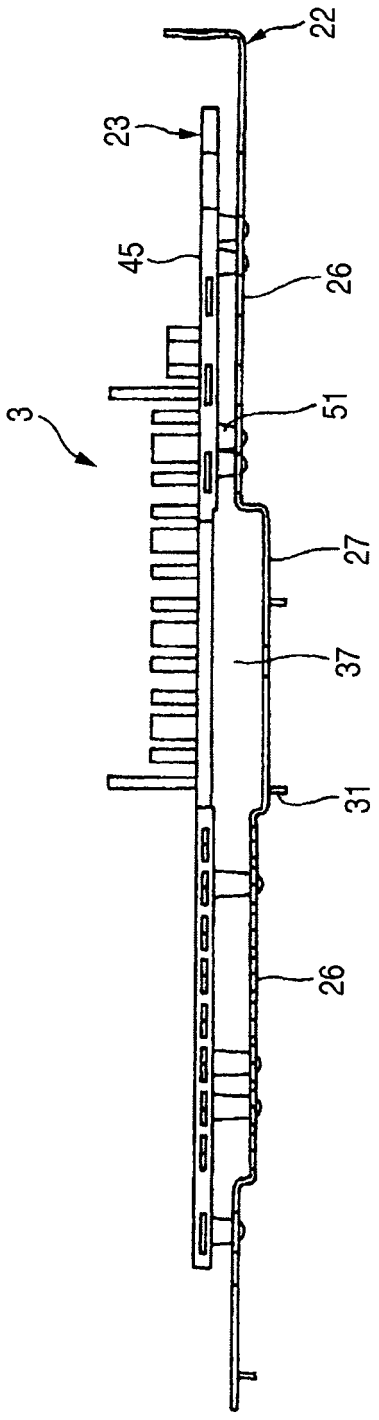


FIG. 5

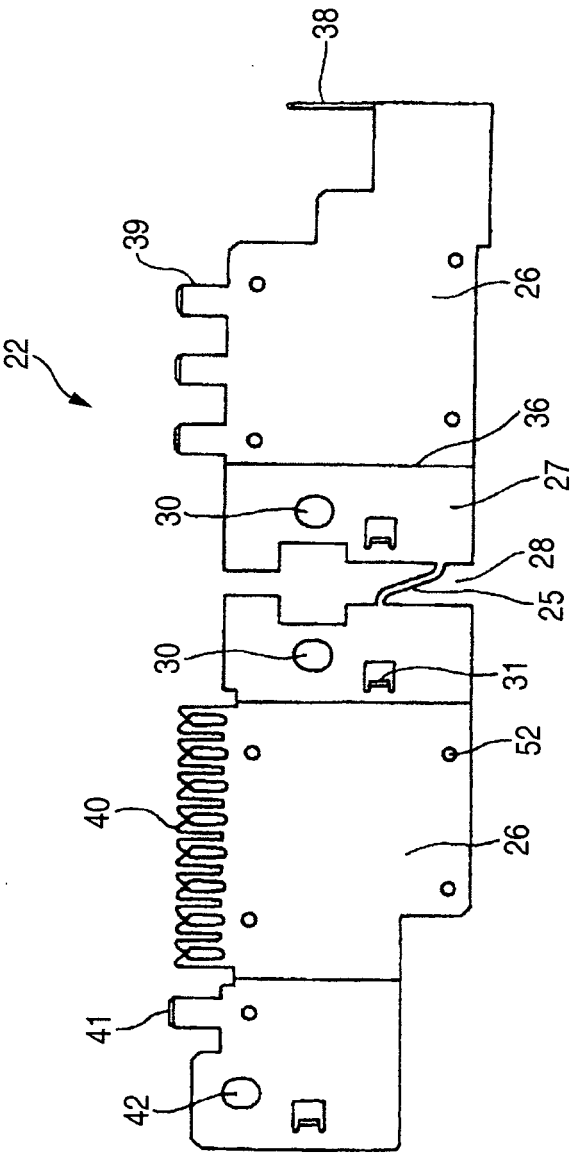


FIG. 6

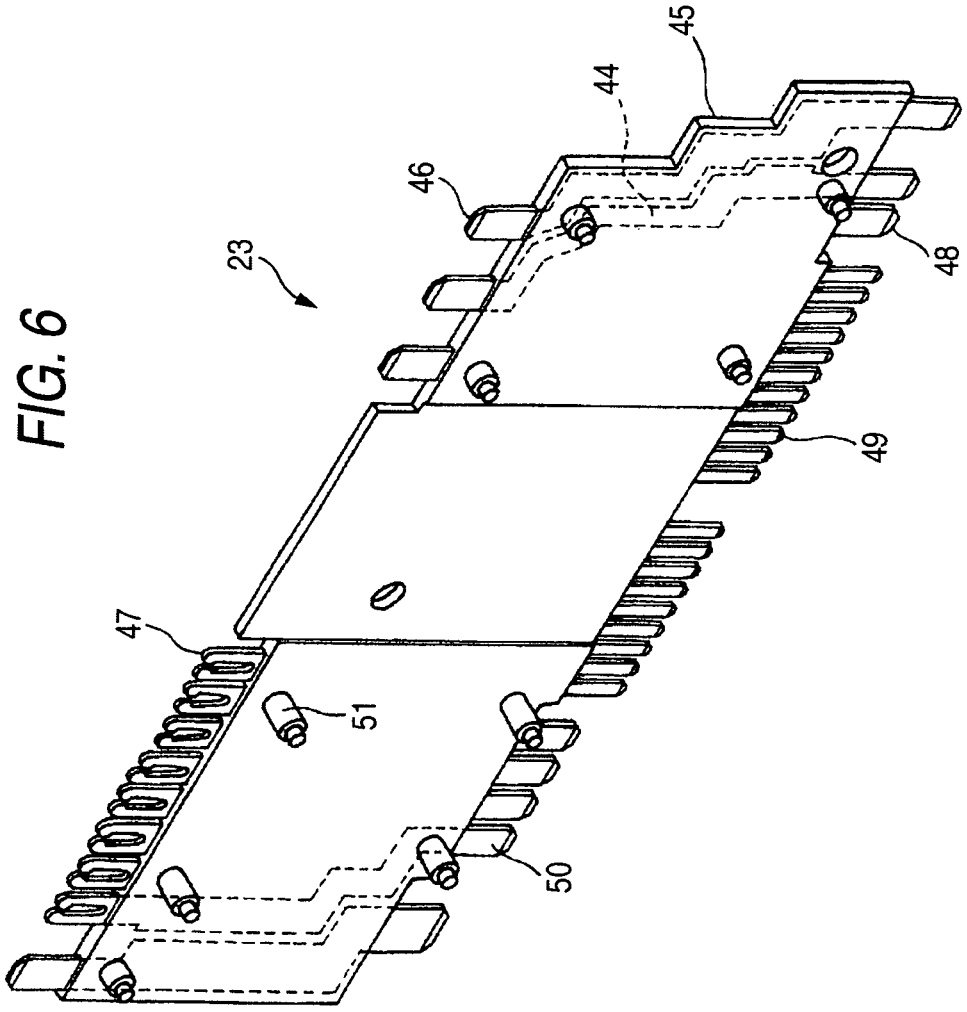
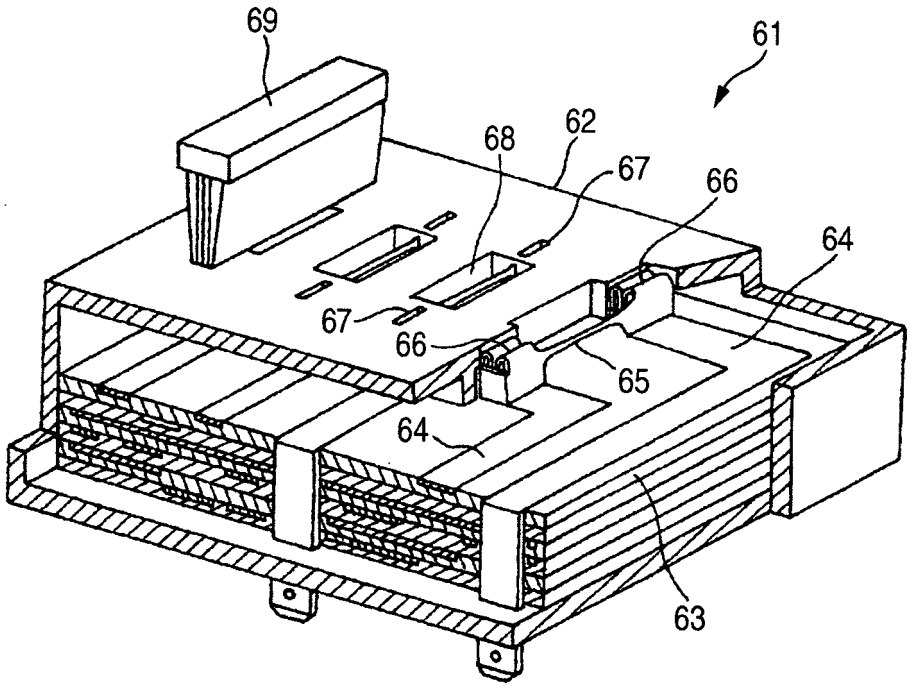


FIG. 7



REFERENCES CITED IN THE DESCRIPTION

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