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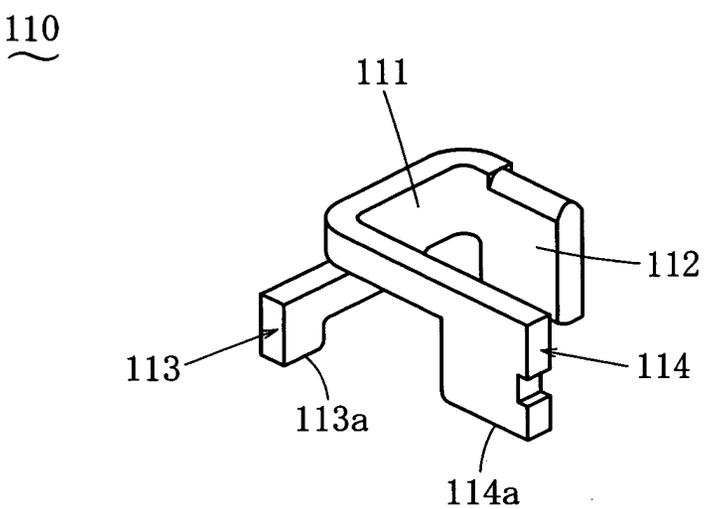
(54) A header contact and a header connector for use therewith

(57) A header contact fixes a header housing reliably and prevents separation or the like of a soldering part so as to secure a function of signal connection and enhance the electric reliability of a header connector. The header contact (110) is provided in the header connector (100) that is to be mounted on a surface of an object for mounting (B) having conductor pattern. This header contact (110) comprises a contacting part (112) which is to contact a socket contact (220) of a counterpart socket connector (200), and a first connecting part (113) and a second connecting part (114)which are to be soldered onto the conductor pattern (FP), (SP) of the object for mounting (B).

FIG. 1



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Description

[0001] The present invention relates to header contacts and header connectors provided with header contacts for mounting on a surface of an object having a conductor pattern.

[0002] Japanese Patent Unexamined Publication Heisei 10-308265 discloses a board mount connector comprising a connector housing and a plurality of U-shaped pins, each of the pins having one end protruding in the connector housing as a connector connection terminal and the other end to be mounted on a printed circuit board as a printed circuit board connection terminal. With the use of this connector, as the connector can be mounted on a printed circuit board electrically and mechanically by just mounting its pins on the printed circuit board, mounting is easier and the mounting area can be reduced by reducing the connection points.

[0003] In the case of the board mount connector of Japanese Patent Unexamined Publication Heisei 10-308265, the soldering parts of the pins must exhibit two functions, namely, fixing the connector housing and connecting signals. Thus, if the pins are subjected to loads that are generated when a counterpart socket connector is inserted into or withdrawn from the board mount connector, the soldering parts of the pins being both the connector housing fixing points and the signal connection points will be subjected to the loads. This might cause troubles such as separation of the soldering part from the printed circuit board, posing problems of electric reliability of the connector.

[0004] Various aspects and features of the present invention are defined in the appended claims.

[0005] The present invention was made in view of the above points. Embodiments of the present invention can provide each header contact, which is provided on the header connector, with parts at two locations, the parts being to be soldered onto the conductor pattern of an object for mounting such as printed circuit board, so as to allot the two functions, namely, fixing the header housing and connecting signals, to the soldering parts of the two parts, or to distribute the two functions to the soldering parts of the two parts, and in turn, to fix the header housing reliably, prevent separation or the like of the soldering parts and ensure the function of signal connection, and enhance the electric reliability of the header connector.

[0006] According to the present invention there is provided a header contact, the header contact being provided on a header connector that is to be mounted on a surface of an object for mounting having conductor pattern, the header contact comprising a contacting part that is to contact a socket contact of a counterpart connector, and a first connecting part and a second connecting part that are to be soldered onto the conductor pattern of the object for mounting.

[0007] When this header contact is provided on the header housing to produce a header connector, and the first connecting part and the second connecting part of the header contact are soldered onto the conductor pattern of the object for mounting, the header connector will be mounted on the object for mounting. Next, when a socket connector is inserted into the header connector, the contacting part of the header contact will contact the socket contact, and when the socket connector is withdrawn from the header connector, the header contact will be separated from the socket contact. In that case, if either the soldering part of the first connecting part or the soldering part of the second connecting part is made to exhibit the header housing fixing function and the other is made to exhibit the signal connection function, the loads that are generated when the socket connector is inserted or withdrawn will be exerted mainly to the former soldering part and scarcely to the latter soldering part. When both the soldering part of the first connecting part and the soldering part of the second connecting part are made to exhibit both the header housing fixing function and the signal connection function, the loads that are generated when the socket connector is inserted or withdrawn will be distributed to both the soldering part of the first connecting part and the soldering part of the second connecting part. As a result, the signal connection function will be secured reliably, and the electric reliability of the header connector will be enhanced. Moreover, as the header housing is not provided, in addition to the header contact, with an extra member for soldering such as a reinforcing member, the number of components will not increase, and in turn, the production process will be simplified and the control man-hour will be reduced.

[0008] In the header contact of the present invention, portions that are to be soldered onto the conductor pattern of the object for mounting are provided at two locations, and the two functions, namely, fixing the header housing and connecting signals, are allotted to the soldering parts of these two portions, or the two functions are distributed to the soldering parts of these two portions. As a result, while the header housing is fixed reliably, separation or the like of the soldering parts is prevented to secure the signal connection function; thus the electric reliability of the header connector can be enhanced.

[0009] The header contact of the present invention may be so structured that either the first connecting part or the second connecting part is to be soldered onto the conductor pattern for fixing of the object for mounting and the other is to be soldered onto the conductor pattern for signals of the object for mounting.

[0010] With this arrangement, the soldering part of the connecting part that is to be soldered onto the conductor pattern for fixing of the object for mounting exhibits the header housing fixing function, and the soldering part of the connecting part that is to be soldered onto the conductor pattern for signals of the object for mounting exhibits the signal connection function. Moreover, the loads that are generated when the socket connector is

inserted or withdrawn are exerted mainly to the soldering part of one connecting part, which is soldered to the conductor pattern for fixing, and hardly to the soldering part of the other connecting part, which is soldered to the conductor pattern for signals.

[0011] Accordingly, as the two functions, namely, fixing the header housing and connecting signals, are allotted to the soldering parts of two connecting parts, while fixing of the header housing is done reliably, the function of signal connection is secured; thus the electric reliability of the header connector can be enhanced.

[0012] The header contact of the present invention may be so structured that the first connecting part and the second connecting part are to be soldered onto the conductor pattern for signals of the object for mounting.

[0013] With this arrangement, each of the soldering part of the first connecting part and the soldering part of the second connecting part exhibits both the header housing fixing function and the signal connection function. The loads that are generated when the socket connector is inserted or withdrawn are distributed to both the soldering part of the first connecting part and the soldering part of the second connecting part.

[0014] Accordingly, as the two functions, namely, fixing the header housing and connecting signals, are distributed to both the soldering parts of the two connecting parts, while fixing of the header housing is done reliably, the function of signal connection is secured; thus the electric reliability of the header connector can be enhanced.

[0015] In the header contact of the present invention, the contacting part, the first connecting part and the second connecting part may be so arranged that their top ends form a triangle when seen in a direction that is perpendicular to the surface of the object for mounting at the time of mounting onto the object for mounting.

[0016] With this arrangement, if the header housing is provided with, for example, two header contacts so that the respective contacting parts are close to each other and the first connecting parts and the second connecting parts are located approximately at the four corners of the header housing when seen in a direction that is perpendicular to the surface of the object for mounting at the time of mounting onto the object for mounting, the header housing fixing function will be exhibited by the header contacts in a well balanced manner, and strength of connecting the header housing onto the object for mounting will be more stabilized.

[0017] The header contact of the present invention may be so arranged that it is formed by bending a single plate of a certain configuration, and faces of the first connecting part and of the second connecting part, the faces opposing to the conductor pattern of the object for mounting, are formed by an end face of a straight edge of the plate.

[0018] With this arrangement, the first connecting part's and the second connecting part's faces opposing to the conductor pattern of the object for mounting are located on a common plane, and the so-called coplanarity is improved; thus the soldering parts are formed stably.

[0019] A header connector of the present invention comprises a header housing and the header contact of the present invention, which is provided in the header housing.

[0020] A header connector of the present invention may be so arranged that it comprises a header housing and three or more header contacts that are arranged side by side in a direction that is substantially in parallel with the surface of an object for mounting at the time of mounting onto the object for mounting, and of the header contacts, the header contacts at both ends are the header contacts of the present invention.

[0021] With this arrangement, while fixing of the header housing can be done reliably by the header contacts at both ends, separation of the soldering parts is prevented to ensure the signal connection function, and in turn, the electric reliability of the header connector can be enhanced. Moreover, by providing a single connecting part to each header contact between the header contacts at both ends, the pitch between the header contacts can be narrowed, and the header connector can be more downsized.

[0022] In the following, some embodiments of the present invention will be described with reference to the drawings.

[0023] Fig. 1 is a perspective view showing the header contact of the first embodiment.

[0024] Fig. 2 is plan view of the header contact of the first embodiment seen in the height direction.

[0025] Fig. 3 is a side view of the header contact of the first embodiment seen in the width direction.

[0026] Fig. 4 is a plan view showing a plate that is formed into a certain configuration to produce the header contact of the first embodiment.

[0027] Fig. 5 is a plan view of the header contacts of the first embodiment. They are arranged in a positional relationship that they take when assembled in the header connector.

[0028] Fig. 6 is a perspective view showing the header connector of the first embodiment.

[0029] Fig. 7 is a plan view showing the header connector of the first embodiment.

[0030] Fig. 8 is a sectional view of the header connector of the first embodiment, which is sectioned in a plane facing in the height direction and seen in the height direction.

[0031] Fig. 9 is a sectional view of the header connector of the first embodiment, which is sectioned in a plane facing in the depth direction and seen from the front in the depth direction.

[0032] Fig. 10 is a sectional view of the header connector of the first embodiment, which is sectioned in a plane facing in the width direction and seen in the width direction.

[0033] Fig. 11 is a perspective view of the first config-

uration of mounting of the header connector of the first embodiment on an object for mounting.

[0034] Fig. 12 is a perspective view of the second configuration of mounting of the header connector of the first embodiment on an object for mounting.

[0035] Fig. 13 is a perspective view showing a socket connector that is to be connected to the header connector of the first embodiment.

[0036] Fig. 14 is a perspective view of the header connector of the first embodiment with the socket connector connected thereto.

[0037] Fig. 15 is a sectional view of the header connector of the first embodiment and the socket connector connected thereto. They are sectioned in a plane facing in the width direction and seen in the width direction.

[0038] Fig. 16 is a sectional view of the header connector of the first embodiment and the socket connector connected thereto. They are sectioned in a plane facing in the depth direction and seen in the depth direction.

[0039] Fig. 17 is a perspective view showing the header contact of the second embodiment.

[0040] Fig. 18 is a perspective view showing the header connector of the second embodiment.

[0041] Fig. 19 is a plan view showing the header connector of the second embodiment.

[0042] Fig. 20 is a perspective view showing the header connector of the third embodiment. A part of the header housing is sectioned to show an intermediate header contact.

[0043] Some embodiments of the present invention will be described below. Fig. 1 through Fig. 3 show the header contact 110 of the first embodiment of the present invention. Fig. 6 through Fig. 10 show the header connector 100 being an embodiment, which is provided with the header contact 110 and to be mounted on a surface of an object for mounting B having conductor pattern. A depth direction, a width direction and a height direction all being perpendicular to each other are assumed, and these directions are used for description. In the case of this embodiment, with reference to Fig. 2, the top-bottom direction of the diagram is the depth direction, the top of the diagram is the rear in the depth direction, and the bottom is the front in the depth direction. The direction perpendicular to the plane of the paper of the diagram is the height direction, and the left-right direction of the diagram is the width direction. The object for mounting B is an object that has a plane surface facing in the height direction and also has conductor pattern to which the header contacts 110 are to be connected. This object for mounting B includes, for example, printed circuit board, flat type flexible cable such as FFC (flexible flat cable) and FPC (flexible printed circuit), and casing of electronic equipment. Here the printed circuit board means a board wherein a conductor pattern that is needed for connecting components is formed by printing according to the circuit design on the surface of an insulative board or on the surface and inside thereof. In the case of a casing of electronic equipment, an example is an insulator wherein conductors are formed on its surface by MID (molded interconnection device) technology that forms conductive plated layers. In the case of the present embodiment, the object for mounting B is a printed circuit board, and the multi-connection type header connector 100 is mounted on the surface of the printed circuit board being the object for mounting B. In the present invention, of the conductor patterns, those used for fixing contacts are referred to as conductor pattern for fixing FP and those used for signal transmission are referred to as conductor pattern for signals SP.

[0044] The header contact 110 is formed of a conductive material and comprises a body 111, a contacting part 112 that extends from the body 111 and is to contact a socket contact of the counterpart socket connector, a first connecting part 113 that extends from the body 111 and is to be soldered onto the conductor pattern of the object for mounting B, and a second connecting part 114 that extends from the body 111 and to be soldered onto the conductor pattern of the object for mounting B. This header contact 110 is of a blade type, and the contacting part 112 is formed into a plate form, and the socket contact is arranged to contact, with a contact pressure, one or two end faces in the thickness direction of the contacting part 112. The contacting part 112 extends from one end in the width direction of the body 111 frontward in the depth direction, with its plate thickness direction facing in the width direction. The first connecting part 113 extends in the width direction from the other end in the width direction of the body 111, and a face 113a that is to oppose to the conductor pattern of the object for mounting B is formed on its top end, on one face in the height direction thereof. The second connecting part 114 extends from the other end in the width direction of the body 111 frontward in the depth direction, and a face 114a that is to oppose to the conductor pattern of the object for mounting B is formed on its top end, on one face in the height direction thereof. The first connecting part 113 and the second connecting part 114 may be soldered onto the conductor pattern on the surface of the object for mounting B, or may be inserted into holes formed in the object for mounting B and then soldered to the conductor pattern. It does not matter whether the hole is through the object for mounting B or not.

[0045] As shown in Fig. 2, the contacting part 112, the first connecting part 113 and the second connecting part 114 are so arranged that their top ends form a triangle when seen in a direction that is perpendicular to the surface of the object for mounting B at the time of mounting on the object for mounting B (the height direction here).

[0046] The header contact 110 is formed by bending a single plate of a certain configuration as shown in Fig. 4, and the body 111, the contacting part 112, the first connecting part 113 and the second connecting part 114 are formed by this plate. Moreover, the face 113a of the first connecting part 113 and the face 114a of the second connecting part 114, the faces opposing to the conduc-

tor pattern of the object for mounting B, are formed by the end face of a straight edge of the plate.

[0047] As shown in Fig. 6 through Fig. 10, the header connector 100 comprises a header housing 120 and the above-mentioned header contacts 110 that are provided in the header housing 120. This header housing 120 is made of an insulative material. Installation of the header contacts 110 in the header housing 120 is done by some methods including integral molding and inserting.

[0048] The header housing 120 is provided with a receiving chamber 123 that penetrates it from the top face 121 being one end face in the height direction thereof to the bottom face 122 being the other end face or concaves from the top face 121 toward the bottom face 122, and extends up to an end face on the front side in the depth direction. The header housing 120 comprises a rear wall 124 that extends in the width direction on the rear side in the depth direction of the receiving chamber 123, and side walls 125 that extend from both the ends in the width direction of the rear wall 124 frontward in the depth direction and are located on both sides in the width direction of the receiving chamber 123. This header housing 120 is arranged so that its bottom face 122 opposes to the surface of the object for mounting B.

[0049] As shown in Fig. 5, in this header connector 100, two header contacts 110 are arranged side by side in a direction that is substantially parallel to the surface of the object for mounting B at the time of mounting on the object for mounting B (the width direction here). These header contacts 110 have configurations that are symmetrical to each other in the width direction with respect to an imaginary line extending in the depth direction. These header contacts 110 are so arranged that, their contacting parts 112 are close to each other and the two first connecting parts 113 and the two second connecting parts 114 are substantially located at the four corners of the header housing 120 when seen in the direction perpendicular to the surface of the object for mounting B at the time of mounting on the object for mounting B.

[0050] The header contact 110 is so provided on the header housing 120 that the body 111 is located inside the header housing 120, the contacting part 112 comes out into the receiving chamber 123 of the header housing 120, and the first connecting part 113 and the second connecting part 114 come out of the bottom face 122 or the periphery thereof. In the case of this embodiment, the body 111 is set inside the rear wall 124, the contacting part 112 comes out of the rear wall 124 of the header housing 120 into the receiving chamber 123, the first connecting part 113 penetrates the rear wall 124 in the width direction and its top end protrudes from the side wall 125 in the width direction, and the second connecting part 114 penetrates the rear wall 124 in the width direction first and then penetrates the side wall 125 and its top end protrudes from the side wall 125 frontward in the depth direction. The first connecting part 113 and the second connecting part 114 are fixed onto the object for mounting B by soldering.

[0051] The configurations of mounting this header connector 100 on an object for mounting B are of two kinds. One configuration is as shown in Fig. 11, wherein either the first connecting part 113 or the second connecting part 114 is soldered onto the conductor pattern for fixing FP of the object for mounting B, and the other one is soldered onto the conductor pattern for signals SP of the object for mounting B. The other configuration is as shown in Fig. 12, wherein both the first connecting part 113 and the second connecting part 114 are soldered onto the conductor pattern for signals SP of the object for mounting B. In respective configurations, a soldering part 115 is formed between the first connecting part 113 and the conductor pattern by soldering, and a soldering part 116 is formed between the second connecting part 114 and the conductor pattern by soldering.

[0052] A socket connector 200 as shown in Fig. 13 is connected to the above-mentioned header connector 100 (refer to Fig. 14 through Fig. 16). This socket connector 200 comprises a socket housing 210 that is made of an insulative material and socket contacts 220 that are made of a conductive material and provided in the socket housing 210. The socket housing 210 has a protruding part 211 that is located at one end in the height direction thereof and fits into the receiving chamber 123 of the header housing 120 in the height direction. The socket contact 220 is connected to a wire W, and the socket contact 220 is to contact the contacting part 112 of the header contact 110. As shown in Fig. 15 and Fig. 16, in the case of the socket connector 200 of this embodiment, the protruding part 211 is provided with insertion & engagement grooves 212 for receiving the contacting parts 112 of the header contacts 110 when the protruding part 211 is fitted into the receiving chamber 123, and the contacting parts 221 of the socket contacts 220 are provided in these insertion & engagement grooves 212. The contacting part 221 extends in the height direction and its top end is so bifurcated that the top ends contact both end faces in the thickness direction of the contacting part 112 of the header contact 110. The constituent walls of the receiving chamber 123 of the header housing 120 and the protruding part 211 of the socket housing 210 are provided with locking mechanisms that enhance the engaging strength when the protruding part 221 fits into the receiving chamber 123. To be more specific, the constituent walls of the receiving chamber 123 are provided with concaved parts as the locking parts 126, the protruding part 211 is provided with projecting parts as the locking parts 213, and they are so arranged that when the protruding part 211 fits into the receiving chamber 123, the respective locking parts will engage with each other by utilizing their flexibility. Reversely, the protruding part 211 may be provided with concaved parts, and the constituent walls of the receiving chamber 123 may be provided with projecting parts.

[0053] The operations of the header contact 110 and

the header connector 100 of the above-mentioned embodiments will be described. When the header connector 100 is mounted on the object for mounting B and the protruding part 211 of the socket connector 200 is inserted into the header connector 100, the contacting parts 112 of the header contacts 110 will contact the contacting parts 221 of the socket contacts 220, and when the socket connector 200 is withdrawn from the header connector 100, the header contacts 110 will be separated from the socket contacts 220. In that case, as shown in Fig. 11, if either the first connecting part 113 or the second connecting part 114 is soldered onto the conductor pattern for fixing FP of the object for mounting B and the other is soldered onto the conductor pattern for signals SP of the object for mounting B, the soldering part of the connecting part that is soldered onto the conductor pattern for fixing FP of the object for mounting B will exhibit the function of fixing the header housing 120, and the soldering part of the connecting part that is soldered onto the conductor pattern of signals SP of the object for mounting B will exhibit the function of connecting signals. The loads that are generated when the socket connector 200 is inserted or withdrawn will be exerted mainly to the soldering part between one connecting part and the conductor pattern for fixing FP and will be hardly exerted to the soldering part between the other connecting part and the conductor pattern for signals SP. On the other hand, as shown in Fig. 12, if both the first connecting part 113 and the second connecting part 114 are soldered onto the conductor pattern for signals SP of an object for mounting B, both the soldering part 115 of the first connecting part 113 and the soldering part 116 of the second connecting part 114 will exhibit both the function of fixing the header housing 120 and the function of connecting signals. The loads that are generated when the socket connector 200 is inserted or withdrawn will be distributed to both the soldering part 115 of the first connecting part 113 and the soldering part 116 of the second connecting part 114. As a result, separation or the like of the soldering parts 115, 116 is prevented to ensure the signal connection function, and in turn, the electric reliability of the header connector 100 is enhanced. Moreover, as the header housing 120 is not provided, in addition to the header contacts 110, with an extra member for soldering such as a reinforcing member, the number of components will not increase, and in turn, the production process can be simplified and the control man-hour can be reduced.

[0054] The present invention includes an embodiment of a header contact wherein the contacting part, the first connecting part and the second connecting part are so arranged that their top ends are located substantially on a straight line when seen in a direction that is perpendicular to the surface of an object for mounting at the time of mounting on the object for mounting. However, in the case of the header contact 110 of the above-mentioned embodiment, the contacting part 112, the first connecting part 113 and the second connecting part 114 are so arranged that their top ends form a triangle when seen in a direction that is perpendicular to the surface of an object for mounting B at the time of mounting on the object for mounting B. With this arrangement, if the header housing 120 is provided with two header contacts 110 so that the respective contacting parts 112 are close to each other and the first connecting parts 113 and the second connecting parts 114 are located approximately at the four corners of the header housing 120 when seen in a direction that is perpendicular to the surface of an object for mounting B at the time of mounting on the object for mounting B, the function of fixing the header housing 120 will be exhibited by the header contacts 110 in a well balanced manner, and the strength of connection of the header housing 120 onto the object for mounting B will be stabilized further.

[0055] The present invention includes an embodiment of a head connector that is made of a plurality of members. However, in the case of the header contact 110 of the above-mentioned embodiment, it is formed by bending a single plate of a certain configuration, and the faces 113a, 114a of the first connecting part 113 and of the second connecting part 114, respectively, the faces opposing to the conductor pattern of the object for mounting, are formed by an end face of a straight edge of the plate. With this arrangement, the first connecting part 113's and the second connecting part 114's faces 113a, 114a opposing to the conductor pattern of the object for mounting B are located on a common plane, and the so-called coplanarity is improved, and in turn, the soldering parts 115, 116 are formed stably.

[0056] Next, other embodiments will be described. Members and parts that exhibit identical functions to those of the case of the header contact 110 and the header connector 100 of the first embodiment are given identical marks, respectively, and their description will be omitted. Fig. 17 shows a header contact 110 of the second embodiment according to the present invention. Fig. 18 and Fig. 19 show an embodiment, a header connector 100 that is provided with this header contact 110 and is to be mounted on an object for mounting B. In the case of the header contact 110 of the first embodiment, the first connecting part 113 extends in the width direction from the other end in the width direction of the body 111. And this first connecting part 113 penetrates the rear wall 124 of the header housing 120 in the width direction and its top end protrudes from the side wall 125 in the width direction. In contrast to it, in the case of the header contact 110 of the second embodiment, the first connecting part 113 extends rearward in the depth direction from the other end in the width direction of the body 111. And this first connecting part 113 comes out of the end face on the rear side in the depth direction of the rear wall 124 of the header housing 120 and protrudes rearward. A face 113a opposing to the conductor pattern of the object for mounting B is formed on one end in the height direction of the top end of the first connecting part 113. In the header contact 110 and the

header connector 100 of the second embodiment, other structures are similar to those of the header contact 110 and the header connector 100 of the first embodiment, and their functions and effects are also similar. As the protruding direction of the first connecting part 113 is different, the header contact 110 and the header connector 100 of the first embodiment are appropriate for locations wherein the mounting area in the depth direction rather than in the width direction is desired to be reduced, and the header contact 110 and the header connector 100 of the second embodiment are appropriate for locations wherein the mounting area in the width direction rather than in the depth direction is desired to be reduced.

[0057] Fig. 20 shows the header connector 100 of the third embodiment. This header connector 100 is provided with three or more header contacts. Fig. 20 shows a case wherein six header contacts are provided, but the number of poles of the header connector according to the present invention is not limited by it. Of these header contacts, the header contacts on both ends are of the similar structures to those of the pair of header contacts 110 that are provided in the header connector 100 of the first embodiment, and these header contacts 110 comprise a body 111, a contacting part 112, a first connecting part 113 and a second connecting part 114, but other intermediate header contacts 130 have a single connecting part. To be more precise, in the intermediate header contact 130, the body 131 is provided inside a rear wall 124 of a header housing 120, a contacting part 132 that extends from the body 131 frontward in the depth direction comes out of the rear wall 124 of the header housing 120 into a receiving chamber 123, and a connecting part 133 that extends from the body 131 comes out of a bottom face 122 or the periphery thereof of the header housing 120. Other structures of the header contacts 110 at both the ends and the header connector 100 of the third embodiment are similar to those of the header contacts 110 and the header connector 100 of the first embodiment, and the functions and the effects are also similar. With the arrangement of the third embodiment, while fixing of the header housing 120 is done reliably by the header contacts 110 on both the ends, separation or the like of the soldering parts 115, 116 is prevented to secure the function of signal connection, and in turn, the electric reliability of the header connector 100 can be enhanced, and moreover, by providing the header contacts 130, which are located between the header contacts 110 on both ends, with the single connecting part 133, the pitch between the header contacts can be narrowed down, and in turn, the header connector 100 can be downsized.

[0058] The header contact 110 of each of the above-mentioned embodiments is provided with the body 111, and the contacting part 112, the first connecting part 113 and the second connecting part 114 extend from this body 111. The header contact of the present invention, however, includes an embodiment of a header contact that is not provided with a part comparable to the body and the contacting part, the first connecting part and the second connecting part are directly interconnected to form the header contact. The header contact of the present invention also includes an embodiment wherein from any one of the contacting part, the first connecting part and the second connecting part another part is branched. It is sufficient for the header contact of the present invention that it is a header contact that is provided in a header connector that is to be mounted on an object for mounting, and the header contact of the present invention is not limited by the configurations of the header contact 110 described in the above-mentioned embodiments. The header contact of the present invention is not limited to the blade type. The configuration of the header housing that comprises the header connector of the present invention is not limited by the configuration of the header housing 120 described in the above-mentioned embodiments. The number of header contacts that are provided in the header connector of the present invention is not limited by the above-mentioned embodiments, and the present invention includes an embodiment of a single pole header connector.

[0059] The present invention includes embodiments wherein features of the embodiments described above are combined.

Claims

1. A header contact (110) that is provided on a header connector (100) that is to be mounted on a surface of an object for mounting (B) having conductor pattern,

   the header contact (110) comprising a contacting part (112) that is to contact a socket contact (220) of a counterpart connector (200) and
   a first connecting part (113) and a second connecting part (114) that are to be soldered onto the conductor pattern of the object for mounting (B).

2. The header contact (110) as recited in claim 1, wherein

   it is so structured that either the first connecting part (113) or the second connecting part (114) is to be soldered onto the conductor pattern for fixing (FP) of the object for mounting (B) and the other is to be soldered onto the conductor pattern for signals (SP) of the object for mounting (B).

3. The header contact (110) as recited in claim 1, wherein

   it is so structured that the first connecting part (113) and the second connecting part (114) are

to be soldered onto the conductor pattern for signals (SP) of the object for mounting (B).

4. The header contact (110) as recited in any one of claims 1 to 3, wherein

the contacting part (112), the first connecting part (113) and the second connecting part (114) are so arranged that their top ends form a triangle when seen in a direction that is perpendicular to the surface of the object for mounting (B) at the time of mounting onto the object for mounting (B).

5. The header contact (110) as recited in any one of claims 1 to 4, wherein

it is formed by bending a single plate of a certain configuration, and
faces of the first connecting part (113) and of the second connecting part (114), the faces opposing to the conductor pattern (FP), (SP) of the object for mounting (B), are formed by an end face of a straight edge of the plate.

6. A header connector (100) comprising a header housing (120) and the header contact (110) that is recited in any one of claims 1 to 5 and provided in the header housing (120).

7. A header connector (100) comprising a header housing (120) and three or more header contacts (110) that are arranged side by side in a direction that is substantially in parallel with the surface of an object for mounting (B) at the time of mounting onto the object for mounting (B), and of the header contacts (110), the header contacts (110) at both ends are the header contact (110) that is recited in any one of claims 1 to 5.

FIG. 1

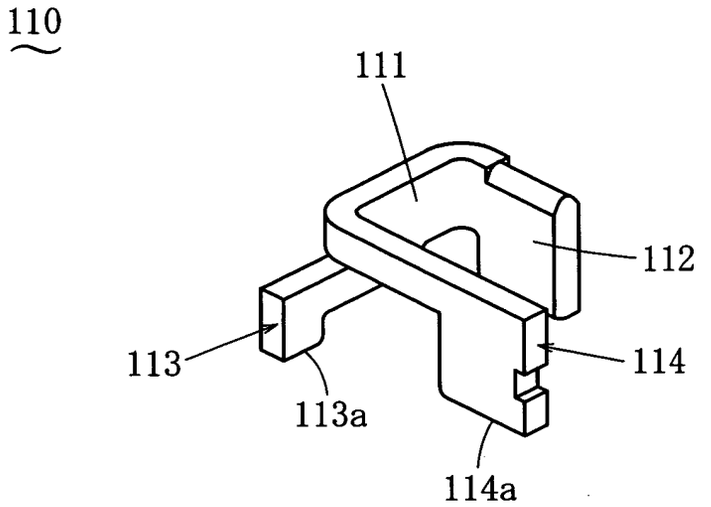


FIG. 2

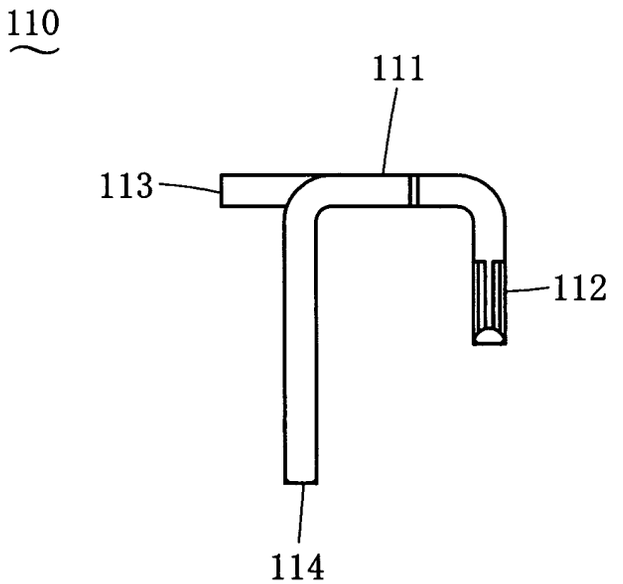


FIG. 3

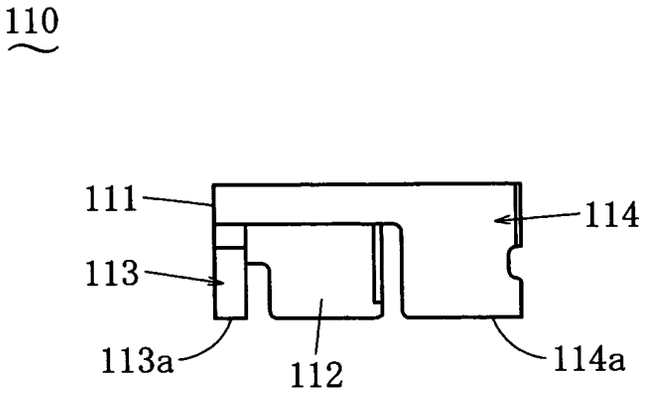


FIG. 4

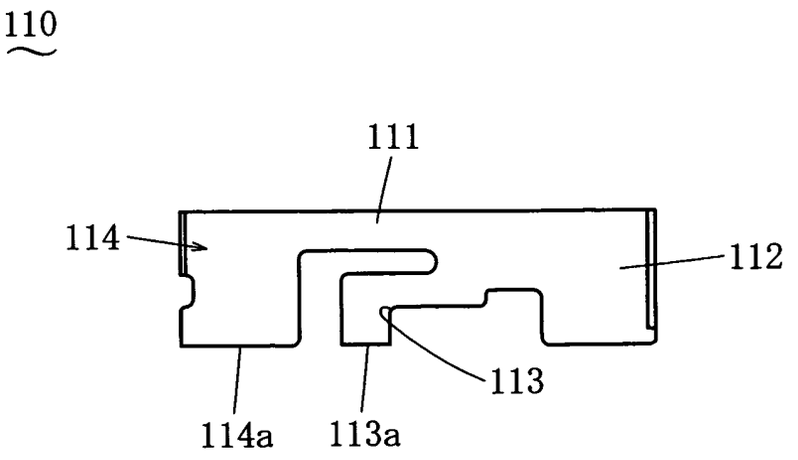
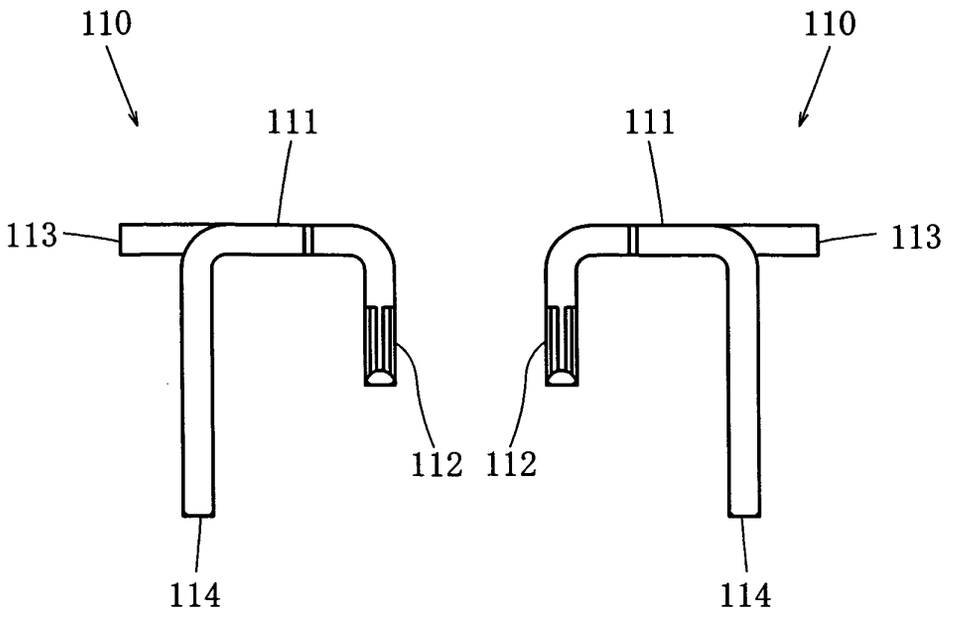


FIG. 5


110
110
111
111
113
113
112
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114
114

FIG. 6

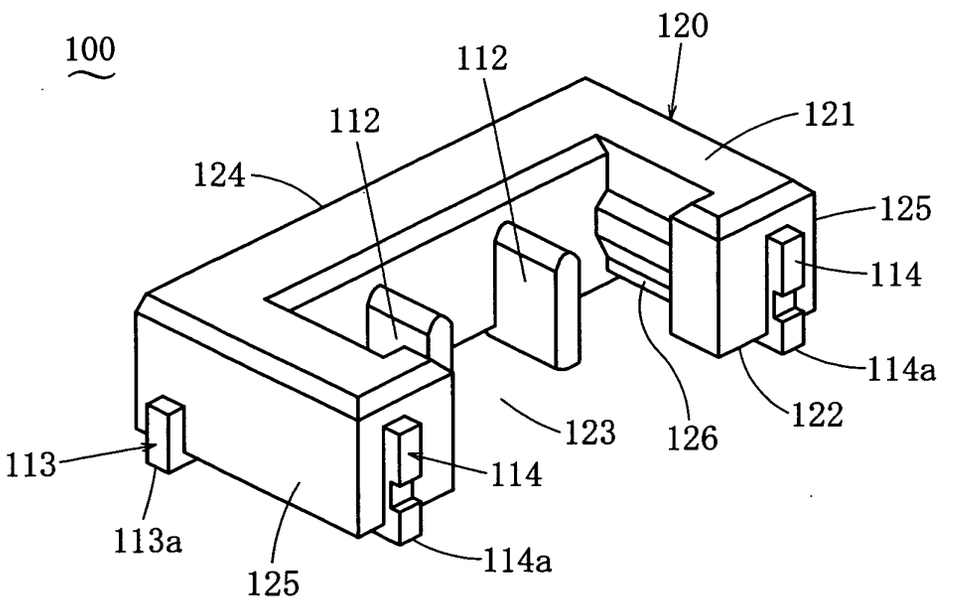

100
120
112
112
121
124
125
114
114a
122
123
126
113
114
113a
114a
125

FIG. 7

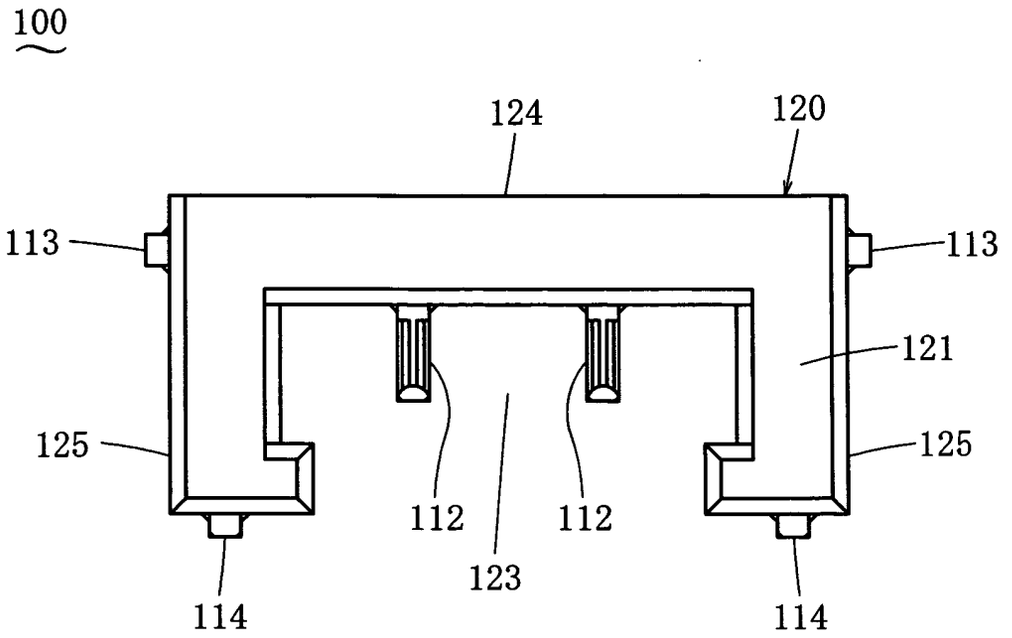
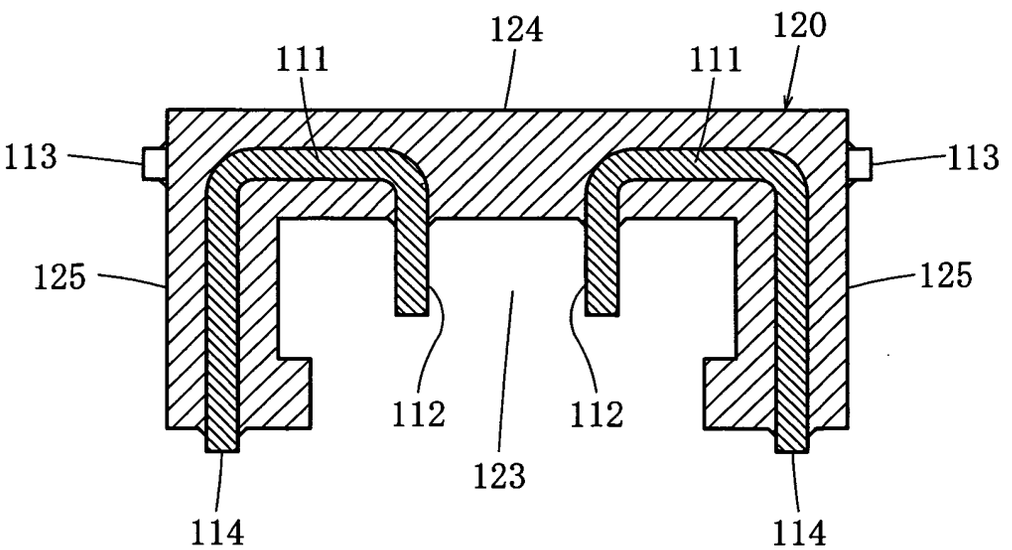

100
124
120
113
113
121
125
125
112
112
123
114
114

FIG. 8


124
120
111
111
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123
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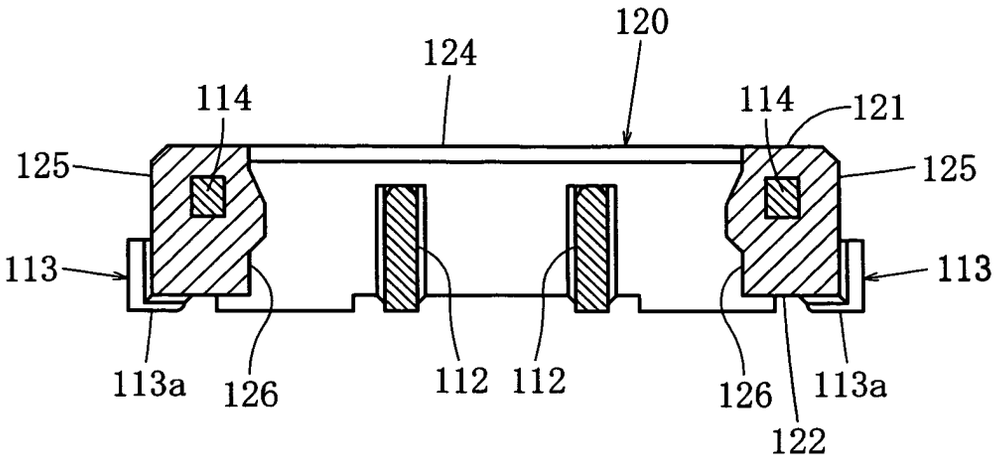
FIG. 9


120
124
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113a
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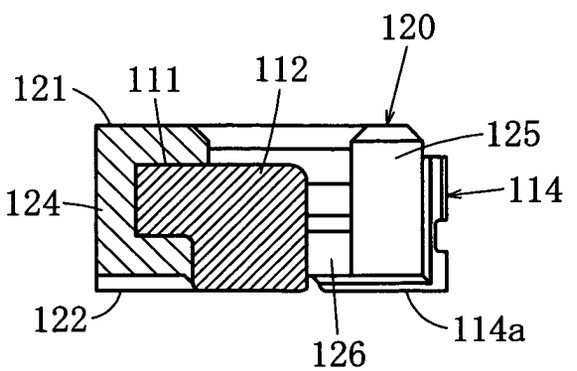
113a
122

FIG. 10


120
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124
122
126
114a

FIG. 11

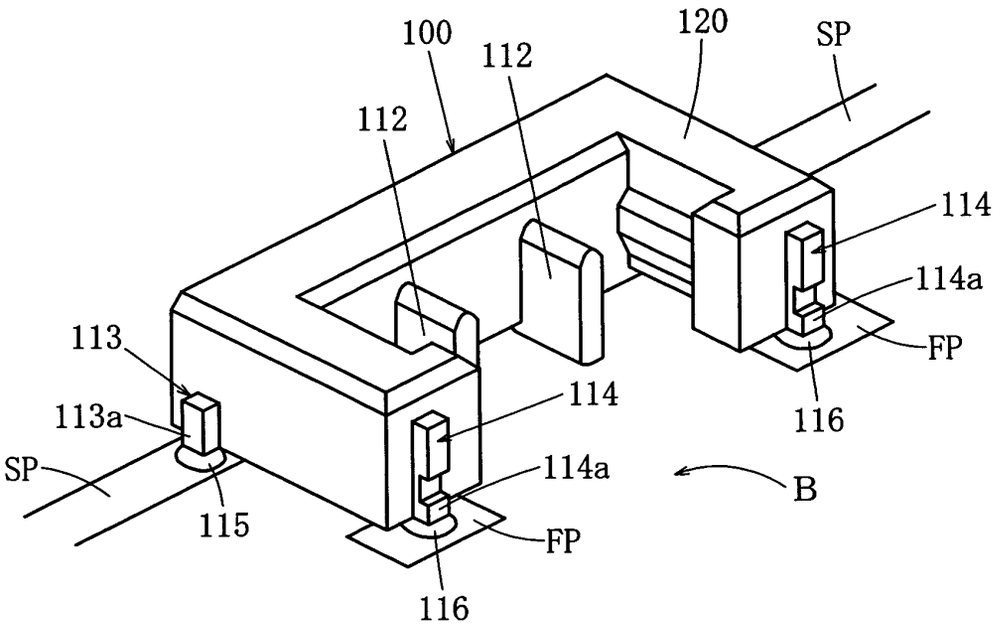
100
112
112
120
SP
114
114a
FP
116
113
113a
SP
115
114
114a
FP
116
B

FIG. 12

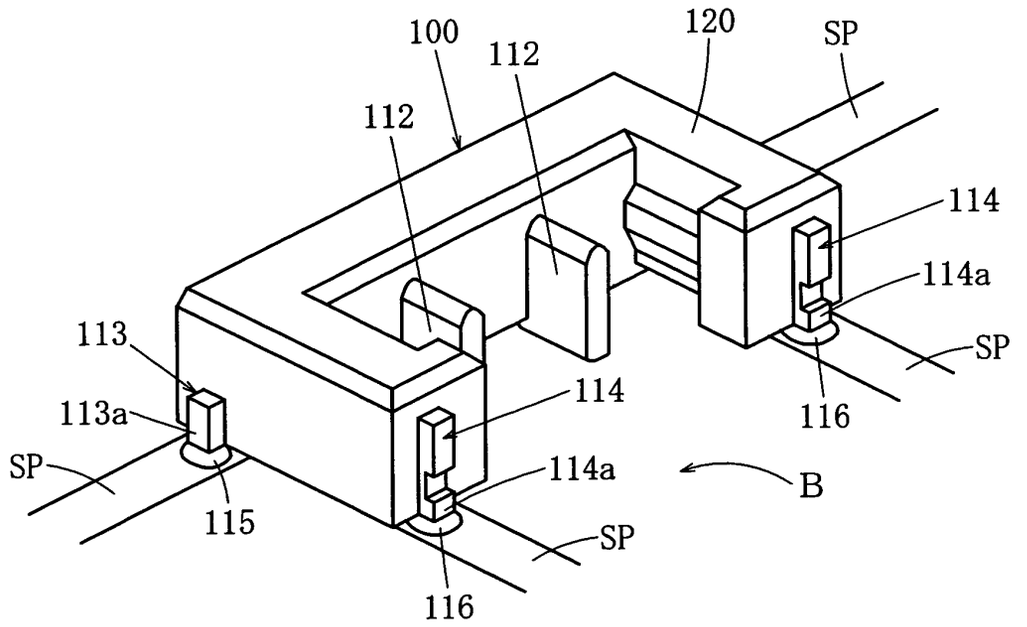
100
112
112
120
SP
114
114a
SP
116
113
113a
SP
115
114
114a
SP
116
B

FIG. 13

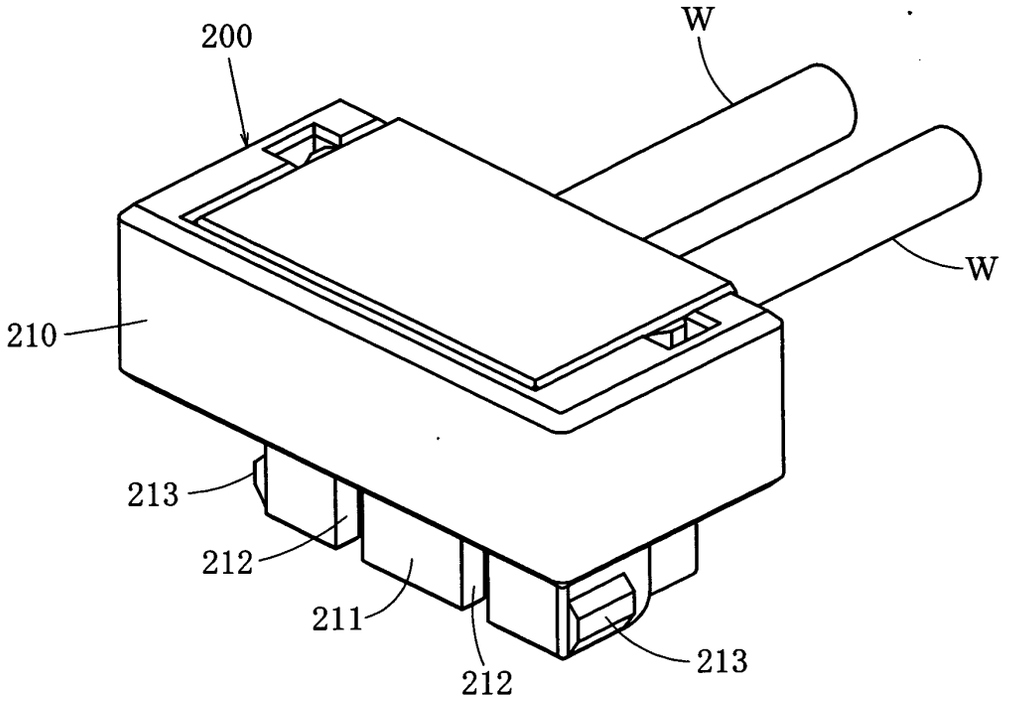

FIG. 14

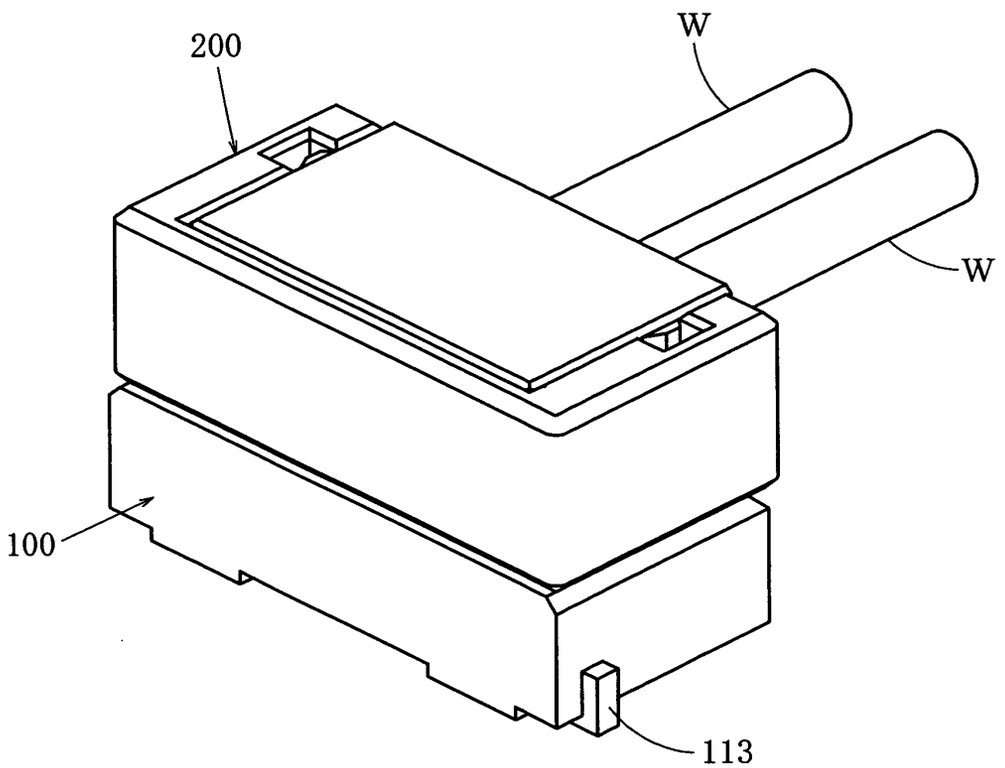

FIG. 15

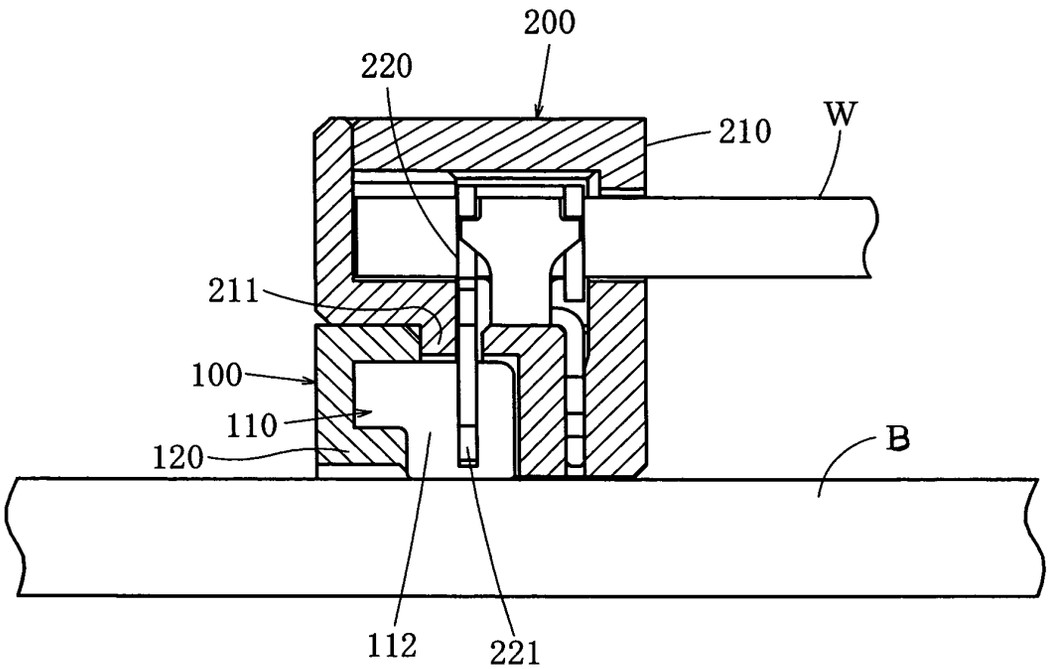
200
220
210
W
211
100
110
120
B
112
221

FIG. 16

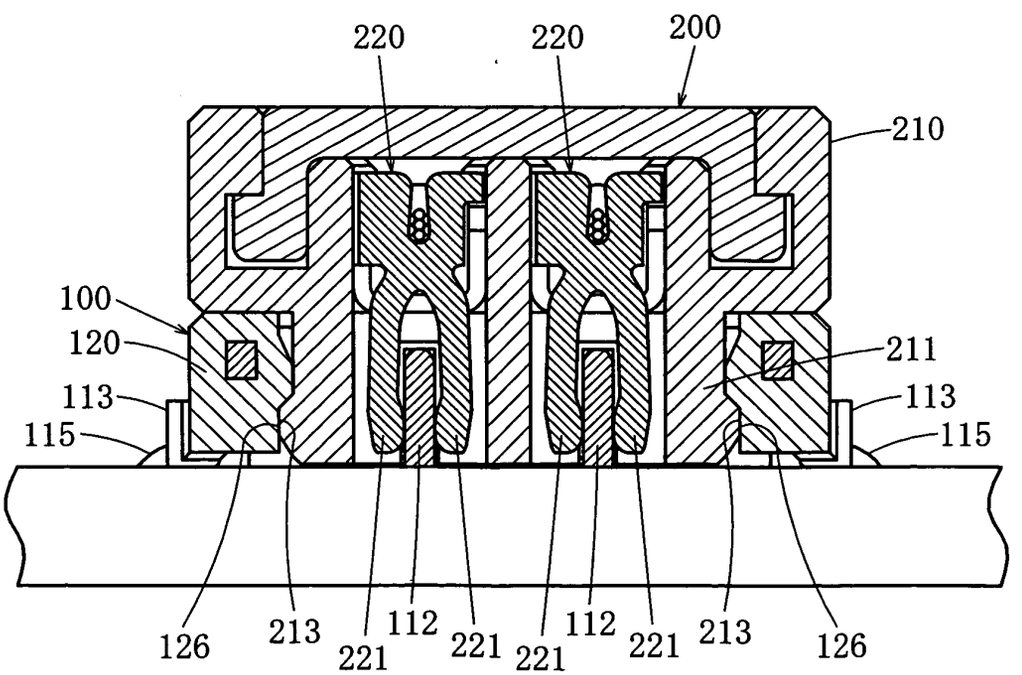
220
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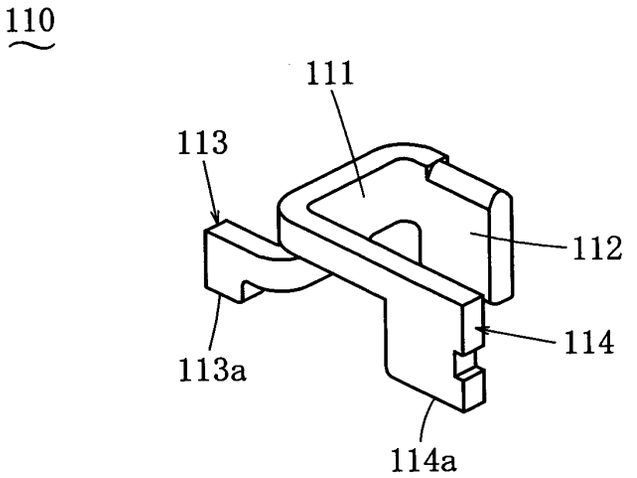
FIG. 17


110
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113a
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FIG. 18

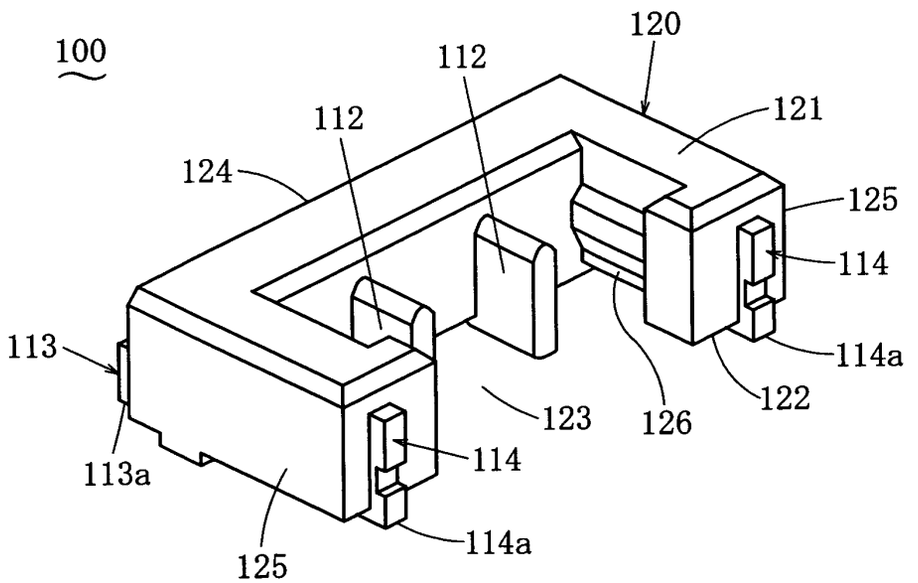
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FIG. 19

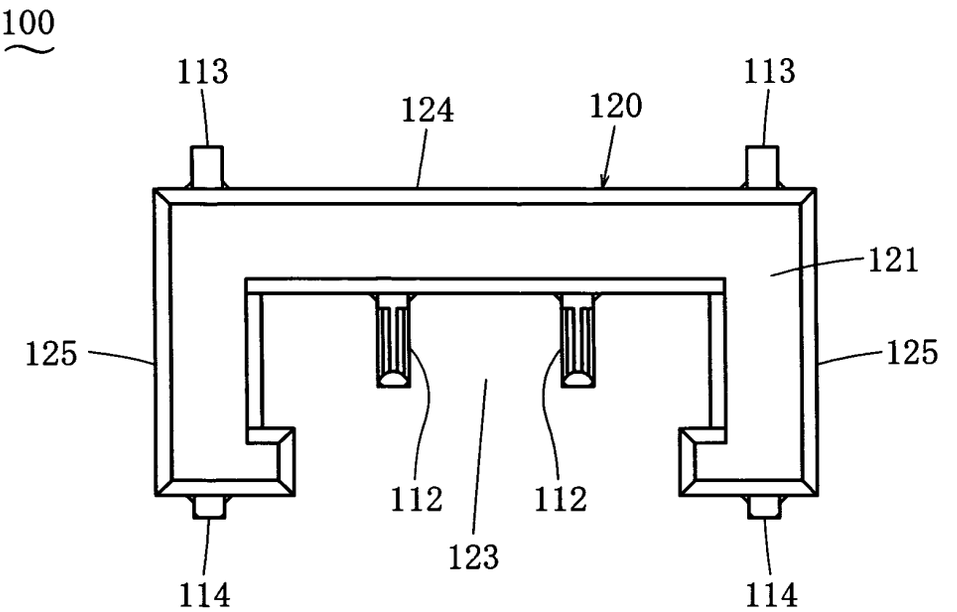
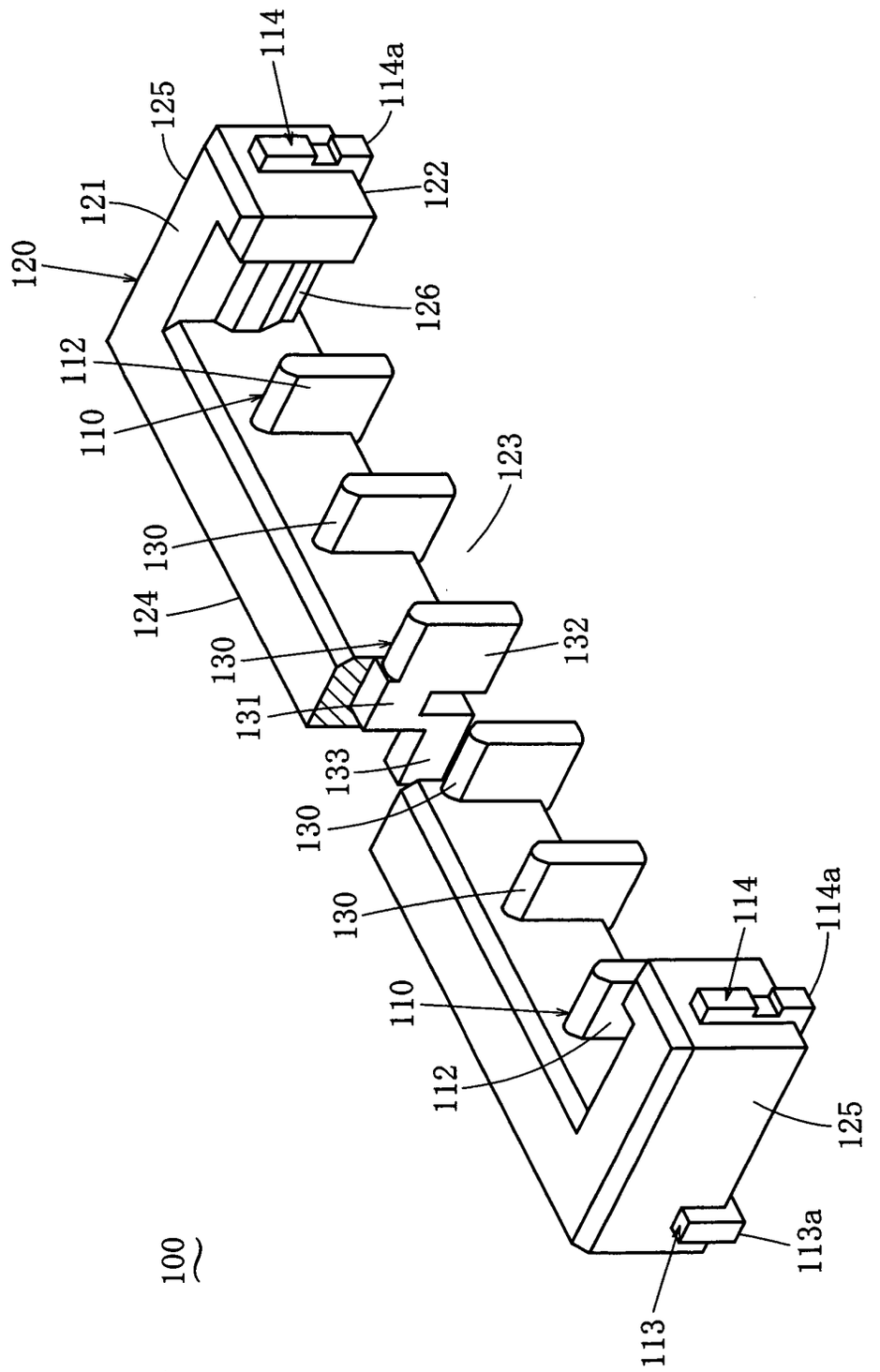


FIG. 20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114a
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131
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133