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(54) **BRIDGING STRIP AND CHANGEOVER SWITCH ASSEMBLY**

(57) A bridging strip, comprising a housing (12), multiple conductive strips (14) and multiple insulating plates (16). The housing is formed with an accommodating cavity (123) which extends in an extension direction (X). The multiple conductive strips are disposed in the housing (12) so as to be spaced apart in sequence in an arrangement direction (Y) that is perpendicular to the extension direction, each of the conductive strips having multiple bridging terminals which are arranged in sequence in the extension direction and can project from the housing. One insulating plate is disposed in each gap of the multiple conductive strips to separate two adjacent conductive strips in an insulating manner, and the length of the insulating plates in the extension direction is greater than the length of the conductive strips in the extension direction. The bridging strip described above has good dielectric properties, and can provide higher resistance to high voltages. Also provided is a changeover switch assembly having the bridging strip described above.

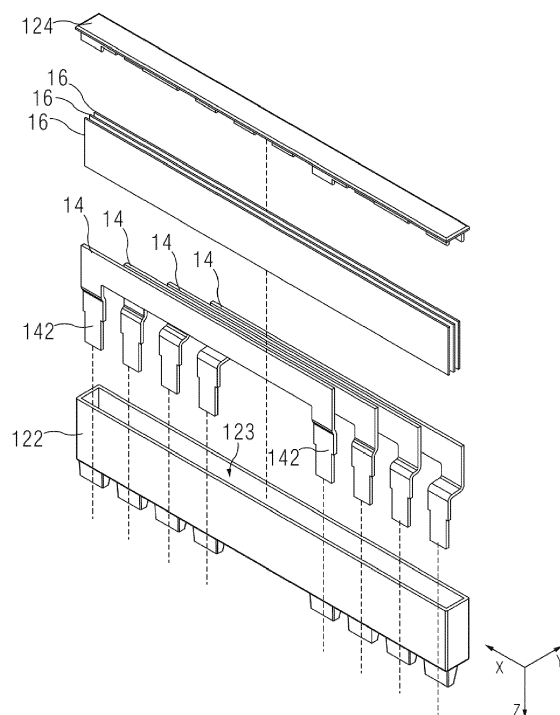


Fig. 2

Description

Technical field

[0001] The present invention relates to a bridging strip, in particular to a bridging strip for a changeover switch. The present invention also relates to a changeover switch assembly having the abovementioned bridging strip.

Background art

[0002] A changeover switch is an electrical switch device for switching two or more power supplies or loads. As Fig. 6 shows, a changeover switch 20 has input terminals 21 and output terminals 22; the changeover switch 20 can be connected to a main power supply 30 and a backup power supply 40 via the input terminals 21, the output terminals 22 of the changeover switch 20 can be connected to a bridging strip 10, and a selection is made by the changeover switch 20 to connect the main power supply 30 or the backup power supply 40 to the bridging strip 10.

[0003] To ensure safety in use, the bridging strip must have good dielectric properties so as to provide higher resistance to high voltages.

Content of the invention

[0004] An object of the present invention is to provide a bridging strip which has good dielectric properties and can provide higher resistance to high voltages.

[0005] Another object of the present invention is to provide a changeover switch assembly having a bridging strip.

[0006] The present invention provides a bridging strip, comprising a housing, multiple conductive strips and multiple insulating plates. The housing is formed with an accommodating cavity which extends in an extension direction. The multiple conductive strips are disposed in the housing so as to be spaced apart in sequence in an arrangement direction that is perpendicular to the extension direction, each of the conductive strips having multiple bridging terminals which are arranged in sequence in the extension direction and can project from the housing. One insulating plate is disposed in each gap of the multiple conductive strips to separate two adjacent conductive strips in an insulating manner, and the length of the insulating plates in the extension direction is greater than the length of the conductive strips in the extension direction. Between two adjacent conductive strips, the creepage distance of the conductive strips in the extension direction X is increased, because the length of the insulating plates in the extension direction is greater than the length of the conductive strips, in order to improve the dielectric properties between two conductive strips, and thereby improve the high voltage resistance of the bridging strip as a whole.

[0007] In one schematic embodiment of the bridging

strip, each conductive strip has two bridging terminals; the two bridging terminals are respectively disposed at two ends, in the extension direction, of one conductive strip.

5 [0008] In one schematic embodiment of the bridging strip, the lengths of the conductive strips in the extension direction are equal, and the bridging terminals at the same side, in the extension direction, of the conductive strips are arranged to be spaced apart in sequence in the extension direction. When the design described above is adopted, the arrangement of all bridging terminals on the housing is facilitated.

10 [0009] In one schematic embodiment of the bridging strip, the lengths of the insulating plates in the extension direction are equal. The adoption of such a design benefits the overall configuration of the bridging strip.

15 [0010] In one schematic embodiment of the bridging strip, the insulating plates run through the accommodating cavity in the extension direction, so the maximum creepage distance can be provided.

20 [0011] In one schematic embodiment of the bridging strip, in a mounting direction that is perpendicular to the extension direction and to the arrangement direction, the housing sequentially comprises a main body housing and a base plate. The main body housing forms the accommodating cavity, and the base plate can close the accommodating cavity. The design described above aids the overall assembly of the bridging strip.

25 [0012] In one schematic embodiment of the bridging strip, that side of the base plate which faces the accommodating cavity is provided with multiple pairs of support pieces; one pair of support pieces corresponds to one conductive strip, and the support pieces can abut the conductive strips in the mounting direction. In the design described above, the support pieces help to position the conductive strips.

30 [0013] In one schematic embodiment of the bridging strip, the insulating plate can extend between two support pieces which are adjacent in the arrangement direction. The design described above makes the overall structure more stable.

35 [0014] In one schematic embodiment of the bridging strip, that side of the base plate which faces the accommodating cavity is also provided with two rows of positioning pieces; the two rows of positioning pieces are disposed on two sides of multiple insulating plates in the arrangement direction. The design described above makes the overall structure more stable.

40 [0015] The present invention also provides a changeover switch assembly, comprising a changeover switch and a bridging strip. The changeover switch has multiple output terminals, and the bridging terminals of the bridging strip can be connected to the output terminals.

45 [0016] Preferred embodiments are explained below in a clear and easily comprehensible way with reference to the accompanying drawings to further explain the abovementioned characteristics, technical features and advantages of the bridging strip and changeover switch assembly.

bly and embodiments thereof.

Description of the accompanying drawings

[0017] The accompanying drawings below merely illustrate and explain the present invention schematically, without limiting the scope thereof.

Fig. 1 is a schematic structural diagram intended to explain a schematic embodiment of a bridging strip. Fig. 2 is a schematic exploded structural view of the bridging strip shown in Fig. 1.

Fig. 3 is a configuration diagram intended to explain the conductive strips and insulating plates.

Fig. 4 is a partial schematic structural diagram intended to explain a schematic embodiment of a bridging strip.

Fig. 5 is a diagram intended to explain the configuration of the base plate, conductive strips and insulating plates of the bridging strip.

Fig. 6 is a schematic structural diagram intended to explain a schematic embodiment of a changeover switch assembly.

[0018] Key to labels

12	housing
122	main body housing
123	accommodating cavity
124	base plate
125	support piece
126	positioning piece
14	conductive strip
142	bridging terminal
16	insulating plate
20	changeover switch
21	input terminal
22	output terminal

Particular embodiments

[0019] To enable clearer understanding of the technical features, objectives and effects of the invention, particular embodiments of the present invention are now explained with reference to the accompanying drawings, in which identical labels indicate structurally identical components or components with similar structures but identical functions.

[0020] As used herein, "schematic" means "serving as an instance, example or illustration". No drawing or embodiment described herein as "schematic" should be interpreted as a more preferred or more advantageous technical solution.

[0021] To make the drawings appear uncluttered, only those parts relevant to the present invention are shown schematically in the drawings; they do not represent the actual structure thereof as a product. Furthermore, to make the drawings appear uncluttered for ease of un-

derstanding, in the case of components having the same structure or function in certain drawings, only one of these is drawn schematically, or only one is marked.

[0022] As used herein, "first" and "second" etc. are merely used to differentiate between parts, not to indicate their order or degree of importance, etc.

[0023] As used herein, "perpendicular" etc. are not strict limitations in the mathematical and/or geometric sense, but include errors which can be understood by those skilled in the art and are permitted in manufacture or use, etc.

[0024] Fig. 1 is a schematic structural diagram intended to explain a schematic embodiment of a bridging strip. As fig. 1 shows, the bridging strip comprises a housing 12, with other components disposed in the housing; see fig. 2 for details. As fig. 2 shows, the housing 12 is formed with an accommodating cavity 123, the accommodating cavity 123 extending in an extension direction X in the figure.

[0025] The bridging strip further comprises four conductive strips 14 and three insulating plates 16. The four conductive strips 14 are disposed in the housing 12 so as to be spaced apart in sequence in an arrangement direction Y that is perpendicular to the extension direction X, each conductive strip 14 having two bridging terminals 142 which are arranged in sequence in the extension direction X and can project from the housing 12. One insulating plate 16 is disposed in each gap of the four conductive strips 14 to separate two adjacent conductive strips 14 in an insulating manner, and the length of the insulating plates 16 in the extension direction X is greater than the length of the conductive strips in the extension direction X; fig. 3 may be referred to at the same time.

[0026] When the design described above is adopted, in addition to the insulating plates 16 being used to separate two adjacent conductive strips 14, the creepage distance of the conductive strips 14 in the extension direction X is increased, because the length of the insulating plates in the extension direction X is greater than the length of the conductive strips 14, in order to improve the dielectric properties between two conductive strips 14, and thereby improve the high voltage resistance of the bridging strip as a whole. Those skilled in the art will understand that the quantities of conductive strips 14 and insulating plates 16 are not limited to those shown in the figures.

[0027] In the embodiment shown in fig. 2, each conductive strip 14 has two bridging terminals 142; the two bridging terminals 142 are respectively disposed at two ends, in the extension direction X, of one conductive strip 14. The two bridging terminals 142 are suitable for use with a changeover switch controlling the switching of two power supplies or loads. Of course, depending on different design requirements, each conductive strip 14 could also be designed with a greater number of bridging terminals 142 in order to suit a changeover switch controlling the switching of more than two power supplies or loads; furthermore, the bridging terminals 142 need not be dis-

posed at the ends of the conductive strip 14.

[0028] In the embodiment shown in figs. 2 and 3, in the case where two bridging terminals 142 are respectively disposed at two ends, in the extension direction X, of one conductive strip 14, the lengths of the conductive strips 14 in the extension direction X are equal; moreover, the bridging terminals 142 at the same side, in the extension direction X, of the conductive strips 14 are arranged to be spaced apart in sequence in the extension direction X. When the design described above is adopted, the arrangement of all bridging terminals 142 on the housing 12 is facilitated (fig. 1 may be referred to at the same time). Of course, depending on different design requirements, other designs could also be employed for the conductive strips 14, such that the bridging terminals 142 are not arranged in the order shown in the figures.

[0029] In the embodiment shown in figs. 2 and 3, the lengths of the insulating plates 16 in the extension direction X are equal. The adoption of such a design benefits the overall configuration of the bridging strip; in particular, as a result, the insulating plates 16 run through the accommodating cavity 123 in the extension direction X, i. e. the two ends, in the extension direction X, of each insulating plate 16 respectively abut the housing 12, so that the maximum creepage distance can be provided. Of course, depending on different design requirements, the lengths of the insulating plates 16 in the extension direction X could also be unequal.

[0030] In the embodiment shown in fig. 2, in a mounting direction Z that is perpendicular to the extension direction X and to the arrangement direction Y, the housing 12 (see fig. 1) sequentially comprises a main body housing 122 and a base plate 124. The main body housing 122 forms the accommodating cavity 123, and the base plate 124 can close the accommodating cavity 123. The design described above aids the overall assembly of the bridging strip, e.g. see fig. 4. In the embodiment shown in fig. 4, that side of the base plate 124 which faces the accommodating cavity 123 (see fig. 2) is provided with four pairs of support pieces 125. One pair of support pieces 125 corresponds to one conductive strip 14 (only one is marked in the figure), i.e. it can be seen from the figure that one pair of support pieces 125 correspond to each other in the extension direction X. Fig. 5 may be referred to at the same time; the support pieces 125 can abut the conductive strips 14 in the mounting direction Z. The support pieces 125 help to position the conductive strips 14.

[0031] Furthermore, as shown in fig. 5, the insulating plates 16 can extend between two support pieces 125 which are adjacent in the arrangement direction Y. Thus, within the housing 12, the length of the insulating plates 16 in the mounting direction Z is also greater than that of the conductive strips 14 in order to increase the creepage distance of adjacent conductive strips 14 in the mounting direction Z, and improve the dielectric properties between two conductive strips 14. Moreover, since the insulating plates 16 extend between two support pieces 125 which are adjacent in the arrangement direction

Y, the support pieces 125 can restrict the positioning of the insulating plates 16 and conductive strips 14 in the arrangement direction Y, making the overall structure more stable.

[0032] In the embodiment shown in fig. 4, that side of the base plate 124 which faces the accommodating cavity 123 (see fig. 2) is also provided with two rows of positioning pieces 126. The two rows of positioning pieces 126 are disposed on two sides of multiple insulating plates 16 in the arrangement direction Y, and may be used to further restrict the positioning of the insulating plates 16 and conductive strips 14 in the arrangement direction Y, making the overall structure more stable.

[0033] The present invention also provides a changeover switch assembly comprising, as shown in fig. 6, a changeover switch 20 and a bridging strip 10 as described above. The changeover switch 20 has multiple output terminals 22. The bridging terminals 142 of the bridging strip 10 can be connected to the output terminals 22.

[0034] It should be understood that although the description herein is based on various embodiments, it is by no means the case that each embodiment contains just one independent technical solution. Such a method of presentation is adopted herein purely for the sake of clarity. Those skilled in the art should consider the description in its entirety. The technical solutions in the various embodiments could also be suitably combined to form other embodiments capable of being understood by those skilled in the art.

[0035] The series of detailed explanations set out above are merely particular explanations of feasible embodiments of the present invention, which are not intended to limit the scope of protection thereof. All equivalent embodiments or changes made without departing from the artistic spirit of the present invention, such as combinations, divisions or repetitions of features, shall be included in the scope of protection of the present invention.

Claims

1. A bridging strip, **characterized by** comprising:

a housing (12), formed with an accommodating cavity (123) which extends in an extension direction (X);
multiple conductive strips (14), disposed in the housing (12) so as to be spaced apart in sequence in an arrangement direction (Y) that is perpendicular to the extension direction (X), each of the conductive strips (14) having multiple bridging terminals (142) which are arranged in sequence in the extension direction (X) and can project from the housing (12); and
multiple insulating plates (16), with one of the insulating plates (16) being disposed in each gap of the multiple conductive strips (14) to sep-

arate two adjacent said conductive strips (14) in an insulating manner, and the length of the insulating plates (16) in the extension direction (X) being greater than the length of the conductive strips in the extension direction (X).

2. The bridging strip as claimed in claim 1, **characterized in that** each of the conductive strips (14) has two said bridging terminals (142); the two bridging terminals (142) are respectively disposed at two ends, in the extension direction (X), of one of the conductive strips (14). 5
3. The bridging strip as claimed in claim 2, **characterized in that** the lengths of the conductive strips (14) in the extension direction (X) are equal, and the bridging terminals (142) at the same side, in the extension direction (X), of the conductive strips (14) are arranged to be spaced apart in sequence in the extension direction (X). 10
4. The bridging strip as claimed in claim 1, **characterized in that** the lengths of the insulating plates (16) in the extension direction (X) are equal. 15
5. The bridging strip as claimed in claim 4, **characterized in that** the insulating plates (16) run through the accommodating cavity (123) in the extension direction (X). 20
6. The bridging strip as claimed in claim 1, **characterized in that** in a mounting direction (Z) that is perpendicular to the extension direction (X) and to the arrangement direction (Y), the housing (12) sequentially comprises: 25
 - a main body housing (122), which forms the accommodating cavity (123); and
 - a base plate (124), which can close the accommodating cavity (123) . 30
7. The bridging strip as claimed in claim 6, **characterized in that** that side of the base plate (124) which faces the accommodating cavity (123) is provided with multiple pairs of support pieces (125); one pair of the support pieces (125) corresponds to one of the conductive strips (14), and the support pieces (125) can abut the conductive strips (14) in the mounting direction (Z). 35
8. The bridging strip as claimed in claim 7, **characterized in that** the insulating plate (16) can extend between two support pieces (125) which are adjacent in the arrangement direction (Y) . 40
9. The bridging strip as claimed in claim 8, **characterized in that** that side of the base plate (124) which faces the accommodating cavity (123) is also pro- 45

vided with two rows of positioning pieces (126); the two rows of positioning pieces (126) are disposed on two sides of multiple said insulating plates (16) in the arrangement direction (Y).

10. A changeover switch assembly, comprising:

a changeover switch (20), having multiple output terminals (22) ;
the bridging strip (10) as claimed in any one of claims 1 to 9, wherein the bridging terminals (142) of the bridging strip (10) can be connected to the output terminals (22).

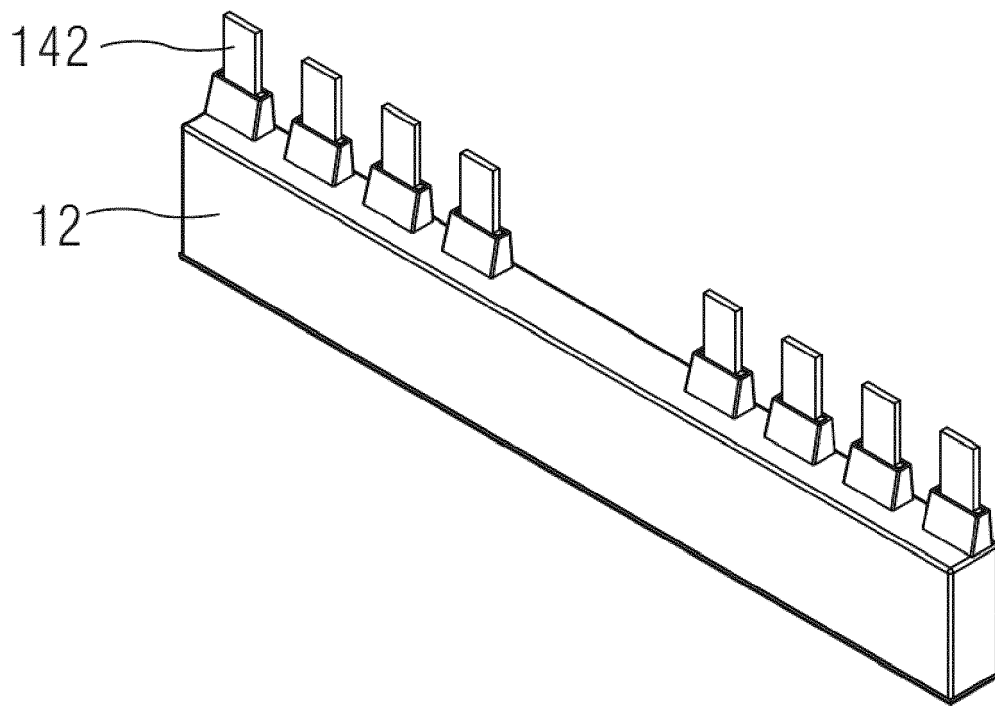


Fig. 1

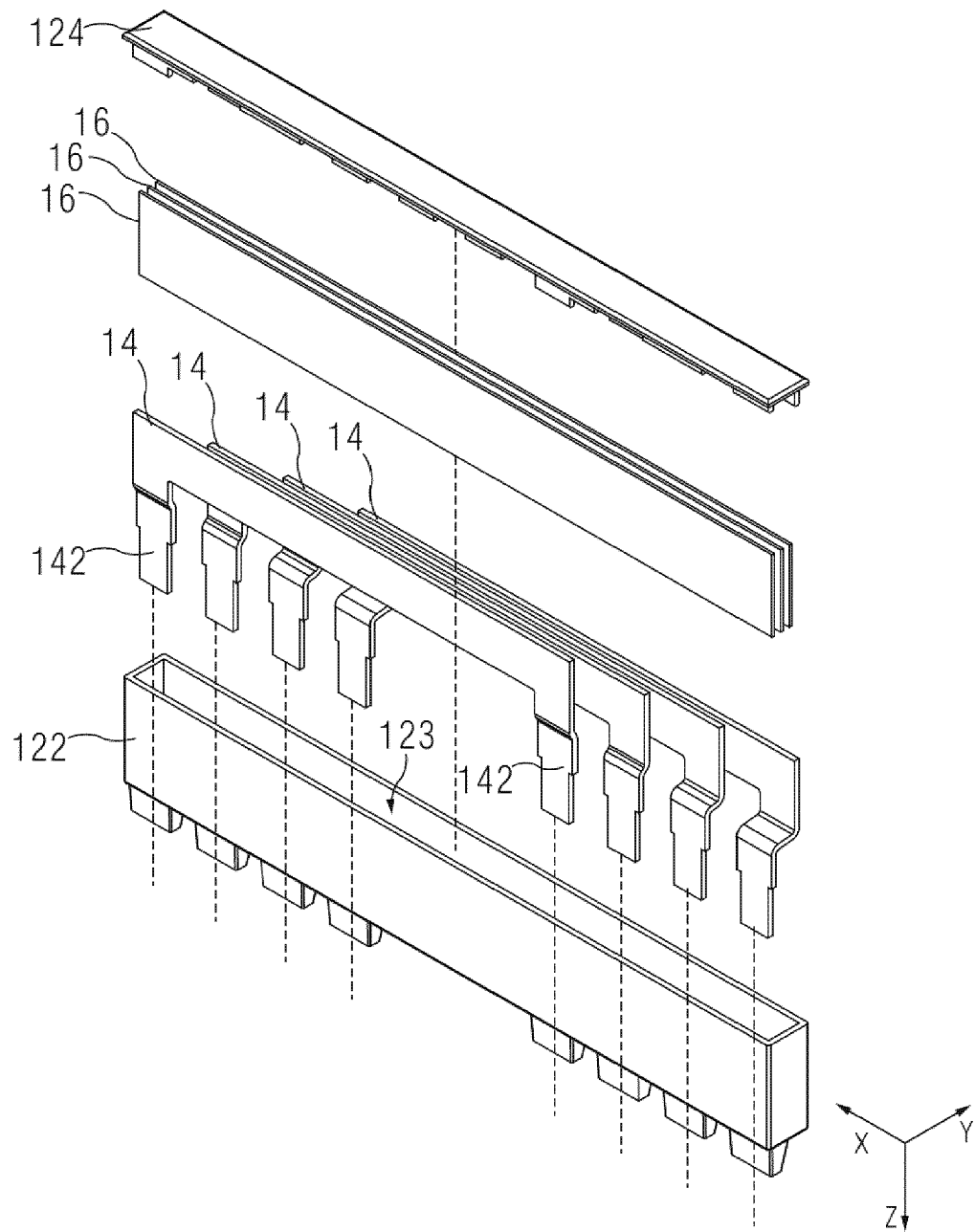


Fig. 2

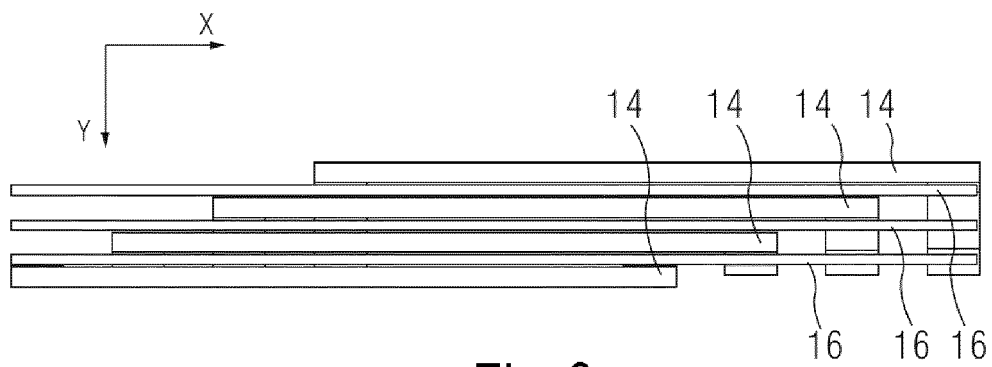


Fig. 3

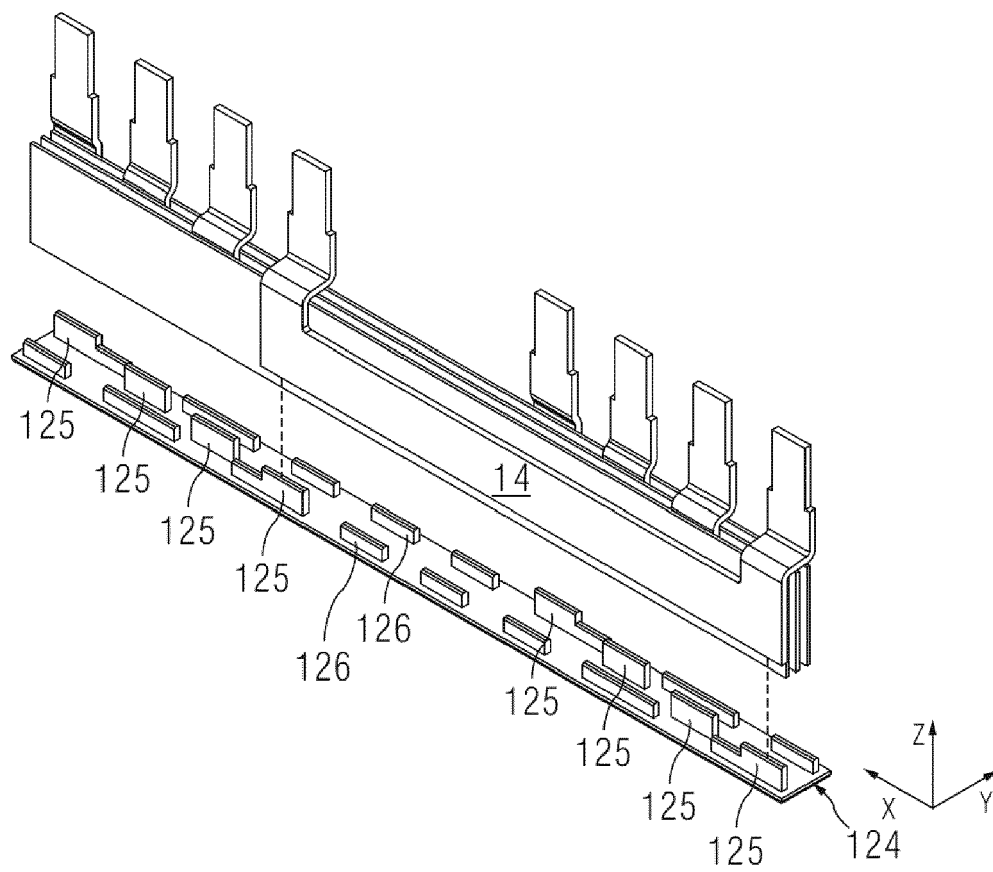


Fig. 4

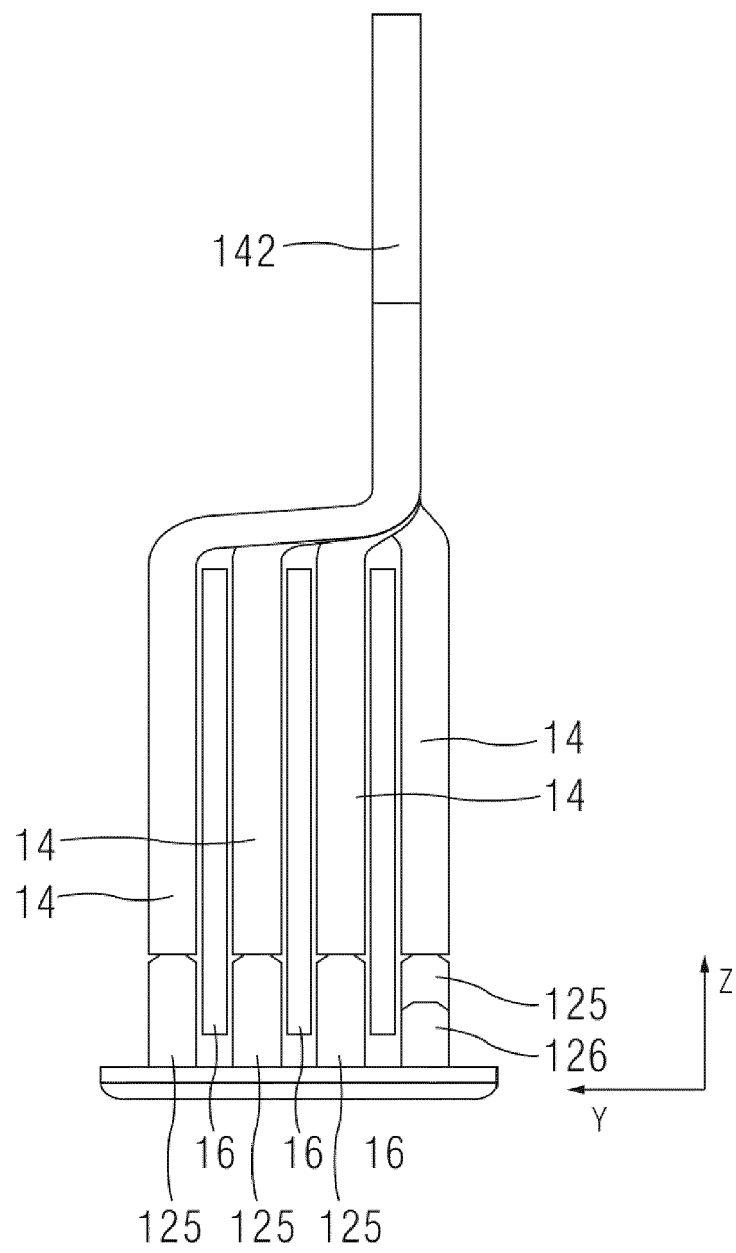


Fig. 5

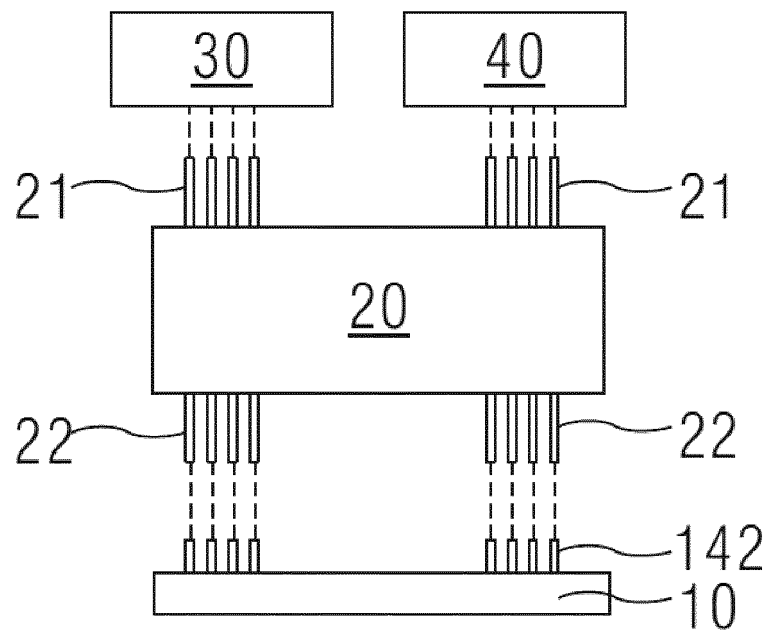


Fig. 6



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Application Number
EP 17 19 3671

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Place of search Munich		Date of completion of the search 15 January 2018	Examiner Simonini, Stefano
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