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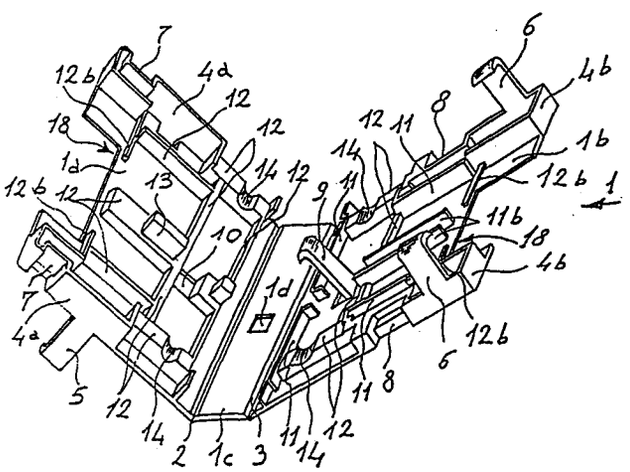
(54) A holder for plate fuses.

(57) A holder (1) for plate fuses consisting of a shaped plate in dielectric plastic comprising two sides (1a, 1b) and one central portion (1c), said sides (1a, 1b) being provided with ribbings (11, 11b, 12, 12b) for housing and keeping in position a pair of plane metal receptacles having a wire or a plate orthogonal to the receptacle itself, the sides (1a, 1b) being furthermore foldable one towards the other so as to hold the metal receptacles, each side laterally bearing elastic elements (6) and corresponding seats (7) for blocking the sides (1a, 1b) in the closed position of the holder (1) as well as further elastic elements (5) and further corresponding seats (8) for connecting and packing two or more holders placed side by side or for connecting one or more holders to a fixed supporting structure.



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A holder for plate fuses

The present invention relates to a holder for plate fuses, in particular for cars.

As known, fuses of different shapes and sizes, connected in series within the circuit, are employed in several appliances in order to protect the various apparatus of an electrical system, for example of cars.

Fuse holders bearing a pair of receptacles connected to the circuit and in which the ends of appropriate fuses are inserted, are employed in order to allow an easy replacement of the melted fuses.

The object of the present invention is to provide, at a low prime cost, an appropriately insulated holder for plate fuses apt to contain a pair of plane receptacles and to be associated to one or more holders of the same type in order to house, in a close structure, all the fuses protecting an electrical system.

To this purpose, the present invention provides a fuse holder obtained from a single moulded piece for containing and keeping in position two metal receptacles, into which the electric contacts of plate type fuses can be inserted, and provided with means for its connection to other holders of the same type and/or to fixed supporting structures.

According to the present invention, it is possible to rapidly and easily assemble and disassemble the holder and the metal receptacles therein contained. It is also possible to rapidly

and easily connect and disconnect two or more assembled holders of the invention respectively for their reciprocal connection or disconnection or for their connection with or disconnection from fixed supporting structures.

In greater detail, the present invention provides a holder for plate fuses, in particular for cars, consisting of a shaped plate in dielectric plastic comprising two sides and a central portion, which are delimited from each other by two parallel folding lines in reduced thickness material, said sides being provided with ribbings for housing and keeping in position, electrically insulated each other, a pair of plane metal receptacles, said sides being furthermore foldable each towards the other so as to hold and to allow the blocking of the metal receptacles, each side laterally bearing elastic elements and corresponding seats for blocking the sides in the closed position of the holder as well as further elastic elements and further corresponding seats for connecting and packing two or more fuse holders of the invention placed side by side.

Furthermore, an anchor plate is provided, which bears a pair of seats for housing and engaging the pair of further elastic elements projecting from a holder, said plate being also provided with means for constraining it to a fixed supporting structure, for example to the body of a car or the like.

According to a preferred embodiment of the invention, said elastic elements and the corresponding seats for blocking the holder in the closed position consist respectively of a pair of hook elements projecting from the upper part of one side towards the inside of the holder and of a pair of step hollows obtained in the corresponding areas of the opposite side and

apt to engage said elastic hook elements during the closing of the sides for forming the holder.

Likewise, the elastic elements and the corresponding seats for packing two or more holders consist respectively of a pair of hook elements projecting towards the outside of the holder in a direction perpendicular to the plane of the side and placed on the same side bearing the step hollows designed for blocking the holder in the closed position and of a pair of step hollows obtained in the corresponding areas of the opposite side, below the elastic hook elements designed for blocking the holder in the closed position, and apt to engage the hook elements projecting from the outer side of a further holder to be packed.

Besides, according to said preferred embodiment of the invention, the side bearing the pair of hook elements designed for blocking the holder in the closed position also bears a further elastic element, placed in its lower inner part, in the middle as to the width, and preferably consisting of a hook element, which is designed to be engaged in a corresponding seat obtained in the opposite side and preferably consisting of a step hollow, for a better blocking of the holder in the closed position and which constitutes, together with complementary ribbings which are present on the two sides and designed for forming a slide in order to close the holder in a correct position, an insulating partition for the electric contacts.

Always according to said preferred embodiment of the invention, the pair of seats provided in the anchor plate advantageously consists of a pair of step hollows apt to engage the pair of elastic hook elements projecting towards the outside of a single holder or of a holder connected to one or more holders packed

according to the invention.

Said preferred embodiment of the invention furthermore provides, on the inner surfaces of the sides, ribbings having a different relief for housing and keeping in seat the metal receptacles as well as appropriately prearranged outlet grooves for the wires, which allow the holder of the invention to contain either plane metal receptacles having a plate orthogonal to the receptacle itself, or plane metal receptacles having a wire orthogonal to the receptacle.

According to a further embodiment of the present invention, the inner surfaces of the sides are provided with ribbings for housing and keeping in position, electrically insulated from each other, a pair of metal receptacles of the type called "Faston" or the like.

In said further embodiment of the invention, the inner surfaces of the sides also bear pins and sleeves designed to fit each other for centering the two opposite sides in the correct position when closing the holder.

According to said further embodiment of the invention, the elastic elements and the corresponding seats for blocking the holder in the closed position respectively consist of a pair of staple elements projecting from the upper part of one side towards the inside of the holder and of a pair of tooth elements obtained in the corresponding areas of the opposite side and apt to engage said staple elements when closing the sides for forming the holder.

Likewise, the elastic elements and the corresponding seats

for packing two or more holders consist respectively of a pair of staple elements projecting towards the outside of the holder in a direction perpendicular to the plane of the side and placed on the same side bearing the tooth elements designed for blocking the holder in the closed position, and of a pair of tooth elements obtained in the corresponding areas of the opposite side, below the staple elements designed for blocking the holder in the closed position, and apt to engage the staple elements projecting from the outer side of a further holder to be packed.

Always according to said further embodiment of the invention, the pair of seats provided in the anchor plate advantageously consists of a pair of tooth elements apt to engage the pair of staple elements projecting towards the outside of a single holder or of a holder connected to one or more holders packed according to the invention.

The holder according to said further embodiment of the invention furthermore provides a middle partition, lengthwhise arranged, and appropriate lateral openings placed in its lower part for allowing the passage of the wires for the electric connection of the metal receptacles therein contained.

Further features and advantages of the fuse holder of the invention will be more clearly apparent from the following particularised description of two embodiments thereof, which are illustrated by way of example in the accompanying drawings, in which:

Figure 1 is a perspective view of the holder of the invention according to a preferred embodiment, in the open position,

Figure 2 is a front view, in section, of one side of the holder of Figure 1, housing a receptacle with an orthogonal wire and a receptacle with an orthogonal plate,

Figure 3 shows a plate fuse suitable for insertion into the holder of the invention,

Figure 4 is a perspective view of a pair of holders of Figure 1, in the closed position, with receptacles housed and fuses inserted,

Figure 5 is a perspective view of a plate for anchoring the holders of Figure 1 to a fixed supporting structure, with the corresponding holder coupled therewith,

Figure 6 is a perspective view of the holder of the invention according to a further embodiment, in the open position,

Figure 7 is a front view, in section, of one side of the holder of Figure 6, housing a pair of metal receptacles,

Figure 8 is a perspective view of a pair of holders of Figure 6, in the closed position, with receptacles housed and fuses inserted, and

Figure 9 is a perspective view of a plate for anchoring the holders of Figure 6 to a fixed supporting structure, with the corresponding holder coupled therewith.

Referring to Figure 1, the fuse holder 1 of the invention according to a preferred embodiment thereof consists of a shaped plate, in insulating plastic, which can be folded

along the parallel lines 2, 3 having a reduced thickness and delimitating two sides 1a, 1b as well as a central portion 1c preferably bearing an opening 1d.

Sides 1a, 1b present, in their upper parts, substantially edge ribbings having a higher relief 4a, 4b which respectively bear the pairs of hook elements 5, 6 and of step hollows 7, 8, the pair of hook elements 6 of the side 1b being designed for engaging into the step hollows 7 of the opposite side 1a for fixing the holder in the closed position, while the pairs of hook elements 5 and of step hollows 8 are designed for connecting the fuse holder 1 to further holders of the same type or, by using only the pair of hook elements 5, to a plate for anchoring the holder 1 to a fixed supporting structure.

The side 1b furthermore bears, in its lower inner part and in a central position with respect to the width, a hook element 9 designed for engaging, when closing the holder, in the corresponding step hollow 10 of the side 1a for a better blocking of the holder itself in the closed position.

The side 1b provides ribbings having a higher relief 11, 11b for housing the metal receptacles, while ribbings having a lower relief 12, 12b are provided on both sides 1a, 1b for keeping in seat said metal receptacles.

The side 1a provides a tooth relief 13 designed, when closing the holder, to be inserted between the ribbings 11b of the side 1b for a correct positioning of the two sides and to form, in the closed position of the holder and in co-operation with the hook element 9, an insulating partition for the electric contacts.

Appropriate semicylindrical hollows 14 are laterally provided in the lower part of both sides 1a and 1b for allowing the wires, when present, to pass.

As shown by way of example in Figure 2 with reference to the side 1b, inside the spaces delimitated by the ribbings 11, 11b, 12b there can be housed both a plane metal receptacle with orthogonal wire 15, connected to a wire 16 coming out from the holder through the semicylindrical hollow 14, and a plane metal receptacle with an orthogonal plate 17 coming out from the holder through the free spaces provided for between the ribbings having a lower relief 12 and designed to be electrically connected to the circuit outside the holder.

Said receptacles 15 or 17 will be blocked, in the closed position of the holder, as to their slidings in a direction parallel to the ribbings having a higher relief 11b, for example during the insertion or the extraction of a plate fuse, by the lower transversal sections of the ribbings having a higher relief 4b as well as by the transversal ribbings having a lower relief 12b, and, as to their slidings in a direction parallel to the lines 2, 3 having a reduced thickness, by the ribbings having a higher relief 11b.

Upper recesses 18 facilitate the extraction of the fuse with fingers.

On the central portion 1c, a hole 1d is furthermore preferably obtained in order to allow the air for cooling the contacts and/or the fuses at the time of melting to pass.

In Figure 3 is shown a plate fuse 19 with its contact plates 19'.

In Figure 4 is shown the fuse holder 1 of Figure 1 housing two metal receptacles 15 with an orthogonal wire 16, which has been folded along the lines 2 and 3, closed and fixed by engaging the hook elements 6 in the corresponding step hollows 7. By the further engaging of the hook element 9 in the corresponding step hollow 10 there is obtained the optimum blocking of the mounted holder in the closed position.

When closing the holder, the tooth relief 13 is inserted between the ribbings 11b, thus allowing the correct positioning of the two sides 1a and 1b and preventing possible lateral slidings thereof.

A plate fuse 19 is inserted, by its contact plates 19', into the receptacles 15 of the holder 1.

In Figure 4 is furthermore shown a second fuse holder 1' housing two metal receptacles with an orthogonal plate 17, mounted as above described and packed to the holder 1 by engaging its lower hook elements 5' into the step hollows 8 of the holder 1, said holder 1' presenting its step hollows 8' free for connecting further holders.

The fixing of the holder, or of a group of packed fuse holders, to a fixed supporting structure, for example to the body of a car or the like, can be made using an anchor element of the type illustrated in Figure 5, in which a plate 20 is provided with a pair of lateral step hollows 21 designed to engage the hook element 5 of the fuse holder 1 and with a lower projection 22 for supporting the holder itself.

The plate 20 can be fixed in the use position by means of an

adhesive or of a bi-adhesive plate, or by means of screws. Preferably, according to the present invention and as shown in Figure 5, there is provided a pair of elastic tooth wedges 23 designed to be inserted and fixed in an appropriately shaped hole obtained in the body of the car or the like. In that case, and in the case in which a hole is provided instead of the elastic tooth wedges 23 for fixing the plate 20 to the body by means of a screw, said plate 20 will be provided with a projecting pin 24 or the like, which enters a corresponding hole in the body, in order to prevent the plate 20 from rotating.

For the use of rectilinear type receptacles, appropriate openings will be made in the central portion 1c in order to allow the corresponding wires or plates to pass.

Referring now to Figure 6, the fuse holder 101 of the invention according to a further embodiment thereof consists of a shaped plate, in insulating plastic, which can be folded along two parallel lines 102, 103 having a reduced thickness and delimiting two sides 101a, 101b as well as a central portion 101c.

Sides 101a, 101b present lateral relief edges 104, interrupted in a portion next to the central portion 101c and opposite fixing elements 105, 106 consisting respectively of a sleeve 105 and of a pin 106, which can be inserted into said sleeve 105. Relief ribbings 107, 108 are furthermore provided on both sides 101a, 101b.

Besides, the lateral relief edges 104 of the side 101a bear, in their upper parts, tooth elements 109 while, in correspondence to them, the lateral relief edges 104 of the side 101b bear staple

elements 110. Near and below said tooth elements 109, the lateral relief edges 104 of the side 101a bear the staple elements 111 while, in correspondence to them, the lateral relief edges 104 of the side 101b bear the tooth elements 112.

The side 101b furthermore bears the partition 113 subdividing it into two portions.

As can be seen in Figure 7, inside the spaces delimitated by the partition 113, two metal receptacles 114, of the type so called "Faston" with an orthogonal wire, are housed, each of them being connected to a wire 115.

Said receptacles 114 are blocked, as to their slidings in a direction parallel to the partition 113, by said relief ribbings 107, 108.

In the upper part of the sides 101a, 101b, recesses 104a can be obtained with the purpose of facilitating the extraction of the fuse with fingers.

In Figure 8 there is illustrated the holder 101, housing two receptacles 114, which has been folded along the lines 102 and 103, closed and fixed by engaging the tooth elements 109 inside the corresponding staple elements 110.

When closing the holder, pins 106, inserted inside the sleeves 105, assure the centering of the coupling of the two sides 101a and 101b and prevent possible lateral slidings thereof.

In Figure 8 is furthermore shown a plate fuse 116 inserted, by its contact plates 117, into the receptacles 114.

Finally, in Figure 8 there is shown how a second fuse holder 101', with the fuse 116' inserted, is connected to the holder 101 by engaging its staple elements 111' beyond the tooth elements 112 of the holder 101 and presenting its tooth elements 112' free for the connection of further holders.

The fixing of the holder 101, or of a group of packed fuse holders 101, to a fixed supporting structure, for example to the body of a car or the like, can be made using an anchor element of the type illustrated in Figure 9, in which a plate 118 is provided with a pair of lateral tooth elements 119 designed to couple with the staple elements 111 of the fuse holder 101, and with a lower projection 120 for supporting the holder 101.

The plate 118 can be fixed in the use position as already described and illustrated with reference to Figure 5.

With the fuse holder realized according to said further embodiment of the invention, the metal receptacles of the type "Faston" 114 or the like are kept in position, when a pressure is exerted for inserting the fuse 116, by the relief ribbings 108 against which the bent ends 114a of the receptacle 114 can lean. When the fuse 116 is pulled for its extraction, the upper end of the receptacles 114, indicated with the reference 114b in Figure 7, leans against the ribbings 107, thus preventing the slipping of the receptacles 114 out of the holder.

For the use of receptacles of the rectilinear type, a different arrangement of the pins 105 and of the sleeves 106 in the holder 101 may be provided and two openings in the central portion 101c will be provided in order to allow the wires connected to the

receptacles to pass.

It will be apparent that the holder according to the invention can be also applied, without any substantial change or variation, to the electrical connection of two poles of an electric system by substituting the fuse with a plate plug which may be joined or separated.

It will also be apparent that many variations of constructive type may be made without thereby departing from the scope of the present invention.

Claims:

1. A holder for plate fuses, in particular for cars, characterised in that it consists of a shaped plate in dielectric plastic comprising two sides (1a, 1b - 101a, 101b) and one central portion (1c - 101c), which are delimited from each other by two parallel folding lines (2, 3 - 102, 103) in reduced thickness material, said sides (1a, 1b - 101a, 101b) being provided with ribbings (11, 11b, 12, 12b - 107, 108) for housing and keeping in position, electrically insulated from each other, a pair of plane receptacles (15 or 17 - 114), said sides (1a, 1b - 101a, 101b) being furthermore foldable each towards the other so as to hold and to allow the blocking of the metal receptacles (15 or 17 - 114) and laterally bearing elastic elements (6 - 110) and corresponding seats (7 - 109) for blocking the sides in the closed position of the holder (1 - 101) as well as further elastic elements (5 - 111) and further corresponding seats (8 - 112) for connecting and packing two or more fuse holders placed side by side.

2. A holder according to claim 1, characterised in that said elastic elements and the corresponding seats for blocking the holder in the closed position consist respectively of a pair of hook elements (6) projecting from the upper part of one side (1b) towards the inside of the holder (1) and of a pair of step hollows (7) obtained in the corresponding areas of the opposite side (1a) and apt to engage said hook elements (6) during the closing of the sides (1a, 1b) for forming the holder (1), and in that said further elastic elements and corresponding seats for packing two or more holders consist respectively of a pair of hook elements (5) projecting

towards the outside of the holder (1) in a direction perpendicular to the plane of the side (1a) and placed on the same side (1a) bearing the step hollows (7) designed for blocking the holder (1) in the closed position, and of a pair of step hollows (8) obtained in the corresponding areas of the opposite side (1b), below the hook elements (6) designed for blocking the holder (1) in the closed position, and apt to engage the hook elements (5') projecting from the outer side of a further holder (1') to be packed.

3. A holder according to claims 1 and 2, characterised in that the side (1b) bearing the pair of hook elements (6) designed for blocking the holder (1) in the closed position also bears a further elastic element, placed in its lower inner part, in the middle with respect to the width, and preferably consisting of a hook element (9), which is designed to be engaged in a corresponding seat obtained in the opposite side (1a) and preferably consisting of a step hollow (10), for a better blocking of the holder (1) in the closed position, said hook element (9), together with a tooth relief (13) and with a pair of longitudinal ribbings (11b) apt to house said tooth relief (13), respectively placed on one and on the other of said sides (1a, 1b) in the middle part with respect to the width and designed to form a closing slide for the holder (1), constituting a partition for the electric contacts.

4. A holder according to any one of the preceding claims, characterised in that the internal surfaces of the sides (1a, 1b) bear ribbings (11, 11b, 12, 12b) having different relief for housing and keeping in seat two metal receptacles and appropriate outlet grooves (14) for the wires (16), which allow the housing in the holder (1) either of plane metal

receptacles having a plate orthogonal to the receptacle itself (17), or plane metal receptacles with an orthogonal wire (15).

5. A holder according to claim 1, characterised in that a pair of metal receptacles of the type so called "Faston" or the like (114) having a wire orthogonal to the receptacle itself are kept in position by appropriate ribbings (107, 108), said sides (101a, 101b) bearing, in their lower parts, openings for the passage of wires (115, 115') for the electric connection of the receptacles, as well as pins (106) and sleeves (105) which can be engaged to each other to center the two opposite sides (101a, 101b) in the correct position when closing the holder (101).

6. A holder according to claim 5, characterised in that said elastic elements and the corresponding seats for blocking the holder (101) in the closed position consist respectively of a pair of staple elements (110) projecting from the upper part of one side (101b) towards the inside of the holder (101) and of a pair of tooth elements (109) obtained in the corresponding areas of the opposite side (101a) and apt to engage said staple elements (110) during the closing of the sides (101a, 101b) for forming the holder (101) and in that said further elastic elements and the corresponding seats for packing two or more holders (101) consist respectively of a pair of staple elements (111) projecting towards the outside of the holder (101) in a direction perpendicular to the plane of the side (101a) bearing the tooth elements (109) designed for blocking the holder (101) in the closed position, and of a pair of tooth elements (112) obtained in the corresponding areas of the opposite side (101b), below the staple elements (110) designed for blocking the

holder (101) in the closed position, and apt to engage the staple elements (111') projecting from the outer side of a further holder (101') to be packed.

7. A holder according to any one of the preceding claims, characterised in that a plate (20 - 118) is provided for anchoring one holder (1 - 101) or more packed holders (1 - 101), said plate (20 - 118) being provided with a pair of seats (21 - 119) designed to engage a pair of elastic elements (5 - 111) projecting from the outer side (1a - 101a) of a holder (1 - 101), as well as with a lower projection (22 - 120) for supporting the holder (1 - 101) itself and with means (23, 24 - 121, 122) for fixing it to the fixed supporting structure, for example to the body of a car or the like.

8. A holder according to claims 1 to 4 and 7, characterised in that the pair of seats provided in the anchor plate (20) consists of a pair of step hollows (21) apt to house and to engage the pair of hook elements (5) projecting from the outer side of a single holder (1) or of a holder (1) packed to one or more holders (1').

9. A holder according to claims 5 to 7, characterised in that the pair of seats provided in the anchor plate (118) consists of a pair of tooth elements (119) apt to engage the pair of staple elements (111) projecting from the outer side of a single holder (101) or of a holder (101) packed to one or more holders (101').

10. A holder according to any one of the preceding claims, characterised in that the fuse (19 -116) is substituted by a

plate plug in order to use the holder (1 - 101) as a socket to connect two poles of an electric system.

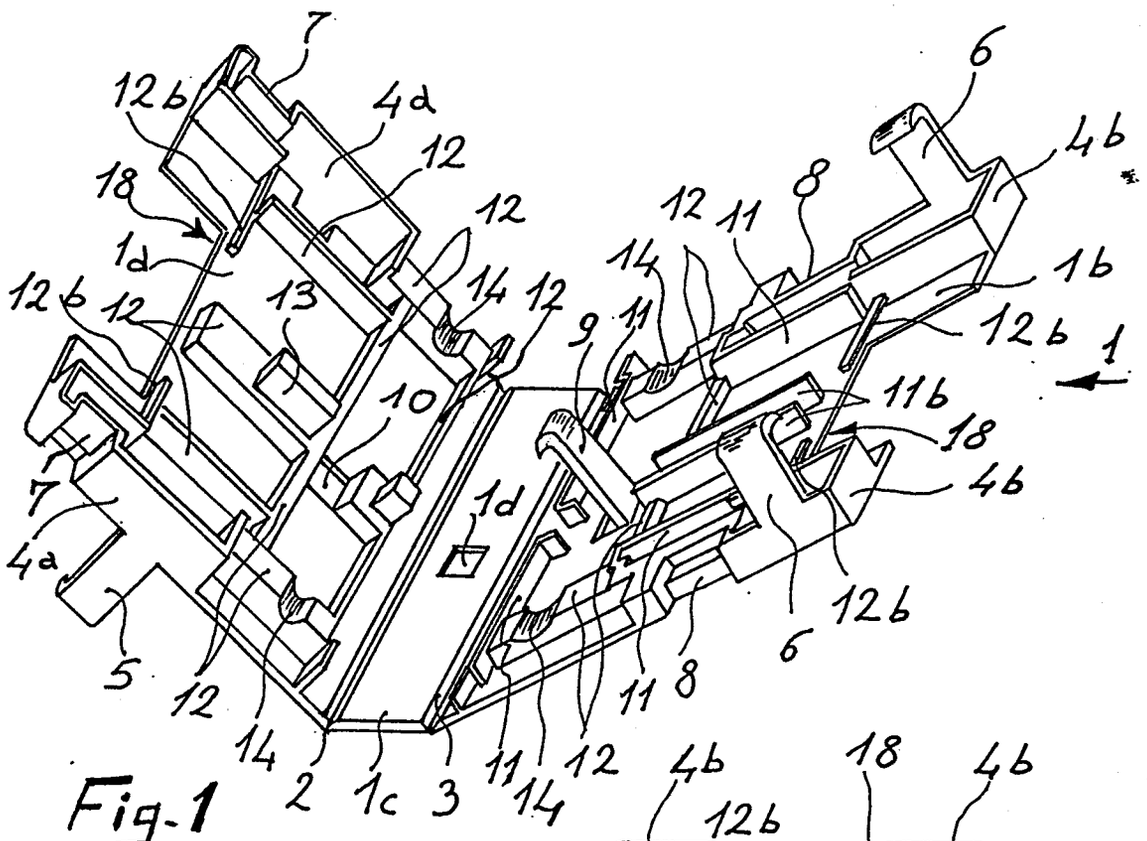

Fig-1

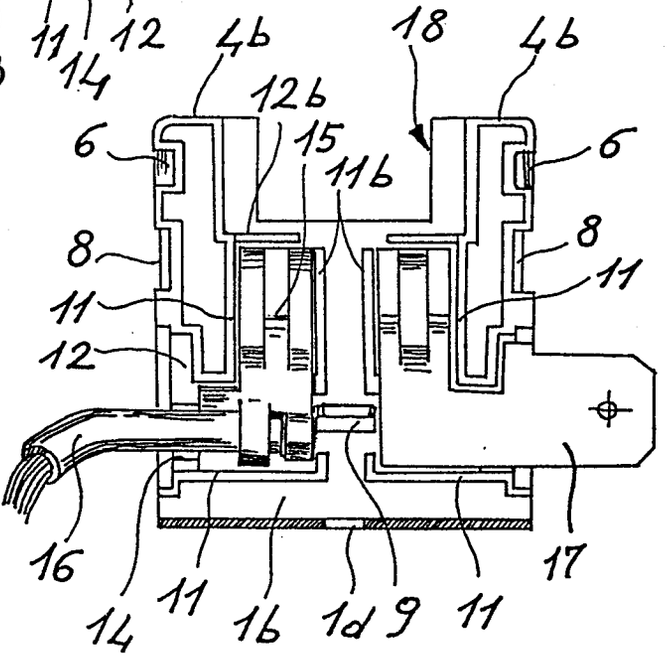

Fig. 2

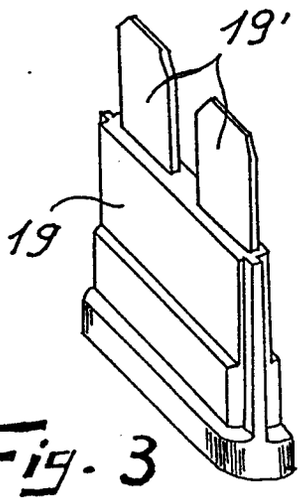

Fig. 3

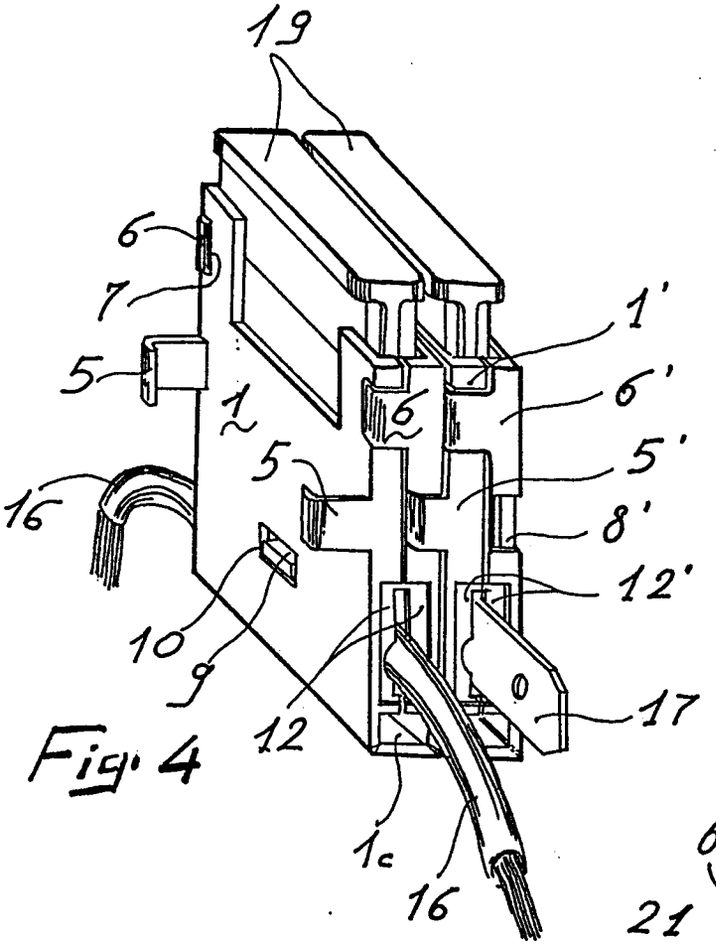

Fig. 4

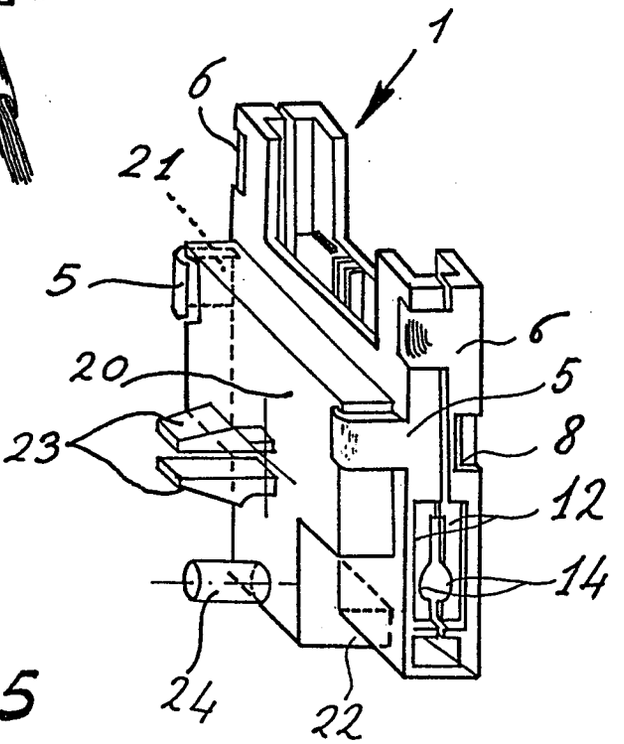

Fig. 5

Fig. 6

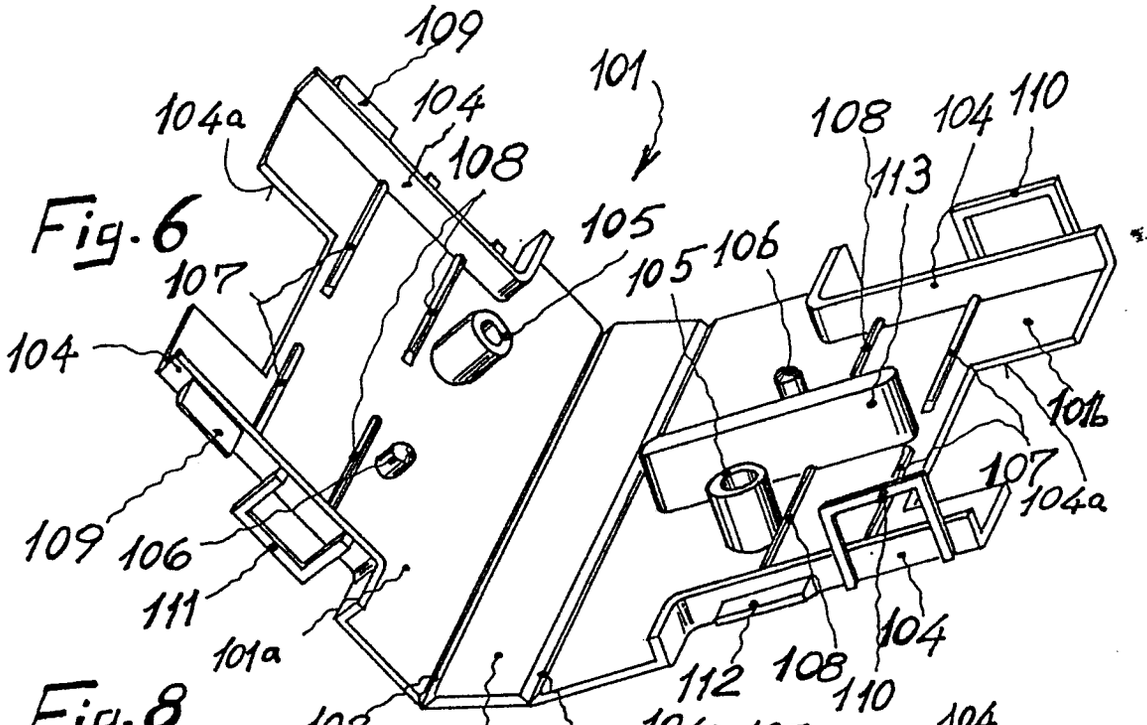

Fig. 8

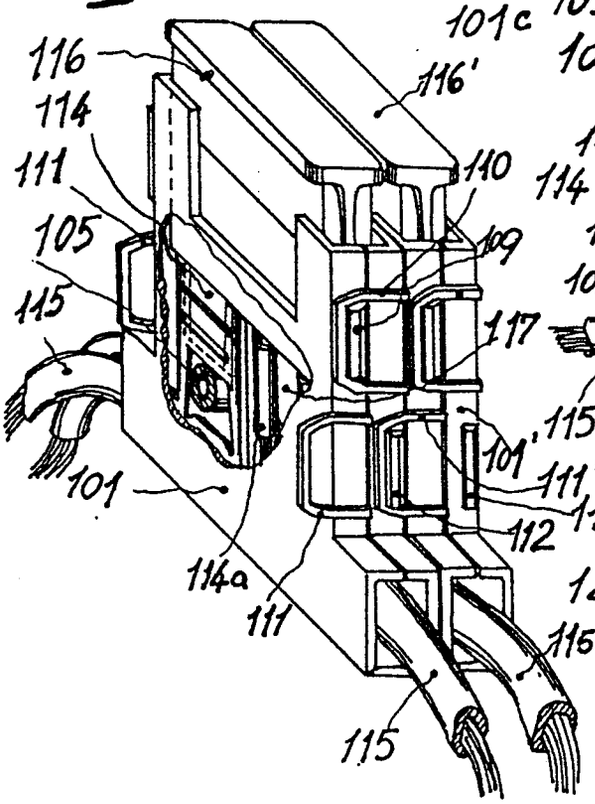

Fig. 7

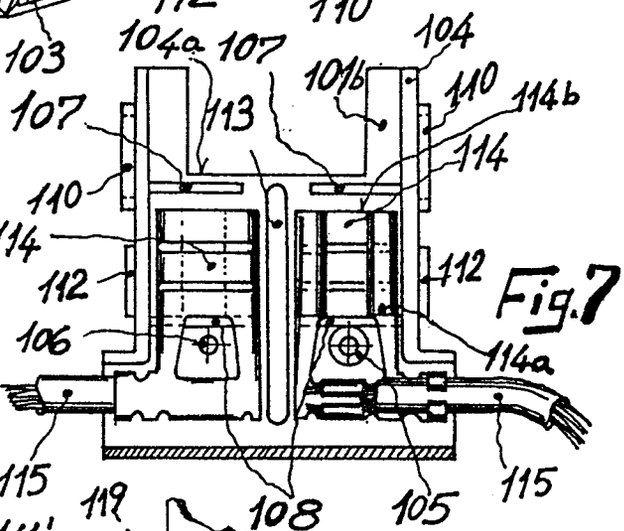

Fig. 9