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(54) **Készülék tartó, és egy ilyen készüléktartóval ellátott készülék**

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

EQUIPMENT SUPPORT AND ELECTRICAL EQUIPMENT COMPRISING SUCH AN EQUIPMENT SUPPORT

TECHNICAL FIELD TO WHICH THE INVENTION RELATES

The present invention relates generally to fastening two electrical accessories supports in a mutually juxtaposed position to a common wall box.

It relates more particularly to an accessory support for fastening to a flush-mounted wall box.

It also relates to electrical accessory comprising such an accessory support and at least one accessory mechanism received in the central opening of the frame of said accessory support.

TECHNICAL BACKGROUND

An electrical accessory generally comprises an accessory support in the form of a frame that is suitable for receiving an accessory mechanism in its central opening, and that is arranged to be fastened to a wall box.

For that purpose, as it is described in document EP0620620, such an accessory support is provided with connection means for connecting it to the wall box, which means act in diametrically opposite positions on the frame.

For example, such means may merely be keyhole-shaped orifices that are suitable for passing fastener screws and that extend substantially over circular arcs centered on the center of the central opening of the frame.

For this purpose, each of said orifices has large-size circular ends for passing the head of the fastener screw, and an elongate body of smaller width, the edges of which form bearing surfaces for the head of the fastener screw.

Fastening the accessory support to the wall box then breaks down into four main operations consisting in:

- loosening the fastener screws engaged in the screw wells of the wall box, in a manner such that their heads emerge over a height greater than the thickness of the bearing edges of the frame of the accessory support;
- mounting the accessory support on the wall box in a manner such that it is skewed slightly, in a manner such that the heads of the fastener screws pass through the circular ends of the orifices in the frame of the accessory support; then
- re-aligning the accessory support by causing it to pivot relative to the wall box, in a manner such that the bearing edges of the frame engage under the heads of the fastener screws; and finally
- tightening the fastener screws onto the bearing edges so as to fasten the accessory support rigidly to the wall box.

It can be necessary to associate at least two accessories supports of the same type horizontally and/or vertically so as to constitute banks of juxtaposed pieces of electrical accessory.

We know from the document FR 2,695,532 an accessory support comprising means for association with another support of the same type, that are able to join these two supports before fixing them on a wall box.

However, fixing these two supports remains difficult in so far as it is not possible to rotate the supports on the box. That is why it is necessary to unscrew entirely the screws out of their threaded bores before putting the two supports on the box, and then to fully lock the screws in their bores.

The supports as those described in EP 0620620 do not have any mean for association with another support. When it is desired to fix two supports of this type on a wall box, a first support is attached first on the box, and the second one is attached after.

It can however be understood that, after the first accessory support has been fastened to the wall box, said accessory support hinders fastening of the second accessory support because it prevents said second accessory support from being mounted on a skew onto the wall box. One of the corners of the second accessory support comes into abutment against the front face of the first accessory support.

It is then necessary to loosen the fastener screws of the second accessory support over a larger height so that the heads of the fastener screws can pass through the circular ends of the orifices of the frame of said second accessory support.

However, that loosening operation is only possible if the frame of the first accessory support is thin, as generally applies when it is made of metal.

The same does not apply with frames made of plastics materials. In order to have rigidity equivalent to the rigidity of frames made of metal, frames made of plastics materials are generally of greater thickness, and the fastener screws must then be unscrewed completely until they come out of the screw wells in the wall box.

The operations for installing the second accessory support on the wall box are then not only tedious but they might also cause the fastener screws to be lost.

One possibility for making it easier to fasten accessories supports in a juxtaposed position is then to reduce the thickness of the frame without however reducing its rigidity, by reinforcing the plastics material used by filling it with glass fibers. Unfortunately, such accessories supports are more costly to manufacture because the material used is more expensive and it requires the manufacturing molds to be replaced more frequently.

OBJECT OF THE INVENTION

An object of the present invention is to propose a novel accessory support that is inexpensive to manufacture and that is easier to assemble in a juxtaposed position.

More particularly, the invention provides an accessory support as defined in claim 1.

Thus, by means of the invention, the second accessory support can be mounted on a skew on the wall box, by engaging its corner into the zone of clearance set back into the front face of the frame of the first accessory support.

It is thus not necessary to unscrew the fastener screws completely until they come out of their screw wells in order for the fastener screws to pass through the circular ends of the orifices in the frame of the second accessory support so as to facilitate installation of said second accessory support.

In addition, the indentation that defines the zone of clearance adversely affects the rigidity of the frame to only a very small extent, and, elsewhere, said frame may be of large thickness in order to compensate for the weak mechanical properties of the plastics material that is not fiber-reinforced.

Other advantageous and non-limiting characteristics of the accessory support of the invention are described in claim 2 and in the following claims

DETAILED DESCRIPTION OF AN EMBODIMENT

The following description, given with reference to the accompanying drawings and by way of non-limiting example, makes it possible to understand what the invention consists in and how it can be implemented.

In the accompanying drawings:

- Figure 1 is a diagrammatic perspective view of an accessory support of the invention;
- Figure 2 is a diagrammatic front view of the accessory support of Figure 1;
- Figure 3 is a diagrammatic section view on the plane A-A of Figure 2;
- Figure 4 is a diagrammatic side view of two accessories supports that are of the same type as the accessory support shown in Figure 1, and that are positioned over a wall box;
- Figure 5 is a diagrammatic front view of the two accessories supports and of the wall box of Figure 4;
- Figure 6 is a detailed perspective view of the accessory support of Figure 1; and
- Figures 7 to 9 are diagrammatic perspective views of three variant embodiments of the accessory support of Figure 1.

Figures 1 to 3 are diagrammatic views showing an accessory support 100 for supporting electrical accessory, which accessory support is arranged to receive at least one accessory mechanism base. A detailed view of this accessory support 100 is shown in Figure 6.

This accessory support 100 is designed to be fastened to a wall box that is flush-mounted in or surface-mounted on any wall, e.g. a cavity wall.

Such a wall box 200 for flush mounting is, for example, shown in Figure 4. As shown in Figure 4, the wall box 200 is designed to receive two accessories supports 100 of the same type. For this purpose, it has a rectangular back wall 201 surrounded towards the front by a side wall 202. At the front face, this side wall 202 defines an edge face 203 against which the two accessories supports 100 can bear.

On its inside face, the side wall 202 carries screw wells of axes A2 orthogonal to the back wall 201, in which wells fastener screws 300 (Figure 5) are engaged. Initially, on delivery, said fastener screws 300 are fully tightened into their screw wells, so that their heads are flush with the edge face 203 of the box.

Since said wall box 200 is not the subject of the present invention, it is not described in any more detail herein.

Each accessory support 100 serves to mount inside the wall box one or more accessories supports, e.g. a switch mechanism, an electricity outlet mechanism, a telephone outlet mechanism, or a trip switch mechanism.

As shown in Figures 1 to 3, and for this purpose, the accessory support 100 has a flat frame 100A which is square in this example and that has a back face 109 designed to be placed against the wall box, and an opposite front face 108.

The frame 100A thus has four branches 101, 102, 103, 104 and is defined between a square outside peripheral edge 107 and an inside peripheral edge 105 that is also square, and that defines a central opening 106 of axis A1.

The term "peripheral edge" is used more precisely in this example to designate an edge face of the frame of the accessory support 100. Each of the inside and outside peripheral edges 105 and 107 of the frame 100A thus has four sides.

As can be seen in Figures 1 and 2, the accessory support 100 also has connection means suitable for making it possible to fasten the frame 100A to the wall box.

At the center of each of the four branches 101, 102, 103, 104 of the frame 100A of the accessory support 100, said connection means comprise a keyhole-shaped orifice 111 that extends substantially over a circular arc about the axis A1 of the central opening 106 of the frame 100A.

As appears in Figure 2, each orifice 111 then has an oblong portion 111A of width equal, ignoring clearance, to the diameter of the threaded bodies of the fastener screws 300, and a circular end 111B of diameter equal, ignoring clearance, to the diameter of the heads of the fastener screws 300.

As shown in Figure 1, each orifice 111 is more precisely provided in the back 112 of an indentation 110 set back into the front face of each branch 101, 102, 103, 104 of the frame 100A.

The back of said indentation 110, which thus surrounds the orifice 111, then forms a bearing edge 112 against which the head of a fastener screw engaged through said orifice 111 can bear.

As shown in Figures 4 and 5, by using these connection means, fastening a first accessory support 100 to the wall box 200 then breaks down into four main operations consisting in:

- loosening the two fastener screws 300 engaged in the corresponding screw wells of the wall box 200, over a length such that their heads emerge proud of the edge face 203 of the wall box 200 to a height greater than the thickness e2 (see Figure 3) of the bearing edges 112 of the frame 100A;

- mounting the first accessory support 100 on the edge face 203 of the wall box 200 by skewing it slightly about the axis A1 in a manner such that the heads of the two fastener screws 300 pass through the circular ends 111B of the orifices 111 provided in two opposite branches 101, 103 of the frame 100A; then

- re-aligning the accessory support by causing it to pivot about the axis A1 in a manner such that the bearing edges 112 of the frame 100A engage under the heads of the fastener screws 300, and so that the two branches 101, 103 of the frame 100A come into alignment with the side wall 202 of the wall box 200; and finally

- tightening the fastener screws 300 onto the bearing edges 112 so as to lock the back face 109 of the frame 100A of the first accessory support 100 against the wall box 200 so as to fasten said support rigidly to the box.

Once the first accessory support 100 has been fastened to the wall box 200, the back face 109 of its frame 100A bears either against the wall itself or against the front edge face 203 of the wall box 200, in particular if the wall is a cavity partition.

Here, the outside peripheral edge 107 of the frame 100A has, over at least one fourth of the length H of at least one of its four sides, an indentation 120 that defines a zone of clearance 121 set back into the front face 108 of the frame 100A (see Figure 2).

In this example, as shown in the figures, the outside peripheral edge 107 of the frame 100A of the accessory support 100 is provided with four indentations 120 situated at respective ones of its four sides, in such a manner as to be symmetrical in pairs about the axis A1 of the central opening 106 in the frame 100A.

In this example, each zone of clearance 121 extends lengthwise from the middle B1 of the side corresponding to the outside peripheral edge 107 of the frame 100A to the vicinity of one of the corners of said frame 100A.

Each zone of clearance 121 extends more precisely over an angular sector that is centered on the middle B1 of said side of the outside peripheral edge 107 of the frame 100A and that is flanked on one side by said outside peripheral edge 107 and on the other side by a straight portion 122 of the indentation 120.

As shown in Figure 2, said straight portion 122 of the indentation 120 has a length l2 slightly less than one half of the length l1 of the side of the outside peripheral edge 107 of the frame 100A. In this example, it has a length l2 lying in the range 30 millimeters (mm) to 34 mm while the length l1 of the side of the outside peripheral edge 107 of the frame 100A is substantially equal to 71 mm.

This straight portion 122 of the indentation 120 is also inclined relative to the corresponding side of the outside peripheral edge 107 at an angle c1 that is, in this example, greater than or equal to one half of the angle c2 subtended by the circular arc formed by each orifice 111. In this example, the angle c1 lies in the range 10 degrees to 12 degrees while the angle c2 lies in the range 19 degrees to 21 degrees.

As shown in Figure 3, the zone of clearance 121 also has a depth h1 from the front face 108 of the frame 100A of the accessory support 100 that is greater than or equal to one half of the maximum thickness e1 of the frame 100A.

In this example, the depth h1 of said zone of clearance is strictly less than the maximum thickness e1 of the frame 100A. Therefore, on the same side as the back face 109 of the frame 100A, the zone of clearance 121 is defined by a back 124.

In a variant, as shown in Figure 7, it is possible to make provision for each zone of clearance 121 to extend over the entire thickness of the frame 100A, from its front face 108 to its back face 109. In this variant, the frame 100A then has rigidity that is lower than rigidity of the frame shown in Figures 1 to 6. However, as explained in more detail below, it is then easier to mount the frame on the wall box in a position in which it is juxtaposed with another frame of the same type.

Therefore, as shown in Figures 4 and 5, fastening a second accessory support 100 to the wall box 200, in a position in which it is juxtaposed with the first accessory support, then breaks down into four main operations consisting in:

- loosening the two fastener screws 300 engaged in the corresponding screw wells of the wall box 200, over a length such that their heads emerge proud of the edge face 203 of the wall box 200 to a height greater than the thickness e2 (Figure 3) of the bearing edges 112 of the frame 100A of the second accessory support and greater than the thickness e3 of the back 124 of the zone of clearance 121 of the first accessory support;

- mounting the first accessory support 100 on the edge face 203 of the wall box 200 by skewing it slightly about the axis A1 in a manner such that the heads of the two fastener screws 300 pass through the circular ends 111B of the orifices 111 provided in two opposite branches 101, 103 of the frame 100A, and such

that one of the corners of the frame 100A of said second accessory support 100 engages in the corresponding zone of clearance 121 of the frame of the first accessory support 100; then

- re-aligning the accessory support by causing it to pivot about the axis A1 in a manner such that the bearing edges 112 of the frame 100A engage under the heads of the fastener screws 300, and so that the frame of the second accessory support 100 is juxtaposed exactly with the frame of the first accessory support 100; and finally

- tightening the fastener screws 300 onto the bearing edges 112 so as to fasten said second accessory support 100 rigidly to the wall box 200.

Once the first accessory support 100 has been fastened to the wall box 200, the back face 109 of its frame 100A bears either against the wall itself or against the front edge face 203 of the wall box 200, in particular if the wall is a cavity partition.

It can be understood that, with the frame 100A shown in Figure 7 in which the zones of clearance 121 are not provided with backs, it is necessary, prior to mounting, merely to loosen the fastener screws over a short length, equal to the thickness of the bearing edges 112 of the frame 100A, thereby making the second accessory support easier and quicker to install.

Figure 6 shows a first detailed view of the accessory support 100.

As shown in Figure 6, the inside peripheral edge 105 of the frame 100A of the accessory support 100 is equipped with fastening means for fastening one or more accessory mechanism bases (not shown) in the central opening 106. More precisely, on either side of the inside peripheral edge 105 of the frame 100A, said fastening means comprise two clip-fasteners 150 situated on either side of the orifice 111, to which snap-fastener means can fasten that are provided in register with them on a front trim plate.

The frame 100A of the accessory support 100 is also provided with clip-fastener means 140 for clip-fastening a worksite protective cover making it possible to paint the wall without staining the accessory support 100. In this example, said clip-fastener means 140 comprise an opening at each corner of the frame 30A for receiving a snap-fastener stud provided on the back face of the worksite protective cover in register with the opening.

In order to guarantee that the first and second accessories supports are aligned exactly in the juxtaposed position, the frame 100A of each accessory support 100 also has joining means 160, at each of its four corners of its outside peripheral edge 107. In this example, said joining means 160 comprise two male elements 161 projecting from the outside peripheral edge 107 of the frame 100A, and two female elements 162 of complementary shapes set back into the outside peripheral edge 107.

As shown in Figure 6, the straight portion 122 of each indentation 120 extends to the corresponding stud-receiving opening 140, so that said straight portion does not extend as far as the outside peripheral edge 107 of the frame 100A. Said straight portion 122 is then extended by a rounded portion 123 that goes around the outside of the stud-receiving opening 140 to the outside peripheral edge 107 of the frame 100A.

In a variant, and as shown in Figure 8, provision can be made for the straight portions 122 of the indentations 120 to extend to beyond the openings 140 for receiving the studs of the worksite protective cover, so that they extend as far as the outside peripheral edge 107 of the frame 100A. In this way, the stud-receiving

openings 140 are situated inside the zones of clearance 121 rather than outside said zones of clearance, in a portion of the frame 100A that is of small thickness.

In this example, the frame 100A of said accessory support is formed in one piece by molding an insulating plastics material that is not fiber-reinforced, such as acrylonitrile butadiene styrene (ABS).

The present invention is in no way limited to the embodiments described and shown, but rather the person skilled in the art may make any variant thereto that lies within the spirit of the invention.

In particular, as shown in Figure 9, it is possible to make provision for each indentation 120 to extend over the entire length of the corresponding side of the outside peripheral edge 107 of the frame 100A rather than over one half of the length of said side.

It is possible, more precisely, to make provision for each indentation 120 to have a rounded portion 125 that goes around the orifice 111 of the corresponding branch 101 -- 104 of the frame 100A, and two straight portions 124 that extend on either side of said rounded portion 125 to the adjacent indentations 120 of the frame 100A.

In this way, the four indentations 120 together define a single zone of clearance 121 that extends over the entire periphery of the frame 100A. The four indentations 120 also co-operate with the central opening 106 of the frame 100A to define a peripheral rib that surrounds said central opening 106 and that extends towards the front of the frame 100A in order to rigidify the accessory support 100.

In another variant, it is possible to make provision for the frame to have a rectangular frame rather than a square frame so as to receive a larger number of accessory mechanism bases.

In another variant, it is possible to make provision for the connection means for connecting the frame to the wall box to be provided with grip screws arranged to fasten to the inside face of the side wall of the wall box, in addition to the keyhole-shaped orifices.

These grip screws could also be arranged to fasten to the inside face of a floor box or to the back side of a cavity partition.

In another variant, it is possible, instead of the outside peripheral edge of the frame having four indentations 120 situated on respective ones of all four of its sides, to make provision for said outside peripheral edge to have only two indentations situated on respective ones of two opposite ones of its sides, symmetrically about the center of the frame.

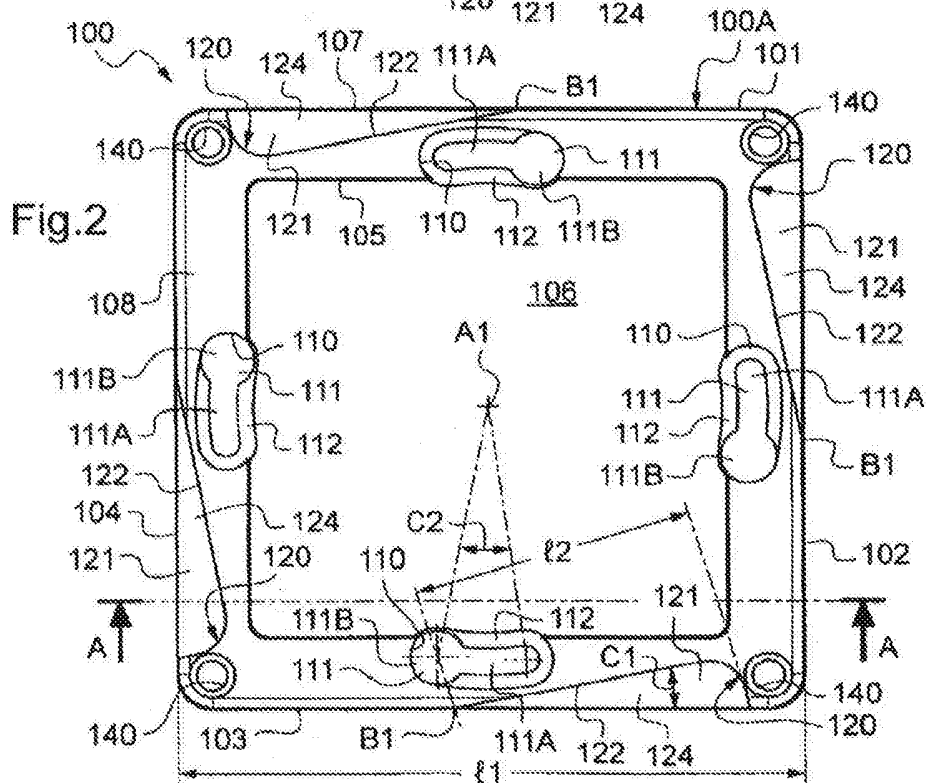
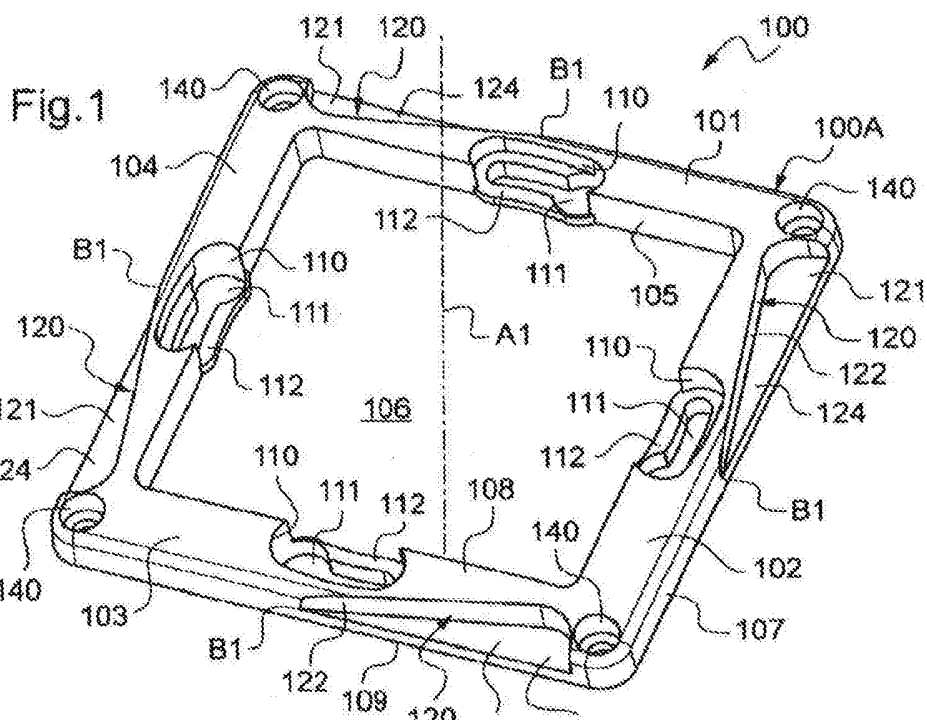
It can also be envisaged that the support has, on at least two opposite sides of the frame, two recesses extending on two opposite angular sectors centered on the middle of the corresponding side of the outer peripheral edge of the frame.

More generally, it could be envisaged that each recess extends over an area larger than an angular sector, provided that this recess includes the angular sector centered on the middle of the corresponding side of the outer peripheral edge of the frame, and that it allows a support of the same type to pivot relative thereto.

KÉSZÜLÉK TARTÓ, ÉS EGY ILYEN KÉSZÜLÉKTARTÓVAL ELLÁTOTT KÉSZÜLÉK

SZABADALMI IGÉNYPONTOK

1. Készülék tartó (100) kerettel (100A), ami legalább két hosszított, körív alakú felvevő nyílással (111) rendelkezik rögzítő csavarok (300) részére, és ami tartalmaz egy kerületi peremet (107), aminek van egy kimélyítése (120), ami egy kivágott részt (121) határol a keret (100A) elülső oldalán, **azzal jellemezve, hogy a kivágott rész (121) legalább az egyik sarok részénél van kialakítva, amit a keret (100A) kerületi peremének (107) megfelelő oldala és egy egyenes szakasz határol, amely egyenes szakasz a megfelelő oldal közepétől (B1) ferdén l2 hosszúságban terjed ki, ahol az l2 hosszúság megfelel a keret (100A) kerületi pereme (107) oldalhosszúságának (l1) negyede és fele közötti értéknek.**
2. Az 1. igénypont szerinti készülék tartó (100), ahol a keret (100A) elülső oldalától (108) kiinduló kivágott rész (121) mélysége (h1) nagyobb, mint a keret (100A) maximális vastagságának (e1) fele.
3. A 2. igénypont szerinti készülék tartó (100), ahol a kivágott rész (121) a keret (100A) elülső oldalától (108) a hátsó oldaláig (109) tart.
4. A 2. igénypont szerinti készülék tartó (100), ahol a kivágott részt (121) a keret (100A) hátsó oldalánál (109) egy fenéklap (124) határolja.
5. Az 1 – 4. igénypontok bármelyike szerinti készülék tartó (100), ahol a keret (100A) kerületi peremén (107) két kimélyítés (120) van, amik két egymással szemben fekvő oldalon, a keret (100A) középpontjára nézve szimmetrikusan helyezkednek el.
6. Az 1 – 4. igénypontok bármelyike szerinti készülék tartó (100), ahol a keret (100A) kerületi peremén (107) négy kimélyítés (120) van, amik a négy oldalon páronként a keret (100A) középpontjára nézve szimmetrikusan helyezkednek el.
7. A 6. igénypont szerinti készülék tartó (100), ahol a kimélyítés (120) hosszirányban egy olyan szakaszon (l2) fekszik, ami hosszabb, mint a keret (100A) kerületi pereme (107) oldalhosszának harmada.
8. A 6. vagy 7. igénypont szerinti készülék tartó (100), ahol a sarok rész nyílásszöge (c1) nagyobb, mint a hosszított felvevő nyílások (111) körívének nyílásszögének (c2) fele.
9. Az 1 – 8. igénypontok bármelyike szerinti készülék tartó (100), ahol a keret (100A) egy darabból van nem szálerősítéssel ellátott műanyagból formába öntve.
10. Elektromos készülék az 1 – 9. igénypontok bármelyike szerinti készülék tartóval (100) és legalább egy olyan készülék mechanizmussal, ami egy, a keret (100A) által meghatározott központi nyílásban (106) van ágyazva.



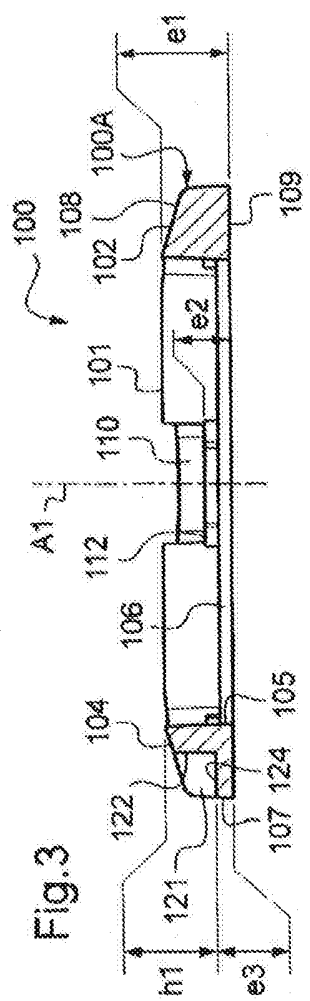


Fig.3

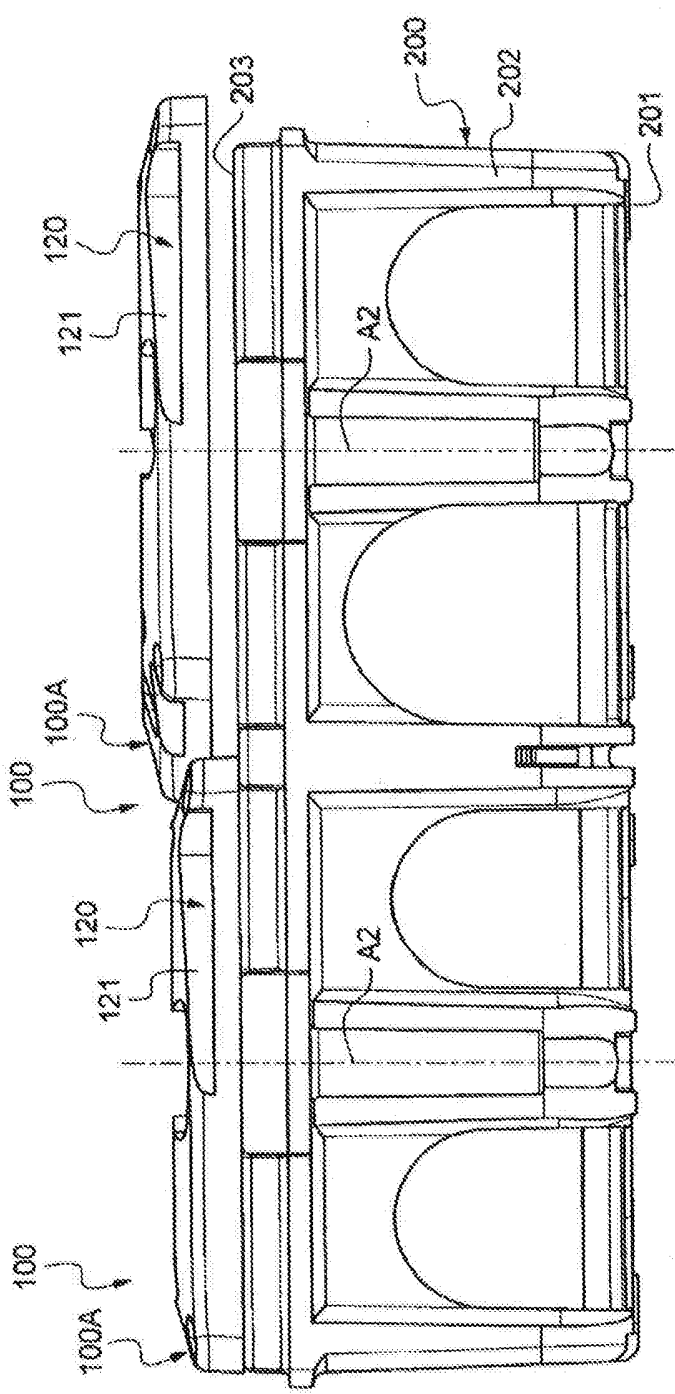


Fig.4

Fig. 5

