

Mounting Device

Description

The invention relates to a mounting device for the concealed wall-flush installation of an electrical installation device with a supporting ring in a wall mounting box inserted in a wall, which mounting device is arranged on holding brackets of the wall mounting box.

When mounting concealed installation apparatuses, so-called wall installation boxes are normally being used. In general, wall installation boxes are round hollow cylinders with standard dimensions such as height and diameter. They are inserted into prefabricated holes (e.g. by boring), and, if required, fixed in the wall with plaster or mortar.

As to installation works carried out in Germany as a rule wall installation boxes made from insulating materials, mainly from plastic, are used which are flush with the wall i.e. the mounting surface of the respective installation wall, whereas in other countries, as in Great Britain, for instance, metal installation boxes standardized by the manufacturer are used, having often a rectangular cross section.

In general, fastening of installation apparatuses in these wall boxes is made by screws that bite into the tapholes provided in the brackets arranged opposite to each other at the interior wall of the installation boxes and which serve as a support for the installation apparatus pertaining to this box. These holding and supporting brackets, depending from manufacturer,

are provided in varying distances from the front box edge, ranging from 5 to 7 mm.

Furthermore it has to be observed in this connection, that the installation of the wall mounting boxes is normally made before plasterwork is done. This entails the problem that the plaster thickness is not always constant but is likely to vary between 1 to 2 mm. This tolerance has also to be considered when selecting the respective intermediate ring.

Based upon this state of the art it is the goal of the invention to create an installation apparatus of the kind as described before, which, during the wall-flush installation of the installation apparatus, serves to bridge in a simple and cost-saving way the distances resulting between the holding brackets and the mounting surface and hence offers the possibility to mount foreign installation apparatuses with a supporting ring, i.e. those installation apparatuses that normally are being supported on the mounting surface by means of their supporting ring.

According to the invention this task is accomplished by the characteristic features of Claim No. 1. Further embodiments and improvements of the invention are subject of the subclaims.

According to the invention the device consists of a ring-shaped disk to be inserted at the front of the wall mounting box and which overlaps the same; in addition, it is provided with an opening to accommodate the installation apparatus (12) which is resting on the mounting apparatus by means of its supporting ring.

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The ring-shaped apparatus according to the invention shows a basis the size of which is determined in such a way that the respective installation unit can be inserted into the mounting apparatus, as it used to be the case with wall mounting boxes as per German regulations, and, on the other hand, can overlap the holding opening of the existing larger wall mounting box up to the edge without an additional aid. Apart from the insertion opening for the installation apparatus to be mounted, the apparatus as per the invention is equipped with further openings on one hand, through which the screws for fastening onto the holding brackets are passing, and, on the other hand, those on which the supporting ring of the respective installation apparatus can be screwed.

The adaptor ring is preferably adjusted to the cross section of the pertaining mounting box, i.e. it has also a rectangular shape, the holding brackets normally being located centrically at the respective side of the mounting box. In principle, it is also possible to use circular adaptor rings as per the invention, their outside diameter corresponding to the inside diameter of the mounting box in question.

In this case it is always provided that, the adaptor ring overlaps the wall mounting box at least partly, i.e. where the holding brackets are located in the wall mounting box so that the apparatus can be easily screwed onto the holding brackets. The distance existing between the outside surface, e.g. the plaster surface, the wall and the holding brackets, can be compensated by means of the screws - if need be, by screws of different length.



Mainly the openings mentioned for the holding screws are borings, but, for ease of installation it is also possible to provide an elongated hole or a lateral slot. As mentioned before, the fastening is made by means of screws which are either passing both through the installation apparatus and the adaptor ring or only through the adaptor ring, in which case the installation apparatus is fixed by means of additional screws connecting the supporting ring to the adaptor ring.

As per the development of the invention a terminal for the connection of an earth conductor respectively a protective conductor is provided on the side of the adaptor part as per the invention that faces the mounting box.

According to a preferred embodiment of the invention the adaptor ring consists of a corrosion-resistant, preferably galvanized press bent component made from sheet steel, but it is also possible, in accordance to a further variant, to produce the adaptor as a plastic molding.

In all application cases considered by the invention, the adaptor ring is supported by the wall surface surrounding the respective wall mounting box and it is fixed at the holding brackets provided in the wall mounting box. The installation apparatus in question, as already explained, is fixed either by the same holding screws at the holding brackets or by means of separate holding screws at the adaptor ring.

In this case, however, it can be provided, in particular for plastic adaptor rings, that the adaptor, by an elongation of the opening for the installation appara-

tus is equipped with an extension piece shaped as a hollow cylinder and fitting into the wall mounting box, the interior wall of which serves as a fastening surface for braces at the installation apparatus. In this regard it is provided that the outside diameter of the extension piece lies within the holding brackets of the mounting box or, if not possible, that appropriate diametrical longitudinal slots are provided in the cylinder wall to ensure that the adaptor ring can be inserted into the wall mounting box by preventing any rotation.

These advantageous versions and improvements of the invention and other ones as well are subject of the subclaims.

By means of an embodiment example shown in the schematic drawing, the invention, advantageous versions and improvements thereof and particular advantages of the invention shall be explained and described in detail.

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It is shown in:

Fig. 1 a longitudinal section of an installation apparatus installed in an installation wall with an intermediate ring as per the invention;

Fig. 2 a rectangular adaptor ring as per the invention in top view;

Fig. 3 a view in cavalier projection of the adaptor ring as per Fig. 2, and

Fig. 4 a further longitudinal section of an installation apparatus inserted in a mounting wall with an adaptor ring as per Fig. 2

Fig. 1 schematically shows an electrical installation apparatus 10, not specified in detail, provided for a concealed installation, e.g. a socket. This installation apparatus is inserted in a hole 13 of an installation surface 12 containing a mounting box 14. As usual, the electrical installation apparatus 10 is equipped with a female connector 16 on which a supporting ring 18 is fixed.

As a rule, the electrical installation apparatus 10 is inserted with its female connector 16 into the mounting box 14 located in the opening 13, the supporting ring 18 with its front face being put against the mounting surface 12, thus ensuring a fixed position of the apparatus.

The example shown here, however, concerns such a version of the mounting box 14 as per British Standards, the inside diameter of which exceeds the diameter of



the supporting ring 18, and not that version with a smaller diameter as per German Standards, for instance, so that a conventional mounting is not possible. Instead of this, the mounting box 14 as shown is provided for the mounting of special installation apparatuses that are not shown here in detail. For this purpose holding brackets 20, fixed at the interior wall and bent inwards, i.e. showing radially towards the centre, are provided at a determined distance from the front edge, thus serving as a support for the particular installation apparatus in question.

However, to properly insert an installation apparatus 10 equipped with a supporting ring 18 conforming to German Standards into a mounting box 14 already available on site, the invention here provides an adaptor ring 22 to bridge the gap between the edge of the wall mounting box 14 on one hand and the supporting ring 18 on the other hand, thus allowing the fastening of the installation apparatus. For this purpose the invention provides that the adaptor ring 22 is fixed by means of the screws 24 onto the holding brackets 20.

The adaptor ring can either be a rectangular ring 14, according to the top view shown in Fig. 2, or a circular ring 15. In both cases the distance between the holding bracket 20 and the edge of the opening 13 (i.e. the mounting surface 12) is bridged by the adaptor ring 22.

As per the example shown in Fig. 2 the adaptor ring 22 is equipped with elongated borings with a circular end - so-called keyholes 22 - located diametrically opposite to each other and forming a circular arc, that are forming one contact face each, cooperating by

means of a bolt and nut with the holding bracket 20 in the mounting box 14.

Fig. 3 shows a perspective side view of the adaptor ring 22 given in Fig. 2, which clearly shows that the adaptor ring 22 is equipped with a terminal 30 only on the contact side adjacent to the wall, that serves as a connection 30 for an earth or protective conductor not shown in the drawing. Fig. 4, on the other hand, schematically shows a longitudinal section of the wall mounting box 14 inserted into the mounting box 14 fixed in a hole 13 of a mounting surface 12 that accommodates an installation apparatus 10 shown with its contours. The essential difference to the illustration in Fig 1 is that the wall mounting box 14 is not installed flush with the wall but sunk mounted into the wall opening. The distance between the mounting surface and the holding brackets, however, is bigger than that shown in Fig. 1. Nevertheless, it can be easily seen that this bigger distance does not entail any problems, since only longer screws 24 are required to ensure a sufficient fastening in this case, too.

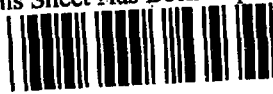
In the example shown the fastening of the installation apparatus 10 is provided by screwing of supporting ring 18 alongwith adaptor ring 22 onto the holding brackets 20. This requires, however, that the radial distance of the opposite keyholes 26 exactly equals the distance of the holding brackets 20.

Since the wall mounting boxes as per British Standard, however, may differ in their dimensions, their inside diameter ranging from 65 mm to 75 mm, the direct mounting of the installation apparatus 10 is limited to such cases in which the distances of the holding brackets 20 are equal to those of the keyholes 26. In

all other cases, a separate fastening of adaptor ring 22 and installation apparatus 10 cannot be avoided.

The separate mounting, however, can also be advantageous, if there is an exchange of the installation apparatuses 10 because then an exchange of the adaptor disk 22 as per the invention will not be required. This means that there is not only one item less to be removed and re-installed afterwards but that the adaptor ring 22 cannot get lost since it is even not required to remove it.

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Patent Claims

1. Mounting device (22) for the concealed wall-flush installation of an electrical installation device (10) with a supporting ring (18) in a wall mounting box (14) inserted in a wall (12, which mounting device (22) is arranged on holding brackets (20) of the wall mounting box (14), characterized in that the device (22) is provided by an adaptor ring (22) which, being mounted at the front side of the wall mounting box (14), overlaps the box and is provided with an opening (23) to accommodate the installation device (10), that is resting on the device (22) with its supporting ring (18).

2. Mounting device according to Claim 1, characterized in that the adaptor ring (22) is located between the mounting surface (12) and the supporting ring (18) and bridges the distance between the wall mounting box (14) and the installation device (10).

3. Mounting device according to Claim 1 or 2, characterized in that the adaptor ring (22) is provided with a terminal 30 on the side facing the wall mounting box (14).

4. Mounting device according to one of the preceding claims, characterized in that the adaptor ring (22) is made as a sheet steel punch bend component.

5. Mounting device according to Claim 4, characterized in that the adaptor ring (22) is covered with an anti-corrosion coating.

6. Mounting device according to Claim 5, characterized in that a zinc coating is provided for the corrosion protection.

7. Mounting device according to Claim 5, characterized in that a cadmium coating is provided for the corrosion protection.

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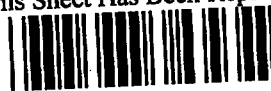
8. Mounting device according to Claim 5, characterized in that the adaptor ring (22) is a plastic molding piece.

9. Mounting device according to one of the preceeding claims, characterized in that the adaptor ring (22) is of a rectangular form.

10. Mounting device according to one of the preceeding claims, characterized in that the adaptor ring (15) is of a circular form.

11. Mounting device according to one of the preceeding claims, characterized in that the adaptor ring (22) is provided at its rear with an extension piece of a hollow-cylindrical form, the inside diameter of which corresponds to the opening (23) in the adaptor ring (22) for accommodation of the installation device.

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