

SURFACE MOUNTABLE ELECTRICAL FITTING

This invention relates to an electrical fitting, such as a switch or socket, which is adapted for securing to a support structure such as a wall or other support surface.

A well-established design for a wall mountable electrical fitting of a so-called flush fitting type comprises a face plate to which a separately pre-formed body section is secured. The face plate comprises apertures for retention screws by means of which the fitting may be secured to a support surface, typically via a mounting box embedded in the support surface. The face plate also is apertured for communication with the body, for example to allow the pins of a plug to extend through the face plate into engagement with the body in the case of a socket or, in the case of a switch, to locate at least a part of control means for control of a switching device associated with the body.

To minimise cost and weight it is conventional for the rear face of a face plate to comprise one or more recesses and stiffening ribs. The stiffening ribs may be defined by four edge formations at the outer periphery of a rectangular shaped face plate and the face plate also may comprise at least one stiffening rib that lies inwards of the face plate periphery.

For use of an electrical fitting of the aforescribed type a cavity is formed in the support surface and has a depth sufficient to accommodate a mounting box which, in turn, is selected to have a depth sufficient to accommodate the body section of the fitting.

To enable the required depth of the mounting box to be kept to a minimum, and thus avoid the need to form an unduly deep cavity in the support surface, it is usual for the front face of the body section to lie within or adjacent the recess of the face plate, in contact with the rear face of the face plate.

The face plate will have a larger footprint than that of the body section such that the outer edge regions of the face plate can abut the support surface where it surrounds the mounting box when at least part of the body section lies within a mounting box. Thus at a position between the side faces of the body section and the face plate edge formations the face plate conveniently defines recess regions in which a retainer, such as a retention screw, is stored until required for securing the fitting to a pre-installed mounting box.

The retention screws or other such retainers usually are held in position in the rear recess(es) of the face plate by retention means in the form of small deformable location lugs, these being moulded integrally with the face plate in the case of a face plate of plastics material. However, because of the small space surrounding the retainers their removal from the location lugs is not always easily accomplished. This can be a particular problem when an installer is working in a cold environment which both reduces the manual dexterity of the installer as well as increasing the stiffness of the location lugs such that an undesirably greater force is required in order to remove the retainers.

Furthermore, commonly it is necessary to employ a tool, such as the end of a screwdriver, in order to prise the retainer from the retention means.

The present invention seeks to provide an improved surface mountable electrical fitting in which the aforescribed disadvantages of conventional electrical fittings are mitigated or overcome.

In accordance with one aspect of the present invention a surface mountable electrical fitting comprises a face plate to the rear of which a body section is secured, said face plate comprising at least one aperture through which a retainer may extend for securing the face plate to a support structure and the electrical fitting additionally comprising retention means for releasably securing a retainer to the electrical fitting until the retainer is required to be inserted through the face plate aperture, wherein the retention means is adapted to hold a retainer at a position rearwards of the rear extremity of the

face plate and comprises two spaced apart formations a first of which, in use in combination with a retainer, at least partly encircles an elongate retainer at one end region thereof and a second formation that is in the form of a clip which releasably secures the retainer at a second end region thereof.

The retention means may extend from either the face plate or the body section of the electrical fitting.

Preferably the retention means extends from the body section to hold a retainer at a position rearwards of the rear extremity of the face plate.

In accordance with another aspect of the present invention a surface mountable electrical fitting comprises a face plate to the rear of which a body section is secured, said face plate comprising at least one aperture through which a retainer may extend for securing the face plate to a support structure and the electrical fitting additionally comprising retention means for releasably securing a retainer to the electrical fitting until the retainer is required to be inserted through the face plate aperture, wherein the retention means is adapted to hold a retainer at a position rearwards of the rear extremity of the face plate and wherein the retention means extends from the face plate of the electrical fitting.

The retention means preferably is of a non-rupturable and/or re-usable type whereby, if necessary, a retainer which has been removed from the retention means may be replaced in that retention means.

~~Preferably the retainer retention means comprises two spaced apart formations a first of which, in use in combination with a retainer, at least partly encircles an elongate retainer at one end region thereof and a second formation that is in the form of a clip which releasably secures the retainer at a second end region thereof.~~

The first formation need not necessarily fully encircle the retainer, but preferably encircles the retainer sufficiently such that the retainer can be

removed from the first formation only by withdrawal in a direction substantially parallel with the length of the retainer. The first formation preferably does not tightly engage the retainer but instead acts as a fulcrum to allow tilting of the retainer. Accordingly, for removal the retainer may be tilted slightly for release from the second formation and then withdrawn lengthwise from the first formation. Replacement of the retainer may then be effected by the simple reversal of these steps.

The retention means may be moulded integrally as part of the electrical fitting, for example as an integral part of the body section. Alternatively it may be formed as a discrete component which is then secured to the electrical fitting, for example to the body section.

For use of a retainer in the form of a screw the second formation may comprise a profile which is shaped, for example of a wedge shape in cross-section, whereby it provides an interference fit engagement with the screw thread. Thus provision of a shake proof retention of the retainer is facilitated.

One embodiment of the present invention will now be described, by way of example, with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a view of the rear of an electrical socket in accordance with the present invention;

Figure 2 is a view of the front of the socket of Figure 1;

Figure 3 shows in perspective part of the rear of the socket;

Figure 4 is a detailed view of part of the rear of the socket;

Figure 5 is a perspective view of the part of the socket shown in Figure 4 in the absence of a retainer screw;

Figure 6 is a side view of socket of Figure 1 in the direction of the arrow A of Figure 1, and

Figure 7 is a view in the same direction as Figure 6 but with the retainer screw tilted to a position for removal.

An electrical fitting in the form of a two-gang mains powered socket 10 comprises a moulded plastics face plate 11 and a body section 12 comprising a plastics moulding 13 which has secured thereto in known manner an assembly of electrical conductors and switches.

The body section 12 comprises an earthing strip 14 which extends between earth connections of the body section and which has two ear formations 15 which are aligned with location apertures 16 in the face plate 11. The ears 15 are each secured to the face plate in known manner by means of rivets 17. The rivets and optionally other securing means such as click fit formations hold the body section firmly against the rear face 18 of the face plate.

The rear face 18 of the face plate comprises a plurality of stiffening ribs, including a peripheral rib 19 aligned with the periphery of the face plate and inward ribs 20.

The body section comprises two retention means 21 each for storage of a retainer screw 22 which is removable for inserting through an aperture 16 to secure the socket to ~~a mounting~~ a mounting box (not shown). Each retention means holds a retainer screw at a position beyond and well clear of the rear face 18 and ribs 19, 20 of the face plate.

Each retention means comprises three upstanding formations 23, 24, 25 (see Figures 5 & 6). One formation 23 is of a U shape and has, in cross section, a pair of V shaped confronting edges 26 which locate as an interference fit with the thread of a retainer screw at an end region of the screw nearest the screw head 27.

A second formation 24 comprises an aperture 28 through which the other end region of the screw extends, the aperture being of a diameter larger than that of the screw such that the screw is able to tilt freely when the first end region is lifted out from the U shaped first formation. The second formation also comprises a support surface 29 which acts as a fulcrum for pivotal movement of the screw.

A third formation 25 acts as an end stop such that when a screw is introduced into the second formation for retention relative to the body section the screw head is held spaced from the U shaped first formation.

In use the U shaped first formation 23 positively engages with the screw to prevent inadvertent displacement. However the screw head end region may be readily lifted from the position shown in Figure 6 to the tilted position as shown in Figure 7 and from which the screw then may be readily withdrawn from the second formation in the lengthwise direction of the screw.

Replacement of the screw requires merely a reversal of the aforescribed removal procedure.

Accordingly the present invention provides an electrical fitting having retention means which is able securely to retain a screw or like retainer and to achieve that in a manner which enables the retainer to be easily removed or replaced. The need for awkward action to prise a retainer from a position within a face plate recess is eliminated.

CLAIMS

1. A surface mountable electrical fitting comprising a face plate to the rear of which a body section is secured, said face plate comprising at least one aperture through which a retainer may extend for securing the face plate to a support structure and the electrical fitting additionally comprising retention means for releasably securing a retainer to the electrical fitting until the retainer is required to be inserted through the face plate aperture, wherein the retention ~~means is~~means is adapted to hold a retainer at a position rearwards of the rear extremity of the face plate and comprises two spaced apart formations a first of which, in use in combination with a retainer, at least partly encircles an elongate retainer at one end region thereof and a second formation that is in the form of a clip which releasably secures the retainer at a second end region thereof.

2. An electrical fitting according to claim 1 wherein the retention means extends from the face plate of the electrical fitting.

3. An electrical fitting according to claim 1 wherein the retention means extends from the body section of the electrical fitting.

4 A surface mountable electrical fitting comprising a face plate to the rear of which a body section is secured, said face plate comprising at least one aperture through which a retainer may extend for securing the face plate to a support structure and the electrical fitting additionally comprising retention means for releasably securing a retainer to the electrical fitting until the retainer is required to be inserted through the face plate aperture, wherein the retention means is adapted to hold a retainer at a position rearwards of the rear extremity of the face plate and wherein the retention means extends from the face plate of the electrical fitting.

5. An electrical fitting according to claim 4 wherein the retention means comprises two spaced apart formations a first of which, in use in combination with a retainer, at least partly encircles an elongate retainer at one end region thereof and a second formation that is in the form of a clip which releasably secures the retainer at a second end region thereof.

6. An electrical fitting according to any one of the preceding claims wherein the retention means is moulded integrally with that part of the electrical fitting from which it extends.

~~57.~~ An electrical fitting according to any one of claims 1 to 3 wherein the retention means is a discrete component secured to ~~at least one of the face plate and the body section of the electrical fitting~~ that part of the electrical fitting from which it extends.

~~68.~~ An electrical fitting according to any one of the preceding claims wherein the retention means is of a non-rupturable and/or re-useable type whereby a retainer may be removed from and then replaced in said retention means.

~~7.~~
~~An electrical fitting according to any one of the preceding claims wherein the retention means comprises two spaced apart formations a first of which, in use in combination with a retainer, at least partly encircles an elongate retainer at one end region thereof and a second formation that is in the form of a clip which releasably secures the retainer at a second end region thereof.~~

~~89.~~ An electrical fitting according to any one of the claims 1 to 3 or 5 to 8 wherein the first formation at least partly encircles the retainer whereby following release from the second formation the retainer is removable from the first formation only by withdrawal in a direction substantially parallel with the length of the retainer.

~~9~~10. An electrical fitting according to any one of the claims 1 to 3 or 5 to 9~~claim 7 or claim 8~~ wherein the first formation acts as a fulcrum to allow tilting of the retainer.

~~40~~11. An electrical fitting according to any one of the claims 1 to 3 or 5 to 10~~any one of claims 7 to 9~~ wherein the first and second formations are arranged such that a retainer may be tilted slightly for release from the second formation and then withdrawn lengthwise from the first formation.

~~41~~12. An electrical fitting according to any one of the claims 1 to 3 or 5 to 11~~any one of claims 7 to 10~~ wherein the second formation comprises a profiled surface which, in use, provides an interference fit with the screw thread of a screw threaded type retainer.

~~42~~13. An electrical fitting according to claim ~~10~~ and substantially as hereinbefore described.

14. An electrical fitting according to claim 4 and substantially as hereinbefore described.

~~43~~15. An electrical fitting assembly comprising the combination of an electrical fitting according to any one of the preceding claims and a retainer located in the retention means of the electrical fitting.

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