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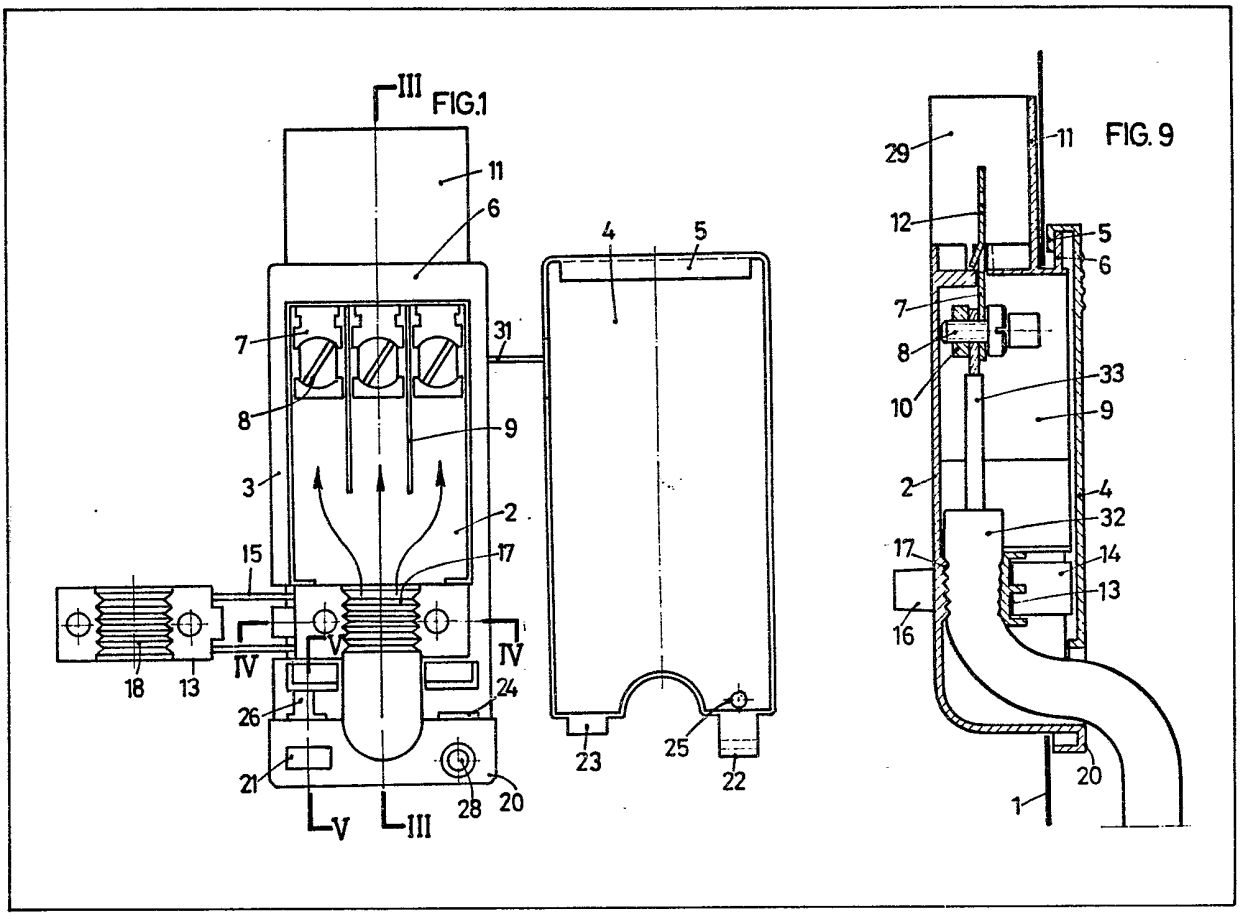
(54) **Electrical connectors**

(57) An electrical connector fittable to an aperture in the casing (1) of an electrical appliance comprises a box -form body (2) of electrical insulating material provided with a flange (3) around an open face of the body and which extends to a rim that projects over and remains lodged in edges of the aperture when the connector is fitted to the appliance; and a cover (4) having at its edge a rim (5) for attachment to the flange (3) of the body and held thereto by means of a protrusion in the form of a lug (23) which engages with a slot (24) defined by the flange (3) of the body (2).



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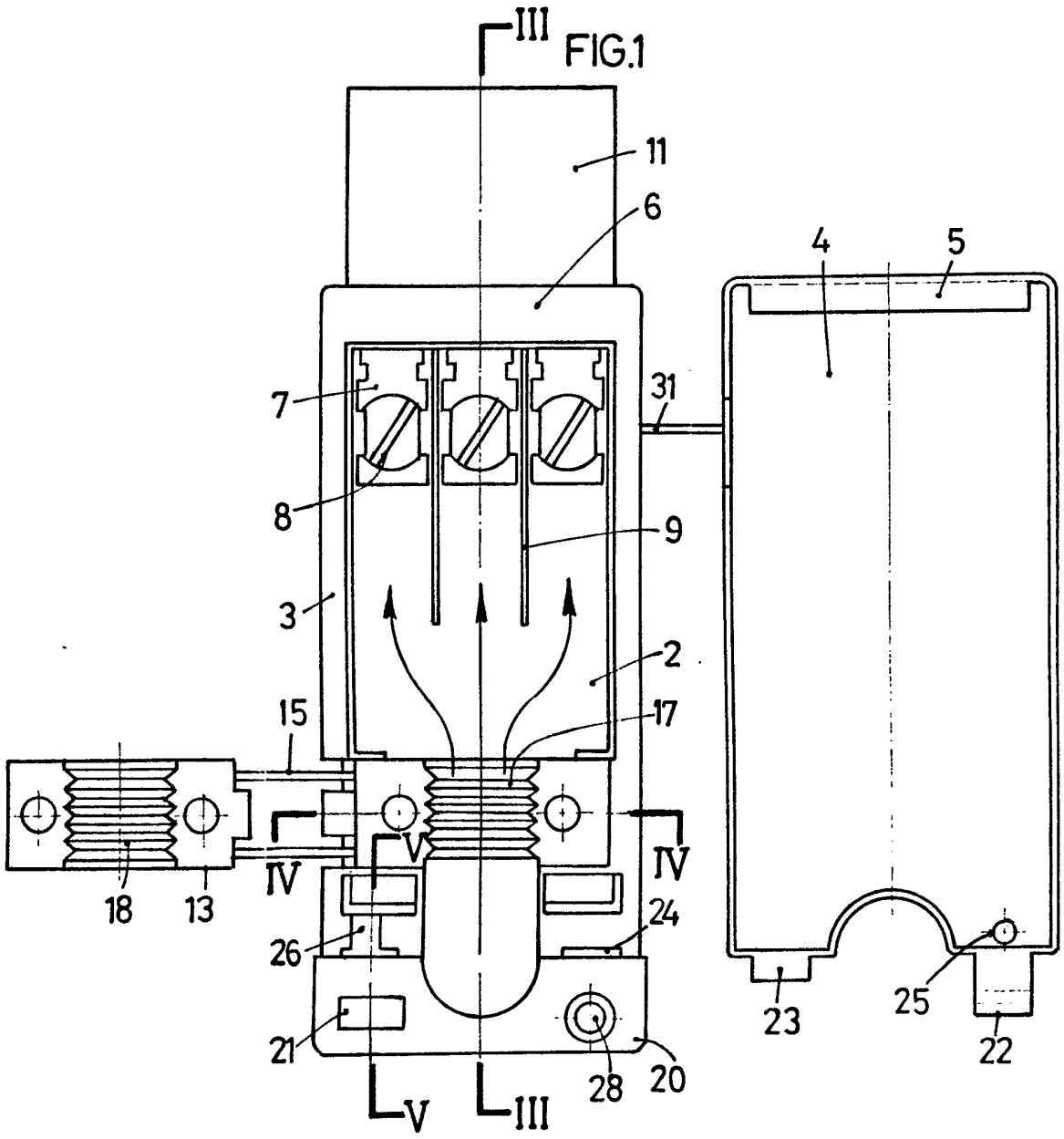


FIG.1

FIG. 2

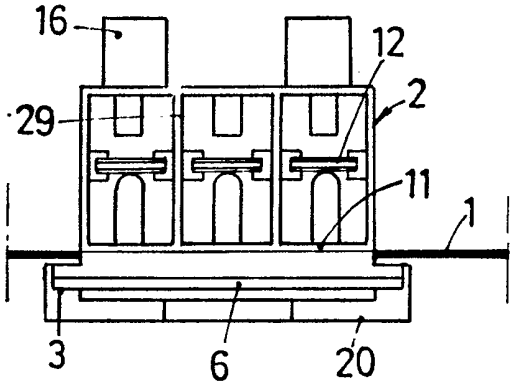


FIG. 3

FIG. 3

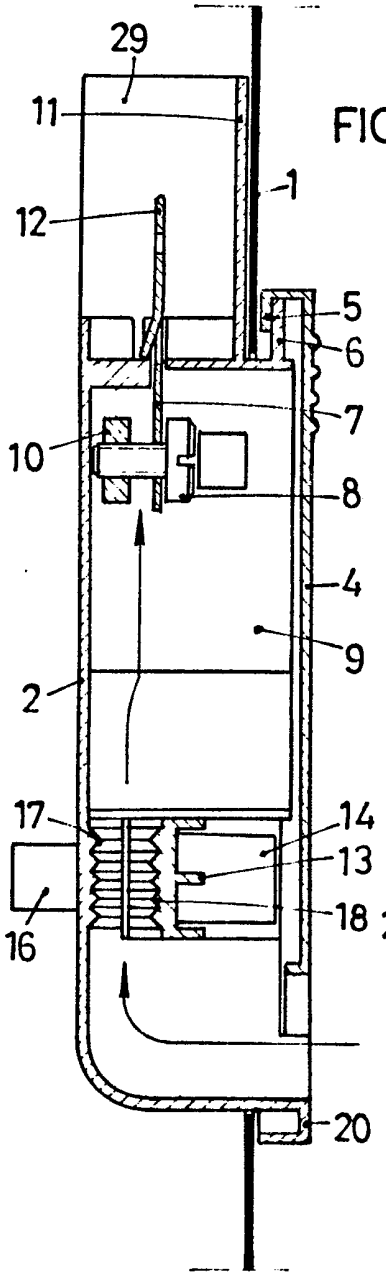


FIG. 5

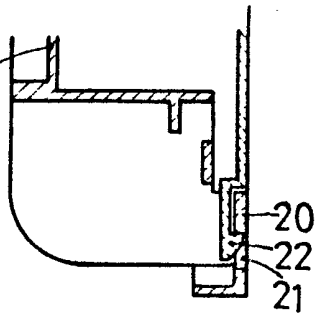


FIG. 6

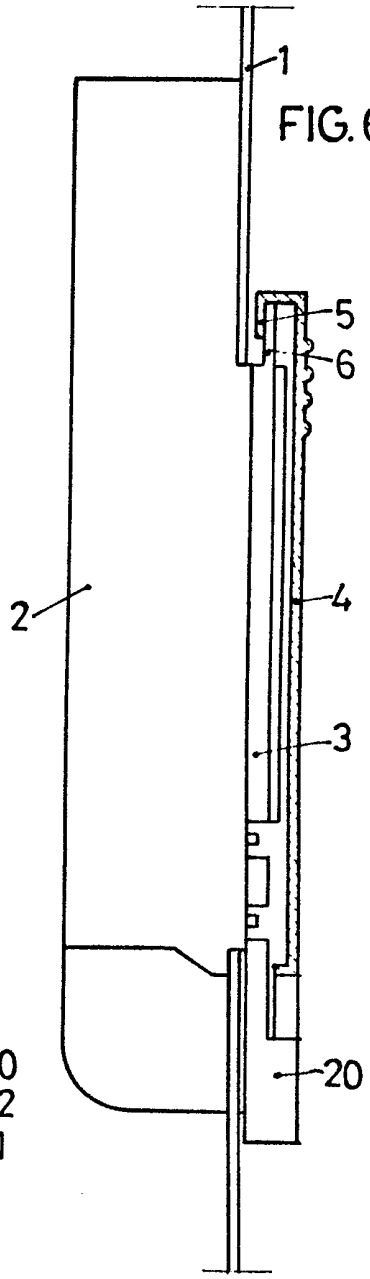


FIG. 4

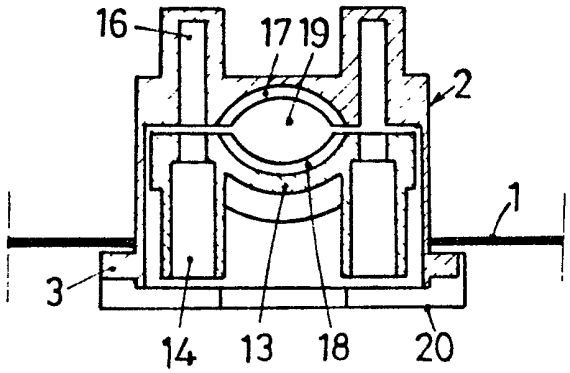


FIG. 7

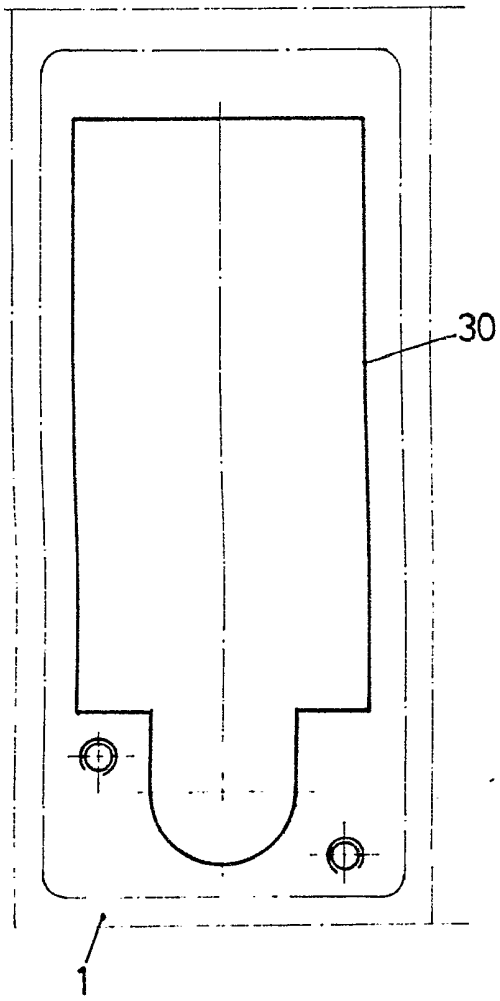


FIG. 8

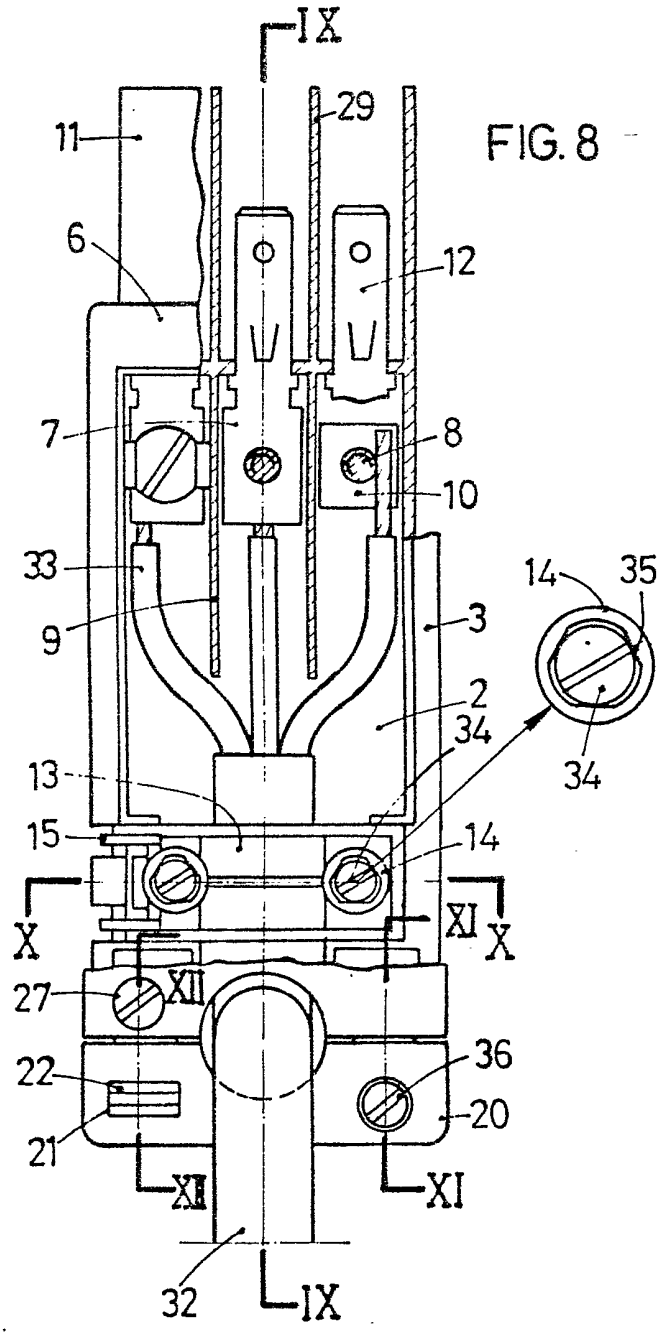
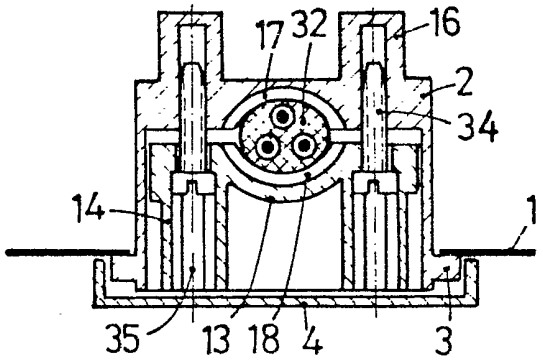


FIG. 10



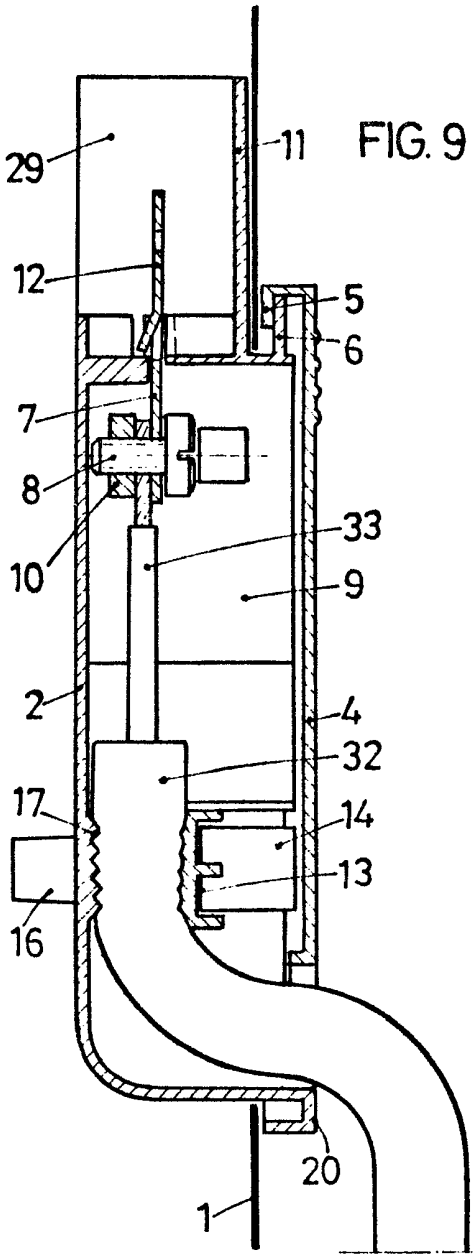


FIG. 9

FIG. 11

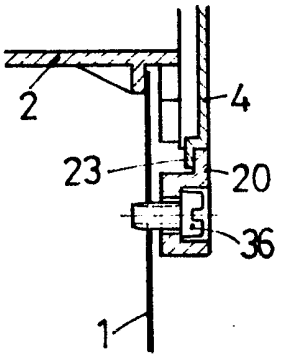
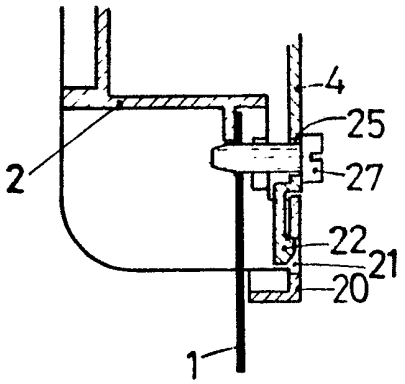


FIG. 12



SPECIFICATION

Electrical connectors

This invention relates to electrical connectors. It is particularly concerned with a connector which can be attached, for example, to the casing of an electrical domestic appliance with the object of receiving the terminals of a supply cable and thus providing for the connection of the supply cable to the appliance.

According to the present invention there is provided an electrical connector fittable to the casing of an electrical appliance and comprising a box-form body of electrical insulating material provided with means of attachment to an aperture in said casing, this means consisting of a flange around an open face of the body and which extends to a rim that projects over and remains lodged in edges of said aperture when the connector is fitted to the appliance; and a cover having at its edge a rim for attachment to said flange of the body and held thereto by means of a protrusion in the form of a lug which engages with a slot defined by the flange of the body. With this connector fitted to an electrical domestic appliance and serving to connect a supply cable to the appliance, should the supply cable have to be changed due, for example, to a mechanical or electrical defect, this operation can be carries out without having to have access to the interior of the appliance and in consequence without interference with the electrical installation of the appliance. The operation can be undertaken by an electrician, or even by the user of the appliance, having a minimum of manual skill.

As will be described hereinafter, the connector constitutes a junction box with terminal connections to which the conductors of a supply cable can be attached, the terminal connections being of adequate number, as for example and frequently, for two conductors in the case of alternating current with a third for the earthing conductor for neutralising the casing or frame of the appliance. The connector has means for retaining the body of the cable at a point adjacent the connected extremities of the cable such that pulling effort on the cable will not effect the connections to the terminals. The cover serves as a protective cover that isolates the connections and prevents introduction of extraneous objects, while being removable should this be required by anyone needing to inspect the connections or to change the supply cable.

For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings, in which:—

Figure 1 is a front view of an electrical connector with a cover and a cable retention component shown remote from a main body of the connector,

Figure 2 is a plan view of the connector,

Figures 3, 4 and 5 are sections on lines III-III, IV-IV and V-V, respectively in Figure 1,

Figure 6 is a side view of the connector with its cover in position,

Figure 7 shows a suitable aperture, for the connector, provided in the casing of an electrical appliance to which the connector is to be fitted,

Figure 8 demonstrates connection of a three conductor cable, and

Figures 9 to 12 are longitudinal and transverse cross-sectional views of the connector and of some of its component parts.

The connector has a body in the form of a box 2 which is for fitting in a rectangular aperture 30 in the casing 1 of, for example, a domestic electrical appliance. The box 2 is made of electrical insulating material and has formed thereon a flange 3 around its front face, which face is open, and to which is fitted the cover 4 which is rectangular and provided with a flanged edge on its periphery and a rim 5 which hooks on to one portion 6 of the flange 3 of the box 2.

In the interior of the box 2 are provided the terminal connections which comprise terminal strips 7, screws 8 and captive nuts 10 contained within housings provided in the upper part. Dividers 9 separate the terminals. There is a prolongation 11 of the body 2 upwards that has dividers 29 which separate the conductors entering the body of the appliance to which the connector has been attached, these conductors being secured at their extremities to the upper ends 12 of the terminal strips 7.

A yoke 13 serves as a retention means for the supply cable and is provided with two tubular extensions 14 designed each to accept a screw for attachment of the yoke 13 in conjunction with recesses provided in tubular extensions 16 on the rear face of the body. Accidental separation or loss of the yoke 13 is prevented by means of plastics connecting ties 15.

The interior 17 of the box 2 and the central section 18 of the yoke 13 define a space 19 in which the supply cable is held, ribs and grooves provided transversely contributing to the retention effect.

A protrusion 20 at the lower part of the flange 3 defines, with the cover 4, a central orifice for entry of the cable and has to one side an opening 21 designed to accept and retain a lug 22 formed by a derivation of the cover 4 at its lower end. Similarly a lug 23, which is a further derivation of the cover, is inserted into a slot 24 provided in the flange 3 such that, together with the parts 5 and 6 described above, the cover is securely held in place once the supply conductors have been connected. An orifice 25 serves to take a screw 27 which passes through an opening 26 provided in the flange 3 of the connector box and then screws into an orifice provided in the casing of the appliance to which the connector is fitted. Similarly an orifice 28 on the lower protrusion 20 of the box 2 serves to take a screw 36 which also screws in to an orifice provided for this purpose in the casing of the appliance.

The aperture 30, of which the shape and dimensions may be seen in Figure 7, allows the box 2 to be introduced into the inside of the appliance with the flange 3 remaining on the outside, the flange extending to the rim 5 that projects over and remains lodged in an edge of the aperture 30.

A tie 31 of a plastics material integral with the box 2 and its cover 4 prevents possible separation and loss of the cover.

A cable 32 on entering the connector takes the form of a double elbow as may be seen in Figure 9, such that the extremities of its conductors 33, once they have been bared, may be secured to the terminal strips 7 by

means of the screws 8.

So as to prevent their possible loss, screws 34 held in the tubular extensions 14 of the retaining yoke 13 are themselves retained by means of ribs 35 formed on the inner walls of the tubular extensions 14 as may be seen in Figure 8.

CLAIMS

1. An electrical connector fittable to the casing of an electrical appliance and comprising a box-form body of electrical insulating material provided with means of attachment to an aperture in said casing, this means consisting of a flange around an open face of the body and which extends to a rim that projects over and remains lodged in edges of said aperture when the connector is fitted to the appliance; and a cover having at its edge a rim for attachment to said flange of the body and held thereto by means of a protrusion in the form of a lug which engages with a slot defined by the flange of the body.

2. A connector as claimed in claim 1, in which an electricity supply cable connected thereto is retained, on its entry through an opening formed by a combination of part of the cover and the body flange, by a yoke having tubular extensions housing retaining screws in conjunction with housings defined by a wall of the body.

3. A connector as claimed in claim 1 or 2, wherein there are provided insulating means for connection terminals of the connector, these means being provided by independent compartments for the terminals into which compartments protrude the ends of metal strips which receive the conductors of a cable to be connected to the connector, and wherein on the appliance side of the connection terminals there are dividers corresponding to the insulation means.

4. An electrical connector fittable to the casing of an electrical appliance, substantially as hereinbefore described with reference to the accompanying drawings.

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