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EARLIEST PRIORITY CLAIMED	COUNTRY	NUMBER	DATE			
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NOTE: The country must be indicated by its International Abbreviation - see schedule 4 of the Regulations

54	TITLE OF INVENTION
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" A DOMESTIC ELECTRICAL DISTRIBUTION DEVICE "

57	ABSTRACT (NOT MORE THAN 150 WORDS)
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NUMBER OF SHEETS	19
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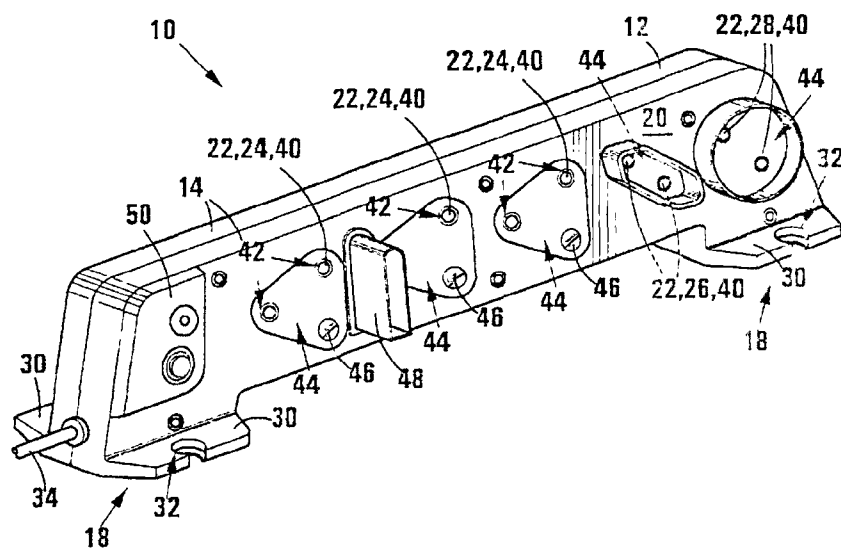
The sheet(s) containing the abstract is/are attached.

If no classification is furnished, Form P.9 should accompany this form.  
The figure of the drawing to which the abstract refers is attached.



WO 03/010859 A1

(54) Title: A DOMESTIC ELECTRICAL DISTRIBUTION DEVICE



(57) **Abstract:** This invention relates to a domestic electrical distribution device (10) which includes a plurality of electrical socket sets (22), each socket set (22) being arranged for receiving a complementary electrical plug, a connection arrangement (34) for electrically connecting the socket sets (22) to an electrical power supply, and a housing (12) in which the socket sets (22) are located. The housing (12) includes two opposed socket walls (20), the socket walls having suitably positioned access openings (42) therethrough for permitting access for connection by the plugs to the socket sets (22), such that at least one socket set (22) is accessible by a complementary plug through one of the socket walls (20), and a plurality of socket sets (22) are accessible by complementary plugs through the other socket wall (20). Preferably, the device has different types of socket sets (22), so that the distribution device (10) is connectable to different types of electrical plugs.

## A DOMESTIC ELECTRICAL DISTRIBUTION DEVICE

**This invention** relates to a domestic electrical distribution device.

According to the invention, there is provided a domestic electrical distribution device which includes:

a plurality of electrical socket sets, each socket set being arranged for receiving a complementary electrical plug;

a connection arrangement for electrically connecting the socket sets to an electrical power supply; and

a housing in which the socket sets are located, the housing including two opposed socket walls, the socket walls having suitably positioned access openings therethrough for permitting access for connection by the plugs to the socket sets, such that at least one socket set is accessible by a complementary plug through one of the socket walls, and a plurality of socket sets are accessible by complementary plugs through the other socket wall.

Typically, each socket set comprises a plurality of socket defining

elements, each socket defining element being for receiving a pin of a complementary electrical plug, the access openings being arranged in sets of openings, such that each socket set has a set of access openings associated therewith, the access openings of each set of access openings being in register with the socket defining elements of the associated socket set.

The distribution device may have different types of socket sets, so that the distribution device is connectable to different types of electrical plugs. A plurality of socket sets may be accessible through both of the socket walls.

The housing may be elongated, the sets of access openings in each of the socket walls being spaced in series along the length of the associated socket wall.

Both socket walls may have the same arrangement of access opening sets, each access opening set being positioned in register with a corresponding access opening set on the opposite socket wall, so that each pair of registering access opening sets are for receiving the same type of electrical plug.

The access openings of each set of access openings may be out of register with the access openings of the corresponding access opening set on the opposite socket wall.

Preferably, the connection arrangement includes an electrical supply cable.

Conveniently, the housing may have a base for supporting the housing on a support surface, the socket walls extending transversely from the base and substantially parallel to each other.

At least some of the access openings may be provided with associated shutter members.

The distribution device may include a protection unit connected in series between the connection arrangement and the socket sets. In one embodiment of the invention, the protection unit is a thermal cutout device.

At least one of the electrical socket sets may be for receiving a removable plug-in module, such as a surge protection plug-in module.

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

Figure 1 is a schematic three-dimensional view of a domestic electrical distribution device in accordance with the invention;

Figure 2 is a schematic plan view of the distribution device of Figure 1;

Figure 3 is a schematic side elevation of the distribution device of Figure 1;

Figure 4 is a view corresponding to Figure 3, taken from an opposite side of the distribution device; and

Figure 5 is a schematic three-dimensional view of a further embodiment of a domestic electrical distribution device in accordance with the invention.

With reference to Figures 1 to 4 of the drawings, reference numeral 10 generally indicates a domestic electrical distribution device in accordance with the invention. The device 10 includes an elongated housing 12 which comprises two longitudinal halves 14. The halves 14 are mouldings of a thermo-plastics material, the halves 14 being connected together by means of snap-fit engagement of complementary sockets (not shown) with spigots (not shown) provided on the halves 14, so that the housing 12 has a hollow interior.

The housing 12 defines a base 18 and two opposed longitudinal socket walls 20 which are parallel to each other and extend transversely to the base 18. A plurality of electrical connector sets, or socket sets 22, are housed in the hollow interior of the housing 12, each socket set 22 comprising a number of socket defining elements 40. Each socket defining element 40 is in the form of an elongated hollow copper tube which is shaped to receive a complementary pin (not shown) of an electrical plug (not shown), in conventional fashion. In this example, the lengthwise direction of all the socket defining elements 40 are parallel to the base 18 and normal

to the socket walls 20. The device 10 is provided with a number of different types of socket sets 22, which includes 3-pin socket sets 24, Euro-type socket sets 26, and DIN-type socket sets 28.

Each socket defining element 40 has an associated registering access opening 42 through one of the socket walls 20, to provide access by a complementary pin of a suitable electrical plug to the socket defining element 40. The access openings 42 are arranged in sets 44, such that each socket set 22 has a set 44 of access openings 42 in register with it, to permit access for connection by a complementary electrical plug. Some of the access openings 42 are provided with shutter members 46 for automatically closing the access openings 42 when no electrical plugs are passed through the associated access opening sets 44.

As can best be seen in Figures 3 and 4 of the drawings, both socket walls 20 have an arrangement of access opening sets 44 for permitting access to different types of socket sets 22. Each socket wall 20 thus provides access opening sets 44 for three 3-pin connector sets 24, a Euro-type connector set 26 and a DIN-type connector set 28. The socket sets 22 and the associated access opening sets 44 are arranged similarly on both socket walls 20, so that each set 44 of access openings 42 has an access opening set 44 in register therewith on the opposite socket wall 20, each pair of registering access opening sets 44 being for plugs of the same type.

However, the socket defining elements 40 of each pair of registering socket sets 22 are out of register with one another. This can best be seen in Figures 3 and 4 of the drawings, where access openings 42 on the obscured socket wall 20 are shown in broken lines. The socket defining elements 40 of each pair of registering socket sets 22 are thus located in spaces defined between the socket defining elements 40 of the associated socket set 22. As can be seen in Figures 3 and 4, one socket set 24 of each pair of 3-pin socket sets 24 is rotated through an angle of  $60^\circ$  relative to the associated registering socket set 24, when the device 10 is viewed in side view, normal to the socket wall 20, while the socket sets 22 of each pair of DIN-type socket sets 28 and Euro-type socket sets 26 are at an angle of  $90^\circ$  to each other.

The device 10 includes a number of conducting strips (not shown) which electrically connect the socket defining elements 40 to a connection arrangement in the form of an electrical supply cable 34. Although not shown in the drawings, the supply cable 34 is provided with an electrical plug for connection to a conventional electrical socket (not shown), to connect the socket sets 22 to a mains power supply, *via* the conducting strips and the supply cable 34. The socket defining elements 40 and the conducting strips are integrally formed. Furthermore, one of the socket walls 20 provides a socket for receiving a plug-in module 48 which, in this case, provides surge protection to the device 10.

The device 10 further includes a protection unit in the form of a thermal cutout 50 which is connected in series between the socket sets 22 and the cable 34, automatically to disconnect the socket sets 22 from the power supply in the event of overheating.

The base 18 has securing formations in the form of flanges 30 which extend transversely to the walls 20. The flanges 30 have securing openings 32 for accepting fasteners, such as screws (not shown), to secure the housing 12 to a support surface (not shown), such that the socket walls 20 rise perpendicularly from the support surface. The flanges 30 and securing openings 32 permit fastening of the device 10 to a downwardly facing surface, such as the underside of a desk.

In Figure 5, reference numeral 60 generally indicates a further embodiment of a domestic electrical distribution device in accordance with the invention, with like reference numerals indicating like parts in Figures 1 to 4 and Figure 5. The device 60 of Figure 1 is substantially similar to the device 10 of Figures 1 to 4, except that the device 60 has no socket for receiving a plug-in module 48, and that the device 60 has two Euro-type connector sets 26 on each wall, instead of one.

It is an advantage of the distribution device described with reference to the drawings that it provides for connection of a greater number of electrical plugs to a power supply than similar conventional distribution devices, without its being

substantially larger than conventional devices, as it provides access to connector sets from both sides of the device. Space inside the housing 12 is used optimally, as the socket defining elements 40 of each connector set 22 occupy the spaces between the socket defining elements 40 of the registering connector set 22. Furthermore, when the housing 12 is secured on a level support surface, easy access to both sides of the device is promoted. Thus, for instance, when the device 10 is secured to the underside of a desk, twice as many plugs can be connected to the device than would have been the case with conventional distribution devices, where access to connector sets is possible from only one side of the device.

**Claims:**

1. A domestic electrical distribution device which includes:
  - a plurality of electrical socket sets, each socket set being arranged for receiving a complementary electrical plug;
  - a connection arrangement for electrically connecting the socket sets to an electrical power supply; and
  - a housing in which the socket sets are located, the housing including two opposed socket walls, the socket walls having suitably positioned access openings therethrough for permitting access for connection by the plugs to the socket sets, such that at least one socket set is accessible by a complementary plug through one of the socket walls, and a plurality of socket sets are accessible by complementary plugs through the other socket wall.
  
2. A distribution device as claimed in claim 1, in which each socket set comprises a plurality of socket defining elements, each socket defining element being for receiving a pin of a complementary electrical plug, the access openings being arranged in sets of openings, such that each socket set has a set of access openings associated therewith, the access openings of each set of access openings being in register with the socket defining elements of the associated socket set.
  
3. A distribution device as claimed in claim 2, which has different types of

socket sets, so that the distribution device is connectable to different types of electrical plugs.

4. A distribution device as claimed in claim 2, in which a plurality of socket sets are accessible through both of the socket walls.

5. A distribution device as claimed in claim 4, in which the housing is elongated, the sets of access openings in each of the socket walls being spaced in series along the length of the associated socket wall.

6. A distribution device as claimed in claim 5, in which both socket walls have the same arrangement of access opening sets, each access opening set being positioned in register with a corresponding access opening set on the opposite socket wall, so that each pair of registering access opening sets are for receiving the same type of electrical plug.

7. A distribution device as claimed in claim 6, in which the access openings of each set of access openings are out of register with the access openings of the corresponding access opening set on the opposite socket wall.

8. A distribution device as claimed in any one of the preceding claims, in which the connection arrangement includes an electrical supply cable.

9. A distribution device as claimed in any one of the preceding claims, in which the housing has a base for supporting the housing on a support surface, the socket walls extending transversely from the base and substantially parallel to each other.
10. A distribution device as claimed in any one of the preceding claims, in which at least some of the access openings are provided with associated shutter members.
11. A distribution device as claimed in any one of the preceding claims, which includes a protection unit connected in series between the connection arrangement and the socket sets.
12. A distribution device as claimed in claim 11, in which the protection unit is a thermal cutout device.
13. A distribution device as claimed in any one of the preceding claims, in which at least one of the electrical socket sets are for receiving a removable plug-in module.



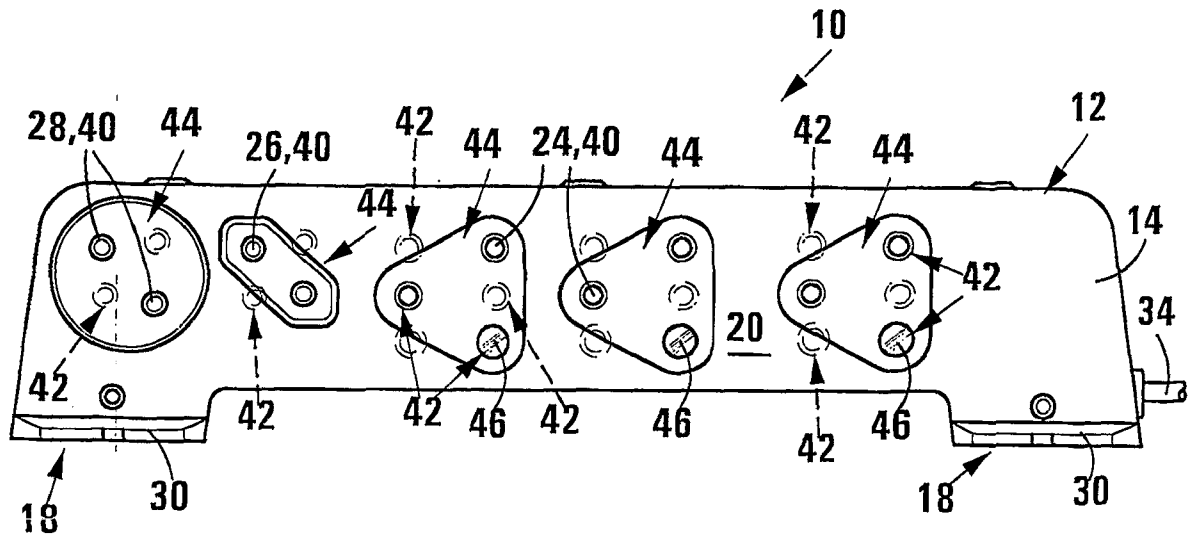


FIG 3

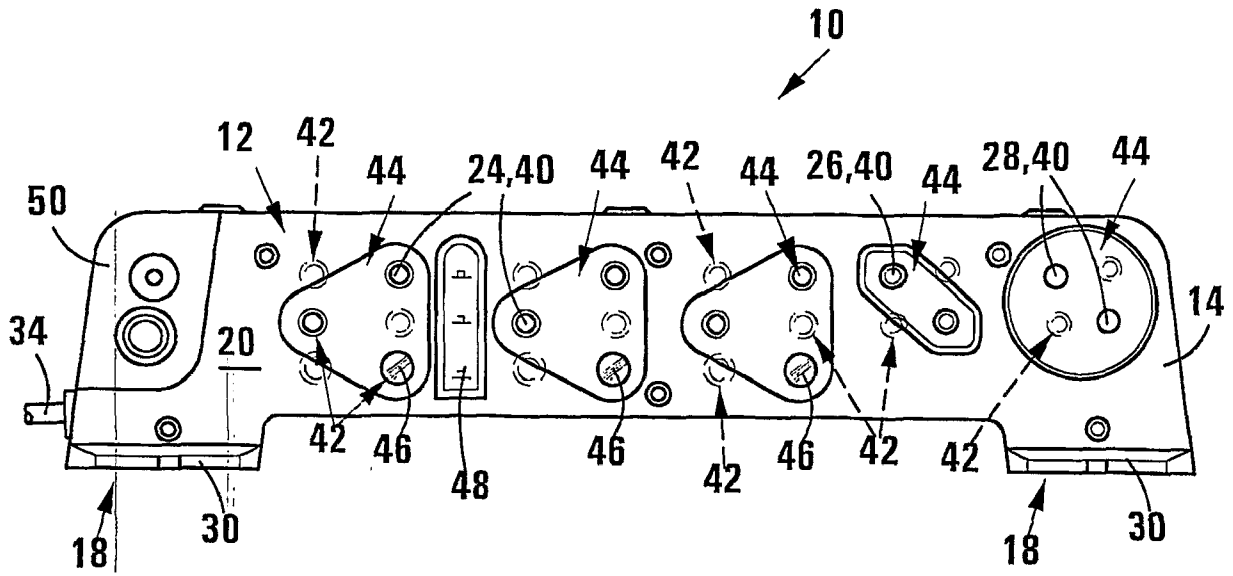


FIG 4

