

[54] **CURRENT ADAPTOR**
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[22] Filed: **Mar. 13, 1973**

[21] Appl. No.: **340,768**

[30] **Foreign Application Priority Data**
 Mar. 18, 1972 Netherlands 7203661

[52] U.S. Cl. **339/21 R, 339/91 R, 200/51 R**

[51] Int. Cl. **H01r 9/00**

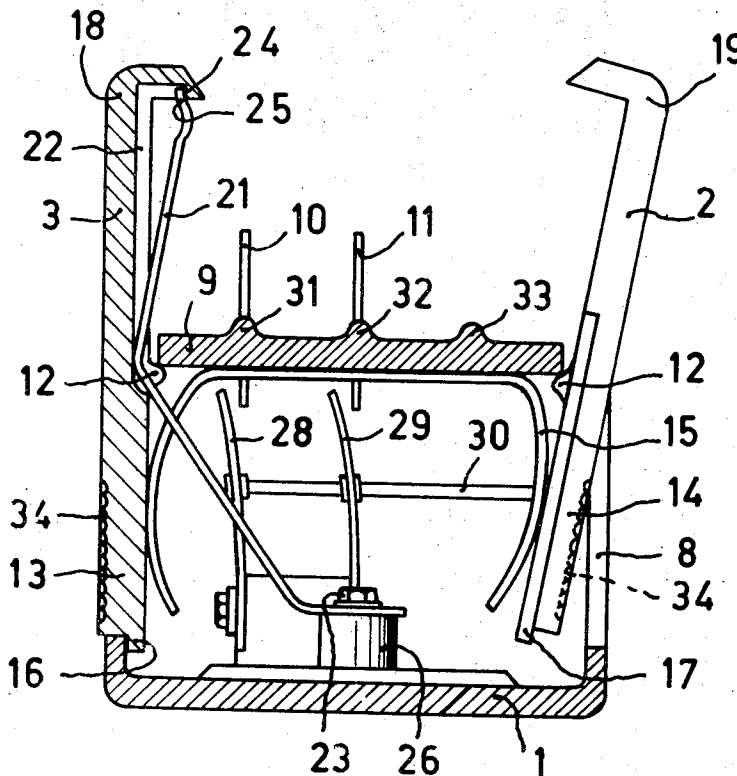
[58] Field of Search **339/20, 21 R, 21 S, 22 T,**
339/23, 24, 91; 200/51 R; 24/254, 230 AT

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[57] **ABSTRACT**
 The invention relates to a current adaptor which can be connected to a current supply rail. The current adaptor comprises a housing with grips on either side whose free ends are bent in the form of a hook so as to grip around the current supply rail. The grips are hinged to the housing and those sides of each of the grips which extend beyond the pivot viewed from the free end, are pressed apart with the aid of a spring incorporated in the housing.

4 Claims, 3 Drawing Figures



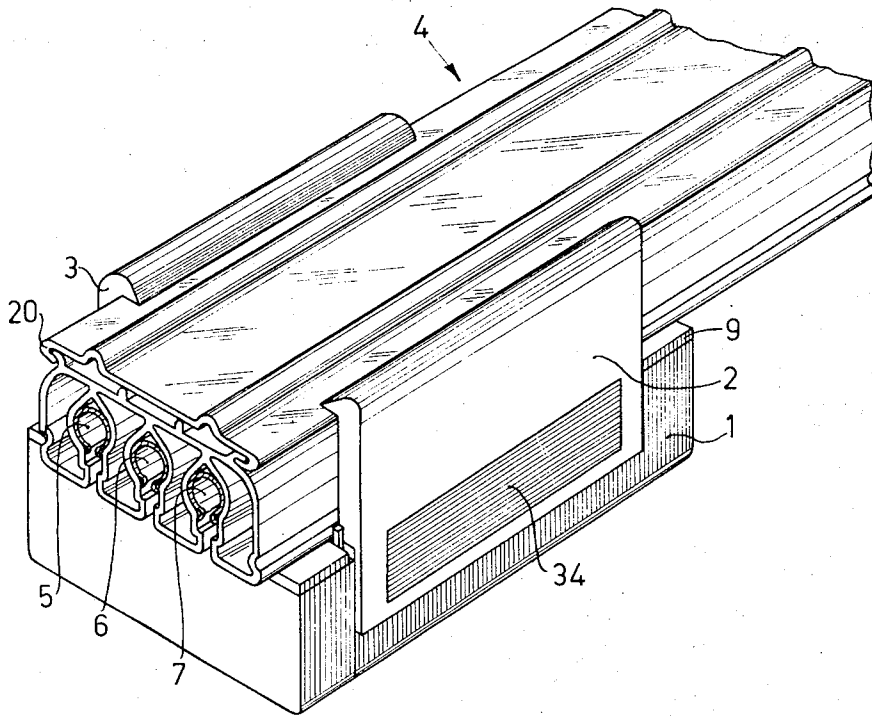


Fig.1

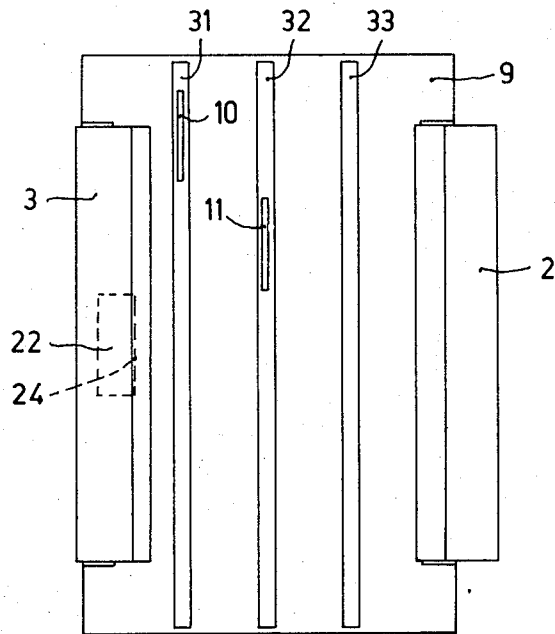


Fig. 2

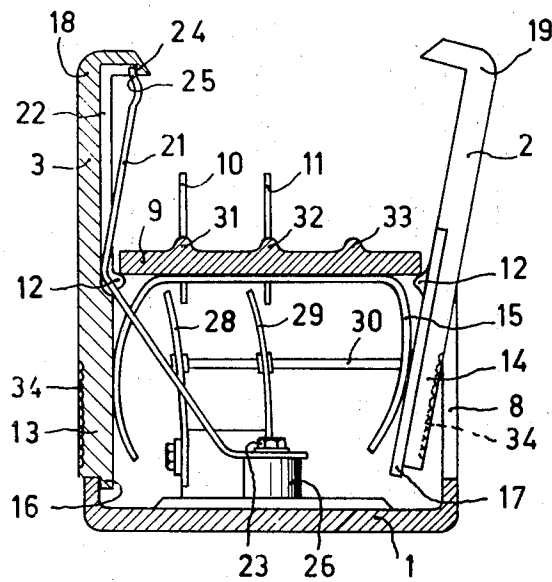


Fig. 3

CURRENT ADAPTOR

The invention relates to a current adaptor for use in conjunction with a current supply rail comprising a housing from which a number of contact elements protrude, which can be electrically connected to current conductors accommodated in the current supply rail, said current adaptors having two-spring-loaded movable grips attached to the housing and extending on either side of and beyond the housing, whose free ends which are farthest away from the housing are bent towards each other so as to grip around the current supply rail, thus at the same time establishing the connection. Such a current adaptor is known.

In the known current adaptor the grips are constituted by metal brackets whose free ends are bent in such a way that they can be hooked behind a raised edge on the periphery of the current supply rail, and also form a pulling eye enabling the adaptor to be detached from the current supply rail with two fingers. A drawback of such a construction is that two hands are needed to attach and detach the adaptor, so that one cannot at the same time hold a current consumer which is generally attached to the current adaptor.

A further drawback of the known current adaptor is that the mechanical connection and the earthing are effected by one and the same metal bracket. The present safety requirements do not allow this.

It is an object of the invention to provide a current adaptor which does not have the said drawbacks.

To this end the current adaptor according to the invention is characterized in that the grips are hinged to the housing, those sides of each of the grips which extend beyond the pivot viewed from the free end being pressed apart by the action of a spring which is incorporated in the housing. As a result, the free ends of the grips can only be moved apart against the spring pressure. This can be effected by pressing those parts of the grips which are located on the other side of the pivot towards each other between the thumb and forefinger of one hand. The spring in the housing is preferably shaped as a U-shaped bracket.

A favorable embodiment of the current adaptor according to the invention is characterized in that at least one earthing contact is provided, which is shielded by one of the grips and which can be moved resiliently relative to this grip in the direction of the opposite grip. This arrangement of the earthing contact virtually prevents the earthing contact from being touched when detaching or attaching the current adaptor. Moreover, when the current supply rail and the current adaptor are suitably proportioned, it is possible to achieve that the adaptor is earthed when mounting the current adaptor before the mechanical and electrical connections are established, which is very desirable in view of safety.

An alternative preferred embodiment of the current adaptor according to the invention is characterized in that in the housing a switch is included in the electrical connection between the contact elements and a current consumer to be connected to the current adaptor, by means of which switch said electrical connection is interrupted when at least one of the grips is depressed. This ensures that when the current adaptor is attached to the current supply rail, a current consumer connected to the current adaptor is not yet included in the circuit when the contact elements come into contact

with the conductors, but only once the grips are released.

Another alternative embodiment of the current adaptor according to the invention is characterized in that the contact elements are formed by blade contacts and that the outer surface of the housing section from which these blade contacts protrude is provided with a number of longitudinal projections each extending in the plane of a blade contact. The openings in the current supply rail giving access to the conductors should preferably be adapted to the shape of these projections. The projections form a sort of centring device, so that the current adaptor is firmly attached to the current supply rail, and touching of the contact elements is prevented.

The invention will be described, by way of example with reference to a drawing, in which:

FIG. 1 is a perspective view of a current adaptor according to the invention and an associated current supply rail in perspective,

FIG. 2 is a top plan view of the current adaptor according to FIG. 1, and

FIG. 3 is a cross-sectional view of the current adaptor according to FIG. 1, the right-hand grip being shown in elevation.

As is apparent from FIG. 1, the current adaptor according to the invention comprises a housing 1 and two grips 2 and 3 extending on either side of the housing and gripping around the current supply rail 4. The current supply rail in this embodiment has three conductors 5, 6 and 7, which are accommodated in slots formed in the material of the current supply rail. An earthing conductor 20 extends at the top of the current supply rail. The openings giving access to the slots in which the conductors are located, are slightly rounded.

The housing of the current adaptor (see FIG. 2) is shaped as a rectangular box in whose side walls the openings 8 are provided. The parts 13 and 14 of the grips 2 and 3 fit the openings 8. The box is covered at the top by a lid 9, from which the blade-shaped contact elements 10 and 11 protrude (also see FIG. 3). These blade contacts 10 and 11 can engage with the current conductors 5 and 6 or 6 and 7 respectively. The grips are provided with the projections 12, which are positioned against the lid 9 and by means of which the grips can be hinged. Parts 13 and 14 are pressed apart by a U-shaped spring 15, which is attached to the lid 9. The edges 16 and 17 of the grips fit behind the edges of the openings 8, thus preventing the parts 13 and 14 from being pressed out of the housing. The spring 15 ensures that the hook-shaped bent ends 18 and 19 firmly grip around the current supply rail. Both grips are provided with non-slip serrations 34.

The earthing contact 21, which is made of a resilient material, is partly incorporated in a recess 22 provided in grip 3. In the housing 1 this earthing contact is attached to a socket 26 at the bottom of the housing by means of a screw 23. The recess 22 extends to the hook-shaped bent end 18 of the grip 3 where it is bounded by an edge 24, against which the free end 25 of the earthing contact 21 is pressed by the spring action. Due to the shape and the dimensions of the earthing contact the current adaptor will be earthed when attaching the adaptor to the current supply rail, before the electrical connection and the mechanical coupling are realized.

Also located inside the housing is a switch 27, shown diagrammatically, which comprises two resilient conductors 28 and 29 which are also attached to the socket 26. These conductors are interconnected by a rod 30 which is made of an insulating synthetic material and which extends in the direction of the grip 2. In the unloaded condition, the conductors 28 and 29 are in contact with the blade contacts 10 and 11. However, when the part 14 of the grip 2 is pressed inwards against the pressure of spring 15, the rod 30 and the conductors 28 and 29 are moved to the left, so that the connection with the blade contacts is interrupted. The conductors 28 and 29 are attached to the current-conducting elements, not shown, of a current consumer which is connected to the current adaptor.

As appears from the FIGS. 2 and 3, the lid 9 has three raised edges, denoted by the reference numerals 31, 32 and 33, which fit the openings giving access to the slots in the current rail, in which the current conductors 5, 6 and 7 are mounted. The raised edges are locally interrupted by the blade contacts 10 and 11.

Due to these raised edges it is practically impossible to touch the blade contacts when the current adaptor is coupled to the current supply rail.

As already stated hereinbefore, the blade contacts 10 and 11 may be connected to the current conductors 5 and 6 but also to current conductors 6 and 7 after reversing the current adaptor. This is possible because the current adaptor is symmetrical. In either case the earthing connection is established. The advantage of this is that with its blade contact 10 the current adaptor can be connected to one of the two live conductors which can be operated independently of each other, in this case the conductors 5 and 7, conductor 6 forming the common earthing conductor connected to blade contact 11.

Although in this embodiment a current adaptor is described which is suited for use in conjunction with a current supply rail comprising three current conductors, it will be obvious that the current adaptor according to the invention can also be employed in conjunction with a current supply rail having two or more than three current conductors. Finally, it is to be noted that the grip 2 may have a recess in which a second earthing contact is fitted.

What is claimed is:

1. A current adaptor for use with a current supply rail which accommodates current carrying conductors, comprising a housing, a plurality of contact elements protruding from a surface of said housing for electrical connection to said current carrying conductors, two grip members hingedly attached to said housing for pivotal movement, said grip members being located on opposite sides of said housing and extending beyond said housing, the free ends of each grip member remote from the housing being bent toward the other grip member so as to grip around the current supply rail, a spring carried within said housing for engaging both grip members and urging the grip members on one side of the hinge point apart so that said bent ends are urged toward each other, and a resilient earthing contact carried by one of said grip members resiliently movable toward the other grip member.

2. The current adaptor according to claim 1 wherein said spring is substantially U-shaped.

3. The current adaptor according to claim 1 wherein said contact elements are formed by blade contacts, and further comprising a plurality of projections carried on the outer surface of said housing which carries said blade contacts and each of said projections extending in the plane of one of the blade contacts.

4. A current adaptor for use with a current supply rail which accommodates current carrying conductors, comprising a housing, a plurality of contact elements protruding from a surface of said housing for electrical connection to said current carrying conductors, two grip members hingedly attached to said housing for pivotal movement, said grip members being located on opposite sides of said housing and extending beyond said housing, the free ends of each grip member remote from the housing being bent toward the other grip member so as to grip around the current supply rail, a spring carried within said housing for engaging both grip members and urging the grip members on one side of the hinge point apart so that said bent ends are urged toward each other, and a switch carried in said housing for electrically connecting said contact elements to an electrical consumer to be connected to the current adaptor, by means of which switch said electrical connection is interrupted when at least one of said grip members is depressed.

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