

[54] **OUTPUT ADAPTOR FOR ELECTRIC DISTRIBUTION TRACKS**

[72] Inventors: **Derek James Hart; Robert Davis**, both of London, England

[73] Assignee: **British Lighting Industries Limited**, London, England

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[51] Int. Cl. **H01r 33/30**

[58] Field of Search **200/31, 51.07; 339/22, 21, 339/14**

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Primary Examiner—David Smith, Jr.
Attorney—Joseph C. Ryan

[57] **ABSTRACT**

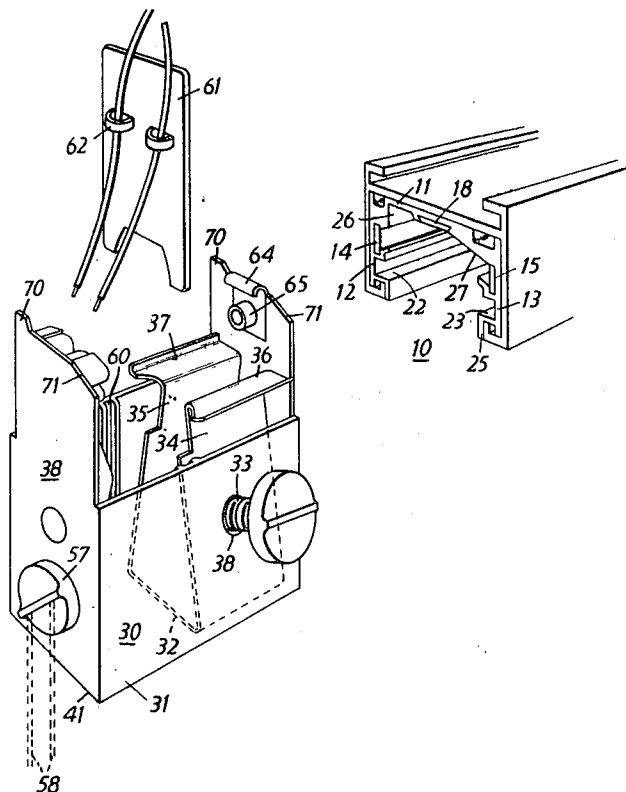
An output adapter intended for use with electricity distribution tracks provided with exposed track conductors has an on-off switch and a resilient clamp which can be moved outwardly from the adapter to engage a track and lock the adapter thereto in a position in which the contacts of said switch can be moved to the "on" position in abutment with the track conductors.

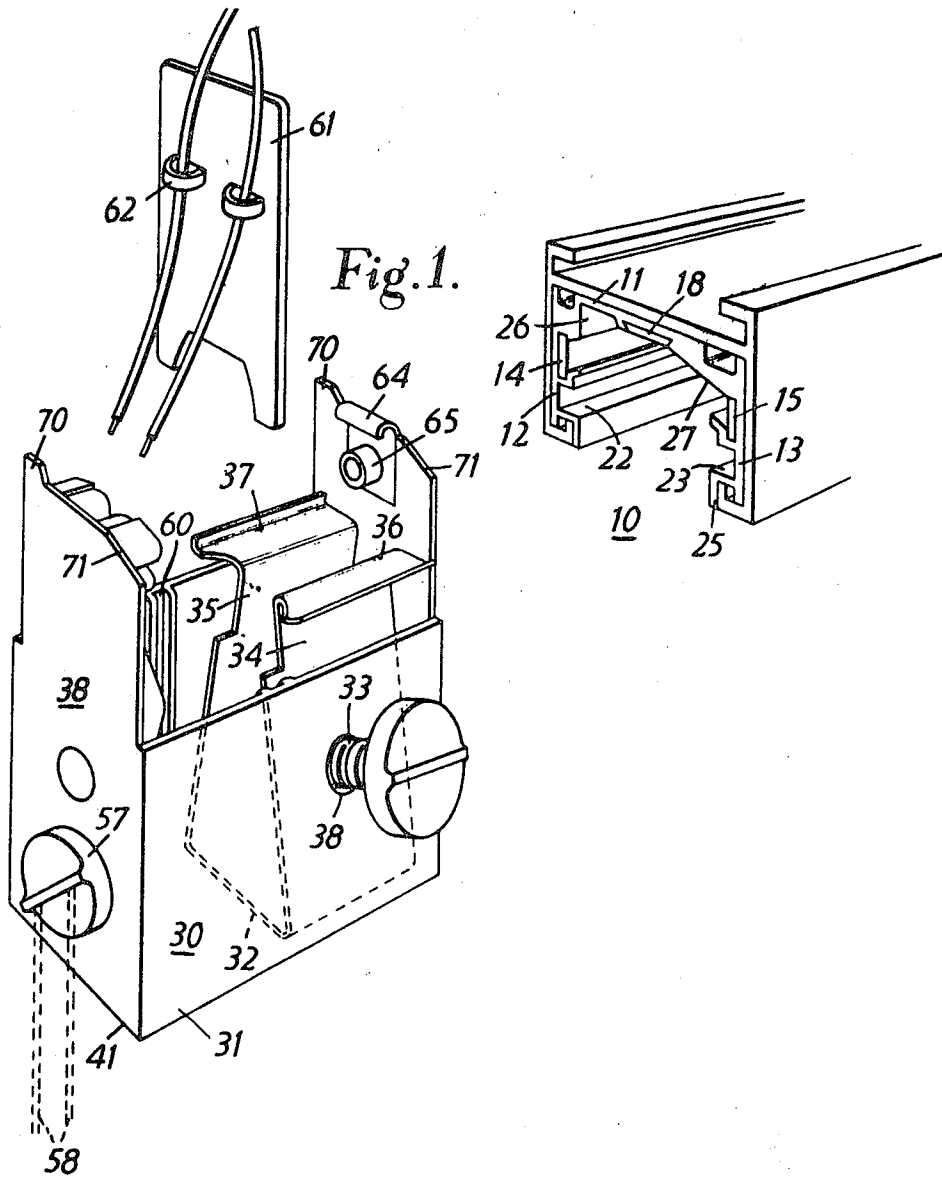
2 Claims, 3 Drawing Figures

[56] **References Cited**

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DEREK JAMES HART
ROBERT DAVIS
INVENTORS

BY *Joseph C. Ryan*
ATTORNEY

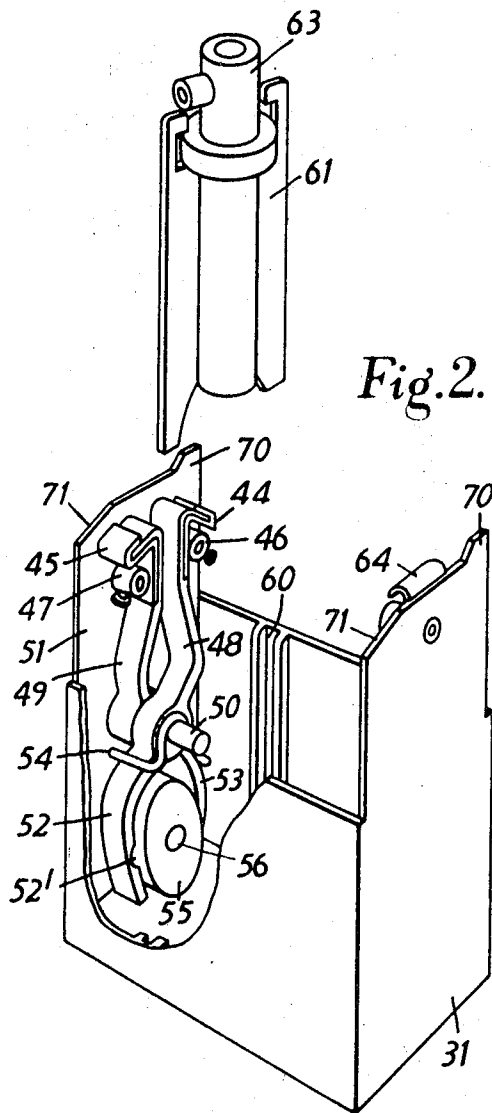
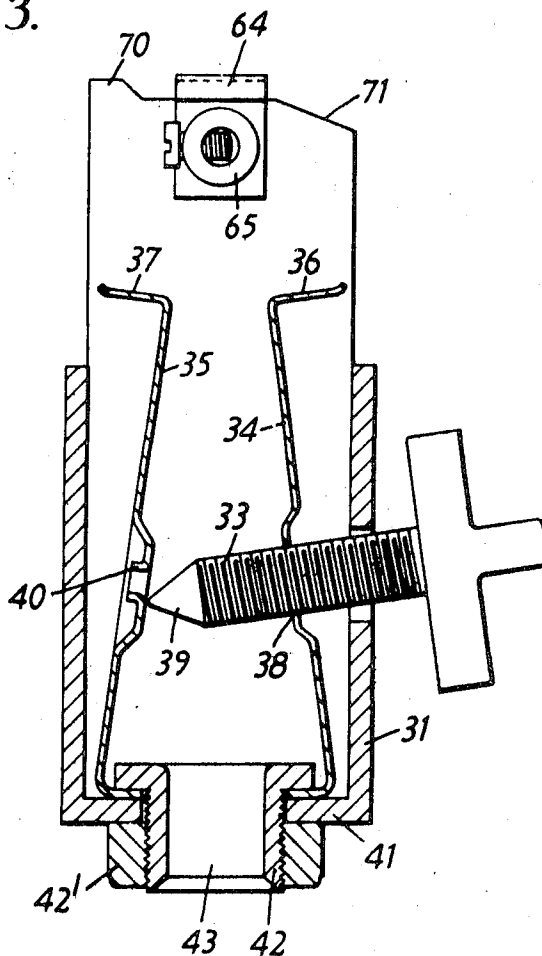


Fig. 2.

DEREK JAMES HART
ROBERT DAVIS
INVENTORS

BY *Joseph C. Ryan*
ATTORNEY

Fig. 3.



DEREK JAMES HART
ROBERT DAVIS
INVENTORS

BY *Joseph C. Ryan*
ATTORNEY

OUTPUT ADAPTOR FOR ELECTRIC DISTRIBUTION TRACKS

The present invention relates to an output adapter for use with electric distribution tracks. The output adapter enables electric power to be tapped from the track for supply to appliances such as electric tools and lamps. The output adapter is particularly, but not exclusively, suitable for use with an electric distribution track such as is described in our copending application of even date, entitled: "Track for Distribution of Electricity" Ser. No. 872,656.

According to the present invention, there is provided an output adapter for use with electric distribution tracks carrying bare track conductors, the output adapter comprising a housing in which there is a clamping arrangement having a pair of movable tongues which can be moved into engagement with the track to support and clamp the output adapter thereto, and a separately operable switch having contacts, of which at least one contact can be moved out of the housing and into engagement with one of the track conductors.

The outlet adapter can be supported on the track by means of the movable tongues which can be moved towards and away from one another, so as to rest on ledges when the adapter is positioned on the track. The outlet adapter can be located at any desired position on the track, and its position can be adjusted by sliding it along the track. Further movement of the tongues away from one another exerts a clamping force on the track to hold the adapter in the desired position. Power can be supplied through an on-off switch carried by the adapter to an appliance connected thereto. The on-off switch includes at least one movable contact which can be moved into and out of engagement with one of the track conductors to make and break the power supply circuit to the appliance. The movable contact is supported on a rocker element, movement of which is preferably controlled by a cam. Preferably, the on-off switch is a double-pole switch having two contacts, each movable into engagement with the track conductors. Two rocker elements are therefore provided, and both are moved simultaneously by the cam.

In addition, the outlet adapter is preferably provided with a contact strip for abutting a further track conductor to earth an appliance connected to the adapter. Provision is made so that a fuse link can be incorporated in the outlet adapter if preferred.

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

FIG. 1 is an exploded perspective view of an outlet adapter and part of a length of an electric distribution track,

FIG. 2 is a further exploded perspective view of the outlet adapter, and

FIG. 3 is a section through the outlet adapter showing the clamping arrangement.

Before describing the outlet adapter in more detail, a brief description of the electric distribution track will be given for clarity. The track 10 comprises an elongate member made, for example, from an extrusion of a plastics material such as P.V.C. The track has a base 11 and sides 12, 13 extending perpendicularly from the longitudinal edges thereof. The sides 12, 13 include housings in which track conductor strips 14, 15 are carried. The track conductors 14, 15 are accessible from the inner region of the track 10 by way of slots 16, 17. A further track conductor 18 is supported in the base 11 of the track 10, and is used to provide an earth line. The sides 12, 13 of the track 10 additionally include flanges 22, 23 on the upper surfaces of which the outlet adapter and other accessories can be supported. The flanges 22, 23 are located on the inner surfaces of the sides 12, 13 remote from the base 11. As can be seen from FIG. 1, the flanges include downwardly directed extensions 24, 25 so that a pair of grooves 24', 25' is formed between the extensions 24, 25 and the sides 12, 13. The flanges 22, 23 extend longitudinally along the track 10. It will readily be appreciated from FIG. 1 that the track 10 is asymmetrical in cross section, about a central plane parallel to the sides 12, 13. In particular, the base 11 has a longitudinally

extending groove 26 located adjacent one side 12. The base 11 further includes a surface 27 which is inclined towards the track conductor 15 carried by the side 13.

The outlet adapter 30 has a housing 31 within which a clamping arrangement and switch are mounted. The clamping arrangement shown in FIGS. 1 and 3 consists of a substantially U-shaped member 32 and a screw 33. The U-shaped member 32 is made from spring steel sheet. Limbs 34 and 35 of the U-shaped member 32 are bent outwardly away from one another adjacent the free ends of the limbs, to produce tongues 36 and 37. The tongues can be moved relative to each other by means of the screw 33, to clamp the outlet adapter to a track. The limb 34 includes an aperture 38 which is threaded to receive the screw 33. The free end 39 of the screw abuts the inner surface of the limb 35, a depression 40 formed in the limb 35 engaging the free end of the screw. With a right-hand screw thread, clockwise rotation of the screw 33 causes the inner end thereof to move away from the limb 34, to move the limb 35 correspondingly. The limbs, and their associated tongues 36, 37 can therefore be moved apart in order to produce a clamping force for holding the outlet connector 30 to a track 10. The U-shaped spring steel member 32 is so formed that a biasing force opposes movement of the tongues 36, 37 away from one another. The U-shaped member 32 is secured to the base 41 of the housing 31 by means of a nut and bolt 42, 42'. The bolt can have an aperture 43 therethrough so that a cable can be threaded into the housing 31.

Although not shown in the drawings, a pair of flanges can be provided on the sidewalls of the housing 31. The flanges can be so located as to engage the grooves 24', 25' of the track member 10, to prevent the tongues 36, 37 from distorting the sidewalls when the tongues 36, 37 are moved outwardly by the screw 33.

The switch shown in more detail in FIG. 2 is of double-pole type, and includes a pair of contacts 44, 45 which have screw-clamp connector terminals 46, 47 associated therewith, to which cable leads can be connected. The contacts 44, 45 can be moved from the position shown in the drawing to project out of the housing 31. In such an open position, the contacts 44, 45 can abut track conductors 14, 15 carried by the track 10.

Movement of the contacts 44, 45 is controlled by means of a cam assembly acting on rocker elements 48, 49 which carry the contacts 44, 45. The rocker elements 48, 49 operate in a manner generally similar to a pair of scissors. The rocker elements 48, 49 are mounted in the housing 31 on a pivot 50 carried by a sidewall 51 of the housing. It will be appreciated that when the lower portions 52, 53 of the rocker elements 48, 49 are moved apart, then the contacts 44, 45 also are moved apart into the open position. A spring 54, supported about the pivot 50, acts on the lower portions 52, 53, and provides a force which biases the rocker elements 48, 49 and the associated contacts 44, 45 together.

The cam assembly consists of a generally elliptical cam 55 which is mounted on the sidewall 51 between the lower portions 52, 53 of the rocker elements 48, 49. The cam 55 is carried on a camshaft 56 which extends through the sidewall 51 and terminates in an enlarged head portion 57. The head portion 57 is provided with apertures to that control cords 58 can be attached thereto. The cam 55 can be retained on the camshaft 56 by known means, which for example could consist of a circlip or retaining nut. When the camshaft 56 and cam 55 are rotated through approximately 90° from their position shown in FIG. 2, by pulling the appropriate control cord 58, the lower portions 52, 53 are moved apart against the bias of the spring 54. Corresponding movement of the contacts 44, 45 into the open position therefore results. It will be appreciated that the provision of control cords 58 is not necessary: if preferred, the head portion 57 can be turned directly by hand. When the cam 55 is rotated to set the switch in the "on" position, the cam 55 is locked with its ends seated in grooves 52' formed in the lower portions 52, 53.

The housing 31 is provided with grooves 60 in which a plate 61 can be slid. The plate 61 can have projecting bridges 62 under which cable leads can be located. Alternatively, the plate 61 can carry a fuse link holder 63.

A contact strip 64 is mounted on the housing 31, and includes a bush 65. The contact strip 64 can abut an earthing track conductor 18 when the output adapter 30 is mounted on the track 10. An earth lead can be wired into the bush 65.

The sidewalls of the housing 31 each have a projection 70 at one top corner; the opposite top corner is inclined, as at 71. The exterior of the housing 31 is therefore asymmetrical in cross section about a central plane perpendicular to the base 41. The track 10 is similarly asymmetrical in cross section. The output adapter 30 can therefore only be inserted into the track 10 with the projection 70 engaged in the groove 26 of the track. If reversed end for end, the output adapter could not be fitted properly into the track. This ensures that an appliance connected to the output adapter 30 is supplied with electricity of the correct polarity.

To fit the outlet adapter 30 into the track 10, the switch is operated to move the rocker elements 48, 49 and the associated contacts 44, 45 together. The screw 33 is rotated anticlockwise so as to move the tongues 36, 37 together so that they do not project out of the housing 31. The output adapter 30 is then moved up into the track 10, ensuring that it is the right way round relative to the track. The screw 33 is rotated clockwise to move the limbs 34, 35 and the associated tongues 36, 37 apart from one another. The tongues 36, 37 thus move to rest on the upper surfaces of the flanges 22, 23 and retain the output adapter on the track 10. The output adapter can then be slid along the track into a desired position. Further rotation of the screw 33 moves the tongues 36, 37 to abut the

sides 12, 13 thereby clamping the output adapter to the track 10. The switch can then be operated to bring the contacts 44, 45 into abutment with the track conductors. Where the track is installed overhead, the switch can conveniently be operated by means of the control cords 58.

We claim:

1. An output adapter for use for electricity distribution tracks in which exposed track conductors are mounted, the output adapter comprising:

a housing,
a clamping arrangement carried by said housing, the clamping arrangement having a pair of movable tongues, a separately operable switch secured within said housing having at least one contact movable from an inner to an outer position,

whereby outward movement of said tongues into engagement with the track clamps said housing to the track with the contacts of said switch located for abutment with the track conductors upon movement to the said outer position, said switch being of the double-pole type and including a pair of rocker elements mounted in said housing and carrying the said contacts, the rocker elements being movable between an outer "on" position, in which the contacts project from the housing, and an inner "off" position, a generally elliptical cam mounted in said housing and in engagement with said rocker elements, and means supported on said housing to move said cam and thereby move both rocker elements simultaneously between the "on" and "off" positions.

2. The combination of claim 1 and spring means to bias the said rocker elements into the "off" position.

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