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[54] **COUPLING MEMBER FOR ELECTRICAL DISTRIBUTION TRACKS**
1 Claim, 1 Drawing Fig.

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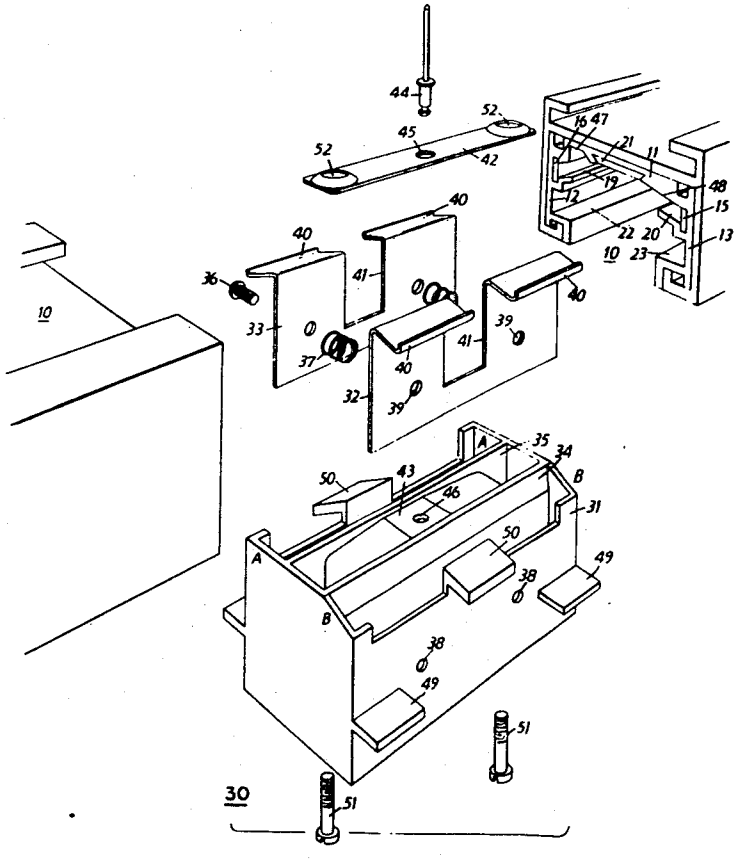
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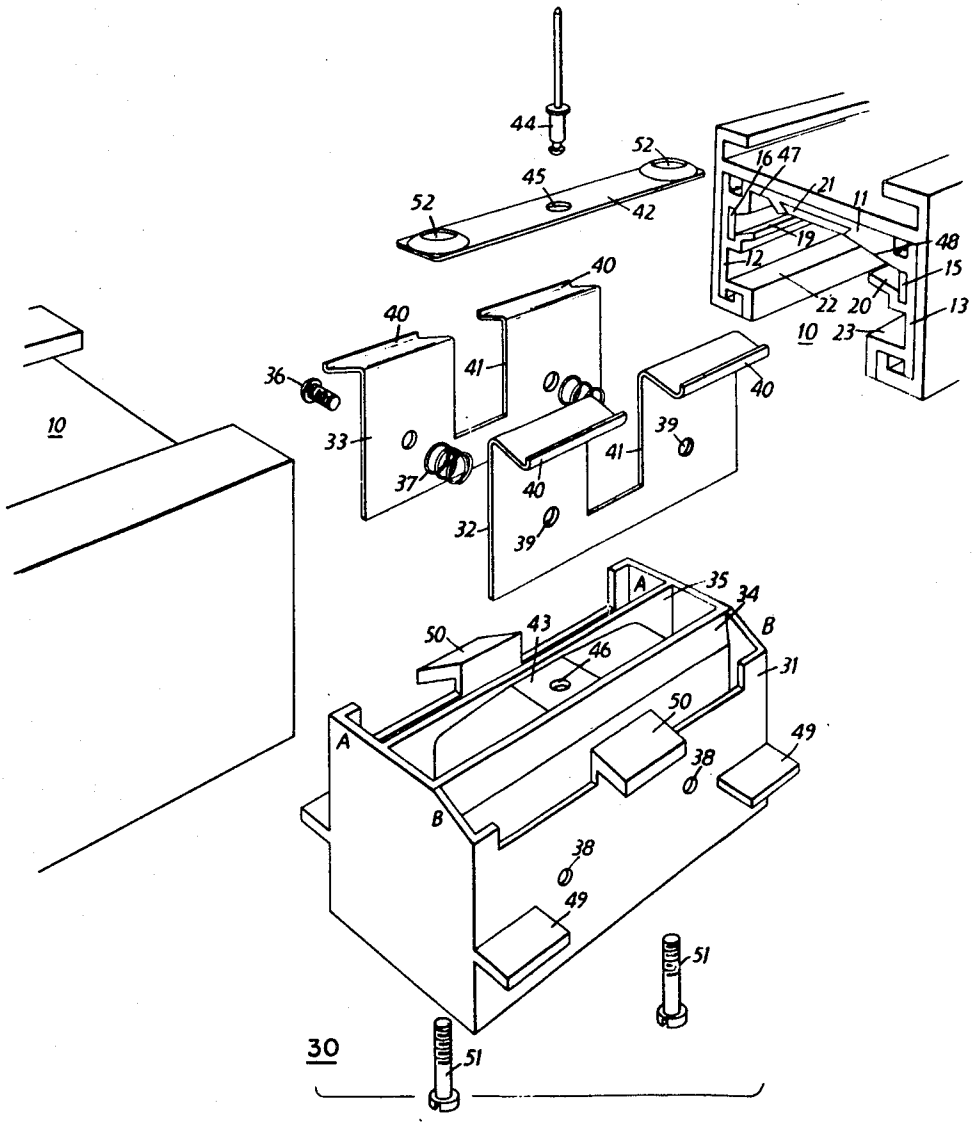
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ABSTRACT: A coupling member, for connecting the ends of two lengths of electricity distribution track in which exposed track conductors are mounted, has a pair of conductive contact members which are resiliently mounted within a housing parallel to and insulated from one another, the coupling member being so constructed as to be capable of insertion into the adjacent ends of two lengths of track with contact fingers, provided on the contact members, biased into engagement with the track conductors.



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COUPLING MEMBER FOR ELECTRICAL DISTRIBUTION TRACKS

The present invention relates to a coupling member for electrical distribution tracks.

The coupling member is designed to join together the ends of electric distribution tracks in such a way that electrical continuity is established from track to track, without the necessity of making conventional mechanical or soldered electrical connections. The coupling member is especially suitable for joining electrical distribution tracks which carry bare conductor elements, and is particularly, but not exclusively, suitable for use with the track described in our pending application of even date entitled "Track for Distribution of Electricity."

According to the present invention, there is provided a coupling member for connecting the ends of separate lengths of electric distribution tracks, comprising a housing in which a pair of conductive contact members is mounted parallel to and insulated from one another, the contact members being so spaced as to be able to engage conductors carried in the tracks, the housing having projections therefrom for engaging with the tracks to locate the coupling member with the contact members abutting the conductors when the coupling member is positioned to connect the tracks.

The coupling member is partially inserted into the end of one length of track, so that part of the member projects from the end of the track. The other end of the coupling member is then inserted into a second length of track. Preferably, the housing is asymmetrical in cross section. The tracks, being also of asymmetrical cross section, can only be connected with the coupling member in one way. Thus reversal of the tracks end-for-end will prevent their connection with the coupling member. In this way, the power supplied by each length of track to appliances through special output adaptors always has the correct polarity. The contact members are so arranged that they abut the conductors carried by the tracks when the coupling member is in position joining two lengths of track. In addition, the coupling member preferably includes a further contact member, which abuts a third conductor carried by each of the tracks when the coupling member is in position. Continuity between the third conductors, which may form an earth line, is thus established. It will be appreciated that electrical continuity is automatically achieved by mechanical contact of the conductors with the contact members. It is therefore unnecessary to make conventional connections by soldering or by wiring into known devices such as screw-clamping connectors.

The present invention will now be described by way of example with reference to the accompanying drawing which is an exploded perspective view of a coupling member and electric distribution tracks.

As shown in the drawing, the track **10** consists of an elongate member made 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 for conductor strips **15, 16** which are connected to an electrical supply. The strips are accessible from the inner region of the track **10** by way of slots **19, 20**. A third conducting strip **21** is carried by the base **11** of the track **10**, and provides an earth line. The sides **12, 13** of the track **10** additionally include flanges **22, 23** which project inwardly from the sides **12, 13** of the track. The flanges extend lengthwise of the track and provide rails on which a coupling member can be positioned.

The coupling member **30** includes a housing **31** in which a pair of contact members **32, 33** is mounted. The housing **31** can be moulded from a rigid plastics material such as P.V.C. Inner walls **34, 35** are located parallel to and spaced apart from one another inside the housing **31**. The contact members **32, 33** are secured to the walls **34, 35** on resilient mountings. In the embodiment shown, the resilient mountings comprise plugs or rivets **36** and helical coil springs **37**. The contact members **32, 33** are assembled in the housing **31** by passing the plugs **36** through apertures **38** and **39** provided in the housing **31** and the contact members respectively. The apertures **38, 39** are so dimensioned that the plugs **36** are a force fit therein. The helical springs **37** are positioned on the plugs **36** between the inner surfaces of the contact members **32, 33** and the walls **34, 35**. It will be appreciated, therefore, that the helical springs **36** bias the contact members **32, 33** away from each other in a lateral direction.

The contact members **32, 33** include portions which are bent out from the members, to form contact fingers **40** which can engage the conductor strips **15, 16** carried by the track **10**. It will be appreciated that the contact fingers **40** project outwardly from the sides of the housing **31**. Each contact member has two such contact fingers, which are separated from one another by a slot **41**. The contact members can be made from a material such as copper.

The housing **31** additionally carries a further contact strip **42**, which is positioned between the walls **34, 35**. The contact strip **42** is secured to a spacer **43**, attached to the walls **34, 35**, by means of a conventional "pop" rivet **44** which is passed through apertures **45** and **46** in the contact strip **42** and the spacer **43**. The contact strip **42** is provided to establish continuity between the earth line conductors **21** carried by the tracks **10**. The strip **42** can be made from a spring steel.

It will be seen from the drawing that, in cross section, the tracks **10** are asymmetrical about a central plane parallel to the sides **12, 13**. In particular, adjacent side **12** there is a groove **47** and adjacent the side **13** the base includes a surface **48** which is inclined towards the conductor strip carried by the side **13**. The housing **31** of the coupling member is so shaped that it can only be inserted into the end of the track **10** in one way. Thus, the housing **31** includes, when viewed in plan a square corner —*A*, which will project into the groove **47** of the track when the coupling member is positioned in the end of the track. The opposite corner *B* of the housing **31** is inclined corresponding to the inclined surface **48** of the base **11**. If the coupling member **30** were reversed end-for-end, the square corner *A* would abut the track in the zone of the inclined surface **48**, and prevent the insertion of the coupling member **30**. When the coupling member has been correctly inserted in the end of one length of track, a second length of track can be connected to the coupling member. It will be appreciated that only one end of the second track will fit over the coupling member, owing to their a symmetry. When connected to a supply line, the polarity of, for example the track conductor **16**, adjacent the groove **47** in the base **11**, will be identical from track to track. The power supplied to appliances through similarly asymmetrical track output connectors will therefore be of the correct polarity. The housing **31** is additionally provided with projections **49** which rest on the flanges **22, 23**. The projections **49** are so positioned relative to the contact fingers **40** that when the coupling member is positioned on the track, the contact fingers **40** can engage the track conductors. In addition, the housing **31** includes further projections in the form of lugs **50**. The lugs **50** are so positioned that, on inserting the coupling member **30** into the track **10**, the lugs can abut the ends of the track conductors **15, 16**. Movement of the coupling member **30** into the track will then move the track conductors **14, 15** away from the end of the track. This ensures that the track conductors cannot be accidentally touched, and furthermore avoids electrical tracking between the conductors and a mating metal cover track.

As will be seen from the drawing, the earthing strip **42** is provided with apertures **52**. The apertures **52** include raised circumferential lips. When the coupling member **30** is inserted into the track **10**, the raised lips of the apertures **52** contact the third conducting strip **21** of the track **10**, bending the earthing strip **42** downwards as viewed in the drawings. A countersunk portion is formed in the strip **21**, to accept the raised lips of the corresponding aperture, when the coupling member **30** is inserted to the requisite distance into the track **10**.

To connect two lengths of track **10**, the coupling member **30** is inserted into the end of one track. As explained, the coupling member **30** can be inserted into the ends of lengths of track in one way only. The housing **31** is so positioned relative to the track **10** that the underside of the projections **49** coincide with the top surface of the flanges **22, 23** of the track. The contact members **32, 33** are moved towards each other, and the coupling member is inserted into the end of the track. The contact members **32, 33** are then released. The projections **49** are so located that when the contact members are released, the contact fingers **40** pass through the passages **19, 20** to abut the conductor strips **15, 16**. Efficient electrical contact between the fingers **40** and the conductor strips **15, 16** is maintained by means of the biasing of the contact members **32, 33** provided by the springs **37**. When the coupling member has been fully inserted in the tracks, the contact fingers **40** of the contact members **32, 33** are completely housed within the track **10**. Thus the contact members cannot be touched accidentally. The other length of track is then connected to the coupling member in a similar manner.

Once the coupling member is positioned between two lengths of track, it can be locked in place by means of fixing screws **51** which extend through the apertures **52** provided in the spring steel earthing strip **42**. The coupling member thus provides simple electrical connection between separate lengths of electrical distribution track. When positioned, the coupling member automatically connects the conductors carried in the track thereby eliminating conventionally formed connections. The correct polarity is ensured from track to track since the coupling member can be positioned in the tracks in one way only.

We claim:

1. A coupling member for connecting the ends of separate lengths of electricity distribution tracks which carry exposed track-conductors, the coupling member comprising:

a housing,

a pair of conductive contact members mounted parallel to and insulated from one another in said housing,

track-locating projections on the external surfaces of said housing,

said locating projections positioning the coupling member, when connected between two lengths of track, with its conductive contact members abutting the said track-conductors, and

further projections located to abut the ends of the track conductors when the coupling member is in position for connecting two lengths of track, whereby relative movement between the coupling member and the two lengths of track is transmitted to the track conductors to move them longitudinally away from the adjacent ends of the two lengths of track.