# United States Patent [19]

**Hesse**

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[45] **Mar. 18, 1975**


[54] **CONNECTING DEVICE FOR CURRENT DISTRIBUTOR RAILS**


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[73] Assignee: **Staff KG,** Lemgo, Germany



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Feb. 21, 1973 Germany ..... 7306545

[52] **U.S. Cl.** ..... **339/21 R**
[51] **Int. Cl.** ..... **H01r 9/00**
[58] **Field of Search** ..... 339/20, 21 R, 21 S, 22 T, 339/23, 24



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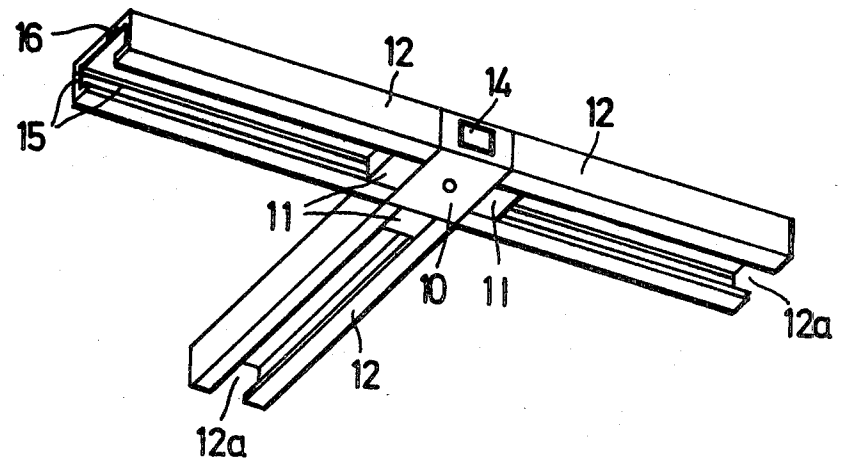
*Assistant Examiner*—Robert Hafer
*Attorney, Agent, or Firm*—Diller, Brown Ramik & Wight



[57] **ABSTRACT**

A connecting device for interconnecting U-shaped current distributor rails at right angles includes a cubic connecting body including a variable arrangement of insulated interconnecting contacts and earthing strips, a rectangular hole in each of four sides of the cube, and a bridging body in each hole opposite to and extending into a rail to which connection is to be made, non-used holes being plugged up. Each bridging body has insulated bridging and earthing contacts interconnecting its associated rail with similar contacts of the connecting body, and locking means for securing each bridging body in position. The earthing connections are dimensioned so as to make contact before the power connections, during assembly of the various parts.


**22 Claims, 22 Drawing Figures**



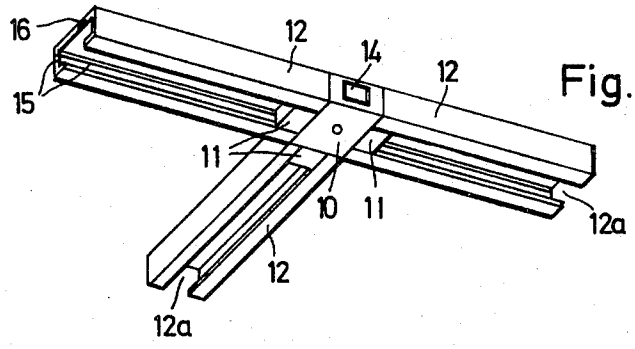



Fig.1

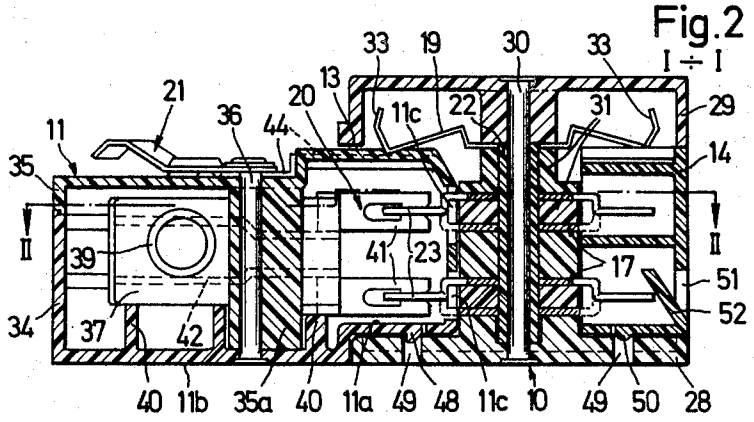



Fig.2

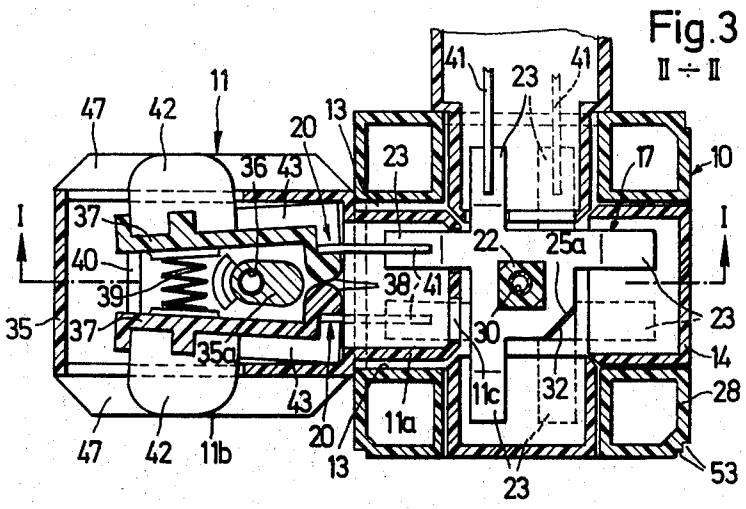



Fig.3

Fig.4

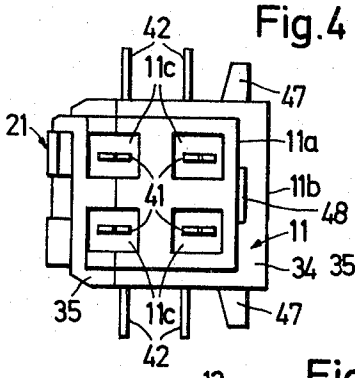



Fig.5

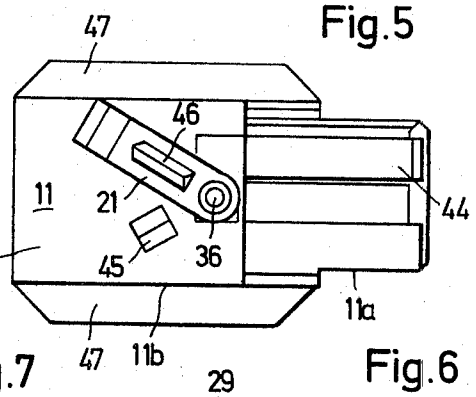



Fig.7

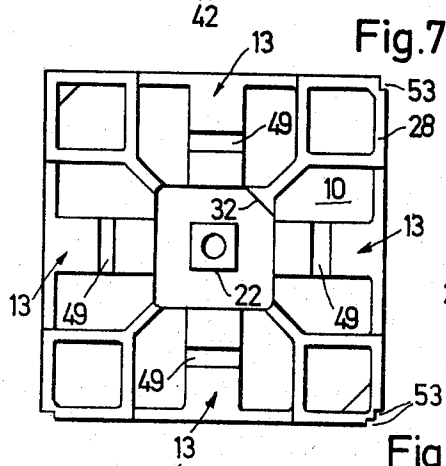



Fig.6

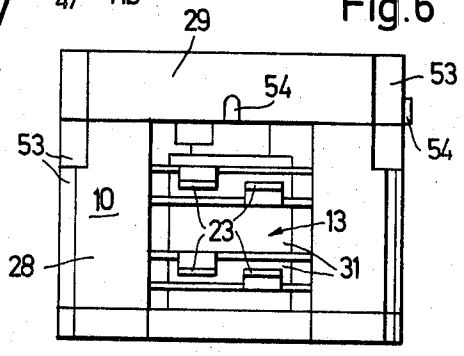



Fig.8

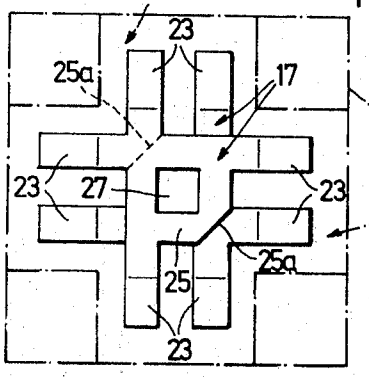



Fig.9

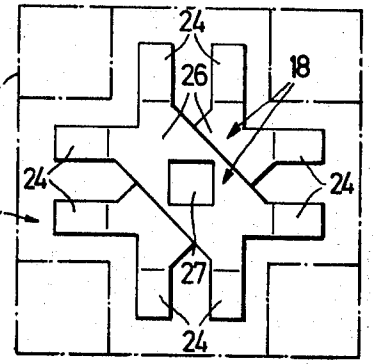
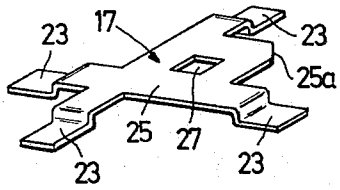


Fig.10



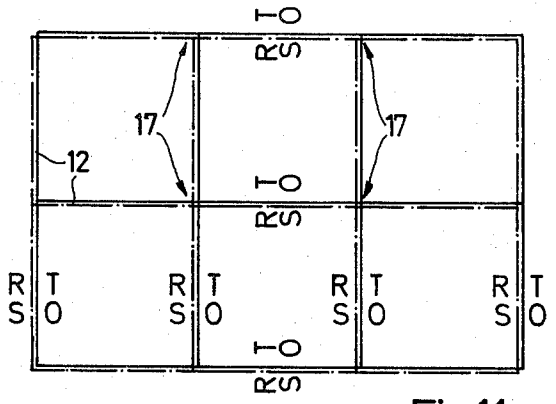




Fig.11

Fig.12

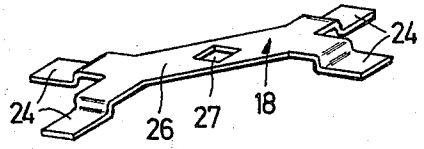



Fig.13

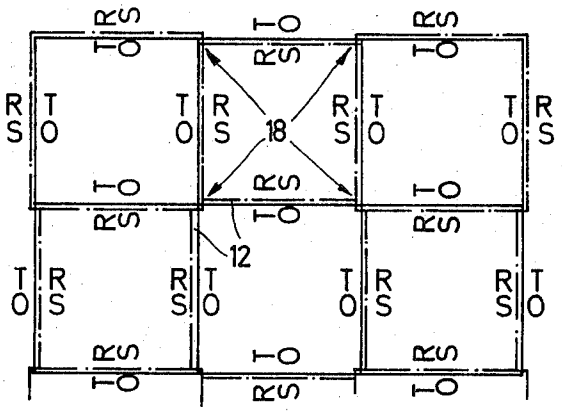


Fig. 14

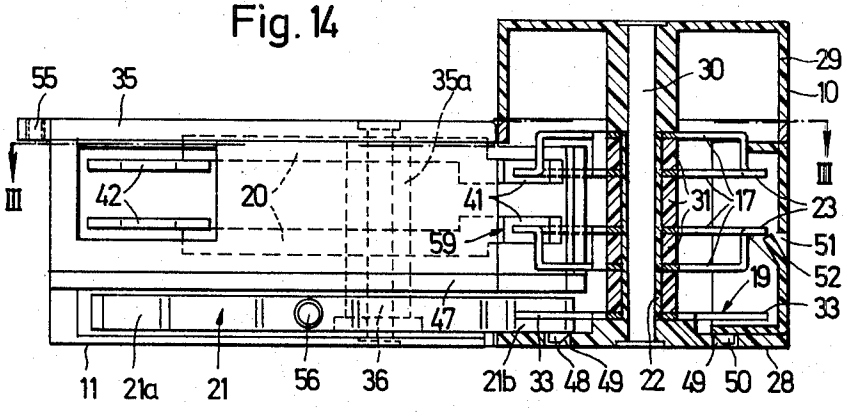



Fig.15

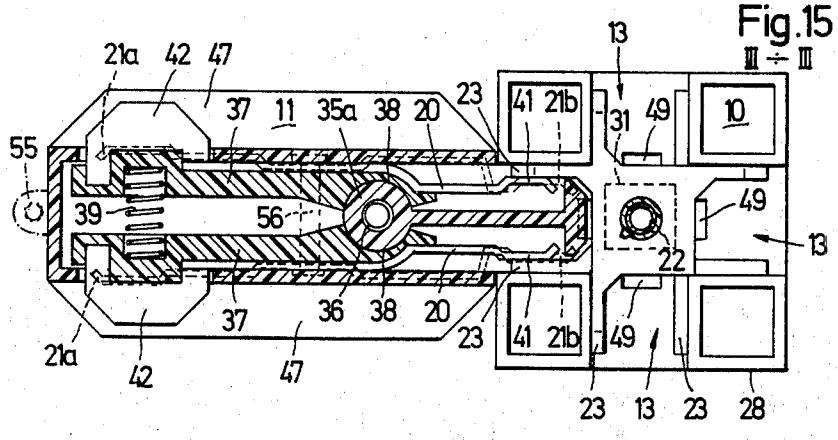
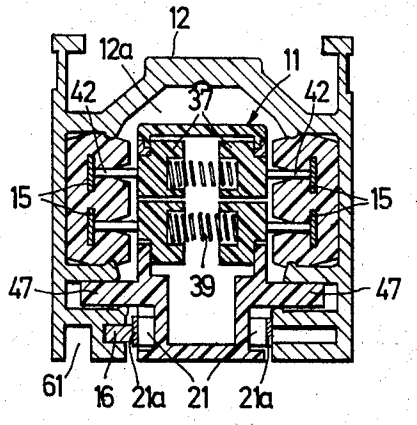



Fig.16



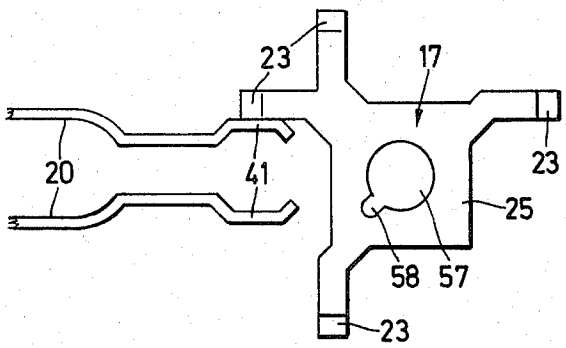



Fig.17

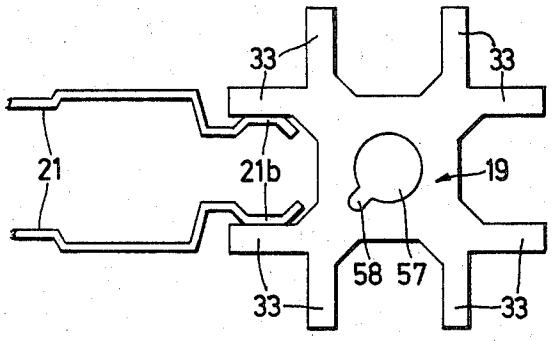



Fig.18

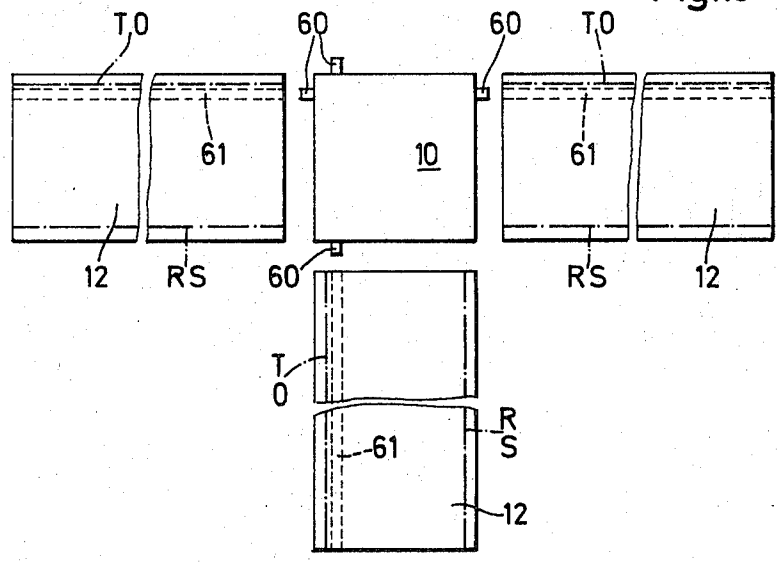



Fig.19

Fig. 20

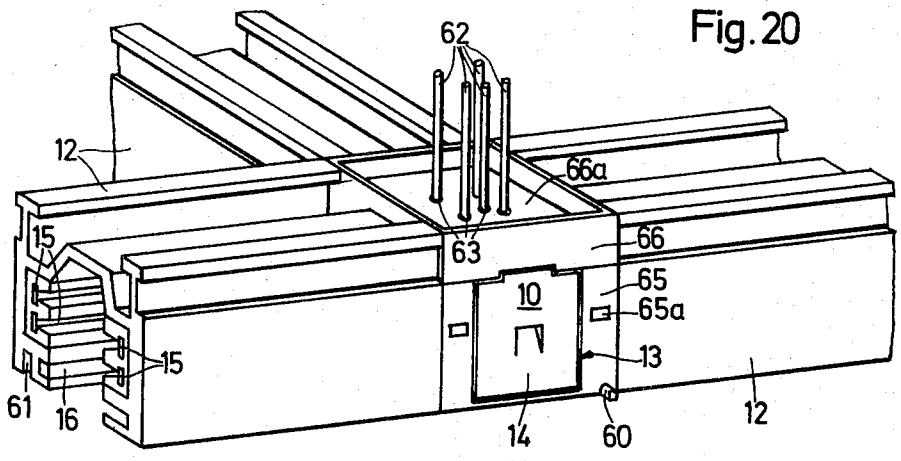



Fig. 21

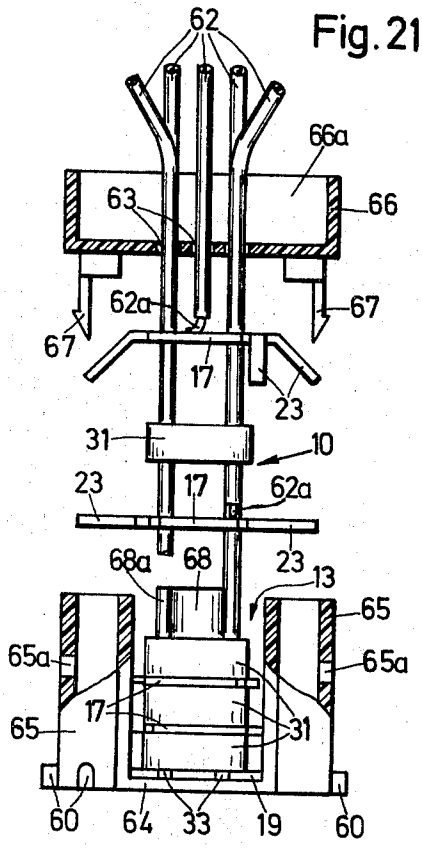
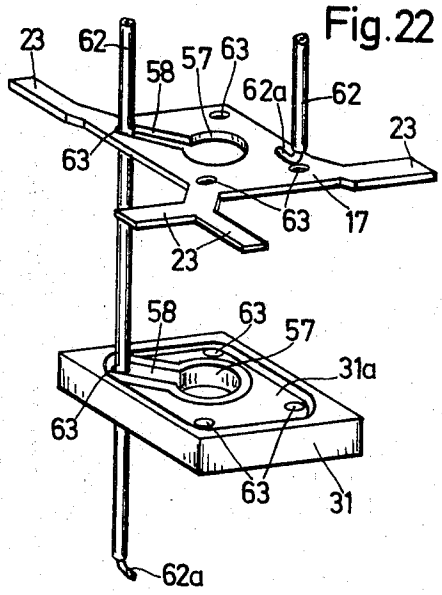



Fig. 22



# CONNECTING DEVICE FOR CURRENT DISTRIBUTOR RAILS

PRIOR APPLICATION:

In Germany on April 1, 1972 and numbered P 2216085.

In Germany on Feb. 21, 1973 and numbered G 7306545.9

One object of the present invention is to provide a simple and economical, easily manipulated device for establishing a reliable and safe connection for electrical current distributor rails with adaptors, and having a U-shaped or C-shaped cross-section.

Another object of the present invention is to provide a compact construction of the connecting device which should have no parts projecting beyond the rail cross-section.

This connecting device is formed of only a few separate parts and provides an electrical connection between the current distributor rails without the use of tools and wiring.

A further object of the present invention is that the connecting device should render possible any desired electrically safe interconnection of the current distributor rails.

According to the present invention there is provided a connecting device for electrical current distributor rails adapted to receive current collectors and having a U-shaped cross-section, including a connecting body arranged between the adjacent ends of current distributor rails located in the form of a T or cross and lying with their open sides in a common plane, said body having a plurality of connecting or protective contacts each forming an electrical connecting cross-over, a bridging body provided for each rail end to be connected, the body detachably engaging with a plug connection in the connecting body and in an end of the current distributor rail, and having a plurality of contact bridges connectable to the current conductors of the current distributor rails and the connecting contacts of the connecting body and a protective contact bridge connectable to the current distributor rail protective conductor and the protective contact of the connecting body before the current-conducting closure of the contacts, during connecting up of the rails.

The device of the present invention for the electrical connection of current distributor rails abutting each other at an angle, T-shaped or cross-shaped, is simple and economical to design and renders possible easy, rapid and electrically reliable connections.

The device includes a connecting body provided in the abutting areas of the rails and a bridging body at its sides, (preferably square) and in the ends of the rails, the said body being secured with a plug connection in the ends of the rails, so that only the bridging bodies need to be inserted in the ends of the rails and the connecting bodies to establish electrical connections.

The connecting body is provided with contacts on all its square sides, and each bridging body has contacts which are connectable to the contacts of the current distributor rail and to the contacts of the connecting body without wires and without the use of tools, by pressure and sliding contact means.

An advantage of the present invention is the compact construction of the connecting device which is accommodated entirely in the free space between the abutting



current distributor rails and in the rails, so that it has no parts projecting beyond the periphery of the rails.

The contacts are provided in the device by the manufacturer, and therefore the electrical connection can be effected without danger by an unskilled person. The entire device has only a few separate parts which can be made economically, and assembled rapidly.

Due to the design of the contacts in the connecting body, the phase arrangement may be of any desired kind, so that all parallel rails may have the same phase arrangement, the phase arrangement may change from time to time. This form of phase connection is electrically reliable because of the use of polarisation points between the connecting body and the ends of the rails.

The bridging bodies when mounted in the current distributor rails afford a mechanical fixing means for the connecting body, so that it is held between the ends of the current rails by the bridging bodies.

Since the connecting body forms a structural unit with the electrical supply leads, separate current feeding devices are unnecessary; the present invention presents a compact feeding cube which is electrically safe to manipulate, requires no internal wiring for assembly, and is simple to connect to the mains supply voltage externally of the rail system.

Since the connecting body is provided with feed leads, a supply of current may be effected at any abutting or crossing point of a network or grid formed of rails.

Embodiments of the present invention are illustrated in the accompanying drawings in which:

FIG. **1** is a perspective view from below of three current distributor rails abutting in T-shaped joint, and a device connecting them electrically together in the abutting area.

FIG. **2** is a vertical longitudinal section through a connecting device formed of a connecting body with connecting contacts and a bridging body with contact bridges, taken on the line I—I of FIG. **3.**

FIG. **3** is a horizontal longitudinal section through the same connecting device taken on the line II—II of FIG. **2.**

FIG. **4** is a front view of the bridging body, viewed from the end within the connecting body;

FIG. **5** is a plan view of the bridging body;

FIG. **6** is a front view of the connecting body, with an insertion opening receiving a portion of the bridging body, and connecting contacts located therein;

FIG. **7** is a plan view of the lower portion of the bipartite connecting body with the cover removed;

FIG. **8** is a plan view of two superimposed connecting contacts with a rectangular phase arrangement;

FIG. **9** is a plan view of two superimposed connecting contacts with diagonal phase arrangement;

FIG. **10** is a perspective view of a connecting contact of the connecting body, constructed as an electrical cross-over;

FIG. **11** is a schematic view of the current rail phases of a current rail network, the electrical connection having contacts as shown in FIG. **10**;

FIG. **12** is a perspective view of an alternative connecting contact of the connecting body, constructed as an electrical cross-over;

FIG. **13** is a schematic view of the arrangement of the current rail phases of a current rail network, with contacts according to FIG. **12**;

FIG. 14 is a side view of a connecting device formed from a distributor body with a bridging body inserted therein, with modified current conducting contacts and a protective contact arranged differently;

FIG. 15 is a horizontal longitudinal section through the same connecting device taken on the line III—III of FIG. 14;

FIG. 16 is a vertical cross-section through a bridging body inserted in current distributor rails, with a protective (earthing) conductor on one side wall;

FIG. 17 is a plan view of a connecting contact with a contact bridge in contact therewith;

FIG. 18 is a plan view of a protective connecting contact with a protective contact bridge in contact therewith;

FIG. 19 is a schematic plan view of a connecting body with current distributor rails attachable thereto and having locating projections on the connecting body and a groove in the current distributor rails;

FIG. 20 is a perspective view of a connecting body provided between current distributor rails forming a I junction, and acting as a feed point, with electrical leads projecting from its upper end;

FIG. 21 is a side view of a connecting body comprising a plurality of superimposed contact members and an electrical lead connected to each contact member, and extending upwardly, shown partly in section and in a partially expanded view;

FIG. 22 is a perspective view of a plate-like contact member connected to an electrical lead and having openings for the other electrical leads, and an insulating spacer having inserting openings for the electrical leads.

In FIG. 1 a connecting body (distributor box) **10** having a U-shaped cross-section and arranged with the open side of the rail (U side) located in current distributor rails **12** in a common plane, forms an electrical and mechanical connecting device for electrical current distributor rails **12**, with one or more bridging bodies (plug members) **11** detachably engaging in ends of the current distributor rails abutting the body **10**.

The connecting body **10** has a square basic shape corresponding in size to the free space between the T-shaped arrangement of the rails **12** and square sides corresponding in width and depth to the width and depth of the rails; on each side of the square there is an insertion opening **13** (FIG. 2) for a bridging body **11**. Unused insertion openings may be closed by an insert **14** so that the unused square side is securely shut-off electrically from the outside.

The bridging body **11** is similar in its form and cross section over a portion **11** of its length, to the receiving space (U-space **12***a*) of the current distributor rail **12**, and over the other part of its length **11***a* to the insertion opening **13**; it is preferable to provide the bridging body **11** with a rectangular cross-section, to displace the part of the bridging body engaging in the connecting body **10** in depth relatively to the other portion, and to reduce its width.

The portion **11***b* of the bridging body **11** engaging the current distributor rail **12** has a lower side extending flush with the lower side of the connecting body **10** and the open side of the rail, so that the connecting device extends flush with each rail **12** on the open side of the rail and is co-planar therewith.

On the two opposing side walls of the rail the current distributor rail **12** is provided with two current conductors **15** (R,S,T AND O) located with a clearance one above the other, extending over the entire length of the current distributor rail and accessible from the interior **12***a* of the rail, and a protective (earth) conductor **16** disposed externally of the cross-sectional bi-sectors of the rail (near a side wall of the rail), extending over the entire length of the rail in the connecting portion of the U and also accessible from the interior **12***a* of the rail, these conductors **16** being electrically connected together with the current distributor rails **12** by the connecting device, the phasing being the same in each case.

The connecting body **10** is provided with a plurality of connecting contacts such as current-conducting contacts **17** and **18**, and a protective contact **19**, and each bridging body **11** has a plurality of current-conducting contact bridges **20** making contact with the current conductors **15** of the current distributor rail **12** and the connecting contacts **17** and **18** of the connecting body by a plug or sliding connection. There is also a protective contact bridge **21** in contact with the rail protective conductor **16** and the protective contact **19** of the connecting body by a plug or sliding connection. Contact closure between the contact bridge **21** and protective contact **19** is effected before the electrical closure between the current-conducting contacts **20** and **17** or **18** during plugging of the bridging body **11** with the connecting body **10**.

There are four connecting contacts **17** and **18** arranged one above the other with a clearance, corresponding to the number of rail current conductors **15**. These are located about a bearing axis **22** provided in the centre of the square connecting body **10** and extending at a right angle to the direction of insertion of the bridging body, each two of which have adjacent contact tabs **23** and **24** (the lower two and the upper two) located on a common level; these tabs **23** and **24**, disposed at the same level, and associated with superimposed pairs of contacts, establish electrical connection between opposed current conductors **15** of the distributor rail **12**.

Each connecting contact **17** and **18** (FIGS. **10** and **12**) is a plate-shaped metal part having four contact tabs **23** and **24** bent out of the plane of the plate to a second plane; all the contact tabs **23** and **24** of each connecting contact **17** and **18** extend in a common plane and are arranged in the form of a cross. The crossing point of the imaginary lines of all the tabs **23** which extend in the longitudinal direction of the tabs or of two adjacent tabs **24**, extends outside the contact bearing point **22**. All the four tabs **23** and **24** of each contact **17** and **18** respectively are at right angles to each other in their longitudinal direction, the four tabs **23** of the contact **17** crossing each other at a common point and the four tabs **24** of the contact **18** having two crossing points with a space between them. Two tabs **24** are always at right angles to each other in this case.

The connecting contact **17** of FIGS. **3** and **8** has four tabs **23** the extensions of which cross each other at a common point, and the crossing point of all these four tabs **23** is in the corner of a square contact plate **25** of this contact **17**; two adjacent tabs **23** meeting in a corner of the contact bearing plate, extend within the connecting body **10** on both the inner sides of the angle of two adjacent insertion openings **13**, and the other two tabs **23** disposed also at a right angle to each other, extend along the outsides of the angle of the other two in-

sertion openings 13 (FIG. 3 and FIG. 8). These two tabs 23 extend along two diagonally opposing corners of the contact bearing plate 25.

The connecting contact 18 of FIG. 12 is provided at both ends of a diagonal bar 26 with two tabs 24 which join at a right angle and are each disposed on the insides of the angle of two adjacent insertion openings 13. This contact 18 is roughly cross-shaped, and is arranged with its bar 26 diagonally to two relatively opposed insertion openings 13 in the connecting body 10 (FIG. 9).

A square bearing opening 27, is formed in the contact bearing plate 25 and the diagonal bar 26, through which hole the bearing axis 22, also having a square cross-section, engages to prevent the contacts 17, 18 from turning.

The square hole 27 in the contact 17 has its sides parallel to adjacent tabs 23, and the hole 27 in the contact 18 extends with its square sides also parallel to the adjacent tabs 24, the diagonal arrangement of the bar 26 being thereby determined in the connecting body 10.

The connecting body 10 has a two-part housing with a box-shaped lower part 28 of plastics material, and a box-shaped cover 29, also of plastics material, mounted thereon. These two housing parts 28, 29 are held together by a bolt 30 passing through the bearing axis 22. The connecting contacts 17 and 18 are held vertically one above the other by means of spacers 31 insulating them from each other, the two lower and the two upper contacts 17 and 18 being turned through 180° from the plane of their plate and then through 90° to the right about the bearing point 22, so that their tabs 23 and 24 which are then bent in opposite directions are at a common level, and each insertion opening 13 contains two tabs 23 and 24, one tab of which, 23 or 24, is used by the upper contact 17 or 18 and the other tab 23 or 24 by the lower contact 17 and 18 co-operating with the upper contact (FIGS. 8 and 9).

The contact member 17 (FIG. 8) is turned in its plane through 180° and arranged in pairs, and then through 90° to the right about its axis 22 or about the diagonal, as a pivotal axis, through 180° extending between the two pairs of tabs (the inner angle pair and the outer angle pair).

The contact member 18 (FIG. 9) is turned through 180° in its plane and arranged in pairs, and then rotated about its bearing point 22 through 90° to the right or left so that the bars 26 of two co-operating contacts 18 cross each other.

From the four contacts 17 and 18, four contact tabs 23 and 24 also extend in each insertion opening 13, two tabs 23 extending adjacent to each other with a lateral clearance and located at a common level, and two pairs of tabs 23 and 24 disposed vertically one above the other (FIGS. 2, 3, 6, 8 and 9).

In order to ensure an electrically safe arrangement of the connecting contacts 17 in the connecting body 10 when assembled, the free corner between two contact tabs 23 and associated with the contact plate 25 has a fixing surface 25*a* co-operating with alternately diagonally opposed fixing surfaces 32 of the lower part 28. Above the four superimposed connecting contacts 17 and 18 there is a protective connecting contact 19 held by a spacer 31 above the upper contact 17 or 18 secured in the lower part 28, which also has four resilient contact tabs 33 in the form of a cross, of which only one tab is in each insertion opening 13. At the same time each tab extends only along one side of the insertion opening 13. These tabs 33 may be arranged according to the tabs 23 of the connecting contact 17 shown in full line in FIG. 3.

The bridging body 11 also has a two-part housing which is formed from a lower box-shaped part 34 and a box-shaped cover 35. These two parts both consist of plastics material and are held together by a connecting bolt 36, near the part 11*b* and extending at a right angle to the direction of insertion of the body and parallel to the axis 22. This bolt means 36 passes through a cover attachment 35*a* resting on the bottom of the lower part 34. The bridging body 11 has four contact bridges 20, of which two contact bridges 20 are provided in vertical spaced relationship in each side portion of the bridging body 11. Thus two pairs of contact bridges are located one above the other and are mounted vertically in the bridging body 11 to agree with the spacing between the current conductors 15.

The two contact bridges 20 provided in each side portion are each mounted on an insulating body 37 of plastics material, and the two relatively opposed insulating bodies 37 have arcuate contact surfaces 38 at one end (mobile surfaces formed by thickened portions) these being directed towards each other so that they are in contact but relatively displaceable. They engage with an abutment preventing movement of the insulating bodies 37 away from the connecting body 10.

At the other end of the two insulating bodies 37, a spring 39, is arranged between the two, and urges the two insulating bodies 37 outwardly in opposite directions. The two insulating bodies 37 each carrying two contact bridges 20 are supported on ribs (40) at the bottom of the lower part 34. At one end each contact bridge 20 has a knife contact member 41, coming into contact with the tab 23 or 24 of the contact 17, 18 on the connecting body, and at the other end, a contact member 42 coming into contact with a current conductor 15 of the conductor rail 12, said part 42 extending out of the side wall of the housing 34. The opposing parts 42 of the four contact bridges 20 are held by the spring 39 pressed against their insulating bodies 37 in a position outside the housing 34 so that they come immediately into contact with the conductors 15 when the bridging body 11 is inserted into a current conductor rail 12, thus rendering possible a certain amount of relative movement due to their spring mounting.

The two contact members 41, 42 with a connecting member 43 holding them apart from a single assembly, and are made from a metal plate or strip, the plane of the plate or strip of the two contact members 41, 42 being turned approximately through 90° relatively to each other; the contact members 42 extend with their plane at a right angle to the axes 22, 36 in a horizontal plane and the contact members 41 parallel to the axes 22, 36 in a vertical plane.

The edge-wise knife or sliding contacts or contact members 41 are in contact with the tabs 23 and 24 during any swivel movement of their insulating bodies 27, since these tabs have a much greater width than the thickness of the contact members 41. A turned up protective conductor 21 is journalled to pivot about the connecting axis 36 on the upper side of the bridging body 11 and can look in either of two pivoted positions, said conductor being in contact with a contact bridge 44 extending longitudinally over the entire body 11*a*.

The top of the cover **35** is provided in the pivotal range of the protective conductor **21** with two vertically spaced locking projections **45** engaging in a locking recess **46** in the conductor **21** when the conductor is in a particular pivoted position.

Since the current distributor rail **12** is provided with only one eccentric protective conductor **16,** the protective conductor **21** mounted centrally at one end and associated with the bridging body **11** must be pivoted into an inclined position for making contact with the rail protective conductor **16**; it is secured in this particular pivoted position by the locking connection **45, 46.**

Identical bridging bodies **11** are used for an angular, T-shaped or cross connection, so that the protective conductor connection of the bridging body **11** must be pivoted into one or other inclined position with the rail protective conductor **16** of the protective conductors **21** into one or other inclined position, in order to come into contact with its conductor **16** disposed on one side when the current distributor rails **12** come into abutment with the connecting body **10.**

The bent protective conductor tab **33** of the protective conductor cross **19** in the connecting body **10** is located on the protective conductor bridge **44** of the bridging body **11,** making contact to give protective earthing.

When the bridging body **11** is inserted in the connecting body **10,** the protective conductor connection is produced first between the protective conductor bridge **44** and the protective conductor tab **33** and then a current conducting connection is established between the contacts **41** and **23** or **24.** This is ensured by extending the bridge **44** further in the insertion direction.

To effect mechanical attachment of the bridging body **11** in the current distributor rail **12** the body **11** is provided on its two relatively opposed side walls, in the lower portion, with a projecting securing bar **47** occupying a portion of the length of the bridging body. The two securing bars **47** are opposed to each other at the same level and engage in fixing grooves in the current distributor rails **12**; they extend over the entire length of the rail **12** and are accessible from the rail receiving space **12***a*.

The bridging body **11** is detachably secured in the connecting body **10** by a locking connection, whilst, on the lower side of the portion **11***a*, a projecting locking member **48** is provided engaging in an annular groove **49** of the lower part **28** in each insertion opening.

The insertion member **14,** closing the unused insertion opening **13** of the connecting body **10** is formed as a plastics hood and its base is flush with the outer surface of the housing in the inserted position (FIGS. **2** and **3**). For securing the insertion member **14,** the member is provided with a locking projection **50** by which it engages in a locking recess **49** of the lower part **28.**

To release the box-shaped insertion member **14,** it has a bottom insertion opening **51** for a tool, but this insertion opening **51** is covered by an internal bar **52** preventing contact of the tool with an electrical contact **17.** The end of each bridging body **11** when disposed within the connecting body **10** is closed for the contacts **23, 24** with the exception of openings **11***c*.

The current distributor rails **12** when mounted on a ceiling or wall can be electrically connected at their abutting ends as follows.

A bridging body **11,** with its portion **11***b* located forward in the direction of insertion, is inserted into the abutting ends of a rail, this portion **11***b* being prevented by its securing members **47** from dropping into the rails **12.** The bridging body **11** is first inserted with its entire length into the rails **12**; then the connecting body **10** is inserted between the free space defined by the adjacent ends of the rail and the individual bridging bodies **11** are partially drawn out of the ends of the rail again and inserted into the openings **13** of the connecting body **10** for electrical connection with their section **11***a*, the protective earthing (connection of the contact **33** and **44**) being first made, followed by a connection between the contacts **23** and **24** and **41.** The long sections **11***a* of the bridging bodies **11** inserted in the connecting bodies **10** keeps the body **10** fast between the ends of the rails, so that it is not necessary to secure it to a surface of a building.

When the bridging bodies **11** are inserted into the ends of the rails, the laterally projecting contact members **42** make contact with the rail current conductors **15** and the upwardly projecting protective conductor **21** is disposed against protective conductor **16,** the conductor **21** of the bridging body **11** having to be pivoted into the lateral position in which the rail protective conductor **16** is disposed.

FIG. **11** of the drawings show the phase arrangement (R.S.T and O) in the case of grid-shaped current distributor rails **12**; an electrical connection at the abutting points (crossing points) of the current rail **12** is established by the connecting contacts **17** of FIG. **10,** so that the parallel current rails **12** always have the same phases R, S and T, O on the same side. In the case of the series of rails **12** in the longitudinal direction and the series of rails **12** extending parallel thereto at spaced intervals, the phases R and S are always on the left side and the phases T and O on the right side.

FIGS. **13** also shows the phase arrangement (R, S, T and O) with grid-like current distributor rails **12**; the electrical connection at the abutting points (crossing points) of the current rails **12** is established by the connecting contacts **18** of FIG. **12,** so that the parallel rails **12** change in their phase arrangement. In one current rail **12** the phases R and S are on one side and the phases T and O on the other side but in the case of the following rail **12** these are reversed. This is repeated alternately in the case of all the rails **12** arranged in series.

In order to ensure correct phase connection between the rails **12** and the connecting body **10,** the ends of the rails and the corners of the connecting body are provided with projections or recesses **53, 54** so that a phase cross-over is impossible. Only the rails **12** having ends corresponding with the recesses or projections **53,** 54 of the connecting body **10** can be attached at this end, otherwise they must be connected to the body **10** by their other ends.

The connecting body **10** may have a basic form with more than four sides, and provided on each side with an insertion opening with contacts **17, 28** so that more than four bridging bodies **11** can be detachably secured to the connecting body **10.**

A lug **55** formed like an eyelet is provided at the end of each bridging body **11** remote from the connecting body **10** (FIG. **15**). It has a threaded hole provided therein and extending transversly, to the longitudinal direction of the distributor rails through which hole a fixing screw (not shown) engages. The bridging body

11 is secured detachably in the current distributor rails 12 by this fixing screw, in that the screw presses on the inside against the U or C cross piece.

It is preferable to manufacture the cover 35 integrally with the extension 55.

FIGS. 14 to 19 show another embodiment of a connecting device for the electrical and mechanical connection of current conductor rails 12 abutting each other in the form of a T or cross, the rail protective conductor 16 being arranged in a different position from FIG. 1 on the current conducting rail 12 and on a side wall of the C or U-shaped rail 12, accessible from the rail receiving space 12*a*. The connecting body 10 and the bridging body 11 correspond in their basic design and in their mode of operation to the connecting parts 10,11 of FIGS. 1 to 13. In order to avoid repetition, no further description of the basic construction of the parts 10,11 of the device shown in FIGS. 14 to 19 is given and only modifications of the construction are described.

Below the superimposed current conducting connecting contact 17 forming an electrical connecting cross and associated with the connecting body 10 there is a connecting cross protective contact 19 having eight projecting contact tabs 33 in the base of the body 10 each two of which tabs project as a pair into an insertion opening 13 of the connecting body 10 and are spaced from each other in the two side portions of the insertion opening 13.

In the two side portions of each bridging body 11 (in the area of the two side walls of the bridging body) there is a protective contact bridge 21 below the securing bars 47, one end of which is contactable by a contact tab 33 of the connecting body 10 and the other end of which is contactable by the protective conductor 16 in the end portion of a C or U-side of the distributor rail 12 and accessible from the receiving space 12*a*, before the current-conducting closure of the contacts 15,17 and 20. The bridging body 11 is provided on both sides with a protective contact bridge 21, but one only is used for the protective contact. The rail 12 is attached at both ends to the connecting body 10 so that the conductor 16 is disposed either on the left side or on the right side and thus one of the two contact bridges 21 is used alternatively.

The two contact bridges 21 are located on the same side of the bridging body 11, lying exposed, and are secured by a common rivet 56, connected together in the centre longitudinal area or attached to the bridging body 11. The two protective contact bridges 21 extend almost over the entire length of the bridging body 11 and are made longer than the current conducting contacts 20, extending at both ends beyond the current-conducting contact ends, so that a protective contact connection is automatically obtained when the parts 10,11 and 12 are plugged together, before the current conducting connection.

Each protective contact 21 is a metal strip having a rectangular cross-section which is arranged edgewise on the bridging body 11 by its greater cross-sectional extension, and is thus in parallel by this extension with the side wall of the bridging body.

At both ends the protective contact bridge 21 has sliding contacts 21*a*, 21*b* which are formed by bends in the plain of the strip, one of which is placed in contact with the lateral protective conductor 16 and the other with the inside (the side directed towards the bisector of the width of the insertion opening) of the tab 33.

The protective contact 19 of the connecting body 10 is formed by a plane metal plate having eight contact tabs 33, each two of which engage as a pair in an opening 13, a protective contact bridge 21 being located against its sides facing each other. The two tabs 33 of each pair extend parallel to each other and all the pairs of tabs 33 are at a right angle to each other in one plane. All the connecting contact crosses 17,21 arranged one above the other are held by spacers 31 at points one above the other, and have a circular bearing opening 51 for securing their position. There is a fixing groove 58 which is disposed between two tabs 23 and 33 at right angles to each other.

Of the four superimposed connecting contacts 17 each two adjacent ones co-operate and have tabs 23 on a common plane; there are two contacts 17 of metal strip located with their tabs 23 in a common plane, two metal strips located with their tabs 23 in a second plane by bends, and one plane connecting contact 17 provided with angled tabs 23.

It is preferably to provide the highest and the lowest connecting contact 17 with angled tabs 23 so that the tabs, extending downwardly or upwardly, are disposed in one plane with the metal strip 17 arranged below or above it.

Of the two co-operating connecting contacts one is turned about a diagonal axis extending between the inner angle pair of tabs and the outer angle pair of tabs and through the fixing groove 58, through 180°, so that the superimposed co-operating contact 17 with its tabs 23 reach the same level, and two tabs 23 of two contacts 17 are located in each insertion opening 13. The bearing point 22 is formed by a column having a circular cross-section and provided with a rib engaging in the fixing groove 58. This holds all the contacts 17,19 in position in the connecting body 10. The bearing point 22 is provided as an extension partially on the housing 28 and partially on the cover 29.

For compensating tolerances in the spacing of the rail conductors 15, each current conducting contact bridge 20 is mounted on its own insulating body 37 so that each contact bridge 20 can apply itself individually to the associated rail conductor 15. Each insulating body 18 is mounted to pivot within a certain range by the use of an arcuate (sector-like) contact surface 38 about an extension 35*a* of the cover 35 and of the housing 34, having a circular cross-section and simultaneously secured in its longitudinal position.

The two insulating bodies 37 opposed to each other at a common level are held on the outside in opposite directions by a pressure spring 39; this presses the contacts 20 against the rail conductors 15. However, the contacts 20 may also be held on a common insulating body 37.

Each current conducting contact bridge 20 is a metal strip having a rectangular cross-section which is mounted on the insulating body 37 edgewise in the bridging body 11 by its greater cross-sectional extension; it extends by the edgewise plane of the strip parallel to the side wall of the bridging body, and the U or C sides of the rail.

At one end each contact bridge 20 has a contact plate 42 bent at right angle to the plane of the strip and at the other end a sliding contact 41 formed by bends within the plane of the strip. The contact plate 42 of

each contact bridge **20** is in contact with the current conductor **15** and the sliding contact **41** is disposed against the inside (the side facing the bisector of the insertion opening) of the contact tab **23** (FIG. **15**).

The sliding contact **41** is exposed by an opening **59** for making contact with the connecting contact **17** at the sides and ends of the bridging body **10.**

On all of its square sides the connecting body **10** has a rib-like projection **60** in one corner, which engages in a groove **61** of the current conductor rail **12.** The groove **61** is provided on the side of the rail holding the protective conductor **16** and extending over the depth of the side and also open over the depth of said sides. This groove **61** (FIGS. **16** and **19**) extends over the entire length of the rail.

At the bottom of its housing **28** the connecting body **10** is provided, on two adjacent sides of the square in a common corner, with two projections **60** and on the other two sides of the square, in the corners adjacent to the above two sides of the squares, with respective projections **60.** The current distributor rails **12** can only be fitted in a specific position by these projections **60** and their unilateral groove **61,** so that, when the distributor rails **12** are applied to the connecting body **10,** electrical misconnections are impossible. Each rail **12** is attached by one end or the other (always with only one end to one side of the square) to the connecting body **10** so that the phase arrangement determined by the connecting contacts **17** is ensured, with the phases (R,S,T and O) according to the diagram shown in FIG. **11.** This form of connection is clearly shown in FIG. **19** of the drawings.

The connecting body **10** shown in FIGS. **20–22** is a modified embodiment having a plurality of superimposed and electrically insulated contact members **17,19** which may be connected directly by electrical contacts **20,21** of the bridging body **11** to electrical contacts **15,16** of the distributor rails **12.**

The superimposed current conducting contacts (R,S,T), the contact members **17,19** (for example fire contact members) forming a zero conductor ($M_p$), and a rail protective conductor, are each connected to an electrical lead **62** and all the electrical leads **62** extend out of the top of the connecting body (upper surface) for connection to the main supply voltage.

According to the number of phases desired (three, four or five phases) the contact body **10** is provided with contact members **17,19** superimposed vertically on the connecting body, and electrical leads **62,** as current feeding leads, extend out of the top of the connecting body **10** according to the number of contact members **17,19.**

Each feed line **62** is connected by welding, soldering or the like to the contact member **17,19** associated therewith; the ends **62***a* of the feed lines **62** in the connecting body **10** are bent relatively to the lines **62** extending vertically in the connecting body, rest on the contact members **17, 19** and are connected thereto by welding or soldering.

Each contact member **17,19** has a plurality of openings **63** through which all the leads **62** of the contact members **17,19** extend; it is preferable to provide each contact member **17,19** with the same number of openings **63** as there are electrical leads **62.** In the case of a five-conductor connecting body **10,** five contact members (four contacts **17** and one protective contact **19**) are present with each five openings **63,** whilst all the other four contact member leads **62** extend through the top contact member **17** connected to a lead while through the bottom contact member **19,** which may represent the rail protective contact, no lead **62** is passed, but only one lead **62** secured thereto.

Each contact member **17,19** is a contact plate which has several contact bridges **23,33** located in the plane of the plate or located in said plate and bent out of the plane of the plate at a right angle to each other. Each contact plate **17** has four contact bridges **23** and the contact plate **19** of the protective conductor has, four contact claws **33.** Each contact plate **17,19** establishes contact by a contact bridge **23** or contact claw **33** in an insertion opening **13** extending transversely to the vertical direction of the connecting body.

Each contact plate **17,19** has a central centering opening **57** and lead openings **63** provided around this centering opening **57** with a space therefrom and from each other.

The centering opening **57** is a circular hole with a centering recess **58** branching therefrom and simultaneously providing a lead opening **63.** A plate-shaped spacer **31** of an insulating material, such as a plastics material, is arranged between the superimposed contacts **17,19** and electrically insulates the parts **17,19** from each other. It is also provided with a central centering opening **57** with a centering groove **58** and lead opening **63.** The centering groove **58** of the spacer **31** also provides a lead opening **63.**

The spacers **31** are provided near the contacts with a recess **31***a* which receives the end **62***a* of the lead **62** soldered or welded to contact member **17,19.**

The connecting body **10** has a lower, square base plate **64** on which hollow posts **65** extend upright from all four corners to leave exposed the insertion openings **13** between them to rise with a preferably square cross-section, the four posts **65** are formed integrally with the base plate **64** of an insulating material.

A box-shaped cover **66** open at the top and having a receiving chamber **66***a* also open at the top for electrical terminal and connecting members and electrical leads is supported on the four posts **65.** The cover **66** engages by locking members **67** in the member **65** and is detachably secured thereto; the hook shaped locking members **67** of the cover **66** engage longitudinally in the cover and hook in recesses **65***a* in the posts **65.** The cover **66** is made of an insulating material (plastics) in one piece with the locking member **67** and has openings **63** for the electrical lead **62.**

The connecting body **10** has a cubic shape and is a feeding point. The lower surface of the cube is plain and closed and the upper surface is also closed with the exception of the opening **63** for the leads. It provides the receiving space **66***a*, whilst the four side surfaces form the insertion openings **13** for the bridging body **11,** each side surface being formed by parts of two posts **65** and between the posts **65** the insertion opening **13** limited by the cover **66** and the base plate **64.**

A central, upright centering pin **68** forming a workpiece with a base plate **64** rises from the said plate **64.** The contact members **17,19** and the spacers **31** are positioned around the contact members **17,19;** the centering pin **68** have a unilateral centering rib **68** over which the centering groove **58** of the parts **17,19,31** engages as determined by the position of the contacts **17,19.**

Any insertion openings **13** which are not used, may be closed by detachable locking plates **14**, these plates **14** engaging by clamping forks extending from the lower side in the direction of insertion into the contact claws **33** of the lower protective contact plate **19** and by locking projections on the upper side in recesses of the cover **66**.

The height of the connecting body **10**, corresponds to the height or depth of the rail, and of basic shape corresponding to the free space formed by the abutting rails **12**.

After the current conductor rails **12** are fastened on a surface of a building and the insertion of the bridging bodies **11** in the rails **12**, the connecting body **10** may be inserted from the open side of the rail into the free space formed by the rails **12**, and is retained in position by the bridging bodies **11**, then drawn partly out of the rails **12** and inserted into the openings **13** of the connecting body **10**.

The leads projecting out of the top of the connecting body **10** may be connected to the main supply voltage directly or by way of other leads so that the rails **12** may receive voltage from the feed cube **10**.

The feeding points may be located at the desired rail abutting points (nodes) in a current distributor network or grid with parallel or crosswise rails **12**.

At the points where current is to be supplied, the electrical leads **62** of the connecting body **10** are connected to the network and at the points where no supply of current is necessary, the leads **62** can be accommodated in the space **66***a* without any electrical effect or detached by being severed from the connecting body **10**.

We claim:

**1.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, the number of connecting contacts in each socket of said connecting body corresponding to the number of rail current conductors, said contacts being positioned in adjacent vertically spaced stacked relationship, a plurality of contact tabs on each connecting contact, each said connecting body socket having disposed therein one contact tab of each connecting contact, the contact tabs of adjacent connecting contacts in each socket of said connecting body being located at the same level and extending in adjacent spaced relationship in side portions of the respective one of said sockets.

**2.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, each said connecting contact having four contact tabs bent out of the plane of a contact plate and disposed on a common second plane, wherein all said contact tabs of each connecting contact extend normal to each other and the crossing point of the imaginary straight line of all said tabs extending in the longitudinal direction of each tab lies externally of a bearing point of said connecting contact, two superimposed connecting contacts located on a common plane being turned with respect to the plane of their plate through 180° and relatively displaced at an angle of 90° and secured in position in said connecting body.

**3.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said con-

necting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, each said connecting contact having a contact bearing plate and four contact tabs with imaginary tab extensions crossing at a common point, said crossing point being located in a corner of said contact bearing plate, two adjacent ones of said contact tabs extending outwardly at a right angle to each other located on the inner sides of the angle of two adjacent ones of said sockets, and two other contact tabs extending outwardly also at a right angle to each other located on the outsides of the angle of two other two adjacent ones of said sockets, the contact bearing plate of said connecting contact being provided in a free corner between two adjacent tabs with a fixing surface which cooperates with a fixing surface of said connecting body for correct positioning of said contact, said fixing surfaces for all connecting contacts being arranged diagonally and alternately opposite to each other in said connecting body.

**4.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, each connecting contact having two contact tabs at both ends of a diagonal bar extending at a right angle to each other, each of said contact tabs lying within the included angle between the centers of two adjacent sockets.

**5.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, there being four contact bridges mounted in each bridging body, each of said contact bridges having two superimposed and spaced apart contacts arranged on two sides of a common insulating body of plastics material to which said contacts are secured, two relatively opposed ones of said insulating bodies each holding two superimposed contact bridges opposed to each other at the same level in two side portions of said bridging body and pivotable one upon the other relatively to each other at one end by means of arcuate displacement surfaces to engage behind an extension of a cover of said bridging body forming an abutment to prevent movement of said insulating bodies relatively to the direction of insertion of said bridging body, and a compression spring between ends of said insulating bodies remote from said displacement surfaces, said spring urging said two insulating bodies in opposite directions.

**6.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped

cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, each said contact bridge being a metal strip plate which at one end has a contact member contactable with said current conductors, and at the other end a contact member contactable with a tab of said connecting contact, planes of said strip plate and said two contact members of each contact bridge being rotated relative to each other through substantially 90°.

**7.** A connecting device as recited in claim **6**, wherein each connecting contact includes a bearing plate, insulation spacers mounting individual connecting contacts in vertical spaced relationship, holding means for securely holding said connecting contacts in said connecting body against axial displacement about a common bearing axis, and an angular opening defined in each said contact bearing plate for said holding means.

**8.** A connecting device as recited in claim **6**, including said protective contact being located above said connecting contacts, an insulating spacer between said protective and connecting contacts, and each said protective contact having a contact tab which projects into and extends in the side portion of each socket.

**9.** A connecting device as recited in claim **6**, each socket having a removable insertion member in the form of a box-shaped plastics part, the bottom of which when in use is flush with the outside of said connecting body with a locking projecting on a wall thereof engaging in a bottom locking recess in said connecting body and, an insertion opening for an unlocking tool insulated from said electrical contacts.

**10.** A connecting device as recited in claim **6**, wherein said connecting body includes an insulated housing of plastics material with a box-shaped lower portion and a box-shaped cover, a holding part extending between said cover and lower portion, each said socket defined by said lower part in each side of said box, said bridging body having an insulated housing of plastics material formed from a box-shaped lower part and a box-shaped cover, and holding means between bridging body lower part and cover.

**11.** A connecting device as recited in claim **6**, wherein said bridging body has a cover secured in place by connecting means, said protective contact bridge including a protective conductor bar and a protective conductor contact lockable in two positions and mounted for pivoting on the cover about said connecting means, said protective conductor contact when in use being in contact with said protective conductor bar, said protective conductor bar engaging over said cover on that portion thereof engaging in said connecting body and contact-closeable with said protective conductor of said connecting body before the establishment of electrical contact between said current conductors, said cover of said bridging body being provided in the pivotal range of said protective conductor with two spaced-apart locking projections which engage in a locking recess defined in said protective conductor for positioning said protective conductor in each of two lateral inclined positions according to the mounting of said rail protective conductor.

**12.** A connecting device as recited in claim **6**, wherein a lower part of said bridging body is provided on the underside of that portion thereof engaging in said connecting body with a locking projection detachably engaging in a recess defined in the lower part of each socket, and the lower part of said bridging body having securing bars on two relatively opposed sides carrying the projecting parts of a respective one of said contact bridges, said bars engaging in recesses defined in the respective current distributor rail.

**13.** A connecting device as recited in claim **6**, wherein said connecting body is of square form and is provided in the corners of all of the sides of said square with a projection engaging in a groove open in the vertical direction of each said side and in a groove provided in a side of the current-distributor rail holding the protective conductor for the parallel identical phase arrangement of the conductors, and said connecting body is provided in a corner on two adjacent sides of said square with a projection and on the other two sides of said square, in the corners adjacent to the said sides of said square, with a further projection.

**14.** A connecting device as recited in claim **10**, including an eyelet-like extension provided on said cover, said extension defining a threaded bore extending transversely to the longitudinal direction of a rail and on the end of the bridging body remote from said connecting body, and a fixing screw in said bore, said screw effecting a detachable locking connection between said bridging body and a distributor rail and pressing against said rail with a clamping effect.

**15.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging

body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, said protective contact being below superimposed current-conducting connecting contacts of the connecting body, said protective contact having a plurality of protective contact tabs of which two spaced-apart tabs located in side portions of a respective socket are provided in the bottom of said connecting body, and said protective contact bridge contact being closeable at one end with a protective contact tab of said connectinb body and at the other end with a protective conductor arranged at the free end of a side of the current distributor rail and accessible from a receiving space of said rail before electrical contact is made between said current conducting contacts.

**16.** The connecting device of claim **15,** wherein there are a pluraltity of said protective contact bridges of said bridging body and each includes a metal strip with a rectangular cross-section extending on edge by its greater cross-sectional dimension and parallel to a side wall of said bridging body and contact parts at both ends thereof are formed by bends in said strip, and one of said contact parts may be applied to said protective conductor and the other of said contact parts applied to the inside of a tab of said protective conducting contact.

**17.** The connecting device of claim **16,** wherein said protective connecting contact of said connecting body is a plane metal plate having eight contact tabs of which two extend as a pair of tabs in parallel and engage in a common socket and in which opposing inner sides of each pair of tabs form contact surfaces for sliding contacts of said contact bridges, and in which all four pairs of tabs lie in one plane but are directed at right angles to each other.

**18.** The connecting device of claim **17,** wherein said four superimposed connecting contacts include two first metal plates located with their contact tabs in a common plane and two second metal plates provided with the contact tabs bent into a second plane, a connecting contact of said first metal plates and a connecting contact of said second metal plates being arranged one above the other, and a connecting contact of the two co-operating contacts turned through **180°** about a diagonal axis extending between two adjacent contact tabs and through a fixing groove in said connecting body.

**19.** The connecting device of claim **18,** wherein each current-conducting contact bridge of said bridging body is held on its own insulating body and two said insulating bodies opposed to each other at a common level are held by means of a compression spring and urged outwardly thereby, and each insulating body is secured in position and pivotable within a certain range by an arcuate contact surface about an extension of said bridging body provided on a cover of said bridging body and having a circular cross-section.

**20.** The connecting device of claim **19,** wherein each current-conducting contact bridge of said bridging body is a metal strip having a rectangular cross-section with its larger cross-sectional dimension on edge and extending parallel to a side wall of said bridging body and at one end has a contact plate bent at an angle to the plane of said strip and in contact with a current-conductor and at the other end has a sliding contact formed by a bend within the plane of said strip and in contact with one of said tabs, each sliding contact being accessible by a lateral and front opening defined in said bridging body.

**21.** A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, each contact of said connecting body having a three-dimensional form and an electrical lead connected by welding to each such contact to act as a feed line, said lead extending out of the top of said connecting body, the ends of said feeding lines disposed in said connecting body being bent relatively to the portions of said lines extending in the vertical direction of said connecting body, each such end resting on a contact member associated therewith and welded to said contact member, and each contact member defining openings for

other electrical leads extending to contact members provided therebelow.

22. A connecting device particularly constructed for electrically connecting together electrical current distributor rails of the type having a generally U-shaped cross section and carrying in insulated relative relation a plurality of current conductors and at least one protective conductor, said connecting device comprising a connecting body adapted for positioning between adjacent ends of a plurality of current distributor rails, a plurality of sockets in said connecting body, said connecting body having therein in insulated relation a plurality of connecting contacts and a plurality of protective contacts opening into said sockets; and a bridging body for each current distributor rail, each bridging body having a first plug connection detachably received in one of said connecting body sockets and a second plug connection for detachable reception in an end of an associated one of said current distributor rails, each of said bridging bodies having a plurality of separate contact bridges each having means for connection to one of said current conductors of an associated current distributor rail and a respective one of said connecting contacts of said connecting body, each of said bridging bodies further having a protective contact bridge for connection to the protective conductor of the respective current distributor rail and the respective protective contact of said connecting body; the respective positions of the protective conductor, protective contact bridge and protective contact on the one hand and the current conductors, connecting contacts and contact bridges on the other hand being such that in the assembly of said connecting device with one of said current distributor rails through the use of one of said bridging bodies a protective connection is made in advance of a current distributing connection, said connecting body being provided with a lower square insulating base plate with upright hollow insulating posts at all four corners thereof and defining between said posts a lateral insertion opening, and a center upright centering pin which receives said contact members and engages by a centering rib in centering openings defined in said contact members with a plug connection, said connecting body having an upper box-shaped cover defining a receiving space open at the top for electrical terminal and connecting members, and locking members detachably securing said cover on said posts.

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