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JOINT FOR SECTIONALIZED ELECTRIC DISTRIBUTION SYSTEMS

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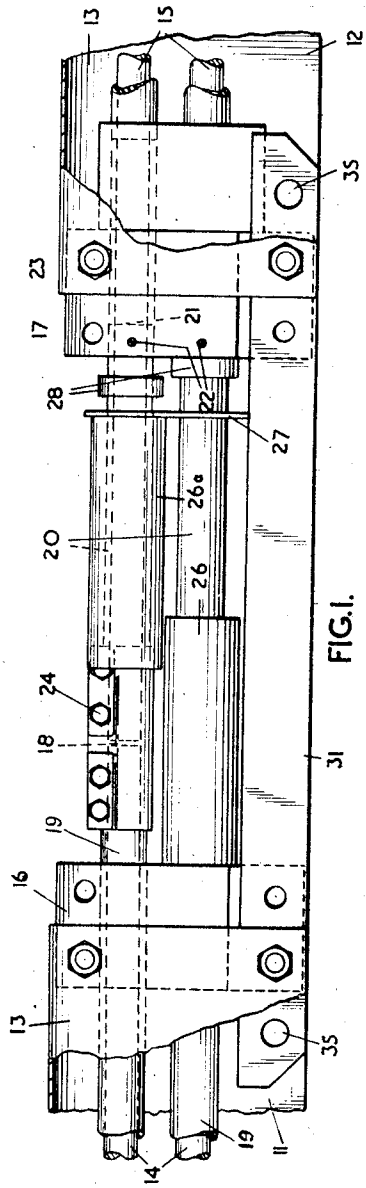



FIG. 1.

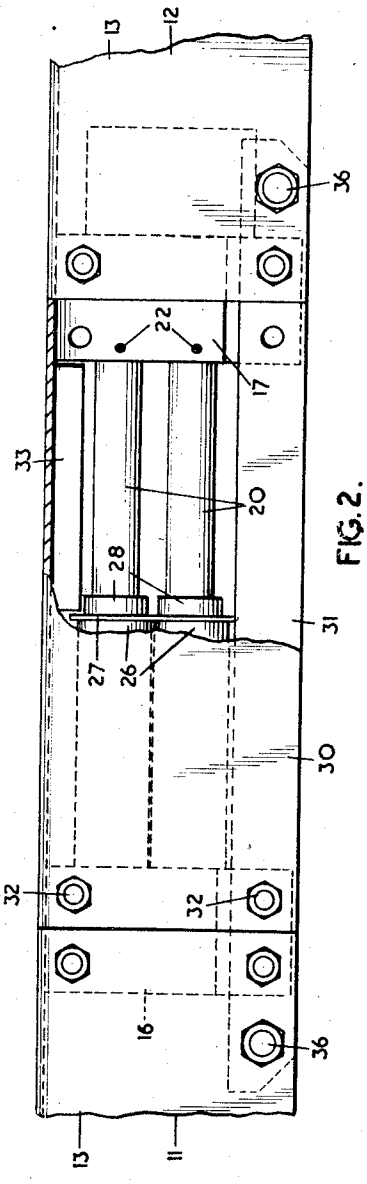



FIG. 2.

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## JOINT FOR SECTIONALIZED ELECTRIC DISTRIBUTION SYSTEMS

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Application March 1, 1946, Serial No. 651,141
In Great Britain May 18, 1945

6 Claims. (Cl. 174—88)

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This invention relates to an electric distribution system, for a production shop or the like, of the kind comprising a plurality of similar sections of convenient length joined to one another, as disclosed, for example, in patent specification No. 2,069,575.

More particularly it relates to an electrical distribution system, of the kind disclosed in the specification of my co-pending patent application, Serial No. 651,139, filed March 1, 1946, having four busbars or other conductors for three live phases and an insulated neutral, and fuse-containing output boxes (to be selectively plugged into conductor-connected sockets carried by insulating blocks serving for spacing the conductors) having detachable fuses to be in circuit with terminals for the three live phases.

The main object of the invention is to provide an improved joint, for joining together two such sections, which will provide satisfactory insulating properties, can be quickly and easily made or broken and with which the joining must be correctly made, and will allow of any one section being removed without the adjacent sections being axially disturbed.

According to the invention the adjacent ends of two sections, which are to be electrically and mechanically joined to one another in a detachable manner, incorporate insulating blocks from which extend conductors (either rigid busbars or stranded or other relatively-flexible cables) to be appropriately joined together by means of clamps, insulating means being provided for enclosing the extending conductors except at their adjacent ends where the clamps are. There is combined therewith a slidable insulating means round the clamps, a cover, for the joint, to be secured to the adjacent ends of the sections, and interlocking means between the cover and the slidable insulating means—to prevent movement of the latter when the joint has been made, and to prevent the correct assembly of the cover unless the joint has been properly made.

In the accompanying drawings—

Figure 1 is an elevation of a joint, according to the invention, between the adjacent ends of two sections as aforesaid, the cover for the joint being removed and the said slidable insulating means for one of the phases being shown in a position in which the associated clamps are almost entirely uncovered; and

Figure 2 is a corresponding elevation of the joint when completed, but with the cover (shown partly broken away) in interlocking position.

In the construction shown, each of the sections

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11, 12 is enclosed by an inverted U-sectioned metal casing 13, as disclosed in the specification of co-pending application Serial No. 651,140, filed March 1, 1946, the lower openings of these main casings being covered-in in the manner described in that specification; and the two sets of conductors 14, 15 extend from the insulating blocks 16, 17, at the ends of the sections to be joined, by different amounts so as to abut one another, at 18, near one of the blocks 16 and relatively remotely from the other block 17. The shorter-extending conductors 14 are encased in individual insulating tubes 19 which are fixed in position, and the further-extending conductors 15 have individual insulating tubes 20 thereon which, when the joint is made, extend for only a short distance into the adjacent block, as indicated at 21, where they may be lightly axially located as by means of grub screws 22 of insulating material. Recesses are provided in these blocks to permit of the axial withdrawal of the set of insulating tubes 20 when the joint is to be unmade or the conductors bared.

The respective insulating tubes leave bare the extremities of the conductors to receive the conductive clamps 24.

Slidably mounted round the clamps are individual insulating tubes 26, which may be united as a four-chamber insulating moulding, which, when properly in position, abut the block 16 from which the shorter-extending conductors are supported. At the ends of the tubes 26 (or moulding) remote from that block 16 is an insulating plate 27 with holes in it to receive the associated insulating tubes 20. On the other side of the plate 27 remote from the clamps use is made of rubber rings or the like 28 for completing an axial interlock between the plate and the slidable insulating tubes 20 round the further-extending conductors. Obviously, the plate 27 may, if desired, be fast with the tubes 26.

The joint is adapted to be completed by means of a U-section metal casing 30 (Figure 2) to be placed thereover with its opening on the underside, the opening being closed by a cover plate 31 which serves as a mechanical tie between the two sections and for spacing them, the ends of the joint casing 30 being adapted to abut the adjacent ends of the main casings 13 of the two sections and to be secured to the end insulating blocks 16, 17 of the sections by means of through bolts 32, which also serve for securing the tie plate 31. The joint casing is provided internally, parallel with one of its faces, with an insulating abutment means 33 (Figure 2) which will coact

with an edge of the plate 27 and prevent the proper mounting of the joint casing unless the insulating tubes 26 (or moulding) and interlocked tubes 20 have been correctly fitted. When the joint casing, however, is properly fitted, then the insulating tubes 26 (or moulding) are located axially against the block 16 from which the shorter-extending conductors are supported.

When the joint is to be broken in order to remove a section, the U-sectioned joint casing 30 is first removed, and by sliding back the rubber rings or the like 28 abutting the insulating plate 27 the tubes 26 (or the moulding) can be slid axially, as indicated at 26a in Figure 1; whilst by removal of the grub screws or the like 22 which were locating the one set of insulating tubes 20 the latter can be slid back, thereby enabling the clamps, when released, to be slid in the same direction to disconnect the various conductors from one another. Then the bottom cover plate 31 can be removed to break the mechanical tie between the sections.

Actually, in the example shown, the channel flanges of the bottom plate 31 are reinforced at their outer ends by transverse tubular spacers (not shown) having bores 35 to receive further through bolts 36 serving for securing the main covers 13 thereto.

By means of the interlocks provided it is impossible for the joint to be incorrectly made.

Thus, in this way, a very satisfactory electrical and mechanical joint is provided.

What I claim as my invention and desire to secure by Letters Patent of the United States is:

1. Means for electrically and mechanically joining to one another, in a detachable manner, the adjacent ends of two sections of an electric distribution system, comprising an insulating block at that end of each section which is adjacent to the other section, a plurality of conductors, to be appropriately joined together, extending from each insulating block, insulating means for enclosing the extending conductors except at their adjacent ends, clamps uniting the adjacent ends of the appropriate conductors of both sections, slidable insulating means round said clamps, a cover for the joint between the two sections, means for securing said cover to the adjacent ends of said sections, and interlocking means between said cover and said slidable insulating means.

2. Means for electrically and mechanically joining to one another, in a detachable manner, the adjacent ends of two sections of an electric distribution system, comprising an insulating block at that end of each section which is adjacent to the other section, a plurality of conductors, to be appropriately joined together, extending from each insulating block, one set of conductors extending uniformly from one insulating block by an amount which is less than the amount by which the other set of conductors extend from the other insulating block, so that one set of conductors abuts the other set in a position which is nearer to one of said blocks than to the other, axially-fast insulating tubes for enclosing the shorter-extending conductors except at their respective ends, axially-slidable insulating tubes for enclosing the longer-extending conductors except at their respective ends, clamps respectively and appropriately connecting the ends of the shorter-extending conductors to the ends of the longer-extending conductors, said axially- slidable insulating tubes being slidable into respective recesses in the adjacent block so as to permit the clamps, when loosened, to be slid clear of the ends of the shorter-extending conductors, slidable insulating means round said clamps, a cover for the joint between the two sections, means for securing said cover to the adjacent ends of said sections, and interlocking means between the cover and the slidable insulating means.

3. Means, according to claim 2, in which the axially-slidable insulating tubes are held, in the operative position, in the outer ends of the recesses in the insulating block by grub screws, said grub screws, upon being slackened, permitting said tubes to be slid further into said recesses for enabling the clamps to be slid clear of the shorter-extending conductors.

4. Means for electrically and mechanically joining to one another, in a detachable manner, the adjacent ends of two sections of an electric distribution system, comprising an insulating block at that end of each section which is adjacent to the other section, a plurality of conductors, to be appropriately joined together, extending from each insulating block, insulating tubes enclosing the extending conductors of each block except at the ends where they are to be joined together, clamps uniting the adjacent ends of the appropriate conductors of both sections, slidable insulating outer-tubes enclosing said clamps and abutting one of said blocks when in one extreme position, and exposing said clamps when in the other extreme position, an insulating register plate slidably supported by the relatively-inner insulating tubes on the side of the outer-tubes which is remote from the block to be abutted by the latter, a cover for the joint between the two sections, means for securing said cover to the adjacent ends of said sections, and an abutment on the inside of the cover which only permits the latter to be correctly installed when said register plate is in the position for holding said outer-tubes in their said one extreme position.

5. Means, according to claim 4, in which the relatively-inner insulating tubes, on the side of said register plate which is remote from said outer tubes, carry rubber rings which can be adjusted along said inner tubes for abuttingly engaging said plate for holding it in contact with the adjacent ends of said outer-tubes when the latter are in their said one extreme position.

6. Means for electrically and mechanically joining to one another, in a detachable manner, the adjacent ends of two sections of an electric distribution system, comprising an insulating block at that end of each section which is adjacent to the other section, a plurality of conductors, to be appropriately joined together, extending from each insulating block, insulating tubes enclosing the extending conductors of each block except at the ends where they are to be joined together, clamps uniting the adjacent ends of the appropriate conductors of both sections, a slidable insulating structure having apertures which, when said structure is in one extreme position in which it abuts one of said blocks, encloses said clamps, said structure exposing said clamps when in its other extreme position, a cover for the joint between the two sections, means for securing said cover to the adjacent ends of said sections, and an abutment on the inside of the cover which only permits the latter to be correctly installed when said structure is in its said one extreme position.

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