Sept. 11, 1962 B. B. BASCHKIN 3,054,078

INTERMEDIATE PANEL CONNECTOR

Filed Oct. 8, 1959 2 Sheets-Sheet 1

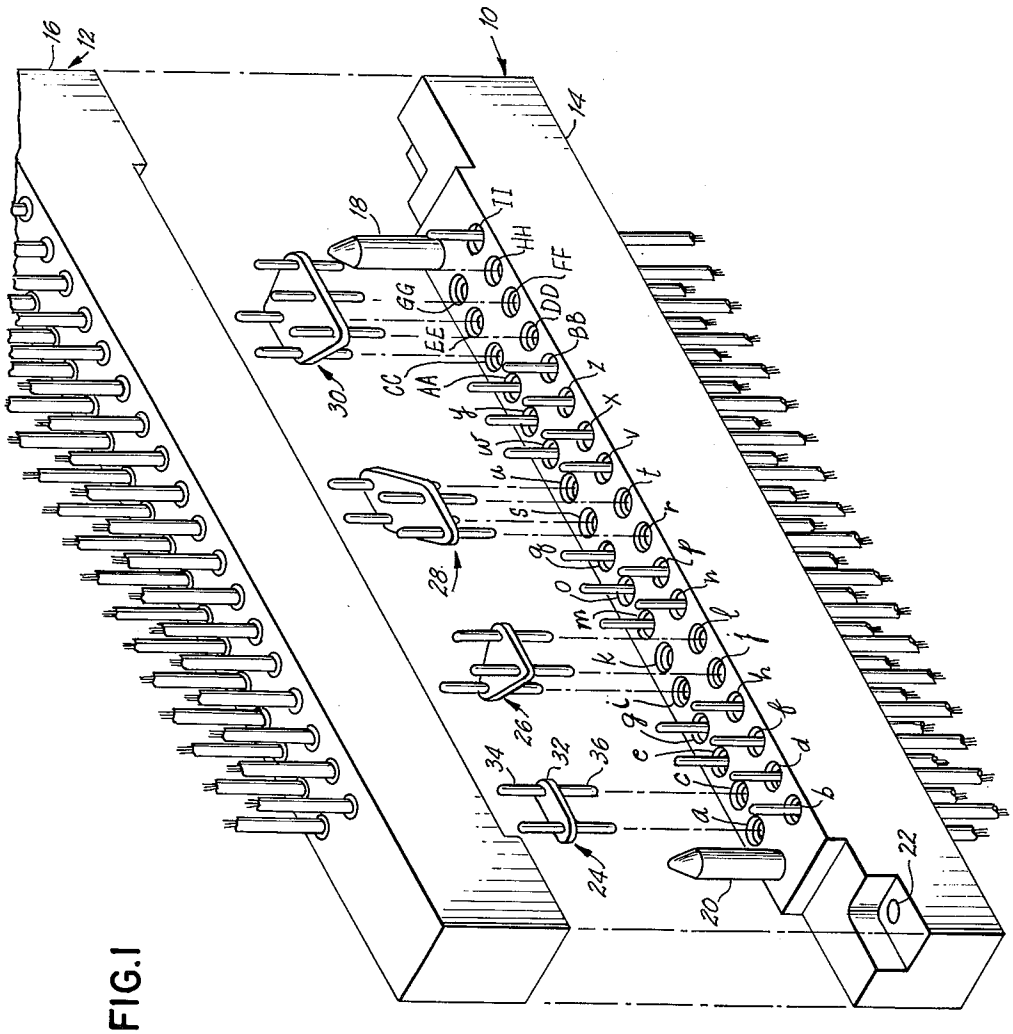


FIG. 1

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INTERMEDIATE PANEL CONNECTOR

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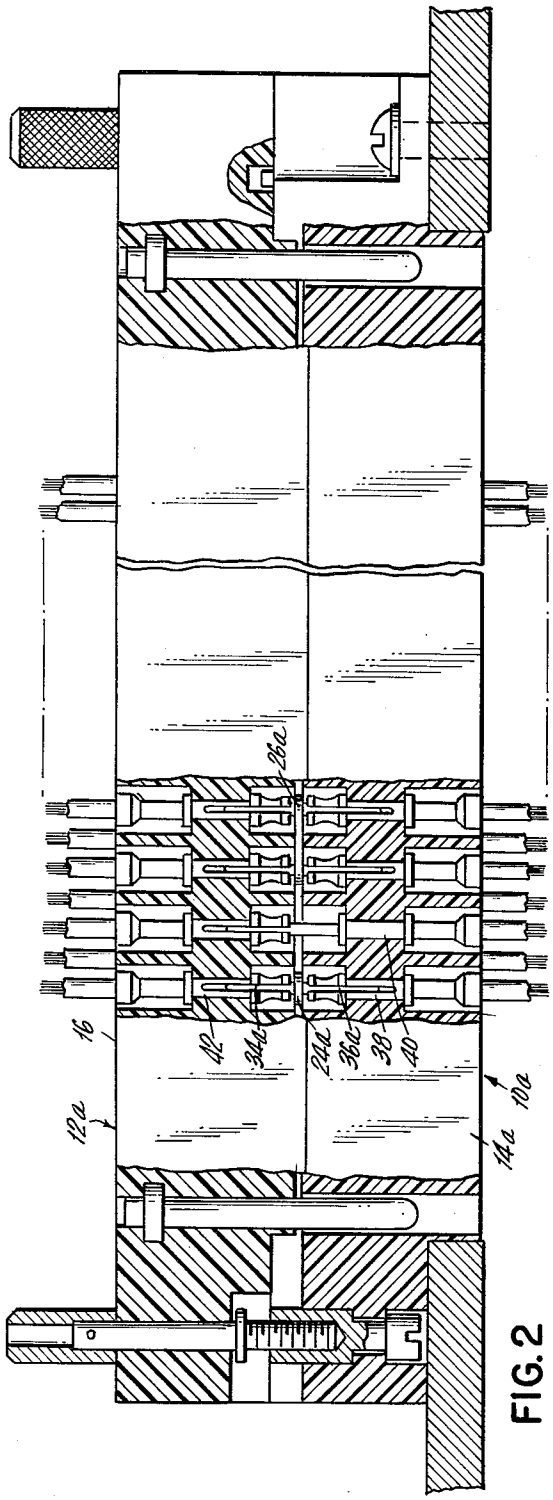


FIG. 2

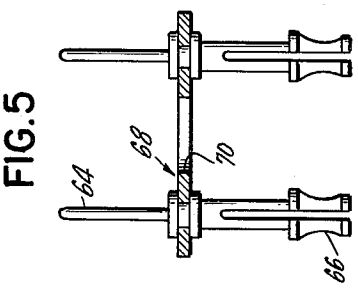


FIG. 5

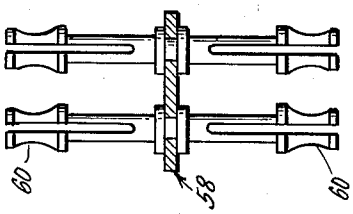


FIG. 4

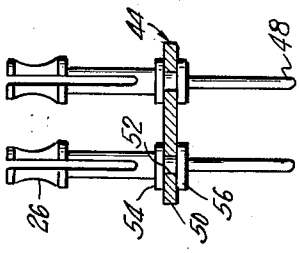


FIG. 3

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# INTERMEDIATE PANEL CONNECTOR

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1 Claim. (Cl. 339—18)

This invention relates to separable multiple contact electrical panels and, more particularly, to an intermediate panel connector for selectively establishing electrical contact between electrical panels.

It is often necessary or desirable to electrically join circuits in an electric system. In the past, when it was desirable to join a plurality of circuits with a chassis, a special jumper permanently joined the contacts together. Sometimes the junction connection was exterior to the connector contacts.

One of the objects of this invention, therefore, is to provide an intermediate junction connector which may be utilized in standard separable panels.

Another object of this invention is to provide an intermediate junction connector for use in multiple contact separable panels having removable pin and socket contacts which may interchangeably be mounted in identical insulation panels.

A further object of this invention is to provide junction means which may selectively join a plurality of contacts within multiple contact separable electrical panels.

One of the features of this invention is the provision of an intermediate panel connector in which a multiple set of contacts are mounted on an electrically conductive base for insertion between the mating contacts of multiple contact separable panels.

Another feature of this invention is the provision of multiple contact separable panels in which the pin and socket contacts may be interchangeably mounted within the panels. An intermediate panel connector having opposed pin contacts is utilized to join opposing socket connectors mounted in the separable panels.

The above-mentioned and other features and objects of the invention will become more apparent by reference to the claims, and the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an exploded view in perspective of multiple contact mating electrical panels, and a plurality of intermediate junction connectors electrically connecting selective contacts of the mating panels;

FIG. 2 is a side elevation view partly in cross-section of the coupled electrical panels utilizing several intermediate junction connectors therebetween;

FIG. 3 is a side elevation of a typical intermediate junction connector;

FIG. 4 is a similar view of another typical intermediate junction connector; and

FIG. 5 is a perspective view of an intermediate junction connector with by-pass opening mating panel.

Referring to FIG. 1 of the drawing, the electrical mating panel connectors comprises pin panel **10** and socket panel **12**. The panels are each formed of insulating material into bases **14** and **16**, respectively. The bases, **14** and **16** include a plurality of contact openings such as those designated "*a*" through "*ii*." Each of the contact openings is adapted to have an electrical contact pin or socket mounted therein. Normally, the panel **10** contains pin contacts and the panel **12** contains socket contacts. Each of the contacts is terminated on one end by an electrical conductor connected to the wiring of the electric circuit, and on its other end is adapted to mate with its opposing contact. In order to assist in the proper alignment of the plug and receptacle portions, polarizing pins **18** and **20** are mounted in the pin panel **10** and



are adapted to engage opposed openings in the socket panel **12**. In addition, mounting holes **22** may be utilized to mount the electrical connector to a supporting chassis.

In accordance with the principles of our invention, intermediate junction connectors, such as **24**, **26**, **28**, and **30** are provided. Each junction connector comprises an electrically conductive base **32** having electrical contacts **34** mounted to one side thereof. On the opposite side of base **32**, normally aligned with electrical contacts **34**, are electrical contacts **36**. Junction connectors, as will be indicated hereinafter, may be provided with pin and/or socket contacts depending on the panel contacts to be engaged. Thus, a junction connector **24** is designed and adapted to electrically join two selected socket contact positions in the pin and socket panels; for example, contacts "*a*" and "*c*." In this instance, the pin contacts normally located in positions "*a*" and "*c*" of pin panel **10** are replaced with the socket contacts shown, and the junction connectors **24** has its pin contacts **36** inserted into the sockets now located in contact openings "*a*" and "*c*." The pin contacts **34** will then mate with the sockets in socket panel **12**. In a similar manner, junction connector **26** is designated to electrically join three adjacent socket contacts disposed in contact openings "*i*," "*j*" and "*l*." These too have their normal pin contacts replaced with socket contacts shown. The junction connector **26** then connected the socket contacts in openings "*i*," "*j*" and "*l*" with the corresponding socket contacts in socket panel **12**. Similarly, the four position junction connector **28** and the five position junction connector **30** have the corresponding intermediate junction connector pins in pin panel **10** replaced by socket contacts permitting the junction connectors to be coupled between panels **10** and **12**.

In practice, when all the desired junction connectors are properly located in the pin panel **10** of the electrical connector, the socket panel **12** which contains only sockets is joined or coupled to the panel **10**. It is understood that the junction connectors **24**, **26**, **28**, and **30** and the pin contacts located in all other openings of panel **10** mate with socket contacts in the panel **12** and each socket of panel **12** has a mating pin contact to which it is joined.

In FIG. 2, there is illustrated pin and socket panels **10***a* and **12***a* provided with an intermediate junction connector **24***a*. The pin contacts **36***a* of junction connector **24***a* engage socket contacts **38** which have replaced the pin contacts **40** normally positioned in the corresponding contact openings. The pin contact **34***a* of junction connector **24***a* engages normal socket contact **42** of the socket panel **12***a*.

There is additionally shown in FIG. 2, an intermediate junction connector **26***a* which is provided with a plurality of pin contacts. Between junction connectors **26***a* and **24***a*, normal pin and socket contacts **40** and **42** are shown, which are not joined by intermediate connectors.

A form of readily interchangeable pin and socket contacts for use with panels, are shown and described in greater detail in application Serial No. 735,229, filed May 4, 1958.

In FIG. 3, there is illustrated an intermediate junction connector **44** having socket contacts **26** on one side thereof and pin contacts **48** on the other. Such an arrangement may be used where necessary to avoid making changes in the existing contacts of coupled panels.

There is also shown in FIG. 3, a method of securing the contacts **26** and **48** to the intermediate junction base **50**. The contacts **26** and **48** may be made of a rod or tube which is placed in aperture **52** and upset or staked as at **54** and **56** in the proper portion to secure it securely

in position. The junction base is made of highly conductive metal, such as, copper to transmit the current efficiently.

In FIG. 4, a socket-and-socket intermediate junction connector **58** is shown wherein sockets **60** and **62** are used to join nonmating pin panels.

In FIG. 5, a pin **64** and socket **66** intermediate junction connector **68** is shown provided with an aperture **70** for by-passing one or more mating pin and socket contact parts to which an electrical junction connection is not sought.

The foregoing connectors enable selected circuits to be joined intermediate standard separable panels which may be of the multiple contact variety. These may also be employed with panels having removable pin and socket contacts which may be interchangeably mounted in identical insulation panels.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claim, and by means of which, objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.



I claim:

An electrical connector assembly comprising a pair of panels, each panel having a first and second group of electrical contacts, the first group of contacts in one of said panels adapted to mate with the first group of contacts in the other of said panels, a junction connector having an electrically conductive base and a first set of contacts mounted on one side of and electrically connected to said base, and a second set of contacts mounted on the other side of and electrically connected to said base, said first set of contacts adapted to mate with said second group of contacts in one of said panels and said second set of contacts adapted to mate with said second group of contacts in the other of said panel whereby said second group of contacts in said panels may be electrically joined.

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