

Nov. 24, 1970

C. E. VANDERBEEK

3,543,216

CIRCUIT COMMON DEVICE

Filed Sept. 26, 1968

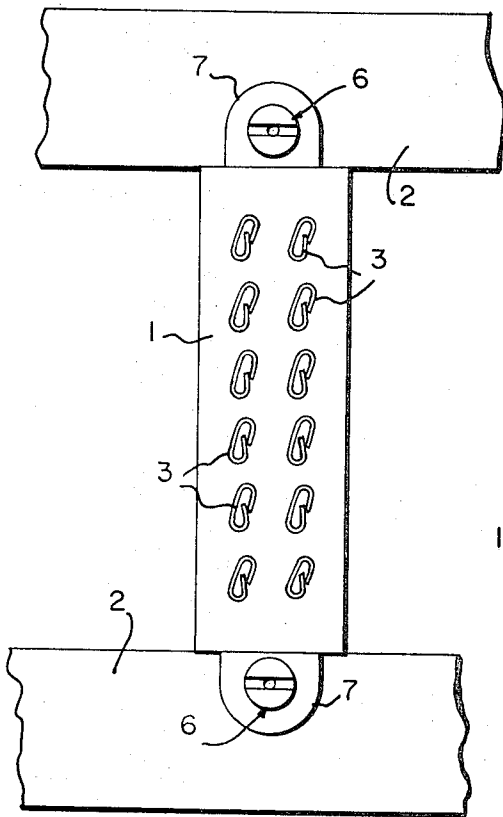


Fig. 1.

Fig. 2.

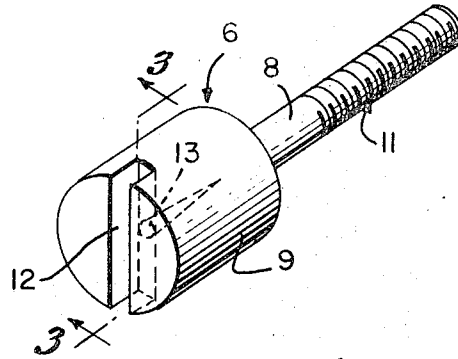


Fig. 3.

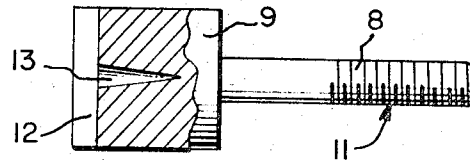


Fig. 5.

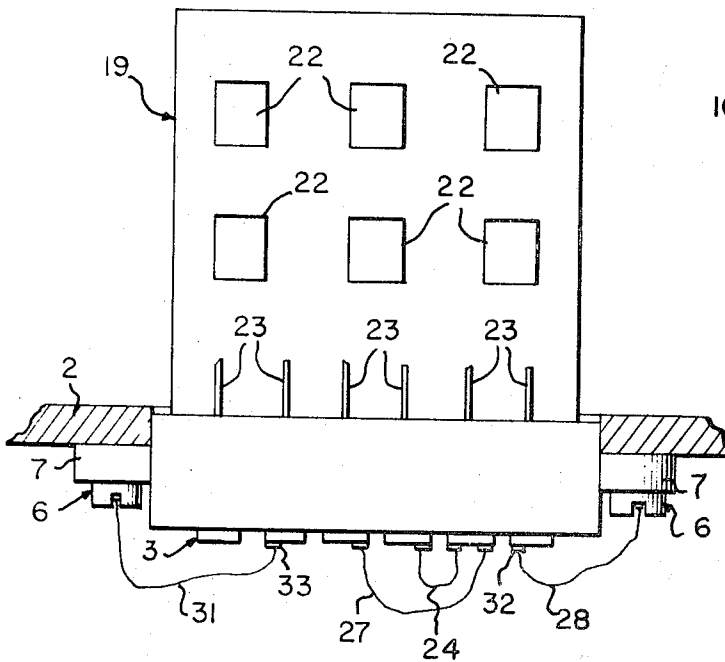
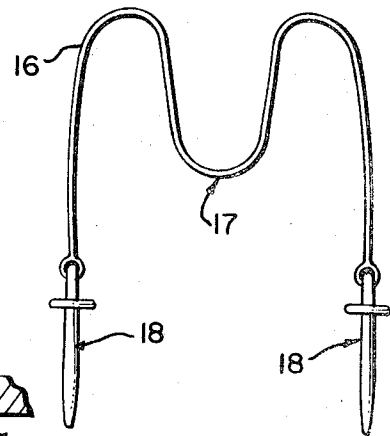


Fig. 4.



INVENTOR.
CARLTON E. VANDERBEEK
BY

John H. Tompkins

ATTORNEY

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CIRCUIT COMMON DEVICE

Carlton Eugene Vanderbeek, Los Angeles, Calif., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 26, 1968, Ser. No. 762,846

Int. Cl. H01r 3/06, 29/00; H05k 1/04

U.S. Cl. 339—18

3 Claims

ABSTRACT OF THE DISCLOSURE

An apparatus having a threaded shank portion and a slotted head portion which both secures an insulative body to a conductive member and which acts as a circuit common or ground point.

This invention relates to a device for facilitating circuit connections and more particularly to a device for facilitating circuit connections which is utilized to support portions of electrical equipment.

In modern day technology, industry has constantly been striving to reduce costs and speed up production. Along these lines, equipments have been standardized utilizing circuit cards. Normally, these circuit cards are used in association with various types of supporting members.

Typically, these supporting members are insulative bodies having means for permitting the circuit cards to be attached thereto. The attachment means are quite frequently of the plug-in arrangement. With the plug-in arrangement, the circuit card may be plugged into one side of the insulative body, and the electrical connections of circuit components on the cards may be electrically connected by interconnections of the attachment means from the other side of the insulative body.

The insulative bodies are secured to structural supports, usually a conductive part of the equipment chassis. In the prior art, this is accomplished by bolting the insulative body to the chassis; furthermore, in most equipments it is necessary to provide an electrical common for each of the circuit cards. In the past, when this was necessary, a lead from the circuit card was soldered or bolted to the chassis of the equipment.

The prior art satisfactorily provides the functions of securing the insulative body to the chassis and of providing an electrical common for the various circuit card components, when needed. Nevertheless, to accomplish these functions, time and effort are lost by utilizing separate securing means and separate circuit common means.

It is, therefore, an object of this invention to provide a new and improved device which will facilitate interconnections of circuit commons in electrical equipments.

It is another object of this invention to provide a new and improved device which can be utilized as a securing means and a circuit common means.

A device, embodying certain features of the invention, may include an insulative body which is supported by a conductive member. Conductive securing means connect the insulative body to the conductive member. The securing means can have two portions, one of the portions being in physical and electrical contact with the conductive member, and the other of the two portions having an opening therein. Conductive connector means may be secured in the opening. With this arrangement there is provided one device which both secures the insulative body to the conductive member, which may be a chassis, and provides a circuit common to which conductive connectors may easily be attached.

The above-recited and other objects and features of the invention will be apparent from the following detailed description of a specific embodiment thereof, when

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read in conjunction with the accompanying drawings, in which:

FIG. 1 shows an end view of the device;

FIG. 2 shows an isometric view of the conductive securing means;

FIG. 3 shows a partial sectional view of the conductive securing means, taken along line 3—3 of FIG. 2;

FIG. 4 shows an isometric view of the conductive connector means, and

FIG. 5 shows a side elevation view of the invention as it would appear in an electrical equipment.

Referring now to FIG. 1, an insulative body 1 is attached between two conductive supports 2—2. The insulative body has attachment means 3—3, which are pluggable connector sockets, and which pass through the body and are adapted to receive a circuit card, more fully described herein below, on the reverse side. A screw 6 having a slotted head portion secures the insulative body 1 to the conductive supports 2—2. The slotted screw 6 is conductive and passes through a projection 7 of the insulative body 1.

Referring now to FIGS. 2 and 3, the slotted screw 6 is composed of shank portion 8 and head portion 9. The slotted screw 6 can be made from any conductive material. The shank portion 8 has threads 11 thereon. These threads are screwed into the conductive member 2—2 in a standard manner. It is possible, however, to use any of the well-known substitutes for threads which permit attachment, the essential feature not being in the method of attachment of the slotted screw 6 to the conductive member 2—2.

The head portion 9 of the screw 6 has a slot 12 for receiving the blade of a screwdriver so as to be able to insert and remove the slotted screw, in the standard manner. At the base of the slot is an internal cavity 13, extending into the head portion 9 from the base of slot 12. The internal cavity 13 may be either a straight or internally tapered cavity. In the preferred embodiment, shown in FIG. 3, the internal cavity 13 is internally tapered.

Referring now to FIG. 4, a typical connector 16 is shown. The connector 16 has a wire 17 with a tapered insertion pin 18 secured at each end. The insertion pins are adapted to be plugged into both the pluggable connector sockets 3—3 and the internal cavity 13 due to the internal taper of the cavities. The internal cavity 13 and insertion pins 18—18 are designed so that when connected, friction alone is sufficient to retain the pins in place.

Referring now to FIG. 5, a circuit card 19 is supported by pluggable connector sockets 3—3. Circuit components 22—22, generally shown by boxes, are attached to the circuit card 19. The circuit components are electrically connected to conductive paths, not shown, which run on the reverse side of the circuit card. The conductive paths attached at the base of the circuit card 19 to insertion plugs 23—23. Insertion plugs 23—23 which are attached to the circuit card 19, secure the circuit card to the insulative body 1 by insertion into pluggable connector sockets 3—3.

Connectors such as those designated 24 and 27 interconnect circuit components 22—22 in any desired manner, the manner of interconnection not being important to the present invention. The components can be typically made into amplifiers, oscillators, or any circuit configuration by a choice of the individual circuit components attached to card 19 and the interconnections made between pluggable connector sockets 3—3.

The insulator 1 is secured to conductive supports 2—2 by means of the slotted screws 6—6 which pass through projections 7—7. Connectors 28 and 31 electrically interconnect desired components with the circuit common. One insertion pin 18 of connectors 28 and 31, respective-

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ly, is inserted in an attachment means 32 and 33, respectively, as shown in FIG. 5. The other insertion pin 18 of these connectors is inserted into the internal cavity 13 of the slotted screw 6 thereby being electrically connected to a circuit common, which is the potential of conductive supports 2—2. Conductive supports 2—2, normally being the chassis of electrical equipments, is usually kept at zero potential. However, if it is so desired, conductive supports 2—2 can be kept at a positive or negative potential and utilized as a bias or power supply for any of the circuit components 22—22.

Many modifications may be made to the present invention without departing from the spirit and scope thereof. For example, several openings may be provided in the head portion of the securing means to receive more than one tapered insertion pin. It is to be understood, therefore, that the above arrangement of elements is simply illustrative of an application of the principle of the invention, and any other modification may be made without departing from the invention.

What is claimed is:

1. An electric common device comprising:

an insulative body having attachment means adapted to support a circuit card and electrically connect insertion plugs on said card;

a conductive member supporting said insulative body;

a conductive securing means connecting said insulative body to said conductive member, said securing means having a shank portion and a head portion, one of said portions being in physical and electrical contact with said conductive member, and the other of said portions having an opening therein; and

conductive connectors having two ends, said conductive connectors having a tapered engagement means affixed to each of said two ends, one of said engagement means being wedged into one of said attachment means and the other of said engagement means being wedged into the opening of said conductive securing means.

2. An electric common device comprising:

an insulative body;

a conductive member supporting said insulative body;

conducting-securing means connecting said insulative body to said conductive member, said securing means

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having two portions, a shank portion and a head portion, said shank portion having threads thereon, said head portion having a slot therein for receiving the blade of a screwdriver so as to be able to insert and remove the threaded shank, one of said two portions being in physical and electrical contact with said conductive member, and the other of said two portions having an opening therein, and

conductive-connector means secured in said opening.

3. An electric common device comprising:

an insulative body;

a conductive member supporting said insulative body;

conductive-securing means connecting said insulative body to said conductive member, said securing means

having two portions, one of said two portions being in physical and electrical contact with said conductive member, and the other of said two portions having an opening therein, and

conductive-connector means secured in said opening,

said conductive connector means being wire connectors having two ends, each end having a tapered engagement means affixed to it, said conductive-connector means secured in said opening being one of said tapered engagement means, the latter being adapted to wedge into the opening of said conductive-securing means.

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MARVIN A. CHAMPION, Primary Examiner

T. P. LEWIS, Assistant Examiner

U.S. Cl. X.R.

339—14, 17, 29 176, 273