

[54] **ELECTRICAL ADAPTOR**

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[22] Filed: **June 9, 1972**

[21] Appl. No.: **261,263**

[52] U.S. Cl. **339/61 R, 339/110 R, 339/116 R,**
339/149 C

[51] Int. Cl. **H01r 13/48**

[58] Field of Search 339/28, 29, 59, 61,
339/102, 108, 110, 149, 200, 218, 224, 226,
228, 229

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[57] **ABSTRACT**
An adaptor for use in making an electrical connection between an electrode and a cable connected to a monitoring instrument.

3 Claims, 6 Drawing Figures

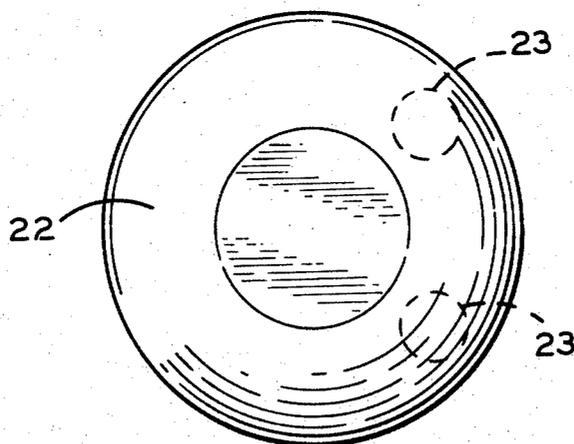


FIG. 1

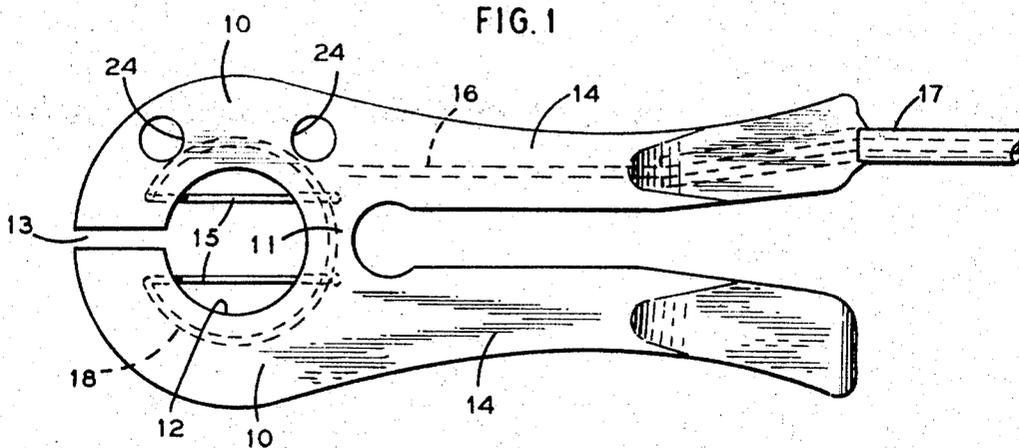


FIG. 3

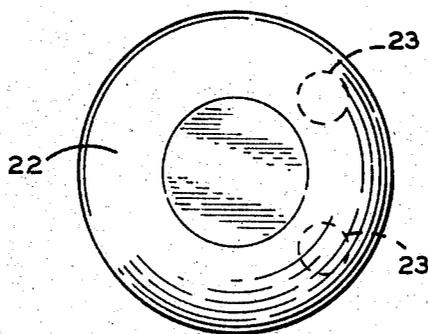


FIG. 4

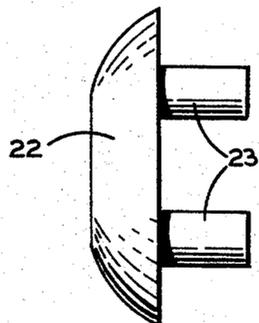


FIG. 2

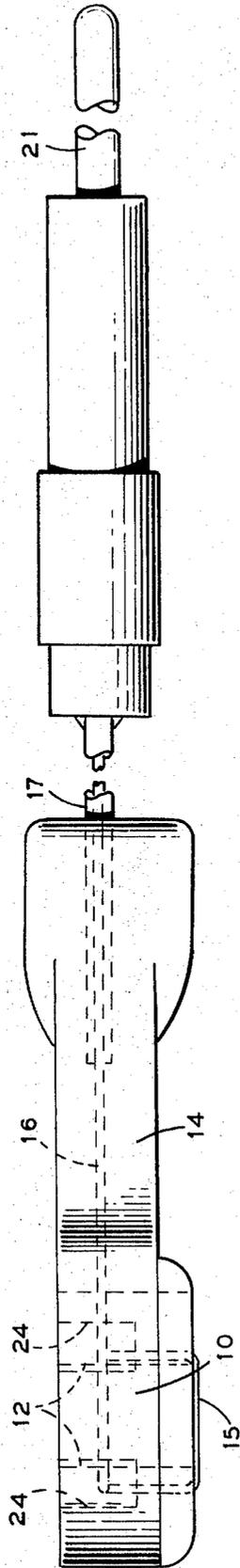


FIG. 5

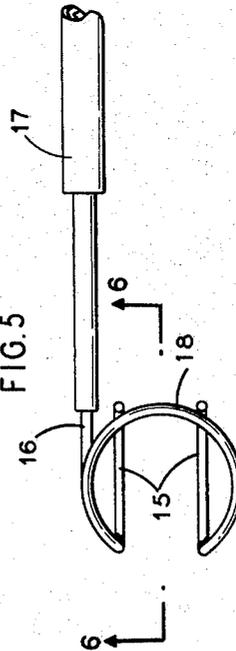
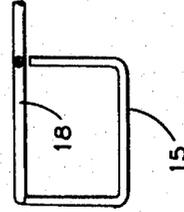


FIG. 6



ELECTRICAL ADAPTOR

This invention relates to an electrical adaptor.

More particularly, this invention relates to an adaptor having a unitary body for use in making an electrical connection between an energizing force and a monitoring instrument.

At the present time, there are over 100 different instruments from various manufacturers using different cables to connect to dozens of different types of electrodes. For instance, to name a few, there are the clothing snaps consisting of a split sleeve or contained ring type, the split sleeve retained in a molded rubber casing, and others of the spring clip variety.

The aforesaid types of adaptors and those of a similar nature in the past have not been ideal because they require many pounds of force to apply and are difficult to remove in order to change cables. And, of major importance, they will not stay on adequately in normal use. There have been other designs but these have been confusing to use, often difficult to apply and remove.

What is needed in the art is an adaptor wire having the following characteristics, viz:

1. It may be applied without pressing down on the patient.

2. It may be intentionally removed without applying pressure to the patient.

3. It will not accidentally release under tension in any direction.

4. It is easily operated by inexperienced personnel.

5. It should be small, and not cumbersome with smooth edges.

The subject invention answers the aforesaid needs of the art without encountering any of the difficulties of prior art devices.

It is therefore an object of this invention to provide an adaptor wire having a one-piece body for use in connecting an electrode and a cable intended to communicate with a monitoring device or instrument.

Other objects and many of the inherent advantages of this invention will become more apparent to those skilled in the art from a reading of the following drawing taken with the drawings, wherein:

FIG. 1 is a top plan view of the device of the present invention.

FIG. 2 is a side view of the device of FIG. 1 provided with an insertable pin for use in connecting a monitoring instrument in electrical relationship to the body of an adaptor.

FIG. 3 is a top plan view of a cap for use on the device of FIG. 1.

FIG. 4 is a side view of the cap of FIG. 3.

FIG. 5 is a top plan view showing the electrical conductor in relationship to the electrical transfer line.

FIG. 6 is a side view of the conductor of FIG. 5.

Similar numerals refer to similar parts throughout the several views.

Referring now to FIG. 1, an adaptor is shown having a pair of semi-circular arc-like jaws 10 lying in a common plane. The latter jaws 10 are connected to a common joint 11 and form in essence a circumscribed area 12 having a channel 13 providing access to such area. The adaptor, as shown, is provided with a pair of arms 14 flaring outwardly from said joint 11 to which they are integrally engaged. It is to be noted that the jaws, joint and arms consist together as a one-piece or unitary item.

Further, as shown in FIGS. 1 and 2, the adaptor is also provided with a conductor wire 15 which communicates with a lead wire 16, the latter passing through an insulator 17 which is embedded in arm 14. In a preferred embodiment, the conductor 15 consists of a pair of parallel exposed wires, each of which traverses the circumscribed area 12 on either extrapolated side of the channel 13. The conductor 15 is attached to and communicates with a C-shaped wire 18 which is embedded in both the jaws 10 and the joint 11 as shown.

Referring again to FIG. 2, the wire 16 in its insulated bed 17 passes out of arm 14 and extends to and communicates with a pin 21 whose function it is to transmit electrical signals to a monitoring instrument (not shown).

In FIGS. 3 and 4, a cap 22 is shown having insert pins 23 which are adapted to fit into the openings 24 of the device. The purpose of this cap is to protect the exposed wires 15 and the engaged electrode from damage or corrosion.

As shown in FIG. 5, the spring wire 18 is soldered to wire 16 and provides support for the parallel conductors 15 which engage the electrode (not shown). FIG. 6 shows a side view of the specific structure of the parallel conductor 15 being supported by the C-shaped wire 18.

In operation, the device is of a cantilever spring-like structure. When arms 14 are squeezed towards each other, a force is transmitted to joint 11. The latter deforms in such a manner that jaws 10 and channel 13 tend to open to permit the conductor 15 to pass freely over the stud head of an electrode (not shown). When the arms 14 are released, the jaws 10 return to their closed position, and the conductor rod 15 or wire securely grips the stud head.

In the arrangement described, the jaws 10 are closer to the joint 11 than the lever arms 14 and thus, the gripping force is multiplied in ratio to the distance.

A suitable plastic material must have proper spring tension, resistance to fatigue and "memory," so that the jaws 10 will always be fully closed. The opening 12 circumscribed by the jaws 10 is intended to stop excessive stress on the joint 11, but allow full opening of the jaws 10. There are many plastics which may be utilized in the manufacture of the body and cap of the device. For instance, an acetyl plastic such as Delrin which is made by Du Pont may be used or a polyester resin such as Valox of the General Electric Company may be used.

What is claimed is:

1. A disposable adaptor for use in providing an electrical connection between a stud-provided electrode of the skin surface variety and a cable intended for connection to a monitoring instrument,

said adaptor consisting essentially of:

A pair of semi-circular arc-like jaws lying in a common plane,

said jaws also having a common joint and an access channel to the area circumscribed by said jaws,

A pair of arms integral said joint in said common plane,

said jaws, joint, and arms consisting of a one-piece structure made from electrically insulating material,

each of said arms flaring outwardly from said joint, said arms when compressed providing adequate clearance to said access-channel for the passage

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of said stud therethrough to said circumscribed area,

A conductor exposed in said circumscribed area in order to provide communicating relationship to the stud of said electrode,

said conductor consisting of a pair of metal rods in parallel alignment with said channel and traversing said circumscribed area for separable engagement of said stud,

An electrical transfer line passing through at least one of said arms,

said line communicating with both said conductors and said monitoring instrument.

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2. The adaptor of claim 1 wherein each of said arms is provided with an end portion lying in a normal perpendicular plane relative to said arm in order to provide a relatively high torque to said joint when said arms are pressed towards each other.

3. The adaptor of claim 1 wherein one of said jaws is provided, in spaced relationship, with female slots for the separable engagement of aligned plugs of a cover, the latter being utilized for the protection and prevention of corrosion of said conductor rods in said circumscribed area.

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