

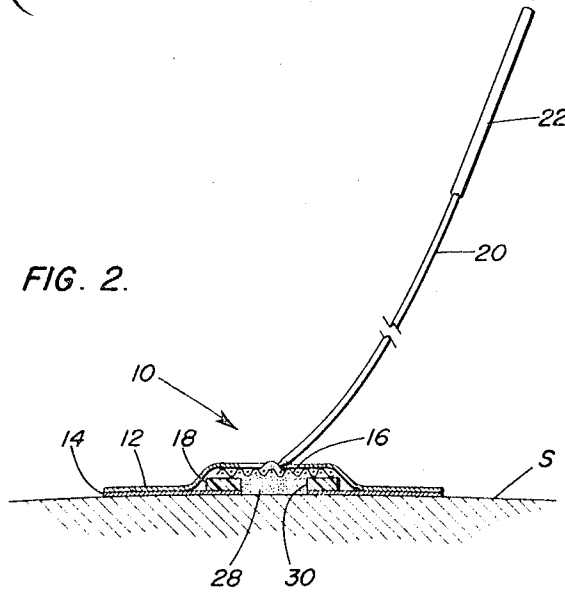
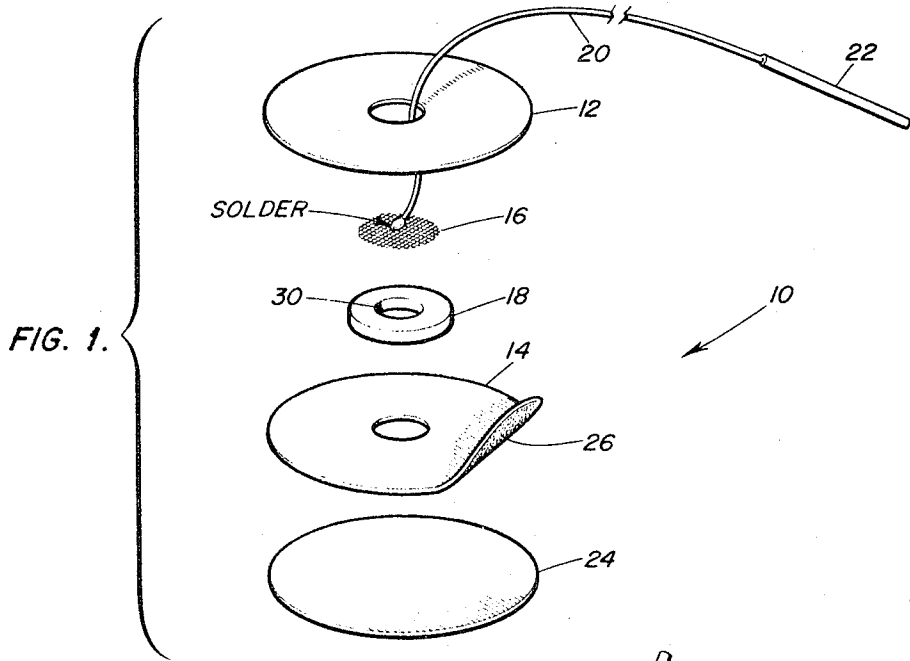
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BIO-MEDICAL INSTRUMENTATION ELECTRODE

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BIO-MEDICAL INSTRUMENTATION ELECTRODE
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7 Claims

ABSTRACT OF THE DISCLOSURE

A bio-medical instrumentation electrode having a paste immersed, plastic mounted metallic mesh as a flexible, ventilated electrode, providing constancy of contact by avoidance of pressure differences between the paste and the atmosphere.

This invention relates generally to diagnostic medical devices, and more particularly it pertains to electrocardiograph body contact brushes.

Stress electrocardiography has recently become important in coronary disease diagnosis. In this work the patient is required to exercise while electrodes, attached at many places to his body, record significant electric signals. To eliminate distortions of the record due to electrode-to-skin factors from rapid muscular activity and sweating, it has been necessary to develop a novel electrode.

Accordingly, principal objects of this invention are to provide an electrode for body attachment which is of very low mass and one which adheres tightly to the skin and which conducts solely through a layer of electrode paste.

Another object of this invention is to provide an inexpensive one-use disposable electrode which provides uniform area of contact despite variations in the quantity of electrode paste used.

Still another object of this invention is to provide an electrocardiograph electrode which is free of casual metal-to-skin contact under working stress of the patient to give reliable EKG records free from baseline drift despite rapid respiration and sweating.

Other objects and attendant advantages of this invention will become more readily apparent and understood from the following detailed specification and single sheet of accompanying drawings in which:

FIG. 1 is an exploded view of the components of a novel electrode incorporating features of this invention; and

FIG. 2 is a cross section of the electrode of FIG. 1 installed on the skin of a patient.

With reference now to FIGS. 1 and 2 of the drawings, reference numeral 10 indicates generally an electrode. This electrode 10 comprises an assembly made up of two centrally apertured wafers 12 and 14 of very thin flexible plastic sheet.

A washer or collar 18 of flexible plastic approximately one-half mm. in thickness is centrally placed upon the bottom wafer 14 and on top of this a disc 16 of fine stainless steel wire cloth is centered. A fine flexible insulated wire 20 is soldered to the top of this disc 16 and brought up through the apertured top wafer 12 and the latter is then brought down over the assembly and welded or cemented to the bottom wafer 14. The underside of wafer 14 is coated with adhesive 26 and a temporary cover disc 24 of paper is thereupon affixed.

A pin connector 22 is soldered to the remote end of lead 20 of suitable type for connection to a receptacle (not shown) leading to the measuring equipment.

The electrode 10 is prepared for service by peeling off and discarding the paper cover disc 24 to expose the

adhesive 26. An electrode paste 28 of the usual kind is placed within the cavity 30 comprising the interior of collar 18 and then the electrode 10 is attached by means of the adhesive 26 to the skin S of the patient as shown in FIG. 2.

It will be noted there is very little mass to this assembly and it conforms closely to the contour of the body of the patient. The metal parts never touch the body and should there be an excess of paste 28, it will overflow through the mesh of disc 16 rather than extend around on the surface of the skin S in an indefinite contact area.

Obviously, many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. An electrode, comprising, first and second spaced centrally apertured non-metallic flexible elements, a third centrally apertured non-metallic flexible element positioned between said first and second elements to space said first and second elements from each other, with the aperture of said first, second and third elements being in axial alignment with each other, a metallic mesh material positioned in axial alignment between one of said first and second elements and said third element, electrical lead means secured to said mesh material over an area small with respect to the area of said mesh material aligned with the aperture of said first element, said electrical lead means passing through the aperture of said first element, and means including an adhesive positioned on the exposed face of said second element.

2. An electrode as recited in claim 1, and additionally means including a removable cover for said adhesive.

3. An electrode as recited in claim 1, and additionally means including an electrode paste positioned in the aperture of said third element.

4. An electrode as recited in claim 1, wherein said first and second elements consist of two centrally apertured wafers formed of thin flexible plastic sheet.

5. An electrode as recited in claim 4, wherein said third element consists of a collar of greater thickness than said first and second elements.

6. An electrode as recited in claim 5, wherein said metallic mesh material consists of a fine stainless steel wire cloth.

7. An electrode as recited in claim 6, and additionally means including an electrode paste positioned in the cavity of said collar.

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