Oct. 2, 1934. E. J. ROSE 1,975,518

ELECTRODE MEANS FOR THERAPEUTIC PURPOSES

Filed Aug. 27, 1932

Fig. 1.

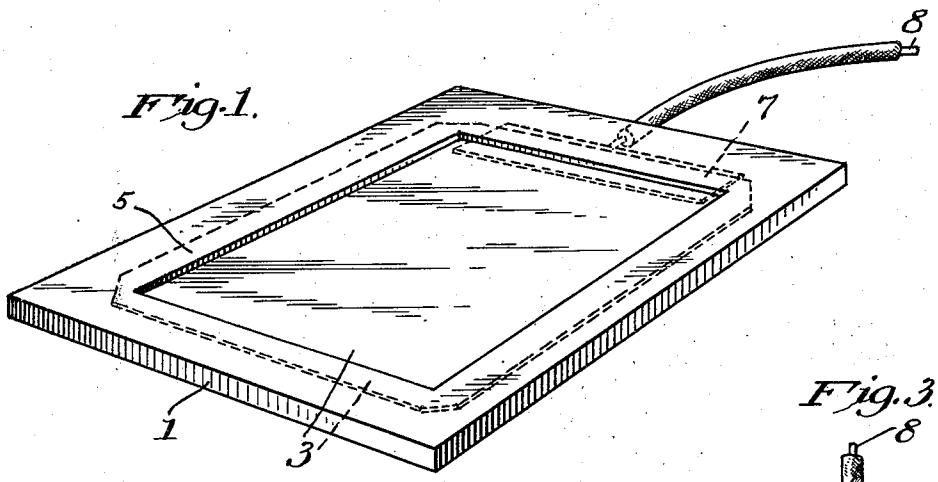


Fig. 2.

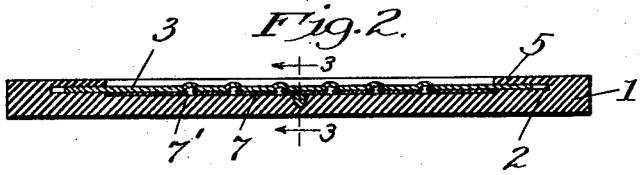


Fig. 3.

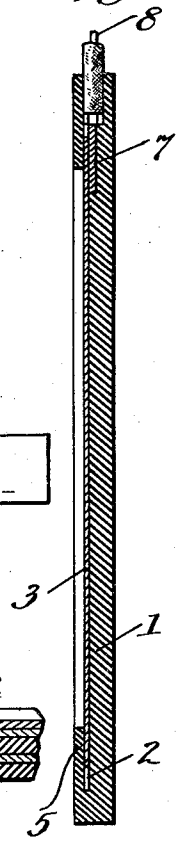


Fig. 4.

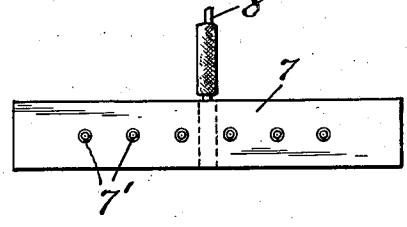


Fig. 5.

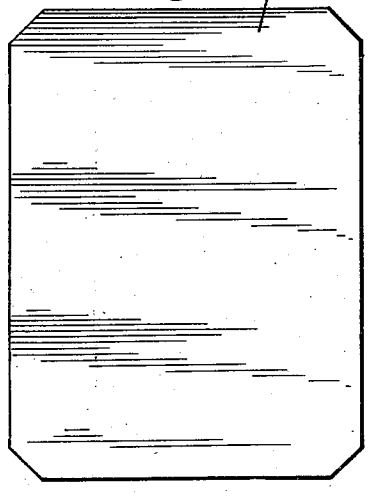
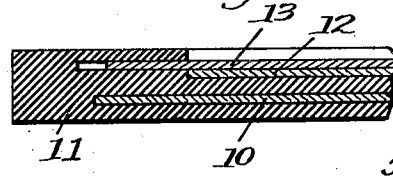


Fig. 6.



INVENTOR
Edgar J. Rose,
BY Arthur P. Knight & Alfred W. Knight
ATTORNEYS

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ELECTRODE MEANS FOR THERAPEUTIC PURPOSES

Edgar J. Rose, Los Angeles, Calif.

Application August 27, 1932, Serial No. 630,690

2 Claims. (Cl. 174—89)

This invention relates to improvements in pad or electrode means for applying diathermy or other electro-therapeutic currents to the human body.

The main object of the present invention is to provide a device for the above stated purpose which will eliminate certain objectionable features of diathermy pads and other electrode devices heretofore in use.

In the application of electric currents to the human body, it is usual to employ flexible metal electrodes, for example of block tin sheet metal which is cut to proper shape and applied to the part to be treated, being bent over such part so as to conform thereto. With such an electrode, the application of high frequency high tension current often results in production of corona or brush discharge from the edges of the sheet electrode and particularly from any sharp points or projections at such edges. Such corona discharge is liable to result in burns or other objectionable effects and the main object of the present invention is to provide means for preventing such corona effects.

A further object of the invention is to provide an electrode means for therapeutic purposes which is sanitary and can be readily cleaned.

Another object of the invention is to provide an electrode applying means in which the electrode is removably supported in such manner that it can be readily removed and replaced if desired.

The accompanying drawing illustrates my invention and referring thereto:

Fig. 1 is a perspective of the pad or electrode means;

Fig. 2 is a transverse section thereof;

Fig. 3 is a section on line 3—3 in Fig. 2;

Fig. 4 is a plan view of the means for making connection to the electrode from a supply wire;

Fig. 5 is a plan view of the electrode;

Fig. 6 is a partial section showing a modified form of the invention.

My invention comprises a pad or electrode support 1 consisting of suitable flexible insulating material and provided on one face thereof with means for removably supporting a flexible electrade thereon. The pad 1 preferably consists of gun rubber or equivalent material formed as a sheet of sufficient thickness to serve as effective support and of sufficient flexibility to enable it to be readily bent and form to the shape of the member such as an arm or other portion of the human body to which it would be applied. Instead of being formed of gum rubber, the pad 1 may be made of any other flexible insulating material, for example, vulcanized rubber, felt, etc.

One face of the pad or holder 1 is provided with a recess 2 for receiving the electrode indicated at 3, said electrode being for example of block tin or other flexible metal which is adapted to lie within said recess and against the face of the pad and to be bent therewith. In order to hold electrode 3 in position on the pad or holder 1, said pad or holder is provided on one face thereof with flexible flap or flange means 5 extending inwardly from the sides of recess 2 so as to overlap the outer edges of electrode 3 when the latter is placed in position within said recess so that the walls around the recess are grooved to form undercuts adapted to receive the sheet metal electrode, the edge portions of said electrode being then engaged in the grooves of the walls. Said flap or flange means 5 are preferably formed of gum rubber secured to or moulded with the body of the holder or pad 1 and are of sufficient flexibility to enable the electrode 3 to be inserted in the recess 2 by lifting the edges of the flap or flange means 5 and slipping the electrode means 3 thereunder. The electrode may be removed when desired by lifting the edges of the flap or flang means 5 sufficiently to enable withdrawal of the electrode from the recess.

In order to make contact with the electrode 3 and provide for convenient removal thereof a contact plate or flat terminal member 7 is mounted within the recess 2 for example at one end thereof and is connected to an insulated wire or electric conductor cord 8 for connection to any suitable supply means for diathermy or other current. This flat terminal member 7 fits in a socket or slot formed in pad 1 and extending adjacent an edge of said recess and opening into the groove in the wall at said edge; and said conductor 8 connected to said member 7 extends through the adjacent edge portion of the pad, as shown in Fig. 3. This contact plate 7 may be provided with bosses or projections 7′ adapted to engage the electrode as shown in Fig. 2 so as to improve the electric connection and at the same time hold the electrode from shifting on the holder or pad.

In using the device the electrode 3 is inserted within the recess 2 and under the flaps or flanges 5 as above stated and in contact with the plate 7 so as to be brought into effective connection with the electric supply circuit; the device is then applied to the part of the human body which is to be treated, with the electrode 3 lying against such part and in contact therewith and

is bent so as to conform to such part, the parts 1, 5 and 3 being of sufficient flexibility to enable the device to conform to any part to which it is applied. When a diathermy or other high tension current is supplied to the electrode, the current passes uniformly from all parts of the electrode to the part to be treated and there is no corona or edge effect as such effect is prevented by the inter-position of the insulating flaps or flanges 5 between the edges of the electrode 3 and the part to which the pad is applied.

In general the block tin electrode will furnish sufficient stiffness to enable the device to retain any condition of curvature to which it is brought in order to conform to the part to be treated. In some cases however, it may be desirable to further stiffen the device by means of flexible re-inforcing means which may for example be moulded within the body of the holder as shown in Fig. 6 wherein 10 indicates re-inforcing means, such as a flexible metal plate or metal strips, moulded within the insulating flexible electrode holder 11.

It will be understood that any suitable means may be provided for making contact with the electrode and as shown in Fig. 6 the contact plate indicated at 12 and making contact with electrode 13 may be a flat plate without the bosses or projections above referred to.

The above described electrode means may be used advantageously in the application of electrical currents of any frequency or either high or low voltage; for example it may be used for making contact in diathermy treatment or in treatment by galvanic or rapid sinusoidal current. It may also be used as one of the electrodes in electro-surgical operations.

The removability of the electrode from the supporting pad or holder not only permits cleaning of the electrode and of the holder, but also permits substitution of electrodes of different materials such as tin for diathermy or zinc or copper for electrolysis or cataphoresis. The pad or holder is preferably made of pure gum rubber (unvulcanized caoutchouc) so as to enable it to be cleaned and sterilized by boiling or otherwise without injury thereto.

I claim:

1. A pad for the application of electric current including a flexible insulating body having a recess in one face with the walls around the recess grooved to form undercuts, an electrode mounted in said recess and having its edge portions engaged in the grooves of the walls, said body having a socket opening into one of said grooves, and a conductor terminal in said socket engaging the electrode.

2. A pad for the application of electric current including a flexible insulating body having a recess in one face with the walls around the recess grooved to form undercuts, an electrode mounted in said recess and having its edge portions engaged in the grooves of the walls, said body having a slot therein extending adjacent an edge of said recess and opening into the groove in the wall at said edge, a flat terminal member fitted in said slot to engage the electrode, and a conductor connected to said terminal member and extending through the wall of the recess.

EDGAR J. ROSE.