

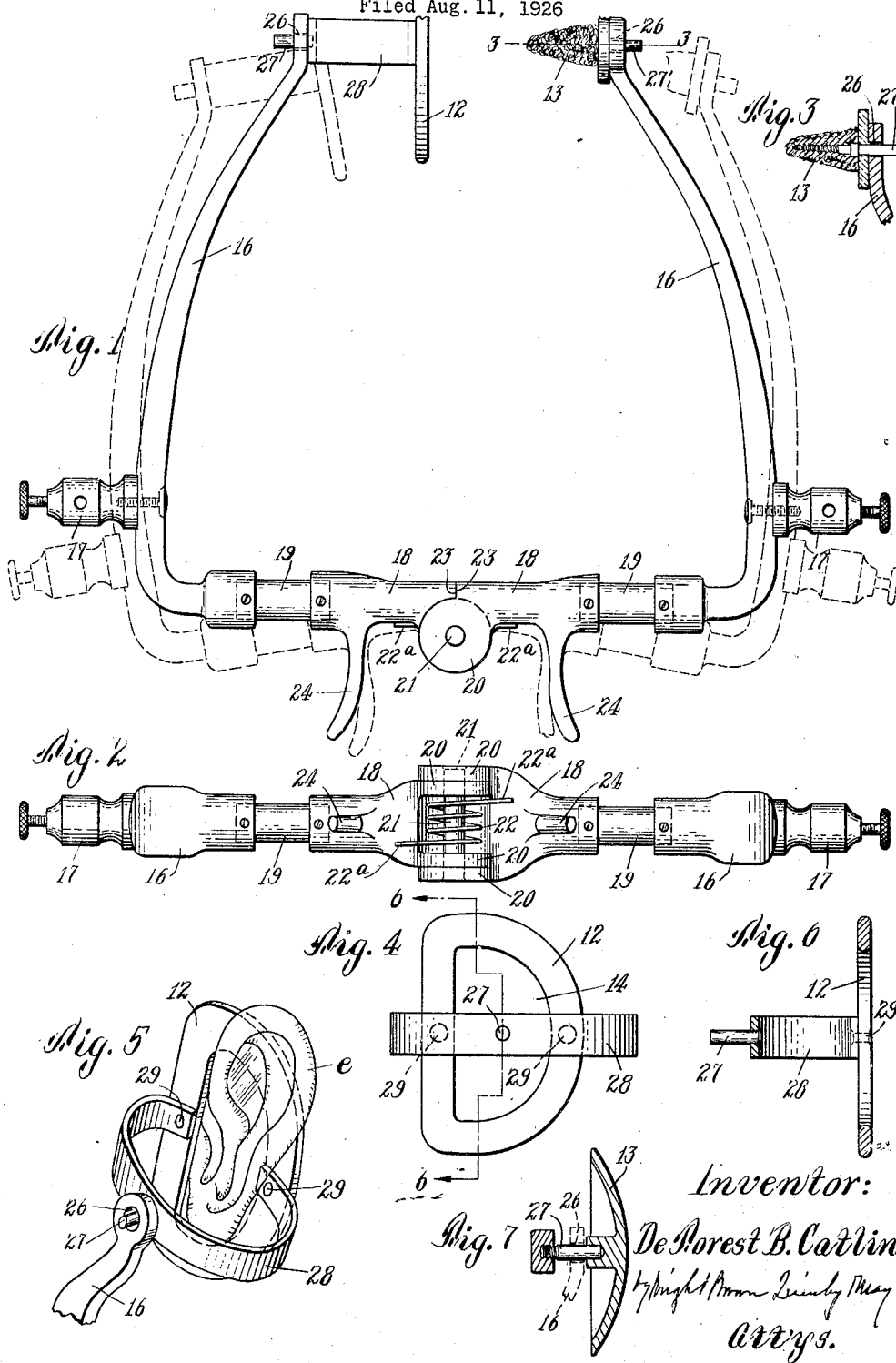
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DIATHERMY AND GALVANIC EAR SET

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DIATHERMY AND GALVANIC EAR SET.

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This invention relates to means for treating by diathermy, and like means, those portions of the human head which include the ears and the head tissues between the ears. An ear set embodying the invention includes a pair of electrodes formed to be engaged with and supported by the ears of a patient in position to cause the current employed in diathermy to pass from one electrode to the other through the interposed tissues and generate heat which is concentrated at a predetermined point between the electrodes, the point being determined by the size of the electrodes, or, in other words, the surface areas thereof contacting with the skin. It is a generally accepted fact that the generation of heat within the tissues by the use of diathermy equipment may be localized to a considerable extent by the employment of electrodes, one of which is larger and presents a greater area to the skin than the other, the highest temperature being nearest the smaller electrode. My invention is embodied in certain improvements in the form and construction of the electrodes and of the means for holding the same in their operative positions, the construction permitting the conjoint use of a smaller and a larger electrode and the use of differently formed larger and smaller electrodes interchangeably, the general object being to provide practical and efficient means for quickly applying diathermy and electrical modalities in the treatment of pathologic conditions of the ear, and locating the maximum heat at the desired point between the electrodes.

Of the accompanying drawings,—

Fig. 1 is a side elevation of an ear set embodying the invention;

Fig. 2 is an end view of the same looking toward the lower end in Fig. 1;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 shows in elevation, and Fig. 5 in perspective, the larger electrode shown by Fig. 1;

Fig. 6 is a section on line 6—6 of Fig. 4;

Fig. 7 is a fragmentary sectional view showing another form of electrode.

The same reference characters designate the same parts in all the figures wherever they occur.

In the drawings, 12 and 13 designate respectively a larger and a smaller electrode, the larger electrode 12 being usually called the indifferent electrode to distinguish it

from the smaller electrode. The terms "larger" and "smaller" as used herein refer to the areas of contact, the electrode 12 called the larger electrode having a greater area of contact than the electrode 13 called the smaller electrode. Each electrode may have any desired form. As shown by Figs. 1, 4, 5 and 6, the larger electrode 12 may be a substantially D-shaped frame surrounding an opening 14 formed to receive the protruding portion of a human ear *e* as shown by Fig. 5, the inner side of the electrode contacting with the portion of the head surrounding the protruding portion of the ear. As shown by Figs. 1 and 3, the smaller electrode 13 may be substantially conical and formed to enter the outer cavity of the ear. If desired, the smaller electrode 13 may be concavo convex, as shown by Fig. 7, its convex side contacting with surfaces of the outer cavity of the ear. In any case, the form of the electrodes is such that they may be engaged with and supported by the ears of the patient when the electrodes are engaged with the yoke next described.

Said yoke connects and depends from the electrodes, and is composed of conducting arms 16 contacting with the electrodes and provided with binding posts 17, to engage conducting wires, and a neck connecting the arms and insulating them from each other. The neck is flexible so that the arms and electrodes are movable toward and from each other, and is provided with means for yieldingly pressing the arms and electrodes toward each other so that the electrodes are maintained in yielding contact with the surfaces with which they are engaged. The preferred construction of the neck is shown by Figs. 1 and 2, and includes members 18, 18 connected by a stop hinge, and insulating members 19, 19, connecting the members 18 with the inner ends of the arms 16. The stop hinge is preferably formed by ears 20 formed on the members 18 and a pintle 21 connecting said ears in pairs, the stop portions of the hinges being formed by shoulders 23 adapted to abut against each other, as shown by Fig. 1. The means for yieldingly pressing the arms and electrodes toward each other is preferably embodied in a helical spring 22 (Fig. 2) surrounding the pintle 21, and having end portions 22^a bearing on the members 18 and normally holding the stop shoulders 23 in contact with each

other, the arrangement being such that when the arms and electrodes are moved outwardly from each other, as shown by dotted lines in Fig. 1, to be engaged with the ears, the tension of the spring is increased so that the electrodes are pressed yieldingly toward each other with sufficient force to maintain them in engagement with the ears. When the set is in use the yoke depends from the electrodes at the front of the patient's breast.

To permit a decrease of the inward pressure of the electrodes, the members 18 are provided with handles 24 which may be manipulated by the patient to expand the yoke and move the arms and electrodes apart until any objectionable pressure is removed.

The electrodes are loosely connected with the arms so that each electrode is self-conforming to the surfaces with which it contacts. This connection is preferably provided by sockets 26 in the free ends of the arms 16, and studs 27 secured to the electrodes and projecting loosely into the sockets so that the studs and electrodes are adapted to tip or be inclined in various directions relative to the arms. In the D-shaped type of larger electrode 12 shown by the drawings, the stud 27 thereof is fixed to a looped handle member 28 which in turn is fixed at 29 to the electrode.

I claim:

1. A diathermy ear set comprising a pair of electrodes formed to be engaged with and supported by the ears of a patient; a yoke connecting the electrodes and composed of conducting arms contacting with the electrodes and having binding posts, and a neck connecting the arms and insulating them from each other, the neck including members connected by a stop hinge and provided with a spring normally extending said members and maintaining the electrodes spaced a minimum distance apart.

2. A diathermy ear set comprising a pair of electrodes formed to be engaged with and supported by the ears of a patient; a yoke connecting the electrodes and composed of conducting arms contacting with the electrodes and having binding posts, and a neck connecting the arms and insulating them

from each other, the neck being flexible so that the electrodes are movable toward and from each other, the neck being provided with means for yieldingly pressing the electrodes toward each other and against surfaces between the electrodes, the electrodes being loosely connected with the arms so that each electrode is self-conforming to the surfaces with which it contacts.

3. A diathermy ear set comprising a pair of electrodes formed to be engaged with and supported by the ears of a patient; a yoke connecting the electrodes and composed of conducting arms contacting with the electrodes and having binding posts, and a neck connecting the arms and insulating them from each other, the neck being flexible so that the electrodes are movable toward and from each other, the neck being provided with means for yieldingly pressing the electrodes toward each other and against surfaces between the electrodes, the arms being provided with sockets in their free ends and the electrodes with studs removably inserted in said sockets and loose therein so that the electrodes may be inclined in various directions relative to the arms.

4. A diathermy ear set comprising a pair of electrodes formed to be engaged with and supported by the ears of a patient; a yoke connecting the electrodes and composed of conducting arms contacting with the electrodes and having binding posts, and a neck connecting the arms and insulating them from each other, the neck being flexible so that the electrodes are movable toward and from each other, the neck being provided with means for yieldingly pressing the electrodes toward each other and against surfaces between the electrodes, one of said electrodes being a frame formed to receive the flexible protruding portion of a human ear and bear on head surfaces surrounding said portion, and provided with a handle member having means for engagement with one of said arms.

In testimony whereof I have affixed my signature.

DE FOREST B. CATLIN.