April 4, 1950 E. C. LUND 2,502,865

DIATHERMY CONDENSER ELECTRODE

Filed May 3, 1947 2 Sheets-Sheet 1

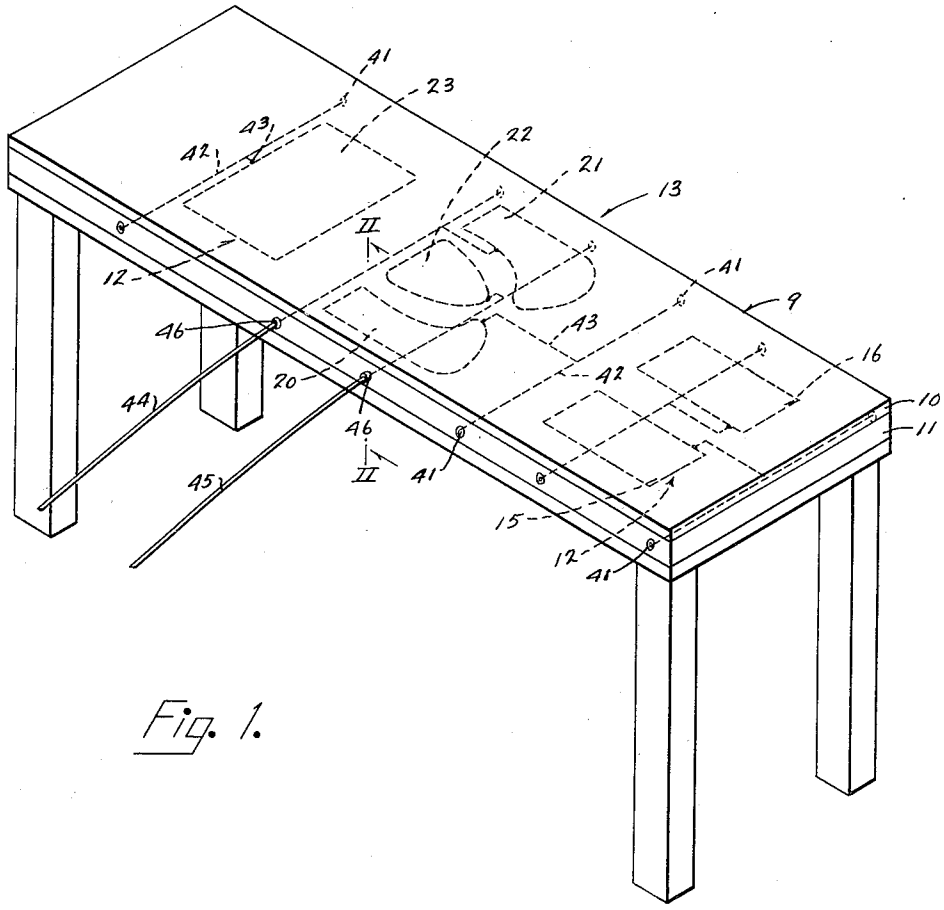


Fig. 1.

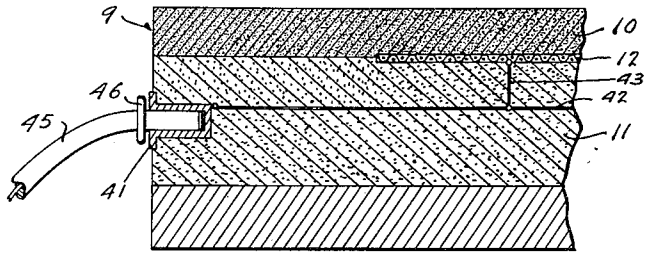


Fig. 2.

INVENTOR
Eiler C. Lund
BY
Beau, Brooks, Buckley & Beau.
ATTORNEYS

April 4, 1950 E. C. LUND 2,502,865

DIATHERMY CONDENSER ELECTRODE

Filed May 3, 1947 2 Sheets-Sheet 2

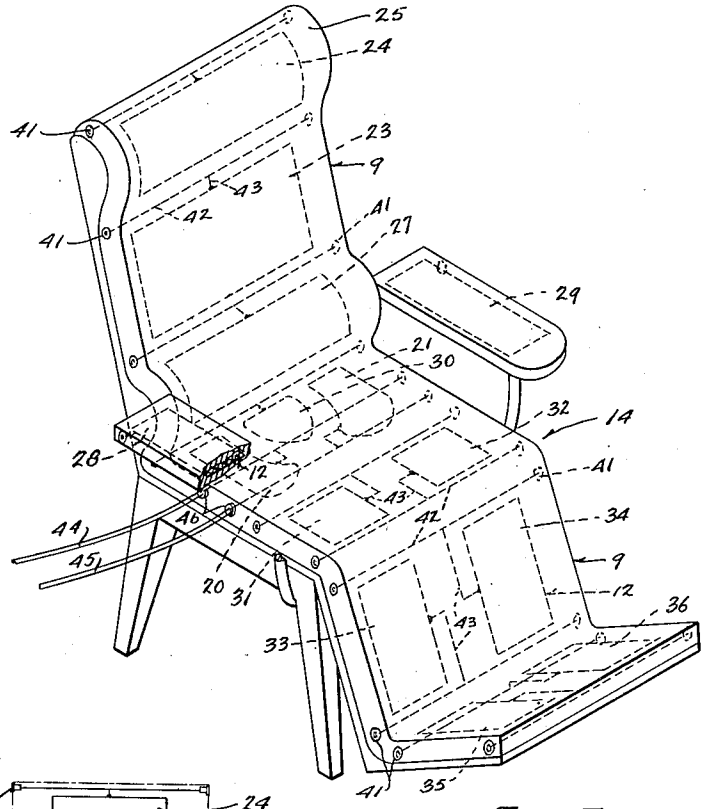


Fig. 3.

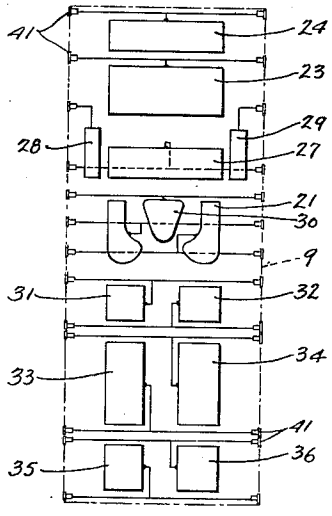


Fig. 4.

INVENTOR
Eiler C. Lund
BY
Bean, Brooks, Buckley & Bean.
ATTORNEYS

Patented Apr. 4, 1950

2,502,865

UNITED STATES PATENT OFFICE

2,502,865

DIATHERMY CONDENSER ELECTRODE

Eiler C. Lund, Kenmore, N. Y.

Application May 3, 1947, Serial No. 745,756

2 Claims. (Cl. 128—413)

1

It is well known to those skilled in the art that when treating the human body by short-wave diathermy applied by means of the customary separate, loose electrodes, severe burns on the patient's body may result unless great care is taken in the relative positioning of the electrodes, and the cables connected thereto, with respect to each other and to the patient's body.

It has therefore been a principal object of my invention to provide a device in the nature of a dielectric cushion supported by a treatment chair, table, or the like equipped with a plurality of permanently placed condenser electrodes so spaced with relation to each other and the supporting surface of the cushion that body burns are obviated.

Another object has been to so proportion and arrange the electrodes in the dielectric cushion that substantially any portion of the patient's body may be treated while he is resting thereon in one position without the necessity of moving about when placing the electrodes or when altering the electric field of treatment, thereby resulting in greater comfort for the patient and greater convenience for the attending physician.

Moreover, since the electrodes of my cushion are permanently arranged and are connected to the generator by means of plugs and jacks located at the edge of the cushion, all danger of the electrode cables coming into contact with the patient's body or of being placed too close to one another is avoided.

Another object has been to completely surround the electrodes and embed them within the cushion, whereby the patient may not have to experience the usual uncomfortableness occasioned by the use of the usual, separate, loose electrodes on which he must lie, or the annoyance or discomfort of being moved about while such electrodes are being properly placed underneath him. A further advantage is that the cables cannot become dislodged, thus causing distortion of the electric field, or body tissue burns.

Furthermore, my device provides means for maximum therapeutic results in the treatment of the body since any electrode or any desired combination of electrodes may be used at will to suit the specific requirements without the usual delay in rearranging loose electrodes.

Moreover, my cushion may be operated from either side thereof, a complete set of jacks being provided for each side for plug attachment of the cables connected to the generator.

The above objects and advantages have been

2

accomplished by the device shown in the accompanying drawings, of which:

Fig. 1 is a perspective view of a treatment table with which my invention is used;

Fig. 2 is an enlarged transverse sectional view of my cushion taken on line II—II of Fig. 1;

Fig. 3 is a perspective view of a treatment chair equipped with my invention; and

Fig. 4 shows a diagrammatic layout of the electrodes used in the chair and the wiring connections thereto.

As hereinbefore pointed out, my invention may be applied to a table, mattress, or other support for a patient being treated, such as a chair, or a table such as illustrated in the drawings.

My invention comprises a cushion 9 of suitable dielectric material such as sponge rubber; and, as shown in Fig. 1, is made preferably of two layers 10 and 11. The layers are detachably secured together and between them are placed the condenser electrodes 12 of my invention. As hereinbefore pointed out, these electrodes are permanently positioned in the cushion where they are suitably secured. The electrodes are preferably shaped and proportioned to conform substantially to the region or organ of the body to be treated and are so relatively positioned that each electrode will be in registering position with the area to be treated when the average patient lies upon the treating table 13 or sits in the treating chair 14.

As shown in Fig. 1 where my invention is applied to a treatment table, I show in dotted lines the use of six electrodes properly shaped and arranged for selective treatment of certain specific areas of the patient's body while he is resting in one position upon the table. As here shown, the electrodes 15 and 16 are for treating the patient's legs. Electrodes 20 and 21 cover the gluteal areas, while electrodes 22 and 23 are for the sacral and dorsal regions, respectively.

In Fig. 3 where my invention is shown as applied to a treatment chair, the cushion 9, which is of dielectric material, is supported by the framework of the chair in any suitable manner. In the chair there is a somewhat different arrangement of electrodes since the portions of the human body assume different relative positions when the patient is in a sitting position than when he is lying down. The arrangement is also for a somewhat more specific treatment of certain affected regions. In addition to the dorsal electrode 23, a cervical electrode 24 is provided. This electrode is located in a curved or padded portion 25 of the cushion which is so positioned as to register with

the patient's neck when he is sitting in the chair. A lumbo-sacral electrode **27** is arranged below the dorsal electrode **23** and the cushion **9** is preferably provided at this place with a pad **26** which snugly fits the patient's lumbar region. Furthermore, in this form of my invention, an electrode **30**, located between the right and left gluteal electrodes **20** and **21**, is provided for the treatment of the perineum region. Two groups of thigh electrodes are also provided, those numbered **31** and **32** being for treatment of the femoral region while those numbered **33** and **34** are for treatment of the legs. Foot treatment electrodes **35** and **36** are for the treatment of the feet of the patient, and these are arranged in the foot rest **40** of the chair. Arm electrodes **28** and **29** are also provided, and these are embedded in cushions carried by the arms of the chair.

Arranged along each side edge of the cushion is a plurality of jacks **41** which are connected, as shown in Figs. 1, 3, and 4, in pairs by means of cross wires **42**. Each of these cross wires **42** is connected to one of the electrodes by means of a connecting wire **43**. By this arrangement, the physician may give a treatment from either side of the table, thereby adding to the convenience of operating the device. A pair of cables **44** and **45** coming from the generator (not shown) are indicated in both forms of the invention of Figs. 1 and 3. Each of these cables is provided with a plug **46** at its inner end for convenient attachment to either of the selected jacks **41**.

It is well known to those skilled in the art that in short-wave diathermy, the cables connecting the generator (not shown) with the electrodes should be of substantially the same length, and in carrying out my invention so as to make the detachable cables of uniform length whereby they can be attached to any electrode, that portion of the cross wire and connecting wire extending from the jack to any one of the electrodes is of such length as to make up the required length of cable when added to the exterior portion of the cable. Therefore, some of the embedded wire will be longer than others owing to the fact that some of the electrodes are more remote from the connecting jack than are others of them. Any surplus embedded wire within the cushion occasioned by the requirement of a definite length will be properly arranged. Where in Figs. 1, 3, and 4, I show such wires, they are illustrated in diagrammatic manner only and no attempt is made to show any definite length of lead.

From the foregoing, it will be obvious that once the patient has been placed upon the treatment table or is arranged within the treatment chair, it will not be necessary for him to move in order that the physician arrange the electrodes in the proper places, and should it be necessary to alter the treatment by the use of different electrodes, this is accomplished in a very prompt and convenient manner by disconnecting the plugs of the cables and connecting them to the jack of the newly selected electrode or electrodes. By means of my invention the electrodes may therefore be selected for the treatment of any portion of the body and various combinations of electrodes may be used at the discretion of the physician without the patient's having to move. While I have shown all electrodes embedded, it is obvious that in some cases it may be desirable to use a separate electrode (not shown) together with one or more of the permanently located electrodes within my cushion.

What is claimed is:

1. A short-wave diathermic apparatus, comprising a dielectric treatment cushion, a support for said cushion, a plurality of one-piece condenser electrodes completely surrounded by and permanently embedded in fixed positions within said cushion, said electrodes being shaped and positioned to substantially cover and register with specific anatomical areas of the human body, a plurality of fixed selective terminal means permanently connected to each associated electrode and extending to the exterior surface of said cushion, and a plurality of short-wave generator cables for removable attachment to the selected terminal means.

2. A short-wave diathermic apparatus, comprising a dielectric treatment cushion, a support for said cushion, a plurality of one-piece condenser electrodes completely surrounded by and permanently embedded in fixed positions within said cushion, said electrodes being shaped and positioned to substantially cover and register with specific anatomical areas of the human body, a plurality of fixed selective terminal means permanently connected to each associated electrode and extending to the exterior surface of said cushion and arranged along the edge portion thereof, and permanently embedded leads connecting each electrode with its corresponding terminal means, said embedded leads being of substantially uniform lengths.

EILER C. LUND.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
765,470	Friedlander	July 19, 1904
775,869	Strong	Nov. 22, 1904
2,105,749	McClelland	Jan. 18, 1938

FOREIGN PATENTS

Number	Country	Date
158,606	Austria	May 14, 1938
313,359	Great Britain	June 13, 1929
425,803	Great Britain	Mar. 21, 1935