July 24, 1934. M. FRIEBERG 1,967,815

DIATHERMY APPARATUS

Filed March 25, 1933

Fig. 1.

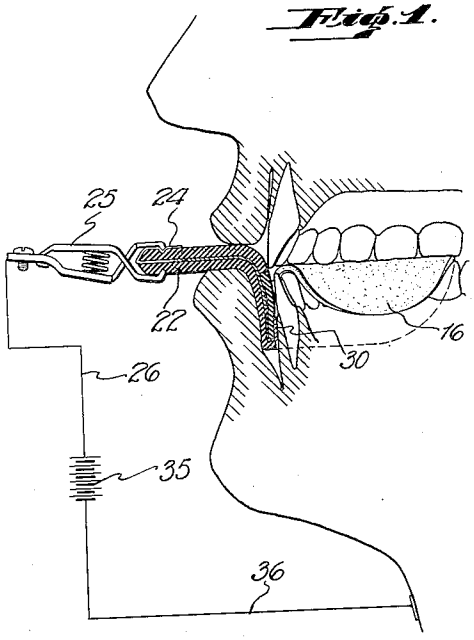


Fig. 4.

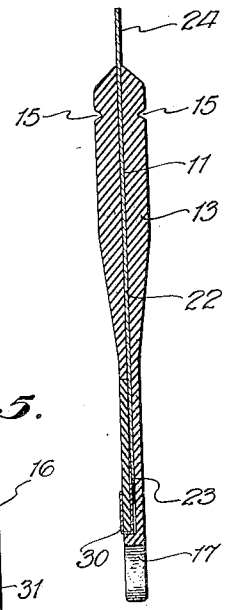


Fig. 5.

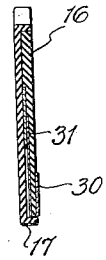


Fig. 2.

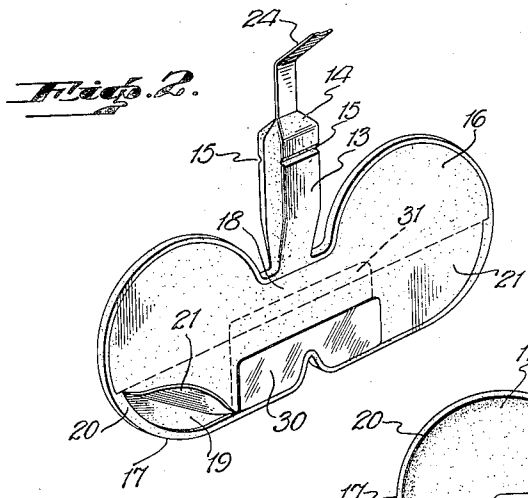


Fig. 3.

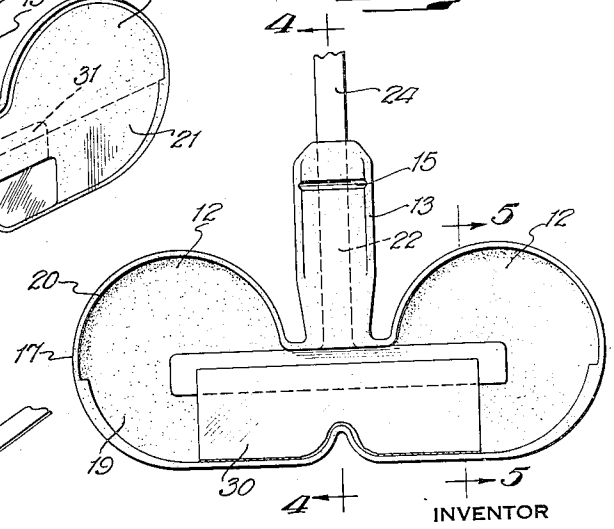
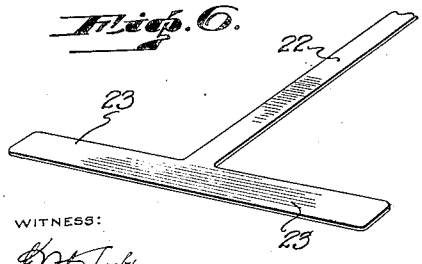


Fig. 6.



WITNESS:

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DIATHERMY APPARATUS

Max Frieberg, Brooklyn, N. Y.

Application March 25, 1933, Serial No. 662,658

3 Claims. (Cl. 174—89)

This invention relates to new and useful improvements in medical appliances and more particularly it pertains to medical appliances of an electrical nature, and while I have herein illustrated my invention as embodied in an apparatus especially adapted for performing diathermic operations in the oral cavity, the principles and advantages thereof are readily adaptable to apparatus for use in other locations of the body.

I am aware that apparatus have been heretofore devised for the purpose of applying special treatments to portions of the oral cavity, but all such devices with which I am familiar, have at least two very serious disadvantages. First, all such apparatus with which I am familiar, have an electrode of a fixed size which electrode subjects the entire area covered thereby to the treatment which in some instances is undesirable since in some cases a more confined or local treatment is desired. Second, all such devices have their electrode permanently attached to a body portion of insulating material preferably soft pliable rubber which forms an insulator for portions of the area adjacent the area being treated. In such devices perfect sterilization, which is highly desirable where the same device is used by many patients, is almost impossible of attainment.

A feature of the present invention resides in the provision of a novel apparatus wherein the electrode is of such character that it may be used in any size desired thereby providing a device by which the treatment may be restricted to relatively small areas when desired.

A further feature of the invention resides in a novel construction wherein the electrode is readily removable and of such a nature that it is used upon but a single patient, the electrode being discarded or disposed of after each use, each patient being treated by a new and unused electrode.

The removable electrode above mentioned is preferably in the form of a sheet of thin pliable metal of which foil is one very good example. This foil has electrical contact with a contact element and another very important feature of my invention resides in a novel construction whereby this contact element may be removed from the body of the device to thereby provide for effective sterilization of all parts which are used in more than one operation.

Other features of the invention relate to certain novel and improved constructions, arrangements and combinations of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawing illustrating the invention in its preferred form and the following detailed description of the constructions therein shown.

In the drawing:

Figure 1 is a sectional view illustrating the manner in which a device constructed in accordance with the present invention is used,

Figure 2 is a perspective view of the device,

Figure 3 is a view in rear elevation of the device,

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 3,

Figure 5 is a detail sectional view taken substantially on the line 5—5 of Figure 3, and;

Figure 6 is a detail perspective view of the contact element of the device.

The device of the present invention comprises a main body portion which in the present embodiment includes two wing-like members 12 which are spaced from each other as best illustrated in Figures 2 and 3. Projecting from the body portion at a point between the wing-like members 12, there is an extension 13 which preferably increases in thickness in the direction of its free end 14. Adjacent its free end, the extension may be provided with a groove 15 upon each of two opposite faces, the purpose of which will be hereinafter referred to. This extension 13 is also provided with a passage 11 which extends preferably entirely therethrough.

The device is formed from a non-conducting material, preferably rubber, and said material is of very pliant or flexible nature in order that it may readily conform to the contour of any irregularities in the area to be treated and to which it is applied.

The body portion of the device preferably consists of two members 16 and 17, the member 16 being secured to the member 17 throughout a portion only of its area by a suitable adhesive, vulcanizing, or in any other suitable manner. In securing the member 16 to the member 17, the entire lower portion of the member 16 is left free in order that this portion of the member 16 may be folded back upon itself for a purpose to be hereinafter described. Also, the members 16 and 17 are unattached at the point designated 18 and the space provided by this non-attachment of the members 16 and 17 at the point 18, has communication with the passage 11 of the extension 13.

The member 17 is recessed as at 19 which re-

cessed portion is defined by a flange 20. The member 16 is of such size and shape that it conforms to the recess 19 and when in position therein, its outer face will be flush with the outer face of the flange 20 to present a smooth outer surface upon the rear face of the device.

The free portion of the member 16 is designated 21 and this portion of the member 16, together with the recess 19 of the member 17 forms a pocket which is adapted to be closed by the free portion 21 of the member 16, which in effect forms a pocket closing flap.

In Figure 6, I have illustrated a contact element which is substantially T-shaped, having a stem 22 and arms 23. This contact element is formed from metal capable of conducting electricity and it is adapted to be positioned in the recess 19 beneath the portion 21 of the member 16, with the stem 22 thereof extending through the passage 11 of the extension 13 as best illustrated in Figure 4 of the drawing. The stem of the contact element is longer than the extension 13 and in use, the free end of the stem is adapted to be bent into parallelism with one side face of the extension 13 as at 24 in Figure 1. A terminal clip 25 may be employed to electrically connect a conductor 26 with the contact element and in making the connection, one jaw of the terminal clip will force the bent over end 24 of the stem of the contact element into one of the grooves 15 of the stem thereby to prevent movement of the contact element between the two members 16 and 17.

The reference character 30 designates an electrode and this electrode is so positioned as to have a portion thereof exposed upon the rear face of the body portion of the device and at the same time have electrical contact with the contact element. This electrode is formed from a thin sheet of ductile metal of which foil is one very good example.

In positioning the electrode, a piece of foil is cut to the desired size and shape depending of course upon the size and shape of the area to be treated. The electrode is then folded about the free edge of the pocket closing flap 21 with a portion thereof extending into the pocket 23 as indicated in dotted lines in Figure 2 and designated 31. This portion 31 of the electrode will always be of such size that when the pocket closing flap is in its closed position, the portion 31 will engage and have electrical contact with that portion of the contact element which occupies a position in the pocket formed by the members 16 and 17.

In Figure 1, I have illustrated one manner of use of the device herein disclosed. In said figure, the device is positioned between the lip and gums of the patient being treated, the electrode 30 being positioned in contacting engagement with the area to be treated. The conductor 26 is connected to one terminal of a suitable source of electric current supply, herein illustrated diagrammatically as a battery 35, the other terminal of said source of electric current supply being connected with the body of the patient as at 37 by a conductor 36 all in a manner commonly employed in the use of such devices.

After the treatment has been completed, the device is removed from mouth after which the electrode 30 may readily be removed and discarded. The terminal clip 25 may be removed after which upon folding back the free edge 21 of the portion 16, the contact element may be removed leaving the several parts separated in order that they may be separately subjected to suitable sterilization treatment. After sterilization, the contact element may be again positioned within the pocket between the members 16 and 17, a new electrode positioned as heretofore described and the device is again ready for use.

From the foregoing it will be readily apparent that the present invention provides a new and improved apparatus so constructed and arranged that a sanitary device employing a new electrode is provided for each patient, thus greatly enhancing apparatus of this general character.

While the invention has been herein illustrated in its preferred form, it is to be understood that it is not to be limited to the specific construction herein illustrated and that it may be practiced in other forms which rightfully fall within the scope of the appended claims.

Having thus described the invention, what is claimed as new and what it is desired to secure by Letters Patent of the United States, is:

1. A device of the character described comprising a body portion of non-conducting material, said body portion having a contact element receiving pocket, a pocket closing member, an electrical contact element mounted in said pocket, and an electrode foldable about a portion of the pocket closing member and extending into said pocket into engagement with the contact element carried therein.

2. A device of the character described comprising a body portion of non-conducting material, said body portion having a contact element receiving pocket, a pocket closing flap, a contact element removably carried in said pocket, and an electrode carried by said pocket closing flap and foldable about the free edge thereof in such a manner that when the flap is in its closed position, a portion of the electrode will be exposed upon the outer face thereof with a portion of the electrode disposed behind the flap in contact with said contact element.

3. A device of the character described comprising a body portion having a contact receiving pocket, a flap for closing said pocket, said pocket closing flap having its free edge positioned in spaced relation to the adjacent edge of the body portion when said flap is in pocket closing position, a contact element removably mounted in said pocket, and an electrode foldable about the free edge of said pocket closing flap and having substantial portions thereof disposed upon opposite sides of said flap with that portion at the rear of said flap contacting with the contact element.

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