April 14, 1953 W. W. HODGE 2,635,175

THERAPEUTIC APPLIANCE

Filed Feb. 9, 1952

Fig-1



Fig-2

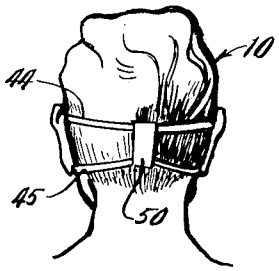


Fig-5

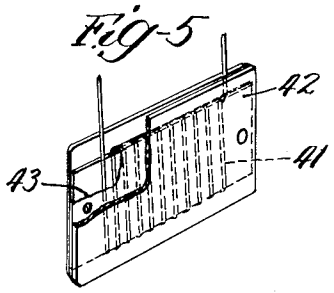


Fig-3

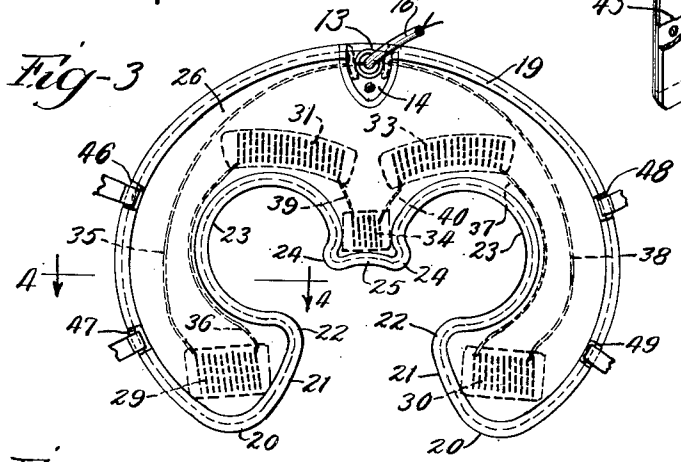
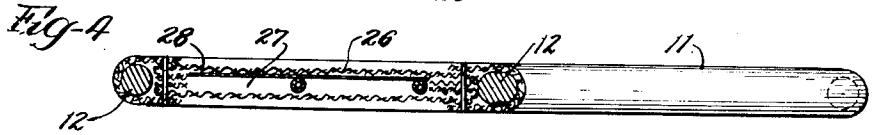


Fig-4



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THERAPEUTIC APPLIANCE

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2 Claims. (Cl. 219—46)

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The present invention relates to therapeutic appliances, and is particularly concerned with devices of that type which are adapted to be used to treat the sinuses of a patient by the application of heat.

One of the objects of the invention is the provision of an improved therapeutic appliance in the form of a partial mask which is to be applied to the face of a patient for the application of heat to all of the sinuses simultaneously.

Another object of the invention is the provision of an improved sinus mask, the parts of which are malleable or bendable so that it can be readily shaped to the physiognomy of many different patients and so that it may be bent and otherwise deformed to bring its heating pads into close engagement with the skin at all points for producing a maximum therapeutic effect by heat upon the sinuses of the user.

Another object of the invention is the provision of an improved sinus heating pad which is simple in structure, capable of economical manufacture, adaptable to many different patients, and capable of being used for a long period of time without necessity for repair or replacement of any of its parts.

Another object of the invention is the provision of an improved sinus heating mask which has all of its parts so constructed and located that the sinus pads are automatically located in the proper position for heating all of the sinuses and so that the pad is held in fixed position for treatment of the patient without further attention.

Other objects and advantages of the invention will be apparent from the following description and the accompanying drawings, in which similar characters of reference indicate similar parts throughout the several views.

Referring to the single sheet of drawings accompanying this specification,

Fig. 1 is a front elevational view of a patient wearing a therapeutic appliance embodying my invention;

Fig. 2 is a rear elevational view on a reduced scale;

Fig. 3 is a front elevational view of the mask, showing the details of construction of its parts;

Fig. 4 is a fragmentary sectional view, taken on an enlarged scale on the plane of the line 4—4 of Fig. 3, looking in the direction of the arrows;

Fig. 5 is a view in perspective of one of the electrical heating units.

Referring to Figs. 1 and 2, these are illustrations in which the patient 10 is shown wearing the therapeutic appliance 11 in the form of a sinus heating mask, which has provision for heating all of the sinuses simultaneously for its therapeutic effect.

The mask 11 comprises a suitable malleable or

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bendable frame 12 made of a wire, such as copper wire, iron, aluminum, or suitable bendable plastic, which is of sufficient size to give the mask its shape, while at the same time permitting it to be bent by the hands into a suitable shape for engaging the face of any type of patient.

The wire frame 12 may be constructed of a single length of wire which has its ends joined together at the top 13, where the ends of the wires are inwardly bent to form an anchor, and clamped between a pair of resilient soft rubber blocks, forming a clamping member 14, which is provided with an outwardly extending, tapered, tubular, soft rubber member 15, supporting the inner end of a flexible, two conductor, braided wire, rubber insulated cord 16, provided with a wall plug 17, having a pair of prongs 18.

The clamping member 14 with its tubular member 15 not only serves to prevent a sharp break in the energizing cord 16 by limiting its bending, but it also secures the two ends of the wire frame together to form a closed loop.

The frame 12 is provided with a substantially oval portion 19, which extends about the outside of the mask on three sides, terminating at the points 20 at the bottom (Fig. 3), where the frame is bent upward at an easy bend and provided with the diagonally, inwardly extending portions 21.

These terminate at 22 on either side of the nose, where they are provided with an easy bend extending outwardly and leading to a partially circular portion 23 surrounding each eye. The two partially circular portions 23 of the frame cover three-fourths or more of the circle and lead to a pair of sharply curved portions 24, 24, which are integrally joined by a concave portion 25 over the bridge of the nose.

The acutely curved portions 24 are adapted to be bent downward on both sides of the bridge of the nose for closer engagement with the ethmoidal sinus areas. All parts of the frame 12 are bendable so that they may be bent as required into or out of their normal plane for closely engaging the face of any patient.

The frame is preferably provided with a fabric covering 26, which extends over the edge of the frame 12 on all sides and is provided with an inner and an outer layer stitched together or otherwise secured inside of the frame, and producing the inner chamber 27.

The fabric covering 26 may enclose, on the face side of the mask, an inner layer of aluminum foil 28, extending over the full area of the face side of the mask, and interposed between the fabric covering 26 and the heating pads 29—34.

The mask is provided in the chamber 27 with the heating pads 29—34, including the two pads 29 and 30, which are located on either side of the nose for engagement with the face outside the

maxillary sinus, and the pads 31 and 33 located above the eyes for engagement with the face outside the frontal sinuses and the pad 34 which is located on the bridge of the nose and is adapted to engage the face outside the ethmoidal sinuses.

The pads are preferably connected in series by means of the conductors 35, 36, 37, 38, 39, and 40, with the two conductor cords 16 leading to the plug 17.

The electric resistance wires 41 of each pad are insulated and are wrapped about flat, rectangular slugs 42 of bendable material, such as a sheet of lead, which is provided with a layer of insulation 43 between the wire and the lead, and with another external layer of insulation, such as a plastic compound, outside of the wires.

The heating pads 29—34 being bendable, they may likewise be shaped to the face of the wearer inside the chamber 27 by bending them with the fingers until they conform to the face of any individual patient.

The size and electrical characteristics of the resistance wire 41 and the length of the resistance wire is such that when all of the heating elements are connected in series and energized by means of the plug 17, they are adapted to be connected to the 110 volt lighting circuit, A. C. or D. C.; and they produce a moderate amount of heat, sufficient to heat the sinus areas of the face; but the radiation from the front side of the heating element is such that there is no danger of burning the patient at any time.

The layer of aluminum foil 28 in contact with the insulated heating parts serves to diffuse the heat and spread it more uniformly over the sinus areas, although the pads may not be of the exact shape of the sinus areas.

The mask 11 is held on the face by means of a pair of elastic tension members 44 and 45, the ends of which are passed through slits in the covering 26, passed about the wire frame 12, and stitched together to form a loop at the points 48—49. The two elastic bands 44, 45 are long enough to extend about the head of a patient above and below the ear, and are preferably joined at the back by means of a strap 50.

The elastic bands 44, 45 draw the mask tightly against the face and assure a uniform contact between the heating portions of the mask and the face, after the mask has been shaped to fit the face of the user.

In addition to shaping the mask to fit the contour of the face, the two inwardly extending portions 21 on both sides of the nose may be bent inward or outward to conform to the width of the face of the wearer.

The operation of my therapeutic appliance will be apparent from the foregoing description of its construction. It is adapted to engage the face of the wearer adjacent each of the sinus areas and to apply a moderate, but nonburning, heat to the sinus areas, which stimulates the circulation of the blood in these areas and tends to cause the blood to eliminate the congestion which may be present at the sinuses.

While I am aware that masks have been provided in the prior art with electrodes for the application of electric current or voltage to the person of the user, none of the devices of the prior art with which I am familiar are adapted to apply heat electrically or otherwise to the sinus areas of the face.

While I have illustrated a preferred embodiment of my invention, many modifications may be made without departing from the spirit of the

invention, and I do not wish to be limited to the precise details of construction set forth, but desire to avail myself of all changes within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A therapeutic appliance for applying heat to the sinuses only, comprising a wire frame having an oval outside outline conforming substantially to the outline of the upper part of the face of a patient, said frame curving upwardly and backwardly at the corners of the mouth to provide two inwardly extending frame parts for supporting heaters for the maxillary sinuses, said frame curving about the eyes of the patient and extending downwardly over the bridge of the nose, a fabric covering for both sides of said frame forming a chamber inside said frame for enclosing heaters, and local electric heater elements of substantially the same area as each sinus, carried by said covering in said chamber directly above each maxillary sinus and directly above each frontal sinus for applying heat directly only to the said sinuses, each of said local electric heaters comprising a base plate of bendable material covered with insulation, an electric heating wire wrapped about said base plate, and an outer layer of insulation, and the heater bases being bendable with the fingers to conform to the curvature of the face directly outside of each sinus.

2. A therapeutic appliance for applying heat to the sinuses only, comprising a wire frame having an oval outside outline conforming substantially to the outline of the upper part of the face of a patient, said frame curving upwardly and backwardly at the corners of the mouth to provide two inwardly extending frame parts for supporting heaters for the maxillary sinuses, said frame curving about the eyes of the patient and extending downwardly over the bridge of the nose, a fabric covering for both sides of said frame forming a chamber inside said frame for enclosing heaters, and local electric heater elements of substantially the same area as each sinus, carried by said covering in said chamber directly above each maxillary sinus and directly above each frontal sinus for applying heat directly only to the said sinuses, each of said local electric heaters comprising a base plate of bendable material covered with insulation, an electric heating wire wrapped about said base plate, and an outer layer of insulation, and the heater bases being bendable with the fingers to conform to the curvature of the face directly outside of each sinus, said frame part which extends downwardly over the bridge of the nose enclosing and supporting a local bendable heater extending transversely to the nose over the bridge and bendable on both sides of the bridge into closer engagement with the ethmoidal sinus areas.

WOODROW WILSON HODGE.

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