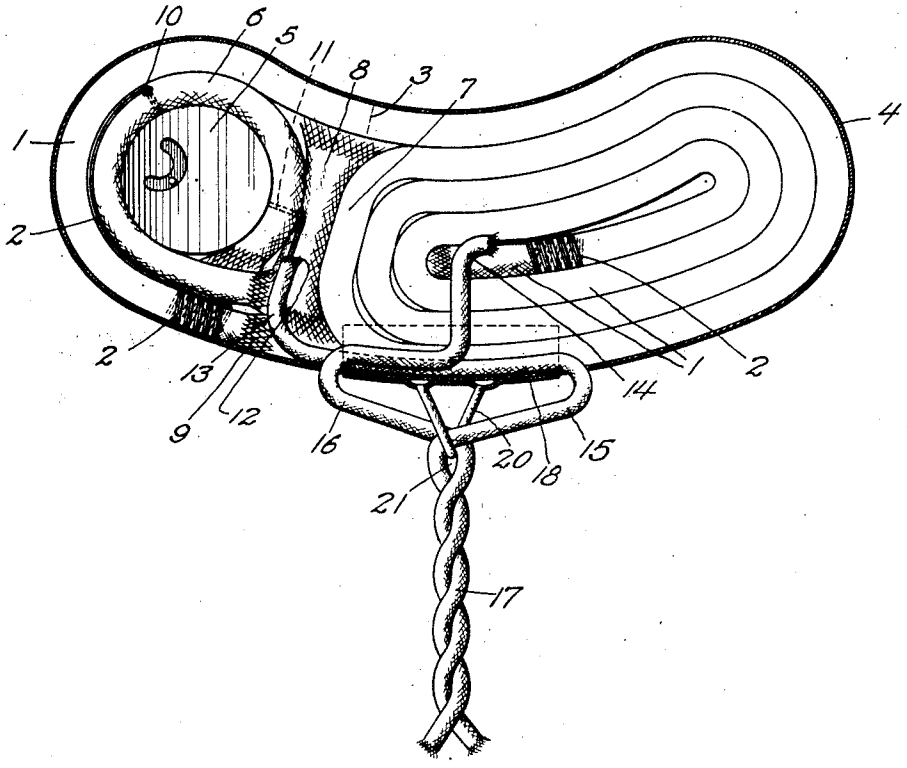
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W. RICHMOND

HEATING PAD

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UNITED STATES PATENT OFFICE.

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HEATING PAD.

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To all whom it may concern:

Be it known that I, WALTER RICHMOND, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented an Improvement in Heating Pads, of which the following is a specification.

This invention relates to electric heating pads and particularly to a heating pad which is thermostatically controlled and useful for local and limited application. It is the object of the invention to produce a pad which may be used for treating mastoid or sinus conditions or to be applied locally to cover other particular regions, primarily the head. It is an object of the invention to produce a pad of a size and shape conveniently applicable to local and limited areas, particularly of the head; and to include therein a thermostat for regulating the temperature of the pad; the thermostat being included and the pad so constructed as to provide maximum flexibility and maximum efficiency in operation.

The drawing is an enlarged plan view showing an illustrative embodiment of the preferred form of the invention. It discloses the construction of the body of the pad of my invention with the fabric covering thereof removed from the face of the pad but shown in section around the margins.

I have made the pad of arc or crescent form with a slightly constricted width across the center and with rounded ends, a form designed for most effective treatment of mastoid or sinus conditions. Thus the pad will fit behind the ear to cover the entire mastoid area; upon a frontal sinus without obstructing the vision or doing damage to the eye. It will fit also upon the angle of the jaw and in many other local and limited applications. Its size is determined by its intended use; the preferable size being four inches long and wide.

It is important that a pad for medicinal use such as the treatment of mastoid conditions be thermostatically controlled in order to remain at a definite and regulable temperature. This involves the incorporation of the thermostat in the pad. The location of a thermostat in a pad of such small size overcomes a number of difficulties and at the same time presents a pad having maximum flexiblility throughout its central region; and generating throughout a uniform temperature.

The body of the pad is made up preferably of a core of soft braided cord or rope, upon which is spirally wrapped the fine heating wire 2. This rope 1 I coil into a compact very much flattened spiral, the contour of the spiral being curved so as to form about two thirds of the arc form shown in the drawings.

Thus the coiled core 1 from the starting point in the center of the pad up to the point 3 affords a compact flat flexible heating unit, extending from the right hand end 4, of the arc or crescent shaped pad, well beyond the central region of the pad. This produces throughout the central region of the pad throughout all of one lobe of the arc a perfectly uniform mat or fabric of uniform and maximum flexibility, without lumps or projections, and readily adapted to be pressed smoothly over a frontal sinus or mastoid region or the like.

In the lobe of the pad opposite to the end 4, that is to say, in the one third of the arc remaining, I incorporate a preferably round thin flat thermostat case 5, containing a thermostat preferably of a type illustrated in the Richmond Patent No. 869,460. Around this thermostat I coil preferably a single convolution 6 of the core material without heating wires, and between the coil 6 and the adjacent end 7 of the flattened spiral or wrapped core I insert a cross piece 8 of the core material without the heating wire. This fills up the central portion of the remaining one third of the pad. I then wrap the free end of the wrapped core with which I started (and which makes up the other two thirds of the arc) across the upper end of the cross piece 8, and around the outside of the convolution 6 to the point 9. By this construction I have completely filled up the contour of the rounded arc shape desired. Two thirds of this area, including the important central region is made of a perfectly uniform mat with heating wire uniformly distributed throughout and of maximum flexibility. The remaining lobe comprises the small thermostat 5 with an insulating packing comprising the convolution 6 and cross piece 8, bounded marginally by the wrapped core 1. The construction is compact, and the thermostat is located at the

point where its rigidity can interfere least with the use of the pad.

The heating coils 2, it will be understood, are wrapped along the entire length of the coil 1, from its beginning to its end at the point 9. At this point the heating wire 2 passes from the end 9 of the coil 1, passes back in the reverse direction, between the core 1 and the convolution 6 to the point 10, where it passes through the convolution 6 and connects with one side of the thermostat 5. A heating wire 11 passes out of the thermostat 5 on the opposite side from the point 10, passes through the convolution 6 and connects at 12 with the insulated lead wire 13.

The construction above described will deliver a substantially uniform quantity of heat over its entire area.

The thermostat is preferably of the type in which the blades are wound with heating wire as indicated in the patent of Richmond No. 869,460, October 29, 1907, and thus the entire area of the thermostat casing 5 will remain at the same temperature as that developed throughout the pad by heating coil. The entire area of the thermostat casing plus the heat wire wrapped core around it, plus the heating wire between the convolution 6 and the adjacent length of core on both sides of the thermostat casing 5 will deliver substantially exactly the same amount of heat as that delivered by any other area of the same size in the pad.

I shall now describe the attachment of the lead wires to the pad. The ends of the lead wires 13 and 14 are connected to the ends of the heating wires 2 and 11, adjacent the center of the pad. The lead wire 13 passes outwardly from the point 12 to the convex margin of the pad, passes along that margin, and is bent back at 15 in the opposite direction. The lead wire 14 passes outwardly to the convex margin of the pad, passes along that margin in the opposite direction to the lead wire 13, is then bent to the left, bent back at 16. The lead wires 13 and 14 are merged at 17 with the ordinary twisted connector. The construction forms a loop in the ends of the lead wires one side of which loop (comprising the two wires extending in opposite directions) is laid along the margins of the pad. To secure this side of the loop to the pad I apply a strip of binding fabric 18 which is stitched tightly over the side of the loop along the margins of the pad. Additionally I provide the loop connector 20, which is fastened in eyelets in the fabric 18 and passes freely through the aperture 21 in the twisted connectors.

The invention herein described makes it possible to provide an efficient and serviceable thermostatically controlled electric heating pad having a thermostat embodied therein; of small size, of shape eminently for application to limited and local areas particularly of the head, and of maximum flexibility, and the heat delivered throughout the entire pad is completely uniform, and a uniform temperature therein maintained. It is of course to be understood that I do not limit myself to the particular details of construction herein described.

Having described my invention, I claim:

1. An electric heating pad for local and limited application comprising a pad shaped to form a segment of an arc when flat adapted to fit over the mastoid area or a sinus on the brow and having a heat regulatory thermostat incorporated therein.

2. An electric heating pad for local and limited application comprising a pad shaped to form a segment of an arc when flat adapted to fit over the mastoid area or a sinus on the brow; and having a heat regulatory thermostat incorporated in one of the lobes thereof.

3. An electric heating pad for local and limited application comprising a crescent shaped pad (with rounded ends) lead wires fixed to the pad upon the convex side of said crescent and a thermostat embedded in one lobe of said arc.

4. An electric heating pad for local and limited application, comprising an arc shaped pad formed of rope or the like, spirally wrapped with a heating wire, wherein said rope is coiled upon itself to make substantially two thirds of the arc form, a thermostat applied in the remaining third of said arc, and the rope being passed around the thermostat to complete the contour of the arc shaped pad.

5. An electric heating pad for local and limited application, comprising a pad formed of coiled rope or the like, bearing a heating wire, wherein said rope is coiled upon itself to make a two thirds of an arc shaped pad, a thermostat, applied on the unfinished side of the arc, and the rope is passed around the thermostat to complete the arc, a coil of rope immediately surrounding said thermostat for insulating purposes; the heating wires passing partially around said last named coil to connect through the thermostat.

6. An electric heating pad for local and limited application formed of rope or the like bearing heating wires, wherein the rope is laid in parallel line to build up a flat flexible structure, a thermostat is placed adjacent one side of said structure and attached thereto.

7. An electric heating pad for local and limited application formed of rope or the like bearing heating wires, wherein the rope is laid in parallel line to build up a flat flexible structure, a thermostat is placed adjacent one side of said structure and the rope passed around the thermostat to complete the contour of the pad.

8. An electric heating pad for local and limited application, comprising an arc shaped pad formed of coiled rope or the like, spirally wrapped with a heating wire, wherein said rope is coiled upon itself to make substantially two thirds of the arc form, a thermostat, applied on the unfinished side of said arc, and the rope is passed around the thermostat to complete the pad, a coil of unwrapped rope immediately surrounding said thermostat for insulating purposes; the heating wires passing partially around said last named coil to connect through the thermostat.

In witness whereof, I hereunto subscribe my name this 22 day of March, A. D. 1920.

WALTER RICHMOND.