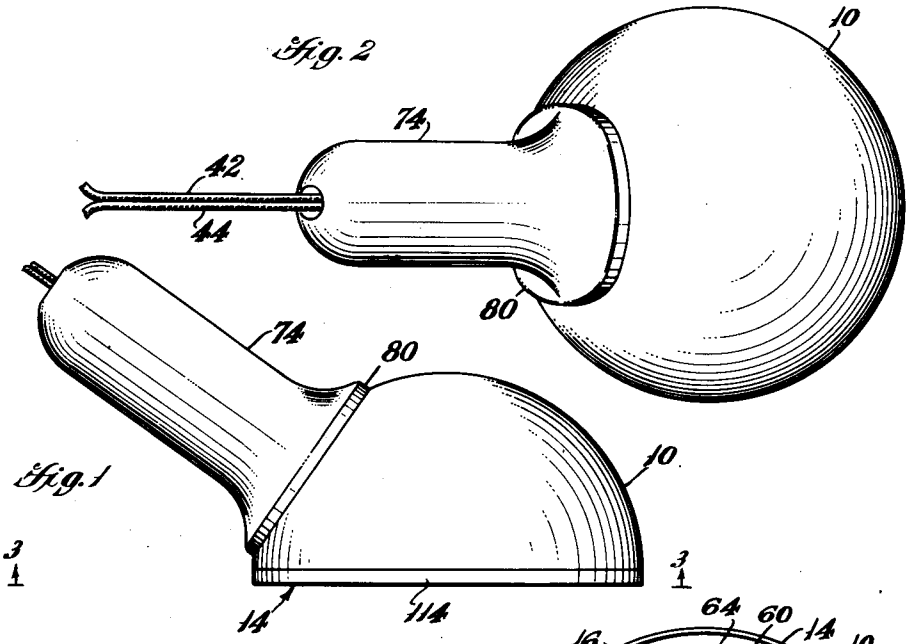
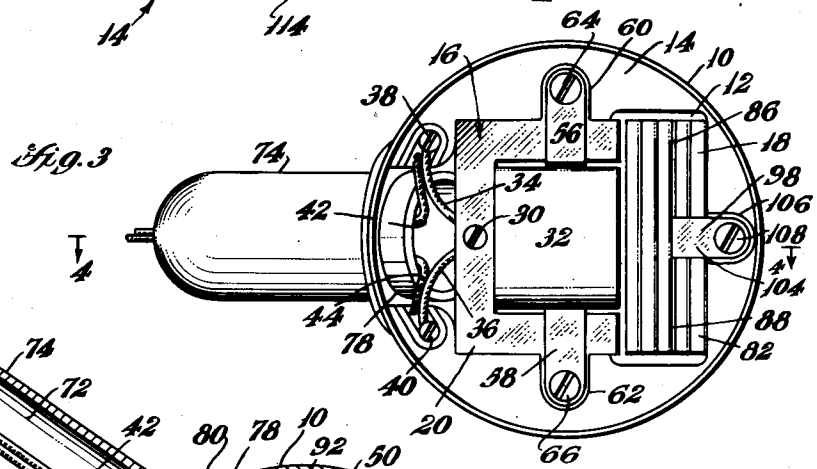
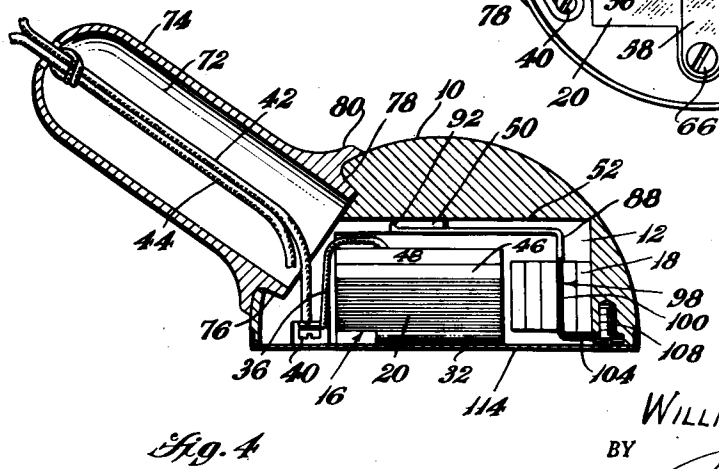
Jan. 15, 1952 W. AUGUST 2,582,617

COMBINATION HEATER AND VIBRATOR

Filed July 11, 1947 2 SHEETS—SHEET 1







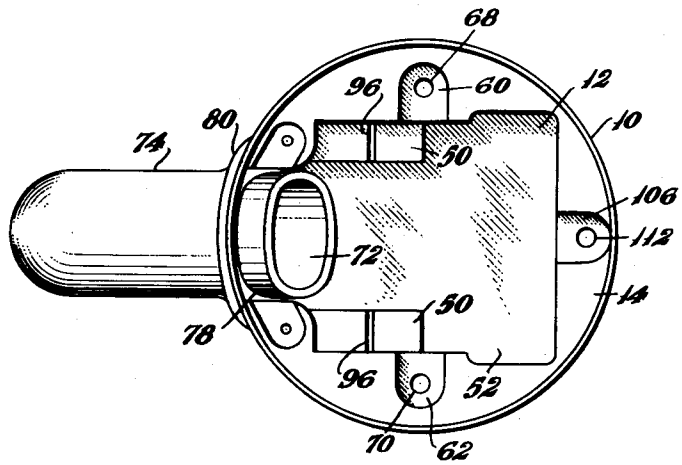
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Fig. 5



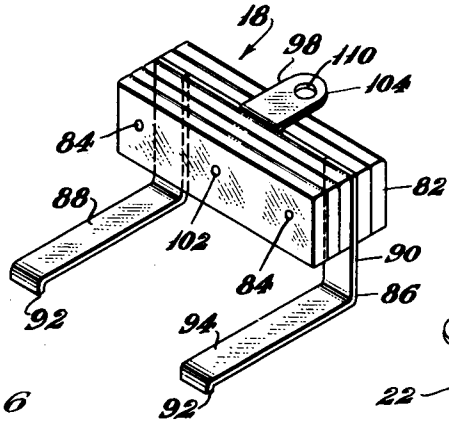


Fig. 6

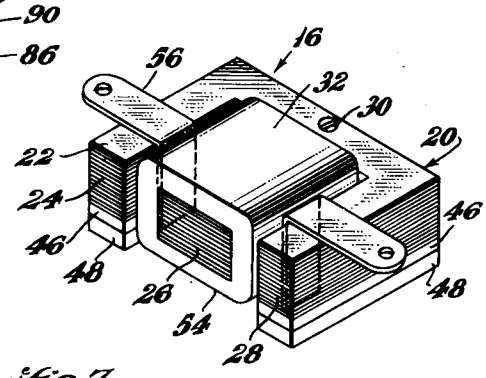


Fig. 7

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COMBINATION HEATER AND VIBRATOR

William August, New York, N. Y., assignor, by direct and mesne assignments, to Ben Lee Products, Inc., a corporation of New York

Application July 11, 1947, Serial No. 760,194

4 Claims. (Cl. 128—24.1)

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This invention relates to therapeutic devices for massaging and applying heat to the body.

An object of the invention is to provide a device which is adapted, upon connection to a source of electric power, to undergo vibration which may be imparted to the body upon contact therewith, to massage the same.

Another object of the invention is to provide an electric massage device including electric vibrator means, and which is adapted upon contact with the body, not only to massage the same, but also to impart heat to the area which is being massaged.

A further object of the invention is to provide a combination electric massage and heat applicatory device which at the same time imparts a vibratory massage to the body and imparts heat thereto, the device being characterized by novel means for regulating the temperature of the device, preventing overheating thereof.

Still another object of the invention is to provide a combination electric massage and heat applicatory device which is simple in design, inexpensive to manufacture, and which is effective and automatic in operation.

Other objects and advantages of the invention will become apparent from the following description of a preferred embodiment thereof as illustrated in the accompanying drawings, and in which:

Fig. 1 is a side elevational view of my improved heat massage device;

Fig. 2 is a top plan view thereof;

Fig. 3 is a bottom plan view taken on line 3—3 of Figure 1, the metal plate which transmits massage and heat being removed to illustrate the interior parts;

Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 3;

Fig. 5 is a view similar to that of Fig. 3, but showing the device with certain parts removed therefrom, the removed parts being shown in Figs. 6 and 7;

Fig. 6 is a perspective detail view of the movable armature forming part of the vibrator; and

Fig. 7 is a perspective detail view of the electromagnet which actuates the armature of Fig. 6.

In the usual construction of therapeutic devices adapted to massage parts of the body, it has been customary, either to apply massage only, without heat, or, where heat was also desired to be imparted to the body, to accomplish this by means of a separate heating unit. The separate heating unit involves considerable expense over and above the cost of the vibratory parts, but in addition makes for a bulky unit which is difficult to handle. With the separate heating unit, the device is quite likely to overheat, with consequent danger of body burns, and must be constantly watched to avoid such dangers, it being necessary to disconnect the same to allow it to cool off.

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The present invention discloses a solution to this problem by providing a vibrator and heating unit all combined in the same structure, together with integral heat regulating means which is automatic in operation.

In order to understand clearly the nature of the invention, and the best means for carrying it out, reference may now be had to the drawings, in which like numerals denote similar parts throughout the several views.

As shown, I provide a housing 10 the external contour of which may conveniently be hemispherical in shape and molded of plastic or other suitable insulating material. The housing 10 has a recess or chamber 12 formed therein, which opens upon the lower or flattened portion 14 of the hemispherical housing, as seen best in Figs. 3, 4 and 5, the recess 12 being adapted to receive the operating mechanism of the vibrator and heater.

Inside the chamber 12, I dispose an electromagnet generally indicated at 16 and shown in perspective detail in Fig. 7, and an armature 18, which is shown in perspective detail in Fig. 6. The electromagnet 16 includes a core 20 formed of a number of stacked iron laminations 22 having three legs 24, 26 and 28, and secured together by a bolt 30, which extends through aligned openings formed in the individual laminations.

A coil 32 encircles the central magnetic leg 26, as shown best in Figs. 3, 4 and 7, and is connected by lead wires 34 and 36, to junction terminals 38 and 40 which are secured to and insulated from the housing 10 and disposed in suitable recessed portions thereof. Connection between the electric power lines and the junction terminals 38 and 40 is effected through lead wires 42 and 44 which are connected at one end to the junction terminals, and at the other end to a plug, not shown, for connection to a utility outlet.

Insulating spacing blocks 46 and 48 may be secured to the inner face of the electromagnet core 20, as best shown in Figs. 4 and 7, and are supported upon upstanding platform steps 50 molded integrally with the inner wall 52 of the chamber 12, and protruding into the chamber from said wall. It will be seen that, due to the thickness of the spacing blocks 46 and 48, and

the platforms 50, the undersurface 54 of the coil 32 is not directly in contact with the surface 52 of the chamber 12, but is slightly spaced therefrom.

Metallic strips or bands 56 and 58 formed of any suitable material, extend around the core 20, and have their upper ends bent over and outwardly as shown in Figs. 3 and 7, so as to extend into rounded recesses 60 and 62 formed in the housing 10 and adapted to receive the band ends. These ends of the bands 56 and 58 are secured in position in the recesses 60 and 62, by means of screws 64 and 66 which extend through holes formed in the bands and are threaded into openings 68 and 70 formed in the housing. The electromagnet core 16 and its coil 32 are thus securely anchored in position within the chamber 12.

The lead wires 42 and 44 extend through an axial bore 72 formed in the handle 74, the lower end 76 of the handle extending into an opening 78 formed in the housing 10, and frictionally engaging the same, being additionally secured therein by any suitable means such as by cement or other adhesive. The handle has an outwardly extending flange 80 which overlies the opening 78, lending additional rigidity to the connection of the handle with the housing 10.

An armature 18 is also disposed in the chamber 12, the armature being formed of a number of iron laminations 82 which are stacked upon each other and secured together in any suitable manner, as by means of rivets 84. The armature 18 is supported upon spring brackets 86 and 88 the upstanding legs 90 of which extend between adjacent armature laminations as best shown in Fig. 6, being secured therebetween by the same rivets 84 which also extend therethrough. The said spring brackets 86 and 88 are preferably made of non-magnetic material, and have downturned feet 92 at the ends of their horizontal legs 94 as shown in Fig. 6, which engage in the lateral slots 96 formed in the platforms 50 of the housing 10 shown in Fig. 5, and also shown in side view in Fig. 4.

A bimetallic temperature regulating bracket 98, which is substantially L-shaped as viewed in Figs. 3, 4 and 6, has one leg 100 extending between adjacent armature laminations 82 and secured therebetween by means of a rivet 102 extending therethrough. The horizontal leg 104 of the bimetallic bracket extends across the remaining armature laminations and into a matching recess 106 formed in the housing 10, being secured at its outer end therein by means of a screw 108 the shank of which extends through an opening 110 in the leg 104 and which is threaded into a recess 112 formed in the housing.

The chamber 12 is closed by a metal plate 114 having a cylindrical flange or skirt which embraces the peripheral edge of the housing as best shown in Figs. 1 and 4, to snap in position.

This unit is thus a combination heater and vibrator, the purpose of which is to impart a massaging action to any part of the body and at the same time to heat the area which is being massaged. The massage or vibrating action and heat are both transmitted to the body through the metal plate 114 which extends across the plane of the equatorial axis of this device. The lead wires 42 and 44 are connected to the alternating current power lines, and the vibration is the result of the electromagnetic forces applied to the weighted ferrous type armature 18 which floats upon the spring support brackets 86 and 88 and is not in contact with the metal plate 114.

It will be seen that, under the influence of the alternating current, and the flux derived therefrom, armature 18, which is normally held out of contact with the electromagnetic core 16, is alternately drawn thereagainst as the magnetizing current reaches its peak, and released when the current is zero, being thereupon drawn away from the core 16 by the spring brackets upon which it is supported. The planes of the laminations of the core are parallel to the plane of the metal plate 114, so that the vibratory action will be in a plane parallel to that of the metal plate, and therefore parallel to the surface to be massaged.

As the vibration proceeds, heat will be generated in the parts, particularly in the iron core and armature, and in the coil 32. The heat is a product of the wattage loss in both the iron core and the copper coil 32 and is transmitted through conduction to the inner surface of the metal plate 114. There is thus eliminated the necessity for a separate coil for heating purposes.

When the temperature of the parts rises too high, this acts upon the bimetallic thermostatic element 98, so as to cause it to bend in such a direction as to move the armature 18 nearer to the core 16. This lessens the air gap therebetween, tending to lessen the heating effect in the parts. When the parts are cool, the element 98 acts similarly to increase the air gap. Automatic heat regulation is thus accomplished.

Although I have described a preferred embodiment of my invention in specific terms, it is to be understood that various changes may be made in size, shape, materials and arrangement without departing from the spirit and scope of the invention as claimed.

I claim:

1. A therapeutic device comprising a housing having a chamber formed therein, a laminated electromagnetic core supported in said chamber, a coil disposed on a leg of said core and connectable to a source of alternating current, an armature floatingly supported in said chamber, spring means normally biasing said armature away from said magentic core and adapted, under the influence of said electromagnet, to be alternately drawn toward said core against said spring bias, whereby vibrations are caused, a metal plate closing said chamber and adapted to be placed directly against the body surface so as to conduct both vibration thereto and also to conduct heat generated in said core, armature and coil to the selected body surface, said housing having an opening formed therein for communication with said chamber, a handle having one end reduced to extend into and to securely engage said opening and having an axial bore extending through said handle, the lead wires for connecting said coil to the alternating current power source extending through said handle.

2. A therapeutic massaging device adapted to be held in the hand and applied to selected parts of the body comprising a housing having a chamber formed therein, a laminated electromagnetic core supported in said chamber, a coil disposed on a leg of said core and connectable to a source of alternating current, an armature floatingly supported in said chamber, spring means normally biasing said armature away from said magnetic core to provide an air gap therebetween and adapted, under the influence of said electromagnet, to be alternately drawn toward said core against said spring bias, whereby vibrations are

caused, a metal plate closing said chamber and adapted to be placed directly against the body surface so as to conduct both vibration thereto and also to conduct heat generated in said core, armature and coil to the body surface, and means in the device for automatically regulating the rate of heat generation in said parts by increasing or decreasing the said air gap, and a handle member connected to said housing.

3. A therapeutic device comprising a housing having a chamber formed therein, a laminated electromagnetic core supported securely in said chamber, a coil disposed on a leg of said core and connectable to a source of alternating current, an armature disposed in said chamber, spring support brackets floatingly supporting said armature in said chamber and normally biasing said armature away from said core, whereby, under the influence of the alternating flux thus generated, the armature is alternately drawn toward said core and returned to initial position by said spring brackets, to impart vibratory motion to said housing, a metal plate closing said chamber and adapted to overlie the portion of the body surface being massaged, a thermostatic bracket carried by said housing and engaging said armature, whereby under the influence of said alternating magnetic flux said core, armature and coil generate heat which is conducted through said plate to the body surface, said thermostatic

bracket being so constructed and arranged that as the temperature rises beyond a predetermined level it moves the armature in such direction as to alter the air gap between the armature and core to lessen the heating effect, whereby automatic heat regulation is accomplished.

4. The construction according to claim 3, characterized further in that the plane of the laminations of said electromagnetic core are parallel to the plane of the metal plate, so that the vibratory action will be in a plane parallel to the metal plate and therefore parallel to the surface to be massaged.

WILLIAM AUGUST.

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