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Hilger

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[45] **Jan. 16, 1973**

[54] **MASSAGER**

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[51] **Int. Cl.** **A61h 1/00**

[58] **Field of Search** 128/24.1, 24.2, 32, 34–36

[56] **References Cited**

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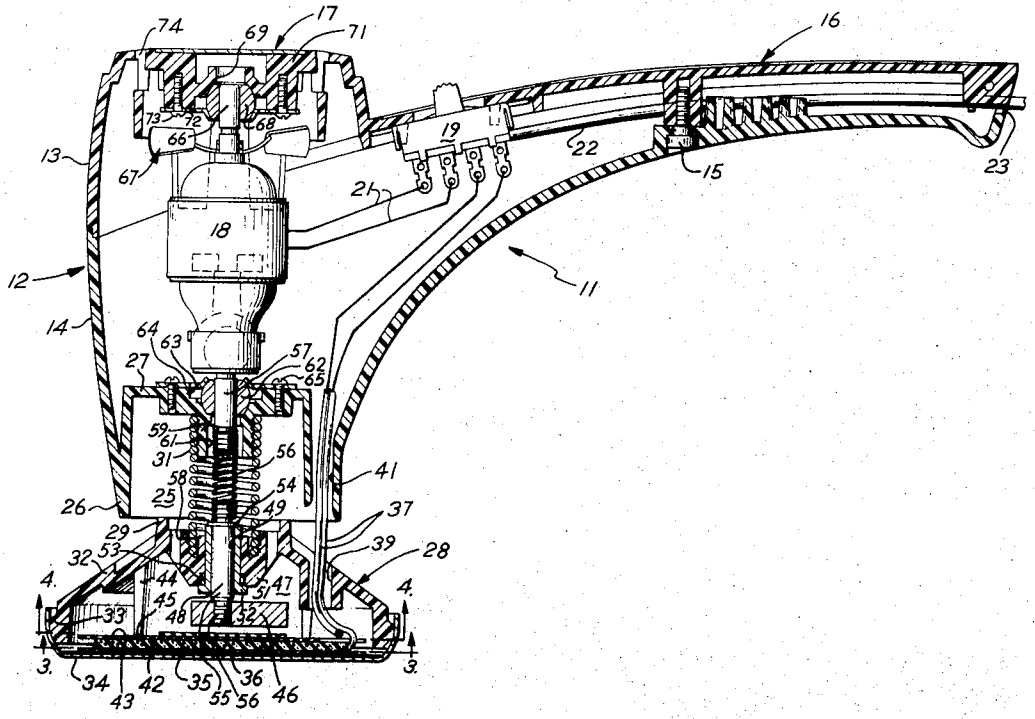
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[57] **ABSTRACT**

An improved massager providing a vibratory muscular and skin massage for easing strain, tension, pain and the like. The massager includes a "floating" head which is connected to the main housing of the massager by a coil compression spring and which is arranged so that the head may follow the body contours. The head is vibrated and is caused to be moved in an orbital path, with respect to the main housing, as a result of the rotation of a motor driven, eccentrically mounted weight positioned in the head. The head also includes a heating element which may selectively be actuated to permit infrared heat to be applied to the portion of the body being massaged.

13 Claims, 4 Drawing Figures



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SHEET 1 OF 2

Fig. 1

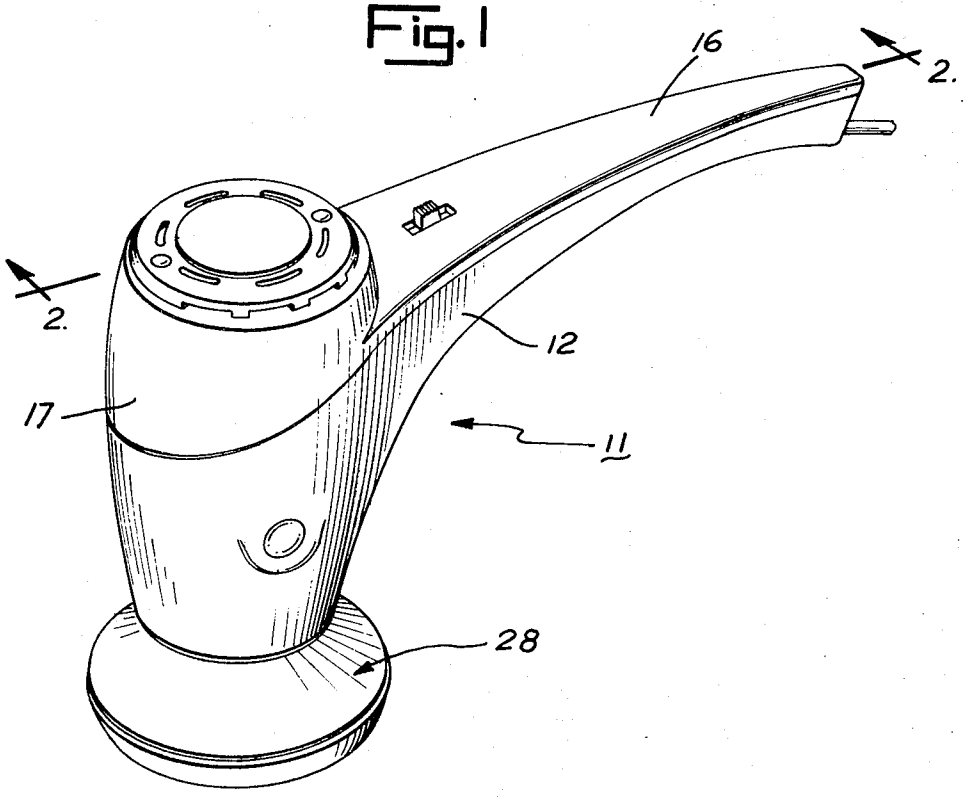
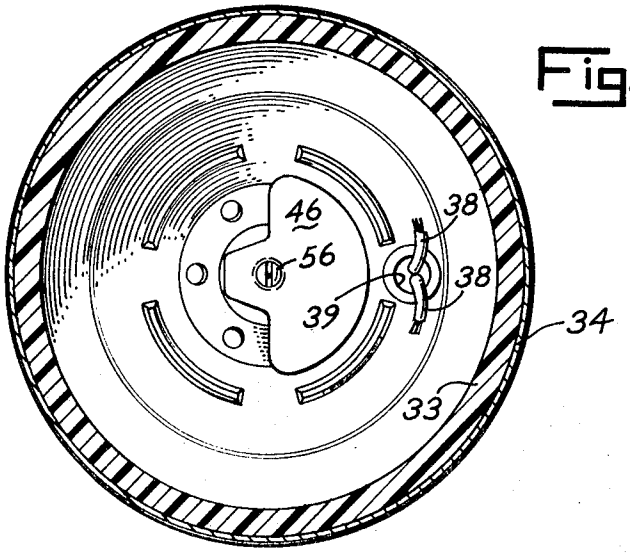


Fig. 4



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Fig. 2

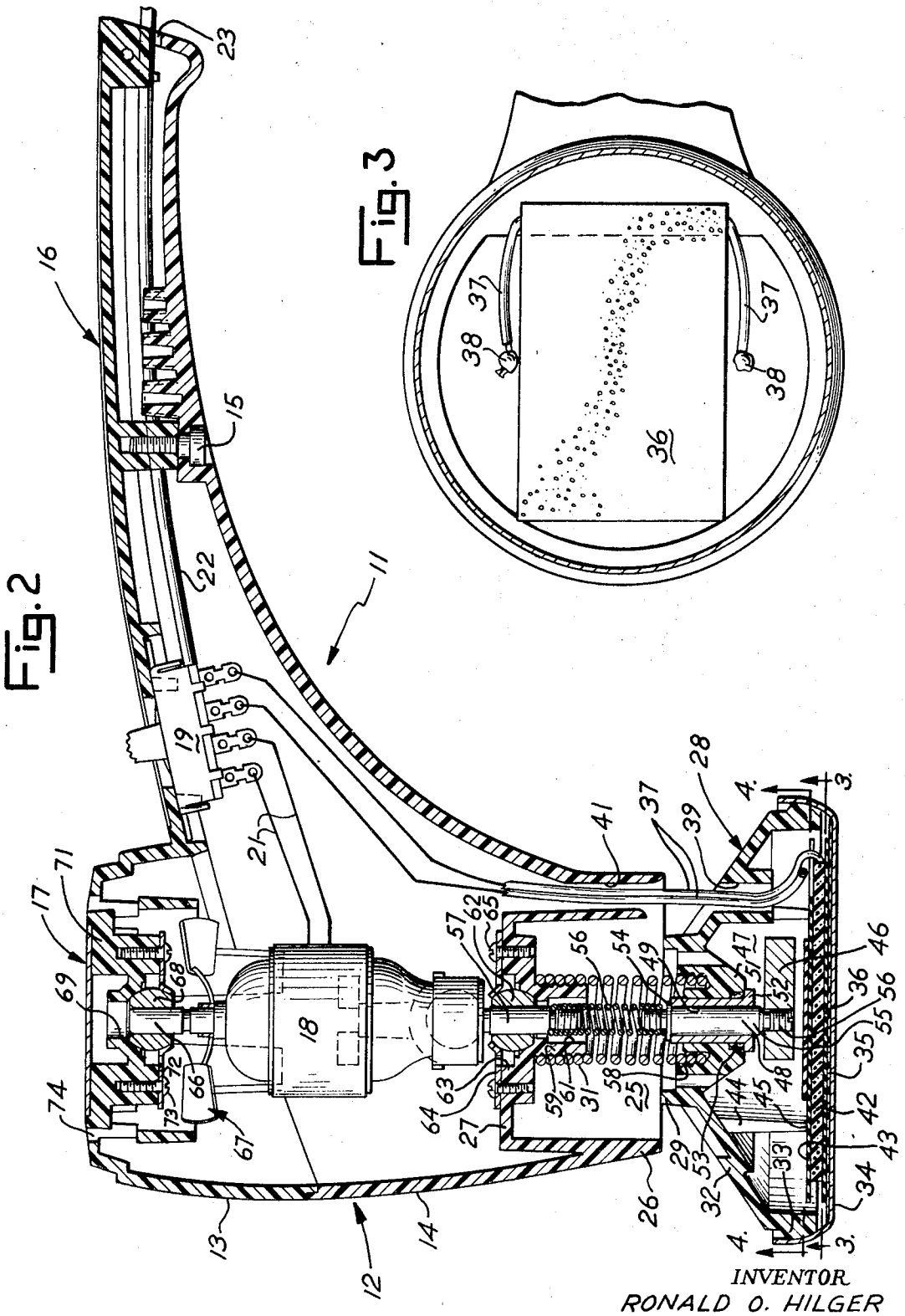


Fig. 3

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MASSAGER

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to an improved massager for providing comforting muscular and skin massage and more particularly, to an improved massager including a vibrating "floating" head mounted on the main housing of the massager so that the body-contacting surface of the head may follow body contours and so that the vibrations imparted to the head cause orbital movement of the head with respect to the housing.

In the past there have been two general types of commercially available massagers which could be used by persons to assist them in giving themselves or others a muscular and skin massage. In one type, a vibrating massager is carried on the back of a person's hand and the hand, with vibratory motion imparted to it by the massager, is utilized to perform the actual massaging of the body. In the other type, the massager is placed directly against the portion of the body to be massaged and may or may not be held by the person during usage.

With respect to the latter type of massagers, generally the head portion of the massager, i.e., the portion which includes the body-contacting surface, is securely attached or is an integral part of the rest of the massager housing so that there is no relative movement between the body-contacting surface and the rest of the massager. Also, these prior body-contacting type massagers usually used electro-magnetic means to impart vibratory motion to the body-contacting surface and have included means for applying infrared heat to the portion of the body being massaged.

In contrast, the improved massager of the present invention includes a "floating" head which is flexibly mounted on the main housing of the massager so that the body engaging surface of the head may follow body contours and so that orbital vibratory motion may be imparted to the head. As a consequence of the improved construction of the massager of the present invention, relatively deep penetration of invigorating, pulsating massage can be achieved for maximum comfort.

More specifically, the improved vibrator of the present invention includes a conical head with the body-contacting surface thereof forming the base thereof. A first coil compression spring interconnects the main housing of the massager and the head, with one end of the spring being connected to the housing and the other end of the spring being connected adjacent to the apex of the head. Vibratory motion is imparted to the head by rotation of an eccentrically mounted weight positioned in the head. The eccentrically mounted weight is rotated by means of an electric motor positioned in the main housing of the massager, with the output shaft of the motor and the shaft on which the eccentric weight is mounted being interconnected by a second coil compression spring. The second coil spring is disposed within the first coil spring and arranged so that its axis and the axis of the first coil spring are coaxial. An electrical heating element is positioned adjacent and parallel to the body-contacting surface of the head to selectively provide infrared heat to the portion of the body being massaged.

Because of the relative simplicity of design and because of the use, to a large extent, of standardized parts, the improved massager of the present invention is relatively inexpensive to manufacture and to maintain. Moreover, as noted above, because of the "-floating" head construction and as a result of the orbital vibratory motion which is imparted to the head during operation of the massager, the massager provides relatively deep penetration of invigorating massage which, if desired, may be supplemented for further beneficial results, by the application of infrared heat.

Accordingly, a primary object of the present invention is to provide an improved massager which affords a vibratory, muscular and skin massage for easing strain, tension, pain and the like and which includes a "-floating" head that moves with respect to the main housing of the massager during operation of the massager.

Another object of the present invention is to provide an improved vibratory massager which includes a flexibly mounted or "floating" head that permits the body-contact surface of the head to follow the contours of the body and that has an orbital, vibratory motion imparted to it during operation of the massager, so as to provide relatively deep penetrating massage.

Still another object of the present invention is to provide an improved massager of the type described wherein the head is connected to the main housing of the massager by means of a first coil compression spring, with one end of the spring being connected to the housing and the other end of the spring being connected to the head.

A further object of the present invention is to provide an improved massager of the type described wherein vibratory orbital action is imparted to the head of the massager, with respect to the main housing of the massager, by the rotation of an eccentrically mounted weight within the head.

A further object of the present invention is to provide an improved massager of the type described wherein the eccentric weight is mounted on a first shaft within the head; wherein an electric motor is positioned within the main housing of the massager; and wherein a second coil compression spring is utilized to provide a flexible drive connection between the first shaft and the electric motor.

Still another object of the present invention is to provide an improved massager of the type described wherein the head is of generally conical shape with the body-contacting surface forming the base thereof; wherein the main housing of the massager has an opening or recess formed therein that is larger than the apex of the head; and wherein the head is positioned with respect to the main housing of the massager so that the apex thereof is adjacent to the opening. A related object of the present invention is to provide an improved massager of the type described wherein the first coil compression spring interconnects the main housing and the apex of the head; wherein the second coil compression spring (which acts as a flexible driving connection for the eccentrically mounted weight) is positioned within the first coil compression spring and arranged so that the longitudinal axes of the springs, the first shaft and the head are coaxial and substantially perpendicular to the plane of the body-contacting surface.

These and other objects, advantages and features of the present invention will become more apparent from the following description of the preferred embodiment of the invention taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Referring to the drawings, wherein like reference numerals indicate like parts throughout figures;

FIG. 1 is a perspective view of an improved massager embodying the principles of the present invention;

FIG. 2 is a vertical cross-sectional view taken through line 2—2 in FIG. 1;

FIG. 3 is a cross-sectional view taken along line 3—3 in FIG. 2; and

FIG. 4 is a cross-sectional view taken along the line 4—4 in FIG. 2.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIGS. 1 and 2, an embodiment of an improved massager of the present invention is shown generally at 11. The massager 11 includes a hollow molded plastic housing 12 comprising separable upper and lower portions 13 and 14 which are secured together by a screw 15. The housing 12 includes an integral, tapering handle portion 16 which extends from a main, generally cylindrical portion 17.

A conventional electric motor 18 is mounted, in a conventional manner, in the body portion 17 of the housing 12. A conventional two-pole, 3-position electric switch 19 is connected to the motor 18 by means of wires 21 and is mounted in the handle portion 16 so that it can be actuated by a person while he is holding the massager 11 by the handle portion 16. Power cord 22 is connected at one end with the switch 19 and is adapted to have its other end connected with a source of electrical energy, such as a wall plug. As shown in FIG 2, the cord extends through an aperture 23 formed in the projecting end of the handle portion 16 of the housing 12.

An inverted cuplike opening or recess 25 is formed in the lower end 26 of the cylindrical portion 17. A wall 27, formed as an integral part of the lower portion 14 of the housing, defines the opening 25 and substantially segregates the opening from the interior of the housing 12.

A generally conical, hollow molded plastic head 28 is positioned so that its upper apex 29 is disposed adjacent to the opening 25. A coil compression spring 31 is utilized to connect the head 28 to the housing 12, as hereinafter described.

The head 28 includes a molded plastic side wall 32 which terminates at its lower end at a circumvental rim 33. A generally circular, preferable aluminum, cover plate 34 defines the bottom or base of the conical head 28 and serves as the body-contacting surface of the head. The circumvential edges of the plate 34 are rolled over or staked about the rim 33 so as to secure the plate 34 to the rim 33 of the side wall 32 of the head 28.

A Mylar, heat insulating disc 35 is disposed adjacent to the upper surface of the plate 34 and between the inner edges of the rim 33. A conventional electrical heating element 36 is positioned immediately above the insulating disc 35, and is utilized so as to permit infrared heat to be applied to the portion of the body in contact with the outer or lower surface of the plate 34. The element 36, as shown in FIG. 3, is a generally rectangular plate and is positioned within the rim 33 of the head 28. A pair of leads 37 are connected to terminals 38 formed on the plate 36 and are connected with the switch 19 so that the heating element 36 may be selectively energized by movement of the switch 19. The leads 37 extend through an aperture 39 molded in the side wall 32 of the head 28 and an aperture 41 formed in the lower end 26 of the main body portion 17 of the housing 12.

A polyurethane foam, adhesive-backed, heat insulating pad 42 is disposed on the upper surface of the heating element 36. A second heat insulating disc 43 is, in turn, positioned on the upper surface of the pad 42.

A plurality of segmental rims 44, formed as integral parts of the side wall 32, extend downwardly from the wall 32 toward the plate 34. The lower ends 45 of the rims 44 bear upon the upper surface of the disc 43. The length of the rims 44 are selected, with respect to the thicknesses of the disc 43, the pad 42, the element 36 and the disc 35, so that the rims hold the disc 43, and thus the pad 42, the element 36 and disc 35 tightly, against the plate 34 and so as to prevent relative movement therebetween.

An eccentric counterweight 46, as shown in FIG. 4, is utilized to impart vibratory and orbital motion to the head 28 and is mounted in the head 28. More specifically, the counterweight 46 is mounted for rotational movement within a chamber 47 defined by the upper surface of the disc 43, the side wall 32, and the rims 44. A shaft 48 is mounted for rotational movement in a central aperture 49 formed in the apex portion 51 of the wall 32 adjacent to the apex 29 of the head 28. A bronze flanged bearing 52, backed by an oil wick felt washer 53, is utilized to journal the shaft 48 in the aperture 49. A flange 54 is formed on the shaft 48 adjacent to the upper end of the shaft 48 and is arranged so that the undersurface of the flange 54 abuts the upper end of the bronze bearing 52 so as to limit the vertical downward movement of the shaft with respect to the bearing 52. The counterweight 46 is secured to the lower end 55 of the shaft 48 by means of a screw 56, as best shown in FIGS. 2 and 4, and is arranged so that the plane in which it rotates is substantially parallel to the plane of the plate 34.

A coil compression spring 57 is connected at its lower end to the upper end of the shaft 48. The upper end of the spring 57 is connected, in turn, to the lower end of the rotatable output shaft 57 of the electric motor 18. The spring 56 forms a flexible drive connection between the shafts 57 and 48 so that the rotary motion of the shaft 57 is imparted to the shaft 48 and thus to the counterweight 48. As best shown in FIG. 2, when the head 28 is in its normal position, the center portion of the spring 56, i.e., the portion between its upper and lower ends, is slightly extended, and this permits the spring 56 to accommodate limited, vertical movement of the head 28 with respect to the housing 12.

As noted above, the coil compressing spring 31 connects the head 28 with the housing 12. More specifically, the spring 31 is disposed about the spring 56 so that their longitudinal, central axis are coaxial. The

apex portion 51 of the wall 32 of the head 28 has an internal threaded recess 58 formed about the aperture 49, with the threads formed therein being of sufficient size to receive the lower end of the spring 31 so that the lower end of the spring 31 is secured therein by these threads. The wall 27 of the housing 14 has a central, lower depending, externally threaded projection 59 integrally formed thereon which receives and secures the upper end of the spring 31.

The upper end of the spring 56 and the drive output shaft 57 of the electrical motor 18 are positioned in a central molded aperture 61 formed in projection 59 of the wall 27. A generally spherical, self-aligning bearing 62 is positioned in the upper portion 63 of the aperture 61 and is utilized to support and journal the motor output shaft 57. A bearing retainer plate 64 retains the bearing 62 in place and in turn, is secured to the wall 27 by a plurality of screws, two of which are shown at 65. When the massager 11 is in its normal position, i.e., the position shown in FIG. 2, the springs 31 and 57 and shafts 48 and 57 are arranged so that their axes are coaxial and are substantially perpendicular to the plane of the plate 34.

The above described flexible connection between the head 28 and the lower end 26 of the housing 12 permits the head to move, with respect to the housing 12, both vertically and at an angle with respect to the vertical without interfering with the operation of the counterweight 46 or the heating element 36. This enables the head 28, and more particularly the plate 34 to follow the contours of the body during the operation of the massager 11. Furthermore, the rotation of the counterweight 46 within the head 28 imparts an orbital, vibratory motion to the head 28, with respect to the housing 14, and this orbital vibratory motion permits the relatively deep penetration of invigorating, pulsating massage to the portions of the body adjacent to the plate 34.

The upper end of the electrical motor 18 has a rotatable, projecting shaft 66 which carries a conventional fan blade assembly 67 which is utilized to draw air over the motor 18 during its operation. The shaft 66 is journalled in a generally spherical, self-aligning bearing 68 which is positioned in a molded aperture 69 formed in the upper wall portion 71 of the housing portion 13. A retainer plate 72 is secure to the lower surface of the wall portion 71 by a plurality of screws, two of which are shown at 73, and is utilized to retain the bearing 68 in proper position. A plurality of spaced apertures 74 are formed in the wall portion 71 and permit air to be drawn into the interior of the housing by the fan blade assembly 67.

OPERATION

The operation of the massager 11 is as follows:

The person using the massager 11 holds the massager by the handle portion 16 and positions the surface 34 against the portion of the body to be massaged. As noted above, the switch 19 is of the type which permits the motor 18 to be operated with or without the heating element 36 being actuated. In other words, the person may move the switch 19 either to the position wherein the motor 18 alone is actuated to the position wherein both motor 18 and the heating element 36 are both actuated so that soothing infrared heat may be applied to portion of the body adjacent to the plate 34 along with the massaging action. Actuation of the motor 18 results in orbital, vibratory motion being imparted to the head 28 as a result of the rotation of the eccentrically mounted counterweight 46 in the head 28. This orbital, vibratory movement of the head 28 results in a relatively deep penetrating, invigorating and pulsating massage being applied to the body. As a result of the flexible connection between the head 28 and the housing 12 afforded by the springs 31 and 56, the head 28 may follow the contours of the body as the massager 11 is moved over the body.

In view of the foregoing, it is apparent that the massager of the present invention is a commercially attractive device from the standpoint that it provides a satisfying and comforting muscular and skin massage and that it is relatively inexpensive to manufacture and maintain.

It should also be apparent to those skilled in this art that modifications could be made in the massager 11 without departing from the principles of the present invention. For example, the motor 18 could be replaced by a multi-speed motor which could then be used to impart different rates of vibratory motion to the head 28 due to the fact that the weight 46 would be rotated at different speeds. Therefore, while the foregoing is a detailed description of the preferred embodiment of the present invention, it is to be understood that all modifications that would be obvious to those having ordinary skill in the art are to be included in the scope of the invention as claimed.

I claim:

1. An improved massager for providing a comforting muscular and skin massage to the body comprising:
   - head means including a generally conical member having a surface which is adapted to contact the portion of the body to be massaged and which defines the base of the member;
   - housing means including an opening having a size greater than the size of the apex of the conical member;
   - means for imparting vibratory motion to the head means during operation of the massager for causing said surface to provide a vibratory, muscular and skin massage to the portion of the body against which it is held; and
   - connection means for flexibly connecting the head means to the housing means so that the head means may move with respect to the housing means during operation of the massager so as to permit said surface to follow the contours of the body as it is moved over the body, with the connection means being connected to the conical member adjacent to the apex of the conical member so that the apex of the conical member is positioned adjacent to said opening.

2. The improved massager described in claim 1 wherein infrared heating means are positioned adjacent to said surface so as to selectively permit infrared heat to be applied to the portion of the body being massaged.

3. The improved massager described in claim 1 wherein the connection means permits limited relative movement of the conical member with respect to the housing means in both a direction substantially parallel

to the axis of the conical member and at an angle with respect to the axis of the conical member.

4. The improved massager described in claim 3 wherein the connection means includes a coil compression spring which is connected at one end to the housing means and which is connected at its other end to the conical member adjacent to its apex.

5. An improved massager for providing a comforting muscular and skin massage to the body comprising:

head means having a member which has a first end including a surface adapted to contact the portion of the body to be massaged and which has a second end spaced from the first end;

housing means including an opening having a size larger than the size, of the second end of the body of the head means;

connection means for flexibly connecting the member of the head means to the housing means so that the head means may move with respect to the housing means during operation of the massager so as to permit said surface to follow the contours of the body as it is moved over the body, the connection means being connected to the member of the head means adjacent to the second end of the member so that the second end of the member is positioned adjacent to said opening of the housing means; and

means for imparting vibratory motion to the head means during operation of the massager for causing said surface to provide a vibratory, muscular and skin massage to the portion of the body against which it is held, the vibratory means including a weight which is eccentrically mounted on a first shaft positioned in the head means, and motor means positioned in and carried by the housing means, the motor means including a rotatable drive shaft which is operatively connected with the first shaft.

6. The improved massager described in claim 5 wherein a first coil compression spring is connected at one end with the drive shaft of the motor means and is connected at its other end with the first shaft.

7. The improved massager described in claim 6 wherein the connection means includes a second coil compression spring which is connected at one end to the housing means and at its other end to the head means so as to permit limited relative movement of the head means with respect to the housing means in both a direction substantially parallel to the axis of the second spring and at an angle with respect to the axis of the second spring and so that the head means may move orbitally with respect to the axis of the second coil compression spring.

8. The improved massager described in claim 5 wherein the connection means includes a second coil compression spring which is connected at one end to the housing means and at its other end to the head means so as to permit limited relative movement of the head means with respect to the housing means in both a direction substantially parallel to the axis of the second spring and at an angle with respect to the axis of the second spring and so that the head means may move orbitally with respect to the axis of the second coil compression spring.

9. The improved massager described in claim 8 wherein the head means is a generally conical member with said surface defining the base thereof; wherein the other end of the second coil compression spring being connected adjacent to the apex of the conical member; wherein the housing means includes an opening having a size larger than the size of the conical member, adjacent to its apex; and wherein the conical member is positioned so that the apex thereof is adjacent to said opening.

10. The improved massager described in claim 9 wherein the first coil compression spring is disposed within the second coil compression spring so that the axes of the first coil compression spring and the second coil compression spring are coaxial.

11. The improved massager described in claim 10 wherein the axis of the conical member is coaxial with the axes of the first and second coil compression springs; and wherein the plane in which the eccentric weight moves is substantially parallel to said surface.

12. The improved massager described in claim 11 wherein the axes of the first shaft and drive shaft are coaxial; wherein the axis of the conical member is coaxial with the axes of the first shaft and the drive shaft and is substantially perpendicular to the plane of said surface.

13. The improved massager described in claim 12 wherein infrared heating means are positioned adjacent to said surface so as to selectively permit infrared heat to be applied to the portion of the body to be massaged; and wherein the housing means includes a handle so as to enable user of the massager to hold the massager during use.

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