

United States Patent

Ogawa et al.

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[54] ELECTRO-MASSAGER

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Dec. 26, 1969 Japan.....44/104403

[52] U.S. Cl.128/36

[51] Int. Cl.A61h 1/00

[58] Field of Search128/32-36, 24.1, 128/24.2, 59

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[57] ABSTRACT

An electro-massager comprising a casing having a handle, a pair of motors disposed in the casing for actuating a pair of vibrating heads, each including an eccentric balance weight therein, which are, respectively, rotatably coupled with the motors through flexible coupling means, whereby the eccentric balance weights are subjected to rotation in the vibrating heads thereby to both vibrate and massage the objective portion of the body inserted therebetween.

10 Claims, 12 Drawing Figures

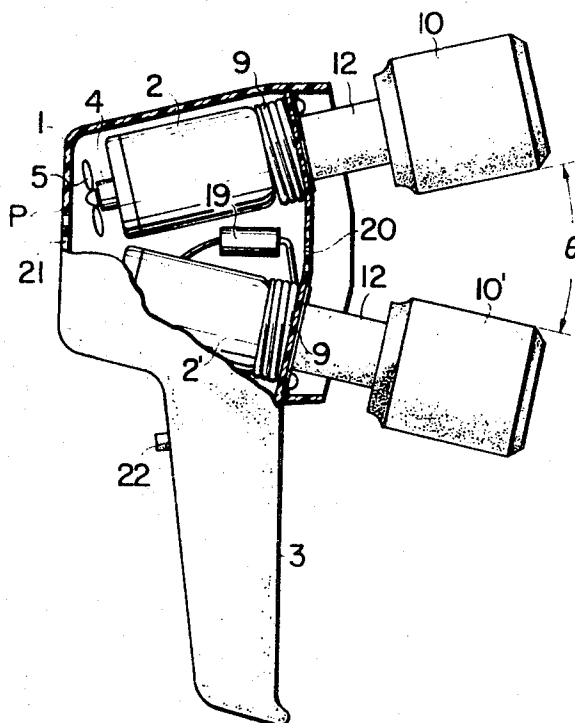


FIG. 1

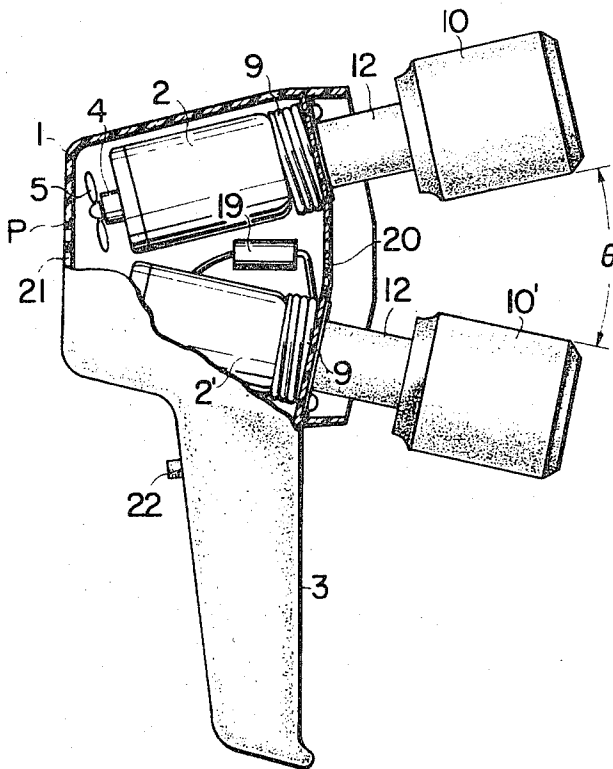


FIG. 2

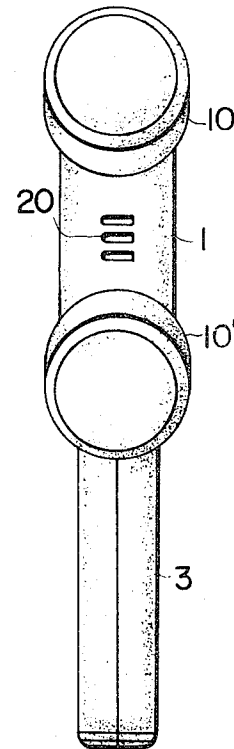
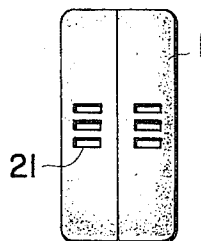


FIG. 3



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FIG. 4

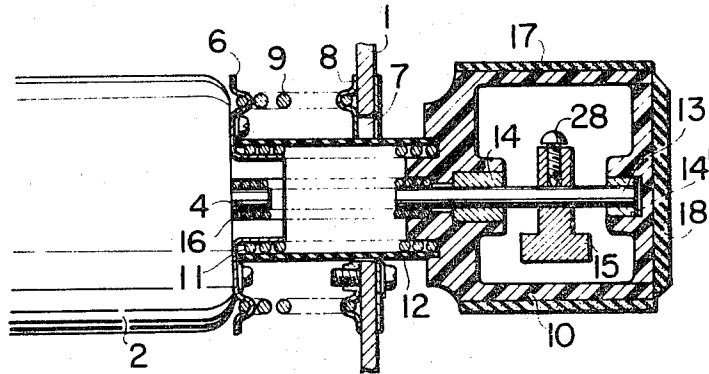
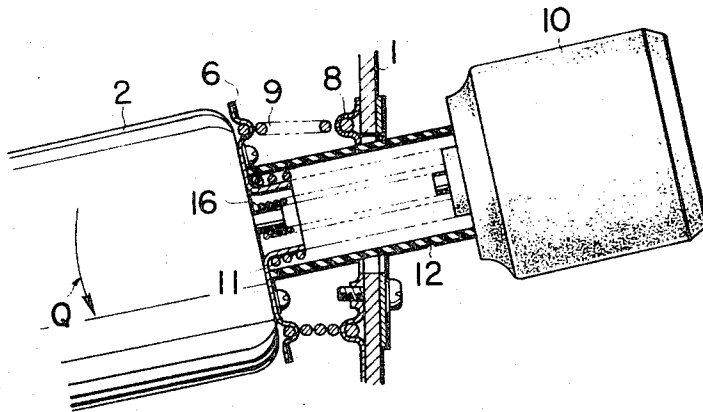


FIG. 5



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FIG. 6

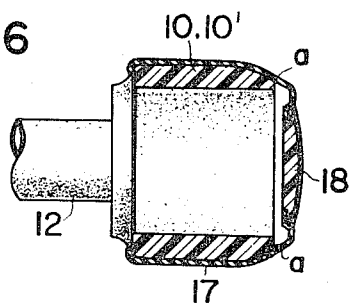
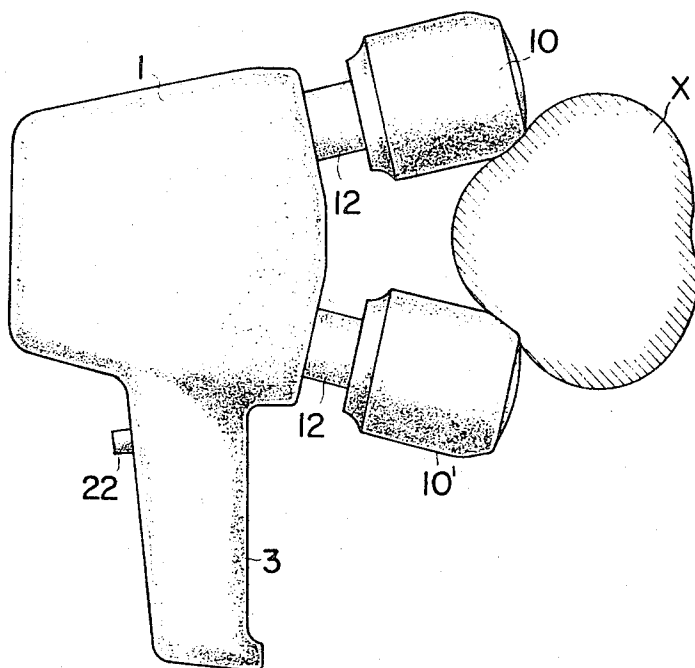


FIG. 7



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FIG. 8a

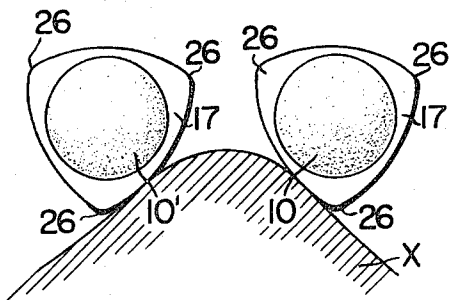


FIG. 8b

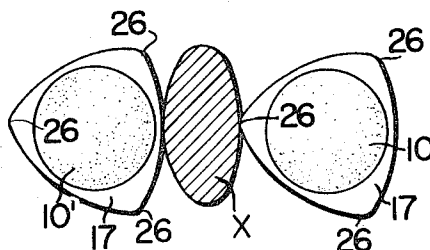


FIG. 8c

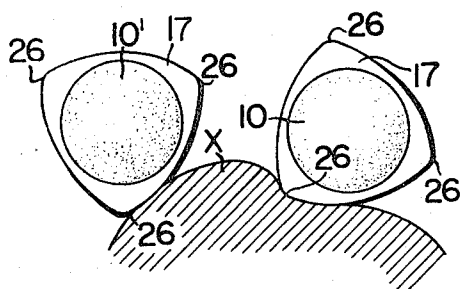
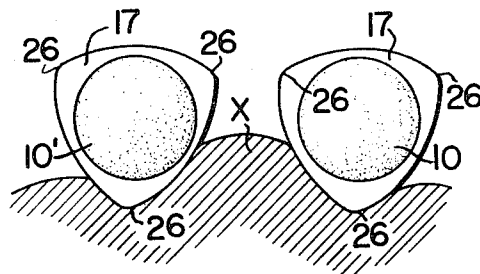
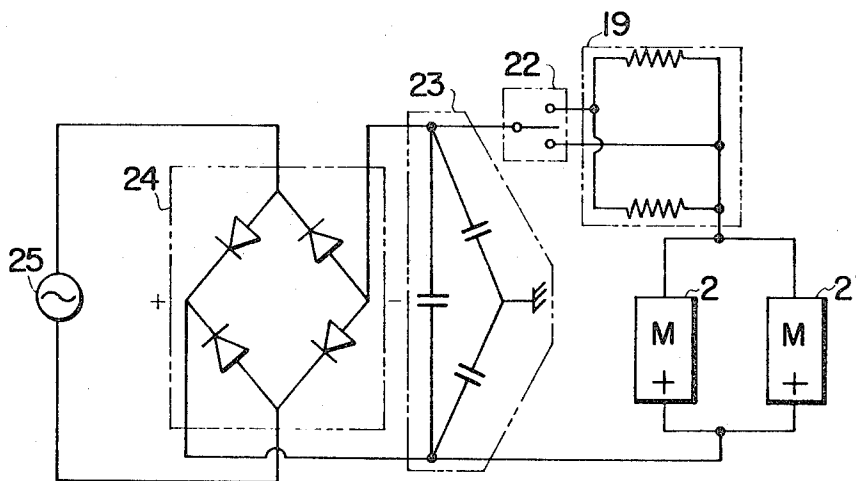


FIG. 8d



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FIG. 9



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ELECTRO-MASSAGER

BACKGROUND AND BRIEF DESCRIPTION OF THE INVENTION

This invention relates in general to an electro-massager of the type having two vibrating heads, and more particularly to a device of this type which is capable of providing multi-massage characteristics.

All of the existing electro-massagers are adapted to effect massage by use of any one of a plurality of generally used functions, such as vibration, tap or massage; however, there is no known electro-massager which is capable of providing two simultaneous functions, such as massage and vibration at one time. More effective massage requires an electro-massager capable of providing two simultaneous functions at one time.

It is a principle object of the present invention to meet this demand with an electro-massager of simple construction which is adapted to provide both vibration and massage functions simultaneously.

In an embodiment of the electro-massager according to the invention, two micromotors are provided in a case having a handle, and these micromotors are connected to rotate respective eccentric balance weights. Two vibrating heads, each being vibrated by the rotation of the eccentric balance weight positioned therein, are so arranged at an angle to each other that the distance therebetween is widened nearer the ends thereof, and each vibrating head is connected to the case through a flexible coupling. This structure facilitates the inserting of affected body parts, such as arms, legs, shoulder or neck, into the space between said two vibrating heads and also facilitates quick transfer of the electro-massager to other affected parts of the body to be massaged while the affected parts are held between the two vibrating heads. When the micromotors are driven, the vibrating heads apply vibration to the affected parts from their opposite sides, and therefore the same effect as a massage is provided successively. This also permits easy massage of any affected body parts at any place on the human body. As the present electro-massager is mainly made up of two micromotors, two vibrating heads and a case with a handle for the micromotors, it can be miniaturized and portable with the result that the massager becomes convenient for home use.

In another embodiment of the electro-massager, the distance between the two vibrating heads can be widened at will so that the affected parts on different size arms, legs, back or neck may be placed in the space between the vibrating heads. Namely, each vibrating head is directly coupled to a micromotor by an elastic member which in turn passes through a relatively larger opening provided in the front face of the case. A coil spring is placed between the micromotor and the case, and thus the distance between the two vibrating heads can be changed by properly adjusting the positions in which the two micromotors are mounted. In this manner, the distance between the two vibrating heads, suitable for the size of the user's arms, legs, back, or neck, is well obtainable, and thereby the device of the present invention is useable by all persons, regardless of their size.

In still another embodiment of the electro-massager, the outer peripheral shape of the vibrating heads is designed to provide a more effective massage function. For this object, it is suggested that an elastic ring having a plurality of projections be provided releasably on each of the two vibrating heads. It is also suggested that the corner portions of the opposite faces of said two vibrating heads be rounded.

In still another embodiment of this invention, the effect of massage may be improved by blowing warm air against the affected body parts which are placed between the vibrating heads so as to promote the circulation of the blood through these areas. A fan is provided in the case, which fan is rotated by said micromotors. With the arrangement as above mentioned, heat generated in the motor and a resistor selectively connected in circuit with the motors is blown through an exhaust port against the affected body parts by the fan. As the

heat is ceaselessly exhausted to the outside of the casing by the fan as mentioned above, an increase in temperature is restrained within the case. This is effective in preventing damage due to overheat of the micromotors and other parts of the device.

According to the present invention, as outlined above, there is provided a small-size, inexpensive electro-massager which may be comfortably used at home, and by which vibration and massage may be simultaneously applied to affected body parts and the best effect of massage may be constantly obtained in accordance with the conditions of the affected parts to be massaged.

BRIEF DESCRIPTION OF THE DRAWING

These and other objects, features and advantages of the present invention will become more apparent from the following detailed description thereof when taken with the accompanying drawings, which illustrate several embodiments of the present invention, and wherein:

FIG. 1 is a partial sectional view of the electro-massager in accordance with the present invention;

FIG. 2 is a front view of the electro-massager shown in FIG. 1;

FIG. 3 is a back view of a portion of the casing of the device shown in FIG. 1;

FIG. 4 is an enlarged sectional view of the head portion of the electro-massager;

FIG. 5 is an explanatory view of the operation of the head portion of the electro-massager;

FIG. 6 is an explanatory view of the head portion of another embodiment of this invention;

FIG. 7 is a view illustrating the mode of use of the electro-massager as shown in FIG. 6;

FIGS. 8a through 8d are explanatory views illustrating different modes of use of a third embodiment of the electro-massager of this invention; and

FIG. 9 is a schematic diagram of the electrical circuit employed in the electro-massager.

DETAILED DESCRIPTION OF THE INVENTION

This invention will be explained with reference to the embodiments shown in the accompanying drawings, wherein like reference numerals are used to designate corresponding parts. 1 designates a case comprising two divided portions, which may be made of plastic, for example, in which are positioned micromotors 2 and 2' disposed at an angle to each other. A handle 3 is formed integrally with the case 1 and the two micromotors 2 and 2' are arranged one above the other in the upper portion of the handle 3. The rotating shaft 4 of each of the micromotors 2 and 2' is provided at the end thereof with a fan 5, as seen in connection with the motor 2 in FIG. 1.

A resistor arrangement 19 is disposed between the two micromotors 2 and 2' for switching them between high and low positions. An exhaust port 20 is also provided on a front surface of the case 1 positioned adjacent to the resistor 19, which is connected in series circuit with the micromotors 2 and 2', and an inhalation port 21 is provided on a rear surface of the case 1 positioned on the opposite side of the resistor 19 from the port 20 so that air brought in the port 21 by the fan 5 will be heated by the resistor 19 and forced out the port 20.

A retaining ring 6 is affixed on the front surface of each of the micromotors 2 and 2', as seen in FIG. 4, and an opening 7 is provided on the front surface of the case 1, around which opening 7 another retaining ring 8 is also fixedly mounted. A coil spring 9 has its respective ends fixedly coupled to said rings 6 and 8, and a pair of vibrating heads 10 and 10' are fixed to the retaining ring 6 of their respective motors through the opening 7 by means of a coil spring 11. A housing 12 is provided for coil spring 11, which housing is made of elastic or other flexible material. A rotating shaft 13 is supported by bearings 14, and 14' within the vibrating heads 10 and 10', respectively, to which shaft 13 an eccentric weight 15 is con-

nected by means of a screw 28 or other fastening device. A flexible coupling 16 connects the rotating shaft 4 of the motor to the rotating shaft 13 by means of which shaft 16, the eccentric weight 15 is rotated to vibrate the heads 10 and 10'. An elastic member 17 is provided on the front surface of the vibrating heads 10 and 10' and around the sides thereof.

With reference to FIGS. 1 and 5, another embodiment of the mounting structure for the micromotors 2 and 2' will be explained. The angle θ as shown in FIG. 1 can be varied by arranging the micromotor 2 so that it can move in the direction as shown by an arrow Q in FIG. 5. As the micromotors 2 and 2' are mounted on the case 1 through an elongated hole and screw, the mounting position of these micromotors 2 and 2' can be adjusted by loosening the screw to shift it along the hole. In this way, the space between the heads can be adjusted.

With reference to FIGS. 6 and 7, another embodiment of the invention relating to the structure of the vibrating heads 10 and 10' will be explained. As is clearly seen from the drawing, the corner portion of the end of the vibrating heads 10 and 10' is rounded. This provides smooth insertion of the affected body parts *x*, such as arms or legs, into the space between these vibrating heads. Thus, a massaging of the body part along with vibration thereof is easily carried out.

Another embodiment of the elastic ring 17 is explained with reference to FIGS. 8a through 8d. This ring 17 is made in a form of polygon to provide a plurality of convex portions 26 thereon. This elastic ring 17 is releasably mounted on the vibrating heads 10 and 10', and is rotatably provided thereon. This particular shape of the heads is effective in making the present electro-massager applicable to different shapes of the affected body parts *x*.

With the above-described structure, when the affected body parts *x* are inserted into the space between the vibrating heads 10 and 10', as shown in FIG. 7, vibration is applied to the affected parts *x* from either side thereof and the same effect as a massage is obtained. Therefore, the electro-massager according to this invention can be used under its best conditions according to the thickness of the affected body parts and in compliance with the user's taste, by changing the mounting position of the elastic ring 17, changing the distance between the vibrating heads 10 and 10' or employing elastic rings 17 of different shape.

In case an improvement on the effect of the massage is desired, the circulation of blood in the affected body part may be promoted by supplying the resistor 19 with current so that the fan 5 will blow warm air against the affected parts *x* from the exhaust port 20.

A switch 22 is provided on the handle 3 and connected in series with the resistor 19 as seen in FIG. 9 for adjusting the speed of the micromotors 2 and 2'. A capacitor arrangement 23 is also provided in the handle 3 for prevention of occurrence of noise, which arrangement is connected in parallel to the micromotors 2 and 2'. The motors 2 and 2' are supplied with power from a power source 25 through a standard rectifier arrangement 24; however, the device may also be battery operated by the provision of suitable batteries in the handle.

While we have shown and described several embodiments in accordance with the present invention, it is understood that the same is not limited thereto but is susceptible of numerous changes and modifications as known to a person skilled in the art, and we therefore do not wish to be limited to the details

shown and described herein but intend to cover all such changes and modifications as are obvious to one of ordinary skill in the art.

What is claimed is:

1. An electro-massager comprising a casing, a pair of vibrator heads projecting from one side of said casing in spaced relationship, each of said vibrator heads having an eccentric balance weight rotatably mounted therein, drive means disposed in said casing for rotating the balance weights in said vibrator heads, and flexible coupling means for coupling said drive means to said vibrator heads so as to effect rotation of said balance weights while permitting flexible movement of said heads by a body part inserted in the space between said heads.
2. An electro-massager as defined in claim 1, wherein said vibrator heads extend out of said casing at an angle to one another so that the space between the heads increases with distance from the casing.
3. An electro-massager as defined in claim 2, wherein each vibrator head includes a rotatable shaft carrying said eccentric balance weight and said drive means includes a drive shaft for each vibrator head, said flexible coupling means including a helical spring connecting said rotatable shaft in the vibrator head to the drive shaft in said drive means so as to cause vibration and swing movement in the heads by rotation of the eccentric balance weight.
4. An electro-massager as defined in claim 1, further including a fan driven by said drive means for blowing heated air generated by the components in said casing out of the casing in the direction of said vibrator heads.
5. An electro-massager as defined in claim 1, wherein each of said vibrator heads is provided with an elastic outer ring shaped in the form of a polygon having a plurality of extending convex portions.
6. An electro-massager as defined in claim 1, wherein each vibrator head includes a rotatable shaft carrying said eccentric balance weight and said drive means includes a drive shaft for each vibrator head, said flexible coupling means including a helical spring connecting said rotatable shaft in the vibrator head to the drive shaft in said drive means so as to cause vibration and swing movement in the heads by rotation of the eccentric balance weight.
7. An electro-massager as defined in claim 6, wherein said drive means includes an electric motor for each vibrator head mounted within said casing, and said flexible coupling means additionally includes a second helical spring interconnecting the body of said motor with the vibrator head and a flexible housing for said second helical spring.
8. An electro-massager as defined in claim 7, wherein said vibrator heads extend out of said casing at an angle to one another so that the space between the heads increases with distance from the casing.
9. An electro-massager as defined in claim 8, further including a fan driven by said drive means for blowing heated air generated by the components in said casing out of the casing in the direction of said vibrator heads.
10. An electro-massager as defined in claim 9, wherein each of said vibrator heads is provided with an elastic outer ring shaped in the form of a polygon having a plurality of extending convex portions.

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