United States Patent [19]

Anderson

[11] **3,845,758**

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[54] **ROTARY MASSAGER**

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[52] **U.S. Cl.** **128/56,** 128/57, 128/49

[51] **Int. Cl.** **A61h 7/00**

[58] **Field of Search** 128/56, 57, 24.3, 48–52

[56] **References Cited**

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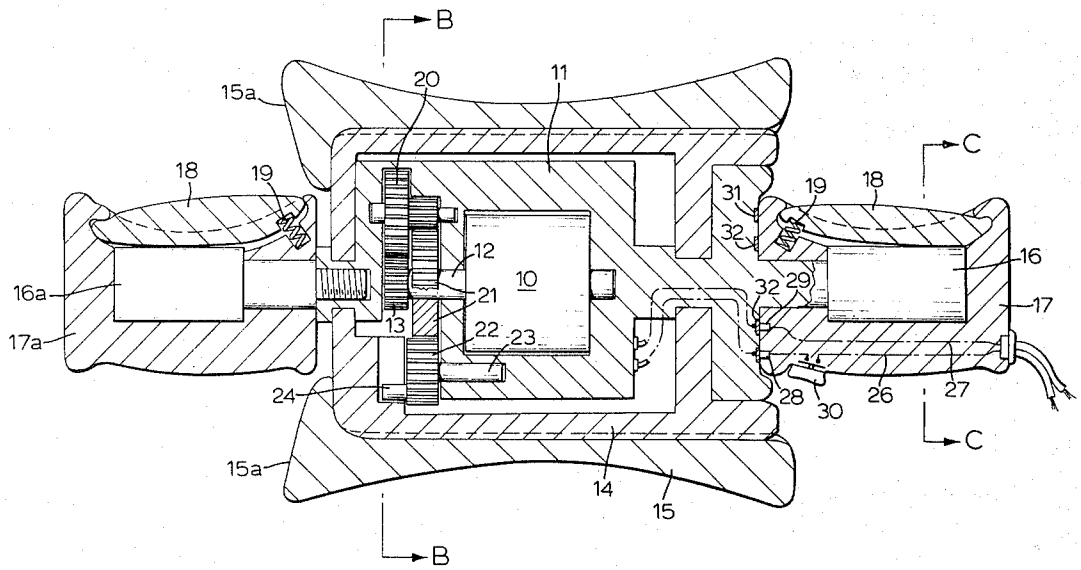
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Primary Examiner—Lawrence W. Trapp
Attorney, Agent, or Firm—Sim & McBurney

[57] **ABSTRACT**

A rotary massager has first and second coaxially mounted components that are adapted to rotate relative to each other about a common longitudinal axis of rotation, this axis being the axis of rotation of the rotary massager as a whole. At least one handle is rotatably mounted on the first component in such a way that the handle and first component are rotatable relative to each other about the aforesaid common longitudinal axis of rotation. Associated with the handle is a brake that coacts with the first component to apply a variable braking force thereto to inhibit rotation of the first component about the axis of rotation thereof relative to the handle. Means are provided for rotating the second component back and forth about its axis of rotation and simultaneously rotating the first component back and forth about its coincident axis of rotation and relative to the handle when the brake is in a position such that it does not entirely prevent rotation of the first component relative to the handle. By applying the brake, a greater degree of back and forth rotation is applied to the second component, and it is provided with a surface that moves with the second component and contacts the skin of a person desiring a massage.

18 Claims, 5 Drawing Figures



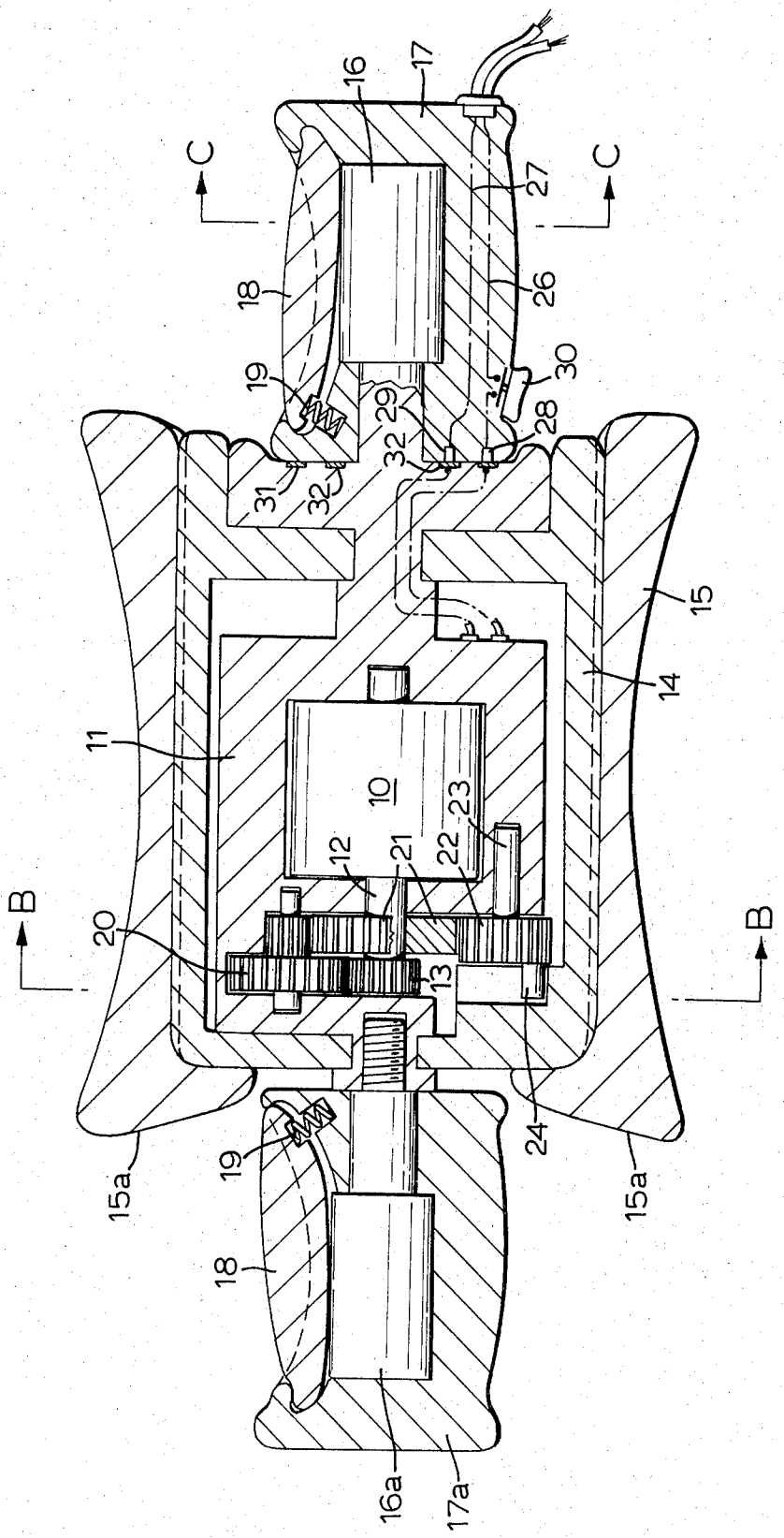

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15a
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16a
17a

FIG. 1

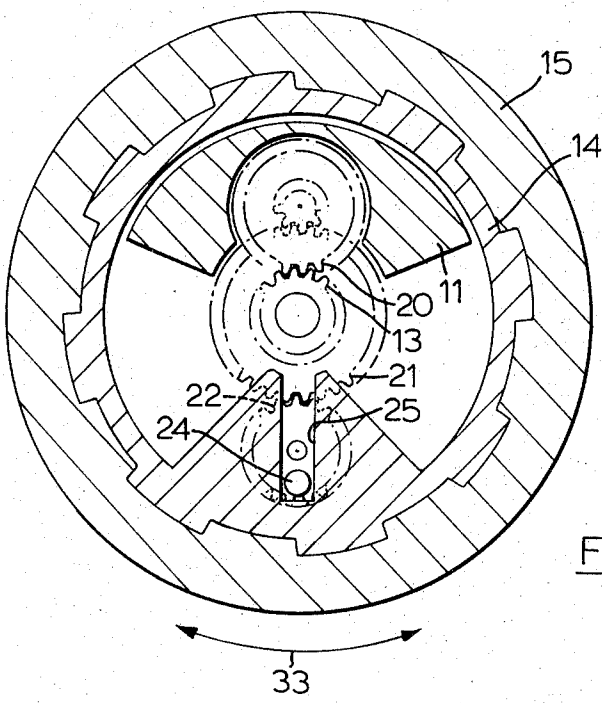


FIG. 2

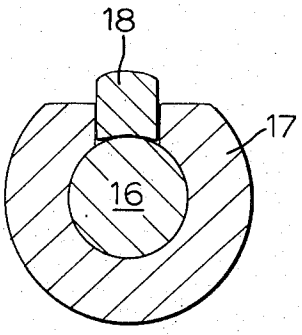


FIG. 3

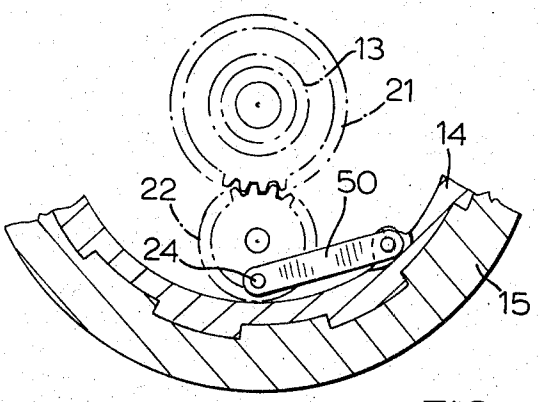


FIG. 4

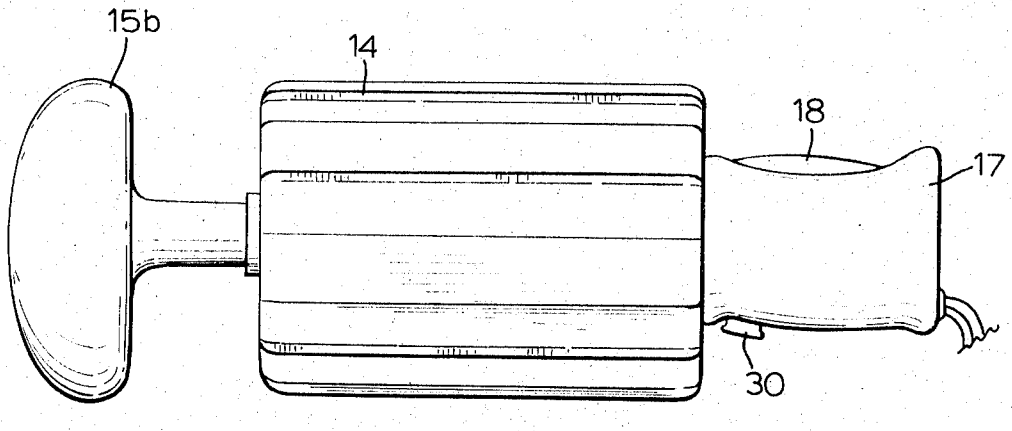


FIG. 5

ROTARY MASSAGER

BACKGROUND OF THE INVENTION

This invention relates to a rotary massager. More particularly, this invention relates to a device having a part which is held in contact with an area of the human body and which imparts a massaging effect thereto by virtue of partial rotation of the aforesaid part clockwise and anticlockwise through a number of degrees that may be varied and controlled by the user.

Vibrators for personal use have been sold for many years. Typical of such vibrators are those which are hand held and which impart vibrations to the hand which then are transmitted via the fingers of the hand to an area of the human body to be treated. Such vibrators permit only a rather limited area of the human body to be treated at any one time and, after having been held for several minutes, cause a degree of discomfort in the hand, particularly in the finger joints.

Although vibrators are advertised as massaging devices, in fact they impart vibrations to the area of the body being treated, and this is quite different from the kneading and rolling effect of a true massage. To this end, rotary massage devices have been designed that can be rolled over an area of the body to be massaged, and some such devices have been provided with electric motors or the like that reciprocate the rollers of such devices back and forth parallel to the axes of rotation of the rollers. Reference may be made to U.S. Pat. Nos. 1,895,116 and 2,417,744 issued Jan. 24, 1933 and Mar. 18, 1947 respectively in which devices of this type are disclosed.

SUMMARY OF THE INVENTION

In contrast with vibrators and rotary massage devices of the type referred to hereinbefore, a rotary massage device embodying my invention has a roller or other body engaging part that rotates clockwise and anticlockwise through partial revolutions, and the degree of partial rotation is under control of the user, to give a massage that is very similar to a true massage administered by a masseur. Large areas of the body may be treated. The roller can be easily rolled from one part of the body to another without being lifted off the body, thereby providing an evenly distributed continuing massage.

BRIEF DESCRIPTION OF THE DRAWINGS

My invention will become more apparent from the following detailed description, taken in conjunction with the appended drawings, in which:

FIG. 1 is a longitudinal section through a rotary massager embodying my invention;

FIG. 2 is a section taken along line B—B in FIG. 1;

FIG. 3 is a section taken along line C—C in FIG. 1;

FIG. 4 is a section similar to FIG. 2 showing a modification of the mechanism of FIG. 2; and

FIG. 5 shows in part another embodiment of my invention.

Referring to FIG. 1, the rotary massager illustrated therein includes an electric motor consisting of a rotating armature 10 and a stator 11 carrying field windings (not shown). Armature 10 is journalled to rotate within stator 11 and has a shaft 12 on which is fixed a gear 13.

The electric motor is enclosed within a housing 14 that is generally cylindrical in cross section and which is free to rotate relative to stator 11. Removably mounted on the outer surface of housing 14 is a hollow cylinder 15 that engages the body of the user and which may be fabricated of any suitable material such as, for example, rubber. Cylinder 15 is contoured, as shown, by being dished inwardly. Cylinders with other contours may be provided to be substituted for the particular cylinder 15 illustrated.

Formed integral with stator 11 is a handle 16 on which a handle grip 17 is rotatably mounted. A similar handle 16*a* extends from the other side of stator 11 but is removably connected to stator 11 so that it may be disconnected therefrom for a purpose which will become more apparent hereinafter. A handle grip 17*a* is rotatably mounted on handle 16*a*.

Associated with handle grips 17 and 17*a* are brake members 18, one of these being best shown in FIG. 3. Brake members 18 may be pressed into engagement with handles 16 and 16*a* to control the degree of rotation of stator 11. Normally brake members 18 are spring biased out of engagement with handles 16 and 16*a* by means of springs 19.

Journalled for rotation in stator 11 and engageable with gear 13 is a gear 20 that acts as a reduction gear. Rotatably mounted on shaft 12 is a further gear 21 that engages gear 20 and is driven thereby. Gear 21 in turn drives a gear 22 that is fixed to a shaft 23 that is journalled for rotation in stator 11. Gear 22 has a pin 24 eccentrically located thereon that is positioned in a slot 25 (FIG. 2) formed in a part of housing 14. The positions of the pin and slot can be reversed, course.

As best shown in FIG. 1, embedded in handle grip 17 are conductors 26 and 27 that are connected to brushes 28 and 29. A thumb switch 30 may be connected in one of the conductors to permit the electric motor to be energized and deenergized. Two electrically conductive rings 31 and 32 are embedded in stator 11 and are suitably electrically insulated therefrom. Rings 31 and 32 engage brushes 28 and 29. As shown in FIG. 1, conductors lead from rings 31 and 32 to the field windings (not shown) of stator 11.

It will be noted from the foregoing that stator 11, handle grips 17 and 17*a* and housing 14 all have a common longitudinal axis of rotation, that being the axis of rotation of the rotary massager as a whole.

The operation of the rotary massager illustrated in FIGS. 1 – 3 now will be discussed. It will be assumed that when switch 30 is closed, brakes 18 are fully depressed into engagement with handles 16 and 16*a*. Under these circumstances, rotation of rotor 10 is transmitted via gears 13, 20 and 21 to gear 22. Rotation of gear 22 causes pin 24 to slide in slot 25 resulting in a back and forth rotation of housing 14 through a limited arc that depends upon the eccentricity of pin 24 and which is shown by the arrow 33 in FIG. 2. This results in a rotary massaging effect when cylinder 15 is engaged with a part of the human body to be treated.

Stator 11 preferably is designed to have a greater inertia than housing 14 and its associated removable contour cylinder 15. Notwithstanding this, as brakes 18 are released from engagement with handles 16 and 16*a*, some of the movement previously imparted to housing 14 is transferred to stator 11 which then oscillates back and forth within handle grips 17 and 17*a*. A corre-

spondingly lesser degree of rotation then is imparted to housing **14.** When brakes **18** are fully released, the degree of back and forth movement of housing **14** is even further diminished with greater back and forth movement being imparted to stator **11.** Thus it is possible by means of brakes **18** to control the degree of rotary massage imparted by the device over a wide range.

Quite apart from the back and forth movement in a clockwise and anticlockwise direction of housing **14** and its associated contour cylinder **15,** it should be noted that it is possible to roll cylinder **15** over the area of the body being treated like a rolling pin. The resulting rotation of housing **14** under the circumstances simply is transmitted to gear **22** via pin **24** moving in slot **25,** and ultimately this rotation results in rotation of armature **10** and stator **11** (or of armature **10** only, if the brake is applied fully) via the gear train.

If desired, handle **16***a* may be removed and a different type of rotary massage imparted by the side edges **15***a* of cylinder **15.** Alternatively, after handle **16***a* has been removed, a different type of member than cylinder **15** can be employed. This member **15***b*, which is shown in FIG. **5,** can be domed outwardly, for example, and can be held against the body and will be oscillated by the electric motor in the manner previously described to impart a different type of rotary massage than is achieved by the inwardly dished surface of cylinder **15.**

Another system for oscillating housing **14** is shown in FIG. **4.** In this embodiment of the invention a crank arm **50** is connected between pin **24** and housing **14.**

It should be understood that power sources other than an electric motor may be used without departing from my invention. For example, oscillating magnets or magnetic coils might be employed. Thus, as oscillating magnetic coil with mechanical switching might be used. In such an arrangement current is used to drive a magnetic component until it reaches a mechanical switch point. At this point the current is cut off and the device returns to its original position. At the return point current again is mechanically switched on and the cycle repeats. Devices of this type operate quite satisfactorily in the 5 - 10 cycle per second range. As another alternative an oscillating magnetic coil with electronic dividing circuit might be used. In such an arrangement line frequency (60 Hz) is reduced to a lower frequency, say 5 - 10 Hz by the use of a conventional frequency divider. The low frequency current then is fed to a simple oscillating magnetic coil. In another embodiment an electromagnet could be used in place of armature **10** and stator **11.** The electromagnet would consist of an iron core taking the place of stator **11** and having handles **16** and **16***a* projecting therefrom. Wound around the iron core would be a coil, and the core could be generally horseshoe shaped in configuration. Between the ends of the horseshoe but spaced apart therefrom would be a piece of magnetic material that would be secured to housing **14.** When the electromagnet is magnetized with one polarity by current flowing in one direction and at a suitably low frequency, the magnetic material secured to housing **14** would be attracted to one pole of the electromagnet resulting in a part oscillation of housing **14.** When the direction of current flow is reversed the piece of magnetic material would be attracted to the other pole of the electromagnet resulting in oscillation of housing **14** in the opposite direction.

If desired additional slip rings may be provided mounted on and insulated from housing **14** with conductors leading from slip rings **31** and **32** to brushes that engage the slip rings mounted on housing **14.** An electrical outlet connected to the latter slip rings also may be mounted on housing **14** and cylinder **15** modified to incorporate a heating element therein that plugs into the aforesaid outlet.

While stator **11** and armature **10** are mounted within housing **14,** this being most convenient from a size point of view, it should be noted that this is not essential and housing **14** could be mounted to one side of stator **11** and armature **10.**

It also should be noted that instead of providing a member **15***b* that is secured to housing **14** as shown in FIG. **5,** member **15***b* may be formed integral with cylinder **15.**

What I claim as my invention is:

1. A rotary massager comprising first and second coaxially mounted components adapted to rotate relative to each other about a common longitudinal axis of rotation, said axis being the axis of rotation of said rotary massager, handle means rotatably mounted on said first component such that said handle means and said first component are rotatable relative to each other about said common longitudinal axis of rotation, brake means associated with said handle means and coacting with said first component to apply a variable braking force thereto to inhibit rotation of said first component about said common longitudinal axis of rotation relative to said handle means, and means for rotating said second component back and forth about said common longitudinal axis of rotation and simultaneously rotating said first component back and forth about said common longitudinal axis of rotation and relative to said handle means when said brake means is in a position such that it does not entirely prevent rotation of said first component relative to said handle means, said second component having a surface that moves with said second component and that is adapted to contact the skin of a person desiring a massage.

2. A rotary massager according to claim **1** wherein said first component comprises the stator of an electric motor having an armature and a stator, said armature being rotatable relative to said stator, and said means for rotating said second component comprises said armature, a plurality of gears driven as a gear train by said armature, one of said gears being journalled for rotation in said stator, and crank means connected between said one gear and said second component.

3. A rotary massager according to claim **1** wherein said first component comprises the stator of an electric motor having an armature and a stator, said armature being rotatable relative to said stator, and said means for rotating said second component comprises said armature, a plurality of gears driven as a gear train by said armature, one of said gears being journalled for rotation in said stator, one of said one gear and said second component having a slot formed therein and the other of said one gear and said second component having a pin thereon, said pin being eccentrically located with respect to the axis of rotation of said one gear and located in said slot for sliding movement therein in response to rotation of said one gear.

4. A rotary massager according to claim **1** wherein said surface is the surface of a sleeve that is removably mounted on said second component.

5. A rotary massager according to claim 1 wherein said sleeve also is coaxially mounted with respect to said first and second components.

6. A rotary massager according to claim 1 wherein said first component has extensions thereof projecting from both ends thereof and arranged coaxially with said first component, said handle means comprising handle grips rotatably mounted on said extensions.

7. A rotary massager according to claim 6 wherein one of said extensions is removable from said first component.

8. A rotary massager according to claim 1 wherein said means for rotating is electrically operated and means including slip rings and brushes mounted on said first component and said handle means for supplying electrical energy thereto.

9. A rotary massager according to claim 1 wherein said first component has greater inertia than said second component.

10. A rotary massager according to claim 1 wherein a part of said first component is mounted within said second component with said second component being journalled for rotation on said first component.

11. A rotary massager according to claim 1 wherein said surface of said second component is generally circular in cross-section, the cross-section being in a plane perpendicular to said axis of rotation.

12. A rotary massager having a longitudinal axis of rotation and comprising inner and outer coaxially mounted components adapted to rotate relative to each other about said axis of rotation, said components each having generally circular peripheral surfaces arranged parallel to each other and to said axis of rotation and rotatable with said respective components about said axis of rotation, said components each having first and second end sections, said inner component being located within said outer component; said inner component having handle members extending from said end sections thereof through said end sections of said outer component, and handle members being coaxial with said inner component and adapted to rotate about said axis of rotation, handle grips rotatably mounted on said handle members such that said handle grips and said inner component are rotatable relative to each other about said axis of rotation, brake means associated with at least one of said handle grips and coacting with the one of said handle members on which said one handle grip is rotatably mounted to apply a variable braking force thereto to inhibit rotation of said inner component about said axis of rotation relative to said handle grips, and means for rotating said outer component back and forth about said axis of rotation and simultaneously rotating said inner component back and forth about said axis of rotation and relative to said handle grips when said brake means is in a position such that it does not entirely prevent rotation of said inner component relative to said handle grips.

13. A rotary massager according to claim 12 wherein one of said handle members is disengageable from said inner component.

14. A rotary massager according to claim 12 wherein said inner component has greater inertia than said outer component.

15. A rotary massager according to claim 12 wherein said outer component is journalled for rotation on said handle members.

16. A rotary massager according to claim 12 wherein said outer component has a sleeve removably mounted on said peripheral surface thereof.

17. A rotary massager according to claim 16 wherein said inner component has greater inertia than said outer component and wherein said outer component is journalled for rotation on said handle members.

18. A rotary massager comprising first and second coaxially mounted components adapted to rotate relative to each other about a common longitudinal axis of rotation, said axis being the axis of rotation of said rotary massager, handle means rotatably mounted on said first component such that said handle means and said first component are rotatable relative to each other about said common longitudinal axis of rotation, and drive means for rotating said second component back and forth about said common longitudinal axis of rotation, said second component having a surface that moves with said second component and that is adapted to contact the skin of a person desiring a massage.

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