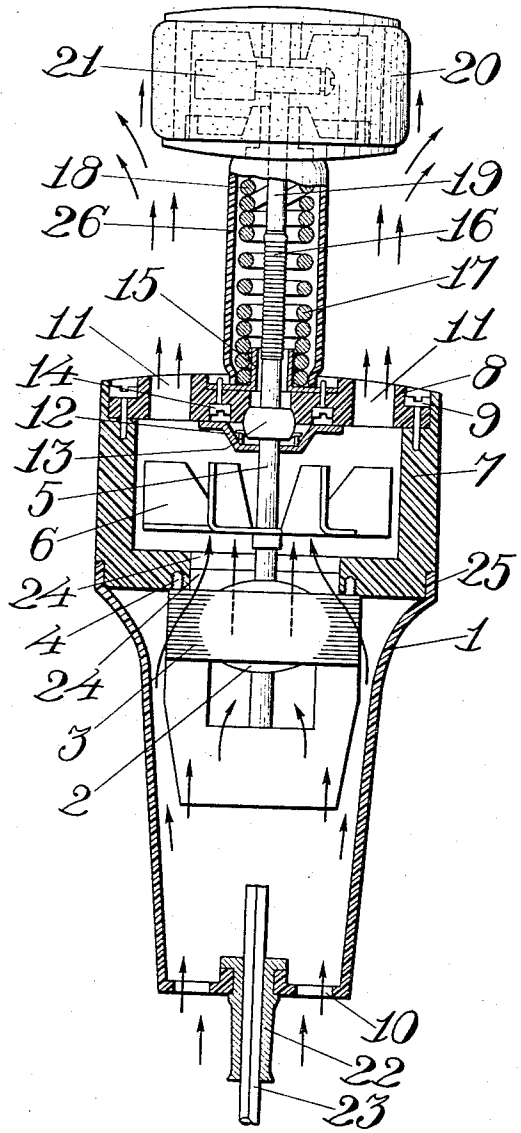
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MOTOR OPERATED MASSAGING VIBRATOR WITH MEANS FOR DIRECTING AIR

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MOTOR OPERATED MASSAGING VIBRATOR WITH MEANS FOR DIRECTING AIR

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This invention relates to a vibrator for use with a massage therapy and more particularly to a vibrator so adapted that an air current may be produced inside the vibrator proper by means of a fan provided on the driving shaft thereof to prevent the over-heating of the motor and that said air current which has deprived the motor of its heat may be forced towards the vibration member of the vibrator to provide a more effective massage therapy.

Heretofore, in a vibrator used for massage therapy, it is a common practice to produce vibration by rotation of an electric motor. However, when a vibrator of this kind is used for massage therapy, the effects of therapy would be improved appreciably if the user should take a bath or have his diseased part warmed with a hot compress and etc. previously to such therapy. However, the bath or hot compress may sometimes prove to be troublesome to the user and moreover requires the provision of proper equipments and special operation, so that these expediencies can not be used every time the massage therapy is employed. As a matter of fact, such application of heat to the diseased area has seldom been put into practice in the actual cases of massage therapy. Supposing that a kneader is used by the aged in cold seasons when the temperature of the kneader may fall down far below the body temperature, without previous application of heat to the diseased area, not only the massage therapy will be ineffective but also the skin will become stiff temporarily from time to time. This will run counter to the objects proper to the massage therapy. Moreover, in this type of the vibrator, the body member or gripping member should be so small in size as to be hand-held and, as a general rule, the vibrator should also be proportionately small in size, so that the motor enclosed therein has also to be small-type motor. On the other hand, the rotary member of the vibrator usually has a large load so as to produce sufficient vibration, so that the load on the motor is large relatively to the small size of the motor. Thus, the vibrator of this kind has a further defect that the motor has to cease its operation periodically to dissipate the overmuch heat produced therein and the massage effects due to a continuous and prolonged use cannot be expected from this vibrator.

In view of the foregoing it may be mentioned that the present invention provides with success a vibrator which has been enabled to withstand a prolonged use and which has also improved considerably as to its effects of the massage therapy through eliminating these defects which have existed in the conventional device.

In the attached drawing, the figure is a side elevational view showing in partial cross-section an embodiment of the vibrator for massage therapy according to the present invention.

Referring to the attached figure by way of description of the embodiment of the invention, the vibrator proper A is made up of the gripping cylinder **1** and the connecting cylinder **7** and a motor system consisting of a rotor **2** and a fixed iron core **3** is provided inside the gripping cylinder **1**. For the sake of stability, the iron core **3** is secured by means of a fixture **4** to the connecting cylinder **7** engagedly fitted to the gripping cylinder **1**, and a fan **6** is attached to the driving shaft **5** connected to the rotor **2**.

As this fan **6** is rotated together with the driving shaft the air forced inwardly by way of an air intake **10** on one end of the gripping cylinder **1** is heated and turned into warm air, when passing through the clearances or past the peripheral area of the fixed core **3**, due to the elevation of temperature of the motor, and the heated air is forced outwardly in a direction indicated by the arrow mark through the vent **11** on the cover **8** by way of the openings **24, 24**. In the embodiment illustrated a cover **8** is fitted to the connecting cylinder **7** by means of a fastener **9** and to said cover **8** is fastened and secured the lower end of the spring holder **15** by means of a fastener **14**. The driving shaft **5** connected to the rotor **2** is extended partially into the inside of this spring holder **15** and, for the sake of stability, a bearing **13** is provided together with a bearing cover **12** as encircling said bearing **13** on the part of the driving shaft **5** where the cover is fitted. An end of the coil spring **16** is attached to the foremost end of the driving shaft **5** having an extension as described, while the other end of the spring **16** is connected to a pendulum shaft **19**, and additionally a helical spring **17** sheathed with a vinyl cover **26** is wound up about the driving shaft **5**, coil spring **16** and the pendulum shaft **19** and fittedly mounted on said spring holder **15**. On the pendulum shaft **19** is provided a vibration member **20** having a pendulum **21** so that the user may have his diseased area massaged through the vibrating motion of the said member. Additionally, a bearing **18** is provided between the upper end of the helical spring **17** and the vibration member **20** to steady the pendulum shaft **19**, and the diameter of that portion of the gripping cylinder **1** which contains the above mentioned motor system is suitably enlarged to provide a shoulder **25** to which is threadedly attached the connecting cylinder **7** of larger diameter than the gripping cylinder **1**. The set-up described is intended to provide room for a relatively large-type fan **6**.

With the foregoing description of the present invention in view, a fan **6** is mounted on the driving axis **5** thereof to make a further use of the motor which produces vibration of the vibration member and this fan **6** is effective to force the air drawn into the holding cylinder inwardly through the inside or past the periphery of the stator core **3** and outwardly from the vent **11** and to sequentially ventilate the air contained in the vibrator proper. Thus, the motor is perpetually air-cooled by the draught and the heating of the motor over a certain degree of temperature may be prevented. The elevation of temperature of the motor being thus constant approximately at all times, the system of the motor etc. may not be injured in any way even if the vibrator is put to a continuous use over a prolonged period of time. Thus, the vibrator of the present invention is the very practical one as compared with the known device that is subject to the overmuch elevation of temperature and can not be used continuously over a prolonged period of time but has to cease its operation at short intervals of time to operate effectively. Furthermore, the present invention has such a characteristic effect that the air forced inwardly from the air intake **10** absorbs heat from the motor to heat the member **20** before it is exhausted outwardly from the vent **11** in a direction indicated by the arrow mark as shown in the drawing, so that the vibrator may operate effectively from the start of its operation without causing any changes in the body temperature where said member is heated previously in this manner and applied to the diseased part of the user. Moreover, since the vibrator of this kind is effective not only to impart a shock to the human body due to vibration to dilate the blood vessels and improve blood circulation but also to let the warm air forced from the fan toward the diseased part of the user thereby to

further dilate blood vessels and capillary vessels of the user, a physical state such as attained immediately after bathing may be attained and such excellent results that cannot be expected in any way from the conventional device may be obtained due to the multiplicational action of the vibration and heat, so that the therapeutic as well as the kneading and massage effects of the vibrator may be improved appreciably.

Moreover, where the user has his diseased part coated with medicines or liquid medicines, these drugs will penetrate into the body tissue of the user easily and quickly due to the dilation of the capillary vessels and improved blood circulation as described in the foregoing to promote the effects of the massage therapy. Moreover, the conventional device has had a defect that when the atmospheric temperature falls down as in winter the pliability or fluidity of the grease and etc. contained in the vibration member is lost causing the smooth rotation of the pendulum shaft to be retarded to damp the vibration produced by the vibration member. According to the present invention described in the foregoing the warm air from the fan heats said member without any hindrances to the circulation of grease or other lubricating oils so that from the very start of operation the vibrator may be run smoothly to produce powerful vibration and the functions proper to the vibrator may be displayed satisfactorily. Thus, the present invention is a very effective one from the practical as well as manufacturing points of view since the vibrator may be assembled in an extremely simplified manner, produced at low costs and suitable for mass production because the abovesaid effects of the vibrator may be brought about solely by the fan **6** provided in the inside of the vibrator proper and the electrical charges are substantially the same as with the conventional device because the fan **6** may be turned and

operated by the motor that causes the vibration of the vibration member.

What is claimed is:

1. A vibrator used for massage therapy comprising a hollow body member provided with one or more air intake openings and vents, an electric motor enclosed within said member, a vibration member mounted on the foremost end of the driving shaft of the motor extending longitudinally and outwardly of said body member through the intermediary of a connecting member, and a fan fitted on the driving shaft of the motor inside said body member and having blades to create an air current to flow toward said vent from said air intake opening provided on said body member.

2. A vibrator for massage therapy as claimed in claim **1** wherein said air intake opening is provided on one end longitudinally of the body member and said vent is provided on the other end longitudinally of said body member as facing to said air intake opening and opened toward said vibration member.

3. A vibrator used for massage therapy as claimed in claim **1** wherein that part of the body member which contains the fan is a tubular member of larger diameter than the other part of the body member which encloses the electric motor and fittedly connected to said other part of the body member.

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