Feb. 10, 1970 F. MARICH 3,494,353

RECIPROCATING VIBRATORY MASSAGING DEVICE

Filed Dec. 4, 1968 2 Sheets-Sheet 1

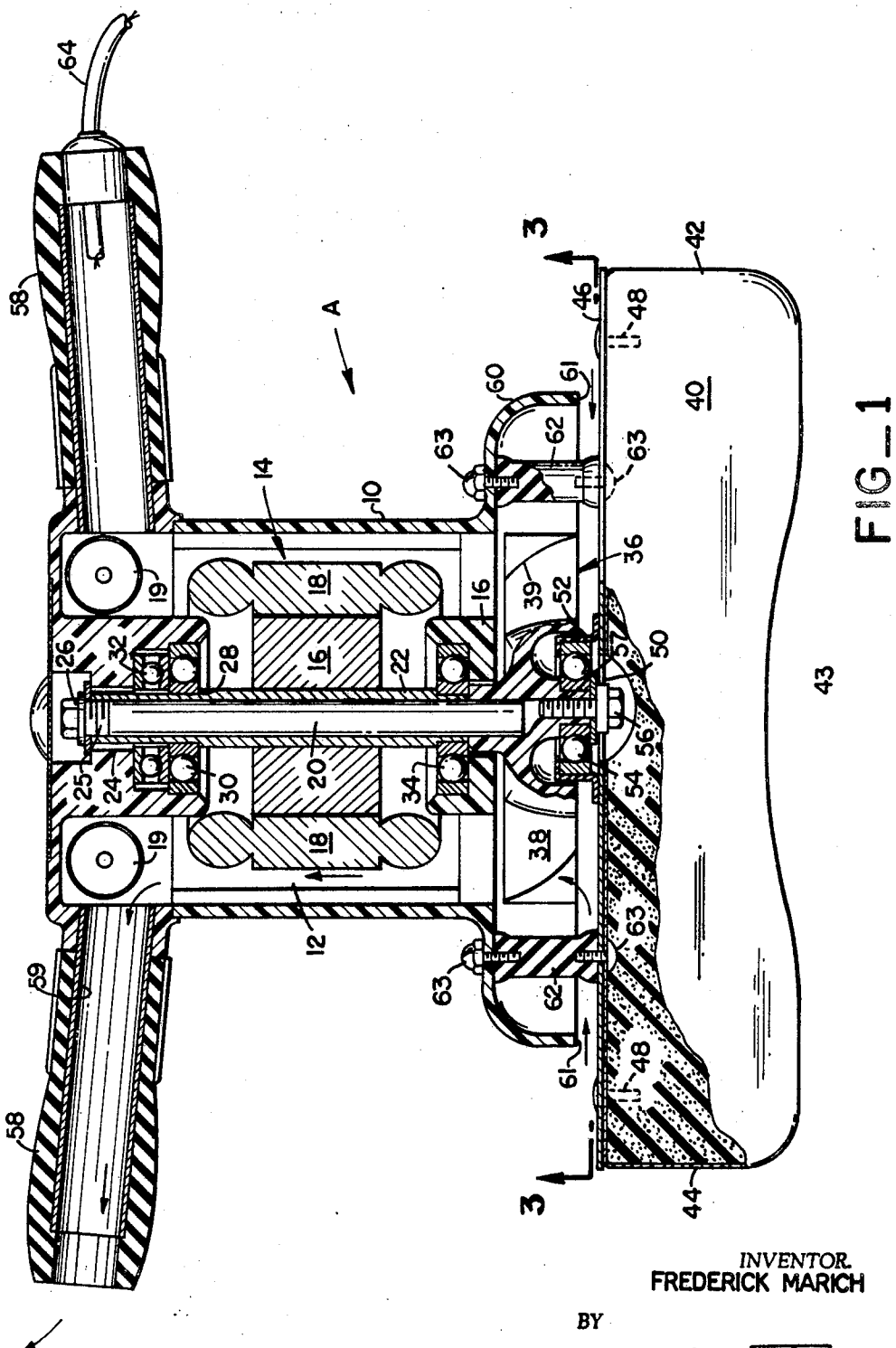


FIG_1

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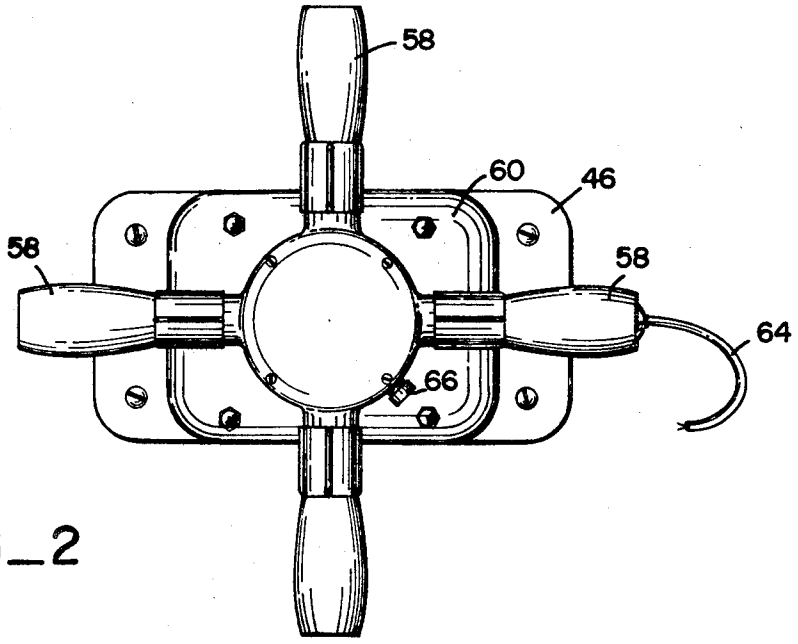


FIG_2

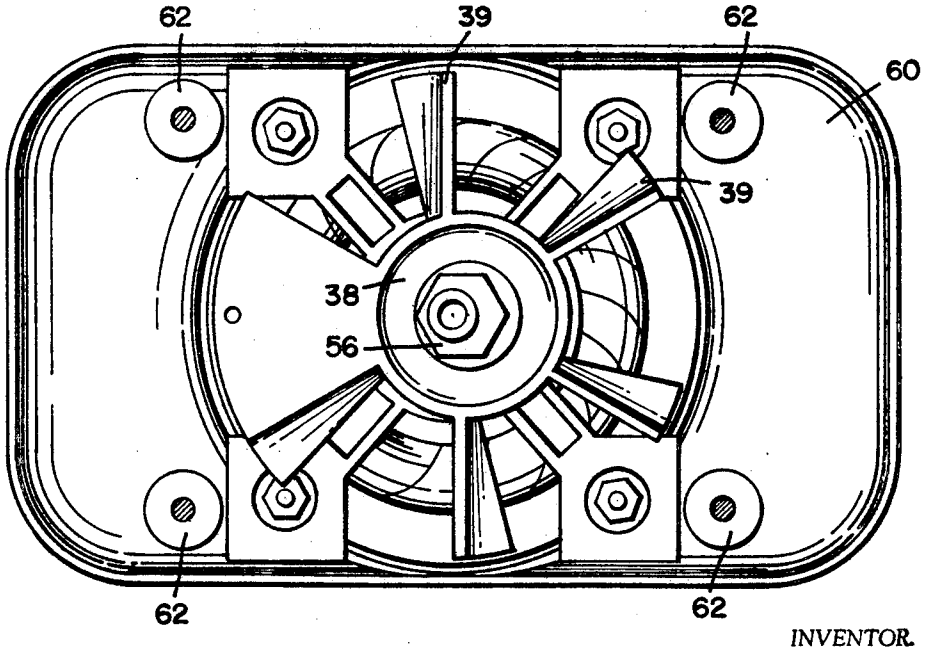


FIG_3

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3,494,353

RECIPROCATING VIBRATORY MASSAGING DEVICE

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U.S. Cl. 128—36 5 Claims

ABSTRACT OF THE DISCLOSURE

A massaging device wherein orbital motion is converted to reciprocating vibration through the use of a plurality of resilient connectors extending from a padded cushion to the housing of a motor having a rotatable shaft to which the padded cushion is eccentrically mounted. The device includes a plurality of handles that provide a fluid path through which cooling air is continually passed over the motor by a circulating fan.

This invention relates to a reciprocating vibratory massager, especially advantageous for use by professional chiropractors and/or athletic trainers.

A number of devices have been developed for applying vibratory massaging to the body in an attempt to tone muscles and relieve pain. Such devices are exemplified by the device disclosed in recently issued U.S. Patent No. 3,169,521. Although most of these hand-manipulated devices have some degree of effectiveness, each of them has exhibited a number of drawbacks that prevent the respective device from being totally effective for the use intended. For example, the device of the aforementioned U.S. Patent No. 3,169,521 is unattractive for a number of reasons including the fact that it is an orbiting device thereby losing a lot of its effectiveness because of the tendency of the machine to rotate, rather than vibrate. Furthermore, the device tends to heat up, with the outer metallic shell becoming uncomfortably hot. The device disclosed by U.S. Patent No. 3,322,117 includes resilient connectors for restraining rotation, but is directed to a circular device that does not have the versatility of the hand-held units.

Therefore, it is a primary object of the present invention to provide a reciprocating vibratory massager having a continuous air circulation path extending into and out of the compartment housing the condenser motor.

It is another object of this invention to provide a non-orbiting, reciprocal vibratory device wherein the motor chamber and gripping handles are relatively free of vibration.

It is a feature and advantage of this invention to utilize rubber isolation pads (connectors) to accomplish controlled vibration as opposed to rotation of the padded cushion.

It is a further feature and advantage of this invention to provide an air-circulation fan having outwardly curving vanes to direct air from the base of the housing up through the motor chamber and out the hollow handles.

It is still another feature and advantage of this invention to provide reciprocating vibratory movement to the padded cushion by mounting the same eccentrically of the motor shaft.

It is a further feature and advantage of this invention to utilize a thrust bearing to protect the motor from undue forces applied thereto when downward pressure is exerted upon the handle members during use of the device.

These objects, features and advantages will become better understood and others will be apparent from a close examination of the following detailed description, especially in view of the attached drawings, wherein:

FIGURE 1 is a partially sectioned elevational view of a preferred embodiment of the invention;

FIGURE 2 is a plan view illustrating the outer configuration of the embodiment of FIGURE 1; and

FIGURE 3 is a cross-sectional view taken along the line 2—2 of FIGURE 1.

Referring now to the drawings wherein similar characters of reference represent corresponding parts in each of the several views, there is shown a vibratory massager A including motor housing **10**, preferably fabricated from a poorly heat conductive material such as a rigid plastic or, in the alternative, a lightweight metal. Housing **10** defines a relatively large compartment **12**, enclosing actuating means such as condenser motor **14** including stater **16**, rotor **18**, and condensors **19**. Motor **14** has integral therewith rotatable shaft **20** secured to sleeve **22**. Shaft **20** extends through recessed opening **24** in the top of housing **10** and includes an outer threaded end **25** for engagement with a threaded member such as nut **26**. Sleeve **22** includes a lip **28** that is drawn into abutting engagement with ball bearing **30** and thrust bearing **32** when threaded member **26** is tightened on the end of shaft **20**. Shaft **20** and sleeve **22** are rotatably supported near their lower end by ball bearing **34**.

Attached to the lower end of shaft **20** is eccentric extension **36** to which is secured a similarly eccentrically-positioned air circulating member, such as fan **38**, having curved vanes **39** for drawing air up over motor **14**. Detachably mounted to extension **36** is yieldable pad **40** including a contoured segment of resilient material **42** preferably formed in an elongated rectangular shape having an outer concave surface **43**. Resilient member **42** is conventionally enclosed in a suitable leather or polyvinyl plastic covering **44** which in turn is secured to metal plate **46** by self-threading screws **48**. Plate **46** contains at the center thereof an annular opening **50** partially enclosed by a similar annular-shaped flange **52** for retaining the outer portion of circular ball bearing **54** in fixed relation to pad **40**. Threaded member **56** is inserted through ball bearing **54** into a corresponding opening **57** in extension **36** so as to retain pad **40** in rotatable alignment with extension **36** when shaft **20** is caused to rotate by actuation of condenser motor **14**.

Near the upper end of motor housing **10** are positioned four equally spaced-apart gripping members such as handles **58**, formed with bores **59** defining a tubular opening so as to provide an unobstructed fluid path for the introduction of air into housing **12**. The opposite end of housing **12** is provided with an outwardly extending flange **60** terminating a finite distance, such as ¼", above plate **46** to provide annular opening **61**. As demonstrated by the arrows, air drawn in through the base of housing **12** is forced over motor **14** and out through apertures **59** of gripping members **58**.

Massager A is further provided with a plurality of resilient connectors **62** attached at one end within housing **10** and at the other end to plate **46**, by conventional means such as screws and bolts **63**. Electric cord **64** is arranged to extend through one of the gripping members **58**. As shown most clearly in FIGURE 2, off-on switch **66** is attached to housing **10** between and below two of the gripping members **58**.

In operation, when cord **64** is attached to an appropriate electrical outlet (not shown) having, for example, 110-volt, 60-cycle output, and switch **66** depressed to the "on" position, motor **14** causes shaft **20** to rotate, thus simultaneously rotating eccentric extension **56**. In this manner, yieldable pad **40** is caused to reciprocate to the extent allowed by resilient connectors **62**. The overall affect is for the resilient member **42** to vibrate at a high rate of speed so as to provide a soothing reciprocation to

the body area to which it is being applied. Simultaneously with the rotation of shaft **20**, fan **38** rotates, causing impeller blades **39** to direct cooling air across motor **10** from opening **61** and out through air inlet passages **59** in gripping members **58**. Thrust bearing **32** is positioned to absorb the downward forces applied to gripping members **58** by the operator. As a result, shaft **20** can rotate more frely and motor **10** will run more smoothly, thus with a longer life than the aforementioned prior art devices.

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it will be apparent to one skilled in this art that certain changes and modifications may be practiced within the spirit of the invention as limited only by the scope of the appended claims.

What is claimed is:

1. In a vibratory massaging device having an actuating means disposed within an outer housing, a plurality of spaced-apart elongated gripping members extending outwardly from said housing, and a generally rectangular resilient cushion spaced from said housing, said cushion secured to and adapted for rotation about an eccentric segment of a shaft driven by said motor, the improvement comprising a plurality of resilient connectors, each secured at a first end to said cushion and at a second end to said housing so as to convert rotational movement of said cushion about said shaft to reciprocal orbital movement and air circulation means disposed within said housing and integral with said shaft, said gripping means being hollow and in fluid communication with said housing so that said circulating means will continuously convey air into and out of said housing relative to said actuating means so as to cool said actuating means.

2. A vibratory massaging device in accordance with claim **1** wherein said actuating means is a condenser motor.

3. A vibratory massaging device in accordance with claim **1** wherein said condenser motor is supported in part by a thrust bearing.

4. A vibratory massaging device in accordance with claim **1** wherein said air circulating means is a fan attached to the eccentric segment of said shaft.

5. A vibratory massaging device in accordance with claim **4** wherein said fan includes outwardly curved vanes.

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L. W. TRAPP, Primary Examiner

U.S. Cl. X.R.

128—52