

MINI MASSAGER

BACKGROUND OF THE INVENTION

5 1. Technical Field

The present invention relates to health massagers, and more particularly, to a small handheld vibrating health massager.

2. Description of Related Art

10 An existing mini massager generally includes a case and a vibrating motor in the case. When the mini massager is used, vibration is generated by the vibrating motor and used to massage a user. However, the existing mini massager only has a single vibrating strength which can't meet users' personalized requirements.

BRIEF SUMMARY OF THE INVENTION

15 A technical problem to be solved by the present invention is to overcome the shortcomings of the prior art and provide a mini massager which can adjust vibrating massage strength.

The present invention adopts the following technical solutions to solve the technical problem: a mini massager including a first housing, a second housing, a rheostat, a motor and a vibrating body, the first housing and the second housing are
20 connected together and form a rotating pair, at least one of the first housing and the second housing is provided with a massage block, a mounting cavity is formed by the first housing and the second housing, the rheostat, the motor and the vibrating body are all mounted in the mounting cavity, the vibrating body is eccentrically mounted on a motor shaft of the motor, so that the resistance value of the rheostat is
25 changed and the rotation speed of the motor is changed correspondingly during the rotation of the second housing around a rotation axis relative to the first housing, wherein the first housing rotates, the second housing is still, or the first housing is

still, the second housing rotates, or the first housing and the second housing rotates simultaneously.

Further, the rheostat may include a resistance wire and a sliding contact piece, one of the first housing and the second housing is securely connected with the resistance wire, the other one of the first housing and the second housing is connected with the sliding contact piece, the other one and the sliding contact piece are fastened together, or the sliding contact piece is driven by the other one, wherein the other one and the sliding contact piece may be directly connected, or be indirectly connected by an additional element.

Further, the mounting cavity includes a connecting loop rotating around the rotation axis, the first housing matches with the connecting loop, the second housing has a driving body used for driving the connecting loop to rotate, the first housing may rotate relative to the connecting loop by means of the rotation match.

Further, the driving body may be deformable elastic arms under stress, the connecting loop has a gear with a circle of gear teeth, so that the elastic arms can engage with each gear tooth along rotation direction during the rotation of the second housing relative to the first housing.

Further, an upper clamping plate and a lower clamping plate are fixedly arranged in the mounting cavity, in the direction of the rotation axis the connecting loop may be clamped by the upper clamping plate and the lower clamping plate, the connecting loop are sleeved by the upper clamping plate and the lower clamping plate, the upper clamping plate and the lower clamping plate matches with the connecting loop in order to rotate, the elastic arms are arranged on the upper clamping plate, the feel of the rotating operation can be improved by the match between the elastic arms and the gear.

Further, the mounting cavity is formed by a first cavity created by the first housing and a second cavity formed by the second housing, the first cavity has a

first opening end facing the second mounting cavity, the second cavity defines a second opening end facing the first mounting cavity therein, the upper clamping plate, the lower clamping plate and the second opening end are fastened together.

Further, the first housing includes a soft rubber cover and an upper cover
5 covered by the soft rubber cover and engagingly matched with the soft rubber cover by buckles, and the first mounting cavity is formed by the upper cover, however it should be noted that the soft rubber cover is not necessary.

Further, the first mounting cavity includes a battery compartment, the battery compartment and the upper cover are fastened together, the battery compartment is
10 loosely sleeved by the connecting loop, and the motor is arranged in the second mounting cavity and fastened together with the second housing.

Further, an annular protrusion is convexly arranged on an upper end face of the upper clamping plate, the protrusion is sleeved by the battery compartment.

Further, the resistance wire and the battery compartment are fastened together.

15 The present invention has the following benefits: When the second housing rotates relative to the first housing, the resistance value of the rheostat is changed and the rotation speed of the motor is changed correspondingly in order to change the vibrating strength of the vibrating body, thereby the vibrating massage strength is adjusted.

20 **BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS**

Fig. 1 is a cross-sectional view of a mini massager according to an embodiment of the present invention;

Fig. 2 is an exploded view of a first housing and a battery compartment before assembly according to the embodiment of the present invention;

25 Fig. 3 is an exploded view of an upper clamping plate, a lower clamping plate and a second housing before assembly according to the embodiment of the present invention;

Fig. 4 is a schematic perspective view of a connecting loop, an upper clamping plate and a lower clamping plate after assembly according to the embodiment of the present invention;

Fig. 5 is a top view of an upper clamping plate according to the embodiment of
5 the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will be explained below in detail with reference to the accompanying drawings and embodiments in the following.

10 As shown in Fig. 1 to Fig. 5, a mini massager according to an embodiment includes a first housing 1, a second housing 2, a rheostat 3, a motor 4 and a vibrating body 5. The first housing 1 and the second housing 2 are connected and form a rotating pair so that the second housing 2 may rotate around a rotation axis relative to the first housing 1. A mounting cavity 6 is created by the first housing 1
15 and the second housing 2, and the rheostat 3, the motor 4 and the vibrating body 5 are all mounted in the mounting cavity 6. The resistance value of rheostat 3 may be adjusted, the vibrating body 5 is eccentrically mounted on a motor shaft 41 of the motor 4 so that the resistance value of the rheostat 3 is changed and the rotation speed of the motor 4 is changed correspondingly during the rotation of the second
20 housing 2 around the rotation axis relative to the first housing 1. Thus the vibrating strength of the vibrating body 5 is changed to thereby adjust vibrating massage strength.

The rheostat 3 may includes a resistance wire 31 and a sliding contact piece 32. The resistance wire 31 and the first housing 1 are fastened together, the sliding
25 contact piece 32 is driven by the second housing 2 to rotate, and the sliding contact piece 32 slidably contact with the resistance wire 31. During the rotation of the second housing 2 around the rotation axis relative to the first housing 1, the sliding

contact piece 32 slides on the resistance wire 31 so as to change the resistance value of the rheostat 3. Since the sliding contact piece 32 may rotate relative to the resistance wire 31, the shape of the resistance wire 31 may be an annular resistance wire or a part of the annular resistance wire in order to obtain a good conductive
5 contact.

The first housing 1 may includes an upper cover 11 disposed on an inside of the first housing 1 and a soft rubber sleeve 12 is disposed on an outside of the first housing 1, the soft rubber sleeve 12 may be used for sleeving the upper cover 11, a first mounting cavity 13 having a first opening end 14 facing the second housing 2
10 is formed by the upper cover 11. The second housing 2 may include a lower cover forming a second mounting cavity 21, the second mounting cavity 21 has a second opening end 22 facing the first housing 1, the first opening end 14 matches with and presses against the second opening end 22, and the second housing 2 may further include at least one massage block 23.

The second mounting cavity 21 may include an upper clamping plate 7 and a lower clamping plate 8, both of the upper clamping plate 7 and the lower clamping plate 8 are fixed on the second opening end 22 of the second housing. The mini massager may also include an annular connecting loop 9, the upper clamping plate 7 and the lower clamping plate 8 may be annular-shaped, and the upper clamping
15 plate 7 and the lower clamping plate 8 may be loosely disposed around the connecting loop 9. In the direction of the rotation axis, the connecting loop 9 may be clamped by the upper clamping plate 7 and the lower clamping plate 8 so that the connecting loop 9 can rotate relative to the upper clamping plate 7 and the lower clamping plate 8 instead of moving relative to the upper clamping plate 7 and
20 the lower clamping plate 8. A matching block 91 is convexly arranged on an outer wall of the connecting loop 9, and a matching groove 71 is arranged on the upper clamping plate 7 correspondingly. Thus the matching block 91 can match with the
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matching groove 71, and the matching block 91 can be clamped by the upper clamping plate 7 and the lower clamping plate 8.

The matching block 91 of the connecting loop 9 may be a gear arranged around the rotation axis, the gear includes a circle of gear teeth 92. The upper
5 clamping plate 7 is correspondingly provided with at least one elastic arm 72, and the elastic arm 72 can be deformed under stress.

When the second housing 2 is rotated, the connecting loop 9 is driven by the elastic arm 72 of the upper clamping plate 7 to rotate, so that the sliding contact piece 32 can slide on the resistance wire 31 to change the resistance value of the
10 rheostat 3, a voltage of the motor 4 is simultaneously changed for the change of the resistance value so as to change the rotation speed of the motor 4, thus the vibrating massage strength is adjusted. During the rotation the gear is driven by the elastic arm, the elastic arm 72 is deformed under the action of the gear, and then the elastic arm 72 is engaged with each gear tooth 92 of the gear 91 in turn along the rotation
15 direction.

The mini massager may further include a battery compartment 15 in the first mounting cavity 13, the battery compartment 15 is used for accommodating batteries 17, the battery compartment 15 and the upper cover 11 are fastened together, the connecting loop 9 is loosely sleeved by the battery compartment 15 so
20 that the connecting loop 9 can rotate relative to the battery compartment 15, in other words, the connecting loop 9 can rotate relative to the first housing 1. The resistance wire 31 of the rheostat may be fixed on the battery compartment 15 by a fixing block 33, namely, the resistance wire 31 and the first housing 1 may be fastened together. An annular protrusion 73 is convexly arranged on an upper end
25 face of the upper clamping plate 7. The battery compartment 15 may be sleeved on the protrusion 73. The mini massage may further include a motor cover 16 arranged in the second cavity 21, the motor cover 16 and the second housing 2 are fastened

together, and the motor cover 16 may be used for covering the motor 4.

The mini massager includes a first housing, a second housing, a rheostat, a motor and a vibrating body, wherein a mounting cavity is created by the first housing and the second housing, the rheostat, the motor and the vibrating body are all mounted in the mounting cavity, the rheostat may include a fixing part and a moving part, the fixing part and one of the first housing and the second housing are fastened together, and the moving part may be connected with the other one of the first housing and the second housing. When the first housing and the second housing rotates relative to each other, the moving part and the fixing part will rotate relative to each other in order to change the resistance value of the rheostat, which is an embodiment of the rheostat such as the match of the resistance wire and the sliding contact piece. The motor may be fastened together with the first housing or the second housing.

In the mini massager, the first housing and the second housing are connected and form a rotating pair, wherein the connection of the first housing and the second housing refers to that whatever the mini massager is used or not, the first housing and the second housing are not easily separated, the rotating pair refers to that the second housing can rotate around the rotation axis relative to the first housing, which means that the first housing rotates, the second housing is still, or the first housing is still, the second housing rotates, or the first housing and the second housing rotate simultaneously. The rotating pair may be formed directly by the first housing and the second housing, or by the first housing, the second housing and an additional element wherein there is a relative rotation between the first housing and the second housing.

The mini massager may include an upper clamping plate and a lower clamping plate, the upper clamping plate, the lower clamping plate and the second housing may be fastened together. The connecting loop may be clamped by the upper

clamping plate and the lower clamping plate, the connecting loop may rotate around the rotation axis, the upper clamping plate is provided with elastic arms, if the second housing is rotated, the connecting loop is driven by the elastic arms, thereby adjusting the resistance value of the rheostat.

- 5 The present invention has been further detailed in the above descriptions with reference to the preferred embodiments; however, it shall not be construed that implementations of the present invention are only limited to these descriptions. Many simple deductions or replacements may further be made by those of ordinary skill in the art without departing from the conception of the present invention, and
- 10 all of the deductions or replacements shall be considered to be covered within the protection scope of the present invention.

CLAIMS

1. A mini massager, comprising: a first housing, a second housing, a rheostat, a motor and a vibrating body, wherein the first housing and the second housing are connected together and form a rotating pair, at least one of the first housing and the second housing is provided with a massage block, a mounting cavity is formed by the first housing, and the second housing, the rheostat, the motor and the vibrating body are all mounted in the mounting cavity, the vibrating body is eccentrically mounted on a motor shaft of the motor so that the resistance value of the rheostat is changed and the rotation speed of the motor is changed correspondingly during the rotation of the second housing around a rotation axis relative to the first housing, the rheostat comprises a resistance wire and a sliding contact piece, one of the first housing and the second housing is securely connected with the resistance wire, the other one of the first housing and the second housing is connected with the sliding contact piece, the mounting cavity comprises a connecting loop rotating around the rotation axis, the first housing matches with the connecting loop, the second housing comprises a driving body used for driving the connecting loop to rotate, the driving body is deformable elastic arms under stress, the connecting loop comprises a gear with a circle of gear teeth so that the elastic arms engage with each gear tooth along rotation direction during the rotation of the second housing relative to the first housing.
2. The mini massager of Claim 1, wherein an upper clamping plate and a lower clamping plate are fixedly arranged in the mounting cavity, in the direction of the rotation axis the connecting loop is clamped by the upper clamping plate and the lower clamping plate, the connecting loop is sleeved by the upper clamping plate and the lower clamping plate, and the elastic arms are arranged on the upper clamping plate.

3. The mini massager of Claim 2, wherein the mounting cavity is formed by a first cavity formed by the first housing and a second cavity formed by the second housing, the first cavity defines a first opening end facing the second mounting cavity therein, the second cavity defines a second opening end facing the first mounting cavity therein, the upper clamping plate, the lower clamping plate and the second opening end are fastened together.
4. The mini massager of Claim 3, wherein the first housing comprises a soft rubber cover and an upper cover covered by the soft rubber cover and engagingly matched with the soft rubber cover, and the first mounting cavity is formed by the upper cover.
5. The mini massager of Claim 3, wherein the first mounting cavity comprises a battery compartment, the battery compartment and the upper cover are fastened together, the battery compartment is loosely sleeved by the connecting loop, and the motor is arranged in the second mounting cavity and fastened together with the second housing.
6. The mini massager of Claim 5, wherein an annular protrusion is convexly arranged on an upper end face of the upper clamping plate, the protrusion is sleeved by the battery compartment.
7. The mini massager of Claim 5, wherein the resistance wire and the battery compartment are fastened together.