United States Patent

LaBarber

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[54] **GAS MEDIUM CIRCULATING ASSEMBLY**

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[52] **U.S. Cl.**.....**417/12,** 417/424

[51] **Int. Cl.**.....**F04b 49/00,** F04b 35/04

[58] **Field of Search**.....417/12, 363, 424, 423 A; 415/121; 128/66

[56] **References Cited**

UNITED STATES PATENTS

2,136,268	11/1938	Watts	417/423
2,717,748	9/1955	Martinet	417/363
2,987,241	6/1961	Lindsjo et al.	417/363
3,033,125	5/1962	Pleuger	415/121
3,256,828	6/1966	Rule	417/424
3,264,999	8/1966	Tutthill	417/424
3,337,134	8/1967	Bond	415/121
3,481,328	12/1969	Powell	128/66
3,539,276	11/1970	Matsuura	417/313
3,563,676	2/1971	Coovert et al.	417/424

FOREIGN PATENTS OR APPLICATIONS

644,260	8/1947	Great Britain	417/423

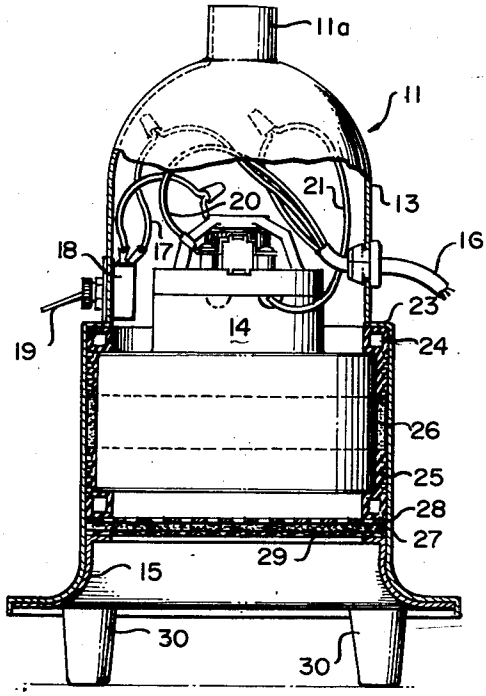
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[57] **ABSTRACT**

The assembly includes a motor for producing a flow of gas medium that is freely disposed in a housing. Retaining means is used to hold the freely disposed motor in place within the housing. In a specific embodiment of the assembly, the motor is freely disposed against an abutment means. The retaining means includes a rim means or section detachably connected to the bottom of the housing to provide support for the motor. An opening located in the rim means forms an inlet through which a flow of air may pass. Means is attached to the housing for supporting the housing a spaced distance from the surface against which the assembly is to be placed. Means is provided for directing the flow of air outwardly from the housing. In a more specific embodiment, the outwardly directing means for the gas medium includes a tubing passage having holes located therein. The tubing passage may be placed in a bath container for providing a hydromassage to a person in the bath container.

7 Claims, 8 Drawing Figures



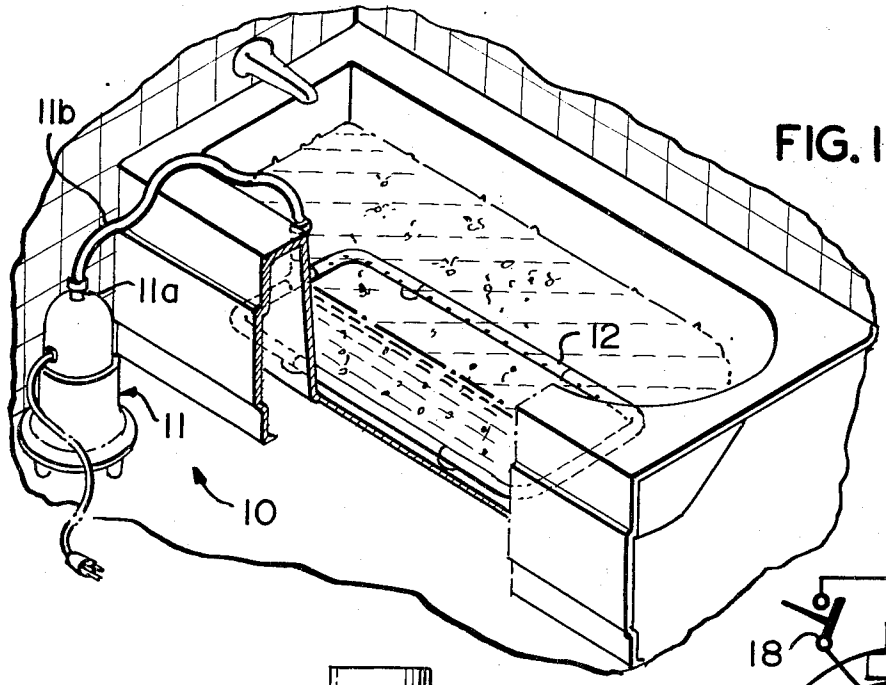


FIG. 1

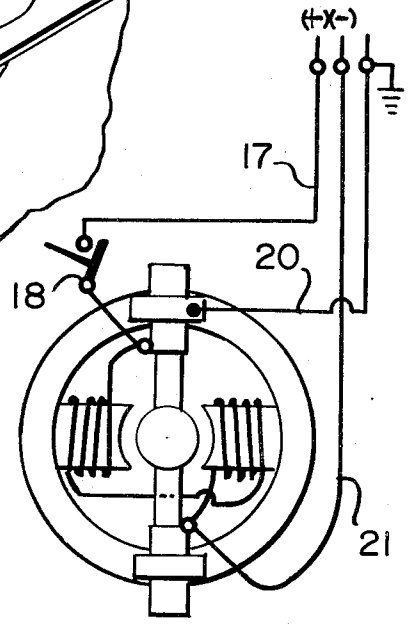


FIG. 3

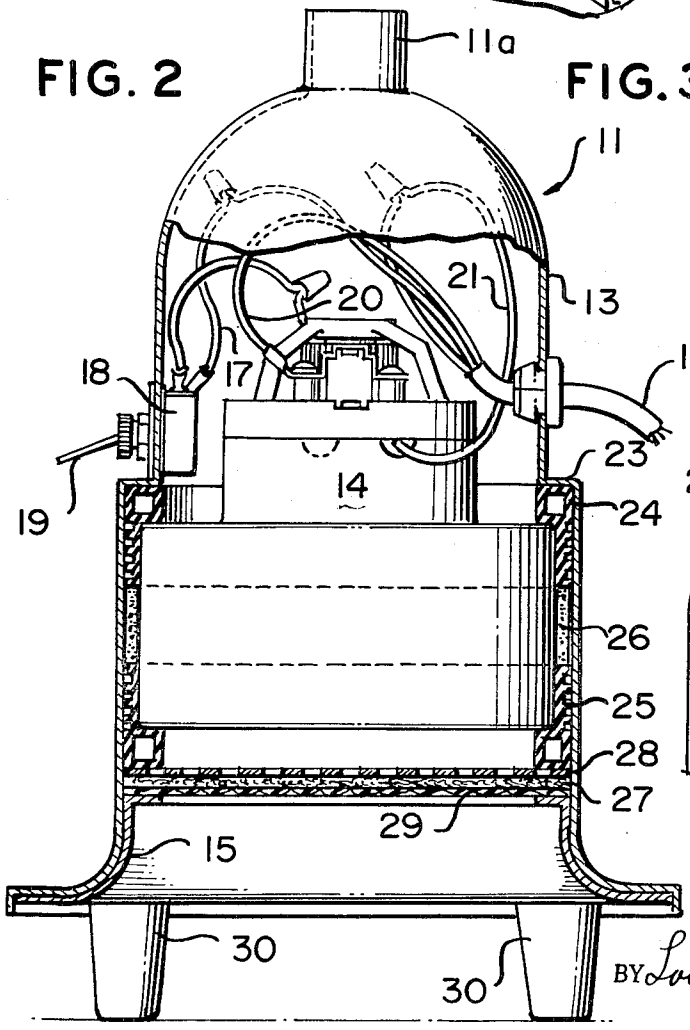


FIG. 2

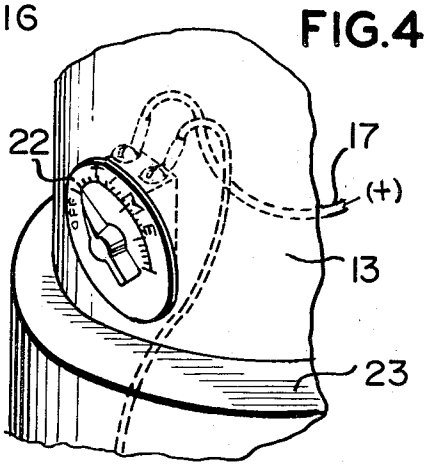


FIG. 4

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FIG. 5

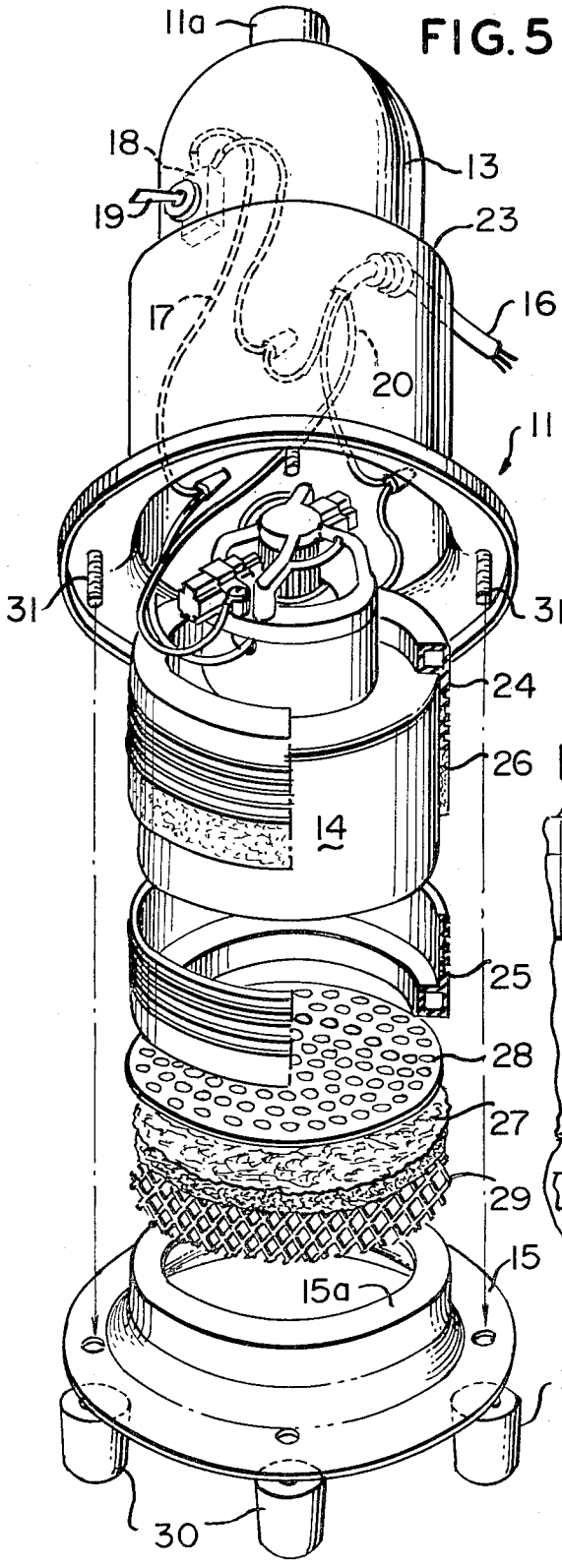


FIG. 6

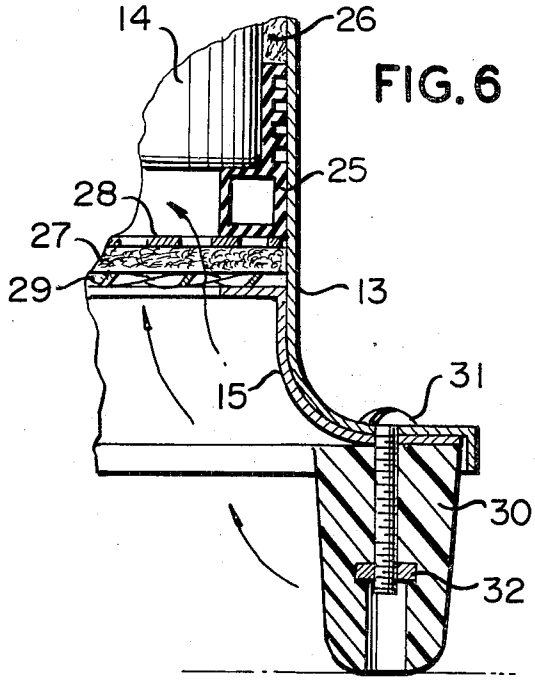


FIG. 7

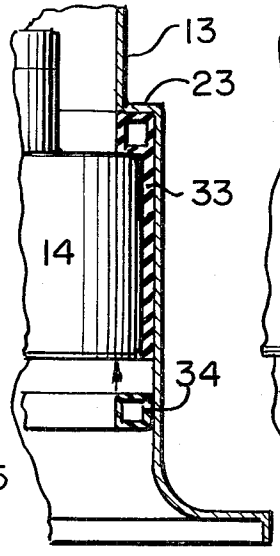
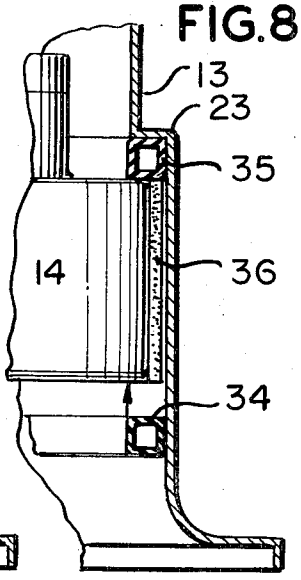


FIG. 8



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GAS MEDIUM CIRCULATING ASSEMBLY

BACKGROUND OF THE INVENTION

Due to the rising cost of manufacturing products on the market today, it is necessary to develop products in a manner which will keep such expenses to a minimum. At the same time, it is desirable to have an attractive looking package which will operate at peak efficiency and be appealing to consumers.

There are many air circulating devices available in the prior art. Such devices include various types of vacuum cleaners and blowing units. Generally these prior art devices include an electrically operated motor that is fixedly attached to a support of some kind with a housing assembly placed thereover. In some instances, the electrically operated motor may even be fixedly attached to the housing unit during the assembly of the air circulating device.

Each time a separate fastening means is used to provide additional attachment or support in the construction of such an assembly, there is a corresponding loss of time and increase in expense during the assembly operation.

The importance of having a structure which may be easily assembled is emphasized where a large number of devices is to be produced. An amount of time saved is greatly magnified where there is a large number of units to be produced. An air circulating device used in conjunction with a hydromassage aerator apparatus is an example of such a commodity. The injecting of air into a body of water in a confined volume disturbs the water in such a manner as to accomplish a similar massaging effect upon the body of the user in the water.

PURPOSE OF THE INVENTION

It is the primary object of this invention to provide an air circulating device which is very simple in its construction and therefore inexpensive to manufacturer and assemble.

It is another object of this invention to provide a motor that is freely disposed within a housing without having any fixed attachment to the housing structure.

A further object of this invention is to provide a housing having a unitary construction within which an electrical motor is freely disposed and held in place by a rim means detachably connected to the bottom of the housing.

It is still another object of this invention to provide a new and improved water massage aerator bath apparatus which comprises an air blowing unit and a tubing passage which constitutes an outwardly directing means for directing a flow of air from the blowing unit into liquid located in a bath container.

It is a still further object of this invention to provide a retaining means for holding and supporting a motor that is freely disposed within a housing without using fasteners attaching the motor to the housing.

It is another object of this invention to provide a retaining means for holding a motor within a housing wherein the retaining means includes at least one ring member disposed between the motor and the housing. The ring member has a structural configuration to provide frictional support for the motor within the housing.

SUMMARY OF THE INVENTION

The gas medium circulating assembly of this invention includes a motor freely disposed in a housing having means for allowing a flow of gas medium to pass therethrough. A retaining means is used for holding the freely disposed motor in place within the housing. A more specific feature of this invention provides an abutment means in the housing against which the motor is disposed and held in place by a rim means that is detachably connected to the bottom of the housing. Another feature of this invention provides that the housing be a single, continuous one-piece housing that is open at the bottom thereof to receive the motor. A rim means or section is detachably connected to the bottom of the housing and provides support for the motor. The rim section includes an opening through which a flow of gas medium passes into the assembly. A step configuration in the one-piece housing provides a landing constituting an abutment means against which the motor may be freely disposed. The entire blower unit may be assembled very easily. The motor and additional filtering means are placed into the one-piece housing and subsequently a rim means is detachably fastened along the bottom of the housing structure.

Another feature of this invention is that the device may include supporting leg members that are attached to the bottom of the housing along with the rim means. The fasteners which attach the rim section to the housing also hold the leg members in place. A spaced distance is thereby provided between the bottom of the housing and the surface against which the assembly is to be placed. This feature is especially important in the operation of the motor when the inlet means is located through the bottom of the housing via the opening in the rim means. The space must be sufficient to provide an amount of air to pass into the device and through the outwardly directing means to effect efficient operation of the blower motor.

In another embodiment of this invention, the outwardly directing means for directing the flow of air from the housing includes a tubing passage having holes located therein. This tubing passage is placed in a bath container containing liquid medium in which a user is located.

BRIEF DESCRIPTION OF DRAWINGS

Other objects of this invention will appear in the following description and appended claims, reference being made to the accompanying drawings forming a part of the specification wherein like reference characters designate corresponding parts in the several views.

FIG. 1 is a perspective view of an apparatus made in accordance with the disclosed invention,

FIG. 2 is a sectional view of an air circulating device made in accordance with this invention,

FIG. 3 is an electrical circuit diagram of the apparatus as shown in FIG. 2,

FIG. 4 is another embodiment of an apparatus made in accordance with this invention,

FIG. 5 is an exploded perspective view, partially in section, showing the assembly of the device of FIG. 2,

FIG. 6 is a partial sectional view of the assembly shown in FIG. 2,

FIG. 7 is a partial cross-sectional view of another embodiment made in accordance with this invention, and

FIG. 8 is a partial cross-sectional view of further embodiment of the disclosed invention.

DESCRIPTION OF SPECIFIC EMBODIMENTS

More specifically, an air circulating device, generally designated **10**, as shown in FIG. 1, includes a blowing unit **11** and an aerator ring **12**. The aerator ring **12** may be composed of a tubing passage having a plurality of tube sections such as shown in my copending application Ser. No. 658,816 filed Aug. 7, 1967. The aerator ring is shown in water located in a bath container in FIG. 1. The blowing unit **11** is electrically operated in this specific embodiment and air travels from the outlet **11***a* through a flexible tube **11***b* into the aerator ring **12**. Air is injected into the body of water as shown in FIG. 1.

The blowing unit **11** incorporates several features of the instant invention. The housing **13** is a single, continuous one-piece construction in this specific embodiment and includes a step portion **23** and an outlet opening **11***a*. The housing **13** is open at the bottom thereof to receive the electrical motor **14** therein. The step portion **23** constitutes an abutment means against which the motor **14** is freely disposed.

An electrical motor which may be used in this particular embodiment is a cylindrically shaped, 1 horse power Lamb motor that is commercially available. The upper space in the top portion of the housing **13** accommodates the wiring required to run the motor **14**. A cord **16** extends through the wall of the housing **13** and includes a ground wire **20** which is attached to the brushes of the motor **14**. The power lead wires **17** and **21** extend between the power supply and the motor **14**. A toggle switch **18** is located in the circuit to switch the motor **14** on and off. The toggle lever **19** may be plastic or other insulating material to insure against electrocution. The toggle **19**, if composed of metal, may be coated with plastic material to provide the desired insulation. The circuit diagram of FIG. 3 shows the electrical wiring of the blowing unit of FIG. 2. In another embodiment of this invention, a toggle switch **22** may be used in connection with the operation of the motor **14**.

An extremely important aspect of the construction of this invention is that the motor **14** is freely disposed within the housing **13** and held in place by a retainer rim **15**. In this particular embodiment, the housing **13** is composed of a metallic material. It is desired therefore to have an electric insulation to exist between the motor **14** and the housing **13**. It is also within the contemplation of this invention, however, that the housing **13** be constructed of other types of material such as strong and durable plastic. The upper ring member **24** is composed of a rubber material in this specific embodiment and is dimensioned to fit tightly between the motor **14** and the housing **13**. The top of the ring **24** abuts against the step portion **23** located around the circumference of the housing **13**. The resilient, flexible characteristics of the upper ring **24** and the lower ring **25** provide frictional support for the motor **14** within the housing **13**.

An additional insulation ring **26** is used in the embodiment as shown in FIG. 5 where the ring members **24** and **25** do not extend the entire length of the body of the motor **14**. Additional embodiments of various ring structures are shown in FIGS. 7 and 8. The upper ring member **33** includes a portion which extends the entire length of the motor **14**. The embodiment of FIG. 8 shows the use of a different insulation material **36** between the upper and lower ring members **35** and **34**, respectively.

A filter member **27** is disposed within the housing **13** between an upper screen member **28** and a lower screen member **29**. The upper screen member **28** keeps the material of the filter **27** from being drawn into the blower motor **14**. The lower screen member **29** keeps the material of the filter **27** from falling out of the opening **15***a* of the rim member **15**. The opening **15***a* constitutes the inlet for air to flow through the device drawn by the motor **14** and directed out of the outlet **11***a*.

The screen members **28** and **29** may be composed of any desired metal having sufficient stiffness for support and enough openings to allow the flow of air to pass therethrough.

The leg members **30** constitute means for supporting the housing a inch- chrome distance from the surface against which the assembly is to be placed. As shown in FIG. 1, the blowing unit **11** is located on the floor in this particular embodiment. It is contemplated, however, that similar blowing devices may well be mounted on wall or ceiling surfaces using different types of bracketing members to accomplish same. The leg members in this specific embodiment are composed of rubber. Bolts **31** are placed in holes located at the bottom of the housing **13** and extend downwardly into the leg member **30** as shown in FIG. 6. A nut **32** is located within the rubber leg member **30**. In this embodiment, the bolts **31** are 1 ¼ inch chrome plated screws and the rubber leg members are 1 inch in diameter and 1 ¼ inches long. The bolts **31** simply screw into the nuts **32** located in the leg members **30** thereby effecting the final assembly of the blowing unit **11** after all of the individual parts are placed in the housing **11** as described hereinabove. There is no requirement for screws or bolts other than the bolts **31** which attach the rubber leg members **30** to the assembly. The amount of time required to assemble the apparatus is clearly reduced to an absolute minimum.

While the gas medium circulating assembly has been shown and described in detail, it is obvious that this invention is not to be considered as being limited to the exact form disclosed, and that changes in detail and construction may be made therein within the scope of the invention, without departing from the spirit thereof.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. A gas medium circulating assembly comprising:
   a. a unit including a motor and a gas moving device for producing a flow of air,
   b. a housing extending upwardly and being open at the bottom thereof to receive the unit,
   c. said housing having a unitary construction and including a step portion constituting an abutment means against which the unit is freely disposed on the inside of the housing,
   d. a rim means detachably connected to the bottom of the housing to provide a support for the unit and to hold the unit firmly in place within said housing,
   e. said rim means including an opening forming an inlet through which said flow of air may pass,
   f. at least one ring member being disposed between the unit and the step portion of the housing,

g. means including leg members for supporting the housing a distance spaced from the surface against which the assembly is to be placed by an amount sufficient to provide enough air thereby allowing efficient operation of the motor,

h. fastening members to connect the leg members and the rim means to the housing and providing the sole means for holding the unit within the housing, and

i. means for directing the flow of air outwardly from the housing.

2. An assembly as defined in claim **1** wherein

a first ring member is disposed between the step portion and the motor and a second ring member is disposed between the motor and the rim means,

said ring members being composed of an electrical insulating material.

3. An assembly as defined in claim **1** wherein

the unitary construction consists of a single continuous piece of material having a flange portion along the bottom thereof, and

fastening members connect the rim means to the flange portion.

4. An assembly as defined in claim **1** wherein

filtering means are disposed in the housing between the motor and the inlet in the rim means for filtering the air flowing therethrough.

5. An assembly as defined in claim **4** wherein

a screen member is located at each side of the filtering means to hold the filtering means in place during operation of the assembly.

6. An assembly as defined in claim **1** wherein

the motor is electrical and a switch means is disposed on the housing to turn the motor on and off.

7. An assembly as defined in claim **6** wherein

the switch means includes a timer for controlling the length of time the motor will operate.

* * * * *