

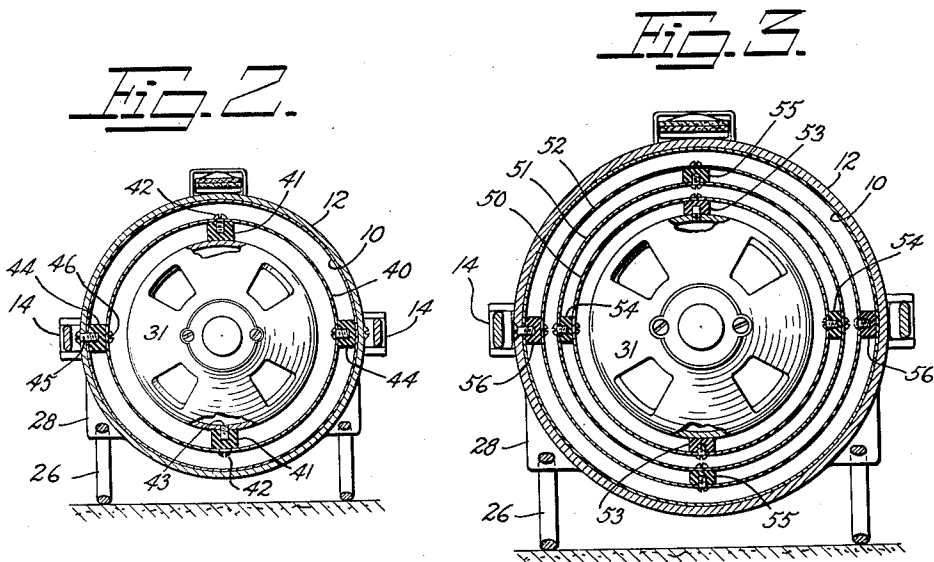
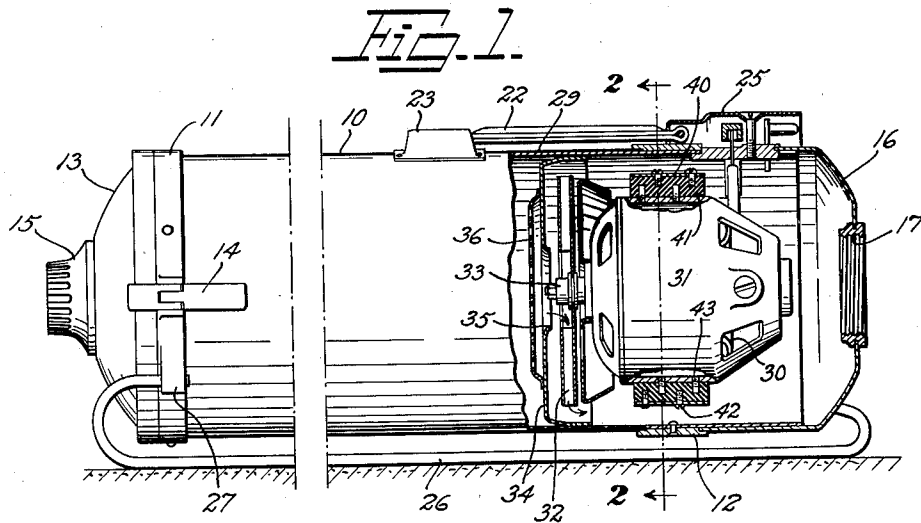
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VACUUM CLEANER

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VACUUM CLEANER

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This invention relates to vacuum cleaners, and more particularly to a new and improved type of motor support therefor. The invention is applicable to a vacuum cleaner in which the motor and fan are mounted as a unit and provides a resilient support for connecting this unit to the casing of the cleaner.

An object of the invention is to provide a support for the motor unit of a vacuum cleaner which is capable of affording a limited range of movement to the motor whereby the effect of sudden shocks and jars is reduced. Other objects of the invention are: to provide an insulating motor support so that the motor may be electrically insulated from the vacuum cleaner casing; to provide for mounting the motor unit by means of supports which are located in a plane extending approximately through the center of gravity of the unit so that the tendency to vibrate is reduced to a minimum; to provide a free, floating, resilient support for the purpose above indicated; to provide a mounting for a vacuum cleaner motor which prevents the vibrations of the motor from being transmitted to the casing whereby a substantially vibrationless and noiseless operation is obtained; and to provide a cheap, simple, convenient and efficient device for the purpose specified.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, the mode of its operation and the manner of its organization may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is a side elevation of a vacuum cleaner unit partly broken away to show the motor and support therefor; Fig. 2 is a section taken on the line 2—2 of Fig. 1; and Fig. 3 is a sectional view of a modified form of motor support.

Like reference characters denote like parts in the several figures of the drawings.

In the following description and in the claims parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring more in detail to Figs. 1 and 2 in which a specific embodiment of the invention is disclosed, the vacuum cleaner unit is shown as provided with a casing comprising a barrel 10, enclosing the various operating parts of the cleaner. Ring 11 is secured at one end of barrel 10 and ring 12 is mounted a short distance from the other end thereof in the plane of the motor support, to be described. Bell 13 seats on ring 11 and is detachably secured by convenient means such as clips 14. Said bell is provided with a central aperture in which coupling member 15 may be threaded or otherwise secured. Member 15 is adapted to receive an operating attachment such as a flexible air hose.

Cap 16, having a central aperture 17 which is adapted to receive coupling member 15, telescopes over the rear end of barrel 10 and seats against ring 12 to which it may be secured by any convenient means. For lifting the unit a flexible handle 22 is provided which is connected to barrel 10 and ring 12 by members 23 and 25, respectively. Runners 26 are mounted in lugs 27 and 28 which are formed on rings 11 and 12. Barrel 10 may be covered with a thin member 29 of paper, leather or similar material to protect the barrel and present a neat outside appearance.

Driving motor 30 is enclosed in a housing 31 by which it is supported in the manner to be described. Fan 32, which may be of any standard type, is mounted on shaft 33 of said motor and, together with the motor and housing, comprises the motor unit. Shield 34 is mounted within barrel 10 and separates the motor chamber from the chamber containing the dust bag. Said shield has a central aperture 35 through which air is drawn by fan 32. Aperture 35 is covered by a screen 36 which prevents dirt and other foreign materials from being drawn into fan 32.

The motor support comprises a ring 40 of flexible material, such as spring steel, which is secured to motor housing 31 by supports 41 which are evenly spaced about the periphery of said housing. Said supports are secured to ring 40 and housing 41 by screws 42 and 43, respectively, which are preferably staggered so as not to make electrical contact between said elements.

Ring 40 is mounted in barrel 10 in the plane of ring 12 by supports 44 which are similar in construction to supports 41 and are mounted in staggered relation with respect thereto about the periphery of ring 40. Said supports 44 are secured by suitable means, such as screws 45 and 46, which are passed through rings 12 and 40, respectively. Supports 41 and 44 may be formed of insulating material, such as rubber phenol condensation product, or similar material, to insulate the motor from the casing of the cleaner unit. Ring 40 is preferably located in a plane extending through the center of gravity of the motor unit so that the motor is freely supported and torsional forces are eliminated. It is to be noted that the motor unit is free to move within the limits of elasticity of ring 40, the fan being entirely supported by the motor and free from the shield 34 and barrel 10.

A modified form of support is disclosed in Fig. 3 in which motor housing 31 is connected to ring 12 by means of a plurality of flexible metallic rings 50, 51 and 52. Supports 53 interconnect housing 31 and ring 50. Rings 50 and 51, rings 51 and 52 and rings 52 and 12 are connected, respectively, by supports 54, 55 and 56. The supports connecting alternate sets of rings are staggered peripherally to provide a maximum resilience to the mounting. It is to be understood that supports 53 to 56 are formed in a manner similar to supports 41 and 44 (Figs. 1 and 2) and are similarly mounted. The number of supporting rings between the motor housing and the casing of the vacuum cleaner unit may be varied as desired to obtain the desired characteristics. A particular embodiment has been shown by way of illustration only.

In the operation of the above described cleaner, the fan 32 causes air to be drawn in through the aperture in bell 13, passed over motor 30 and discharged through aperture 21 in cap 16. As the motor is freely supported the vibrations thereof are not transmitted to the casing of the cleaner unit and consequently the noise of operation is reduced to a minimum. Furthermore, the motor is protected from sudden shocks and jars to which the casing may be subjected. By insulating the motor from the casing the operator is protected from the electric circuit and the possibility of obtaining a shock therefrom is eliminated. The mounting is cheap

and simple to manufacture and may be readily installed or disassembled.

While certain novel features of the invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated, and in its operation may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. In a vacuum cleaner having a casing, a motor having a housing and resilient means for mounting said housing in said casing comprising a flexible ring connected to said housing and to said casing at spaced points.
2. In a vacuum cleaner having a casing, a motor, a housing therefor, means for supporting said housing in said casing comprising a metallic ring and insulating members interconnecting said ring with said housing and said casing, respectively.
3. In a vacuum cleaner having a casing, a motor, a housing for said motor and resilient means for supporting said housing from said casing comprising a metallic ring and supporting members arranged between said ring and the housing and casing, respectively, said members being arranged in pairs and staggered with relation to each other whereby a resilient suspension is obtained.
4. In a vacuum cleaner having a casing, a motor having a housing and means for connecting said housing to said casing comprising an endless resilient member secured to said housing at spaced points and to said casing at alternate points.
5. In a casing, a motor having a housing and means for resiliently mounting said housing comprising a ring concentric with said housing and spaced therefrom and supports inter-connecting said ring with said casing and said housing, said supports being spaced about the periphery of said ring and alternately arranged.
6. In a vacuum cleaner unit, a cylindrical casing, a motor unit mounted axially thereof, a support for said motor unit comprising a flexible ring located between said motor unit and said casing and concentric therewith and means connecting said ring to said motor unit and said casing at spaced points.
7. In a vacuum cleaner having a casing, a motor having a housing and a resilient means for mounting said housing in said casing comprising a metal ring connected to said housing and to said casing at spaced points.
8. In a vacuum cleaner having a casing, a motor unit comprising a motor and fan, a housing for said motor, a resilient metallic ring surrounding said housing in a plane extending through the center of gravity of said motor unit, insulating members connecting said ring to said housing and insulating mem-

bers connecting said ring to said casing, said members being staggered peripherally of said ring to provide a flexible support for said motor unit.

5 9. In a vacuum cleaner having a casing, a motor, a housing therefor, means for supporting said housing in said casing comprising a metallic ring and insulating members interconnecting said ring with said housing and
10 said casing respectively, said insulating members being attached by staggered screws whereby metallic interconnection is prevented.

15 10. In a vacuum cleaner having a casing, a motor having a housing, a plurality of spaced concentric rings between said casing and said housing, means connecting adjacent rings and means connecting said casing and said
20 housing to certain of said rings, said connecting means being staggered to provide a resilient mounting for said housing.

In testimony whereof I have affixed my signature.

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