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VACUUM CLEANER

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Fig. 1.

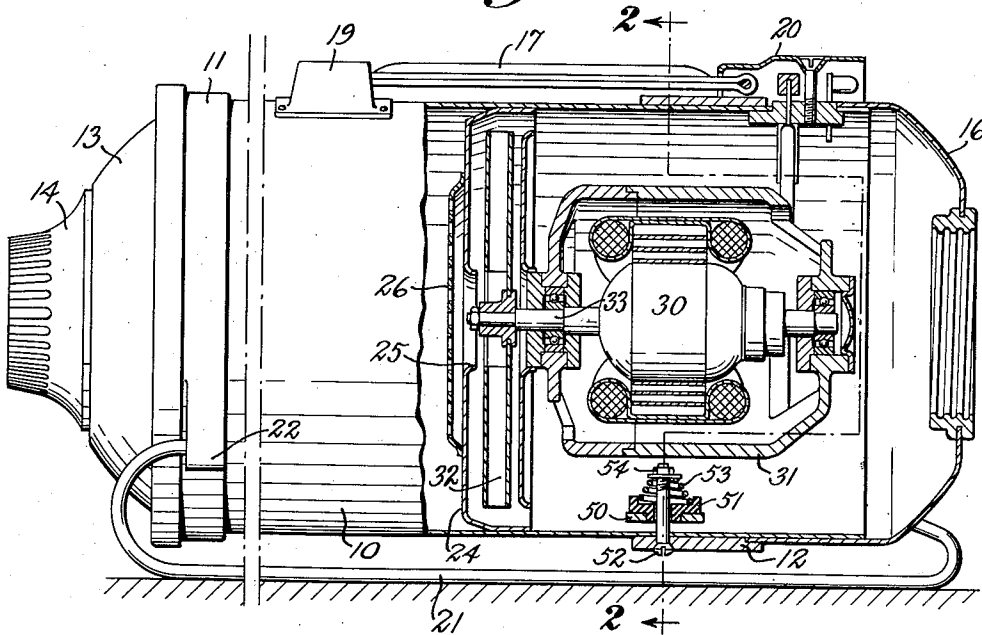
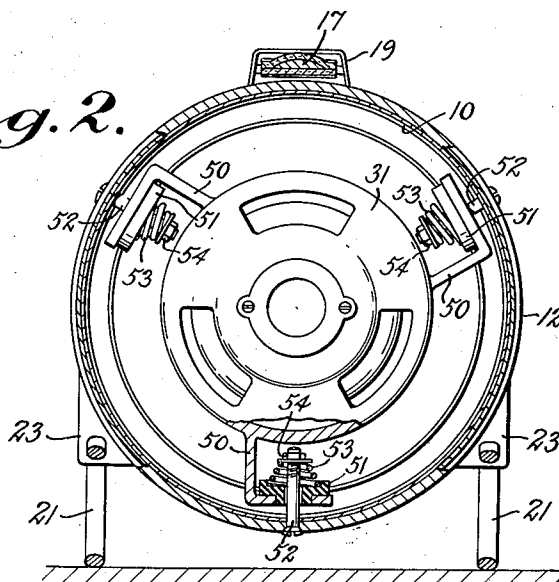


Fig. 2.



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VACUUM CLEANER

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Original application February 25, 1930, Serial No. 431,241, now Patent No. 1,860,884, dated May 31, 1932. Divided and this application May 2, 1932, Serial No. 608,598. In Germany March 5, 1929

2 Claims. (Cl. 248—26)

This application is a division of my copending application Serial No. 431,241, filed February 25, 1930.

This invention relates to vacuum cleaners, and more particularly to a new and improved type of motor support for resiliently mounting a motor therein. The invention is particularly applicable to a vacuum cleaner having a horizontal casing in which the motor and fan impeller are mounted as a unit, and provides for preventing mechanical vibrations from being transmitted between the motor and the casing whereby a substantially vibrationless and noiseless operation is effected.

An object of the invention is to provide a resilient support for the motor unit of a vacuum cleaner. Other objects of the invention are: To provide an insulating support for the motor whereby the electrical circuit is insulated from the casing of the vacuum cleaner; to provide a resilient support at substantially the center of gravity of the motor unit whereby torsional forces are eliminated; to provide a support which affords a limited range of movement of the motor unit with respect to the stationary part of the vacuum cleaner, so that the unit is protected from shocks and jars and the vibrations of the motor are not imparted to the stationary part of the cleaner; to provide a free, floating, resilient support for the motor unit; and to provide a simple, convenient and efficient device of the type above indicated.

Referring to the accompanying drawing, which forms part of this specification, and which illustrates a preferred embodiment of the invention:

Fig. 1 is a side elevational view of a vacuum cleaner unit partly broken away to show a motor unit and support; and

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1.

Referring to the drawing more in detail, the invention is shown as embodied in a vacuum cleaner unit comprising a cylindrical barrel 10 having a ring 11 mounted at one end thereof and a ring 12 mounted near the other end thereof in the plane of the motor support, to be described. Bell 13, which is provided with a central aperture formed to receive coupling member 14, is seated on ring 11 and secured thereto by any convenient means. Coupling member 14 has a bore for receiving a flexible air hose or similar device. Cap 16, which is also provided with a central aperture for receiving coupling member 14, is telescoped over the end of barrel 10 and seats against ring 12 to which it is secured by any suitable means.

A flexible handle 17 is connected to barrel 10 and ring 12 by members 19 and 20 respectively. Said handle is preferably located at the center of gravity of the cleaner unit and facilitates transportation thereof. Runners 21 are mounted in lugs 22 and 23 formed on rings 11 and 12 respectively, and support the unit on a surface, such as a floor. Shield 24 is mounted within barrel 10 and separates the dust bag compartment from the compartment containing the motor unit. Shield 24 is provided with a central aperture 25 for the admission of air to the fan which is covered by a screen 26 for preventing undesired particles of material from being drawn into the fan. Motor 30, having a shaft 33, is mounted within motor housing 31. A fan impeller 32 is carried on shaft 33 and is supported thereby. Motor 30, housing 31 and fan impeller 32 constitute the motor unit, which may be assembled independently of the other parts of the vacuum cleaner and secured therein by the supporting mechanism now to be described.

Motor housing 31 is provided with a plurality of angular legs 50 which are preferably formed integrally therewith. Said legs are apertured to receive washers 51 which are preferably formed of insulating material, such as rubber, phenol condensation product, or the like. Screws 52 pass through ring 12 and extend through the apertures in washers 51. Spiral springs 53, which are preferably conical in shape, are mounted on screws 52 and are clamped between nuts 54 and washers 51.

The washers 51 insulate screws 52 and springs 53 from legs 50 of housing 31, thereby electrically insulating the motor from the casing of the vacuum cleaner unit. The supports are preferably symmetrically disposed about the casing. The entire supporting assembly and the cooperating springs are preferably mounted in a plane extending through the center of gravity of the motor unit whereby the motor unit is freely supported and torsional forces are eliminated. It will be seen that the springs are arranged with their axes in the transverse plane of the cleaner unit which passes through the center of gravity of the motor unit whereby the motor unit is freely supported by the spring support.

It will be seen that, with respect to the conical springs, the apex of the cone is attached to the casing and the base of the cone is attached to the motor unit. There is thus provided a spread which gives a balanced support. The inclination of the sides of the cone of the springs is equal

with respect to the plane through the centers of the springs.

5 The support is simple and cheap to manufacture and provides a convenient mounting for the motor, which may be readily applied or disassembled. The entire motor unit including the motor and fan impeller are resiliently mounted with respect to the casing of the vacuum cleaner unit whereby transmission of vibrations therebetween is prevented. This results in a substantially vibrationless and noiseless operation while the electrical insulation serves to insulate the current-carrying elements and eliminates the possibility of the operator receiving an accidental shock.

10 It will be understood that while but one embodiment is illustrated, the invention is not to be limited except by the scope of the appended claims considered in the light of the prior art.

What I claim is:

20 1. In a vacuum cleaner, a horizontally supported cylindrical casing, a motor unit, means for re-

siliently supporting said motor unit in said casing comprising spiral springs extending between said motor unit and said casing, said springs being conical and being peripherally disposed about said motor unit and having their apexes secured to the casing and their bases secured to the motor unit, and insulating means associated with the springs for insulating the motor unit from the casing.

2. In a vacuum cleaner, a casing, a motor, insulating means between the motor and the casing for insulating the motor from the casing, and means for supporting said motor in said casing comprising coiled springs interposed between the motor and the casing, said springs having turns of different radii, at least some of said turns being free of the insulation of the motor and the casing, whereby weight and twist of the motor are transmitted through and vibrations are absorbed by the free turns of different radii.

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