Nov. 17, 1931. A. C. GILBERT 1,832,457

VACUUM CLEANER

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Fig. 1.

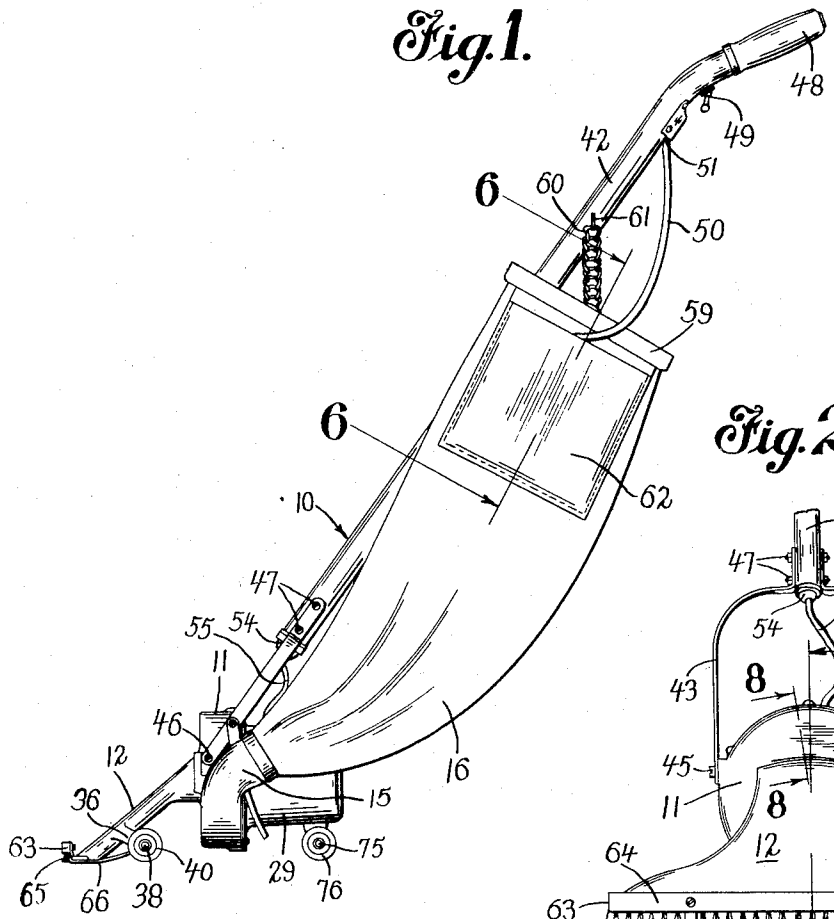


Fig. 2.

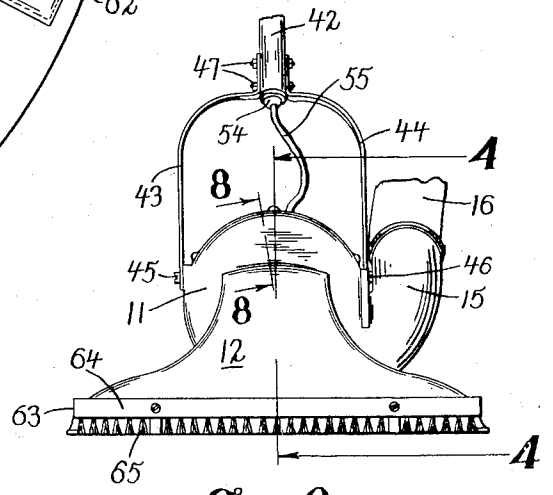


Fig. 3.

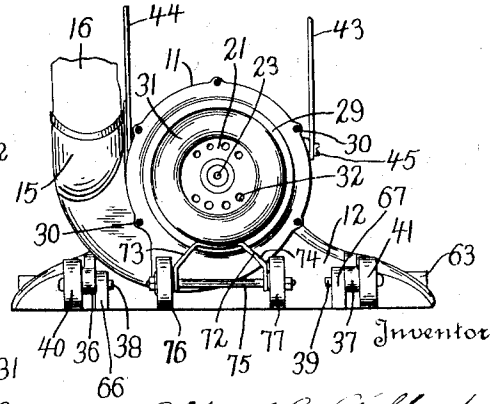
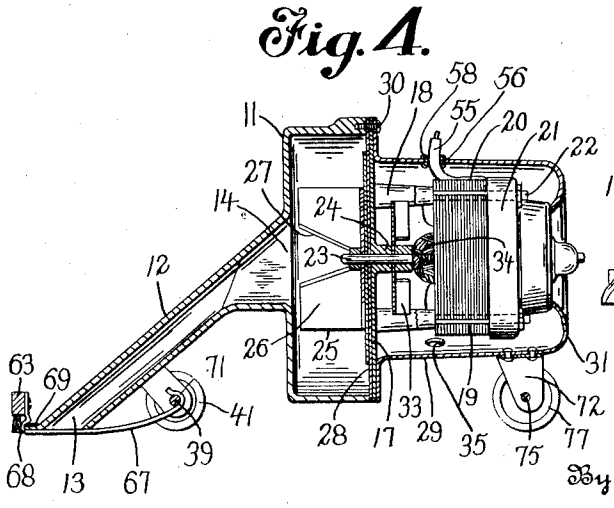


Fig. 4.



Inventor

Alfred C. Gilbert

By Rockwell & Barthelow

Attorneys

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Fig. 5.

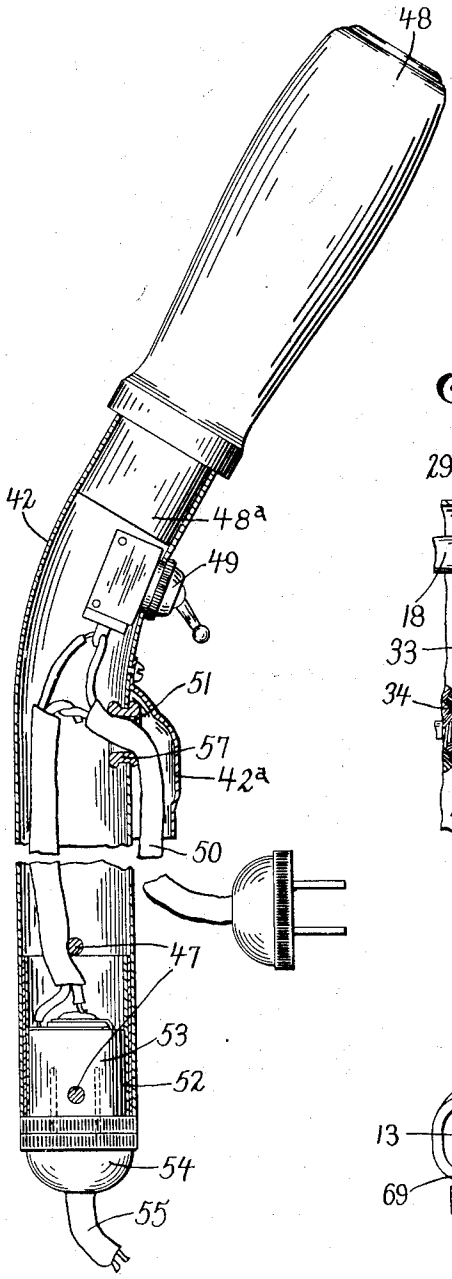


Fig. 6.

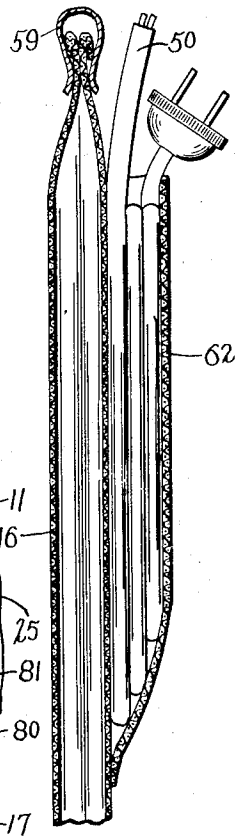


Fig. 8.

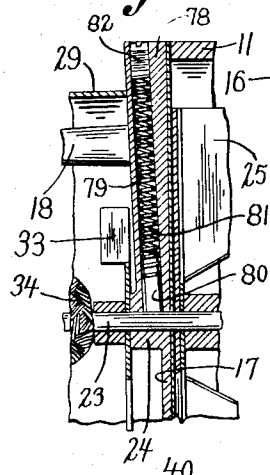
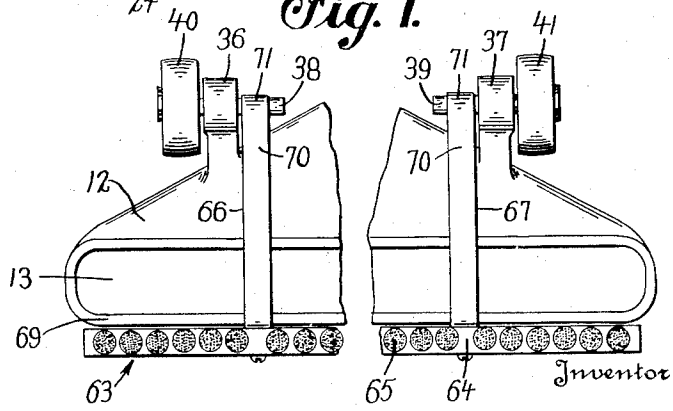


Fig. 7.



Inventor

Alfred C. Gilbert

By Rockwell & Bartholow

Attorneys

Patented Nov. 17, 1931 1,832,457

UNITED STATES PATENT OFFICE

ALFRED C. GILBERT, OF HAMDEN, CONNECTICUT, ASSIGNOR TO THE A. C. GILBERT COMPANY, OF NEW HAVEN, CONNECTICUT

VACUUM CLEANER

Application filed July 5, 1928. Serial No. 290,498.

This invention relates to a vacuum cleaner, and more especially to a portable cleaner of the type which is provided with a suction nozzle and a dust receiver directly connected to a fan casing.

Generally speaking, the invention relates to improvements in that form of portable vacuum cleaners in which a fan and motor are directly connected together and supported on casters, rollers, or wheels, and in which there is a nozzle extending downwardly from the fan casing to a position closely adjacent a floor, or other support, while an upwardly extending handle is provided for propelling the cleaner, the handle also serving as the support for a dust bag into which the fan discharges.

In order that cleaners of the above type may be used at a distance from an electric light socket or outlet, it is usually the custom to provide a relatively long flexible connection or cord which when the cleaner is not in use is usually coiled and supported on the cleaner handle. One of the features of the present invention resides in a novel means for supporting a flexible cord for a cleaner when not in use.

Another object of the invention is to provide a detachable brush which may be readily mounted on or detached from the nozzle, in which the arrangement is such that the brush may not be accidentally displaced when the cleaner is in use.

To these and other ends, the invention consists in the novel features and combination of parts to be hereinafter described and claimed.

In the drawings,

Fig. 1 is a side elevational view, showing a vacuum cleaner according to my invention;

Fig. 2 is a front view of the cleaner shown in Fig. 1, but partly broken away;

Fig. 3 is a rear view of the cleaner shown in Fig. 1, but partly broken away;

Fig. 4 is a sectional view, along line 4—4 of Fig. 2;

Fig. 5 is an enlarged view of the handle, partly in section, and broken away;

Fig. 6 is a sectional view, along line 6—6 of Fig. 1;

Fig. 7 is a bottom view of the cleaner nozzle, showing an improved form of brush, and brush attaching means; and

Fig. 8 is a fragmentary view of a means used for oiling one of the motor bearings.

Referring to the drawings in which I have illustrated my invention by showing a preferred embodiment thereof, the reference numeral 10 indicates, in general, my improved vacuum cleaner which comprises a fan casing 11, provided with a nozzle 12 integrally formed with respect to the casing 11 and extending downwardly and forwardly therefrom to terminate in a horizontally disposed elongated open mouth 13. The fan casing 11 is spirally shaped and has an axial inlet at 14, where the nozzle 12 joins the casing 11, and a radially disposed outlet 15 on which is mounted a dust bag 16. Closing the opposite end of casing 11 from nozzle 12 is a cover plate 17 having a plurality of axially disposed elongated bosses 18, on which is mounted the field 19 of an electric motor 20, the latter being provided with an end bearing plate 21 supported from plate 17 by means of bolts 22 which pass through bearing plate 21, field 19, and into bosses 18. One end of the motor shaft 23 is supported in a suitable bearing in plate 21, while the opposite end is supported in bearing 24 on cover plate 17 and extends into the fan casing 11. Mounted on the latter end of the shaft and within fan casing 11 is a centrifugal fan 25 provided with radially directed blades 26, which are cut away at 27, to permit air to readily pass between the blades from the nozzle 12.

A gasket 28 is interposed between cover plate 17 and fan casing 11, in order to make a dust-tight joint therebetween, while mounted on the outer side of plate 17 is a casing 29; casing 29, cover plate 17, and gasket 28 being secured to casing 11 by means of a plurality of screws 30 which pass through casing 29, plate 17 and gasket 28 and into casing 11.

Casing 29 is preferably pressed out of sheet material and provided with an inwardly directed open outer end 31 which leaves a substantial part of bearing plate 21 exposed,

and in this exposed portion of plate 21 there are provided a plurality of openings 32 through which a draft of air may be drawn by means of centrifugal fan 33, mounted on shaft 23, between armature 34 and bearing 24, the draft of air passing through motor 20 and radially outwardly through openings 35 in casing 29, there being a plurality of these openings spaced at suitable intervals around the casing 29.

In order that the cleaner may be readily moved on a floor, or other support, the nozzle 12 is provided on either side thereof with preferably integrally formed roller supports 36 and 37 having mounted therein roller shafts 38 and 39, on which are received rollers 40 and 41.

In order to propel the cleaner, a hollow handle 42 is provided having a yoke at its lower end composed of spaced bars 43 and 44, pivotally supported at their lower ends on casing 11, as by screws 45 and 46, and secured on handle 42 by means of bolts 47.

At the upper end of handle 42 is a grip 48 having a shank 48^a received in the end of the handle, while immediately below the grip 48 is a switch 49 for controlling the supply of power to the motor 20, flexible cord 50 being provided of sufficient length to permit the cleaner to be moved at a distance from a power outlet, and cord 50 passing into handle 42 at 51, and to switch 49 from which it passes through the handle to the separable connection 52, one half 53 of which is secured in the lower end of handle 42, and the other half 54 attached to cord 55, which passes through casing 29 at 56 and is connected to the motor 20 in the usual manner. Insulated bushings 57 and 58 are provided where the cords 50 and 55 pass into handle 42 and casing 29, respectively, bushing 57 and cord 50 being protected by plate 42^a which extends downwardly over bushing 57 and is provided with an open lower end through which the cord 50 passes.

The dust bag 16 is detachably secured to the outlet 15 in any usual or suitable manner, and is provided at its opposite end with a relatively large opening, through which the accumulations of dirt may be removed, the open end of the bag 16 being normally kept closed by means of spring clamp 59, which by means of chain, or other flexible connection 60, supports the upper end of the bag from the handle 42, the latter being provided with a hook 61 on which the chain is received. Dust bag 16 is provided with a relatively large pocket 62, adjacent the upper end thereof, in which the cord 50 may be carried when not in use.

In order to assist in removing accumulations of dirt from rugs, etc., a detachable nozzle brush 63 is provided, brush 63 comprising a relatively long, narrow strip 64, having mounted therein a plurality of tufts of bristles 65 of suitable material and having a pair of spaced clips, 66 and 67, each provided with an arcuate part 68, adapted to engage the forwardly extending lip 69 of nozzle 12, and a rearward extension 70 provided with a hook-like end 71 adapted to engage the extended ends of shafts 38 and 39, respectively.

In order to support the rear of the cleaner, a bracket 72 is mounted on casing 29, bracket 72 having a pair of spaced arms 73 and 74, which support shaft 75, on the outer ends of which are mounted rollers 76 and 77.

The plate 17 is provided with a radially directed boss 78, having a bore 79, in which is received oil wick 80 pressed against shaft 23 by means of spring 81 held in place by threaded plug 82. The boss 78 extends upwardly through a suitable opening in casing 29 and in cooperation with the opening assists in positioning the casing 29 on plate 17.

The operation of my improved form of vacuum cleaner will be readily understood from the above description and may be briefly described as follows:

The end of the cord 50 may be attached to a suitable power outlet, and upon tripping switch 49, the motor will be brought into operation, rotating fan 25 and creating a draft of air through nozzle 12, casing 11, and into dust bag 16. As the cleaner is moved back and forth on a carpet, rug, etc., accumulations of dust, or other dirt, will be entrained by the draft of air and pass into dust bag 16 where the dirt will be trapped, the dust bag being made of suitable material to permit the passage of air therethrough, but not solid materials. When the dust bag is filled to any extent with materials it may be removed from the cleaner, clip 59 detached, and the accumulation of dirt taken out through the opening in the end of the bag. The brush 63 may or may not be used, as occasion demands, being readily detachable from the nozzle. In attaching the brush the hook-line ends 71 are placed on shafts 38 and 39 and the forward end of the brush swung up into engagement with lip 69 of nozzle 12, whereupon the arcuate parts 68 may be sprung over the lip 69. The brush may be detached in the reversed manner. It is to be noted that the point of attachment of the brush 63 to the nozzle 12 is as close as possible to the end of the nozzle, and that the clips 66 and 67 pass under the end of the nozzle, thus effectively preventing accidental detachment of the brush if it should strike a piece of furniture, or another object.

The arrangement of the casing 29 and motor 19 is such that the motor may be effectively cooled by fan 33, the latter by being mounted on the motor shaft insuring that a draft of air will pass through the motor during all times when the latter is in operation. Furthermore, by using a separate fan for

this purpose, there is no danger of dust passing through casing 11, penetrating the working parts of the motor.

The pocket 62 forms a simple but efficient means for carrying the cord when the cleaner is not in use, not only effectively concealing the cord but protecting it from engagement with surrounding objects when the cleaner is being carried about.

While I have shown and described an improved arrangement for mounting the motor on the fan casing and for cooling the motor, I do not claim the same herein since these features have been made the subject matter of my copending application for improvements in vacuum cleaners, Serial No. 514,118, filed February 7, 1931.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all the details shown but is capable of modification and variation within the spirit of the invention and the scope of the appended claims.

What I claim is:

1. In a vacuum cleaner, suction means, power means for operating said suction means, a dust bag for receiving dirt discharged by said suction means, a flexible cord having one portion thereof connected to said power means, and means for carrying the unconnected portion of said cord on said bag in a substantially concealed position.

2. In a vacuum cleaner, suction means, power means for operating said suction means, a dust bag for receiving dirt discharged by said suction means, a flexible cord having one portion thereof connected to said power means, and means for carrying the unconnected portion of said cord on said bag in a substantially concealed position, said last named means comprising a pocket on said bag.

In witness whereof, I have hereunto set my hand this 2d day of July, 1928.

ALFRED C. GILBERT.