April 3, 1956 S. BUDA 2,740,494

VACUUM CLEANERS

Filed July 29, 1953 2 Sheets-Sheet 1

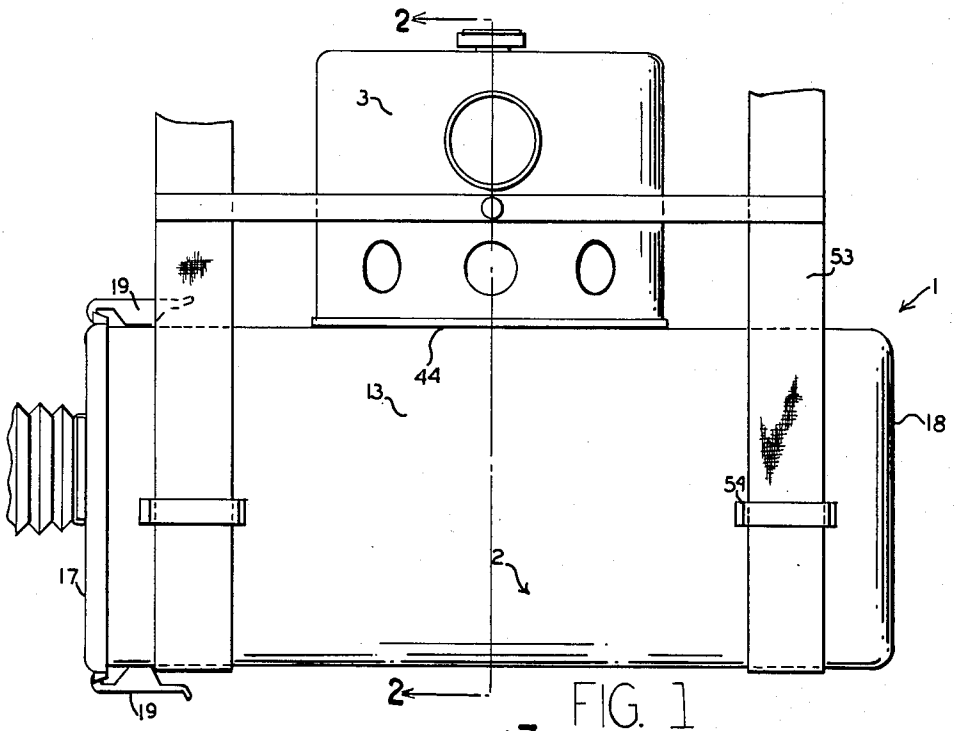


FIG. 1

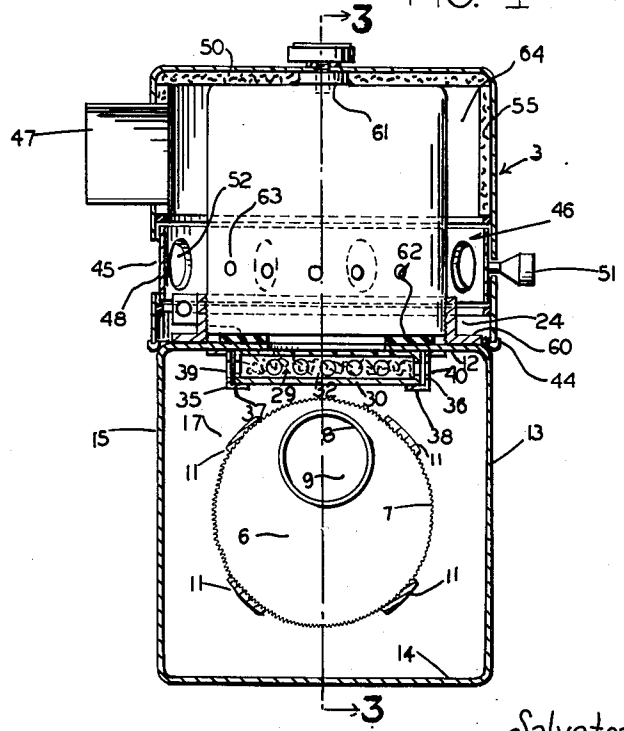


FIG. 2

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VACUUM CLEANERS

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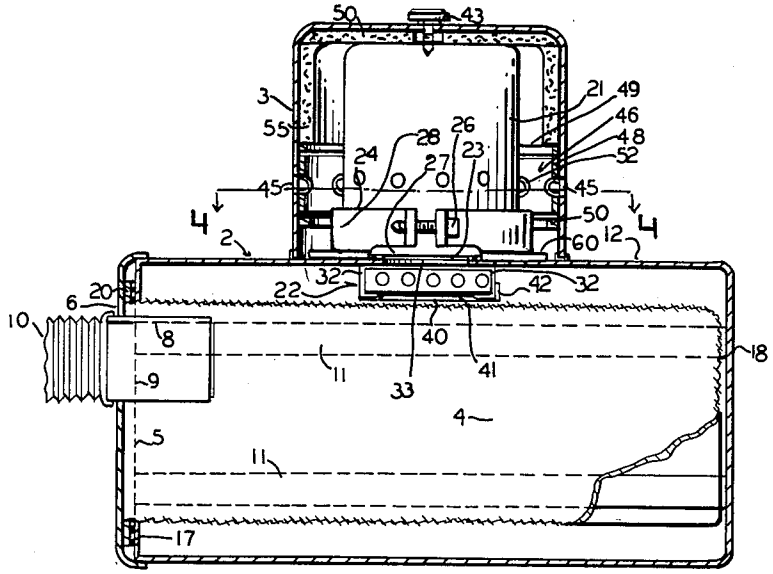


FIG. 3

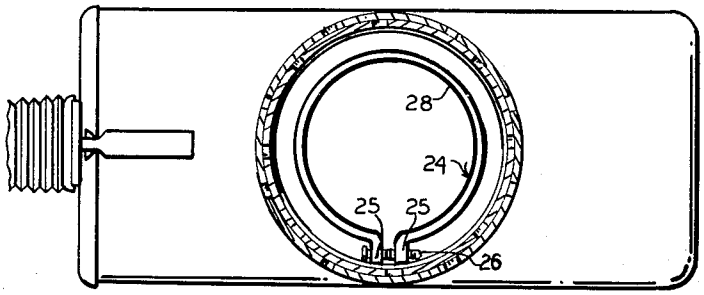


FIG. 4

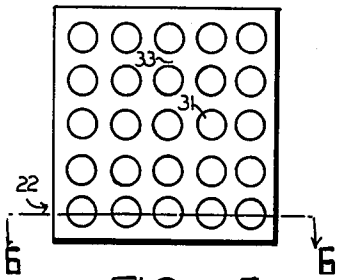


FIG. 5

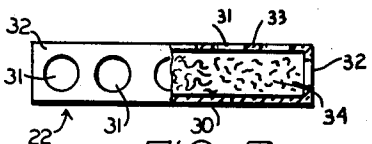


FIG. 6

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Patented Apr. 3, 1956

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VACUUM CLEANERS

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Application June 29, 1953, Serial No. 364,570

4 Claims. (Cl. 183—37)

The present invention relates particularly to an improvement in vacuum cleaners, more particularly to an improvement in a combination vacuum cleaner and blower.

This vacuum cleaner is particularly designed to maximize the efficiency of the suction motor as it draws air through the fabric walls of the dust bag, thus creating a stronger vacuum in the bag. This is accomplished by positioning the suction motor in relation to the bag so that air is drawn through the bag evenly over its entire fabric wall area. It is further an object of the present invention to provide a lightweight cleaner particularly suitable for portable use having an improved construction and relation of parts and which may readily be dismantled for repairs.

A further advantage in the present invention not only comes from the fact that the filter is separate from the dust bag through which dust laden air is initially drawn, but also from the fact that the bottom face of the filter close to the surface of the bag is covered and the air in the space surrounding the bag enters the filter through its four sides permitting the dust to settle in the bottom of the container to the extent that the dust may pass through the walls of the bag. Another feature of the present invention is that the air flow through the filter is uniform on all sides, and there is no tendency for one side to clog up and force the other sides to do all of the work. A further advantage is that the filter is centrally placed with reference to the suction fan of the motor and in the space in the container half way along the length of the bag.

These and other objects of the present invention will be more apparent from the following description when considered in connection with the accompanying drawings in which:

Figure 1 is a side elevation of the cleaner.

Figure 2 is a cross section of the cleaner taken along the line 2—2 of Figure 1.

Figure 3 is a cross section of the cleaner taken along the line 3—3 of Figure 2.

Figure 4 is a cross section of the cleaner taken along the line 4—4 of Figure 3.

Figure 5 is a plan view of the filter box as viewed from the top, and

Figure 6 is a fragmentary cross section along the line 6—6 of Figure 5.

In this invention, it is preferable that light weight metal such as aluminum be used in the fabrication of the housing.

Referring particularly to the drawings, there is provided a housing 1 having a lower rectangular shaped section 2 with a cylindrical section 3 positioned symmetrically on the center of the top 12 of the rectangular section. Within the rectangular section 2 having side walls 13 and 15, a top and bottom 12 and 14 respectively, and ends 17 and 18, is provided a removable dust bag 4 having fabric walls 7 with the usual degree of porosity for such bags. This bag is preferably cylindrical in shape and extends substantially the length of

the rectangular section 2. It is secured at its open end 5 to a metal cover 6 which is shaped to fit over the open end 17 of the rectangular section of the housing. A collar 8 enclosing an opening 9 in the cover 6 is provided for securing to the cover 6 the flexible or accordion pleated hose 10 through which dirt and dust are drawn into the bag 4. The cylindrical walls 7 of the bag are preferably supported symmetrically within the rectangular section 2 of the housing by four retaining strips 11 extending lengthwise of the bag on the outer surface thereof and secured between the ends 17 and 18 of the section 2. The cover 6 to which the bag 4 is secured is itself secured over the open end 17 of the section 2 by a pair of clamps 19 positioned on opposite side walls 12 and 14 of the rectangular section 2 of the housing. A gasket 20 may be provided on the inside of the cover 6 shaped to fit around the opening 8 in the end 17 on the rectangular portion of the housing.

The bag 4 at its end 5 is provided with a flange which is between the inner surface cover 6 and the outer surface of the annular end 17 of the rectangular section 2. The clamping members 19 clamp the flange of the bag with the gasket 20 tightly against the end 17 of the section 2 so that the bag may be readily removed for cleaning purposes simply by taking off the outer cover.

Suction is provided by a motor 21 positioned within the cylindrical section 3 which draws air through a filter arrangement 22 fitting below an opening 23 in the side wall 12 of the lower section 2. The motor 21 is secured within the cylinder section 3 by a substantially circular collar 24 having parallel flanged ends 25 through which is threaded a securing nut 26 which may be adjusted to hold the motor tightly within the collar. The collar has outwardly extending base flange 60 at its bottom end forming an L-shaped cross section which may be welded or bolted to the top wall 12 of the lower section 2 about the opening 23. The base flange is cut away along sections 27 toward the ends of the collar to permit the ends to be drawn together. The inner surface 28 of this collar may be knurled to provide a more suitable friction contact with the motor base. The filter arrangement 22 comprises a filter box 29 closed on its lower side 30 with a plurality of openings 31 on its four sides 32 and its top 33. The box itself is filled with a suitable filter material 34 such as fibre glass. The box is removably secured in the rectangular section 2 beneath the opening 23 by parallel side flanges 35 and 36, each having an inwardly flanged lower edge 37 and 38 respectively and which is secured on either side of the opening 23 within the section 2. To provide maximum circulation through the openings 31, the sides of each flange 35 and 36 have longitudinally extending slots 39 and 40 respectively. The end of each side flange 35 and 36 farthest from the open end 17 of the rectangular section is bent inwardly to form a stop 42 for the filter box 29. The flanges 35 and 36 may be headed or grooved at 41 for securely holding the filter box 29 in place. The cylinder section 3 may be removably secured over the motor by a retainer nut 43 threaded through the top of the cylinder section 3 into a boss 61 formed on the top of the motor. The inside of this cylinder section may be lined with an acoustic material 55 to deaden the vibrations of the motor. A gasket 44 may be secured around the lower edge of the cylinder section 3 to insure a tight fit against the rectangular section of the housing. Another gasket 62 is positioned between the base of the motor case 21 and the top wall 12 around the opening 23. This gasket not only prevents vibration and noise of the motor but also prevents air from leaking out before it is drawn in the suction element which may be at the bottom of the

motor in the position **70**. The lower section of the suction motor housing is provided with openings **63** through which the filtered air sucked up by the motor fan at the bottom of the suction motor will pass outward into the chamber **64** formed between the cylindrical section **3** and the motor housing. A plurality of openings **45** are circumferentially disposed about the walls of the cylinder section **3** to permit passage of air drawn through the filter from inside the cylinder section **2**.

These openings may be closed by means of a shutter device **46** in which event the apparatus will act as a blower with air drawn through the filter opening being forced rapidly through the blower opening **47** in the wall of the cylinder section **3**. The shutter device comprises an annular sheet **48** with openings **52**, the sleeve being slidingly secured over the openings **45** by upper and lower flange members **49** and **50** respectively. An operating handle **51** extending through a horizontal slot in the cylinder section wall and secured to the sleeve **48** is provided to open and close the shutter device by moving the openings **52** into and out of alignment with the openings **45**.

As this entire construction is extremely simple and light weight, it may be provided with a harness arrangement **53** secured to the rectangular section **2** by a plurality of metal cross straps **54**. The harness itself may be of any conventional arrangement suitable for securing the cleaner to the back of an individual.

Having now described my invention I claim:-

1. A vacuum cleaner having an elongated housing with a dust laden air intake at one end, an air porous dust bag extending substantially the length of the housing, means spacing said bag from the housing walls, said dust bag having an opening with the edge thereof secured around said air intake, an air outlet opening on the side of said housing, a motor housing and suction motor with a suction fan mounted over said air outlet opening, a filter support positioned about said air outlet having means for removably securing a filter over said air outlet in said elongated housing, a filter positioned in said last mentioned means comprising a casing having a plurality of openings in the sides and top and being enclosed on the bottom adjacent said dust bag.

2. A vacuum cleaner having an elongated housing with a dust laden air intake at one end, an air porous dust bag extending substantially the length of the housing but spaced from the walls thereof having an opening with the edge thereof secured around said air intake, an air outlet opening on the side of said housig, a suction motor with a suction fan mounted over said air outlet opening, a cylindrical motor housing secured over said motor, said motor housing having a plurality of openings, an annular sleeve having corresponding openings slidingly secured to the inside of said motor housing over said openings, a filter support having a filter therein mounted in said elongated housing extending over said air outlet, said filter being exposed on the sides and top and covered on the bottom adjacent said dust bag.

3. A vacuum cleaner having an elongated housing with a dust laden air intake at one end, an air porous dust bag extending substantially the length of the housing having an opening secured around said air intake, guide means longitudinal of and secured within said elongated housing for spacing said bag from the walls of said elongated housing, an air outlet opening on the side of said housing, a motor housing and suction motor with a suction fan mounted over said air outlet opening, a filter support having a filter therein mounted in said elongated housing extending over said air outlet, said filter being exposed on the sides and top and covered on the bottom adjacent said dust bag.

4. A vacuum cleaner having an elongated housing with a dust laden air intake at one end, an air porous dust bag extending substantially the length of the housing but spaced from the walls thereof having an opening with the edge thereof secured around said air intake, an air outlet opening on the side of said housing, a suction motor with a suction fan, means removably securing said motor over said opening comprising an open collar fitting around the end of the motor, means securing the edge of the collar adjacent the outlet opening to the housing said collar having sections adjacent the open ends thereof unsecured to the housing, bolt means acting between said sections for tightening the collar about said motor, a filter support having a filter therein mounted in said elongated housing extending over said air outlet, said filter being exposed on the sides and top and covered on the bottom adjacent said dust bag.

References Cited in the file of this patent

UNITED STATES PATENTS

110,976	Fergerson	July 28, 1914
1,739,082	Simmons et al.	Dec. 10, 1929
2,008,067	Faber	July 16, 1935
2,064,587	Carlstedt	Dec. 15, 1936
2,158,109	De Remer et al.	May 16, 1939
2,273,210	Lowther et al	Feb. 17, 1942
2,276,844	Holm-Hansen	Mar. 17, 1942
2,335,428	Lofgren	Nov. 30, 1943
2,438,133	Sparklin	Mar. 23, 1948
2,439,182	Nuffer et al	Apr. 6, 1948

FOREIGN PATENTS

656,550	France	May 8, 1929