Jan. 17, 1956 M. A. KENT 2,731,194

VACUUM CLEANER BLOWER

Filed Feb. 2, 1953 2 Sheets-Sheet 1

Fig. 1.

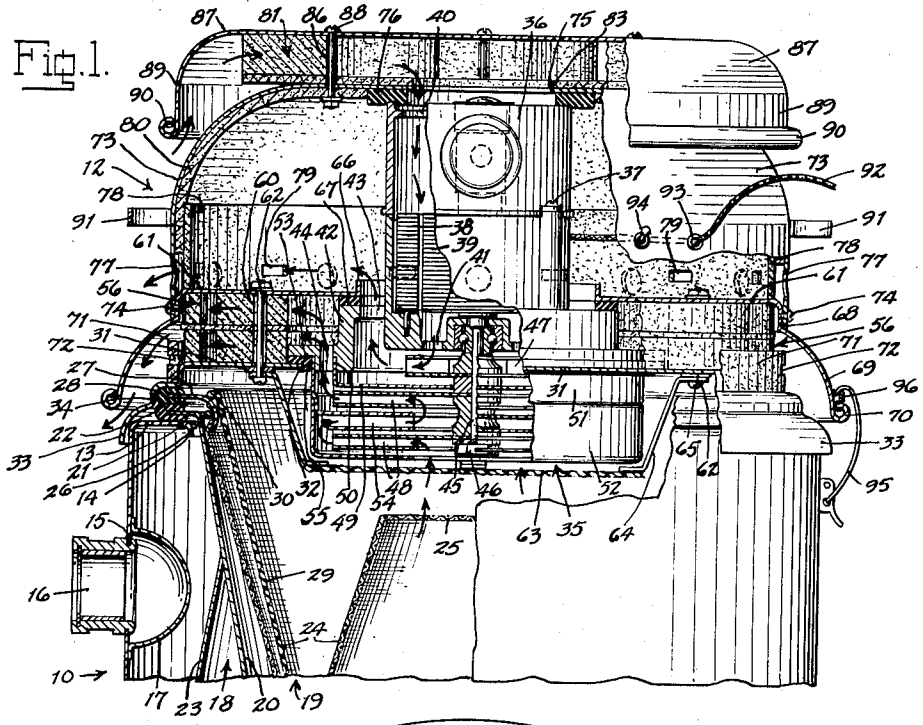
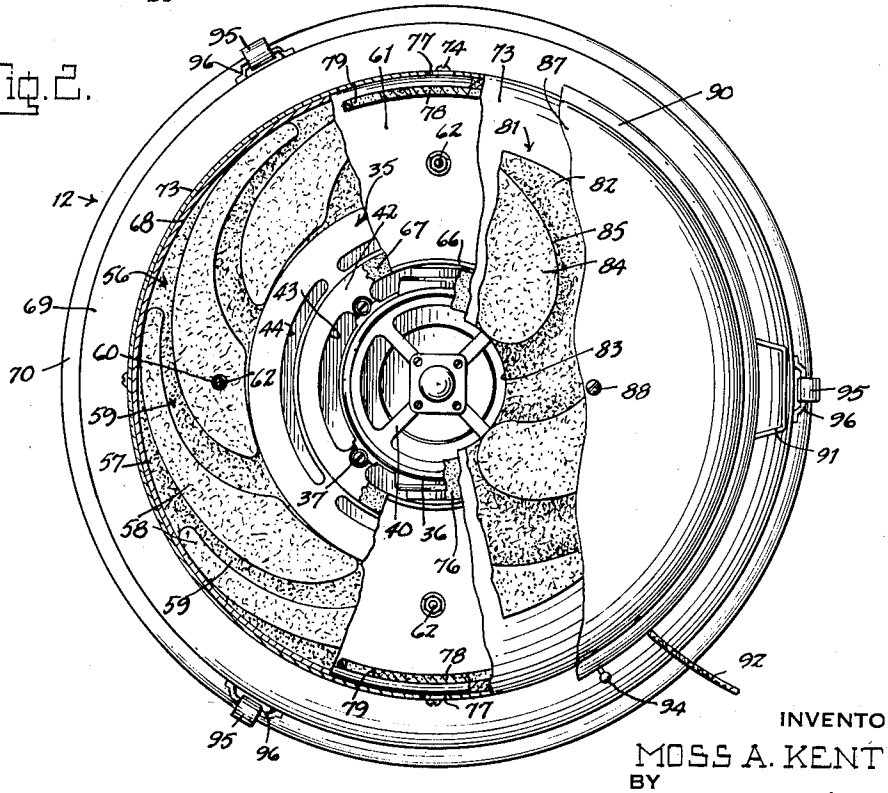


Fig. 2.



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Jan. 17, 1956 M. A. KENT 2,731,194

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Filed Feb. 2, 1953 2 Sheets-Sheet 2

Fig. 3.

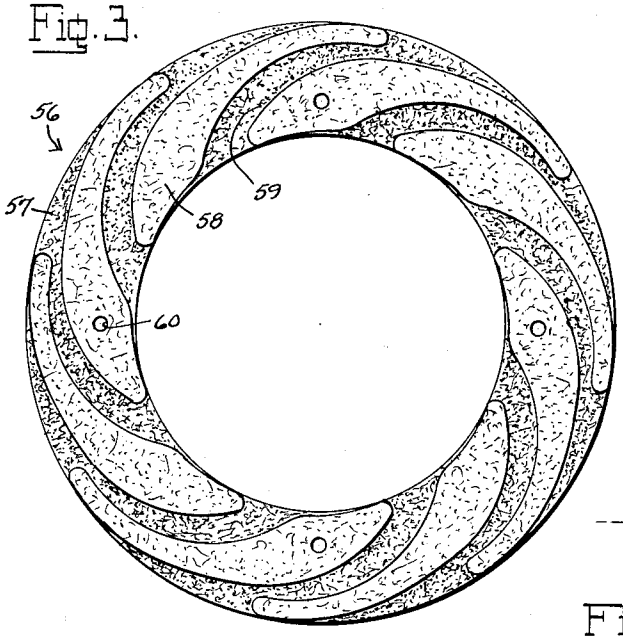


Fig. 7.

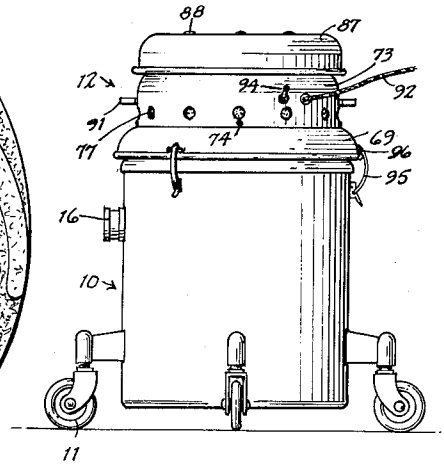


Fig. 4.

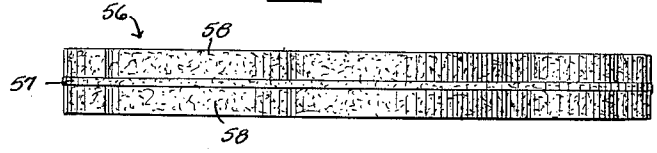


Fig. 5.

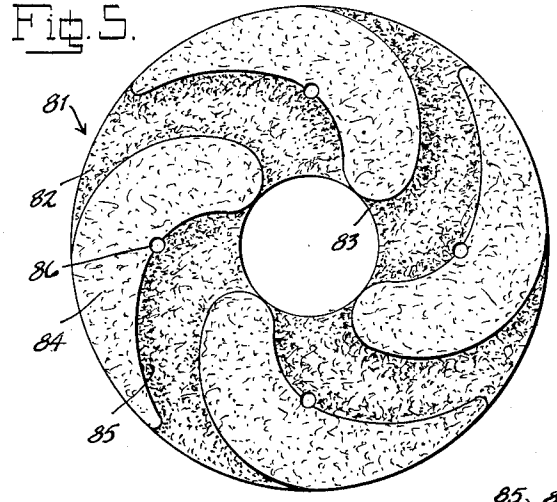
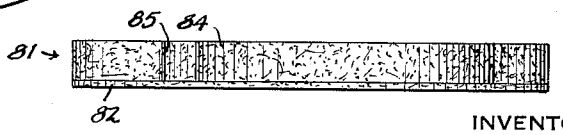


Fig. 6.



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2,731,194

VACUUM CLEANER BLOWER

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Application February 2, 1953, Serial No. 334,464

17 Claims. (Cl. 230—117)

The present invention relates to an improved vacuum cleaner, particularly of the type adapted for relatively heavy duty, as in office buildings, apartment houses, hotels, and the like, and which is also suitable for use in large homes.

A principal object of the invention is to provide a vacuum cleaner in which noise is reduced to a minimum. Noise in a vacuum cleaner results from two causes, namely, the vibration of movable parts and the transmission of such vibrations to the surrounding metal structure, and the sound produced by the movement of air through the cleaner. It is proposed, according to the present invention, to provide a vacuum cleaner in which transmission of vibrations in the moving parts is substantially eliminated, and in which the air is drawn through muffler units to effectually dissipate the sound of its movement through the cleaner.

A further object is to provide a vacuum cleaner wherein the air carrying dirt into the cleaner bypasses the fan driving motor, so that the latter is protected from contamination by particles of dirt or moisture that may be carried in this air after it has passed through the dirt filter means provided in the cleaner.

A further object is to provide a vacuum cleaner in which the motor is air cooled, and wherein a flow of air is drawn into the cleaner through the motor casing, this flow of air being entirely independent of the bypassed flow of dirt laden air.

It is further proposed to provide muffler means through which the motor cooling air is drawn, and further to provide muffler means tor the bypassed dirt laden air, whereby the velocity and the sound of the moving air is substantially reduced prior to its exit from the cleaner.

Other objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawings:

Fig. 1 is a vertical sectional view of the vacuum cleaner according to the invention, the lower portion of the dirt receptacle being broken away;

Fig. 2 is a broken away view partially in top elevation and partially in horizontal section;

Fig. 3 is a plan view of the muffler unit for the dirt moving air;

Fig. 4 is a side elevation thereof;

Fig. 5 is a plan view of the muffler unit for the motor cooling air;

Fig. 6 is a side elevation thereof; and

Fig. 7 is a side elevation of the complete vacuum cleaner, on a reduced scale.

Similar reference characters indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawing, and more particularly to Figs. 1, 2 and 7, the vacuum cleaner, according to the illustrated exemplary embodiment of the invention, comprises a receptacle generally designated as **10**, supported for mobility on suitable casters **11**, and a suction head, generally designated as **12**, removably mounted upon the upper end of the receptacle. The receptacle **10** is a rigid structure, preferably of sheet metal, and is open at its upper end where it is provided with an inturned horizontal annular flange **13** bent downwardly at its inner edge, as at **14**, to provide a smooth depending stiffening rim. The flange **13** provides a support for a dust bag and its associated frame and shield, as well as for the suction head, as will presently more fully appear.

The receptacle is provided in its cylindrical side wall, in suitably spaced relation to its upper and lower ends, with an opening **15** in which is secured a fitting **16** to which one end of a flexible hose is adapted to be detachably connected. Interiorly disposed in line with the fitting **16** is a scoop-shaped deflecting baffle **17** which has its discharge end extending substantially parallel to the inner face of the wall of the receptacle, so that the entering dirt laden air has imparted to it a rotary movement following the inner side of the receptacle wall. This has the effect of minimizing the noise of inrushing air, and also directs the air in relation to the filtering structure, presently to be more fully described, in the most effectual manner for separating the air carried dirt particles and depositing them within the receptacle.

Mounted within the receptacle is a dust bag shield assembly generally designated as **18**, and a dust bag assembly generally designated as **19**. The dust bag shield assembly comprises a downwardly and inwardly tapered annular body **20** formed of sheet metal, provided at its upper edge with an outwardly extending flange **21** having mounted thereon an annular sealing gasket **22** of rubber or similar material, which seats upon the supporting flange **13** of the receptacle. The lower end of the dust shield (not shown) is open and may be provided with a rigid screen, and intermediate its upper and lower ends it is provided exteriorly with an outwardly and downwardly extending skirt **23**, preferably welded thereto, and which has its lower end spaced radially outwardly from the lower end of the shield **20**.

While the specific structure of the shield assembly forms no part of the present invention, it is pointed out that the skirt **23** is especially adapted for preventing water from passing to and through the dust bag upon such occasions when the vacuum cleaner is being used to clean water flushed surfaces. In such case, the dirt laden water will run down the outer surface of the skirt **23** and drop into the receptacle at a substantial distance outwardly from the lower open end of the shield, and will thus be prevented, to a large extent, from being drawn into contact with the dust bag.

The dust bag assembly **19** includes a bag **24** of woven material which, when fully extended, is substantially in the shape of an inverted truncated cone, closed at its lower end as by a portion **25** but open through its larger diameter upper end. At its upper end the bag is secured by a tie wire or core **26** to a transversely curved metal bag mounting ring **27** which has mounted upon its outer periphery an annular sealing gasket **28** of rubber or similar material, and which seats upon the sealing gasket **22** of the shield assembly **18**.

A truncated cone shaped dust bag positioning member **29**, formed of relatively heavy wire mesh, is provided at its upper large diameter end with a mounting ring **30**, soldered or otherwise suitably secured thereto, and which rests in centered relation upon the upper side of the metal bag mounting ring **27**, the lower smaller diameter end being open and having the bag folded about its edge so

that when suction is created within the cleaner, the bottom 25 of the dust bag is carried upwardly within the positioning member 29.

The suction head 12 comprises a circular mounting base member 31 formed of sheet metal having a central circular opening 32 and an outer rim flange 33 of stepped shape in cross section to provide an annular shouldered recess 34 which receives the gasket 28 of the dust bag assembly, the rim flange being flared outwardly and downwardly below the recess 34 to extend slightly below the upper end of the receptacle 10 with a slight clearance so that compression of the sealing gaskets may take place without contact of the rim flange with the receptacle and at the same time the rim flange substantially centers the suction head when placing it upon the receptacle.

The motor and fan unit, generally designated 35, comprises a centrally disposed motor housing 36 of hollow cylindrical form, preferably constructed of upper and lower separable parts secured by screws 37, and within which the field 38, armature 39, and other electric motor parts are disposed. At its upper end the housing is provided with a spider grill 40 providing entrance openings for air, and at its lower end is provided with air outlet openings 41. Integrally formed upon the lower portion of the housing 36 is a laterally extending annular mounting frame 42 of stepped form in cross section, and including a horizontal upper portion connected to the housing in upwardly spaced relation to its lower end, a vertical wall portion in concentric spaced relation to the lower end of the housing, and a horizontal lower portion extending outwardly from the lower end of the vertical wall portion. The horizontal upper portion of the frame 42 is provided with a circumferentially arranged series of slots 43 extending vertically therethrough, and the horizontal lower portion is similarly provided with a circufmerentially arranged series of slots 44, these slots, respectively, providing passages for the motor cooling air and the dirt moving air, as will hereinafter more fully appear.

The motor shaft 45 projects vertically downwardly from the motor housing and has rigidly secured thereon, by means of a retaining nut 46 screwed upon its lower end, a motor cooling centrifugal suction fan 47 for drawing cooling air through the motor housing, and a pair of two-stage centrifugal suction fans 48 for drawing dirt carrying air, as will presently more fully appear. The space within which the upper fan 47 operates is isolated from the space within which the lower fans 48 operate by a closure in the form of a centrally apertured tray-like circular sheet metal member 49, having its upwardly extending rim fitted and secured within an annular recess 50 formed in the lower horizontal portion of the mounting frame 42 inwardly of the slots 44 and outwardly of the slots 43, so that air entering the upper end of the motor housing is drawn downwardly therethrough and out through the openings 41, from which it is directed by the fan 47 outwardly and upwardly through the slots 43, as indicated by the direction arrows.

The fans 48 operate in an enclosure consisting of upper and lower centrally apertured tray-like circular sheet metal members 51 and 52. The upper enclosure member 51 encloses the upper fan 48 and has its upwardly extending rim fitted and secured upon the vertical annular wall of a peripheral right angle recess 53 provided in the under side of the lower horizontal portion of the mounting frame 42 outwardly of the slots 44, and the lower member 52, which has its upwardly extending rim fitted and secured upon the rim of the upper member 51, encloses the lower fan 48. Air drawn upwardly through the dust bag enters the lower fan 48 through the central aperture of the lower enclosure member 52, being then directed outwardly by the lower fan against the rim of the enclosure member. Fixed guide vanes 54 are provided upon the under side of the upper enclosure member 51 to direct the air from the lower fan 48 inwardly to the central aperture through which it flows to the upper fan 48, which directs it outwardly and upwardly through the slots 44, as indicated by the direction arrows.

Within the peripheral recess 53 of the mounting frame 42, in contacting surrounding relation to the rim of the enclosure member 51, there is disposed a gasket ring 55 of resilient rubber or similar material, and of right angle shape in cross-section, its vertical downwardly extending flange portion engaging within the circular opening 32 of the base member 31 in substantially closely fitting relation, and its horizontal outwardly extending upper portion seating upon the upper surface of the base member 31 in surrounding relation to the hole 32. The gasket 55 thus provides a resilient support which centrally positions the motor and fan unit 35 and insulates it against metal-to-metal contact both vertically and laterally with respect to the base member.

In the use of the present cleaner, the dirt-moving air drawn through the two-stage centrifugal fan 48 is exhausted through the slots 44, and passes through a muffler unit generally designated 56 and shown alone in Figs. 3 and 4. This muffler unit is formed of felt or other suitable sound absorbing material and includes a relatively stiff flat ring member 57 upon the upper and lower sides of which are adhesively connected a series of spaced block members 58, compressed to a lesser extent than the ring member, and so shaped as to provide a series of substantially spirally curved slot passages 59 extending from the inner periphery to the outer periphery of the ring 57. The members 58 are of such thickness and width that each provides a substantial body of sound absorbing fibrous material, and their curved walls are of such shape that the slot passages 59 are slightly converging toward their outer ends providing progressively restricted passage ways for the discharging air.

The spiral arrangement of the passage ways prevents a direct outward radial movement of the air so that sound waves moving through the passages are successively baffled back and forth and this, in combination with the gradual restriction of the movement of the air, effectually minimizes the sound emanating from the cleaner. A suitable number of holes 60 are provided through the muffler unit for the reception of assembly bolts, as will presently more fully appear. The internal diameter of the muffler unit is such that it fits in concentric relation about the outer edge of the mounting frame of the motor and fan unit 35, and the outer diameter is substantially equal to the upper flat side of the base member 31.

Upon the upper side of the muffler unit there is engaged a muffler cover member 61 formed of sheet metal, the muffler unit and the cover member being secured upon the base member 31 by vertical bolts 62 engaged upwardly through the holes 60 of the muffler unit and suitable holes provided in the base member and cover member, the securing nuts of these bolts being preferably arranged upon the upper side of the cover member.

The bolts 62 also serve to secure in place a flat circular screen 63 of relatively stiff woven wire, disposed in spaced relation beneath the motor and fan unit 35 and provided with bracket arms 64 soldered or otherwise suitably secured at their lower horizontally bent ends to the screen, and having their upper horizontally bent and apertured ends engaged by the bolts above the bolt heads, insulating resilient washers 65 of rubber or the like being interposed between the bracket ends and the under side of the base member 31. The screen serves as a foraminous barrier to prevent the end of the dust bag from being drawn into the fan unit, and also constitutes a substantially rigid supporting base for the suction head 12 when the latter is removed from the receptacle 10, being for this purpose flat and of substantially large diameter and disposed in a plane below the rim 33 of the base member 31.

The muffler cover member 61 is formed of sheet metal and is of circular shape and is provided with a central

opening defined by an upstanding rim 66 having an internal diameter substantially in register with the outer circumferential walls of the slots 43 through which the motor cooling air is exhausted. The inner marginal portion of the cover member seats upon a gasket ring 67 of rubber or the like, provided upon the upper side of the upper horizontal portion of the mounting frame 42 of the motor and fan unit 35, its internal diameter being preferably the same as the internal diameter of the rim 65. The gasket ring 67 together with the gasket ring 55 serves to support the motor and fan unit 35 in a substantially floating relationship without metal-to-metal contact with any of the surrounding metal structure. The two gasket rings are brought under compression through tightening of the bolts 62 which also bring the muffler unit under slight compression.

The muffler cover member is provided with a peripheral rim which includes an upper substantially cylindrical portion 68 and a downwardly and outwardly flared skirt portion 69 terminating in an annular stiffening bead 70, the lower end of the skirt portion being outwardly spaced from the rim 33 of the base member 31 and disposed above its lower edge so that an exit slot for the exhausting air is provided beneath the skirt portion and the rim 33, the exhausting air being diverted downwardly as it moves out of the muffler by the downward and outward flare of the skirt portion 69, as indicated by the direction arrows. This serves to effectually dissipate the force and sound of the exhausting air.

Mounted upon the rim 33 in its upper angular recessed portion above the recess 34, is a baffle ring 71 in the form of a strip of felt or similar sound absorbing material which extends a short distance above the upper side of the base member 31, in surrounding relation to the lower portion of the muffler unit, its upper edge being in spaced relation below the central ring member 57 of the muffler unit, so that a restricted exit slot is provided within the skirt portion 69. At suitable points this ring member is provided with slot openings 72 having their lower sides substantially in line with the upper surface of the base member and which are, in effect, scuppers for allowing the drainage of condensation moisture which may accumulate upon the base member in the muffler passages as a result of operating the vacuum cleaner to draw up dirt laden water, in which case the air moving through the muffler may have a heavy moisture content. The ring member 71 is preferably cemented to the wall of the base member 31 so that moisture is prevented from flowing down between the ring member and such wall.

It will be seen from the above that the dirt moving air flowing through the muffler unit 56 bypasses the motor, and that the motor cooling air discharges through the slots 43 into the space above the muffler cover 61 surrounding the upper part of the motor housing 35. This space is enclosed by a circular dome member 73 formed of sheet metal having a vertical side wall engaged at its lower marginal edge portion about the cylindrical wall 68 of the muffler cover member and secured thereto by screws 74. The dome member curves upwardly and inwardly to a horizontal top wall provided with a central circular opening 75 above and in substantial axial alignment with the open upper end of the motor housing 36.

The opening 75 is somewhat smaller in diameter than the cylindrical wall of the housing 36 so that it is inwardly offset from such cylindrical wall, and between the under side of the dome member, immediately surrounding the opening 75, and the upper edge of the cylindrical wall of the motor housing, there is provided a relatively thick resilient gasket ring 76 formed of sponge rubber or other suitable soft resilient material, and which is under substantial compression created by the fastening in place of the dome member by the screws 74. Thus the dome member is stabilized by its support through the gasket 76 by the motor unit without metal-to-metal contact therewith, so that transmission of vibrations created in the motor unit 36 to the dome member is substantially eliminated.

A series of circumferentially spaced outlet holes 77 is provided in the vertical wall portion of the dome member adjacent the muffler cover member 61, and in inwardly spaced relation thereto there is provided a vertically disposed baffle ring 78 of felt or other suitable sound absorbing material, and which is provided with a series of circumferentially spaced air outlet slots 79 in staggered relation to the holes 77. Thus, air flowing outwardly through the slots 79 is baffled by the vertical wall of the dome member and travels in the annular space between this vertical wall and the baffle member before it emerges through the holes 77.

The dome member is further sound proofed by a lining 80 consisting of a relatively thick layer of felt or other suitable sound absorbing material, which extends from the outer periphery of the gasket 76 along the curved wall portion and downwardly between the vertical wall portion and the baffle member 78 with its lower edge terminating just above the air outlet holes 77. The lining 80 is preferably cemented to the inner surface of the dome member, the baffle member 78 is preferably cemented to the lining 80, and in the assembled relation of the dome member, the lower edge of the baffle member rests snugly under slight compression under the muffler cover member 61.

A muffler unit, indicated generally as 81 and shown alone in Figs. 5 and 6, is mounted upon the upper side of the dome member so as to muffle the passage of air entering the upper end of the motor housing through the opening 75. The velocity of this motor cooling air drawn by the fan 47 is substantially less than the velocity of the dirt moving air drawn by the two-stage fan 48, and consequently the muffler unit 81 requires substantially less muffling capacity than the muffler unit 56. It consists of a relatively stiff flat ring member 82, the central opening 83 of which corresponds in diameter to the opening 75 of the dome member and which is provided upon one side with a series of block members 84 formed of felt or other suitable sound deadening material, and spaced apart to provide passages 85 between them. The block members are substantially less in number than the block members of the muffler unit 56, and are spaced apart a substantially greater distance so that there are fewer air passages, and these are substantially wider than the air passages 59 of the muffler unit 56. A number of bolt receiving holes 86 are provided vertically through the muffler unit.

A circular cap member 87, formed of sheet metal, surmounts the muffler unit 81 and is secured to the dome member by vertical bolts 88 extending through the bolt holes 86 and through holes provided in the cap member and the dome member, the nuts securing these bolts being at the inner side of the lining layer 80 of the dome member. Tightening of the bolts causes the cap member to place the muffler unit 81 under slight compression. The cap member is provided with a downwardly extending skirt 89 provided at its edge with a stiffening bead 90, this bead being outwardly spaced from the curved wall portion of the dome member and being substantially below the upper horizontal wall, so that a restricted annular entrance passage for air is provided between the bead 90 and the dome member. The direction arrows indicate the path of the motor cooling air as it is drawn through the motor housing 36 by the fan 47.

Handles 91 are riveted or otherwise suitably secured at diametrically opposite points upon the dome member for convenience in handling the suction head in placing it upon the receptacle 10 or removing it therefrom. The power line 92 for the motor extends through a fitting 93 secured in the vertical wall portion of the dome member and an on-and-off switch 94 connected in the power line is also mounted in this vertical wall portion.

The suction head is removably secured upon the receptacle **10** by suitably spaced hasp type clamps **95** secured upon the wall of the receptacle **10**, and which hook into brackets **96** welded or otherwise suitably secured upon the skirt portion **69** of the muffler cover member directly above the stiffening bead **70**. The securing of the suction head places the supporting gaskets **22** and **28** of the shield and dust bag assembly under compression.

What is claimed is:

1. In a vacuum cleaner, a receptacle having an open end and an inlet for dirt-moving air, and a suction head forming a closure for the open end of said receptacle, said suction head including a centrally apertured base member engageable on said receptacle, a motor-fan unit supported by said base member within the central aperture thereof, said unit having a motor housing providing a cooling air passage having inlet and outlet openings, a motor-driven first fan means arranged to move cooling air through said passage, a motor-driven second fan means arranged to draw dirt-moving air into and through said receptacle, a first space-enclosing means enclosing a space in which said first fan means operates, and a second space-enclosing means enclosing a space in which said second fan means operates, first and second air outlet means for said respective first and second space-enclosing means, a dome member surrounding said motor housing and enclosing a space in which said first air outlet means exhausts, said dome member having air outlet means opening to the atmosphere and having a top wall superimposed on said motor housing and provided with a central opening in axial line with said cooling air passage, and a muffler unit upon the top wall of said dome member interposed between said central opening thereof and the atmosphere.

2. The invention defined in claim 1, further characterized by a muffler unit interposed between said second air outlet means and the atmosphere.

3. The invention as defined in claim 1, further characterized by a muffler unit supported on said base member interposed between said second air outlet means and the atmosphere, and a sound-absorbing baffle ring carried by said base member in surrounding relation to said muffler unit.

4. The invention as defined in claim 1, further characterized by a muffler unit supported on said base member interposed between said second air outlet means and the atmosphere, and a sound-absorbing baffle ring carried by said base member in surrounding relation to said muffler unit, said baffle ring having a series of spaced outlet holes substantially flush with the muffler unit-supporting surface of said base member.

5. The invention as defined in claim 1, further characterized by said dome member including an annular wall having a series of spaced outlet holes opening to the atmosphere.

6. The invention as defined in claim 1, further characterized by said dome member including an annular wall having a series of spaced outlet holes opening to the atmosphere, and a sound-absorbing baffle ring in concentric inwardly spaced relation to said annular wall and laterally opposed to said spaced outlet holes, said baffle ring having a series of spaced outlet holes in staggered relation to said outlet holes of said annular wall.

7. The invention as defined in claim 1, further characterized by a yieldable gasket ring concentrically outwardly of said central opening of said dome member interposed between the top wall of said dome member and the upper end of said motor housing and sealing said central opening of said dome member from said space enclosed by said dome member.

8. The invention as defined in claim 1, further characterized by a cap member engaged over said muffler unit, and fastening means connecting said cap member to said dome member and extending through said muffler unit.

9. The invention as defined in claim 1, further characterized by said muffler unit having a central opening in axial line with said central opening of said dome member and having passages extending from said central opening of said muffler unit to its outer periphery, and a cap member engaged over said muffler unit closing said central opening of said muffler unit and in axially opposed relation to said central opening of said dome member.

10. The invention as defined in claim 1, further characterized by said muffler unit having a central opening in axial line with said central opening of said dome member and having passages extending from said central opening of said muffler unit to its outer periphery, and a cap member engaged over said muffler unit closing said central opening of said muffler unit and in axially opposed relation to said central opening of said dome member and including a peripheral downwardly extending skirt portion outwardly of the periphery of said muffler unit and extending downwardly below the top wall of said dome member and outwardly spaced at its lower edge from said dome member to provide an annular air inlet opening.

11. In a vacuum cleaner, a receptacle having an open end and an inlet for dirt-moving air, and a suction head forming a closure for the open end of said receptacle, said suction head including a centrally apertured base member engageable on said receptacle, a motor-fan unit supported by said base member within the central aperture thereof, said unit having a motor housing providing a cooling air passage having inlet and outlet openings, an annular mounting frame connected to and surrounding said housing including a radially inward upper wall portion, a radially outward lower wall portion, and a connecting wall portion between said upper and lower wall portions, said lower wall portion being seated on said base member, a motor driven first fan means arranged to move cooling air through said passage, a motor-driven second fan means arranged to draw dirt-moving air into and through said receptacle, a first space-enclosing means connected to said mounting frame enclosing a space in which said first fan means operates, a second space-enclosing means connected to said mounting frame enclosing a space in which said second fan means operates, said upper wall portion having air outlet openings for said first space-enclosing means, and said lower wall portion having air outlet openings for said second space-enclosing means, an annular muffler unit supported on said base member in surrounding relation to said mounting frame having passages extending between said outlet openings of said lower wall and the atmosphere, a centrally apertured cover member superimposed on said muffler unit and superimposed at its inner peripheral marginal portion on said upper wall portion of said mounting frame outwardly of said air outlet openings thereof.

12. The invention as defined in claim 11, further characterized by fastening means connecting said cover member to said base member and extending through said muffler unit.

13. The invention as defined in claim 11, further characterized by a yieldable gasket ring interposed between said lower wall portion of said mounting frame and said base member, and a yieldable gasket ring interposed between said upper wall of said mounting frame and said cover member.

14. The invention as defined in claim 11, further characterized by a dome member secured to said cover member in surrounding relation to said motor housing and enclosing a space in which said outlet openings of said upper wall portion of said mounting frame exhaust, said dome member having air outlet means opening to the atmosphere and a top wall superimposed on said motor housing and provided with a central opening in axial line with said cooling air passage.

15. The invention as defined in claim 11, further characterized by a dome member secured to said cover member in surrounding relation to said motor housing and enclosing a space in which said outlet openings of said upper wall portion of said mounting frame exhaust, said dome member having air outlet means opening to the atmosphere and a top wall superimposed on said motor housing and provided with a central opening in axial line with said cooling air passage, and a second muffler unit upon the top wall of said dome member interposed between said central opening thereof and the atmosphere.

16. The invention as defined in claim 11, further characterized by a dome member secured to said cover member in surrounding relation to said motor housing and enclosing a space in which said outlet openings of said upper wall portion of said mounting frame exhaust, said dome member having air outlet means opening to the atmosphere and a top wall superimposed on said motor housing and provided with a central opening in axial line with said cooling air passage, a second muffler unit upon the top wall of said dome member interposed between said central opening thereof and the atmosphere, a cap member engaged over said muffler unit, and fastening means connecting said cap member to said dome member and extending through said second muffler unit.

17. The invention as defined in claim 11, further characterized by a dome member secured to said cover member in surrounding relation to said motor housing and enclosing a space in which said outlet openings of said upper wall portion of said mounting frame exhaust, said

dome member having air outlet means opening to the atmosphere and a top wall superimposed on said motor housing and provided with a central opening in axial line with said cooling air passage, a second muffler unit upon the top wall of said dome member interposed between said central opening thereof and the atmosphere, a yieldable gasket ring interposed between said lower wall portion of said mounting frame and said base member, a yieldable gasket ring interposed between said upper wall of said mounting frame and said cover member, and a yieldable gasket ring concentrically outwardly of said central opening of said dome member interposed between the top wall of said dome member and the upper end of said motor housing and sealing said central opening of said dome member from said space enclosed by said dome member.

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