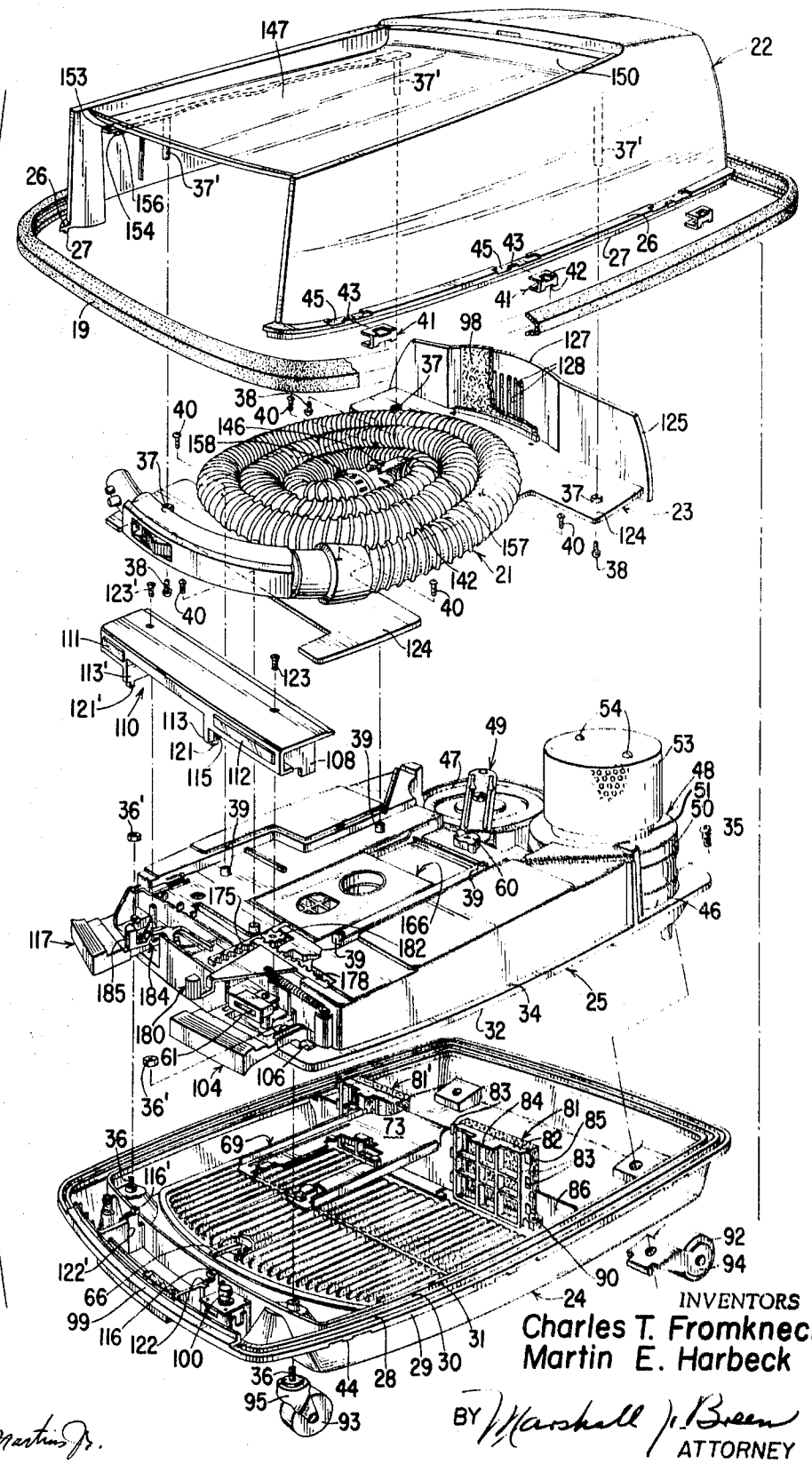
June 29, 1971 C. T. FROMKNECHT ET AL 3,588,944

CANISTER VACUUM CLEANER

Filed Jan. 8, 1970 5 Sheets-Sheet 1

Fig.1



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CANISTER VACUUM CLEANER

Filed Jan. 8, 1970 5 Sheets-Sheet 2

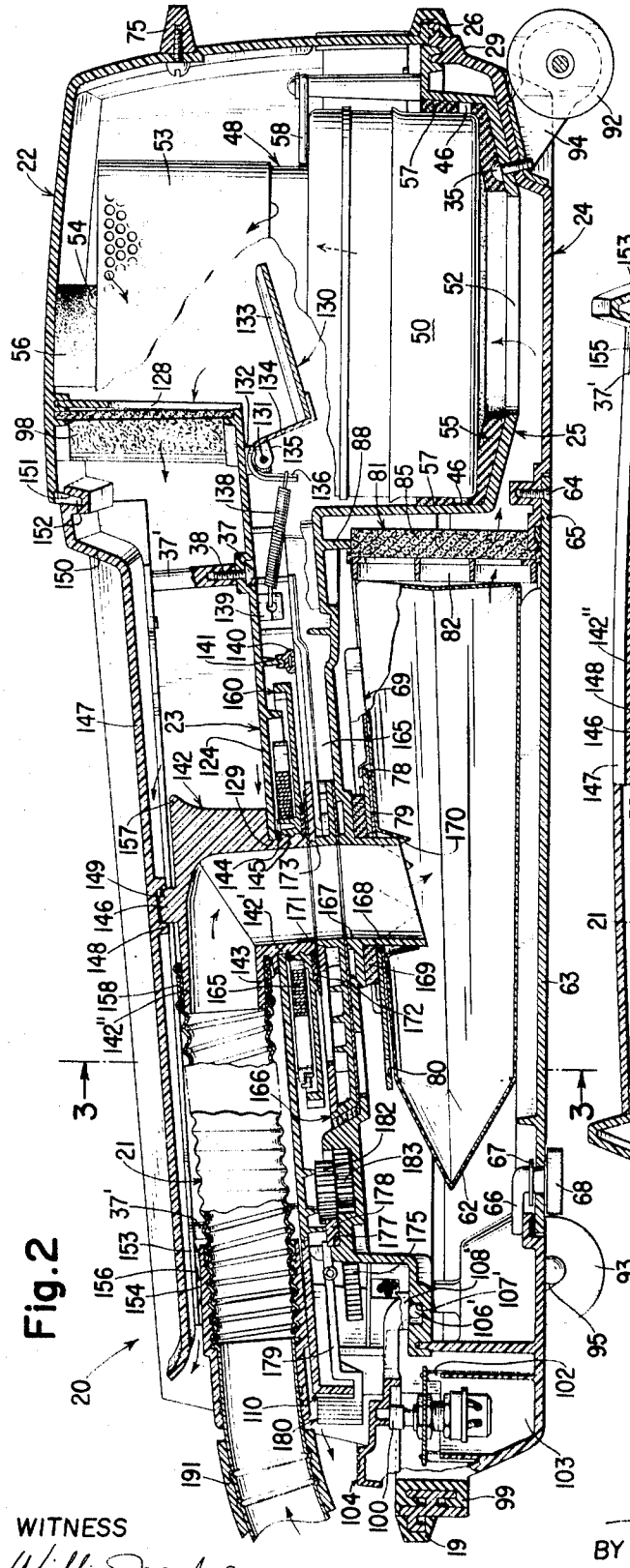


Fig.2

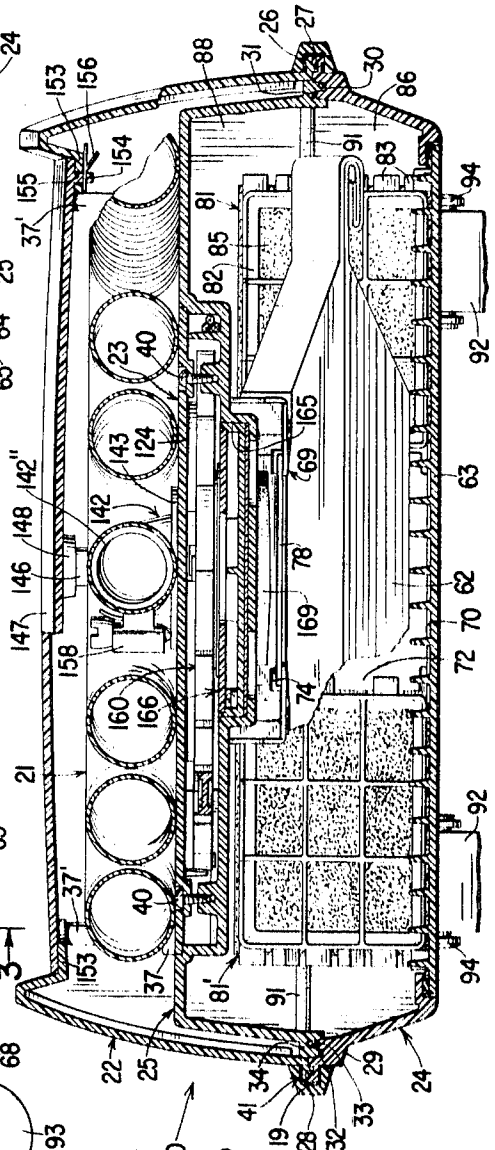


Fig.3

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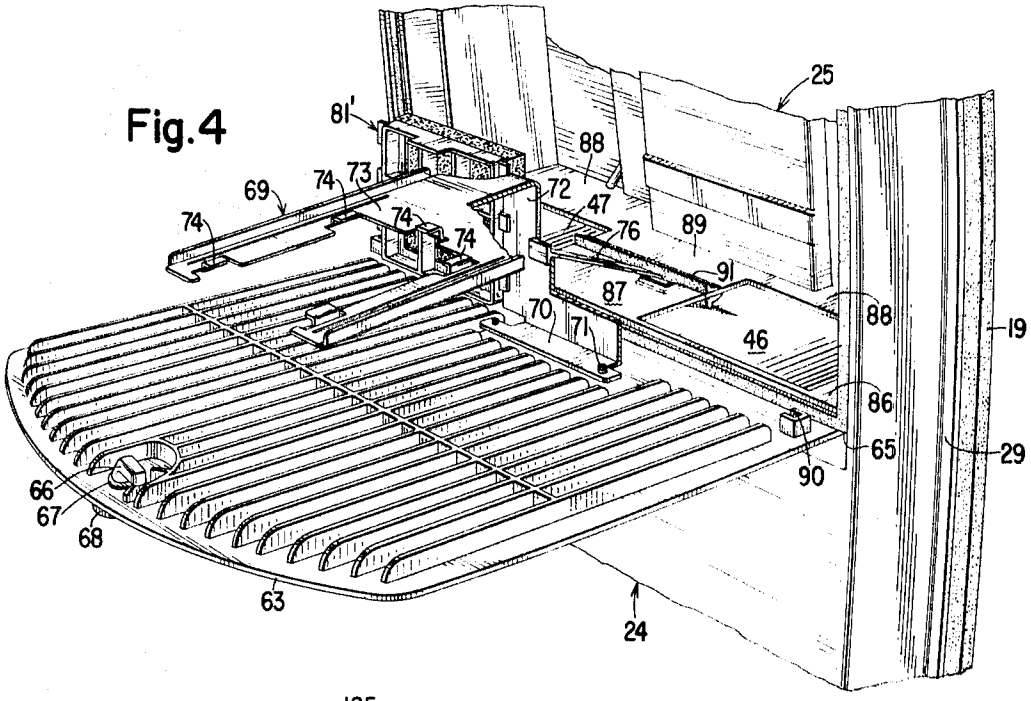
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June 29, 1971 C. T. FROMKNECHT ET AL 3,588,944

CANISTER VACUUM CLEANER

Filed Jan. 8, 1970 5 Sheets-Sheet 3

Fig.4



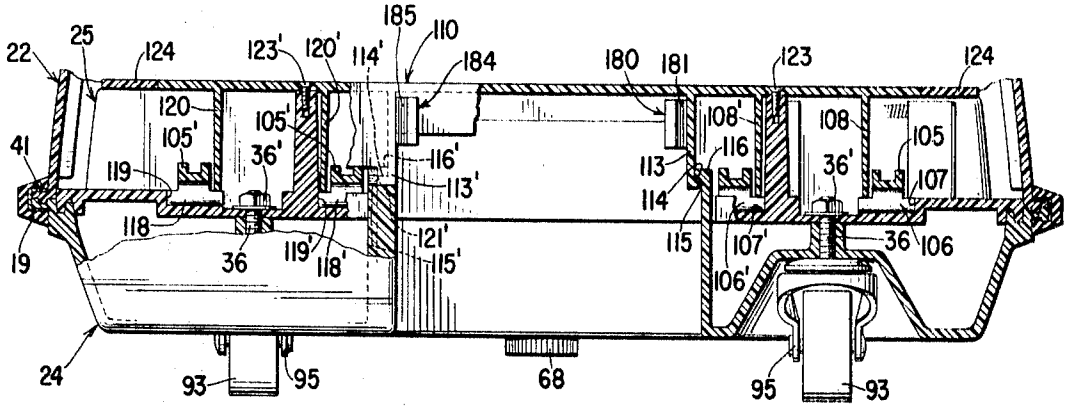


Fig.7

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CANISTER VACUUM CLEANER

Filed Jan. 8, 1970 5 Sheets-Sheet 4

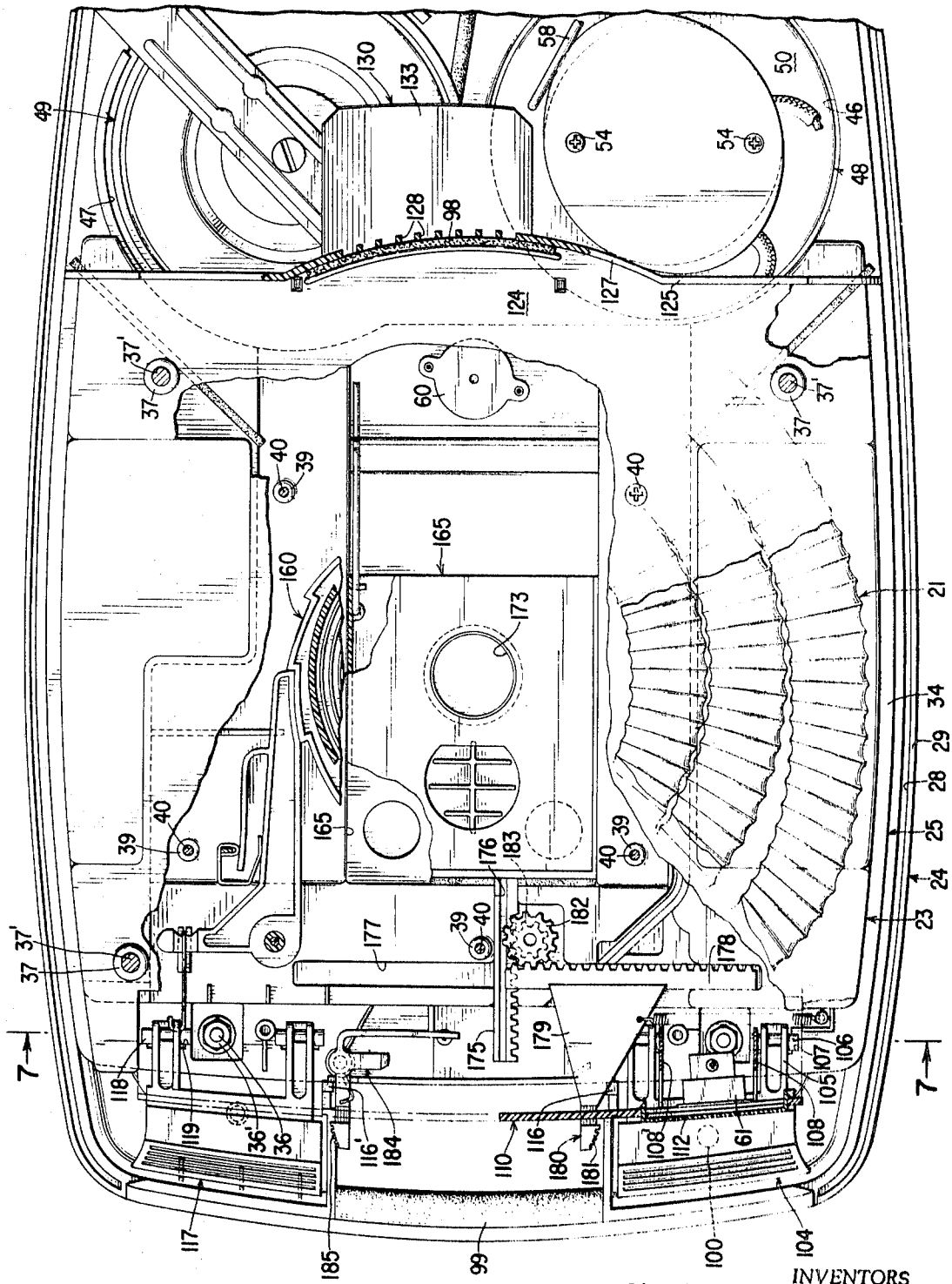


Fig.5

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CANISTER VACUUM CLEANER

Filed Jan. 8, 1970 5 Sheets-Sheet 5

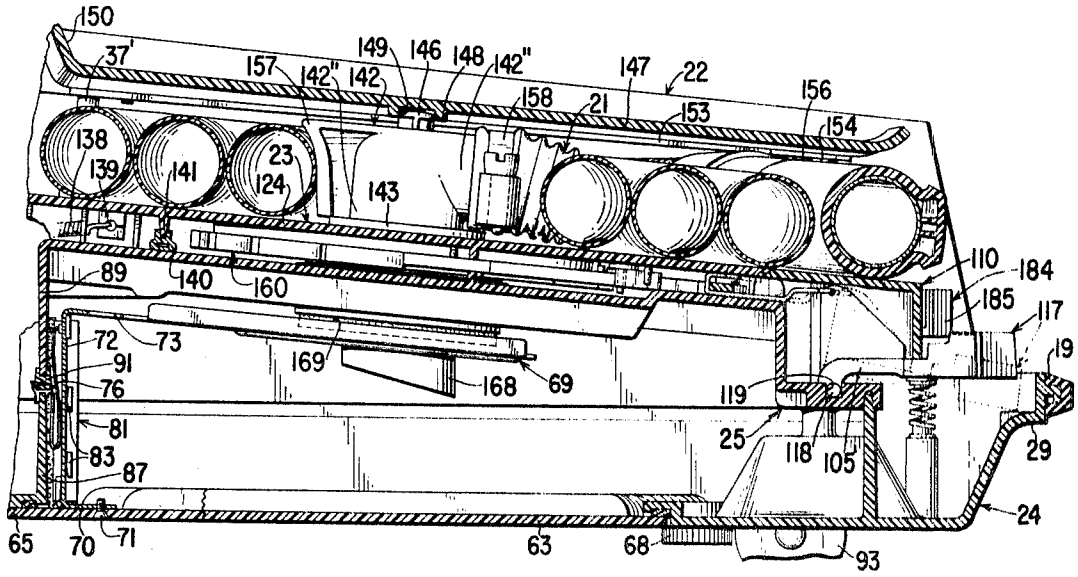


Fig.6

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United States Patent Office 3,588,944 Patented June 29, 1971

3,588,944

CANISTER VACUUM CLEANER

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Filed Jan. 8, 1970, Ser. No. 1,489
Int. Cl. A47l 5/36, 9/14
U.S. Cl. 15—327 7 Claims

ABSTRACT OF THE DISCLOSURE

A vacuum cleaner of the canister variety for domestic use having lower and upper housings secured together by U-shaped clips, and an intermediate housing. Between the upper and intermediate housings is disposed a hose storage compartment within which the hose is retracted and stored by a hose reel mechanism upon depression of a foot pedal. A dust bag, located within the vacuum chamber between the intermediate and lower housing, is attached to a bracket on an access door located at the bottom of the lower housing. To change the filter bag, and a pair of secondary filters which are also removably mounted on the door, the cleaner is set on end and the access door opened to a table-like position. A front panel, mounted on the intermediate housing and secured to the lower housing, operably mounts the hose retraction pedal, the power switch pedal, the suction/blower levers and a filter bag change indicator. Also disclosed is a selectively operable lever controlled slide valve for converting the cleaner from suction to blower operation and vice versa.

BACKGROUND OF THE INVENTION

This invention relates to vacuum cleaners and more particularly to improved canister type vacuum cleaner having a novel frame construction which can be assembled easily and rapidly and in which the filter bag and secondary filters may be removed easily and rapidly.

Canister type vacuum cleaners usually utilize a primary filter of the disposable dust bag type for collection of the dust and dirt from the dirt laden air stream, and one or more secondary filters which back up the primary filter to protect the motor blower unit. In the prior art cleaners of this type it has been found to be a time consuming and relatively difficult chore for the usual household user to change the filter bag and to remove the secondary filter when they must be cleaned. In one prior art cleaner, the hose must be removed from the air inlet which is located in a support plate mounted on the lower housing, and the lower plate must then be raised to remove the filter bag which is fitted on a bracket mounted on the bottom of the support plate. In another arrangement, the filter bag is mounted within a hinged upper housing to which is attached the hose. To replace the bag the housing is pivotally lifted, the hose moving therewith. In this arrangement the hose flips about as the upper housing is lifted and is thus cumbersome and inconvenient. Furthermore, the secondary filter must be stretched about a ring to be mounted within the cleaner, and this entails a tedious and often dirty job.

Moreover, in a modern canister vacuum cleaner which contains a plurality of convenience features for reducing the cleaning chores, such as automatic hose retraction and rapid convertability from vacuum to blower mode, it is necessary to mount the controls for these features in a manner which is simple and inexpensive and to secure the housings which comprise the frame in a rapid manner.

SUMMARY OF THE INVENTION

With the above deficiencies and needs in mind the present invention provides a vacuum cleaner in which the filter bag and secondary filters are mounted on an access door in the lower housing of the cleaner. To remove the filter bag or secondary filters the cleaner is set on end and the access door is opened to a table-like position, whereby the bag and secondary filters may be easily removed by sliding them out from their securing means.

The invention further provides a vacuum cleaner frame comprising an upper, lower and intermediate housing and a front panel member in which the housings are secured together in a simple, effective and rapid manner, and the front panel is simply secured between the lower and intermediate housing to properly mount the vacuum cleaner controls on the intermediate housing.

It is, therefore, a first object of this invention to provide a vacuum cleaner in which the filter bag may be readily accessible for changing without the necessity of removing the hose from the cleaner.

It is another object of this invention to provide a vacuum cleaner in which the filter bag and the secondary filters may be removed easily from the cleaner in a rapid and simple manner.

It is a further object of the present invention to provide a vacuum cleaner frame which is simply and effectively secured together and in which the controls are mounted to be readily accessible to the operator.

A still further object of the present invention is the provision in a vacuum cleaner of a filter access door which may be opened to provide ready accessibility to the filters which are mounted thereon.

BRIEF DESCRIPTION OF THE DRAWINGS

The particular features and advantages of the invention as well as other objects will become apparent from the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is an exploded perspective view showing the main assemblies of a vacuum cleaner embodying the novel features of the present invention, and showing the hose in its coiled position on the hose floor;

FIG. 2 is a cross sectional view of the vacuum cleaner of FIG. 1 in the vacuuming mode, and with the hose extracted from the storage compartment, taken substantially along the longitudinal center line thereof with certain of the parts broken away for clarity;

FIG. 3 is a cross sectional view of the cleaner taken substantially along line 3—3 of FIG. 2 but showing the hose in its stored position and with certain of the parts broken away;

FIG. 4 is a partial view of the vacuum cleaner in perspective looking at the bottom thereof with the cleaner set on end and the filter bag door in its open position;

FIG. 5 is a top plan view of the vacuum cleaner with the upper housing removed for clarity and the hose floor partially broken away and partially in section to show the blower valve which is also partially broken away, its position selector apparatus, the hose retraction ratchet and pawl and the pawl releasing mechanism;

FIG. 6 is a partial cross sectional view of the front portion of the vacuum cleaner taken substantially along the longitudinal center line looking in a direction opposite to that of FIG. 2 and with the hose in its stored condition; and

FIG. 7 is a section taken substantially along the line 7—7 of FIG. 5, showing the mounting of the front panel.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring now to the accompanying drawings wherein like reference numerals denote similar parts throughout the various views, there is disclosed a canister vacuum cleaner generally designated **20** which provides air suction for household cleaning and also, has the facility of use as a blower by selectively reversing the direction of air flow through flexible hose **21**. The cleaner frame comprises an upper housing **22** including a hose floor assembly **23**, a lower housing **24** and a bulkhead or intermediate housing **25** assembled in sandwich-like relationship between the first mentioned housings. These housings **22**, **24** and **25** are fitted together at their periphery by conventional means comprising a series of tongue and groove connections disposed at the sides and the rear of of the cleaner housings. The upper housing **22** has formed about its periphery at the sides and at the rear a lip **26** having a tongue **27** depending downward therefrom which registers with a first groove **28** formed in a peripheral lip **29** of the lower housing **24**. The lower housing **24** is provided in its lip **29** at a location spaced inwardly from the first groove **28** with a second continuous groove **30** and an upstanding tongue **31** formed therewith which register with a tongue **32** and a groove **33**, respectively, formed in the underside of a peripheral flange **34** of the bulkhead **25**. The bulkhead **25** is secured to the lower housing **24** by means of a pair of screws **35** at the rear of the unit and by a pair of bolts **36** and nuts **36'** at the front thereof. The hose floor assembly **23** includes three bosses **37** formed thereon through each of which a screw **38** projects. Each screw is threaded into an elongated internally threaded rod **37'** integral with a flange of the upper housing **22** to secure the hose floor assembly thereto. Formed on the top surface of the bulkhead are five bosses **39** each of which includes a tapped hole. The hose floor assembly also includes five holes through which pass an equal number of screws **40** which are threadedly received within the bosses **39** to secure the hose floor **23** to the bulkhead **25**. The upper and lower housings **22** and **24** respectively are secured together by a plurality of U-shaped spring metal clips **41** spaced about the periphery at the sides and at the rear of the assembled housings. Each of the clips straddles the lips **26** and **29**, and has an aperture **42** provided in each of its opposite facing legs at the location of the cross leg for engaging upper and lower bosses **43** and **44** molded respectively onto the upper and lower housing peripheral lips **28** and **29**. Each of the bosses **43** and **44** is located at the outer edge of a substantially T-shaped recess **45** molded in the lip of the corresponding housing. The clips provide a quick and easy way of fastening the housings together and may be removed readily by prying them loose by means of a sharp pointed instrument inserted between the recess surface and the adjacent clip leg. A conventional bumper **19** surrounds the complete cleaner and provides the usual protection against damaging furniture, as well as additional means for sealing.

The bulkhead **25** is formed at the rear thereof with molded pockets **46** and **47** within which are respectively mounted a motor blower assembly **48** and a cord reel assembly **49**, both of which may be of any suitable standard construction. The air moving unit or motor blower assembly **48** preferably comprises a two stage fan **50** and a coaxial driving motor **51**, the motor being cooled by the high air flow created by the fans. Suffice it to say that in the present preferred embodiment the air flow enters an inlet opening **52** of the fan stage and is exhausted at the motor end through a cylindrical shaped motor blower guard **53** that is formed with exhaust apertures in its cylindrical wall and is secured to the motor frame casting by means of screws **54**. To minimize vibration the motor blower is mounted resiliently in floating fashion in the cleaner. The fan end of the motor blower **48** seats

on an annular rubber gasket **55** secured such as by glue to the bottom of the pocket **46**, while at the exhaust or motor end there is provided between the motor and the upper housing **22** a pair of disc-like rubber mounts **56** (only one of which is shown) which may be fastened, such as by gluing, to the upper housing. To further isolate the motor blower from the adjacent walls of the bulkhead there is provided at the fan end a plurality of rubber mounts **57** spaced about the periphery of the fan casing pocket **46**. The motor-blower is further secured by a rod **58** connected to the fan casing and to a cylindrical boss **59** on the bulkhead. The horizontally disposed cord reel **49** is conventional and is attached by means of screws to the bulkhead. Also, there may be provided a system including a pressure sensitive switch **60** carried by the bulkhead and an electrically cooperating indicator light **61** secured at the front of the bulkhead to tell the operator when the filter bag has become full and should be changed. The system is conventional and does not form a part of the present invention.

A vacuum compartment, within which is located a porous filter bag **62**, is formed by the walls of the bulkhead, **25** and the lower housing **24**. The lower housing includes an enlarged opening within which is fitted a filter bag access door **63** that is secured to the lower housing by screws **64** and pivots about a plastic living hinge **65** formed therewith. To provide added rigidity to the door the inner side thereof is of a rib construction. The periphery of the opening is recessed slightly an amount substantially equal to the thickness of the door and a gasket or seal is secured about the peripheral recess so that a substantially air-tight relationship exists between the lower housing and the door when the latter is locked. A molded plastic L-shaped latch **66** at the end of the door opposite the hinge releasably locks the door in sealed relation to the lower housing. The bag door is latch is secured to the bag door by an annular retaining ring **67** and is molded with a knurled knob **68** located outside the bag door to facilitate opening and closing of the bag door. The filter bag **62** is mounted and properly located within the vacuum compartment by a substantially rigid metal bag bracket **69** comprising three integral legs. A lower leg **70** is secured by screws **71** to the bag access door to properly position an upstanding leg **72** and an upper leg **73**. The leg **73** is of substantially U-shaped configuration and includes a series of upstanding overhanging locating tabs **74** formed on the edges of the opening. The space between the tabs and the surface of the legs **73** act as a slideway for receipt of the bag as will herein be described. To change the filter bag the cleaner is set on end, being supported in that position by a rear tab or lug **75** secured to the rear wall of the upper housing, and the door is opened to a position substantially at a right angle relative to the bottom of the cleaner, as shown, in FIG. 4. To hold the door in this table-like position, there is provided a hinged foldable plastic bag door strap **76** which is secured at one end to the upstanding leg **72** of the bag bracket and at its other end to a vertical wall **77** of the lower housing. The strap includes a plurality of molded living hinges that, as shown in FIG. 6, permit the strap to fold into a substantially flat position, when the bag door is closed.

The filter bag **62** includes a cardboard locating and mounting collar **78** that is adapted to fit into the slideway formed by the bag bracket and is positioned properly by means of the locating and positioning tabs **74** formed with the bracket. Between the mounting collar and the filter bag there is provided a spacing member **79**, also made of cardboard, to prevent the filter bag from contacting the edges of the bag bracket, thereby minimizing possible tearing of the bag as it is inserted or removed. The locating collar may be provided with a finger slot **80** to facilitate handling of the bag.

In the filter bag vacuum compartment of the cleaner, mounted for movement with the bag door, are a pair of

identical secondary filters **81** and **81'** each of which comprises a rectangular grid-like frame **82** formed on either side with a plurality of laterally extending alternately offset molded guide tabs **83**, and at the top with a tab **84** to facilitate manipulation of the filter. The lateral tabs form a longitudinal slideway between the alternate sets thereof for positioning on the access door as will be explained. Each frame has permanently affixed thereto by suitable means a rectangular piece of open fare plastic foam **85** that provides additional cleaning of the air after it has been drawn through the filter bag by the motor blower and also serve as a protective backup filter should the filter bag rupture. Furthermore, these filters provide the main filtering of air during blower operation. The lower housing is formed with a partition wall located adjacent the pivotally mounted end of the filter bag door and which separates the vacuum compartment from the air-mover compartment. The partition wall comprises a pair of side or lateral walls **86** and **86'** and a central wall **87** which together with a similar partition wall on the bulkhead, comprising a pair of side walls **88**, **88'** and a central wall **89**, are arranged to define a pair of rectangular openings for receiving the secondary filter. To assemble the secondary filters the slideway formed by the tabs **83** thereon at one side is slid into register with an edge of leg **72** of the bag bracket **69** so that the plastic foam member is disposed in front of its respective opening in sealed abutting relation with the partition wall. The other end of the filter frame is held in position against the partition wall by means of a molded tab receiving channel **90** formed on the filter door. Thus, the secondary filters are mounted to the filter door and may be readily removed for cleaning or otherwise when the filter door is swung open. Also, to further effect the sealing relationship between the lower housing and the bulkhead, in the area of partition wall along the top edge of each of the partition walls **86**, **86'** and **87** there is secured a seal or gasket **91** that abuts against the bulkhead partition walls **88**, **88'** and **89** so that all the air flowing into the fan must first pass through the filters **81**.

For manipulation of the cleaner there is a conventional arrangement including a pair of fixed axis wheels **92** located at the rear and a pair of swivel wheels **93** at the front of the cleaner. Briefly, the front wheels **93** comprise a single molded plastic wheel covered with an extended plastic soft-surface thread, while the rear wheel **92** comprises a pair of rigid plastic wheels covered with an extended plastic soft-surface thread. The rear wheels are secured to the lower housing by means of the screws **35** which are threaded into the rear wheel bracket **94** while caster **95** of the front wheel is formed unitarily with the securing bolt **36**. Moreover, the rear wheels **92** and the tab **75** facilitate storage of the cleaner in an endwise position and allow the cleaner to be stood upon its end when cleaning areas such as steps. For further manipulation and lifting of the cleaner there is attached to the lower housing a flexible molded soft plastic handle **99** providing a soft gripping surface.

The on-off condition of the cleaner is controlled by a standard push-push type switch **100** in which a positive depression against a biasing force is required to change the state of the contacts. The switch is mounted in a conventional manner to a metal plate **101** which in turn is mounted to molded bosses **102** located in a pocket **103** formed in the front of the lower housing. Actuation of the switch is accomplished through operation of a conveniently accessible hinged foot pedal **104**. The pedal is formed with a pair of integral legs **105** to which are molded integral axles **106** and **106'** which respectively pivotally mount in recesses **107** and **107'** molded at the front in the bulkhead and are properly trapped in place by a pair of laterally spaced ribs **108** and **108'** that are formed with and extend downward from front panel **110**.

The front panel **110** comprises a plastic cover on which are located the various graphics **111** for the cleaner, as well as the indicator light lens **112**. The panel is secured in place by a pair of integrally molded locking tabs **113** and **113'** having respective ledges **114** and **114'** including respective tapered cam surfaces **115** and **115'** which snap to lock with complementary overhanging flange projections **116** and **116'** formed on the lower housing. The front panel also properly secures in place a hose return pedal **117** which is mounted in a manner similar to that of the switch pedal **104**. Thus, the hose retraction pedal **117**, whose function is described completely in copending United States application No. 1,498, filed on Jan. 8, 1970, by James J. Bolzan, Jr. and Charles T. Fromknecht and assigned to the present assignee, includes a pair of integral legs **105'** to which are molded integral axles **118** and **118'** which respectively pivotally mount in recesses **119** and **119'** molded in the bulkhead and are trapped in place by a pair of downwardly extending ribs **120** and **120'** formed on the front panel. A pair of fingers **121** and **121'** respectively extend downwardly from tabs **113** and **113'** and set against shoulders **122** and **122'** respectively in the lower housing. A pair of screws **123** and **123'** secure the panel **110** to the bulkhead, so that the panel is properly secured to both the lower housing **24** and the bulkhead **25**. The front edge of the hose floor **23** rests on the rear edge of panel **110** when the former is fitted into place. As explained hereinafter, the front panel also assists in securing a pair of levers **180** and **184** used in conjunction with the conversion from vacuum mode to blower mode and whose operation and securement is completely described in above mentioned copending application.

The hose floor assembly generally designated **23** comprises a hose floor **124**, which is a molded plastic part, having an upstanding rear wall **125** that mates with a peripheral groove **126** in the upper housing **22** and is formed with a concave central portion **127** provided with a plurality of exhaust vents or ports **128** over which is glued an open face exhaust filter **98**. A substantially circular opening **129** is located in substantially the center of the hose floor. When operating the cleaner as a blower the exhaust ports **128** are covered by an exhaust door **130**, preferably made from metal, that pivots on an axle **131** journaled in a pair of bosses **132** secured to the underside of the hose floor. The door **130** includes a closing portion **133** having a shape that corresponds to that of the concave central portion **127** of the rear wall **126**, and a lower supporting portion **134** suitably formed with or secured to the former and which includes a pair of tabs **135** through which pass the axle **131**. Formed on the lower portion **134** of the exhaust door is a curved striker portion **136** that wraps about the axle **131** in overlying fashion. An extension spring **138** is secured at one end to the free end of the door striker portion and at the other end to an angle shaped boss **139** that is fastened to the hose floor so as to normally bias the exhaust door **130** downward into an inoperative position to maintain the exhaust ports **128** open. The operation of the exhaust door relates to the operation of the blower valve mechanism and is described in said copening application. A seal **140** secured to a rib **141** on the bottom of the hose floor aids in maintaining the space forward of the seal, between the hose floor and the bulkhead, free from the exhaust air. A pair of seals **159** and **159'** mounted in diagonal slots formed in the bulkhead forward of the pockets **46** and **47** further act to seal the motor-blower compartment from the front of the cleaner.

Mounted for free rotational movement about a normal vertical axis in the circular opening of the hose floor is a substantially rigid hose elbow **142** which comprises a continuous annular flange **143** integrally molded therewith located adjacent the top of the hose floor. The elbow comprises two substantially perpendicular legs, one of which **142'** extends through the floor opening and is contained therein by retaining snap ring **144** that is disposed in an annular groove integrally formed with the elbow

and located adjacent the lower side of the hose floor directly above a plurality of spaced peripheral lugs or tabs **145** that extend radially outward from that end of the hose elbow. At the top the hose elbow is formed with an upwardly extending lug **146** disposed in register with a cover **147** for an open end hose storage compartment defined by the hose floor **23** assembly and the upper housing **22** including the cover **147**. On the lower surface of the cover directly above the elbow lug there is formed a boss **148** having a recess **149** for receiving the lug and assisting in maintaining the hose elbow properly in place. The hose cover is provided at its rear with an upstanding portion **150** and is formed at its rear edge with a laterally extending groove or notch **151** extending between the side edges of the cover. The hose cover is assembled to the upper housing by fitting the groove into register with a lower edge **152** of the top of the upper housing and snapping the cover in place. The sides of the cover seat on lateral shelves **153** extending inwardly from each side of the upper housing. At each front corner of the hose cover is a narrow apertured boss **154** that locates in a corresponding slot **155** formed at the front of each shelf such that the aperture is disposed below each shelf. To secure the cover in place a cotter pin **156** is inserted through each aperture. The cover, of course, need not be a part separate from the upper housing, but may be integral therewith. The feature of a removable cover aids in assembling the cleaner and also, in the event of malfunction of the retractable hose feature, the hose can be removed by guiding it out the opening at the front of the upper housing after removing the cover.

The elbow which acts as a reel is formed with an extended inclined lip **157** for helping to properly locate and guide the hose **21** as it is coiled for storage. The flexile hose is secured to the end of one leg **142''** the elbow by a standard hose clamp **158**. At the end of the other leg **142'** of the elbow there is attached a hose winding mechanism as described completely in said above mentioned copending application, and generally indicated as **160** herein. The hose winding mechanism is operably connected to the pedal **117** for retracting the hose into the hose storage compartment when the hose is outside said compartment. Located in a recess **165** formed in the bulkhead **25** and extending lengthwise of the cleaner is a blower valve **166** whose operation is also described in the prior cited copending application. The recess **165** defines a slideway for the valve and is formed with a substantially central intake opening **167**. To provide a sealed connection between the intake opening and the filter bag **62** there is provided a cylindrical truncated tube **168** molded with the bulkhead and depending in a downward direction into the vacuum chamber. An annular gasket **169** is secured to the bulkhead about the tube **168** so that when the filter bag door is closed the tube will register with the filter bag inlet mouth **170** and the gasket will abut against the mounting collar **78** to form an airtight seal therewith. The valve **166** is prevented from being vertically dispaced from the recess **165** by the bottom lip **171** of the hose elbow and an annular seal **172** glued on the bottom of an element of the winding mechanism **160** to prevent leakage past the upper surface of the valve. The valve **166** includes an aperture **173** which communicates with the opening **167** and the tube **168** in the vacuuming mode.

A toothed rack **175** is fixed to the valve and slidably seats in a longitudinal groove **176** at the front of the bulkhead. Extending laterally of the groove **176** is a second groove or recess **177** formed in the bulkhead to provide a guideway for a rack **178**. A triangular portion **179** is formed integrally with the rack **178** and a blower control lever **180** which is provided with a knurled surface **181** and protrudes out the front of the panel **110** for facilitating manipulation thereof. Mounted for rotational movement in a recess adjacent the longitudinal groove **176** and the lateral groove **177** are a pinion **182** and a gear **183** which are molded coaxially together. The pinion **182** is disposed in operable engagement with the rack **178** while the gear **183** is in operable engagement with the rack **175** of the valve. The operation of this gearing system to shift the valve is clearly described in the above said copending application as is the operation of a release lever **184** which is pivotably mounted on the front of the bulkhead with a knurled portion **185** extending through the front panel. Suffice it to say in the present case that the mounting of the front panel sets on the lever **184** and the triangular portion **179** of rack **178** and lever **180** to maintain them in their proper position.

It is thus clear that a vacuum cleaner frame is provided in which the members are secured together in a unique manner to provide an easy accessability to the primary and secondary filters and an effective mounting of the controls. Modifications of the invention, falling within the scope thereof will occur to those skilled in the art, and accordingly the scope of the invention should not be limited except as set forth in the claims that follow.

Having thus set forth the nature of the invention, what we claim herein is:

1. A vacuum cleaner of the canister type comprising a lower housing including a bottom surface and a peripheral rim, an intermediate housing secured to the peripheral rim of the lower housing in a substantially airtight relationship defining a vacuum chamber therebetween, said intermediate housing having an air inlet communicating with said vacuum chamber, air-moving means for creating a suction flow of air through said chamber, a hose, means for mounting said hose outside said chamber in communicating relationship with said inlet for admission of a dirty stream of air, said lower housing having an opening defined in the bottom surface, a door having a peripheral portion adapted to register in sealed relationship with said opening, means for pivotably mounting said door on said bottom surface such that said door may be pivoted between a closed position in registration with said opening and an open position out of registration therewith, a bracket secured to said door and having a portion thereof disposed such that when said door is closed the bracket is within said chamber with said portion adjacent said inlet, a porous filter bag having a mouth removably mounted on said bracket portion with said mouth in communication with said inlet when the door is closed, and means for locking said door in said closed position whereby said dirty air stream may be admitted into said bag to separate dirt and the like therefrom.

2. A vacuum cleaner as recited in claim **1** wherein said door is substantially normal to said bottom surface when in said open position, and means for limiting said door from opening beyond said normal position.

3. A vacuum cleaner as recited in claim **1** including means defining a partition wall in said vacuum chamber, said air moving means being located on a first side of said wall and said inlet being located on the second side of said wall, said wall having aperture means therein communicating said first side with said second side, and secondary filter means removably mounted on said door in position to register with and abut said aperture means when said door is closed so that substantially all said air flowing through said chamber passes through said secondary filter means.

4. A vacuum cleaner as recited in claim **3** wherein said aperture means comprise two apertures formed in said wall, said secondary filter means comprising a pair of secondary filters, each filter being adapted to register with a respective one of said apertures in a sealed abutting relationship, each said filter comprising a frame having a plurality of laterally extending alternately offset guide tabs projecting from the sides thereof for defining a longitudinal slideway therebetween, said bracket including a first leg secured to said door intermediate said filters and a second leg integral with and extending from said first leg, said second leg having a pair of opposite facing edges, each edge being adapted to register with a respective one

of said slideways, and a tab receiving channel formed on said door remote from said bracket on each side thereof for slidably receiving at least one of said tabs whereby each of said filters may be slid into position with one of said edge and channel for mounting on said door.

5. A vacuum cleaner as recited in claim 1 including an upper housing having a peripheral lip, a lip formed on the peripheral rim of said lower housing, means for registering said last named lip with said first named lip, a plurality of bosses formed on each said lip, a plurality of U-shaped clips corresponding in number to the bosses formed on each of said lips, each said clip having an aperture formed in each of its opposite facing legs at the location of the cross leg, said clips straddling said lips with each of said opposite facing leg apertures receiving one of said bosses therein for securing said upper and lower housings together, said upper housing and said intermediate housing defining a storage compartment therebetween, said hose being mounted in and adapted to be stored within said compartment.

6. A vacuum cleaner as recited in claim 1 including an electric power switch mounted in said lower housing, said switch being activated by depression thereof against a biasing force for energizing said air-moving means to create a suction flow of air through said chamber and deactivated by depression thereof against said biasing force for de-energizing said air-moving means, a pedal having at least one axle integral therewith, said lower housing including a recess adjacent said switch and formed to receive said axle with said pedal disposed upon

said switch, and a front panel member secured to said intermediate and lower housing, said member including at least one downwardly extending rib disposed above said recess and engaging said axle to entrap the same within said recess such that said recess and said rib form a journal for said axle, whereby depression of said pedal rotates the axle to allow the pedal to depress the switch against said biasing force.

7. A vacuum cleaner as recited in claim 6 wherein said pedal includes a pair of integral legs, each of said legs including an axle integral therewith, both of said axles being received within said recess, said front panel member including two said ribs, a first rib engaging one of said axles and a second rib engaging the other of said axles.

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