May 21, 1963 M. H. KORRELL ETAL 3,090,181

VACUUM CLEANER

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Fig. 1.

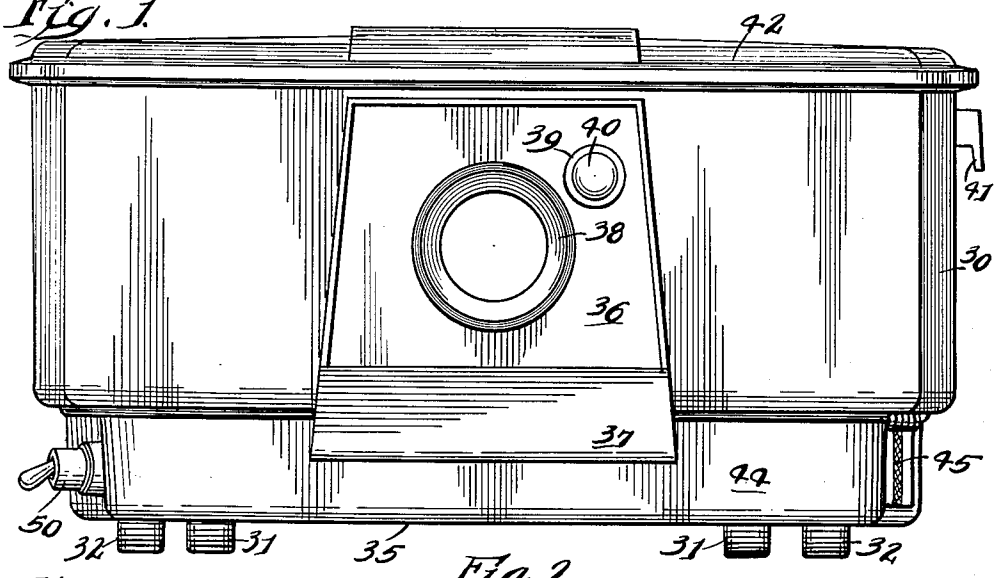
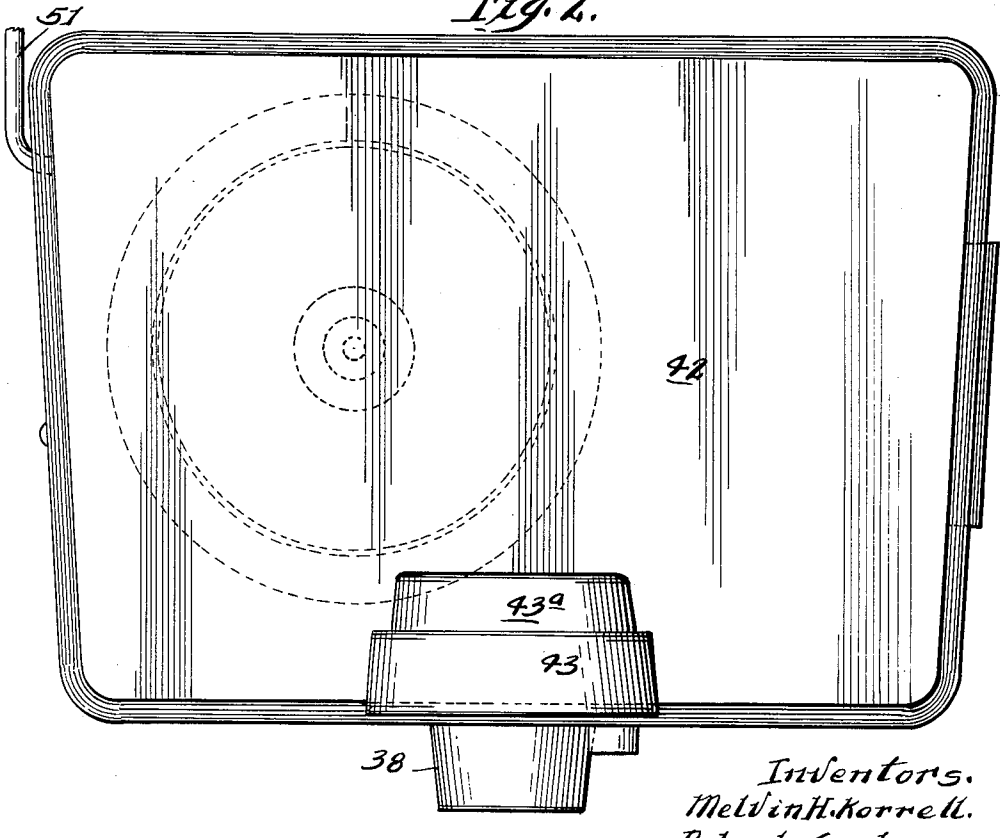


Fig. 2.



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May 21, 1963 M. H. KORRELL ETAL 3,090,181

VACUUM CLEANER

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Fig. 3.

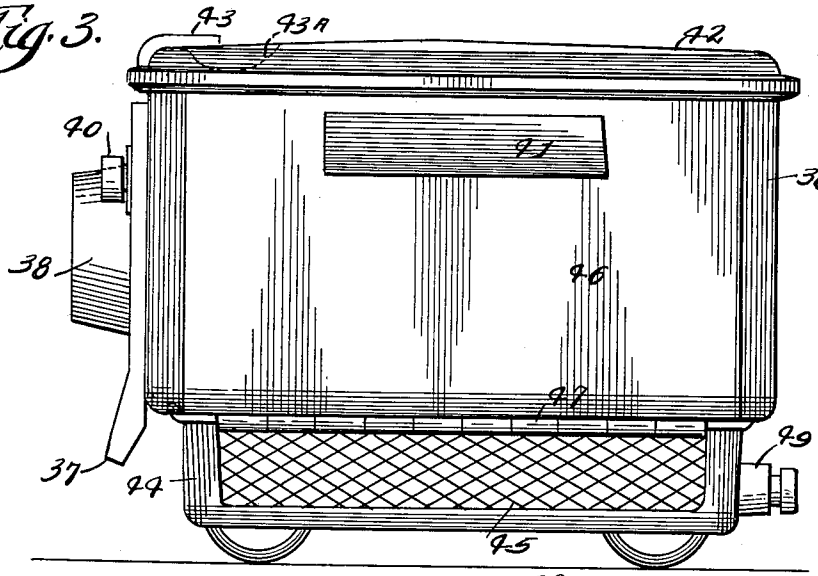
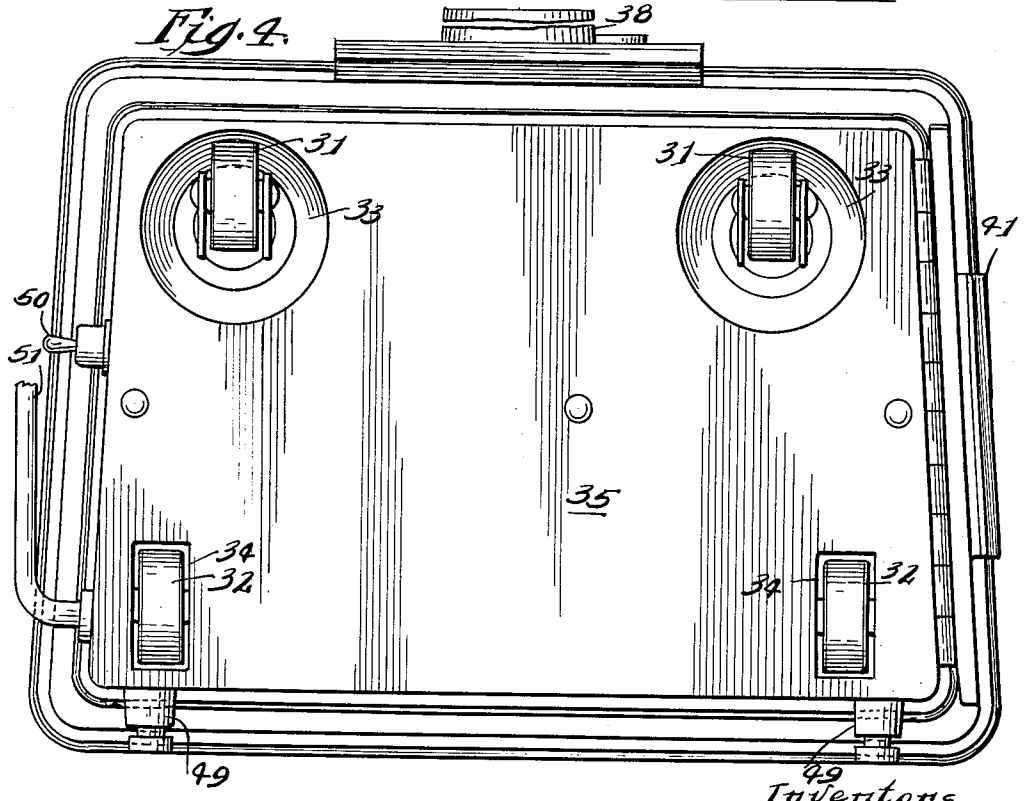


Fig. 4.



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VACUUM CLEANER

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Fig. 5.

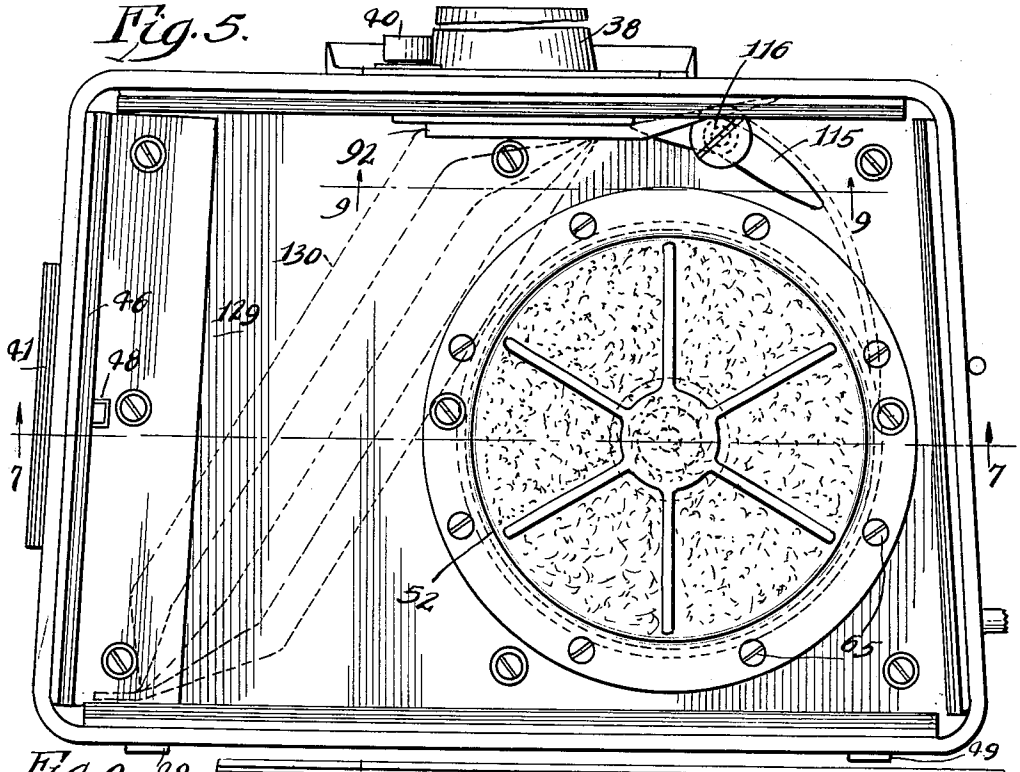
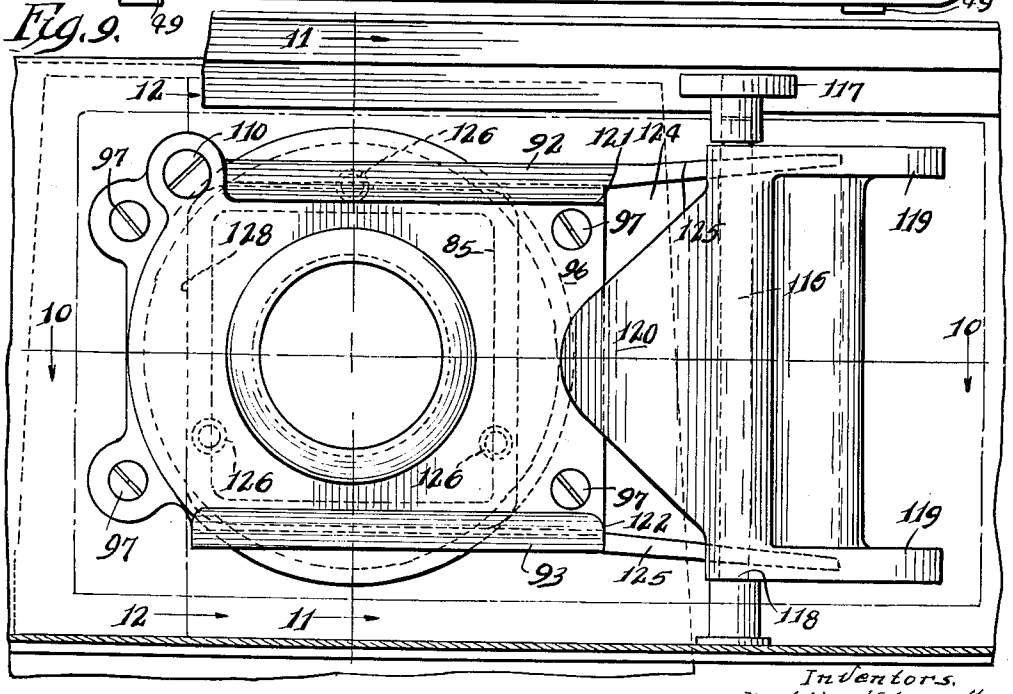


Fig. 9.



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May 21, 1963

M. H. KORRELL ETAL

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VACUUM CLEANER

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Fig. 6.

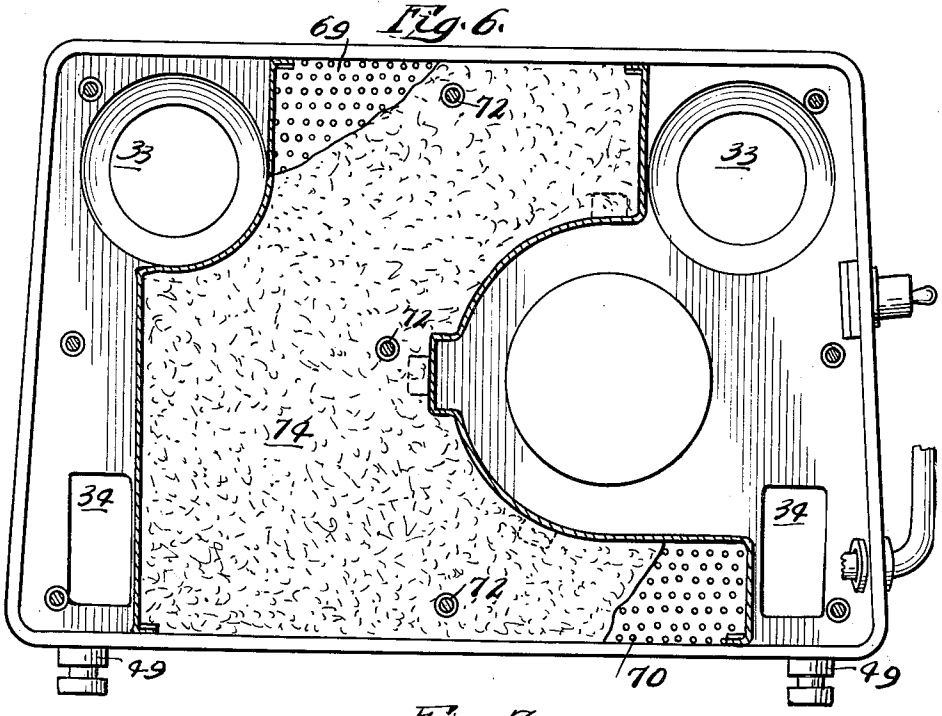


Fig. 7.

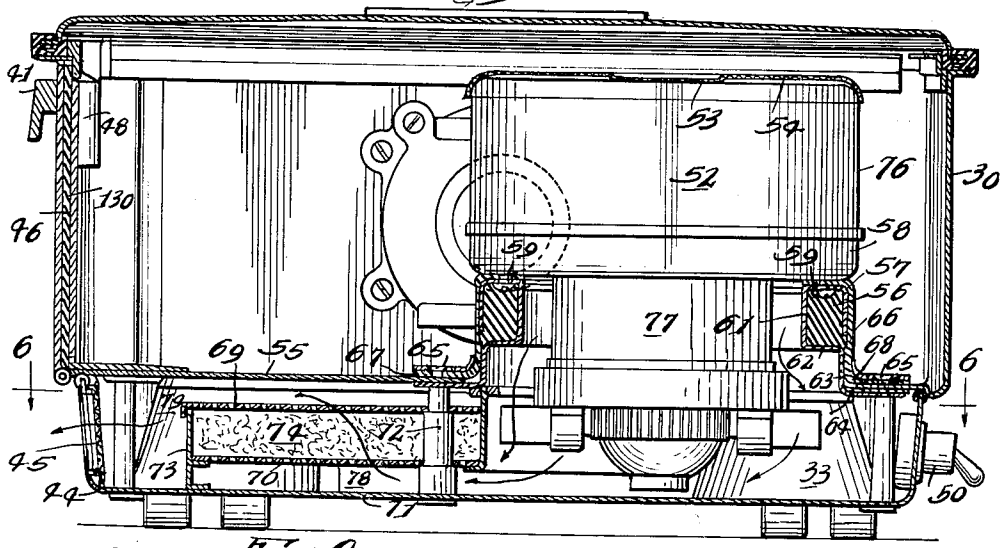
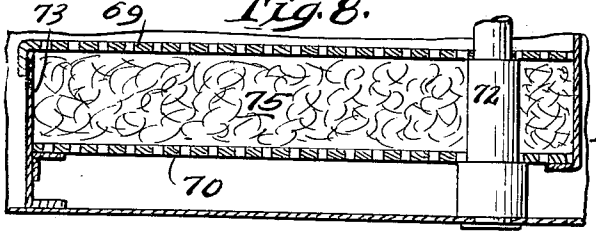


Fig. 8.



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May 21, 1963 M. H. KORRELL ETAL 3,090,181

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Fig. 10.

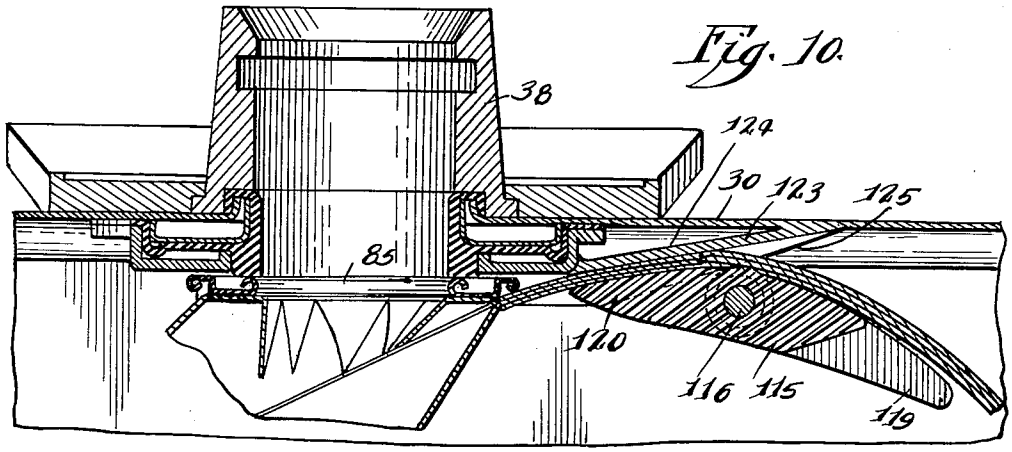


Fig. 11.

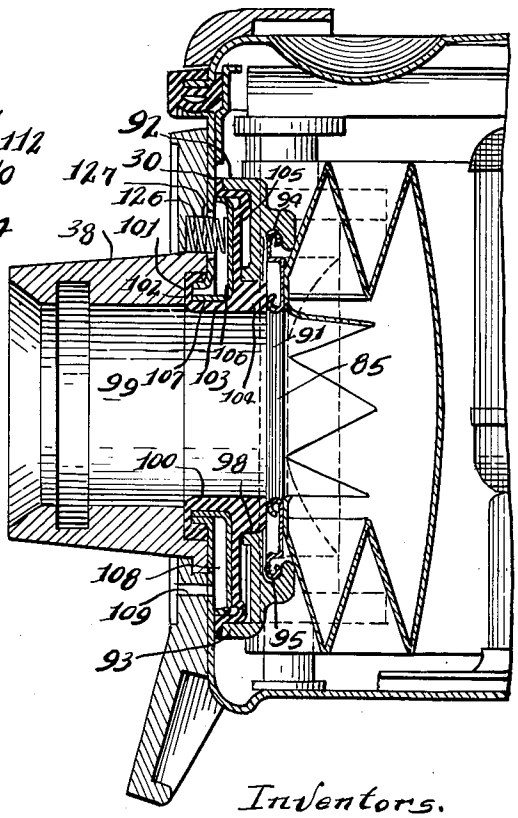


Fig. 12.

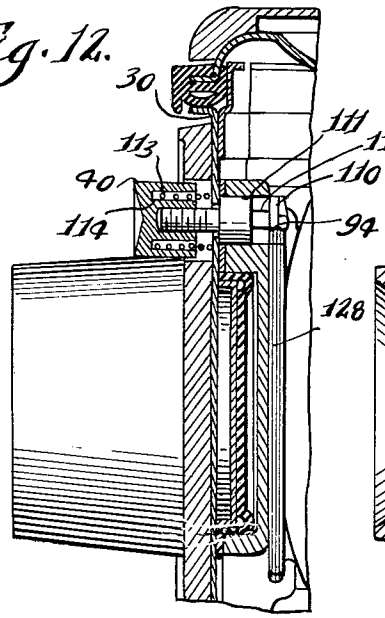
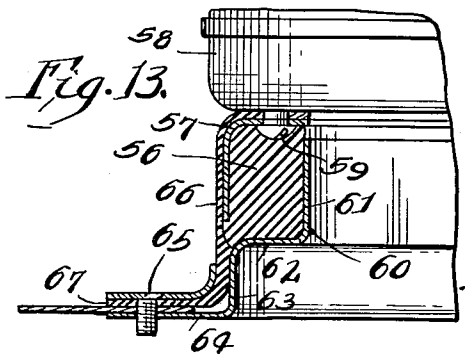


Fig. 13.



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May 21, 1963 M. H. KORRELL ETAL 3,090,181

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Fig. 14.

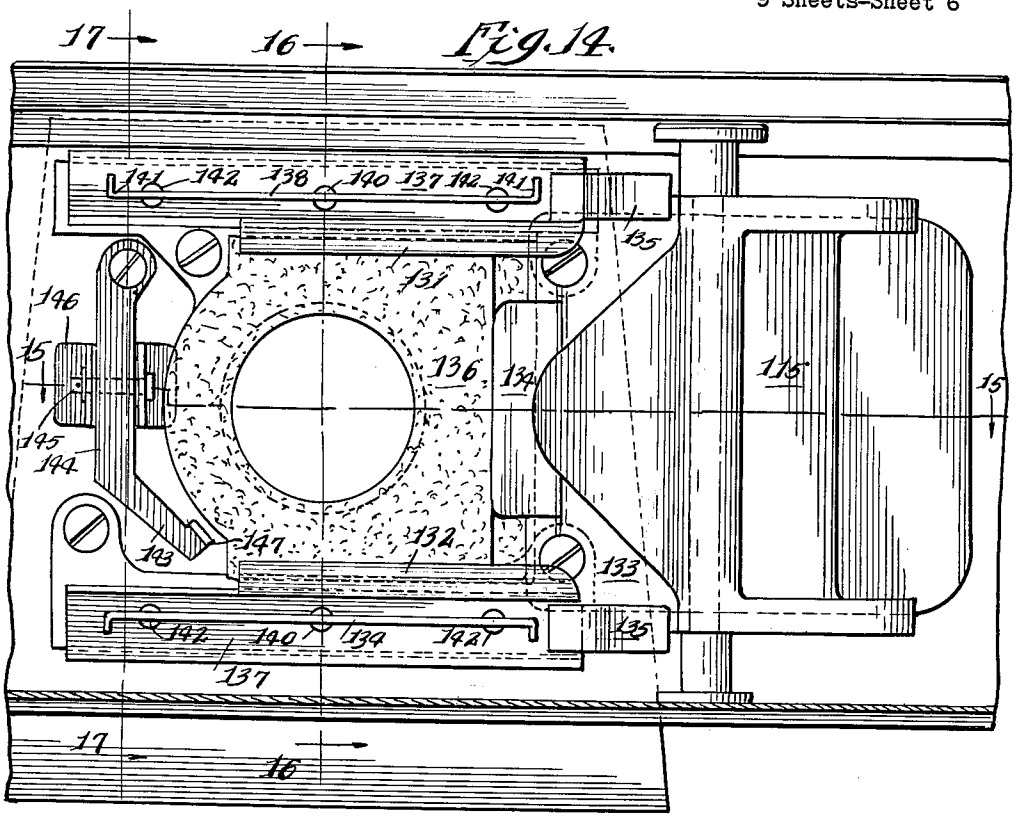
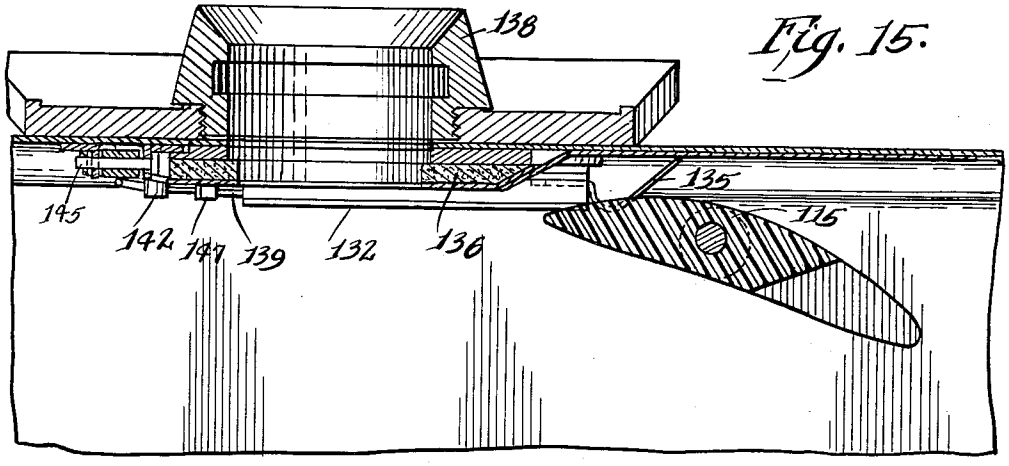


Fig. 15.



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May 21, 1963 M. H. KORRELL ETAL 3,090,181

VACUUM CLEANER

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Fig. 16.

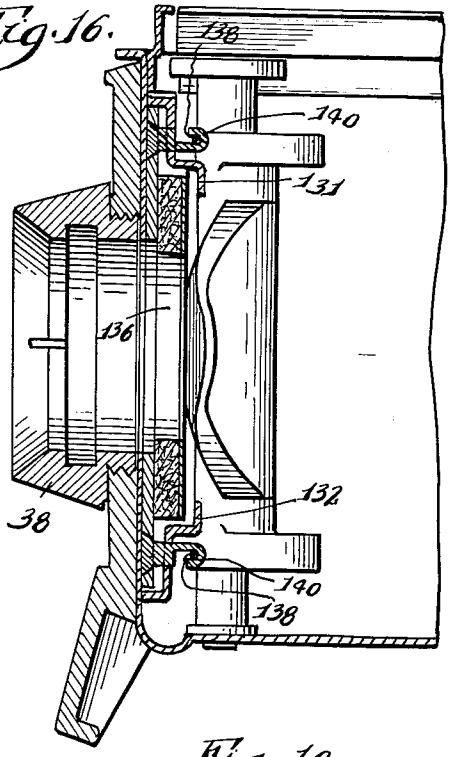


Fig. 17.

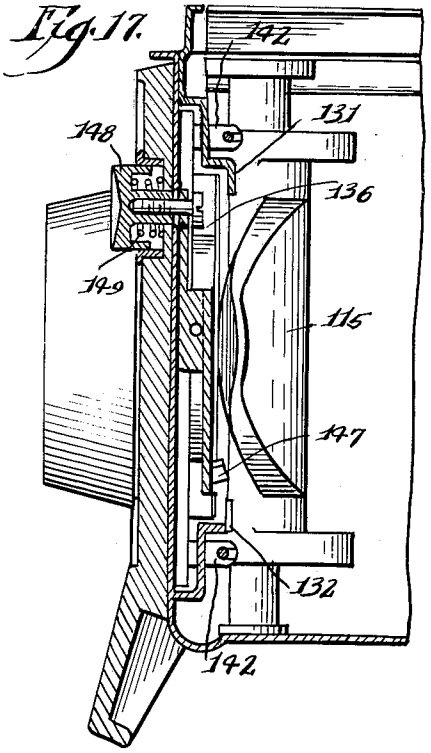


Fig. 18.

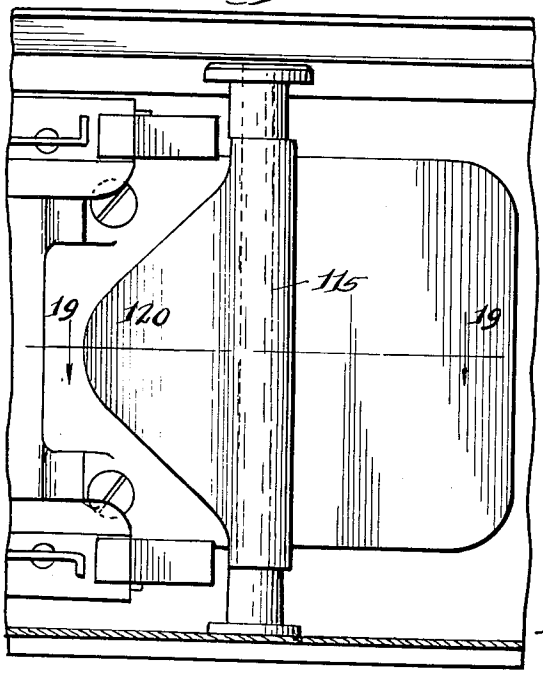
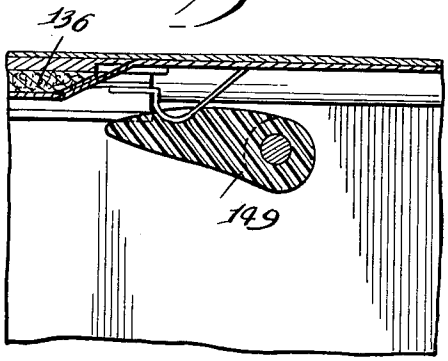


Fig. 19.



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May 21, 1963 M. H. KORRELL ETAL 3,090,181

VACUUM CLEANER

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Fig. 20.

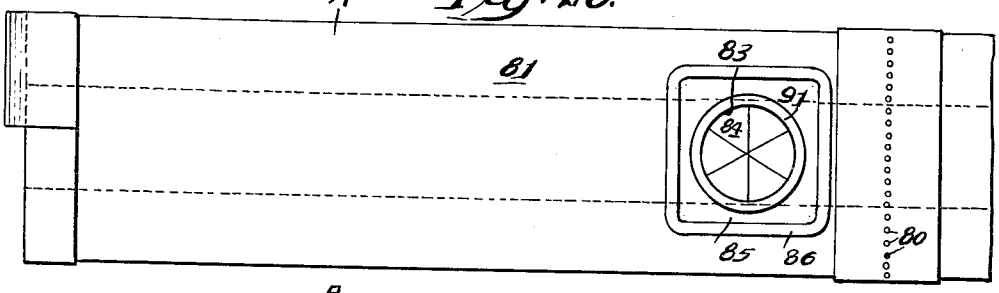


Fig. 21.

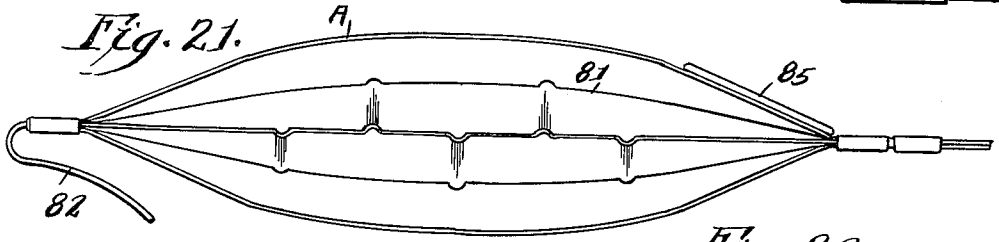


Fig. 22.

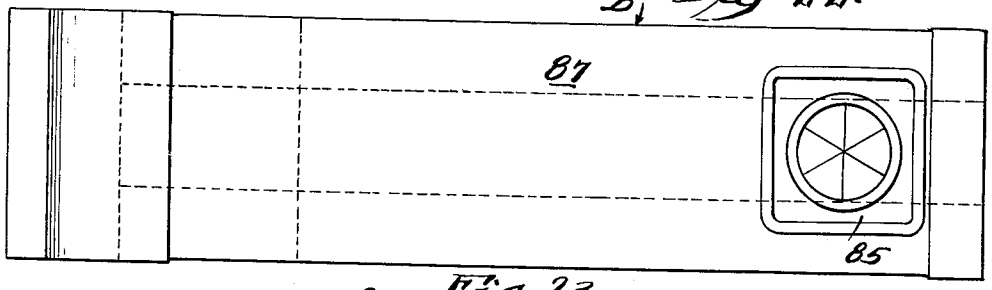


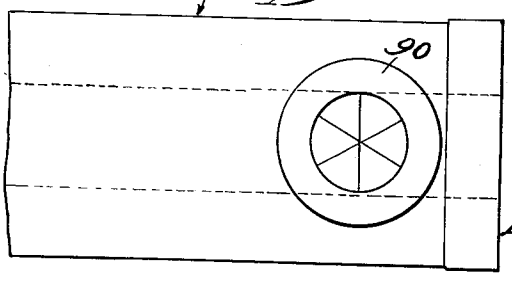
Fig. 23.



Fig. 24.



Fig. 25.



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Fig. 26.

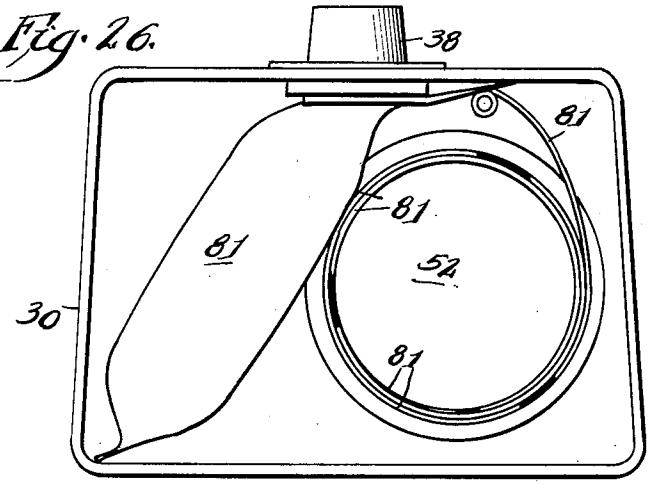


Fig. 27.

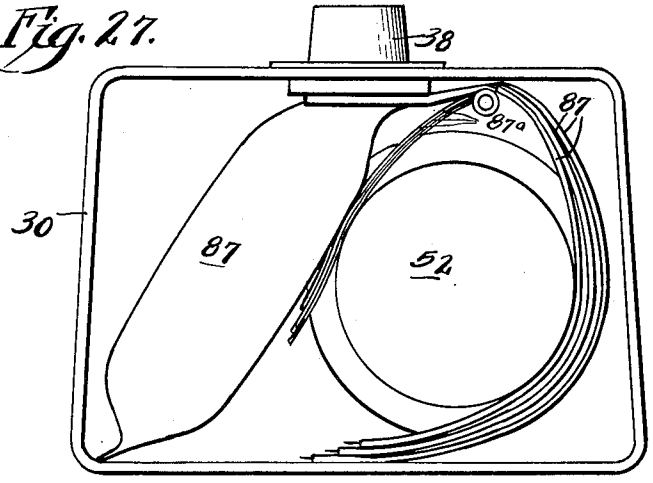
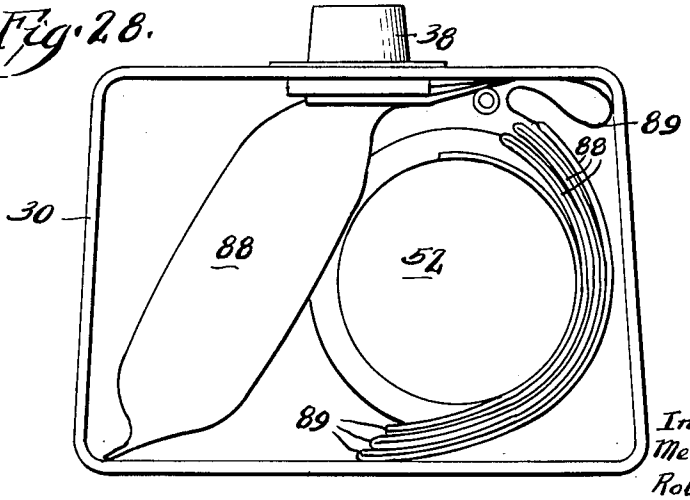


Fig. 28.



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United States Patent Office 3,090,181 Patented May 21, 1963

3,090,181

VACUUM CLEANER

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Filed June 2, 1960, Ser. No. 33,479
13 Claims. (Cl. 55—376)

This invention relates to a vacuum cleaner.

It has become customary for vacuum cleaners to use disposable filters through which the dirt laden air is directed for separating the dirt from the air. These filters are commonly in the form of bags made of porous paper that are disposable.

The vacuum cleaner of this invention employs disposable filter bags and in addition provides means for automatically positioning a fresh filter bag in proper position for further operation of the vacuum cleaner substantially simultaneously with the removal of a dirt laden filter bag. For this purpose a supply of bags may be stored in conjunction with the cleaner and it is a simple matter to remove a dirty filter bag from the cleaner while moving a fresh bag from the supply into position for further cleaning operation. In addition the vacuum cleaner of this invention employs improved types of filter bags and also incorporates an improved motor mounting for reducing vibration and noise.

One of the features of this invention therefore is to provide an improved vacuum cleaner having improved means for sealingly retaining a bag in position at the inlet opening of the vacuum cleaner including means providing a resilient seal to prevent dirt and air leakage. This structure aids in permitting efficient sealing of the bag yet provides for ready removal of a dirt containing bag and substitution therefor of a clean bag.

Another feature of the invention is to provide such a vacuum cleaner in which means are provided for moving a dirt filled bag out of position and simultaneously moving a clean bag into position for resuming the cleaning operation.

A further feature of the invention is to provide an improved air filter bag that is readily adaptable for use in such a vacuum cleaner.

Yet another feature of the invention is to provide an improved motor mounting that serves to reduce the noise and absorb vibration.

Other features and advantages of the invention will be apparent from the following description of certain embodiments thereof taken in conjunction with the accompanying drawings. Of the drawings:

FIGURE 1 is a front elevational view of a vacuum cleaner embodying the invention.

FIGURE 2 is a plan view thereof.

FIGURE 3 is an end elevational view of the cleaner.

FIGURE 4 is a bottom view of the cleaner.

FIGURE 5 is a plan view of the cleaner with the cover removed to show the interior thereof, and with the positions of a plurality of filter bags indicated by broken lines.

FIGURE 6 is a plan sectional view taken substantially along the line 6—6 of FIGURE 7, with the motor removed and with portions broken away for clarity of illustration.

FIGURE 7 is a transverse sectional view taken substantially along line 7—7 of FIGURE 5.

FIGURE 8 is an enlarged detail view similar to a lower portion of FIGURE 7 but showing an alternate embodiment of the invention.

FIGURE 9 is a fragmentary sectional, elevational view taken substantially along the line 9—9 in FIGURE 5.

FIGURE 10 is a sectional view taken substantially along the line 10—10 of FIGURE 9.

FIGURE 11 is a sectional view taken substantially along the line 11—11 of FIGURE 9.

FIGURE 12 is a view taken substantially along the line 12—12 of FIGURE 9.

FIGURE 13 is an enlarged fragmentary detail view of a portion of the structure shown in FIGURE 7 illustrating the improved motor mounting.

FIGURE 14 is a view similar to FIGURE 9 but illustrating a modification of the apparatus for releasably locking a filter bag in position for the filtering operation and means for directing the bag into this position.

FIGURE 15 is a sectional view taken substantially along line 15—15 of FIGURE 14.

FIGURE 16 is a sectional view taken substantially along line 16—16 of FIGURE 14.

FIGURE 17 is a sectional view taken substantially along line 17—17 of FIGURE 14.

FIGURE 18 is a view similar to FIGURE 14 but showing another modification of the invention.

FIGURE 19 is a modified sectional view taken substantially along line 19—19 of FIGURE 18.

FIGURE 20 is a plan view showing a portion of a strip of severable paper filter bags.

FIGURE 21 is a side elevational view of the filter bag of FIGURE 20 but showing the bag expanded as would occur during use of the vacuum cleaner.

FIGURE 22 is a view similar to FIGURE 20 but showing an alternate embodiment of the filter bag structure.

FIGURE 23 is a side elevational view of the filter bag structure of FIGURE 22.

FIGURE 24 is a side elevational view of another embodiment of the filter bag structure.

FIGURE 25 is a fragmentary end view of another embodiment of a filter bag.

FIGURE 26 is a semi-diagrammatic view illustrating how the bags of FIGURE 20 are arranged with the cleaner in the manner of the embodiment of FIGURE 5.

FIGURE 27 is a view similar to FIGURE 26 but with the bags of FIGURE 23.

FIGURE 28 is a view similar to FIGURE 26 but with the bags of FIGURE 24.

The vacuum cleaner as illustrated in the accompanying drawings comprises a casing 30 supported on a pair of caster front wheels 31 and a pair of rear wheels 32. The caster front wheels extend into recesses 33 while the rear wheels likewise extend into recesses 34 all located in the bottom plate 35 of the cleaner. The front of the cleaner is provided with a plate 36 having an outwardly and downwardly extending handle portion 37 as a part thereof. This plate also has mounted thereon a metal inlet collar 38 to which one end of a suction hose (not shown) may be attached in the customary and well known manner. The plate 36 is provided with a collar 39 adjacent an upper corner of the plate in which is located a push button 40 whose structure and operation will be explained later.

Mounted on one side of the casing 30 is a handle 41. Positioned on the top of the casing 30 is a cover 42 provided at the front end with a handle portion 43 and immediately behind this portion 43 is a recess 43A in the cover 42 to permit inserting the fingers beneath the handle 43. The casing 30 is provided with a bottom portion 44 having sides recessed inwardly from the remainder of the casing. One end of this bottom portion is provided with an air pervious section 45 for the escape of air in a manner to be described hereinafter.

One end of the casing 30 is provided with a door 46, that covers almost this entire end, that is hingedly mounted on a bottom hinge 47 and to which is attached the handle 41 for opening and closing the door. The door 46 is pro-

vided near its top with a spring urged catch 48 of ordinary construction for retaining the door in closed position.

In order that the cleaner will stand securely on its rear side the bottom portion 44 at this side is provided with a pair of rearwardly extending feet 49.

One side of the casing 30 at the bottom portion 44 thereof is provided with an ordinary switch 50 in the electrical circuit to the cleaner. This circuit is supplied with electricity by means of an ordinary cord 51.

Located within the casing 30 is a motor-fan suction unit 52 of customary construction having an inlet 53 covered with the customary screen 54 to prevent accidental entry of dirt in the event a filter should burst. The suction unit 52 is mounted on an interior base plate 55 within the casing which is located above the bottom portion 44 of the casing.

The mounting for the suction unit 52 (FIGURES 7 and 13) includes an annular section 56 of resilient polyurethane sponge material of rectangular cross section having its top and side contacting but not attached to a bracket 57 of inverted L-shaped cross section. The top of the bracket 57 is attached to the bottom of the upward extending suction portion 58 of the unit 52 as by a plurality of bolts 59. The other side and bottom of the annular section 56 contact a second bracket 60 having a vertical top 61 to which the sponge is attached and a horizontal annular part 62 to which the sponge is not attached. Bracket 60 has a downwardly extending intermediate section 63 and outwardly extending annular edge 64 so that the portions 61, 62, 63 and 64 constitute a single mounting bracket made of sheet metal. The section 64 is attached to the base plate 55 as by a plurality of bolts 65.

To complete the mounting for the motor there is provided a sheet of rubber or the like 66 that extends over the outer surfaces of the bracket 57, the exposed lower outer edge of the sponge section 56 and the outer surfaces of the bracket sections 63 and 64. An outwardly extending peripheral edge 67 of this rubber sheet is clamped into position on the base plate 55 by means of an overlying clamping plate 68 held in position by the bolts 65.

The above-described mounting for the suction unit has a number of important advantages. The polyurethane sponge or foam has sufficient strength to be stable in all directions. It is also able to withstand without distortion or set the elevated temperatures resulting from the motor operation. In addition, it deadens the sound producing vibrations so that the motor runs quieter. The resilient sheet 66 which may be made of rubber serves to seal the structure and prevent air leakage. Its resiliency also serves as a spring in resisting any upward force on the unit 52 which would be caused by a blockage of the air inlet 38. This upward force under extreme conditions could be as much as fifty pounds.

Within the bottom portion 44 of the casing there is provided a pair of substantially parallel horizontally aligned plates 69 and 70 with the top plate 69 being spaced beneath the base plate 55 and the bottom plate 70 being spaced above the bottom plate 35 of the cleaner casing. The plates 69 and 70 are held in their spaced parallel relationship by means of a plurality of stepped posts 72 and an edge bracket structure 73. In the embodiment shown in FIGURES 6 and 7 the space between the plates 69 and 70 is filled with particles 74 of activated charcoal. In the embodiment of FIGURE 8 this space is filled with glass fibers 75 or the like to serve as a sound deadener. In both embodiments air from the upper fan portion 76 of the unit 52 is forced down around the motor portion 77 between the outside of the motor and the mounting bracket 60. This air as indicated by the arrows in FIGURE 7 then flows through the passage 78 that is beneath the bottom perforated plate 70, up through the space between the plates 69 and 70 and through the passage 79 above and at the side of the plate structure 69—70. The ir then flows out through the air pervious section 45.

In the embodiment of FIGURES 5 and 9–12 there is illustrated a first embodiment of an air filter bag attaching structure by means of which individual air filter bags of a series of bags of the type shown in FIGURES 20–25 inclusive may be releasably attached in position with the cleaner. In the embodiment of FIGURE 5, these connected bags may be wrapped around suction unit 52 as shown in FIGURE 26 or may be wrapped around a sleeve of paper, plastic, metal, etc., encompassing that unit to facilitate easy unwrapping of the roll of filter bags wrapped around that sleeve. As is shown in these figures these bags may take any one of a number of different forms. Thus, in the embodiment of FIGURES 20 and 21 the bags are in continuous strip form with each bag 81 separate from the others by means of a series of perforations 80. The lead bag in the series is provided with a pulling strip 82 for aid in positioning this first bag in proper filtering position. This strip 82 is at the leading edge of the bag. Adjacent the trailing edge of each bag is provided an opening 83 that is normally at least partially closed by a plurality of pie-shaped paper sections 84. Surrounding the opening 83 is a rigid rim member 85 in the form of a flat plate with an edge bead 86. This plate may be made of metal, plastic or the like.

In the embodiment of FIGURES 22 and 23 the bag 87 is an individual bag and is not one of an elongated series. This bag likewise is provided with a rim member 85 and at its leading edge with an elongated pulling strip 87*a*. These individual bags are preferably stored adjacent suction unit 52 as shown in FIGURE 27 so that removal of a used filter bag will automatically expose the tab or pull strip 87*a* of the next succeeding bag. Tab 87*a* may be of varying lengths depending upon the desired manner of removal of bags 87 from the casing 30. For example, long tabs may be used for removal of the bags through the end door 46 while shorter tabs are sufficient if the bags are removed through the upper door or cover 42.

In the embodiment of FIGURE 24 the bags 88 are arranged in series but are separated from each other by an elongated strip 89 of paper between each pair of bags. Each strip of paper joins the following end of one bag to the leading end of the next bag as shown in FIGURE 24. The filter bags connected in this manner are adapted for use in roll form as shown in FIGURE 5 or in a zig-zag form in a corner of casing 30 adjacent suction unit 52 as shown in FIGURE 28 which is somewhat similar to the method of storing individual bags as shown in FIGURE 27.

The embodiment of FIGURE 25 is similar to that of FIGURE 23 but here the rim member 90 is merely a flat plate with neither an inner bead nor an outer bead as illustrated at 91 and 86 in FIGURE 20.

In order to fasten one of the bags in position relative to the inlet 38 there is provided on the interior of the casing 30 an upper channel member 92 and a lower channel member 93 substantially parallel to each other and having grooves 94 and 95 facing each other. These channel members are parts of a plate 96 that is bolted to the casing around the inlet 38 as by a plurality of bolts 97. The plate 96 is formed with an opening 98 substantially concentric with the interior opening 99 of the inlet 38. Mounted within this opening 98 is a soft rubber collar 100. The forward end 101 of this collar 100 is locked in position between the rear edge 102 of the inlet 38 which is shaped to form a channel and a projecting edge on the casing 30. An intermediate section 103 of generally cylindrical shape extends into the cleaner and is enlarged at its inner end to form a sealing section 104. Extending outwardly from the area where the sections 103 and 104 join is a flexible flange section 105 of collar member 100 whose outer edge is clamped between the casing 30 and an edge portion on the plate 96. Immediately forward of this portion 105 is a mov-

able rigid plate 106 having a forwardly extending inner flange portion 107 that is positioned against the outer surface of the intermediate portion 103. The spacing of this plate 106 from the adjacent portions of the casing 30 provides an air chamber 108 connected to the exterior of the cleaner by means of a small air hole 109.

In order to provide a releasable stop to position properly the rim member 85 of a filter bag of the type previously described, there is provided a stop 110 that is movable inwardly and outwardly within an opening 111 in the plate 96. This stop 110 which is of generally cylindrical construction is provided with an annular groove 112 that is normally positioned outwardly of the grooves 94 and 95 as shown in FIGURE 12. In order to operate the stop 110 there is provided the previously described push button 40. This button is urged outwardly by means of a helical spring 113 positioned in an annular groove 114 in the button 40. This spring which has one end bearing against the casing 30 and the other end against the push button 40 serves to hold the stop 110 in its outermost position as shown in FIGURE 12.

In order to guide the bags into proper position there is provided an arcuate shaped guide member 115 that is rockably mounted about a vertical rod 116. Guide member 115 is positioned on rod 116 against shoulder 118 by nut 117 with the guide member 115 being located adjacent the entering ends of the channel members 92 and 93. This guide member is provided with a pair of rearwardly extending upper and lower ears 119 and is provided with a forwardly extending tongue 120 that extends at its furthest point forwardly of the entering ends 121 and 122 of the channel members 92 and 93.

Cooperating with the guide member 115 is a second guide member 123 that is formed integrally with plate 96. This second guide member is provided with an inclined portion 124 that cooperates with the inner surface of the plate 96 to form a slide for guiding a rim member 85 of a filter bag into and between the channel members 92 and 93 as shown most clearly in FIGURES 9 and 11. The guide member 123 also has upper and lower raised edge portions 125 that are located above and below the grooves 94 and 95 of the plate 96. These raised edge portions 125 serve to guide the paper portion of the filter bag away from the channel members 92 and 93 in the manner shown most clearly in FIGURE 11 so as to prevent these paper portions from becoming wedged within the grooves 94 and 95.

In order to form an initial seal of the rubber collar 100 against a rim member 85 there are provided a plurality of helical springs 126 mounted in recesses 127 at the rear of the plate 36 as shown in FIGURE 11. These springs bear against the rear of the movable plate 106 so as to force the sealing section 104 against the bead 91 of the rim member 85. This serves to form an initial seal. However, when suction is turned on within the cleaner by operation of the suction unit, air entering the hole 109 provides air pressure within the chamber 108 to force the sealing section 104 even more firmly against the bead 91.

The operation of this embodiment of the device is as follows: a bag which may be the first one of a length of bags or which may be an individual bag with a tab or other means thereon for pulling is placed around in front of the guide member 115 between the guide member 115 and the second guide member 124. The pulling force is continued laterally of the longitudinal axis of the inlet collar 38 to the left as viewed in FIGURE 5. The tongue 120 of the guide member 115 directs the rim member 85 of the bag into the entrance ends 121 and 122 of the channel members 92 and 93. Simultaneously the edge portion 125 of the second guide member 123 directs the upper and lower edges of the bag adjacent the rim member 85 inwardly to avoid the channel members 92 and 93. By clearing these edge portions of the bag from the channel members 92 and 93 the rim member 85 is free to pass into the channel members 92 and 93 in the manner shown in FIGURES 5 and 9–12. The rim member 85 slides easily within these channels until the leading edge 128 of the rim member strikes the stop 110. The pulling force is then discontinued. This pulling can easily be accomplished by reason of the hinged door 46. Thus, in order to accomplish the pulling this door is lowered by force on the handle 41 so that the operator can reach his hand into the chamber 129 where the bag that was in use is located as indicated on the dotted line structure 130 in FIGURE 5.

As soon as this leading edge has contacted the stop 110 the cleaner is then ready for operation. The side door is thereupon closed and it is held closed by the catch 48, being sealed by an edge rubber gasket 130*a*. As soon as the vacuum is set up by the suction unit air enters the small air hole 109 into the air chamber 108 in the manner previously described to seal the rubber collar 100 securely against the rim member 85. FIGURE 26 illustrates a construction in which an elongated strip of bags of the type shown in FIGURES 20 and 21 are wrapped around the suction unit 52. This serves to store the bags ready for use.

When a bag is filled and it is desired to remove it and replace it with a fresh one, it is only necessary to push the button 40 inwardly until the groove 112 is aligned with the leading edge 128 of the rim member 85. This occurs when the button is pushed inwardly its fullest extent. It is then only necessary to open the access door 46 and holding the button 40 depressed pull on the full bag 130. Continued pulling causes the wound bags to slip around the suction unit 52 and to permit the following fresh bag to be moved into position. As soon as the rim member 85 on the full bag 130 clears the stop 110 it is only necessary then to release the button 40 so that the stop 110 again moves into position to stop and automatically position properly the rim member 85 of the next in line bag. The full bag can then be separated at the line perforations 80 and the full bag 130 discarded.

In the embodiment of FIGURES 14–18 inclusive a second guide member 133 is provided as in the previous embodiment for guiding the rim member into the channel members 131 and 132. In this embodiment the second guide member 133 is in the form of a sheet of metal having a central tongue portion 134 for guiding the rim member into the channels 131 and 132 and edge inclined portions 135 for guiding the edges of the filter bag away from the channel members in the manner previously described. As in the first embodiment there is provided a sealing gasket 136 around the inlet 38. In this embodiment the plate member 137 from which the channel members 131 and 132 are struck is movable, sliding easily on pins 140 and 142, and is urged toward the gasket 136 by means of a pair of elongated springs 138 and 139. Each spring has its center anchored by a post 140 in the form of a hook. Each spring which is bowed has its ends 141 bearing against the plate member 137 and these ends are guided in slots that are located in end posts 142.

A retractable stop 143 is employed to limit the extent of movement of a rim member of a bag in the manner previously described in connection with the previous embodiment. This stop 143 is in the form of a bar 144 rockably mounted about a hinge pin 145 secured to a bracket 146. This bar 144 is provided with an upwardly extending stop portion 147 on one end and on the opposite end has attached thereto an outwardly extending button 148 similar to the previously described button 40 in the previous embodiment. This button 148 is also spring urged by means of a spring 149 so as to normally position the stop portion 147 in position to intercept the rim of an incoming bag.

The apparatus of this second embodiment operates in substantially the same way as the previously described embodiment. In this second embodiment the rim member 85 is directed by the tongue 134 to enter between the

gasket 136 and the channel members 131 and 132. When the rim member contacts the stop portion 147 the bag is properly positioned. Sealing force is provided by means of the springs 138—139 pressing the plate member 137 and thus the channel members 131 and 132 against the rim member and thus the rim member against the gasket 136.

When it is desired to replace a bag it is only necessary to push the button 148 inwardly to retract the stop portion 147. The bag may then be removed and a new one inserted in the same manner as previously described.

The embodiment of FIGURE 19 is the same as the embodiment of FIGURES 14–18 inclusive except that here the guide member 149 omits the rearwardly extending ears.

Having described our invention as related to the embodiments shown in the accompanying drawings, it is our intention that the invention be noted limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; bag retaining means adjacent said inlet opening; movable resilient bag sealing means adjacent said inlet opening, the retaining and sealing means cooperating to grasp and retain releasably a rim with the sealing means being between said rim and said inlet opening; and means forming an air chamber vented to atmosphere on a side of said resilient means opposite said rim in order that air pressure will force said resilient means against said rim upon operation of said vacuum creating means.

2. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; a pair of susbtantially parallel flange members adjacent said inlet opening adapted to engage a rim on an inner side thereof in areas on the rim between said rim and said filter portion so that said openings communicate with each other; a resilient sealing member adapted to bear against said rim on an outer side thereof that is opposite said filter portion, said flange members and said sealing member providing a means for grasping said rim, the sealing member being between said rim and said inlet opening; and resilient means urging at least one of said sealing member and said pair of flange members against said rim to increase the sealing pressure thereon.

3. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; a pair of substantially parallel flange members adjacent said inlet opening adapted to engage a rim on an inner side thereof in areas on the rim between said rim and said filter portion so that said openings communicate with each other, the flange members being located opposite each other relative to the inlet opening; a resilient sealing member adapted to bear against said rim on an outer side thereof that is opposite said filter portion, said flange members and said sealing member providing a means for grapsing said rim, the sealing member being between said rim and said inlet opening; and spring means urging said flange members against said rim and thus said rim against said sealing member to increase the sealing pressure on said rim.

4. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; a pair of substantially parallel flange members adjacent said inlet opening adapted to engage a rim on an inner side thereof in areas on the rim between said rim and said filter portion so that said openings communicate with each other, said flange members being open at their ends to permit a rim to slide between, through and from said flange members; a stop member adapted to engage a rim for positioning the corresponding air filter opening in said communicating relationship with said inlet opening; a resilient sealing member adapted to bear against said rim on an outer side thereof that is opposite said filter portion, said flange members and said sealing member providing a means for grasping said rim, the sealing member being between said rim and said inlet opening; resilient means urging at least one of said sealing member and said pair of flange members against said rim to increase the sealing pressure thereon; and means for releasing said stop member preparatory to removal of said filter.

5. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; bag retaining means adjacent said inlet opening; bag sealing means adjacent said inlet opening, the retaining and sealing means being movable toward and away from each other to grasp and retain releasably a rim with the sealing means being between said rim and said inlet opening; resilient means urging at least one of said retaining means and sealing means against said rim to increase the sealing pressure thereon; and means for guiding one of said rims of said filters into position adjacent said inlet in said casing for said grasping.

6. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; a pair of substantially parallel flange members adjacent said inlet opening adapted to engage a rim on an inner side thereof in areas on the rim between said rim and said filter portion so that said openings communicate with each other, said flange members being open at their ends to permit a rim to slide between, through and from said flange members; a stop member adapted to engage a rim for positioning the corresponding air filter opening in said communicating relationship; a resilient sealing member adapted to bear against said rim on an outer side thereof that is opposite said filter portion, said flange members and said sealing member providing a means for grasping said rim, the sealing member being between said rim and said inlet opening; resilient means urging at least one of said sealing member and said pair of flange members against said rim to increase the sealing pressure thereon; means for guiding one of said rims of said filters into position for said grasping; and means for releasing said stop member.

7. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; a pair of substantially parallel flange members adjacent said inlet opening adapted to engage a rim on an inner side thereof in areas on the rim between said rim and said filter portion so that said openings communicate with each other, said flange members being open at their ends to permit a rim to slide between, through and from said flange members; a stop member adapted to engage a rim for positioning the corresponding filter inlet opening in said communicating relationship; a resilient sealing member adapted to bear against said rim on an outer side thereof that is opposite said filter portion, said flange members and said sealing member providing a means for grasping said rim, the sealing member being between said rim and said inlet opening; resilient means urging at least one of said sealing member and said pair of flange members against said rim to increase the sealing pressure thereon; a guide member for directing said rim toward said flange mem-

bers, the guide member being arcuately oscillatable for automatic alignment of said rim with said flange members; guide means for directing the filter portions on opposite sides of said rim inwardly of the rim to clear said flange members; and means for releasing said stop member.

8. A vacuum cleaner adapted to employ air filters each having a filter portion and a stiff rim surrounding an intake opening, comprising: a casing having an inlet opening; means for creating a vacuum in said casing; a pair of substantially parallel flange members adjacent said inlet opening adapted to engage a rim on an inner side thereof in areas on the rim between said rim and said filter portion so that said openings communicate with each other, said flange members being open at their ends to permit a rim to slide between, through and from said flange members; a stop member adapted to engage a rim for positioning the corresponding air filter opening in said communicating relationship; a resilient sealing member adapted to bear against said rim on an outer side thereof that is opposite said filter portion, said flange members and sealing member providing a means to grasp said rim; spring means urging said flange members against said rim and thus said rim against said sealing member to increase the sealing pressure on said rim; a guide member for directing said rim into said grasping position, the guide member being arcuately oscillatable for automatic alignment of said rim with said flange members; guide means for directing the filter portions on opposite sides of said rim inwardly of the rim to clear said flange members; and means for releasing said stop member.

9. A vacuum cleaner comprising, a housing, means defining an air inlet in said housing, a suction unit within said housing for drawing dirt laden air through said air inlet, means defining a trackway adjacent said air inlet, a filter bag positioned within said housing for filtering dirt laden air entering said air inlet, means defining a filter bag inlet in said filter bag, a guide member on said filter bag engageable with said trackway for retaining said filter bag adjacent said air inlet when said filter bag inlet is aligned with said air inlet, guide means within said housing spaced from said trackway, said filter bag including a pull strip positioned between said trackway and said guide means facilitating manual movement of said guide member past said guide means and into engagement with said trackway for alignment of said filter bag inlet with said air inlet and further facilitating removal of said guide member from said trackway for subsequent disposal of said filter bag.

10. A vacuum cleaner comprising, a housing, means defining an air inlet in said housing, a suction unit within said housing for drawing dirt laden air through said air inlet, means defining a trackway adjacent said air inlet, a series of interconnected filter bags positioned within said housing, each of said bags being provided with a filter bag inlet and a guide member adjacent said filter bag inlet for engagement with said trackway when each of said bags is successively moved into alignment with said air inlet, guide means within said housing spaced from said trackway, and manually graspable means on each of said filter bags facilitating successive movement of said guide members past said guide means and into engagement with said trackway for alignment of each respective filter bag inlet with said air inlet and further facilitating successive removal of said filter bags from said trackway for subsequent disposal of said filter bags.

11. A vacuum cleaner comprising, a housing, means defining an air inlet in said housing, a suction unit within said housing for drawing dirt laden air through said air

inlet, means defining a trackway adjacent said air inlet, a series of interconnected filter bags encircling said suction unit, each of said bags being provided with a filter bag inlet and a guide member adjacent said filter bag inlet for engagement with said trackway when said bags are unwrapped from said suction unit and are successively moved into alignment with said air inlet, guide means within said housing spaced from said trackway, and manually graspable means on each of said filter bags facilitating successive movement of said guide members past said guide means and into engagement with said trackway for alignment of each respective filter bag inlet with said air inlet and further facilitating successive removal of said filter bags from said trackway for subsequent disposal of said filter bags.

12. A vacuum cleaner comprising, a housing, means defining an air inlet in said housing, a suction unit within said housing for drawing dirt laden air through said air inlet, means defining a trackway adjacent said air inlet, a series of interconnected filter bags folded back and forth within said housing adjacent said suction unit, each of said bags being provided with a filter bag inlet and a guide member adjacent said filter bag inlet for engagement with said trackway when each of said bags is successively moved into alignment with said air inlet, guide means within said housing spaced from said trackway, and manually graspable means on each of said filter bags facilitating unfolding of said bags and successive movement of said guide members past said guide means and into engagement with said trackway for alignment of each respective filter bag inlet with said air inlet and further facilitating successive removal of said filter bags from said trackway for subsequent disposal of said filter bags.

13. A vacuum cleaner comprising, a housing, means defining an air inlet in said housing, a suction unit within said housing for drawing dirt laden air through said air inlet, means defining a trackway adjacent said air inlet, a series of filter bags and pull strips alternately connected to each other and folded back and forth upon each other within said housing, each of said bags being provided with a filter bag inlet and a guide member adjacent said filter bag inlet for engagement with said trackway when each of said bags is successively moved into alignment with said air inlet, guide means within said housing spaced from said trackway, a bag removal opening in said housing, each of said pull strips providing manually graspable means facilitating unfolding of said bags and successive movement of said guide members past said guide means and into engagement with said trackway for alignment of each respective filter bag inlet with said air inlet and further facilitating successive removal of said filter bags from said trackway for subsequent disposal of said filter bags through said bag removal opening.

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