

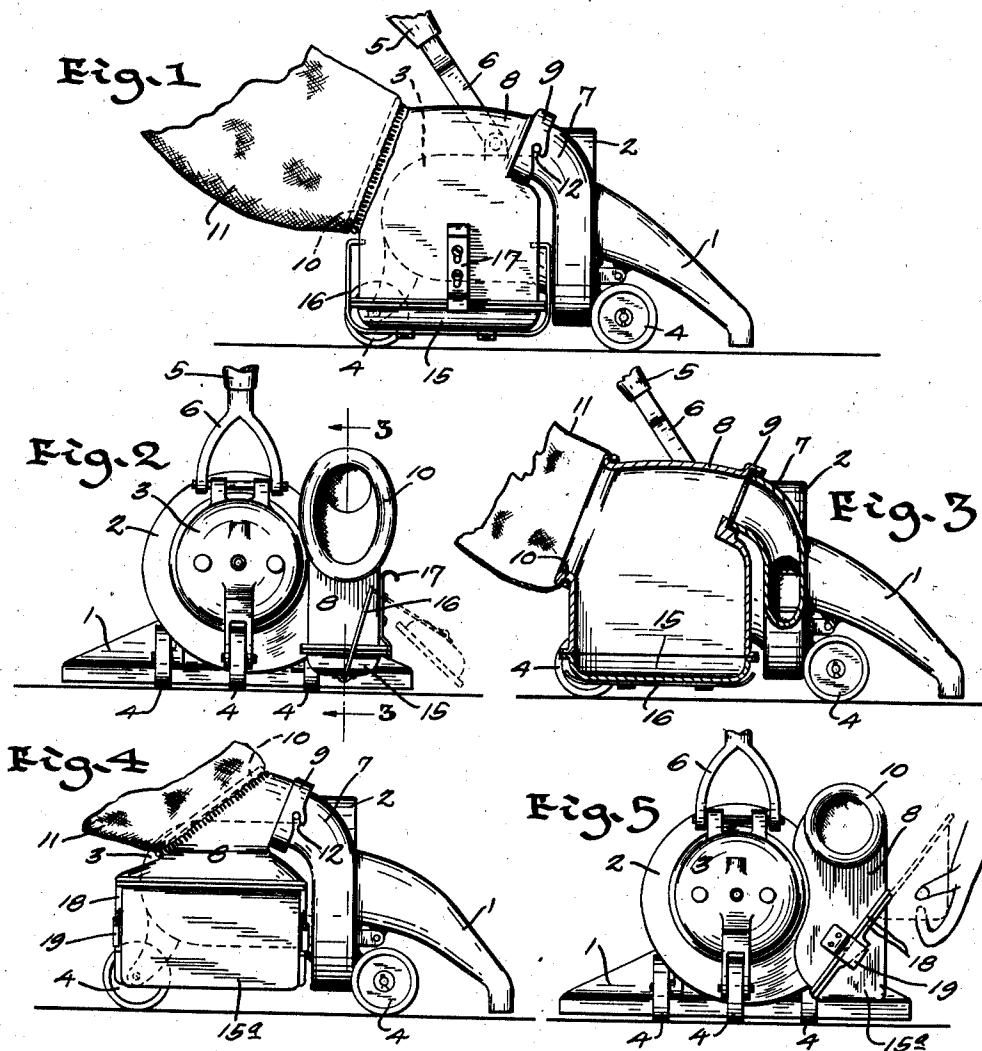
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SUCTION CLEANER

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SUCTION CLEANER

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This invention relates to suction cleaning apparatus and has for its object the provision of a new and improved litter receptacle which can be more easily emptied than previous devices of this nature. Most suction cleaners are provided with porous dust-bags of cloth or other filtering material as shown for example in my Patent No. 1,184,458, to separate the litter from the air-stream by which it is carried; and despite the employment of various expedients to facilitate the opening and closing of the bag, as shown for example in my Patent No. 1,214,796, the removal of the dust and litter from such a bag has always been a messy and unpleasant operation which the user has always deferred as long as possible, with the result that the cleaning ability of the machine is oftentimes considerably impaired. The main objects of the present invention are the provision of a litter-receptacle of such form, nature, material, and location that it can be evacuated more easily than the usual dust-bag and even preferably without the necessity of removing it from the cleaner, yet without impeding the operation and manipulation of the cleaner; the provision of a litter box having a hinged or otherwise displaceable side; the provision of a litter receptacle which shall enable the omission of the dust valve heretofore generally employed; while further objects and advantages of the invention will become apparent as the description proceeds.

In the drawing accompanying and forming a part of this application I have shown certain physical forms which my invention may assume. Fig. 1 is a side elevation of an electric vacuum cleaner having one of my improved dust-boxes attached thereto; Fig. 2 is a rear elevation of the device shown in Fig. 1, with the bag omitted; Fig. 3 is a vertical sectional view corresponding to the line 3—3 of Fig. 2; Fig. 4 shows a side elevation and Fig. 5 a rear elevation of a modified form of device.

I have shown my improved dust-box in connection with an electric cleaner of the so-called "horizontal type", that is to say: the casing of the cleaner comprises a nozzle 1 and fan-casing 2 and motor-housing 3, connected rigidly together in the order named from front to rear and forming a unit which is provided with suitable wheels 4—4 whereby it is supported with the motor axis substantially horizontal and with the collecting mouth of the nozzle properly applied to the floor, about which it is propelled by means of a handle 5 pivoted to the casing by a fork 6. The fan-casing is generally made of somewhat spiral shape

and is provided at one side of the motor-housing with an upwardly and rearwardly directed outlet-neck 7. In the angle thus defined at the rear of the outlet-neck and at one side of the motor-housing I locate a hollow dust-box 8, preferably approximately rectangular in horizontal section and preferably extending not much beyond the rearward wheel. This box is provided at its forward upper corner with a suitable connection, such as the ring 9, adapted for attachment to the outlet-neck 7, and at the rearward upper corner with provisions, such as the flange 10, for the attachment of the lower end of the dust-bag 11. In Figs. 1 to 4 inclusive the ring 9 is provided with a bayonet-slot 12 adapted for detachable connection to the neck 7 in the same way that the dust-bag has often heretofore been attached thereto. Other arrangements and connections could obviously be employed.

In the form shown in Figs. 1, 2, and 3, the box is formed with a separate bottom 15, removably secured in place by the joint operation of the pivoted bail 16 and the slidable latch 17. This permits the bottom to be swung downwardly and laterally to dump the contents of the box without removing either the box or the bag from its attachment to the casing. In the form shown in Figs. 4 and 5 the bottom and part of one side of the box is formed as a separate piece 15^a, joining the box obliquely along the flange 18 and adapted to be removed by an outward and upward sliding motion as shown in Fig. 5, being normally held in place by a suitable clip 19. In the first form of the device the litter is dumped downwardly and in the second form sidewardly, since this can be effected without detaching or even handling the bag it is less likely to be postponed. Besides this device permits the omission of the internal sleeve customarily used inside the bag as illustrated for example in my patents Reissue No. 14,100 and No. 1,422,105. This further decreases the opposition to the air stream, and also permits any loose dust which collects on the inside of the bag to be shaken down into the dust-box and thence discharged, which is obviously impossible when the collapsible sleeve is employed. Furthermore there is more available filtering area in the dust-bag, and by reason of easier evacuation there is less fouling of the bag.

My improved dust-box forms a very neat and compact device and does not in any way interfere with the ordinary manipulation of the cleaner. It can be made and sold as a separate article of manufacture for previous cleaners, or employed

interchangeably with the usual dust-bag, or fixedly secured to the fan-casing.

The two different devices shown in Figures 1 to 5 of the drawing constitute couplings for detachably securing the dust-bag to the cleaner in addition to serving as dust collecting and emptying devices. The opening of the dust-box which is connected to the dust-bag is of much larger size than is the opening communicating with the fan outlet so that dust and dirt separated from the air in passing through the material of the dust-bag may drop into the dust-box during the operation of the cleaner. This action is possible by reason of the decrease in velocity of the air as it enters the dust-bag as compared with its velocity as it enters the dust-box by way of the relatively small inlet of the dust-box which is directed against the upper part of the relatively large outlet opening so that the normal flow of dust and dirt past the lower part of such opening is not greatly impeded by the oppositely blowing air stream coming from the fan case. The upper end of the filter or dust-bag is connected to the upper part of the pivoted cleaner handle 5 as shown in some of the patents earlier referred to and as is customary in cleaners of the type disclosed. The ordinary movements of the handle occasioned during the use of the cleaner operate to shake the bag and to cause dust and dirt collected in the bag to drop into the dust-box where such materials remain until the dust-box is emptied.

It will be understood that I do not limit myself to the horizontal type of cleaner or to an electrically operated cleaner nor to any of the shapes or arrangements or other details herein shown except as the same are specifically recited in my several claims, which I desire may be construed each independently of limitations contained in other claims.

Having thus described my invention what I claim is:

1. A dust receptacle for suction cleaners of the type having a fan casing supported with its axis substantially horizontal and also having a motor housing coaxial with the fan casing which has a rearwardly facing discharge outlet at one side of said motor housing; said receptacle comprising a rectangular oblong box of rigid impervious material located substantially entirely in the space directly behind the fan casing adjacent to the outlet thereof and at one side of said motor housing with its bottom closely adjacent to the working surface, said box having in one wall an opening adapted to communicate with the fan casing discharge outlet and having in another wall an air outlet, and a porous dust bag secured over the last outlet of said box, said box having a displaceable wall adapted to be separated from the rest of the box to enable emptying of its accumulated contents without detachment of the box from either the fan casing or said bag and with the cleaner in working position.

2. A dust receptacle for a suction cleaner of the type having a fan case and a motor housing arranged one behind the other in the order named and with the discharge outlet of the fan case at one side of the motor housing, the fan case being substantially coaxial with the motor housing and extending radially beyond the same; said receptacle comprising a dust box located substantially entirely in the space directly behind the fan case and alongside of the motor housing with a part at least of the dust box

lying below the fan case outlet, said dust box having a pair of oppositely disposed spaced openings in its upper part one of which is connected in communicating relation with the outlet of the fan case, a porous dust filter connected to the other opening of said dust box, and means for discharging the accumulated contents of said dust box when in position on said cleaner.

3. A dust receptacle for a suction cleaner of the type having a fan case and a motor housing arranged one behind the other in the order named and with the discharge outlet of the fan case at one side of the motor housing, the fan case being substantially coaxial with the motor housing and extending radially beyond the same; said receptacle comprising a dust box located in the space behind the fan case and alongside of the motor housing with its bottom closely adjacent to the working surface and below the outlet of the fan case, said dust box having a pair of openings in its upper part one of which is connected in communicating relation with the outlet of the fan case, and a porous dust filter connected to the other opening of said dust box, said dust box having a bottom wall part removable therefrom when the cleaner is resting on a supporting surface for emptying the litter accumulated therein.

4. A dust receptacle for a suction cleaner of the type having a fan case and a motor housing arranged one behind the other in the order named and with the discharge outlet of the fan case at one side of the motor housing, the fan case being substantially coaxial with the motor housing and extending radially beyond the same; said receptacle comprising a dust box located in the space behind the fan case and alongside of the motor housing with its bottom closely adjacent to the working surface and below the outlet of the fan case, said dust box having a pair of openings in its upper part one of which is connected in communicating relation with the outlet of the fan case, and a porous dust filter connected to the other opening of said dust box, said dust box having a detachable bottom wall part hinged thereto for emptying the litter accumulated therein with the cleaner in working position.

5. A dust receptacle for a suction cleaner of the type having a fan case and a motor housing arranged one behind the other in the order named and with the discharge outlet of the fan case at one side of the motor housing, the fan case being substantially coaxial with the motor housing and extending radially beyond the same; said receptacle comprising a dust box located in the space behind the fan case and alongside of the motor housing, said dust box having a pair of substantially aligned spaced openings of different size in its upper part the smaller of which is connected in communicating relation with the outlet of the fan case, a porous dust filter connected to the larger opening of said dust box whereby dust and dirt may be discharged from the filter into said dust box during the operation of the cleaner, and means for discharging the accumulated contents of said dust box when in position on said cleaner.

6. Dust collecting and filtering instrumentalities for a suction cleaner of the type having a fan case and a motor housing arranged one behind the other in the order named and with the discharge outlet of the fan case at one side of the motor housing, the fan case being substantially coaxial with the motor housing and extending

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radially beyond the same; said instrumentalities comprising a porous dust bag, and a hollow coupling member carried in the space behind the outlet of said fan case and alongside of said motor housing for detachably connecting the lower end of said bag to the fan case outlet, said member having a depending part defining a litter chamber and also having a lower removable wall part for the discharge of litter from said bag and member.

7. In a portable self-contained vacuum cleaner of the type employing a power driven suction fan and a ported casing therefor having an operating handle pivotally attached thereto and a non-rigid dust or filter bag supported at its upper end from said handle; a dust receptacle for receiving the heavy contents of the filter bag, the upper part of said receptacle being adapted to communicate with the outlet port of the fan casing and fixed thereto, said receptacle having an air outlet in the upper part of one of its walls and also having its bottom wall displaceable whereby accumulated litter may be discharged freely and completely from the receptacle upon the displacement of the bottom wall thereof, means for fixedly securing the lower end of the filter bag to the air outlet of said receptacle whereby dust and dirt may be shaken into the receptacle by the movements of the pivoted handle and the upper end of the bag incidental to the ordinary use of the cleaner, and means for detachably securing the bottom wall of said receptacle in place.

8. In a portable self-contained vacuum cleaner of the type employing a power driven suction fan and a ported casing therefor having an operating handle pivotally attached thereto and a non-rigid dust or filter bag supported at its upper end from said handle; a dust receptacle for receiving the heavy contents of the filter bag, such bag having a surface of considerably greater area

than that of said receptacle, the upper part of said receptacle being adapted to communicate with the outlet port of the fan casing and fixed thereto, said receptacle having an air outlet in the upper part of one of its walls communicating with the bottom of the filter bag and also having its bottom wall displaceable for emptying accumulated litter collected by the filter bag and the dust receptacle, means for fixedly securing the lower end of the filter bag to the air outlet of said receptacle whereby dust and dirt may be shaken into the receptacle by the movements of the pivoted handle and the upper end of the bag incidental to the ordinary use of the cleaner, and means for detachably securing the bottom wall of said receptacle in place.

9. In a portable self-contained vacuum cleaner of the type employing a power driven suction fan and a ported casing therefor having an operating handle pivotally attached thereto and a non-rigid dust or filter bag supported at its upper end from said handle; a dust receptacle for receiving the heavy contents of the filter bag, the upper part of said receptacle being adapted to communicate with the outlet port of the fan casing and fixed thereto, said receptacle having an air outlet in the upper part of one of its walls opposite to and spaced from the fan casing outlet port and also having its bottom wall located a substantial distance below such air outlet and outlet port and displaceable from the receptacle whereby accumulated litter may be discharged freely and completely from the dust receptacle upon the displacement of the bottom wall of said receptacle, means for fixedly securing the lower end of the filter to the air outlet of said receptacle in position to discharge dust and dirt into the receptacle, and means for detachably securing the bottom wall of said receptacle in place.

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