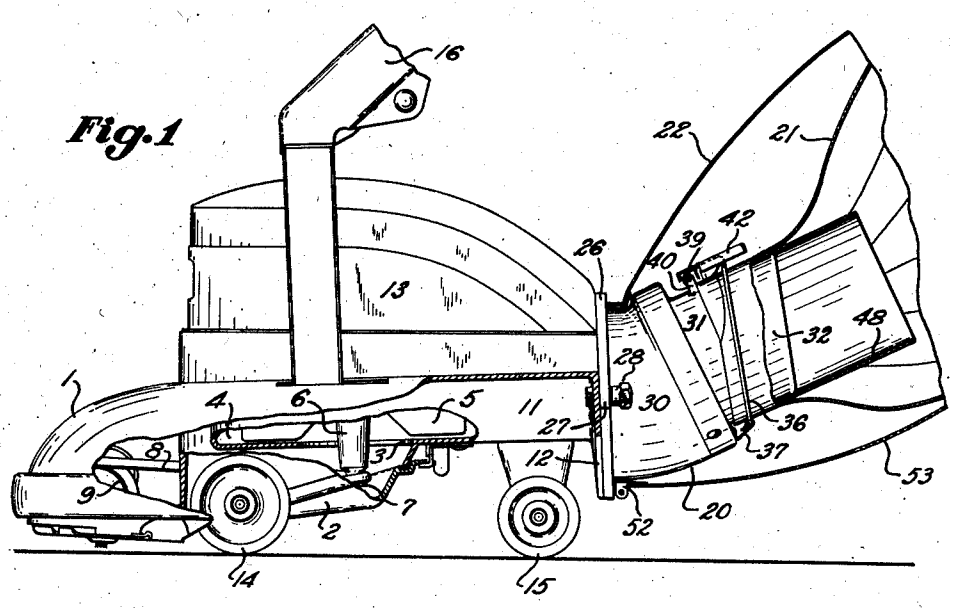
Sept. 15, 1942. H. B. WHITE 2,295,981

SUCTION CLEANER

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Fig. 1



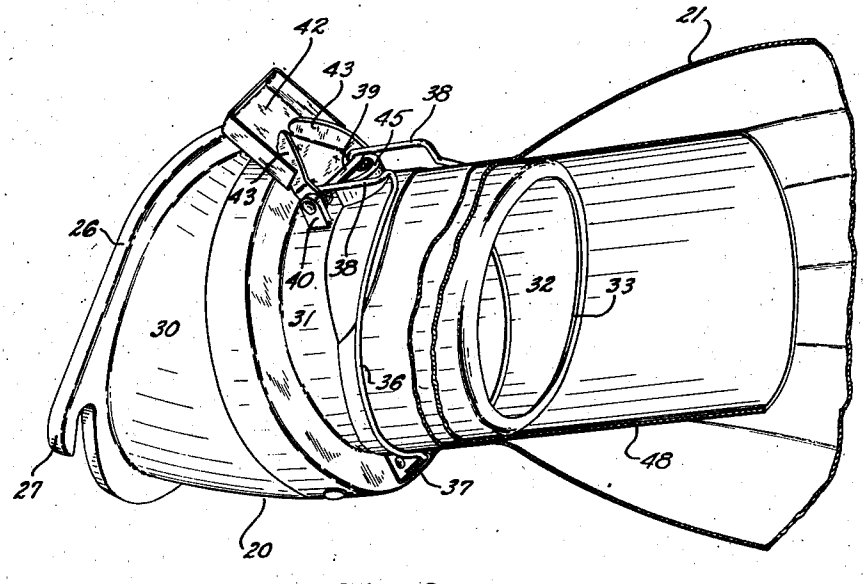


Fig. 2

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SUCTION CLEANER

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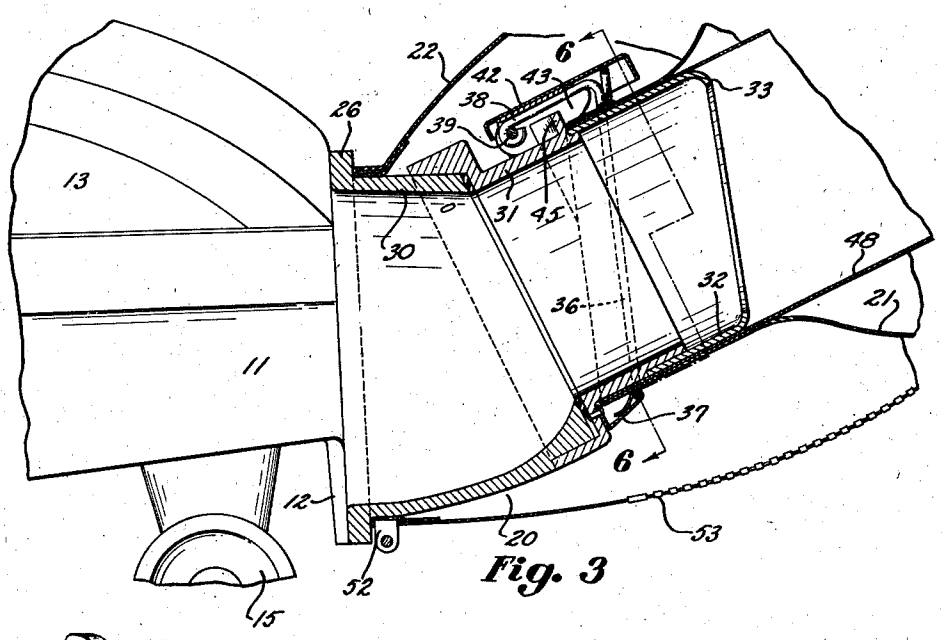


Fig. 3

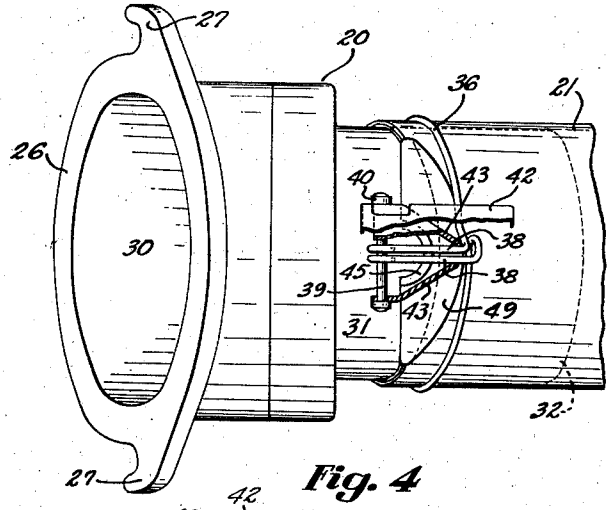


Fig. 4

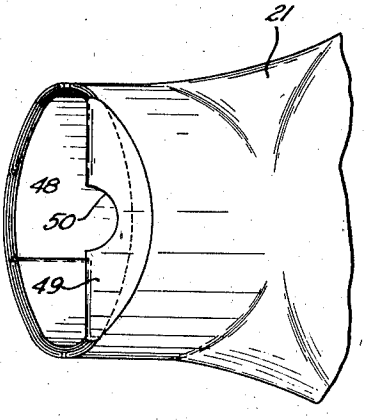


Fig. 5

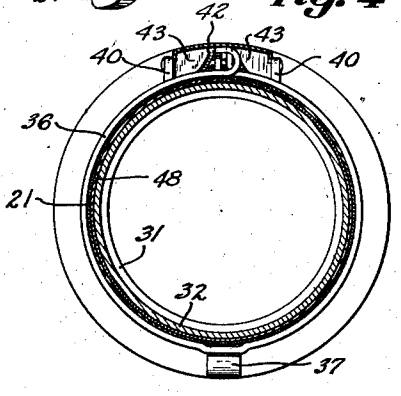


Fig. 6

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SUCTION CLEANER

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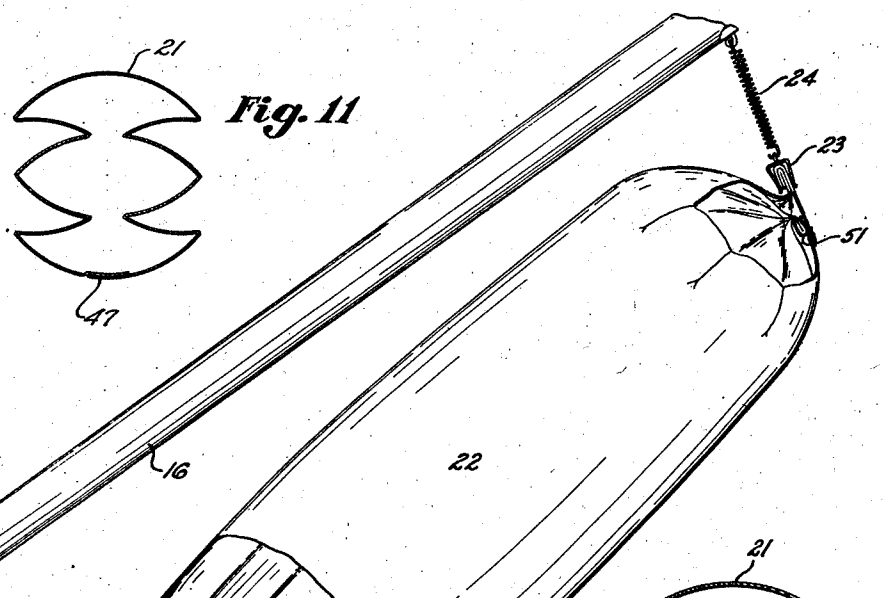


Fig. 11

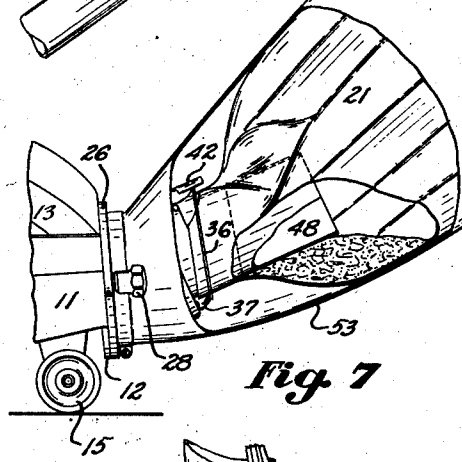


Fig. 7

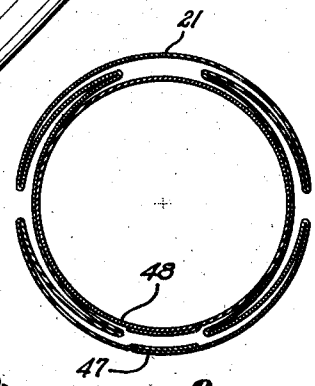


Fig. 9

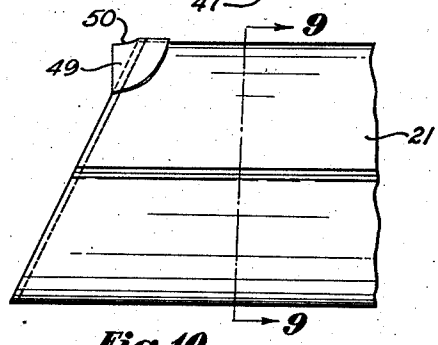


Fig. 10

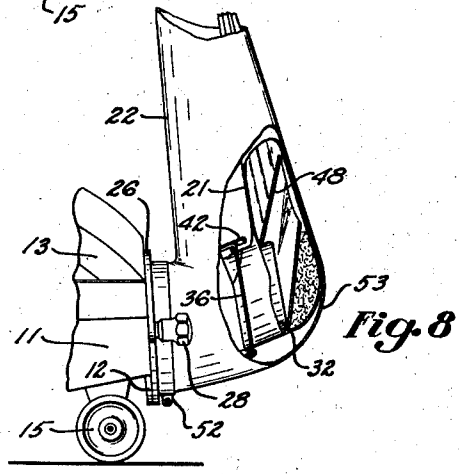


Fig. 8

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Patented Sept. 15, 1942

2,295,981

UNITED STATES PATENT OFFICE

2,295,981

SUCTION CLEANER

Harry B. White, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Application December 23, 1939, Serial No. 310,756

15 Claims. (Cl. 183—51)

The present invention relates to suction cleaners in general and more particularly to a new and novel dirt-filtering bag and means for removably mounting and positioning it in a suction cleaner assembly.

It is an object of the present invention to provide a new and improved suction cleaner. It is another object of the invention to provide a new and improved dirt-filtering bag in a suction cleaner. A further object of the invention is to provide new and improved mounting means for a dirt-filtering bag in a suction cleaner. Still another object of the invention is to provide a new and improved paper bag for a suction cleaner. Another object of the invention is to provide a dust-filtering paper bag for a suction cleaner provided with a restricted inlet which expands through a plurality of pleats into an enlarged body portion and which is provided with seating means which insures the bag to be properly positioned in the cleaner assembly with the pleats at the sides to provide maximum flexibility and bending. Still another object of the invention is to provide a paper filtering bag for suction cleaners having an elongated mouth of maximum length upon its underside to reduce spillage. A still further object of the invention is to provide a removable paper bag for a suction cleaner, the inlet of which is cut upon the bias to facilitate assembly and ease of insertion upon the seating pilot. A further object of the invention is to provide a suction cleaner paper dust bag having its greatest length upon its underside to reduce the strain when moved to a storage position in which the bag is sharply bent. A further object is to provide a bag assembly in a suction cleaner in which cooperating means are provided upon the mounting and upon the bag to insure the proper positioning of the bag. A still further object is to provide a new and novel bag-clamping construction in a suction cleaner. These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawings to which they relate.

Referring now to the drawings in which preferred emodiments of the present invention are disclosed, and in which the same reference character refers to the same parts throughout:

Figure 1 is a side view of a suction cleaner embodying the present invention with certain parts broken away and shown in section;

Figure 2 is a view in perspective of the bag-mounting assembly with the inlet neck of the bag seated thereon, the bag being broken away and shown in section to show the relatively stiff paper valve sleeve closely enclosing the mounting pilot, the bag-clamping means being shown in the released condition;

Figure 3 is an enlarged longitudinal section through the lower end of the bag and its mounting means in position upon the exhaust of the cleaner, the bag being clamped in place by the retaining means;

Figure 4 is a top view of the mounting assembly with the bag clamped in place, the cam levers being broken away and shown in section;

Figure 5 is a top view of the bag inlet or mouth as it would be positioned if slid rearwardly from the pilot of the mounting assembly illustrated in adjacent Figure 4;

Figure 6 is a section upon the line 6—6 of Figure 3;

Figure 7 is a view of the cleaner assembly with the handle in the operating position and the upper end of the outer appearance bag supported thereby;

Figure 8 is a view of the rear portion of the cleaner with the bag assembly attached thereto but with the handle positioned to the upright or storage position to illustrate the relationship of the parts in the bag assembly to this condition;

Figure 9 is a section through the bag inlet upon the line 9—9 of Figure 10 but with the folded pleats slightly open and spaced from the cylindrical seating sleeve to illustrate the manner of its folding so as to closely encircle the sleeve;

Figure 10 is a side elevation of the bag mouth and illustrates the inclined or biased end with the locating means;

Figure 11 is a transverse cross section through the body of the filter bag partially expanded to show the position of the pleats at the sides of the bag.

In the modern suction cleaner, the paper filtering bag which can be thrown away after use is an important element. Such bags render unnecessary the unpleasant task of cleaning, which was required in the earlier cloth bags which were too expensive to discard. Paper bags, however, have heretofore not been entirely satisfactory in suction cleaners of the bag-on-handle type in which the handle pivots and relative movement takes place between the ends of the bag. In such machines the bag is repeatedly flexed with the reciprocatory movement of the cleaner over a surface covering and the collected foreign material tends to collect at the bottom of the bag and become compressed into a solid mass about which the bottom of the bag bends. These repeated bag flexures tend gradually to stretch the bag material until finally, upon the bag being stretched greatly as by the moving of the handle to its vertical position, the paper of the bag gives way and the foreign material falls out. In the bag assembly constructed in accordance with the present invention the danger of this undesirable result has been greatly reduced by the provision of a construction which provides for the ready and substantially free change of angular posi-

tion of the bag relative to the cleaner body. New and novel bag seating and clamping means are provided which permit of ease of positioning and locking of the lower end of the bag in place. The bag itself has been constructed so as to have a maximum length along its underside thereby insuring a greater length of bag material which can be subjected to the strain thereby minimizing the strain per unit of length. According to the present invention it is preferable to provide an outer appearance bag which encloses the entire removable inner paper bag and its mounting means, and which also supports that bag from the cleaner handle.

Referring again to the drawings in which a preferred embodiment of the present invention is illustrated, there is seen to be disclosed a modern suction cleaner which comprises, as is best illustrated in Figure 1, a nozzle 1 which is interiorly connected by an air pasageway 2 to the eye 3 of the fan chamber 4 within which is positioned a suction-creating fan 5 carried upon the downwardly extending end of the motor shaft 6. The latter is provided at its lower end with a driving pulley 7 which seats and drives a power-transmitting belt 8, the function of which is to rotate the agitator 9 positioned in surface-contacting relationship within the nozzle 1. The fan chamber 4 has an exhaust outlet 11 formed at its end with a peripheral flange 12. The motor, which actuates shaft 6, is unshown but is positioned within the motor casing 13 immediately over the fan chamber 4 and may be of any common type although an universal motor is recommended. The cleaner body is movably supported upon front and rear wheels 14 and 15 and there is provided, as in the usual suction cleaner, a pivoted handle 16 by which the operator can exert a propelling force. The parts heretofore described are parts of the ordinary suction cleaner and no invention is claimed to reside in their construction and arrangement as heretofore disclosed.

The bag assembly, which is secured to the exhaust outlet of the cleaner body, comprises three parts. There is first the mounting assembly, indicated generally by the reference character 20, the inner or dirt-filtering bag 21, and the outer appearance and supporting bag 22, the lower end of which seats upon the mounting assembly, and which is supported at its upper end by means of a channel member 23 itself carried by a coil spring 24 on the upper end of the handle 16.

The mounting assembly 20 is removably secured to the cleaner body by flanged ring 26 formed on each side with an ear 27 which overlies a manually operable clamping securing member 28 carried by the exhaust outlet flange 12. The body of mounting assembly 20 is formed of three hollow conduit parts, a lower part 30 integral with the ring 26 and which ends in an outwardly and slightly upwardly inclined face, a central part 31 which is largely cylindrical but which is formed with an enlarged lower end fixedly seated upon the lower part 30, and an outer portion 32 which is formed with an inclined face at its outer end defined by an inturned rim or flange 33. The face defined by the flange 33 lies in a plane which is not perpendicular to the major axis of the cylindrical section 32, but instead slopes outwardly and upwardly. The section 32 is fixedly secured to the central cylindrical section 31 which in turn is fixedly secured to lower section 30 so that the entire mounting assembly comprising body portions 30, 31 and 32 forms an integral unitary construction functionally. The outer cylindrical section 32 and the cylindrical portion of 31 adjacent thereto are adapted to receive and seat the inlet neck of a dust bag and may be referred to as a pilot.

The mounting assembly 20 also includes bag clamping means which comprise a clamping wire spring 36 encircling the pilot 31, 32 in an inclined plane substantially parallel to the plane of the outer face 33. The underside of the clamping spring 36 is supported by a flat spring 37, carried by the enlarged end of central section 31 which by its own resiliency tends to maintain in spaced relationship the lower side of the spring 36 and the pilot. Diametrically opposite to the supporting spring 37, that is, upon the top of the mounting, the clamping spring 36 has its extremities bent outwardly and then rearwardly in the form of jaw levers 38, 38. The ends of these jaw levers encircle and slidingly seat upon a transverse pin or shaft 39 carried by spaced supports 40, 40 on the central section 31. The clamping spring 36 inherently exerts an expanding force which tends to move the jaw levers 38, 38 to the outer extremities of the shaft 39. When fully expanded and positioned by the pin 39 and the supporting spring lever 37 the clamping spring 36 is spaced from the pilot around its entire circumference. Spring 36, however, is adapted to be compressed about the pilot in clamping relationship around its entire length and, to insure this effect and to eliminate the possibility of interference at the jaws 38, the ends of the circular portion of the spring 36 do not make abutting contact at the jaw levers 38, 38 but instead one end thereof slips past the other, as is clearly illustrated in Figures 4 and 6.

The actuating force for the clamping spring 36 is provided by a manually operable lever 42 which is provided upon its underside with a pair of cams 43, 43 and which is pivotally mounted upon the transverse pin 39 on which the jaw levers 38 are slidably mounted. The arrangement is such that as the manually operable lever 42 is pivoted downwardly, that is, from the position shown in Figure 2 to that illustrated in Figure 3, the jaw levers 38, 38 are forced inwardly by the cams 43, 43 which slide thereon. The extremities of the jaw levers move inwardly toward each other along the shaft 39, that is, from the position illustrated in Figure 2 to that illustrated most clearly in Figure 4. In this latter position the operating lever 42 lies parallel to the body of the mounting assembly 20 and the jaw levers 38, 38 have ridden along the cams 43, 43 until they have reached the rounded ends thereof which in effect form non-camming locking surfaces. The expanding force of the spring 36 is sufficient to hold the actuating lever 42 in place against any vibrational force and in fact against all but intended displacing forces.

The bag mounting assembly is completed by the locator 45 which is a semi-circular projection formed upon the central body portion 31 of the mounting assembly and which presents its curved surface in convex relationship to the outer end of the assembly. Locator 45 is positioned immediately adjacent the pivotal pin 39 of the actuating lever 42 and the jaw levers 38, 38 in fact pass thereover in moving to and from clamping position. Locator 45 is adapted, as will hereinafter be apparent, to cooperate with a similarly

shaped recess or notch in the lower end of the bag to insure the positioning of the bag in the proper relationship upon the pilot.

Th dirt-filtering inner bag is formed of paper and is indicated generally by the reference character **21**. This bag is preferably formed of a single sheet of paper folded upon itself and secured by a seam **47** running its length on its underside. The bag is reduced in diameter at its mouth or inlet by a plurality of folds or pleats which are gathered along the bag side and are in abutting and overlying relationship at the bag mouth to provide an inlet having a plurality of thicknesses to give strength. With the bag deflated the pleats extend the full bag length. With the bag inflated, however, the pleats merge into the smooth surface of the bag gradually as they extend outwardly from the bag mouth where they are secured in gathered relationship. The mouth of the bag encloses and is sewed to a stiff paper cylinder valve, or seating element **48**. The lower extremity of the cylinder **48**, and also the bag proper **21** is cut upon the bias or slant so that, with the cylinder **48** aligned with the pilot **32** of the mounting assembly, it will be parallel to the adjacent outer face **33** of the pilot **32**. The outer extremity of the stiff cylinder **48** is formed, on its short side, with an overhanging projection **49** which is provided centrally with a semicircular notch or recess of the exact shape of locator **45** carried by the mounting assembly. Overhanging projecting portion **49** of the sleeve **48** can be, and preferably is, formed by providing an extension on that side of the sleeve which extension can be folded back upon itself until its rear edge overlies the top of the folded pleated bag and thereafter cutting into the double thickness of the folded extension the recess or notch **50**. The folded-back extension **49** is secured in place, and the sleeve and bag proper are secured together by sewing, or gluing, or by a similar method.

The outer appearance supporting bag **22** is supported, as described, at its upper end from the handle by means of a coil spring **24** and the channel member **23**. This bag encloses both the inner filtering dust bag **21** and the mounting assembly **20** therefor, and is itself preferably formed of a porous material which readily permits the escape of the filtered air. The lower end of this bag is clamped about the body portion **30** of the mounting assembly adjacent the flange **26**, as is clearly illustrated in Figures 1 and 3, by means such as a clamping ring **52**. To insure ease of removal and insertion of the inner dirt-filtering bag **21** a manually operable zipper closure construction **53** is preferably provided along the underside of the bag **22** which extends from a point adjacent the upper end thereof down to a point adjacent the manually operable locking construction for the inner bag.

The construction is one that has many desirable characteristics both in operation and when being attached and detached. Assuming the mounting assembly to be secured to the exhaust outlet of the cleaner and the outer bag to be supported from the cleaner handle, the positioning upon the cleaner of a new dirt-filtering bag is a simple operation. The operator first makes certain that the zipper **53** is open to provide access to the interior of the bag **22** and to the mounting assembly **20**. The manually operable latch **42** should be positioned to the open position, as illustrated in Figure 2, in which position the clamping spring **36** is in its expanded relationship and is spaced circumferentially from the pilot **32** around its entire periphery. The operator then inserts the mouth or lower end of the inner dust bag **21**. The preferred manner is to insert the bag in a somewhat angular position so that the extended lower end of the mouth portion contacts the side or near the top of the pilot **32**, the extended portions acting as guides. As the mouth of the bag is advanced on to the pilot, the seating sleeve **48** of the bag closely enclosing the pilot, the bag mouth or inlet is rotated until the underside thereof, which is of greatest length, is on the underside of the pilot and the recess **50** in the upper side thereof is in alignment with the locator **45**. The insertion is continued until the locator **45** is positioned within the conforming notch or recess **50**, at which time the bag is in its seated position and the operator pivots the operating latch **42** downwardly. The movement of the lever **42** results in the contraction of the clamping spring **36**, the result accruing directly from the cooperation of the jaw levers **38** and the cams **43**, as above described. With the lower end of the inner bag clamped the operator then makes certain that the upper end thereof extends along the outer bag **22**. The upper open end of the inner bag is normally closed by means of a common and well known channel member **51**, which, in operative relationship, is positioned near the top of the outer bag but is unattached thereto. The operator then closes the zipper **53** and the construction is ready for use.

In use, cleaning air is drawn through the suction cleaner by the operation of the suction-creating fan **5** which causes the dirt-laden air from the nozzle **1** to pass through the air passageway **2**, through the fan chamber **4**, and out through the exhaust outlet **11** into the bag assembly. The dirt-laden air is filtered by the air-permeable inner bag **21** and passes into the surrounding atmosphere, the porous outer bag **22** offering no resistance to its escape. The foreign material remains within the inner bag and collects at the lower portion thereof, as illustrated in Figure 7.

As the operator propels the machine back and forth across the surface covering by means of the pivoted handle **16**, the angular position of the handle changes within limits called the working range as the machine approaches and moves from the operator. As the upper end of the outer appearance supporting bag **22** is carried by the handle, it also changes its angular position relative to the exhaust outlet of the cleaner, as does the inner bag **21** which is expanded within the outer bag by the pressure of the air exhausted from the cleaner. This angular movement during operation takes place through an angular range which extends upon both sides of the position shown in Figure 7 which can be considered as a mean position, the extreme positions being the vertical position, illustrated in Figure 8, and the horizontal position, in which the bag and handle extend horizontally. The foreign material within the inner bag collects at the lower end thereof and below the dirt valve **48**. Valve **48**, while being relatively stiff, as compared with the flexible paper material of the bag **21** itself is bendable, as illustrated in Figure 8, and performs the function of preventing the return of foreign material from the inner bag into the mounting assembly, particularly when no air is being exhausted from the cleaner and when

the bag is moved into the extreme vertical position as when being stored.

The bag construction with the seam upon the underside provides a multi-ply thickness along the line of greatest tension while the presence of the pleats at the sides of the bag provides maximum flexibility, a feature of greatest importance because of the continued flexing action. The inner bag, not being directly connected to the handle, is not tensioned directly thereby through the supporting means for the outer bag 22 but is instead permitted a limited sliding movement within the outer bag as that element is moved upwardly by the handle. This is particularly desirable when the handle is moved to its extreme vertical or storage position, as illustrated in Figure 8. The construction of the pilot 32 with its sloping face 33 in cooperation with the bag mouth with its sloping inner face corresponding to the slope of the face 33 of the pilot, provides a construction in which a maximum supporting length for the bag upon the mounting element is provided with only a minimum rearward extension of the pilot into the bag at the lower side thereof. It is about the latter point that the bending of the bag takes place, as is illustrated in Figure 8. This relatively great length of the seating area of the bag upon the mounting is extremely desirable as it reduces leakage and accumulation of foreign material at the point of clamping of the bag to the mounting. Obviously, the lessening of the extension of the pilot into the bag provides a longer free bag length at the underside thereof which can be subjected to the strain of repeated bending. A greater bag life follows from these features.

The removal of the dirt bag, following use, is substantially the reverse operation of the insertion thereof. The operator opens closure 53 thereby gaining access to the interior of the outer appearance supporting bag 22. Thereafter, he moves to the open position the latching lever 42 after which the dirt filtering bag 21 can be pulled at its lower end outwardly from the supporting pilot 32. The inclined lower end of the bag again assists in preventing spillage of dirt from the lower end thereof and it is recommended that it be tilted upwardly immediately upon passing from the pilot. As the lower end of the bag mouth extends beyond the upper side thereof, it is obvious that any accumulated foreign material which falls from the upper side of the bag mouth falls onto the extended lower side or lip thereof. The inner bag is then removed from the outer bag and it is recommended that it be disposed of and a new bag inserted although it is possible in certain cases to re-use the paper bag.

I claim:

1. A bag unit for a suction cleaner of the type having an ambulatory body formed with a nozzle and an exhaust outlet and suction-creating means to draw air into said nozzle and to exhaust it from said outlet; comprising a bag-mounting assembly adapted to be secured to said exhaust outlet and including a bag-seating conduit and bag-clamping means, said bag-seating conduit being adapted to extend into the mouth of a dirt-filtering bag and being formed with an outer end having an inclined face relative to a transverse plane perpendicular to the conduit axis to provide inclined piloting edges to aid in seating a bag on said conduit, a dirt filtering bag formed with a reduced inlet conduit and expanding into an enlarged body portion, the outer end of said inlet conduit being formed with a face inclined similarly to the face of said bag-seating conduit, said inlet conduit being of a size to slide upon and closely embrace said bag-seating conduit, and cooperating locating means upon said bag-mounting assembly and upon said bag inlet to align said conduits with said inclined faces parallel.

2. A bag unit for a suction cleaner of the type having an ambulatory body formed with a nozzle and an exhaust outlet and suction-creating means to draw air into said nozzle and to exhaust it from said outlet; comprising a bag-mounting assembly adapted to be secured to said exhaust outlet and including a bag-seating air-conducting cylindrical pilot and bag-clamping means, said pilot being formed longer along its top than along its bottom to form a piloting portion to aid in seating a bag inlet thereon, a paper dirt-filtering bag formed with a body and a reinforced reduced inlet adapted closely to embrace said pilot, the lower portion of said bag inlet being longer along its bottom than along its top to provide substantially the same seating area for the top and bottom of said inlet on said pilot, and cooperating locating means upon said pilot and upon said bag inlet to align said inlet on said pilot with said lower portion positioned upon the underside of said pilot.

3. A bag unit for a suction cleaner of the type having an ambulatory body formed with a nozzle and an exhaust outlet and suction-creating means to draw air into said nozzle and to exhaust it from said outlet; comprising a bag-mounting assembly including a conduit, bag-locating and bag-clamping means adapted to be secured to a suction cleaner exhaust outlet, said conduit being formed with an outer end lying in a transverse plane extending by an angle with respect to the axis of said conduit to form a bag entering end with piloting side edges to aid in seating a bag inlet thereon and providing a bag seating surface at its outer end, said bag clamping means comprising an enclosing wire spring encircling said conduit in a plane parallel to the end thereof so as to provide equal bag lengths on said conduit at all points therearound and manually operable means to contract said spring into clamping relationship on said conduit, a filter bag including a reduced inlet neck and an enlarged body, said inlet neck being adapted to be inserted upon said conduit and being formed with an inner end the bottom of which extends beyond the top and which is adapted to underlie said clamping spring around the entire circumference of said conduit, and cooperating locating means upon said mounting assembly and upon said bag inlet to insure the positioning of the bottom of said inlet on the underside of said conduit.

4. A bag-mounting assembly comprising a body formed as a conduit with means to connect to the exhaust outlet of a suction cleaner, the outer end of said body being formed as a cylindrical bag-seating pilot the outlet face of which extends outwardly and upwardly relative to a medial axis and bag-clamping means carried by said body to clamp the inlet of a dust bag on said pilot, said means comprising a spring encircling said pilot at an angle such that the top thereof is farther out on said pilot than the bottom thereof and which tends under its own force to expand from said pilot, a flexible guide for said spring at the bottom of said pilot, rigid guide means for said spring at the top of said pilot, and manually

operable cam elements to contract said spring on said pilot.

5. A bag-mounting assembly comprising a body formed as a conduit with means to connect to the exhaust outlet of a suction cleaner, the outer end of said body being formed as a cylindrical bag-seating pilot adapted to extend into the neck of a detachable dust bag, an axially extending locator upon said pilot adapted to guide and position locating means upon the bag to position said bag neck circumferentially relative to said pilot, and manually operable clamping means enclosing said pilot at an angle to clamp said neck to said pilot.

6. A bag-mounting assembly comprising a body formed as a conduit with means to connect to the exhaust outlet of a suction cleaner, the outer end of said body being formed as a cylindrical bag-seating pilot adapted to extend slidingly into the neck of a dust bag, the upper side of said pilot being longer than the lower side thereof to provide camming side edges to force open a bag inlet, an axially projecting locator upon the top side of said pilot adapted to seat into the formed inner end of a dust bag to position said bag relative to said pilot in proper angular relationship, and manually operable clamping means to secure a bag on said pilot.

7. A bag-mounting assembly for a suction cleaner comprising a body formed as a conduit having an outer end and having means for detachably connecting the same to the exhaust outlet of a suction cleaner, the outer end of said body having a substantially cylindrical periphery forming a bag seating surface, bag clamping means carried by said body and operable to clamp a bag inlet about said seating surface, the outer end of said body being formed on the bias with respect to the axis thereof whereby a portion of said seating surface provides a projection serving as a pilot to open and guide the inlet of a bag onto said cylindrical seating surface.

8. A suction cleaner dirt-filtering bag of air-permeable paper having an elongated body and a reduced inlet neck, a stiff paper sleeve secured within said neck and providing an air passageway therefor, the outer end of said neck being cut on the bias to provide a receding mouth, and mating means on said neck adapted to inter-lock with complementary means on a mating seat of an exhaust outlet means of a suction cleaner whereby to insure the proper initial and sustained positioning of said bag on an exhaust outlet.

9. A suction cleaner bag comprising an elongated body having a reduced inlet neck, a cylindrical paper sleeve at said neck adapted to seat upon an exhaust conduit having a cylindrical seating surface, the outer end of which conduit lies in a plane at less than a right angle to the median axis of said cylindrical seating surface, the end of said paper sleeve being cut at an angle to mate with the outer end of the seating surface of said exhaust conduit, and said sleeve also being formed with means adapted to inter-lock with a mating means on said exhaust conduit when said sleeve is properly seated thereon whereby maximum contact may be had between said paper sleeve and the cylindrical seating surface of said exhaust conduit.

10. A bag-mounting assembly comprising a body formed as a conduit with means to connect the same to the exhaust outlet of a suction cleaner, the outer end of said body being formed as a cylindrical bag-seating pilot adapted to extend slidingly into the neck of a dust bag, the outer end of said pilot being cut on the bias and in such manner that the upper side of said pilot is longer than the lower side thereby providing a reduced upwardly protruding cam-like pilot portion adapted to extend into the flexible neck of a dust bag for the purpose of opening the same and quickly guiding the bag-neck into position on said bag-mounting assembly.

11. A suction cleaner bag comprising an elongated body having a reduced inlet neck, a cylindrical paper sleeve at said neck adapted to seat upon an exhaust conduit having a cylindrical seating surface the lower end of which lies in a plane at an angle to the axis of said cylindrical seating surface, the end of said sleeve lying in a plane at an angle to the axis of said sleeve which angle is substantially the same as said first mentioned angle, said sleeve being formed with a recess at the end opposite the body of the bag which recess is adapted to fit a mating enlargement on an exhaust conduit when said sleeve is properly seated thereon, whereby maximum contact may be had between said paper sleeve and the cylindrical seating surface of an exhaust conduit.

12. A bag-mounting assembly for a suction cleaner comprising a body forming an exhaust outlet conduit, the discharge end of said conduit being cut on the bias so that the top of the conduit projects farther than the bottom thereof, said conduit providing a dirt bag seating surface at its outer end, an air-permeable dirt bag adapted to seat upon said conduit, said bag having a reduced neck portion formed to embrace said exhaust conduit snugly when seated thereon, the end of said neck being cut on the bias so that the bottom projects farther than the top thereof whereby the projecting top end of said conduit provides a cam-like pilot over which the neck of said bag can be inserted quickly and easily and the neck expanded and guided into proper seating position on said exhaust conduit.

13. An air-permeable dirt bag for a suction cleaner, said bag being elongated and tubular in shape, one end being gathered into a neck-like portion forming an air inlet passageway of reduced diameter into the bag, said neck comprising pleats formed from said bag and arranged to reenforce said neck, the outer end of said neck being cut on the bias with respect to the axis thereof and with the lower side of the neck extending farther than the top side whereby said bag is adapted to be quickly, easily and tightly seated on an exhaust outlet conduit of a suction cleaner.

14. An air-permeable dirt bag adapted to receive the exhaust products from a suction cleaner, said bag having a reduced end providing a mouth, said end being formed on the bias with respect to its axis for cooperation with an exhaust outlet of a suction cleaner, whereby said bag is adapted to be piloted into its assembled position expeditiously.

15. A bag-mounting assembly for a suction cleaner comprising a body forming an exhaust outlet conduit, a discharge end on said conduit formed on the bias to define a piloting element for cooperation with a dirt bag, a dirt bag having a reduced end formed on the bias at an angle substantially equal to that provided at said discharge end, said ends being adapted for telescoping relationship whereby a seating relationship may be established expeditiously.

HARRY B. WHITE.

CERTIFICATE OF CORRECTION.

Patent No. 2,295,981. September 15, 1942.

HARRY B. WHITE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, second column, line 65, claim 4, for the word "outlet" read --outer--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 27th day of October, A. D. 1942.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)