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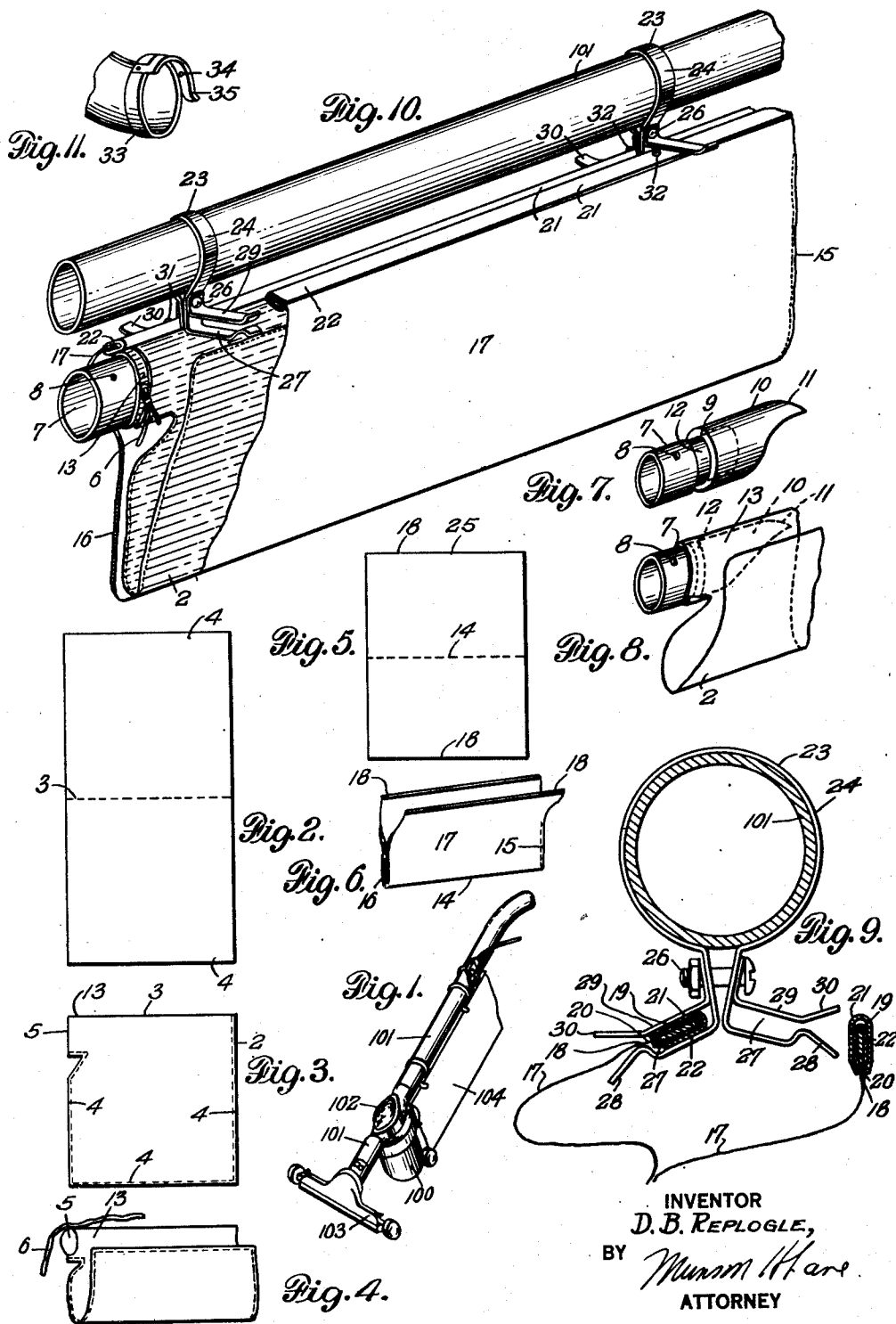
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2,016,295

DUST COLLECTOR BAG FOR AIR-METHOD CLEANERS

Filed May 29, 1934

2 Sheets-Sheet 1



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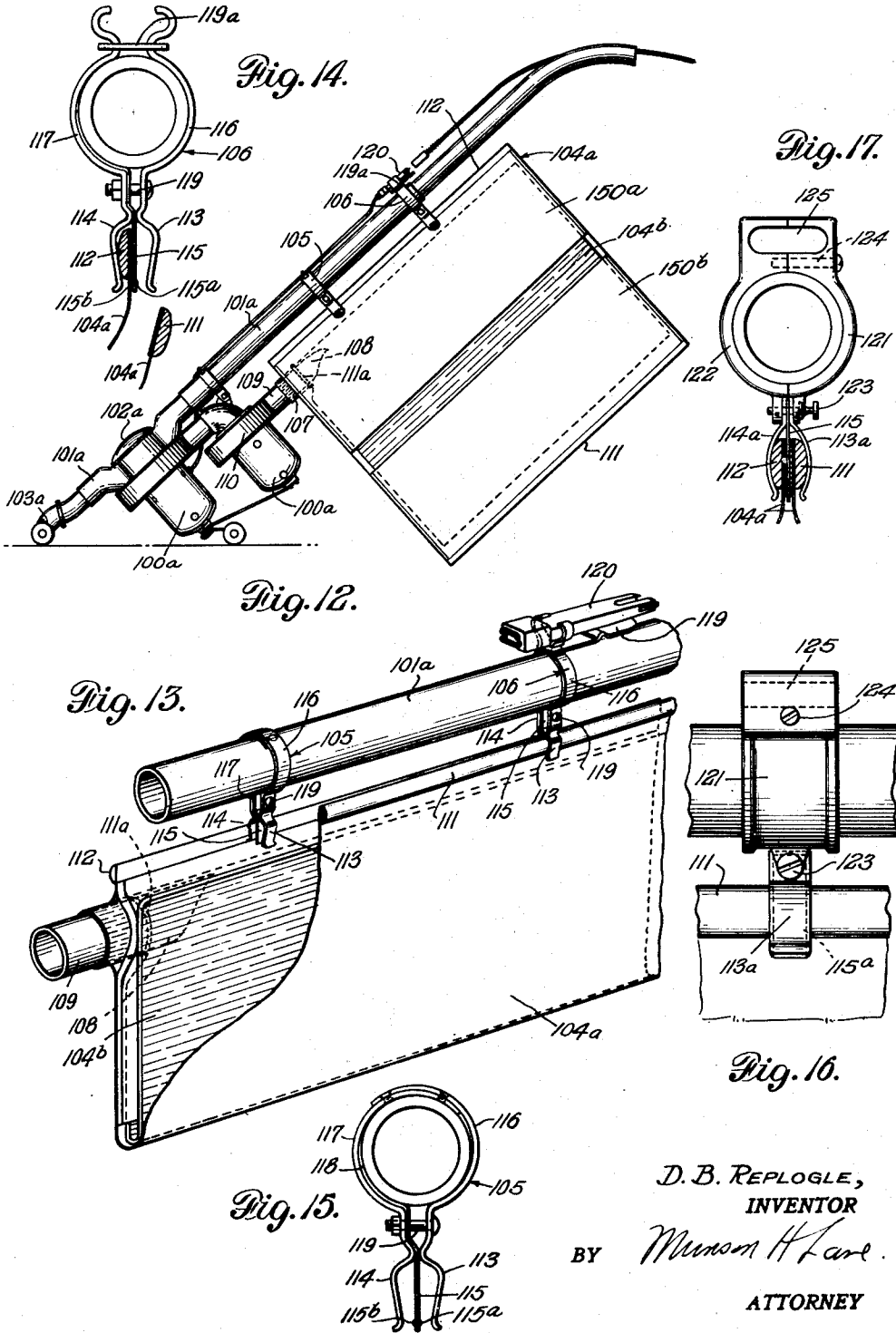
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## UNITED STATES PATENT OFFICE

2,016,295

DUST COLLECTOR BAG FOR AIR-METHOD  
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to Citizens Trust Company, Toledo, Ohio, a  
corporation of Ohio, trustee

Application May 29, 1934, Serial No. 728,156

6 Claims. (Cl. 183—51)

This invention pertains to dust collector bags such as are used in connection with pneumatic cleaners, and means for detachably securing the same to said cleaners. The invention is particularly applicable to that form of electrical motor-driven portable cleaner in which suction producing means are directly connected to a suction pipe that carries the floor cleaning tool and are moved about manually with the pipe, or some part of it, used as a handle. Such cleaners are known commercially under the registered trademark "Air-Way".

The invention is in the nature of an improvement on the type of dust collector disclosed in Replogle Patent No. 1,416,876, dated May 23, 1922, and it is one of the objects of the present invention to provide a ready means for detachably securing the dust collector, consisting of an inner and an outer bag, to the handle of the cleaner. Another object is to simplify removal of the inner bag from the outer bag. A further object of the invention is to provide improved connecting means between the dust collector and the discharge pipe of the fan or suction producing means.

Another object of the invention is to provide, in combination with a suction cleaner, a cleaner bag comprising opposed side walls having separated upper edges defining between them a mouth for the reception of an inner dust collecting receptacle, each wall being individually suspended from the cleaner at its upper edge, one of said walls being detachable from the cleaner while the other remains suspended, so as to allow the insertion of said inner receptacle while the bag is supported upon the cleaner.

Another object of the invention is to provide, in combination with a suction cleaner, a normally flat cleaner bag of fabric material comprising opposed side walls, separated at their upper edges and along their end edges from the upper corners of the bag to points substantially above the bottom of the bag and thence joined from said points to the bottom of the bag and along said bottom to form a pocket, each wall being individually suspended from the cleaner, and one of the walls being detachable from the cleaner while the other remains suspended, whereby to form a side opening in the bag at the upper extremity of said pocket.

Other features of the invention and other objects and advantages thereof will be apparent from a consideration of the following detailed description and the accompanying drawings, in

which are set forth illustrative embodiments of the invention.

In the drawings,

Fig. 1 is a perspective view of a cleaner of the type disclosed in my Reissue Patent No. 16,224, with the dust collecting device in place;

Fig. 2 shows a flat rectangular sheet of paper suitable for the paper bag;

Fig. 3 represents the paper bag formed up;

Fig. 4 shows the inner bag folded ready for insertion;

Fig. 5 shows a sheet of cloth suitable for the cover;

Fig. 6 represents the outer bag formed up;

Fig. 7 is a perspective view of a nipple for connecting the inner bag to the fan case discharge tube;

Fig. 8 shows the same with the inner bag attached;

Fig. 9 is a detail of one of the double clip constructions, by which the outer bag is suspended from the handle;

Fig. 10 is a perspective view of the assembled device, with one corner of the outer bag broken away;

Fig. 11 is a view in perspective of a discharge of an "Air-Way" type cleaner to which the nipple is attachable;

Fig. 12 is a side elevation of a modified form of cleaner with a modified bag applied thereto, one edge of the outer bag being engaged by clips carried by the handle and the other separated therefrom;

Fig. 13 is a perspective view similar to Fig. 10, but showing the modified form of attaching clips;

Fig. 14 is an enlarged sectional view showing one of the attaching clips;

Fig. 15 is a similar view showing the other of the attaching clips;

Fig. 16 is a side view showing the clip illustrated in section in Fig. 14, and

Fig. 17 is a view showing a further modified form of spring clip.

The specific features of the preferred embodiment of the invention are set forth in Figs. 4 to 11 and are the joint invention of myself and Harold E. Queen, these features being claimed in application Serial No. 613,508, filed May 25, 1932, whereas the generic invention included in all modifications together with the specific details set forth in Figs. 12 to 17 inclusive are my sole invention.

A cleaner of the general type shown in my Reissue Patent No. 16,224, dated December 15, 1925, is illustrated in Fig. 1 with the preferred

form of dust collector applied thereto, and as shown, the reference numeral 100 denotes a suction producing means such as an electrical motor, fan and fan casing, 101 denotes a hollow conduit handle, 102 denotes a valve in the handle by means of which the suction can be directed from either end of the handle, 103 denotes a detachable application tool on the shorter end of the handle used when cleaning floors, and 104 denotes the dust collector bag.

The dust collector includes an inner and an outer bag. Successive steps in the process of making the inner bag are illustrated in Figs. 2 to 4 inclusive, wherein numeral 1 represents a flat rectangular sheet of porous paper, approximately twice as long as its width, which is formed into a bag 2 by folding on line 3 and stitching or gluing along the joined edges 4, leaving opening 5. A cord 6 is attached to the bag near the mouth for attachment to nipple 7, which is provided with a small hole in its wall adjacent its opposite end.

The nipple 7 is adapted to be inserted into the fan case discharge tube 33 of the suction producing means 100, and to be retained by engagement of peg 34, carried by spring latch 35, with the hole 8. Nipple 7 has a reduced section 9 upon which is shrunk a section of fibre tube 10 having a down-bent deflector tip 11 leaving an annular groove 12 adapted to receive the cord 6 when tied around the neck 13 of the mouth 5 of the inner bag.

Referring particularly to Figs. 5 and 6, numeral 25 represents a flat rectangular sheet of cloth which, when folded on line 14 across its middle, joined by sewing 15 at one end and by a zip lock 16 at the other end, forms the outer bag 17. The edges 18—18 of the outer bag 17 are tightly folded about a strip of stiff material 19, such as fibre, as shown in Figs. 9 and 10, to which strip it is glued or fastened by sewing to itself along line 20. A channel 21 of stiff material such as sheet aluminium is folded about the edges 18, forming a stiffened and enlarged beaded edge 22. The beads 22 are adapted to be releasably engaged in a suitable manner from spring clips or the like carried by the cleaner handle. In this manner the entire dust collector, including the inner and outer bags, is detachably supported.

As shown, numeral 23 denotes a band of springy material such as spring steel or aluminium formed into a loop 24 encompassing and gripping handle 101 when tightened by screw bolt 26, and having recesses 27—27 near its ends 28—28 which are bent down to form guides for the beads 22—22. Short strips of springy material such as spring steel or aluminium form hold-down covers 29—29 adapted to retain beads 22—22 in recesses 27—27 until released by raising cover ends 30—30. Raised bumps 31 and 32 on each bead 22 serve to locate the bead under covers 29—29 against endwise movement.

The operation of the device will be apparent from the foregoing description. When the collector is in use the nipple 7 is retained rigidly in the discharge tube 33 of the fan case by means of a latch 35 carrying a peg 34 which engages in the aperture 8. The outer bag being smaller in size than the inner bag, it is necessary to fold the latter for insertion into the outer bag. Driven air from the fan outlet discharge tube 33 tends to balloon the inner bag and to partially expand the folds, but the inner bag is sustained from tearing by contact with the outer covering bag which is of stronger material. The assembled

bags are restrained against endwise movement by the coaction of the projections 32 and the spring fingers 29.

When the inner bag becomes fouled after continued use, it may be readily removed and replaced by an unused bag. This is done by first partially opening the forward end of the outer bag by operating the zipper 16 which permits the reinforced edges 22 of the outer bag to be withdrawn from the spring clips which normally retain the same in position. Either one or both of the edges of the outer bag may be withdrawn from the holding clips, which renders the inner bag accessible and permits the hollow connector to be withdrawn after the same has been released from the discharge tube of the fan case by lifting the latch 35 and disengaging the peg 34 from the hole 8. The hollow connector is now engaged within the reduced neck of a new bag which is secured in place by means of the cord 6, and the outer cover is placed about the inner bag which is folded as previously described, and the open end of the outer cover is again closed by means of the zipper. The hollow connector is then detachably secured to the discharge tube of the fan case and the reinforced edges 22 of the outer bag are detachably secured within their respective clips, being properly located endwise by the projections 32.

In Fig. 12 there is illustrated a cleaner of the double motor type disclosed in my Patent No. 1,533,271, dated April 14, 1925, which cleaner is equipped with a dust collecting and air filtering bag which may likewise be of the type disclosed in said patent, the principal difference residing in the form of spring clips employed for detachably securing the bag to the handle, those disclosed in the present application being provided with a central plate or partition so that opposite sides of the bag may be individually secured and individually removed.

As illustrated, the cleaner includes two suction producing devices, the motors of which are designated 100a—100a, and handle portions 101a—101a, between which is mounted a valve 102a. The cleaner may be equipped with the usual floor tool 103a, and the outer bag of the dust collector unit is designated by the numeral 104a, shown as provided with pockets 150a and 150b as in my Patent No. 1,533,271, to receive the inner bag, referred to by the numeral 104b. The outer bag is carried by a pair of duplex clips 105 and 106, carried by the handle and shown in detail in Figs. 14, 15 and 16.

The dust collector and air filter may be substantially the same as that disclosed in my aforesaid Patent No. 1,533,271, the inner bag being of porous paper, as set forth in my Patent No. 1,416,876, and provided with a reduced portion 107 adapted to fit over a coupler 108, which in turn communicates with and preferably fits over the exhaust pipe 109 of a fan casing 110. A flexible band or elastic 111a may be provided to secure the mouth of the paper bag to the coupler 108.

A detailed description of the outer bag 104a is unnecessary as it may be substantially identical with that set forth in my Patent No. 1,533,271, its longitudinal edges being rigidified, preferably by the use of rods, which may be of wood or other suitable material and which are herein designated by the reference numerals 111, 112, to which the cloth of the bag may be secured in any suitable manner, as by gluing or tacking, or both. These rods are adapted to be indi-

vidually engaged in the three-pronged clips which are carried by the handle, these clips being so formed that either rod may be removed while the other remains in place, so that access may be had to the inner bag for replacement purposes.

When in place the outer bag encloses the inner bag and the discharge connection or coupler 108 extends between the forward edges of the closed bag. This bag may, if desired, be provided with pockets for reception of the inner paper bag, as set forth in Patent No. 1,533,271.

The bag-holding clips include a pair of curved outer side spring prongs 113, 114, adapted to engage the outer surfaces of the reinforcing bars or rods 111 and 112, respectively, and an inner flexible plate 115, likewise preferably of springy material which separates the side bars and permits individual removal thereof. The lower clip 105 is shown in detail in Fig. 15, wherein the outer prongs 113, 114 have portions 116, 117 respectively, which surround the handle and overlap one another at the top of the handle. As shown, the portion 117 overlies a curved extension 118 of the central plate 115 and holds it firmly against the handle. Fastening means 119 are employed just below the handle for holding the outer prongs in assembled position. Preferably the plate 115 is provided with a pair of laterally extending lugs 115a and 115b at the lower portion thereof adapted to prevent accidental removal of the side bars 111 and 112.

The upper clip 106, shown in detail in Fig. 14, is similar to the clip 105, except that the extensions of the prongs 113 and 114 do not overlap at the top, but are curved outwardly and held together by a member 119a, which, as shown in Fig. 13, extends a short distance lengthwise of the handle of the cleaner. The out-turned upper portions of the extensions 116, 117 are adapted to detachably embrace a connector switch 120, which carries the wires supplying the motors 100a, 100a with electric current. The member 119a underlies this connector switch and holds the same in position, as indicated in Fig. 13.

A modification of the clip shown in Fig. 14 is illustrated in Fig. 17, wherein three spring metal prongs 113a, 114a and 115a are held in place by a clamp which is secured to the handle. The clamp includes two halves 121, 122 which are held together below the handle by means of a fastener 123 and above the handle by a fastener 124. An opening 125 is provided to receive a connector switch similar to that shown at 120 in Fig. 12.

The operation of the apparatus will be apparent from the foregoing description. Assuming the dust collector including the inner and outer bags to be in place and the inner bag filled with dust, one of the rigidifying rods 111 or 112 carried by the cloth bag may be removed from its position within the clips, leaving the other in place, held by the resilience of one of the outer prongs in combination with the central prong. The lowering of one side of the outer bag renders the inner bag accessible, so that it may be removed by merely detaching the rubber band or other fastening means 111a, whereupon a new bag may be substituted. The rod carried by the released edge of the outer bag may now be replaced within the clips and the cleaner is ready for operation.

The generic invention involved in all of the modifications herein disclosed is the same; that is to say, all embodiments of the invention in-

clude the idea of providing means carried by the handle for releasably engaging the rigidified upper edges of the outer cleaner bag individually, whereby one may be detached while the other remains suspended. This generic idea is my sole invention and is claimed herein. In the embodiment of the invention disclosed most clearly in Figs. 9 and 10, which is the joint invention of H. E. Queen and myself, pairs of spring clasps are provided which extend and open laterally on opposite sides of the handle, so that when the bag is inflated the strengthening rods and spring clips form a part of the distended circular bag. This arrangement puts less strain on the bag when the sticks are already held distended in the direction which the strain will come and a lighter stick may thus be used. In the embodiment of the invention shown in Figs. 12 to 17, which embodiment is my sole invention, each bag holding clip extends and opens downwardly from the handle, accidental removal of the side bars being prevented by the lugs 115a and 115b of the intermediate prong or plate 115. The outer prongs 113, 114 of the clip engage the outer surfaces of the two separate reinforcing rods or bars of the cleaner bag, and the intermediate plate 115 is in contact with the inner surfaces of both of the reinforcing bars. This arrangement is simple and inexpensive and permits a considerable saving of material.

The present application is a continuation in part of my application Serial No. 640,690, filed November 1, 1932.

What I claim is:

1. In combination with a suction cleaner, a cleaner bag comprising opposed side walls having separated upper edges defining between them a mouth for the reception of an inner dust collecting receptacle, each wall being individually suspended from the cleaner at its upper edge, one of said walls being detachable from the cleaner while the other remains suspended, so as to allow the insertion of said inner receptacle while the bag is supported upon the cleaner.

2. In combination with a suction cleaner, a normally flat cleaner bag of fabric material comprising opposed side walls, separated at their upper edges and along their end edges from the upper corners of the bag to points substantially above the bottom of the bag and thence joined from said points to the bottom of the bag and along said bottom to form a pocket, each wall being individually suspended from the cleaner, and one of the walls being detachable from the cleaner while the other remains suspended, whereby to form a side opening in the bag at the upper extremity of said pocket.

3. In combination with the handle of a suction cleaner, a cleaner bag comprising opposed side walls, having rigidified upper edge members defining between them a mouth for reception of an inner porous dust collecting bag, and means carried by the handle for releasably engaging said upper edge members individually, whereby one may be detached while the other remains suspended.

4. In combination with a suction cleaner having a fan casing discharge connection, a cleaner bag comprising opposed side walls, one of which is individually suspended at its upper edge from the cleaner, and the other of which has an upper portion detached from said first mentioned side wall both at its upper edge and along its end edges, and downwardly foldable to provide

a side opening in the bag, and means for securing said foldable portion at its upper edge in bag-closing relationship with the other side wall, said means being releasable while the bag remains suspended on the cleaner, said discharge connection being extended between the forward edges of the bag.

5 5. In combination with a suction cleaner having a fan casing discharge connection, a cleaner  
10 comprising opposed side walls, one of which has a rigidified upper edge detachably suspended from the cleaner, and the other of which has an upper portion detached from said first mentioned side wall both at its upper edge and along  
15 its end edges from the upper corners of the bag to points substantially above the lower corners thereof, and downwardly foldable to provide a side opening in the bag, and means for securing said foldable portion in bag-closing relationship  
20 with the other side wall, said means being releasable while the bag remains suspended on the

cleaner, said discharge connection being extended between the forward edges of the bag.

6. In combination with a suction cleaner, a normally flat cleaner bag of fabric material comprising opposed side walls, one of which is individually suspended from the cleaner at its upper edge, and the other of which has its upper portion detached from said first mentioned side wall both at its upper edge and along its end edges from the upper corners of the bag to points substantially above the lower corners thereof, the walls being joined from said points to the bottom of the bag and along the bottom to form a pocket, said upper portion being foldable downwardly along a line joining said pockets to form a mouth at the upper extremity of said pocket, and means for securing said foldable upper portion in bag-closing relationship with the other side wall, said means being releasable while the bag remains suspended on the cleaner.  
20 DANIEL BENSON REFLOGLE.