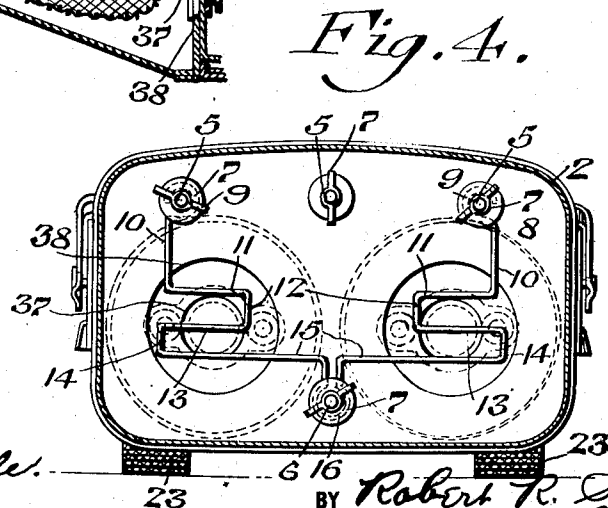
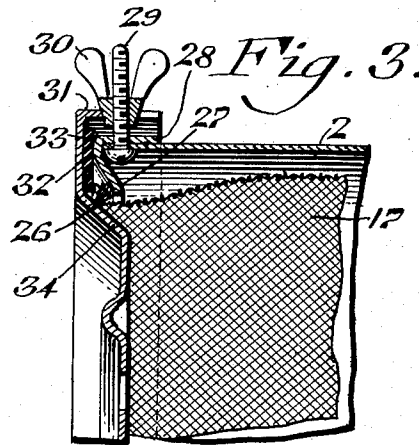
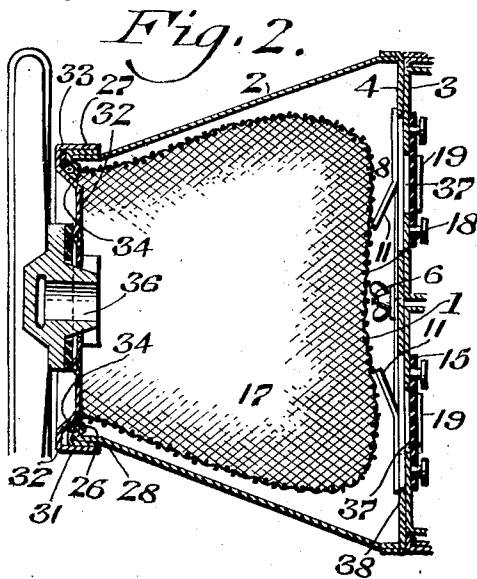
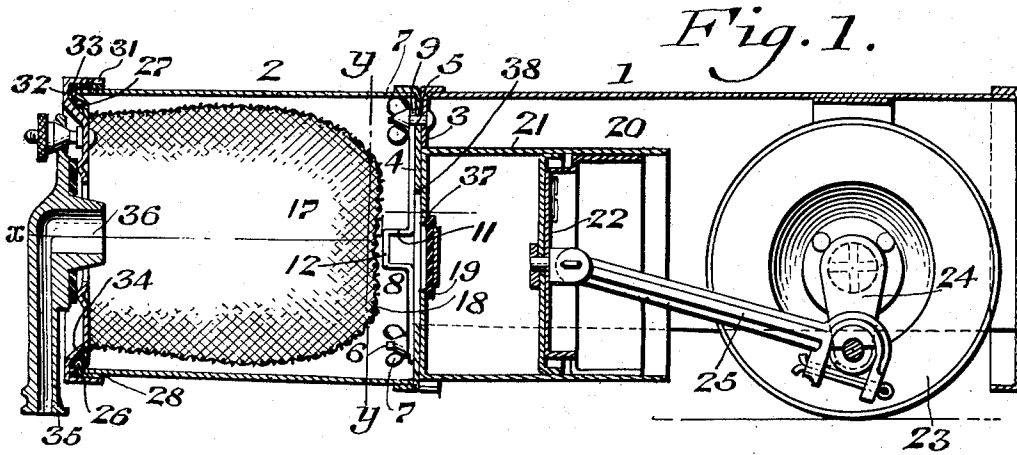


R. R. SMITH.  
DUST SEPARATOR FOR VACUUM CLEANERS.  
APPLICATION FILED MAR. 25, 1912.

1,038,223.

Patented Sept. 10, 1912.



WITNESSES

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# UNITED STATES PATENT OFFICE.

ROBERT R. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

DUST-SEPARATOR FOR VACUUM-CLEANERS.

1,038,223.

Specification of Letters Patent.

Patented Sept. 10, 1912.

Original application filed January 9, 1912, Serial No. 670,208. Divided and this application filed March 25, 1912. Serial No. 686,064.

*To all whom it may concern:*

Be it known that I, ROBERT R. SMITH, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Dust-Separator for Vacuum-Cleaners, of which the following is a specification.

My invention consists of a novel construction of dust separating apparatus for vacuum cleaners which is capable of general adaptation, but is more particularly adapted for use in that type of vacuum cleaners wherein the pumping apparatus is actuated by means of contact of the traction wheels of the device with the floor or other surface to be cleaned and my present invention, which is a division of a contemporaneously pending application filed by me on the 9th day of January, 1912, Serial No. 670,208, is more particularly directed to a novel dust bag combined with means for securing the open end or mouth of said dust bag to the forward or suction nozzle end of the apparatus, whereby the dust bag is readily accessible for the purpose of inspection, emptying replacement or repairs, provision being further made for utilizing the devices which connect the pump chamber and dust bag chamber, as supports for guard wires which serve to prevent the dust bag from interference with the suction valves of the pump chamber.

My invention also consists of a novel manner for securing the open end of the dust bag in position with respect to the suction nozzle and the dust bag chamber.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawing one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a longitudinal sectional view of a dust separator for a vacuum cleaner, embodying my invention. Fig. 2 represents a section on line  $x-x$  Fig. 1. Fig. 3 represents a vertical section through the forward end of the dust bag chamber. Fig. 4 represents a section on line  $y-y$  Fig. 1.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings: 1 designates the casing of the pump chamber of a vacuum cleaner and 2 designates the casing of the dust bag chamber, said casings having the abutting walls 3 and 4 respectively, which are held in assembled position by the fastening devices or threaded bolts or studs 5 and 6, the upper studs 5 being in the present instance three in number, as will be understood from Fig. 4.

7 designates thumb nuts, which have the dual function of securing together the walls 3 and 4 and they also serve to hold in position the guard wire 8, which comprises the upper eyes 9, each having the depending member 10, with the inwardly extending member 11, the downwardly extending member 12, the outwardly extending member 13, the downwardly extending member 14 and the inwardly extending member 15, the two latter meeting to form the eye 16, which engages the stud 6 and is held in position by the thumb nut 7 thereon. The members 11 and 12 are sprung outwardly as will be understood from Fig. 2, so as to prevent the juxtaposed portion 18 of the dust bag 17 from fouling the valves 19 of the pump 20, which comprises the cylinder 21 and the piston 22 of any approved construction. The valves 19 control the ports 37 and 38, as is evident. In the present instance, the piston is reciprocated by the contact of the traction wheels 23, which through the medium of the crank 24 and connecting rod 25 effect the reciprocations of the piston. The forward end of the dust bag has the ring 26 secured thereto, which is held against the contiguous portion of the annulus 27, which has the rearwardly extending flange 28, engaging the forward end of the casing 2, and held in position by the bolt 29 and the thumb nut

30, said thumb nut having its base tapered and engaging the flange 31 of the head 32, as will be understood from Fig. 3, wherefrom it will be seen that the ring 26 is held tightly in place between the annulus 26 and the inturned portion 34 of the head 33. The suction nozzle 35, which forms the subject-matter of another application, effects the collection of the dust, dirt or other impurities through the inlet 36, in the dust bag 17.

The operation is as follows:—When the parts are in assembled position they appear as seen in Fig. 1, the thumb nuts 7 retaining the dust chamber and pump chamber in assembled position, while the dust bag is secured in position in the manner already described in detail. The suction nozzle is also secured in position, as will be understood by those skilled in the art, and when the entire casing is propelled backward and forward across the floor, the traction wheels 23 which are preferably two in number will reciprocate the pistons 22 which are two in number and will alternately actuate the valves 19 which are preferably two in number, as will be understood from Fig. 2. There will thus be a continuous suction created through the suction nozzle 35 and the dust, dirt and other impurities will be sucked into the bag 27, the purified air being drawn from the dust chamber by the pumping mechanism as will be readily understood. The guard wires 8 by reason of the deflecting portions 11 will prevent the dust bag from being sucked into or following the pump valves 19, as will be apparent, and when the bag becomes filled with the dirt, dust or other impurities and it is desired to remove the same, it is only necessary to loosen the thumb nut 30, whereupon the head 32 can be readily withdrawn and the dust bag 17 removed from its casing 2 whereupon it can be emptied and replaced in position in a very short space of time.

It will be apparent that the bolts 29 and thumb nuts 30 may be three or four in number and arranged around the periphery of the head 32 according to requirements, and by the provision of the gasket 33 a tight joint will be formed between the head 32 and the annulus 27, as will be evident.

I have not deemed it necessary to describe in detail the construction of the nozzle 35 and its manner of attachment to the dust chamber, since this forms the subject-matter of a separate application. I have not deemed it necessary to describe in detail the operation of the pumping mechanism since this also forms the subject-matter of a separate application and while I have shown one type of pumping mechanism which has been employed with great success in practice with my novel construction of dust bag, it will be apparent that my manner of secur-

ing the dust bag in position and my arrangement of the guard wires coöperating with said dust bag may be employed in other kinds of pumping devices than that shown.

It will now be apparent that I have devised a novel and useful construction of a dust separator for vacuum cleaners which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination of a plurality of casings having ports therein, upper and lower fastening devices for said casings, a guard wire having angularly bent portions bridging said ports and engaging at its upper and lower portions said fastening devices, nuts on said fastening devices for both securing said wire in position and for holding said casings in assembled condition, and a dust bag in one of said casings, said dust bag being prevented from being drawn into said ports by the deflected portions of said guard wire.

2. The combination of a plurality of casings having ports therein, upper and lower bolts for securing said casings in assembled position, a guard wire having eyes 9 engaging a pair of said upper bolts, said wire having opposite deflected portions 10, 11, 12, 13, 14 and 15, the latter meeting in the common eye 16, the latter engaging said lower bolt, nuts for said bolts, said nuts serving to simultaneously hold said casings in assembled position and to retain said guard wire in fixed position with respect to said bolts, and a dust bag in one of said casings, said dust bag being prevented from being drawn into said ports by means of the deflected portions of said guard wire.

3. In a vacuum cleaner the combination of a dust bag casing, a dust bag therein, a ring for the open end of said dust bag, an annulus having a flange secured to said casing, a bolt common to said casing and said flange, a head having a flange, a nut having a tapered body engaging said bolt and said latter flange, and a gasket intermediate said annulus and head, the latter having an inwardly deflected portion, said ring being retained between said annulus and deflected portion.

4. In a dust bag casing having a port therein, a dust bag, a wire secured to the upper and lower portions of a wall of said

casing and having a portion bent around said port and deflected outwardly therefrom to prevent said bag from entering said port, a ring secured to the open end of said dust  
5 bag, an annulus secured to said casing, a head also secured to said casing, said ring being held between said head and annulus, and a fastening device common to said casing, annulus and head.

ROBERT R. SMITH.

Witnesses:

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