Oct. 10, 1939. D. B. REPLOGLE 2,175,645

AIR-METHOD CLEANER ANTECHAMBER TYPE

Filed Aug. 19, 1936

Fig. 2.

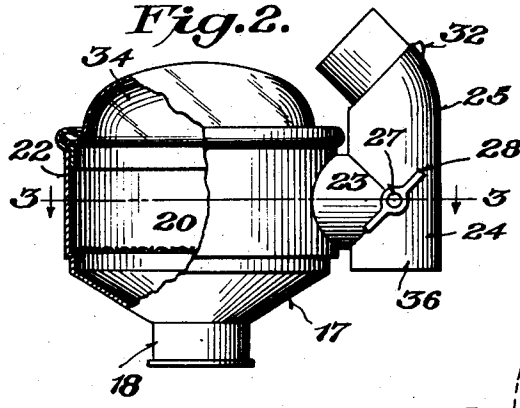


Fig. 1.

Fig. 1a.

Fig. 3.

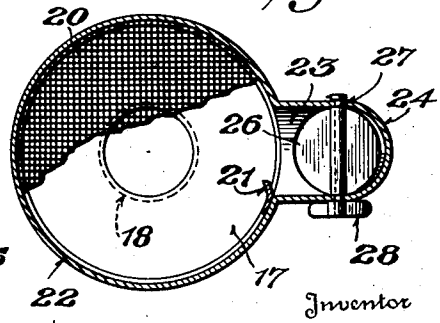
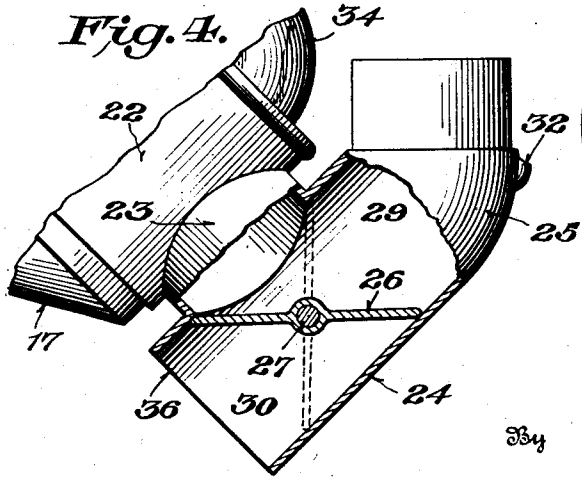


Fig. 4.



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AIR-METHOD CLEANER ANTECHAMBER TYPE

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Application August 19, 1936, Serial No. 96,907

10 Claims. (Cl. 15—9)

The invention relates to cleaning apparatus and more particularly to portable electric suction cleaners of the air-method type which may be selectively employed for ordinary floor cleaning purposes or by the use of suitable extension devices may be employed for cleaning walls, draperies and the like.

One of the objects of my invention is to provide a simple means for controlling the flow of dust laden air into the dust collecting device with which the apparatus is equipped, from the floor tool or extension devices as the case may be.

Another object is to provide means whereby the amount of dust entering the cleaner may be observed at all times by the operator of the cleaning apparatus.

A further object of the invention is to provide a convenient arrangement and assembly of the parts of the cleaner.

A still further object of the invention is to provide an improved mounting for the dust collecting and air filtering means.

Another object is to provide improved supporting means for the cleaning apparatus.

Other objects of the invention will appear hereinafter.

According to my invention the dust collecting and air filtering device is housed in a cylindrical container or caddy which caddy is covered by a cap assembly which includes a valve located in an ante-chamber and serving to control the direction of flow of dust laden air entering the caddy from a floor tool or from extension devices as the case may be.

The invention will be more readily understood by reference to the accompanying drawing and the following detailed description which are intended as illustrative of the inventive thought and not as limiting the invention to the precise details herein set forth.

In the drawing:

Fig. 1 is a side elevation of a cleaner embodying my invention, the cap with the bag attached being shown partially withdrawn and the supporting bail being shown in a plurality of adjusted positions.

Fig. 1a is a fragmentary view of the cap viewed from the left in Fig. 1.

Fig. 2 is a view partly in side elevation and partly in vertical section showing the cap assembly.

Fig. 3 is a section on line 3—3 of Fig. 2, and

Fig. 4 is a fragmentary view partly in side elevation and partly in vertical section showing the butterfly valve with which the apparatus is equipped.

Referring in detail to the drawing, the reference numeral 10 denotes a cylindrical housing, barrel or caddy housing at one end a power plant 11 which may be of the multiple unit type disclosed in my application Serial No. 64,420 filed February 17, 1936 to which reference may be had for details of construction.

The lower end of the caddy may be closed by a removable cap 12 to which access may be had to the power plant for cleaning and repairing the same, the said cap being provided with a pair of lateral exhaust outlets only one of which is shown.

The caddy 10 may be composed of any suitable material although preferably light insulating material such as the modern plastics, as represented by the Bakelite type plastics, or the hard fiber type, is employed. An electric conductor cord 13 may be employed to supply current to the power plant. This conductor is suitably insulated by the walls of the caddy and is adapted to be plugged to extensions which in turn may be plugged into a wall socket or the like. At the top of the caddy there is provided an external ring 14 which may be of fiber, metal or other suitable material. To this ring is hingedly mounted a spring bail 15 and at the upper portion of the ring there is provided a loop or eye 16.

The cap assembly shown in Fig. 2 is adapted to fit the top of the caddy. This assembly includes a funnel member 17 having a reduced neck 18 to which may be secured the mouth of a dust collector 19 of any suitable type. As shown the dust collector includes an inner porous paper bag which may be destroyed when filled with dirt. The mouth of this container may be secured to the neck 18 by means of a spring, rubber band, string or other suitable means. Preferably a reinforcing bag or receptacle not shown is also employed to cooperate with the inner bag and serves as a reinforcing member. Such outer bag may be of wire, cloth, netting, matting or the like which prevents direct contact between the paper bag and the cylindrical walls of the caddy while permitting air to pass freely therethrough.

Covering the top of the funnel member there is preferably provided a screen 20 which may be of wire, cloth or like material intended to prevent the passage of large particles into the porous paper bag.

Over the top of the funnel 17 the main casing 22 of the cap is fitted, this casing serving to hold the screen in position. Leading from one side of

the casing is an inlet passage 23 for dust laden air which communicates with an external valve chamber 24 which may be termed an ante-chamber. Just at one edge of the passage 23 there is located a deflector member 21 which is adapted to cause the entering air to circle around the cap before entering the bag. The ante-chamber 24 is located in a short vertical pipe section 25 which is adapted to communicate above with suitable extension devices and to be connected below to a floor tool or the like.

Within the valve chamber 24 there is mounted a suitable valve 26 of the butterfly type pivoted at 27 and provided with an external handle or grip 28 secured to the end of the valve axis. By means of this valve the effect of the suction produced by the power plant may be directed to either of two airways 29 and 30, the airway 29 leading upwardly to the extension devices and the airway 30 leading downwardly toward the floor tool.

A short curved handle grip 31 which may be of hard fiber or the like is attached at the upper end of the pipe section 25 and to this handle grip suitable extension devices such as hose members, rigid tubes, extension tools and the like known in the art may be secured.

An external bump or projection 32 is formed near the upper end of the pipe section 25, said bump being adapted to cooperate with the swinging bail 15 on the ring 14 to hold the cap assembly air-tight against the top of the caddy.

A hook 33 is formed on the cap casing 22 preferably at a position opposite the passage 23, said hook being adapted to engage the eye 16 on the strap 14 to insure the proper location of the valve and of the handle grip.

A top 34 of Celluloid, glass or other transparent material is removably attached to the top of the casing 22 and by removal of such top any objects which may have collected on the screen 20 may be removed. By means of this transparent cap the amount of dust laden air entering the cleaner may be seen by the operator at all times and also the quantity of debris which is accumulated on the top of the screen. It will be noted that the valve ante-chamber and handle grip member are located below the transparent top so that such top is visible at all times.

The ring or strap 14 is shown as provided with an extension member or collar 35 into which fits the lower end 36 of the pipe section 25. To the other side of the collar may be removably attached a curved suction pipe 37 which may be in the form of a flexible hose or if desired a rigid pipe section of hard fiber, Bakelite or even metal may be employed. When a hose is used such hose is adapted to be removed and attached at the end of the handle grip portion 31 to serve as an extension member therefor in place of or in conjunction with other extension members.

A socket 38 is shown as connected to the cap 12 at the bottom of the caddy and into this socket the lower end of the pipe section 37 may be fitted. The short pipe section 39 fits into the lower end of socket 38 and to this section a suitable floor tool 40 having wheels in the ends thereof may be detachably secured. The floor tool may be of the double faced reversible type shown in Replogle and Queen Patent No. 1,994,872 dated March 19, 1935 or may be of the type shown in my Patent No. 1,994,868 dated March 19, 1935 wherein the floor tool is revoluble about an inclined joint.

As shown rollers 41 are attached at the lower end of the cap 12. These rollers may be of spring type and may be secured in sockets as disclosed in my Patent No. 1,541,280 dated June 9, 1925.

Suitable means for supporting the cleaner in any one of a number of positions may be provided. As shown a strap 50 is secured about the caddy intermediate its ends and to said strap a long spring bail or hanger 51 is hingedly secured. At the end of the bail or hanger 51 there is provided a foot or eye member 52. In the full line position shown in Fig. 1 the caddy or barrel 10 is supported at an inclination of about 45 degrees, the weight of the cleaner being supported by the floor tool and by the foot 52 on the bail 51. The bail may however be folded up against the lower portion of the bottom of the caddy as indicated in dotted lines. In such position the bail 51 will serve as a skid which is bowed sufficiently to prevent the handle grip 51 from touching the floor and being broken. The apparatus may be drawn along the floor on the skid 51 and rollers 41.

The bail 51 may be raised above the caddy as also indicated in dotted lines and in such position will serve as a hanger for supporting the cleaner from above with the eye member 52 serving as means for attachment to a bracket or hook on the walls or ceiling. In this position the cleaner is raised entirely from the floor and the handle grip 31 is accessible for attachment of extension devices and the like.

The operation of the device will be apparent from the foregoing description, but may be briefly summarized as follows:

Before starting the motor the bag will of course be inserted in the caddy and the cap assembly held in position by the spring bail 15 fitting over the projection 32 on the pipe section 25. In this position the end 36 of the pipe section 25 fits into the socket 35 with an air-tight fit and communicates with the curved pipe 37 which in turn communicates with the pipe section 39 and the floor tool 40. For floor cleaning purposes the butterfly valve 26 is turned to the position indicated in dotted lines in Fig. 4 and current being now supplied to the fan motor dust laden air will be drawn into the cleaner through the floor tool 40, pipes 39 and 37, pipe section 25 through inlet 23, thence into the casing 22 where it is given a whirling motion by the deflector 21. Any large particles are retained by the screen 20 and the smaller particles of dirt together with the air pass into the filter bag where the finer dirt particles are filtered out and the filtered air passes thence through the power plant and is discharged through one or both of the outlets 13. If blowing action is desired the flexible pipe or other extension member may be secured to one of the outlets 13 and the other capped.

When the dust collecting bag is full of dirt the bag may be withdrawn together with the valve assembly and handle grip portion after which the bag is separated from the neck 18 and replaced by a clean bag or where a cloth bag is employed instead of a paper bag the cloth bag may be emptied and again attached to the valve assembly after which the parts are replaced and secured in place by the spring bail 15.

For using extension members the cleaner may be suspended if desired from a hook or the like by using the bail 51 as a hanger. The valve is turned to the full line position shown in Fig. 4 and the hose section 37 or other extension members are attached to the handle grip 31 together with the suitable tools if desired.

These may be applied to the cleaning of walls, ceilings, draperies, furniture or the like. It is

not necessary that the cleaner be supported from above as it is sufficient to support the cleaner in an inclined position upon the bail 51 resting on its foot 52. In this position the extension devices may be attached to the handle grip 31. The cleaner may be readily moved from place to place resting upon the wheels of the floor tool, the rollers 41 and/or the skid 51. The hollow pipe section 31 serves as a handle grip.

Owing to the light weight of the parts of the cleaner the same may be reversed and if desired the floor tool 41 may be applied to the curved pipe 31, the pipe section 39 then being used as a handle. When it is desired to rest the cleaner upon the floor, the bail is folded to form a skid which cooperates with the rollers 41. If the floor tool 40 is removed an extension hose may be attached to the pipe section 39 and the apparatus drawn to any desired position on the skids. In this position a blower pipe may be attached to either or both of the outlets 13.

The invention has been described in detail for the purpose of illustration but it will be apparent that same may be varied without departing from the spirit of the invention.

I claim:

1. A suction cleaner comprising a plurality of communicating tubular sections, one section housing suction producing means at one end and a dust collector at the other, a pair of sockets carried by said housing adjacent opposite ends thereof, a rigid section detachably connected to the housing and communicating with the air filtering means, and including a valve ante-chamber carrying a suction handle grip extending in one direction and a hollow leg extending in the other direction and adapted to fit in one of said pair of sockets carried by the housing, a two way valve in said chamber, a removable hose pipe section extending between the two sockets, and a floor tool detachably connected to the second socket, said hose pipe being adapted to be removed and attached to the handle grip when the valve is turned to communicate therewith.

2. In a suction cleaner, including a tubular conduit adapted to serve as a housing for an air filter, a removable cap assembly for said conduit, comprising a body portion having a transparent top, a funnel extending from the body portion into the conduit, and having a neck for attachment of said filter, a screen separating the body portion and said funnel, and an air inlet communicating with the interior of said cap assembly.

3. A suction cleaner comprising a cylindrical container having an inlet opening at one end and a discharge opening at the other and housing suction producing means at the discharge end and a dust collecting bag at the other, a cap for said container having a lateral inlet portion through which the dust laden air may be drawn by said suction producing means, and valve means mounted in and controlling said inlet portion and adapted to connect the same with one or the other of a pair of airways leading from different cleaning tools, said cap including a funnel having a neck to which the cleaner bag is adapted to be detachably connected, said cap, valve and bag being withdrawn as a unit from the container when the bag becomes fouled with dust.

4. A suction cleaner comprising a cylindrical container having an inlet opening at one end and a discharge opening at the other, and housing suction producing means at the discharge end and dust collecting and air filtering means at the other, a removable cap for said container having an inlet portion through which dust laden air may be drawn by said suction producing means, and having a transparent cover through which the entering dust may be viewed, means for connecting the air filter to said cap, valve means mounted in and controlling said inlet portion and adapted to connect the same with one or another of a pair of airways, leading from different cleaning tools, and a handle portion secured to the cap and serving as means for withdrawing the cap, valve and dust collecting means as a unit.

5. A suction cleaner comprising a tubular conduit having a discharge outlet, a porous dust collecting bag housed within said conduit, a cap for said conduit slidably fitting the same and having an air inlet, valve means controlling said inlet and adapted to connect the same with one or another of a pair of airways leading from different cleaning tools, the cleaner bag being connected to said cap, said cap, valve and bag being adapted to be withdrawn as a unit from the container when the bag becomes fouled with dust.

6. In a suction cleaner, a tubular conduit having a discharge outlet, air filtering means housed within the conduit, a cap for said conduit slidably fitting the same and having an inlet for dust laden air, valve means controlling said inlet and adapted to connect the same with one or another of a pair of airways leading from different cleaning tools, said air filtering means being secured to said cap, said cap, valve, and bag being adapted to be withdrawn as a unit from the container when the bag becomes fouled with dust, and a handle attached to the cap and serving as means for withdrawing said unit.

7. In a suction cleaner, a housing containing air filtering means communicating with a source of suction, a removable transparent topped cap for the air filtering end of said housing slidably fitting the same, and a T-shaped tubular fitting carried by said cap, one leg of the fitting opening into the cap, another leg being adapted to be placed in communication with a floor tool, while the third leg is provided with a suction handle, and means for controlling the admission of air to said cap; said cap, fitting, and suction handle being interconnected and adapted to be withdrawn as a unit.

8. In a suction cleaner, a housing containing air filtering means, a tubular conduit extending lengthwise of the housing and a unitary tubular fitting comprising three intercommunicating pipe sections, one of said pipe sections being provided with a transparent cap slidably fitting the conduit housing said air filtering means, a second section being adapted to fit said conduit, while the third section is provided with a suction handle secured thereto, and means for controlling the flow of air into said cap from said suction handle or from said conduit; said transparent cap, fitting, and suction handle being interconnected and adapted to be withdrawn as a unit.

9. In a suction cleaner including a tubular housing containing the air filtering and suction producing means, a cap assembly for the air filtering end of the caddy; comprising a funnel having a neck for attachment to the air filtering means, a strainer fitting over the top of the funnel, a removable transparent top for the cap assembly giving access to the strainer, and an air inlet for the cap.

10. A suction cleaner comprising a cylindrical

container having an inlet opening at one end and a discharge opening at the other and housing suction producing means at the discharge end, and a dust collecting bag at the other, a cap for said container slidably fitting the same and having an inlet portion through which the dust laden air may be drawn by said suction producing means, and valve means mounted in and controlling said inlet portion and adapted to connect the same with one or the other of a pair of airways leading from different cleaning tools, the cleaner bag being detachably connected to the cap and associated valve mechanism; said cap, valve and bag being adapted to be withdrawn as a unit from the container when the bag becomes fouled with dust.

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