

Oct. 10, 1939.

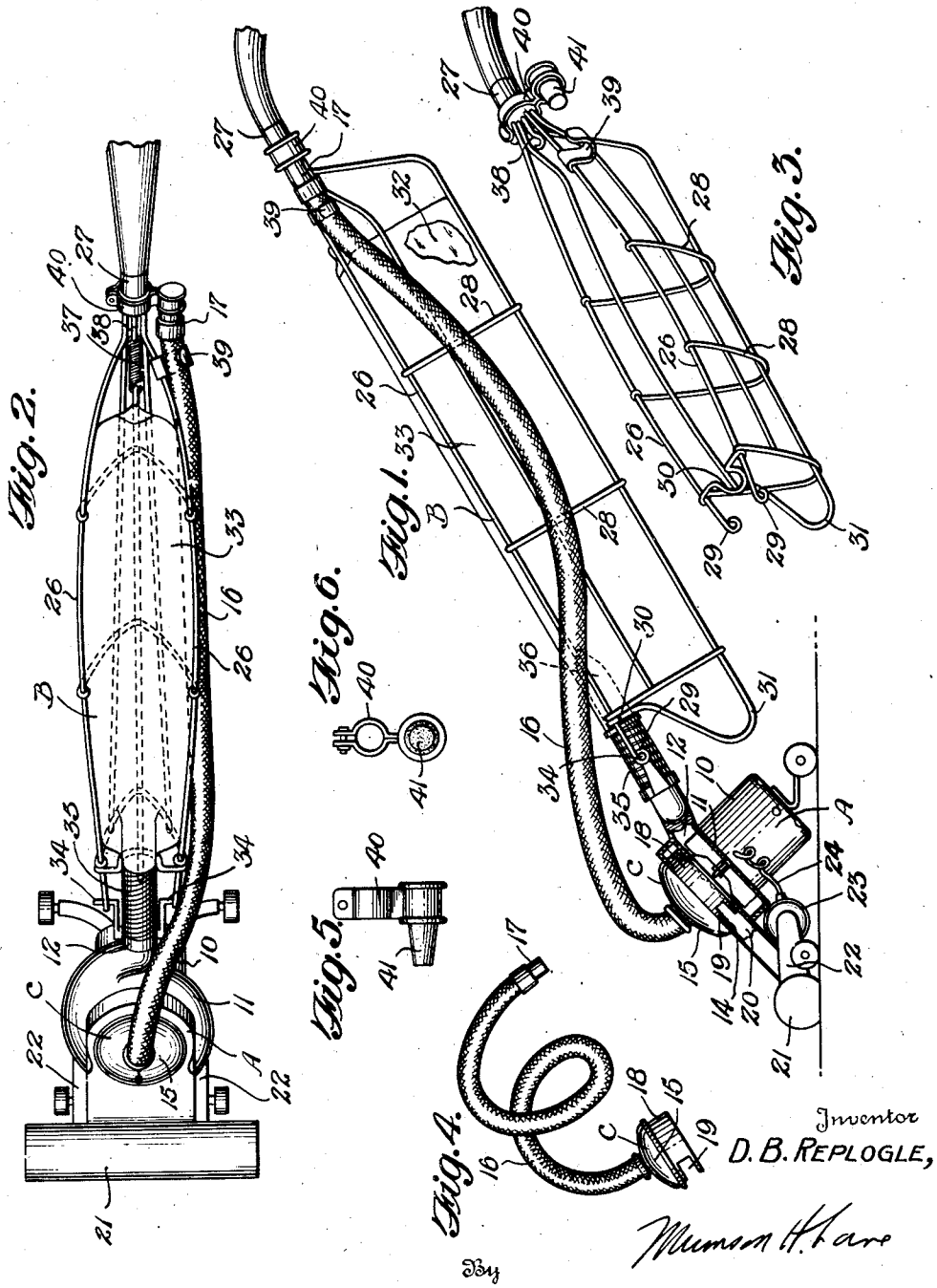
D. B. REPLOGLÉ

2,175,642

PNEUMATIC CLEANER

Original Filed Aug. 5, 1936

2 Sheets-Sheet 1



Inventor
D. B. REPLOGLÉ,

Mumson H. Lane

Attorney

Oct. 10, 1939.

D. B. REPLOGLE

2,175,642

PNEUMATIC CLEANER

Original Filed Aug. 5, 1936

2 Sheets-Sheet 2

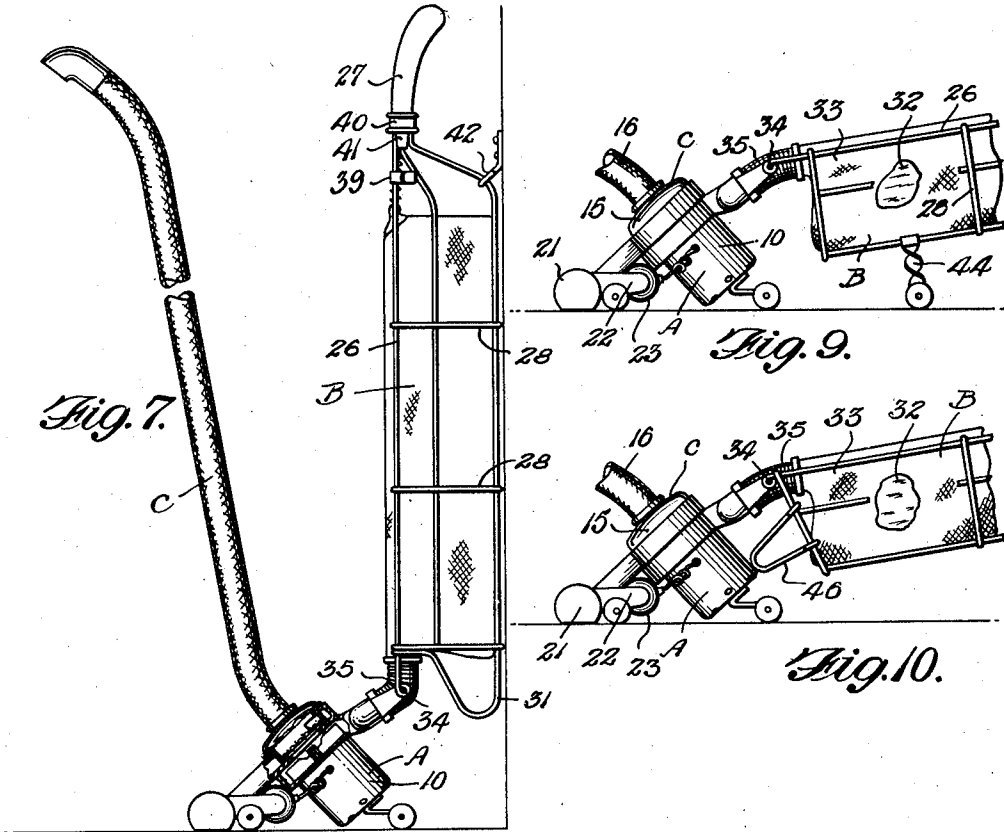


Fig. 7.

Fig. 9.

Fig. 10.

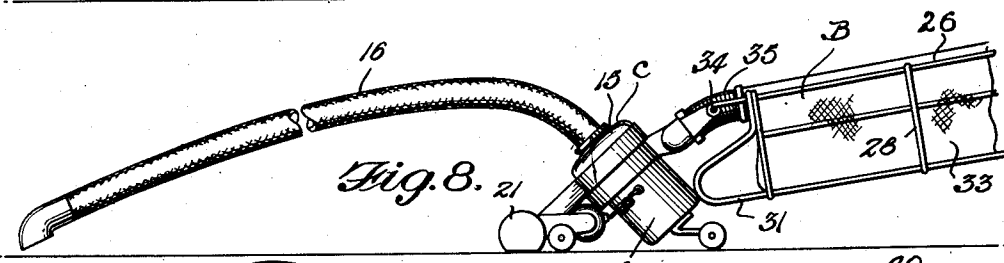


Fig. 8.

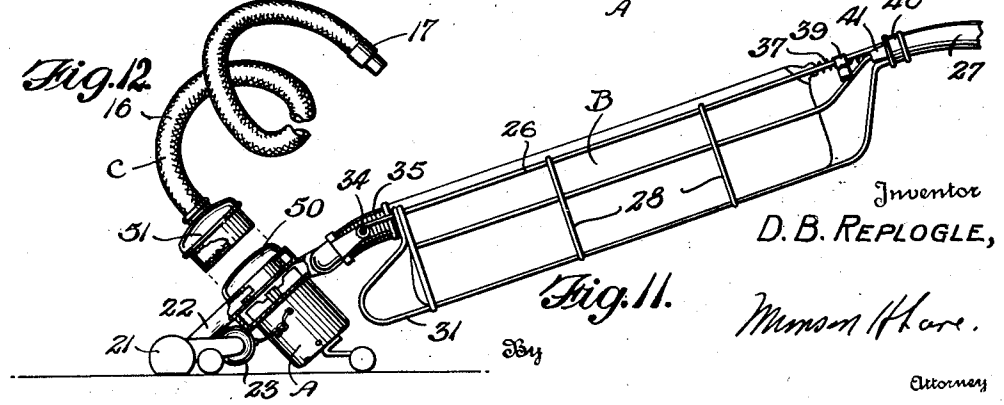


Fig. 12.

Fig. 11.

Inventor
D. B. REPLOGLE,

Mason H. Ware.

Attorney

UNITED STATES PATENT OFFICE

2,175,642

PNEUMATIC CLEANER

Daniel Benson Replogle, Berkeley, Calif., assignor
to The Ohio Citizens Trust Company, Toledo,
Ohio, a corporation of Ohio, as trustee

Application August 5, 1936, Serial No. 94,438
Renewed August 7, 1939

4 Claims. (Cl. 15—9)

The invention relates to cleaning apparatus and more particularly to portable electrically operated suction cleaners which may be selectively employed for floor cleaning purposes with the use of a suitable floor tool or may be arranged to utilize suitable extension devices which may be employed for cleaning walls, furniture or the like.

In designing the apparatus it is my aim to utilize to a large extent standard and interchangeable parts, connections and the like which are covered by my prior patents and applications and which are included in what is known as the "Air-Way" system, the term "Air-Way" being covered by registered trade mark.

The present application is a continuation-in-part of my prior application Serial No. 13,164, filed March 26, 1935 for Air-method electric cleaner and carpet sweeper, now Patent No. 2,085,042, and of my application Serial No. 55,290 filed December 19, 1935 for Air-method electric cleaner and carpet sweeper, the entire disclosures of which applications are hereby incorporated by reference as part of the disclosure of the present application.

According to the preferred embodiment of my invention the cleaner comprises: (1) a body portion which includes suction producing means and preferably a floor tool carried thereby, (2) a swinging handle from which may be supported a dust filtering bag, and (3) an auxiliary hose extension device which may be carried by the cleaner with one end connected to the suction producing means while the other end is adapted to be releasably supported by the handle portion of the cleaner when the extension device is inoperative or may be applied to the walls, furniture or the like when the extension device is in use.

One of the objects of the present invention is to provide an improved supporting device for the hose extension, preferably on the handle of the cleaner.

Another object is to provide a handle which may be detached from the body of the cleaner.

A further object is to provide means for supporting the handle while the extension device is in operation.

A further object is to provide means whereby the neck of the cleaner bag may be readily supported within a cage-like frame.

Other objects and advantages of the invention will appear hereinafter.

The invention will be more readily understood by reference to the accompanying drawings and

following detailed description in which are set forth for the purpose of illustration certain structural embodiments of the inventive thought involved, it being understood that the invention is not limited to structural details.

In the drawings:

Fig. 1 is a side elevation of the cleaner in accordance with my invention wherein the handle is provided with means for supporting the nozzle end of the hose extension.

Fig. 2 is a top plan view of the same.

Fig. 3 is a perspective view of the handle portion shown removed from the rest of the cleaner.

Fig. 4 is a detail view of the extension device shown removed from the cleaner.

Fig. 5 is a detail side view of an attachment for closing the end of the extension nozzle.

Fig. 6 is a front view of the same.

Fig. 7 is a side view of the cleaner with the handle supported in vertical position and the extension hose in operative position.

Fig. 8 is a view of the cleaner wherein the handle is supported by contact of a projection with the fan motor casing, the hose extension being in operative position.

Fig. 9 is a fragmentary side view of a modified form of apparatus wherein the handle is supported by a bracket from the floor.

Fig. 10 is a view similar to Fig. 8 but showing a slightly different form of handle.

Fig. 11 is a side elevation of the cleaner showing a separate cap in use when the apparatus is employed for floor cleaning purposes.

Fig. 12 is a view showing a cap with hose extension which may be applied in place of the cap in Fig. 11.

According to the preferred embodiment of my invention the cleaner comprises three principal cooperating parts which are separable from each other and which may be independently repaired or replaced. These parts comprise a body portion A which includes the power plant consisting of a motor and fan and preferably including a floor tool which may be permanently or detachably connected thereto.

The second principal part B preferably includes the handle and dust collector both of which are swingingly connected to the body portion and preferably separable therefrom and from each other.

The third principal element C is a transparent dust cap or cover for closing the top of the fan casing which is preferably equipped with a hose extension adapted to be carried by the cleaner handle.

Describing the apparatus more in detail and referring particularly to Figs. 1 to 7 the body portion of the cleaner comprises a motor casing 10 which houses a high speed electric motor (not shown) supplied by a conductor cord from any suitable source. This arrangement of parts may be similar to what is shown in my Reissue Patent No. 16,224 dated December 15, 1925. Above the motor is a fan casing 11 having a discharge outlet 12 and housing a high speed centrifugal fan driven by the motor. An inlet opening 14 at the top of the fan casing is preferably closed by the transparent cap 15 of the member C which cap is provided with a flange fitting into the opening while the main portion of the cap is transparent so that the operator may observe the quantity of dust being drawn into the fan chamber. The valve cap may be equipped with an indicating arrow.

Extending from the top of the cap there may be provided a flexible hose extension 16 having a suitable nozzle 17 on the end thereof. The nozzle end of the hose extension is adapted to be carried by the handle of the cleaner in a manner which will be more fully described hereinafter. The flange 18 of the valve cap seats in the top of the fan casing which likewise constitutes a valve casing and said flange is provided with a side opening 19 adapted to be placed in communication with a passageway 20 leading to a nozzle or floor tool 21 as described in my prior Patent No. 2,085,042 and application Serial No. 55,290 aforesaid. As shown a pair of chambered arms 22 extend rearwardly from the nozzle, one on each side of the outlet passage. These arms support the motor 23 which is adapted to drive a revolving brush (not shown) mounted within the nozzle. A conductor cord 24 may be supplied from windings within the motor casing 10 and parallel with the motor windings and thus derive its electrical power from the conductor cord supplying the fan motor.

If desired the floor tool may be made detachable and may be of the form shown in my Reissue Patent No. 16,224 referred to above or in my recent Patent No. 1,994,868. In these forms no revolving brush is contemplated and consequently the extra motor may be eliminated.

In the present embodiment of the invention the handle portion is shown as a cage-like structure such as is disclosed in my prior Patent No. 2,085,042. This structure is hingedly and detachably connected to the body portion and is adapted to support the air filtering bag therein. However, the handle may be of other form such as is shown for example in my application Serial No. 499,575, now Patent No. 2,123,912, or in my Patent No. 2,009,455 dated July 30, 1935 wherein the cleaner bag is suspended from the handle.

As herein shown the handle includes longitudinal members 26 preferably constituting resilient wires or bars which terminate at the rear in a solid handle or grip portion 27. The longitudinal wires are connected at intervals by U-shaped members 28. The top wires terminate at the front in eyes 29—29 and are connected adjacent the forward portion by a cross member which includes a loop 30 adapted to yieldingly engage the neck of the dust collector bag. An extension member 31 is shown as formed integral with the lowest wire of which the handle is composed and the point of this extension member is adapted to engage the lower and rear portion of the fan casing when the handle is lowered so as to sup-

port the handle above the floor as indicated for example in Fig. 8.

The longitudinal members 26 and the U-shaped members 28 constitute in effect an open work cage into which fits the dust collector bag. When the bag is expanded by the air which flows thereinto the sides of the bag tightly fit the cage which serves to reinforce and support the bag and prevent bursting.

The dust collector preferably comprises a pair of cooperating inner and outer bags, the inner bag 32 being preferably of porous paper while the outer bag 33 may be of cloth or other relatively coarse mesh material such for example as mosquito netting, matting or the like as described for example in my Patent No. 1,416,876 or in my Patent No. 2,016,295 or in my Patent No. 2,085,042. The reduced neck of the bag rests in the loop 30 of the handle.

The handle is swingingly connected to the body portion by applying the eyes 29—29 over out-turned portions of bracket irons 34—34 which are carried by the body portion, one on each side of the fan discharge outlet 12. The resiliency of the wires of which the cage is composed permits ready assembly or removal of the handle, it being only necessary to draw the front ends of the top wires slightly apart in applying the handle to the bracket arms.

The dust collecting and air filtering bag is placed in communication with the fan discharge outlet 12 through any suitable flexible coupling, one such coupling being illustrated at 35 in the form of a flexible hose which is connected at one end to the discharge outlet of the fan and at the other end to a connector 36 which enters the paper bag mouth, as more fully described in my Patent No. 1,416,876 and in my pending application Serial No. 552,050, now Patent No. 2,123,913. Instead of a flexible hose 35 other flexible connections may be employed as for example a swinging elbow joint such as is illustrated in my Patent No. 2,009,455 dated July 30, 1935.

The end of the bag remote from the fan discharge outlet may be connected through a spring 37 or other means to a hook or the like 38 carried by the handle grip 27.

The attachment C comprising the transparent cap 15 and the hose 16 has been briefly referred to as fitted over the fan inlet. When the cap 15 is in one position the side opening 19 places the floor tool 21 in communication with the source of suction through the passage 20 and opening 19, but at the same time the hose 16 is also in communication with the source of suction. Accordingly when the floor tool is to be used and the hose is inoperative I provide means for closing the nozzle end of the hose and for supporting the same when not in use. As shown a flexible U-shaped bracket 39 is carried by one of the longitudinal wires of which the handle is composed adjacent the rear end thereof and is adapted to support the neck of the hose near the nozzle, and just beyond it another bracket 40 is provided which is carried by the handle grip 27. This bracket carries a plug 41 of any suitable material which is adapted to close the end of the hose nozzle and prevent air from being drawn therein as illustrated in Fig. 1.

The operation of the cleaner will now be described: When the apparatus is to be used for ordinary floor cleaning purposes the hose 16 is carried by the bracket 39 and the nozzle 17 on the end thereof is closed by the plug 41.

The fan motor having been started suction is 75

produced which draws dust laden air into the floor tool, this air passing thence through passage 20, opening 19, in the cap 15, thence through the fan and discharge outlet 12 into the dust collecting and air filtering device, the dust being retained within the bag and the air passing out through the pores of the paper and outer cloth covering.

The apparatus may be moved to and fro across the floor by means of the handle which also serves to support the dust collecting bag and one end of the hose extension.

When the extension device is to be used for cleaning walls, furniture or the like the nozzle end of the hose is removed from the bracket supporting the same on the handle and the cap 15 is turned so that the arrow points away from the floor tool, thereby bringing the unperforated portion of the flange 18 to a position to cut off flow from the floor tool.

The dust collector and handle may be supported from a hook or bracket 42 on the wall as indicated in Fig. 7 or may be lowered as in Fig. 8 so that the projection 31 on the handle contacts the motor casing. Preferably a fine screen is placed within the dust cap 15 at the end of the hose or at any other suitable location for the purpose of sifting out dust from type, buttons, trinkets, beans or other small articles that should be cleaned thoroughly by air. They may be shaken around in this receptacle and thoroughly dusted without going into the paper bag. Also if desired a net cover may be placed over the end of the nozzle through which air is drawn into the hose as indicated for example in my Patent No. 1,994,869 dated March 19, 1935. The extension hose may be lengthened by the use of auxiliary members to any desired extent so that the hose may reach entirely across the room or throughout the various rooms of a house. In such case the apparatus functions in a manner similar to the stationary type suction cleaner system.

A further modification of the invention is illustrated in Fig. 9 wherein the handle of the dust collector is supported by means of a flexible wheeled bracket 44 resting upon the floor while in Fig. 10 an attachment 46 projecting from the handle at the front thereof contacts the motor casing in the manner similar to what is illustrated in Fig. 8. It will be understood that while in the various modifications the cage form of handle has been illustrated this type of handle is not required insofar as the broad features of the invention are concerned.

In Figs. 11 and 12 a modification is shown wherein a separate cap 50 is adapted to be applied to cover the fan inlet when the floor tool is in use, this cap being adapted to be replaced by the horizontal hose attachment shown in Fig. 12 consisting of the cap 51, hose 16 and nozzle 17. This attachment is the same as that shown in Fig. 4 except that the cap 51 does not require a side opening in the flange which extends into the fan casing. The cap 50 however, which is used when the floor tool is in operation, is provided with such an opening to permit dust laden air to be drawn into the fan from the

floor tool nozzle. With this form of device the attachments on the handle for supporting the hose and for closing the nozzle may be omitted if desired.

In all of the modifications herein described the body portion is arranged to be supported on the floor in either the floor cleaning or wall cleaning positions. The motor extends downwardly and rearwardly from the fan casing providing a well-balanced structure and the cap with the hose extension is in a position which is accessible at all times.

The invention has been described in detail for the purpose of illustration but it will be obvious that many variations and modifications may be resorted to without departing from the spirit of the invention.

I claim:

1. In a suction cleaner, the combination with (1) a wheeled body portion including suction producing means having an inlet and a discharge outlet, a suction chamber communicating with said suction producing means and having a pair of inlets, a floor tool adapted to be placed in communication with one of said inlets, and (2) a swinging handle supporting an air filter connected with the discharge outlet of said suction producing means; of (3) a cap fitting over the second inlet of said suction chamber and having an extension hose pipe communicating with the top thereof, and means carried by the handle for closing the inlet end of said hose pipe and for supporting the same when not in use.

2. A suction cleaner having suction producing means, an open topped suction chamber communicating with said suction producing means, a cap for said suction chamber, a flexible hose connected to said cap, and means carried by the cleaner for supporting the free end of the hose when in inoperative position, said means including a stopper for closing the end of the hose.

3. A suction cleaner having suction producing means, an open topped suction chamber communicating with said suction producing means, a floor tool suction nozzle having an outlet passage communicating with said suction chamber, a cap for said suction chamber, including valve means for controlling the passage leading from the suction nozzle, a flexible hose connected with said cap, and means carried by the cleaner for supporting the free end of the hose when not in use, said means including a stopper for closing the end of the hose.

4. A portable electric suction cleaner having suction producing means, an open topped suction chamber communicating with said suction producing means, a floor tool suction nozzle having an outlet passage communicating with said suction chamber, a rotatable cap removably positioned in the top of said chamber, said cap including valve means for controlling the passage leading from the suction nozzle, a flexible hose carried by said cap, and means independent of the cap for cutting off communication through said hose when the floor tool nozzle is operatively connected to the suction chamber.

DANIEL BENSON REPLOGLE.