

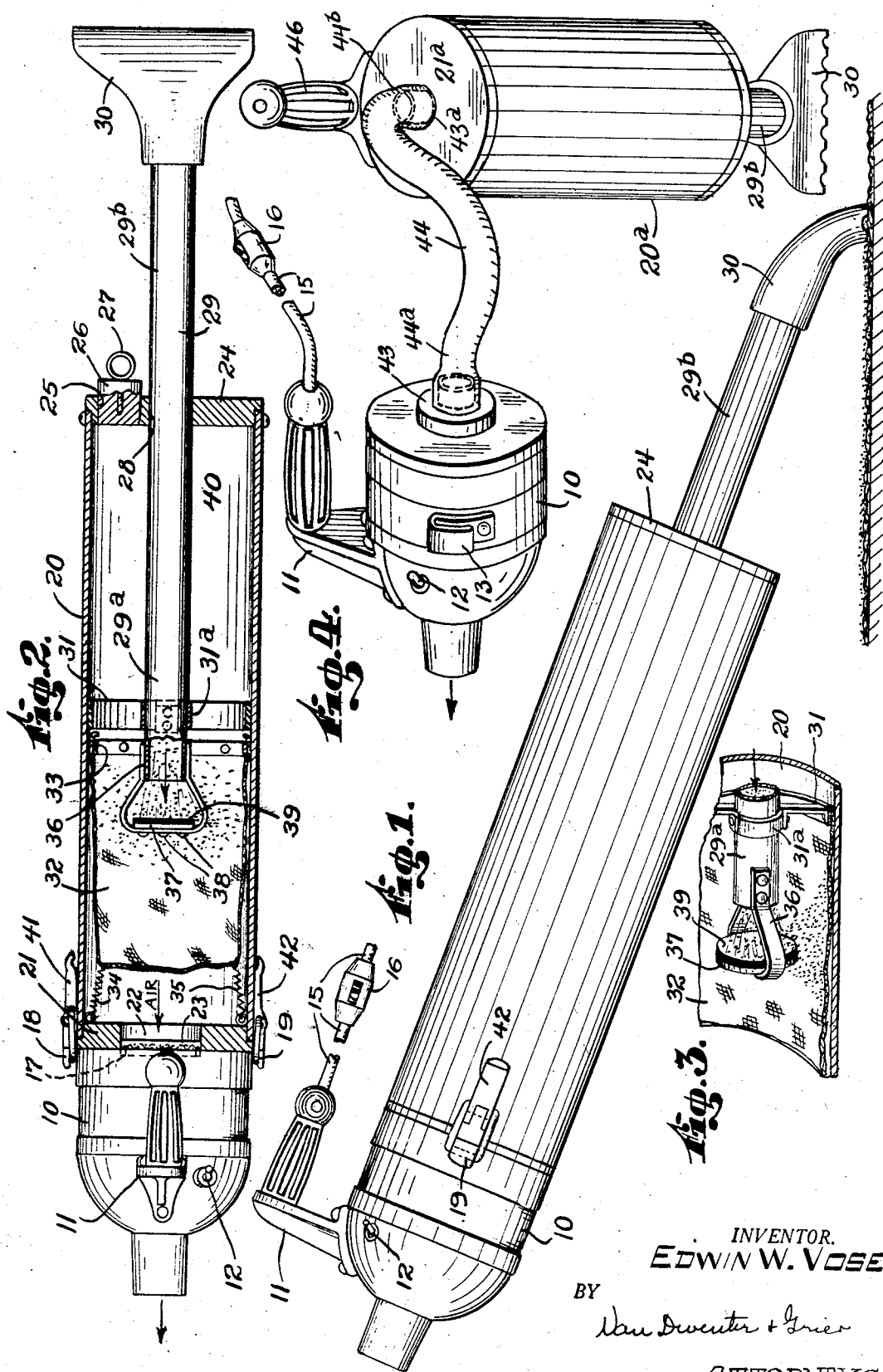
**April 11, 1944.**

**E. W. VOSE**

**2,346,339**

VACUUM CLEANER

Filed Feb. 11, 1943



## UNITED STATES PATENT OFFICE

2,346,339

## VACUUM CLEANER

Edwin W. Vose, Orange, N. J.

Application February 11, 1943, Serial No. 475,473

4 Claims. (Cl. 15—16)

This invention relates to improvements in vacuum cleaners and has for an object the provision of a vacuum cleaner which is light in weight, easily portable, and particularly adapted for retrieving materials lost from construction and production operations.

Another object of the invention is the provision, in a vacuum cleaner or material retriever, of an inverted filter and a chamber immediately below said filter adapted to contain the collected or retrieved materials.

A further object of the invention is the provision of a cleaner unit adapted to be quickly associated with a motor driven fan unit.

Yet another object of the invention is the provision, in a vacuum cleaner, of a unit including a pick-up head, a conduit carrying said head and extending into said unit, an inverted filter within said unit; said unit being connected to a portable motor driven blower by means of a flexible conduit.

Another object of the invention is the provision, in a vacuum cleaner or material retriever, of a filter chamber having mounted therein a deflecting plate upon which the material entering the chamber impinges.

A further object of the invention is the provision of a deflecting plate, the surface of which has secured thereto wear-resistant material which is substantially unaffected by the material impinging thereon.

Other objects and advantages of the invention will be apparent to those skilled in the art upon a study of the attached drawing and specification.

Referring to the drawing—

Figure 1 is an external view of the new and improved vacuum cleaner;

Figure 2 is a plan view, partly in section, of the cleaner shown in Figure 1;

Figure 3 is a fragmentary view showing one arrangement of the target upon which pick-up material impinges; and

Figure 4 is a view showing a modified form of the new and improved vacuum cleaner wherein the motor driven blower is connected to the cleaner per se by means of a flexible conduit.

My co-pending application, Serial No. 475,471, filed Feb. 11, 1943, relates to spraying devices for liquids, a typical example of the use of which is described in connection with the application of liquid asphaltum to the surfaces or roofs and the like.

My co-pending application, Serial No. 475,472, filed Feb. 11, 1943, relates to a granule sprayer for handling granules and other finely divided

solid materials. A typical example of the use of this device would be the application of ground oyster shells, etc., to the surfaces which have been previously coated with asphaltum, the granules or the like impinging upon the coated surfaces of the roofs or the like.

Now when the job is finished, my new and improved vacuum cleaner, the subject of the present application, may be utilized for "cleaning up" the job and recovering and removing all finely divided material which did not stick to the asphaltum. This has two advantages: (1) It leaves the job thoroughly clean; and (2) it recovers the unadhered material and saves it.

In the present application, use is shown of substantially the same motor blower unit as was utilized in the apparatus of the co-pending applications referred to above. This motor driven blower unit is designated by the numeral 10, and has a common casing to which a suitable handle 11 is secured. A switch 12 is provided for controlling the flow of current to the motor. A suitable hook 13 is mounted on the motor blower unit so that the upper end of the new and improved cleaner may be supported by a strap 14 which fits about the operator's neck.

A conductor cord 15 is provided for connecting the motor to a source of current, and this cord includes a switch 16 by means of which the current flowing to the motor may be controlled by the operator. The motor driven blower unit is so arranged that air enters the fan end through the opening 17, and the casing 10 has lugs 18 and 19 mounted thereon.

The cleaner per se has a cylindrical casing 20, the upper end of which has mounted therein a closure plate 21 having a hole 22 formed therein. Mounted in the hole 22 is a strainer 23 which strains the air entering the blower.

The lower end of the cylindrical casing 20 has a closure member 24 mounted therein. This closure member has a hole 25 formed therein through which the recovered material may be emptied, as will hereinafter be described.

The hole 25 is closed with a plug 26 which may carry a ring 27 to form a handle therefor. The closure member 24 also has a central hole 28 formed therein, and a pipe or rigid conduit 29 forms a press fit with the hole 28, and has one portion 29<sup>a</sup> extending into the casing 20, and a portion 29<sup>b</sup> upon which is mounted a suitable nozzle 30 for traversing the surface to be cleaned or from which material is to be recovered.

The inner end of the portion 29<sup>a</sup> is anchored or steadied in the cylindrical casing 20 by means

of a ring member 31 which forms a fit for the interior of the casing 20, and includes a portion 31<sup>a</sup> embracing the rigid conduit 29.

A filter bag 32 has its open end retained in contact with the interior wall of the casing 20 by means of an annular member 33. The upper end of the filter bag 32 is anchored to the closure plate 21 by means of springs 34 and 35, each spring having one end connected to the filter bag and the other end connected to the closure plate 21.

Carried on the extreme end of the portion 29<sup>a</sup> is a bracket member 36 upon which is mounted a target 37. This target is secured to the bracket 36 by any suitable means, for example by rivets 38. Mounted on the face of the target 37 is a disc 39 of resilient material which is substantially unaffected by material impinging thereon through the tube 29. Although many different materials may be chosen for the disc 39, I have found that rubber is the most effective.

When the switch 16 is thrown on, the motor driven blower (unit 10) starts operating and air is drawn through the nozzle 30 up the conduit 29, and as the materials leave the conduit 29 they impinge upon the rubber disc or target 39 and most of their force is thereby expended. This prevents damage such as undue wearing or the like to the fabric or other materials of which the filter bag 32 is made.

As the operator traverses the area to be cleaned with the nozzle 30, the loose material is picked up, it impinges on the target disc 39 and falls to the lower portion of the chamber within the casing 20. This lower chamber is designated by the numeral 40; so that at the end of an operation the recovered material may fall out of the chamber 40 into any suitable container when the plug 26 is removed.

The casing 20, which houses the cleaner unit, carries suitable clamping members 41 and 42 which are respectively adapted to engage the lugs 18 and 19 for securing the motor and the casing 20 together to form a unitary structure. These clamping members may be of a type widely used on trunks.

The motor driven blower unit is similar to the one shown and described in the co-pending applications, and may be interchangeably used with the devices shown in said applications, the only difference being that the devices shown in said applications are connected to the discharge end of the blower unit, whereas my new and improved vacuum cleaner, the subject of the present application, is connected to the inlet end of the blower.

In the modification of my new and improved vacuum cleaner, as shown in Figure 4, the motor driven blower unit 10 has a flanged fitting 43 secured thereto. This fitting is embraced by the end 44<sup>a</sup> of a flexible hose or conduit 44.

The casing 20<sup>a</sup> is substantially like the casing 20 except that the closure plate 21<sup>a</sup> has mounted thereon a flanged fitting 43<sup>a</sup>, similar to the flanged fitting 43 above referred to. The other end 44<sup>b</sup> of the flexible conduit 44 is secured to the fitting 43<sup>a</sup>. A handle 46 is secured to the upper end of the casing 20<sup>a</sup> and is provided to facilitate the handling of the new and improved vacuum cleaner.

To use the cleaner, the operator having a suitable harness on the body, engages a hook 13 on the motor with said harness, preferably in such a manner that the motor driven unit 10 is behind him. He may then reach back, turn on the switch

12 to start the motor driven unit 10, and may then take hold of the handle 46 and move the casing 20<sup>a</sup> back and forth to cause the nozzle 30 to traverse the area to be cleaned.

By separating the motor driven blower unit from the cleaner per se, I find that a great deal more flexibility is obtained, and the cleaning-up job can be done in a minimum of time. In both arrangements shown, the chamber 40 within the casing 20 is particularly adapted to hold a large quantity of recovered or picked-up material, and this material is, as pointed out above, prevented from injuring or destroying the filter bag 32 due to the fact that the material first impinges upon the rubber disc 39 mounted on the target 37 and has its force spent, and then falls down into the chamber 40. None of the recovered material remains on the surface of the strainer bag 32 due to the fact that the latter is inverted.

Although I have herein shown and described one form of my new and improved vacuum cleaner and a modification thereof, it is obvious that many changes may be made in the arrangements herein shown and described without departing from the spirit of the invention as hereinafter set forth in the annexed claims.

What is claimed is:

1. In a vacuum cleaner, a container or tank having a closure member at each end thereof, a tubular member having a nozzle formed on one end thereof and having the other end extending through one of said closure members and extending into said container, an opening formed in said last-mentioned closure member, removable means closing said opening, a target adjacent to said other end of said tube against which material passing through said tube into said container may impinge, a strainer or filter within said container spaced apart from said target and protected thereby, a closure head for the other end of said container or tank, an opening formed in said head, and means on said head for detachably connecting the interior of said container via said last opening to a source of sub-atmospheric pressure.

2. In a vacuum cleaner, a container or tank having a closure member at each end thereof, a tubular member having a nozzle formed on one end thereof and having the other end extending through one of said closure members and extending into said container, an opening formed in said last-mentioned closure member, removable means closing said opening, a target adjacent to said other end of said tube against which material passing through said tube into said container may impinge, a strainer or filter within said container spaced apart from said target and protected thereby, a closure head for the other end of said container or tank, an opening formed in said head, a fitting spanning said last-mentioned opening, a source of subatmospheric pressure, and flexible means for connecting said source to said fitting.

3. In a vacuum cleaner, a container or tank having a closure member at each end thereof, a tubular member having a nozzle formed on one end thereof and having the other end extending through one of said closure members and extending into said container, an opening formed in said last-mentioned closure member, removable means closing said opening, a target adjacent to said other end of said tube against which material passing through said tube into said container may impinge, a strainer or filter within said container spaced apart from said target and pro-

tected thereby, a closure head for the other end of said container or tank, an opening formed in said head, a strainer covering said opening securing means on said container adjacent to said last-mentioned end, a motor driven blower having an inlet port adapted to coincide with said last-mentioned opening when said blower is positioned on said last end, and means on said blower adapted to be engaged by said securing means for securing said blower on said container.

4. In a vacuum cleaner, a container or tank having a closure member at each end thereof, a tubular member having a nozzle formed on one end thereof and having the other end extending through the lower of said closure members and extending into said container, an opening formed in said last-mentioned closure member, removable means closing said opening, a target disc

5 within said container and spaced apart from said other end of said tube, said target disc being of sufficient diameter to be engaged by all of the material passing into said container through said tubular member, a coating of rubber or other resilient material on the surface of said disc for protecting the latter from being worn away by said material, a strainer or filter within said container spaced apart from said target disc and protected thereby, a closure head for the upper end of said container, an opening formed in said last head, means on said last head for detachably connecting the interior of said container via said last opening to a source of sub-atmospheric pressure, and means for opening the lower end of said container for permitting the operator to remove material therefrom.

EDWIN W. VOSE.