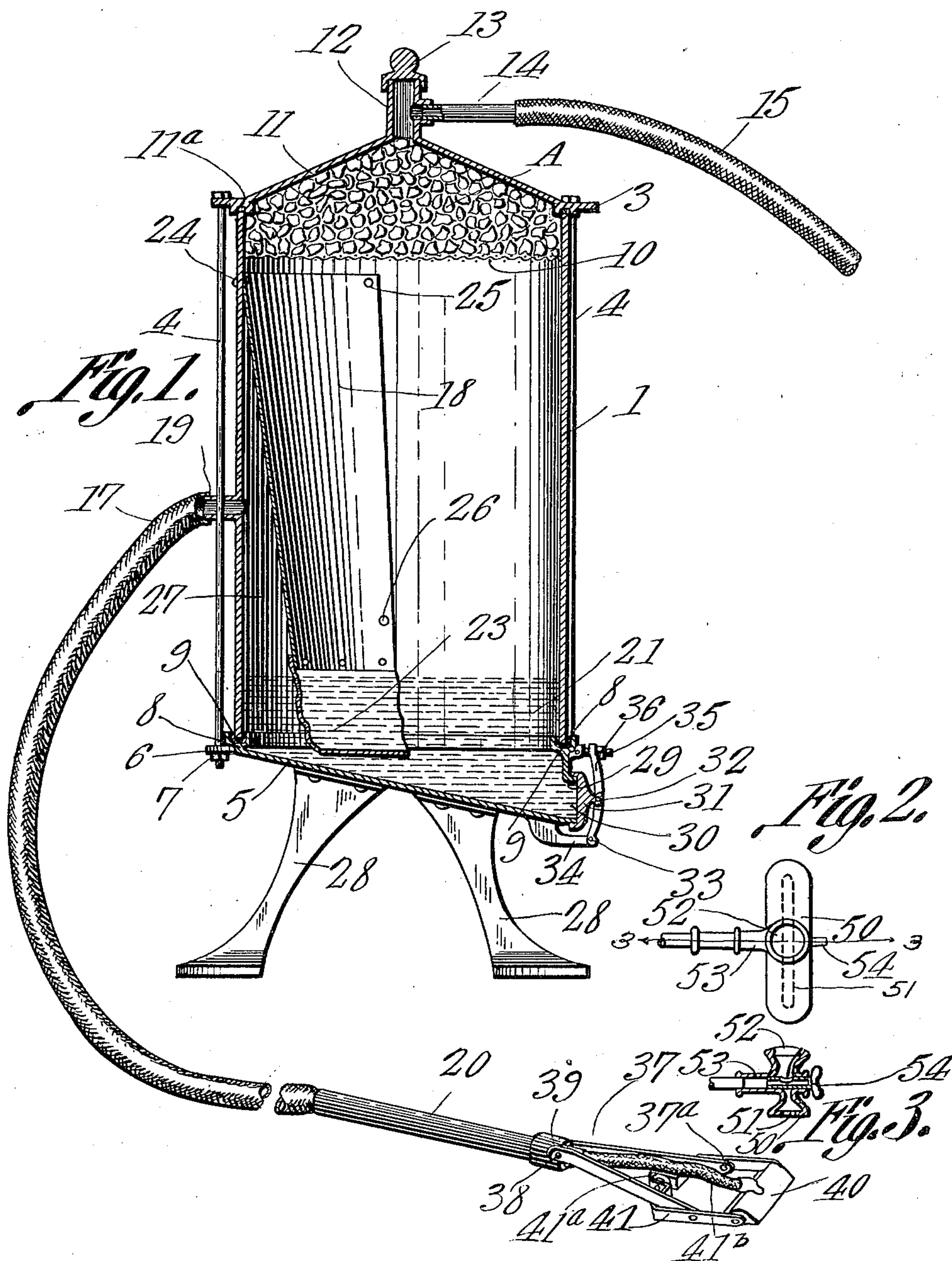


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VACUUM SEPARATOR.  
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997,864.

Patented July 11, 1911.



Witnesses

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# UNITED STATES PATENT OFFICE.

HERBERT A. SIMPSON, OF HOMER, MICHIGAN.

VACUUM-SEPARATOR.

997,864.

Specification of Letters Patent.

Patented July 11, 1911.

Application filed November 9, 1910. Serial No. 591,471.

*To all whom it may concern:*

Be it known that I, HERBERT A. SIMPSON, a citizen of the United States, residing at Homer, in the county of Calhoun and State of Michigan, have invented a new and useful Vacuum-Separator, of which the following is a specification.

This invention relates to vacuum cleaners and more particularly to means for separating the dust from the air drawn to the suction pump, one of its objects being the provision of a simple form of casing for containing a liquid with which the air, and the dust carried thereby, contacts during its passage through the separator.

A further object is to provide a device of this character utilizing a supplemental separating or filtering structure which insures the retention of practically all dust within the separator.

A further object is to provide a separator the interior of which can be easily cleaned.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a view partly in section and partly in elevation of the complete apparatus, the nozzle and its connection with the separator being shown in perspective. Fig. 2 is a plan view of a modified form of nozzle. Fig. 3 is a section on line 3—3 of Fig. 2.

Referring to the figures by characters of reference 6 designates the base of the separator, the same having an inclined bottom 5 leading to an outlet opening 30 surrounded by flange 29. A cap 31 serves to close this opening, this cap being designed to bear upon the flange 29 and being pivotally connected, as at 32, to a lever 36. This lever is fulcrumed, as at 33, upon a bracket 34 extending from the bottom 5. The free end of the lever 36 is bifurcated and receives a pivoted bolt 35 connected to the base 8 and carrying a wing nut or the like whereby the lever 36 can be forced toward the base 8 and thus clamp the cap 31 upon flange 29 and

seal the opening 30. The base 8 is supported by legs 28 or the like and is provided, at the top thereof, with an annular channel or groove 9 in which suitable packing may be placed, this groove being designed to receive the lower end of a cylindrical casing 1. The upper end of this casing projects into a groove or channel 11<sup>a</sup> formed adjacent the periphery of a conical cap 11, said cap having an annular flange 3. Tie bolts 4 engage the flange and also engage gears 6 extending from the base 8, these bolts being provided with wing nuts 7 or the like whereby the base and the cap may be tightly clamped upon the two ends of the casing 1.

A tubular extension 12 projects from the apex of the cap 11 and is normally closed by means of a screw cap 13. A tubular outlet arm 14 projects from this extension and may be connected, as by means of flexible hose 15 to a suction pump (not shown).

A partition 10, preferably formed of wire fabric, is secured within the upper portion of the casing 1 and is designed to support charcoal, indicated at A, and which completely fills the cap 11.

A transversely bowed deflecting plate 18 is secured at its upper end, to the casing 1 close to the partition 10 and is also secured along its side edge to the casing, this plate being inclined downwardly toward the center of the bottom 5 although spaced from said bottom. A compartment 27 is thus formed between the deflecting plate and the casing. A flexible apron 23 of leather or the like is attached to the lower end of the plate 18 and hangs close to the bottom 5.

An inlet tube 19 opens into the casing 1 back of the plate 18 and is connected, as by means of flexible hose 17 to the tubular arm 20 of the collecting nozzle of the cleaner. This arm 20 has an enlargement 39 to which are pivotally connected diverging arms 37, the pivots being indicated at 38. These arms are in turn pivotally attached as at 37<sup>a</sup>, to the sides of a yoke 41 in which a nozzle 40 is pivoted. Said yoke has a U-shaped extension at the center thereof, said extension carrying a roller 41<sup>a</sup>. A flexible tube, indicated at 41<sup>b</sup> connects the nozzle 40 with the tubular member 20. It will be apparent that, by mounting the nozzle in the manner described, it can be swung to any desired angle relative to the arms 37 and to the member 20 without, however, interrupting the



suction which may be established through the tube 41<sup>b</sup> from nozzle 40 to the tubular member 20. A nozzle such as described is especially designed for cleaning floors, walls and other extensive smooth surfaces. For cleaning furniture and the like, a nozzle such as illustrated in Figs. 2 and 3 is preferably utilized. Such nozzle includes a tubular member 53 adapted to be connected to the hose 17 in any manner desired and having an elongated hood 50 extending therefrom and also a cup-shaped extension 52, the said extension and the hood being oppositely disposed and both opening into the member 53. A valve 54 is mounted for rotation within the member 53, and by turning it, either of the parts 50 and 52 can be placed in communication with the extension 53. The cup-like extension 52 is particularly designed for cleaning tufted furniture while the hood 50 which has an elongated opening 51 therein, is especially useful in cleaning smooth furniture.

When it is desired to use the structure which has been described, the nozzle to be employed is attached to the hose 17 and water is poured into the casing 1 through the extension 12 until it assumes a level slightly below the lower edge of the plate 18. Apron 23 will therefore hang in the water. It is desirable to have the charcoal A in position on the screen partition 10 during this charging operation so that a certain amount of water will be absorbed by the charcoal. The charcoal can be placed in the casing through the extension 12 or, if preferred, the cap 11 can first be removed and the charcoal subsequently placed in the casing. When a suction is set up through the hose 15 and 17 a current of air is of course established through the casing 1, this current passing downwardly from the inlet 19 so as to flow under the plate 18. In order to pass under this plate it is necessary for the apron 23 to rise to a certain extent because of the pressure exerted thereagainst by the air. The air and the dust carried thereby will thus be brought into contact with the water and separation of the two will therefore be effected. If any small particles of dust pass under the plate 18 without being collected by the water, they will be retained by the

moistened charcoal located on the partition 10. By pouring water through the extension 12 and the charcoal therebelow, said charcoal can be quickly cleaned and all of the contents of the separator can be readily drained by removing closure 31 from the opening 30.

What is claimed is:—

1. In a vacuum cleaner, a dust separator including a casing, said casing having an outlet in the upper portion thereof and an inlet between the top and bottom thereof, the lower portion of the casing constituting a water container, a non-yielding deflector secured at its upper end and sides to the wall of the casing, the lower end of the deflector being located close to but above the level of the water within the casing and there being an air compartment between said deflector and the casing, and an apron of flexible material secured to and extending downwardly from the deflector and below the level of the water within the casing, said apron extending continuously throughout the width of the deflector.

2. A separator including a base having an outlet opening, the bottom of the base being inclined downwardly toward said opening, a casing supported on the base and having an inlet between the ends thereof, a cap secured on the casing and having an outlet, a transversely curved deflector plate secured at its upper end and along its sides to the wall of the casing and having its lower end supported close to but above the level of water contained within the separator, the lower portion of the casing and the base constituting a water container, and an apron of flexible material secured to and hanging downwardly from the deflector plate, said apron extending continuously throughout the width of the plate, and a closure for the outlet in the base of the casing.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HERBERT A. SIMPSON.

Witnesses:

MYRON H. NICHOLS,  
JOHN S. LINTON.