

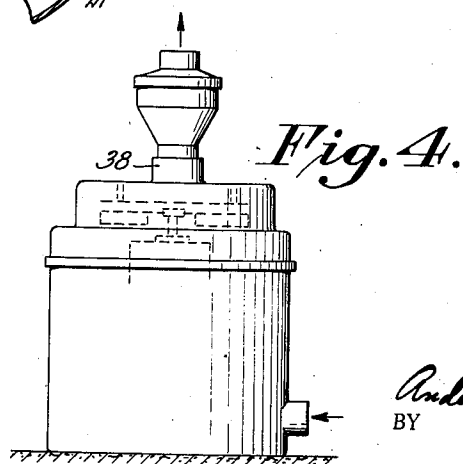
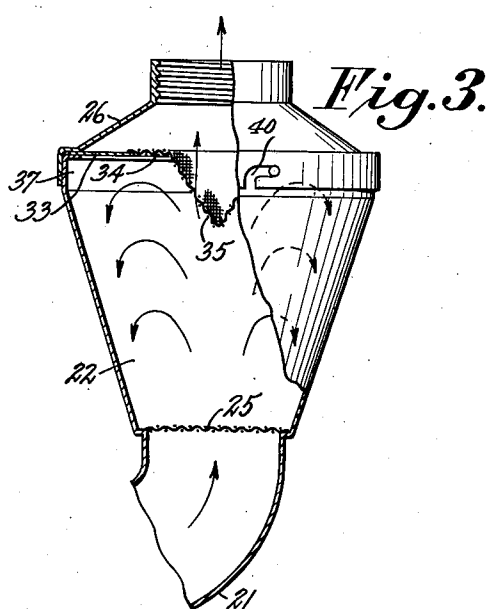
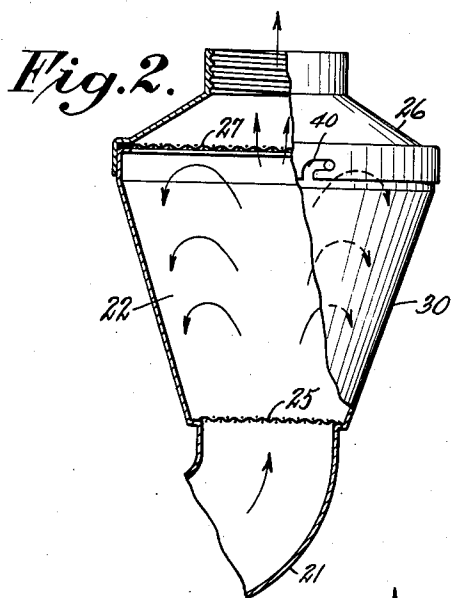
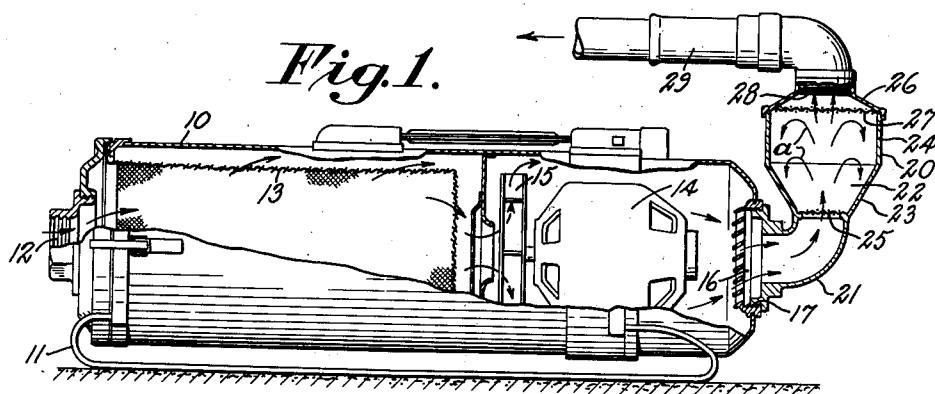
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VACUUM CLEANER

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VACUUM CLEANER

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3 Claims. (Cl. 21-127)

The present invention relates to vacuum cleaners or similar devices employed for cleaning or air-conditioning. More particularly it relates to a device adapted to be used in connection with a vacuum-cleaner or other air-flow producing means, the object of the device being to treat the air by introducing thereinto a disinfectant or other air-conditioning gas.

Still more particularly the invention relates to a container or receptacle for containing vaporizable crystals, the receptacle being adapted to be secured to the outlet of a vacuum cleaner whereby the air passing through the receptacle agitates the crystals therein and causes the vaporization.

One of the objects of the invention is to provide a device of this nature which is simple in construction and efficient in operation.

Further objects and advantages of the invention will be apparent from the following description considered in connection with the accompanying drawing, which forms a part of this specification and on which:

Fig. 1 is a cross-sectional view showing one embodiment of the invention;

Fig. 2 is a cross-sectional view of another embodiment of the invention;

Fig. 3 is a cross-sectional view of a still further embodiment of the invention; and

Fig. 4 is a view of still another embodiment of the invention.

Referring more particularly to Fig. 1, reference character 10 designates the casing of a vacuum cleaner unit which is supported in a horizontal position on a horizontal surface by means of runners 11. Casing 10 is provided with an inlet opening 12 which admits air into the interior of a dust bag 13 which is secured within the casing. Also mounted within the casing 10 is a motor 14 driving a fan 15 which serves to create a current of air through inlet 12 and dust bag 13. The casing is provided with an outlet opening 16 through which this current of air is exhausted. Outlet opening 16 is preferably provided with screw threads 17.

Reference character 20 designates generally a container or receptacle including an inlet conduit 21 formed as a right-angled bend. The horizontal end of conduit 21 is provided with screw threads which are adapted to engage threads 17 formed in outlet opening 16. The vertical end of conduit 21 communicates with a chamber 22 within receptacle 20. In the embodiment shown in Fig. 1, the lower part of chamber 22 is bounded by a conical wall 23, while the upper part of the

chamber is bounded by a cylindrical wall 24. Secured within receptacle 20 at the point where conduit 21 communicates with chamber 22 is a perforated plate or screen 25.

The upper end of chamber 20 is closed by means of a cover member 26 which may be removably secured to the cylindrical wall 24 in any suitable manner such as by screw threads or by a close fit or by the bayonet joint shown at 40 in Figs. 2 and 3. Secured within cover member 26 so as to be removable therewith is a perforated plate or screen 27. Chamber 22 is thus bounded at its upper and lower ends by means of screens or perforated plates. This chamber is adapted to receive vaporizable crystals such as crystals of paradichlorobenzol or paradibromobenzol, which may be placed in the chamber by removing cover 26.

Cover 26 is provided with an outlet opening 28 to which may be secured a hose or other conduit 29 if it is desired to discharge the conditioned air at a point remote from the cleaner unit. Otherwise, the air may be discharged to the atmosphere directly through outlet 28.

The above described embodiment operates as follows:

When it is desired to treat the air discharged from the vacuum cleaner, the receptacle 20 is secured to the outlet of the cleaner unit by screwing conduit 21 into outlet 16. The threads are so arranged that receptacle 20 extends in a vertical direction with the outlet 28 at the top when conduit 21 is screwed tightly into the outlet 16. As above stated, crystals of a vaporizable substance may be placed within chamber 20 by removing cover 26. The cover is then replaced in position and the motor 14 started. Rotation of fan 15 causes a current of air to pass through casing 10 and through conduit 21 and screen 25 into chamber 20. The flow of air in a vertical direction through screen 25 lifts the crystals against the force of gravity and this agitates them violently, which increases the rate of vaporization. Screen 27 prevents the agitated crystals from being blown out of chamber 22. Due to the fact that the cross-sectional area of chamber 22 at the upper part thereof is larger than at the lower part, the velocity of the air is reduced towards the upper part of the chamber to such an extent that crystals fall back toward the bottom of the chamber, to be again picked up by the high velocity air entering the chamber. The arrows "a" indicate a possible path of travel of the crystals although it is to be understood that these arrows by no means indicate a definite path

of travel. In any event, the result is that the crystals are violently agitated and are not held in a more or less stationary position against the upper screen 27.

5 The embodiment shown in Fig. 2 differs from that just described only in the fact that the wall 30 bounding chamber 22 is conical throughout its entire length instead of being made up of conical and cylindrical portions. The operation of this
10 embodiment is substantially the same as previously described.

In the embodiment shown in Fig. 3 a baffle member 33 is secured within cover member 26 and is formed with a central opening across
15 which is secured a screen 34. This screen may be flat, like the screen 27 in Fig. 1, or it may be formed with a conical central part 35, the apex of the cone being at the bottom.

The operation of this modification is similar
20 to that above described, except that baffle 33 tends to produce a region 37 at the top of chamber 22 where the air has no velocity in an upward direction and may even have a downwardly directed component. This facilitates the return
25 of the crystals to the lower part of the chamber. As the screen 34 is formed with a conical central part, the upwardly moving crystals are deflected thereby into the quiet zone, and hence, returned to the lower part of the chamber.

30 In Fig. 4 an embodiment of the invention is shown in connection with a vacuum cleaner of the commercial type which has an upwardly directed outlet 38. When used in a vacuum cleaner
35 of this type, it is not necessary to provide receptacle 20 with a bent conduit 21 inasmuch as the air discharged from the cleaner unit flows in a vertical direction.

A vaporizer made in accordance with the present invention is simple and cheap to manufacture.
40 A violent agitation of the crystals is obtained without recourse to any special means for agitating or whirling the air admitted to the receptacle. This results in a very simplified structure.

While several more or less specific embodiments
45 of the invention have been shown and described, it is to be understood that this has been done for purposes of illustration only. Further embodiments and modifications thereof fall within the scope of the invention, which is to be limited
50 only by the appended claims viewed in the light of the prior art.

What is claimed is:

1. A vaporizer including wall structure forming a container having a conical portion, means for supporting said container with the axis of said cone vertical and with the wider part thereof above the narrower part, a first screen member secured across the upper part of said container, a second screen member secured across the lower part of said container, and means for directing a current of air upwardly through said container and the screen members therein for agitating vaporizable crystals retained between said screen members.

2. A vaporizer including wall structure forming a container having a conical portion, means for supporting said container with the axis of said cone vertical and with the wider part thereof above the narrower part, a first screen member secured across the upper part of said container, a second screen member secured across the lower part of said container, means for directing a current of air upwardly through said container and the screen members therein for agitating vaporizable crystals retained between said screen members by lifting crystals against the force of gravity, and baffle means in the upper part of said container for providing a zone of reduced air velocity for facilitating return of crystals to the lower part of said container.

3. A vaporizer including wall structure forming a container having a larger upper than lower cross-sectional area, a first perforated member disposed across the lower part of said container, a second perforated member disposed across the upper part of said container, said members defining a space within said container adapted to retain vaporizable solid particles, means for directing a current of air upwardly through said container and the perforated members therein for agitating said particles by lifting particles against the force of gravity, and baffle means in the upper part of said container for providing a zone of reduced air velocity for facilitating return of particles to the lower part of said container, the central part of said second perforated member being conical with the apex extending downwardly, whereby particles are deflected into said zone of reduced velocity.

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