

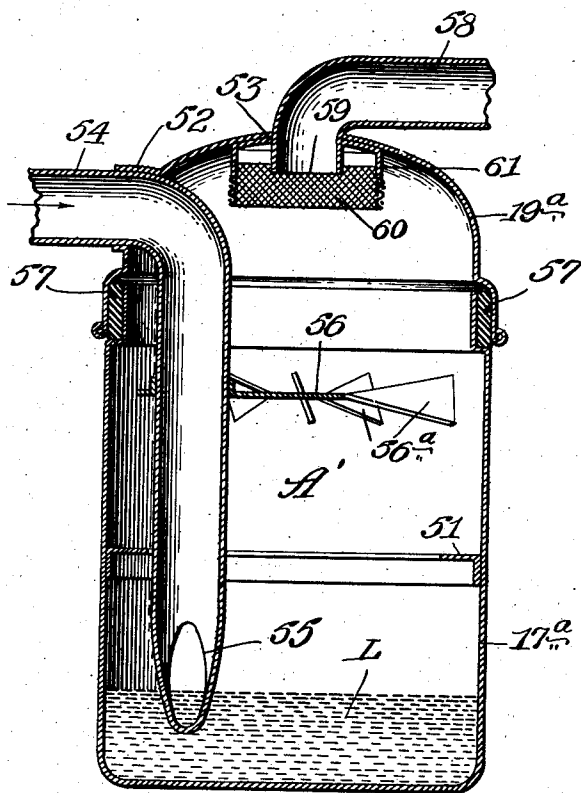
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2 Claims. (Cl. 183—8)

This invention relates to a separator and more particularly to a suction cleaner of the bagless type.

An object of the invention is to provide a suction cleaner which effectively separates the dirt, dust, etc., out of the air without the use of fabric bags, etc.

Another object is to provide such a cleaner in which the means for producing the suction is mounted in a separate unit, and in which the air is cleaned in a separate container which may be easily detached and removed for cleaning.

A further object is to provide a suction cleaner in which dust laden air is brought into contact with a pool of liquid and agitated therewith, the resulting spray or mist effecting a washing action on the air and aiding particularly the precipitation and removal of the extremely fine dust of the type which usually escapes through the meshes of the conventional bag type suction cleaner.

Another object is to provide improved baffle means for preventing the escape of liquid from the liquid container. Still another object is to provide a cleaner of this type which is easy to move from place to place and convenient to operate. Other objects will appear as the specification proceeds.

The invention is illustrated in the accompanying drawing, in which:

A sectional view in elevation of a form of separator apparatus is shown.

A form of separator unit A' is shown in the drawing. Unit A' comprises a cylindrical liquid container 17^a which may be partly filled with a liquid L, such as water or any desired cleaning fluid. Above the level of liquid L, container 17^a is provided with an annular flange 51 which has its edges secured to the inside walls of the container. At its top container 17^a is provided with a rubber washer 57, over which is received the outer edges of the closure 19^a. Closure 19^a has two openings 52 and 53. Through opening 52 is received the inlet tube 54. Immediately inward of opening 52, tube 54 is curved downwardly along the side of the container. This tube extends downwardly to the liquid level and its extreme lower end is again turned horizontally, its mouth or opening 55 facing a direction substantially parallel with the wall of the container. Upwardly of flange 51 is a baffle member 56 equipped with the radial blades 56^a which are inclined so as to deflect any liquid which may tend to rise with the rotating mixture of air and liquid. Blades 56^a are cut away adjacent the inlet tube 54 and are

fixedly secured to this tube by soldering or any other suitable means. Extending within opening 53 in closure 19^a is the outlet tube 58 which has its opening 59 in the upper central portion of the container through which the clean air is drawn off from the unit. Depending from bracket 61 secured to the top closure 19^a is a filter screen 60 which serves to prevent any spray which may have escaped from along the edges of the container from entering the outlet opening 59. This filter screen may be of any suitable material and preferably it has rather fine perforations so that no liquid will be likely to pass through it into the outlet opening.

In the operation of the unit A', the inlet tube 54 may be connected by a flexible hose or other suitable conduit with a suitable cleaning nozzle not shown, and outlet tube 58 should be connected by any suitable means with a blower not shown or other suitable means for producing a vacuum. In its operation, air is drawn out through outlet tube 58, and the vacuum produced inside the container causes air to be drawn in rapidly through inlet tube 54. The air leaving mouth 55 of the inlet tube moves rapidly in a direction tangential with the walls of the container and through contact with liquid L produces a violently rotating mixture of liquid and air. The centrifugal action tends to throw the liquid upwardly along the walls of the container. As the liquid moves upwardly, it strikes the annular flange 51 and is deflected inwardly. Liquid spray rising upwardly strikes the baffle member 56 and the blades 56^a are effective for deflecting the liquid downwardly. Any moisture which may escape past the edges of baffle member 56 is caught when it strikes the filter screen 60. The dust laden air after coming into close contact with the cleaning liquid is thoroughly cleansed of all foreign material and the pure clean air is drawn off from the central upper portion of the container through the outlet tube 58.

Though, as here shown, the inlet tube 54 is preferably disposed nearer one side of container 17^a, this tube may extend downwardly at the center of the container if so desired.

The separator unit A' may be connected to any means for producing a vacuum. For example, the inlet tube of the unit may be connected to the blower unit of an ordinary bag type vacuum cleaner or may be connected to the intake manifold of an automobile engine. The latter arrangement is a convenient one when the cushions and upholstery of a motor car are to be cleaned. During the cleaning operation the separator unit

may be rested on the floor or on any convenient support.

In the separating unit described, the air is passed through a very rapidly rotating body of liquid and liquid spray which is actuated by the rapidly moving air entering in a tangential direction. The liquid and the dirt and dust which are entrained in it are kept from rising to the upper portion of the container by baffle means, and the pure clean air is withdrawn from the central upper portion of the container. Even the finest of dust particles which would pass through the bag of an ordinary bag type cleaner is in my improved cleaning apparatus thoroughly removed from the air.

It is understood that many changes may be made in the construction of the apparatus without departing from the spirit of my invention.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

I claim:

1. In a suction cleaner of the character set forth, a cylindrical liquid container partly filled with liquid, said container being equipped with a removable top closure, an air inlet tube extending through said closure and to the bottom portion of said container, said inlet tube being nearer one side of said container and being turned at its

lower end to provide an opening through which air may be discharged substantially parallel with said side of the container whereby rotation of the liquid in said container is produced by the discharge of said air, an air outlet passage leading from the central upper portion of said container, and baffle means for preventing the rise of said liquid to the upper portion of said container, said means including a fan baffle secured to said inlet tube and having blades extending radially of said container, said blades being inclined downwardly in the direction of movement of air and liquid within said container.

2. In a suction cleaner of the character set forth, a cylindrical liquid container partly filled with liquid, said container being equipped with a removable top closure, air inlet means for introducing air tangentially into the lower portion of said container below the level of the liquid therein, an air outlet passage for drawing air off from the central upper portion of said container, an annular flange about the interior of said container for preventing the passing of liquid upwardly along the container walls, a baffle member having radial blades which are inclined downwardly in the direction of air movement within said container, and a screen filter depending about the opening of said air outlet means, said screen filter and baffle member being adapted to prevent the passing of said liquid into said outlet passage.

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