

July 4, 1939.

J. T. NORMAN

2,164,833

AIR CLEANING AND CONDITIONING APPARATUS

Filed Sept. 13, 1937

2 Sheets-Sheet 1

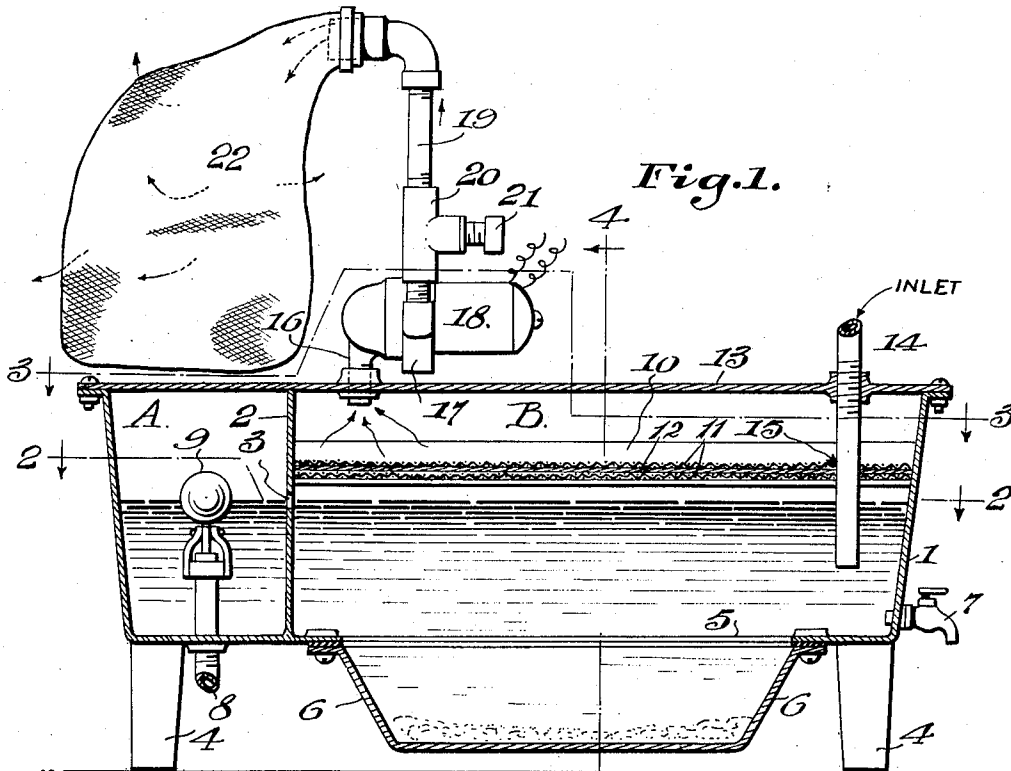
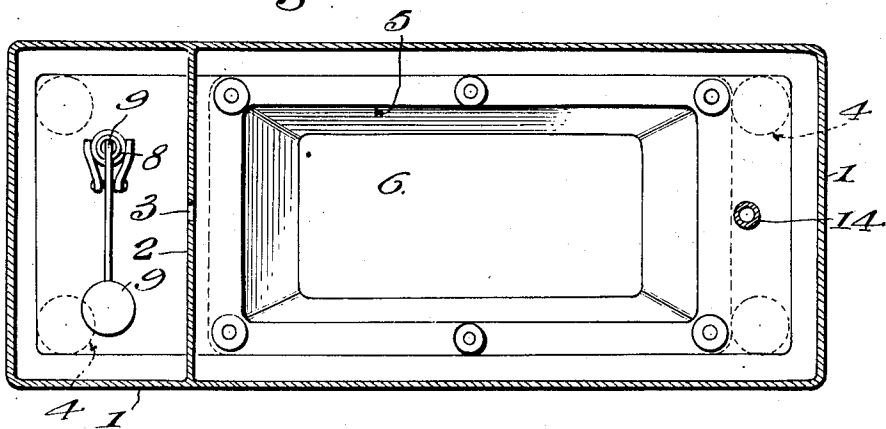


Fig. 2.



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Fig. 3.

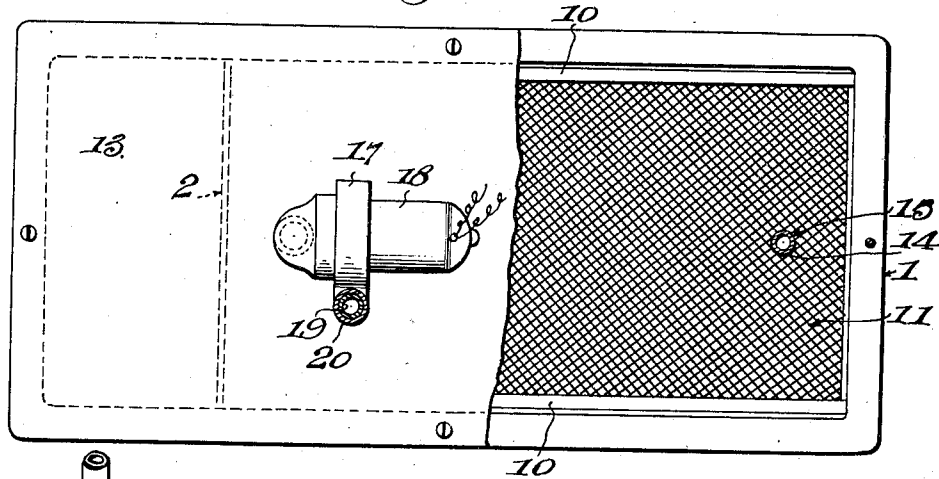


Fig. 4.

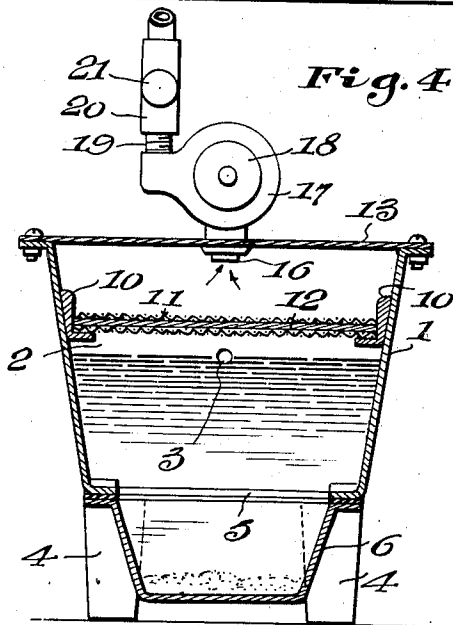
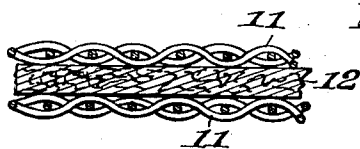


Fig. 5.



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UNITED STATES PATENT OFFICE

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AIR CLEANING AND CONDITIONING
APPARATUS

Joseph T. Norman, Shickshinny, Pa.

Application September 13, 1937, Serial No. 163,681

2 Claims. (Cl. 183—14)

My invention relates to means for freeing air of foreign bodies such as smoke, dust and noxious gases. It primarily has for an object to provide a unit which can be employed for a variety of objects as for example a smoke consumer for furnaces, a draft and air circulator for furnaces, an air circulator, cleaner and moistener for rooms, an air purifier and cooler in summer time and an air purifier and warmer in winter time.

Further the invention has for its object to provide a unit for each and all of the above purposes which will operate with a small power motor and will therefore cost very little to operate.

Again it is an object to provide a unit of the character stated of a simple inexpensive construction which will be automatic in action and will readily serve its intended purpose.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends the invention still further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, and then be particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which:

Fig. 1 is a vertical, longitudinal section of the unit.

Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal section on the line 3—3 of Fig. 1.

Fig. 4 is a cross section on the line 4—4 of Fig. 1.

Fig. 5 is an enlarged detail section of a portion of the filter.

In the drawings, in which like numerals and letters of reference indicate like parts in all of the figures, 1 represents a tank of suitable size and material in which is located a cross partition 2 whose purpose is to divide the tank into two separate compartments which communicate with one another only through an aperture 3. One of the compartments A is the water inlet and supply compartment, while the other B is the air treating compartment.

The tank 1 is suitably supported, as by legs 4, and it has an opening 5 in its bottom under which is removably secured the sediment trap 6, a drain cock 7 being provided for drawing off the liquid contents of the compartment B when desired.

Water is supplied from any suitable source

via pipe 8 and float valve device 9 to compartment A.

When the water level in compartment A reaches hole 3 the water will pass through compartment B below the filter-screen 11—12 until it reaches a level with the water in compartment A at which time float valve 9 will shut off. The water level is so adjusted that it never reaches the filter-screen 11—12.

The filter-screen comprises a pair of wire-mesh screens between which is placed a cloth or other suitable filtering means which will permit air to pass through but which will hold back dust, smoke and the like. So that it may be renewed when renewal is desired, the filter-screen 11—12 rests on flanges 16 secured to the side walls of the tank 1.

13 designates the cover for the tank. It supports an inlet duct 14 which projects through a tight hole 15 in the screen filter 11—12 and has its discharge end immersed in the water (or chemical fluid when such is used) in compartment B of tank 1. The cover 13 also carries the outlet duct 16 communicating with the suction blower 17, the latter being preferably of the type used in vacuum cleaners and which is operated by a small electric motor 18.

The blower's outlet duct is indicated by 19, and 20 indicates a T coupling, the branch outlet of which is capped at 21 when not in use. To the outlet end of the duct 19 may be connected a filter bag 22 of suitable construction and material, such for instance as that used in the well known vacuum cleaner bags.

When the unit is to be used the pipe 8 is connected with a suitable constant source of water supply.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the complete construction, operation and advantages of the invention will be clear to those skilled in the art.

What I claim is:

1. In apparatus of the class described, a unitary structure comprising a tank, divided by a partition into two side-by-side chambers, one chamber constituting a water supply chamber and the other a gas washing chamber, a cover for said tank, means securing said cover to said tank over said chambers, an inlet pipe carried by said cover and extending into said washing chamber, an outlet pipe and a suction-blower with motor mounted on and carried by said cover, a filter screen in said washing chamber below the top thereof and serving as a partition for said wash-

ing chamber, dividing it into an upper air space and a lower liquid space, and means to admit liquid to said water supply chamber, said first-mentioned partition having means to pass liquid
5 from said supply chamber to said washing chamber at the level at which the liquid is to be maintained in said washing chamber, said inlet pipe projecting through said screen and having its delivery end continuously immersed in the liquid in the washing chamber and said outlet pipe
10 communicating with the air space above the screen in said washing chamber.

2. In apparatus of the class described, a unitary structure comprising a tank, divided by a
15 partition into two side-by-side chambers, one chamber constituting a water supply chamber and the other a gas washing chamber, a cover for said tank, means securing said cover to said tank over said chambers, an inlet pipe carried by said cover
20 and extending into said washing chamber, an

outlet pipe and a suction-blower with motor mounted on and carried by said cover, a filter screen in said washing chamber below the top thereof and serving as a partition for said washing chamber, dividing it into an upper air space
5 and a lower liquid space, and means to admit liquid to said water supply chamber, said first-mentioned partition having means to pass liquid from said supply chamber to said washing chamber at the level at which the liquid is to
10 be maintained in said washing chamber, said inlet pipe projecting through said screen and having its delivery end continuously immersed in the liquid in the washing chamber and said outlet pipe communicating with the air space above
15 the screen in said washing chamber, said tank having an opening in its bottom and a dirt collecting reservoir removably secured to said tank under said opening for purposes described.

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