April 15, 1941. J. W. CARMAN 2,238,461

MEANS FOR PURIFYING TOILET GASES

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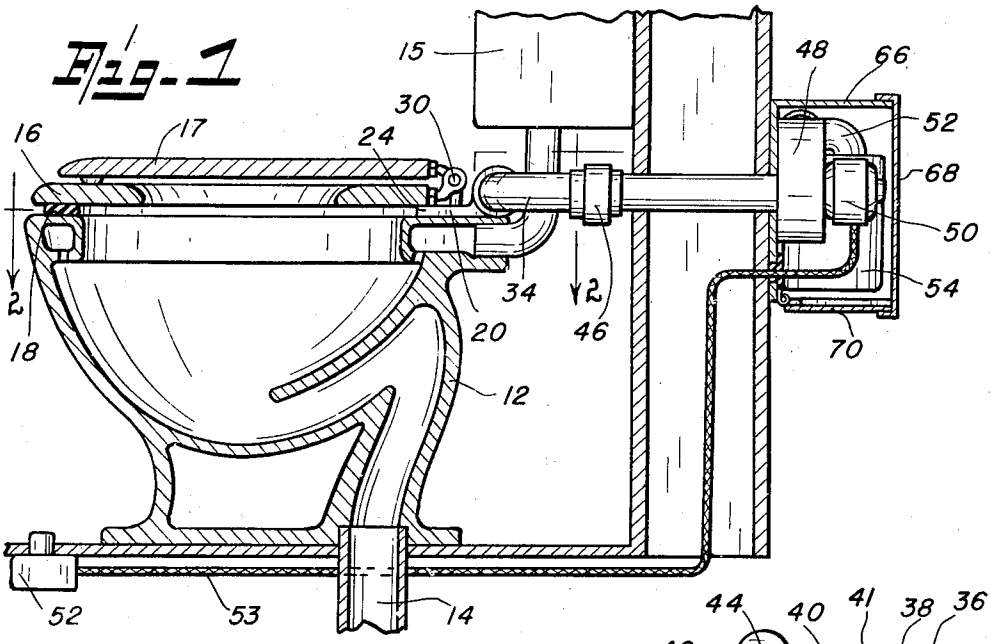
Fig. 1



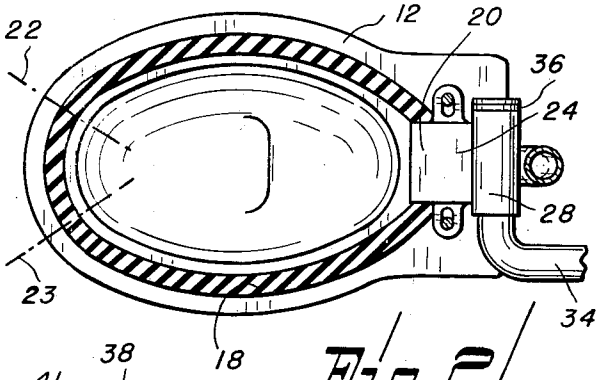


Fig. 2

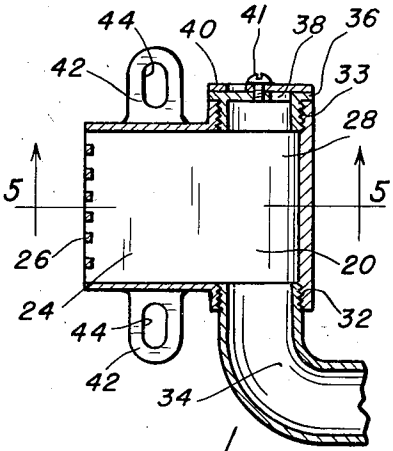


Fig. 3

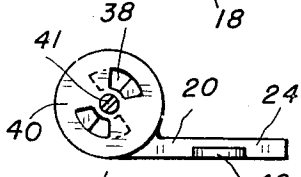


Fig. 4

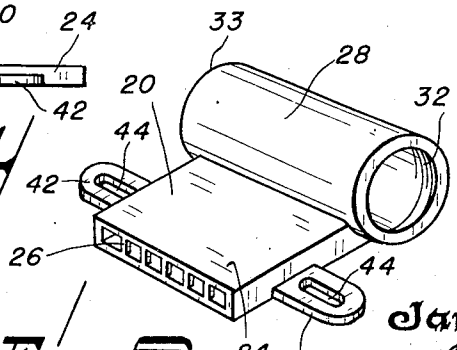


Fig. 6

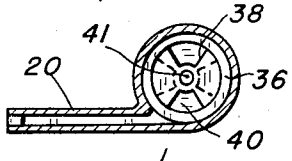


Fig. 5

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MEANS FOR PURIFYING TOILET GASES

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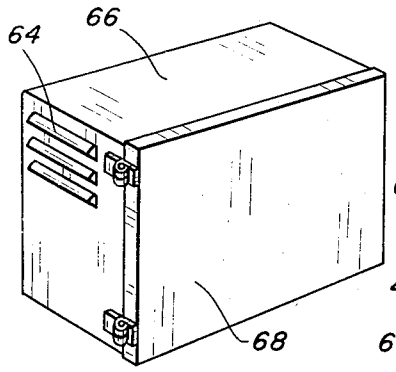

Fig. 7

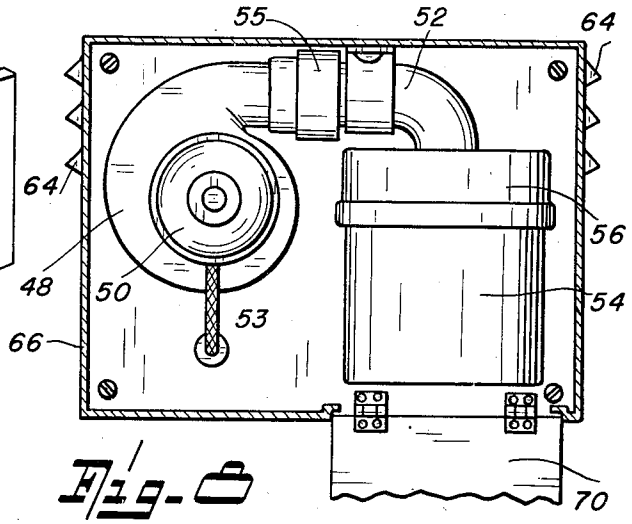

Fig. 8

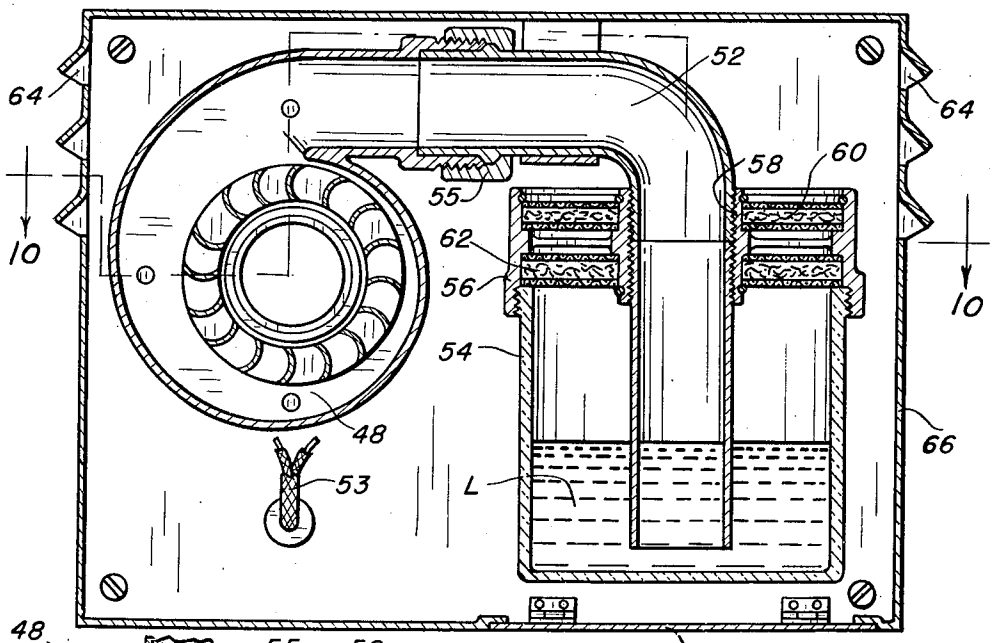

Fig. 9

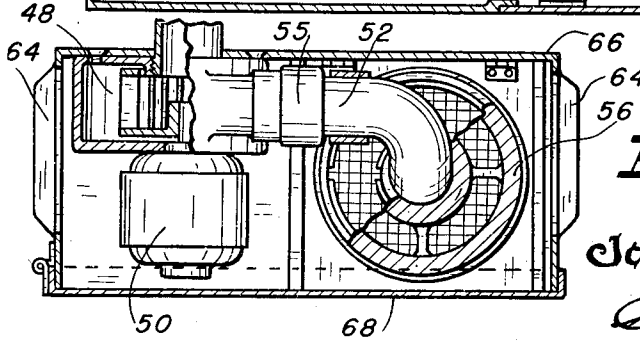

Fig. 10

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UNITED STATES PATENT OFFICE

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MEANS FOR PURIFYING TOILET GASES

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Application November 9, 1939, Serial No. 303,691

2 Claims. (Cl. 4—213)

My present invention relates to a means for purifying toilet gases.

My invention consists, essentially, in a suction fan, power drive, which is so disposed as to draw air from a toilet bowl and to then pass this air through a medicated solution in a filter so arranged that the antiseptic solution is caused to saturate a plurality of fibrous pads so that the air, as it passes through the filter, will have both chemical treatment and the physical filtering before it is discharged into the atmosphere. It is a well known fact that over twenty serious diseases are traceable to the human excreta and the point of greatest danger of a person infecting himself or others occurs in a poorly ventilated toilet room. Here many of the gases given off carry harmful bacteria and germs of various types, and it is, therefore, the purpose of my present equipment to draw these noxious and lethal gases from the toilet bowl, and to pass them through a sterilizing media before they are liberated, so that they may be breathed in a germ free state.

A further object of my invention is to provide the maximum sanitation and wholesomeness in toilet rooms, particularly where they are used by many people and where facilities for ventilation are difficult to obtain or to service.

A further object of my invention is to provide a sterilizing device for toilet gases which is most unobtrusive in the bathroom itself, and in which all the working parts are outside the dwelling, preferably, so that there is no noise or danger, and where the same may be readily serviced and maintained.

A further object of my present invention is to provide equipment to secure these results that will have universal application to a wide variety of toilets as now constructed, and which will not require extensive or expensive installation, and one in which the equipment will be most readily adaptable to a widely varying range of installation conditions.

Other and more specific objects will be apparent from the following description taken in connection with the accompanying drawings, wherein

Figure 1 is a typical vertical, sectional view through a toilet bowl showing my equipment applied thereto.

Figure 2 is a cross-sectional view along the line 2—2 of Figure 1.

Figure 3 is a horizontal, sectional view through the suction unit of my device.

Figure 4 is an end view of my suction nozzle.

Figure 5 is a sectional view taken along the lines 5—5 of Figure 3.

Figure 6 is a perspective view showing my suction nozzle.

Figure 7 is a perspective view showing the outside housing member for my sterlizing equipment.

Figure 8 is a vertical, sectional view through the housing of Figure 7.

Figure 9 is a vertical, sectional view on an enlarged scale, but otherwise taken in the same sense as Figure 8, excepting that the working parts on my suction fan and filter proper are shown in section to better illustrate their structure.

Figure 10 is a cross-sectional view taken along the line 10—10 of Figure 9.

Referring to the drawings, throughout which like reference characters indicate like parts, 12 designates a conventional toilet having the usual soil pipe 14 and the normal water tank 15. When making an installation of my equipment in this kind of toilet, I find it desirable to raise the seat as 16 and its cover 17 and insert between the seat and the toilet bowl, preferably, a rubber gasket as 18. This gasket is arranged to encircle the upper margin of the toilet bowl proper so as to seal the same and make it possible for the suction nozzle 20 to fully evacuate the toilet bowl to the full capacity of the suction fan. In Figure 2 I have shown a type of rubber gasket used with the conventional toilet seat. With some types where the seat is split at the front end, it is necessary to cut away this rubber gasket. I have indicated this cut-out portion by the broken lines 22 and 23. Nozzle 20, which is shown in perspective in Figure 6 and in detail in Figures 3, 4, and 5, consists essentially of a cast unit having the nozzle portion proper 24, the leading edge of which is formed with a comb or fret arrangement at 26 to the end that toilet paper and the like cannot be drawn into the nozzle and thus interfere with the workings of the various parts of my device. At its outer end, the nozzle is provided with a tubular header arrangement 28. This header is disposed far enough back from hinge 30 so as not to interfere with the normal hinging of the seat cover or lid, and it is preferably threaded at each of its ends as 32 and 33, so that it may be used with the exhaust pipe 34 secured to either end as the conditions controlling installation require. The end opposite the exhaust pipe, is closed with a screwed in cap member 36. This cap member is provided with ports as 38 which in turn are adapted to be adjust-

ably closed by the ported cover member **40**. The cover member **40** can be turned until the desired amount of closure has been effected, and then the locking screw **41** set firmly in place, thus fixing the air intake for the particular installation involved. To secure the nozzle member in position I provide two outstanding ear portions as **42**. Formed as part of the casting, I provide outstanding lugs **42**, and in each of these I provide elongated slots as **44**, so that one casting can be accommodated to the full range of toilet hinge members. Suction pipe **34** is normally supplied with a union **46** for ease of assembly and leads to a suction fan **48** which may be driven by any convenient source of power, as electric motor **50**. Motor **50** is preferably controlled by switch **52** which is adapted for foot operation and should be of a spring type so that when pressure is relieved therefrom, the motor circuit will be broken. It will be apparent, however, that the electric cable **53** might be led to any convenient switching arrangement to meet the requirements.

The discharge from fan **48**, which should be capable of creating reasonable pressures, is led by discharge pipe **52** into, preferably, a glass container **54**. This container is normally partially filled with a suitable antiseptic solution, one that is known to kill, in reasonable concentration, all the various germs which are found in the excreta of the human body. As a matter of convenience a union is provided at **55** to assist in assembly and jar **54** is, preferably, screwed up into a cover member **56**. This cover member is fixedly secured as by thread **58** to the discharge pipe **52**, and is arranged to provide a seat and securing means for a plurality of pads as **60** and **62**, which are formed by enclosing fibrous material between screens which will hold the same in position. Their purpose is two-fold: as the air is driven through the liquid L in chamber **54** a portion of the bacteria may be included in the bubbles of air that are passed through the liquid. Consequently it has been found most desirable to have these pads above the liquid, so that as the air bubbles through the liquid, the liquid will be thrown upwardly into the pads, saturating them, and then, as the air is forced through these pads due to the pressure exerted by fan **48**, it will be very finely divided so that each particle of air comes in intimate contact with some of the antiseptic solution and in this manner a complete immunization is obtained. These pads, also by virtue of their finely divided fibrous materials, serve as physical collectors for any particles that might otherwise be drawn through in the air draft.

As the air passes out through filters **60** and **62** it is then discharged out through louvers **64** formed in housing **66**. In order to provide easy access to jar **54** I provide the hinge cover **68** and a second hinged bottom portion **70** so that jar **54** can be readily removed for refilling with antiseptic.

The foregoing description and the accompanying drawings are believed to clearly disclose a preferred embodiment of my invention, but it will be understood that this disclosure is merely illustrative and that such changes in the invention may be made as are fairly within the scope and spirit of the following claims.

I claim:

1. In a ventilating system for toilet-bowls, the combination with a ported-nozzle adapted to receive fumes from a toilet bowl, a tubular head integral with said nozzle and having opposed threaded ends, and a closure plug threaded in one and having an air-damper, of a fan-device having its intake end threaded in the other end of said head, a discharge pipe for the fan-device, a filter-bowl containing a sterilizing solution in which the free end of said discharge pipe terminates, and a porous cover for said filter bowl located in position to be saturated with the turbulent solution in the bowl.

2. In a ventilating system, the combination of a jar containing a sterilizing solution, and means including a sectional, threaded discharge pipe for forcing fumes from a toilet bowl through said pipe under pressure, said pipe having its lower free end terminating in the contained solution, a top sleeve threaded on said jar, a spider frame integral with said sleeve and a central reduced collar integral with said frame, said collar threaded on the threaded ends of the discharge pipe and forming an annular space between the collar and sleeve, and an annular porous cover for the jar mounted in said space in position to be saturated with the turbulent solution in the jar.

JAMES W. CARMAN.