March 31, 1931. J. D. COLE 1,798,457

DEODORIZING UNIT

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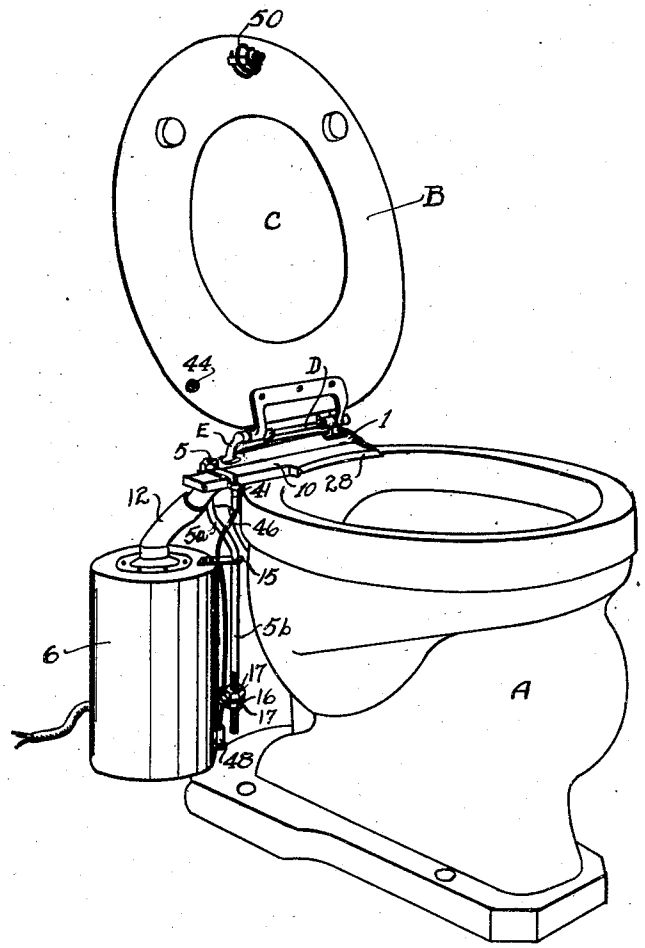


FIG. 1

Inventor

James D. Cole

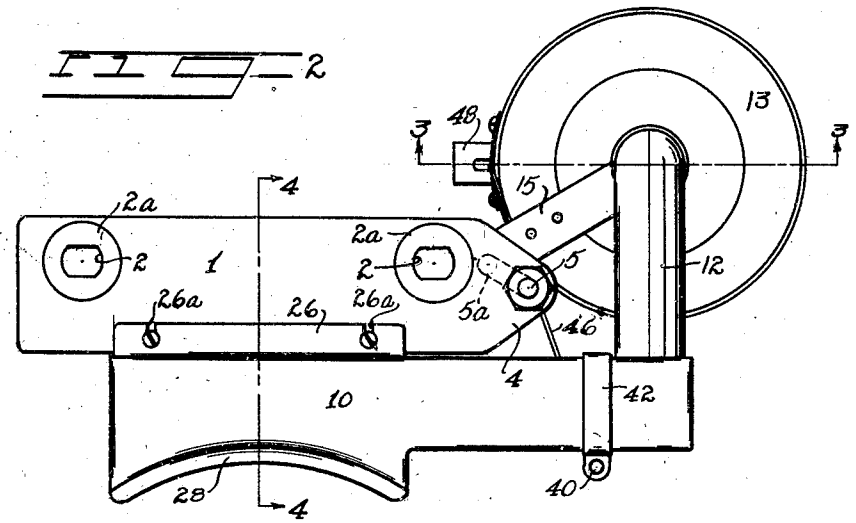
By Bates, Macklin, Gobrick & Teare

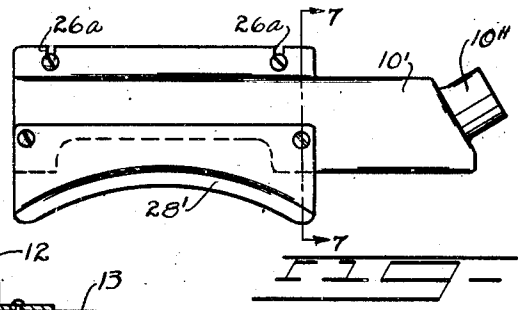
Attorneys

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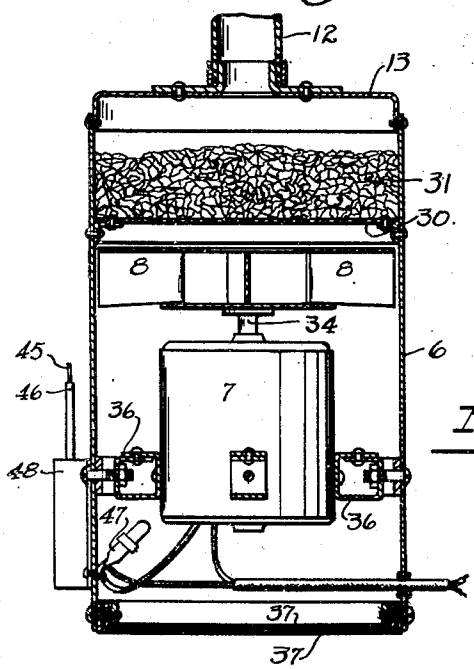
DEODORIZING UNIT

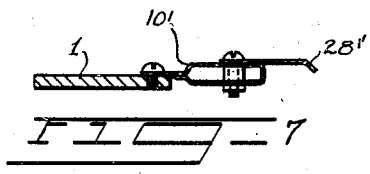
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Inventor

James D. Cole

By Bates, Macklin, Golrick & Teare

Attorneys

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DEODORIZING UNIT

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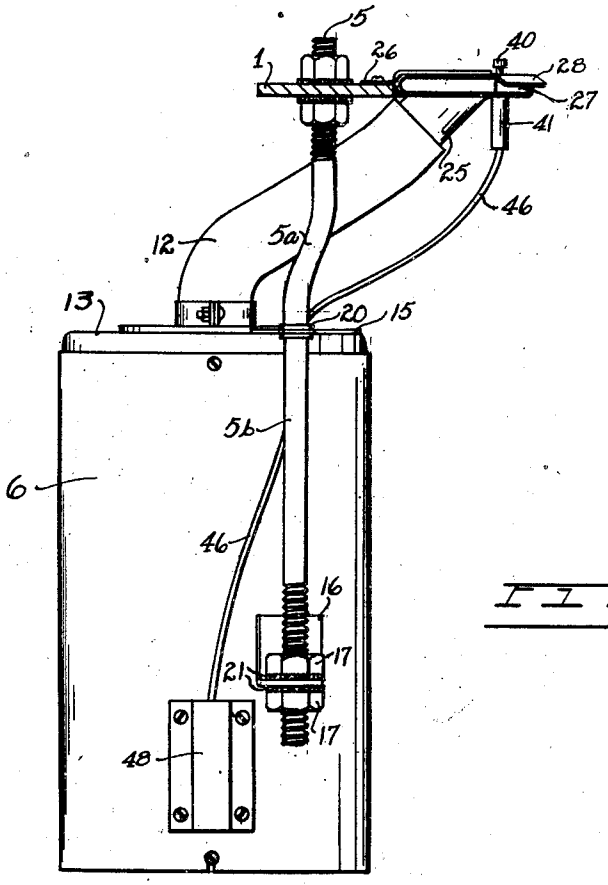


Fig. 4

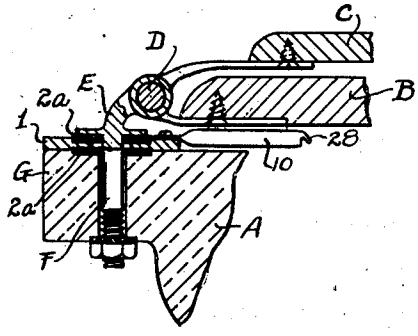


Fig. 5

Inventor

James D. Cole

By Bates, Macklin, Golrick & Teare

Attorneys

Patented Mar. 31, 1931

1,798,457

UNITED STATES PATENT OFFICE

JAMES D. COLE, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO THE DOMESTIC ELECTRIC COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

DEODORIZING UNIT

Application filed August 2, 1928. Serial No. 297,019.

The primary object of this invention is to provide an improved apparatus for purifying air.

The specific problem solved by the invention is in connection with toilet bowls. It has been previously proposed to eliminate odors in connection with such fixtures by various suction devices, the air collected by such devices being variously disposed of, for example, by leading it to the usual vent-stack, by leading it to the soil pipe or drain line and in some cases by discharging it more directly into the open air outside the building containing the fixture. These devices have not gone into general use mainly because of inadaptability to fixtures already in use.

A more recent development contemplates treating the air to deodorize it and return the thus purified air back into the room containing the fixtures. This has the striking advantage over the earlier proposed methods in that it permits the installation of an effective deodorizing unit without disturbing the plumbing or the walls of the room. My invention is concerned particularly with apparatus of this type.

A specific object is to provide an apparatus which will be substantially universally adapted for installation on modern toilet fixtures.

A further object is to provide a deodorizing unit which will be practically noiseless in operation.

A still further object is to provide an improved and effectively operating automatic control for a deodorizing unit adapted to be electrically operated, as by means of a motor and fan.

Other objects and novel features will be made apparent in the following description relating to the accompanying drawings wherein I show my preferred form. The essential characteristics are summarized in the claims.

In the drawings, Fig. 1 is a perspective view of the preferred apparatus installed on a toilet bowl of a common type; Fig. 2 is a plan view of the air purifying unit detached from the bowl; Fig. 3 is a substantially central vertical section through the container for the air purifying medium and motor housing; Fig. 4 is a sectional side elevation as indicated by the line 4—4 of Fig. 2; Fig. 5 is a cross sectional view through the rear portion of a toilet bowl, showing the co-operative relation between the hinge support, the toilet seat and the main supporting element of the air purifying unit; Fig. 6 is a plan view of a modified form of air collecter, and Fig. 7 is a cross sectional view thereof as indicated by the lines 7—7 on Fig. 6.

Referring in detail to the drawings, the toilet bowl is designated A and has the usual seat ring B and seat cover C. The parts B and C, in substantially all modern toilets, are hinged on a single horizontal bar, such as D, and this has its ends supported by two forwardly extending brackets E suitably shouldered adjacent the bowl and provided with vertical threaded extensions F passing through openings in a rear flange G of the bowl. These extensions are suitably fastened in place as by nuts engaging the underside of the flange.

It has been found that the threaded extensions, such as F, are substantially identical in size and spaced relationship on all modern toilet bowls. I utilize this standardization in bowl construction in providing a main support for the deodorizing apparatus. This consists of an elongated flat plate 1 having openings 2 to receive the extensions F. The openings may be elongated to accommodate minor variation in the spacing of the extensions. Adjacent the openings 2 the plate is countersunk and resilient washers 2*a* may be placed on both sides of the plate at the countersunk surfaces to eliminate, to some extent, the transmission of sound from the motor (to be presently described) of the air purifying apparatus, to the toilet bowl and plumbing system.

One end of the plate 1 overhangs the bowl as at 4 and this end carries a downwardly extending supporting bar 5 to which is adjustably attached a hollow metal shell 6 which forms a container for the air purifying material and a housing for an electric motor 7 which drives a fan 8. The foul air collector comprises a hollow member 10 attached to the plate 1 and formed to provide a collector nozzle, as will be presently shown.

This communicates with the shell 6 through a flexible hose 12 attached to an upward extension of a removable cover member 13 of the shell.

The bar 5 is bent as at 5*a* below which it is vertical as at 5*b*. This permits the container to be swung with reference to the toilet bowl whenever variations in the bowl, for example, make this necessary to complete the installation. Bracket members 15 and 16 on the cover 13 and shell 6 respectively are perforated to embrace the vertical portion of the bar 5, and the shell may be adjustably locked at various heights by reason of nuts 17 on either side of the bracket member 16. Suitable silencing washers may be used at 20 and 21 to further avoid sound transmission along the bar 5.

The member 10 forming the nozzle may vary in construction. As shown this is formed of sheet metal and there is provided a hose attachment at 25, a thin flange 26 for attachment to the plate 1 as by screws and an air receiving opening 27. The opening faces forwardly close to the brim of the bowl and is guarded by a forwardly extending lip 28.

The plate 1 and nozzle fitting 10 may of course be made one piece, if desired, either adapted to be made and sold as right or left hand installations, or reversible for either right or left hand connections to the purifier and motor shell. In the latter case, the guard lip may be removable and adapted to be placed on either side of the opening 27, as suggested in Figs. 6 and 7.

In Fig. 3 the shell is shown as divided by a perforated partition 30. This forms the bottom of a receptacle for air treating material, such, for example, as a quantity of granulated charcoal, shown at 31. The motor 7 is placed in vertical position, the upper end of the armature shaft 34 carrying the fan 8 which is arranged to draw air downwardly when rotated. The motor is suspended from the walls of the shell by hanger members, which comprise loops of material having low sound conductivity, preferably leather designated 36, the loops being suitably secured to the motor and shell. These cooperate with the other sound deadening devices shown, including a double layer of cloth or the like 37 at the bottom of the shell to isolate the sound of the motor. Built substantially as shown the apparatus is noiseless in operation.

The motor may of course be controlled in any manner as by a hand switch, but preferably it is energized automatically when the seat B is depressed. A suitable arrangement comprises a plunger 40 slidably mounted for vertical movement in a tube 41 on a bracket 42 carried by the member 10. The plunger is held in elevated position as by a light spring (not shown) and is engaged by a button 44 on the seat. Connected to the plunger is a light cable 45 running through a protecting flexible conduit 46 to a mercury switch 47 partially within a casing 48 on the shell 6 (see Fig. 3). This switch is of well known construction and will not therefore be described in detail. Any suitable means may be employed to hold the seat B slightly raised, for example, a coil spring 50 on the underside of the seat may be positioned to bear against the rim of the bowl. This compresses sufficiently to allow the seat to operate the switch 47.

In the modification shown in Figs. 6 and 7, the member 10′ may be reversed with the plate 1 in order to support the shell 6 on either side of the bowl whichever is found most convenient. In order that the hose connection 10″ shall be uniform it may incline rearwardly as shown, but in a horizontal plane. The guard for the opening, designated 28′, may be applied on either side of the opening and suitably secured, as by screws, so that it will be above the opening when the installation is complete.

I find that dust is apt to collect between the member 10 and the bowl. To facilitate cleaning, the lip 26 of the member 10 is slotted as at 26*a* to receive screws which fasten to the plate 1. This, in conjunction with the flexible conduit 12, permits the member 10 to be swung clear of the bowl, without necessitating removal of the entire apparatus.

I claim:

1. Apparatus of the class described, comprising, an air purifying unit including a container, air purifying means and an air flow inducing device housed by the container, an air collecting device for conveying foul air from a toilet bowl to the container, and means adjustably arranged to support the container on either side of the toilet bowl.

2. Apparatus of the class described, comprising, a container, air purifying means and air flow inducing means located in the container, means for supporting said container from a toilet bowl, comprising a plate adapted to be clamped on the bowl by the usual seat hinge securing means pivotally, and means connecting the container to the plate to allow the container to swing for adjustment in a horizontal plane.

3. In a device of the class described, a main supporting member, a member pivoted thereto and arranged to be locked in adjusted position, and an air purifying unit carried by the pivoted member.

4. In combination, a motor driven air purifying unit for toilet bowls, and supporting means therefor, comprising a reversible device adapted to be clamped in place on the bowl by the usual seat hinge securing means, and a member supported by said device and swingable relative thereto, said latter member directly supporting the unit.

5. In an apparatus of the character described, a plate having one end formed to

support an air purifying unit, a sheet metal shell removably attached to said plate and having an opening at one side thereof for collecting foul air, a portion of the shell being formed to provide an attachment for a conduit, said conduit communicating between said attachment and the unit, the plate being reversible in position so as to support said unit at either side of a toilet bowl, and there being a guard removably attached to said shell and arranged to overhang the opening irrespective of whether the conduit attachment extends to the right or left of the bowl.

6. In combination, an air purifying unit, means for supporting the same from the usual seat hinge structure of the toilet bowl, comprising a plate having apertures to receive the seat hinge supporting members, a foul air collecting device, comprising a hollow shell open on one side, and means for supporting the shell from the plate, there being a depending member carried by the plate, on which member the unit is mounted for vertical adjustment, and a flexible hose connection between the shell and the purifying unit.

7. In combination, an air purifying unit, means for supporting the same from the usual seat hinge structure of the toilet bowl, comprising a plate having apertures to receive the supporting members, a foul air collecting device, comprising a hollow shell open on one side, and means for supporting the shell from the plate, consisting of slotted openings in the shell member, to receive bolts on the plate, and a flexible conduit connection between the shell and the purifying unit.

In testimony whereof, I hereunto affix my signature.

JAMES D. COLE.