Jan. 31, 1956 R. W. POTTS 2,732,564

SANITARY CLOSET

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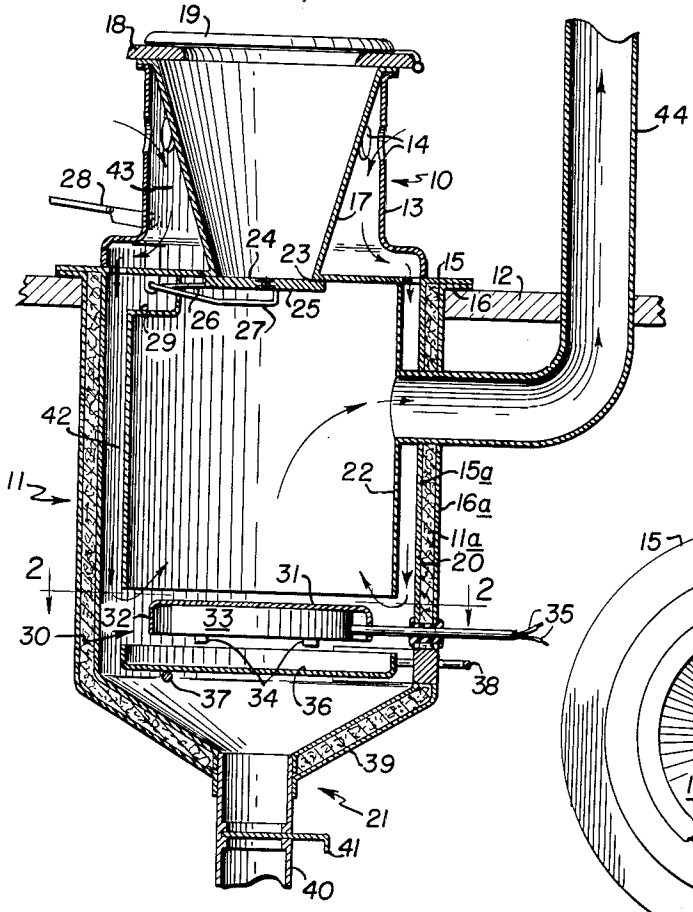


FIG. 1.

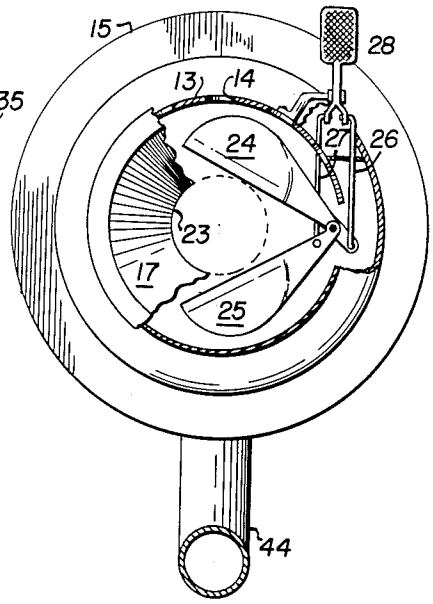


FIG. 3.

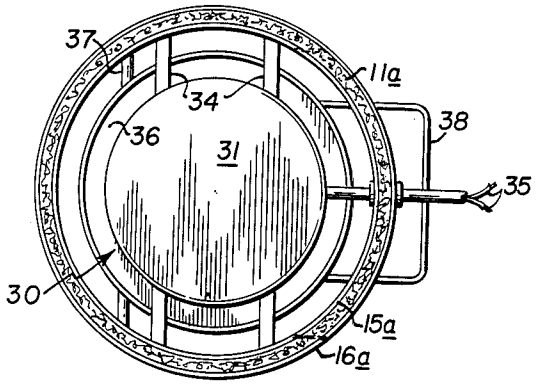


FIG. 2.

ROBERT W. POTTS
INVENTOR.

BY Herbert J. Brown

ATTORNEY

United States Patent Office

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SANITARY CLOSET

Robert W. Potts, Fort Worth, Tex., assignor of twenty-five per cent to Ted Weiner and J. H. Snowden

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This invention relates to dry sanitary closets and, more particularly, to a disposal unit in a sanitary closet which vaporizes and burns waste products. Although not so limited in use, the invention is particularly useful in moving vehicles such as aircraft, railway cars, house trailers, and other transportation devices.

An object of this invention is to provide, in a sanitary closet, an improved disposal unit which requires no storage tank, chemical treatment, or use of liquid in the disposal of waste products and which disposes of the same rapidly and sanitarily. Another object is to provide a disposal unit wherein only heat is required for the treatment of waste products to render them in condition for disposal.

An additional object is to provide a disposal unit which converts waste substances to sanitary end products which may be expelled safely and freely from moving vehicles.

Another object of this invention is to supply a disposal unit which vaporizes the volatile content of excreta and incinerates the solid content thereof to innocuous residue.

A further object is to provide a disposal unit which is small and compact, and one which is particularly adapted for use where space is limited.

A still further object is to provide a disposal unit of the class described which requires very little cleaning and is simple in operation.

An important object of this invention is to furnish a disposal unit of the class described which incinerates solid excreta and separately vaporizes the vaporizable content of liquid excreta followed by incineration of its solid content, to provide efficient disposition of the whole of the waste and avoiding the formation of excessive volumes of gases.

Still another object of the invention is to provide a unit of the class described which is arranged to maintain its outer surface relatively cool by means of air drawn into the region of incineration.

These and other objects of the invention will be apparent on consideration of the following description and accompanying drawing illustrating a preferred embodiment of the invention in which the various parts are identified by like reference characters in each of the views, and in which:

Figure 1 is a vertical partly sectional view of a sanitary closet embodying the features of the invention;

Figure 2 is a sectional view taken on line 2—2 of Figure 1;

Figure 3 is a broken partly sectional plan view of the embodiment shown in Figure 1.

Referring to the drawing, the sanitary closet includes a stool 10 and a disposal unit 11 therebeneath extending through and supported adjacent its upper end by a floor 12. The stool 10 includes an upwardly directed generally cylindrical body 13 having radial openings 14 in its wall for the entrance of air, and which body is secured to the disposal unit 11 by bolts or other means, not shown. The disposal unit 11 includes integral and outwardly projecting circular flanges 15 and 16 at its upper end, which support the unit on the floor 12. A downwardly and inwardly sloping frustro-conical bowl 17 is enclosed within the body 13, extending from the lower end of the body to the upper end, where it is secured to the body. A seat 18 provided with a central opening and a lid 19 covering the seat are secured to the upper end of the bowl 17 by means not shown. The foregoing stool arrangement is generally of conventional construction and is shown to illustrate the utility of the disposal unit of the invention.

The disposal unit 11 includes a generally tubular housing 20 having an integral drain 21 at its lower end. The housing 20 includes concentric tubular walls 15*a* and 16*a* containing insulation 11*a* between them, and which walls are integral with or otherwise rigidly secured to the aforementioned flanges 15 and 16. A tubular baffle 22 is secured to the housing 20 within and spaced from the inner wall 15*a* of the housing, and includes a restricted circular opening 23 in its upper end which communicates with the interior of the bowl 17. Doors 24 and 25 are pivotally connected to the upper end of the baffle 22 and are arranged to close the opening 23, the doors meeting across the opening at corresponding edges provided with heat resistant resilient material. Rods 26 and 27 are pivotally connected at corresponding ends to the doors 24 and 25 and are pivotally connected at their remaining ends to a foot pedal assembly 28 which is pivotally mounted on the body 13, for opening and closing the doors. The foot pedal assembly 28 extends from outside the body 13 through the wall of the body and downwardly through the upper end of the baffle 22, terminating in a recess 29 in the baffle, where the assembly is connected to the rods 26 and 27.

Below the lower end of the baffle 22 and concentric with the housing 20 there is a relatively flat horizontal incinerator 30 having a circular cover plate 31 and a downwardly projecting circumferential flange 32 integral with the cover plate 31 at its outer edge. A heating element 33 is positioned beneath the cover plate 31 and is supported by bars 34 secured to the housing 20, the heating element being connected by electrical conductors 35 to a source of electric current, not shown.

Directly below and adjacent the incinerator 30 there is a circular receptacle 36 extending outwardly of the flange 32 on the cover plate 31. The receptacle 36 is spaced from the inner wall of the housing 20 and is supported by a rod 37 secured to the housing 20 and by a handle 38 secured to the receptacle and extending through the wall of the housing, which is arranged to permit withdrawal of the receptacle.

The drain 21 is positioned below the receptacle 36 and has an upper inwardly and downwardly sloping frustro-conical portion 39 and a lower cylindrical portion 40. In the cylindrical portion of the drain is a gate 41 for opening and closing the drain.

The baffle 22 and the housing 20 are arranged at their upper ends to permit air to be drawn into the annulus 42 therebetween from the chamber 43 between the bowl 17 and the body 13, which communicates with the outside through the opening 14. Attached to the baffle 22 and communicating with its interior is a vent pipe 44 leading to the atmosphere.

In operation, waste products drop on the doors 24 and 25, and when the doors are opened by operation of the foot pedal assembly 28, the products are scraped off of the doors by the rim of the opening 23 and fall on the cover plate 31. The solid portion of the waste remains on the cover plate, and the liquid portion runs off of the cover plate and into the receptacle 36.

The electrical circuit to the incinerator 30 is then closed, preferably in conjunction with the operation of the doors 24 and 25, and the incinerator becomes hot and rapidly reduces the material on the cover plate 31 to ashes. At the same time, radiation from the incinerator 30 vaporizes

the volatile content of the liquid waste contained in the receptacle 36, which is in close proximity to the incinerator, and vaporization is followed by burning of the solid residue in the receptacle to ashes. As the process is repeated, the ashes that are obtained on the cover plate 31, which have low density, spill over the edge of the plate and into the receptacle 36. Ashes accumulate in the receptacle 36 until they spill over the edge of the receptacle and into the drain 21. The movement of ashes from the cover plate 31 to the receptacle 36 and from the receptacle to the drain 21 is accelerated by the vibration accompanying the movement of vehicles. It is to be noted that the ashes accumulated in the drain 21 are separated from waste products not yet incinerated, so that only sanitary end products are discharged, and may then be discharged at any time.

Rapid, efficient incineration of waste products involves high temperatures, and a feature of the invention has to do with conserving heat and with cooling the housing 20. Air is drawn through the openings 14, through the chamber 43, and through the annulus 42 into the combustion zone, as indicated by arrows in the drawing. The baffle 22 serves also as a radiation shield, and the air moving through the annulus 42 cools it and the housing 20 while providing insulation between the two members, with the result that the temperature of the outer surface of the housing is low. Gases evolving from the receptacle 36 and from the cover plate 31 rise in the interior of the baffle 22 and exit through the vent pipe 44.

The invention is not limited to the specific construction shown and described, but may be made in many ways within the scope of the appended claims.

What is claimed is:

1. In a sanitary closet, an incinerator assembly comprising a vertical housing having a downwardly directed converging lower end and including an opening in the lowermost end of the latter, a vertical baffle within said housing and positioned around and spaced from the inner wall of said housing, an air inlet within the upper end of said housing, an air outlet through said baffle and extending through said housing, a horizontal plate having a depending flange therearound within the lower end of said housing and inwardly spaced from the inner surface of said baffle, an incinerator beneath said plate and positioned inwardly of said depending flange, and a receptacle positioned beneath said plate and said incinerator, the outer dimensions of said receptacle being greater than the outer dimensions of said plate.

2. In a sanitary closet, an incinerator assembly as defined in claim 1 and wherein said receptacle is substantially shallow and positioned near the depending flange of said horizontal plate.

3. In a sanitary closet, an incinerator assembly comprising a vertical cylindrical housing having a converging downwardly directed lower end and including an opening in the lower end of the latter, a cylindrical baffle within said housing and spaced therefrom providing an annulus therearound, said annulus communicating with the interior of said housing within the lower end of the latter, an air inlet in the upper end of said housing, an air outlet through said baffle and extending through said housing, a horizontal plate within the lower end of said housing and having a depending flange therearound, a heating element positioned beneath said plate and inwardly of said depending flange, and a receptacle positioned beneath said plate and said incinerator, the outer dimensions of said receptacle being greater than the outer dimensions of said plate, said receptacle being spaced from the inner surface of said baffle.

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