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SEWAGE DISPOSAL DEVICE FOR TOILETS

Filed Sept. 12, 1942

2 Sheets-Sheet 1

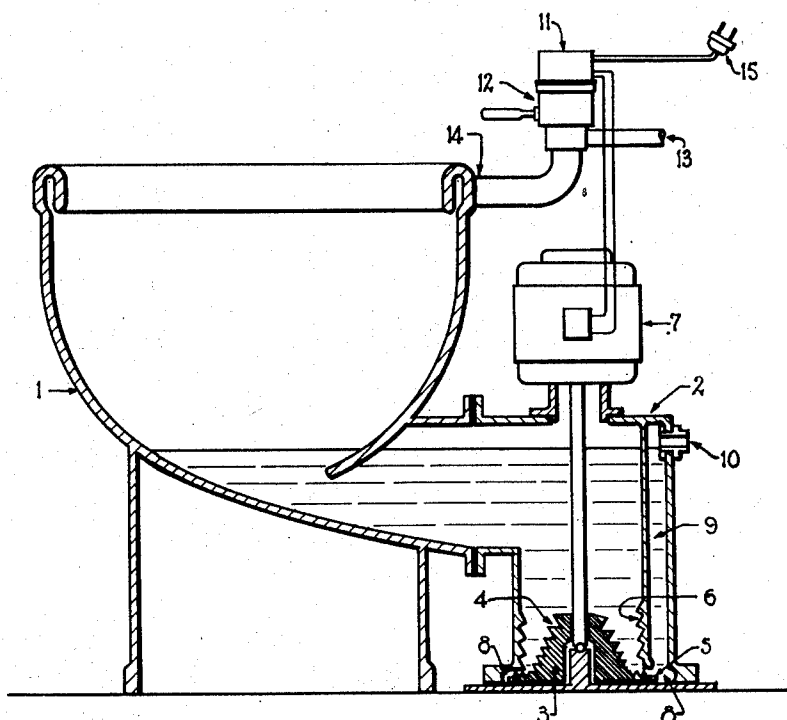


Figure 1.

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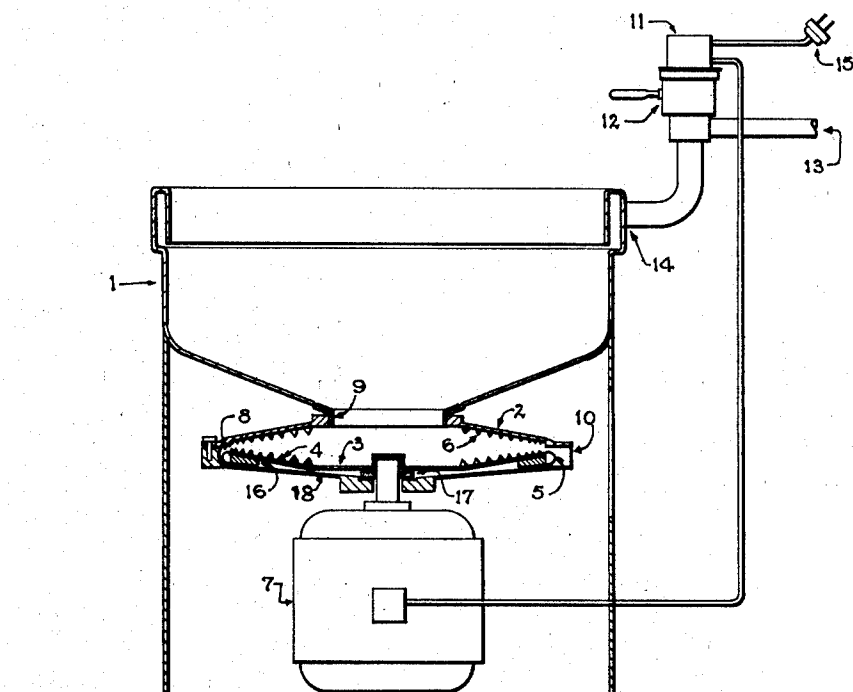


Figure II.

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SEWAGE DISPOSAL DEVICE FOR TOILETS

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4 Claims. (Cl. 4-10)

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This invention relates to the disposal of sewage and/or garbage and particularly to that class of sewage and/or garbage which must be disposed of from automobile trailers, particularly in trailer camps, and passenger-carrying vehicles such as buses, railway trains, and airplanes.

One object of my invention is to provide, in combination with a water toilet, a stationary grinding surface and a rotary grinding surface in spaced relationship whereby the sewage and/or garbage will be macerated into fine bits therebetween.

Another object of my invention is to equip the rotor of the grinding means with impellers to insure a flow through the grinding means and at the same time furnish pressure so that the macerated sewage and/or garbage may be sprayed into the air in minute particles or pumped into a main sewer line.

In the drawings:

Figure I is a vertical sectional view showing one embodiment of my invention as applied exteriorly of a water toilet.

Figure II is a vertical sectional view showing a modified embodiment of my invention as applied interiorly of a water toilet.

It is to be understood that the present device is to operate with water from a pressure source and electric current, either and/or both of which may be provided in any of the customary manners.

In the preferred form of my invention, as illustrated by Example I, I have fitted to the outlet of an ordinary type water closet 1, which may be constructed of metal, desiliconized porcelain or like suitable material, a separate cylindrical chamber 2, cast or molded in one piece or composed of sections and sealed at the bottom. There is mounted inside the chamber 2 a conical-shaped member 3 mounted so that it may rotate rather freely. This member 3 is provided with a grinding surface, preferably in the form of teeth 6, which diminish in size toward the base of the member 3. The base of the conical-shaped member 3 is flared and provided with lugs or impellers 5 spaced around its periphery.

The interior surface of the chamber 2 is provided with a grinding surface, preferably in the form of teeth 6 arranged in helical rows defining worm channels therebetween. This grinding surface may be made integral with the chamber 2 by proper casting or molding, or it may be made separately and attached to the interior of the chamber 2 by brazing, bolting, or other suitable manner.

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The lower portion of the cylindrical chamber 2 is enlarged, as shown at 8, to form a shroud in which the flared section of the member 3 and impellers 5 may rotate to effect a centrifugal pumping action. Located tangentially to the periphery of this shroud is an outlet in the form of a water trap 9. This trap may be formed integrally with chamber 2 or it may be located exteriorly of the chamber, according to the most convenient manner of construction. The water trap 9 is fitted with an outlet 10.

The rotary member 3 of the grinding means is attached in a suitable manner, such as studded, bolted, or welded, to the rotary shaft of an electric motor 7. The motor is controlled by a switch 11 located intermediate the motor and an electric plug 15. The switch 11 may also be controlled by a water flushing valve 12 located in the water inlet conduit 13.

In order to insure proper washing of the bowl, the water inlet is located tangentially to the curvature of the bowl, as illustrated at 14.

The embodiment as illustrated in Figure II is essentially the same as that of Figure I, differing only in a few details of arrangement and construction. In this embodiment, a water toilet 1, formed from any suitable material and supported in any suitable manner, is provided with a hole in its bottom and inserted in the hole is a flanged collar 9 protruding below the bottom of the toilet 1. The collar 9 is securely fastened to the bottom of the toilet in any suitable manner, such as welded or bolted. Securely fastened to the lower portion of the collar below the toilet bottom, in any of the known methods such as the engagement of threaded sections, bolted or welded, is a circular inverted dish-shaped member 2 made of a suitable material such as cast iron or steel, having a grinding surface on the under surface thereof. The preferred form of this grinding surface is to construct it of prismatic cutting teeth 6, diminishing in size toward the outer periphery of the member 2. In spaced relationship to this grinding surface there is another circular dish shaped member 3 having a grinding surface facing said other grinding surface. This grinding surface is likewise preferably composed of prismatic cutting teeth 4. This member 3 is so mounted as to rotate, and it has a counterweight portion 16 on its underside near the outer periphery so as to function as a fly-wheel; impeller blades 5 are also spaced around its outer periphery. This member 3 is rotated by the shaft of an electric motor 7 to which it

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is secured by suitable means, as studs, welding, or the like.

The motor shaft extends through a plate 18 fastened with studs, or other suitable means, to the member 2 thereby forming a closure for the grinding surfaces. The plate 18 is so shaped as to define a channel 8 in which the impellers 5 rotate to effect a centrifugal pumping action. An outlet 10 is provided tangentially to the channel 8. To avoid water leakage, there is provided a rotary shaft seal 17 between the rotary member 3 and the plate 18.

The operation of the device is the same for both embodiments illustrated in the drawings. By actuating the flushing valve 12, which may be a foot treadle, button, or handle mechanism, water flows from the conduit 13 through the opening 14 into the toilet 1 with a whirling action. With the actuation of the flushing valve 12 the electric switch 11 is likewise actuated, making electrical contact to start the motor 7. As the motor 7 is operating, the rotary grinding surface 4 is rotating and macerating the solid sewage and/or garbage against the stationary grinding surface 6. The slope of the teeth and the centrifugal force tend to force the particles toward the shroud channel 8. The force created by the impellers 5 not only forces the macerated material out the opening 10, but also creates a suction pulling the sewage and/or garbage toward the outlet 10 thereby preventing back-splashing.

The valve 12 and switch 11 mechanism may be such that require manual operation to both open and close or they may be manually opening and automatically closing mechanisms, both types of mechanisms are well known in the industry.

The outlet 10 may be connected to a spray system similar to lawn sprinklers. Due to the fine degree of grinding and dilution, this additional aeration renders it possible to sprinkle the sewage and/or garbage within a hundred feet of dwellings without creating undesirable odors as well as other conditions. Likewise, the outlet may connect with a common sewer line of trail camps, or like arrangement.

While I have illustrated and described in detail embodiments of my invention, I desire to have it understood these descriptions and showings are merely illustrative and that parts may be interchanged in the several forms and that modifications and other changes may be made without departing from the spirit of the invention and within the scope of the appended claims.

Now having described my invention, what I claim and desire to secure by Letters Patent is:

1. A sewage and/or garbage grinding and pumping mechanism located adjacent the outlet of a water toilet, comprising a chamber having an opening in relationship with the outlet of said water toilet whereby water and sewage and/or garbage may flow from said toilet into said chamber, a grinding surface integral with

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the inner surface of said chamber, a rotatable grinding surface facing and in spaced relationship with said stationary grinding surface, means for rotating said rotatable grinding surface, said chamber defining a circular channel in its wall member, impellers integral with said rotary grinding surface and rotating in said channel, an outlet located tangentially with respect to the periphery of said channel.

2. A sewage and/or garbage grinding and pumping mechanism located adjacent the outlet of a water toilet, comprising a chamber having an opening in relationship with the outlet of said water toilet whereby water and sewage and/or garbage may flow from said toilet into said chamber, said opening located tangentially with respect to the periphery of said chamber, a grinding surface integral with or attached to the inner surface of said chamber, a rotatable grinding surface facing and in spaced relationship with said stationary grinding surface, means for rotating said rotatable grinding surface, said chamber defining a circular channel in its wall member, impellers integral with said rotary grinding surface and rotating in said channel, an outlet located tangentially with respect to the periphery of said channel.

3. A sewage and/or garbage grinding and pumping mechanism located adjacent the outlet of a water toilet, comprising a chamber having an opening in relationship with the outlet of said water toilet whereby water and sewage and/or garbage may flow from said toilet over a baffle into said chamber, a grinding surface integral with or attached to the inner surface of said chamber, a rotatable grinding surface facing and in spaced relationship with said stationary grinding surface, means for rotating said rotatable grinding surface, said chamber defining a circular channel in its wall member, impellers integral with said rotary grinding surface and rotating in said channel, an outlet located tangentially with respect to the periphery of said channel.

4. In combination with a water toilet, a sewage and/or garbage grinding and pumping mechanism, comprising a chamber having an opening in relationship with the outlet of said water toilet whereby water, sewage and/or garbage may flow from said toilet into said chamber; a stationary grinding surface attached to said chamber; a rotatable grinding surface facing and in spaced relationship with said stationary grinding surface, and said grinding surfaces having pyramidal points with the cutting edges opposed; means for rotating said rotatable grinding surface; said chamber defining a circular channel in its wall member, impellers integral with said rotary grinding surface and rotating in said channel; and, an outlet located tangentially with respect to the periphery of said channel.

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