

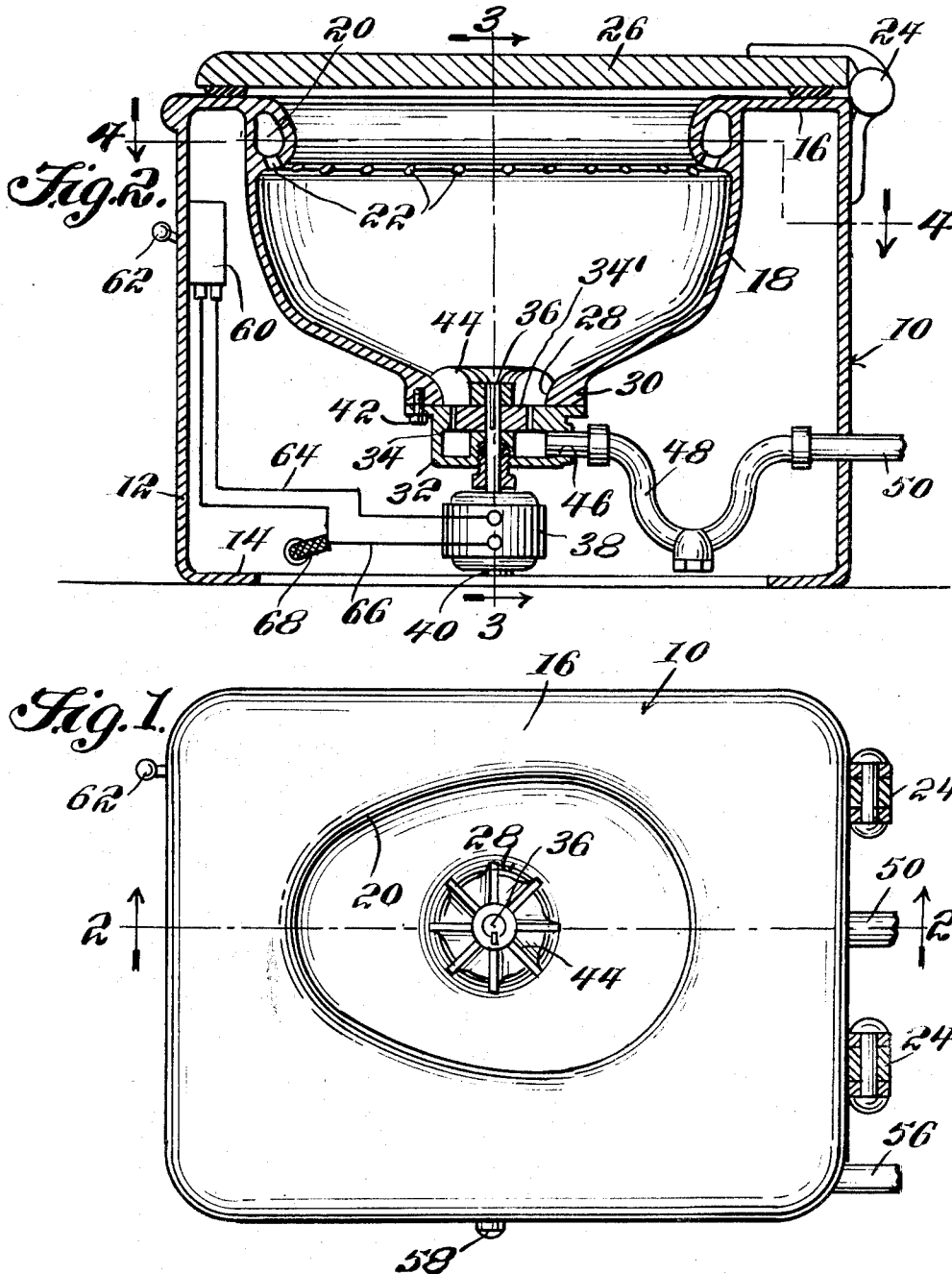
Feb. 5, 1957

L. E. HOULE
DISPOSAL UNIT

2,779,948

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3.

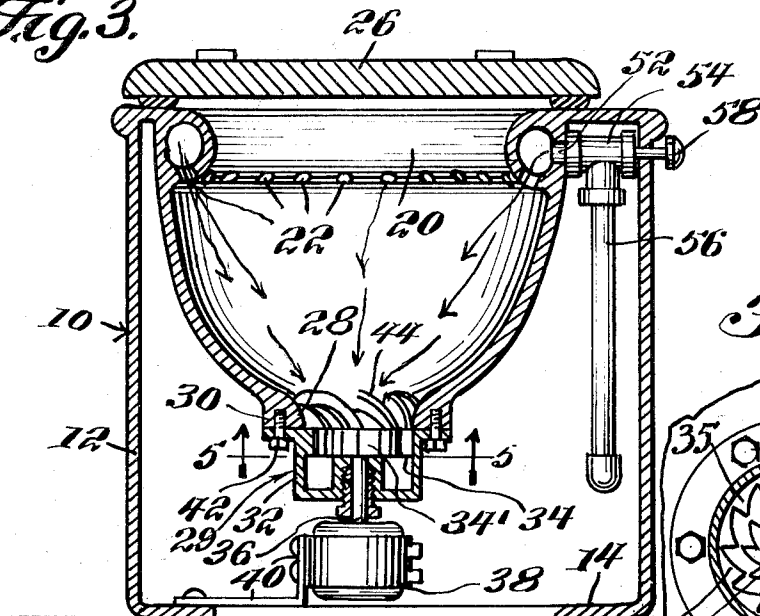


Fig. 5.

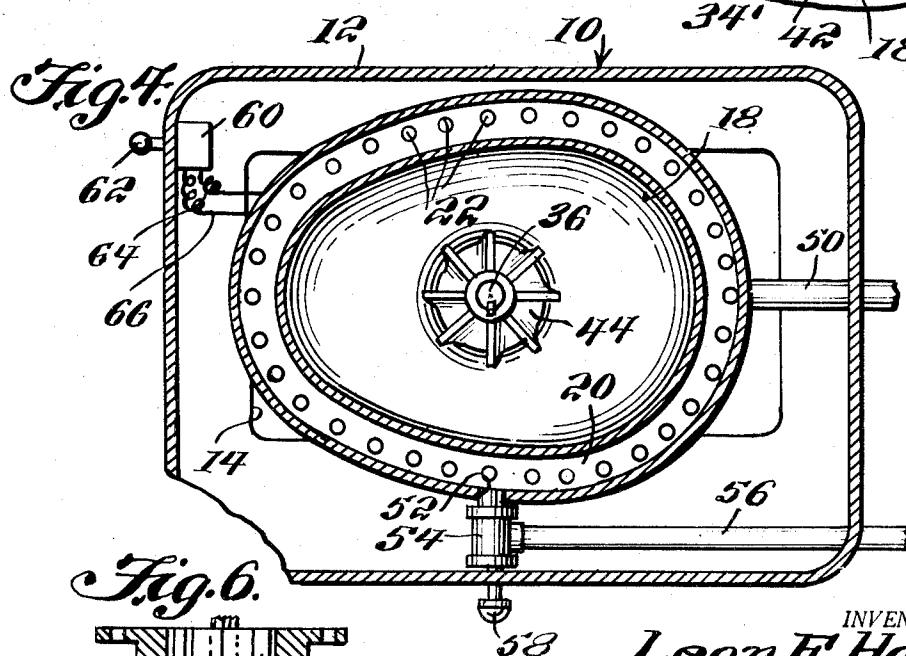
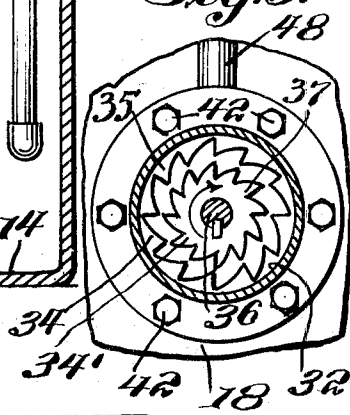


Fig. 6.



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1 Claim. (Cl. 4—10)

This invention relates to an improved flush type toilet bowl having mechanical means for comminuting solid waste matter and flushing the comminuted waste matter from the bowl into a drain.

A primary object of the invention is to provide an efficient, practical, and low cost device of this kind which enables sewage disposal systems of the kind commonly employed in dwellings to use drain pipes not exceeding one and one-half to two inches in diameter.

A further object is to effect economies in the installation of bathroom equipment by eliminating the necessity of employing conventional four inch drain pipes and to effect the saving of labor in the fabrication of the drainage system.

Other important objects and advantages of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a preferred embodiment of the invention is set forth in detail.

In the drawings:

Figure 1 is a top plan view of a device embodying the features of this invention showing the cover removed therefrom;

Figure 2 is a vertical longitudinal sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a transverse vertical sectional view taken substantially on the line 3—3 of Figure 2;

Figure 4 is a horizontal sectional view taken substantially on the line 4—4 of Figure 2;

Figure 5 is an enlarged fragmentary horizontal sectional view taken substantially on the line 5—5 of Figure 3; and

Figure 6 is an enlarged detail sectional view through the stationary grinding plate.

Referring to the drawings in detail, the illustrated device comprises a housing designated generally 10 having a side wall 12 carrying at its lower end intumed flanges 14 defining a base upon which the housing rests. On the upper end of the housing 10 is a top flange 16 carrying a depending toilet bowl 18 having a relatively large open upper end surrounded by an inwardly projecting duct 20 which has inwardly directed water discharge openings 22.

Carried by the housing 10 adjacent the upper end thereof are hinges 24 to which is connected a suitable cover 26 which, as illustrated in Figure 2, is adapted to close the upper open end of the bowl 18.

The bowl 18 tapers downwardly to a lower end which terminates in a relatively small central neck 28 having a relatively thick attaching flange 30, to which a waste matter comminuting disposal unit 29 is connected.

The disposal unit 29 comprises a hollow cylindrical housing 32 in whose upper end is secured an annular stationary grinding plate 34, through which is journaled the upper end of a shaft 36 which has a lower end below the housing 32 and connected to an electric motor 38 which is located below the housing 32 and is in axial alignment with the vertical axis of the housing.

Fixed on and projecting radially inwardly from the

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inner periphery of the grinding plate 34 are circumferentially spaced teeth 35. A toothed rotor 34' is keyed to the shaft 36 in the plane of the plate 34 and has peripheral teeth 37 which cooperate with the teeth of the grinding plate 34 for grinding solids as the solids are being flushed downwardly in the bowl 18. The motor 38 is mounted on a suitable bracket 40 carried by the housing flange 14. The disposal unit housing 32 is bolted to the underside of the thickened flange 30 of the bowl neck 28 by suitable attaching bolts 42. Demountably fixed on the upper end of the shaft 36 for rotation therewith is a pump impeller 44 having radially extending blades riding on the upper surface of the grinding plate 34 and reaching upwardly in the neck 28 so that solid matter subsiding within the bowl 18 will be forced downwardly by the impeller 44 against the grinding plate 34 and the rotor 34' to be comminuted so that water discharged under pressure from the duct holes 22 will flush the comminuted matter into the housing 32. The housing 32 is provided with a lateral discharge opening 46 to which is connected a suitable trap 48 located within the housing 10 and connected to a drain line 50 constituting an element of a drainage system of a building. It is to be noted that the drain line 50 may be of pipe no larger than from one and one-half to two inches in diameter. This small diameter pipe can be used owing to the fact that solids deposited within the bowl 18 are comminuted before being flushed therefrom and therefore can readily pass through the pipe of reduced diameter.

Formed in the upper end of the bowl 18 and communicating with the duct 20 is an opening 52 to which one end of a suitable button type flush valve 54 is connected and whose other end is connected to a conventional water supply 56. The valve has a push button control 58 which is disposed outside of the housing 10, as shown in Figure 3.

Mounted on the front wall of and within the housing 10 is an electrical control switch 60 having an operating lever 62 which extends through the wall of the housing. One side of the switch 60 is electrically connected by a conventional conductor 64 to one terminal of the motor 38 while the remaining terminal of said motor is connected by a conductor 66 to one side of a source of electrical energy through a conventional cable 68, and the remaining side of the switch is connected to the source. It will thus be seen that when the switch 60 is closed, the motor 38 is energized to rotate the impeller 44 and the rotor 34'.

While in the foregoing there has been shown and described the preferred embodiment of this invention, it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What is claimed is:

In a toilet bowl structure, a bowl having a relatively large upper end and a relatively small lower end terminating in a depending neck, said neck having a lower end, a hollow vertical axis housing secured to and depending from the lower end of the neck, said housing having a closed lower end and an open upper end and a lateral outlet, an annular grinding plate secured in the upper end of the housing at the lower end of the neck, said grinding plate having a toothed inner periphery, a vertical shaft journaled axially through said housing and having upper and lower ends, a toothed rotor fixed on the upper end of the shaft in the plane of the grinding plate with the teeth of the rotor and the teeth of the grinding plate in grinding relation, said rotor having a top, a rotary pump impeller in said bowl neck above the housing and fixed on and projecting upwardly from the top of the rotor and working in the bowl neck for forcing matter in the bowl

downwardly against and between the grinding plate and the rotor into said housing, and a motor connected to the lower end of said shaft.

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