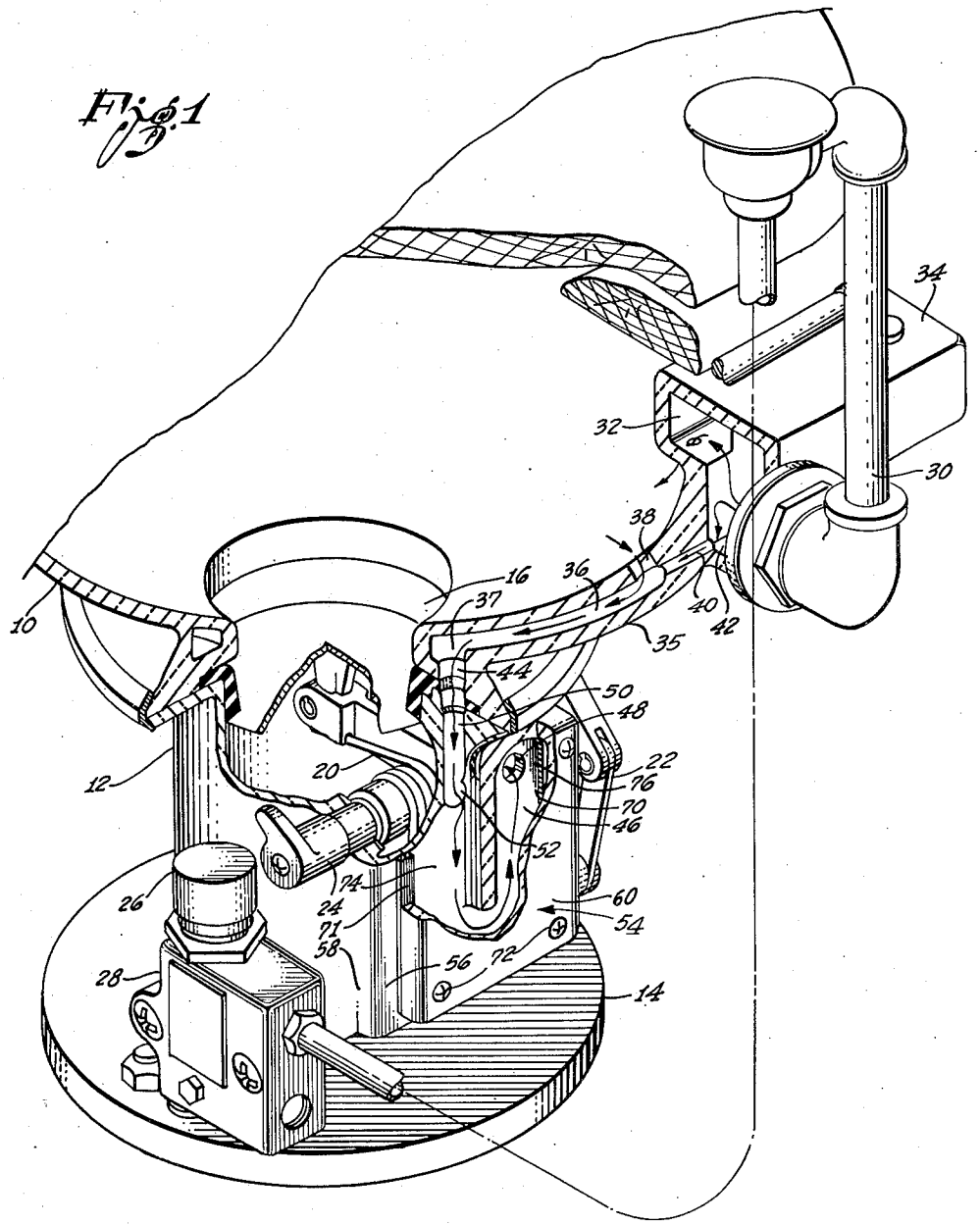
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TOILET CONSTRUCTION

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Fig. 1




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Fig. 2

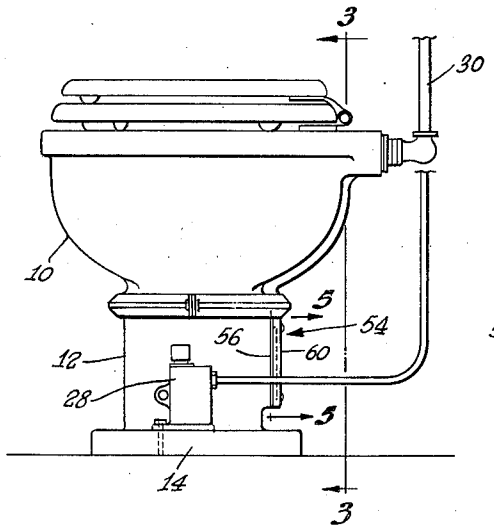



Fig. 4

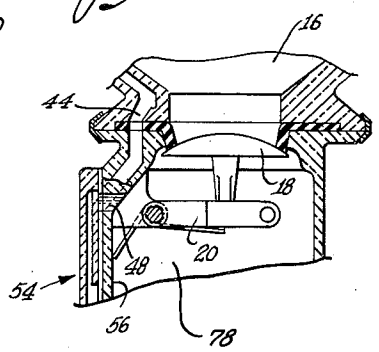



Fig. 3

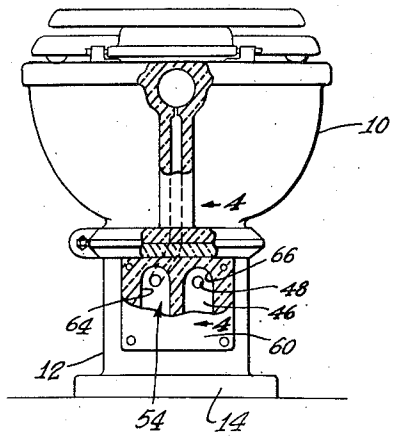
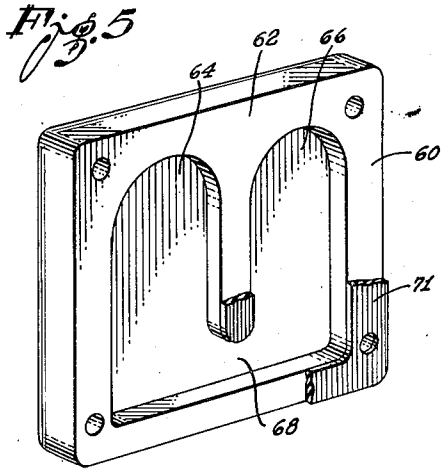



Fig. 5




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# TOILET CONSTRUCTION

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4 Claims. (Cl. 4—79)

This invention relates to toilet units and particularly to the construction of a toilet with an improved overflow passage wihch readily lends itself to cleaning. The invention is especially adapted to inclusion in toilet units for mobile habitations, such as are disclosed in my co-pending application, Serial No. 782,489, filed December 23, 1958.

It is not only desirable, but mandatory, by the sanitary codes in many states and cities, to provide in a toilet unit an overflow passage through which, when the bowl outlet becomes blocked and the water rises in the bowl to near the point of overflow, such water is drained off at a predetermined rate and caused to by-pass the bowl outlet valve and discharge directly into the waste pipe into which the bowl outlet empties.

In the unit described in my said co-pending application, Serial No. 782,489, the entrance to the overflow passage is further placed in direct communication with the stream of flushing water as it enters the bowl, and serves to conduct a predetermined quantity of the flushing water in a course which by-passes the bowl and discharges on the mechanism which operates a closure valve for the bowl outlet to clean such mechanism.

Desirably, overflow passages of the type so shown in my said co-pending application, Serial No. 782,489, should be formed to provide a trap whereby noxious gases from the discharge pipe below the bowl outlet, may be effectively prevented from escaping upwardly through the overflow passage and into the room in which the toilet is located.

Since such an overflow passage is generally fairly small in cross-section, and if it is formed tortuously in the bowl wall to provide a trap, it is not easily cleaned upon becoming clogged with solids which may be carried into such passage when overflow occurs in the bowl. Yet if the cross-section of the overflow passage is made very large for easier cleaning, too much water will by-pass the bowl; and where the passage is contained in the bowl wall, the latter will have to be thickened to such an extent as to make the bowl undesirably heavy and aesthetically or otherwise objectionable.

The present invention satisfies these conflicting requirements by providing a removable platelike element which may be attached to the wall of the bowl or its base, and which element, with the said wall is so formed as to define a portion of the overflow passage—preferably the trap section. Whenever it is desired to clean the overflow passage thus defined by the removable plate-like element, the platelike element is unbolted from the bowl or its base to expose a substantial portion of the walls defining the overflow passage. Cleaning is then readily accomplished by scrubbing the separated halves of the passage defining walls with a brush; the remainder of the passage, may be cleaned with a pipe cleaner type brush.

Other advantages and objects of the present invention may readily be perceived from a consideration of the following detailed specification with reference to the accompanying drawings in which,

FIGURE 1 is a perspective view partly broken away, of the lower portion of a toilet unit constructed according to the present invention;

FIGURE 2 is a side elevation of the unit of FIG. 1;

FIGURE 3 is a rear view, partly broken away, taken in the direction of the arrows 3—3 of FIGURE 2;

FIGURE 4 is a partial section taken through the axis



of the bowl and looking in the direction of the arrows 4—4 on FIGURE 3; and

FIGURE 5 is a perspective view of the removable element which defines the trap, after the same is separated from the bowl supporting base, in the direction of the arrows in FIGURE 2.

The preferred embodiment of the invention is shown in FIGURES 1–5 of the drawings incorporated in a toilet unit of the type described in detail in my co-pending application, Serial No. 782,489.

For the purpose of describing the present invention, it is sufficient to state that the toilet unit itself in which the invention is illustrated, comprises a bowl 10 mounted on a generally cylindrical upright supporting pedestal 12 having a platelike base 14 which is adapted to be bolted to a floor or deck (not shown).

The lower portion of the bowl 10 defines an outlet 16 which is opened and closed by means of a closure 18, pivotally actuated by a mechanism 20. The latter is arranged for manual or foot operation by articulated member 22 partly shown in FIGURE 1. An extension 24 of the mechanism 20 is disposed to actuate the plunger 26 of a delay closing valve unit 28 which serves to control the admission of water into the bowl 10 for flushing through a pipe 30 and supply manifold 32.

The manifold 32 passes the flushing water into the bowl 10 via one or more ports (not shown) within the bowl rim 34 in a conventional manner. The rear wall 35 of the bowl 10 is thickened and hollowed to define a section 36 of an overflow passage 37, the entrance port 38 to which from the bowl 10 is located at a point just under the rim 34. A bleeder cut 40 extends between the lower area 42 of the manifold 32 and the entrance port 38, to pass a predetermined quantity of water into the passage 37, with each flushing action.

In addition to the section 36, the passage 37 is comprised of a vertical section 44, a trap 46 and a discharge port 48. The lower portion 50 of the vertical section 44 of the passage 36 is contained in the wall of the pedestal 12 and is in communication with the trap 46 through the port 52.

The trap itself is in the form of a flat U-shaped chamber generally indicated at 54 defined on one side by a flattened portion 56 of the rear external wall 58 of the pedestal 12, and, on the other side, and at its edges by a specially shaped platelike element 60, shown best in FIGURES 1, 3 and 5. As may be seen in FIGURE 5, the face 62 of element 60 which is placed against the flattened portion 56 of the rear external wall 58, is molded or otherwise formed to provide a pair of shallow recesses 64, 66, interconnected in their lower areas by an opening 68.

Desirably, the flattened portion 56 may be complementarily recessed somewhat as at 70 to afford a deeper chamber 54, although such recessing is not essential to the practice of the invention.

To insure a good water tight abutment of the face 62 of element 60 against the flattened wall portion 56, suitable gasket means 71 may also be provided.

It will be seen that when the element 60 is placed on and secured against the flattened portion 56 by means of screws 72, a U-shaped chamber 54 is thereby formed, into the upper area of one section 74 of which water from passage 37 is admitted through the port 52, and from the upper area of the other section 76 of which it is discharged via the port 48 into the waste pipe 78.

However, once water has been admitted into the chamber 54, discharge from the port 48 continues only so long as there is maintained in the entry section 74 of the chamber the pressure of the column of water in the passage 37 and entry section. As soon as the water level in the passage 37 and entry section 74 drops down to the

level of the port 48, further discharge from the latter ceases and there is left standing in the chamber 54 water at a level just below the level of the port 48. Such standing body of water serves as an effective trap to prevent any gases in the waste pipe 78 from escaping back up through the overflow passage 37.

Whenever further flushing occurs, the passage 37 and chamber section 76 are refilled by water passing from the supply manifold 32 through the bleed duct 40 and into the passage entrance 38. The build-up of pressure in the vertical section 44 and chamber section 76 thereupon causes the level in chamber section 76 to rise again above the level of the port 48 to cause further discharge through the latter. Similar action takes place whenever the water level in the bowl 10 rises to the entrance 38 so that the passage 37 is alternatively refilled in this manner.

Should the passage 37 or chamber become blocked through the flow of solids therein upon overflow, or otherwise require cleaning, it is a simple matter to accomplish such cleaning by first unscrewing and removing the element 60 from the flattened wall portion 56 to expose the recessed face 62 and the mating recessing 70 of the flattened wall portion 56. These recesses may then be readily cleaned by a brush or hosing down, and the passage itself may be cleaned by inserting a flexible pipe-cleaner either into the entrance 38 or port 52.

When cleaning is thus accomplished the element 60, with interposed gasket means 71, is screwed back tightly onto the flattened portion 56 of the rear external wall 58 of the pedestal 12. Removability of the element 60 also enables the valve actuating mechanism 20 and the inner walls of the pedestal 12 to be cleaned better since a hose nozzle may be brought into alignment with and pressed against the port 48 to force water under fairly high pressure through that port and into the waste area below the closure valve 18.

From a consideration of the foregoing it will be appreciated that the present invention provides means whereby an overflow passage with a gas trap may be constructed small enough to enable it to be formed in the walls of the bowl and pedestal without having to make such walls of a size which is aesthetically unacceptable and undesirably bulky. The passage and trap, however, are readily cleanable.

While the invention has been illustrated and described in an application to a toilet bowl assembly, the particular arrangement so illustrated and described may be modified and utilized in other applications without departing from the scope of the invention.

What is claimed is:

1. In a toilet for removing waste material deposited by a person using the toilet and for removing such waste material by a flow of water upon a flushing of the toilet,

a bowl defined by walls and having a hollow configuration to define a first passage and having a first opening at the top to receive waste material from the person using the toilet and having a port near the top to introduce water to the bowl for the flow of water through the first passage defined by the bowl and having an outlet at the bottom to pass the water and the waste material after the flow of the water through the first passage defined by the wall,

a particular one of the walls being shaped at a position relative to the port in the bowl and the outlet at the bottom of the bowl to define an overflow passage communicating with the port in the bowl at one end and with the outlet at the other end for the flow of water through the port and through the overflow passage to the outlet upon the flushing of the toilet,

valve means operatively coupled to the bowl for obtaining a flow of the water in the bowl to the outlet and for obtaining a passage of additional water through the port and the first passage and the overflow passage to the outlet, and

a plate removably attached to the particular one of the walls and provided at its inner surface with a configuration relative to the particular wall to define a trap communicating with the overflow passage.

2. The toilet set forth in claim 1 in which the particular wall defining the overflow passage is provided with raised portions extending from the wall and defining a pair of spaced recesses interconnected by an opening at one end and in which the plate is provided at its inner face with raised portions having a configuration corresponding to that of the raised portiflons on the particular wall of the bowl and in which the raised portions on the plate about the raised portions on the particular wall of the bowl and in which means are disposed between the inner surface of the plate and the particular wal of the bowl to provirde a seal for preventing water from leaking from the overflow passage.

3. In a toilet for removing waste material deposited by a person using the toilet and for removing such waste material by a flow of water upon a flushing of the toilet,

a bowl defined by walls and having a hollow configuration to define a first passage and further having an opening in the bowl at the top of the bowl to receive waste material from the person using the toilet and further having a first port in the bowl near the top of the bowl to obtain a flow of fluid into the first passage in the bowl and further having an outlet at the bottom of the bowl to obtain a flow of the water from the bowl,

a particular one of the walls in the bowl being shaped to define an overflow passage having a relatively small volume relative to the volume of the first passage in the bowl and communicating with the port and the outlet in the bowl,

there being at least a second port extending outwardly from the particular one of the walls and communicating with the overflow passage,

valve means operative in a first relationship to prevent the flow of the water in the bowl through the outlet in the bowl and to prevent the flow of water through the port to the first passage and the overflow passage and actuatable to a second relationship by the person using the toilet to obtain the flow of the water in the bowl through the outlet in the bowl and to obtain the flow of water through the port to the first passage and the overflow passage, and

a plate provided at its inner surface with raised portions shaped to define a trap between the raised portions and removably attached to the particular wall of the bowl with the trap in communication with the second port for the flow of water through the overflow passage and the trap to the outlet in the bowl.

4. The toilet set forth in claim 3 in which the inner surface of the plate is provided with raised portions extending toward the external surface of the plate and in which the raised portions are provided with configurations to define between the raised portions a pair of shallow recesses separated from each other and interconnected by an opening at one end and constituting the trap.

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