Nov. 21, 1939. W. C. GROENIGER 2,180,585

FLOOR DISCHARGING DEFECATOR

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Fig. 1

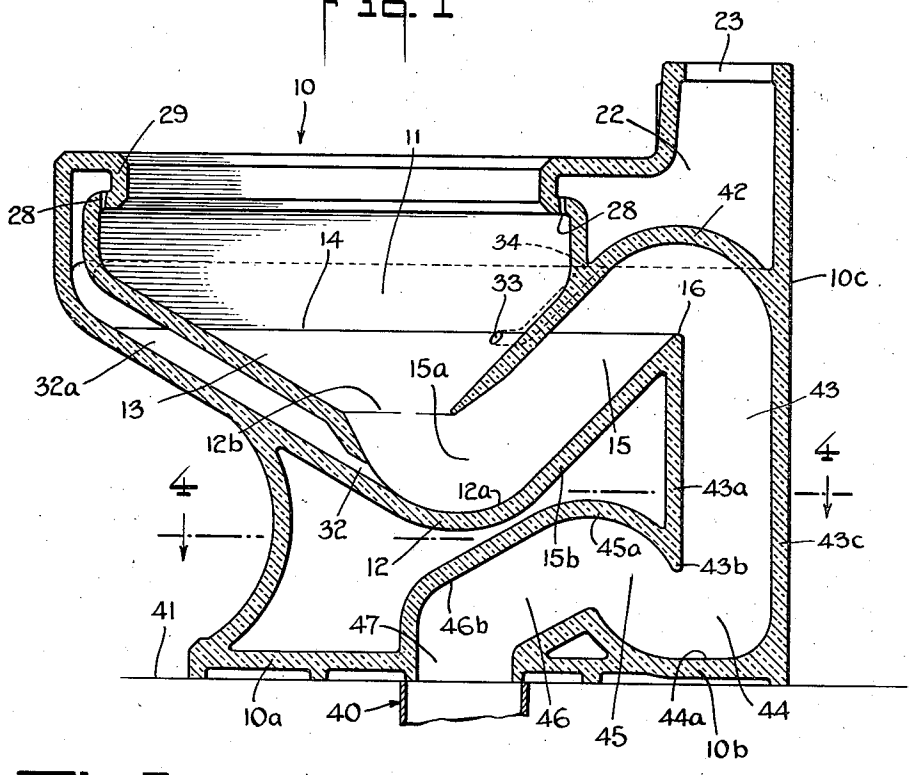
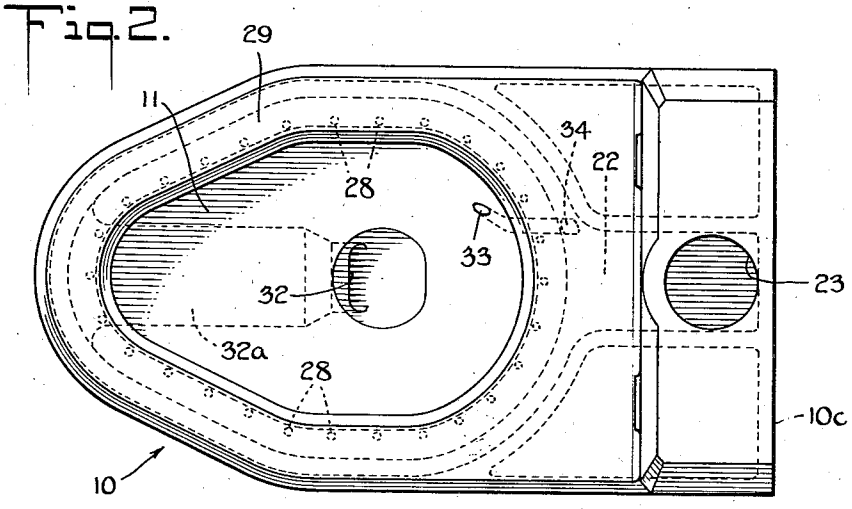


Fig. 2.



INVENTOR
William C. Groeniger
BY
Henry J. Lucke
HIS ATTORNEY

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Fig. 3.

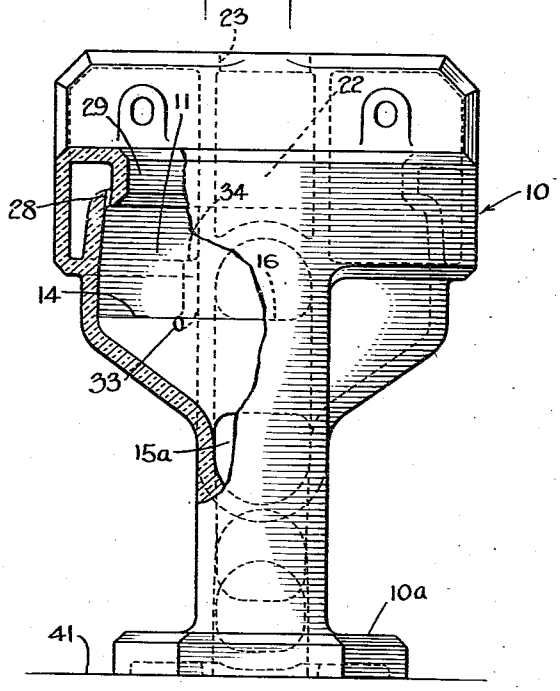


Fig. 5.

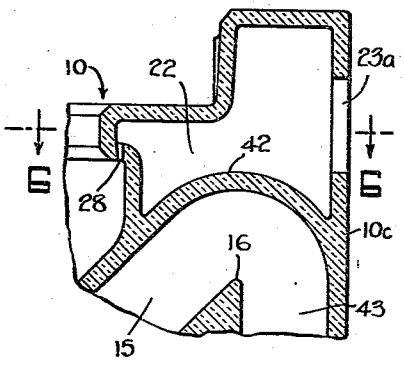


Fig. 4.

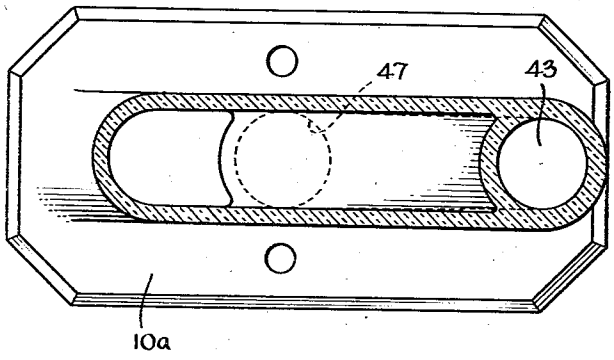
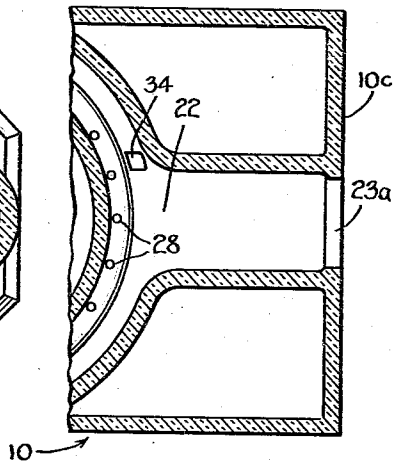


Fig. 6.



INVENTOR
William C. Groeniger
BY
Henry J. Rucke
HIS ATTORNEY

Patented Nov. 21, 1939

2,180,585

UNITED STATES PATENT OFFICE

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FLOOR DISCHARGING DEFECATOR

William C. Groeniger, Columbus, Ohio, assignor to John B. Pierce Foundation, New York, N. Y., a corporation of New York

Application January 5, 1937, Serial No. 119,069

2 Claims. (Cl. 4—69)

The present invention relates to defecators.

My present invention is directed to defecators embodying a bowl structure of the general construction set forth in my United States Patent No. 2,066,882, entitled Defecators, of grant of patent of January 5, 1937.

As is set forth in my aforesaid United States patent, the bowl proper comprises an inner wall, in the vicinity of the normal level of the contents of the bowl, having a general conical contour solely increasing in effective radius upwardly without increase of the rate of increase of the radius, to thereby avoid re-entrant wall formation of the bowl, suitable jet means for the flow of the effluent for the initiation and maintenance of a vortical movement of the contents of the bowl, suitable jet means for effecting a momentum flow of effluent and thereby of the contents of the bowl, such momentum flow combining with the stated vortical movement of the contents of the bowl, to effect the full discharge of the contents of the bowl upwardly through the up-flow half-siphon leg of the bowl, with which is further combined suitable rim channel means and rim jet openings communicating therewith, for suitably scouring the upper portions of the inner faces of the bowl, the jets of the effluent supplied by the rim openings being suitably directed in correspondence to the vortical movement of the contents of the bowl. The siphonic means effective in the discharge of the bowl comprises a posterior or back half-siphon leg constructed and operating pursuant to my evacuator of either of the principles set forth in my United States Patent No. 2,055,490, granted September 29, 1936, entitled Evacuators, or United States Patent No. 2,055,489, granted September 29, 1936, entitled Adjustable evacuator.

Pursuant to the manner of assembly and operation of defecators embodying the principles of my aforesaid inventions, the interior or up-flow half siphon leg terminates at or adjacent the rear face of the bowl structure, thus affording the placement of the rear face of the bowl structure, and/or its support, at the face of a wall, usually a partition wall, the posterior or back half-siphon leg extending interiorly of the wall, and the discharge from such back half-siphon leg effected horizontally and rearwardly in direction relative to the bowl structure.

Another embodiment of my aforesaid bowl structure, having a posterior or back half-siphon leg integral with the bowl structure is set forth and claimed in my U. S. Pat. No. 2,066,883, granted January 5, 1937, entitled Efficator with integral evacuator.

A particular structural and operation feature of the present invention resides in the general adaptation of the principles of construction of the bowl proper of my aforesaid United States Patent No. 2,066,882, and novel siphonic passage means combined therewith to afford the discharge of the bowl through suitable discharge pipe means extending through the floor of the room in which the defecator is installed. Such pipe means may be a part of or otherwise communicates with the soil pipe proper.

As one phase of utility of my present invention, the bowl structure per se and having the above general structural and operation characteristics is combined with suitable discharging means for eventual discharge into a soil pipe or soil pipe connection extending through the floor, in replacement of present day bowls connected for discharge through a floor-extending soil pipe or connection therewith.

Further features and objects of the invention will be more fully understood from the following detail description and the accompanying drawings, in which

Fig. 1 is a vertical central section of an embodiment of my invention, the upper rear structure being arranged for connection with a flush tank for the supply of the effluent;

Fig. 2 is a top plan view of Fig. 1;

Fig. 3 is a rear elevation of Fig. 1; and

Fig. 4 is a detail horizontal section on line 4—4 of Fig. 1;

Fig. 5 is a detail central vertical section corresponding generally to the structure of Fig. 1, but illustrating the upper rear bowl structure arranged for suitable flush valve connection with the supply of the effluent; and

Fig. 6 is a detail horizontal section on line 6—6 of Fig. 5.

Pursuant to the preferred embodiments illustrated in the accompanying drawings, the bowl proper, designated generally 10, comprises a wall structure 11, the inner face of which extends from the well opening 12b upwardly, and has general conical contour solely increasing in effective radius without increase of the rate of increase of the radius, to thereby avoid re-entrant wall formation. Such inner face of the wall structure 11 is smooth. The normal, i. e., afterfill, content of the bowl is indicated at 13 and its normal level is indicated at 14.

The bottom wall 12 of the well, preferably, has its maximum depth at a location indicated at

12a, namely at on within the entrance opening 15a of the upflow, i. e., anterior, half-siphon leg 15.

The compartment 22 serves for the reception of the effluent for flushing, i. e., effecting the discharge of the contents of the bowl, pursuant to the principle of operation herein set forth. Such supply of the effluent may be had by means of a flush tank (not shown), which may be of any suitable construction, the connection therewith being made through the inflow port 23.

The manner and means of communication of the effluent supply compartment 22 with the channel 34 leading to the vortex jet opening 33, also with the interior of the rim flange 29, thence to the rim jet openings 28 and the supply under momentum through the channel 32a to the momentum jet opening 32 are generally as is set forth in my aforesaid United States Patent No. 2,066,882.

Pursuant to the present invention the posterior, i. e., back half-siphon leg structure is integrally connected to the anterior, i. e., front half-siphon upflow leg 15, and the former constructed in correlation with the stated vortex and momentum jets for the eventual discharge of the contents of the bowl into a pipe 40 extending through the floor, indicated at 41, which pipe 40 may be a part of or connected to the soil pipe (not shown).

The external appearance of the structure of the present application is shown and claimed in my co-filed design application, entitled Defecator.

A preferred embodiment of such integrally connected back half-siphon leg is illustrated in the drawings and in essentials comprises an upper arcuate wall 42, defining a downwardly directed elbow communicating with the vertically downwardly extending passage 43, which latter is partially defined by the vertical wall 43a which is molded integral with the lower wall portion 15b of the upflow leg 15. At 43b such wall portion 43a terminates and the channel of the back half-siphon leg continues through the lower and elbow-like passage 44, providing flow of the discharge in direction toward the front of the bowl proper, thence through the passage 45, extending arcuately upwardly and thence through the passage 46 extending downwardly, and thence through the elbow-like downwardly arcuate passage 47, suitably arranged for connection with the connecting pipe or part of the soil pipe 40.

The upper wall portion 45a is molded integrally with the terminal wall portion 43b, which wall portion 45a merges with the upper wall portion 46b, which terminates and merges with the front base portion 10a of the bowl proper, the remainder of the wall of the passages 46, 47 merging with and molded as a part of the rear base portion 10b, thus giving rise to a truss structure in support of the internal parts of the defecator as a whole. The rear portions 43c of the wall of the vertical passage 43 merge with and are molded as a part of the rear wall 10c of the defecator as a whole, the aforesaid combining structurally to provide full support of the defecator directly upon the floor 41, mechanically independently of the plumbing connection of the back half-siphon leg with the soil pipe or its connection.

Functionally with respect to the manner of discharge flow, such back half-siphon leg arrangement, upon the supply of water as the effluent and resulting concomitant and coacting vortical movement and momentum flow of the contents of the bowl, as above indicated and more particularly set out in my aforesaid United States Patent No. 2,066,882, at the initial stage the discharge flowing downwardly over the weir 16 initiates a curtain of such discharge at and extending lowerly from the stated terminal wall portion 43b which curtain formation is enhanced by the dish formation of the lower wall 44a of the stated lower elbow-like passage 44, and upon continuation of the discharge through the vertically downward passage 43, the same is gradually filled in capacity, at the approach and continuation of which stage the air originally in the upper elbow-like passage formed by the wall 42 is more and more entrained until substantially fully entrained with the discharging flow. At this stage the passages 44, 45 and finally the passages 46, 47 will have become substantially fully capacitated with the discharge flow, such stage co-acting with the stated curtain flow at and extending from the terminal wall portion 43b precluding all possible back flow of air into the back half-siphon leg and into the siphonic passage, aforesaid, as a whole.

The embodiment shown in Figs. 5 and 6 corresponds generally to that of Figs. 1 through 4 and like parts are designated by like reference characters. The structure shown in Figs. 5 and 6 provides for the supply of the water serving as the effluent through suitable connection with the port opening 23a of the compartment 22, as through suitable piping connection with a flushometer (not shown).

From the above, it appears that my invention provides for a bowl proper, preferably having an inner wall formation and comprising vortical jet means, momentum jet means, upper rim flange and rim jet openings, arranged upon the supply of effluent for the concomitant and cooperating vortical movement of the contents of the bowl and the discharge of the contents from the bowl upwardly through a rearwardly extending up-flow half-siphon leg passage, thence through an upwardly disposed elbow-like passage communicating with a vertically downwardly extending back half-siphon leg passage, communicating in turn with a lowerly disposed elbow-like passage extending toward the front of the defecator, in turn communicating with a forwardly extending, and preferably upwardly and then downwardly arcuately directed passage, leading to a discharge opening at the base of the defecator, arranged for communication with piping extending through the floor of the room, the wall formation of the aforesaid parts being integrally molded with one another respectively, and including wall formation serving as a base for the defecator, adapted for the support of the defecator as a whole upon the floor of the room.

Whereas this invention has been described with reference to specific forms thereof, it is to be understood that many changes may be made without departing from the spirit of the invention as described in the following claims.

I claim:

1. A defecator, comprising a bowl, wall means therefor arranged to provide a supporting base for said bowl, means for introducing liquid into said bowl for flushing the same, and means for evacuating the contents of the bowl upon the flushing thereof, said means comprising an upflow syphon leg, a substantially vertical posterior syphon leg operatively connected thereto, an upwardly directed elbow communicating with said posterior syphon leg and arranged to retain a body of liquid subsequent to the stage of flushing the bowl, said elbow discharging sharply upwardly

at an angle substantially less than the vertical into a downwardly directed outflow leg arranged within the confines of said suporting base, a forward wall of said posterior syphon leg being substantially continuously vertical and arranged substantially centrally of said upwardly directed elbow and serving in part to define said elbow, the lower terminus of said syphon leg wall being disposed relatively closely above the level of fluid retained by said elbow and in positive spaced relationship therewith.

2. A defecator, comprising a bowl, wall means therefor arranged to provide a supporting base for said bowl, means for introducing liquid into said bowl for flushing the same, and means for evacuating the contents of the bowl upon the flushing thereof, said means comprising an upflow syphon leg, a substantially vertical posterior syphon leg integral with said defecator and operatively associated with said upflow leg, an upwardly directed elbow communicating with said posterior syphon leg and arranged to retain a body of liquid subsequent to the stage of flushing the bowl, said elbow discharging sharply upwardly at an angle substantially less than the vertical into a downwardly directed outflow leg arranged within the confines of said suporting base, a forward wall of said posterior syphon leg being substantially continuously vertical and arranged substantially centrally of said upwardly directed elbow and serving in part to define said elbow, the lower terminus of said syphon leg wall being disposed relatively closely above the level of fluid retained by said elbow and in positive spaced relationship therewith, said lower terminus being in the plane of the juncture of said upflow and said posterior syphon legs.

WILLIAM C. GROENIGER.