

Sept. 20, 1971

F. L. ELLIS ET AL

3,605,129

CHEMICAL TOILET

Filed April 9, 1970

3 Sheets-Sheet 1

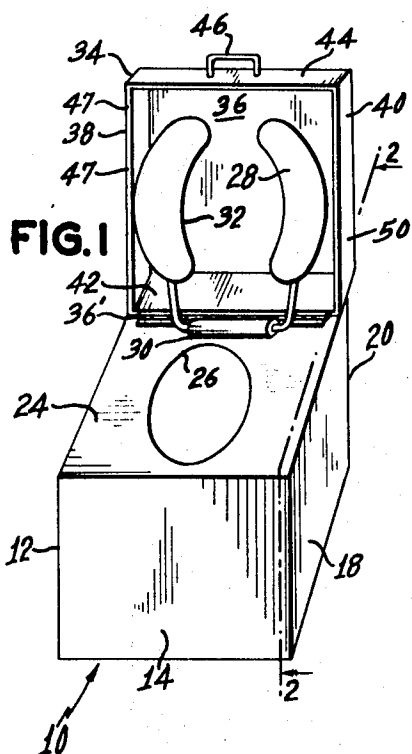


FIG. 1

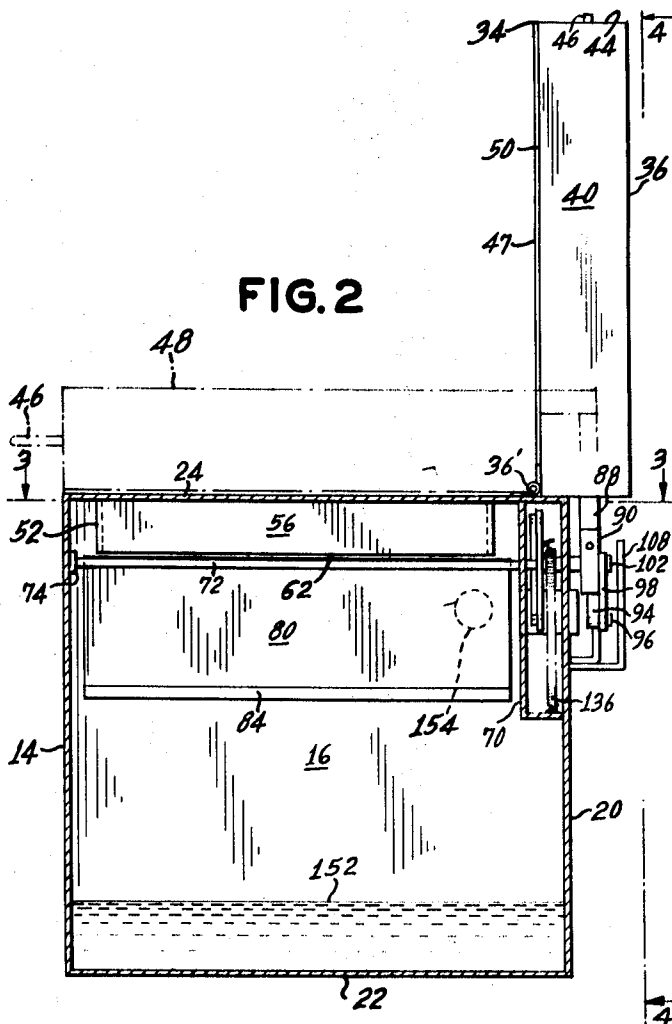


FIG. 2

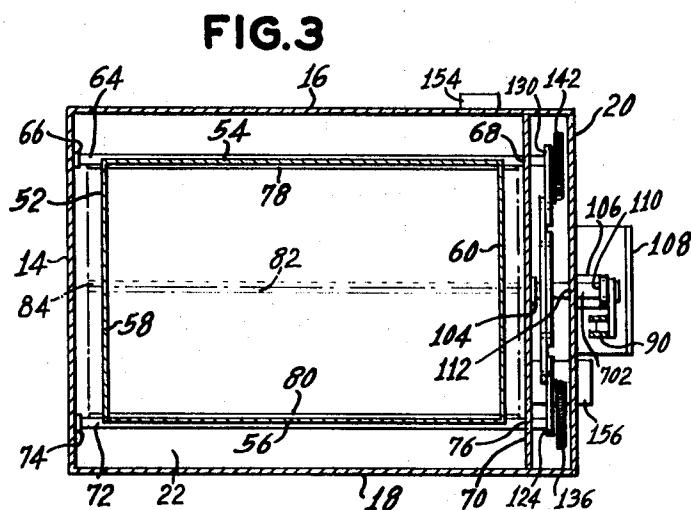


FIG. 3

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FIG. 4

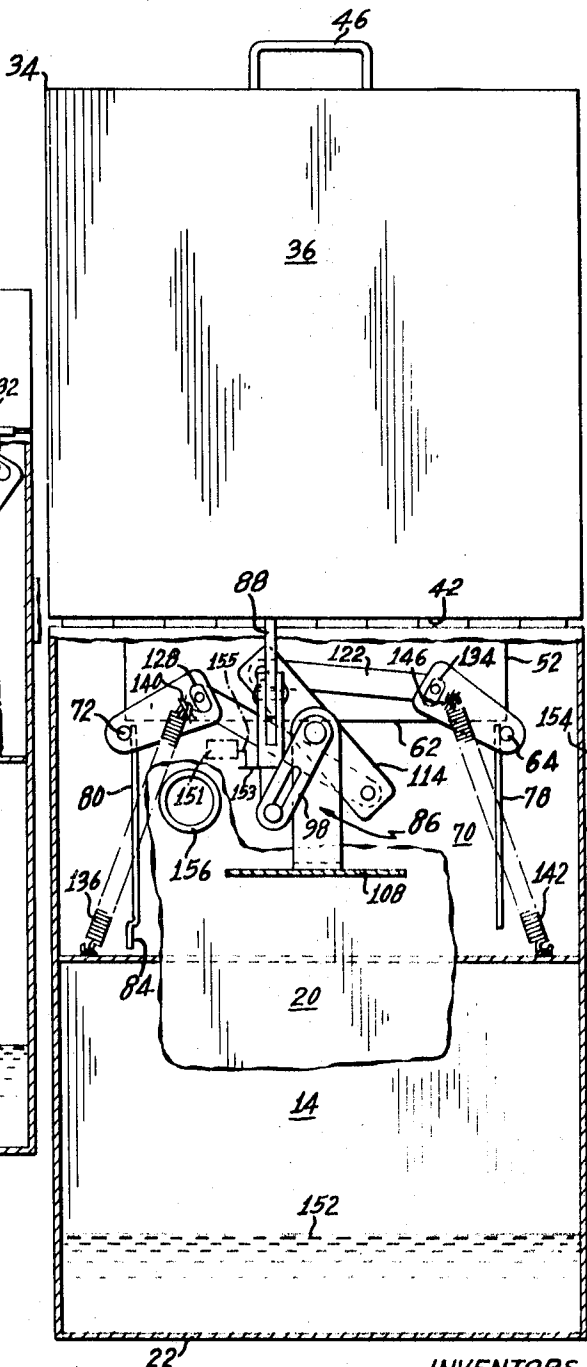
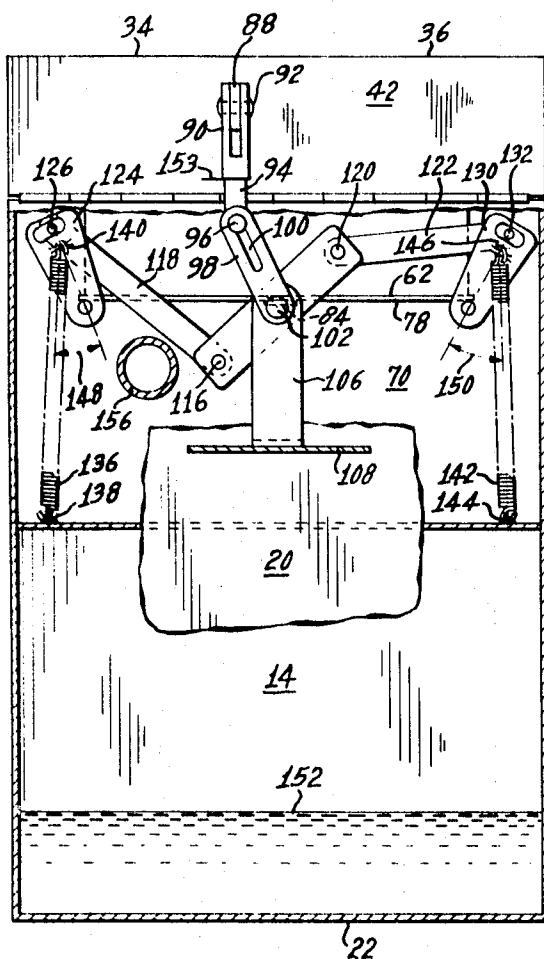


FIG. 5



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CHEMICAL TOILET

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3,605,129

CHEMICAL TOILET

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U.S. Cl. 4—115

17 Claims

ABSTRACT OF THE DISCLOSURE

A self-contained chemical toilet for vehicular use having a toilet seat pivotally mounted to a housing and surroundingly positioned over an opening in the top wall, and a cover assembly pivotally mounted to the housing to cover the seat, opening and top wall. A pair of door members are respectively mounted to each of a pair of rods within the housing with the door members being pivotal from a closed horizontal position between the solution and the opening to an opened vertical position extending downwardly toward the chemical solution to baffle same during vehicular movement. A passageway member is attached to the housing top wall and depends downwardly into the interior thereof for sealingly engaging the door members when in their closed position to prevent splash-up of the solution onto the toilet seat and top wall. Linkage means extend between the cover assembly and each rod which is operable to pivot the rods and attached door members into their open position upon opening of the cover assembly and into their closed position on closing of the cover assembly. A counter records the number of times the cover assembly is opened for use of the toilet.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to an improved toilet system. More particularly, the invention disclosed herein pertains to improvements in a chemical toilet or sewage disposal device particularly adapted for vehicular use, and includes means for retaining a chemical solution and waste deposited therein in the tank portion of the chemical toilet and preventing the same from splashing upward toward the toilet seat and top wall thereof, particularly when the vehicle is in motion. These retaining means additionally baffle the chemical and waste solution in the tank portion of the toilet when the same is in use, to aid in preventing the splash-up of the solution onto the user of the toilet. The improved chemical toilet of this invention permits both of the above described advantageous and desirable features to be accomplished by a single automatically operative means. The invention, relating to improvements in waterless toilets of the kind including a chemical or aseptic solution contained within a tank portion of the toilet for the reception of sewage, excrement and waste therein, has special utility in connection with railroad cars, buses or other like conveyances or vehicles.

Description of the prior art

Sewage disposal systems including a toilet device, and more particularly a chemical toilet, especially adapted for railroad use, vehicular use or of a portable nature have previously been devised, such prior arrangements and apparatuses being generally disclosed in United States Patents Nos. 125,370, 756,599, 1,006,812, 1,189,714, 1,210,186, 1,264,873, 2,011,511 and 2,946,065. Applicants' invention of an improved chemical toilet particularly adapted for railroad cars or other vehicular use, disclosed herein, is an improvement over such prior art devices, as shown for example in the above mentioned patents.

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SUMMARY OF THE INVENTION

It is a general object of this invention to provide an improved chemical or waterless toilet of the type generally including a chemical or aseptic solution contained within a tank portion of the toilet for the reception of sewage, excrement and other waste therein and being particularly adapted for vehicular use, such as in railroad cars.

Another object of the invention is to provide an improved chemical toilet particularly adapted for vehicular use in which the splashing and surging of the chemical solution and waste contained therein within the tank portion of the toilet is prevented from splashing upward toward and onto the toilet seat and top of the toilet during those periods when the toilet is not in use, and particularly when the vehicle is in motion.

A further object of the subject invention is to provide an improved chemical toilet particularly adapted for vehicular use in which the surging and splashing of the chemical solution and waste contained therein within the tank portion of the toilet is baffled to aid in and prevent the movement of the chemical and waste solution within the tank portion thereby substantially eliminating splash-up on the user of the toilet when the same is in use, particularly when the vehicle is in motion.

Still another object of the instant invention is to provide an improved chemical toilet particularly adapted for vehicular use in which a splash preventing means is employed and in which the splash preventing means and the means for mounting the same is of a simplified and rugged construction, and in which the splash-preventing means is readily operated in a positive and automatic manner on the opening and closing of a cover assembly provided for the chemical toilet.

In general these objects are attained by providing a self-contained chemical toilet adapted for vehicular use having a housing including a plurality of side walls and a bottom and top wall forming a tank therewithin for the reception of a chemical solution and waste material to be deposited therein through an opening in the top wall. A toilet seat is pivotally attached to the housing and surroundingly positioned over the opening in the top wall and a cover assembly is pivotally mounted to the housing and adapted and arranged to cover the seat, the opening and the top wall. The toilet further includes door means pivotally mounted within the housing and being positioned adjacently below the top wall thereof, with the door means being pivotal from a closed generally horizontal blocking position between the chemical solution and the opening within the top wall to an opened generally vertical non-blocking position extending downwardly toward the chemical solution to baffle the same when the vehicle is in motion.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features which are believed to be characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of the improved chemical or portable toilet of this invention;

FIG. 2 is an enlarged cross-sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a transverse sectional view taken along line 3—3 of FIG. 2;

FIG. 4 is an enlarged rear elevational view of the improved chemical or portable toilet of this invention;

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FIG. 5 is an enlarged rear elevational view similar to FIG. 4 but with certain parts thereof in other positions;

FIG. 6 is a rear pictorial view of a second embodiment of the improved chemical or portable toilet of this invention; and

FIG. 7 is a rear pictorial view of a second embodiment of the invention, similar to FIG. 6 but with certain portions thereof being in other positions.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings in detail, and in particular to FIG. 1 thereof, the improved self-contained chemical or portable toilet 10, particularly adapted to vehicular use, is seen to include an outer housing or enclosure 12 having a front wall 14, side walls 16 and 18, a rear wall 20, a bottom wall 22 and a top wall 24. Housing or enclosure front wall 14, side walls 16 and 18, rear wall 20 and bottom wall 22 are connected and sealed together to form a tank 24 therewithin for the receiving and holding of a chemical or aseptic solution and the reception and containment of excrement, sewage and other like wastes which are deposited within the toilet 10. The top wall 24 of toilet housing or enclosure 12 is provided with an oval shaped opening 26 centrally located therein through which excrement, sewage and other like wastes may be deposited into the holding tank 24 located therebelow.

Toilet 10 further includes a toilet seat 28 hingedly mounted at reference numeral 30 to the top wall 24 of toilet enclosure or housing 12. Toilet seat 28 includes an opening 32 therein which, upon lowering of toilet seat 28 to rest upon top wall 24 of enclosure 12, is in registry with opening 26 within top wall 24 of enclosure 12. Seat 28 is further provided with a spring mechanism within its hinge portion at 30 whereby upon non-use of the seat the same automatically rises to a position which is at an angle of approximately 90 degrees to top wall 24 of toilet housing 12.

Chemical toilet 10 further includes a cover assembly 34 hingedly attached by means of a piano hinge 36' to the rear portion of top wall 24 of toilet enclosure 12 and positioned closely adjacent rear wall 20 of the enclosure. Top cover 34 includes a top section 36, depending side sections 38 and 40, a back section 42, to which one section of hinge 36' is attached, and a front section 44. A handle 46 is connected to front section 44 to aid in the opening and raising, and the lowering and closing of cover 34 about hinge 36' from its at rest and closed position, as depicted in dashed line configuration at reference numeral 48 of FIG. 2, resting on and sealing the top wall 24 of toilet enclosure 12, to its fully opened position 50, as depicted in FIGS. 1 and 2, with cover 34 at an angle of approximately 90 degrees to the top wall 24 of the toilet housing.

The cover assembly 34 further includes a gasket or sealing member 47 positioned about and attached to its lower edge to provide a seal between cover assembly 34 and top wall 24 of housing 12. If desired top cover 34 may be provided with a latch or lock mechanism (not shown) extending between cover 34 and the top portion of enclosure 12 to secure cover 34 in its closed position sealing top wall 24 and seat 28 of enclosure 12. Upon the release of the latch mechanism and the raising of cover 34, into its opened position 50 depicted in FIGS. 1 and 2, seat 28 will automatically rise to the position as depicted in FIG. 1, thereafter the same will have to be depressed and lowered to be sat upon or used.

Positioned within tank portion 24 of toilet enclosure or housing 12 is a rectangular member 52 having side walls 54 and 56 which are generally parallel to respective side walls 16 and 18 in enclosure 12 and end walls 58 and 60 which are generally parallel to respective front and back walls 12 and 14 of enclosure 12. Rectangular member 52 surrounds opening 26 within enclosure top wall 24, is attached to top wall 24 and depends downwardly there-

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from into tank 24 of enclosure 12 to the point as indicated by reference numeral 62, as depicted in FIG. 2.

Within enclosure 12 and positioned therein outwardly of side wall 54 of rectangular member 52 and at a height approximately equal to the lower edge 62 of rectangular member 52, is a pivotally mounted rod 64. Rod 64 is journaled within bushing 66 attached to front wall 14 of enclosure 12 and extends through an opening at 68 within an inner frame member 70 such as to make the same freely pivotable about its longitudinal axis. A second, similar rod 72 is positioned within enclosure 12 and pivotally mounted therein outwardly of side wall 56 of rectangular member 52 and at a height just slightly below the lower edge 62 of rectangular member 52. Rod 72 is journaled within bushing 74 attached to the front wall 14 of enclosure 12 and extends through an opening at 76 within inner frame member 70 such that rod 72 is freely pivotable about its longitudinal axis. Attached to rod 64, adjacently along one of its longitudinal edges, is a door or inner cover 78, which is pivotable with rod 64 from a generally vertical, depending, open position (see FIGS. 2 and 4) to a generally horizontal, closed position (see FIGS. 3 and 5) in which door 78 engages and seals against lower edge 62 of rectangular member 52. Door 78, when in its closed generally horizontal position, extending approximately one-half the distance across rectangular member 52. Mounted to rod 72, adjacently along one of its longitudinal edges is a second door or inner cover 80, which is pivotable with rod 72 from an open position in which it depends generally vertically downward from rod 72 to a closed position in which it extends generally horizontally and in which position it engages and seals against lower edge 62 of rectangular member 52. In its closed, generally horizontal position, door 80 extends approximately one-half the distance across rectangular member 52. The small gap 82 existing between doors 78 and 80 when the same are in their closed generally horizontal positions is filled and sealed by an offset flange 84 (see FIGS. 4 and 5) which is connected to and carried by the inner edge of door 80.

With particular reference to FIGS. 2, 3, 4 and 5, the improved self-contained chemical toilet of this invention includes an operating mechanism 86 extending between pivotable rods 64 and 72 and top cover assembly 34, such that upon opening and raising of cover assembly 34 to its opened position 50 as depicted in FIG. 2, doors or inner covers 78 and 80 are pivoted about respective rods 64 and 72 to their open generally vertical positions depicted in FIGS. 2 and 4, and upon closing of cover assembly 34 to its closed position 48 of FIG. 2, doors 78 and 80 are pivoted with respective rods 64 and 72 into their closed generally horizontal positions engaging and sealing lower edge 62 of rectangular member 52, as depicted in FIGS. 3 and 5.

Operating mechanism 86 includes an extension rod 88 rigidly connected to the mid-portion of back section 42 of cover assembly 34 which extends rearwardly outward therefrom. Extension rod 88 is pivotally connected by means of pin 92 to a clevis portion 90 adjacent the upper end of an elongated push rod 94. The lower end of push rod 94 is pivotally connected by means of pin 96 to an actuating lever 98, with pin 96 extending through a slotted opening 100 in one end portion of actuating lever 98. The other end portion of actuating lever 98 is rigidly connected to the outer end portion of an actuating rod 102. The inner end portion of actuating rod 102 is journaled within a bushing 104 attached to inner frame member 70 such that rod 102 is freely pivotable therein and about its longitudinal axis. Actuating rod 102 is further supported for pivotal movement about its longitudinal axis by an L-shaped support member 106 having its shorter generally horizontal leg attached to outer protective frame member 108, with rod 102 passing through an opening at 110 within the upper portion of generally upright elongated leg of L-shaped supporting member or bracket 106, with

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rod 102 being freely pivotable therein. Actuating rod 102 further passes through an opening at 112 within the rear wall 20 of enclosure 12 and is free to pivot therein.

An intermediate actuating lever 114 is rigidly connected at its mid-portion to actuating rod 102 at a point thereon between rear wall 20 of enclosure 12 and inner frame member 70 to pivot with actuating rod 102 upon pivotal movement thereof. Pivotaly connected to one end portion of intermediate actuating lever 114 by means of pin 116 is a left hand actuating lever 118, and pivotaly connected to the opposite end portion of intermediate actuating lever 114 by means of pin 120 is a right hand actuating lever 122. The opposite end portion of left hand actuating lever 118 is pivotaly connected to the upper portion of a left hand actuating plate 124 by a pin 126 positioned in and extending through a slotted opening 128 within the upper portion of this left hand actuating plate 124. In similar fashion the opposite or other end portion of right hand actuating lever 122 is pivotaly connected to the upper end portion of a right hand actuating plate 130 by a pin 132 positioned within and extending through a slotted opening 134 within the upper end portion of this right hand actuating plate 130. The opposite or lower end portion of left hand actuating plate 124 is fixedly connected to an end portion of pivotal rod 72 to which is affixed door 80 as hereinabove explained. The opposite or low end portion of right hand actuating plate 130 is fixedly attached to an end portion of pivotal rod 64 on which is mounted door 78 as hereinabove described.

A coiled spring 136 has one of its end portions fixedly attached at 138 to inner frame member 70 and its opposite end portion fixedly attached at 140 to left hand actuating plate 124. A similar coil spring 142 has one of its end portions fixedly attached at 144 to inner frame member 70 and its opposite end portion fixedly attached at 146 to right hand actuating plate 130. Coil spring 136 and 142 aid in maintaining doors 78 and 80 in their closed sealed positions, as depicted in FIG. 5, and rigidly in their generally vertically upright open positions as depicted in FIG. 4. Coil springs 136 and 142 also aid in snapping doors 78 and 80 into their closed and opened positions as the springs pass over the pivot centers (rods 72 and 64) of their respective left and right hand actuating plates 124 and 130. The angle 148 between the center line of spring 136 and the center line of left hand actuating plate 124, when door 80 is in its closed position, is less than the angle 150 between the center line of spring 142 and the center line of right hand actuating plate 130, when door 78 is in its closed position, all as depicted in FIG. 5, thereby insuring that door 80 which carries sealing flange 84 opens and pivots downward slightly ahead of door 78 and insures that door 78 closes and pivots upward slightly ahead of door 80 carrying sealing flange 84 on its inner edge. The degree of control exerted by springs 136 and 142 on the lateral movement of respective left hand and right hand actuating plates 124, 130, is controlled by the amount or size of respective slots 128 and 134 in each of the actuating plates adjacent their upper end portions at the point of pivotal attachment of respective attaching pins 126 and 132.

Upon opening and raising of cover assembly 34 to position 50 as depicted in FIGS. 1 and 2, push rod 94 is depressed thereby pivoting actuating lever 98 and connected actuating rod 102 in a counter-clockwise direction. The counter-clockwise pivoting of actuating rod 102 causes the counter-clockwise movement of intermediate actuating lever 114 and the rightward movement of left hand actuating lever 118 and the leftward movement of right hand actuating lever 122 into positions as depicted in FIG. 4. As left hand actuating lever 118 moves to the right the top portion of left hand actuating plate 124 moves to the right pivoting rod 72 and attached door 80 in a clockwise direction into door 80's open position. When right hand actuating rod 122 moves in a leftward direction the upper portion of right hand actuating plate 130

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is moved to the left pivoting rod 64 and door 78 attached thereto in a counter-clockwise direction into door 78's open position. During this opening operation of operating mechanism 86, springs 136 and 142 aid in snapping doors 80 and 78 into their opened positions. Upon the lowering and closing of cover assembly 34 into the position as depicted at reference number 48 in FIG. 2, the reverse of the above operation takes place within operating mechanism 86 whereby doors 78 and 80 will be pivoted into their closed position sealing against the bottom 62 of inner rectangular member 52, all as depicted in FIG. 5. In the closing operation springs 136 and 142 will aid in snapping respective doors 80 and 78 into their closed positions and aid in maintaining them sealed against the lower edge 62 of rectangular housing 52.

To put the improved self-contained toilet of this invention into operation, after the same has been installed in a railroad car, similar vehicle or other like conveyance, the same is first charged with a solution of water and chemicals to approximately the level as indicated by reference numeral 152 in FIG. 2. Once the toilet has been so charged with solution the same may be used repeatedly for a period of time such as a week or more before emptying and recharging. The chemically treated waste that accumulates in the bottom of tank 24 and within the solution may be drained and removed either by gravity flow means (not shown) or the same may be emptied by a vacuum system, a portion of which is shown at reference numeral 154 in the drawings.

When toilet 10 is not in use, inner doors 78 and 80 are in a closed and overlapped position sealing against the lower edge 62 of inner rectangular member 52 to retain the chemical solution and waste accumulated therein within the lower portion of tank 24 of toilet 10 thereby preventing splashing of the same upwards through rectangular member 52 towards and onto top wall 24 and seat 28 of the toilet. When the cover assembly 34 is opened and the toilet is in use inner doors 78 and 80 are in their open generally vertical position depending downwardly from adjacent the lower edge 62 of rectangular member 52, and in this position act as baffle plates to control the flow, movement and sloshing about of the chemical solution and waste accumulated therein within the lower portion of tank 24 of the toilet, thus preventing the splashing upwards through rectangular member 52 towards the person using the toilet, especially when the vehicle is in motion. When the toilet 10 is not in use and cover assembly 34 is in its down and closed position, doors 78 and 80 are closed to provide a complete enclosure for toilet seat 28 and top wall 24 of the toilet whereby the seat, seat area and top wall of the toilet are protected from trash, debris, dirt and the like from the top and the chemical solution and waste from the bottom. Doors 78 and 80 aid in odor control for toilet 10 in that the waste and chemical solution are retained within tank 24 and the same is vented to the atmosphere through vent 156 in a manner that is more complete than if partial venting occurred upward through inner rectangular member 52 and opening 26 into the compartment within the vehicle in which toilet 10 is installed.

Self-contained chemical toilet 10 includes an impulse or mechanical type counter 151 attached to back wall 20 thereof, which is automatically operated each time cover assembly 34 is raised and opened and the toilet is used. Counter 151 is operated through a contact arm 153 rigidly attached to push rod 94 which extends generally perpendicularly and horizontally outward therefrom, and which moves in a generally vertical path upward and downward with push rod 94. Arm 153 contacts a counter lever arm 155, which lever 155 is connected to the counter mechanism and extends generally horizontally outwardly therefrom into the path of travel of arm 153, upon opening and raising of cover assembly 34 thereby pivoting arm 155 and causing counter 151 to advance one number

(see in particular FIG. 4). When cover assembly 34 is lowered and returned to its closed position, contact arm 153 moves upward with push rod 94 and counter lever arm 155 is rotated by spring means to its original at-rest position, all as depicted in FIG. 5. In this manner the number of times that toilet 10 is used is recorded by counter 151 such that a schedule for the emptying, cleaning and servicing of toilet 10 can be programmed which is based on the actual number of times the facility is used, and the necessary or desired strength of the chemical solution charge for the toilet can be readily and more accurately determined.

With particular reference to FIGS. 6 and 7, a second embodiment of the improved self-contained chemical toilet 10 of this invention is shown therein and includes toilet enclosure 12, as was shown in the previous embodiment. Housing 12 includes side walls 16 and 18, back wall 20 and top wall 24 having the opening 26 extending therethrough, all as seen in FIGS. 6 and 7. Toilet enclosure 12 of the embodiment depicted in FIGS. 6 and 7 includes a cover assembly 160 having a top section 162 and depending side sections 164 and 166, a back section 168 and a handle 170 connected to depending side section 164 and extending outward therefrom to aid in the opening and closing of cover assembly 160. Cover assembly 160 further includes a gasket or sealing member (not shown) to seal between cover assembly 160 and top wall 24, of toilet housing 12, as in the previous embodiment. A pair of blocks 172 and 174 are spacedly mounted to side wall 18 of toilet enclosure 12 closely adjacent top wall 24 thereof and respectively closely adjacent the front and rear walls thereof. A hinge pin 176 passes through openings within blocks 172 and 174 and is freely pivotable therein. Cover assembly 160 is attached to pivot hinge pin 176 by a pair of connecting lugs 178 and 180 extending between and rigidly connected to hinge pin 176 and depending side section 166 of cover assembly 160. A short lever arm 182 has one of its end portions rigidly connected to an end of hinge pin 176 and its opposite end portion pivotally attached by means of pin 184 to one end portion of an elongated connecting arm 186. The other end portion of connecting arm 186 is pivotally attached to an end portion of an actuating lever 188 by pin 190, while the opposite end portion of actuating lever 188 is fixedly and rigidly attached to actuating rod 102. In this manner applicant has provided, not only an improved self-contained toilet having a back-hinged, front-opening cover assembly, as depicted in FIGS. 1 through 5, but also a side-hinged, side-opening cover assembly as depicted in FIGS. 6 and 7.

Upon the lifting and opening of cover assembly 160 by handle 170, from its closed position 192 as depicted in FIG. 6 to its open position 194 as depicted in FIG. 7, hinge pin 176 will pivot in a counter-clockwise direction within blocks 172 and 174 causing lever arm 182 to pivot therewith, with its lower end portion to move to the right. The pivoting of lever arm 182 with hinge pin 176 will cause connecting arm 186 to move to the right thereby moving the lower end portion of actuating lever 188 to the right. With this movement of actuating lever 188, actuating rod 102 is pivoted in a counter-clockwise direction thereby opening doors 78 and 80, as explained hereinabove. Upon closing of cover assembly 160, the reverse of the above operation will take place whereby actuating rod 102 will be pivoted in a clockwise direction thereby closing inner doors 78 and 80.

While the invention has been described with respect to certain specific embodiments, it will be appreciated that many modifications and changes may be made by those skilled in the art without departing from the spirit of the invention. It is intended, therefore, by the appended claims to cover all such modifications and changes as fall within the true spirit and scope of the invention.

What is claimed as new and what it is desired to secure by Letters Patent of the United States is:

1. In a self-contained portable chemical toilet adapted for vehicular use including a housing having a plurality of side walls and a bottom and top wall forming a tank therewithin for the reception of a chemical solution and waste material to be deposited therein through an opening in said top wall, a toilet seat pivotally mounted to said housing and surroundingly positioned over the opening in said top wall, a cover assembly pivotally mounted to said housing and adapted and arranged to cover said seat, opening and top wall, and door means pivotally mounted within said housing and being positioned adjacently below said top wall of said housing, said door means being pivotal from a closed generally horizontal blocking position between the chemical solution and said opening within said top wall when said cover assembly is in its closed position to an opened generally vertical non-blocking position extending downwardly toward and above the chemical solution to baffle same whereby such solution and waste material is inhibited from splashing upward toward the toilet seat and top wall and onto the user of the toilet during vehicular motion.

2. In the self-contained portable chemical toilet as defined in claim 1 wherein said door means includes a pair of door members, means for pivotally mounting said door members to said walls within said housing, one of said pair of door members having an overlapping flange portion oppositely facing an edge portion of the other of said pair of door members, said flange portion overlapping and sealing against said edge portion when said door members are in their closed position thereby inhibiting chemical solution splash-up and odors from escaping through said opening while said door members are in their closed positions.

3. In the self-contained portable chemical toilet as defined in claim 1 further including counter means connected to said housing, means positioned between said cover assembly and said counter means for actuating said counter means upon opening of said cover assembly whereby said counter means records the number of times said cover assembly is opened for use of the toilet.

4. In the self-contained portable chemical toilet as defined in claim 1 wherein said plurality of side walls includes a front wall and a back wall, said cover assembly being pivotally mounted to said housing closely adjacent said back wall, said cover assembly extending across said top wall and being openable from a position closely adjacent said front wall of said housing.

5. In the self-contained portable chemical toilet as defined in claim 1 wherein said plurality of side walls includes a pair of opposed side walls, said cover assembly being pivotally mounted to said housing closely adjacent one of said pair of opposed side walls, said cover assembly extending across said top wall and being openable from a position closely adjacent the other of said pair of side walls of said housing.

6. In the self-contained portable chemical toilet as defined in claim 1 wherein said door means includes a pair of door members, and means for pivotally mounting said door members to said walls within said housing.

7. In the self-contained portable chemical toilet as defined in claim 6 wherein said means for pivotally mounting includes a pair of generally parallel rods pivotally mounted to said walls within said housing, each door member being mounted to a respective said rod for pivotal movement therewithin.

8. In the self-contained portable chemical toilet as defined in claim 7 further including linkage means extending between and connected to said cover assembly and one end portion of each of said pair of rods, said linkage means being operative to pivot said pair of rods and pair of doors attached thereto into their open position upon opening of said cover assembly and to pivot said rods and attached doors into their closed position upon closing of said cover assembly.

9. In the self-contained portable chemical toilet as defined in claim 8 further including a counter mechanism connected to said housing, said linkage means including means for operating said counter mechanism upon opening of said cover assembly, said counter mechanism recording the number of times said cover assembly is opened for use of the toilet.

10. In the self-contained portable chemical toilet as defined in claim 1 further including passageway forming means positioned between said opening in said top wall and the chemical solution within said housing, said passageway forming means sealingly engaging said door means when said door means is in its closed position thereby preventing splash-up of the chemical solution onto said toilet seat and said top wall of said housing.

11. In the self-contained portable chemical toilet as defined in claim 10 further including a gasket sealingly positioned about and connected to the lower edge of said cover assembly, said gasket sealing against said top wall of said housing when said cover assembly is in its closed position thereby inhibiting odors from escaping through said opening while said cover assembly is in its closed position.

12. In the self-contained portable chemical toilet as defined in claim 10 further including vent means positioned through and attached to said housing, said vent means providing communication between the interior and exterior of said housing for ventilating odors emanating from the chemical solution and waste material contained within said housing.

13. In the self-contained portable chemical toilet as defined in claim 10 wherein said passageway forming means is attached to said top wall of said housing and depends generally downwardly therefrom into the interior of said housing.

14. In the self-contained portable chemical toilet as defined in claim 1 further including linkage means extending between and connected to said cover assembly and said door means, said linkage means including means extending through one said side wall and connected to said door means, said linkage means being operative to pivot said door means into its open position upon opening of said cover assembly and to pivotally close said door means upon closing of said cover assembly.

15. In the self-contained portable chemical toilet as defined in claim 14 further including spring means extending between and connected to said housing and said

linkage means, said spring means biasing said door means into their closed position.

16. In the self-contained portable chemical toilet as defined in claim 14 wherein said linkage means includes a push-pull rod having one of its end portions pivotally attached to said cover assembly for movement therewith, an actuating lever having one of its end portions pivotally attached to the other end portion of said push-pull rod for pivotal movement thereof upon movement of said push-pull rod, a generally horizontal actuating rod mounted to said housing for pivotal movement about its longitudinal axis, one end portion of said actuating rod being fixedly attached to the opposite end portion of said actuating lever for pivotal movement therewith, an intermediate actuating lever fixedly attached at its mid-portion to the mid-portion of said actuating rod and being pivotal therewith, a pair of arms respectively pivotally attached at one of their end portions to opposite end portions of said intermediate actuating lever for movement with said opposite end portions upon pivotal movement of said intermediate actuating lever, and a pair of elements having one of their end portions respectively pivotally attached to the opposite end portions of said pair of arms, the opposite end portions of said pair of elements being respectively fixedly attached to said door means for pivoting of said door means upon movement of said pair of arms.

17. In the self-contained portable chemical toilet as defined in claim 16 further including spring means extending between and connected to said housing and respective said pair of elements of said linkage means, said spring means biasing said elements whereby said door means are biased into their closed position.

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HENRY K. ARTIS, Primary Examiner

U.S. Cl. X.R.

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