Aug. 11, 1931. C. B. SCHUMACHER 1,818,586

DRY CLOSET

Filed Jan. 10, 1930

Fig. 1

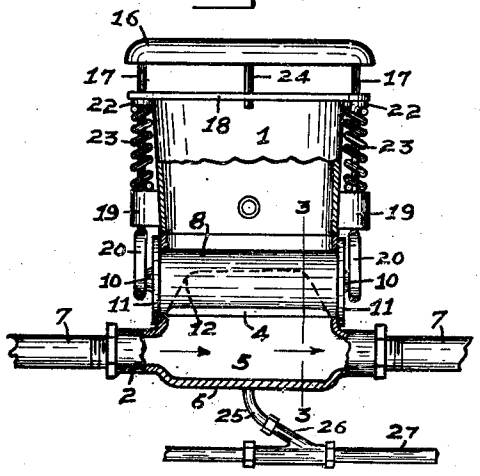


Fig. 2

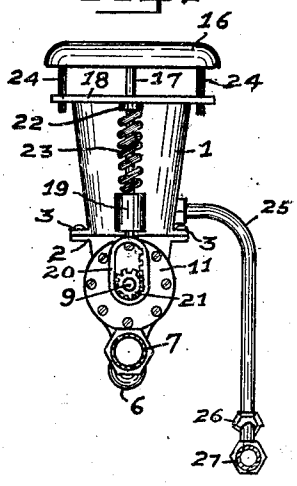


Fig. 3

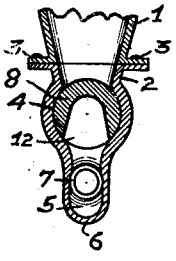


Fig. 4

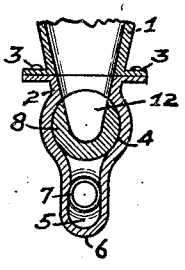


Fig. 5

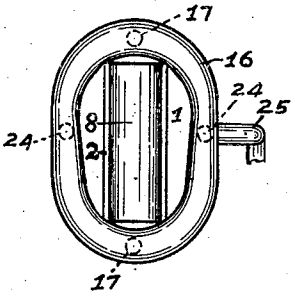
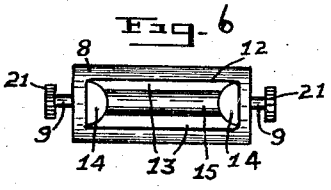


Fig. 6



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UNITED STATES PATENT OFFICE

CHARLES B. SCHUMACHER, OF PITTSBURGH, PENNSYLVANIA

DRY CLOSET

Application filed January 10, 1930. Serial No. 419,834.

My invention relates to dry closets particularly adapted to be used on aeroplanes, motor busses, or any other vehicles employing internal combustion engines for propelling or operating the same.

Important objects of the invention are to provide a dry closet, of the character described, which utilizes the exhaust products of internal combustion engines for completely consuming and dissipating the excrement discharged therein, which is automatic in its operation, which embodies novel means for drawing noxious vapors and odors and gases therefrom, which may be readily installed in vehicles already constructed as well as form a component part of a new vehicle structure, and which is positive in its action and comprises relatively few parts.

Further objects of the invention are to provide a device of the class stated, which is simple in its construction and arrangement, durable and efficient in its use, sanitary, and comparatively inexpensive to manufacture and install.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention hereinafter disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings wherein like numerals of reference designate corresponding parts throughout the several views:—

Figure 1 is a side view, partly in cross section, of a dry closet constructed in accordance with the invention.

Figure 2 is a rear end view thereof.

Figure 3 is a sectional view on line 3—3, Figure 1.

Figure 4 is a similar view with the valve member in the receiving position.

Figure 5 is a top plan view of the device.

Figure 6 is a plan view of the valve member and of associated parts.

Referring in detail to the drawings 1 denotes a closet bowl, which is mounted on the top of a valve casing 2. The closet bowl 1 communicates with and is secured to the top of a valve casing 2, as indicated at 3, and the upper portion of the latter virtually constitutes a continuation of the bowl 1. The closet bowl 1 is oblong and tapers to gradually diminish its size from its upper to its lower end.

The valve casing 2 is formed to provide a horizontally extending valve chamber 4 and a horizontally extending passage chamber 5. The valve chamber 4 is disposed longitudinally above and parallel to the passage chamber 5 and communicates with the latter. The passage chamber 5 is provided with a dipped bottom 6, for the purpose to be described, and communicates, at respective ends, with the exhaust pipe 7 of an internal combustion engine. In other words, the valve casing 2 is connected in an internal combustion engine exhaust pipe 7, and the latter communicates with respective ends of the passage chamber 5 of the valve casing 2.

A horizontally disposed, cylindrical valve member 8 is revolubly mounted in the valve chamber 4. The ends of the valve member 8 are provided with projecting trunnions 9, which are suitably journaled for rotation in bearings 10 formed on the end plates 11. The latter are detachably secured to the valve casing 2 and cover the respective ends of the valve chamber 4.

The cylindrical valve member 8 is provided with a large, longitudinally extending pocket 12. The latter is formed with sloped side and end walls, respectively indicated at 13 and 14, which converge toward the rounded bottom 15. The pocket 12 is open at the periphery of the valve member 8, and the size of this opening is exactly commensurate to the opening formed by the converging lower ends of the tapering walls of the closet bowl 1 as combined with the upper portion of the valve casing 2. It will here be noted, that the valve member 8 virtually constitutes the bottom of the closet bowl 1, and that when the valve member 8 is shifted to the receiving position the pocket 12 will be in exact registration with the lower end of the closet bowl 1, as clearly shown in Figure 4.

A seat 16 is mounted for vertical movement on the top of the closet bowl 1. The seat 16 is carried by a pair of supporting rods 17, which are fixed to and depend perpendicularly from respective ends thereof. The supporting rods 17 are slidably mounted in an annular flange 18 and in respective slide bearings 18. The flange 18 is disposed outwardly from and formed integral with the upper end of the closet bowl 1, and the slide bearings 19 are formed integral with the closet bowl 1 adjacent to the lower end of the latter and at the front and rear thereof, respectively.

The lower end of each of the supporting rods 17 carries a fixed oblong gear link 20, which surrounds and engage the gears 21. The latter are fixed to the outer projecting ends of respective trunnions 9.

A collar 22 is fixed on each of the supporting rods 17 at a point below its projection through the flange 18. A spiral spring 23 is mounted on each of the supporting rods 17, one end of which abuts against the associated collar 22, and the other end thereof against the slide bearing 19.

The normal action of the springs 23, forces the seat 16 to the elevated position, as shown in Figures 1 and 2, and further maintains the latter in such elevated position. The depression of the seat 16 is effected by the weight of the occupant, while its elevation is effected by the action of the springs 23.

The ratio of the gearing of the gears 21 relatively to respective gear links 20 is such that the travel of the latter, during the elevation or depression of the seat 16, will cause the valve member 8 to rotate exactly one-half turn. The movement of the seat 16 is limited and determined by the distance between the seat 16 and the collars 22 on the supporting rods 17.

When the seat 16 is in the elevated position, as illustrated in Figures 1 and 2, the valves member 8 will be in the depositing position, with the pocket 12 thereof in exact registration with the passage chamber 5, as clearly shown in Figures 1 and 3. When the seat 16 is in the depressed position, the valve member 8 will be in the receiving position with the pocket 12 thereof in exact registration with the lower end of the closet bowl 1, as clearly shown in Figure 4.

The seat 16 is provided with a pair of guide pins 24 which depend from respective sides thereof and extend slidably through the bowl flange 18. The function of the guide pins 24 is to maintain the seat 16 on its proper horizontal plane during the depressing movement of the latter.

In practice, the operation of my improved dry closet is as follows:—The weight of the occupant upon the seat 16 will depress the latter together with the gear links 20 carried by the supporting rods 17. Such depression of the gear links 20, through their engagement with the gears 21 will rotate the valve member 8 exactly a one-half turn, thereby bringing the pocket 12 into exact registration with the lower end of the bowl 1, to receive the excrement discharged by the occupant. When the latter leaves the seat 16, the action of the springs 23 will elevate the seat 16 and likewise the gear links 20, whereby the valve member 8 will be revolved a one-half turn to bring the pocket 12 into registration with the passage chamber 5, and deposit the excrement upon the dipped bottom 6 of the latter.

As the products of combustion are being exhausted through the passage chamber 5, the same will consume and dissipate all excrement deposited in the latter and in the valve member pocket 12. It will be noted that when the closet is not occupied the products of combustion act upon the pocket 12 and through the passage chamber 5 to maintain the latter and said pocket 12 in a clean, sanitary condition. The purpose of the dipped passage chamber bottom 6 is to retard the too sudden expulsion of the excrement therefrom and thereby subject the latter to consuming action of the products of combustion.

To remove any noxious odors, vapors, or gases from the bowl 1, a ventilating pipe 25 is communicably joined therewith. The ventilating pipe 25 is provided with an angular connection 26 to an air pipe 27, which is open at both ends. The speed of travel of the vehicle equipped with my improved device, will cause a continuous rush of air through the air pipe 27, by which the vitiated air will be forcibly drawn, by suction, from the bowl 1 and through the ventilating pipe 25.

It will here be noted that the products of combustion can never enter the closet bowl 1, as the width of the pocket 12, at the periphery of the valve member 8, is less than that portion of the latter engaged by either side wall of the valve chamber 8. By such arrangement, the pocket 12 cannot open to the passage chamber 5 until the said pocket 12 has been completely closed to the closet bowl 1 and vice versa.

The present invention provides a most efficient device of its kind, which is particularly adapted for aeroplanes, for completely consuming and dissipating all excrement discharged therein by the utilization of the exhaust product from the internal combustion engine employed for propelling the vehicle.

What I claim is:

In combination, a dry closet of the character described comprising a valve casing including a passage chamber and adapted to being connected in the exhaust conduit for the products of combustion of an internal combustion engine, said passage chamber communicating with said exhaust conduit, a

closet bowl mounted on said valve casing, said closet bowl being provided with an annular outwardly disposed flange formed integral with the upper end thereof, a vertically shiftable seat member disposed above said closet bowl, a cylindrical valve member formed with a pocket revolubly mounted in said valve casing and constituting a bottom for said closet bowl, said valve member being provided with a pair of trunnions projecting from said valve casing, a gear fixed to each of said trunnions, a pair of slide bearings carried by said closet bowl, a pair of supporting rods carrying said seat member and slidably extending through said flange and said slide bearings oblong gear links carried at the lower end of said pair of supporting rods and engaging said gears for actuating said valve member, a collar fixed to each of said pair of supporting rods below said flange, resilient elements mounted on said pair of supporting rods intermediate of and engaging said collars and said slide bearings for normally shifting said seat member to the elevated position and for rotating said valve member in a direction to open said pocket to said passage chamber, a pair of guide pins being fixed to and depending from said seat member and slidably extending through said flange for maintaining the horizontal plane of said seat member during the movements of the latter, the depression of said seat member actuating said valve member to open said pocket to said closet bowl.

In testimony whereof I affix my signature.

CHARLES B. SCHUMACHER.