

P. ALLAN.
MARINE CLOSET.

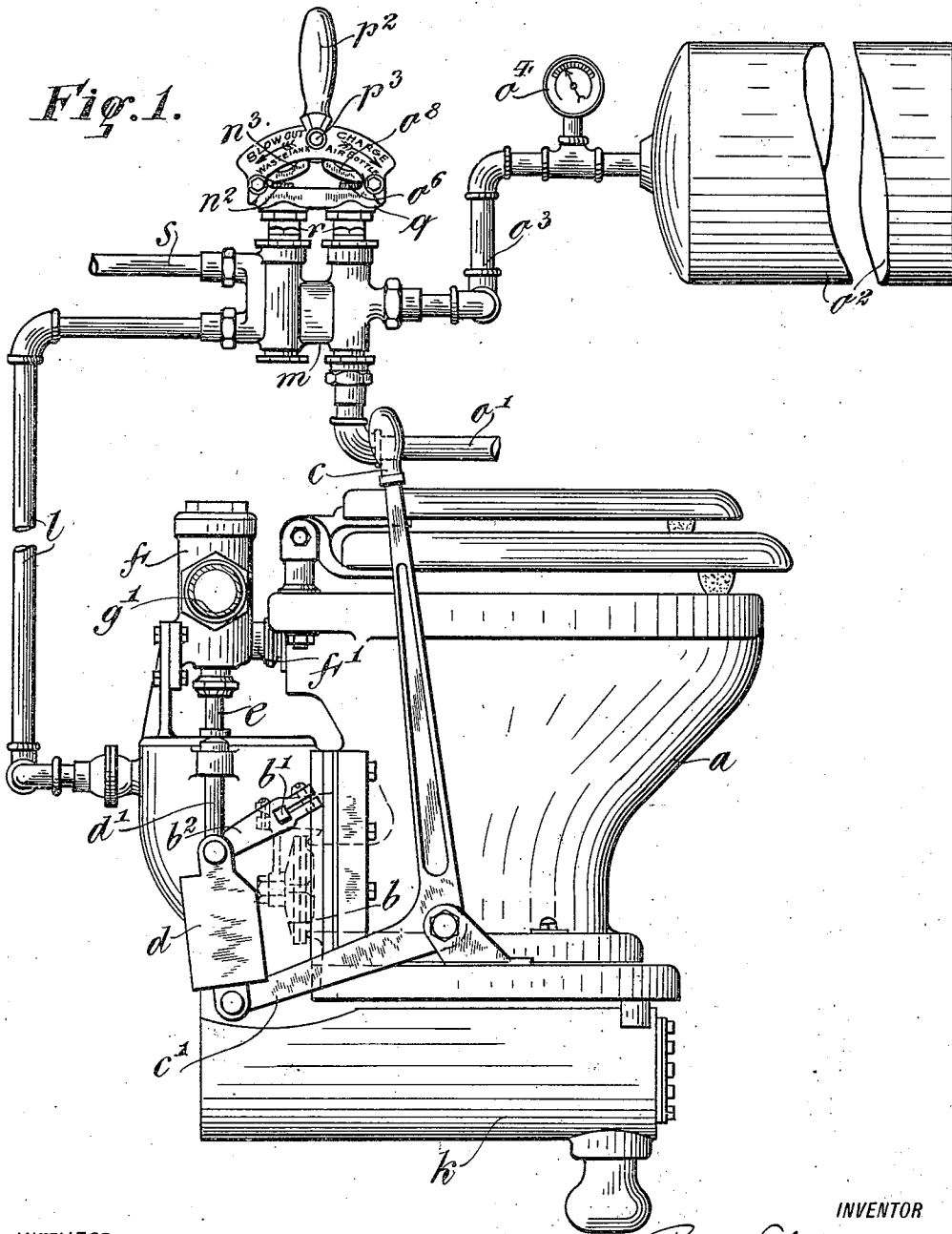
APPLICATION FILED AUG. 5, 1919.

1,421,362.

Patented July 4, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESS

Swickman

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2 SHEETS—SHEET 2.

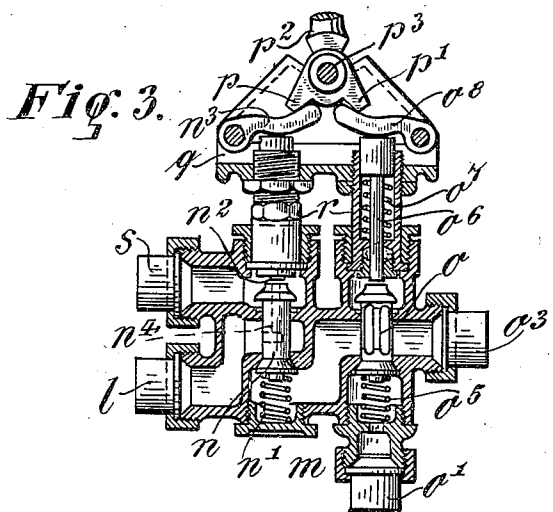
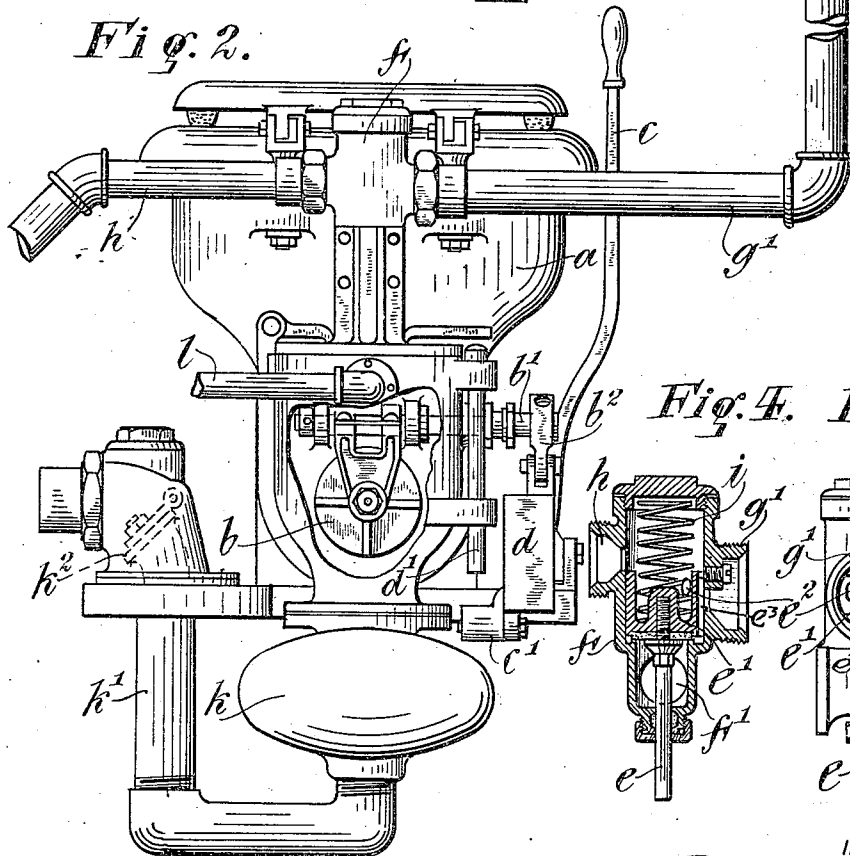
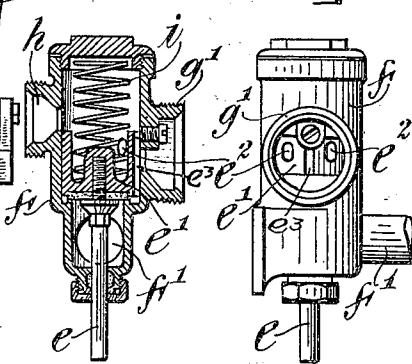


Fig. 4. Fig. 5.



WITNESS
Seaford 10/17.

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UNITED STATES PATENT OFFICE.

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MARINE CLOSET.

1,421,362.

Specification of Letters Patent.

Patented July 4, 1922.

Application filed August 5, 1919. Serial No. 315,397.

To all whom it may concern:

Be it known that I, PERCY ALLAN, a citizen of the United States, residing in the city of Montclair, in the State of New Jersey, have
5 invented certain new and useful Improvements in Marine Closets, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

10 This invention relates to marine closets adapted generally for use under any conditions where the refuse is to be discharged into the sea below the water level, but particularly adapted for use in submarines
15 where this discharge must be effected at relatively great and varying pressures. The invention has for its principal object to provide a closet for use as described which shall have associated therewith devices for expelling the refuse into the sea by means of
20 an air pressure. The further object of the invention is to provide mechanism of this character which shall be comparatively simple in construction, easy of proper operation and have units which themselves are
25 simple and compact and readily accessible for adjustment or repair.

One practical embodiment of the invention will be described in connection with the
30 accompanying drawings in which—

Figure 1 is a view in side elevation of the ordinary closet showing the relation of the air expulsion thereto.

35 Figure 2 is a view in rear elevation of the closet shown in Figure 1, illustrating particularly the water tank and the discharge pipe from the waste tank.

Figure 3 is a detail view on a somewhat larger scale in vertical section through the
40 casing for the air control valves.

Figure 4 is a view in vertical section showing in detail the control valve for the water tank.

45 Figure 5 is a view in side elevation of the valve shown in Figure 4.

The bowl *a* is provided with an ordinary clapper valve *b* operable as through a lever *c* to permit the flushing of the bowl in the usual manner. The stem *b'* of the clapper *b*
50 has secured thereto an arm *b²* which is pivotally connected to a weight *d*, also pivotally connected to an arm *c'* of the operating lever *c*. The valve arm *b²* may also be connected to a vertically slidable rod *d'*, the
55 upper end of which is in operative relation

to a valve stem *e* carried with a slidable water valve *e'* disposed within a valve casing *f*. This valve casing communicates with the bowl *a* to permit flushing of the latter through a port *f'* and also communicates
60 with a water tank *g* through a pipe connection *g'*. The opposite side of the valve casing *f* has an outward connection *h* through which water flows into the water tank *g* from the sea. The valve *e'* is provided with
65 bleed ports *e²* and has on its periphery a groove *e³* for the purpose of somewhat equalizing the pressure on the two sides of the valve when operated, and to keep the piston from revolving. The valve *e'* is engaged by
70 a spiral spring *i* to assist in its closing movement.

So far as the description has proceeded it will be evident that when the hand lever *c* is operated to open the clapper valve *b*, the
75 water valve *e'* will be moved up in the casing *f* to shut off direct communication between the outward connection *h* and the water tank *g* and permit the flow of water from the tank *g* through the port *f'* into the
80 bowl for flushing. The contents of the bowl will thereupon be discharged into the waste tank *k*. The clapper valve *b* with the hand lever *c* will be returned automatically to normal position under the action of the
85 weight *d* and the spring *i* which acts on the valve *e'*. The certainty of closing will of course be accomplished by manual return of the hand lever *c* to its extreme position. If, at any time, water collects in the bowl *a* to
90 an excessive height a portion thereof can be readily discharged past the clapper valve *b* by rocking the lever *c* just a trifle since there is a little lost motion between the clapper *b* and the water valve *e'* sufficient to permit
95 preliminary opening of the clapper valve before the water valve is unseated.

The waste tank *k* may be of such size as to hold a relatively great quantity of refuse so that this refuse need be discharged
100 therefrom only periodically. The improved devices for effecting such a discharge from the waste tank *k* reside in certain air expulsion means now to be described. In the illustrated embodiment the waste tank *k*
105 is connected through a pipe *l* to a casing *m* in which are operatively disposed two valves *n*, *o*, one of which, *o*, controls the communication between an air supply pipe *o'* and an air tank *o²*, the connection be- 110

tween the casing m and the air tank o^2 being illustrated as a pipe o^3 in which is located a pressure gage o^4 . The other valve n within the casing m controls communication between the tank o^2 and the pipe l leading to the waste tank k . The valves n and o are normally seated by springs n' , o^5 respectively and are adapted to be engaged and unseated against the action of these springs by slidable plungers n^2 , o^6 respectively supported in the casing m in line with the respective valves. The plungers n^2 , o^6 are normally held out of engagement with the respective valves n , o , by means of springs, one of which, o^7 , is shown in Figure 3, in its relation to the plunger o^6 . The free ends of the plungers n^2 , o^6 are engaged by pivoted cam levers n^3 , o^8 respectively, operatively engaged by fingers p , p' , formed on the lower end of an operating lever p^2 pivoted as at p^3 . The operating lever p^2 , with the cam levers n^3 , o^8 may be pivoted on a cam frame q supported on the tubular housings r for the slidable plungers n^2 , o^6 and the co-operating springs.

In operation, when it is desired to expel the refuse from the waste tank k the operating lever p^2 is rocked to the right, as viewed in Figure 1, so as to depress the plunger o^6 through the co-operating finger p' , the cam lever o^8 thereby unseating the valve o and admitting air under pressure from any available source to enter the tank o^2 from the supply pipe o' . When the pressure within the tank o^2 has risen to the desired point as indicated by the gage o^4 , the lever p^2 will be returned to its vertical position thereby permitting the valve o to cut off further supply of air. It will be understood that when the closet is used in a submarine the air pressure necessary for the complete expulsion of the contents of the waste tank will vary according to the depth and for this reason it may be desirable to have prepared for the guidance of the user a table showing the necessary pressure on the gage o^4 for a given depth. By rocking the lever p^2 to the left, as viewed in Figure 1, the valve n will be unseated and air under the pressure of the tank o^2 will pass into the waste tank k and blow the contents thereof through the rising main k' into the sea. In the rising main k' may be located a check valve k^2 to take care of back pressures in a manner which will be evident.

In order to prevent any air from remaining in the closed system in which are included the waste tank k and the pipe l , at an unbalanced pressure which might be lead or vented through the clapper valve b into the bowl a , an auxiliary vent therefor is provided. In the illustrated embodiment this vent is shown as a pipe s connected with the valve casing m and communicating with the pipe l through a channel n^4 formed in

the valve n . This channel n^4 , when the valve n is seated, maintains communication between the pipe l and the vent s . When the plunger n^2 is moved into engagement with the end of the valve n for the purpose of unseating it, this plunger closes the channel n^4 so that air may not escape there-through so long as the valve remains unseated. The vent s may lead to the tank o^2 or may discharge at any place desired.

It will be understood that many of the structural details described, while desirable in the interests of simplicity and accessible for adjusting or removal, may have substituted therefor mechanical equivalents which perform the same or a corresponding function and permit the practise of the invention in any of its essential respects with, perhaps, equal success. The appended claims set out the scope of the invention and cover all mechanical equivalents which might be thus substituted.

I claim as my invention:

1. In a marine closet, a bowl, a waste tank communicating therewith, a water tank to receive water from the sea, a connection from the water tank to the bowl, a three-way piston valve in said connection and slidable to control the flow of water from the sea to the water tank and from the water tank to the bowl for flushing; a valve to control the discharge from the bowl to the waste tank, an operating lever therefor and connections between the two valves for simultaneous operation thereof.
2. In a marine closet, a bowl, a waste tank communicating therewith, a water tank to receive water from the sea, a connection from the water tank to the bowl, a valve casing communicating with the sea, with the water tank and with the bowl, a three-way piston valve in said casing and slidable to control said three connections, a valve to control the discharge from the bowl to the waste tank, an operating lever therefor, a connection between the two valves having provision for lost motion whereby the second named valve is operated prior to the first named valve and a weight operatively disposed in said connection.
3. In a marine closet, a bowl, a water tank, a valve casing communicating with the bowl, the water tank and the sea, a piston valve slidable therein and having bleed ports to equalize the pressure upon operation and a spring to seat said valve.
4. In a marine closet, a bowl, a waste tank to receive the contents of the bowl, an air tank connected with the waste tank to blow the contents into the sea, a valve between the air tank and the source of air supply to admit air to the air tank to a predetermined pressure, a second valve operative independently of the first named valve to control the supply of air from the air tank to the waste

tank, means cooperating with each of said valves to hold one closed when the other is opened and common means for operating said valves separately.

5 5. In a marine closet, a waste tank, an air tank and a connection from the air tank to the waste tank, a valve casing disposed in said connection, a connection from an air source to the valve casing, valves mounted in
10 the casing to control the supply of air from the source to the air tank and from the air tank to the waste tank, a single operating lever movable to control said valves separately and common means for operating both
15 of said valves.

6. In a marine closet, a bowl, a waste tank communicating therewith, means to flush the contents of the bowl into the tank, an air tank in communication with the waste tank,
20 a valve to control the supply of air from the air tank to the waste tank, and an air vent from the waste tank to relieve the pressure therein automatically when the control valve is seated.

7. In a marine closet, a waste tank, an air 25 tank, a pipe connecting therebetween, a valve casing in said connection, a connection from the casing to a source of air supply, valves to control the supply of air from the source to the air tank and from the air tank to the 30 waste tank, plungers operatively disposed with relation to the respective valves, cams engaging the ends of said plungers and a single operating lever engaging the cams to permit control of the valves separately. 35

8. In a marine closet, a bowl, a waste tank communicating therewith, means to flush the contents of the bowl into the tank, an air tank communicating with the waste tank, a valve to control the supply of air to the waste 40 tank and provided with a channel to vent the air from the waste tank when the valve is seated and operating means for said valve adapted to close the channel when the valve is unseated. 45

This specification signed this 18th day of July, A. D. 1919.

PERCY ALLAN.