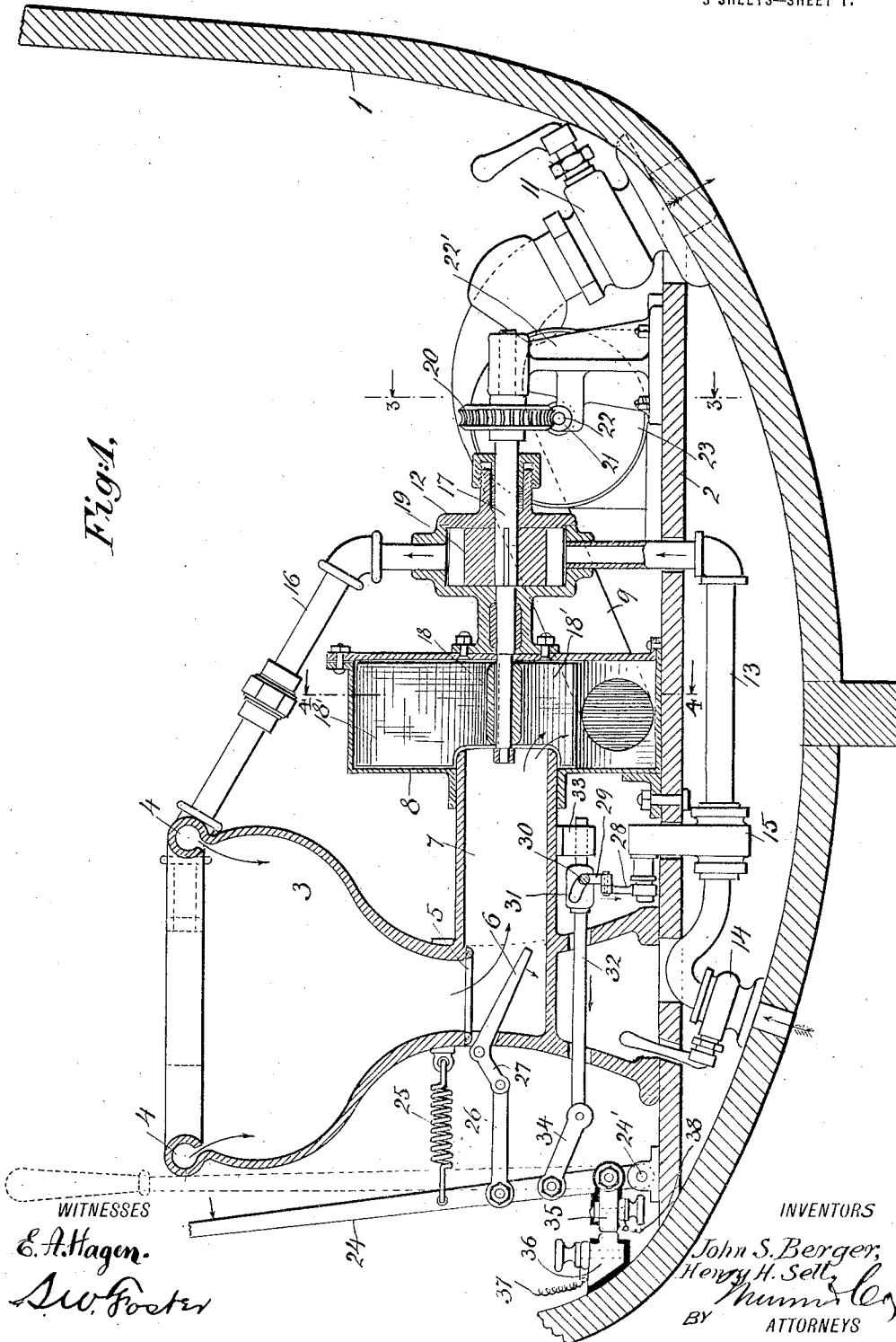


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3 SHEETS—SHEET 1.



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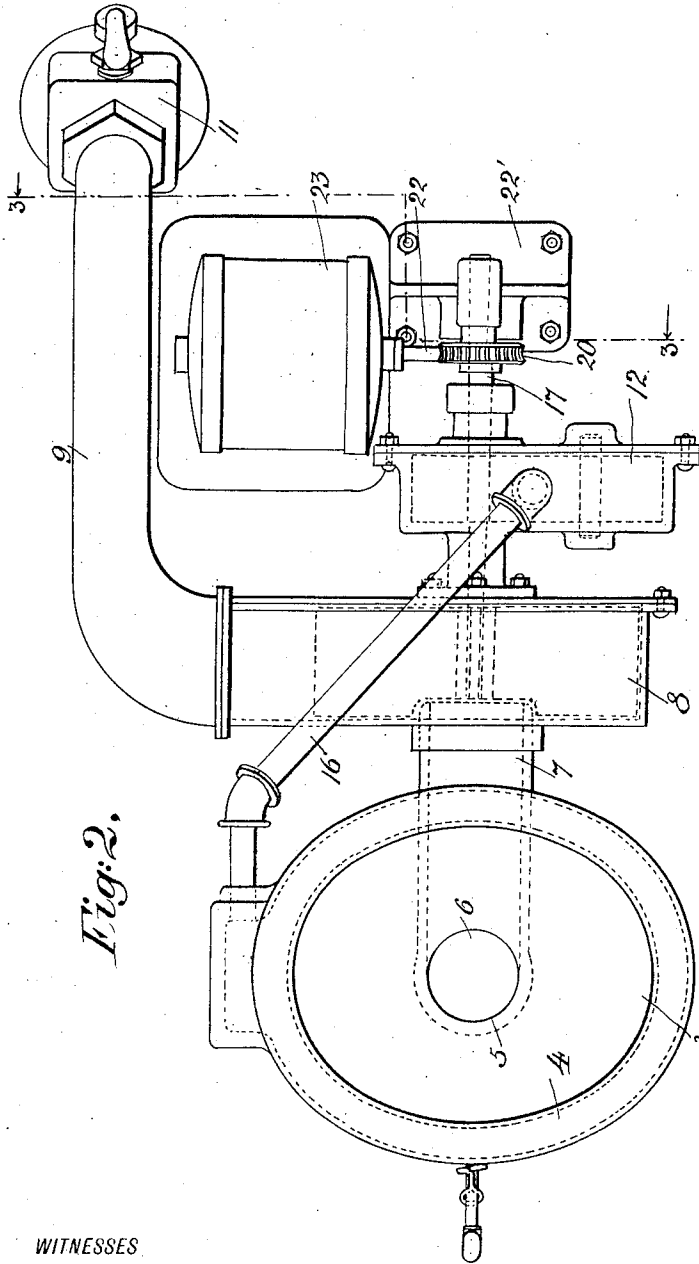
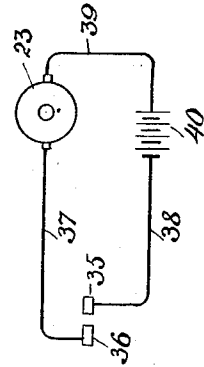


Fig. 2.

Fig. 5.



WITNESSES

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Fig. 3,

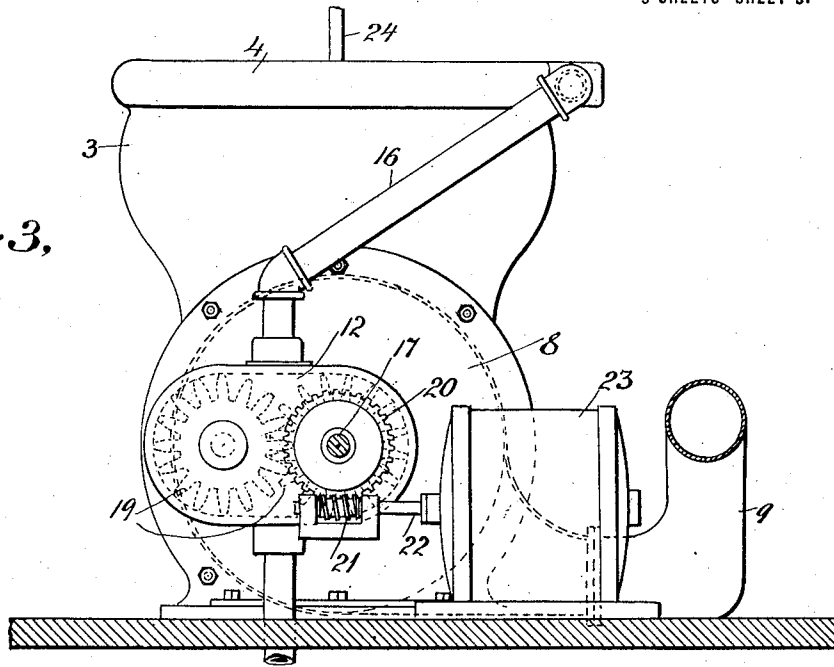
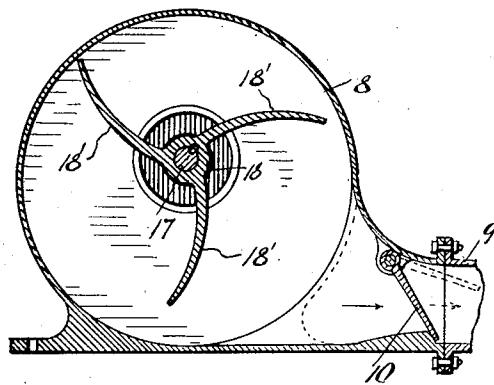


Fig. 4,



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UNITED STATES PATENT OFFICE.

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MARINE WATER-CLOSET.

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Specification of Letters Patent.

Patented Feb. 3, 1920.

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To all whom it may concern:

Be it known that we, HENRY H. SELL and JOHN S. BERGER, citizens of the United States, and residents of the city of New York, borough of the Bronx, in the county of Bronx and State of New York, have invented a new and Improved Marine Water-Closet, of which the following is a full, clear, and exact description.

10 This invention relates to improvements in marine water closets, an object of the invention being to provide an electrically operated centrifugal pump communicating with the outlet of the bowl operated by an electric motor which also operates a second pump forcing water into the bowl, the electric circuit of the motor controlled by the action of a lever which operates a valve normally closing the outlet of the bowl so that
20 when the valve is moved to an open position, the flushing operation is begun.

A further object is to provide an improved construction and arrangement of a centrifugal pump in the outlet or discharge
25 from the bowl which exerts a suction as well as an ejecting action to thoroughly discharge the contents of the bowl.

A further object is to provide an improved arrangement of pumps and valves, the latter manually operated by means of a lever, and the lever operating to close an electric circuit including a motor and a source of electricity supply, the motor driving the pumps and controlling the flow of
35 water in the flushing of the bowl.

With these and other objects in view the invention consists in certain novel features of construction, and combinations and arrangements of parts, as will be more fully
40 hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a view in longitudinal section illustrating our improved marine water
45 closet;

Fig. 2 is a top plan view;

Fig. 3 is an end view of the water closet, the view being taken on the section line 3—3 of Fig. 2;

50 Fig. 4 is a view, in section, of the centrifugal pump 8, the view being in section on line 4—4 of Fig. 1; and

Fig. 5 illustrates an electric diagram showing an electric circuit controlling the
55 motor 23.

1 represents a boat or vessel of any sort

having a floor 2 therein on which the bowl 3 is supported. The bowl is provided at its upper end with an annular water flushing chamber 4 and at its lower portion with
60 an outlet 5 normally closed by a pivoted bowl closure 6. The bowl 3 discharges into a relatively large horizontal pipe 7 communicating at its outlet end with the center of a centrifugal pump 8, said pump dis-
65 charging at its lower portion into an outlet pipe 9, a check valve 10 being located at the outlet of the pump 8 to permit a flow in one direction only. The outlet pipe 9 is provided with a sea cock 11 which may be
70 closed when desired.

12 represents a gear pump having an inlet pipe 13 with a sea cock 14 therein. Between the sea cock 14 and the pump 12 any suitable form of manually operated valve 15
75 may be provided. We have illustrated this valve as an ordinary gate valve, but any other suitable construction of valve may be utilized.

The gear pump 12 discharges the water
80 through a pipe 16 into the flushing chamber 4. A horizontal shaft 17 is keyed to a rotary element 19 of the gear pump 12 and also to a rotary element 18 of the centrifugal pump 8, and is supported at one end in a
85 bracket 22', the casings of the two pumps serving as a further support for the shaft. A worm wheel 20 is fixed to the shaft 17 and is driven by a worm 21 on a drive shaft 22, the latter driven by an electric motor 23.
90

24 represents a manually operated lever pivotally supported on the floor 2, as indicated at 24', and held in normal position by a coiled spring 25 connecting the lever 24
95 with the bowl 3. A link 26 connects the lever 24 with a crank arm 27 on the bowl closure 6 so that the lever controls the operation of the bowl closure.

The gate valve 15, above referred to, is operated by means of a crank arm 28, to
100 which a link 29 is pivotally connected, and is provided with a pin 30 engaging a cam 31 on a longitudinally movable rod 32. This rod 32 is supported in a bearing bracket 33 and is connected by a link 34 with the
105 lever 24.

35 and 36 represent electric contacts supported by and insulated from the lever 24 and boat 1 respectively.

In Fig. 5, we illustrate a simple form of
110 electric diagram which may be utilized in connection with our improved apparatus.

A wire 37 connects the contact 36 with one side of the motor 23. A wire 39 connects the other side of the motor with one pole of the battery 40 or other source of electricity supply, while the opposite pole of the battery is connected by the wire 38 with the contact 35.

We would call special attention to the rotary element 18 of the centrifugal pump 8. It will be noted that the rotary element 18 comprises a series of radial blades 18', which not only cause a suction and discharge of the water, but also act as ejectors which force the material out through the outlet pipe by reason of physical contact so that there is little possibility of the closet becoming clogged at any point from the bowl to the outlet.

The operation is as follows: When the lever 24 is moved from its dotted line position in Fig. 1 to its full line position, it will, through the medium of link 24, draw the closure 6 to the open position shown. At the same time the lever 24, through the medium of link 34, rod 32, cam 31, link 29 and crank arm 28, opens the gate valve 15.

This movement of the lever 24 also moves the contact 35 against the contact 36 closing the electric circuit and causing the operation of the motor 23. The motor drives both of the pumps 12 and 8 through the medium of shaft 21, worm 22, worm wheel 20 and shaft 17. Water is thus sucked in through the pipe 13 by the pump 12 and forced through the pipe 16 and chamber 4 into the bowl to thoroughly flush the same. At the same time, the centrifugal pump 8 sucks all the contents of the bowl through the pipe 7 and discharges the same through the pipe 9 and outside of the boat.

Various slight changes may be made in the general form and arrangement of parts described without departing from the invention, and hence we do not limit ourselves to the precise details set forth but consider ourselves at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

We claim:

1. A marine water closet, comprising a bowl, means for discharging water into the bowl, a closure for the outlet end of the bowl, a centrifugal pump into which the bowl discharges through its outlet, a motor operating the centrifugal pump, and manually operated means controlling the position of the closure and also the operation of the pump operating means.

2. A marine water closet, comprising a bowl, a closure normally closing the lower end of the bowl, a horizontal pipe into which the bowl discharges, a centrifugal pump communicating at its center with the outlet end of said pipe, a discharge pipe communicating with the lower portion of

the centrifugal pump, a motor operating the pump, and a manually movable member simultaneously controlling the action of the closure and the motor.

3. A marine water closet, comprising a bowl, a horizontal pipe into which the bowl discharges, a closure normally closing the bowl at its point of junction with the pipe, a pump casing communicating at its center with the outlet end of the pipe, a rotary element in said pump casing comprising a plurality of radial blades, an outlet pipe communicating with the lower portion of the pump casing, a check valve at the outlet end of the pump casing, a motor operating the rotary element, and a manually movable member simultaneously operating the closure and the motor.

4. A marine water closet, comprising a bowl, a closure for the bowl, a centrifugal pump communicating with the outlet of the bowl, a second pump adapted to force water into the bowl, an electric motor operating both of said pumps, manually operated means for moving the bowl closure, and an electric circuit including a source of electricity supply, a motor and contacts, the latter controlled by the manually movable member.

5. A marine water closet, comprising a bowl, a closure at the discharge end of the bowl, a centrifugal pump into which the bowl discharges, a second pump discharging water into the bowl, an electric motor operating both of the pumps, a hand lever, electric contacts moved into contact by the lever, said contacts included in an electric circuit with the motor and the source of electricity supply, and a link connecting the lever with the closure, whereby the movement of the lever releases the contents of the bowl and causes the operation of both of the pumps.

6. A marine water closet, comprising a bowl, a closure at the discharge end of the bowl, a centrifugal pump into which the bowl discharges, a second pump discharging water into the bowl, an electric motor operating both of the pumps, a hand lever, electric contacts moved into contact by the lever, said contacts included in an electric circuit with the motor and the source of electricity supply, a link connecting the lever with the closure, whereby the movement of the lever releases the contents of the bowl and causes the operation of both of the pumps, and a coiled spring connecting the lever with the bowl and normally holding the closure in closed position and the electric circuit open.

7. A marine water closet, comprising a bowl, a closure for the bowl, a centrifugal pump into which the bowl discharges, a discharge pipe communicating with the centrifugal pump, a check valve in said last-

mentioned pipe, a second pump, a pipe connecting said second pump with the bowl, an inlet pipe communicating with the said second pump, a valve in said inlet pipe, a motor operating both of the pumps, electric contacts included in an electric circuit with said motor and a source of electricity supply, and a hand lever adapted, when moved in one direction, to open the closure, close the electric circuit and open the valve in the inlet pipe.

8. A marine water closet, comprising a bowl, a closure for the bowl, two rotary pumps, a single shaft operating both of the pumps, a pipe connecting the outlet of the bowl with one of the pumps, means permitting the other of said pumps to discharge water into the bowl, a motor, transmission means between the motor and the shaft, a manually movable member controlling the closure, a pair of contacts, an electric circuit including the contacts, said motor and a source of electricity supply, and one of said contacts carried by and movable with the manually operated lever.

9. The combination with a boat, a water closet bowl, two pumps, one communicating with the outlet of the bowl and the other adapted to force water into the bowl, an inlet pipe communicating with the last-mentioned pump, a sea cock in said pipe, a valve in said pipe, an outlet pipe communicating

with the outlet end of the first-mentioned pump, a sea cock in said pipe, a motor operating both of the pumps, a pair of contacts included in an electric circuit with a motor and a source of electricity supply, and a manually operated member supporting one of the electric contacts and adapted, when moved to one position, to close the electric circuit and open the valve in the inlet pipe.

10. The combination with a boat, a water closet bowl, two pumps, one communicating with the outlet of the bowl and the other adapted to force water into the bowl, an inlet pipe communicating with the last-mentioned pump, a sea cock in said pipe, a valve in said pipe, an outlet pipe communicating with the outlet end of the first-mentioned pump, a sea cock in said pipe, a motor operating both of the pumps, a pair of contacts included in an electric circuit with a motor and a source of electricity supply, a manually operated member supporting one of the electric contacts and adapted, when moved to one position, to close the electric circuit and open the valve in the inlet pipe, and a spring normally holding the lever in position to open the electric circuit and close the valve in the inlet pipe.

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