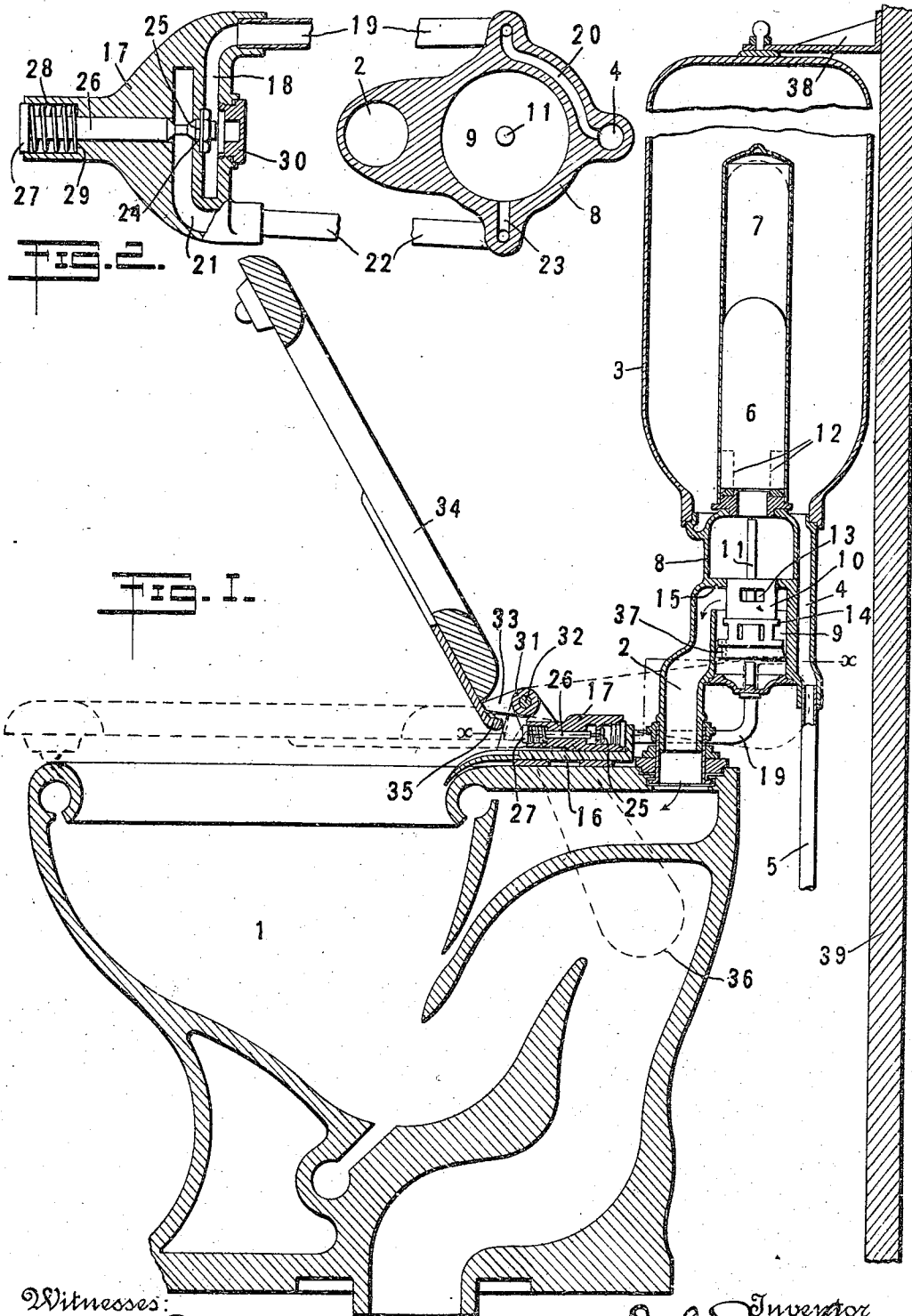


J. A. STAPLES.
FLUSHING APPARATUS.
APPLICATION FILED JULY 1, 1908.

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UNITED STATES PATENT OFFICE.

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FLUSHING APPARATUS.

949,853.

Specification of Letters Patent. Patented Feb. 22, 1910.

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To all whom it may concern:

Be it known that I, JOHN A. STAPLES, a citizen of the United States, residing at Newburgh, in the county of Orange and State of New York, have invented certain new and useful Improvements in Flushing Apparatus, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to flushing apparatus.

One of the objects thereof is to provide a simple and practical flushing apparatus which will be automatically actuated in a reliable and efficient manner upon the closet being used.

Another object is to provide an apparatus of this nature which, while automatic in its normal action, may be readily actuated manually without the necessity of special manual operating means.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings: Figure 1 is a sectional elevation of one of various possible embodiments of this invention. Fig. 2 is a transverse section, partly in top plan, on the line $x-x$, Fig. 1.

Similar reference characters refer to similar parts throughout both views of the drawings.

This invention proposes, in so far as certain broad features are concerned, an automatic flushing apparatus, or closet, adapted to be actuated by the weight of the person using the same, or by the movement of the seat to and from a position in which it is ready for use. The invention also, however, combines therewith the advantages of producing a construction which is also adapted for reliable and efficient manual operation by the movement of the seat, without the necessity for any auxiliary manual appliances, thus providing a combination automatic closet and urinal adapted to be actuated by the movement of the seat, which is efficient, reliable and easily operated in either relation.

Reference may first be had to the embodiment of the invention illustrated in the accompanying drawings, whereupon the advantages and broad principles of the invention may be more readily understood.

A closet bowl, which may be of any desired type is shown at 1 as connected by discharge conduit 2 with a storage or supply tank 3. This tank is fed with water through a conduit 4 connected with a pipe 5, which may be supplied from any suitable source, as, preferably, a pressure main or central distributing pressure tank. Communication from the tank 3 to the bowl through the discharge conduit is primarily controlled by valve 6, resting upon a valve seat and operating within an inner chamber 7. This valve seat is formed at the upper end of a fitting 8 which embodies the supply conduit 4, the discharge conduit 2 and a cylinder 9, within which operates a piston 10. This piston or plunger carries a stem 11 adapted, upon the piston being raised, to contact with the valve 6, which is, preferably, a float valve, and force said valve from its seat. The path of discharge from the tank to the bowl is through ports 12, indicated by dotted lines, in the lower part of the inner chamber 7, through the valve seat and down through the discharge conduit located at one side of the cylinder chamber, the water in its course passing through the ports 13 in the upper end of the piston. This piston is formed with an annular flange 14 adapted when the piston is raised to abut the inwardly extending flange or web 15, thereby closing the discharge conduit and preventing the passage of water therethrough. It will thus be seen that, upon raising the piston 10, the valve 6 will be raised from its seat, but the discharge prevented until such time as the piston has been returned to its normal position shown in Fig. 1.

The construction thus far described is fully set forth and claimed in my co-pending application for valve mechanism, filed of even date herewith, Serial No. 441,353 and need not be further described herein, since its specific construction forms no part of the present invention, save in combination with actuating means.

Rigidly mounted upon the bowl 1 is a member or plate 16 having one end flanged upward to constitute an abutment for assuring the stability of a fitting 17 rigidly secured thereto. This fitting, best shown in

detail in the sectional view of Fig. 2, is, as illustrated, provided with a chamber 18 connected by a pipe 19 with the supply conduit 4 through a by-pass or side conduit 20 in the discharge conduit fitting 8. A second chamber 21 in the fitting 17 communicates by pipe 22 through the wall of the discharge conduit fitting, as shown at 23, with the cylinder 9 beneath the piston 10. A port 24 between the two chambers 18 and 21 is closed by a valve 25, having a valve stem 26 which passes through the fitting and carries at its end a head 27, a spiral spring 28 being interposed between this head and a shoulder formed by the receiving end of the fitting, as at 29. This spring tends to hold the valve 25 normally closed. Fitting 17 has an opening in line with the valve 25, which opening is closed by a removable cap 30 for purposes of convenience in assembly, inspection and replacing of parts.

Mounted upon the bowl 1 is a hinge portion 31 provided with a pin 32 and having coacting therewith the hinge portion or leaf 33 secured to the lower side of the seat 34. This leaf is provided with an abutment or projecting portion 35, adapted, upon the seat being brought down to the bowl, to unseat the valve 25 and open communication, through the passage so shown and described, from the supply conduit to the lower surface of the piston 10. Operatively related to the seat 34 and, preferably, formed integral with the hinge portion or leaf 33, is a counterweight 36 normally tending to swing the seat away from the bowl and hold it in the raised position indicated.

The operation of the above described embodiment of this invention is substantially as follows: When the closet is used the seat is, of course, depressed to the position shown by dotted lines in Fig. 1, and by contact of such seat or its projecting abutment portion with the head of the auxiliary valve stem 26 this valve is opened and pressure from the source applied to the piston 10 to raise said piston and force the main valve 6 from its seat and, at the same time, close the discharge conduit through the supplemental closing means provided by the flange 14 abutting the web 15. When the seat is released from the weight of the person thereon, it is swung back to its normal retracted position by the influence of the counterweight 36, and the valve 25, being released from the pressure of the seat, is again closed, both by the hydraulic pressure from the feed acting to force it to its seat and by the supplemental action of the spring 28. When the cylinder is thus cut off from communication with the source of pressure, the water already therein will escape through a vent port, as indicated by dotted lines at 37, and the piston return to its normal position, leaving a passage for the water from the tank

down through the discharge conduit to the bowl until such time as, by the action of the valve 6, communication between the tank and discharge conduit is again closed.

It will be seen that this invention provides, as illustrated by the embodiment thereof here shown, a construction wherein the water contained in the tank is released for flushing purposes by use of the closet, without the necessity of manual operation often likely to be forgotten. Such flushing, moreover, is positive and reliable in its action and independent of the time during which the seat is held depressed. The depression of the seat sets the apparatus in readiness for actuation, which actuation is effected immediately upon the retraction of the seat, which occurs automatically as soon as the weight of the person using the closet is removed. The invention is rendered more efficient and compact, moreover, in that the seat is mounted independently of the flushing mechanism and of the auxiliary controlling mechanism, its only connection therewith being a contact during a comparatively short arc of its movement. Since this operating movement of the seat takes place during such a short arc, it can be more readily controlled and regulated, and the likelihood of the actuating devices getting out of order is materially lessened. An advantage in the invention is also to be noted in that, while the movement of the seat which actuates the flushing apparatus is preferably, as here shown, a pivotal movement or movement in an arc of a circle, the duration of the contact between the actuating portion of the seat and the movable element associated with the auxiliary valve which sets the flushing apparatus into position for operation is so short that it is possible to use a right line movement of the auxiliary valve and operate it by said pivotal movement of the seat, without the necessity for any intervening means for transferring power from one to the other. Furthermore, the movement of the seat merely operates the auxiliary valve which is fastened rigidly in position upon the bowl, and the relative position of which with relation to the seat may be made very stable, the main tank and flushing apparatus being in no way within the mechanical field of action of the movable seat and associated devices. This conduces vitally to reliability and durability of the entire apparatus. It will thus be seen that the apparatus is automatically actuated upon the closet being used and although this action is brought about in the present instance by the movement of the seat it is to be understood that the broader features of the invention comprehend other actuating means. This invention also eliminates entirely any dependence upon springs, which are in general unreliable in action, since the seat is returned to its normal posi-

tion by means of a counter-weight, and the auxiliary valve is closed by the action of hydraulic pressure, the auxiliary spring 28 being shown merely as an additional safety device, tending to close the auxiliary valve, but not, however, necessary to the efficient operation of the device. It will also be seen that the main valve and the auxiliary valve are so disposed that the action of the flushing apparatus upon the lowering of the seat is practically instantaneous, so that the bowl may be used as a urinal and flushed by a momentary depression of the seat, this operation being effected very easily and without the exercise of any material amount of strength. The seat when used in this way stands well away and clear of the bowl, so that it cannot be fouled when used with ordinary care. All the parts, moreover, are simple, compact and durable, and so related as to be readily accessible for cleansing or repairing if necessary.

The tank 3 is shown as supported by bracket 38 from a wall 39, but it will, of course, be obvious that this tank can be concealed behind a wall or partition, if so desired, and supported in any desired way.

While the seat is shown as pivotally mounted and normally held retracted from the bowl and operating by a pivotal movement to and from the seat, it will be obvious that from the broader viewpoints of the invention such specific mounting and character of movement is not essential, and that the invention may be embodied in other ways.

As already explained, the principle of operation of the present device is of particular advantage in a flushing apparatus adapted to be used as a combination closet and urinal, since the seat may be normally held retracted away from the bowl, where it will not be fouled when used as a urinal, while at the same time, by simply momentarily depressing the seat to the bowl and releasing it, the flushing apparatus may be operated. This may be done quickly, conveniently and without necessity for the use of any considerable amount of power, so that at the same time it is possible of operation by all classes of persons, and is so readily and easily operated that its operation is not likely to be neglected or imperfectly or incompletely accomplished. On the other hand, it will be readily seen that where it is not desired to have the seat normally retracted from the bowl, the apparatus, through its readily controlled auxiliary valve, which responds quickly and readily to a comparatively limited movement may be controlled by a movement of the seat, or a part related thereto or in juxtaposition therewith, the power for which may be supplied by the weight of the person on the seat, without the necessity for an extended seat movement. It will accordingly be un-

derstood that where in the claims the seat is referred to as an element of the combination, this term is intended in its broad aspect, whether as an element moved to position for use as a seat, or a part of the seat, or a member related with the seat, and adapted to be operated either by movement of the seat while being brought to position for use, or by the weight of the person upon the seat, the seat as a whole having no movement.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention what I claim as new and desire to secure by Letters Patent, is:

1. In an apparatus of the class described, in combination, a bowl, a tank adapted normally to contain a flushing charge, a valve controlling communication between said tank and said bowl, means for operating said valve, an auxiliary valve for controlling the action of said operating means, a movable seat, and means adapted to be operated by the movement of said seat for actuating said auxiliary valve.

2. In an apparatus of the class described, in combination, a bowl, a tank, a normally closed main valve controlling communication between said tank and said bowl, an auxiliary valve controlling the operation of said main valve, a movable seat, and means whereby the seat in one position thereof is adapted to open said auxiliary valve.

3. In an apparatus of the class described, in combination, a bowl, a tank, a conduit therebetween, means normally closing said conduit, a movable element adapted to open said conduit upon being moved to a given position and returned therefrom, a seat element movably mounted with respect to said bowl, means whereby upon movement of said seat element said movable element will be moved to said given position, and upon further movement of said seat element returned therefrom.

4. In an apparatus of the class described, in combination, a bowl, a tank, a valve for controlling communication therebetween, means for exposing said valve to hydraulic pressure to open the same, a movable seat element, and means whereby, upon the move-

ment of said seat element to one position, said valve is exposed to said hydraulic actuating means, and, upon movement of said seat element to another position, the hydraulic pressure is released.

5 5. In an apparatus of the class described, in combination, a tank, a bowl, a valve for controlling the discharge from said tank, a conduit adapted to lead said discharge to said bowl, a movable member interposed in said conduit and adapted, in one position thereof, to open said valve and close said conduit, means for exposing said movable member to hydraulic pressure to actuate the same, an auxiliary valve controlling the application of said hydraulic pressure, a movable seat element, and means for operating said auxiliary valve by movement of said seat element.

20 6. In an apparatus of the class described, in combination, a bowl, a tank, a normally closed main valve controlling communication between said tank and said bowl, an auxiliary valve controlling the operation of said main valve, a seat normally held retracted from said bowl and adapted to be brought into juxtaposition therewith, and means operated by movement of said seat for controlling said auxiliary valve.

30 7. In an apparatus of the class described, in combination, a bowl, a tank adapted to contain a flushing charge, a valve controlling the discharge from said tank to said bowl, means for opening said valve, said means acting also to close the communication between said tank and said bowl, a movable seat element, and means whereby, upon the movement of said seat element, the valve will first be opened and the discharge closed, and, upon further movement of said seat element, the discharge again opened and flushing action permitted.

45 8. In an apparatus of the class described, in combination, a bowl, a tank adapted to contain a flushing charge, a conduit connecting said tank and said bowl, a valve controlling the discharge from said tank into said conduit, a single means for opening said valve and closing said conduit, a movable seat, and connections whereby, upon movement of said seat to said bowl, the valve is opened and the discharge conduit closed, and, thereafter, upon movement of said seat away from said bowl, the discharge conduit is opened and the contents of said tank discharged through said bowl.

55 9. In an apparatus of the class described, in combination, a bowl, a tank adapted to contain a flushing charge, a conduit connecting said tank and said bowl, a valve controlling the discharge from said tank into said conduit, a single means for opening said valve and closing said conduit, a movable seat normally held retracted from said bowl, and connections whereby, upon movement of

said seat to said bowl, the valve is opened and the discharge conduit closed, and, thereafter, upon movement of said seat away from said bowl, the discharge conduit is opened and the contents of said tank discharged through said bowl. 70

10. In an apparatus of the class described, in combination, a bowl, a tank, means for charging said tank so that it stands ready for use, a normally closed valve controlling the discharge from said tank to said bowl, means for operating said valve, an auxiliary valve for controlling said operating means, a movably mounted seat, and means whereby the position of said auxiliary valve is controlled in accordance with the position of said seat. 75

11. In an apparatus of the class described, in combination, a bowl, a tank, a discharge conduit from said tank to said bowl, means for opening and closing said discharge conduit, a source of hydraulic pressure, means whereby, upon exposing said conduit closing means to said hydraulic pressure and thereafter cutting off said hydraulic pressure, the discharge between said tank and said bowl will be opened, a seat adapted to be normally retracted from said bowl, and means whereby, upon movement of said seat to and from said bowl, the hydraulic pressure will be first applied and thereafter released to open said discharge. 80 85 90 95

12. In an apparatus of the class described, in combination, a bowl, a tank, a discharge conduit between said tank and said bowl, a valve closing said discharge conduit, a movable member mounted in one position thereof to open said valve and close said conduit, means for operating said movable member by hydraulic pressure, an auxiliary valve for controlling the application of said hydraulic pressure, a seat movably mounted with respect to said bowl, and means for operating said auxiliary valve by movement of said seat. 100 105 110

13. In an apparatus of the class described, in combination, a bowl, a tank adapted to contain a flushing charge, a discharge conduit from said tank to said bowl, a valve normally closing said discharge conduit, a second means for closing said discharge conduit, a seat movably mounted with respect to said bowl, means whereby, upon movement of said seat toward said bowl, said valve will be opened and said second means interposed to prevent discharge, and thereafter, upon movement of said seat away from said bowl, said second means will be withdrawn from the path of discharge and communication opened between said tank and said bowl. 115 120 125

14. In an apparatus of the class described, in combination, a bowl, a tank, a supply conduit for said tank from a source of water under pressure, a discharge conduit from 130

said tank to said bowl, a float valve normally closing the discharge from said tank, an auxiliary connection from said supply conduit to the discharge side of said valve, a seat

5 movably mounted with respect to said bowl, and means for controlling communication through said auxiliary connection in accordance with the position of said seat.

15. In an apparatus of the class described, in combination, a bowl, a tank adapted to contain a flushing charge, a discharge conduit from said tank to said bowl, a float valve adapted normally to close said discharge conduit, a source of hydraulic pressure, a connection from said source to the discharge side of said valve, an auxiliary valve in said connection, a seat movably mounted with respect to said bowl, and means for controlling the position of said auxiliary valve in accordance with the position of said seat.

16. In an apparatus of the class described, in combination, a bowl, a tank, a discharge conduit from said tank to said bowl, a valve normally closing said discharge conduit, a source of hydraulic pressure, a connection from said source to the discharge side of said valve whereby said valve may be opened by the application of said pressure, an auxiliary valve interposed in said connection, a seat movably mounted with respect to said bowl, a movable element mounted in the path of movement of a part upon said seat to be moved thereby, and means for controlling the position of said auxiliary valve in accordance with the position of said movable element.

17. In an apparatus of the class described, in combination, a bowl, a tank, a discharge conduit from said tank to said bowl, a valve normally closing said discharge conduit, a piston adapted in one position thereof to open said valve and at the same time hold said discharge conduit closed, means for applying hydraulic pressure to said piston to move it to its valve-opening and conduit-closing position, means for releasing said piston from said hydraulic pressure whereupon said discharge conduit will be opened, a seat movably mounted with respect to said bowl, and means whereby movement of said seat to and from said bowl will first apply said hydraulic pressure to said piston and thereafter release said pressure.

18. In an apparatus of the class described, in combination, a bowl, a tank, a discharge conduit from said tank to said bowl, a valve normally closing said discharge conduit, an hydraulic piston mounted for movement with relation to said discharge conduit and, at one position thereof, adapted to open said valve and close said conduit, a source of pressure supply, a connection from said source to said piston such that, upon the application of said pressure,

said piston will be moved to open the valve and close the conduit, a seat movably mounted with respect to said bowl, and means whereby, upon the movement of said seat toward said bowl, said hydraulic pressure will be applied to said piston, and, upon further movement of said seat away from said bowl, said hydraulic pressure will be released and the discharge conduit opened.

19. In an apparatus of the class described, in combination, a flushing means, actuating means for said flushing means comprising a pressure supply connection, a valve interposed in said connection, and adapted to be held normally closed by said pressure, a seat movably mounted with respect to said bowl, and means whereby said seat at one point in its movement will operate to open said valve.

20. In an apparatus of the class described, in combination, a flushing means, actuating means for said flushing means comprising a pressure supply connection, a valve interposed in said connection and adapted to be held normally closed by said pressure, a seat movably mounted with respect to said bowl, means whereby said seat at one point in its movement will operate to open said valve, and an auxiliary spring tending to force said valve toward a closed position.

21. In an apparatus of the class described, in combination, a bowl, a tank adapted normally to contain a flushing charge, a valve controlling communication between said tank and said bowl, means for operating said valve, an auxiliary valve for controlling the action of said operating means, and means controlled by the weight of the user adapted to actuate said auxiliary valve.

22. In an apparatus of the class described, in combination, a tank, a bowl, a valve controlling the discharge from said tank, a conduit adapted to lead said discharge to said bowl, a movable member interposed in said conduit and adapted in one position thereof to open said valve and close said conduit, means for exposing said movable member to hydraulic pressure to actuate the same, an auxiliary valve controlling the application of said hydraulic pressure, and means controlled by the weight of the user adapted to actuate said auxiliary valve.

23. In an apparatus of the class described, in combination, a bowl, a tank adapted to contain a flushing charge, a discharge conduit from said tank to said bowl, a valve normally closing said discharge conduit, a second means for controlling said discharge conduit, a member controlled by the weight of the user and movably mounted with respect to said bowl, means where-

by, upon movement of said member in one direction, said valve will be opened and said second means interposed to prevent discharge, and thereafter, upon movement of
 5 said member in another direction, said second means will be withdrawn from the path of discharge and communication opened between said tank and said bowl.

24. In an apparatus of the class described,
 10 in combination, a bowl, a tank, a supply conduit for said tank from a source of water under pressure, a discharge conduit from said tank to said bowl, a float valve normally closing the discharge from said tank, an
 15 auxiliary connection from said supply conduit to the discharge side of said valve, a member controlled by the weight of the user, and means controlled by said member and controlling communication through said
 20 auxiliary connection.

25. In an apparatus of the class described, in combination, a flushing means comprising a valve, actuating means for said valve comprising a pressure supply connection, an
 25 auxiliary valve interposed in said connection and adapted to be normally closed by said pressure, and means controlled by the weight of a user and controlling said auxiliary valve.

26. In an apparatus of the class described, in combination, a closed tank, means adapted to feed water thereto and maintain the same under pressure therein, a bowl, connections leading from said tank to said bowl,
 30 a float valve controlling communication from said tank to said bowl, means adapted to unseat said float valve and permit the same to rise from its seat, and means controlled by the weight of a user and controlling said last mentioned means.
 40

27. In an apparatus of the class described, in combination, a closed tank, means adapted to feed water thereto and maintain the water under pressure therein, a bowl, means
 45 leading from said tank to said bowl, a float valve controlling the discharge of said tank to said bowl, means adapted to raise said valve from its seat and permit the same to float upwardly in said tank, and means con-

trolled by the weight of a user and controlling the admission of a fluid to said valve raising means whereby the same is actuated to raise said valve. 50

28. In an apparatus of the class described, in combination, a closet bowl, a seat mounted upon said bowl and adapted to swing with respect thereto, a supporting member mounted upon said bowl, flushing means adapted to coact with said bowl, and a valve horizontally mounted upon said supporting
 55 member and controlling said flushing means and positioned to be actuated by a member secured to said seat. 60

29. In an apparatus of the class described, in combination, a closet bowl, a seat pivotally mounted upon said bowl and provided with a portion adapted to swing in a substantially horizontal direction as said seat is pressed toward said bowl, flushing means coacting with said bowl, a supporting member mounted upon said bowl and provided with an abutment, and a valve mounted upon said supporting member and resting at its rear end against said abutment and adapted to control said flushing means, the
 65 forward end of said valve being mounted to be engaged and operated by said portion upon said seat. 70 75

30. In an apparatus of the class described, in combination, a closet bowl, a seat pivotally mounted with relation to said bowl, flushing means coacting with said bowl and comprising a valve, a valve casing mounted adjacent said seat, an auxiliary valve within said casing adapted upon being opened
 80 and closed to cause the actuation of said first mentioned valve, a spring urging said auxiliary valve toward closed condition, and means mounted upon said seat adapted to control the operation of said auxiliary valve
 85 as said seat is pressed downwardly and raised. 90

In testimony whereof I affix my signature, in the presence of two witnesses.

JOHN A. STAPLES.

Witnesses:

JOHN H. JACKSON,
 FRED NEAL.