

J. D. RAMSEY.
VALVE FOR DRINKING FOUNTAINS.
APPLICATION FILED JAN. 9, 1911.

1,016,956.

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Fig. 2.

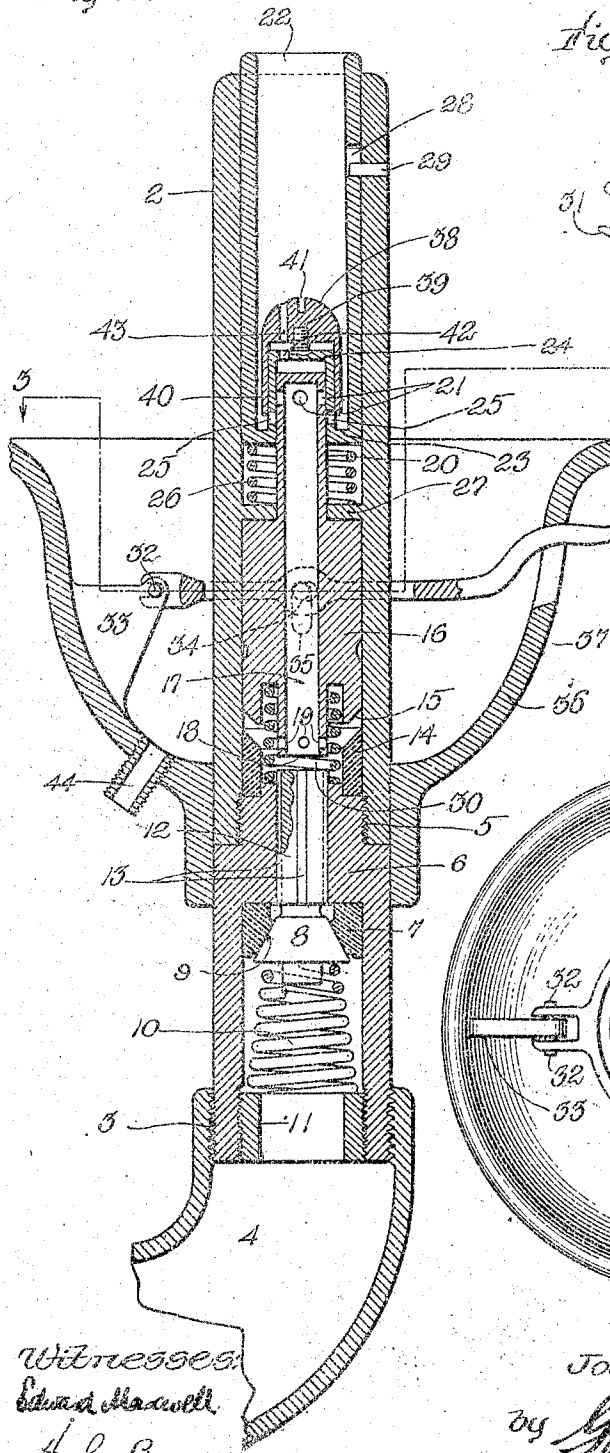


Fig. 1.

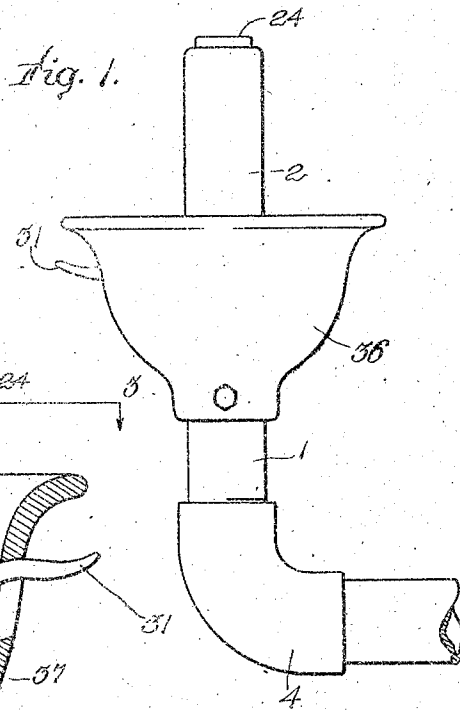
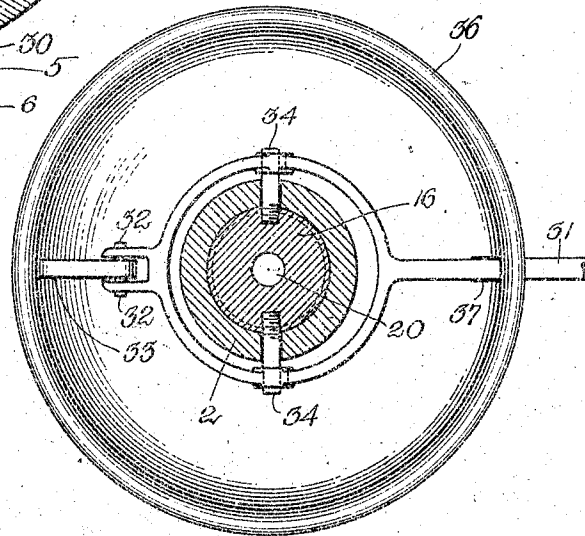


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH D. RAMSEY, OF DORCHESTER, MASSACHUSETTS.

VALVE FOR DRINKING-FOUNTAINS.

1,016,956.

Specification of Letters Patent.

Patented Feb. 13, 1912.

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To all whom it may concern:

Be it known that I, JOSEPH D. RAMSEY, a citizen of the United States, residing at Dorchester, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Valves for Drinking-Fountains, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present-day tendency toward requiring the use of strictly sanitary appliances for public convenience, has evolved a type of drinking fountain in which no drinking cup is required and the mouth of the user does not come in contact with any part of the device, this type involving the projection of a small column of water a short distance into the air, which may be drank from directly. The devices of this type in common use are subject to quite a number of objections. As ordinarily constructed, they either run continuously or leak, so as to waste large quantities of water, constituting a serious item of loss in a city supply, especially where a large number of them are used. The construction is usually of such a nature that children, in play or malice, can by partially closing the outlet with a finger, squirt water about, to the annoyance of others. Further, such devices as have been provided with a controllable outlet, have been of such a nature that the stream could be made so small that the user could put his mouth over the delivery tube end, thus defeating the prime purpose of sanitary attributes.

My invention provides an improved fountain having provision whereby the water is completely shut off except in manipulation for use; having an outlet end so constructed that any contact therewith either by the hand or the mouth of the user, will shut off the flow of water; and, further, the arrangement being such that when the outlet is open at all, the full stream is delivered, of a size to tend to prevent the application of the mouth of the user to the delivery tube end. I moreover provide means whereby the normal water delivery in use can be easily regulated to a nicety, and other features of improvement in details, all as will hereinafter more fully appear by reference to the following description in connection with the accompanying drawings, wherein—

Figure 1 is a side elevation of the improved valve construction; Fig. 2 is a cen-

tral vertical section thereof; and Fig. 3 is a transverse section on line 3—3 of Fig. 2.

In the preferred embodiment shown, the valve comprises a lower tubular part 1 and an upper tubular part 2 the former threaded at 3 for engagement with any suitable source of water supply, as the L-connection 4. The parts 1, 2 are threaded together at 5 for convenience of assembling, adjusting, and repairing the valve. Supported against an inner annular ledge 6 is a valve seat 7, preferably of rubber, cooperating with a metallic valve 8, having a relatively long conical seat portion to engage a somewhat shorter outstanding seating annulus 9 on the valve seat 7. The purpose of the aforesaid special construction is two-fold. By making the moving part, *i. e.*, the part 8, of metal, it is feasible to have it so small that it offers a minimum resistance to the water pressure, so that, notwithstanding the fact that the latter is usually high, the valve can be operated with scarcely any effort. This makes the valve so easy to operate, although opening directly against the full water-pressure, that it can be operated by a child. By having the valve seat of rubber and shaped as shown, the part 8 will always close perfectly against the rubber surface of the seat 7, engaging the entire opposing portion thereof, and notwithstanding that the wear takes place almost altogether on the seat, the latter will wear down evenly without tendency to have a groove formed therein, because of the longer length of the engaging surface on the metal part 8. The valve 8 is normally held upward against its seat by a spring 10 having an abutment 11 threaded in the bottom of the part 1, and the upwardly extending stem 12 of the valve is cylindrical and has a relatively snug fit within the axial opening provided therefor, said stem projecting somewhat above the top of said opening and having any desired number of grooves 13, shown as four, formed throughout its length to permit the passage of water when the valve is open.

Above the ledge 6 is an annular packing seat 14, also preferably of rubber, to receive a conical annulus 15 shown as constituting the lower end of a sliding plug 16, through whose central passage 17 the water flows upward, having entrance into the depending closed portion 18 thereof through lateral apertures 19 communicating with said passage 17, said water having exit from the up-

wardly projecting closed end 20 of said passage 17 through a similar set of lateral apertures 21. Above the plug 16, the part 2 is provided with a tube 22 slidably fitted therein and having a preferably integral cap 23 whose cup-like part 24 has a snug sliding fit over the thimble-like end 20 of said plug. This cup-like part 24 has a set of apertures 25 corresponding in number and arrangement with the exit apertures 21 from the passage 17, said two sets of apertures being maintained normally out of register or alignment, by a spring 26 which rests at one end on a fixed internal abutment 27 and at its other end engages the tube 22. When, however, the plug 16 is lowered into valve-opening position, the apertures 21 are thereby lowered sufficiently to bring them into accurate alignment with the apertures 25 so as to permit the water to flow properly to form the desired bubble for drinking purposes. A pin 29 projecting inwardly from the outer casing or part 2 occupies a slot 28 in the tube 22 so as to limit the extent of movement of said tube 22. The upper free end of the tube 22 projects slightly above the open upper end of the part 2 and constitutes the delivery end of the valve from which the bubble is projected for drinking purposes. This construction constitutes the preferred means of carrying out one of the principal features of my invention, viz., the automatic cutting off of the flow of water whenever an attempt is made improperly to divert the water. For instance, in the common construction of drinking bubble-fountains it has become an annoying pastime for boys to place their thumb or hand over the outlet orifice and thereby divert or squirt jets of water at passers-by, the water pressure exerting sufficient force against the thumb or hand, when held so as not quite to close tightly the orifice, to produce a lateral jet of considerable carrying force. By my construction, however, it will be observed that if a boy should place his thumb or hand on the outlet orifice, he would simply depress the tube 22 against the slight resistance of the spring 26 and thereby entirely cut off the flow at a point wholly below the outlet orifice, the downward movement of said tube 22 causing the cup 24 to slide down on the thimble-end 20 so as to move the apertures 21 out of alignment with the apertures 25, and thereby entirely stop the flow of water. The spring 26 and various adjustments of the parts are preferably such that this downward movement and consequent cutting off of the water flow will be accomplished by the slightest external engagement with the projecting end of the tube 24.

The depending portion 18 of the plug 16 serves the double purpose of acting as a projection to engage the valve stem 12 when the valve 8 is to be opened, and also to receive

and guide a spring 30 whose lower end rests against a fixed part of the valve casing, the upper end of said spring preferably occupying a recess provided therefor around the end 18 in the lower part of the plug 16. This spring holds the plug normally in inoperative position, as shown in the drawings, but yields to permit the said plug to be lowered, whereupon its end 18 engages the upper end of the stem 12 of the valve 8, thereby simultaneously opening the valve 8 and also bringing the apertures 21 and 25 into alignment so as to open the outlet passage for the flow of the water and formation of the desired bubble. Preferably there is a space or provision for lost motion between the parts 18 and 12, so that the operator will have accomplished most of the downward movement of the plug 16 before the opening movement of the valve 8, and the opening movement of the latter takes place therefore just as the downward movement of the plug 16 is terminating. The object of this provision is to make practically certain that the ordinary user will not be able to open the valve only partially and thereby permit only an extremely small bubble, but he will necessarily open the valve 8 fully so as to permit the full flow of water to cause a normal full-sized bubble. The latter is desirable from the hygienic standpoint, because a small bubble permits, and in fact invites, the user to place his mouth over the entire valve outlet, whereas a full-sized, strong bubble tends to prevent the user placing his mouth against any part of the apparatus, inasmuch as the bubble is sufficiently high to permit, and practically require, the mouth to be held some distance above the bubble-orifice.

Any suitable operating mechanism may be employed, a suitable manual operating lever being herein shown as the preferable construction (not intending by the word "manual" to limit the mechanism to the hand specifically, but to include a device capable of being operated by the foot or in fact by any other non-automatic means.) A handle lever 31 is shown as fulcrumed at 32 to a bracket 33 projecting from a fixed support on the valve casing, said lever 31 being shown as loosely embracing the casing and provided with pins 34 extending inwardly therefrom through elongated openings 35 in the part 2 into engagement with the plug 16. Preferably a drip cup 36 is supported around the casing to receive the overflow of water, and the end of the handle lever 31 is shown as extending through a vertical slot 37 in the side of said basin. This construction has considerable advantage, especially where the drinking fountain is to be used by boys. The lever 31 is protected by the basin or slotted support, and the handle end or swinging end thereof is given positive support close to its extremity, so that a boy can-

it readily exert enough pressure thereon to break the lever, and also the ends of the slot 37 give a positive limit to the movement of the lever. This permits the use of a relatively long lever, so that even a small child can easily exert the slight pressure requisite for operating the fountain, and yet, notwithstanding this otherwise relatively weak construction, there is no liability of its getting broken by the rough usage common from boys. Two further important results are accomplished by the shape and tip of the projecting portion of the handle and the location thereof with reference to the cup, viz., the water cannot splash on said portion nor run down thereon to wet the finger or glove of the lady user, for instance, when depressing the lever.

Preferably I provide means for controlling to a nicety the size or rather length of the bubble, independently of the valve mechanism, said means being herein shown as comprising a cap or nut 38 having threaded engagement with a projection 39 extending upwardly from the top of the apertured part 24 and provided with an annular depending flange 40, forming a cap adapted to fit closely over said apertured part 24 to close the outlet openings 25 therein. A kerf 41 is herein shown as a convenient engageable portion to receive a screw-driver or other turning device inserted through the top of the tube 22, whereby said nut or cap 38 may be conveniently adjusted up or down to regulate the flow of water as stated, through said opening 25. Vent openings 42, 43 are preferably provided to prevent improper action of the parts by the accidental accumulation of water inside the part 24, and an outlet nipple 44, for a pipe or any other suitable means, is provided for the escape of water from the catch basin or cup 36.

In practice, the water is entirely cut off from flowing in any way, by means primarily of the closed valve 8 and also by reason of the fact that the openings 21 and 25 are then out of alinement, the former being raised higher in the cup-like part 24 than the latter. When anyone desires a drink, he engages the handle end of the lever 31 where it projects very slightly beyond the basin 36, and depresses the same. This is accomplished with an exceedingly slight pressure, because, first, of the long leverage, and second, the small cross-sectional area of the valve 8, so that a child can readily operate the device. As the lever passes through the greater portion of its movement before causing the depending part 18 to engage the valve stem 12 of the valve 8, which valve is then opened full by the slight remaining movement of the lever, the bubble spurts up immediately to the right extent for drinking purposes. The downward move-

ment of the lever, besides opening the valve 8, has also moved the upper end 20 of the passage 17 down sufficiently to bring its apertures 21 into alinement with the apertures 25 of the inclosing cup-like part 24, through which therefore the water flows freely to form the bubble above the open outer end of the slightly projecting tube 22. If the bubble projects too far or too strongly the regulating cap or nut 38 is turned down slightly so as to reduce the outlet openings or apertures somewhat, whereas if the bubble is not strong enough, said regulating cap is turned in an opposite direction. If a mischievous boy claps his hand over the outlet orifice, thinking to squirt some water on a passer-by, his said movement simply cuts off the flow of water absolutely, by depressing the tube 22 so as to move the apertures 25 out of alinement with the apertures 21. Even if the boy himself has hold of the handle lever 31, he cannot so manipulate the valve as to use it for the mischievous purpose of squirting water, inasmuch as this orifice control is independent of the regular valve control.

Preferably the mounting of the tube 22 is so delicate that even the engagement thereof with the mouth will instantly shut off the water. As the upper annulus 15 is firmly engaged with the seat 14 at all times when water is flowing, no leakage up around the plug 16 can take place.

A further advantage of my invention is that the water passes in a comparatively straight line up through the device, pockets and traps for segment being eliminated. It will be understood that in places where the valve is not open to common use by children, the regulating device 22, etc., may be omitted, in which case the water passage 17 need not be capped over at its ends. And in general, it will be understood, while I have described my improved valve organization in its preferred embodiments, I am not limited thereto excepting as specified in certain of the claims, and also that while it is primarily intended for use as a drinking fountain, I am not limited to this field of usefulness.

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

1. The herein described valve, comprising an outlet for delivering a drinking bubble, a supply conduit for transmitting fluid to said outlet, and automatic means for stopping the flow through said supply conduit to said outlet, operable by such engagement with said outlet as tends to close the latter.

2. The herein described valve, comprising an outlet for delivering a drinking bubble, connections for transmitting the fluid to said outlet, a manually operated valve for opening and closing said connections, and

automatic means for positively cutting off the flow of liquid to said outlet operable independently of said valve by engagement with said outlet which tends to close the latter.

3. The herein described valve, comprising a readily movable outlet part for delivering a drinking bubble, a supply conduit for transmitting fluid to said outlet part, and automatic means for stopping the flow through said supply conduit to said outlet, controllable by movement of said outlet part by a closing pressing movement against the outlet.

4. The herein described valve, comprising an outlet for delivering a drinking bubble, mounted to yield in a direction opposite to that of the delivery flow, a supply conduit for transmitting fluid to said outlet, and means operable by slight pressure against said outlet for stopping the flow through said supply conduit.

5. The herein described valve, comprising an outlet for delivering a drinking bubble, mounted to yield in a direction opposite to that of the delivery flow, a supply conduit for transmitting fluid to said outlet, means operable by slight pressure against said outlet for stopping the flow through said supply conduit, and manually operable means for controlling the primary flow to the outlet.

6. The herein described valve, comprising two tubular portions mounted for relative endwise movement, normally having a liquid passage therethrough, and yieldable means for holding said tubular portions in such normal position, the parts being constructed to close said passage upon relative movement of said tubular portions from normal position.

7. The herein described valve, comprising a tube having lateral apertures, a second larger tube having a reentrant cap at its end fitted over said first tube, said cap having apertures therein adapted to normally register with said first apertures, and means for yieldably holding said tubes in normal position, the parts being movable to adjust said sets of apertures out of alignment upon relative movement from normal position.

8. The herein described valve, comprising an outlet for delivering a drinking bubble, a supply conduit for transmitting fluid to said outlet, means for determinably regulating the flow to said outlet, and automatic means for stopping the flow through said supply conduit to said outlet operable by such engagement with said outlet as tends to close the latter.

9. The herein described valve, comprising an outlet for delivering a drinking bubble, a supply conduit for transmitting fluid to said outlet, a normally closed connection from said supply conduit to said outlet, a

hand operated means for opening said connection, and automatic means for closing said connection operable by such engagement with said outlet as tends to close the latter.

10. The herein described valve, comprising an outlet for delivering a drinking bubble, a supply conduit for transmitting fluid to said outlet in slidable connection with said outlet, said conduit and said outlet having lateral openings normally out of register, and hand operated means for bringing said openings into register, said outlet being movable by slight endwise pressure thereagainst to again close said lateral openings.

11. The herein described valve, comprising an outlet for delivering a drinking bubble to yield in a direction opposite to that of the delivery flow, a supply conduit for transmitting fluid to said outlet in slidable relation to said outlet, there being a normally closed connection between said conduit and said outlet, hand operated means for moving a portion of said conduit and thereby opening said connection, said outlet being movable by slight pressure thereagainst to close said connection and stop the flow through said supply conduit.

12. The herein described device, comprising an outlet for delivering a drinking bubble having an automatically controllable delivery, a valve arranged to also control the flow to said outlet, and an operating device for said valve having a lost-motion connection.

13. The herein described device, comprising a liquid conduit, an outlet therefrom for delivering a drinking bubble and having an automatic control thereof, a valve to further control the passage, means for preventing leakage, and means for simultaneously operating said leak-preventing means and opening said valve.

14. The herein described device, comprising a liquid conduit, an outlet therefrom for delivering a drinking bubble and an automatic control, a valve to control the passage to said outlet, and oppositely disposed means to prevent leakage, and means including a lost-motion connection for closing said leak-preventing means and opening said valve.

15. The herein described device, comprising a liquid conduit, an outlet therefrom for delivering a drinking bubble having an automatic control, a valve to further control the passage, a plug having a passage way therethrough arranged to contact with said passage valve to open the same.

16. The herein described device, comprising a liquid conduit, an outlet therefrom for delivering a drinking bubble, a valve controlling the passage therethrough, an operating device for said valve having a substantial range of movement within limits,

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a further passage controller having parts normally out of register, and connections from said operating device to said valve and to said passage controller to operate said valve when at the end of its movement and simultaneously bring said controller parts into register.

17. The herein described device, comprising a liquid conduit, an outlet therefrom for delivering a drinking bubble and having an automatic control, said conduit having at a point adjacent said outlet, lateral openings, and a regulating cap adjustable over said openings to control the conduit passage.

18. The herein described valve, comprising a conduit for the water, bubble-producing and controlling mechanism therein, an

external manual-operating device, and an overhanging protector interposed between the manually engaged end of said device and the delivery end of the conduit; for protecting said manually engaged end from the water, said operating device projecting through said protector and having its end outside thereof upturned to prevent lodgment of water thereon.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOSEPH D. RAMSEY.

Witnesses:

WILLIAM J. PIKE,
EDWARD MAXWELL.