

931,937.

Fig. 1.

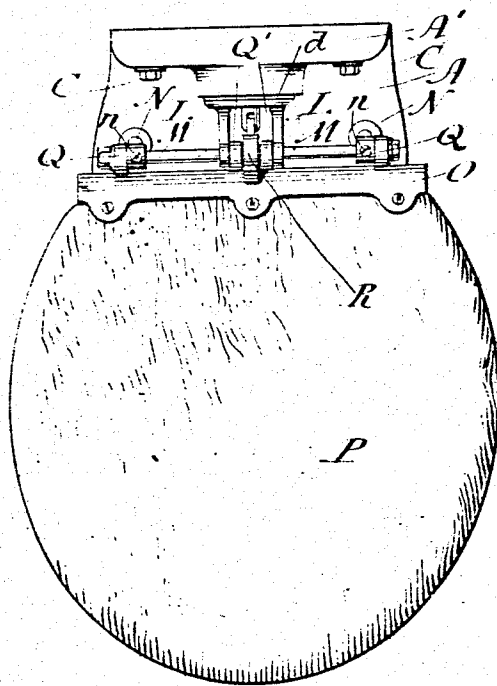
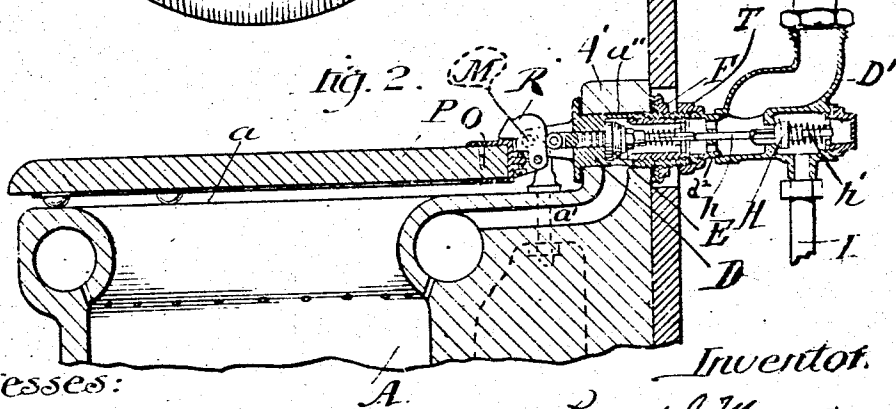


Fig. 2.



Witnesses:

Frank Blanchard
 Melvin Meyer

Inventor.

Patrick J. Madden

By *[Signature]*
 Attorney

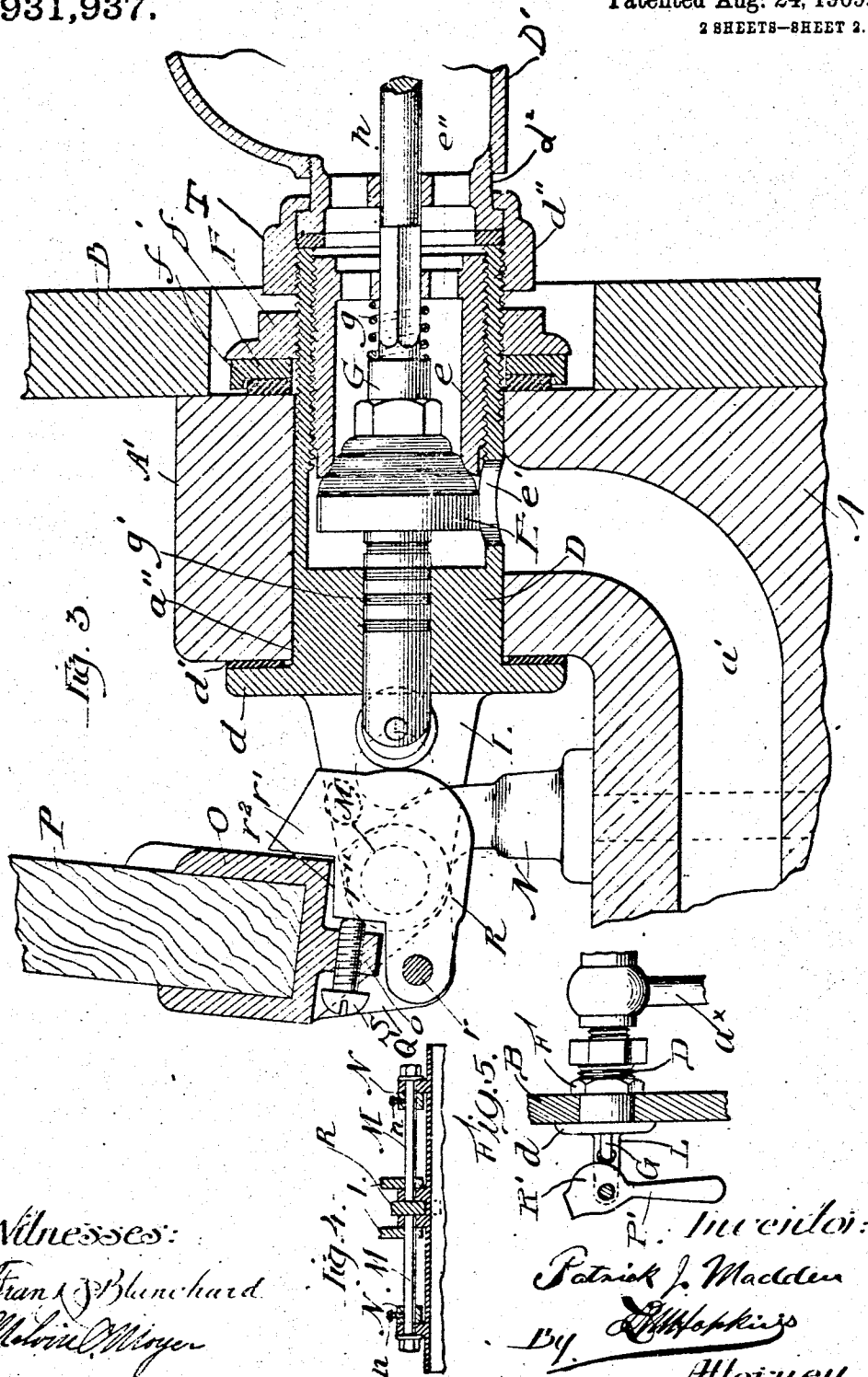
P. J. MADDEN.
WATER CLOSET.

APPLICATION FILED MAY 28, 1906.

931,937.

Patented Aug. 24, 1909.

2 SHEETS—SHEET 2.



Witnesses:
Frank Blanchard
Melvin Meyer

Inventor:
Patrick J. Madden
By *[Signature]*
Attorney.

UNITED STATES PATENT OFFICE.

PATRICK J. MADDEN, OF CHICAGO, ILLINOIS.

WATER-CLOSET.

931,937.

Specification of Letters Patent. Patented Aug. 24, 1909.

Application filed May 28, 1906. Serial No. 319,102.

To all whom it may concern:

Be it known that I, PATRICK J. MADDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Closets, of which the following is a specification.

The invention relates to water closets for general use, but closets embodying the invention are particularly well adapted for use in the cells or rooms of prisons and similar institutions.

Generally stated the object of the invention is to provide a water closet of improved construction, but, as above intimated, a specific object of the invention is to provide a water closet which, for reasons hereinafter stated or intimated, is particularly adapted for the specific purpose named.

The invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings which are made a part of this specification, and in which:

Figure 1 is a plan view of a water closet embodying the invention, all parts back of the bowl being omitted. Fig. 2 is a view, partly in vertical section and partly in elevation of a water closet embodying the invention, the lower portion of the bowl being omitted. Fig. 3 is an enlarged vertical section of a fragment of the bowl, a portion of the valve device, and the manually controlled devices by which the valves are moved in one direction to fill the tank and permitted to be moved in the opposite direction to empty the tank and flush the bowl. Fig. 4 is a horizontal section, on the scale of Fig. 1, showing, in detail, the hinge-joint of the cover (or seat). Fig. 5 is an elevation of a modification.

A represents the bowl only the upper portion of which is shown, the invention being in no wise concerned with the lower portion, or trap. The bowl may be of metal or earthenware—preferably the latter.

The seat for the occupant, when the closet is used as such, is preferably formed directly on the bowl itself as shown at *a* (in fact, is provided by the contour of the top wall of the so-called "hollow-rim") although this is not essential and if desired the customary hinged seat may be used. With the back of this hollow rim communicates a passage *a'* the rear end of which proceeds upward within a vertical extension *A'* located at the

back of the bowl and extending upward above the top of the bowl or the seat thereon. The extension has a horizontal passage or opening *a''* extending completely through it, from front to back, and communicating with the passage *a'*. The back of the bowl is vertical and rests against a wall or partition *B*, to which it is secured by any suitable means, but preferably (in part, at least) by bolts *C* passing through the extension *A'*. Through the opening *a''* passes a tube *D* which constitutes the main portion of the shell or casing of a valve *E*, hereinafter called the outlet valve. The forward wall of the shell or casing is thickened and has a flange *d* which bears against the front side of the extension through the medium of a packing ring *d'* and onto its projecting rear end *d''*, which is threaded both internally and externally is turned a nut *F* between which and the back of the extension *A'* are interposed a washer *f* and packing ring *f'*, which latter occupies a depression in the face of the former. By turning up the nut *F* the extension *A'* may be clamped between the nut and flange *d* with sufficient force to hold the shell or casing securely in place, with its outlet opening *e'* opposite the passage *a'*.

The valve *E* is carried by a stem *G* and is held normally unseated by a spring, *g*. The rear end of this stem is in engagement, or substantial engagement, with the forward end of the stem *h* of a valve *H*, (hereinafter called the inlet valve) which is held normally seated by a spring *h'*. The inlet valve controls communication between the service or supply pipe *I* and a pipe *J* extending to the tank *K*, the pipe *J* being also in communication with the casing of the outlet valve *E*. This valve-device, so far as above described (excepting for the thickened end wall of the shell) is constructed and operates substantially as does the valve device shown in Letters Patent-Number 569,559, which were granted to me October 13, 1896, and which has reciprocally operating inlet and outlet valves. Suffice it to say that the forward end of the stem *G* projects through and beyond the front wall of the shell or casing in position to be engaged by a manually controlled device adapted to force it inward in opposition to the springs *g* and *h'* and thereby seat the valve *E* and unseat the valve *H*. This closes communication between the tank and bowl and opens com-

munication between the service pipe and the tank, permitting the latter to fill. Upon the removal of the pressure from the forward end of the stem G, the springs will unseat the valve E and seat the valve H. This closes communication between the service pipe and tank and opens communication between the tank and bowl, permitting the contents of the tank to be discharged into the bowl. The front wall of the casing is of considerable thickness and that portion of the stem G which occupies the opening through it when the valve E is unseated, is provided with one or more annular grooves g' which receive water and the water in these grooves serves as a "water packing".

The front end of the valve casing carries a pair of forwardly extending lugs or arms L the forward ends of which have perforations occupied by the pintle M of a hinge. This pintle is preferably made in two parts of equal length, and near their outer ends said parts pass through perforations in the upper ends of posts or standards N rising from and secured to the bowl, to which posts the pintle is secured by binding screws n . The pintle passes also through perforations in four lugs or ears, that are carried by and project rearward, from a metallic plate or fitting O to which the cover P or its equivalent is secured, two of said lugs (Q) being adjacent to the posts N (preferably outside of them) and the other two (Q') being adjacent to the arms or lugs L (preferably between them). With the lugs or ears Q and Q' thus located the cover is prevented from moving side-wise (in the direction of the axis of the pintle) and all tendency to move the pintle end-wise, by sidewise strains put upon the cover, is thereby avoided. The lugs Q' are provided, also, with perforations located below the pintle openings, for receiving the pivotal support r of an eccentric cam R which is located between the lugs Q' and directly opposite the projecting end of the valve stem G, which it is adapted to engage. The cam is carried by the part P and is so located that it turns about the axis of movement of said part. It is directly interposed between said part and the valve stem and is so shaped that when said part is lifted, the valve stem will be moved inward with the results already described. It is attached to said part only through the medium of its pivot r and is provided with a shoulder r' which may, under perfect conditions, directly engage said part, whereby it is compelled to move with said part, turning about an axis co-incident with the axis of the pintles M. The cam is provided also with a shoulder r'' adapted to be engaged by a set screw S, having threaded engagement with a lug o carried by the fitting, so that when the screw is in engagement with the shoulder r'' , the upward movement of the cover will

be transmitted to the cam through the medium of said screw. The use of a screw interposed between the cover and the cam has the advantage of making the cam adjustable, either initially or for taking up wear. By adjusting the screw in one direction or the other the throw of the cam may be regulated. By driving the screw inward the radius intervening between the axis of the pintle M (which is also the axis about which the cam is moved by the cover or part P), and the point on the cam with which the valve-stem contacts is increased, and vice versa.

From the foregoing it will be seen that when the cover is lifted the seat on the hollow rim of the bowl will be uncovered, thus conditioning the closet for use as a water closet or as a urinal, and meanwhile the tank will be filled, and when the cover is lowered the seat on the hollow rim of the bowl will be covered and the bowl will be flushed. When in its lowered position the cover is available for use as a seat—as a substitute for a chair, bench, or the like, and this and other things incident to the described construction makes the closet particularly adapted for use in the cells of prisons and similar institutions.

It will be observed that the bowl is relieved of all strain incident to the raising and the lowering of the part P, and in this connection the part P may be regarded either as a cover, such as is shown in the drawings, or as a hinged seat of customary construction. The relieving of the bowl of strains is due to the fact that the opposing strains resulting from the raising and lowering of the part P are transmitted in one direction from the part P to the valve casing, through cam R, valve stem G, valve E and its seat, and react from the casing to the part P through the medium of the lugs L, pintle M and lugs Q'.

The seat for the valve E is formed on the forward end of a tube e which occupies the shell or casing of the valve E, and may be adjusted therein by turning it, the valve-seat tube and shell being provided with external and internal threads, respectively. The valve-seat tube has within it a spider e'' having a non circular opening through which a non circular portion of the valve stem passes, so as to be capable of endwise but incapable of rotary movement, relatively to the valve-seat tube. This spider also forms a bearing for the rear end of the spring g , and this bearing being thus carried by the shell or casing of the outlet valve, instead of by a second part or fitting in rear thereof the assembling and adjusting of the parts accessory to the outlet valve is facilitated. As shown in the drawings the casing D of the outlet valve is attached to the fitting D', which forms a part of the water-

way and with which the casing of the inlet valve H is integral, by a cap T screwed on to the rear end of the casing D and having an internal shoulder engaging the shoulder on a short tube d^2 screwed into the fitting D' so that by the single act of turning the cap in one direction or the other, the casing D and fitting may be coupled or uncoupled without disturbing any of their contained parts. This coupling means, while preferable, may nevertheless be substituted by any other means without departing from the spirit of the invention, this part of which is concerned more particularly with the self-contained character of the outlet valve device. It will be seen that the shell or casing of this valve device contains and carries all of the parts accessory to the valve so that the valve device as a whole is an entity which may be freely handled without the displacement of any of its parts or the altering of any of its adjustments. By adjustably mounting the seat for the valve E directly upon the shell or casing, the parts may be assembled and initially adjusted before the fitting is coupled to the casing and after they are coupled they may be separated without disturbing the said adjustment, and this would not be possible if the seat for the valves E were carried by the fitting D'.

As shown in Figs. 1 to 4 of the drawings and as above described, the part P is a cover for the bowl but it is also, in fact and in mechanical effect, so far as the operation of the valve is concerned, a lever which operates upon the valve-stem through the medium of the cam R. Although this cam is made of a separate piece adjustably attached to the part P, still in the ordinary operation of the device, and excepting for the purpose of adjustment the cam partakes of the movements of the part P and may be regarded as a part of it so far as its function as a lever is concerned. I desire to have it understood, therefore, that, in its broader aspects, the invention is not limited to a lever made in the form of a seat nor to a cam made of a separate piece and attached to the lever and in Fig. 5 I have shown a modification in which the part P' (which corresponds with the part P of Figs. 1 to 4) is in the form of a simple hand-lever, and in which the cam R' is integral with the lever. This form of the device is not intended to be placed immediately behind the seat, but preferably at one side of the closet, within convenient reach. Furthermore its casing is not attached to the bowl, but directly to the wall B or other fixed support and the water is conveyed from the outer opening of the casing to the bowl through a pipe connection a' of any suitable construction.

What I claim as new is:

1. A bowl for water closets having, at its back, an extension proceeding upward above

its top, said extension, having an opening extending through it horizontally from front to back, and adapted to receive a valve device, and a passage extending from said opening to the interior of the bowl.

2. A bowl for water closets, having a seat on its top and having at its back an extension proceeding upward above said seat, said extension having an opening extending through it horizontally from front to back and being adapted to receive a valve device, means interposed between the seat and valve device for operating the valve, and a passage extending from said opening to the interior of the bowl.

3. In a water closet, the combination with a bowl, having at its back an extension proceeding upward above its top, said extension being provided with a horizontal opening extending through it from front to back and a passage leading from said opening to the interior of the bowl, of a valve device having a casing occupying said opening and having a stem projecting forward from said casing above the top of the bowl, a hinged part located over the bowl, and means actuated by said hinged part for engaging the projecting end of the stem and moving it.

4. In a water closet, the combination of a bowl, a valve device having a projecting valve stem, a hinged part located above the bowl, and an eccentric cam carried by said part and having direct engagement with the valve stem for moving it, the axis of movement of the cam being substantially in line with the longitudinal axis of the valve stem and the major radius of the cam being above said longitudinal axis.

5. In a water closet, the combination of a bowl, a valve device having a reciprocating valve stem, a hinged part located above the bowl and an eccentric cam carried by said hinged part and having direct engagement with the valve stem, said cam being so located that it turns about an axis co-incident with the axis of movement of said hinged part.

6. In a water closet, the combination of a bowl, a valve device having a projecting valve stem, a hinged part located above the bowl, and means for transmitting movement from said hinged part to the valve stem and seating the valve when said part is lifted, said means including an eccentric cam carried by said hinged part and directly interposed between said hinged part and the valve stem, and means for adjusting said cam relatively to said hinged part and valve stem, the axis of movement of the cam being substantially in line with the longitudinal axis of the valve-stem and the major radius of the cam being above said line.

7. In a water closet, the combination of a bowl, a valve device having a projecting valve stem, a hinged part located above the

bowl, and means for transmitting movement from said hinged part to the valve stem, said means including an eccentric cam pivoted to said hinged part at one side of the axis of movement of said hinged part, the cam being so located that when moved by said hinged part it turns about an axis co-incident with the axis of movement of said hinged part, and means for adjusting said cam about its individual pivotal axis.

8. In a water closet, the combination of a bowl, a valve-device having a reciprocating valve-stem, a valve carried directly by said stem, a part located above the bowl and hinged to the casing of the valve-device, the hinge of said part being located in line with the axis of the valve-stem, and means for transmitting movement from said hinged part to the valve-stem, said means including an eccentric cam carried directly by said hinged part and directly interposed between said hinged part and the valve-stem.

9. In a water closet, the combination of a bowl, a valve device located above the bowl and having a projecting valve stem, a hinged part located above the bowl, and a cam carried by said hinged part and directly engaging the valve stem, the major axis of said cam being above the line of the longitudinal axis of the valve-stem whereby the upward movement of said hinged part moves the valve stem inward.

10. In a water closet, the combination of a bowl, a valve device having a projecting valve stem, a hinged part located above the bowl, and means actuated by the upward movement of said hinged part for moving the valve stem, said means including an eccentric cam carried by said hinged part and so located that it turns about an axis co-incident with the axis of movement of said hinged part, the major radius of said eccentric being normally above said axis.

11. In a water closet, the combination of a bowl, a valve device having a casing and a valve stem projecting therefrom, lugs projecting from the casing on opposite sides of the valve stem, a part located above the bowl and hinged to said lugs and means directly interposed between said part and the valve stem for transmitting movement from said part to the valve stem, the hinge of said part being substantially in line with the longitudinal axis of the valve-stem.

12. In a water closet, the combination of a bowl, a valve device having a casing and a projecting valve stem, lugs projecting from the casing on opposite sides of the valve stem, a part located above the bowl and hinged to said lugs, and means for transmitting movement from said hinged part to the valve stem, said means having an eccentric cam so located that it turns about an axis co-incident with the axis of movement of said hinged part.

13. In a water closet, the combination of a bowl, a valve device having a casing and a projecting valve stem, lugs projecting from the casing on opposite sides of the valve stem, a part located above the bowl and hinged to said lugs and means directly interposed between said hinged part and the valve stem for transmitting movement from the former to the latter, the axis of movement of said hinged part and the longitudinal axis of the valve stem lying in the same plane.

14. In a water closet, the combination with a bowl, and a valve device having reciprocally operating valves, a valve stem, a casing, and perforated lugs carried by the casing, of a part located above the bowl, and adapted to be raised and lowered, perforated lugs carried by the part aforesaid, means for hinging all of said lugs together, a cam carried by the part aforesaid and adapted to engage the stem and move the valves in one direction, and means for moving them in the opposite direction.

15. In a water closet, the combination with a bowl and a valve device having reciprocally operating valves, a stem, a casing, and perforated lugs carried by the casing, of a part located above the bowl, and adapted to be raised and lowered, perforated lugs carried by said part and jointed to the lugs of the casing, a cam pivoted to said part and adapted to engage the valve stem and means for adjusting the position of the cam.

16. In a water closet, the combination with a bowl and a valve device having reciprocally operating valves, a stem, a casing and perforated lugs carried by the casing, of a part located above the bowl and adapted to be raised and lowered, perforated lugs carried by said part, means for hinging all of said lugs together, a cam carried by the part aforesaid and adapted to engage the valve stem, and a set screw carried by the part aforesaid and having engagement with the cam for adjusting it.

17. In a water closet, the combination with a bowl and a valve device having reciprocally operating valves, a valve stem, and a casing having perforated lugs, of a part located above the bowl and adapted to be raised and lowered, perforated lugs carried by said part, perforated posts secured to and rising from the bowl, means for hinging the lugs of said hinged part and the lugs of the casing and posts together, and means for transmitting movement from the part aforesaid to the valve stem.

18. In a valve-device, the combination of a valve-casing, means for securing it to a fixture, a valve, a valve-seat carried by that part of the casing which is secured to the fixture so as to accompany said part, said valve and valve-seat being relatively adjustable, a valve-stem carried by the casing

and carrying the valve, a fitting forming a part of the waterway, and means for separably connecting or disconnecting the valve-casing and fitting without disturbing the relations of the valve and valve-seat.

19. In a valve-device, the combination of a valve-casing, means for securing it to a fixture, a valve and valve-seat carried by the casing, said valve and valve-seat being relatively adjustable, a stem passing through the end of the casing and carrying the valve, a spider carried by the casing for supporting and guiding the stem, a fitting forming a part of the waterway, and means for separably connecting the casing and fitting.

20. In a valve-device, the combination of a valve-casing, means for securing it to a fixture, a valve and valve-seat carried by the casing, said valve-seat being adjustable relatively to the casing, a fitting forming a part of the waterway, and means for separably connecting the casing and fitting.

21. In a valve-device, the combination of a valve-casing, means for securing it to a fixture, a valve within the casing, a stem carried by the casing and extending through the end thereof, said stem carrying the valve, a valve-seat carried by the casing and adjustable relatively thereto, a spider carried by the valve-seat for supporting and guiding the stem, a fitting forming a part of the waterway and means for separably connecting the casing and fitting.

22. In a valve-device, the combination of a valve-casing, means for securing it to a

fixture, a valve and valve-seat within the casing, a stem carried by the casing and carrying the valve, said stem extending through the end of the casing, a spider, carried by that part of the casing, which is secured to the fixture, for supporting the stem, a spring interposed between the valve and spider, a fitting forming a part of the waterway, and means for separably connecting the casing and fitting.

23. In a water-closet, the combination with a fixture having an opening through one of its walls, of a valve-device having a valve casing extending through said opening and having at one end a flange engaging the wall, its other end being threaded, a nut turned onto the threaded end and engaging the wall, a tube within the casing having a seat for the valve at one end, said casing and tube having threaded engagement with each other whereby the tube may be adjusted, a valve adapted to said seat, a stem carrying the valve and extending through one end of the casing, a spider, carried by the tube and adapted to support and guide the stem, a spring surrounding the stem and bearing in one direction against the valve and in the other direction against the spider, a fitting forming a part of the waterway, and means for separably connecting the casing and fitting.

PATRICK J. MADDEN.

Witnesses:

L. M. HOPKINS,
GEO. A. HARTKE.