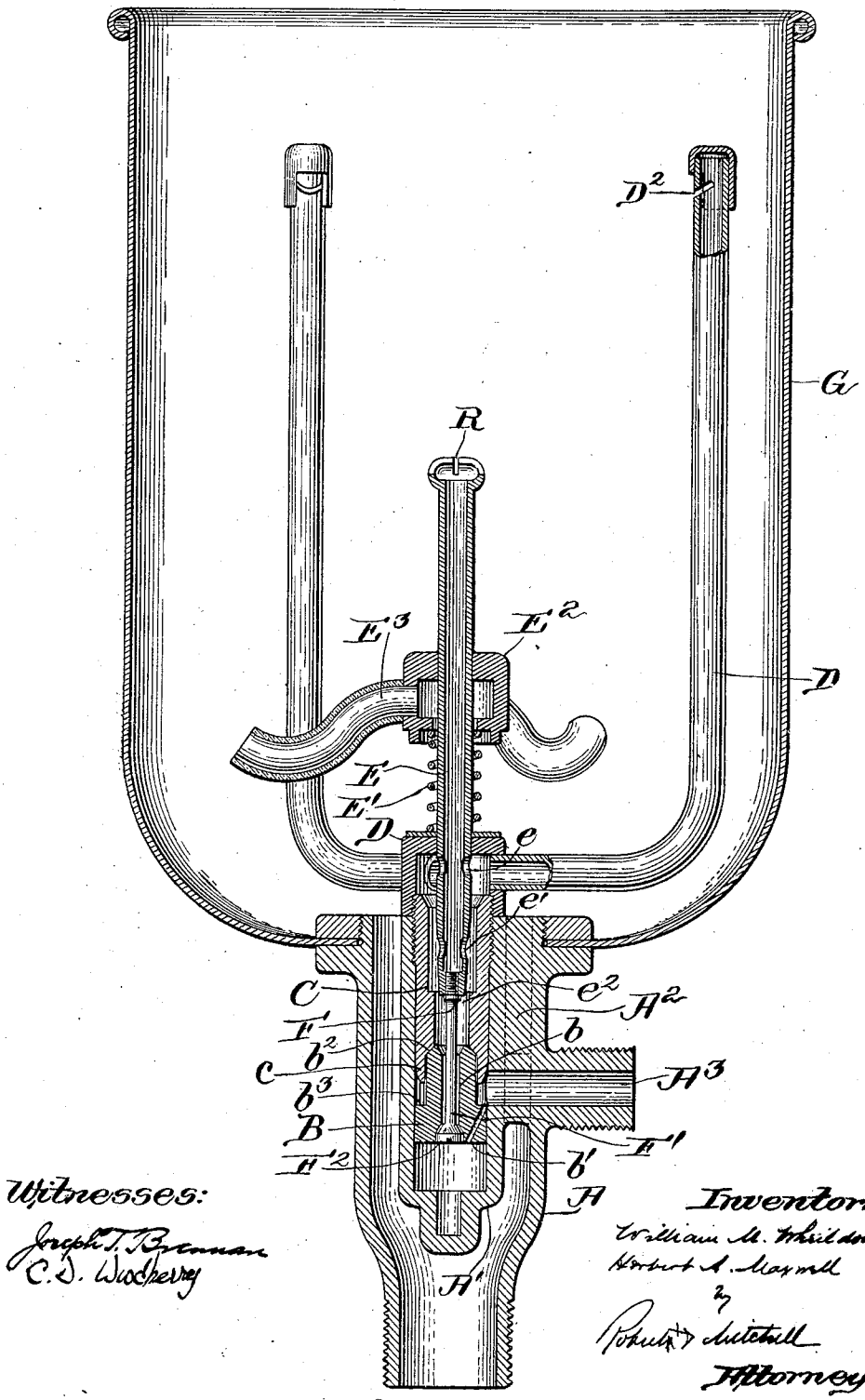
No. 869,281. PATENTED OCT. 29, 1907.

W. M. WHEILDON & H. A. MAXWELL.

VALVE.

APPLICATION FILED AUG. 11, 1906.



Witnesses:

Joseph T. Brennan

C. D. Wadsworth

Inventors

William M. Wheildon

Herbert A. Maxwell

by Robert Mitchell

Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM M. WHEILDON, OF BOSTON, AND HERBERT A. MAXWELL, OF MEDFORD, MASSACHUSETTS, ASSIGNORS TO AMERICAN SODA FOUNTAIN COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

VALVE.

No. 869,281. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed August 11, 1906. Serial No. 330,106.

To all whom it may concern:

Be it known that we, WILLIAM M. WHEILDON and HERBERT A. MAXWELL, citizens of the United States, and residents of Boston, in the county of Suffolk, and Medford, in the county of Middlesex, respectively, and State of Massachusetts, have invented new and useful Improvements in Valves, of which the following is a specification.

Our invention relates to apparatus for washing drinking utensils such as glass tumblers and consists in sundry improvements hereinbelow described.

In the drawing hereto annexed which illustrates an embodiment of our invention, there is shown a tumbler washer in central vertical cross section.

Tumbler washers have heretofore been constructed wherein a movable tumbler support situated in a convenient basin communicated with a valve which controlled the supply of water for washing the tumbler, so that when the tumbler was placed upon or pressed down upon this support the valve was opened and water distributed through suitable jets to wash the tumbler both inside and out. For this purpose a fairly copious supply of water is required and consequently the water inlets are necessarily of fairly large capacity so that considerable force has to be exerted through the medium of the tumbler in order to force open the valves of the contrivances heretofore employed for tumbler washing. Under such circumstances there is great danger of breaking the tumblers if they be made of thin glass and as thin tumblers are very much more generally used now than heretofore, the employment of the old fashioned tumbler washers is attended with considerable breakage of glass.

The object of our invention here described is to provide an apparatus capable of delivering copious streams for tumbler washing, wherein the water inlets are of large capacity and the valves which control the same may be easily and smoothly operated with no more power than that exerted by the weight of the tumbler itself.

Furthermore, it is our object to simplify as far as possible the tumbler washer devices, and we have provided, therefore, a washing arrangement which dispenses with the usual ring or annular tube from which the washing jets are directed to the outside of the glass.

For these purposes we have contrived and provide the following devices.

The casing or casting marked A in the drawing serves as a support for the washing vessel or bowl G and also as the member to which the supply and waste pipes may be coupled. The casing A surrounds an interior cylindrical casing A' to which it is secured by the webs A^2 whereof one is sufficiently enlarged to provide for the supply passage A^3. The interior of the inner cylindrical portion A' of the casing serves as the chamber for the main supply valve B. The upper portion of the casing A' is screw threaded and the inner cylindrical lining C is screw threaded from above into the interior of the casing A', this lining C being counterbored at its lower end so as to form the depending annular lip c and the conical valve seat b^2. The main valve B has a sliding fit within the lower portion of the interior of the casing A' and the upper end of the said valve B slides loosely inside the depending annular lip c and seats against the valve seat b^2.

At b' there is provided a small aperture whereby communication is afforded between the water supply pipe A^3 and the lower portion of the valve chamber in the casing A'. The base of the valve B has sufficient area to enable the water pressure communicated from the inlet pipe to hold the said valve firmly against its seat, the valve acting therefore as a check valve against the escape of water from the supply pipe. The valve B is centrally bored at b and the aperture thus formed is closed by a bleeder valve F^2 which seats upwardly against the lower end of the central bore b and has a stem F' which passes through the central bore of the main valve B. The upper end of the stem F' is secured by its threaded plug F to the lower end of the hollow standard E. This hollow standard E carries a collar E^2 and the spider arms E^3 which constitute the tumbler support, and a spring E' mounted between the collar E^2 and the spider cap D serves to hold the standard E and the parts attached thereto in the elevated position shown in the drawing so that the bleeder valve F^2 is kept closed and the full pressure of water on the lower side of the main valve B exerts itself to keep the main passage of the washing apparatus also closed. The standard E is tubular and is provided with lateral ports e and e' for the purpose of affording free passage to water entering from the supply pipe A^3 when the main valve has been opened. The cap D is hollow and has mounted upon it the spider pipes D' which are bent at about a right angle and extend upward a suitable distance, their ends being closed except for the downwardly inclined transverse slots D^2, the said slots serving as outlets for the wash water directed to the outside of the tumbler. It is to be noted also that the lower end of the standard E is cut away a little on each side at e^2.

The mode of operation of the tumbler washer is as follows: With the parts in the condition shown in the drawing the spring E' is designed and constructed to have preferably sufficient expansive strength to hold the standard E and its attached parts, including the main valve B in the elevated position with the main

valve closed. We do not, however, rely upon the spring E wholly for the closure of the main valve B, the action of the spring being supplemented and reinforced by the pressure of water in the bottom of the valve chamber, this pressure being communicated from the supply pipe A^3 through the small aperture b' or, it may be, through such leakage around the sides of the valve B which is inevitable. The strength of the spring E is, however, preferably such that when a tumbler of the average size and weight is placed upon the spider arms E^5, bottom up as is the custom, this weight will be enough to overcome the stress of the spring E′ enough to allow the standard E to descend a little and to open the bleeder valve F^2, thus admitting water to the internal bore *b* of the main valve B. This water being under pressure, rises around the stem F′ of the valve F^2, passes through the clearances e^2 and thence through the tubular standard E, finding its way out through any of the passages provided. This releases the pressure upon the lower side of the main valve B and allows the water pressure upon the annular ledge b^3 to force the valve B downward until it leaves the lining cylinder C entirely and allows the full stream of water from the pipe A^3 to flow through the lateral apertures *e*′, cap D, tubes D′, tubular standard E and out through the rose R and downwardly slanting slots D^2. The instant that the tumbler is removed from the spider arms E^3 the spring E′ pulls the valve F^2 up against its seat and then the spring E′, materially assisted by the water pressure which is exerted upon the bottom of the valve B, lifts the valve to its seat. All water hammering and shocks due thereto are avoided by so proportioning the upper part of the valve B that it enters the counterbored portion of the lining C and checks the flow gradually so that when the valve finally seats at b^2 it does so without shock. The tumbler washing is thus effectively and automatically accomplished, the valve being controlled by the very smallest application of force, the weight of a very light tumbler being entirely sufficient to work the bleeder valve and thus to allow the water pressure itself to accomplish the rest of the valve opening. The washing of the exterior of the tumbler is effectively provided for by means of the inclined slots D^2. These slots cause a fan-shaped jet of water to be projected toward the outside of the tumbler and three such jets are distributed so that the entire outer surface of the tumbler is reached by the water. This enables us to dispense with the annular pipe heretofore used, but without sacrificing any of the efficiency of the apparatus as a whole.

The operation of this device is extremely sensitive and rapid. The instant that the bleeder valve is opened only slightly the main valve responds to the change in differential pressure and descends so that the main valve and bleeder valve move almost simultaneously. Furthermore, when the bleeder valve is closed by release of pressure from above the main valve closes very promptly and would, unless the anti-water-hammer devices were employed, close with considerable violence. The waste water as is usual descends through the passages provided around the outside of the valve chamber A′ between it and the casing A′ and passes to the waste pipe which may be secured to the lower end of the casing A.

What I claim is:

1. The combination of an inlet pipe, outlet pipe and valve chamber, a main valve sliding in said chamber, and seated therein, the portion of the valve chamber below the main valve being normally in pressure-communication with the supply pipe, said main valve centrally perforated, a bleeder valve to close the central perforation, a vertically movable weight support, and connections between the support and bleeder valve to open the same to relieve liquid pressure in the bottom of the main valve.

2. The combination of an inlet pipe and outlet pipe and valve chamber, a main valve sliding in said chamber and seated therein, said main valve being perforated to admit water from the supply pipe to the lower portion of the valve chamber and also centrally perforated, the central perforation being closed by a bleeder valve, said bleeder valve, a vertically movable weight-support and connections between the support and bleeder valve to open the same to relieve liquid pressure on the bottom of said main valve.

Signed by us at Boston, Massachusetts, this thirty first day of July, 1906.

WILLIAM M. WHEILDON.
HERBERT A. MAXWELL.

Witnesses:
THOMAS J. CESETON, Jr.,
LOUIS W. NEAL.