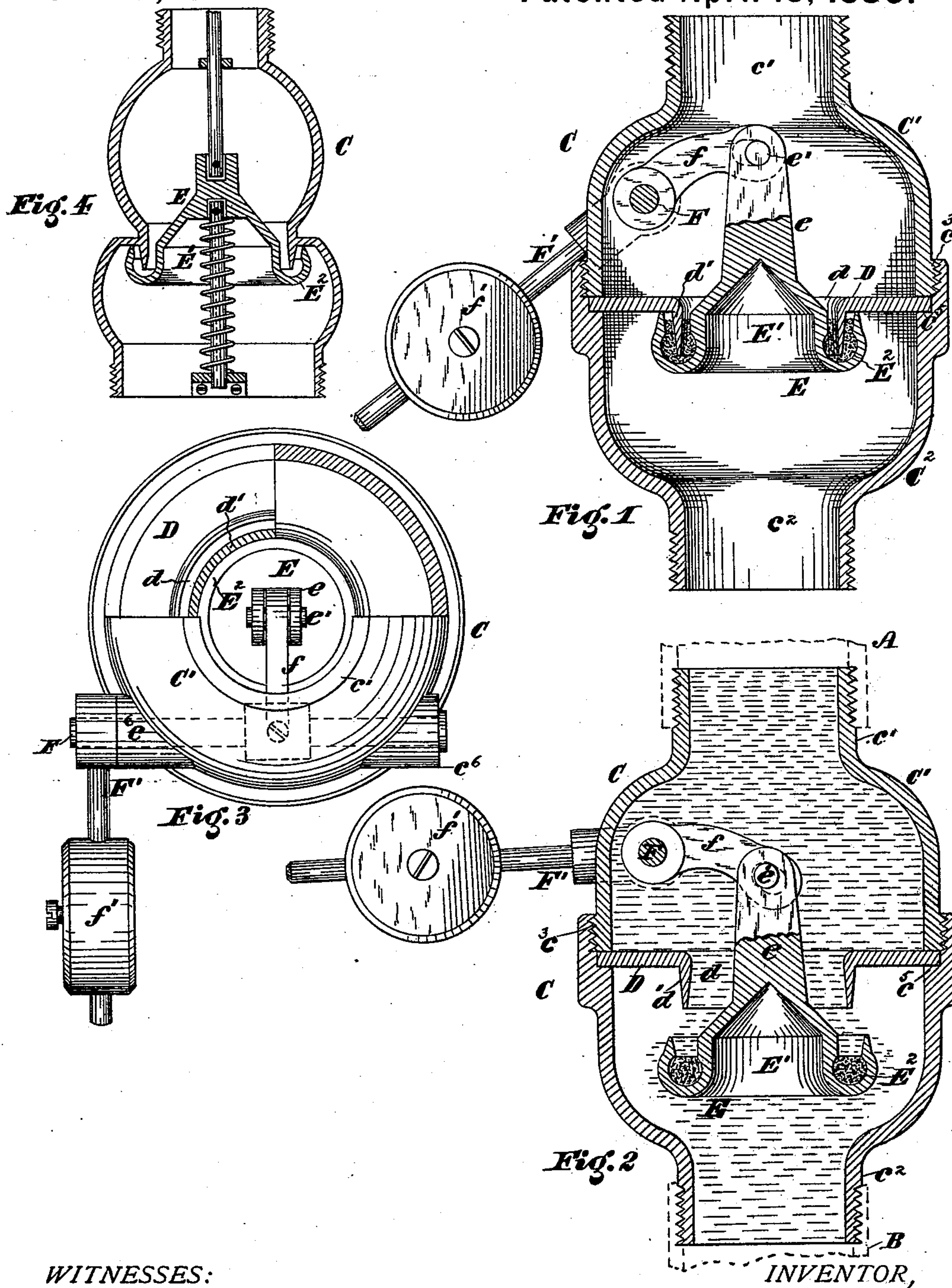


J. BENNOR.
Combined Valve and Seal Joint for Wash-Stands, Bath-Tubs, &c.

No. 226,476.

Patented April 13, 1880.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOSEPH BENNOR, OF PHILADELPHIA, PENNSYLVANIA.

COMBINED VALVE AND SEAL-JOINT FOR WASH-STANDS, BATH-TUBS, &c.

SPECIFICATION forming part of Letters Patent No. 226,476, dated April 13, 1880.

Application filed September 24, 1879.

To all whom it may concern:

Be it known that I, JOSEPH BENNOR, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Combined Valve and Seal-Joint for Wash-Stands, Bath-Tubs, Sinks, and other Fixtures; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figures 1 and 2 are longitudinal vertical sections of my invention. Fig. 3 is a plan, partly in section; and Fig. 4 is a vertical longitudinal section of a modified construction of my invention.

My invention has for its object to provide an automatic seal-joint or self-acting balanced valve for the outlet-pipes of wash-stands, bath-tubs, urinals, and other fixtures of a like or similar character.

My invention consists of a mercurial or equivalent seal-joint constructed and arranged to open automatically under hydrostatic pressure and to close in like manner—i. e., automatically—when such pressure is relieved by the discharge of the fluid producing it.

Referring to the accompanying drawings, A indicates the outlet-pipe from a wash-basin, bath-tub, urinal, or other like fixture, and B the discharge-pipe, which forms a continuation of or is connected to said outlet. C is a coupling for said pipes, composed of two shells or hemispherical sections, C' C², having, respectively, bosses c' c², and united by male and female threads at c³.

D represents a diaphragm which rests on a shoulder, c⁵, in the section C², formed with a central opening, d, and depending annular flange d'.

E represents a valve having a stem, e, which passes up through opening d, and is pivoted at e' to an arm, f, on a rock-shaft, F, which has its bearings in bosses c⁶ c⁶ formed on the walls of the section C'. Said shaft passes through said bosses, and is provided at one end with another arm, F', which is furnished with an adjustable or sliding weight, f'. This weight is designed to balance the valve E so as to hold

the latter up to its seat on the diaphragm D when not moved downwardly therefrom by superincumbent pressure.

The valve E is made of the peculiar form shown, having a head or solid center, E', of conoidal form or other suitable shape, and skirt E², which forms a trough for the reception of mercury or other equivalent material, said trough being also adapted to receive the depending flange d' of the diaphragm D, so as to submerge or immerse said flange, and thereby form a seal-joint.

The operation is as follows: Normally the valve (provided with mercury or equivalent material in the trough E²) is drawn up to its seat against the diaphragm D, the edge of the trough E² meeting the latter, and the flange d' dipping into the trough and entering the mercury or other fluid held therein, as shown in Fig. 1. This forms a perfectly-tight seal-joint, which will absolutely exclude all sewer and other noxious gases and smells, or prevent their entrance through the pipe A to the fixture, for which it forms an outlet. When, however, water or other fluid flows from the basin or other fixture in adequate quantity it will depress the valve sufficiently to permit such fluid to escape and pass down through the waste-pipe B, as shown in Fig. 2. As soon as such escape is accomplished the weight f' will raise the valve to its normal position and the seal will be again closed.

It will be noted that with the foregoing a double seal is provided—viz., that of the water, which remains above the valve when the latter is closed, and that of the mercury in the trough below, into which the flange dips. As the water above decreases by evaporation or other cause the flange will dip more deeply in the mercury.

Should there, from any accident or negligence, happen to be no mercury or other fluid in the trough the water above will form a seal; and should there be neither water nor mercury present the contact of the upper edge of the trough with the diaphragm against which it seats, such edge being made true, will present a tight joint, impenetrable to gases.

In lieu of the counterbalancing-weight, a spring may be employed, as shown in Fig. 4, to bring and hold said valve to its seat.

Whether the weight or the spring be employed, the valve and stem will be loosely jointed, so as to permit said valve to adapt itself truly to its seat.

5 The diaphragm D, which is held in position by the section C' bearing down on it, may, if desired, rest upon a rubber or equivalent gasket, and a like device may be interposed between said diaphragm and section C'.

10 In lieu of the threads c^3 , inclined lugs may be employed; or the coupling C may be formed in one piece, dispensing with said threads and lugs, in which case the diaphragm D and its depending flange d' will be formed integral
15 therewith, as shown in Fig. 4.

What I claim as my invention is—

1. An automatic valve and seal constructed and operating to open under hydrostatic pressure in mercury and to close and seal when re-

lieved of such pressure, substantially as shown 20 and described.

2. The combination, with valve E, having trough E^2 , adapted and designed to hold mercury, and diaphragm D, having depending flange d' , of rock-shaft F, journaled in the shell 25 or coupling C above said diaphragm, and having weight f' or equivalent spring, whereby said valve is balanced and held normally seated against said diaphragm with said flange in its trough, substantially as shown and described. 30

In testimony that I claim the foregoing I have hereunto set my hand this 20th day of September, 1879.

JOSEPH BENNOR.

Witnesses:

JOHN RODGERS,

SAML. J. VAN STAVOREN.