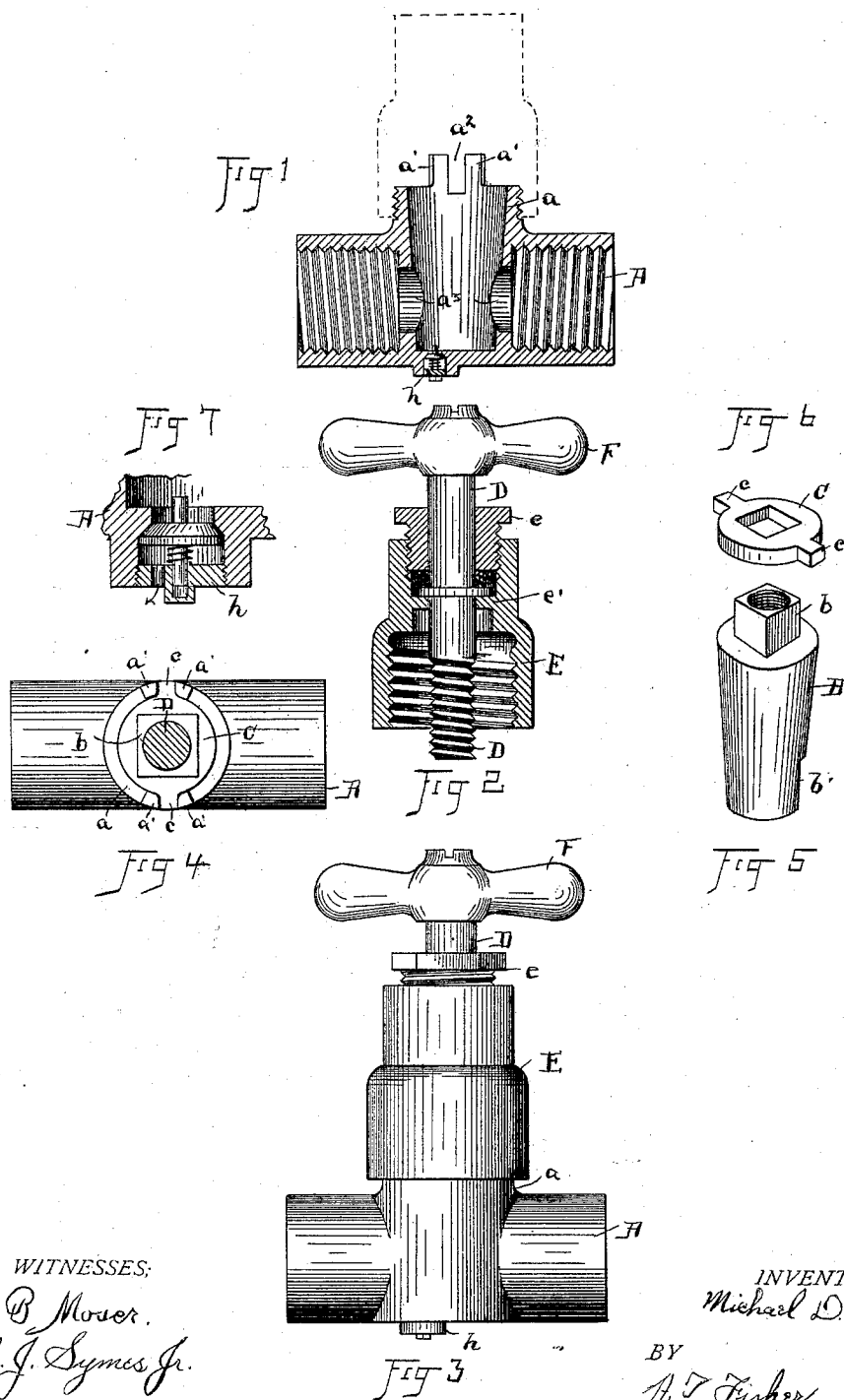


(No Model.)

M. D. O'BRIEN.
VALVE.

No. 473,707..

Patented Apr. 26, 1892.



WITNESSES:

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MICHAEL D. O'BRIEN, OF LORAIN, OHIO.

VALVE.

SPECIFICATION forming part of Letters Patent No. 473,707, dated April 26, 1892.

Application filed July 20, 1891. Serial No. 400,048. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL D. O'BRIEN, a citizen of the United States, residing at Lorain, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Plug-Valves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to plug-valves; and it consists in a plug-valve and means to operate the same, substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of the valve shell or casing. Fig. 2 is a vertical sectional elevation of the cap or hood which incloses the valve at the top and of the valve-spindle and hand-wheel therein. Fig. 3 is a side elevation of the parts represented in Figs. 1 and 2 united as when in use and looking upon the outside thereof. Fig. 4 is a plan view of the casing with the hand-wheel and cap removed and showing the plug seated in the casing. Fig. 5 is a detail in perspective of the plug; and Fig. 6 is a detail of the ring which is adapted to engage the plug and hold it from turning, all as hereinafter more fully described. Fig. 7 is an enlarged section of the casing, showing the drip-valve.

A represents the casing or shell of the valve, which is shown as adapted to have screw-coupling at either side with a straight passage through the casing. This casing has a threaded annular projection a around the valve-seat adapted to receive the inclosing cap, and projecting from the opposite side of this threaded extension a are studs a' , with an open slot between them. These studs project above the edge of the extension a a sufficient distance to accommodate the vertical movements of the ring which holds the plug, and the slot a^2 between the studs in this instance is shown as extending down below the edge of the extension a some distance.

B is a tapering solid plug adapted to the seat in the casing A and designed to fit snugly and closely therein, so as to prevent the escape of fluid about the valve when it is pressed closely

to its seat. It will be observed that this valve is of the variety which is solid and has no passage through for the fluid. The casing, it will be observed, has reduced openings a^3 on opposite sides of the valve-seat, and the plug fits down snugly about these openings and closes the same when duly seated. It will also be seen that the said plug has an angular shank b , threaded on the inside for the valve-stem, and the plug thus constructed is designed to move up and down in straight lines when it is opened and closed and not to turn, as is most common in valves of this general character. To prevent the plug from turning when it is operated, I employ in connection with the angular shank b a disk C, having an angular opening adapted to the angular shank b , so that the said shank can move freely in said opening, and this disk has lugs c on opposite sides, which rest in the slots a^2 between the stud a' in the valve-casing a . Thus having the parts furnished the valve b is placed in its seat. Then the disk C is placed thereon and seated in slot a^2 , with its lugs between the studs a' . Then in order to adjust the valve up and down I employ a threaded stem D, with threads on its lower end to engage in the shank of the valve b . This stem is supported in the cap or cover E, having a suitable packing-nut e and a suitable packing-gland to prevent the escape of fluid in this direction. The said stem is provided with a hand-wheel F or its equivalent to turn the stem, and the stem has a rib around its body in the said gland to bear on the annular flange e' on the inside of the neck of the cap E. By this construction the said stem D is enabled to turn or be turned by means of the handle F, but cannot move up or down. Hence when the stem is turned and being threaded in the plug-valve, which is prevented from turning, the said valve necessarily is carried up or down, according as the valve-stem is turned one way or the other. If the valve be raised from its seat, the fluid will pass beneath and about the same through the opening a^3 , and when it has passed down to its seat it will effectually close the passage and make it fluid-tight. The disk C prevents the valve from turning by reason of its engagement with the studs a' and at the same time is so positioned

as to allow the said valve to rise or fall with respect to said disk. The cap E fits snugly upon the neck or extension *a* of the casing, so that no fluid can escape from this direction, and the gland and packing-nut *e* effectually close the passage about the valve-stem D.

It will be seen that all parts of this valve construction are exceedingly simple, requiring a very small amount of hand-labor to produce the same, and yet making a very effective and useful construction. The valve-shank is shown as rectangular in cross-section; but any form that has angles or their equivalent, so as to cause the shank to lock in the cross-plate or disk and prevent its turning, will suffice. The use of the word "angular" in the claims is therefore understood as meaning such a construction as does prevent turning, as herein described.

In order that there may be a drip from the outflowing side of the plug to prevent water standing in the pipes, I flatten the plug B slightly, as seen at *b'*, and place a drip or waste valve *h* in the casing beneath the plug. The stem of this valve is struck by the plug when it is lowered and the waste-channel is opened.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. A valve-casing having a tapering valve-seat and a threaded neck around the upper portion of said seat and locking-studs on opposite sides above said threaded neck, in combination with a valve in said seat, a cross-piece engaging said valve and said studs and holding said valve from turning, and a threaded spindle to raise and lower the valve, substantially as described.

2. The valve-casing having a valve-seat and a pair of studs on opposite sides at its top, in combination with a valve in said seat having an angular shank at its top, a cross-piece having an opening at its center engaging said shank and projections on opposite sides engaging said studs, an inclosing cap over said valve, and a valve-stem having a threaded end in the valve-shank and secured against longitudinal movement, substantially as described.

Witness my hand to the foregoing specification this 27th day of June, 1891.

MICHAEL D. O'BRIEN.

Witnesses:

TIMOTHY J. SEALY,
KATIE O'BRIEN.