

(No Model.)

2 Sheets—Sheet 1.

A. M. MORRELL.
VALVE STOP.

No. 553,785.

Patented Jan. 28, 1896.

Fig. 2,

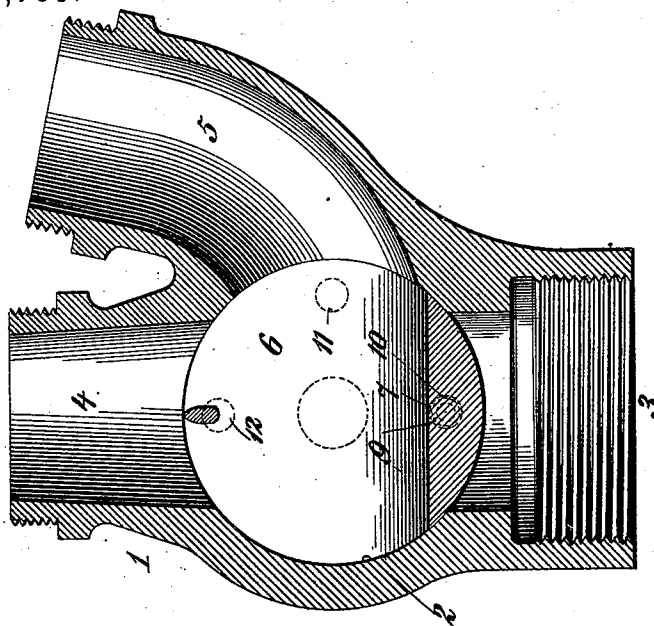
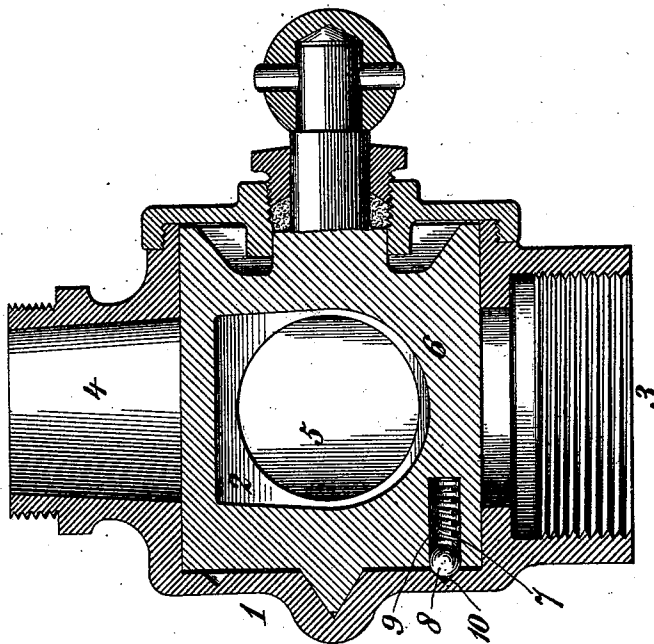


Fig. 1,



Witnesses:-

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L. M. Mable

Inventor:-

Alonso M. Morrell
By *E. M. Marble & Sons*
His Attorneys

(No Model.)

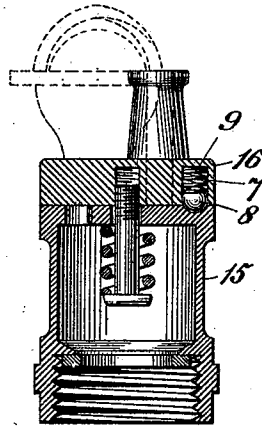
2 Sheets—Sheet 2.

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Fig. 3,



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UNITED STATES PATENT OFFICE.

ALONZO MARTIN MORRELL, OF NEW YORK, N. Y., ASSIGNOR TO THE
COLUMBIAN HOSE NOZZLE COMPANY, OF DES MOINES, IOWA.

VALVE-STOP.

SPECIFICATION forming part of Letters Patent No. 553,785, dated January 28, 1896.

Application filed June 1, 1895. Serial No. 551,353. (No model.)

To all whom it may concern:

Be it known that I, ALONZO MARTIN MORRELL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Valve-Stops; 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 appertains to make and use the same.

My invention relates generally to cocks or valves, and particularly to stops for multiple-ported valves, designed to hold the parts of said valves in the positions best adapted for effecting the results desired of said valves; and my invention consists in the novel device employed for holding the parts of the valve in the desired positions, and in the novel combination, construction, and arrangement of the parts.

Valves consist, generally speaking, of two or more parts, relatively movable with respect to each other, and containing passages for the fluid the flow of which the valve is to direct or control, which passages terminate in the adjacent faces of the relatively movable parts or members of the valve, forming ports, which ports are so placed as to register in certain relative positions of the valve members. The object of a stop is to indicate the positions of the valve members where such ports are in absolute registry and where the ports are entirely out of registry with each other—that is, to indicate when the members of the valve occupy certain predetermined positions relatively to each other and to hold the parts in such positions.

The objects of my invention are, therefore, first, to provide a stop for multiple-ported valves which shall unfailingly indicate the successive preferred relative positions of the members of the valve, and which shall hold the parts in those positions without offering undue resistance to the movement of the parts of the valve when it is desired to change their relative positions, and without preventing them from occupying positions different from those predetermined as preferable, when so desired; second, to provide a stop which, while fulfilling the above conditions, shall not cause scoring or marring of the surface of the

valve; third, to provide a stop which shall prevent overrunning of the moving parts of the valve; and fourth, to make the construction of the stop simple, not liable to derangement, cheap, and durable. These objects are attained in the valve-stop herein described and illustrated in the drawings which accompany and form a part of this application, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 is a central vertical section of a three-way valve of a common type provided with the stop of my invention. Fig. 2 is a horizontal section of the valve, taken through the center line of the admission and discharge passages, and shows in dotted lines the location of the depressions in the bottom of the valve-chamber into which the stop fits; and Fig. 3 is a vertical section of another type of valve applied to a hose-nozzle, showing the method of application of my improved valve-stop to this type of valve.

Referring now to the drawings, and particularly to Figs. 1 and 2, 1 is the valve-casing, which is of ordinary construction and has in it a cylindrical valve-chamber 2, provided with an admission-passage 3 and discharge-passages 4 and 5, all of which passages terminate in the valve-chamber in separate ports.

6 is the valve-plug, which has in it a port so formed that by it the admission-port may be connected to either of the discharge-ports or may be closed entirely.

The valve-casing is provided with the usual cover to the valve-chamber, and this cover carries a stuffing-box, through which passes the stem by which the valve-plug is rotated.

In the valve-plug is a socket 7, in which is a ball 8 and a spring 9 for pressing the ball outward and against the bottom of the valve-chamber. In the bottom of the valve-chamber are depressions 10, 11, and 12, adapted to register with the socket 7 in different positions of the valve-plug. When the socket 7 is in registry with one of these depressions the spring 9 forces the ball 8 down into that depression. When the plug is turned onward again the ball is pushed back into the socket 7 by the inclined side of the depression, but to do this requires sufficient extra effort over

that required to rotate the valve-plug when the ball is not within a depression to indicate to the user that the valve-plug is in one of the preferred positions, and to hold it in that position unless it be turned onward intentionally. Depression 10 corresponds to the position of the valve-plug when the admission-port is entirely closed, depression 11 corresponds to the position when the port of the discharge-passage 4 is in communication with the admission-port, and depression 12 corresponds to the position of the valve-plug when the port of discharge-passage 5 and the admission-port are in communication.

Instead of the ball 8 a pin with rounded end might be used; but a pin can move vertically only when in the socket 7, and the end of the pin therefore slides along the bottom of the valve-chamber, causing scoring of this surface, which may eventually lead to leakage. A pin also wears away the edges of the depressions, after which the action of the stop is no longer noticeable, thus permanently injuring the valve. The ball, however, rolls as it moves over the surface of the valve-chamber, thus becoming in effect a friction-roller. Therefore it does not score the surface of the valve-chamber and the edges of the depressions in the bottom of the valve-chamber are not worn away and rounded; also, because the ball rolls up the sides of these depressions, they may be made deeper than would be possible if a pin were used without causing the pin absolutely to lock the plug and prevent it from being moved thereafter. The ball therefore obtains a better hold in the depressions, and overrunning of the depressions, which is very apt to occur if a pin is used, is prevented.

It is obvious that the socket for the ball may be in the valve-casing instead of in the valve-plug, and that the depressions may be in the valve-plug instead of in the valve-casing, and that this does not change or affect the operation of the stop.

The operation of my valve-stop is follows: As shown in Figs. 1 and 2, the position of the valve-plug is such that the admission-port is closed entirely, and the ball 8 is within the depression 10. When the plug 6 is turned by means of a suitable handle upon the valve-stem, the ball 8 is forced out of the depression 10 and into the socket 7, and rolls along the bottom of the valve-chamber until it comes to another depression, say depression 11. It then enters this depression, being forced therein by the spring 9. To move the ball out of this depression requires an effort sufficiently greater than the effort required to

turn the plug when the stop is not within a depression to indicate to the person using the valve that the valve-plug is in one of the preferred positions, and to hold the plug in that position unless the plug be intentionally turned. The ball does not interfere, however, with the rotation of the plug in either direction if the plug be intentionally turned, and the valve and stop work as well when the plug is turned in one direction as when turned in the other.

Fig. 3 is a sectional view illustrating my stop applied to another type of valve, shown as applied to a hose-nozzle. The valve consists of a valve-plate 16 pivoted to the end of the base portion 15 of the nozzle. In the base portion of the nozzle is a port for the passage of water. The valve-plate carries two or more discharge-tips, one being shown in the drawings and another indicated by dotted lines, and each of these discharge-tips has a port in the face of the valve-plate adapted to register with the port in the base of the nozzle when the valve-plate is in proper position therefor. In the valve-plate is a socket 7 containing the ball 8 and spring 9, and in the face of the base portion of the nozzle are various depressions corresponding to positions of registry of the ports of the valve-plate with the port of the base portion, and to a position of the valve-plate when water is entirely cut off. Only the latter depression is shown in Fig. 3. It is obvious that when used in this valve the operation of my stop does not differ in any way from that of the stop of the valve of Figs. 1 and 2.

My stop may also be applied to other types of valves and may be used in a similar manner.

Having thus completely described my invention, what I claim, and desire to secure by Letters Patent, is—

In a valve, the combination, with two relatively movable valve members, of a socket in one of said members, depressions in the other of said members adapted to register with said socket in different positions thereof, a ball within said socket, and a spring pressing said ball outward and arranged to cause it to enter one of said depressions when that depression is in registry with the socket, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALONZO MARTIN MORRELL.

Witnesses:

HARRY M. MARBLE,
EDWARD K. STURTEVANT.