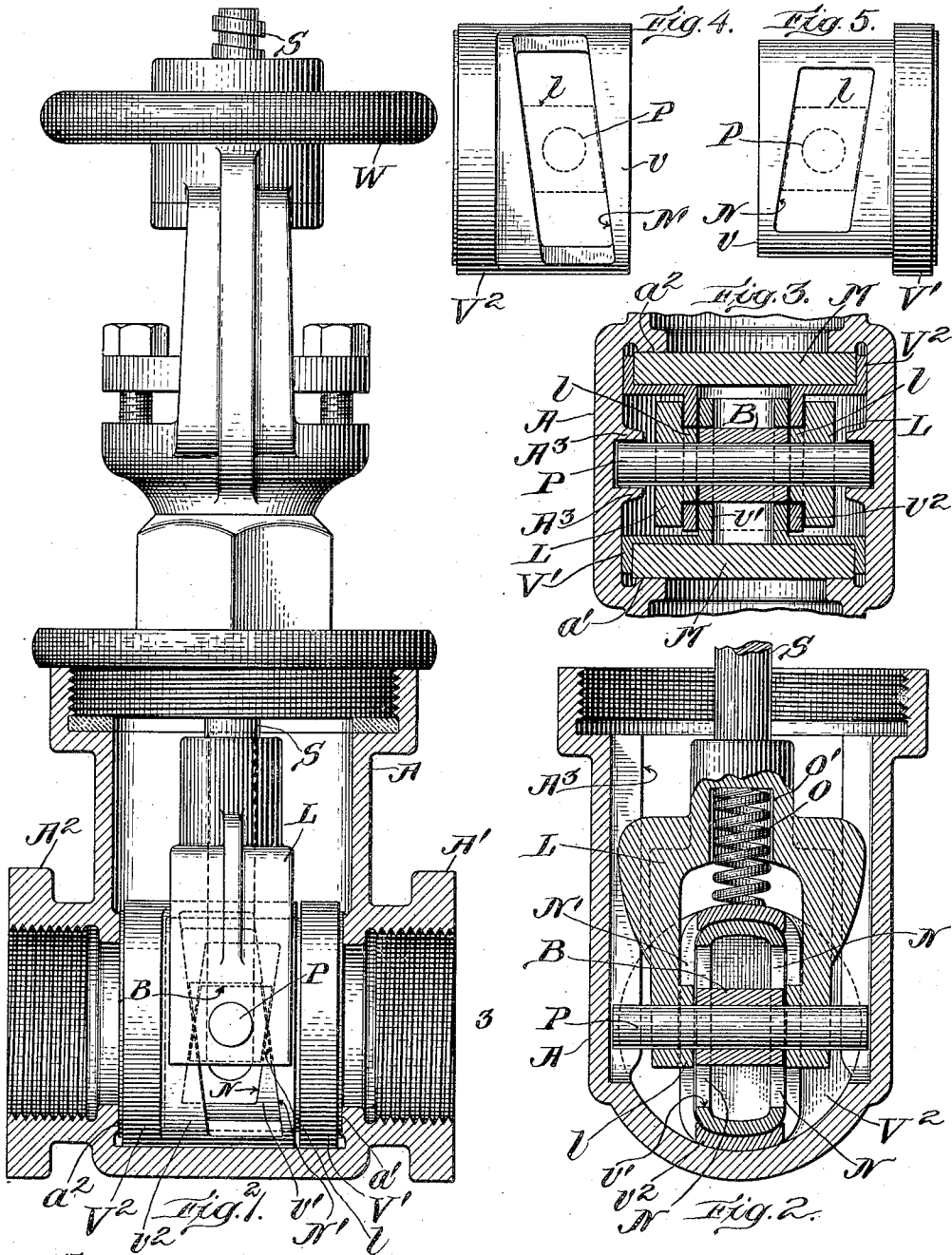


A. WATSON.
VALVE.

APPLICATION FILED JAN. 20, 1912.

1,057,308.

Patented Mar. 25, 1913.



Witnesses:

Charles D. Woodbury
Josephine H. Ryan

Inventor:

Alexander Watson
by *John C. Cushman*
Attys.

UNITED STATES PATENT OFFICE.

ALEXANDER WATSON, OF BEACHMONT, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ONE-HALF TO BYRON C. LEAVITT, OF DUXBURY, MASSACHUSETTS, AND ONE-HALF TO P. H. DELANO, OF KINGSTON, MASSACHUSETTS.

VALVE.

1,057,308.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed January 20, 1912. Serial No. 672,366.

To all whom it may concern:

Be it known that I, ALEXANDER WATSON, a citizen of the United States, and resident of Beachmont, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Valves, of which the following is a specification.

My improvements relate to the construction of gate valves and in particular constitute improvements on the construction shown and described in Letters Patent of the United States No. 983,960, issued to me February 14, 1911. As pointed out in my said patent the characteristic factors of the invention therein described comprise a casing which provides opposite valve seats and a pair of oppositely facing valves which co-operate with the said valve seats. These valves have telescoping extensions of which one comprises a web and flanges, the other making a sliding fit with the web and flanges. Each of these extensions is provided with an oblique slot, the two slots are oppositely inclined, and the two telescopically related valves are operated by a lifter having a pin which extends through the oppositely inclined slots. These characteristic features of construction are preserved in the valve hereinbelow described which comprises in addition sundry improvements which conduce to the accurate and easy operation of the valve and which facilitate and cheapen its construction without detracting from its effectiveness.

In the drawings hereto annexed which illustrate my improvements,—Figure 1 shows a valve in side elevation, the casing in vertical section; Fig. 2 is a section taken on the line 2 of Fig. 1; Fig. 3 is a section taken on the line 3 of Fig. 1; Fig. 4 shows one of the valve members in side elevation; and Fig. 5 the other valve member also in side elevation.

The valve casing A has threaded inlet and outlet slots A', A² within which are the valve seats a', a². The valve members V', V², coöperate with these valve seats and are telescopically related; the valve V' carrying the extension v' and the valve V², the extension v². The bodies of the valve members V', V², are preferably composed of fairly hard metal, such as brass or bronze, and are dished to receive the facing disks M these being the parts which actually come in con-

tact with the valve seats a', a². The seating disks are preferably to be forced under pressure into the dished portions of the valve bodies. The telescopically related extensions v', v² are tubular and roughly speaking rectangular in cross section, each therefore being a short tube of which the longer sides constitute webs and the shorter sides at the top and bottom, flanges. The extension v' is of such dimensions that it enters the slots in the extension v², which is larger, with an easy sliding fit. The structural peculiarity of these valve bodies here illustrated involving as it does tubular formation of the webbed and flanged extensions open at both ends enables the valve bodies to be drawn in dies and thus to be made accurately and at the same time cheaply, involving a minimum of machine work. The extension v' has lateral slots N inclined to the vertical while the extension v² has slots N' inclined to the vertical but in a direction opposite to that of the slots N. These slots can be milled, broached or planed, the operation being simple and inexpensive. In order to provide ample bearing surfaces and minimize friction, the lifting pin P which passes through the oppositely inclined slots is provided with slippers l and B. The slippers l may as indicated in Fig. 1 be separate pieces or as shown in Fig. 2 may be an integral portion of the lifter L. The slipper l have inclined sides so as to fit and slide in the slots N, while the slipper block B fits and slides in the slots N'. The lifter yoke L is secured to the threaded valve stem S to be moved up and down by turning the valve wheel W.

When considerable pressure is exerted upon one side of a duplex valve of the character described in my said patent the initial opening of such a valve by lifting the valve lifter and lifting pin loosens the valve in the casing and the lateral pressure at one side tends to throw the duplex valve against the opposite seat so that its operation at that instant is rendered more difficult than may be desired. To provide against this I arrange the spring O (Fig. 2) which is seated in the socket O' in the valve lifter yoke L and compressed between the base of the socket and the upper cylindrical surface of the valve extension V². The distending effort of this spring O tends to draw the pin

P upward as referred to the valve in the drawings and thus tends to contract the telescoping valve members one on the other so that the instant the valve stem is lifted this spring takes up looseness that might otherwise develop and insures smooth operation of the valve even though the lateral pressure at one of the sides may be largely in excess of that at the other side. The spring O constitutes separate and supplemental means for securing relative movement between the slotted valve-members and the lifter yoke L, while the stem S and the wheel W, supply means for raising and lowering the valve members and lifter yoke together, as well as for seating the valve when simultaneous movement of the valve members and yoke is arrested by the arrival of the valve-members on the bearing provided at the base of the casing. The spring O performs a function distinct from mere cushioning since it acts to unseat the valve, and to draw the valve-members together.

In the construction herein shown, the valve lifter is guided by ribs A³ cast on the interior of the valve casing A between which the ends of the pin P slide.

It will have been observed that the insertion of the seating disk M closes the opening formed by the above described construction of tubular telescoping extensions.

What I claim and desire to secure by Letters Patent is:

1. In a valve of the character described, a pair of valve-members provided with telescoping extensions, said telescoping sections having oppositely inclined slots, a valve stem, a valve lifter, a lifter pin passing through said slots, and a spring between the valve lifter and one of the valve members, normally straining the lifter away from the valve members.

2. In a valve of the character described, a pair of valve members provided with box-like telescoping sections, one to slide within the other, and each open from end to end,

oppositely inclined slots in the sides of the two telescoping sections, and seating disks in the faces of the valve members, to cover the openings in the telescoping sections, a valve stem, valve lifter, and a lifter pin passing through said inclined slots.

3. In a valve of the character described, a pair of valve members provided with box-like telescoping sections, one to slide within the other, and each open from end to end, oppositely inclined slots in the sides of the two telescoping sections, and seating disks in the faces of the valve members, to cover the openings in the telescoping sections, a valve stem, valve lifter, and a lifter pin passing through said inclined slots, and a spring between the valve lifter and one of the valve members, normally straining the lifter away from the valve members.

4. In a valve of the character described, a pair of valve members provided with telescoping extensions, said telescoping extensions having oppositely inclined bearing surfaces, a valve lifter, means to raise and lower the lifter, connections with the lifter which engage the oppositely inclined bearing surfaces, and means supplemental to the lifter-raising and lowering means, to move the lifter in relation to the valve-members to unseat the valve.

5. In a valve of the character described, a pair of valve-members provided with telescoping sections, said telescoping sections having oppositely inclined bearing surfaces, a valve-lifter, means to raise and lower the lifter, connections with the lifter which engage the oppositely inclined bearing surfaces, and a spring between the valve-lifter and the valve members, normally straining the lifter away from the valve members, to unseat the valve.

Signed by me at Boston, Massachusetts, this 16th day of January, 1912.

ALEXANDER WATSON.

Witnesses:

CHARLES D. WOODBERRY,
ODIN ROBERTS.