J. C. F. LONG & F. H. & C. F. BUNKE.

VALVE.

APPLICATION FILED JULY 24, 1916.

1,218,877.

Patented Mar. 13, 1917.

2 SHEETS—SHEET 1.

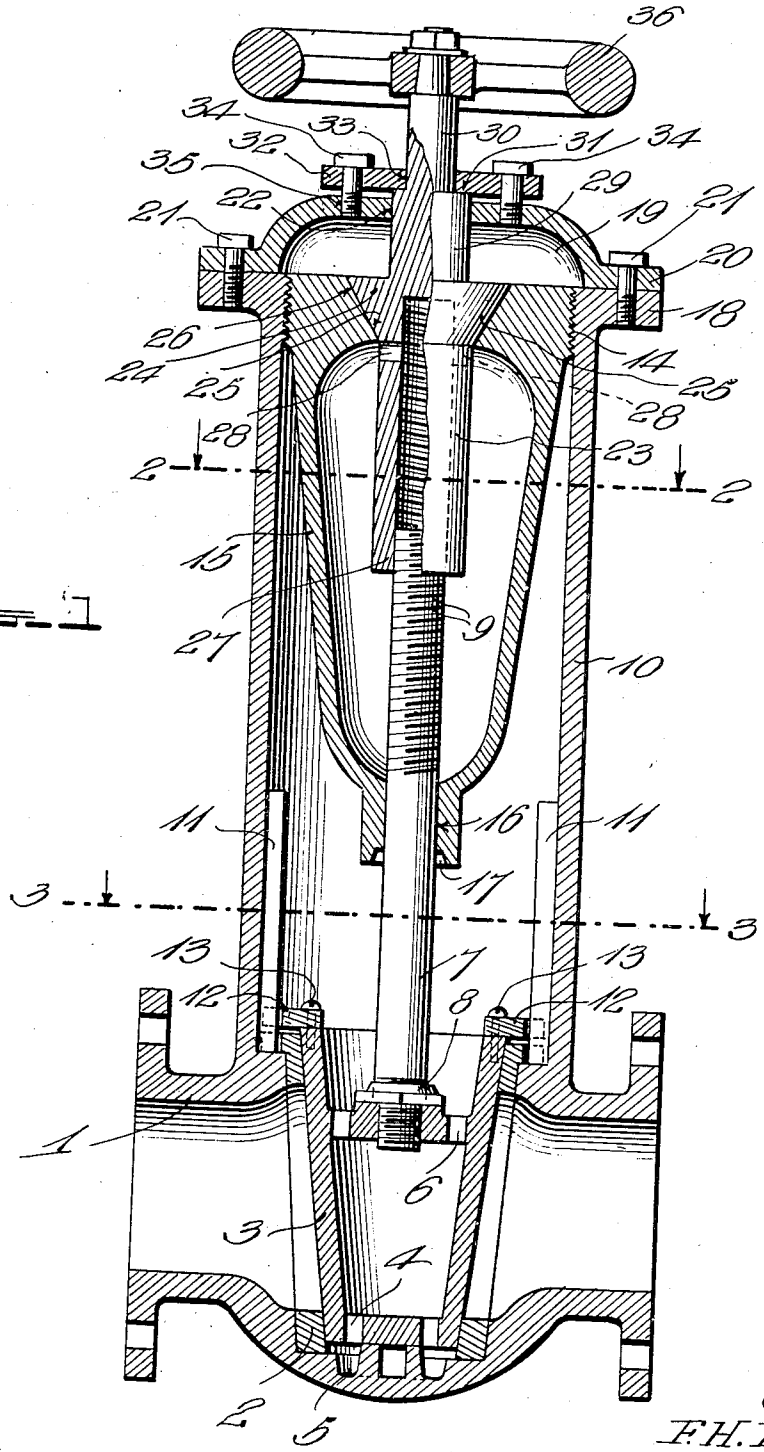


FIG. 1

Witness

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2 SHEETS—SHEET 2.

FIG. 2

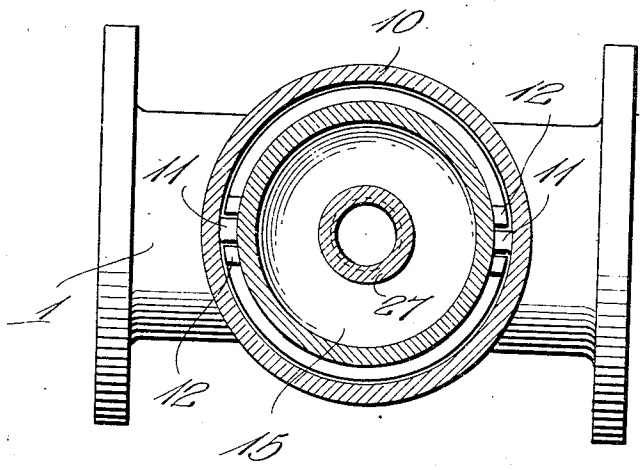
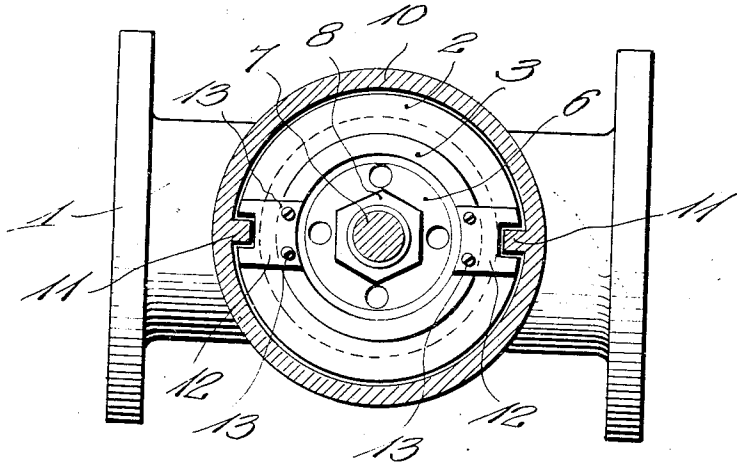


FIG. 3



Witness

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UNITED STATES PATENT OFFICE.

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VALVE.

1,218,877. Specification of Letters Patent. Patented Mar. 13, 1917.

Application filed July 24, 1916. Serial No. 111,060.

To all whom it may concern:

Be it known that we, JOHN C. F. LONG, FREDERICK H. BUNKE, and CHARLES F. BUNKE, citizens of the United States, residing at Lima, in the county of Allen and State of Ohio, have invented certain new and useful Improvements in Valves; and we do 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.

This invention relates to new and useful improvements in valves, and the primary object of the invention is to provide a slide valve of this character which is absolutely fluid-tight, and one which will be easily and simply operated.

Another object of this invention is to provide a device of this character which is simple and durable in construction, inexpensive to manufacture, and one which will be very efficient in operation.

With these and numerous other objects in view, our invention consists of the novel features of construction, combination and arrangement of parts which will be herein referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings:

Figure 1 is a central vertical section of our improved valve;

Fig. 2 is a horizontal section taken on the line 2—2 of Fig. 1; and

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 1.

In describing our invention we shall refer to the drawings in which similar reference characters designate corresponding parts throughout the several views, and in which the numeral 1 designates the valve body which is of the conventional type, having inlet and outlet ports, and provided intermediate its ends with a valve seat 2 positioned therein and provided with inwardly sloping walls. This valve seat 2 has alined openings which correspond with the openings through the body of the valve. Positioned within the seat 2 is a conventional type of slide valve 3, which is hollow and has through its bottom openings 4. The body of the valve 1 is provided with counter sunk recesses 5 adjacent the openings 4 in the lower end of the same, the purpose of which is obvious.

Supported at the top of the valve 3 by a spider 6, is an upwardly projecting upright stem 7, which is secured to the spider by a jam nut 8. The upper end of the stem 7 is externally threaded as shown at 9 for a purpose to be hereinafter more fully described.

The stem 7 is surrounded by an upright casing 10 which is formed integrally with the body of the valve 1, and which extends upwardly to a point above the top of said stem. This casing 10 is provided adjacent its lower end with spaced projecting ribs 11, which are adapted to receive therebetween laterally outwardly projecting lugs 12, which are secured to the upper end of the valve 3 by means of screws 13. These projecting lugs 12 when position between the ribs will act as guides for the sliding movement of the valve 3.

Secured within the upper end of the casing 10 by screw threads as shown at 14 or any other desired means, is a supplemental interior casing 15 which is formed preferably substantially inverted cone-shaped, and has its lower end provided with an opening 16 therein, adapted to receive therethrough the stem 7 of the valve. This stem 7 is slidably mounted through the opening 16, and the lower end of this opening which forms substantially a guide sleeve is notched as shown at 17 for engagement with the upper edge of the jam nut 8, when the valve is raised to its highest position.

The upper end of the casing 10 is provided with an outwardly projecting flange 18, which has a number of spaced openings therethrough, and fitted over the upper end of this casing is a cap 19 which is also provided with a projecting flange 20 with spaced openings therethrough which are adapted for alinement with the openings in the flange 18, and said alined openings are adapted to receive locking bolts 21 to secure the cap in position. The cap 19 is provided with a central opening 22 therethrough for a purpose to be hereinafter more fully described.

The valve 3 is provided with a rotatable operating member 23 which comprises an enlarged head portion 24 intermediate its ends, which is provided with downwardly projecting sloping sides 25 swiveled in a correspondingly shaped opening 26 in the upper end of the supplemental casing. These parts are connected by a ground joint, and they are made substantially fluid tight as will be hereinafter more fully described.

Projecting downwardly from the headed portion 24 is a hollow internally threaded plug 27, which is adapted to operatively engage the threaded end 9 of the stem 7. This hollow plug is provided adjacent its upper end with a dirt removing opening 28. Upon rotation of the operating member, owing to the fact that this plug is operatively engaged with the stem 7, and as the stem 7 is non-rotatable, the valve 3 will consequently be operated. This connection between the upper end of the stem 7 and the lower portion of the operating member is disposed within the interior supplemental casing 15.

Projecting upwardly from the top of the enlarged portion 24 of the operating member is a stem 29 which projects upwardly through the opening 22 in the cap 19, and which is reduced a short distance above the same as shown at 30 to form an annular shoulder 31 thereon. Projecting across the top of the cap 19, is a pressure plate 32, which is provided with an opening 33 therein which surrounds the reduced portion 30 of the stem and which rests upon the shoulder 31. The opposite ends of this plate 32 are provided with adjusting bolts 34, which project downwardly therethrough and are operatively engaged with the cap as shown at 35. Secured on the upper end of the reduced stem 30 is a hand wheel 36, which is for the purpose of rotating the operating member.

In operation when the valve is disposed as shown in Fig. 1 of the drawings, the same is closed, and fluid will be prevented from flowing through the body 1. When it is desired to open the valve, the hand wheel 36 is rotated, and hence the operating member 23 will rotate, and owing to the fact that the lower end of the same is operatively connected with the non-rotatable stem 7 within the interior casing, this stem 7 of the valve 3 will slide upwardly, and consequently the valve will be opened. The sliding movement of the valve 3 is directed by the projecting lugs 12 which slide vertically between the ribs 11 on the inner face of the outer casing 10. When the valve 3 is raised, some fluid will pass upwardly through the hollow valve, and out into the outer casing 10. Owing to the connection between the top of the inner casing 15 and the top of this outer casing, and also the cap on the same, the fluid will be prevented from escaping therefrom.

Should any of the fluid leak between the opening or sleeve 16 along the stem into the inner casing, the same will be prevented from escaping therefrom, owing to the fact that the swiveled connection between the operating member and the upper end of the same is made substantially fluid-tight.

This fluid-tight connection is carried out by means of the pressure plate 32 being vertically adjustable, and owing to the fact that the same when it engages the shoulder on the stem 29 will force the enlarged head portion that forms the ground connection with the upper end of the interior casing against the wall of the same under sufficient pressure to make it absolutely fluid-tight. This pressure, however, is not sufficient to prevent the enlarged head turning therein, and hence the same will be swiveled so that the operating member may be easily rotated.

From the foregoing description of the construction and operation of our improved valve, the manner of applying the same to use, and the operation thereof will be readily understood, and it will be seen that we have provided a simple and efficient device of this character for carrying out the objects of the invention.

We claim:

1. A device of the class described comprising a body, a valve, a stem, a casing, a rigid supplemental casing secured in said first mentioned casing, an operating member extending through the upper end of the supplemental casing and having a fluid-tight connection therewith, and the lower end of said supplemental casing surrounding the stem and adapted to be slidably engaged thereby.

2. A device of the class described comprising a body, a valve, a slidable stem, a casing, a rigid supplemental casing secured in said first mentioned casing adjacent its upper end, said supplemental casing having an opening in its upper end with beveled side walls, an operating member positioned through said opening and having a fluid-tight connection with the side walls of the same, and said supplemental casing having a contracted lower end terminating in a guide sleeve through which the stem is adapted to slide.

3. A device of the class described comprising a body, a valve, a stem, a casing, a supplemental interior casing secured in the upper end of said first mentioned casing and surrounding the upper end of the stem, an operating member including an enlarged portion intermediate its ends swiveled in an opening in said supplemental casing, a lower portion operatively engaging the stem, and an upwardly projecting stem provided with means to make the swiveled connection fluid-tight.

4. A device of the class described comprising a body, a valve, a stem, a casing, a supplemental interior casing secured in the upper end of said first mentioned casing and surrounding the upper end of the stem, an operating member including an enlarged head portion with beveled sides intermediate its ends having a swiveled ground joint connection with an opening in the supplemental

casing, a lower portion on said member comprising a hollow plug operatively engaging the stem in the supplemental casing, an upwardly projecting shouldered stem above said enlarged head, and a vertically adjustable pressure plate on said stem engaging the shoulder to adjust the tension of the swiveled connection.

5. A device of the class described comprising a body, a slide valve mounted therein, a non-rotatable stem on said valve having a threaded upper end, an upright casing surrounding said stem, projecting spaced ribs on the inner surface of said casing, laterally projecting guide lugs on the upper end of said valve positioned between said ribs, a supplemental interior casing in the upper end of said first mentioned casing surrounding the upper end of the stem and slidably engaged therewith, a rotatable operating member having a swiveled connection intermediate its ends in an opening in the supplemental casing, tension adjusting means to make said connection fluid-tight, and the lower portion of said member comprising an internally threaded hollow plug operatively engaging the upper end of said stem in the supplemental casing.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

JOHN C. F. LONG.
FREDERICK H. BUNKE.
CHARLES F. BUNKE.

Witnesses:
W. F. TOWNSEND,
J. F. EMAUS.