

J. W. LYTTON.
 BOTTOM BLOW VALVE.
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1,014,766.

Patented Jan. 16, 1912.

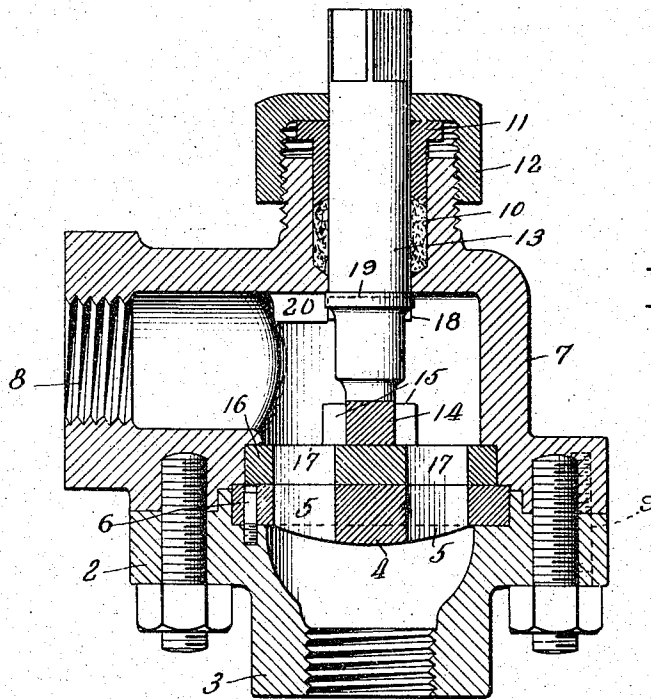


Fig 1

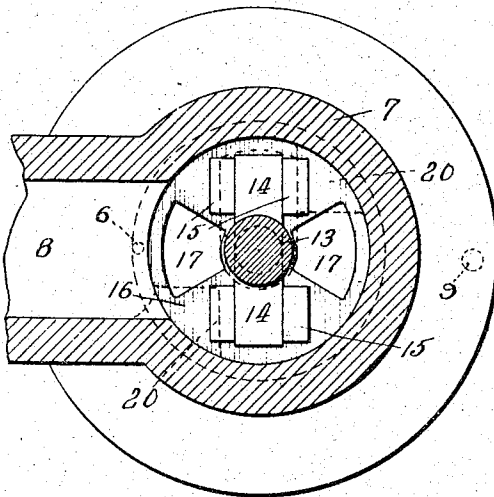


Fig 2

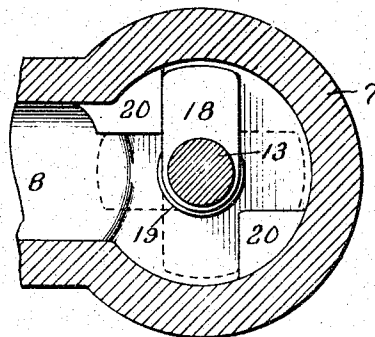


Fig 3

Witnesses
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UNITED STATES PATENT OFFICE.

JARARD W. LYTTON, OF FRANKLIN, VIRGINIA, ASSIGNOR TO LYTTON MANUFACTURING COMPANY, OF FRANKLIN, VIRGINIA, A CORPORATION OF VIRGINIA.

BOTTOM BLOW-VALVE.

1,014,766.

Specification of Letters Patent.

Patented Jan. 16, 1912.

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To all whom it may concern:

Be it known that I, JARARD W. LYTTON, a citizen of the United States, residing at Franklin, in the county of Southampton and State of Virginia, have invented new and useful Improvements in Bottom Blow-Valves, of which the following is a specification.

The present invention relates to valves, and in its present embodiment is shown in connection with that type of valve known as a "bottom blow valve" designed more particularly for use at the bottom or leg of a boiler to blow off the deposits which ordinarily collect, although it is obvious that the valve may be used in other relations and other apparatus if desired.

The object of the invention is to provide a valve of such construction that the valve seat and the cooperating valve disk will be less likely to be attacked and worn either chemically or mechanically, so that the necessity for the renewal of the seat and valve will not be so frequent, its life will be prolonged, and its operativeness will be maintained. Furthermore the construction is such that the parts will be maintained in their proper relation for a long period without the necessity of imposing any valve tightening pressure upon the valve stem to keep the valve disk to its seat, and at the same time the parts may be maintained in a perfectly tight condition. Again the construction is such that the valve will be stopped at the two extremes of its movement (open and closed) positively, and the arrangement of valve stops is such that the parts can not be assembled by careless or ignorant workmen, so as to interfere with the proper functioning of the valve.

In the drawings herewith I have illustrated one embodiment of my invention, and that the best now known to me, but as this disclosure is simply illustrative, and in no sense restrictive of my invention, it is to be understood that there may be many mechanical variations in structure without departing from the invention.

In the drawings—Figure 1 is a longitudinal sectional view of a valve constructed in accordance with my invention. Fig. 2 is a plan view of the valve shown in Fig. 1, the upper part of the valve casing being cut

away to better illustrate the relation of the valve stem and the valve stops. Fig. 3 is a view looking into the upper member of the valve-casing to show the arrangement of stops.

Referring to the drawings by numerals; like numbers indicating like parts in the several views, 2 denotes the lower section or member of the valve casing which may be of any desirable form, and is provided with an outlet nipple 3. The said casing member 2 has on its upper surface a seat which receives the seat member 4 of the valve, which fits snugly a flanged seat formed in the upper casing member 7, this valve seat 4 being formed of brass or other suitable alloy so as to give a good seat surface. The valve is of the rotary type as shown, and the said valve seat is ported as at 5 to provide the necessary outlet ports; and in order that the seat may be placed and maintained in its proper position it is preferably secured by a dowel pin connection 6, as shown in Fig. 1, where it will be seen that a dowel pin rises from the casing member 2, and when the valve seat 4 is dropped to place engages a hole therein, the pin of this dowel connection 6 being shorter than the hole in the valve seat 4 to receive it, so that the dowel pin will not interrupt the surface of the valve seat 4, for if the dowel pin projected above or level with the seat surface it would, if of harder metal than the valve seat, wear the valve disk during its movements, and if it was of the same or softer metal it would in time, become spread by the action of the valve disk, and would rivet the valve seat in the casing, both of which conditions would be undesirable.

The casing member 2 supports the upper half of the valve casing 7, which is provided with an inlet nipple 8, this casing member 7 being bolted in the usual manner to a lower casing member 2, as shown, and preferably as appears from Fig. 2 there is a dowel connection 9 between these parts in order that they may be always maintained in their proper relation. The said casing member 7 has a stuffing box 10 for the valve stem which is of any suitable or desired construction, the form shown here comprising a chamber through which the valve passes, a packing surrounding the valve

stem, and a flanged packing ring 11 above this packing, which packing ring is held to its place by a cap ring 12. The packing ring 10 preferably slides freely in the packing chamber of the stuffing box, so that in assembling the parts it may be dropped in onto the packing, and the compressing of the packing is accomplished by forcing the cap ring 12 against this freely sliding packing ring.

The valve stem 13 is provided at its lower end with a cross head 14 which engages loosely lugs 15 projecting from the valve disk 16, this valve disk having ports 17 complementary to the ports 5 in the valve seat 4 and the said valve disk 16 in the present design is intended to rotate through an angle of ninety degrees in going from one position to another, that is from open position to closed position, or vice versa. The said valve disk 16 is seated in an annular cavity or depression formed in the upper casing member 7, and it will be apparent from Fig. 1 that the valve seat 4 and valve disk 16 will be held in snug operating relation when the casing members 2 and 7 are secured together so that no force need be exerted upon the valve stem 13 to hold the disk to its seat, thereby relieving the cap ring from the necessity of holding the valve to its seat through the medium of the valve stem 13. Furthermore the valve seat 4 and the valve disk 16 are always firmly held together so that the danger of foreign substances creeping between the relatively rotatable parts is eliminated, for the valve seat and valve disk being fixed or housed completely between the casing members 2 and 7 there are no joints open for the ingress of dirt or foreign substances, access to the valve surfaces being only through the ports 5 and 17 as the valve opens or closes and danger of foreign matter getting between the valve surfaces from this source is small, as the parts are constantly wiping and sweeping the surfaces clear.

The valve stem 13 is provided, as has been stated, with a cross head 14, and just above this cross head is a stop lug 18 projecting radially from the stem 13, and additionally I provide the stem 13 with a small flange 19 which bears against the under side of the upper casing 7 and prevents upward movement of the valve stem 13, and disengagement of the cross head and valve disk lugs. The said stop lug 18 plays between stops 20 formed on the under side of the top wall of the upper casing 7, and these stops are preferably formed as shown as right angle projections diametrically opposed, and having their opposite walls at exactly ninety degrees apart in either direction. With this construction it will be obvious that when the valve stem is rotated to throw the valve through its angular travel, the stop lug 18 will permit a valve movement of ninety de-

grees, and that this stopping of the valve will be secured whether the stop lug 18 plays on one side or the other of the stops 20, so that no matter how the stem 13 is dropped into the valve casing a proper angular movement will always be secured, and no danger of lapping or bridging the valve is present. This is one of the important features of this valve structure for the reason that the parts may be assembled by any one, and the proper functioning of the valve will always be secured, for it is impossible to so assemble the parts as to secure any movement other than the proper angular movement of the parts. This will be clear from Fig. 3, for it will there be seen that with the valve stem placed in the position shown in full lines with its cross head in engagement with the lugs of the valve disk an angular movement of ninety degrees will be secured when the stop lug is thrown from one extreme to the other. It will be apparent if the valve stem be dropped in, in the position shown in dotted lines that an angular movement of ninety degrees in the same direction may also be secured.

I claim:—

1. In a valve, a casing formed of two members directly connected, a circular valve seat having ports, fitting fluid tight in a socket formed in one of said members, means for preventing the rotation of said valve seat, a circular valve having ports registrable with the ports in the valve seat, and of less diameter than said valve seat fitting fluid tight in a socket formed in the other member, the outer face of said valve being flat and flush with the adjacent surface of said member, said valve adapted to rotate fluid tight in contact with the valve seat, and means for fastening together the two casing members and thereby securing the valve seat in place wholly within its socket and within the fastening means and holding the valve close against the valve seat and within its socket but permitting the same to be rotated.

2. In a valve, a casing formed of two members directly connected, a circular valve seat having ports, fitting fluid tight in a socket formed in one of said members, means for preventing the rotation of said valve seat, a circular valve having ports registrable with the ports in the valve seat, and of less diameter than said valve seat fitting fluid tight in a socket formed in the other member, the outer face of said valve being flat and flush with the adjacent surface of said member, said valve adapted to rotate fluid tight in contact with the valve seat, means for fastening together the two casing members and thereby securing the valve seat in place wholly within its socket and within the fastening means and holding the valve close against the valve seat and within its

socket but permitting the same to be rotated, a removable valve stem engaging said valve and provided with a stop lug, and limiting stops depending from the upper wall of the casing against which said lug abuts when the valve is turned.

In testimony whereof I have hereunto set

my hand in presence of two subscribing witnesses.

JARARD W. LYTTON.

Witnesses:

THO. G. TURNER, JR.,

EUNICE WHITEHORN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."