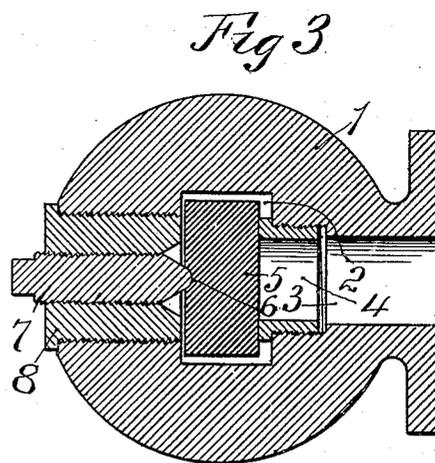
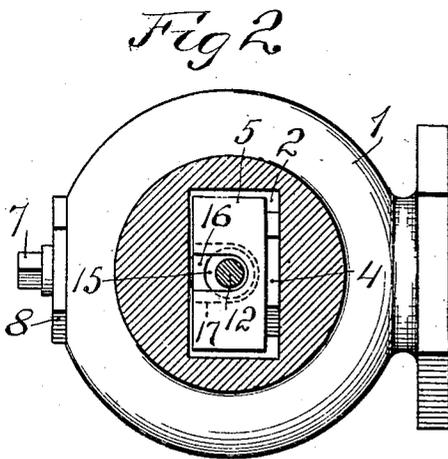
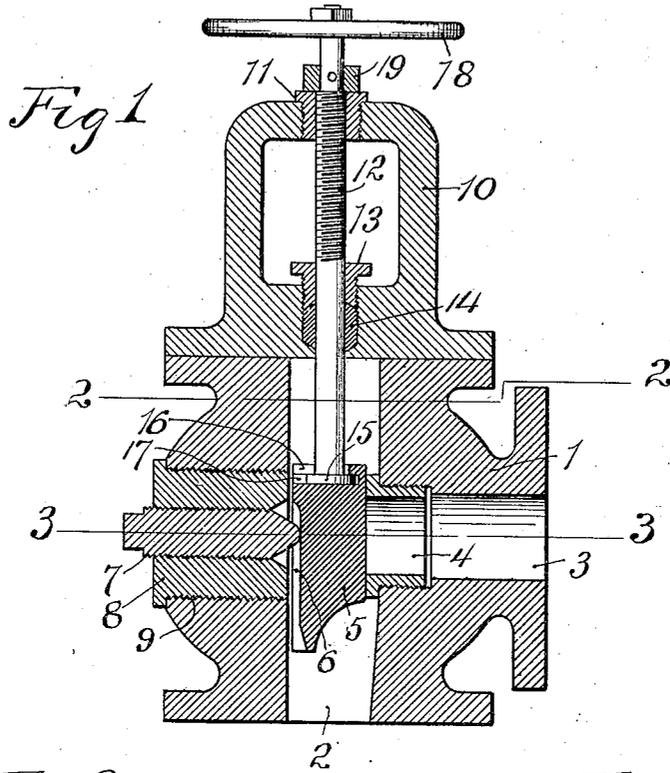


R. T. CAMPBELL.
 BLOW-OFF VALVE.
 APPLICATION FILED MAY 5, 1916.

1,238,259.

Patented Aug. 28, 1917.



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BLOW-OFF VALVE.

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Application filed May 5, 1916. Serial No. 95,593.

To all whom it may concern:

Be it known that I, ROBERT T. CAMPBELL, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Blow-Off Valves, of which the following is a specification.

My invention relates to improvements in blow-off valves.

It relates particularly to the type of valves having slidable engagement with the valve seat.

One of the objects of my invention is to provide a construction in which the valve may be firmly and easily retained in its seat.

Another object of my invention is to provide a construction in which the sliding movement of the valve will keep it clean and neatly fitted to the valve seat.

Still another object of my invention is to provide novel means for holding the valve against lateral movement and at the same time holding it firmly against the seat during its opening and closing movements.

Still another object of my invention is to provide novel means for limiting the inward movement of the valve stem for preventing jamming and consequent injury to the valve in case a careless person closes the same with great force.

My invention further provides a construction which is durable, not liable to get out of order, which may be easily opened and closed, and which may be economically manufactured.

Other novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawing, which illustrates the preferred embodiment of my invention,

Figure 1 is a central vertical sectional view of my improved valve.

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

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

Similar reference characters designate similar parts in the different views.

1 designates the body of a valve casing provided with a vertical passage 2, which is intersected by a horizontal passage 3, having a screw-threaded inner end, in which is fitted an externally threaded annular valve seat 4 having a vertical face at its inner end.

Vertically movable in the passage 2 is a valve 5 provided in one vertical side with a longitudinal vertical groove 6 which is provided with a bearing surface disposed parallel with the opposite side of the valve 5, the latter having a slidable engagement with the inner face or end of the valve seat 4. For holding the valve 5 firmly and at all times against the valve seat 4, there is provided a longitudinal adjustable member consisting preferably of a screw 7, which is fitted in threaded engagement with an annular bushing 8 which is externally threaded and which is fitted in a threaded hole 9 which extends through the body 1, and which is concentric with the passage 3.

The inner end of the screw 7 is preferably rounded and has a bearing against the valve 5 in the groove 6. The latter is preferably arcuate in cross section, and preferably has the same curve as the rounded inner end of the screw 7.

By means of this construction, the valve 5 is held against lateral movement, and is also held snugly against the valve seat 4 during the entire opening and closing movement of the valve. The vertical movement of the valve thus keeps the face of the valve seat and the adjacent side of the valve cleaned and neatly fitted to each other.

Mounted on the body 1 is a bracket 10 having a screw threaded vertical hole in which is fitted an annular internally and externally threaded bushing 11 in which is fitted a screw threaded portion of a vertical valve stem 12, which is rotatably and slidably mounted in an externally threaded packing ring 13, which is fitted in the threaded upper end of a vertical hole, the lower end of which is of reduced diameter. In the hole is mounted packing 14 encircling the valve stem 12 and adapted to have the lower end of the packing ring 13 bear there-against.

The lower end of the stem 12 is provided with a head 15 transversely insertible into a horizontal slot 16 extending inwardly from one side of the valve 5 at the upper end thereof.

At the side of the slot 16 is a horse-shoe shaped groove 17 in which is disposed the flanges of the head 15.

The upper end of the stem 12 has secured to it a hand wheel 18, and intermediate of said hand wheel and the bracket 10 is a col-

lar 19 rigidly secured to the stem 12, and which serves to limit the closing movement of the stem 12.

By turning the hand wheel 18 the valve 5, through the intermediacy of the stem 12, may be opened and closed, the closing movement being limited by the collar 19 striking the bushing 11, thereby preventing the jamming of the valve, when the latter is forcibly closed by a careless person.

As the valve 5 is moved vertically, the screw 7 being provided with a bearing against the valve 5 in the groove 6, and by reason of the parallel disposition of the latter with relation to the opposite side of the valve, holds the valve always snugly against the seat 4, thus preventing the lateral pressure of fluid, passing through the passage 3, from forcibly moving the valve 5 away from the seat 4. At the same time the sliding movement of the valve against the seat 4 keeps their bearing surfaces clean.

The head 15 of the stem 12 being horizontally slidable in the slot 16 and groove 17, permits the valve 5 to be laterally adjusted by the screw 7 toward the seat 4 to compensate for wear.

Owing to the rounded inner end of the screw 7 having substantially the same curve as the groove 6, a broad surface for engagement of the screw with the valve is provided which prevents undue wear of the end of the screw or of the surface of the valve with which the screw has a sliding contact.

In the operation of my invention, the screw 7 may be loosened to permit the valve to freely move vertically, and when the valve is closed, the screw may be turned so as to tightly clamp the valve against the seat 4. Or, the valve may be vertically moved without loosening the screw 7, owing to the valve face being parallel with the groove 6, when it is desired to clean the contacting surfaces of the valve and seat.

I do not limit my invention to the structure shown and described, as modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing and having one side adapted to bear against said seat and having in its opposite side a longitudinal groove, the bearing surface of which is parallel with the other side of the valve, and a screw extending through and having threaded engagement with said casing and adjustable toward and from said seat, and adapted to have a bearing against said valve in said groove.

2. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing and adapted to have one side bear against said seat, the opposite side of said

valve having a longitudinal guide having a bearing surface parallel with the first named side of the valve, and a member extending through said casing and longitudinally adjustable toward and from said seat and adapted to have a bearing against the bearing surface of said guide.

3. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing and provided in one side with a longitudinal groove curved in cross section, and having its opposite side adapted to bear against said seat, and disposed parallel with said groove, and a screw extending through and having threaded engagement with said casing and having its inner end adapted to bear in said groove.

4. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing and having in one side a longitudinal groove curved in cross section, and having its opposite side adapted to bear against said seat and disposed parallel with the bearing surface of said groove, and a screw extending through and having threaded engagement with said casing and having a rounded inner end of substantially the same curve as said groove and adapted to have a bearing against the bearing surface of said groove.

5. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing and having two parallel opposite sides, one of which is adapted to bear against said seat, a longitudinally adjustable member extending through said casing and adapted to bear against the other side of said valve, a rotary valve stem having screw-threaded engagement with said casing and engaging said valve so as to slide the valve against said seat and said member, and means independent of said valve and secured to said stem and adapted to bear against said casing for limiting the closing movement of said stem after the valve has reached the closed position.

6. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing and having two opposite parallel sides, one of which is adapted to bear against said seat, a screw extending through and having threaded engagement with said casing and adapted to bear against the other side of said valve, a rotary valve stem having threaded engagement with said casing and engaging said valve so as to slide the valve upon said seat and said screw, and means independent of said valve and secured to said stem for limiting the closing movement of said stem after the valve has reached the closed position.

7. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing, a rotary valve stem having screw-threaded engagement with said casing and

engaging said valve so as to slide the valve over said seat, a member extending through and longitudinally adjustable in said casing and adapted to engage and force said valve against said seat, and means independent of said valve and secured to said stem for limiting the closing movement of said stem after the valve has reached the closed position.

8. A blow-off valve comprising a casing having a valve seat, a valve slidable in said casing, a rotary valve stem having screw-threaded engagement with said casing and engaging said valve so as to slide the valve over said seat, a screw having a threaded engagement with said casing and adapted to bear against said valve and force it against said seat, and means independent of said valve and secured to said stem for limiting the closing movement of said stem after the valve has reached the closed position.

9. A blow off valve comprising a casing having a screw threaded hole, an annular valve seat fitted in said hole, a slidable valve movable transversely against said valve seat and having at the side opposite said valve seat a bearing surface parallel with the path of movement of the valve, and a screw having threaded engagement with the casing and adapted to bear against said bearing surface during the entire opening or closing movement of the valve.

10. A blow off valve comprising a casing having a valve seat, a valve slidable against

said seat, a stem having means for engaging the valve which permits relative lateral movement of the valve and vertical movement of the valve by the stem, and a screw having threaded engagement with the casing and adapted to bear against the valve to force the valve against said seat during the entire opening or closing movement of the valve.

11. A blow off valve comprising a casing having a valve seat, a valve having at one side sliding engagement with said seat and on its opposite side having a bearing surface parallel with the path of movement of the valve, and a screw having threaded engagement with the casing and adapted to bear against said bearing surface during the entire opening or closing movement of the valve.

12. A blow off valve comprising a casing having a valve seat, a valve having at one side sliding engagement with said seat and at its opposite side having a bearing surface parallel with the path of movement of said valve, a screw having threaded engagement with the casing and adapted to bear against said bearing surface, and a stem having means for engagement with the valve by which the stem slides the valve and permits of lateral movement of the valve toward and from the seat during the entire opening or closing movement of the valve.

In testimony whereof I have signed my name to this specification.

ROBERT T. CAMPBELL.