June 9, 1925. 1,541,558

S. GADE

VALVE

Filed April 17, 1922

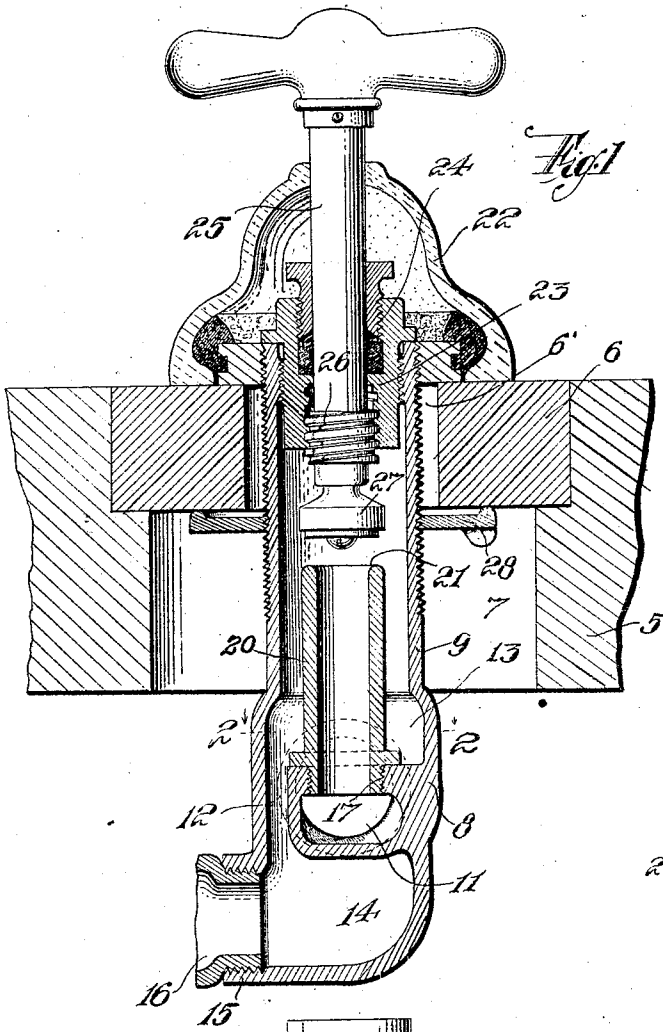


Fig. 1

Fig. 2

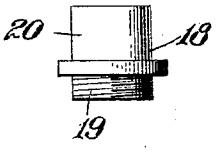


Fig. 3

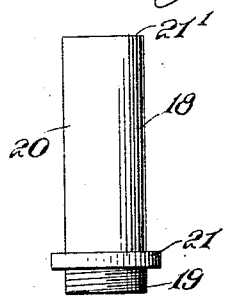
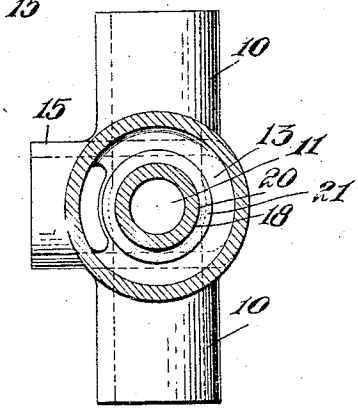


Fig. 4



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UNITED STATES PATENT OFFICE.

SAMUEL GADE, OF NEW YORK, N. Y.

VALVE.

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To all whom it may concern:

Be it known that I, SAMUEL GADE, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a certain new and useful Improvement in Valves, of which the following is a specification.

The present invention relates to an improved valve and broadly comprehends the provision of a simply constructed and inexpensive valve of the type generally used in connection with lavatory fittings wherein the body of the valve is located at one side of a wall or partition and is provided with an extension disposed through said wall and a valve having its operating handle disposed at the opposite side of the wall from that at which the body of the valve is located.

Generically considered, the present improvement comprehends a valve of the above character provided with interchangeable valve seat members which permit of the use of a valve or closure coacting with the seat having either a long or a short stem or spindle.

It is another important object of the present improvements to provide a valve body structure wherein the inlet and outlet chambers are of such form and so arranged that the coring of the valve body is greatly simplified so that an increased number of perfect body castings is secured over the number possible in the casting of valve bodies of this type as heretofore constructed.

It is the present practice in this art where the body of the valve is to be located behind or at one side of a wall or partition and operated by a valve stem or spindle projecting from the opposite side thereof, to provide the body structure of the valve with a long tubular neck or extension, said extension being usually provided with a suitable means for securely clamping the valve in a fixed position relative to the wall or partition. As heretofore produced, such valves have been of two types. In one construction the body of the valve at one end of the tubular neck or projection is provided with a seat. In this case it is necessary to use a long valve spindle extending entirely through the tubular neck. In the second construction, the valve seat is formed in a transverse partition cast in the tubular projection at a point substantially midway between its ends. With this construction it is possible to use a short spindle. Accordingly, it will be apparent that it is necessary for the jobber or dealer to carry both types of valve bodies in stock in order that he may supply a long or short spindle type of valve, as required.

By means of the present invention I propose to obviate the necessity of carrying two different body constructions, and to this end, in one embodiment of my invention, I cast the body portion proper or the valve with the inlet and outlet chambers wholly contained therein and one of said chambers having a wall provided with an elongated valve seat member extending into the tubular projection of the valve body and having its seating surface located at a point intermediate the ends of said tubular projection, thus permitting of the use of a short valve spindle. Preferably, interchangeable valve seat members are provided and removably mounted in the chamber wall so that when desired a short seat member may be substituted for the long valve seat member when it is desired to use a long valve spindle. Thus the valve may be readily converted from the short spindle type to the long spindle type, or vice versa.

With the above and other objects in view, the invention consists in the improved valve and in the form, construction and relative arrangement of its several parts as will be hereinafter more fully described, illustrated in the accompanying drawing and subsequently incorporated in the subjoined claims.

In the drawing wherein I have disclosed one satisfactory and preferable embodiment of the invention and in which similar reference characters designate corresponding parts throughout the several views—

Figure 1 is a sectional view illustrating the improved valve constructed in accordance with one embodiment of the invention;

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

Figs. 3 and 4 are detail elevations of the interchangeable valve seat members.

In the embodiment of the invention selected for purposes of illustration, I show the improved valve mounted upon a wall or slab 5 in one side of which a plate 6 is preferably countersunk at one end of the opening 7 formed through said wall. The plate 6 is provided with a central opening 6′ through which the tubular neck or pro-

jection 9 formed upon one side of the valve body proper 8, extends.

The valve body 8 in the present instance is in the form of a casting which is provided at its opposite sides with the water inlet pipe connections 10 communicating with a common inlet chamber 11 cast integrally with the body wall of the valve. The wall of the inlet chamber 11 at one side thereof is spaced from the side wall of the valve body to provide a longitudinally extending port 12 which communicates at one of its ends with an annular space 13 at one side of the inlet chamber 11 and at its other end communicates with the outlet chamber 14 formed in the valve body at the opposite side of said inlet chamber. The wall of the outlet chamber is provided with an internally threaded nipple or extension 15 projecting at right angles to the pipe connections 10 to which the pipe 16 extending to the lavatory fitting, is adapted to be connected.

The wall of the inlet chamber 11 which is opposed to the annular space 13 intersects the axial line of the piping connections 10 and is provided with a threaded opening 17 concentrically related to the elongated tubular projection 9 on the valve body. This threaded opening is adapted to receive the exteriorly threaded nipple 19 of a valve seat member 18. In Figs. 3 and 4 of the drawing I have shown two of these valve seat members having cylindrical body portions 20 of relatively different lengths, the said members adapted to be interchangeably mounted in the wall of the inlet chamber. At the inner end of the threaded nipple 19 the body of said member is provided with an annular flange 21, said flange adapted to engage the wall of the inlet chamber 11.

As shown in Fig. 1 of the drawing, the relatively long valve seat member seen in Fig. 4 is mounted in the inlet chamber wall and extends beyond the valve body proper and to a point midway between the ends of the tubular projection 9, said member terminating in a suitably formed valve seat 21. It is of course, understood that the valve seat members are of tubular form so that the water may freely pass therethrough from the inlet chamber 11 through port 12 and into the outlet chamber of the valve when the latter is open. These valve seat members are preferably formed of rod metal which are more uniform in their physical structure than castings, so that a perfect seating surface may be more easily secured.

Any preferred means may be employed for rigidly securing the valve in a fixed position in the wall or slab and various means might also be provided for operatively mounting the valve steam or spindle. For this purpose I have herein shown the tubular projection 9 as provided with an external thread and of sufficient length to extend through the opening 7 in the plate 6 beyond the opposite side of the wall to that at which the valve body 8 is located. Upon the projecting end of the tubular projection 9 a bonnet 22 of any desired ornamental form is engaged and fits against the outer surface of the plate 6.

The tubular projection 9 is also provided with internal threads adjacent its end to receive the nut 23. This nut carries a stuffing box 24 through which the valve spindle 25 extends, said spindle having a threaded portion 26 coacting with the internal threads of the nut 23. At its inner end the spindle 25 carries the valve 27 which is suitably swiveled to the end of said spindle.

A clamping plate 28 is engaged with the external threads on the tubular projection 9 and is adapted to be adjusted into tight clamping engagement against the plate 6 to thereby rigidly secure the valve structure in a fixed position.

In the operation of the device as above described, when the valve spindle is rotated to lift the valve 27 from its seat, as shown in Fig. 1, the water enters the inlet chamber 11 through the connections 10 and passes directly upwardly through the valve seat member 20 and then downwardly into the annular space 13 from which it flows freely through the port 12 into the outlet chamber 14 and hence through the conducting pipe 16. In valves of this type as heretofore constructed, having the valve seat located in a transverse partition formed in the tubular projection 9, in the casting of said partition the area of the tubular projection was contracted, which interfered with the free flow of the water. This is obviated by my present construction, since the inlet and outlet chambers are wholly formed within the valve body proper and beyond the inner end of the tubular projection 9. Furthermore, owing to imperfect coring, in the type of valve to which I have referred, the ports in said transverse partition through which the water flows to the outlet chamber cannot be accurately formed. In the present construction, however, the coring operations are quite simple and the outlet port or passage 12 can be accurately machined, thereby further insuring a free and unrestricted flow of the water. Owing to the difficulty of coring the old type of valve body, there was a loss approximating one-third of the total castings. In some instances it might be possible to obtain as high as 75% perfect body castings. By means of my improvements, I have demonstrated in actual practice that 100% of perfect valve bodies can be produced.

By the provision of the detachable and interchangeable valve seat members, all parts of the valve subjected to wear are

easily removable and may be renewed or repaired without necessitating that the valve body shall be disconnected from the pipe. As heretofore noted, it is necessary to provide only one type of valve body structure, since valve seat members of various lengths may be used in connection therewith so as to permit of the use of a valve stem or spindle of any predetermined length which the necessities of the particular case may require. Thus when the wall or partition is comparatively thin or the supply pipe is arranged closely adjacent to one side thereof, the tubular extension 9 of the valve casing must be properly adjusted through the opening of the plate 6 and the short valve seat member shown in Fig. 3 with the long valve spindle used in order that the handle end of the spindle shall not project too far from the housing 22. In the long type of valve spindle, the valve 27 is spaced for a greater distance from the threads 26 than in the short type of spindle illustrated in Fig. 1 of the drawings, this being the distinctive feature of the two different types of spindles.

I have herein referred to the valve body as provided with oppositely extending pipe connections 10 which may be employed when the device is used as a by-pass valve. However, it will be manifest that the valve body might also be formed with only one of these connections. In view of the simplified form of the valve body casting, it will be appreciated that the present improvement not only provides a valve which will be reliable and efficient in operation, but also one which can be manufactured and sold at appreciably less cost than valves for this purpose as heretofore produced.

While I have herein shown and described one practical and satisfactory embodiment of the invention, it is nevertheless to be understood that the present improvements might likewise be exemplified in other valve structures than that herein particularly referred to, and I accordingly reserve the privilege of adopting all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

I claim:

1. A valve body provided with a tubular extension at one side thereof, said valve body being integrally formed with fluid inlet and outlet chambers each of which is bisected by a plane passing through the axial line of said tubular extension, said valve body being further formed at one side thereof with a passage affording communication between said chambers, one wall of said inlet chamber having an opening communicating with said passage, and valve seat members of relatively different lengths adapted to be engaged in said opening for co-operation with valves carried by different length valve spindles and adapted to be mounted in said tubular extension.

2. A valve body provided with a tubular projection at one side thereof, said projection having an uninterrupted bore, the valve body being further formed with inlet and outlet chambers wholly contained within the valve body proper and spaced from said tubular projection and in the longitudinal line thereof, said valve body also having a port affording communication between the inlet and outlet chambers and the wall of one of said chambers being provided with a threaded opening communicating with said port, and interchangeable valve seat members of different lengths adapted to be detachably engaged in said opening and concentrically related with said tubular projection.

3. A valve body having a tubular projection at one side thereof, said valve body being provided with inlet and outlet chambers wholly contained within the valve body proper and spaced from said tubular projection, said body being also formed with inlet and outlet pipe connections communicating with the respective chambers, one wall of said inlet chamber intersecting the axial line of the inlet pipe connection and having a threaded opening therein, said valve body being provided with a port at one side of the inlet chamber said port and said threaded opening affording communication between the inlet and outlet chambers, and interchangeable valve seat members of different lengths adapted to be detachably engaged in said threaded opening for use in connection with long or short valve spindle lengths.

In testimony that I claim the foregoing as my invention, I have signed my name hereunder.

SAMUEL GADE.