

J. A. & A. H. BEDWORTH.
VALVE FOR GAS OR VAPOR BURNERS.

APPLICATION FILED DEC. 15, 1902.

NO MODEL.

Fig. 1.

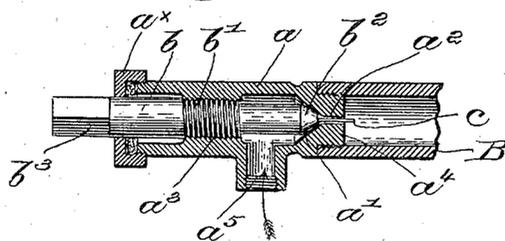


Fig. 2.

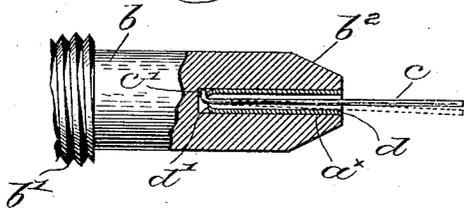


Fig. 3.

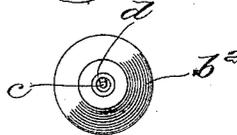


Fig. 4.

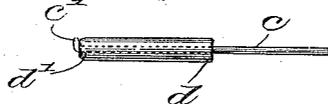


Fig. 5.

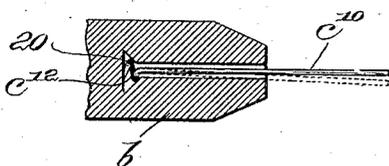
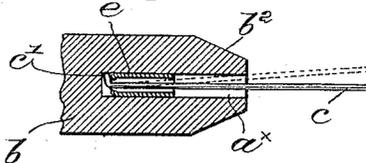


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

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VALVE FOR GAS OR VAPOR BURNERS.

SPECIFICATION forming part of Letters Patent No. 726,395, dated April 28, 1903.

Application filed December 15, 1902. Serial No. 135,174. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. BEDWORTH and ARTHUR H. BEDWORTH, citizens of the United States, and residents of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Valves for Gas or Vapor Burners, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates more particularly to gas or vapor burner inlet-valves, wherein the combustible fluid is admitted through a contracted orifice or small vent-opening into the burner. Inasmuch as these small orifices become clogged by particles of carbonaceous or other solid matter, it is common to attach to the valve a needle-like clearer which is long enough to enter and pass through the orifice when the valve is substantially closed in order to clear the orifice. The clearer is fixedly mounted in the end of the valve, and if it should be moved slightly out of alinement with the orifice it must bend slightly to enter the latter and will so wear the orifice as it is moved longitudinally therein that not infrequently the latter is made too large to properly operate. Not only this, but the bending back and forth of the clearer acts to crystallize it, and it soon breaks, requiring a replacement of parts.

Our present invention has for its object the production of a valve device of the clearer type wherein the clearer is mounted on the valve in such a manner as to possess great freedom of movement laterally, so that breakage of the clearer due to crystallization is prevented and wear of the orifice reduced to a minimum.

The various novel features of our invention will be hereinafter fully described in the subjoined specification, and particularly pointed out in the following claims.

Figure 1 is a longitudinal sectional view of a burner valve mechanism of the type described with one embodiment of our invention applied thereto. Fig. 2 is a much-enlarged view, partly in section, of the valve

and clearer shown in Fig. 1 to illustrate one mode of securing the clearer in place while permitting lateral freedom of movement thereof. Fig. 3 is an end elevation of the valve and clearer viewing Fig. 2 from the right. Fig. 4 is a detached view, in side elevation, of the clearer and the device for holding it in the valve. Fig. 5 is a view similar to Fig. 2, but showing another mode of fastening or holding device for the clearer; and Fig. 6 is a similar view showing yet another holding device to be described.

Referring to Fig. 1, we have shown a valve-case a , provided at one end with a conical valve-seat a' , having an elongated contracted orifice a^2 and internally threaded at a^3 , which may be connected by its threaded end a^4 with a tube B, leading to the burner, the orifice a^2 establishing communication between said tube and the interior of the valve-case a . The latter has an inlet-nipple a^5 for the entrance of the combustible gas or vapor from a suitable source of supply, the valve-case so far as concerns its specific structure having no particular bearing on our present invention, provided it is of the general type shown with a contracted outlet or orifice.

A spindle b , threaded at b' to engage the internal thread a^3 of the valve-case, is made tapering or frusto-conical at one end at b^2 to constitute the valve coöperating with the valve-seat a' , and herein we have shown the latter as having the greater taper, so that when the valve is seated it engages the seat in an annular line. The opposite end of the spindle extends through a suitable stuffing-box a^x , and its projecting end is made polygonal, as at b^3 , to receive a hand-wheel or other device, whereby the spindle may be rotated in one or the other direction to seat or unseat the valve.

A needle-like clearer c is mounted on the valve end of the spindle to enter the orifice a^2 and pass therethrough when the valve is seated to maintain the orifice clear and free from foreign matter in well-known manner.

In order that the clearer may have great freedom of lateral movement for the reasons

hereinafter set forth, we mount it in a novel yet very simple and effective manner on the spindle *b* at the valve end thereof.

Referring now more particularly to Figs. 2 and 3, a rather deep longitudinal axial socket a^x is made in the spindle at its tapered end, said socket being of considerably greater diameter than the clearer *c*. The inner end of the latter is bent over, as at *c'*, Figs. 2 and 4, and a metal sleeve *d* is loosely slipped onto the clearer down to its bent end and preferably pinched or compressed about the clearer, as at *d'*, holding the clearer firmly thereat; but throughout the length of the sleeve therefrom there is sufficient clearance to permit considerable lateral movement of said clearer within the sleeve. The latter is externally of such diameter that when forced into the socket a^x it will be securely held therein in the position shown in Fig. 2, the clearer extending far enough beyond the mouth of the socket to properly cooperate with the orifice a^2 .

By reference to the dotted-line position of the clearer, Fig. 2, it will be seen that a material lateral movement of the tip of the clearer will be inappreciable at its inner held end within the socket, so that the clearer is vibratable or laterally movable substantially throughout its length.

If for any reason the tip of the clearer should be moved out of alinement with the orifice, the inclined face of the valve-seat will deflect it into position to enter the orifice when the valve is moved toward its seat. Such deflection of the clearer is unobstructed throughout substantially its length, and hence there is no forcible bending or pushing into line, as is the case when the clearer is rigidly mounted, and there is no crystallization of the metal, with consequent weakening and ultimate breakage.

In Fig. 2 the retaining-sleeve is shown as extending to the mouth of the socket; but a shorter sleeve may be used, practically a collar, as *e*, Fig. 6, which is closed around the clearer at *e'*, as before described, the collar being forced into the socket to its inner end or bottom. This permits even greater freedom of lateral movement of the clearer, as will be manifest from Fig. 6.

In Fig. 5 we have shown another mode of holding the inner end of the clearer c^{10} in the socket at or near its bottom, the socket being enlarged at its inner end, as at 20, by means of a suitable tool.

The inner end of the clearer is preferably coiled in spiral form at c^{12} and inserted in the socket, after which by means of a tube-like tool (not shown) the coil is flattened or pushed out laterally into the enlargement 20 of the socket, crowding the material of the spiral thereinto and firmly holding the inner end of the clearer in position. Thus the clearer may be held firmly in place in various ways,

while it is free to move or vibrate laterally throughout substantially its entire length.

Not only does the novel mode of mounting the clearer on the valve preserve the life of the clearer, but it also prevents scoring or wearing of the orifice, so that the latter retains its proper small diameter.

A valve device embodying our invention is well adapted to various forms of apparatus wherein a fluid is delivered under pressure in the form of a spray, as the clearer keeps the discharge-orifice clean without any tendency to enlarge it or score its walls.

We have hereinbefore fully described one or more practical embodiments of our invention, which will be well understood by those skilled in the art, and various changes or modifications may be made without departing from the spirit and scope of our invention.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A valve-seat having a contracted orifice, a cooperating valve having a longitudinal socket opposite the orifice, and a clearer for the latter, inserted in and secured at or near the bottom of the socket and free to move laterally in the mouth thereof.

2. A valve-seat having a contracted, elongated orifice, a cooperating valve having a longitudinal socket opposite the orifice, and a needle-like clearer for and to extend through the latter when the valve is seated, said clearer extending into the socket and being held therein at its bottom, to permit lateral movement of the clearer throughout substantially its length.

3. A conical valve-seat having a contracted, elongated orifice, a cooperating, tapered valve having a longitudinal socket in its end opposite the orifice, a needle-like clearer for the latter, and means to secure the inner end of said clearer in the socket at or near the bottom thereof, the clearer being laterally movable in the socket beyond its point of attachment.

4. A valve-seat having a contracted orifice, a cooperating valve having a longitudinal socket opposite the orifice, a clearer for the latter having its inner end inserted in the socket, and a retaining-sleeve of greater internal diameter than the clearer surrounding the latter and closed upon it at its inner end, the sleeve being forced into the socket to hold the clearer in position on the valve.

5. A valve-seat having a tubular outlet-orifice, a valve to cooperate with the valve-seat and having a longitudinal socket opposite the orifice, and a clearer for the latter inserted and secured in the socket at or near its inner end, the clearer having lateral freedom of movement from its attached end to its tip.

6. A conical valve-seat having an elongated outlet-orifice, a valve to cooperate with the valve-seat and having a longitudinal axial

socket opposite the orifice, a clearer for the
latter, and a holding device for the inner end
of the clearer, inserted into the socket and
permitting free lateral movement of the
5 clearer from its inner, held end, at or near the
bottom of the socket to the tip of the clearer.

In testimony whereof we have signed our

names to this specification in the presence of
two subscribing witnesses.

JOHN A. BEDWORTH.

ARTHUR H. BEDWORTH.

Witnesses:

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