J. J. SULLIVAN.

GAS VALVE.

APPLICATION FILED JAN. 18, 1913.

1,126,914. Patented Feb. 2, 1915.

Fig. 1.

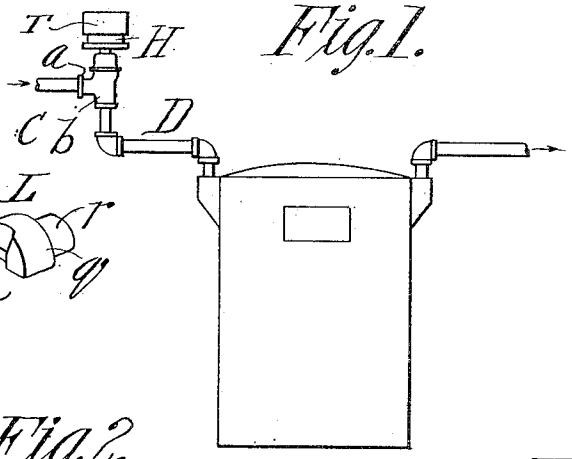


Fig. 5.

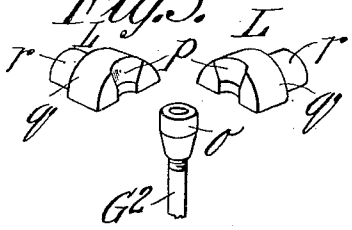


Fig. 2.

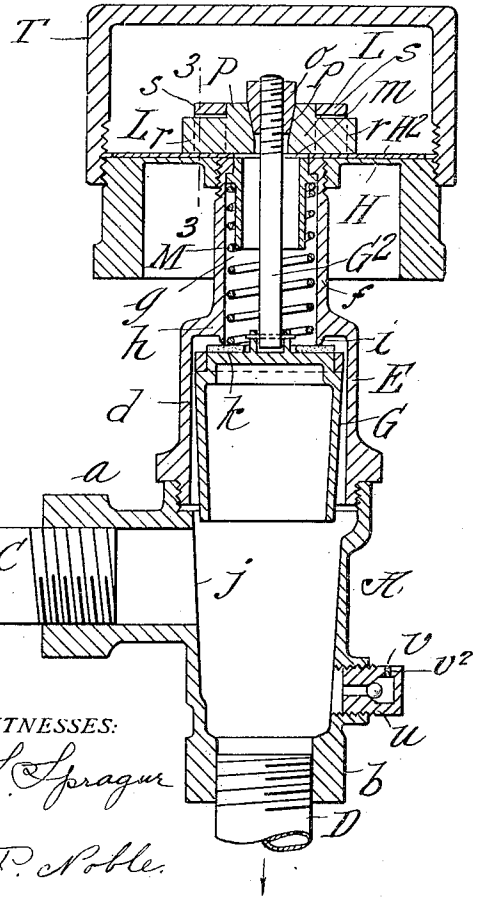


Fig. 3.

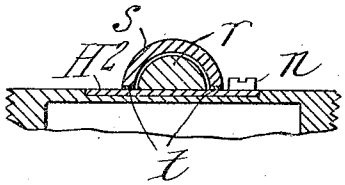
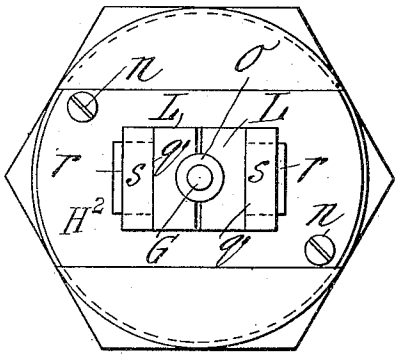


Fig. 4.



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GAS-VALVE.

1,126,914. Specification of Letters Patent. Patented Feb. 2, 1915.

Application filed January 18, 1913. Serial No. 742,770.

To all whom it may concern:

Be it known that I, JOHN J. SULLIVAN, a citizen of the United States of America, and resident of Holyoke, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Gas-Valves, of which the following is a full, clear, and exact description.

This invention relates to improvements in a valve of a kind adapted for employment between a supply and a distributing pipe in a gas or other fluid distributing system, and one in which the valve member is normally in an opened position, being so held by restraining means which are displaceable under temperature conditions whereby a fusible metal comprised in the restraining means becomes melted.

An object of the invention is to provide improved means for the maintenance of the valve normally in its open position.

Another object of the invention is to so construct the device that when the valve is held in its normally opened position, the leakage of gas or other fluid through the valve body will be prevented. And other objects of the invention are to provide means for simplifying and cheapening the construction of the valve and conducing to its efficiency and reliability of action.

The invention is described in conjunction with the accompanying drawings and is set forth in the claims.

In the drawings: Figure 1 is an elevation showing the relation of the gas valve to a supply and distributing pipe in conjunction with which a gas meter is also shown. Fig. 2 is a central vertical section through the improved gas valve. Fig. 3 is a partial vertical section on line 3—3, Fig. 2. Fig. 4 is a plan view of my improved device with the inclosing case removed. Fig. 5 is a perspective view showing formations of parts in detail hereinafter referred to.

In the drawings, A represents the valve body having an inlet connection limb *a* and an outlet connection limb *b* with which the supply pipe C, or pipe in connection with the gas main, and the distributing or service pipe D are respectively connected. The valve body is provided at its upper portion with a bonnet E screw united thereto, the same being formed with a valve accommodating chamber *d* and an extension hub *f* having a passage *g* therethrough of reduced diameter. The construction last referred to is such that an internal annular shoulder *h* is produced at the junction of the chamber *d* and passage *g*, which shoulder is provided with a downwardly extending annular rib *i*.

G represents the valve, normally located in the chamber *d* of the bonnet, the same being of plug form and adapted, when closed, to shut off entrance at the port *j* of gas supplied from the pipe C. The valve at its upper end is provided with a packing of any suitable material adapted to close against said annular rib and for preventing leakage, at all times while the valve is open, of gas through the bonnet of the valve body.

H represents a support shown as screw engaged on the upper end of the bonnet and having a flat or platform-like top, the same having an opening *m* therethrough, through which opening the stem G^2 of the valve is freely movable.

Comprised as a removable section of the top of the support is a thin flat metal plate H^2 detachably confined by the screws *n n*.

On the upper end of the valve stem is provided a member having a downwardly inclined side, this member in practice being preferably made in the form of a downwardly convergent frusto-conical sleeve or nut *o* screw engaged and thereby vertically adjustable on the upper end portion of the stem.

L L represent a pair of members or blocks oppositely arranged and slidable on said support, the same having recesses *p* therein at their approached ends which together constitute a conical socket, and in which the conical member *o* of the valve stem is seated. Said slidable members have shoulders *q* and shank portions *r* as shown, and yokes *s s* embrace the shank portions and have engagements against the shoulders forming stops or abutments for the slidable members L. These yokes are held in the manner of soldering to the plate H^2 by fusible metal *t*, as indicated in Fig. 3. The spring M located and held in compression within the tubular extension hub of the bonnet exerts a sufficiently powerful closing force for the valve G.

When the device is applied in use, the valve being by its stem drawn to its opened position, the screw threaded restraining

member *o* may be turned on the valve stem and thereby slightly downwardly moved for causing such an upward draft on the valve stem as to bring the packing at the head end of the valve to a tightly seated relation against the annular rib *i*,—so that the escape of gas outwardly from the valve body is effectually prevented. In case of abnormal temperature conditions such as might be occasioned in the event of fire, the melting of the fusible metal *t* holding the abutment yokes in their engagements with the slidable members L L, will release such members, leaving them free to be outwardly crowded by the cam-like action of the member *o* under the force exerted in a downward direction by the valve spring,—it, of course, being apparent that on the displacement of said members L the valve will automatically close the port *j* and cut off gas connection between the supplying and distributing pipes.

The valve body at its distributing pipe connection member is provided with a nipple *u* having restricted passage v^2 therethrough which is closed by a fusible metal *v*.

In case there may have been a fire and the gas valve G has automatically closed, shutting off the flow of gas through the gas service pipe, the metal *v* would be fused, leaving the chamber in the nipple *u* open to atmospheric pressure; and in case there should be a partial vacuum or suction inducing a draft of air inwardly through the passage v^2 (which would supply oxygen to the gas between the valve and meter to possibly cause explosion) such action by the little ball which at such time would be drawn to its seat, would be prevented. But under the conditions such as would more probably obtain in case of a conflagration, the residue of gas in the meter and between it and the valve may slowly issue through the passage v^2 for the consumption in the manner of a pilot light and the gas may by the flame, thereabout, be ignited. The support H which is of circular form is exteriorly screw threaded and it receives in connection therewith the internally threaded inverted cup shaped cap T which incloses and conceals the valve stem *o*, the slidable members *q q* and the abutment members *r r* as well as the fusible metal which connects such abutment on the support H.

I claim:—

1. In combination, a movable valve member having a valve-stem provided with a member having an inclined side, a support relatively to which the valve stem moves, a member slidable on said support and with the side of which the inclined sided member of the valve-stem normally engages so as to hold the valve in open position, an abutment normally acting as a stop for said slidable member, a fusible metal connecting the abutment to the support, and a spring for imparting a closing force to the valve and its stem.

2. In combination, a movable valve member having a valve-stem provided with a member having an inclined side, a support relatively to which the valve stem moves, a member slidable on said support and also provided with an inclined side with which the inclined sided member of the valve-stem normally engages so as to hold the valve in open position, an abutment normally acting as a stop for said slidable member, a fusible metal connecting the abutment to the support, and a spring for imparting a closing force to the valve and its stem.

3. In combination, a movable valve member having a valve stem provided with a member having opposite downwardly convergent sides, a support relatively to which the valve stem and its member moves, a pair of members oppositely arranged and slidable on said support and having downwardly and inwardly inclined end surfaces with which the converging sides of the valve stem member normally engage so as to hold the valve open,—said slidable members having shoulders and shank portions, yokes embracing the shank portions and engaging the shoulders, fusible metal connections between said yokes and said support, and a spring for imparting a closing force to the valve and its stem.

4. In combination, a movable valve member having a valve stem provided with a downwardly convergent conical member, a support relatively to which the valve stem and its conical member moves, a pair of members oppositely arranged and slidable on said support and having recesses therein which together constitute a conical socket, and in which the conical member of the valve stem is seated, so as to normally hold the valve in open position—said slidable members having shoulders and shank portions, yokes embracing the shank portions and engaging the shoulders, fusible metal connections between said yokes and said support, and a spring for imparting a closing force to the valve and its stem.

5. In combination, a valve-body having an inlet and an outlet, and having a chambered valve accommodating upper portion made with a valve stem opening and with an internal annular shoulder at the junction of said valve accommodating chamber and said valve stem opening, a valve, normally located in said upper chambered portion and in closing relation to said internal shoulder, having a restraining member on its stem a spring exerting a closing force to the valve, a support relatively to which the valve stem is movable, a member movably mounted on the support and normally in engagement with said restraining member so as to hold

the valve in open position, and means comprising a fusible metal for normally holding the movably mounted member in its position of engagement with the valve restraining member.

6. In combination, a valve-body having an inlet and an outlet, and having a chambered valve accommodating upper portion made with a valve stem opening and with an internal annular shoulder at the junction of said valve accommodating chamber and said valve stem opening, a valve, normally located in said upper chambered portion and in closing relation to said internal shoulder, having a restraining member which is longitudinally adjustable on its stem, a spring exerting a closing force to the valve, a support relatively to which the valve stem is movable, a member movably mounted on the support and normally in engagement with said restraining member, so as to hold the valve in open position and means comprising a fusible metal for normally holding the movably mounted member in its position of engagement with the said restraining member.

7. In combination, a movable valve member having a valve stem provided with a member having an inclined side, a circular and exteriorly threaded support relatively to which the valve stem moves, a member slidable on said support and also provided with an inclined side with which the inclined sided member of the valve stem normally engages, so as to hold the valve in open position, an abutment normally acting as a stop for said slidable member, a fusible metal connecting the abutment to the support, a spring for imparting a closing force to the valve and its stem, and an inverted cup-shaped cap screw engaged with said threaded support and inclosing and concealing said inclined sided valve stem member, the member which is slidable on said support and the abutment therefor.

8. In combination, a valve-body having an inlet and an outlet, and having a chambered valve-accommodating upper portion made with a valve stem opening and with an internal annular shoulder at the junction of said valve-accommodating chamber and said valve stem opening, provided with a downwardly extended annular rib, a movable valve, normally located in said upper chambered portion and provided at its upper portion with a packing material adapted to close against said annular rib, and having a valve stem, a member screw threaded and vertically adjustable on the valve stem, a spring exerting a closing force to the valve, a support relatively to which the valve stem and its member are movable, a member movably mounted on the support and normally in engagement with said valve stem member so as to hold the valve in open position, and means comprising a fusible metal for normally holding the movably mounted member in its normal position of engagement with the valve stem member.

9. In a gas valve, in combination, a valve body comprising a coupling having inlet and outlet passages and having a bonnet screw united thereto, formed with a valve accommodating chamber and an extension hub having a passage of reduced diameter therethrough, a shoulder being formed at the junction of said chamber and reduced passage,—such shoulder having a downwardly extending annular rib, a support mounted on the bonnet and having an opening therethrough, the valve normally located in the bonnet chamber and having a packing material at its upper end adapted to seat against said annular shoulder and having its stem extending through said bonnet hub and said support said stem being provided with an annular screw threaded member vertically adjustable thereon, a spring located within the hub of the bonnet and exerting a closing force against the valve, a member movablv mounted on the support and having an engagement with said adjustable screw threaded member, so as to normally hold the valve in open position and means comprising a fusible metal for normally holding the movably mounted member in its position of engagement with the screw threaded member.

10. In combination, a movable valve member having a valve-stem provided with a member having an inclined side, a support relatively to which the valve stem moves, a plate detachably confined on said support, a member slidably mounted on said plate and with the side of which the inclined sided member of the valve-stem engages so as to normally hold the valve in open position, an abutment acting as a stop for said slidable member, a fusible metal connecting the abutment to the plate, and a spring for imparting a closing force to the valve.

11. In a gas valve, in combination, a valve body comprising a coupling having inlet and outlet passages and having a bonnet screw united thereto, formed with a valve accommodating chamber and an extension hub having a passage of reduced diameter therethrough, a support screw engaged on the upper portion of the bonnet and having an opening therethrough, the valve normally located in the bonnet chamber and having its stem extending through said bonnet hub and through said support and said stem being provided with an annular screw threaded member vertically adjustable thereon, a spring located within the hub of the bonnet and exerting a closing force against the valve, a member movably mounted on the support and having an engagement with said adjustable screw threaded member, so

as to normally hold the valve in open position, means comprising a fusible metal for normally holding the movably mounted member in its position of engagement with the screw threaded member, and an inverted cup-shaped casing for inclosing the extremity of the valve stem, and the parts appurtenant thereto and screw engaged with the said support.

12. In a gas valve, a valve body having separate coupling limbs for connection therewith of supply and distributing pipes and having a restricted passage leading outwardly from the valve chamber therein to the atmosphere, said passage having a closure therefor composed of fusible metal, a valve in said body having a valve stem provided with a restraining member, a support relatively to which the valve stem and its member are movable, and means provided on said support and comprising a fusible metal for normally engaging said valve stem restraining member for retaining the valve in its normally opened position.

Signed by me at Springfield, Mass., in presence of two subscribing witnesses.

JOHN J. SULLIVAN.

Witnesses:
G. R. DRISCOLL,
WM. S. BELLOWS.

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