E. C. WEISGERBER.

THERMAL GAS CUT-OFF VALVE.

APPLICATION FILED JAN. 31, 1916.

1,218,729. Patented Mar. 13, 1917.

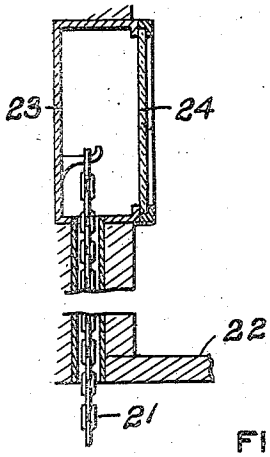


FIG. 1.

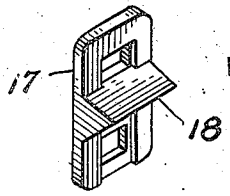
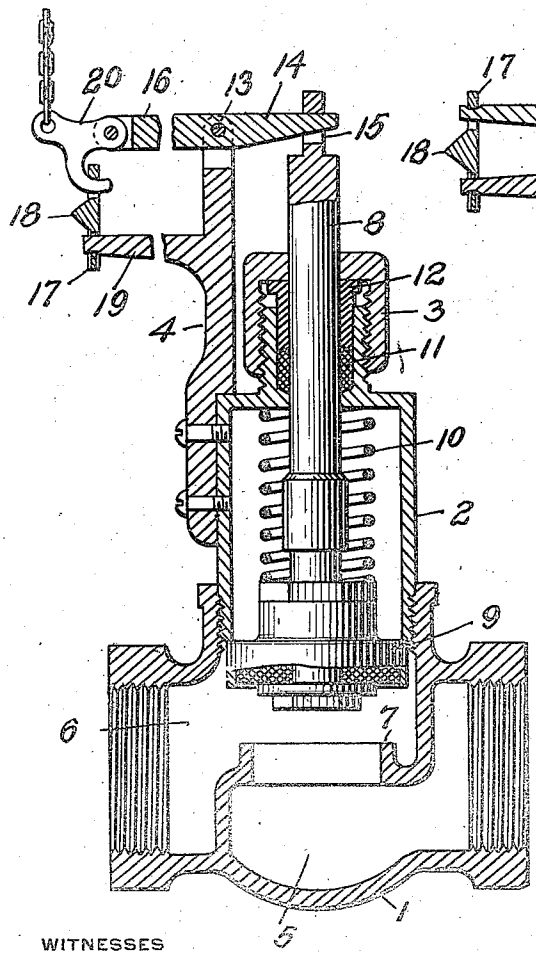


FIG. 3.



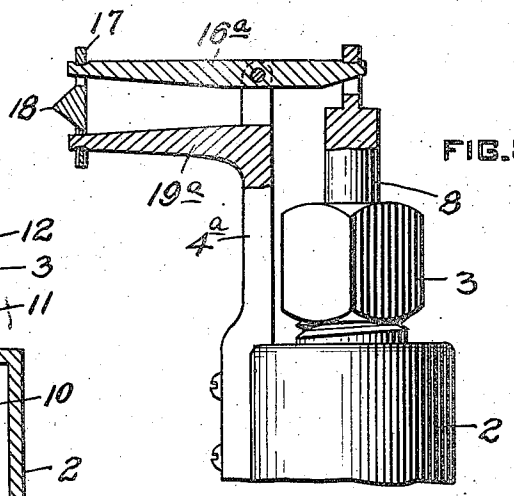


FIG. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

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THERMAL GAS-CUT-OFF VALVE.

1,218,729. Specification of Letters Patent. Patented Mar. 13, 1917.

Application filed January 31, 1916. Serial No. 75,355.

To all whom it may concern:

Be it known that I, EDWIN C. WEISGERBER, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Thermal Gas-Cut-Off Valves, of which improvements the following is a specification.

My invention relates to thermal cut-off valves such as are placed in exposed positions in the gas supply pipes of buildings and which are so constructed and arranged that, in case the building takes fire, the gas will be automatically shut off to prevent its feeding the fire or causing an explosion.

In valves of the character and for the purpose contemplated by my invention, it is very desirable that the valve rod or stem be adequately packed to prevent the gas from leaking. To assure the operation of the valves in case of fire, it is necessary that the valve be pressed toward the seat by an unusually strong and stiff spring, it being understood that the valve stem, having remained in open-valve position for a period of perhaps several years, will, by the packing, by corrosion, or otherwise, become so firmly held in such position that a spring of sufficient strength to readily move the stem when the valve is installed, will fail at such later period. However, to directly hold the stem against the resistance of a strong spring, a heavy and strong fusible link or other connecting element, is required, and it will be readily appreciated that the fusible material required to construct a heavy connecting element will fuse less quickly than a smaller and weaker element.

With the foregoing considerations in mind, the object of my invention may be stated as being to provide a thermal cut-off valve having a packed stem pressed by means of a strong spring toward valve-closing position, but indirectly held in open-valve position against the pressure of such strong spring by means of a relatively weak and readily fusible link, the valve furthermore being simple in construction, certain and positive in its operation, and inexpensive to manufacture.

In the accompanying sheet of drawings which form part of my specification, I have illustrated the preferred embodiment of my invention. Figure 1 is a longitudinal central sectional view of the valve and mechanism for closing it automatically as well as manually; Fig. 2 a detail view showing a modification of construction; and Fig. 3 a perspective view of the fusible link shown in section in Figs. 1 and 2.

In the practice of my invention, I provide a casing having a valve seat therein and a valve stem longitudinally movable to and from such seat. The valve stem is adequately packed to prevent the escape of gas, and is yieldingly pressed toward the seat by means of a stiff spring within the casing. Outside of the casing there is a pivoted lever having a short arm which engages the outer end of the valve stem and a long arm connected by a fusible element to a support to hold the valve stem in open valve position. Preferably a pivoted finger is interposed between the long arm of the lever and the fusible element so that the lever may be released manually by the movement of such finger, or automatically by the fusion of the link.

In the embodiment of my invention illustrated particularly in Fig. 1, the valve casing is formed of four parts, a pipe connecting member 1, a cylinder or barrel 2, a cap or packing nut 3 and a lever support 4. The member 1 is provided with an inlet chamber 5, outlet chamber 6 and a communicating port and valve seat 7. The cylinder 2 has screw thread attachment to a side outlet of the member 1 and surrounds the longitudinally movable valve stem 8, having at its inner end a closure 9, pressed by a stiff spring 10 toward the seat 7. It will be observed that the cylinder surrounds the spring 10, thus protecting it against the deteriorating effects of the atmosphere; and furthermore, that the arrangement is such that the spring contacts neither with the valve stem nor cylinder, thus being free to expand when released. The outer end of the stem is packed by means of a suitable gasket 11, bushing 12 and the nut 3.

As already stated the stem 8 is held in open valve position by means of a lever. This lever is pivoted as at 13 to the support 4, and has a short arm 14, which engages a hole 15 at the outer end of the stem, and a long arm 16 to which the fusible element is either directly or indirectly attached. The

fusible element is preferably in the form of a link 17 having a central portion 18 of relatively low fusion material and outer portions of high fusion material. In the embodiment of my invention shown in Fig. 2 the fusible link 17 directly engages the long lever arm 16^a and a laterally projecting stem 19^a of the support 4^a. Preferably, however, the arm 16 has a finger 20 pivoted to its outer end and adapted to engage the link, as shown in Fig. 1, thus effecting an indirect attachment of the long lever arm to the stem 19. To the finger 20 there is attached a chain 21, which extends through a floor 22, and is supported at its upper end within a box 23, having a glass face 24. This box may be placed in an exposed position in the face of a wall, the arrangement being such that in case of fire the glass face 24 may be broken and the chain 21 pulled to release the finger 20 from its engagement with the link 17, so that the valve stem 8 may, under the pressure of the spring 10, move to valve-closing position.

The operation of the valve will be readily understood from the foregoing explanation. The valve of Fig. 2 is intended only for automatic operation upon the fusion of the link 17, while that of Fig. 1 may, in addition to its automatic operation, be operated manually in the manner described. It will be observed of the valve that the packed stem may be placed under the pressure of a stiff spring without the necessity of employing a structurally heavy fusible link, and that, when the link is fused or manually released, the stem will be free to move under the pressure of the spring.

According to the provisions of the patent statutes, I have described the principle and operation of my invention together with the valve which I now consider to be the best embodiment thereof. However, I desire to have it understood that the valve shown is only illustrative and that my invention may be practised by other forms of valves.

I claim as my invention:

1. In a thermal cut-off valve, the combination of a casing, a packed longitudinally-movable valve stem, a stiff spring for pressing said stem toward valve-closing position, a lever pivoted to said casing adjacent to the outer end of said stem and having long and short arms extending transversely to said stem, the short arm of said lever engaging the outer end of said stem, and a fusible link connecting the long arm of the lever to said casing so as to hold the stem in its open-valve position against the pressure of said spring.

2. In a thermal cut-off valve, the combination of a casing, a packed longitudinally-movable valve stem, a spring within said casing and exerting its pressure upon said stem to press it toward valve-closing position, a lever support secured to said casing and provided with a laterally-extending link engager, a lever having long and short arms pivoted to said support and extending transversely of said stem, the short arm of said lever engaging the outer end of said stem, and a fusible link connecting the long arm of the lever to said link engager so as to hold the stem in its open-valve position against the pressure of said spring.

3. In a thermal cut-off valve, the combination of a casing, a packed longitudinally-movable valve stem therein, a spring within the casing exerting a pressure upon said stem to press it toward valve-closing position, said pressure being substantially greater than that required to overcome the oppositely-acting fluid pressure on the valve and the frictional resistance of the valve stem packing, a lever having long and short arms pivoted to said casing adjacent to the outer end of said stem, the short arm of said lever engaging said stem and the long arm thereof having a finger pivoted thereto, and a fusible link connecting said finger with said casing and thereby holding said stem in open valve position against the pressure of said spring, the tensile strength of said link being less than the unbalanced spring pressure upon said stem.

4. In a thermal cut-off valve, the combination of a casing comprising a pipe connecting member, a spring-inclosing sleeve at one side thereof and a packing nut; a longitudinally-movable valve stem extending through said sleeve and packing nut and having a lever-receiving hole at its outer end, a stiff spring within said sleeve and exerting its pressure upon said stem to press it toward valve-closing position, a lever support secured to said sleeve and provided with a laterally extending link engager, a lever pivoted to said support and having long and short arms extending transversely of said stem, the short arm of said lever extending into said hole in the valve stem, a finger pivoted to the outer end of the long arm of the lever, and a fusible link connecting said finger with the link engager of said support and thereby holding said valve stem in open-valve position against the pressure of said spring.

In testimony whereof I have hereunto set my hand.

EDWIN C. WEISGERBER.

Witnesses:

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FRANCIS J. TOMASSON.