Dec. 2, 1930. A. D. TAYLOR 1,783,395

AUTOMATIC GAS CONTROL VALVE

Filed July 25, 1928

FIG. 1.

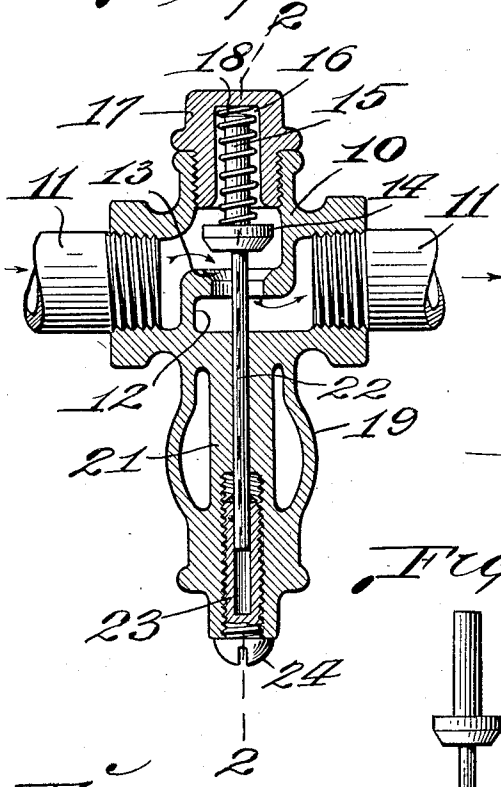


FIG. 2.

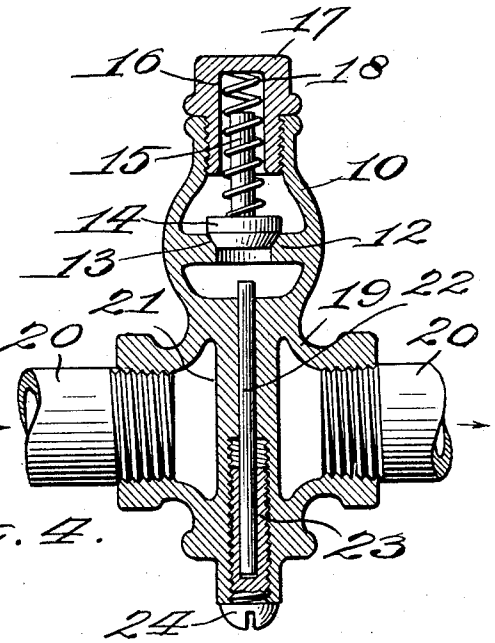


FIG. 3

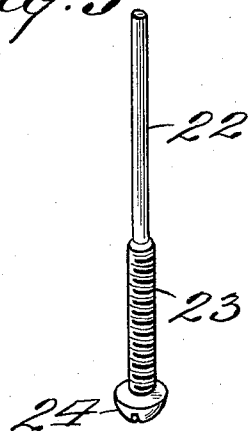
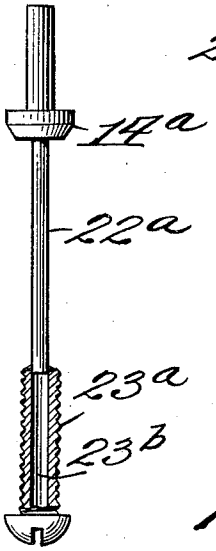


FIG. 4.



INVENTOR.
ALSTON D. TAYLOR
By Martin P. Smith ATTY.

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UNITED STATES PATENT OFFICE

ALSTON D. TAYLOR, OF LOS ANGELES, CALIFORNIA

AUTOMATIC GAS-CONTROL VALVE

Application filed July 25, 1928. Serial No. 295,195.

My invention relates to an automatic gas control valve that is particularly designed for use in the gas supply line that leads to the ordinary household water heater and said valve being intended to function automatically and cut off the flow of gas in the event that the users of the gas heater neglect to turn off the gas, which conditions results in an overheating of the water which sometimes causes the tank to explode, and in other instances the heated water backs up from the tank so as to render the meter unfit for service, thereby necessitating expensive repairs.

The principal objects of my invention are to provide a gas flow control valve that is relatively simple in construction inexpensive of manufacture, and which will act automatically under an abnormal degree of heat to shut off the flow of gas through the supply pipe that leads to the burner of a household water heater or other similar appliance.

Further objects of my invention are to provide a gas flow control valve that may be serviced or maintained in proper condition for automatic operation without requiring the services of a skilled operator, and, further, to provide a valve of the character referred to wherein the automatically acting stem that normally holds the gas flow control valve open may be inserted or removed without leakage or loss of gas.

A further object of my invention is to generally improve upon and simplify the existing forms of gas flow control valves.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangements of parts that will hereinafter be more fully described and claimed and illustrated in the accompanying drawings, in which:

Fig. 1 is a vertical section taken through the center of a gas flow control valve embodying the principles of my invention.

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

Fig. 3 is a perspective view of the stem that is utilized for normally holding the gas valve open and which acts under abnormal temperatures to permit the gas valve to close.

Fig. 4 is an elevational view partly in section of a modified form of the collapsible or telescopic member that normally holds the gas valve open.

Referring by numerals to the accompanying drawings which illustrate a practical embodiment of my invention, 10 designates a valve body that is located in a gas supply line 11 and formed within said valve body is a partition 12 having a seat 13 for a downwardly seating valve 14.

The valve 14 is carried by the lower end of a stem 15, the latter extending upwardly into a chamber 16 that is formed in a cap 17, the lower portion of the latter being screw seated in the upper portion of the valve body 10 and arranged on the stem 15 between the cap 17 and the valve 14 is an expansive coil spring 18 that tends to force the valve 14 into the seat 13.

Formed integral with and depending from the valve body 10 is a body 19 that is located in the pipe 20 that supplies water to the tank or other appliance with which my improved gas flow control valve is associated and centrally arranged within the chamber of the body 19 is a vertically disposed support or tubular member 21.

The collapsible two-part telescopic stem or member that is utilized for normally holding the valve 14 off its seat so as to permit gas to flow freely through the valve that is located in the gas supply line 11, comprises a pin or rod 22, the lower portion of which is connected by readily fusible metal to the upper portion of a tubular screw 23, the latter being provided on its lower end with a head 24, and said screw is seated in a threaded bore 25 that is formed in the lower portion of the member 21.

It will be understood that the collapsible stem comprising the rod 22 and screw 23 is supplied with the gas control valve, and that the rod 22 is secured to the upper end of the screw by metal that will fuse under a predetermined degree of heat, and it is a comparatively simple matter to install one of the stems, inasmuch as it is only necessary to screw the shank of screw 23 into the threaded bore 25, and in so doing the upper end of the rod 22 engages the underside of valve 14 and

lifts same off its seat, thereby opening the port or passage through valve body 10.

With the valve in open position, gas may readily flow through the valve body 10 to the water heater or appliance with which the device is associated, and in the event that the user of the water heater or other appliance fails to close the gas valve adjacent to the gas burner, and water within the tank becomes heated to such a degree as to back up through the water supply pipe 20, the fusible metal connecting rod 22 with screw 23 will melt as the tubular member 21 becomes heated, thereby permitting rod 22 to drop in the tubular screw 23 and consequently permitting valve 14 to be forced onto its seat by the power stored in expansive spring 18.

Thus the further flow of gas to the burner connected with the water heater or other appliance is cut off and danger of an explosion or injury to the meter is eliminated.

After the stem has collapsed as just described to permit the valve to close the collapsed stem may be readily removed by unscrewing the screw 23, which action is accomplished without leakage of gas and a new or uncollapsed stem may be easily and quickly inserted by seating screw 23 in the bore 25, and which action shifts valve 14 from its seat so as to permit gas to flow through line 11, thereby restoring service of the water heater or other appliance with which the device is associated.

In Fig. 4 I have illustrated a modified form of collapsible or telescopic member that normally holds the gas control valve in open position and which under abnormal temperatures collapses in the water passageway through the valve housing and this modified structure comprises a pin or rod 22*a* that is rigidly fixed in any suitable manner to the gas control valve 14*a* and which depends from said valve and passes through the tubular member that occupies the center of the water passageway in the valve housing.

The lower end of this rod 22*a* is secured by readily fusible metal to the upper end of a screw 23*a*, which latter is provided with an axial bore or chamber 23*b*, and which latter receives the lower portion of the pin or rod 22*a* when the fusible metal that connects the rod and screw melts under abnormal temperature within the water flow chamber of the valve.

An especially desirable feature of my improved valve is the arrangement of the tubular member 21 that extends entirely across the water flow passage in the valve housing 19 so that said tubular member which surrounds the greater portion of the telescopic member is always under the influence of the temperature of the water that flows through valve housing 19 and as said tubular member is surrounded by the water it is insulated and protected against external temperatures which, under certain conditions, might tend to fuse the metal that connects the rod and screw comprising the collapsible element.

Furthermore the tubular member 21 is in the direct path of travel of heated water in the event that the same backs up from the water heater or other appliance and thus the heat of such water in backing up is transferred directly to the telescopic or collapsible member that is wholly surrounded by member 21.

Thus it will be seen that I have provided a gas flow control valve that is relatively simple in construction, inexpensive of manufacture and maintenance, and which device acts automatically under abnormal condition to cut off the flow of gas to the burner of a household water heater or other appliance, and consequently preventing explosions and fires, and eliminating the expense of repairs to associated parts.

It will be understood that minor changes in the size, form and construction of the various parts of my improved automatic gas control valve may be made and substituted for those herein shown and described without departing from the spirit of my invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. The combination with a valve housing having separate gas and water passageways, and a valve located in that portion of the housing having the gas passageway, of a tubular member extending through said water passageway, a two-part telescopic stem removably seated in said tubular member, which stem when positioned in said tubular member in extended position, holds the gas flow control valve in open position and the two parts of said stem being secured in extended position by readily fusible metal.

2. A gas flow control valve comprising a valve housing having separate gas and water passageways, a spring pressed valve for controlling the flow of gas through the gas passageway in said housing, a tubular member extending through the water passageway in said housing, and a telescopic stem removably seated in said tubular member and comprising parts that are connected by readily fusible metal, which stem when properly positioned in said tubular member holds the gas flow control valve in open position.

3. In a gas flow control valve, a valve housing provided with separate gas and water passageways, a spring-held valve controlling the flow of gas through the gas passageway in said housing, a support extending through the water passageway in said housing, a member removably seated in said support, and a rod secured to said member by readily fusible metal, which rod projects into the gas passageway and normally holds the spring-held valve therein off its seat.

4. A gas flow control valve comprising a valve housing having separate gas and water passageways, a spring pressed valve for controlling the flow of gas through the gas passageway in said housing, a support extending through the water passageway in said housing, a collapsible member for normally holding the gas flow control valve in open position, which collapsible member extends through the support in said water passageway and a body of fusible metal connecting the parts of said collapsible member for holding the same in extended position.

5. In a gas flow control valve, a housing provided with separate gas and water passageways, a spring held valve for controlling the flow of gas through the gas passageway in said housing, a support extending through the water passageway in said housing, a rod extending through said support and normally bearing against the gas flow control valve to maintain the same in open position, and a screw seated in the lower portion of said support and connected to said rod by readily fusible metal.

6. In a gas flow control valve, a valve housing provided with separate gas and water passages, a spring-held valve controlling the flow of gas through the gas passageway in said housing, a support located in the water passageway through the housing, which support is positioned so that it is wholly surrounded by the water passing through said passageway, a collapsible member extending through said support and normally bearing against the spring-held valve so as to hold the same in open position and a readily fusible connection between the parts of said collapsible member for normally holding the same in extended position.

7. In a gas flow control valve, a valve housing provided with separate gas and water passageways, a spring-held valve controlling the flow of gas through the gas passageway in said housing, a support located in the water passageway through the housing, which support is positioned so that it is wholly surrounded by the water passing through said passageway, and a collapsible member extending through said support and normally bearing against the spring-held valve so as to hold the same in open position, which collapsible member comprises a rod and a recessed screw that are connected by readily fusible metal.

In testimony whereof I affix my signature.

ALSTON D. TAYLOR.