H. SCHNEIDER.

THERMOSTATIC VALVE CONTROLLING MECHANISM.

APPLICATION FILED APR. 28, 1909.

947,310.

Patented Jan. 25, 1910.

FIG. 1.

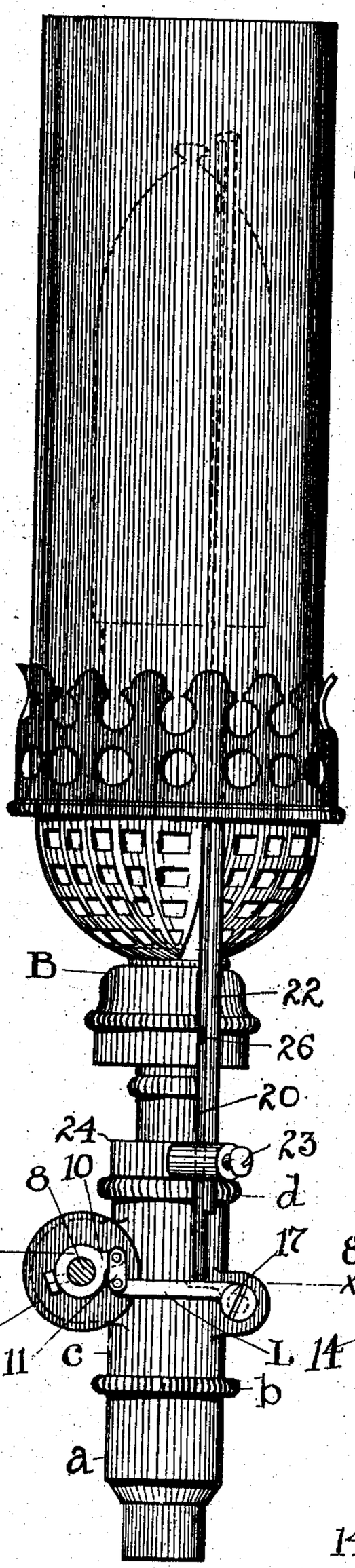


FIG. 2.

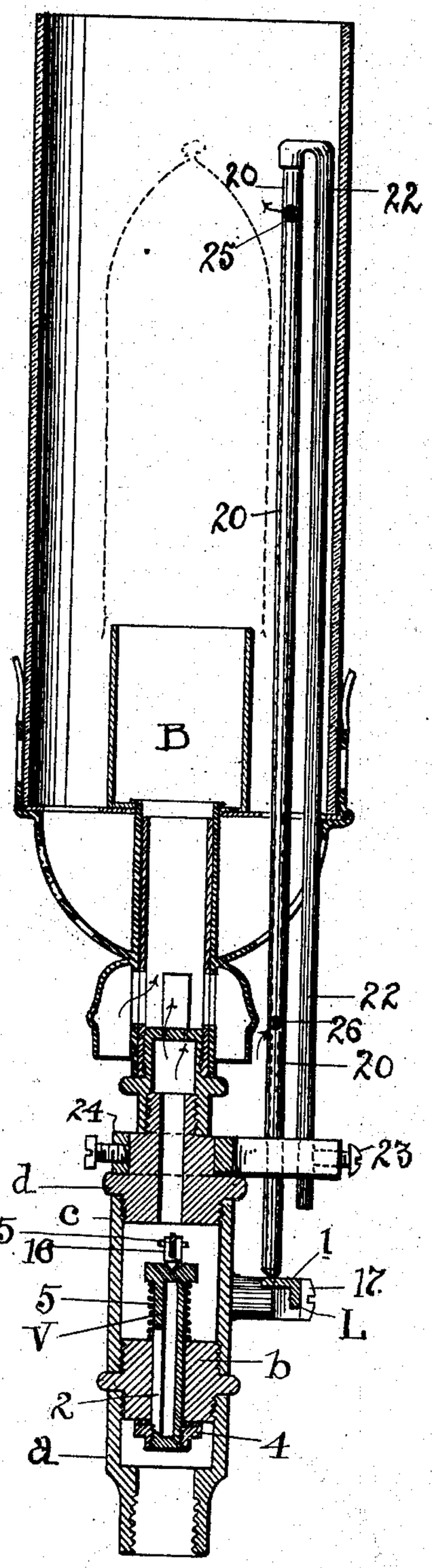


FIG. 3.

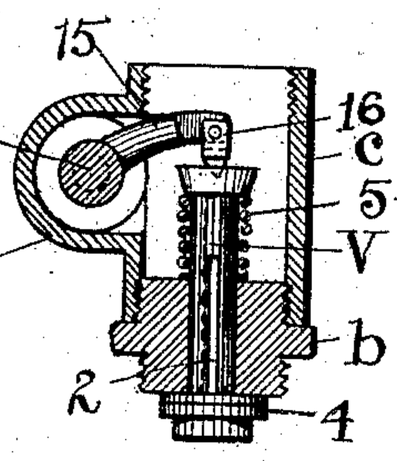
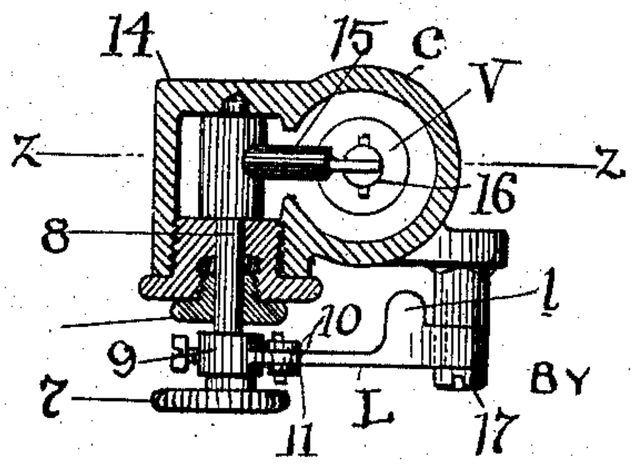


FIG. 4.



ATTEST.
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THERMOSTATIC VALVE-CONTROLLING MECHANISM.

947,310. Specification of Letters Patent. Patented Jan. 25, 1910.

Application filed April 28, 1909. Serial No. 492,689.

To all whom it may concern:

Be it known that I, HUGO SCHNEIDER, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Thermostatic Valve-Controlling Mechanism, of which the following is a specification.

My invention relates to a thermostat for controlling the flow of gas to burners, all substantially as shown and described and particularly pointed out in the claims.

In general, the object of the invention is embodied in a thermostat and valve adapted to completely shut off the flow of gas when the flame is accidentally extinguished, as well as to regulate the size of the flame by gradually cutting off the gas when the flame reaches abnormal heights and temperatures.

In the accompanying drawings, Figure 1 is a side elevation of a gas light with a mantle and my improved thermostatic devices operatively arranged in connection with the gas valve for said lamp. Fig. 2 is a vertical sectional elevation thereof showing the parts in the relations disclosed in Fig. 1. Fig. 3 is a central sectional elevation of the valve seat coupling and a section of the valve casing connected therewith at the top and showing the valve closed at the bottom. Fig. 4 is a cross section looking down on line *x*—*x*, Fig. 1.

As thus shown the device consists, first, of a suitable embodiment or casing for the valve which governs the flow of gas to the lamp or other burner, and built up with a number of separable parts comprising, in this instance, a bottom tubular member or section *a*, a coupling *b* provided with a central bore adapted to receive valve V, a short tubular section *c* threaded onto said coupling and upon coupling *d* at its upper end. From this point upward the details need not be specifically described as they are not in themselves material. Valve V is tubular and cylindrical and has a slot or slit 2 between its headed ends of a length somewhat greater than the axial depth of coupling *b* in which it is supported for a purpose presently to be seen. The seating portion or head 4 of the valve is at its bottom against the bottom of said coupling, and when seated as in Fig. 2, under the lift of spring 5 interposed between the top of the valve and the said coupling, the valve is closed. Then as said valve is depressed it opens in proportion to the depth of depression and exposure of slot 2, through which the gas enters and passes up through the valve and out into the space above said coupling *b* through the upper portion of said slot.

Two separate lines of devices are shown for depressing the valve, both of which operate through or upon the actuating lever L. The first of said lines is wholly mechanical and extends from hand wheel 7 on spindle 8 through collar 9 on said spindle or shaft, which has a finger 10 connected by link 11 with end of lever L. Said shaft or spindle 8 extends through housing 14 at or on one side of casing section *c*, from within which an arm 15 extends from said shaft into said section and has a bearing point 16 pivoted thereon and seated in a cavity in the top of said valve. Hence by rotating spindle 8 by hand the valve V can be opened as far as desired. Of course if pressure on the valve be released the spring 5 will instantly close the same. Lever L is pivoted on casing section *c* at 17 and the second line of valve operating means comprises a thermostatic tube 20 of brass or copper which is supported by a standard 22 of different expansive properties such as steel or iron next to the filament or flame of the lamp or light in such close relations that it will become heated and operative in a comparatively few seconds after the lamp is lighted. The lower end of said tube 20 rests upon lever L, which has a widened bearing *l* therefor, and the standard 22 having said tube engaged with its upper elbow end is itself adjustably supported at its lower end by set screw 23 in collar 24 on coupling *d*.

Now returning to valve V it is seen that the slot 2 therein is of such length that it will always be open more or less above or below the said seating member or coupling *b* and the extent of the opening at either end determines the flow or supply of gas to the lamp. Thus, having opened the valve by hand through wheel 7 and lighted the lamp a very slight delay in releasing the grip on wheel 7 will enable the thermostat tube 22 to so heat and expand that it will hold the valve open when the hand is released. Then and thereafter the flow of the gas will be automatically controlled. If the flame runs high and the thermostat is correspondingly affected it will expand to such a degree that it will begin to close the slot 2 exposed above coupling and may practically cut off the es-

cape of gas therethrough, thus of course reducing the flame and the volume of heat and helping to restore normal conditions. Thus the thermostat automatically regulates the light or flame by governing the amount of gas consumed.

Obviously the invention is not limited to gas lights but may be used in connection with devices or apparatus generally where thermostatic control of the flow of the gas is desirable, such as found, for instance in gas stoves, instantaneous heaters, and furnaces.

Tube 22 is provided with side openings 25 and 26 at top and bottom, respectively, to permit circulation of air therethrough, thereby prolonging the life of said tube and making it also more sensitive than otherwise. Thus, when the flame is cut off quicker cooling and contraction of the tube results. The entire arrangement of the valve is such that the parts may have perfect freedom of movement with a minimum of friction.

A solid rod may be used in place of tube 20 but the tube is preferred for the reasons named.

In operation, when the flame is extinguished by accident or otherwise, tube 20 will immediately cool and contract and this relieves the pressure upon lever L and permits valve V to rise under the action of spring 5 until head 4 seats itself and cuts off the flow of gas to burner B.

What I claim is:

1. A casing and a gas controlling valve therein having a slot lengthwise for determining the flow of the gas and a removable coupling support for the valve in said casing having a bore of less length than the length of said slot, and the said valve having a head adapted to seat and close said slot and to open and pass the gas through one end of the slot and out of the other end.

2. The mechanism described comprising a tubular valve, a screw threaded support in which said valve is slidably mounted said valve having a head adapted to seat against the bottom thereof, and a spring to seat said valve, in combination with means to depress and open said valve comprising an arm having a pivoted bearing point seated within the top of said valve, and a thermostatic tube having operating connection with said arm.

3. In a thermostat valve for gas lamps and burners, a separable casing for the valve comprising a lower tubular member, a coupling having a central bore, a tubular section removably mounted upon said coupling and having a side housing, a top coupling member for said section to removably hold the burner, and a burner, in combination with a valve slidably mounted within said bored coupling, a shaft mounted in said tubular section having engaging connections with said valve, a spring for said valve, a lever and link connections for said shaft, and a thermostatic device engaged with said lever.

4. The combination of a gas burner and a slidable spring pressed valve to control the flow of gas thereto, and means to operate said valve comprising a rock shaft having an arm and a pivoted bearing member adapted to bear on the valve and separable therefrom, a pivoted lever and a linked connection with said shaft to rotate the same, and a thermostat engaging said lever, said shaft having a handle to provide for initial rotation thereof.

5. In gas lamps, the lamp and valve connections therefor at its bottom, in combination with a thermostat device for controlling the flow of gas to the lamp, comprising a pair of parallel stems of different expansive properties mounted partly within and partly without said lamp, one of said stems being adjustably supported at one end and rigidly connected at its opposite end with the other stem, and the latter stem being tubular and having an air intake opening at its lower end located outside of said lamp and having an outlet opening at its upper end located within the lamp.

6. In a thermostat device for controlling the flow of gas burners or the like, a lamp having valved gas connections, in combination with a tube of expansive material engaged with said valved gas connections and having air intake and outlet openings at its opposite ends to permit a free circulation of air therethrough, said intake end being upon the outside of said lamp.

7. A thermostat device comprising a metallic tube having air intake and outlet openings in its side and respective ends, and means to support said tube for endwise expansive movements comprising a rod secured to the upper end of said tube and a horizontally rotatable mounting in which said rod is vertically adjustable.

In testimony whereof I affix my signature in presence of two witnesses.

HUGO SCHNEIDER.

Witnesses:
E. M. FISHER,
F. C. MUSSUN.