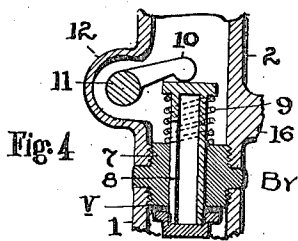
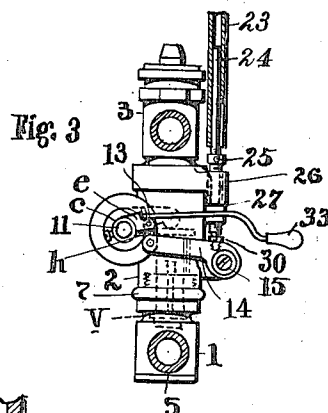
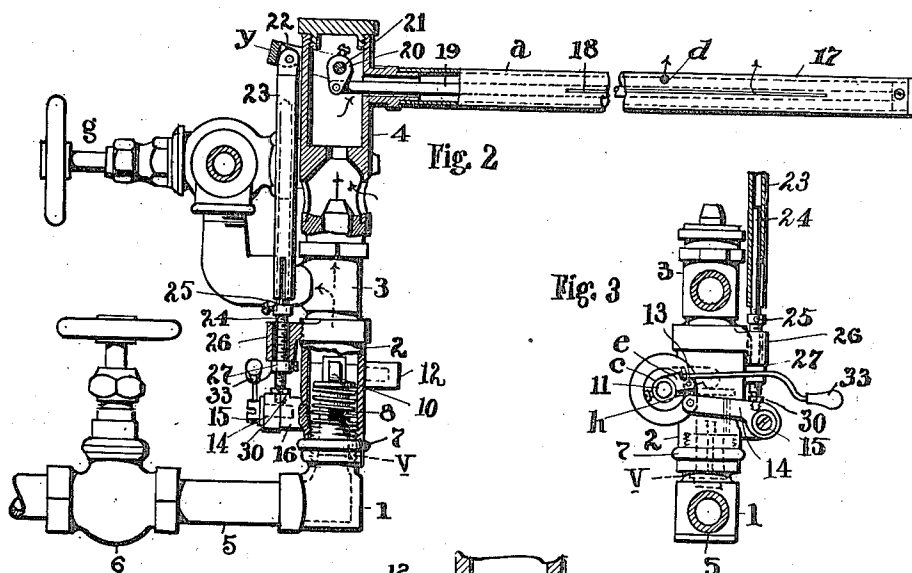
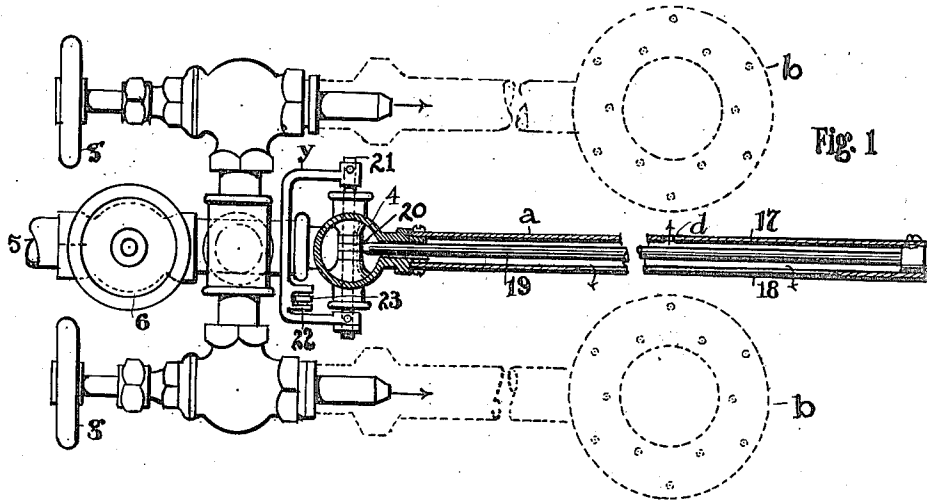


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THERMOSTATIC GAS BURNER.
APPLICATION FILED SEPT. 9, 1912.

1,060,136.

Patented Apr. 29, 1913.



ATTEST
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UNITED STATES PATENT OFFICE.

HUGO SCHNEIDER, OF CLEVELAND, OHIO.

THERMOSTATIC GAS-BURNER.

1,060,136.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed September 9, 1912. Serial No. 719,276.

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 Gas-Burners, of which the following is a specification.

This invention relates to and comprises a thermostatic gas burner, substantially as herein shown and described and more particularly pointed out in the claims.

In general, the object is to provide automatic mechanism to instantly cut off the supply of gas when the flame at the burner is extinguished. To produce this result, the invention includes means to permit a differential movement in the operating connections, and also embodies a thermostatic tube adapted to be used either as a pilot light or heating burner or both.

The invention is also applicable to illuminating burners of the kind shown in my Letters Patent No. 947,810, and dated January 25, 1910.

In the accompanying drawings, Figure 1 is a plan view of an installation of my invention with a two-burner setting for the use of gas and the thermostatic tube shown as located between the same and sectioned lengthwise to disclose the internal construction thereof. Fig. 2 is a side elevation of the devices seen in Fig. 1 and partially sectioned. Fig. 3 is a view looking in from the left of Fig. 2 and designed to show the means whereby the shut-off mechanism is sensitized to the thermostat, as hereinafter fully described. Fig. 4 is an enlarged sectional elevation of the shut-off valve and the immediate means for depressing the same to open position.

The mechanism as thus shown has as its primary object to close the gas inlet valve *v* automatically practically at the instant that the heat which controls the thermostat *a* fails and the thermostat begins to cool. It is not designed to wait until the thermostat is actually cool and hence has contracted sufficiently to close the valve *v* by its own direct action, but I have provided means intermediate of the said thermostat and the said valve *v* whereby the closing of the said valve is effected almost the instant that the heat begins to leave the thermostat whether it be originated directly in the thermostat itself or is communicated thereto from the

burners *b* or other source of heat. These burners may have any form or shape and be either vertically or horizontally placed in a stove or furnace of any kind. To these ends I provide an embodiment comprising a casing which, for convenience, consists of four several sections 1, 2, 3 and 4, built one upon the other and variously constructed according to position and use in each case but constituting a unitary casing for all practical purposes. Thus, the lower section 1 is the base through which the gas flows from supply pipe 5 having hand shut off valve 6. The valve *v* having to do more directly with my invention is located in screw-threaded coupling 7 which unites sections 1 and 2, and closes against the bottom of said coupling. The said valve has a tubular body passing through said coupling and is adapted to slide therein and has a slot 8 lengthwise between its ends adapted to be closed when the valve is raised, as in Fig. 4, but said slot is open for the passage of more or less gas through the same when the valve is depressed.

A spring 9 about the upper portion of the valve bears upon seat 7 and holds the valve in closed position normally, and an arm 10 on transverse shaft 11 bears upon the top of the valve and depresses the same in the opening operation. The said shaft 11 is rotatably mounted in a swell or enlargement 12 on the side of section 2 and means for rotating the same are connected with the end thereof projecting outside said swell and comprise a collar *c* fixed on said shaft by a set screw or its equivalent and provided with two ears *e* inside, and a link *h* is secured between said ears by a pin 13 through the same. The lever 14 is connected with the said link at one end and is pivoted at its other end on a screw 15 engaged in a boss 16 integral with and standing out laterally from the casing 2. A limited up and down movement of the said lever at its linked end is thus provided and it is adapted to cause the requisite rotation of shaft 11 to depress valve *v* through arm 10 bearing on the top thereof as above described. This depression occurs from thermostat *a* through intervening mechanism as presently described and whereby a very slight depression applied near the base of said lever 14 will be greatly multiplied to the valve *v* when all the intervening parts are taken in account, it being remembered that the ther-

mostat is intended to close the valve *v* by its own contraction. To this end the thermostat comprises a brass or like outer tube 17 of a suitable size removably fixed upon the upper tubular casing section 4, which tube is shown as having a slot 18 lengthwise in its middle portion through which gas is adapted to issue. One or more slots may be used depending upon the length and diameter of the tube, or in lieu of a slot or slots I may employ gas outlets of other form.

A steel or like metal rod 19 is fixed at one end in the outer end of tube 17 and projects through the other or inner end into casing 4 where it is engaged between ears on the collar 20 on cross pin 21 in the top of said casing. The said pin projects through the sides of the said casing and a yoke *y* is fixed on the ends thereof by set screws or the like and has ears 22 on which the shaft 23 is pivotally connected at its upper end while the said shaft is shown as bored from its lower end and split part way and a screw 24 is adapted to slide frictionally therein a good working distance. An adjusting collar 25 on said screw fixes the point at which the said shaft 23 will stop on the screw when the shaft is depressed through yoke *y*, and said screw is projected loosely through a guide 26 on casing section 2 and a collar 27 thereon beneath said guide limits the upward movement of the screw against guide 26. The point of the said screw 24 bears in a cavity in a screw head 30 having a threaded portion adjustably mounted on the inside of lever 14 near its pivot, and thus the expanding action of the thermostat is mechanically conveyed to depress the said lever 14 and open valve *v*. This valve may also be opened by hand through a lever 33 either affixed to collar *c* on shaft 11 or loosely mounted on said shaft and adapted to bear upon the projected end of pivot pin 13 through the ears *e*. In other words the said hand lever enables the operator to open valve *v* and let in a sufficient volume of gas which, when ignited, will heat the thermostat. This is but a momentary operation and need be repeated only when starting of the device occurs. Otherwise the work is done by the thermostat. The gas issuing from burner outlet 18 may be lighted and serve alone to heat the tube or I can also utilize heat from the burners *b* or their equivalent to aid in keeping the thermostat at a working temperature.

The burner tube 17 receives its supply of gas from or through the upper section 4 of the casing which is also the mixer for said burner tube. Said tube 17 also has slight perforations or jets *d* oppositely at its top and side through which gas issues and which serve to light the said burners *b* automati-

cally from the said burner tube. The said tube or burner thus becomes also a pilot light for the side burners and in fact is a burner in itself besides having its thermostatic function. Of course when the attendant is present and through with all the burners they are turned off at the valves 6 and *g*. This will shut off all gas to the device, but when desired, the pilot burner 17 can be allowed to burn more or less indefinitely and it will emit enough heat for keeping vessels hot on the stove immediately over the same, or the tube 17 may be larger than as shown to yield more heat and to operate entirely independent of other burners.

A thermostat tube constructed to serve as a burner is of advantage in that it is immediately responsive to the heat generated and will expand very quickly especially if the flame is produced lengthwise thereof at one or both sides. On the other hand, quick contraction is also obtained when the flame is extinguished, as the mixer 4 will take in cool air which will cool the tube in passing through the same and out of its slot 18. Then in order that this quick expansion and contraction of the tube 17 may be utilized, I provide the friction clamping member 23 and part 24 having stop collars 25 and 27, or any equivalent means, to act instantly on the valve lever 14 to open and close the valve. Thus the frictional bind of the split end of member 23 upon the screw-threaded part 24 is sufficient to produce a common lift movement between said parts in releasing the lever when initial contraction of tube 17 takes place, and until collar 27 engages guide 26. Thereafter as the tube 17 continues to contract as obviously it must to its maximum, the split member 23 will slide in respect to part 24, the collar 27 limiting further upward movement of part 24. In other words, this differential movement in the connection operates to immediately close the valve *v* under the action of its spring 9 without waiting for the tube 17 to contract to its maximum. The differential movement in the connections also works to advantage when expansion of tube 17 takes place, as the first initial movement thereof is to operate split member 23 and part 24 together to engage valve lever 14 and hold the valve open. Member 23 then slides in respect to part 24 until tube 17 has expanded to its maximum. The parts are now favorably related to permit immediate closing of the valve on the initial contraction of the tube 17 in the event of the flame being extinguished as hereinbefore described.

What I claim is:

1. A thermostatic burner having a horizontally disposed tube with a slot in its side for the escape of gas and a mixer for air and

gas open to said tube, in combination with a valve and a rod connected with the said burner.

2. A thermostatic burner consisting of a
5 tube with a slot lengthwise in its side, a gas
and air mixer supporting said tube, a gas
inlet valve and means to open the same comprising a rod in said tube adapted to be
10 actuated by the expansion thereof, a lever
and means to depress said valve and operating connections in actuating relations with
one end of said rod and bearing upon said
lever.

3. The mechanism described comprising a
15 casing with a gas and air mixer in its top
and a gas inlet valve in its bottom, a burner
tube at the side and top of said mixer and a
lever mechanism to open said valve, in combination with a rod in said burner tube
20 adapted to be actuated when said tube is
heated, a rock shaft in said mixer operated

by said rod and mechanism actuated by
said rock shaft having operating connection with the said lever mechanism to open
said valve.

4. A supporting casing, a gas inlet valve
25 in the bottom of said casing and a gas mixer
on the top thereof, a thermostatic tube projecting horizontally from the side of said
mixer, a rod fixed at one end in the outer
30 end of said tube; a rock shaft in the top of
said mixer with which said rod is operatively connected, and extensible means operatively connected with said rock shaft and
35 adapted to open said valve.

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

HUGO SCHNEIDER.

Witnesses:

R. B. MOSER,

F. C. MUSSUN.