Nov. 24, 1925. 1,562,962

C. L. HEISLER

GAS BURNER

Filed June 23, 1924 2 Sheets-Sheet 1

Fig. 1.

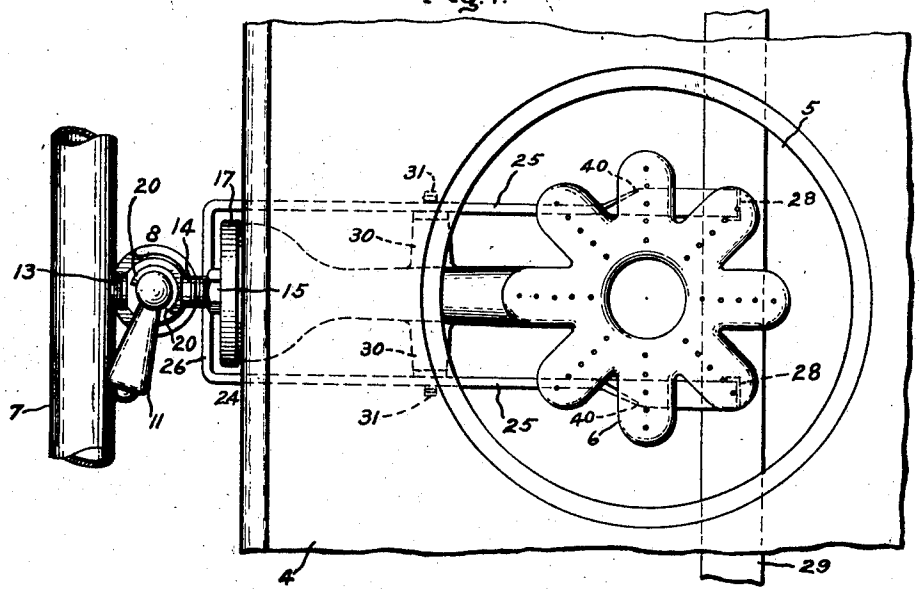


Fig. 2.

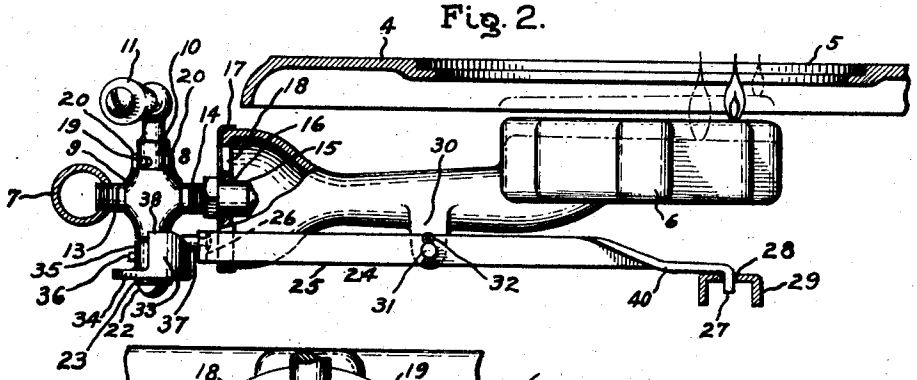


Fig. 3.

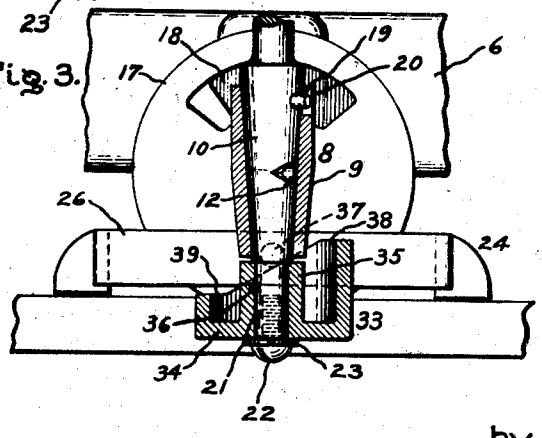
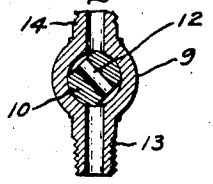


Fig. 4.



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Fig. 5.

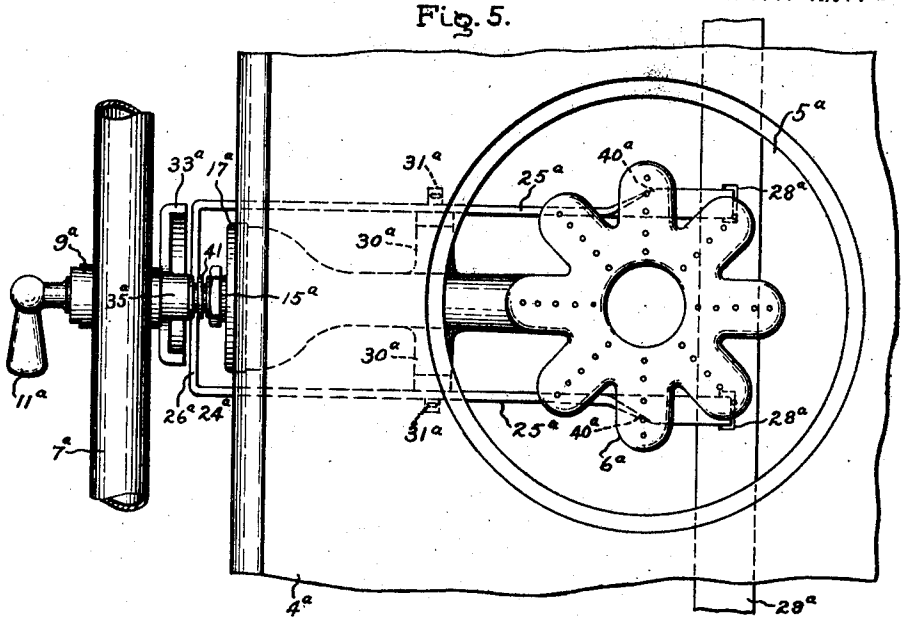


Fig. 6.

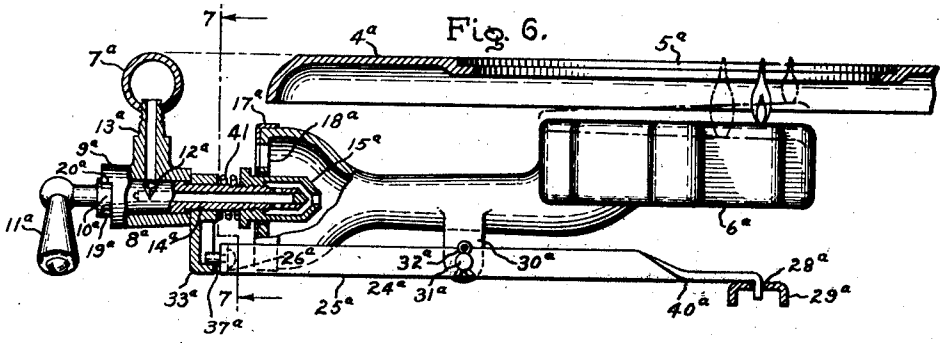
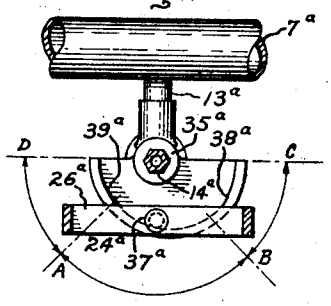


Fig. 7.



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Patented Nov. 24, 1925. 1,562,962

UNITED STATES PATENT OFFICE.

CHARLES L. HEISLER, OF SCHENECTADY, NEW YORK.

GAS BURNER.

Application filed June 23, 1924. Serial No. 721,619.

To all whom it may concern:

Be it known that I, CHARLES L. HEISLER, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Gas Burners, of which the following is a specification.

The present invention relates to gas burners and particularly to gas burners wherein the burner is arranged to be adjusted automatically toward and away from the utensil to be heated as the gas is turned off and on to decrease or increase the flame. In this connection, it is known that much better efficiency is obtained from a gas burner if it is correctly adjusted in accordance with the height of the flame, but ordinarily the burner is set for average conditions and operates at poorer efficiency a good deal of the time, and particularly when the gas is turned partly off to give a low flame.

The object of the present invention is to provide an improved arrangement for automatically adjusting a gas burner toward and away from the utensil being heated as the flame is turned lower and higher, which arrangement is simple in structure, is easily applied to either new or old stoves, and is capable of being manufactured at a low cost. As will be pointed out more fully hereinafter, my improved construction can be applied to a standard type of gas burner in a very simple and easy manner and it is this feature of my invention which I regard as being a very important one.

For a consideration of what I believe to be novel and my invention, attention is directed to the following description and the claims appended thereto.

In the drawing, Fig. 1 is a plan view of a portion of a gas stove equipped with an adjustable burner embodying my invention; Fig. 2 is a side view with certain parts broken away to illustrate more fully the construction; Fig. 3 is a vertical sectional view through the gas valve or cock; Fig. 4 is a horizontal sectional view of the gas valve or cock; Figs. 5 and 6 are views similar to Figs. 1 and 2 respectively illustrating a modification, and Fig. 7 is a detail view of a part of the structure shown in Figs. 5 and 6, the section being taken on line 7—7, Fig. 6.

Referring to the drawing, 4 indicates the top plate of a gas stove provided with an opening 5; 6 indicates a burner disposed to register with opening 5, and 7 indicates the gas supply pipe. Connected to the gas supply pipe is a cock or valve 8 of usual construction which supplies gas from the pipe 7 to the burner 6. It comprises a valve body 9 having a tapered seat or opening in which is located the valve member 10. Attached to member 10 for turning the valve on and off is a handle 11. In valve member 10 is an opening 12 which when the valve member is turned, is brought into line with the inlet nipple 13 and the outlet nipple 14. Inlet nipple 13 is connected to gas supply pipe 7, and outlet nipple 14 is connected to the gas burner by a short discharge nozzle 15. Nozzle 15 fits rather loosely into an opening 16 in the end of the burner as is well understood. At 17 is the usual disk for adjusting the supply of air to the burner through the opening 18. The throw of the valve is limited by the pin 19 which cooperates with the spaced stops 20. This valve construction is the construction found ordinarily on gas stoves and as is well known in connection with such valves, the member 10 is usually held on its seat in the body 9 by a spring which surrounds an extension 21 on the lower end of member 10 and is held between the bottom of valve body 9 and the head of a screw 22 which screws into the bottom of valve member 10. Ordinarily a washer 23 is provided under the head of the screw 22 to furnish a seat for the spring. This arrangement is used to keep the valve tight on its seat and at the same time permit it to turn readily and be self adjusting on its seat.

The arrangement so far described is that found in the ordinary gas stove and is to be taken as typical of any gas stove structure.

Now, according to my invention, I provide a support 24 on which the burner is pivotally mounted. In the present instance the support is in the form of a frame having two parallel side pieces 25 connected by a front cross piece 26. The rear ends of side pieces 25 are bent downwardly to provide fingers 27 which fit loosely into openings 28 in a supporting strip 29. Supporting strip 29 extends along at the rear of the burner and may be supported in any suit-

able manner at its two ends on the end frames of the stove. The burner has two projecting arms 30 provided with pivot pins 31 at their ends which extend through openings in side pieces 25 and receive cotter pins 32 to hold the burner in place in the frame. With this arrangement it will be seen that when the front end of support 24 is raised, the same turning on support 29 as a fulcrum, the burner will be moved toward the top plate 5 and that when such front end is lowered the burner will be moved away from the top plate 5.

In connection with this burner supporting arrangement I then provide for raising and lowering it a cam 33 or other equivalent means which is mounted on the valve member extension 21. Cam 33 is formed on the periphery of a disc 34 at the center of which is a spacing sleeve 35. Spacing sleeve 35 slips over the extension 21 and is held on it by the screw 22. It is fixed against turning on extension 21 by a pin 36. Cam 33 thus turns with valve member 10. Attached to front piece 26 is a pin 37 which rests on cam 33 and is held in contact with it by the weight of the gas burner.

With the above described arrangement, it will be seen that when the valve is closed, this being the position of the valve when handle 11 is parallel to the gas supply pipe 7, the cam is in a position to hold the burner in the highest position and that as the valve is then opened the cam will be moved to permit the burner to lower gradually. The parts are so proportioned as to give the desired rate of adjustment for the different valve openings so that the burner will be correctly positioned for heating most efficiently. Cam 33 can be made of suitable pitch to meet the conditions of any service requirement. Thus as the burner is turned on and off it will be at the same time automatically adjusted with relation to the utensil being heated. When the burner is adjusted it moves on nozzle 15 as a fulcrum, the opening 16 being large enough to permit of the necessary turning movement. At the same time support 24 moves on fixed support 29 as a fulcrum, support 24 being in substance a lever pivotally mounted on support 29. The entire weight of the burner is carried by the support or frame and this weight is transmitted to valve member 10 through pin 37 and cam 33. The weight of the burner thus serves to hold valve member 10 on its seat in valve body 9. This is an important point in connection with my invention for by the arrangement I make the burner itself perform the function of the spring usually provided on the valve.

Preferably I make cam 33 of a length less than the total throw of valve 8 so that the valve can be adjusted somewhat after the burner reaches either its highest or its lowest position. To this end, cam 33 merges into flat portions 38 and 39 at its two extremities along which portions pin 37 moves after it leaves the surface of the cam, to permit of regulation of the valve after the valve is in either of its extreme positions. The valve may have the usual movement of 90 degrees between fully closed and fully open position, the flat portions 38 and 39 being arranged at the two extremities of this 90 degree movement. Preferably, however, I position the stop 20 which limits the opening movement of the valve slightly more than 90 degrees from the other stop so that after the valve has been fully opened it can be moved still further to shut off somewhat the valve. In other words, the valve can be moved beyond the position in which opening 12 is in line with the passages in nipples 13 and 14, so that after being fully opened the valve can be shut off again to a limited extent by moving the valve handle still further in the opening direction. Also in valve member 10 I provide notches 50 which are in line with the openings 12 and form in substance circumferential extensions of such openings. This serves to effect a very gradual opening and closing of the valve.

With this arrangement, when the valve is fully closed pin 37 rests on the flat surface 38, the burner being held in its highest position. Now when it is desired to use the burner, it can be opened or turned on to a limited extent before the burner will start to lower, so that in this initial position the flame can be regulated to a certain extent. As the flame is turned on beyond this limited extent, the burner will be gradually lowered until it reaches its lowest position, in which position the gas will be fully on, pin 37 now resting on the flat portion 39. If now the flame is too high, then the valve can be turned still further to shut it off somewhat, pin 37 moving along the flat surface 39. The valve can be turned off until pin 19 strikes the opening stop 20.

When it is desired to adjust the initial setting of the burner, this can be done readily by bending the side arms 25 of the supporting frame 24 at the point indicated at 40.

An important advantage possessed by my invention is that it can be provided at a low cost and can be applied easily to a gas stove with but little change; and such changes as are required are of a simple nature. The cam 33 can be applied to the stove by merely removing the screw 22, discarding the spring ordinarily provided, and replacing it by the cam 33. The frame can be made out of suitable metal and is easily applied to the stove and burner. In this connection, it will be understood that the

particular frame structure illustrated is only by way of example and that it may take different forms to meet any particular conditions met with. The essential thing is that the burner be mounted on the frame or support, and that it in turn be suitably mounted so as to be raised and lowered by the cam.

In Figs. 5, 6, and 7 I have illustrated a modified form of my invention wherein the valve is shown as being horizontal instead of vertical, the cam in this case taking the form of a cylindrical surface. In these figures the same reference numerals with the exponent *a* added are used to designate corresponding parts.

Referring particularly to Fig. 7, the space between the two lines A and B represents the active portion of the cam which serves to raise and lower the burner, while the portions between the lines A and D, and between the lines B and C are concentric with the center of the valve and permit movement of the valve without moving the burner. In other words, these portions are in the nature of guiding surfaces. In this arrangement a spring 41 is provided to hold the valve on its seat, the valve being horizontal.

The operation of the arrangement shown in Figs. 5 to 7 is similar to that of the arrangement shown in Figs. 1 to 4 and will be readily understood from the description already given in connection with Figs. 1 to 4.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with apparatus which I now consider to represent the best embodiments thereof; but I desire to have it understood that the constructions shown are only illustrative and that the invention can be carried out by other means.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. The combination with a gas stove having a burner and a valve for controlling the supply of gas to the burner, of a movable support upon which the burner is mounted, a cam which moves with the valve, and means carried by the support and engaging the cam whereby as the valve is turned the support will be moved to adjust the position of the burner.

2. In a gas stove, the combination of a valve, a cam carried by the movable element of the valve, a frame supported at one end on a fixed part of the stove and at the other end on the cam, and a burner mounted on said frame.

3. The combination with a gas stove having a burner and a valve for controlling the supply of gas to the burner, of a support mounted at its rear end on a fixed part of the stove, said burner being carried by said support, and means carried by the movable element of the valve and engaging said support for moving it when the valve is moved, said support resting on said means to hold the movable element of the valve on its seat.

4. In a gas stove, the combination of a valve having an extension on its lower end, a cam mounted on said extension, a frame supported at one end on said cam, the other end of the frame being supported on a fixed part of the stove, and a gas burner carried on said frame, said cam serving to raise and lower the burner in accordance with the opening of the valve.

5. In a gas stove, the combination of a valve having a movable element, a cam actuated by said movable element, a support which is moved by said cam, a gas burner carried by the support, said burner having a gas inlet end and a burner end, and means which serves to hold said gas inlet end from vertical movement whereby when the support is moved, the burner end is adjusted vertically.

6. In a gas stove, the combination of a valve having a movable element provided with an extension, a cam carried by said extension, a supporting lever having one end resting on said cam, and a gas burner carried by said supporting lever, the weight of the burner and lever on the cam serving to hold the movable valve element on its seat.

7. In a gas stove, the combination of a vertically-adjustable gas burner having a burner end and a gas inlet end, a manually-operable gas valve having a movable element adapted to oscillate about its axis, a movable supporting member for the gas burner, means connecting the movable gas valve element to said supporting member for moving the supporting member vertically, and means providing a stationary pivot for supporting said gas inlet end.

8. In a gas stove, the combination of a rotary gas valve having an extension on its end, a stationary gas discharge nozzle, a frame movably supported on a fixed part of the stove, a gas burner having a gas inlet end which engages said discharge nozzle and a burner end, said gas burner being pivotally supported on said frame in a manner to cause the burner end to move vertically while the inlet end engages and is held from vertical movement by said stationary gas discharge nozzle, and means connecting the frame to said end extension for raising and lowering the frame to adjust the burner in accordance with the opening of the valve.

9. In a gas stove, a burner, a valve controlling the flow of gas to the burner, means connecting the valve to the burner for adjusting the burner vertically as the valve is turned on and off, said means permitting

the valve to be turned to a limited extent for regulating the gas after the burner has reached its final adjusted position.

10. In a gas stove, a burner, a valve controlling the flow of gas to the burner, said valve being movable beyond full open position so that the flow of gas to the burner can be decreased by a continued movement of the valve in the opening direction, and means connecting the valve to the burner for adjusting the burner vertically as the valve is turned on and off, said means being effective to lower the burner until the valve is fully open, whereby further movement of the valve in the opening direction will serve to adjust the flow of gas to the burner after the burner is in its final position.

11. In a gas stove, a burner, a valve controlling the flow of gas to the burner, and means connecting the valve to the burner for adjusting the burner vertically as the gas is turned on and off, said means effecting vertical movement of the burner during only an intermediate portion of the throw of the valve, whereby the gas flame can be adjusted somewhat after the burner is in its final adjusted position.

12. In a gas stove, a burner, a valve controlling the flow of gas to the burner, and a cam connecting the valve to the burner for effecting vertical adjustment of the burner, the active portion of said cam being of a length less than the total movement of the valve.

In witness whereof, I have hereunto set my hand this 17th day of June, 1924.

CHARLES L. HEISLER.