

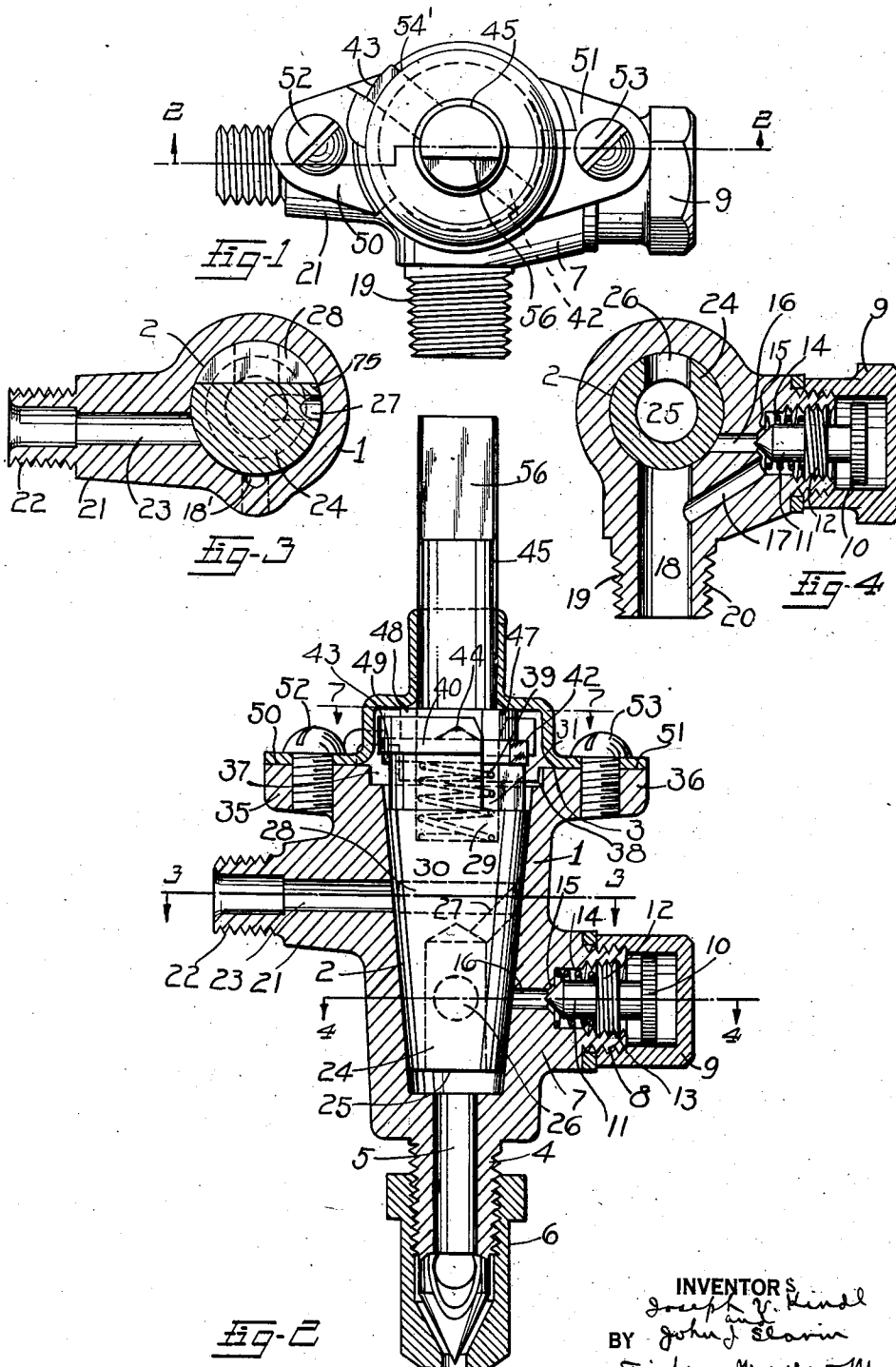
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J. V. KINDL ET AL
VALVE FOR GAS BURNERS

2,113,027

Filed Oct. 21, 1935

3 Sheets-Sheet 1



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April 5, 1938.

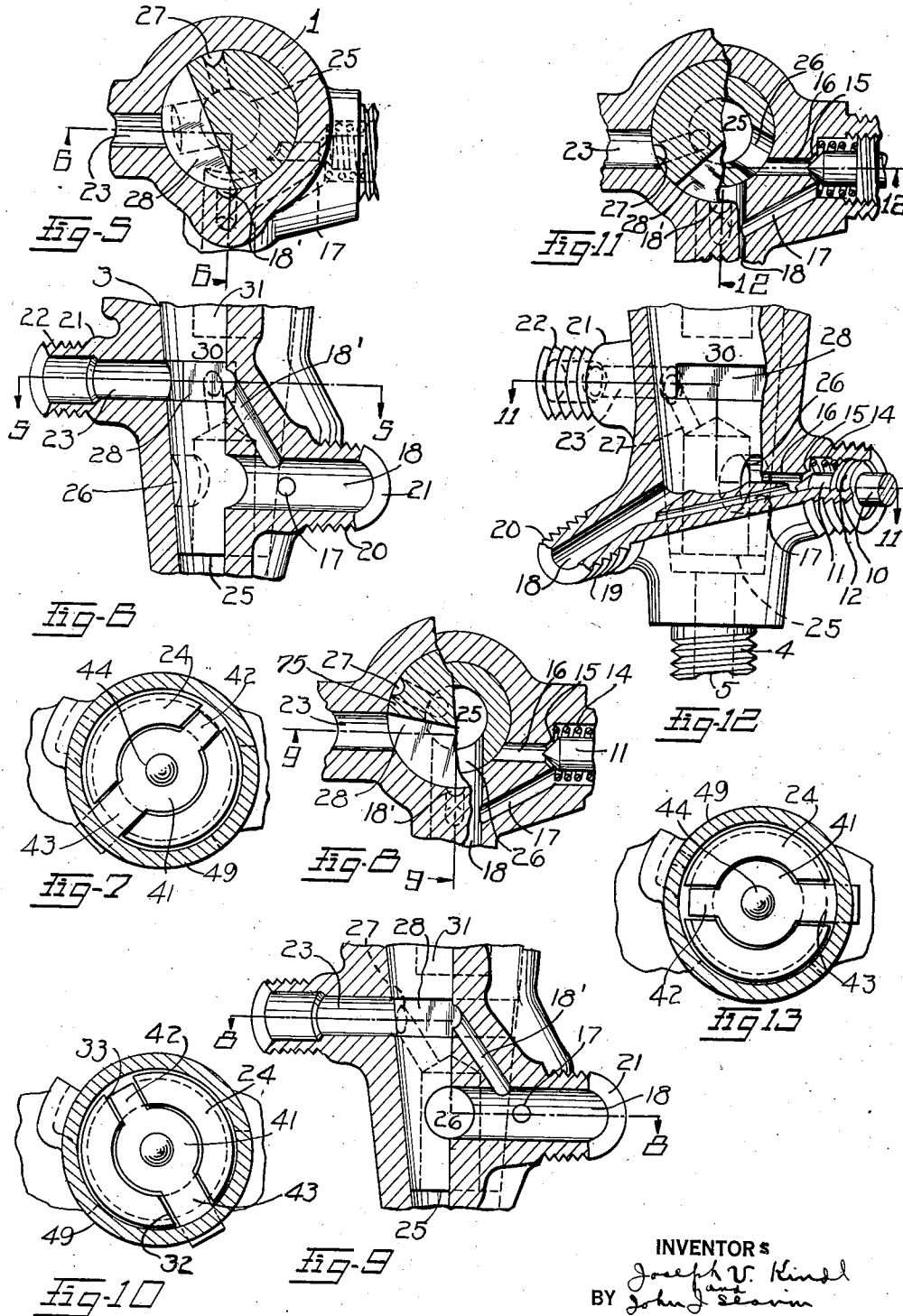
J. V. KINDL ET AL

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VALVE FOR GAS BURNERS

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3 Sheets-Sheet 2



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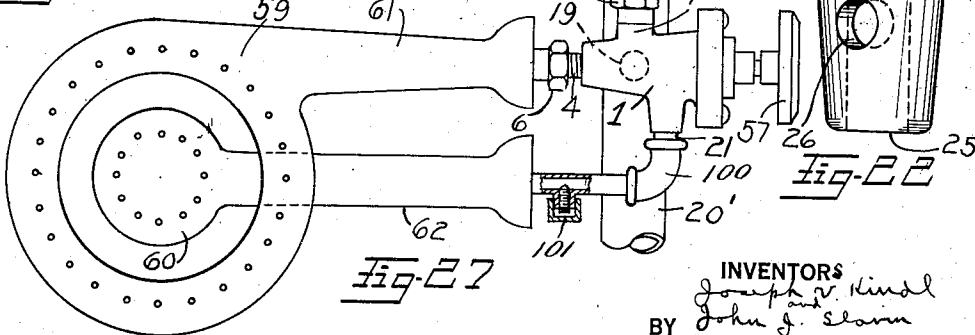
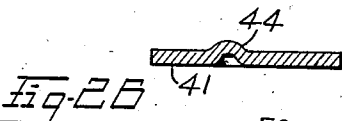
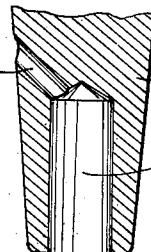
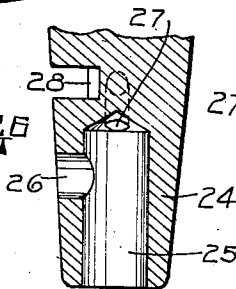
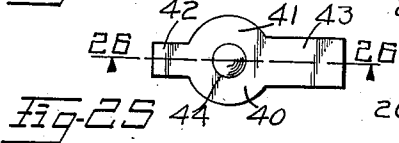
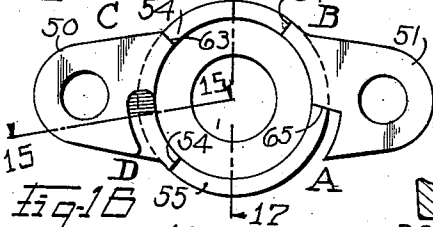
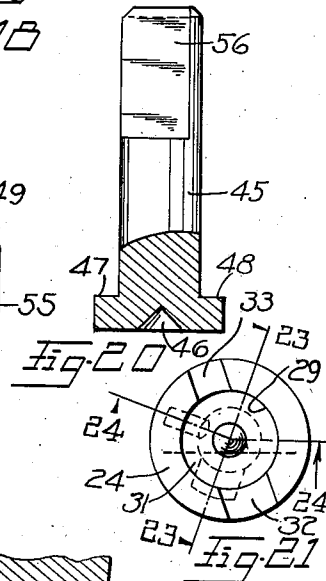
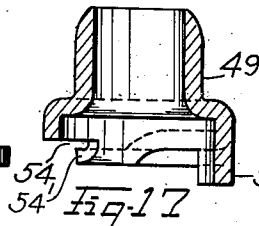
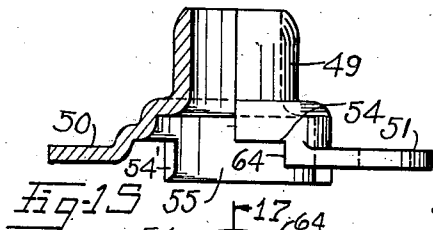
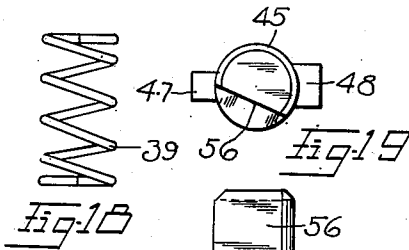
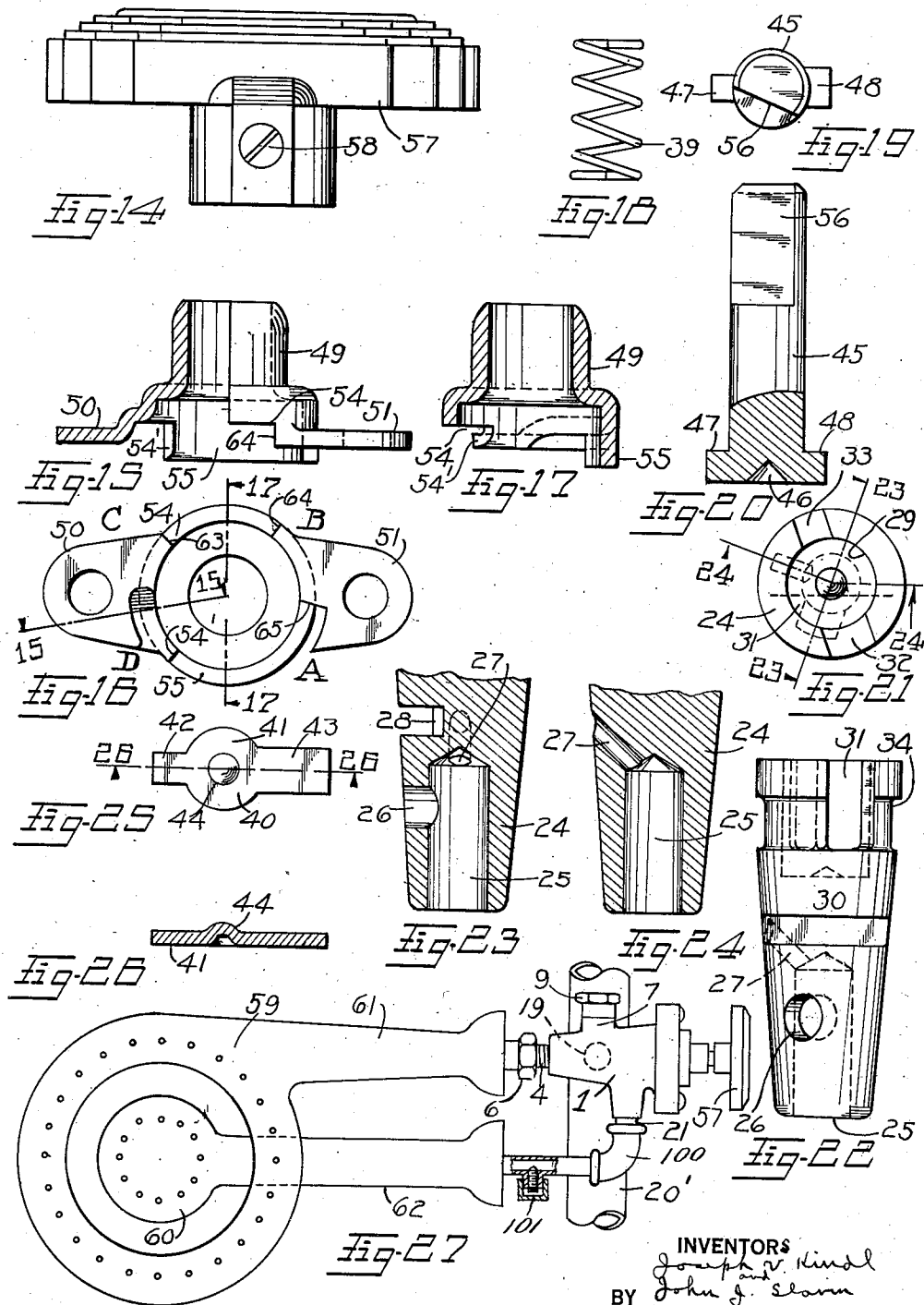
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VALVE FOR GAS BURNERS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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VALVE FOR GAS BURNERS

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Company, Cleveland, Ohio, a corporation of
Ohio

Application October 21, 1935, Serial No. 46,024

6 Claims. (Cl. 277—50)

Our invention relates to improvements in valves for gas burners.

The object of our invention is to provide a simple valve controlling the flow of gas to a main burner and a simmer burner and in which a full flow of gas to both burners may be obtained or the flow of gas entirely cut off.

Another object of our invention is to provide a valve of this character in which the flow of gas to the main burner can be entirely cut off and at the same time maintain a full flow of gas to the simmer burner.

Another object of our invention is to provide a valve of this character in which the flow of gas to the main and simmer burners may be drawn down or decreased to reduce the flame simultaneously at both burners.

Another object of our invention is to provide a valve in which the flow of gas to the main and simmer burners can be simultaneously increased or decreased to regulate the flame.

A still further object of our invention is to provide a valve of this character in which the same is locked in either the full open or closed position and yet allowing the free turning thereof so that it can pass from any of the other positions through the full open or closed position without stopping at such position.

A still further object of our invention is to provide a valve of this type which is simple in construction and operation and very effective to accomplish the desired results and having certain details of structure and combination of parts hereinafter more fully described.

In the accompanying drawings:

Figure 1 is an end view of my improved valve;
Figure 2 is a transverse horizontal sectional view taken on the line 2—2 of Figure 1;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a transverse sectional view taken on the line 4—4 of Figure 2;

Figure 5 is a transverse sectional view taken on the line 5—5 of Figure 6;

Figure 6 is a longitudinal sectional view taken on the line 6—6 of Figure 5;

Figure 7 is a transverse sectional view taken on the line 7—7 of Figure 2;

Figure 8 is a transverse sectional view taken on the line 8—8 of Figure 9;

Figure 9 is a transverse sectional view taken on the line 9—9 of Figure 8;

Figure 10 is a view similar to Figure 7 showing the valve locking means in a different position;

Figure 11 is a transverse sectional view taken on the line 11—11 of Figure 12;

Figure 12 is a longitudinal sectional view taken on the line 12—12 of Figure 11;

Figure 13 is a view similar to Figures 7 and 10 showing the valve locking means in another position;

Figure 14 is a side view of the valve operating handle;

Figure 15 is a side view partly in section taken on the line 15—15 of Figure 16 of the cap for holding the valve and its operating means in position;

Figure 16 is a top plan view of Figure 15;

Figure 17 is sectional view taken on the line 17—17 of Figure 16;

Figure 18 is a side view of the latch retaining spring;

Figure 19 is an end view of the valve operating stem;

Figure 20 is a side view partly in section of Figure 19;

Figure 21 is a top plan view of the valve plug;

Figure 22 is a side elevation of the valve plug shown in Figure 21;

Figure 23 is a longitudinal sectional view taken on the line 23—23 of Figure 21;

Figure 24 is a longitudinal sectional view taken on the line 24—24 of Figure 21;

Figure 25 is a plan view of the valve locking latch;

Figure 26 is a section on line 26—26 of Figure 25; and

Figure 27 is a plan view of a main and simmer burner and the gas manifold showing the application of our improved valve thereto.

Referring now to the drawings 1 represents a valve housing which as shown is of an elongated form having therein a tapering bore 2 which extends from the open upper end 3. The lower end of the housing is provided with a reduced screw threaded end 4 having a passage 5 there-through, the inner end of which communicates with the tapering bore 2. Screwed on said reduced end is a regulating valve 6 which governs the discharge of gas to the main burner, which will be later described. This valve 6 may be of any desired form as it forms no part of our invention and therefore we will not describe the same in detail.

One side of the valve housing 1 is provided with an outwardly extending nipple 7 externally threaded at 8 and upon which is screwed the cap 9 which encloses the operating head 10 of the regulating valve 11. The valve 11 has an en-

larged externally threaded portion 12 screwed into the internal threads 13 of the bore 14. The inner end of the bore 14 is tapered to provide a seat for valve 11, as at 15, and communicates at its inner end with the bore 2 of the valve housing 1, through passage 16. The opening 1 is provided with a passage 17 which communicates at its outer end with the bore 14 of the nipple 7 and the inner end of the passage communicates with a passage 18 in the housing which extends outwardly from the bore 2 through the nipple 19 and whereby the bore 14 has indirectly two communications with the bore 2 of the valve housing. The outer end of the nipple 19 is externally threaded at 20 for connection with the gas manifold 20' and whereby the supply of gas for the valve housing is obtained for feeding the burners.

The passage 18 has communicating therewith an obliquely arranged passage 18' which communicates with the bore of the housing and whereby gas may be diverted directly from the main gas supply to the simmer burners.

The valve housing 1 adjacent its upper open end 3 is provided with a nipple 21 which is externally threaded at 22 for the reception of a coupling 100. The passage 23 allows the gas to pass from the bore 2 of the valve housing 1 to the simmer burner. Manual adjustment of the simmer burner is effected by means of an adjustable screw valve 101 mounted on the coupling 100.

Arranged in the bore 2 of the valve housing is a plug valve 24 of a tapering form to snugly fit the walls of the bore as is well understood in valves of the plug type. The lower end of the valve 24 is provided with the open ended bore 25 which extends about half way up through the valve and is provided adjacent its upper end in one side, with a lateral passage 26 extending through the periphery of the valve. Extending from the upper end of the bore 25 is an obliquely arranged smaller passage 27 which extends through the periphery of the plug, these passages being specifically shown in Figures 23 and 24 of the drawings. The outer periphery of the plug valve is provided with a groove 28 which extends nearly half way through the plug as shown in Figure 23 and is in a line with the upper end of the oblique passage 27.

The upper end of the plug 4 has a bore 29 extending down from the upper end but not communicating with the bore 25 having the wall 30 between it and the bore 25. Intersecting said bore 29 is a transverse slot 31, said slot as shown in Figure 1 being wider on one side of the bore 29 as indicated at 32 than that portion 33 as shown in Figure 21, the purpose of which will be later described. The outer periphery of the plug 24 adjacent its upper end is provided with an annular groove 34.

The upper end of the valve housing opposite the open end of the bore 2 is provided on opposite sides with outwardly extending ears 35 and 36, the inner ends of which are cut away at 37 and 38 forming a guide way for the latch member later to be described. Fitting in the bore 29 is a coil spring 39, the upper end of which bears against the latch member 40. This latch member as shown in Figure 25 of the drawings comprises a circular body portion 41 having on opposite sides the lugs 42 and 43. The circular center portion is of a diameter to fit within the bore 29 of the upper end of the plug 24 and bears upon the spring 39. The lug 42 carried thereby enters the slot 33 and the lug 43 enters the slot

32 in the upper end of the plug and is free to move up and down under the tension of the spring. The body portion 41 of said latch is provided with an upwardly pressed nipple 44 forming a bearing for the valve operating rod 45.

The valve operating rod 45 is provided at its inner end with a depression 46 to receive the nipple 44. The valve rod 45 on opposite sides is provided with outwardly extending lugs 47 and 48, which enter the slots 33 and 32 of the valve plug 24. The lug 47 is of a size to snugly fit the slot 33 while the lug 48 is of a larger size to fit the slot 32 whereby the valve rod is held in the valve against rotation yet is free to be forced inwardly longitudinally thereof against the tension of the spring 39. The spring bears against the circular portion 41 of the latch member 40 and the same is normally held in its outward position as shown in Figure 2 of the drawings. In order to hold the valve operating rod 45 against outward movement beyond the slots in the valve plug I provide a cap 49 which is of a saucer shaped form having on opposite sides the outwardly extending ears 50 and 51 to fit on the ears 35 and 36 of the valve housing and secured thereto by means of screws 52 and 53 whereby the cap is held in the position shown in Figure 2 of the drawings. It will be seen by this structure the valve rod 45 is held in position and the ears 47 and 48 carried thereby engaging the under face of the cap the same is prevented from being forced outwardly by the spring 39 so that the lugs will not disengage from the slots in the plug. One side of the cap 49 is cut away as indicated at 54 which together with the cut away portions 37 and 38 of the ears 35 and 36 form the slot which in combination with the latch member 40 forms a snap latch for holding the valve in its several adjusted positions. The wall 55 of the cap 49 extends below the ears 50 and 51 serving as a stop to engage the lug 43 of the latch member and hold the valve in its two extreme positions. It will be seen that the lug 42 is of a length to pass on the inside of the wall 55 while the lug 43 engages the edge thereof.

The outer end of the valve stem or rod 45 is cut away as indicated at 56 so as to fit a correspondingly shaped slot in the operating handle 57 whereby the same is held thereon against longitudinal movement by the set screw 58.

The device is especially designed for burners in which there is a main burner 59 and a simmer burner 60 within the same, although the exact location of the burners relative to each other do not form a part of the invention as they could be arranged side by side, it being understood that they should be in such relation that the simmer burner will be below the cooking utensil placed on the main burner. In Figure 27 we have shown one arrangement of the burners. The gas supply manifold 20' as shown, supplies gas to the valve housing 1 through the nipple 19. The nipple 4 of the housing and its valve 6 extend into the mixing tube 61 of the main burner 59 while the nipple 21 and its valve extends into the mixing tube 62 of the simmer burner 60.

When the valve plug 2 is in the position shown in Figure 4, the opening 26 is opposite the solid wall of the bore and the gas to both burners is entirely cut off. When in this position arm 43 of the latch member 40 is in engagement with the wall 54' or station d of the cut away 54 and is held in said position. Turning the plug counter clockwise by the hand the arm 43 of the latch

moves with the same being outwardly spring pressed by the spring 39. When the arm 43 reaches the slot the spring forces the latch outwardly at wall 63 of station C into the cut away portion 54 of the cap and snaps indicating the valve has reached another position. When the plug valve is in this position gas passes through the passage 18 from the manifold 20 and from said passage through the passage 18' to the cut away portion 28 of the plug 24. When the plug is in this or full simmer position this cut away portion is also in communication with the passage 23 leading to the simmer burner and a full flow of gas thereto is obtained. The opening 26 in the plug is opposite the solid walls of the bore of the housing and no gas is passed to the main burner.

Continued turning of the valve in a counter clockwise direction causes the arm 43 to strike the other end or wall 64 at station B of the cut away portion of the cap 49 and is held against further counter clockwise movement. When in this position the opening 26 in the plug is opposite the main gas supply passage 18 and a full flow of gas passes through the hollow valve out through bore 25 to the passage 5 to the main burner. The cut away portion 28 in the valve plug is of such a length that when in this position it is also registering with the passages 18' and 23 and a full flow of gas is passing to the simmer burner.

By depressing the operating handle the latch member 40 is moved longitudinally in the valve and the arm 43 is brought in beyond the wall 64 of the cut away portion 54 of the latch and which allows of a continued counter clockwise movement of the handle and plug until the arm 43 strikes the wall 65 at station A of the extended portion of the cap. When the plug has reached this position the opening 26 in the plug is opposite the passage 16 and gas can pass from the main gas passage 18 through passage 17 and through passage 16 and opening 26 to the hollow plug valve and from there through bore 25 and passage 5 to the main burner. Continued anti-clockwise movement of the valve stem gradually closes the plug inlet 26 to inlet 18 but at the same time gradually brings inlet 26 into communication with needle valve controlled by-pass passage 16, and until plug inlet 26 is closed to direct communication with inlet 18 and takes its supply of gas for the main burner through by-pass passages 17 and 16. The flow to the main burner is thus gradually reduced to a minimum. During this movement flow of gas through passages 18 and 18', cut-away portion or groove 28 and outlet passage 23, to the simmer burner, is gradually reduced by gradually closing communication between groove 28 and passage 23. At the same time (and before this communication has been shut off and the simmer extinguished) the passage 27 extending through the wall of the hollow plug valve into the bore 25 thereof is brought into register with the simmer outlet 23. Thus, as the flow of gas to the simmer is gradually shut off through the groove 28 in the plug, a correspondingly decreased supply of gas is made available from the supply going through the bore 25 of the plug to the main burner. This uniform and gradual adjustment of flow to both burners is made possible by the arrangement of passages mentioned and by reason of the fact that the outlet of passage 27, is sufficiently close to the adjacent end of cut-away portion or groove 28, that the portion or area 75 of the plug separating the passage 27 and groove 28, is not of sufficient width

to at any time close passage 23, and because inlet passage 26 will continue to supply gas direct to the simmer burner through inlet passage 26, bore 25 and outlet passage 27, until communication is had through by-pass passages 16 and 17, bore 25 and simmer outlet passage 27. The importance of and necessity for passage 27 is apparent.

In turning the handle and valve clockwise the arm 43 moves until it snaps into the cut away portion 54 adjacent the wall 64 at station B indicating the full open position giving a full supply of gas to the main and simmer burners. The continued clockwise movement of the handle brings the arm 43 of the latch 40 in engagement with the wall 63 of the cut away portion 54, at station C of the cap and stopping the movement therein. This is the position with a full flow of gas to the simmer burner. In order to continue the clockwise movement of the valve by the handle, the handle is forced inwardly forcing the latch 40 inwardly until the arm 43 is beyond the lower end of wall 63 and the valve can be turned, until the arm 43 strikes the extended end or wall 54 at station D of the cap 49. This brings the valve to a full closed position for both burners.

By depressing the handle and holding it against the tension of the spring the valve can be turned to any of the before described positions without stopping at any of the intermediate positions. The same is true in both counter-clockwise and clockwise movements.

It will be seen from the foregoing that when the plug valve has been moved to station A by manipulating the handle 57, and with an equal volume of gas flowing to both the main and simmer burners, under balanced pressure, the height of the flames of the two burners will be the same. At this position the volume of the gas flowing to both burners, as well as the height of the flames of these burners can be regulated to and set at any desired height, below maximum, by means of the regulating valve 11.

It will be readily understood that whenever the housewife desires to cook with or heat a considerable quantity of liquid the center simmer burner will be used because the heat is concentrated. However where a cooking utensil contains very little liquid, use of the main burner is desirable because the flame is distributed over a considerable area and consequently danger of scorching the utensil or its contents is lessened.

From the foregoing it will be seen that gas is simultaneously delivered to the simmer from both of two different sources and independently from these two sources. Also that the regulating valve 11 automatically regulates the amount of gas which flows to both the main and simmer burners when the valves have been rotated to low-flame simmer position.

Having thus described our invention, what we claim is:

1. A valve, comprising a body portion having a bore therethrough, a gas supply passage intersecting said bore, a simmer burner passage leading from said bore, a main burner passage leading from said bore, a valve plug in said body portion and having a bore leading from one end, a transverse passage in the valve adapted to communicate with the gas supply for supplying gas to the main burner passage, a by-pass from the supply through a cut-away portion in the plug for supplying gas to the simmer discharge passage, a passage from the bore of the valve for supplying gas to the simmer passage when

the gas supply passage is cut off and a by-pass leading from the gas supply around into the bore of the plug to supply the simmer and main burner passage with a reduced supply of gas.

5 2. A valve, comprising a body portion having a bore therethrough, a gas supply passage intersecting said bore, a simmer burner passage leading from said bore, a main burner passage leading from said bore, a valve plug in said body portion and having a bore leading from one end, a transverse passage in the valve adapted to communicate with the gas supply for supplying gas to the main burner passage, a by-pass from the supply through a cut-away portion in the 10 plug for supplying gas to the simmer discharge passage, a passage from the bore of the valve for supplying gas to the simmer passage when the gas supply passage is cut off and a by-pass leading from the gas supply around into the bore 15 of the plug to supply the simmer and main burner passage with a reduced supply of gas and a needle valve controlling the flow of gas through the last mentioned by-pass whereby the flow of gas to both the said simmer burner passage and 20 the main burner passage are simultaneously adjusted.

3. A valve comprising a body portion having a tapering bore therein, a gas supply passage intersecting said bore, a by-pass leading from the gas supply around and communicating with the bore of the body portion at a point spaced from but in horizontal alinement with the supply passage, a main burner discharge communicating with the end of the bore, a simmer burner discharge in communication with said bore, a 30 plug valve in said bore and having a hollow lower end, a transverse passage in one wall of the valve and communicating with the hollow portion thereof, and adapted to register with said gas supply passage in one position and with said by-pass in another position, an obliquely arranged passage extending from said supply passage to said bore, a transverse cut-away portion in the periphery of said valve and adapted to 35 communicate with the simmer burner discharge and the upper end of the obliquely arranged passage, a small passage leading from the hollow of the valve to the periphery thereof, at a point spaced from but in horizontal alinement with said cut-away portion, and independent means 40 for regulating the flow of gas through said by-pass whereby the flow of gas through both said main and simmer discharges is simultaneously adjusted.

55 4. A valve comprising a body portion having a bore therethrough, a gas supply passage intersecting said bore, a simmer burner passage leading from said bore, a main burner passage leading from said bore, a valve plug in said bore and having a bore adapted to communicate with said 60 main burner passage and said supply passage, said plug having a by-pass outlet communicating with the bore of said plug and with the simmer burner passage, a by-pass from the gas supply passage, and means placing said by-pass 65 from the gas supply passage in communication with the simmer burner passage for supplying

gas to the simmer burner when the passage to the main burner is cut off, a by-pass leading from the gas supply passage around into the bore of the plug and to said by-pass outlet and to said main burner passage to supply the simmer 5 passage and main burner passage with a reduced supply of gas, and a valve controlling the flow of gas through the last mentioned by-pass, whereby the reduced flow of gas to both the simmer burner passage and the main burner passage 10 is simultaneously reduced.

5. A valve comprising a body portion having a bore therethrough, a gas supply passage intersecting said bore, a simmer burner passage leading from said bore, a main burner passage leading from said bore, a valve plug in said bore and having a bore adapted to communicate with said 15 main burner passage and said supply passage, said plug having a by-pass outlet communicating with the bore of said plug and with the simmer burner passage, a by-pass from the gas supply passage, and said plug having a cut-away portion for placing said by-pass from the gas supply passage in communication with the simmer burner passage for supplying gas to the 20 simmer burner when the passage to the main burner is cut off, a by-pass leading from the gas supply passage around into the bore of the plug and to said by-pass outlet and to said main burner passage to supply the simmer and main 25 burner passage with a reduced supply of gas, and a valve controlling the flow of gas through the last mentioned by-pass, whereby the reduced flow of gas to both the simmer burner passage and the main burner passage is simultaneously 30 reduced.

6. A gas range valve for a double burner comprising a casing with a plug receiving bore, a plug rotatably bearing on a portion of the wall of the bore, said casing having an outlet passage leading from the plug receiving bore to one burner, said casing having a second outlet 35 passage leading from the plug receiving bore to the other burner, said casing having a gas supply passage leading into the plug receiving bore, said casing having a restricted branch passage branching from the gas supply passage and extending to the plug receiving bore, said plug having a system of passages opening onto the bearing surface of said plug receiving bore and 40 a bore in the plug such that in one rotary position of the plug gas may flow through the gas supply passage into the first outlet passage without being restricted in flow before reaching said first outlet passage, the flow of gas to the second 45 outlet passage from the main supply passage being sealed by the plug, and such that in a second rotary position of the plug gas may flow unrestricted from the gas supply to both outlet passages, and such that in a third position of the 50 plug the gas supply passage is sealed at the plug and gas may flow through the said restricted branch passage into the bore of the plug and thence to both outlet passages, and means for rotating the plug.

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