

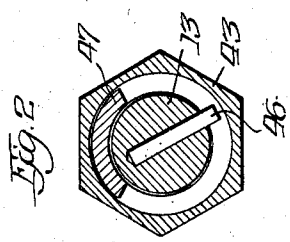
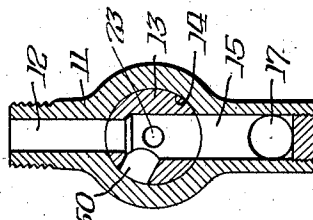
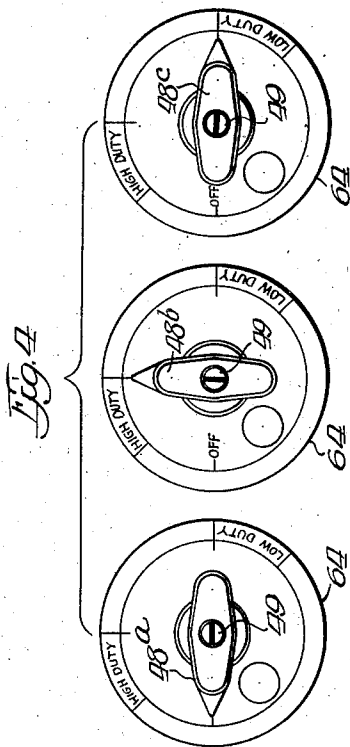
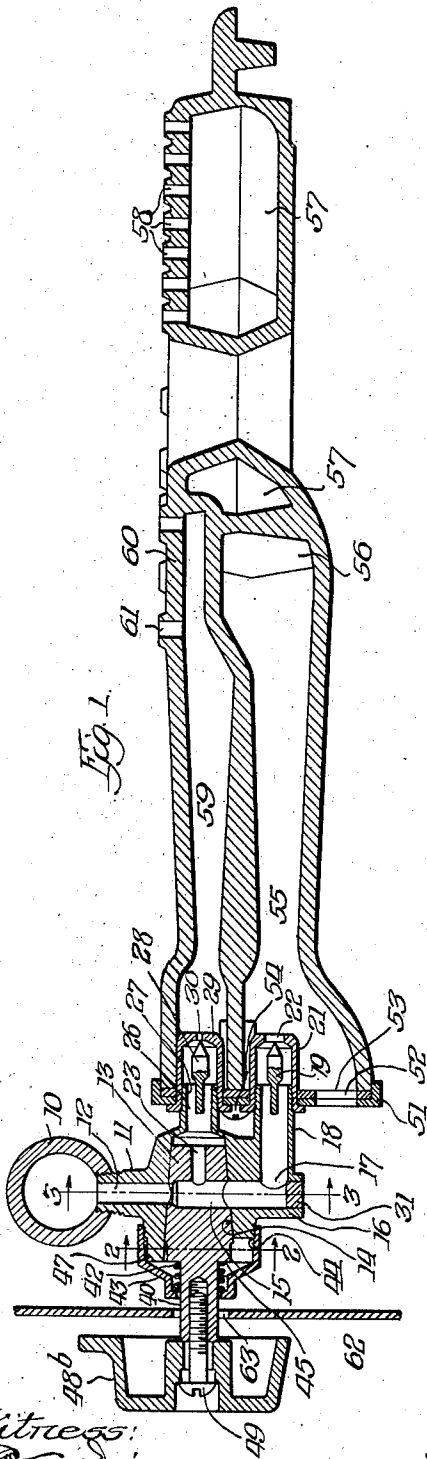
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P. S. HARPER

1,754,388

GAS BURNER

Original Filed April 4, 1928



Witness:
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 By *[Signature]*
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UNITED STATES PATENT OFFICE

PHILIP S. HARPER, OF CHICAGO, ILLINOIS

GAS BURNER

Application filed April 4, 1928, Serial No. 267,222. Renewed February 27, 1930.

This invention consists of a particularly advantageous arrangement of a double gas range cock having two gas nozzles, together with a double gas burner, said cock having the barrel thereof placed substantially in parallel relation to said nozzles, and the plug in said barrels having stops so arranged as to allow said plug to operate through considerably more than the standard limit of 90 degrees or one quarter turn.

In the standard type of gas cock arranged with the barrel perpendicular to the line of the gas nozzle, it is only possible to obtain rotation of the plug through approximately 105 degrees or less due to the fact that greater rotation interferes with rotation of adjacent gas cocks as employed on the usual gas ranges. It is only through use of a multiplicity of ports and considerable additional expense that such valve may be equipped with two nozzles to operate a double burner as disclosed in my Patent No. 1,664,508 issued April 3, 1928. But as herein described, I have devised a new construction to provide a cock that may be so placed on the stove as to be practically operated through a full 180 degrees if necessary, and such construction has enabled the cheapening and simplifying of a double burner cock to a very considerable extent.

The object of this invention is to provide a double cock on a gas stove wherein 180 degrees rotation may be obtained, without interference with the cocks controlling other burners.

Another object of this invention is to provide a double burner cock with a single port of gas exit in the bearing surface of the plug.

Another object is to provide a double gas cock with nozzles arranged thereon to provide a simple and compact construction.

Another object of this invention is to provide a double gas cock with a plug of small diameter, having at the same time a minimum length.

Another object of this invention is to provide a cock which is smaller and cheaper to manufacture.

These and other objects of this invention

will be more apparent from the drawings and the following description, in which—

Figure 1 is a sectional elevation of a gas cock and burner of the type of this invention;

Figure 2 is a cross section of the cock on line 2—2 of Figure 1;

Figure 3 is a cross section through the center of the cock on the line 3—3 of Figure 1; and

Figure 4 is a front view of three of these cocks on a range showing the operation of the handles through 180 degrees or more without interference.

Referring now to the drawings, a manifold pipe 10 is shown into which is screwed one end of the gas cock body 11, said end having a passage 12 therein which continues to the opening in the gas cock body 11 adapted to receive the tapered plug 13, the said plug having a ground bearing 14 in the said body 11 as in the usual gas cock.

The tapered plug 13 has a transversely extending passage 15 therethrough, this passage being larger throughout the greater portion of its length than the passage 12, but is the same size as this passage at the point of communication with the passage 12. The passage 15 communicates with an L-shaped passage 17 formed in the extension 16 of the body of the cock 11, this passage 17 being of the same diameter as the enlarged portion of the passage 15 as it leads to the larger section of the gas burner, and extends into the threaded nozzle end 18 of the body 11, the member 18 carrying the nozzle needle member 19. The said needle 19 is slabbed longitudinally so that gas may pass from passage 17 on each side of said needle. On the threaded nozzle end 18 there is screwed cap 21 having in its outer end a centrally placed orifice 22. This needle 19 in combination with the nozzle cap 21 forms an adjustable nozzle, and the cap 21 is screwed more or less onto the threads of the nozzle end 18 causing the needle to enter the orifice 22 if conditions require so as to throttle this orifice.

Returning now to the passage 15 in the plug, a passage 23 is axially placed in said plug and leads off from the passage 15, out of

the end of the plug and into a passage 26 in a nozzle end 27 having a needle 28 and a nozzle cap 29 with an orifice 30, all of the same construction as the beforementioned needle 19, cap 21 and orifice 22. An advantageous feature of this invention is the placing of nozzle end 27 at the bottom of said plug 13 and substantially in axial line therewith.

A stopper plug 31 is inserted in the portion 16 of the body 11 and serves to close the passage 17 being screwed, pressed, or otherwise securely fastened to effectively close this passage 17.

The outer end of the plug 13 has an extension 40 which extends through a coil spring 42, and a nut 43 which is screwed into the body 11 at point 44, the spring 42 in this assembly being compressed by the nut 43 against the shoulder 45 on the plug 13, thus serving to hold said plug firmly seated on the bearing surface 14. A stop pin 46 is pressed into said plug as shown in Figure 2, and said pin operates against a projection 47 of the body 11, said projection determining and limiting the number of degrees of possible rotation of said plug 13.

The extension 40 has fastened on the outer end a T handle 48^b by means of the stove bolt 49, said handle being slabbed and fitting into a depression in the handle (not shown) in order to prevent relative rotation of the two parts.

Referring now to Figure 3, a side passage 50 is drilled into the bearing surface of the plug 13 so as to make connection to passage 15, for purposes hereinafter to be disclosed, the axis of this passage being at an angle of from 60 to 75 degrees to the axis of the passage 12.

The nozzle caps 21 and 29 project through an outer shutter 51 and an inner shutter 52, said shutters being fastened to the mixer face 53 by the clamping screw 54. Nozzle cap 21 projects into a mixing tube 55 and said mixing tube has side passages 56 leading therefrom into the outer burner section 57, which is of the usual star shape or any other shape desired, and has burner ports 58 in the top surface thereof after the manner of the usual construction of gas range burners.

The upper nozzle 29 projects into upper mixing tube 59 which in turn leads directly to the boiling burner section 60 which has burner ports 61 in the top thereof. These ports 61 are spaced in a circle or otherwise conveniently arranged to provide a small boiling burner or so called simmer burner. The air shutter ports are arranged so that by rotation of the outer shutter 51, the air supply to both burner sections is adjusted in proper proportion to the gas burned by each, as disclosed in my Patent No. 1,664,509 issued April 3, 1928.

A shield 62 is provided having a hole 63 through which extension 40 projects and said shield has thereon indicating dials 64

as shown in Figure 4. In this figure the T handle 48^a is shown pointing to the left which is the off position for both burners, while T handle 48^b is pointing upwards giving both sections of the burner a full supply of gas, while when T handle 48^c is pointed to the right the simmer section alone is supplied with a full quantity of gas. In order to lower the flame for frying in both sections, it is only necessary to turn handle 48^b counterclockwise slightly, while to lower the simmer burner to a very low or warming heat it is only necessary to turn handle 48^c clockwise a few degrees. Placing the handles in the position shown allows the use of a T type handle which, for the same spacing of burners on the stove allows turning through more than the 105 degrees which is approximately the practical limit on a cock of standard arrangement with the plug perpendicular to the line of the gas nozzle. It is also obvious that a lever handle may be used in my construction operating from a point straight upwards to a point straight downwards through a half turn, and with this possible 180 degree rotation, though less than available with the T handle, there is still permitted the economy and simplification of the cock that my invention provides.

As to the operation of my invention, with the T handle in position 48^b, giving the plug the position as shown in Figure 1, gas may pass to both nozzles through passages 15, 23 and 17, thus giving a full gas supply to both sections of the burner. If now the handle is rotated counterclockwise somewhat, it may be seen, by referring to Figure 3, that passage 12 is cut off or may be partially cut off while both passages 15 and 23 have a wide opening, consequently the turning of the plug in this given direction and throttling of the gas in the passage 12 will lower the flame in both sections alike giving a uniform frying heat. Referring to Figure 3 it can be further seen that a quarter turn clockwise to the position 48^c will leave passage 12 approximately half open due to the registering of passage 50 therewith, while passage 15 is fully closed, and consequently gas may pass through this half opening and into passage 23 causing the simmer burner to burn with a full flame since a half opening of passage 12 gives substantially a full gas supply to this small burner section. A further clockwise turning will throttle this passage 12 registering with passage 50, and in this way the flame of the small section of the burner is diminished. The stop projection 47 of the body 11 is so placed as to prevent the plug being turned so far in a clockwise direction as to again open up the passage 15 by the registering of passage 12 in the plug therewith.

By the arrangement of parts of the cock as herein shown, described and claimed, I have devised a cock which performs all the

necessary functions of a double burner, that is, the uniform reduction of both sections for a frying heat, the burning of the small section full for a boiling heat, and the reduction in height of flame in the small section for a warming heat; and I have provided all these proper functions with a valve having a minimum length and diameter of plug by utilizing the bottom end of the plug for gas exit to one section and having only one exit in the bearing surface, such construction giving an economy over the additional size of plug necessary when both exits are in the bearing surface, and having a valve which is less liable to leakage and more simple to manufacture.

While I have described more or less precisely the details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form and the proportion of parts and the substitution of equivalents as circumstances may suggest or render expedient without departing from the spirit or scope of my invention.

I claim:

1. A cock for a double gas range burner comprising in combination, a casing having a plug receiving passage therein and having a plurality of substantially parallel gas discharge nozzles adapted to extend into mixing tubes leading to burner sections and having passages therein leading to said plug receiving passage, a rotatable plug in said casing having a passage transversely there-through, the said passage having different diameters at each side of said plug, and having an axially extending passage therein connected with said transverse passage and terminating at one end of said plug, a cap on said plug, and means whereby the rotation of said plug is limited.

2. A cock for a double gas range burner, comprising in combination a casing having a plug receiving passage therein and having a plurality of substantially parallel gas discharge nozzles adapted to extend into mixing tubes leading to burner sections and having passages therein leading to said plug receiving passage, a rotatable plug in said casing having a passage transversely therethrough, and having an axially extending passage therein connected with said transverse passage and terminating at one end of said plug, a cap on said plug, and means whereby the rotation of said plug is limited, the said axially extending passage being at an angle of between 60 and 75 degrees to the transverse passage in said plug.

3. A double gas range burner comprising a burner casting with two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially parallel gas nozzles thereon, each projecting into one of the aforesaid mixing tubes, said casing having a single

rotatable plug bearing therein, said plug having its axial line substantially parallel to the line of direction of said gas nozzles, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and casing and each leading to one of said gas nozzles, one of said two additional passages opening at the smaller end of said plug and at least partially below the bearing surface thereof.

4. A double gas range burner comprising a burner casting with two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially parallel gas nozzles thereon, each projecting into one of the aforesaid mixing tubes, said casing having a single rotatable plug bearing therein, said plug having its axial line substantially parallel to the line of direction of said gas nozzles, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and casing and each leading to one of said gas nozzles, the end of one of said passages in said plug being outside of the bearing surface between said plug and said casing.

5. A double gas range burner comprising a burner casting with two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially parallel gas nozzles thereon, each projecting into one of the aforesaid mixing tubes, said casing having a single rotatable plug bearing therein, said plug having its axial line substantially parallel to the line of direction of said gas nozzles, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and casing and each leading to one of said gas nozzles, the end of one of said passages in said plug being outside of the bearing surface between said plug and said casing, and stops limiting the turning of said plug to not less than 105 degrees.

6. A double gas range burner comprising a burner casting with two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially parallel gas nozzles thereon, each projecting into one of the aforesaid mixing tubes, said casing having a single rotatable plug bearing therein, said plug having its axial line substantially parallel to the line of direction of said gas nozzles, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and casing and each lead-

ing to one of said gas nozzles, the end of one of said passages in said plug being outside of the bearing surface between said plug and said casing, and stops limiting the turning of said plug to not less than 160 degrees.

7. A cock for a double gas range burner comprising in combination, a casing having a plug receiving passage therein and having a plurality of substantially parallel gas discharge nozzles thereon, each of said nozzles having a restricted opening extending into a mixing tube leading to a burner section, a rotatable plug in said casing having a passage transversely therethrough, said casing having at least two passages arranged to at least partially register with said transverse passage in said plug, and said transverse passage in said plug being arranged to close one of said registering passages in said casing before another, and said plug having an axially extending passage therein connected with said transverse passage and terminating at one end of the bearing surface of said plug.

8. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially parallel gas nozzles thereon, each having a restricted orifice discharging each into one of aforesaid mixing tubes, said casing having a single rotatable plug bearing therein, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and casing and each leading to one of said gas nozzles, the end of one of said passages in said plug being outside of the bearing surface between said plug and said casing, the other of said two additional passageways passing through the bearing surface of said plug in said casing, and extending in said casing from one horizontal plane to another.

9. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with at least two substantially parallel gas nozzles thereon, each having a restricted orifice discharging each into one of aforesaid mixing tubes, one of said nozzles being above the level of the other, said casing having a plug receiving passage with a single rotatable plug in bearing therein, said plug receiving passage having at least three gas passages connecting therewith, two of said gas passages leading each to one of said two nozzles, and one of said passages leading to a means of gas connection on said casing, at least two of said three passages in said casing terminating in the bearing surface between said plug and

casing and extending from one horizontal plane to another.

10. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially parallel gas nozzles thereon, each having a restricted orifice discharging each into one of aforesaid mixing tubes, one of said restricted orifices being larger than the other, the one of said nozzles having the smaller orifice being positioned at a level above the other, said casing having a single rotatable plug bearing therein, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and casing, and each leading to one of said gas nozzles, the end of one of said passages in said plug being outside of the bearing surface between said plug and said casing, the other of said two additional passageways passing through the bearing surface of said plug in said casing.

11. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with at least two substantially parallel gas nozzles thereon, each having a restricted orifice discharging each into one of aforesaid mixing tubes, said casing having a plug receiving passage with a single rotatable plug in bearing therein, said plug receiving passage having at least three gas passages connecting therewith, one of said passages leading to a means of gas connection on said casing, at least two of said three passages in said casing terminating in the bearing surface between said plug and casing, said plug and said casing enclosing a chamber at one end of said plug receiving passage, said casing having a passage leading from said chamber to one of said gas nozzles.

12. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with at least two substantially parallel gas nozzles thereon, each having a restricted orifice discharging each into one of aforesaid mixing tubes, said casing having a plug receiving passage with a single rotatable plug in bearing therein, said plug receiving passage having at least three gas passages connecting therewith, two of said gas passages leading each to one of said two nozzles, and one of said passages leading to a means of gas connection on said casing, at least two of said three passages in said casing terminating in the bearing surface between said plug and casing, aforesaid plug having a taper so that it is larger at one end

of its bearing surface than at the other, and a spring holding said plug in seated relation to the bearing surface, said spring being positioned toward the end of said plug having the larger bearing surface diameter.

5 13. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, 10 a gas cock having a casing with two substantially parallel gas nozzles thereon, each having a restricted orifice discharging into one of aforesaid mixing tubes, said casing having a plug receiving passage with a single rotatable 15 plug bearing therein, said casing having at least two gas passages therein each leading to the bearing surface between said plug and said casing, one of said passages connecting to a source of gas supply and the other leading 20 to one of said nozzles, said plug having a transverse passage therein, said plug having an axially extending passage connecting with said transverse passage, means including said plug enclosing a chamber at one end of 25 said plug, said chamber having its displacement mainly in a horizontal direction from the bearing surface of said plug, said casing having a passage therein leading from said chamber to the other of said gas nozzles.

30 14. A double gas range burner comprising means having two mixing tubes therein, each of said mixing tubes leading to a separate burner section having burner ports therein, a gas cock having a casing with two substantially 35 parallel gas nozzles thereon, each projecting into one of aforesaid mixing tubes, said casing having a single rotatable taper plug bearing therein, a spring holding said plug in bearing, said spring being positioned 40 toward the end of said plug having the larger taper diameter, said casing having a passageway extending into said plug and meeting therein two additional passageways each continuing through said plug and said casing, 45 and each leading to one of said gas nozzles, one of said two additional passages opening at one end of said plug and at least partially beyond the bearing surface thereof.

Signed at Chicago, Illinois, this 29th day 50 of March, 1928.

PHILIP S. HARPER.

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