June 4, 1940. R. E. SCHOENBERGER 2,203,395

GAS COCK

Filed June 4, 1938 2 Sheets-Sheet 1

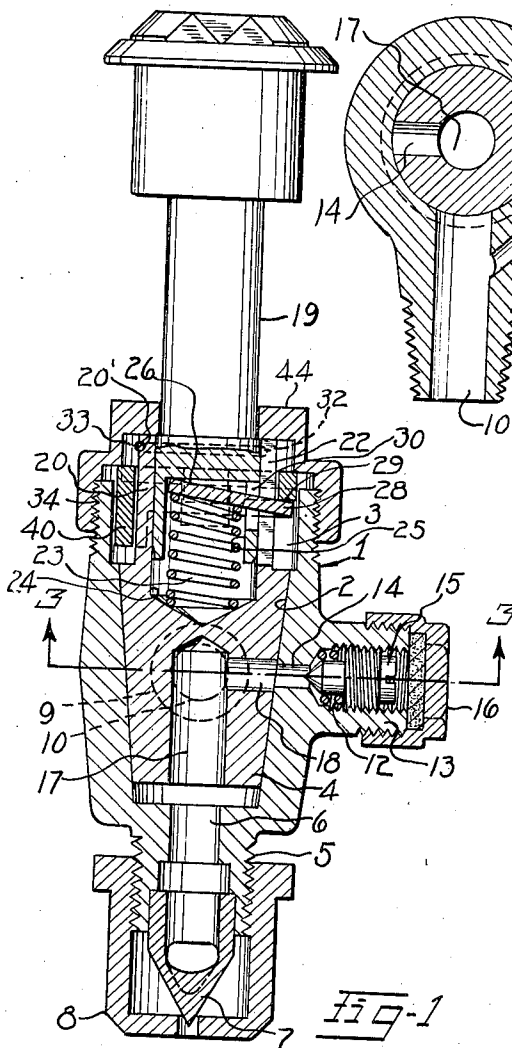

Fig-1

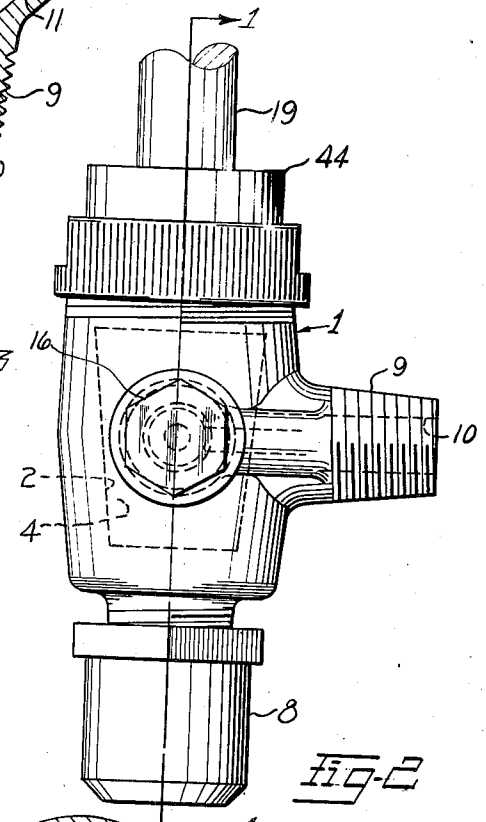

Fig-2

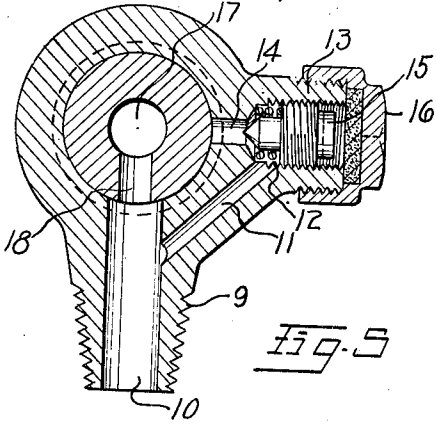

Fig-3

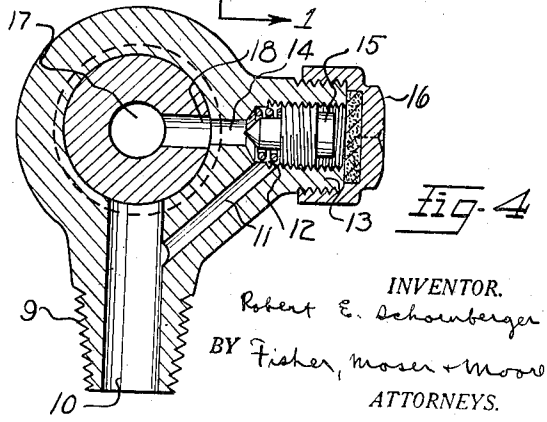

Fig-4

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June 4, 1940. R. E. SCHOENBERGER 2,203,395

GAS COCK

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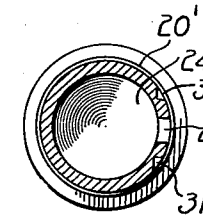

Fig-6

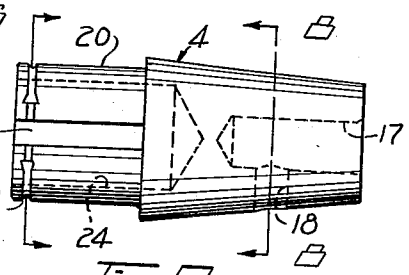

Fig-7

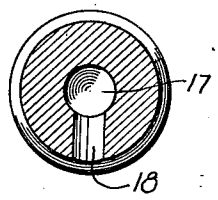

Fig-8

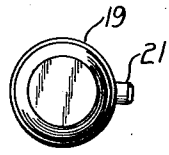

Fig-9

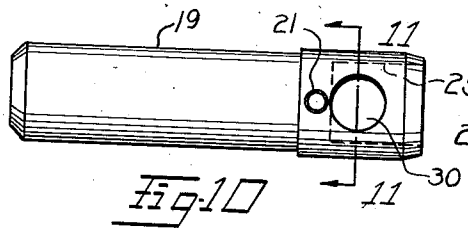

Fig-10

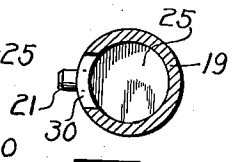

Fig-11

Fig-12

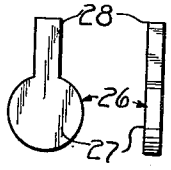

Fig-13

Fig-14

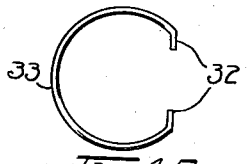

Fig-15

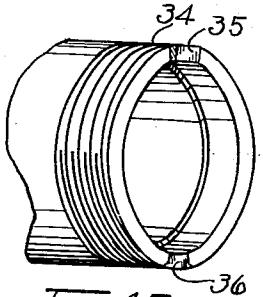

Fig-16

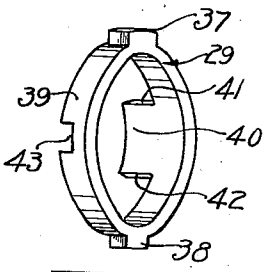

Fig-17

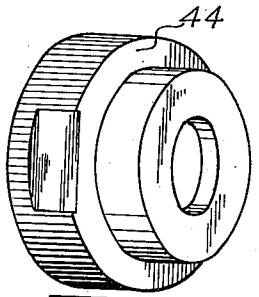

Fig-18

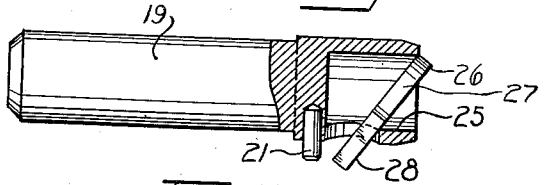

Fig-19

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Patented June 4, 1940 2,203,395

UNITED STATES PATENT OFFICE

2,203,395

GAS COCK

Robert E. Schoenberger, Shaker Heights, Ohio, assignor to The W. J. Schoenberger Company, Cleveland, Ohio, a corporation of Ohio

Application June 4, 1938, Serial No. 211,887

1 Claim. (Cl. 251—165)

This invention relates to new and useful improvements in gas fixtures and has reference to gas cocks or valves designed to prevent accidental opening of gas service lines, and more particularly to gas lines for gas stoves, ranges and the like having a number of adjusted positions or settings such as fully opened position and a simmering position.

The object of the invention is to provide a cock of this character which can not accidentally be opened to allow the gas to flow to the burners and pertains particularly to the type of cocks in which the operating stem of the plug valve has an axial movement for releasing it from its locked position, so that the plug valve can be then rotated to different positions.

Another object of the invention is to provide a valve of this type in which the operating stem, latching sleeve or ring and the spring controlling the latching member are retained in their relative assembled positions with respect to the turning plug, so that the latter can be readily removed from the housing without affecting their assembled operative relation.

A further object of the invention is to provide a simple cheap and effective valve of this type having certain details of construction and combination of parts hereinafter more fully set forth.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view of the valve shown in Figure 2, taken on the line 1—1;

Figure 2 is a side view of the valve;

Figure 3 is a section on line 3—3 of Figure 1, showing the valve in closed position;

Figure 4 is a section on line 3—3 of Figure 1, showing the valve in low simmer position;

Figure 5 is a section on line 3—3 of Figure 1, showing the valve in full on or high simmer position;

Figure 6 is a sectional view on line 6—6 of Figure 7;

Figure 7 is a plan view of the valve plug;

Figure 8 is a section on line 8—8 of Figure 7;

Figure 9 is an end view of the valve stem;

Figure 10 is a plan view of the stem;

Figure 11 is a section on line 11—11 of Figure 10;

Figure 12 is a side view of the valve spring;

Figures 13 and 14 are plan and side views respectively of the locking plate;

Figure 15 is a side elevation of the wire locking ring;

Figure 16 is a perspective view of the end of the valve casing;

Figure 17 is a perspective view of the locking sleeve;

Figure 18 is a perspective view of the valve cap; and

Figure 19 is a side elevation, partly in section, showing method of assembling the locking plate.

Referring more particularly to the drawings a cast metal body or casing 1 is centrally bored or cored, as at 3, to provide a cone shaped bearing surface 2 for a plug valve 4. An integral, cylindrical and screw threaded extension 5, at one end of the casing 1, and axially aligned with respect to the cone shaped seat or bearing surface of chamber or bore 3, communicates with the latter through an axial outlet passage 6, leading to the burner not shown.

This outlet passage 6 is provided at its outer extremity with a needle point or valve 7, cooperating with an adjustable perforated cap 8 to restrict the flow of gas to the desired maximum for supporting a full flame at the burner, when the plug valve is in full on position. Casing 1 also includes a hollow laterally projecting extension or branch 9, externally threaded at its outer end for convenient attachment to a manifold, not shown, and provided with a main supply passage 10 communicating with the bore 2. The supply passage 10 also communicates through an angularly disposed by-pass passage 11, with a chamber or pocket 12, within an internally and externally threaded extension 13, integrally formed with casing 1 and angularly related with respect to lateral extension or branch 9, and this pocket communicates with the bore 3 through a second by-pass passage 14, located in the plane of main gas supply passage 10. A set screw or valve member 15, controls the volume of gas flowing through the by-pass passages to the casing into bore 2 when the plug valve is in simmer or low flame position. A cap 16 threadedly engaged with the outer wall of extension 13 prevents escape of gas, and when unscrewed permits adjustment of valve 15 in pocket 12. The area of by-pass passages 11 and 14 are sufficient to support maximum low flame burner requirements, finer adjustments being made with valve member 15.

The plug valve 4 is bored at its inner end to provide a longitudinal passage 17, and is formed with a short lateral intake passage 18, communicating with passage 17, which may alternately be brought into alinement with main gas supply passage 10 and by-pass passage 14, so that a full flow of gas from passage 10 may flow direct into the longitudinal passage 17 and thence to axial outlet passage 6, or a reduced supply through by-pass passages 11 and 14 in the casing to and through lateral passage 18 in the plug and thence down through longitudinal passage 17 to axial outlet passage 6, according to the position to which the valve 4 has been rotated.

The valve thus described is a simmer valve having a fully opened position, a simmer position in which the quantity of gas passing through the

valve is substantially decreased, and a neutral or closed position in which the gas supply is entirely shut off. In operation plug valve 4 is manually rotated by means of a valve stem 19 having its inner hollow end extending axially and slidably into and interengaging with a hollow reduced extension 20, integrally formed on the outer end of the valve. Thus the stem is provided with a stud or pin 21 which extends into a longitudinal slot 22 formed in reduced portion or extension 20, for slidably but non-rotatably interengaging the stem with the plug valve, when said stem is partly forced into the extension 20, against the tension of a coil spring 23. The inner end of this spring seats within the bore 24 of slotted extension 20, the other end being received within the circular recess 25 in the hollow inner end of the valve stem, and bearing against a locking member or plate 26. This plate has a disk shaped body portion 27, which fits snugly but slidably within the recess 25, in the stem 19, and is formed with a finger 28 adapted to project outwardly through a side opening 30 in the lower hollow end of the stem and into and through the slot 22 for engagement with the inner face or edge of a locking ring or sleeve 29, in turn loosely sleeved over the reduced end or extension 20 of the valve plug. Assembly of the locking plate 26 can be readily effected by inserting the disk shaped body portion 27 thereof into the circular recess 25 of valve stem 19 at an angle and then projecting the finger 28 outwardly through the circular opening 30 formed in the side of the stem, the diameter of the latter being considerably smaller than that of the body portion 27, but sufficiently large to permit of the necessary relative sliding or rocking movement between the plate and the stem.

In order to lock the lower end of valve stem 19 and the coil spring 23, within the opening or bore 24 and also lock the ring 29 upon the plug valve, the upper end of extension 20 is formed with two small openings 31, at one side of and adjacent the slot 22. These openings are adapted to receive the bent ends 32 of a wire ring 33, fitting in groove 20', which is thus fixed to the extension 20 in the path of movement of the ring and prevents the same from slipping off the upper end of the plug, whenever it becomes necessary to remove the latter from the casing for the purpose of greasing the plug, as is frequently the case.

The outer end of casing 1 is formed with an externally threaded flange 34, provided in opposite sides thereof with notches 35 and 36 of different sizes. The locking ring 29, which is of the proper external diameter to fit snugly within the flange 34, is formed with lugs 37 and 38 of different sizes, corresponding in width with the notches 35 and 36 in which the lugs are adapted to seat. The locking ring is thus held in the casing against rotation and due to the relative sizes of the slots and lugs can only have one position relative to the casing and its inlet and outlet openings. When the parts have been assembled a cap 44 is screwed on the casing to hold the valve assembly in place.

The locking ring or sleeve 29 is formed with a depending flange 39 against which the finger 28 of locking plate 20 is forced by coil spring 23 and over which the finger slides when the valve plug is rotated. Flange 39 has an extended portion 40 forming stops 41 and 42 for finger 28 and is provided with a notch 43, intermediate these stop shoulders and against which and into which the finger 28 is adapted to respectively engage and snap during respective positions of the plug. Thus when the valve is in Figure 3 or closed position the finger 28 contacts shoulder 41 and clockwise rotation of the valve stem 19 and plug valve 4 will be prevented. In this position the main gas supply 10 as well as the by-pass passages 11 and 14 are closed to communication with the longitudinal outlet passage 17 in the plug. Upon anti-clockwise rotation of the plug until finger 28 snaps into notch 43, in flange 39, of locking sleeve or ring 29, direct communication between the main gas supply passage 10 and plug passage 17 will remain closed but a reduced supply of gas is then free to flow through the angularly disposed by-pass 11 to pocket 12 and thence through straight by-pass passage 14 to the inlet 13 for longitudinal passage 17, this flow of gas being sufficient to provide the desired simmer flame (see Figure 4). In order to rotate the valve still further in an anti-clockwise direction, to its full open or main burner position, (see Figure 5), it is necessary to press the stem inwardly against the tension of coil spring 23, until finger 28 is forced out of notch 43, whereupon the valve may be rotated until finger 28 contacts and is stopped by shoulder 42. A full supply of gas will now flow direct from main gas supply passage 10 into and through plug passage 17 to the burner. The nut or cap 44 adapted for threaded connection with the flange 34 prevents finger or stud 21 from jumping out of the slot 22 and otherwise locks the parts in their operative relation. When in this position, and at all times, the spring 23 is forcing the valve stem and locking plate 26 upwardly and causing a frictional engagement of the finger 28 of the latter with the depending flange 39 of locking sleeve 29, thus preventing the easy turning of the plug. At the same time the spring is exerting a downward pressure on the plug to hold it tightly to its tapered seat.

In assembling the stem and valve plug the spring 23 is first inserted in the plug and after the locking plate 26 has been placed in the stem, in the manner previously described, the stem is inserted in the bore 24 of slotted extension 20, with the locking plate or ring 26 resting on top of the spring with its finger 28 in slot 22. As the stem is pushed home in the bore 24, the stud or pin 21 and finger 28 travel downwardly in the slot 22. Locking sleeve 29 is then sleeved over extension 20 of the plug valve and finally the bent ends of locking ring 33, seated in peripheral groove 20', are secured in the openings 31. The locking plate 26 is prevented from displacement by the sleeve 29 and both of these parts are securely held on the plug by the wire locking ring.

Having thus described the invention, what I claim is:

A valve comprising a casing, a hollow plug valve rotatable in said casing, a valve stem slidably but non-rotatably mounted in said valve and formed with a circular recess in its end and with a lateral opening communicating with said recess, a valve latching sleeve sleeved on said plug, and means for preventing relative rotation of said sleeve and casing, a latching member loosely carried by said stem having a body portion snugly received in the circular recess of said stem and formed with a finger portion projecting through said lateral opening and cooperating with said sleeve to stop the rotation of the valve when the valve is turned to certain positions, and means on the outer end of said hollow plug for locking said stem and valve and latching sleeve together.

ROBERT E. SCHOENBERGER.