A. W. BICE.

GAS REGULATING VALVE.

APPLICATION FILED JUNE 13, 1912.

1,065,913.

Patented July 1, 1913.

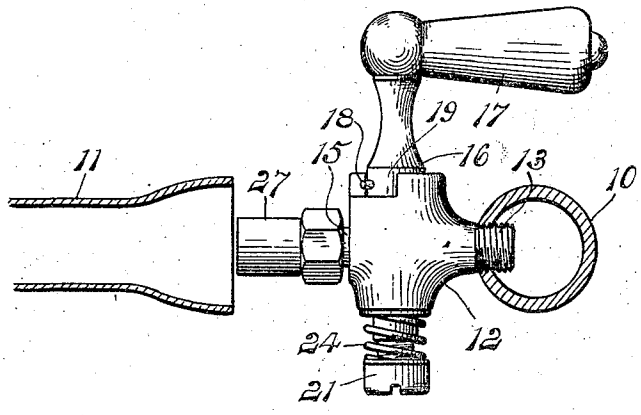


Fig. 1.

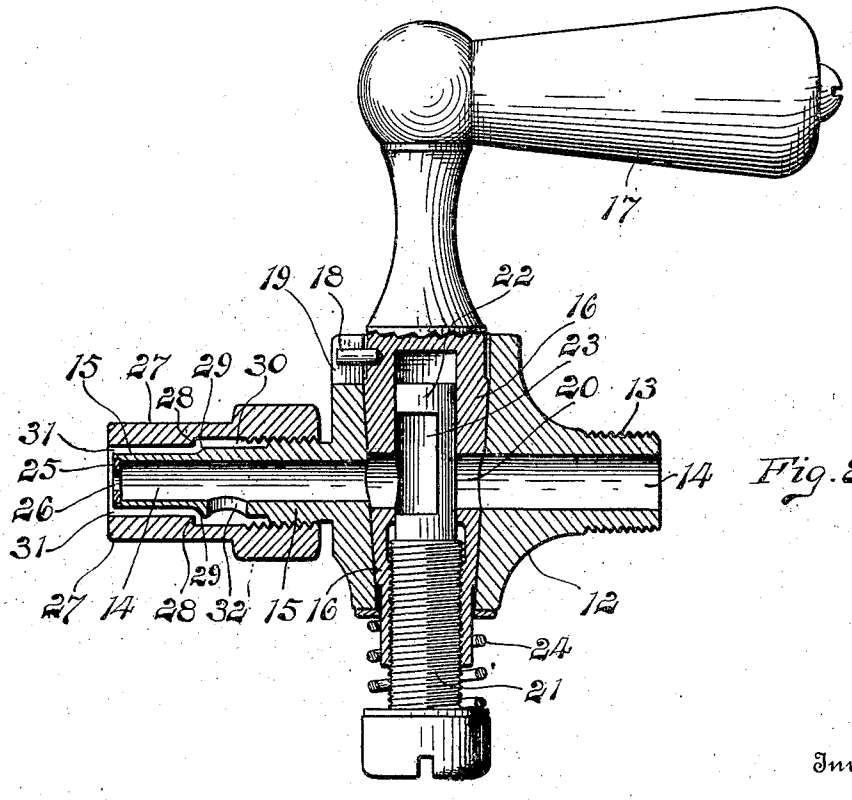


Fig. 2.

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Witnesses

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GAS-REGULATING VALVE.

1,065,913. Specification of Letters Patent. Patented July 1, 1913.

Application filed June 13, 1912. Serial No. 703,450.

To all whom it may concern:

Be it known that I, ARTHUR W. BICE, a subject of the King of England, residing at London, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Gas-Regulating Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improved gas regulating valve and its object is to provide a simple, cheap and compact construction which is so made that it may be quickly and easily adjusted to regulate the volume and speed or flow of the gas, to maintain perfect combustion, and when the device is incorporated in a gas stove, or similar device to prevent a back flash and consequent noise.

To these ends the invention consists in the matters hereinafter set forth and more particularly pointed out in the claims reference being had to the accompanying drawing in which—

Figure 1 is a side elevation of a device embodying the invention; and Fig. 2 a longitudinal vertical section through the same.

In Fig. 1 of the drawing 10 indicates a suitable gas supply pipe and 11 a Bunsen tube forming a gas mixing chamber at right angles to the gas supply pipe with its receiving end at a short distance therefrom. The regulating valve embodying this invention is supported by the pipe 10 with its discharge nozzle in alinement with and adjacent to the open end of the tube.

The regulating valve consists of a casing 12 having a laterally extending externally screwthreaded nipple 13 to engage a screwthreaded opening in the supply pipe 10 or other suitable connection for supplying gas to the valve. A main supply passage 14 extends horizontally through the nipple 13 and casing and longitudinally through a tubular arm 15 which extends horizontally from the side of the casing opposite the nippel 13. The casing is also formed with a vertical tapered bore forming a seat for a plug valve 16 of the usual construction having an upwardly extending end portion to which is secured in any suitable manner a laterally extending handle 17 for turning the plug in its seat. The plug is limited in its turning movement by means of a pin 18 carried by the upper end of the plug and engaging a notch 19 in the upper end of the casing 12. The plug is formed with a transverse bore or passage 20 to register with the main supply passage 14 and is also bored longitudinally inward from its lower end and internally screwthreaded at said end to receive an externally screwthreaded stem 21 having an upper reduced end portion 22 fitting within the inner end of the bore and extending across the main passage 14. This upper end portion of the stem is formed with a deep notch or cut away portion 23 extending inward from one side of the stem to a point beyond its longitudinal axis. This notch is located opposite the main gas passage so that by turning the stem within its bore, the side of the stem opposite the notch may be brought across the passage as shown in Fig. 2, to obstruct the passage and wholly or partially stop the flow of gas therethrough. When the stem is turned so that the notch 23 is brought across the passage 14, said passage is fully open for the free flow of gas therethrough but the flow may be accurately regulated by turning the stem to bring the side thereof adjacent to the notch, across the passage. A spring 24 is sleeved upon the lower end of the stem 21 between the casing and a suitable head on the lower end of the stem to hold the plug valve 16 firmly seated in the casing.

The tubular arm or nipple 15 is externally screwthreaded adjacent to the casing 12 and is reduced in diameter through a middle portion of its length adjacent to the screw threads and further reduced in diameter at its outer end. The bore of the nipple is closed at its extreme end by a disk 25 having an axial discharge opening 26 for the escape of gas from the main supply passage 14. A sleeve 27 having an internal screw thread to engage the screw thread of the nipple is adjustable longitudinally upon the nipple by turning the same and the bore of the sleeve is reduced in diameter toward its outer end forming a shoulder 28 to oppose a similar shoulder 29 formed upon the nipple by the reducing in diameter of the outer end of the nipple. A space or chamber 30 is thus formed between the nipple and sleeve adjacent to the screwthreaded portion of the nipple and intermediate its length and a similar space 31 is provided between the outer reduced end of the nipple and the sleeve, the outer end of the nipple being of lesser diameter than the smallest internal

diameter of the sleeve. A port or opening 32 is provided in the side of the nipple opening into the chamber 30 and providing communication between said chamber and the main gas passage 14. By adjusting the sleeve upon the nipple the shoulder 28 of the sleeve is thus moved toward or from the shoulder 29 on the nipple and the passage or space around the nipple formed by the chamber 30 and space 31 is opened or closed or choked by the bringing of the shoulder 28 nearer to or farther from the shoulder on the nipple.

The volume of gas passing through the valve may be accurately regulated to suit the conditions of supply, by means of the stem 21, said adjustment being a permanent adjustment as the same is carried by the valve plug and turns with it when the plug is turned to shut off or turn on the supply of gas. The velocity with which the gas will be discharged through the opening 26 in the end of the main supply passage may be accurately regulated by turning the sleeve 27 to adjust the shoulder 28 toward or from the shoulder 29 on the nipple and permit a greater or lesser proportion of gas passing through the main passage to escape laterally through the port 32 into the chamber 30 around the nipple and pass out through the narrow passage 31 where it will be carried into the end of the mixing tube 11 by the velocity of the stream of gas issuing from the discharge opening 26. The proper volume of gas may thus be discharged through the nozzle at exactly the proper velocity to give the best results and prevent any back flash through the Bunsen tube. The choking of the auxiliary passage or outlet for the gas around the nipple at a distance from the discharge end of the nipple prevents any disagreeable noise which might otherwise be caused by the issuing of the gas through a contracted discharge end, and causes the gas to issue from the nipple with a smooth even flow.

Obviously, changes in the details of construction may be made without departing from the spirit of my invention and I do not care to limit myself to the particular form or arrangement shown.

Having thus fully described my invention what I claim is:—

1. The combination of a nipple having an outer end portion of uniform cross-sectional diameter and formed with a main gas passage opening through said end, and a sleeve adjustable upon said nipple having a bore of uniform cross-sectional diameter extending inwardly from one end, into which bore said end portion of the nipple projects with a space between said sleeve and nipple forming an annular passage of uniform cross-sectional diameter open at its outer end and communicating at its inner end with said main gas passage, said sleeve being internally formed to regulate the flow of gas into said annular passage by the adjustment of the sleeve.

2. The combination of a nipple having an outer end portion of uniform cross-sectional diameter and formed with a main gas passage opening through said nipple and a lateral opening, a sleeve adjustable upon said nipple having a bore of uniform cross-sectional diameter extending inwardly from one end into which bore said end portion of the nipple projects with a space between said sleeve and nipple forming an annular passage of uniform cross-sectional diameter open at its outer end, and an annular internal shoulder on the sleeve at the inner end of its end bore to oppose a portion of the nipple and regulate the flow of gas into said annular passage when said sleeve is adjusted.

3. The combination of a nipple having an outer end portion of uniform cross-sectional diameter and a screwthreaded portion of greater diameter than the end portion, said nipple being also formed with a main gas passage extending axially therethrough and having an opening in its side, a thin wall closing the outer end of the main gas passage through the nipple formed with an axial discharge opening and having an inner face extending at right angles to the axis of the passage, a sleeve internally screwthreaded to engage the screwthread of the nipple and formed with a bore extending inward from its outer end of uniform cross-sectional diameter and into which bore said end portion of the nipple projects with a space between said sleeve and nipple forming an annular passage of uniform cross-sectional diameter open at its outer end, an annular internal shoulder on the sleeve at the inner end of the said end bore, and an annular shoulder on the nipple at the inner end of the end portion of the nipple, said shoulders being adjusted toward each other by the turning of the sleeve to restrict the flow of gas from the main gas passage through the opening in the side of the nipple into said annular passage around the end portion of the nipple.

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

ARTHUR W. BICE.

Witnesses:

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ANNA M. SHANNON.