A. C. ROESSLER & W. A. ARMINGTON.

GAS SYSTEM.

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1,055,657.

Patented Mar. 11, 1913.

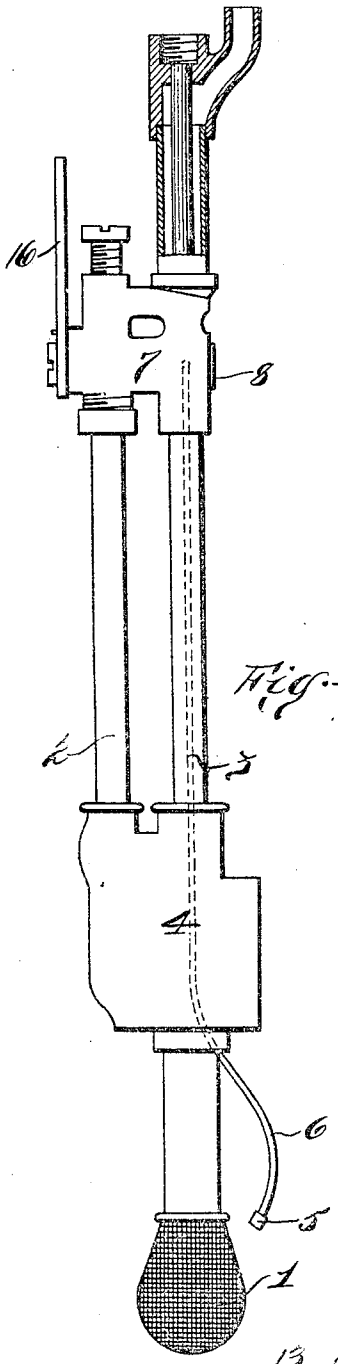


Fig. 1.

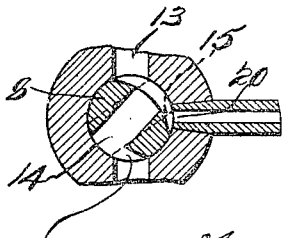


Fig. 7.

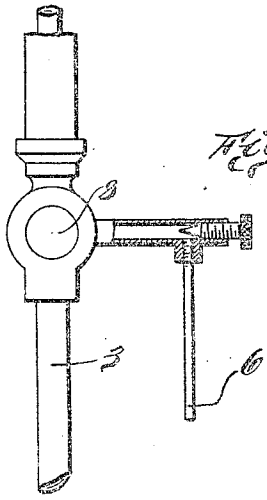


Fig. 2.

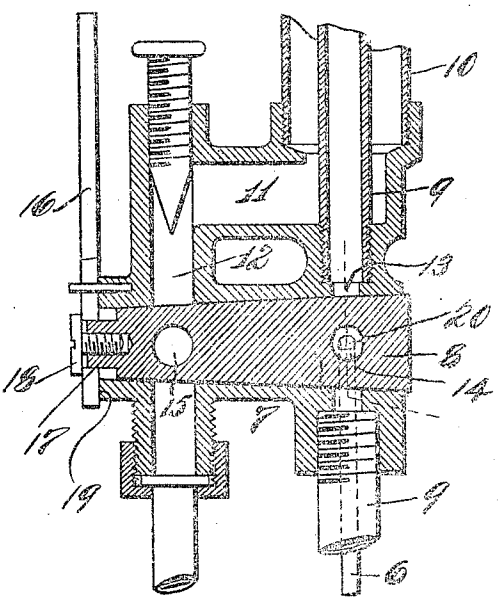


Fig. 3.

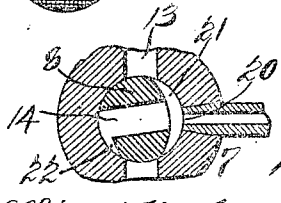


Fig. 4.

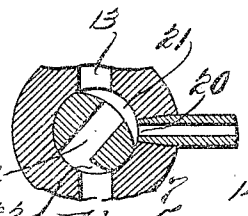


Fig. 5.

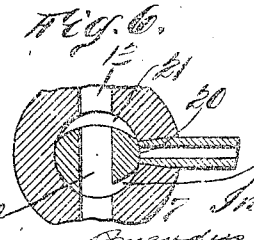


Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## GAS SYSTEM.

1,055,657. Specification of Letters Patent. Patented Mar. 11, 1913.

Application filed May 6, 1911. Serial No. 625,552.

*To all whom it may concern:*

Be it known that we, AMANDUS C. ROESSLER, a subject of the King of Great Britain and Ireland, formerly of London, England, and now a resident of Mineola, Nassau county, and State of New York, and WILLIAM A. ARMINGTON, a citizen of the United States, and resident of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Gas Systems, of which the following is a specification.

Our invention relates particularly to those gas systems wherein a pilot light or "pilot," as it is called, is used for igniting the burner.

To be effective in lighting the burner, it has been necessary heretofore to place the pilot very close to the burner—so close, in fact, that the pilot is frequently burned out. Also it has been customary up to this time to leave the pilot burning all the time. Besides being wasteful, this practice is otherwise objectionable. For instance, in certain work such as "pressure-gas" systems, when the gas is turned on to the main burner, the increased flow to the burner will create a greater flow to the pilot, this causing the pilot to throw a flame directly against the burner. Where the burner is in the form of an inverted mantle, it will be evident that this "cross fire" against the already heated mantle will have a very injurious effect.

The principal object of our invention is to overcome these various objections.

To this end our invention consists in placing the pilot a considerable distance away from the burner so as not to be injured by the heat of the burner, and in providing means for admitting an excessive flow of fuel to the pilot just as the burner is turned on, so that under this greater impulse the flame from the pilot will bridge the distance between pilot and burner and cause ignition at the burner.

In a preferred form the means for controlling the flow of gas to the pilot consists of certain valve mechanism embodying in part a rotary valve body having passages which when the valve body is operated to turn on flow to the burner, will permit an excessive flow to the pilot, and will, as the flow to the burner is turned all the way on, finally cut off the pilot entirely.

Another feature of our invention, when the same is used in connection with a pressure-gas system, consists in the provision of means for simultaneously cutting off both the flow of the air and the gas. The means for accomplishing this purpose may be a part of that same valve mechanism which controls the pilot.

Various other objects and features of our invention will appear as the specification proceeds.

We have illustrated in the accompanying drawings, a preferred embodiment of our invention, but we would have it understood that various changes and modifications may be made therein without departing from the spirit and scope of the invention.

In the drawings: Figure 1 is a side elevation of our invention with certain of the pipe connections broken away and shown in section. Fig. 2 is a broken detail view looking in the direction of the arrow 2 in Fig. 1. Fig. 3 is an enlarged sectional view of the valve mechanism, this view being taken with the rotary valve body in the position indicated in Fig. 4. Figs. 4, 5 and 6 are detail sectional views illustrating the operation of the valve. Fig. 7 is a detail view of a slight modification of the valve mechanism.

Like reference characters have been used to designate like parts throughout the several views.

For purposes of illustration we have shown our invention as applied to a pressure-gas system in which the burner 1 receives a supply of mixed air and gas from the air and gas conduits 2 and 3 respectively, the gas and air being properly commingled in a mixing chamber 4, before reaching the burner. The pilot 5 is, as shown, disposed so as to direct the flame issuing therefrom, toward the burner, and it is furthermore disposed far enough away from the burner so as not to be injured by the heat of the burner. This distance may vary but it is preferably such that when somewhat more than the usual flow of gas is admitted to the pilot, the flame from the pilot will just reach to the burner. The pilot is supplied with gas through a pipe or tube 6.

In its preferred form the valve mechanism consists of a valve casing 7, with a valve body 8, rotatively engaged therein. The valve casing has suitable inlets and outlets for the gas and air. In the form illustrated the gas enters the top of the valve casing through a pipe 9, and the air through a

concentric tube or casing 10, surrounding the gas pipe, the air thence flowing through a lateral passage 11 to the downwardly extending passage 12, and the gas flowing through a passage 13, forming a continuation of the gas pipe 9. The rotary valve body 8 is preferably disposed in the valve casing so as to intercept both the air and the gas passages therein, substantially as shown in Fig. 3, and the said valve body is provided with passages 14 and 15 to register with the gas and air passages respectively. The valve body is preferably of tapered construction, as shown, and instead of placing the valve handle 16, at the large end of the plug, as is usually done, we secure this handle upon an angular extension 17 at the smaller end of the valve body. The handle may be secured in place by a screw 18. The inner face of the handle may have a bearing against the abutment face 19 on the valve casing and so secure the valve body against lateral motion. By reason of this arrangement we are enabled to do away with the usual washer and screw ordinarily used for securing a tapered valve body of this sort, and the screw 18 serves both to hold the handle in place and to adjust and hold the valve in place. For the purpose of controlling the pilot, the valve casing is preferably provided with a port 20, which is displaced angularly to one side of the main gas passage, and to this port is connected the tube 6 which supplies fuel to the pilot. The valve body is formed preferably with a circumferentially grooved portion 21 on its upper side, extending across the top of the passage 14 therein, and with a smaller grooved portion 22 on its lower side. The operation of this valve mechanism is substantially as follows: With the valve in the position indicated in Fig. 4, the passage 14 is out of alinement with the main gas passage so that no gas can flow to the burner, but in this position the grooved portion 21 of the valve body forms a restricted passage between the main passage and the port 20 so as to permit a slight flow of gas to the pilot, which is lighted at that time. As the valve is turned to the position shown in Fig. 5, gas begins to flow to the burner by way of the grooved portion 21, passage 14, and cutaway portion 22 in the valve body, and in this position it will be noted that the larger intermediate part of the groove 21 in the top of the valve body forms a passage-way of increased area to the port 20. A greater or excessive amount of gas is thereby permitted to flow to the pilot. This increased flow to the pilot causes the jet from the pilot to be projected or extended so as to reach over and ignite the gas at the burner. Now when the valve is turned all the way on, as in Fig. 6, the passage 14 in the valve body is brought directly in line with the main passage in the valve casing so that the full flow will pass to the burner, and in this position the port 20 to the pilot is entirely closed. From this it will be seen that when flow to the burner is shut off, a restricted passage-way is opened to the pilot so that only sufficient gas to keep it burning will flow to the pilot. Then when the valve is turned to open flow to the burner, a passage-way of increased area is opened to the pilot so as to permit an excessive flow to the pilot. Ordinarily, therefore, the pilot burns but very little gas, but just when it is needed, it provides a jet of flame sufficient to reach over and ignite the burner. Then when flow to the burner is turned full on, the pilot light is extinguished. When the flow to the burner is turned off, as the valve reaches the position illustrated in Fig. 5, just before flow to the burner is entirely cut off, the passage 21 in the valve body again opens up flow to the pilot, so that in this way the pilot is lighted just before the burner is extinguished.

In order to prevent any possibility of explosion, the gas and air passages in the valve body are preferably offset slightly with respect to each other, substantially as indicated in Fig. 7, so that in turning on flow to the burner, the gas will be turned on slightly in advance of the air.

What is claimed is:

1. In a gas lamp, a burner, a valve casing having gas and air conduits leading to the burner and arranged substantially parallel to each other, an angularly disposed pilot connection leading from the gas conduit, a single rotatable valve body controlling both conduits and also the pilot connection, provided with main passages for the gas and air, circumferentially offset with respect to each other to admit gas to the burner in advance of the air, said valve body also having grooved portions connecting with the main gas passage aforesaid and so arranged that when the gas passage is in alinement with the gas conduit the pilot connection will be closed and when the gas passage is out of alinement with the gas conduit the pilot connection will be open, said grooved portions being of such extent that in opening the gas and air connections to the burner an additional volume of gas will be supplied to the pilot connection before the latter is closed.

2. In a gas lamp, a burner, a valve casing having a gas conduit, a single pilot connection angularly offset from the gas conduit, a rotatable valve body controlling said gas conduit and pilot connection, provided only with a main transverse passage therethrough, a circumferentially arranged groove intersecting one end of the main passage and extending in opposite directions from one end of the main passage, and a second circumferentially arranged groove

extending in one direction only from the opposite end of the main passage, whereby when the valve body is rotated to bring the main passage into alinement with the conduit, an additional volume of gas will first be supplied to the pilot, after which the pilot connection will be closed.

3. In a gas lamp, a burner, a valve casing having a gas conduit, a single pilot connection to the valve casing angularly offset from the gas conduit, a rotatable valve body journaled in the valve casing and provided with a main transverse passage therethrough for registry with the gas conduit, a circumferentially extending groove intersecting one end of the main passage and extending to opposite sides of the main passage, the said groove being deepest at the point of intersection of the main passage, a second circumferentially arranged groove extending in one direction only from the opposite end of the main passage, and means for rotating the valve body, whereby when the valve body is rotated to bring the main passage into alinement with the gas conduit, the intersecting groove will admit an increased volume of gas to the pilot at the time the second groove is first admitting gas from the main passage to the burner.

4. The combination with a burner, of air and gas connections leading to said burner, a valve casing interposed in the said connections and provided with air and gas conduits in line with the air and gas connections respectively, a single angularly disposed pilot connection leading from the side of the gas conduit to a point adjacent the burner, a single rotatable valve body journaled in the valve casing and intersecting both the air and gas conduits therein, the said valve body having transversely-disposed main passages in line with the gas and air conduits and circumferentially offset with respect to each other to admit gas to the burner in advance of the air, a circumferentially extending groove in the valve body, intersecting one end of the main gas passage therein and extending in opposite directions to opposite sides of the main gas passage, said groove arranged thereby to establish restricted communication between the gas conduit and pilot when flow to the burner is cut off and to provide communication from the main gas passage to the burner and an increased flow to the pilot when the valve is rotated to start the burner, and a second circumferentially arranged groove in the valve body extending from the opposite end of the main gas passage therein only in the one direction toward the pilot, whereby to open up flow to the main gas passage when the valve body is in the intermediate position with flow of gas on to both the burner and the pilot, and the two grooves in the surface of the valve body terminating short of each other so that the valve body will cut off flow to the pilot when the main gas passage therein is in line with the gas conduit.

Signed at New York city, in the county of New York and State of New York this 4th day of May A. D. 1911.

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Witnesses:
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