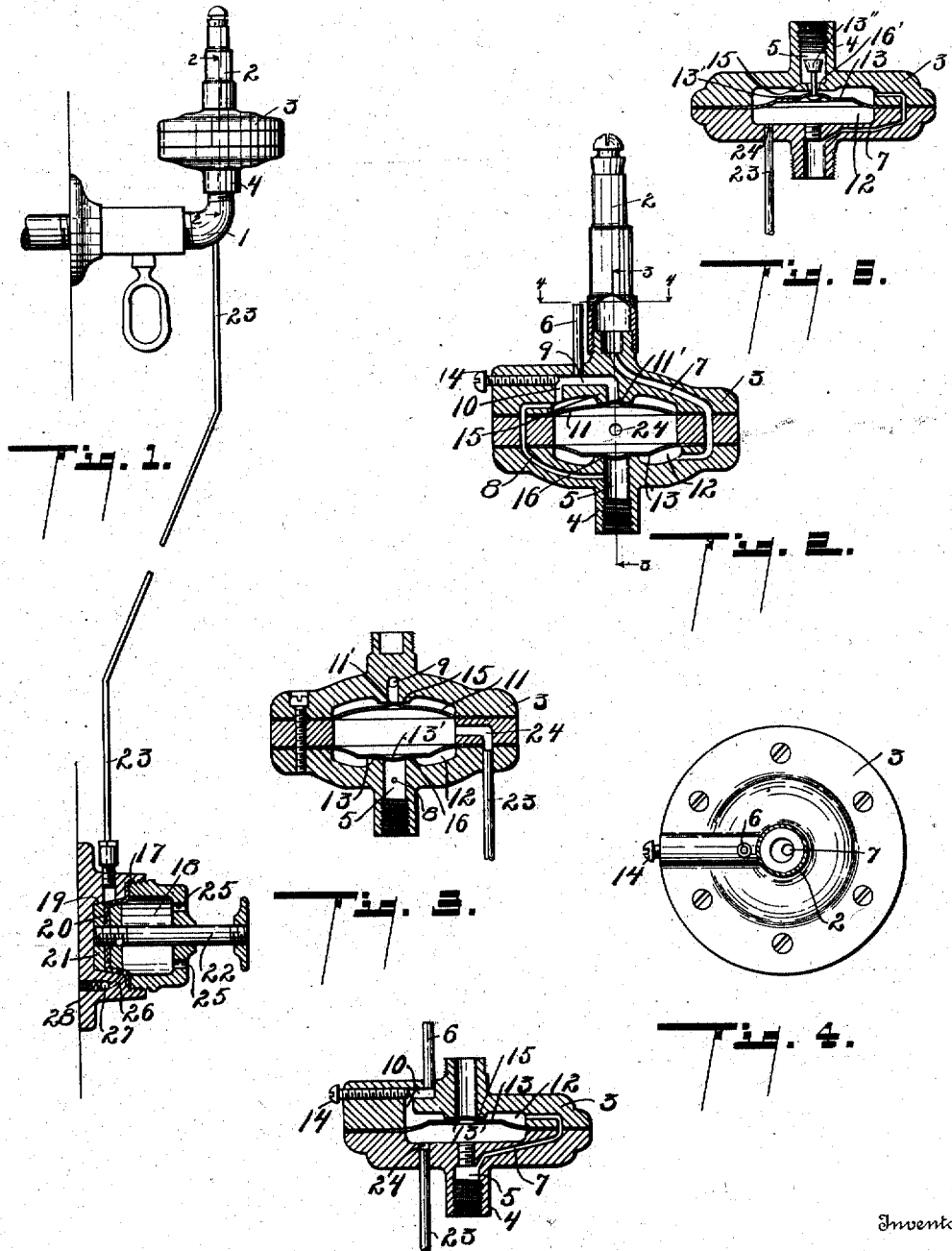


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VALVE AND VALVE ACTUATING MEANS.
APPLICATION FILED AUG. 23, 1909.

982,887.

Patented Jan. 31, 1911.



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VALVE AND VALVE-ACTUATING MEANS.

982,887.

Specification of Letters Patent.

Patented Jan. 31, 1911.

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To all whom it may concern:

Be it known that I, CHARLES J. SIDDALL, a citizen of the United States, residing at the city of Kalamazoo, county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Valves and Valve-Actuating Means, of which the following is a specification.

This invention relates to improvements in valves and valve actuating means.

The main objects of this invention are: First, to provide an improved valve and means for actuating the same, whereby the same may be actuated from a distance. Second, to provide an improved valve mechanism for gas burners having a flash pilot in which the pilot flashing valve will automatically close while the main burner valve remains open until closed through the actuating means. Third, to provide an improved valve mechanism embodying these advantages which is very simple and economical in structure and one which is not likely to get out of repair in use.

Further objects, and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The structure described constitutes one effective embodiment of my invention. Other embodiments would be readily devised by those skilled in the art.

The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a detail side elevation of a structure embodying the features of my invention, the pneumatic actuating means being shown in vertical section. Fig. 2 is an enlarged detail vertical section through the gas valve, taken on a line corresponding to line 2—2 of Fig. 1. Fig. 3 is a detail vertical section, taken on a line corresponding to line 3—3 of Fig. 2. Fig. 4 is a horizontal section taken on a line corresponding to line 4—4 of Fig. 2. Fig. 5 is a vertical section of a modified construction in which the pilot flashing feature is omitted. Fig. 6 is a vertical section of another modification in which

the valve proper is formed separately and attached to the valve diaphragm, the valve here shown is adapted for an inverted burner.

In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents the gas supply pipe, the same being shown in the form of a wall bracket. The burner 2 which is illustrated as the common form of open burner is preferably mounted on the gas valve casing 3, which is connected to the supply pipe by means of the nipple 4, having the supply passage 5 therein. The pilot burner 6 is mounted upon the valve casing 3. The main burner is connected to the valve chamber 12, by the passage 7, while the pilot burner is connected to the valve chamber by the passages 9 and 10. See Fig. 2. A delivery passage 8 which delivers to the valve chamber on the upper side of the pilot valve diaphragm 13 and on the same side thereof as the supply passage 5. The passage 9 for flashing the pilot opens into the chamber 12 on the same side thereof as the supply connections 8, as does also the by-pass passage 10, this by-pass passage is preferably controlled with the regulating valve 14 which is adjusted to regulate the size of the normal pilot flame. When the passage 9 is opened, an additional supply of gas is admitted to the pilot to flash the same. I therefore designate this passage as a flashing passage. The valve diaphragms 11 and 13 are concavo-convex in general form and are arranged to move oppositely in closing, so that by connecting a means for producing suction and pressure to the chamber 12 between the diaphragms the valves are simultaneously opened. The valve seats 15 and 16, respectively, for the pilot and main valves preferably project slightly into the chamber 12, as illustrated. In the structures illustrated in Figs. 2, 3 and 5, the valves proper 11' and 13' are formed integrally with their diaphragms 11 and 13 respectively. The valve 11' is adapted to automatically close while the valve 13' is adapted to remain in either its open or closed positions until moved or actuated through the diaphragm actuating means. This result is accomplished by the form of the dia-

phragms. I preferably accomplish this by forming the main valve diaphragm with an inward curvature, although it may be accomplished by other means. This diaphragm is also preferably concentrically stepped, as illustrated.

The means for actuating the valves preferably consist of a casing 17 having a plunger seat portion 19 at its lower end, the seat portion being preferably tapered. Within the chamber is a diaphragm 20 which is arranged to form a partition across the chamber. On this diaphragm is a plunger 21 having a stem or finger piece 22 thereon arranged through the outer end of the casing. The connecting tube 23 preferably opens into the chamber within the seat portion thereof, so that it is closed by the plunger when the plunger is in its inner position. This connecting tube 23 is connected to the valve casing and through the passage 24 to the chamber between the valves. See Fig. 3. The casing 17 is provided with vent openings 25 at its outer end to permit easy adjustment of the plunger. I also preferably provide the casing with a relief passage 26, which is controlled by the passage 27, the valve being arranged to open outwardly. The valve is held normally on its seat by the spring 28. See Fig. 1. The advantage of this is to permit the ready seating of the plunger in case it is desired to open the valve, that is, the plunger can be moved to its inner position so that the valves are opened by the suction movement thereof.

In the modified construction shown in Fig. 5, the pilot flashing feature is omitted, so that the main burner valve is all that is required. The valve here acts in the same manner as in the structure described in detail.

In the modified structure shown in Fig. 6 the valve 13'' is adapted to close with instead of against the gas pressure. This valve is preferably tapered and the valve seat 16 is also preferably tapered as shown. The valve diaphragm 13 in this structure is also adapted to remain in either its open or closed position.

My improved valve is comparatively simple in structure and is preferably made up of parts as is illustrated in the drawings, for convenience in manufacture and assembling. As these details of structure form no part of the invention they are not specifically described herein.

I have illustrated and described my improved valve in the form in which I have embodied it. I am, however, aware that it is capable of considerable variation in structural details without departing from my invention, and I desire to be understood as claiming the same broadly as well as specifically.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is:

1. The combination with a gas supply, a main and a pilot burner, of a valve casing having a chamber, and a main burner and a pilot flashing passage connecting said chamber to said main and pilot burners respectively, and a passage connecting said pilot to said gas supply; diaphragm valves for controlling said main burner and flash pilot passages and arranged to form partitions across said chamber in said valve casing, said valves being arranged to seat when moved in opposite directions; and means for creating suction and pressure connected to said chamber between said valves, said pilot flashing valve being adapted to automatically close and said main burner valve being adapted to remain in its open or closed position until actuated through said operating means.

2. The combination with a gas supply, a main and a pilot burner, of a valve casing having a chamber, and a main burner and a pilot flashing passage connecting said chamber to said main and pilot burners respectively, and a passage connecting said pilot to said gas supply; diaphragm valves for controlling said main burner and flash pilot passages and arranged to form partitions across said chamber in said valve casing, said valves being arranged to seat when moved in opposite directions; and means for creating suction and pressure connected to said chamber between said valves.

3. The combination with a main and a pilot burner, of a valve casing having a chamber and a main burner and a pilot flashing delivery passage connecting said chamber to said main and pilot burners respectively; diaphragm valves for controlling said main burner and flash pilot passages and arranged to form partitions across said chamber, said valves being arranged to seat when moved in opposite directions; means for creating suction and pressure connected to said valve chamber between said valves, said pilot flashing valve being adapted to automatically close and said main burner valve being adapted to remain in its open or closed position until actuated through said opening means; a gas supply connected to said chamber on the same sides of said valves as the said main burner and pilot flashing passages controlled thereby; and a by-pass passage for said pilot.

4. The combination with a main and a pilot burner, of a valve casing having a chamber and a main burner and a pilot flashing delivery passage connecting said chamber to said main and pilot burners respectively; diaphragm valves for controlling said main burner and flash pilot passages and arranged to form partitions across said chamber, said valves being arranged to

seat when moved in opposite directions; means for creating suction and pressure connected to said valve chamber between said valves; a gas supply connected to said chamber on the same sides of said valves as the said main burner and pilot flashing passages controlled thereby; and a by-pass passage for said pilot.

5. The combination with a main and a pilot burner, of a valve casing having a chamber and a main burner and a pilot flashing delivery passage connecting said chamber to said main and pilot burners respectively; diaphragm valves for controlling said main burner and flash pilot passages and arranged to form partitions across said chamber, said valves being arranged to seat when moved in opposite directions, the diaphragms of said valves being formed of spring metal and being concavo-convex in general form, the main burner valve being concentrically stepped, said pilot flashing diaphragm valve being adapted to automatically return to its closed position and said main valve diaphragm being adapted to remain in either its open or closed positions until actuated through its operating means; means for creating suction and pressure connected to said valve chamber between said diaphragms; a gas supply connected to said chamber on the same sides of said diaphragms as the said main burner and pilot flashing passages; and a by-pass passage for said pilot.

6. The combination with a main and a pilot burner, of a valve casing having a chamber and a main and a pilot flashing delivery passage connecting said chamber to said main and pilot burners respectively; diaphragm valves for controlling said main burner and flash pilot passages and arranged to form partitions across said chamber, said valves being arranged to seat when moved in opposite directions, the diaphragms of said valves being formed of spring metal and being concavo-convex in general form, the main burner valve being concentrically stepped, said pilot flashing valve diaphragm being adapted to automatically return to its closed position and said main valve diaphragm being adapted to remain in either its open or closed position until actuated through its operating means; and means for creating suction and pressure connected to said valve chamber between said valves.

7. The combination with a main and a pilot burner, of a valve casing having a main burner and a pilot flashing delivery passage; diaphragm valves for controlling said main burner and flash pilot passages, said pilot flashing valve being adapted to auto-

matically return to its closed position and said main valve being adapted to remain in either its open or closed position until actuated through its operating means; means for operating said valves; and a by-pass passage for said pilot.

8. The combination with a burner, of a valve casing having a chamber connected to said burner; a diaphragm valve for controlling said burner arranged to form a partition across said chamber, said valve being formed of spring metal and being concentrically stepped and adapted to remain in either its open or its closed position until actuated through its operating means; a gas supply connected to said chamber on the same side of said valve as the said burner connection; and means for creating suction or pressure connected to said valve chamber on the other side of the valve.

9. The combination with a burner, of a valve casing having a chamber connected to said burner; a diaphragm valve for controlling said burner arranged to form a partition across said chamber, said valve being formed of spring metal and being concavo-convex in general form, and being adapted to remain in either its open or its closed position until actuated through its operating means; a gas supply connected to said chamber on the same side of said valve as the said burner connection; and means for creating suction or pressure connected to said valve chamber on the other side of the valve.

10. The combination with a valve casing having an inlet and outlet passage therefor and a valve chamber therein of a diaphragm valve member arranged to form a partition across said chamber, said valve member being formed of spring metal and being concavo-convex in general form and being concentrically stepped and adapted to remain in either its open or its closed position until actuated through its operating means.

11. The combination with a valve casing and a concavo-convex diaphragm valve member of spring metal adapted to remain in either its open or its closed position until actuated through its operating means; and an operating means for actuating said valve member in both directions to open and close the same.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES J. SIDDALL. [L. S.]

Witnesses:

F. GERTRUDE TALLMAN,
MARGARET L. GLASGOW.