No. 859,264. PATENTED JULY 9, 1907.

C. C. TRAVIS.

MIXING VALVE.

APPLICATION FILED AUG. 20, 1906.

Fig. 1.

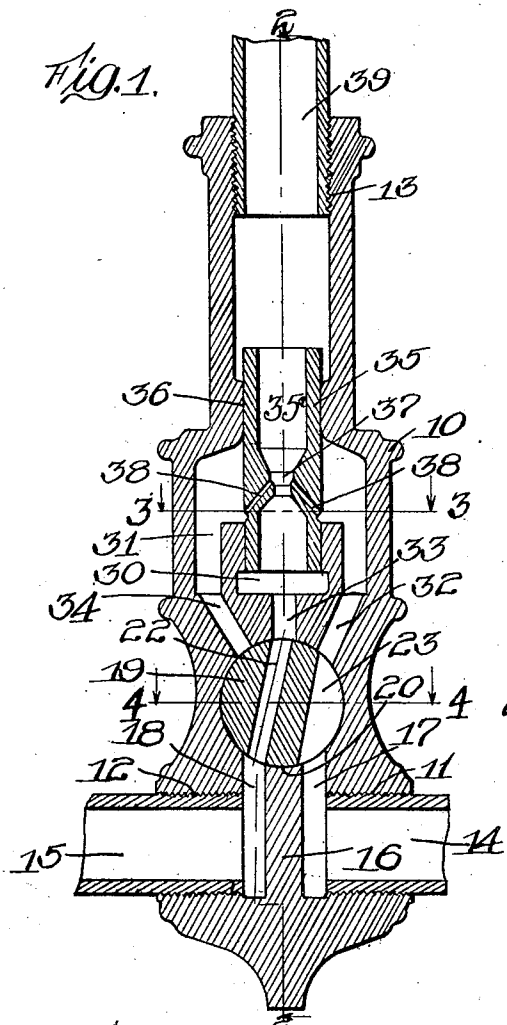


Fig. 2.

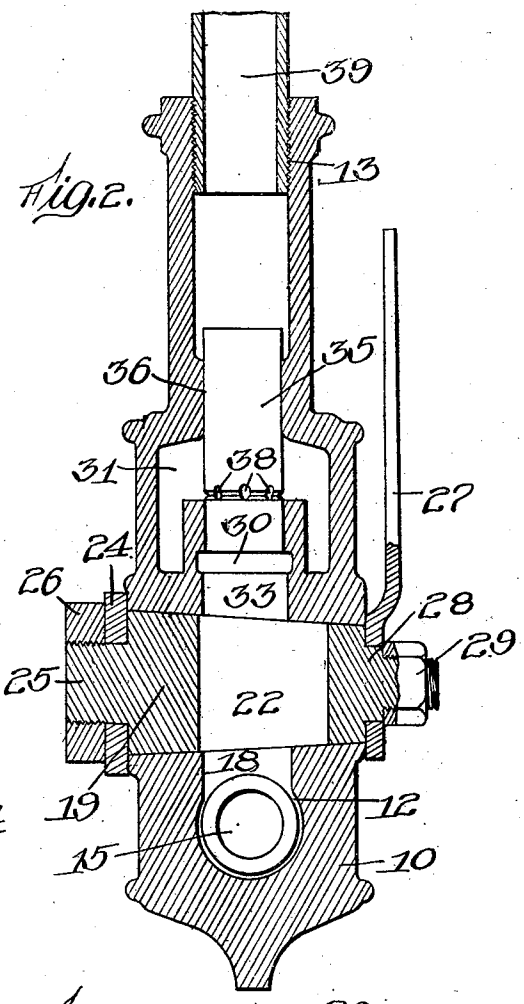


Fig. 3.

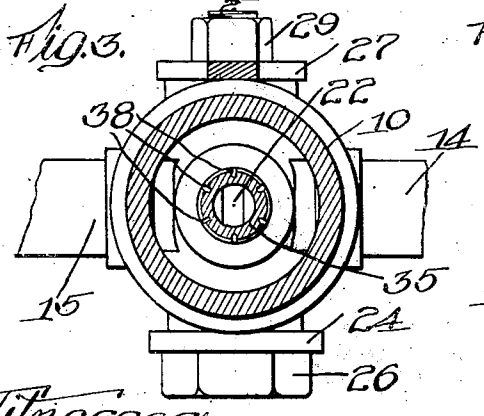
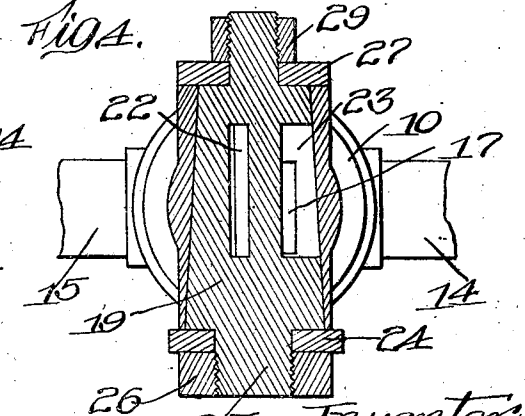


Fig. 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

CLARENCE C. TRAVIS, OF CHICAGO, ILLINOIS.

MIXING-VALVE.

No. 859,264. Specification of Letters Patent. Patented July 9, 1907.

Application filed August 20, 1906. Serial No. 331,264.

To all whom it may concern:

Be it known that I, CLARENCE C. TRAVIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mixing-Valves, of which the following is a full, clear, and exact specification.

This invention relates to improvements in mixing valves particularly adapted for mixing fluids such as air and gas, and the object of the same is to provide an improved device of this character which will be simple and cheap in construction and effective in operation.

To the attainment of these ends and the accomplishment of certain other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawing illustrating an exemplification of the invention, and in which:

Figure 1 is a longitudinal sectional view of a valve constructed in accordance with the principles of this invention; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a sectional view on line 3—3 of Fig. 1; Fig. 4 is a sectional view on line 4—4 of Fig. 1.

Referring more particularly to the drawing, and in which the same reference numerals designate similar parts throughout the several views, the numeral 10 designates the casing which may be of any suitable size and configuration, and is provided with inlet ports 11—12 adjacent one end thereof and an outlet port 13 at the other end. Suitable pipes 14—15 are connected respectively to the inlet ports 11 and 12, and each of these pipes leads from a suitable source of supply (not shown). Located in the bottom of the casing 10, between and spaced from the inlet ports 11 and 12, is a wall or partition 16 of any suitable height, which is adapted to divide the lower portion of the casing into two chambers or ports 17—18. A suitable valve 19 is passed transversely through the casing 10 above the partition 16 and rests upon a suitable valve seat, preferably formed by the top 20 thereof.

The valve is provided with a port 22 passing therethrough and a portion of the side of the valve is preferably cut away or recessed to form a port or passage 23, and these passages or ports are adapted to register with the chambers or ports 17—18, as will be set forth.

Any suitable means may be provided for holding the valve against displacement, such as a washer 24 surrounding a reduced portion 25 on one end and resting against the face of the casing, and a nut 26.

A suitable operating handle or member 27 engages a reduced portion 28 on the other end and is held from displacement by means of a nut 29.

Located above the valve 19 and separated therefrom by a portion of the casing 10 are two spaced and concentrically arranged chambers 30—31, and passing through the casing are ports 32—33—34 which form communicating passages between the valve and the chambers 30—31. The ports 32—34 communicate with the outside chamber 31, while the port 33 communicates with the inside chamber 30.

The inside chamber 30 is considerably smaller than the outside chamber and resting therein is one end of a mixer member 35. This member is preferably in the shape of a cylindrical tube, the lower end of which is supported in any desired manner above the bottom of the chamber 30, preferably by means of frictional engagement with the wall of the chamber, and its upper portion is supported and held in position by means of a circumferential projecting portion 36 which engages and rests against the periphery of the member 35 below its extremity and forms a closure for the chamber 31. The mixing member 35 is provided with a restricted or reduced portion 37 remote from the upper end thereof and preferably adjacent the top of the chamber 30, to form a mixing chamber 35^a, and passing through the wall thereof, preferably in an inclined direction and communicating with the chamber 35^a, are a plurality of apertures 38 which form exits from the chamber 31, through the mixing member 35 and communicate with the exit opening 13 in the casing 10, to which the pipe 39 is secured. In use, gas is admitted through the pipe 14, and air through the pipe 15. Assuming the valve to be in the position shown in Fig. 1, the gas entering through the pipe 14 will flow through the chamber or port 17 in the casing 10, port or passage 23 in the valve 19 and into the chamber 31 through the communicating port or passage 32 and fill said chamber. At the same time, the air entering through the pipe 15 will flow through the port or chamber 18 in the casing, port or passage 22 in the valve 19 into the chamber 30, through the port or passage 33 into the mixer member 35 below the restricted or reduced portion 37 therein. From there the air will pass into the upper part of the mixing member 35 and out through the pipe 39. As the air is passing through the mixing member 35, the gas in the chamber 31 will enter the mixing member through the ports or openings 38, and owing to the reduced or restricted portion 37, a pressure will be exerted upon the air which will tend to cause the air to suck or draw the gas into the mixing member 35, the quantity of gas and air being regulated by manipulating the valve in any desired manner, preferably by means of the crank or handle 27.

If desired, the valve 19 may be rotated so as to cause the port or passage 23 to communicate respectively with the ports or passages 18—34, and the port or passage 22 to communicate with the ports or passages 17—33, in which event the gas may be supplied through the pipe 15 and air through the pipe 14. This construction is preferred, in order to convert the valve from a right to a left hand valve.

In order that the invention might be fully understood, the details of an embodiment thereof have been thus specifically described, but what I claim as new is:

1. In a device of the class described, the combination of a casing, a gas and an air chamber within the casing, an inlet for respectively supplying said chambers, a mixing chamber within the casing and having communication with the gas and air chambers, and a common means for controlling the inlets of said chambers.

2. In a device of the class described, the combination of a casing, a gas and an air chamber in the casing, one of said chambers surrounding the other and each having an inlet, a member supported by one of the chambers and forming a closure for the other chamber, a mixing chamber in said member, said chamber having communication with the gas and air chamber, and a common means for regulating the inlet openings of the last said chambers.

3. In a device of the class described, the combination of a casing, gas and air chambers in the casing, one of which surrounds the other, and each being provided with an inlet, a tubular member communicating with one of the chambers and forming a closure for the other chamber, said member being provided with apertures passing through the wall thereof to form an outlet for the last said chamber, and a valve for controlling the inlet to both of said chambers.

4. In a device of the class described, the combination of a casing, gas and air chambers in the casing, one of which surrounds the other, and each being provided with an inlet, an independent tubular member communicating with and supported by one of the chambers and forming a closure for the other chamber, said member being provided with apertures passing through the wall thereof to form an outlet for the last said chamber, and a valve for controlling the inlet to both of said chambers.

5. In a device of the class described, the combination of a casing, two chambers within the casing, one of which surrounds the other, said casing being provided with openings therethrough to form inlets to the chambers, a member supported by one of the chambers, a mixing chamber in said member communicating with said chamber, said member engaging the wall of the other chamber to form a closure therefor and being provided with apertures to form a communication between the mixing chamber and the last said chamber, and a common means for controlling the inlets of the first said chambers.

6. In a device of the class described, the combination of a casing, two chambers within the casing, one of which surrounds the other, and each of which is provided with an inlet, a member supported by one of the chambers and forming a closure for the other chamber, a mixing chamber in said member, said member being provided with passages communicating respectively with the first said chambers, and a single means for simultaneously controlling the inlets of the said first chambers.

7. In a device of the class described, the combination of a casing, two chambers within said casing, one of which surrounds the other, each being provided with an inlet, a tubular member communicating with and supported by one of said chambers, and forming a closure for the other chamber, said member being provided with a restricted portion remote from its free end to form a mixing chamber, and having transverse apertures in its body to form communicating passages between the mixing chamber and the said other chamber, and means for controlling the inlets of the first said chambers.

8. In a device of the class described, the combination of a casing, two chambers within said casing, one of which surrounds the other, each being provided with an inlet, a tubular member communicating with and supported by one of said chambers, and forming a closure for the other chamber, said member being provided with a restricted portion remote from its free end to form a mixing chamber and having inclined transverse apertures in its body adjacent the restricted portion to form communicating passages between the mixing chamber and the said other chamber, and means for controlling the inlets of the first said chambers.

9. In a device of the class described, the combination of a casing, two chambers within the casing, one of which surrounds the other and each being provided with an inlet, the inner chamber being shorter than the outer chamber, a tubular member communicating with and supported by the inner chamber and projecting above the outer chamber, forming a closure therefor, the passage in said tubular member being restricted above the inner chamber, said member being also provided with inclined transverse apertures passing therethrough adjacent the restricted portion and communicating with the outer chamber, and means for simultaneously controlling the inlets of the chambers.

10. In a device of the class described, the combination of a casing, a plurality of independent chambers in said casing, one of said chambers being provided with a plurality of inlet passages and the other being provided with a single inlet, a mixing chamber provided with passages communicating with the first chambers, and a reversible valve in the casing for controlling the inlet passages, said valve being adapted to normally close one of the inlets in the first said chamber and to simultaneously control the remaining passages.

11. In a device of the class described, the combination of a casing having a gas and an air inlet, two chambers one of which has two inlets and the other of which has only one inlet, and a valve disposed to control the inlets, said valve being provided with two ports or passages, one of said ports being adapted to register with either one of the two inlets to one of the chambers and the other port being adapted to register only with the single inlet to the other chamber.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 11th day of July A. D. 1906.

C. C. TRAVIS.

Witnesses:
FRANCIS A. HOPKINS,
J. H. JOCHUM, Jr.