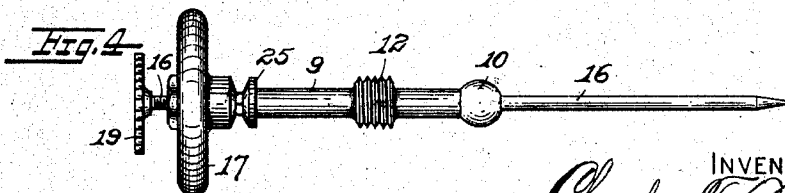
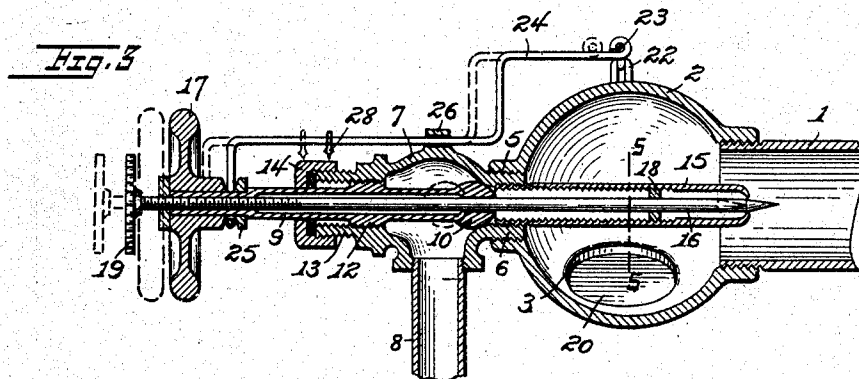
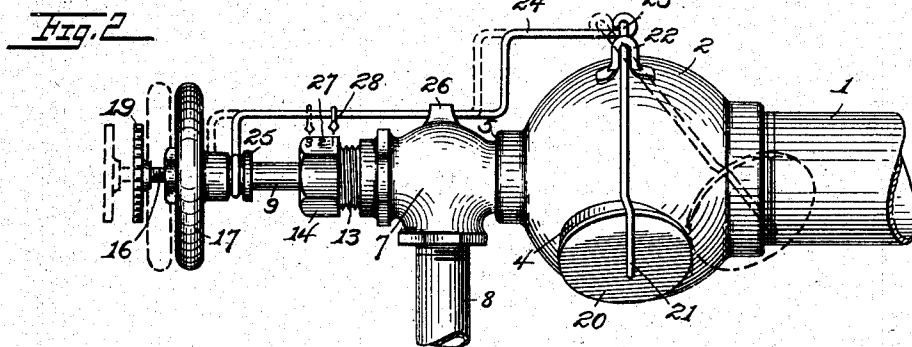
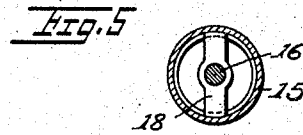
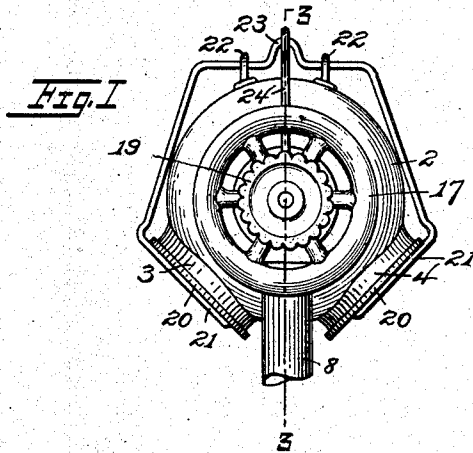


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VALVE.

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949,056.

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WITNESSES:

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VALVE.

949,056.

Specification of Letters Patent.

Patented Feb. 15, 1910.

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To all whom it may concern:

Be it known that I, CHARLES F. BRAND, a citizen of the United States of America, and resident of Wheeling, county of Ohio, and State of West Virginia, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to improvements in gas-feed valves, and more particularly to a combined feed valve, mixer and regulator for gas-burners which is especially adapted for use on the burners of gas-heaters, steam boilers, gas and gasoline engines, carbureters, and the like.

The primary object of the invention is to provide a gas-controlling and mixing valve by means of which the gas supply to the burner or burners may be readily controlled and wherein the quantity of air admitted for mixing with the gas is automatically increased and diminished as the supply of gas is increased and diminished.

A further object of the invention is to provide a simple and comparatively inexpensive device of the character referred to which will so regulate automatically the mixing of air with the gas as to produce perfect combustion at the burner.

With these and other objects in view, the invention finally consists in the particular construction, arrangement and combination of parts which will hereinafter be fully described, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is an end view of the invention; Fig. 2 is a side elevation of the same; Fig. 3 is a longitudinal sectional view of the same taken on the line 3—3, Fig. 1; Fig. 4 is a side elevation of the valve stem and correlated parts, removed from the valve casing; and Fig. 5 is an enlarged cross section on the line 5—5, Fig. 3.

Referring to said drawings, in which like reference numerals designate like parts throughout the several views—1 indicates the mixing tube, or the tube which leads to the gas burners (not shown), which latter may be of any preferred type. Threaded upon the end of said tube is a socket fitting 2 somewhat similar in form to a side-opening ell railing-corner fitting, the neck-ports 3 and 4 of which are directed or inclined downward and outward on opposite sides, as shown, the openings or passages

through said neck-portions affording air-inlet passages, as will presently be explained. In the side or end of the fitting opposite to the tube 1 is provided a socket opening 5 within which is threaded the neck 6 of a valve casing 7, into which leads a gas-supply pipe 8. A hollow valve stem 9 directed into the casing 7 from the end opposite the neck 6 carries upon its end a valve 10 which is adapted to seat in said casing for closing off the gas supply to the mixing tube through said neck. Said stem 9 has a threaded portion or worm 12 in engagement with the interiorly-threaded portion of the neck 13 of the casing, and a stuffing box 14 is threaded upon the outer end of said neck 13 about said stem.

Threaded within the neck 6 of the valve casing so as to stand in alinement with the valve stem 9 is the rear end of a forwardly directed nozzle 15 whose front end is tapered and preferably extends to a point within the mixing tube 1, as shown. A regulating needle 16 is directed longitudinally through the hollow valve-stem 9, valve 10 and nozzle 15 and has its point projected outward from the tapered end of said nozzle, said needle being in threaded engagement with the valve stem and adapted to operate therewith as it is manipulated by means of the hand-wheel 17, for producing a spray-like discharge of the gas ejected from the nozzle. A cross-head 18 is preferably threaded into the nozzle and has the needle projected therethrough for holding the latter in proper alinement. An appropriate head 19 is provided on the outer end of the needle, by means of which the latter is adjusted with relation to the valve stem 9.

For controlling the admission of air to the fitting 2 through the inlet passages, disk-like closures 20 are provided at the mouths of the openings through the neck-portions 3 and 4, said closures being adapted for swinging laterally with respect to said openings to increase or decrease their capacity for receiving air. Said closures are carried by the terminals 21 of a rod or wire which is pivotally supported by a pair of loops 22 fixed upon the top of the fitting 2. Intermediate the loops 22 the wire is bent to form a crank 23 to which is pivotally connected one end of an adjusting rod 24 which lies substantially in parallel alinement with the valve stem and has its opposite end encircling said stem at a suitable point, as

between the boss of said hand-wheel 17 and a bearing portion 25 carried by said stem.

As is obvious, when the valve 10 is withdrawn from its seat, allowing an increased volume of gas to be supplied to the burner, traction is made on the crank 23 through the adjusting rod 24, swinging the closures 20 forward and thus increasing the capacity of the openings in the neck-portions of the fitting 2 for receiving air, and vice-versa.

A suitable guide 26 is provided for the rod 24 upon the top of the valve casing 7, as shown.

For indicating the relative amount of gas supplied to the burner, a series of spaced graduations or numbers 27 may be provided upon the top of the stuffing-box 14, and a small indicator 28 carried by the rod 24 at a suitable point will register with said graduations or numbers at different points in the adjustment of the valve.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, a valve casing provided with an inlet and an outlet port, a valve seat intermediate said ports, a nozzle rigidly mounted in said outlet port and projected forward therefrom, a valve movable toward and from said seat in alinement with said outlet port, a needle projected forward from said valve through said nozzle and movable with said valve, a hollow member inclosing said nozzle and having air-inlet passages therein, and means associated with said passages and controlled by movement of said valve whereby the admission of air through said passages is regulated.

2. In a device of the character described, a valve casing provided with an inlet and an outlet port, a valve seat intermediate said ports, a nozzle rigidly mounted in said outlet port and projected forward therefrom, a valve movable toward and from said seat in alinement with said outlet port, a needle projected forward from said valve through said nozzle and movable with said valve, a hollow member inclosing said nozzle and having air-inlet passages therein, closures for said passages, and means coöperating with said valve whereby movement of the latter with respect to its seat effects a corresponding movement of said closures with respect to the passages.

3. In a device of the character described, a valve casing provided with an inlet and an outlet port, a valve seat intermediate said ports, a nozzle rigidly mounted in said out-

let port and projected forward therefrom, a valve movable toward and from said seat in alinement with said outlet port, a needle projected forward from said valve through said nozzle and movable with said valve, a hollow member inclosing said nozzle and having air-inlet passages therein, closures for said passages, and means interposed between said valve and said closures whereby the latter are moved with respect to the air-inlet passages, increasing the air-supplying capacity of the latter as the gas supply is increased, and vice versa.

4. In combination with a mixing tube having a pair of divergently related and laterally facing air openings leading thereinto and means to supply gas to the tube, a closure for each opening, a member secured to each closure and pivotally mounted upon the tube, means to regulate the gas supply, and means for operating said gas regulating means, said last named means being connected to said member to impart corresponding movement thereto upon its actuation.

5. In combination with a mixing tube formed with divergently related and laterally facing air-inlets, of a gas supply communicating with said tube, reciprocable means whereby the amount of gas entering said tube may be regulated, means for controlling the amount of air admitted to said air inlet, and reciprocable means connected to said movable gas regulating means and to said air controlling means whereby movement of the former will be correspondingly imparted to the latter.

6. In combination with a mixing chamber having a side opening air inlet, means for controlling the admission of air through said inlet, a nozzle projecting into said chamber, a gas supply pipe communicating with the nozzle, a valve for controlling said gas supply, a needle valve for controlling said nozzle, means for mounting said valves whereby both are movable in unison and whereby the needle valve may be adjusted independently of any movement of the gas controlling valve, and means connecting the first mentioned valve and the air-controlling means whereby movement of the former produces a proportionate movement of the latter.

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

CHARLES F. BRAND.

Witnesses:

H. E. DUNLAP,
E. A. LENKARD.