

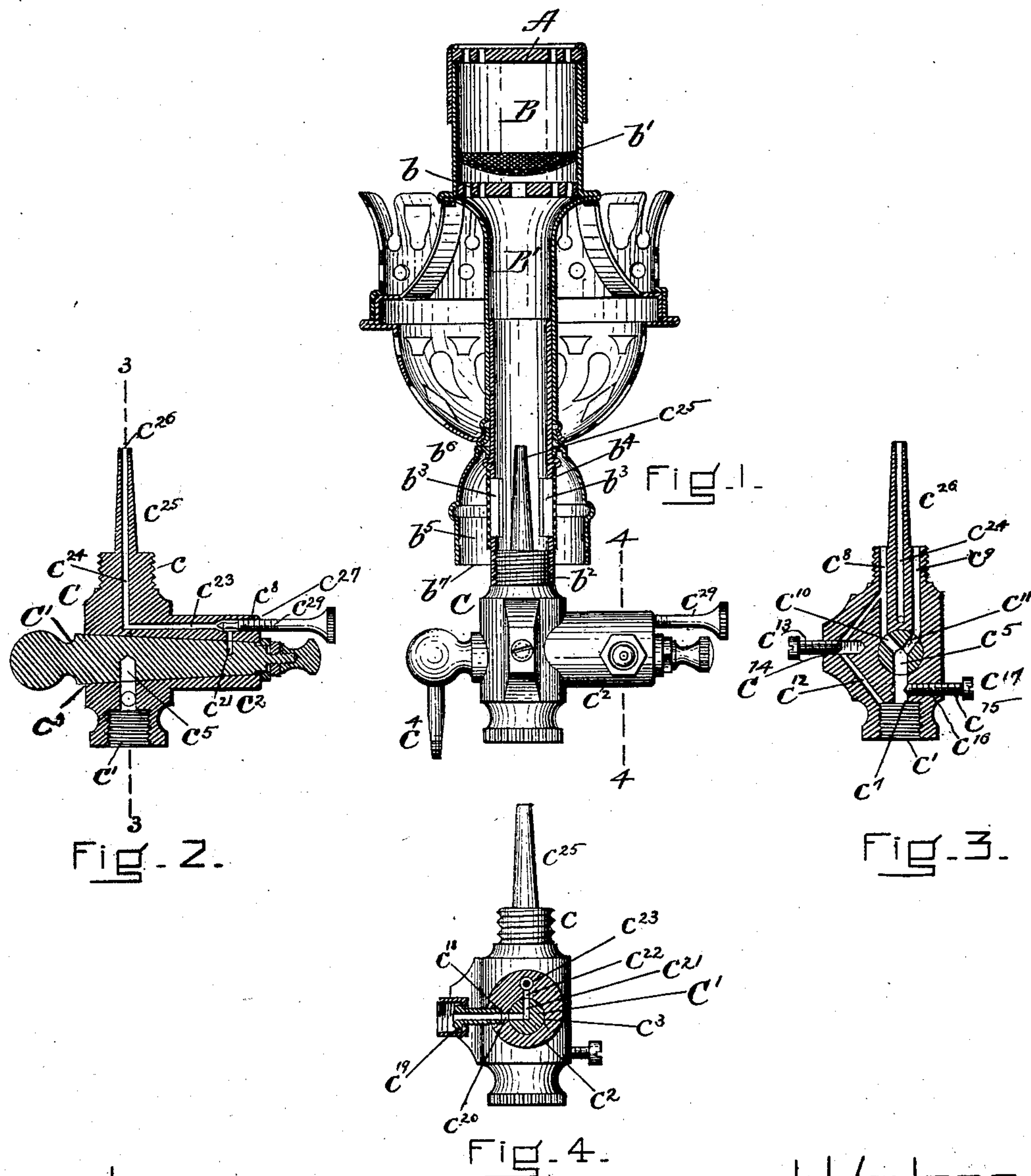
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R. M. BUCKNAM.
GAS BURNER.

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NO MODEL.



WITNESSES=

J. M. Doan.
Saul Sipestein

INVENTOR=

Robert M. Bucknam
by Lewis ally-
J. H. Fitzgerald

UNITED STATES PATENT OFFICE.

ROBERT M. BUCKNAM, OF MEDFORD, MASSACHUSETTS, ASSIGNOR
TO CENTURY LIGHT COMPANY OF AMERICA, A CORPORATION
OF MASSACHUSETTS.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 762,878, dated June 21, 1904.

Application filed March 26, 1903. Serial No. 149,632. (No model.)

To all whom it may concern:

Be it known that I, ROBERT M. BUCKNAM, a citizen of the United States, and a resident of Medford, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Gas-Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to that type of incandescent gas-burners in which a mantle is used and in which also air under pressure is fed to the gas-mixing chamber immediately below the flame-surface of the burner.

The object of the invention is to provide a simple, cheap, effective, and accessible means for controlling and adjusting its operation and which involves means for supplying the gas to the mixing-chamber, for regulating or varying such supply, for providing a supply for a pilot-light, for providing a supply of air under pressure, for regulating the amount of said air-supply, and for cutting off simultaneously the supply of gas and of air without shutting off the supply of gas for the pilot-light. All these means I have combined in one casting and a controlling-cock, and they are located below the burner in the supply gas pipe or main.

I will now describe the invention in detail in conjunction with the drawings forming a part of this specification, wherein—

Figure 1 is a view of the burner, partly in vertical section and partly in elevation. Fig. 2 is a view in cross vertical section of the valve-casing and valve. Fig. 3 is a view in vertical section upon the dotted line 3 3 of Fig. 2. Fig. 4 is a vertical section upon the dotted line 4 4 of Fig. 1 and in elevation of parts back of said line.

The mantle is not shown in the drawings.

Referring to the drawings, A is a perforated disk of any ordinary type, forming the flame-surface of the burner. Below it are the two mixing-chambers B and B', separated from each other by the perforated diaphragm b and the gauze flame-check b'. The cham-

ber B' is formed in a tubular case or shell, which has at its lower end a threaded section b² to screw upon the threaded part c of the valve-casing C, which serves to hold or sustain it upright and which forms the connection between the gas-supply pipe (not shown) and it. This tubular shell has inlet-openings b³ near its lower end from the outer air, which are inclosed by fine perforated gauze b⁴ and surrounded by an outer chamber b⁵ in a petticoat b⁶, fastened to the shell above the openings b³ and forming a chamber opening at its bottom b⁷ only. (See Fig. 1.)

The valve-casing C has the threaded hole c', which receives the threaded end of the gas-conducting pipe. It also has extending through its main part and lateral extension c² a horizontal conical hole c³, which receives and holds the conical valve-plug C'. The plug is fastened to the casing in a manner to be turned by its handle c⁴ in the usual way, and it has the gas-port c⁵ and the air-port c⁶. The gas-port c⁵ is fully represented in Fig. 3 and serves to connect the gas-passage c⁷, which extends from the hole c', with the gas-passages c⁸ c⁹ above the valve and which open into the chamber B' at its lower end. The port c⁵ is divided in the valve-plug into the two arms c¹⁰ c¹¹ to permit this division of the stream of gas into two columns to take place. The passages c⁷, c⁸, and c⁹ are drilled from their respective ends of the valve-casing to the central conical hole c³. The valve-casing also has a by-passage c¹², connecting the hole c' with the passage c⁸ and which is adapted to supply a sufficient quantity of gas not passing through the valve or controlled by it for supporting a pilot-light. This by-passage may be regulated in size or entirely closed by means of a screw stop-plug c¹³, which screws in a threaded hole c¹⁴, crossing the by-passage, and the head of which is accessible from without the casing and adapted to be turned by a screw-driver or in any other desired way. The gas-passage c⁷ may also be adjusted in size or entirely cut off by a screw stop-plug c¹⁵, which screws in the threaded hole c¹⁶ in the casing and enters and may extend across the said

gas-passage c^7 . This gas screw-plug has an exposed head c^{17} , by which it may be turned.

The lateral extension c^2 of the valve-case has a hole c^{18} , which receives the end of an air-supply pipe c^{19} or a coupling connecting such a pipe with the casing. From this hole c^{18} there extends the air-passage c^{20} to the conical hole c^3 , and the conical valve C' has the air-port c^{21} , which serves to connect the air-passage c^{20} with the air-passage c^{22} , which extends from the conical hole c^3 into a horizontal passage c^{23} , (see Figs. 2 and 4,) extending in the lateral extension of the casing to the vertical passage c^{24} in the main part and in its conical extension c^{25} , which is within the chamber B' , and so that the air-outlet c^{26} in said chamber is considerably above the points where the gas-supply enters the chamber and also above the air-openings b^3 . (See Fig. 1.) This vertical air-passage c^{24} is for a portion of its length between the gas-passages c^8 c^9 . (See Fig. 3.) The horizontal air-passage c^{23} has extending into it from the end c^{27} of the lateral extension of the valve-casing a threaded hole c^{28} , in which a threaded stop-plug c^{29} is adapted to be screwed and which serves to adjust the size of the air-passage or to shut it off completely, according as may be desired.

The gas-port c^5 and the air-port c^{21} and the gas and air passages in the valve-casing are so arranged that the turning of the valve-plug serves to simultaneously open or close the gas and air passages, whereby the gas and air are simultaneously fed to the mixing-chambers or shut off from them. The air, like the gas, is fed under pressure through the valve to the mixing-chamber, and it is supplied to the valve by means of a conducting-pipe (not shown) extending from an air-pressure chamber.

The size of the gas and air passages in the valve-casing may be regulated by the screw-plugs to properly balance the respective pressures and quantities of the gas and air, and the passages may also be completely closed by said means. These devices are necessary for the effective working of the burner, and it is very advantageous to have them arranged in and supported by an integral part like a valve-casing common to them all and whereby they are all brought closely together and conveniently located to be operated from the same position. It is also an advantage to have them all located below the burner and supported by the gas-supply pipe.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A valve-casing consisting of an arm forming means for attachment to a burner and provided with a nozzle, a second arm forming means for attachment to a gas-supply pipe, and a lateral extension forming means for attachment to an air-supply pipe, said casing having a valve-chamber therein, a passage

extending from said nozzle into the lateral extension and communicating with the valve-chamber, a second passage in said first-named arm communicating with said valve-chamber, and a third passage in the second-named arm communicating with the gas-supply, in combination with a main valve-plug having a passage to provide communication between the air-supply and said first-named passage and also having a branched passage for providing communication between the gas-supply and second-named passage.

2. A valve-casing consisting of an upper arm forming means for attachment to a burner and provided with a nozzle, a lower arm forming means for attachment to a gas-supply pipe, and a lateral extension forming means for attachment to an air-supply pipe, said casing having a valve-chamber therein, a central passage extending from said nozzle into the lateral extension and communicating with the valve-chamber, a plurality of annularly-disposed passages in said upper arm and communicating with said valve-chamber and a passage in the lower arm communicating with the gas-supply, in combination with a main valve-plug having a passage to provide communication between the air-supply and the central passage and also having a branched passage for providing communication between the gas-supply and the annularly-disposed passages.

3. In a gas-burner of the character specified, the valve-casing C having an extension c^2 , and a valve-chamber extending through said casing and extension, a coupling end c , for receiving and holding the burner, a means c' for attaching the valve-casing to a gas-pipe, a means for connecting an air-pipe with the extension, gas inlet and outlet passages, air inlet and outlet passages, all said passages intersecting the aforesaid valve-chamber, and a main valve contained in said valve-chamber having ports to register with the various passages.

4. In a gas-burner of the character specified, a valve-casing having therein a passage for gas and a passage for air, and a valve-chamber intersecting said passages, a main valve contained in said valve-chamber having a port for opening the gas-passage and a port for opening the air-passage, means at one side of the casing for turning said main valve, a supplemental valve for regulating the gas-passage, protruding from a side of the casing below and quarteringly from the main valve, and a supplemental valve for controlling and closing the air-passage arranged to extend from the casing at a point opposite the main valve, as and for the purposes set forth.

5. In a gas-fixture of the character specified, a valve-casing having a lateral extension and a vertical nozzle and means for attaching said casing to a support, means for receiving and supporting a burner, means for connec-

tion with an air-supply pipe, said casing hav-
ing a main valve, a gas-passage extending
from the gas-inlet to the main valve and from
the main valve in a plurality of parts to gas-
5 outlet openings on either side of the nozzle,
an air-passage extending from the air-inlet to
the main valve and from the main valve to
an air-outlet in the nozzle, the main valve hav-
ing a port for opening the gas-passage and

dividing the gas column into a plurality of 10
columns as aforesaid, and a port for opening
the air-passage as and for the purposes set
forth.

ROBERT M. BUCKNAM.

In presence of—

F. F. RAYMOND, 2d,
SAML. SIPPERSTEIN.