No. 676,721. Patented June 18, 1901.

F. LOGAN.

INCANDESCENT GAS BURNER.

(Application filed Jan. 23, 1900.)

(No Model.)

Fig. 1.

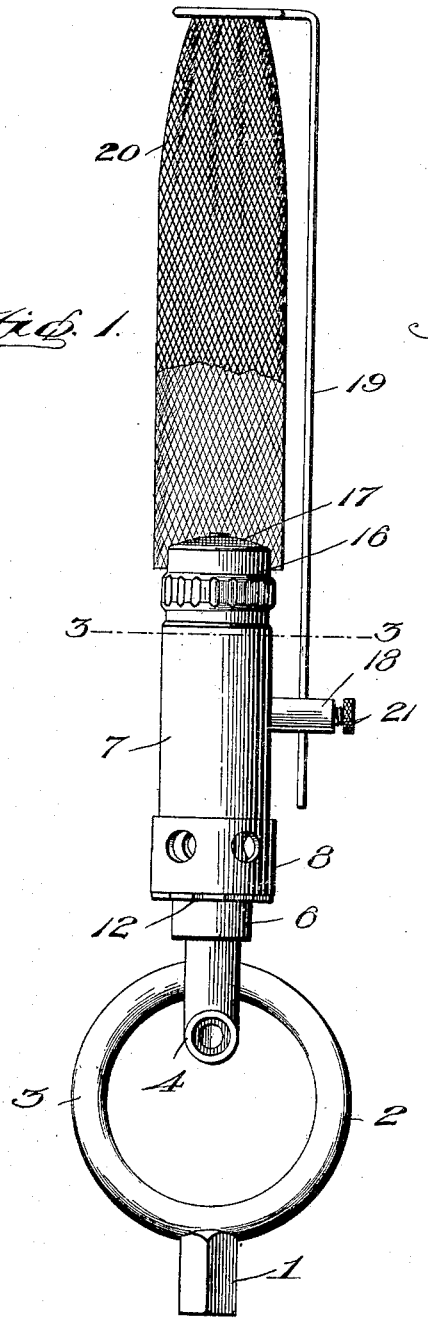


Fig. 2.

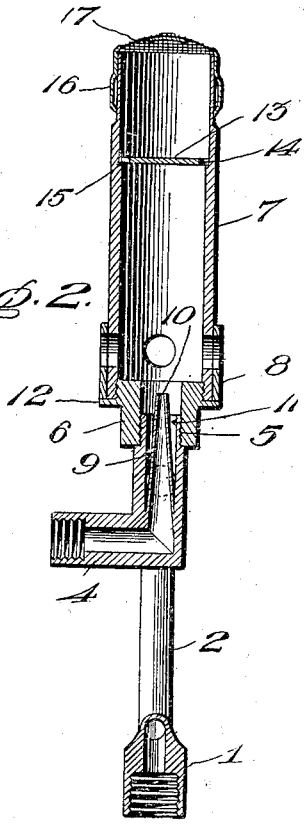
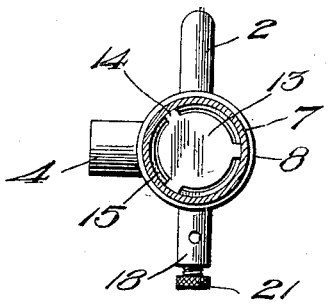


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

FERDINAND LOGAN, OF PHŒNIXVILLE, PENNSYLVANIA.

INCANDESCENT GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 676,721, dated June 18, 1901.

Application filed January 23, 1900. Serial No. 2,518. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND LOGAN, a citizen of the United States, residing at Phœnixville, in the county of Chester and State of Pennsylvania, have invented certain new and useful Improvements in Incandescent Gas-Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to gas-burners, and more particularly to vacuum-burners adapted for use in connection with incandescent mantles.

The primary object of the invention is to heat the mantle of an incandescent burner to an intense heat by evenly distributing the flame throughout the area of the mantle. This object I accomplish by admitting a current of air under pressure into a combined mixing-chamber and superheater at a point above the point of admission of the gas, thus inducing a strong upward current of gas and effecting a thorough admixture of the air and gas below the point of ignition.

A further characteristic of the invention is the employment within the mixing-chamber and superheater of an adjustable metallic diaphragm provided with passages for the mixed air and gas, and adapted to be supported within the walls of the mixing and superheating chamber.

The construction of the improved burner will be fully described hereinafter and defined in the appended claims in connection with the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of a burner embodying the invention. Fig. 2 is a central vertical section of the same, taken at right angles to Fig. 1; and Fig. 3 is a horizontal section on the line 3 3 of Fig. 1.

The reference-numeral 1 designates the sleeve or base of the burner, internally threaded for attachment to the nipple of an ordinary gas-bracket or chandelier and connected, preferably, by semicircular pipes 2 and 3 to an elbow-coupling 4, circumferentially reduced and externally screw-threaded at its upper end 5 to receive a coupling 6, which is internally threaded to receive the upper end 5 of the elbow and externally threaded at its upper end for attachment to the lower internally-threaded end of a cylindrical mixing and superheating chamber 7, which may, if desired, be formed with a series of perforations adapted to be partially or wholly closed by a perforated revoluble shutter 8.

Within the elbow-coupling 4 is arranged an air-pipe 9, gradually tapering in diameter from its lower to its upper discharge end 10, which latter extends above the upper end of the elbow 4 and is surrounded by an annular space 11, constituting the gas-inlet passage.

The coupling 6 is preferably formed with an annular flange 12 of polygonal form to facilitate its being turned by a suitable wrench.

The combined mixing-chamber and superheater extends well above the upper end of the air-tube, and within said chamber is loosely arranged a metallic imperforate diaphragm 13, provided with equidistant radial lugs 14, the outer ends of which frictionally engage the walls of the chamber 7, an annular shoulder 15 being provided within the chamber to limit the downward movement of the diaphragm.

Upon the upper end of the cylindrical mixing-chamber 7 is fitted a cap comprising an annular rim or flange 16 and a top 17, of wire cloth or like foraminous material, the rim 16 being preferably corrugated to facilitate the removal of the cap.

An arm 18 projects from one side of the mixing-chamber to support the lower end of the wire support 19 of the mantle 20, the wire passing through a perforation in the arm and being held by a set-screw 21, passing into the threaded socket in the outer end of the arm 18.

The operation of the burner is as follows: Air under pressure is admitted to the air-pipe 9 and gas through pipes 2 and 3 and the upper portion of the elbow 4. The inflow of the air above the gas induces an upward suction or current of gas within the coupling 6 and the air and gas pass up together into the cylindrical mixer and superheater and around the diaphragm 13 in a substantially thin circular or annular current and through the perforated cap, where the admixed air and gas is ignited, generating a circular flame, which follows the inner cylindrical wall of the mantle, and is thus evenly distributed within the

mantle, insuring a thorough and intense heating thereof and greatly increasing the intensity and brilliancy of the light. The mixing-cylinder 7 quickly becomes heated, and the heating of the diaphragm within the cylinder causes said diaphragm to expand sufficiently to firmly retain itself within the cylinder by the frictional engagement of its radial lugs with the cylinder, thus preventing the movement of the diaphragm by the force or pressure of the incoming flow of air or gas, and the heat of the diaphragm materially contributes to the complete combustion and upward flow of the admixed air and gas.

While the arrangement of pipes shown for supplying gas to the mixer and superheater is convenient and practical, it will be obvious that a straight pipe may be employed for this purpose in lieu of the branched circular pipes shown, and I would have it understood that such other modifications in the details of the device may be resorted to as may properly fall within the scope of the following claims.

I claim—

1. An incandescent gas-burner comprising a mixing and superheating chamber, an expansible imperforate diaphragm arranged therein intermediate its ends and formed with radial lugs or projections adapted to frictionally engage the inner surface of said chamber leaving gas-passages between the periphery of the diaphragm and said inner surface of the chamber; a gas-supply pipe, and a pipe for supplying air under pressure to said chamber, said air-supply pipe terminating above the point of admission of gas.

2. An incandescent gas-burner comprising a mixing and superheating chamber of cylindrical form, a perforated cap therefor; a gas-inlet pipe; a pipe for the admission of compressed air terminating above the gas-inlet; and a circular expansible imperforate diaphragm formed with radial lugs frictionally engaging the inner surface of the chamber intermediate its ends, and adapted to spread the gas and direct it upward in an annular stream following the inner cylindrical wall of the mantle.

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

FERDINAND LOGAN.

Witnesses:
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T. L. HODGE.