(No Model.)

J. McHENRY.

GAS BURNER.

No. 386,485. Patented July 24, 1888.

Fig. 1.

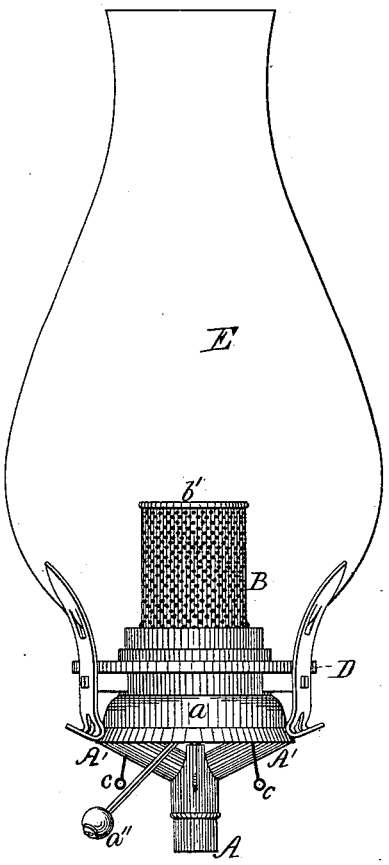
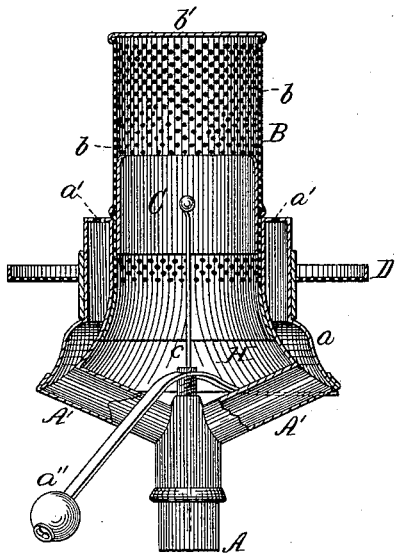


Fig. 2.



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JOHN McHENRY, OF CINCINNATI, OHIO.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 386,485, dated July 24, 1888.

Application filed June 6, 1887. Serial No. 240,425. (No model.)

To all whom it may concern:

Be it known that I, JOHN McHENRY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Improvement in Gas-Burners, of which the following is a specification.

The object of my invention is to provide a gas-burner in which heated air is mingled with the burning gas in the most advantageous manner, and in which the amount of air and its point of contact with the flame may be regulated with due regard to the character of the gas, giving an intense light without smoke; and the invention consists in combining with an Argand burner having a metallic air-cylinder provided with perforations, through which the air is forced outwardly into the gas, a sliding band adjustable in said cylinder.

In the drawings, Figure 1 is a front elevation of one of my improved gas-burners and chimney. Fig. 2 is a vertical section of burner.

A is an Argand burner, having tubes A′ A′ to conduct the gas to the hollow annulus *a*, the upper surface of which is pierced with a circle of small openings, *a′ a′*, through which the gas passes to be burned.

a″ is a cut-off.

B is a hollow perforated metallic cylinder fitted tightly against the walls of the central aperture, H, of the Argand, to allow access of air to the cylinder, and thence through the perforations *b b* into the inside of the flame. The upper end of the cylinder is provided with a cap, *b′*, preferably covering the entire top of the cylinder, so that the air is forced sidewise into the flame. While rising into this cylinder on the inside of the hollow flame the air becomes heated, so that it more readily mingles with the burning gas and oxygenates it. The current of air is regulated by a sliding metallic band, C, in the air-cylinder B. The cylinder C is caused to slide upon the inner surface of cylinder B by a handle, *c*, projecting below the burner, or any other convenient means. The burner is also provided with an annular perforated plate, D, which admits air to the outside of the flame and supports the chimney E, which is made bulb-shaped to conform to the shape of the deflected flame. The perforations in the annular plate D are preferably smaller than those in the air-cylinder, which are purposely made large enough to admit of lighting the gas without removing the chimney, so that by regulating the current to the inside of the flame with reference to the outer current perfect combustion is obtained.

The perforated cylinder being heated by the flame, serves to heat the air as it passes through it. The draft of air coming in contact with the rising gas deflects the gas outward, thus preventing its direct contact with the heated surface of the cylinder. This spreads the light to give it the bulb shape, in which it is most effective, while by thus warming the air and mingling it with the gas, instead of directly heating the gas before it is oxygenated, I obtain more perfect combustion and more luminous flame free from smoke. The flame being thus deflected heats the perforated plate D. The air rising through the plate is thus warmed. The outward current of air from the cylinder, by spreading the gas over this perforated plate, enables the warm air rising through the perforated plate D to be more perfectly mingled with it. The gas is thus subjected to two currents of warm air—one tending to spread it horizontally and the other rising vertically with it. When so spread, the former, being more powerful than the latter, mainly determines the shape and position of the flame. Where the gas is heated before being properly oxygenated, there is tendency to decompose it before ignition, and imperfect combustion is the result. By deflecting the gas from the heated surface while thoroughly mingling it with warm air in the manner described I obtain a clear white highly-luminous flame, sufficiently spread to make it very effective, while I am able, by means of the adjustable slide, to regulate the current according to the quality of gas used.

When a gas which is deficient in carbon is being burned, the band should be so placed as to prevent the passage of air through a greater or less number of the perforations, as may be required. If a gas is rich in carbon, the band may be drawn entirely below the perforations. By means of this band the air may be admitted to the upper or lower part of the

flame, or to the entire flame, as may be desired.

I claim—

1. In a gas-burner, the combination, with a hollow perforated cylinder, of a band adjustable along said cylinder, and a series of gas-outlets surrounding the same, substantially as and for the purpose specified.

2. The combination of a perforated cylinder capped at the top, a band adjustable along said cylinder, a series of gas-outlets surrounding the base thereof, and a perforated plate admitting air to the outside of the gas-outlets, substantially as and for the purpose specified.

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