No. 790,050. PATENTED MAY 16, 1905.

C. E. HALL.

GAS BURNER.

APPLICATION FILED SEPT. 19, 1904.

Fig. 1.

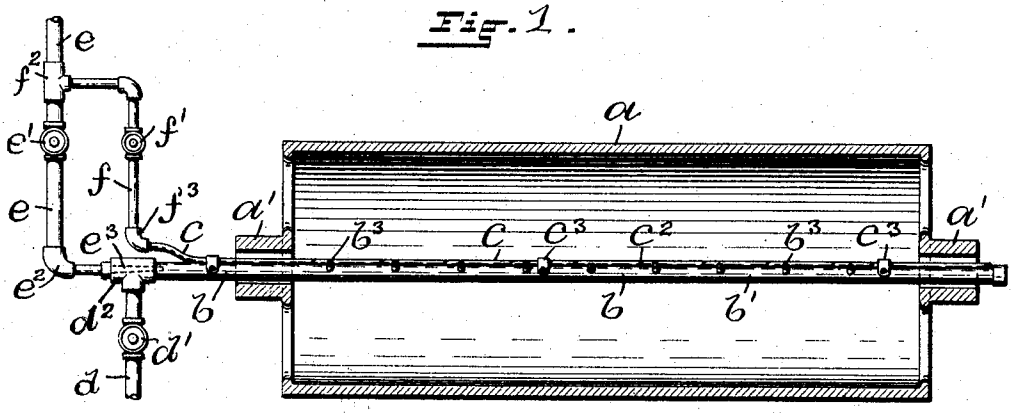


Fig. 2.

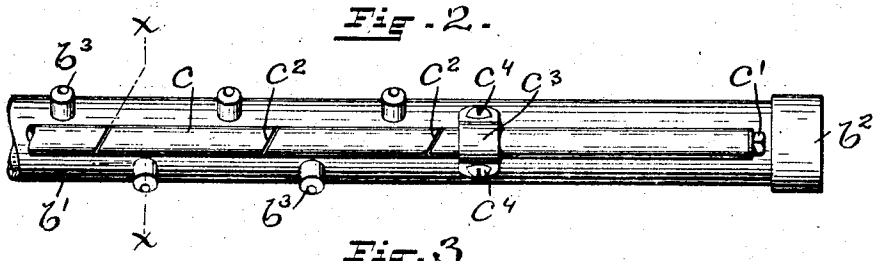


Fig. 3

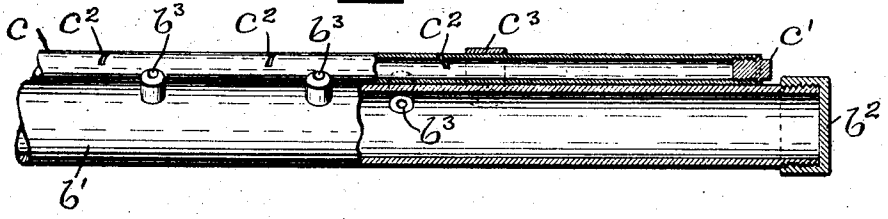
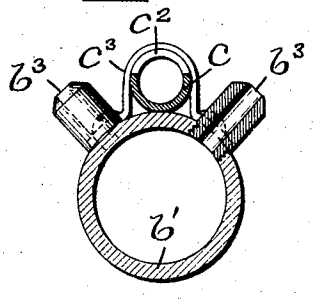


Fig. 4.



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No. 790,050. Patented May 16, 1905.

UNITED STATES PATENT OFFICE.

CHARLES E. HALL, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO GAS CONSUMERS' ASSOCIATION OF THE UNITED STATES, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 790,050, dated May 16, 1905.

Application filed September 19, 1904. Serial No. 224,937.

To all whom it may concern:

Be it known that I, CHARLES E. HALL, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Gas-Burners, of which the following is a specification.

This invention has reference to an improvement in gas-burners, and more particularly to an improvement in gas-burners for heating calender-rolls. Gas-burners for this purpose as heretofore constructed have failed to heat the calender-roll uniformly its entire length and were expensive gas-consumers.

The object of my invention is to improve the construction of gas-burners for calender-rolls whereby a calender-roll is heated uniformly its entire length and a more perfect combustion is attained with a minimum amount of gas than has heretofore been done.

My invention consists in the peculiar and novel construction of a gas-burner for calender-rolls, said burner consisting of a pipe closed at one end, a series of gas-burner tips on the pipe so placed as to form two adjacent parallel rows of tips running lengthwise of the pipe in alternate positions, an auxiliary air-tube closed at one end and secured to the pipe between the rows of tips, a series of slits in the air-tube adjacent the tips on the pipe, means for supplying gas to the pipe from a source of gas-supply under pressure, means for supplying air under pressure to the gas in the pipe, and means for supplying air under pressure to the auxiliary air-tube, as will be more fully set forth hereinafter.

Figure 1 is a sectional view taken lengthwise through a calender-roll, showing the roll provided with my improved gas-burner. Fig. 2 is an enlarged plan view of the closed end of the burner broken away from the rest of the burner to more clearly show my invention. Fig. 3 is a side view of Fig. 2 shown partly in section; and Fig. 4 is a still further enlarged transverse sectional view of the burner, taken on line X X of Fig. 2.

In the drawings, a indicates a calender-roll; b, the gas-burner; c, the auxiliary air-tube forming a part of the burner; d, the gas-inlet pipe; e, the air-inlet pipe, and f the auxiliary air-inlet pipe.

The calender-roll a has the hollow journals a' a' for supporting the roll in the usual way. The gas-burner b is in the form of a pipe b', closed at one end by the screw-cap b^2 and having the series of gas-burner tips b^3 b^3 placed so as to form two adjacent parallel rows of tips running lengthwise of the pipe in alternate position and secured to the pipe by screwing them into the pipe, as shown in Fig. 4.

The auxiliary air-tube c is closed at one end by the screw-plug c' and has a series of slits c^2 c^2 cut at an angle in the upper face of the tube, as shown in Fig. 2. The tube c is secured to the pipe b' between the rows of tips b^3 b^3 by the straps c^3 c^3 and the screws c^4 c^4, which extend through the straps and are screwed into the pipe b'. The tube c is secured in a position on the pipe b' to bring the slits c^2 c^2 in the upper face of the tube between and adjacent the gas-burner tips b^3 b^3.

The gas-inlet pipe d has the valve d' and is connected to the open end of the pipe b', forming the burner b by the T-fitting d^2, as shown in Fig. 1.

The air-inlet pipe e has the valve e' and the elbow-fitting e^2, connecting the pipe e with the reduced injector end e^3, which extends through the T-fitting d^2 by the inlet-opening of the gas-pipe d and into the open end of the pipe b' of the burner, as shown in broken lines in Fig. 1.

The auxiliary air-inlet pipe f, having the valve f', is connected to the air-inlet pipe e above the valve e' by the T-fitting f^2 and the open end of the auxiliary air-tube c by the elbow-fitting f^3, as shown in Fig. 1.

In the operation of my improved gas-burner for calender-rolls the burner b, with its auxiliary air-tube c, is placed in the calender-roll a through the hollow journals a' a', as shown in Fig. 1. The gas-inlet pipe d is connected to a source of gas-supply under pressure, and the air-pipe e is connected to a source of air-supply under pressure. The mixture of gas

and air in the burner is regulated by the valves d' and e', and the amount of air supplied to the flame from the auxiliary air-tube c is regulated by the valve f'. In practice I find that a mixture of fifteen per cent. gas and eighty-five per cent. air in the burner with a pressure of two pounds of air in the auxiliary air-tube is sufficient to entirely envelop the burner with flame or to fill the entire interior of the calender-roll with flame.

By the use of my improved gas-burner for calender-rolls a more perfect combustion is attained and the roll is heated uniformly its entire length with a minimum amount of gas.

It is evident that any form of openings in the auxiliary tube c may be used for supplying air to the flame and that any combination of pipes and valves can be used for connecting the burner and its auxiliary air-tube to a source of gas and air supply under pressure without materially affecting the spirit of my invention.

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

1. A gas-burner having a series of gas-burner tips, an air-supply tube having a series of apertures adjacent the tips, means for securing the tube to the burner, means for supplying gas and air to the burner, and means for supplying air under pressure to the tube, as described.

2. A gas-burner consisting of a pipe having a series of gas-burner tips forming two adjacent parallel rows running lengthwise of the pipe and an air-tube secured between the rows of tips and having apertures adjacent the tips, as described.

3. A gas-burner consisting of a pipe having a series of gas-burner tips forming two adjacent parallel rows running lengthwise of the pipe in alternate positions, and an air-tube secured between the rows of tips and having slits adjacent the tips, as described.

4. A gas-burner consisting of a gas-supply pipe having the screw-cap, the series of gas-burner tips arranged to form two parallel rows, an air-tube c having the screw-plug and series of slits to supply air to the burner-tips, and means for securing the air-tube to the gas-pipe consisting of the holding straps and screws, as described.

5. In a gas-burner, the combination of a burner consisting of the gas-pipe having a screw-cap, a series of gas-burner tips, an auxiliary air-tube c having a screw-plug and a series of slits, the holding straps and screws for securing the air-tube to the pipe, and a gas-inlet pipe d, a valve on the gas-inlet pipe, a T-fitting d^2, an air-inlet pipe e, a valve on the air-inlet pipe, an elbow-fitting, an injector end on the air-inlet pipe, an auxiliary air-inlet pipe, a valve on the auxiliary air-inlet pipe, a T-fitting and an elbow-fitting forming part of the auxiliary air-inlet pipe connection with the air-inlet pipe e, as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES E. HALL.

Witnesses:
ADA E. HAGERTY,
J. A. MILLER, Jr.