No. 824,308. PATENTED JUNE 26, 1906.

H. W. O'DOWD.

GAS BURNER.

APPLICATION FILED SEPT. 10, 1902. RENEWED DEC. 6, 1904.

Fig. 1.

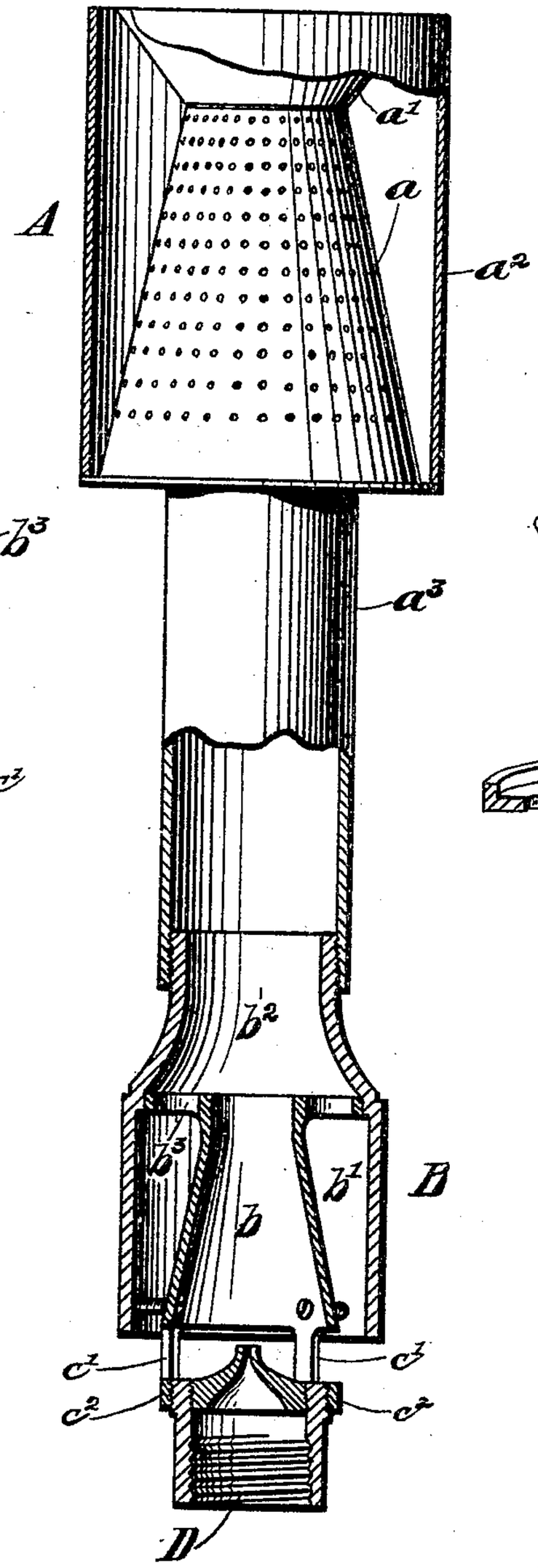


Fig. 2.

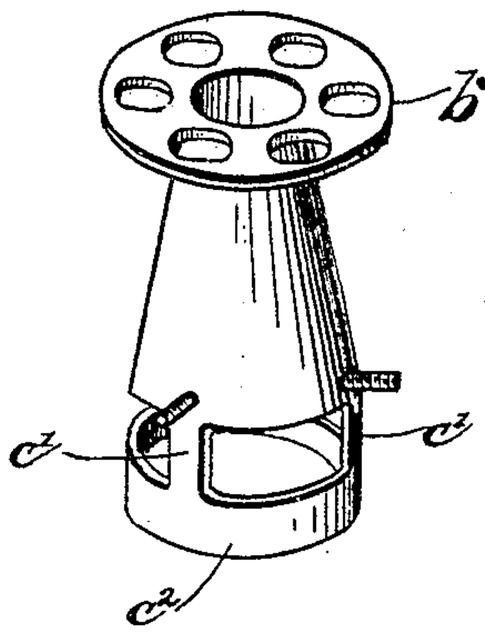
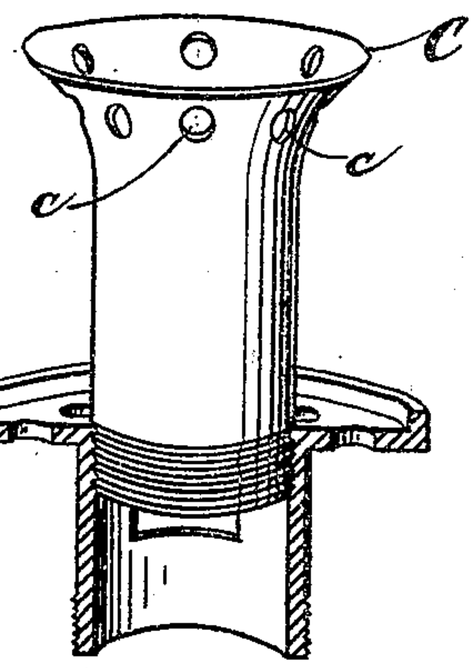


Fig. 3.



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UNITED STATES PATENT OFFICE.

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GAS-BURNER.

No. 824,308. Specification of Letters Patent. Patented June 26, 1906.

Application filed September 10, 1902. Renewed December 6, 1904. Serial No. 235,744.

To all whom it may concern:

Be it known that I, HENRY W. O'DOWD, a citizen of the United States, residing in the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Gas-Burners, of which the following is a specification.

My invention relates to improvements in gas-burners.

A structure embodying the preferred form of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation. Fig. 2 is a perspective view of certain parts, and Fig. 3 is a modification of parts shown in Fig. 2.

Similar reference-letters refer to corresponding parts.

A represents a distributer, which may be of any well-known construction, but which is shown as comprising a perforated main portion *a*, surmounted with a funnel-shaped spreader *a'* and arranged in a casing a^2.

B represents a mixing device, which is connected in any suitable way, such as by the tube a^3, to the distributer A. This mixing device is shown as comprising three parts—an inner air-chamber *b*, an outer air-chamber *b'*, and a mixing-chamber b^2. As shown, the outer walls of the mixing-chamber and the outer air-chamber are integral, and the wall of the inner air-chamber forms also the inner wall of the outer air-chamber. It is not essential that the outer walls of the mixing-chamber and the outer air-chamber be integral.

Integral with or firmly secured to the top of the inner air-chamber *b* is a perforated plate b^3, which is adapted to fit snugly within the outer wall of the mixing device B and form a perforated upper wall for the outer air-chamber. This outer wall will preferably be shaped to form a firm bearing for the plate b^3, as illustrated in Fig. 1. A modified construction is shown in Fig. 3, where the inner chamber is flared outwardly at its upper portion, said outwardly-flared portion being perforated and adapted to bear against the outer wall of the mixing device B.

It is preferable to connect the wall of the inner air-chamber *b* with the outer wall at or near the lower end of said outer wall. This may be done by means of the annular flange shown in Fig. 3, which is firmly connected to the wall of the inner chamber and which serves as a support for the shell or outer wall B. This annular flange is of course provided with any desired number of apertures or ports, permitting the air to enter the outer air-chamber *b'*. My preferred construction for accomplishing substantially the same result, however, is that shown in Figs. 1 and 2, in which I insert any desired number of screws through and extending outwardly from the wall of the inner chamber and adapted to contact with the inner surface of the outer wall B. These screws being adjustable make it possible to secure a very accurate bearing of the parts. By means of these two bearings between the walls of the inner and outer chambers the outer wall and the superimposed distributer are firmly supported upon the inner chamber, and any tendency toward tilting or wabbling is prevented.

The inner chamber may be supported in any desired way, but preferably by means of a suitable number of integral or suitably-attached supports *c'*, extending downward to a supporting-ring c^2, which is adapted to be secured to the top of a gas-pipe D. Gas issuing from the nipple in the end of the pipe D and under pressure will pass up through the inner air-chamber *b* and carry along with it a certain amount of air into the mixing-chamber b^2. As this current of air and gas passes into said mixing-chamber it will induce into this chamber b^2 another current of air from and through the outer air-chamber *b'*. The air and gas having become properly mixed will then pass up to the distributer in the usual manner.

The entire air-chamber will preferably have its internal diameter decreased at its upper end, as shown, for example, in Fig. 1. This construction will increase the speed of the current of air and gas which enters the mixing-chamber from the inner chamber and will thus induce more air from and through the outer chamber *b'*.

What I claim as new is—

1. In a burner the combination of a gas-supply chamber, an air-admitting device above the lower part of the gas-supply pipe or chamber, a mixing device arranged above the gas-supply pipe or chamber and also above the air-admitting device, and having a lower compartment to receive gas and air together, and having also an upper compartment upwardly contracted to cause proper commingling of the gas and air with a transverse annular perforated partition for distributing commingled gas and air around the upper compartment as it enters from the

lower compartment, said upper compartment being furthermore provided with means for admitting into it a supply of air additional to the air entering into it with gas in a commingled state, a commingling tube or conduit larger in transverse area than that of the discharge end of the upper compartment of the mixing device and arranged above the entire mixing device, and serving to receive the commingled gas and air and the additional air, and a distributer surmounting said commingling tube or conduit, substantially as set forth.

2. The combination with a gas-supply pipe and a distributer, of an inner air-chamber supported over the end of the pipe to receive gas therefrom and having air-inlet openings at its lower end, and an enlarged perforated upper end, an outer air-chamber supported by the inner air-chamber and having air-inlet openings at its lower end, and said perforated upper end of the inner chamber forming a perforated upper wall for the outer air-chamber, a mixing-chamber above and communicating with said air-chambers, and a tube connecting the mixing-chamber and distributer, substantially as set forth.

3. The combination with a gas-supply pipe and a distributer, of an inner air-chamber supported on the end of the gas-supply pipe to receive gas therefrom, and having air-inlet openings at its lower end and a perforated plate at its upper end, an outer air-chamber supported on said perforated plate and surrounding the inner air-chamber, said plate forming a perforated upper wall for the said outer chamber and the latter having air-inlet openings at its lower end, a mixing-chamber supported above and communicating with said air-chambers, and a tube connecting said mixing-chamber and distributer, substantially as set forth.

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

HENRY W. O'DOWD.

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