No. 710,248. Patented Sept. 30, 1902.

J. W. CARTER.

GAS HEATER.

(Application filed July 20, 1900. Renewed June 4, 1902.)

(No Model.)

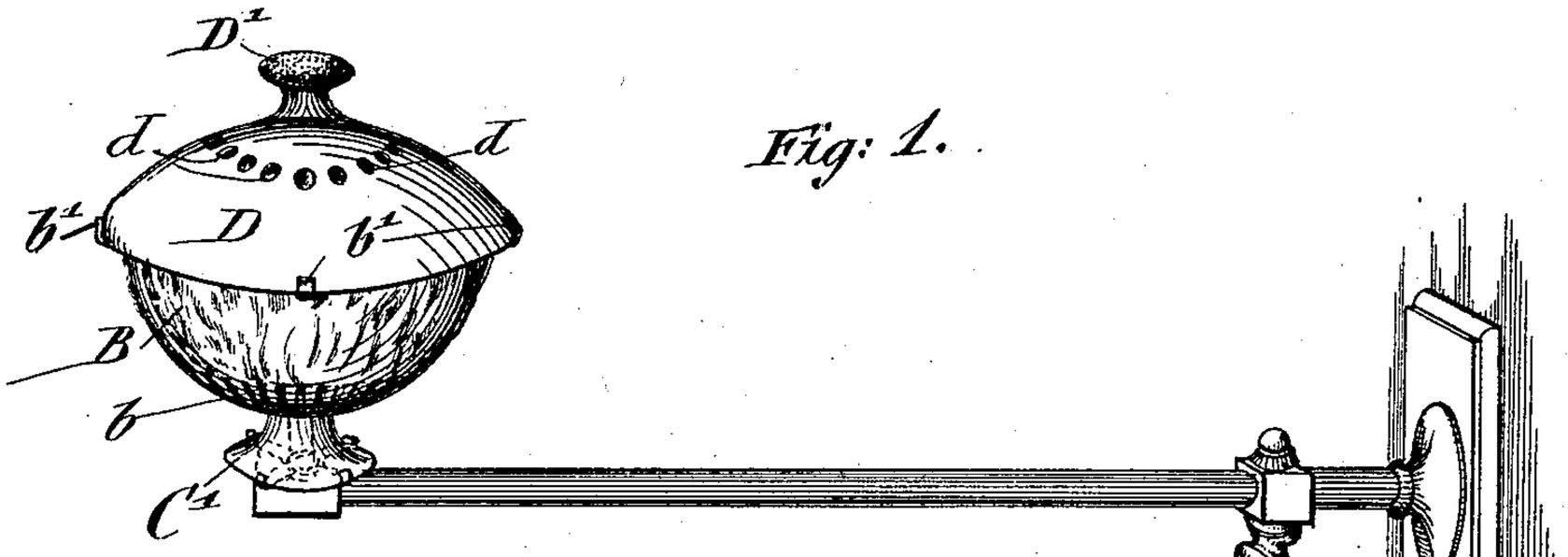


Fig: 1.

Fig: 2.

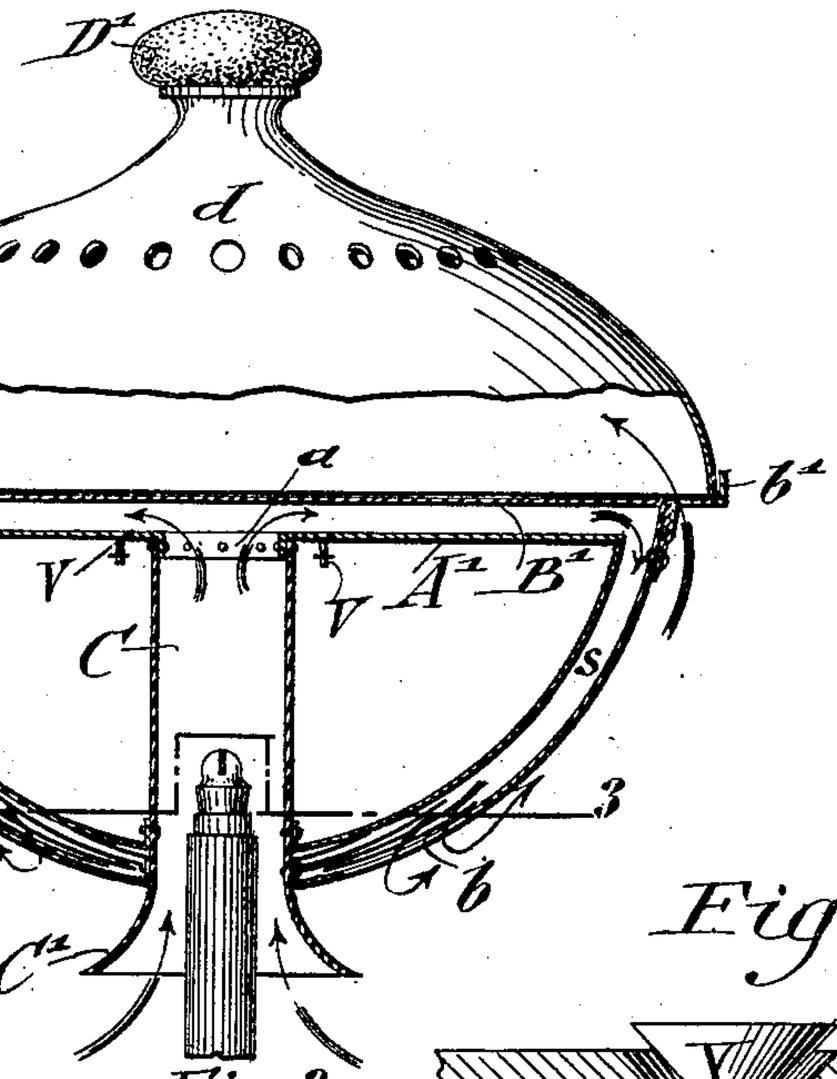


Fig: 3.

Fig. 4.

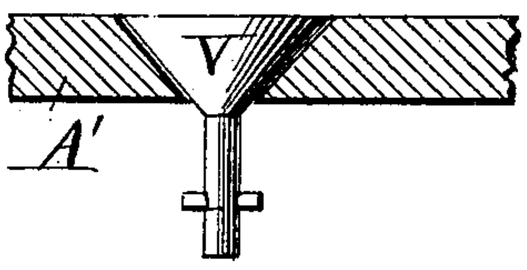
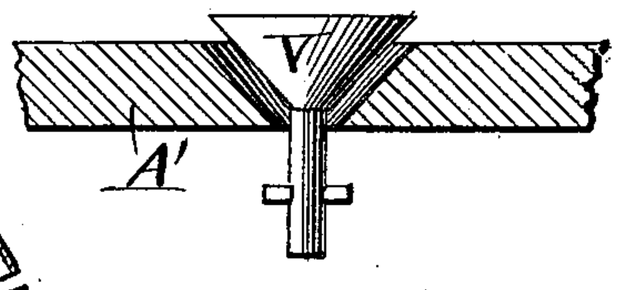
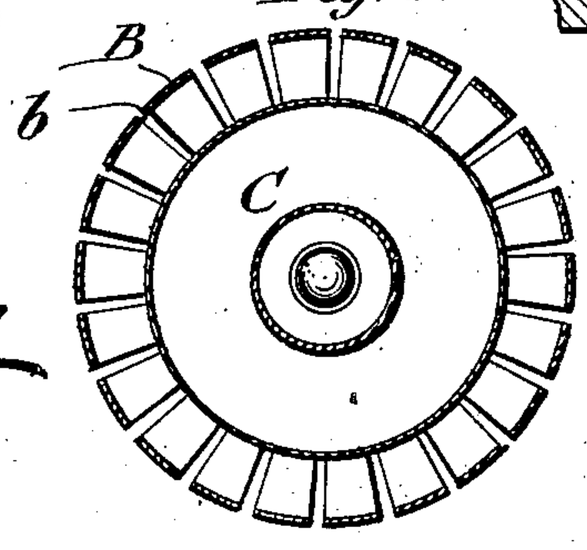


Fig. 5.





WITNESSES:

M. L. Wurtzel

G. C. Gibel

INVENTOR

John W. Carter

BY Goepel & Maegener

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN W. CARTER, OF RUTHERFORD, NEW JERSEY, ASSIGNOR TO WESLEY S. BLOCK, OF BROOKLYN, NEW YORK.

GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 710,248, dated September 30, 1902.

Application filed July 20, 1900. Renewed June 4, 1902. Serial No. 110,165. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. CARTER, a citizen of the United States, residing in Rutherford, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a specification.

This invention relates to certain improvements in gas-heaters of that class which may be supported on the burner of a gas-bracket projecting from the wall and used either for heating purposes or for heating or cooking purposes, as desired; and the invention consists of a gas-heater composed of interior and exterior shells, said exterior shell having outlet-openings, and a central tube having a flaring mouthpiece at its lower end adapted to be seated on the gas-bracket, said central tube passing through the lower part of the shells and to the upper part of the interior shell, which, like the exterior shell, is made with a flat top. The top part of the gas-heater is provided with radial lugs for supporting a cover of larger size than the top of the heater, said cover being provided with an opening or openings in its upper part for the outlet of the air heated up in the space between the heater and cover, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved gas-heater, showing the same in position on a gas-bracket. Fig. 2 is a vertical central section of the same, drawn on a larger scale, partly in elevation. Fig. 3 is a horizontal section on line 3 3, Fig. 2. Figs. 4 and 5 are enlarged detail views showing, respectively, the closed and open positions of one of the valves, the open position being exaggerated for clearness' sake.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the interior shell, and B the exterior shell, of my improved gas-heater. Both the interior and exterior shells are made of sheet metal and are suitably connected by a central tube C, which is made of sufficient size to be placed over the burner of an ordinary gas bracket or fixture. The central tube C is provided at its lower end with an outwardly-flaring mouthpiece C', which, together with the other parts, is supported in any suitable manner on the gas-bracket, as shown in Fig. 1. The central tube C passes through the lower part of the interior and exterior shells A and B and to the top part of the interior shell, communicating at its upper end by an opening *a* in the interior shell with the space *s* between the interior and exterior shells. The top parts A' B' of the interior and exterior shells, respectively, are made parallel with each other and of flat shape, so that the top of the exterior shell may form a support for a copper or other vessel when it is desired to heat water, milk, or other substance on the heater. The exterior shell is provided near its lower part with a number of emission-slots *b b*, through which the gas and air mixture is conducted to the outside for combustion. The flat top part B' of the exterior shell B is provided at three or more points with radial lugs *b'*, that are preferably bent upwardly at the outer end, so as to support the cover D, which is preferably provided with a knob, button, or other handle D' at its upper end and with a number of exit-openings *d* in the upper part. The diameter of the lower part of the cover D is made larger than the diameter of the exterior of the shell B, so that an annular space is formed between the lower edge of the cover and outer edge of the exterior shell B, through which the products of combustion from the jets formed at the lower part of the exterior shell and the air are drawn into the inside of the cover, where they are finally heated up and thence emitted through the discharge-openings *d* in the cover. As the great heat inside the shell A is liable to too greatly expand and to hence warp it, automatic relief-valves V, preferably of the puppet type, as shown, are arranged in the upper part of the said shell, which open automatically to the pressure of the expanded hot air, permitting some to pass off, whereupon the valves close and remain in closed position until the pressure within the shell becomes so great as to again open the same.

The operation of my improved gas-heater is as follows: When the heater is placed in position on the gas-bracket so that the cen-

tral tube C encircles the gas-burner, the gas is turned on. The gas then passes through the central burner, through the space between the top portions of the interior and exterior shells, then in downward direction through the space between the said shells to the emission-slots *b* at the lower part of the exterior shell, where the combustible air and gas mixture is ignited, it burning about the exterior shell with a number of heat-jets of blue flame, so as to envelop the same in a sheet of flame. By the intermingling of the gas with the air drawn in through the downwardly-flaring mouthpiece C′ of the central tube the proper mixture for the heating-flame is produced. The products of combustion of the heating-flame are drawn into the cover, together with an additional quantity of air, and emitted in a hot condition through the discharge-openings *d* of the cover. The gas-heater produces thereby threefold heating: first, the heating of the air by the flame at the slots *b* of the exterior shell; secondly, by the heating of the air in the cover, and, thirdly, by the heating of the air in contact with the exterior surface of the cover. When the cover is removed, the heater can be used for cooking purposes, the vessels being then placed on the flat surface of the exterior shell; but for ordinary heating purposes the cover is placed on the exterior shell for the reasons described.

A great advantage of my invention is that perfect combustion and a blue heating-flame are obtained, owing to the thorough intermingling of the gases in their course through the shells to the outlet-slots, the gas and air mixture being heated up in its course before being emitted from the slots.

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

1. A gas-heater, composed of an interior and an exterior shell, said exterior shell being provided with outlet-slots in the lower part, a central tube passing through the bottom of the interior and exterior shells to and communicating with the space above the top part of the interior shell, and an outwardly-flaring mouthpiece at the lower end of the central tube, substantially as set forth.

2. A gas-heater, composed of interior and exterior shells, said exterior shell being provided with outlet-slots in the lower part, the top part of said shells being flat, a central tube passing through the bottom part of the shells to and communicating with the space above the top part of the interior shell, said interior shell forming a heating-space with the exterior shell, and an outwardly-flaring mouthpiece at the lower end of the central tube, substantially as set forth.

3. A gas-heater, composed of an interior and an exterior shell, said exterior shell being provided with outlet-slots, a central tube connected with said shells, and terminating at the top of the interior shell and communicating with the space between the shells and a cover of larger diameter than the exterior shell and supported on lugs of the exterior shell, said cover being provided with discharge-openings at its upper part, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOHN W. CARTER.

Witnesses:
PAUL GOEPEL,
GEO. L. WHEELOCK.