(No Model.)

C. E. HEQUEMBOURG.

GAS HEATER.

No. 244,056. Patented July 12, 1881.

Fig. 1

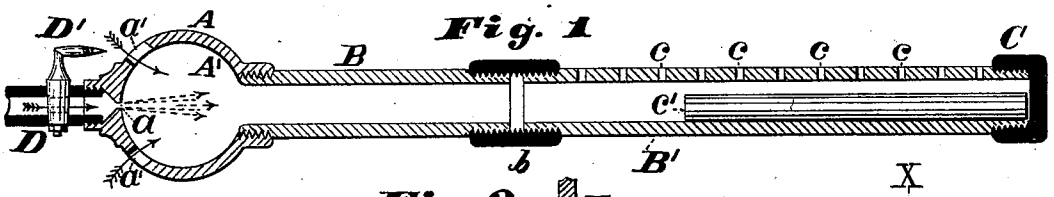


Fig. 2

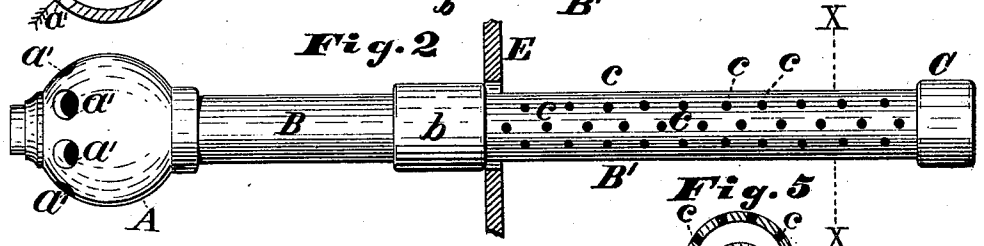


Fig. 5

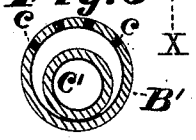


Fig. 4

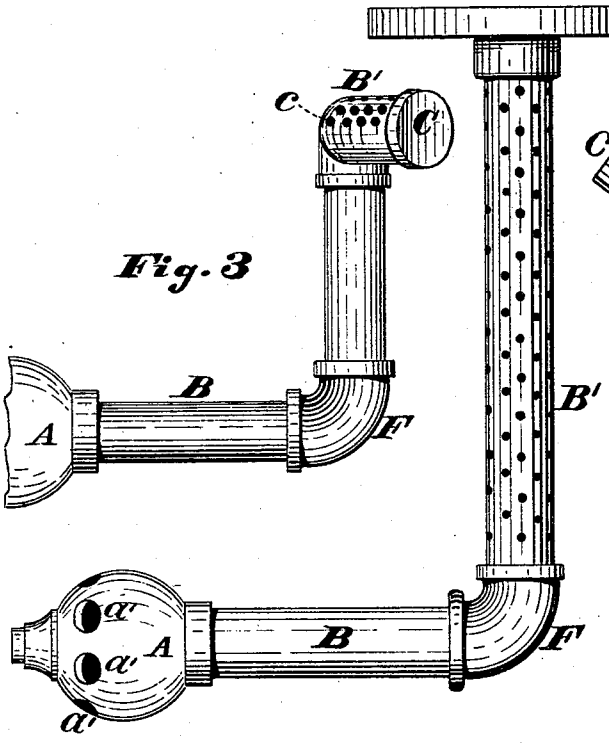
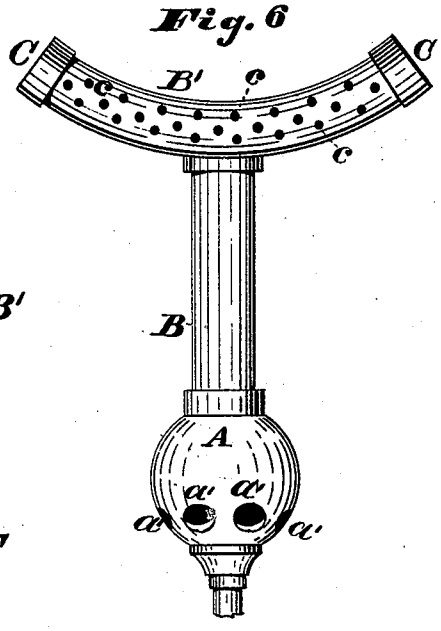


Fig. 3

Fig. 6



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES E. HEQUEMBOURG, OF DUNKIRK, NEW YORK.

GAS-HEATER.

SPECIFICATION forming part of Letters Patent No. 244,056, dated July 12, 1881.

Application filed January 31, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. HEQUEMBOURG, of Dunkirk, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Gas-Heaters, of which the following is a specification.

The object of my invention is to provide a simple and efficient gas-heating device and meter combined; and it consists of a spherical bulb of brass or other suitable material, one side of which is provided with a small gas-opening and a series of larger openings for air arranged in a circle around the gas-opening, in combination with a tubular gas-burner connected to the bulb at the side opposite the air-holes, and having a series of perforations of larger diameter than the gas-opening, and with a supplementary tube arranged within it, as will be more clearly hereinafter shown by reference to the drawings, in which—

Figure 1 is a vertical longitudinal section through the center of the bulb, the connecting-tube and coupling, and through the perforated gas-heater. Fig. 2 is a side elevation of the heater complete. Fig. 3 is a modified arrangement of the device. Fig. 4 is also a modified arrangement, showing the perforated gas-heater arranged vertically and provided with a flame-spreading or heating plate at the top. Fig. 5 is a section through line X X, Fig. 2, and Fig. 6 is a top view of Fig. 3.

A represents the bulb, into which the gas and air pass and combine in the proportion suitable for combustion.

a is the gas-opening, which is made large enough to give out a certain number of cubic feet of gas per hour under a given pressure—for instance, an eighth of an inch gas-opening with two inches of water-pressure will give out twenty-five cubic feet of gas per hour, and a sixteenth of an inch gas-opening will give out a proportionately less number of cubic feet per hour under the same pressure. It will be readily seen that by this means the consumption of gas per hour can be easily calculated. The air-openings *a'* are arranged around the gas-opening *a*, and are much larger than the gas-opening, so as to let in sufficient air to form a suitable combination of air and gas to produce the required combustion. The bulb A, having a spherical chamber, A', on the inside, causes the gas and air as they enter the bulb in the direction of the arrows to circulate and thoroughly mingle together, thereby producing a more perfect combination of the gases, and consequently a better combustion than any other form of chamber. The bulb is connected by a screw, as shown, or by other well-known means, to a short tube, B, and the burner or gas-heating tube B' is connected to the opposite end of the tube B by a coupling, *b*. At the end of the heater B' is a cap, C, for closing it, and inside of the same, at its forward end, is placed a short piece of smaller tubing, *c'*, for the purpose of equalizing the flow of gas. The burner B' is provided with a series of perforations, *c*, through which the combined gas and air pass while in operation.

In Fig. 1, D represents a portion of the connecting gas-pipe, and D' is a stop-cock for admitting or shutting off the gas. The coupling *b* assists in preventing the heat from reaching the bulb. The air, as it enters the openings *a'*, also helps to keep the bulb cool. This is an important feature, for the reason that if the bulb should become heated the conditions would be changed, so as to render the whole device useless for the purposes designed.

In Figs. 3 and 6 I have shown a modification of the device, having the burner B' curved and set on a vertical tube connected to the horizontal tube by an elbow, F, so as to adapt it to a curved or circular fire-chamber or to an upright boiler or furnace.

Fig. 4 also shows a modification, in which the perforated burner or tube B' is connected to the horizontal tube by an elbow, F, and having a plate, E', connected at the top, which acts as a cap, a heater, and a device for spreading the flame. This device, when in operation, produces a very perfect combustion, that gives out a clear flame, free from smoke and of intense heating power, and is therefore well adapted for heating stoves or furnaces, or for steam-boilers or other purposes requiring a strong heat without smoke. In connecting it to a stove or boiler or other device to be heated, it is passed through a hole in the stove, the hole being large enough to allow the coupling *b* to just pass through, as shown by the portion

of a stove or furnace, E, in Fig. 2, so that all the air it receives to combine with the gas for the purposes of combustion must pass through the air-holes *a'*.

In some cases the supplementary tube *c'* may be dispensed with, and, if desired, the short tube B may be a part of the bulb or made in one piece with it; but the device as shown operates well in practice.

I claim as my invention—

The spherical bulb A, provided with a chamber, A', gas-opening *a*, and air-openings *a'*, in combination with a coupling, *b*, a perforated gas-heating tube, B', and a supplementary tube, *c'*, arranged within it, as and for the purposes specified.

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Witnesses:

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