

UNITED STATES PATENT OFFICE.

CALVIN C. BURT, OF JACKSON, ASSIGNOR TO GARDNER HERRICK, OF ALBION, MICHIGAN.

GAS-HEATER.

Specification forming part of Letters Patent No. 103,297, dated May 24, 1870.

To all whom it may concern:

Be it known that I, CALVIN C. BURT, of the city and county of Jackson, and State of Michigan, have invented certain Improvements in the Generating and Burning of Gas from Gaseous Fluids or other Substances, of which the following is a specification.

My invention relates to certain improvements in apparatus for generating and burning gas or vapor from heated volatile fluids, such as gasoline or other equivalents; and it consists as follows: in forming with the burner a conical protuberance through which the flame-jet passes; in the construction of a burner with peculiar side openings, a cone, and a covering-disk; in making the injecting-nozzle (which is surrounded with gas or vapor) tapering in form, whereby valves are dispensed with and a uniform supply produced; finally, in the general construction of the gas-heater, as hereinafter described.

Figure 1 is a side elevation. Fig. 2 is a vertical longitudinal section. Fig. 3 is a similar section of the hollow oxygenated burner detached.

Similar letters of reference indicate like parts in all the figures.

A represents a portion of the vertical supply-pipe, which, as in other apparatus for the purpose, leads from a tank or reservoir, and is provided with a stop-cock, neither of which is shown, being well-known appliances.

B is the horizontal branch pipe, forming a part of the gas-generator. It is screwed to the two elbows C C', one of which connects with the supply-pipe and the other with the burner-head.

D is the injecting-tube, which is placed inside the pipe B, as shown. The open end of the tube is enlarged and threaded to fit corresponding threads formed in the bore of the pipe B at its end joining the elbow C, and the opposite shut end is provided with one or more perforations, through which the fluid flows into the heated chamber F, where it vaporizes.

I is a conical protuberance formed on the burner-head H, having a central perforation, *i*, communicating with the gas-chamber F.

E is the deflecting-canopy, against which the flame from the jet-orifice *i* impinges, and, being laterally deflected, issues through the

spaces and orifices *m* and *n*, the heat from the canopy-plate being conducted back through the sections S, which connect the canopy with the base carrying the cone.

In the noiseless burner G, as shown at Fig. 3, the flame from the cone-orifice issues into a cup-shaped chamber, and the flame, striking the canopy E, (screwed on the cup,) is deflected through the jet-orifices *e e*, &c., around the periphery. An aperture, *a*, is made through each wall of the burner in range with and on a level with the jet-orifice, as shown by the line *x*, to admit the common air to blend its oxygen with the carbureted hydrogen from the cone-orifice in such a manner as to produce a noiseless combustion entirely free from the slight detonations accompanying the burning of gas or vapor in an open burner similar to that shown in Fig. 1. This mode of producing silent combustion, although attended by a certain loss of caloric, is nevertheless useful for certain purposes where an intense heat is not demanded, and to quiet the unnecessary fears of timid people, who think that noise, however slight, is indicative of danger. The gas is at first generated in the usual way by applying the flame of a lamp to the end of the pipe next the burner until sufficiently heated. The stop-cock being then opened, the fluid will pass down the supply-pipe A into the injecting-tube D, and from thence through the perforations into the generating-chamber, where it is converted into gas or vapor, which fills it and the annular space *v* around the tube D and issues through the cone-orifice *i*, where it is ignited. The lamp may now be withdrawn, as the necessary heat is perpetuated by transmission from the burner-canopy, as aforesaid. As the injecting-tube is surrounded by gas, the contained fluid is protected from undue heat and kept solid and quiescent, in which state it is impermeable to the passage of the gas.

The usual mode of admitting the fluid to the generator is by unscrewing a valve next the supply-pipe. This is a wasteful and defective plan, for the supply is usually in excess, and the fluid being unprotected at the point of issue, it becomes heated to ebullition, and the gas forces itself through the globules, and, permeating the whole mass, escapes through the

vent-hole of the tank into the room, emitting an offensive smell.

By making the tube D tapering, as shown, valves are dispensed with, and the supply of the fluid to the generator is uniform, and the shell of the injecting-tube being enveloped in the gas or vapor of the chamber, the contained fluid can never be heated to the boiling-point.

I do not claim the arrangement of the injecting-nozzle within a pipe which communicates with the gas-chamber. Neither do I claim broadly a cone and a cup-shaped compartment having a flat disk-canopy, in combination with a burner-head, nor air-openings arranged at or near the gas-discharging orifice leading from the gas-chamber; but

I claim as my invention—

1. The burner H, with openings *m n*, cone I, and disk E, as set forth, for the purposes specified.

2. The injecting-tube D, arranged as described, when made tapering, whereby valves are dispensed with and a uniform supply produced, as set forth.

3. A gas-heater composed of the pipes A B D, elbows C C', and a burner, G or H, with cone I, disk E, and side openings, all constructed, arranged, and operating substantially as described.

CALVIN C. BURT.

Witnesses:

JAS. C. WOOD,

RICHMOND LIVERMORE.