R. F. CLAYTON.

Gas-Generating Burner.

No. 161,327. Patented March 30, 1875.

Fig. 1.

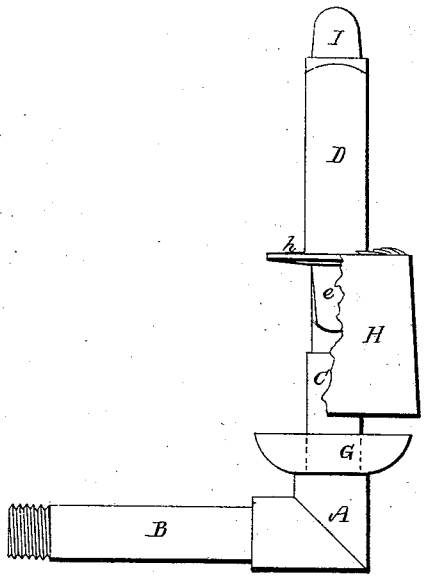


Fig. 2.

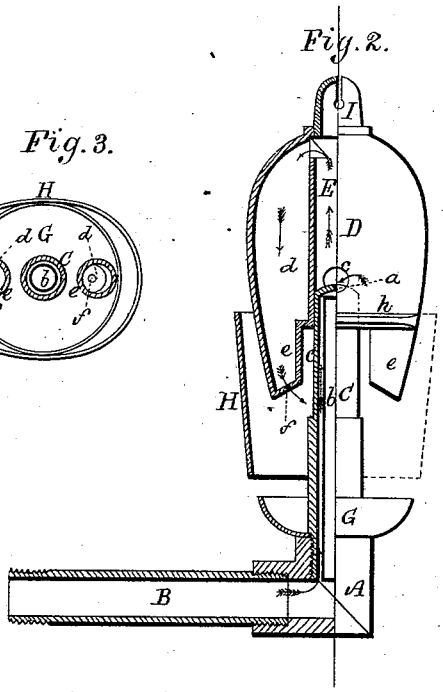


Fig. 3.

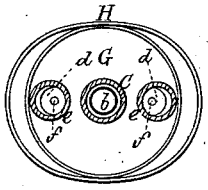
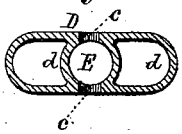


Fig. 4.



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UNITED STATES PATENT OFFICE.

RANSOM F. CLAYTON, OF MELROSE, ASSIGNOR TO HIMSELF AND JOHN COSTELLO, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN GAS-GENERATING BURNERS.

Specification forming part of Letters Patent No. **161,327**, dated March 30, 1875; application filed February 17, 1875.

To all whom it may concern:

Be it known that I, RANSOM F. CLAYTON, of Melrose, Middlesex county, Massachusetts, have invented certain Improvements in Gas-Generating Burners, of which the following is a specification:

These improvements relate to a class of inventions for generating and burning gas from naphtha, or other fluids rich in hydrocarbon, in which are embodied a can or reservoir for containing the fluid; a pipe descending from such reservoir to receive and vaporize a certain amount of such fluid; a cup to contain a small quantity of alcohol, or other proper fluid to impart the proper temperature to the pipe, and generate a small quantity of vapor, as a preparatory step to the ignition of the gas at the burner; and, lastly, of a suitable gas-burner combined with the generating-tubes to disseminate the light of the gas produced by the apparatus.

My invention consists in an original construction of the various parts of the device, whereby I protect the generating-tube from low degrees of the atmosphere, or from changes in the atmosphere which would otherwise interfere with the generating of the gas, and the steadiness and brilliancy of the flame; and my invention further consists in the method hereinafter explained of diverting a small proportion of the gas generated in the apparatus directly against the generating or vaporizing pipe at the point where this vaporizing is to take place, and below the air-inlet ports, by which means I am enabled to carry out the main object of invention—that of obtaining effective vaporizing of the fluid.

The drawings accompanying this specification represent, in Figure 1, a side elevation, in Fig. 2 a front sectional elevation, and in Figs. 3 and 4 horizontal sections, of a device embracing my improvements.

In these drawings, A represents an elbow-joint of gas-pipe or tubing, connecting with which at bottom is seen a pipe, B, which is to lead to and communicate with a can or reservoir suspended some distance above it, to obtain a certain amount of pressure, and containing a quantity of naphtha, or other fluid of a hydrocarbon character, the pipe B being, in practice, packed with a proper substance to absorb the naphtha, and prevent flow of an excess of it to the vaporizing-pipe. Upon the upper part of the elbow A I erect a stand-pipe or generator, C, which is practically a continuation of the pipe B, this pipe C being entirely closed at top, with the exception of a small orifice, *a*, for passage or escape of the vapor generated within it, and this pipe C is to be packed with a substance for the same purpose as in packing the pipe B. This packing, in the present instance, consists of a closed cylinder or a rod, *b*, inserted within the pipe C, and nearly filling the interior of the latter, the shallow annular space intervening between the two sufficing to contain a quantity of fluid capable of supplying the burner, and of presenting the proper amount of heating-surface to vaporize the naphtha. Upon the upper part of the stand-pipe or generator C I place a hollow dome-shaped case, D, the central interior E of which constitutes the mixing-chamber, where the vapor generated in the pipe C is incorporated with a certain quantity of atmospheric air, and converted into illuminating-gas, such air being allowed to flow into the said chamber E through orifices *c c* created in the side of the dome D. Within the chamber E, and at either side thereof, I create a vertical channel or passage, *d*, these passages extending downward, and terminating in legs or hollow horns *e e*, which constitute prolongations of the sides of the dome D, and are pierced at bottom by small orifices *f f*, to permit of escape of gas. The upper part or mouth of the dome D is provided with an ordinary gas jet or burner, I. A shallow annular cup or bowl, G, surmounts the elbow A, and surrounds the lower end of the stand-pipe C, this bowl serving, as before premised, to contain a small quantity of alcohol or other fluid capable of being readily inflamed, and, when inflamed, of imparting a high degree of heat. H in the accompanying drawings represents a cylindrical vertical shield, which encompasses or surrounds the generating-pipe C, the purpose of this shield being to inclose and retain about the said pipe the heat radiated from this part of the apparatus, and to protect said pipe from low degrees of the at-

mosphere, or from great changes in temperature, by which means I insure a more uniform and constant temperature about or within the pipe, economize fluid, and obtain a very effective evaporation of the fluid in the pipe.

It will be observed, and I desire to call especial attention to the fact, that the horns *e*, and their discharging jets or orifices *f* are disposed below the air-inlets *c*, and so as to direct the jets of gas issuing from them indirectly in contact with the generator C, at a point where it is desirable and important that the vaporizing of fluid shall take place—that is, immediately below or near to said air-inlets.

By this means I avoid a bulky and clumsy construction of parts, which is requisite when the heat to vaporize the fluid is obtained indirectly by radiation from metal more or less remote from the vaporizing-point. To avoid liability of the flame from the fluid in the bowl G, or the jets of gas from the passages *d*, being drawn into the chamber E through the air-inlets *c*, I provide a shelf, *h*, to intercept and ward off this flame.

The operation of my apparatus is as follows: A small quantity of proper inflammable fluid is poured in the bowl G and inflamed, and its flame imparts a temperature to the generating-pipe C, sufficiently great to vaporize a small quantity of the naphtha held in suspension in the latter. This vapor ascends through the orifice *a*, and entering the chamber E is incorporated with a preponderance of oxygen inflowing through the ports *c c*, and the two combine to produce oxygenated vapor or illuminating-gas. The greater proportion of the gas generated in the chamber E ascends to the burner I, where it is inflamed, while the remaining small portion descends the passages *d d* and horns *e e*, and, issuing through the orifices *f f*, is inflamed and flows against the generator C, and serves to maintain the latter at such a temperature as to vaporize its fluid contents, the generation of fluid thus becoming, when the fluid in the bowl burns out, continous and self-sustaining, so long as any fluid remains in the main reservoir.

I claim—

1. The dome-shaped case D, composed of the mixing-chamber E, lateral passages *d*, hollows legs *e*, substantially as and for purposes stated.

2. The dome D, consisting of chamber E, lateral passages *d*, and hollow legs *e*, in combination with the generating-pipe C, as shown and set forth.

3. The combination of the dome D, consisting of chamber E, lateral passages *d*, and hollow legs *e*, with generating-pipe C, and shield H, as shown and set forth.

RANSOM F. CLAYTON.

Witnesses:

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