I. STEAD & S. H. BAYLEY.

Gas Generating Burner.

No. 207,828. Patented Sept. 10, 1878.

Fig. 1.

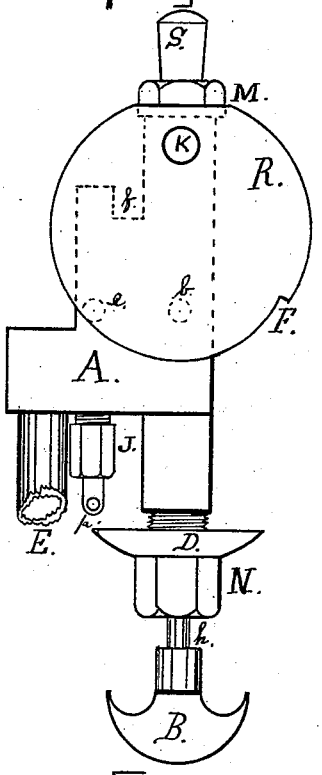

Fig. 2.

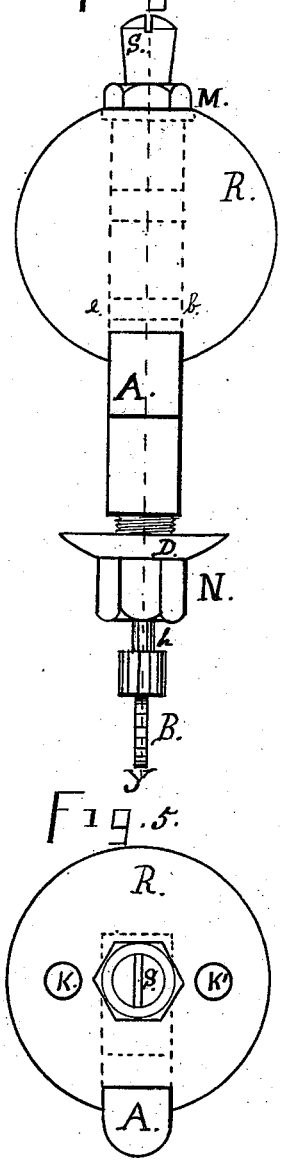

Fig. 3.

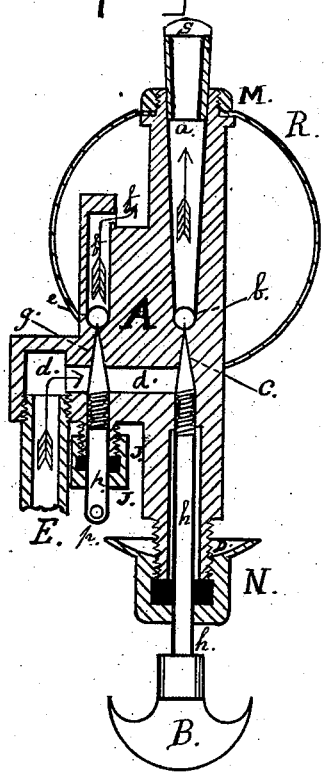

Fig. 4.

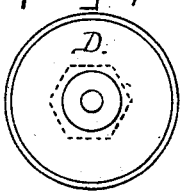

Fig. 5.

WITNESSES.

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ISAAC STEAD AND SAMUEL H. BAYLEY, OF PHILADELPHIA, PA.

IMPROVEMENT IN GAS-GENERATING BURNERS.

Specification forming part of Letters Patent No. **207,828**, dated September 10, 1878; application filed August 20, 1878.

To all whom it may concern:

Be it known that we, ISAAC STEAD and SAMUEL H. BAYLEY, of the city of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Generating Burners, of which the following is a specification:

Our invention belongs to burners for generating and burning gas vaporized from highly-carbonized oils, which vapor, as being burnt, is mixed with atmospheric air. Heretofore, to ignite the illuminating-flame of such burners, a small quantity of oil or other inflammable material was placed in a cup under the burner and ignited every time the illuminating-flame was started.

The object of our invention is the construction of a burner that will, after being once started, continue to generate vapor or gas after the illuminating-flame has been turned out, so that at such times as desired the illuminating-flame may be ignited by simply opening a valve and applying a burning match or taper to the burner.

The invention consists in the combination and arrangement of two valves, two air and two passage ways for the oil, air, and gas, all as will be hereinafter described, referring to the annexed drawings, in which—

Figure 1 is a side view of our improved burner. Fig. 2 is an edge view of the same. Fig. 3 is a vertical section of the same, taken on the dotted line *x y* of Fig. 2. Fig. 4 is a top view of the oil-cup D. Fig. 5 is a top view of Fig. 2.

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

A is a casting, of brass, in which we have cast or drilled a passage, *a*, into the top of which passage is inserted the burner-tip S.

At the bottom of the passage *a* is an air-hole, *b*, which passes through the casing A from side to side. (See dotted lines, Fig. 2.) Below the air-hole *b* is the main valve and seat *c*. Below the seat *c* is drilled or cast in a horizontal passage, *d*, and on a line with the passage *a* is a hole for the valve-stem *h*. The upper end of this stem is turned to a long cone or point, which point forms the valve *c*. Below the cone-point is cut, on the stem, *h* a screw-thread, which is screwed into a corresponding thread tapped in the top of the hole in which fits the stem *h*. (See Fig. 3.) At the lower end of stem *h* is a thumb-butt, B, by which it is turned.

The lower part of the valve-stem *h* passes through a stuffing-box, N. To this box N is cast the oil-cup D, and they are connected to the casing A by a screw, as shown in the figures. The stuffing-box is partially filled with asbestus, which is, by screwing the nut N, packed tightly around the stem *h*, making a tight joint. The asbestus packing is shown, by the solid black, in the boxes N and J, Fig. 3. The horizontal passage *d* communicates with the supply-pipe E. To the left of the passage *a* is another passage, *f*, at the bottom of which is an air-passage, *e*, and a valve and seat, *g*. The valve-stem *p* is fitted with a screw below the cone or point, the same as stem *h* before described. The stem *p* passes through a packing of asbestus in the stuffing-box J. In the end of the stem *p*, projecting below the box J, is a small hole. Into this hole may be inserted a pin or a piece of wire, by which the valve *g* may be set.

R is a shield, which incloses the small flame from the passage *f*, and prevents it from being extinguished by slight currents of air. This shield is made of sheet-brass in the form of a hollow globe, and is cut away at the bottom to fit the casing A, as is shown in Figs. 1 and 2. It also has an opening, F, (see Fig. 1,) to admit air to the holes *b* and *e* and flame from *f*. At the top of the shield are two holes, K K′, for the purpose of draft and to allow the escape of hot air. The shield R is supported on a collar at top of the brass casing A, and is fastened on the collar by the nut M.

The method of operating our improved burner is as follows: The supply-pipe E is connected with a reservoir of oil or other fluid, which is placed at such a height that a constant supply of fluid will be furnished to the burners. A small quantity of the fluid is placed in the cup D, and the main valve *c* is opened to admit a small quantity of the fluid into passage *a′*. The fluid in the cup D is then ignited. The heat of the flame from the cup D will heat the brass casing A, which will vaporize the fluid in the passage *a*, which, as it escapes from the tip of the burner S, is ignited, and

the vapor, as it rises in the passage *a*, is mixed with atmospheric air through the passage *b*. The heat of the casing A will cause the fluid to vaporize down in the passage *d*, and the valve *g* is then opened, and as the gas rises in the passage *f* it is mixed with air through the passage *e*. As it escapes in direction of the arrow it is ignited at *f*, and will produce a small blue flame, which plays against the casing A.

When the burner S is put out, by turning off the supply at the valve *c*, there will be a supply of gas in the passage *d*, and the flame at *f* will continue to burn and supply heat to the casing A, and a supply of gas will be kept up; and at such times as the burner S is to be ignited, it may be done by simply turning the valve *c* by the thumb-butt B, and applying a burning match or taper to the tip S. The flame at *f* is regulated by the valve *g* through the stem *p*, which has a small hole, into which may be inserted a pin or piece of wire, by which it may be turned to set the valve and regulate the flame of the continuous burner *f*, as in cold weather a much larger flame at *f* may be required than in warm weather. In place of igniting oil in the cup D to start the burner, a torch may be used.

We are aware that a continuous flame has been used for the purpose of igniting the illuminating-flame of a gas-burner. This we do not claim. Neither do we broadly claim the continual vaporizing of oil by a small continuous flame; but

We claim as our invention—

The combination of valve *g*, air-passage *e*, oil and gas passage *d*, and the continuous vaporizing-burner *f* with the main valve *c*, air-passage *b*, and the illuminating-burner S, as shown and described, and for the purpose specified.

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Witnesses:
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