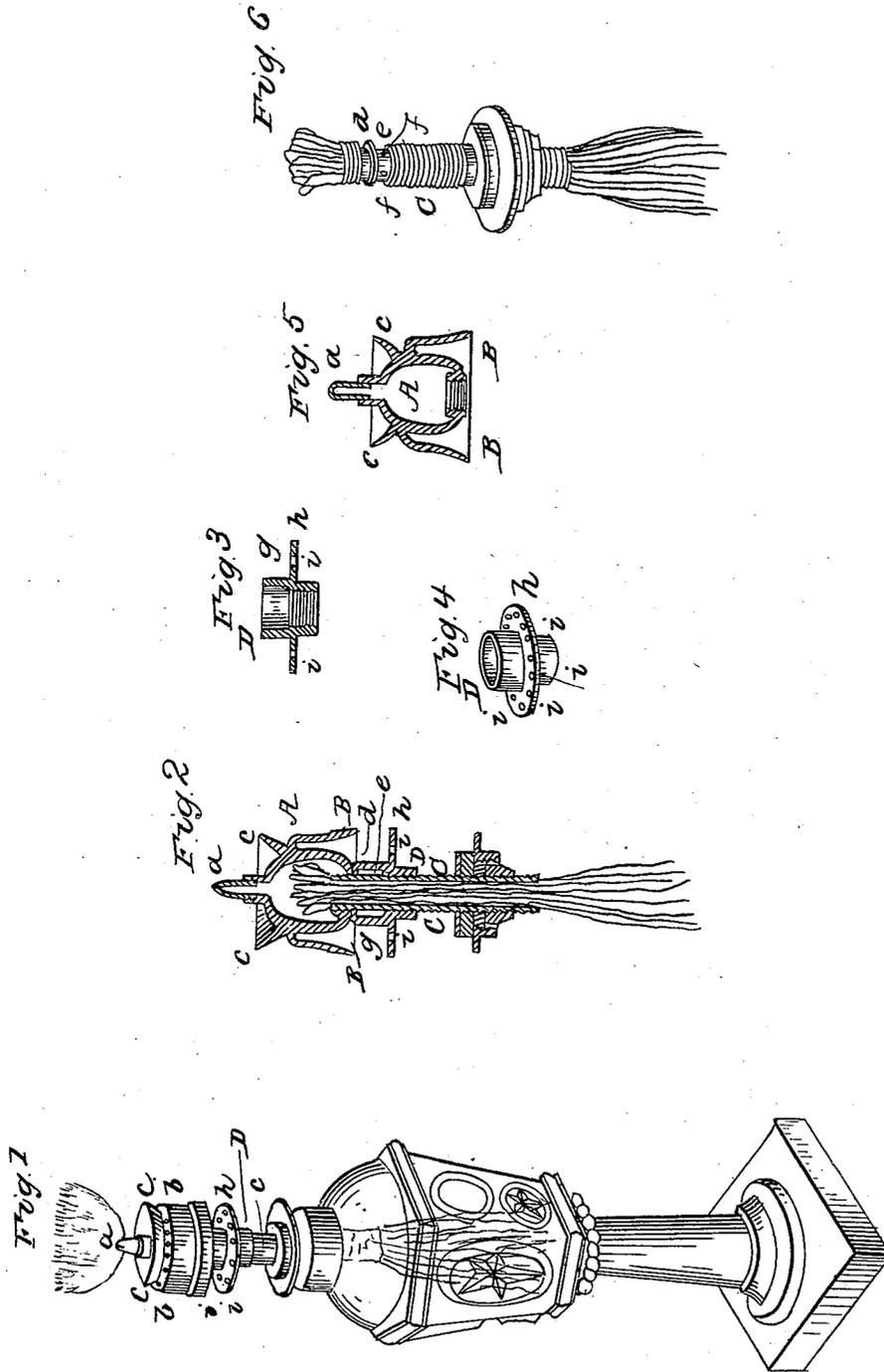


R. W. SARGENT.

Vapor Burner.

No. 16,852.

Patented March 17, 1857.



UNITED STATES PATENT OFFICE.

RUFUS W. SARGENT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN THE BURNER OF BURNING-FLUID LAMPS.

Specification forming part of Letters Patent No. 16,852, dated March 17, 1857.

To all whom it may concern:

Be it known that I, RUFUS W. SARGENT, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Burner for Spirit Gas or any Highly-Volatile Fluid; and I do declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a perspective view of a lamp in operation; Fig. 2, a longitudinal section of the burner upon the burner-tube with the regulator attached; Fig. 3, a longitudinal section of the regulator; Fig. 4, a perspective view of the regulator; Fig. 5, a longitudinal section of the burner, and Fig. 6 a perspective view of the burner-tube.

The burner consists of a chamber A of a globular, spheroidal, or other convenient shape, from the top of which rises a tube *a*, which may be in any form such as is used for burning gas—either the ordinary hydrogen gas or spirit gas—as the bat-wing or fish-tail gas-burners, or with jets. This chamber A is surrounded by an outer case or chamber B, extending from about the insertion of the tube *a* down to the level of the bottom of the exterior of the chamber A or slightly below it. The bottom of the chamber B is left open all round and flares slightly outward. It is perforated with small holes *b* upon the top for the purpose of permitting the draft of air. A flange *c* prevents the draft affecting the flame of the lamp or causing it to flicker. The burner-tube C is screwed into the bottom of the chamber A, the bottom of which immediately around the tube is slightly elevated. The wick extends a short distance into the chamber A. About the one-eighth of an inch below the bottom of the exterior of the chamber A is a small flange *d*, and at the distance of from one-quarter to one-half of an inch below that a shoulder *e* is formed upon the burner-tube, and just above the shoulder are several small apertures *f*.

The regulator is represented at D, and is made with a shoulder *g* upon the interior; below which a screw is cut, by which it fits upon the burner-tube, and so that the regulator may be readily moved up and down thereon. The exterior of the regulator is provided with

a flange *h*, by which it may be more readily handled. This flange is perforated with holes *i* or otherwise made open, so as to allow the air to pass more freely to the heating-flame.

The screw by which the burner-tube is secured to the burner and that which is turned upon its lower part to receive the regulator should be of the same size, or else the former should be smaller than the latter, so that the regulator may be easily removed and replaced should it be necessary for any purpose to take the lamp apart. This is the most convenient arrangement; but the regulator might go on from the bottom of the burner-tube, and then the size of the upper screw would not affect it.

The sizes of the various parts may be varied without varying the principle; but I have found the most convenient proportions to be about as represented in the annexed drawings. For larger or smaller lamps all the parts may be increased or diminished proportionately, and in small lamps the chamber B may be dispensed with, which would enable them to be manufactured more cheaply, but they would consume more fluid in use.

The operation of the lamp is as follows: Above the shoulder *e* to the bottom of the chamber A a wick in any convenient way is placed around the burner-tube, and is secured and kept in its place by screwing the regulator D up over it. The space afforded by the regulator being made with the shoulder *g* gives room for this wick. The space around the burner-tube above the flange to the bottom of the exterior of the chamber A is now to be filled with a packing extending to the exterior of the regulator and so tight as only to allow of a very retarded flow of the fluid. This packing may be made by winding thread tightly around the wick or burner tube or with any other convenient material. The fluid finding access to the outside wick through the apertures *f* is lighted there, the regulator being turned down for that purpose a short distance. After a few moments the heat causes the fluid to flow more freely, and the regulator is then turned up, so as to confine the flame within the chamber B. This flame is the heating-flame, by means of which the gas is generated for illumination. This flame is circular, fills the chamber B, and surrounds the chamber A. The fluid flows into the chamber A through the burner-tube by

the main or ordinary wick, and is there converted into gas by the heating-flame, which, after a few moments, will extend up outside the chamber B and set fire to the gas, which by this time will have filled the chamber A and begun to escape from the tube at the top, and thus the lamp will be fully in operation. The regulator must now be turned up, so as to reduce and confine the heating-flame within the chamber B, and it will then continue to produce a steady and constant heat around the chamber A, generating a steady and constant supply of gas for the illuminating-flame. The regulator may be turned up so high in the first instance as not to permit the heating-flame to extend outside to set fire to the gas for the illuminating-flame, which may be lighted in the ordinary way. When the lamp is fully in operation, the heating-flame is supplied with fluid from the packing, to which it is conducted by the wick around the burner-tube, the regulator being turned up closely to the packing. If the fluid were supplied to the heating-flame by means of a simple wick, the flow of fluid would be so free and copious that the flame would not be confined within the chamber B and would be much larger than necessary for the purpose of heating, causing a waste of fluid. A small cap may be made to fit over the tube *a*. The illuminating-flame can then be extinguished, the cap placed on, and the heating-flame allowed to burn, so that the lamp may be relighted at once upon the removal of the cap.

I do not claim the burner-tube, chamber A, the arrangement of the main wick, or tube *a*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The making of the chamber for the heating-flame in lamps in which burning fluid spirit gas, or other highly-volatile fluid is used, so that it nearly or wholly surrounds the chamber in which the gas is generated, in order that the heating-flame, being sheltered from the outer air and confined within the outer chamber and in immediate contact with the inner chamber, may effect its purpose more steadily and with less consumption of fluid, the form of the outer chamber being substantially as above and as represented in the annexed drawings.

2. The surrounding the burner-tube with a wick and packing, substantially as above described, in order to supply the heating-flame with fluid, and the making of the burner-tube with a flange and shoulder, as described, in order to afford space for said wick and packing, and the perforating the burner-tube with apertures through which said wick may be supplied with fluid.

3. The regulator, substantially as above described, movable up and down upon the burner-tube in order to regulate and control the heating-flame.

RUFUS W. SARGENT.

Witnesses:

WILLIAMS OGLE,
ALEXANDER MCKINLEY.