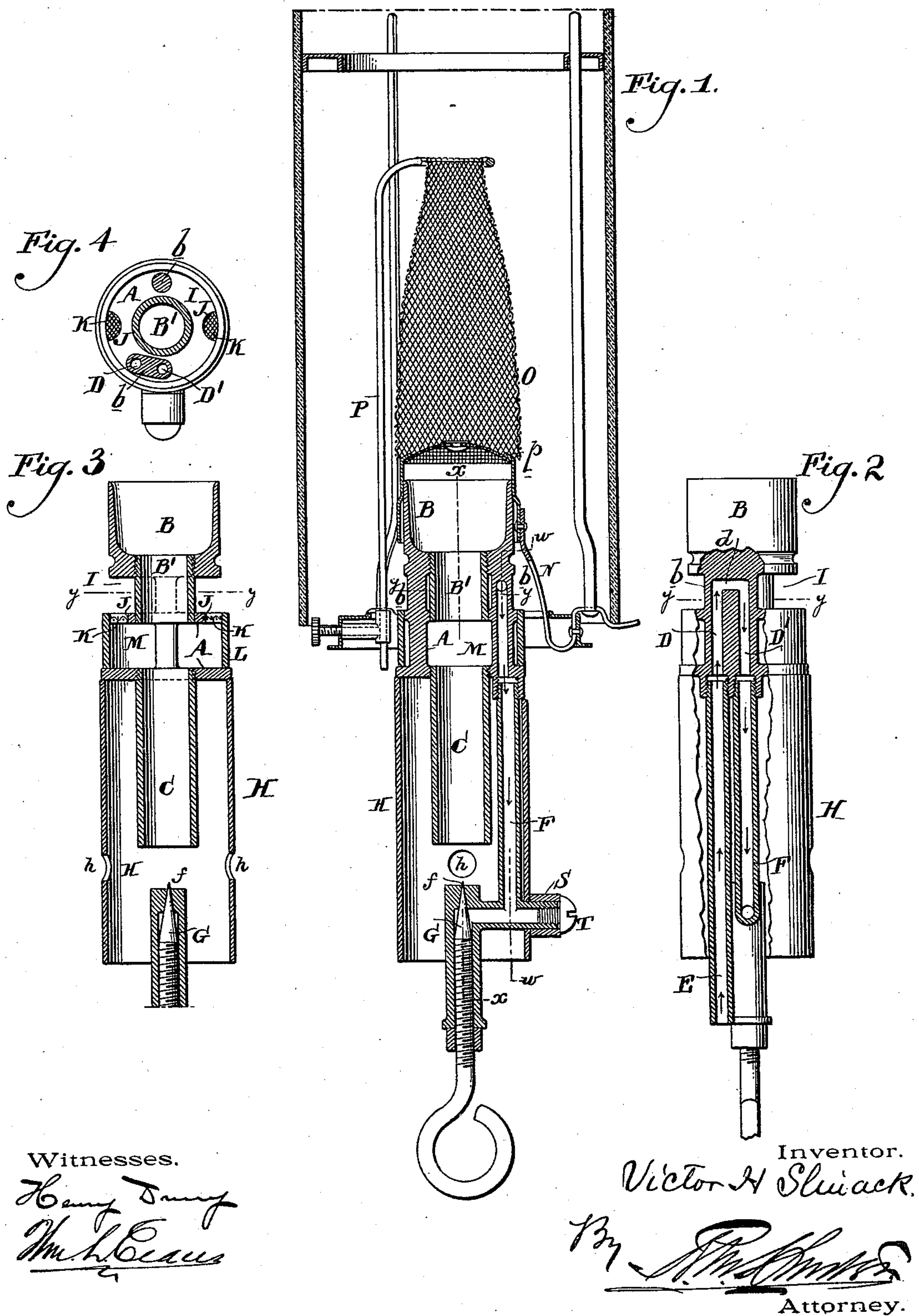


V. H. SLINACK.
HYDROCARBON BURNER.

Patented Mar. 30, 1897.



UNITED STATES PATENT OFFICE.

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HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 579,657, dated March 30, 1897.

Application filed April 17, 1896. Serial No. 587,917. (No model.)

To all whom it may concern:

Be it known that I, VICTOR H. SLINACK, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Incandescent Hydrocarbon-Burners, of which the following is a specification.

My invention has reference to incandescent hydrocarbon-burners; and it consists of certain improvements, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of my invention is to provide a construction of vapor-burner suitable for rendering incandescent a mantle of refractory material, and with special object of dispensing with an auxiliary burner requiring a regulating-valve and employing in lieu thereof auxiliary burners adjacent to the main burner for burning a portion of the vapor generated and admixed with air for the main burner. The auxiliary flames thus produced maintain the heat of the generator and sustain the operativeness of the burner even if the main flame should accidentally become extinguished. They further heat the air rising to the outside of the mantle to make combustion in contact with the mantle more intense and thereby heighten its luminosity.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a vapor-burner embodying my improvements. Fig. 2 is an elevation of the generator portion thereof with a part in section, taken on line *ww* of Fig. 1. Fig. 3 is a sectional elevation of the generator proper on line *xx* of Fig. 1, and Fig. 4 is a cross-section of same on line *yy* of Fig. 1.

A is the generator-head and is cast integral with a tubular burner-head B, the two parts being connected by uprights *b b*. A closed passage-way B' connects the parts A B and is formed of a short section of tube. The perforated or gauze burner-cap *p* is arranged over the head B and is provided with a central button to spread the flame.

O is the mantle of refractory material of open characteristics and is sustained over the

burner by the support P or in any other suitable manner.

C is a mixing-tube and extends down from the head A and terminates a short distance above the vapor-nozzle G. The head A is formed of two parallel disks inclosed by an annular case L, so as to form a compartment M. The upper disk of the head A is provided with apertures J, in which is placed wire-gauze burner-screens K. The lower walls of the burner-head B receive the flame from these auxiliary burners K K.

One of the uprights *b* is formed with parallel flues D D', opening downward and communicating at their tops by a horizontal flue *d*. (See Fig. 2.) The hydrocarbon-fluid-supply pipe E connects with the flue D, while angle-pipe F of the vapor-valve G connects with the flue D'. The vapor escapes from the valve G by the needle-aperture *f*, directly under the mixing-tube C, and in rising draws in air from the bottom of the casing H, which surrounds the valve and mixing-tube. The jet may be examined by sight-holes *h*, which may also supply air to the burner.

The operation will now be understood. Oil is supplied by pipe E, and in passing through the retort-flues D *d* D' it becomes vaporized, and following the course of the arrows escapes by the nozzle *f* with considerable force. The rising vapor sucks in the necessary quantity of air to make a good combustible vapor. This is thoroughly mixed in the tube C and enters the chamber M in the head A. The main portion of this vapor and air passes upward through passage-way B' into burner-head B and is burned at the burner *p*, rendering incandescent the mantle O. A portion of the vapor and air in the chamber M escapes through the auxiliary burners K K and is burned under the base of the burner-head B, and thereby keeps said casting and the part *b* containing the flues D *d* D' in a highly-heated condition. These auxiliary burners perform a twofold function, namely, to heat the adjacent castings for the purpose of vaporizing the oil and to heat the air rising to the main burner *p*, thus greatly assisting in maintaining a high degree of incandescence. By this construction all trouble

from the extinguishment of the main burner is averted, because if from any cause the main burner should go out the heating of the generator portion still continues and also
 5 relights the main burner, and vice versa. In practice, the head B being in a constantly-heated condition from the main flame, it is only necessary to employ small burners K. I would further add that in starting up my
 10 apparatus the use of the burners K K enables the generator to be more quickly brought to the proper temperature and maintained there than burners relying only upon the main burner as the source of heat.

15 The details may be modified without departing from the principle of my invention. Hence I do not confine myself to the exact construction shown.

What I claim as new, and desire to secure
 20 by Letters Patent, is—

1. In a vapor-burner, the combination in a burner of a burner-head, a mixing-tube, an enlarged vapor-chamber interposed between the burner-head and the mixing-tube in di-
 25 rect alinement therewith, a vapor-nozzle below the mixing-tube, a generator connecting with the nozzle and extending up close to the burner-head and above the vapor-chamber, and one or more auxiliary burners opening
 30 out of the vapor-chamber upward and toward the burner-head.

2. In a vapor-burner, the combination of a burner comprising a vapor-chamber interposed between a burner-head and a mixing-
 35 tube, a vapor-nozzle below the mixing-tube, a generator connecting with the nozzle and extending up close to the burner-head, one or more auxiliary burners opening out of the vapor-chamber below the burner-head and
 40 close to the generator, and a removable case or band for the vapor-chamber.

3. In a vapor-burner, the combination of a burner comprising an enlarged vapor-chamber interposed between and in straight aline-
 45 ment with a burner-head and a mixing-tube, a vapor-nozzle below the mixing-tube, a generator connecting with the nozzle and extending up close to the burner-head and to one side of the vapor-chamber, one or more auxil-
 50 iary burners opening out of the vapor-chamber below the burner-head to heat the air passing outside the same, and a burner-cap surmounting the burner-head.

4. In a vapor-burner, the combination of
 55 the generator-head consisting of a casting having two disks A connected by a vapor-generator part having flues D d D', a case L to surround the generator-head and form the gas-chamber M, a burner-head B opening into

the gas-chamber M and connecting therewith 60 by a contracted tubular neck B', one or more auxiliary burners K opening from the chamber M below the head B, a vapor-nozzle ar-
 ranged below the generator-head A and con- 65 necting with the vapor-generator, and a mixing-tube C extending down from the gener-
 ator-head toward the vapor-nozzle.

5. In a vapor-burner the combination of a generator-head having at the top an annular upright main-burner rim and at the bottom 70 two disks or flanges forming between them a vapor-chamber, a removable case surrounding and inclosing the two disks or flanges of the generator-head to make a tight vapor-
 chamber, two auxiliary burners opening from 75 the upper disk at a point below the main burner, a central tube of smaller diameter than the gas-chamber for connecting it with the main-burner head, and means to supply
 80 vapor and air to the vapor-chamber.

6. In a vapor-burner, the combination of a main burner, a mixing-tube below the burner, a vapor-chamber of larger diameter than the mixing-tube interposed between it and the main burner and provided on its upper part 85 with one or more auxiliary burners for supplying a flame upward toward the main burner, the said vapor-chamber being in direct alinement with the burner and mixing-
 tube, a generator extending upward interme- 90 diate of the gas-chamber and main burner and adapted to be heated by the auxiliary burner, and a vapor-nozzle connecting with the generator and directed upward from be-
 low the mixing-tube. 95

7. The herein-described means for produc-
 ing light which consists of a generator for vaporizing a fluid hydrocarbon by heat, means for mixing the vapor while heated with air, flues for dividing the mixed air and vapor 100 unequally whereby the larger portion of the vapor may be burned at the main burner in direct contact with a refractory incandes-
 cing substance and the smaller portion of the vapor burned to heat and vaporize the fluid 105 hydrocarbon and also heat the air surrounding the burner, and means for supplying the heated air to the outside of the main burner and refractory incandescing substance simul-
 110 taneously with the excess of vapor upon the inside thereof.

In testimony of which invention I have hereunto set my hand.

VICTOR H. SLINACK.

Witnesses:

R. M. HUNTER,
 R. M. KELLY.