

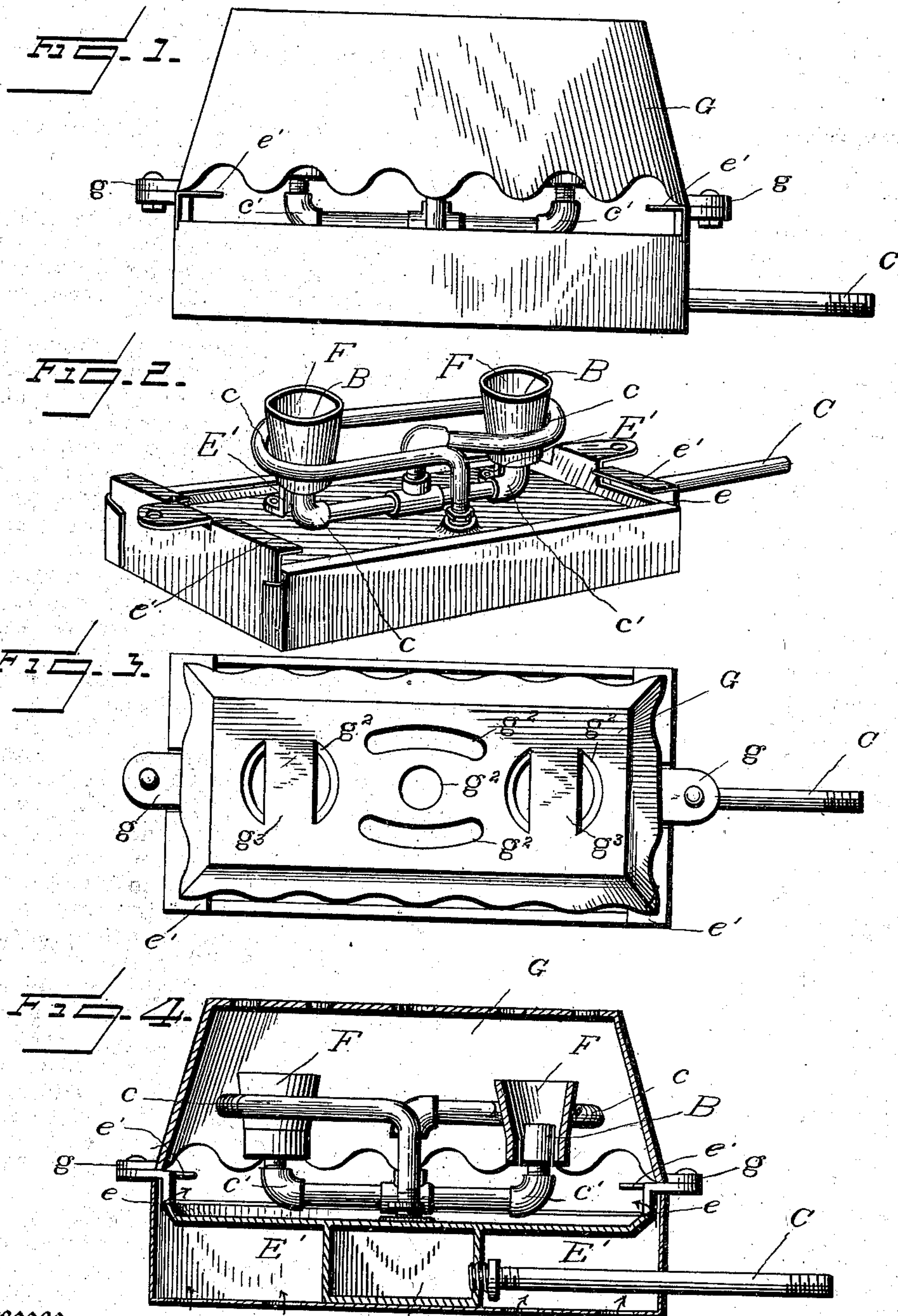
No. 709,387.

Patented Sept. 16, 1902.

E. BETZ.
HYDROCARBON BURNER.

(Application filed July 3, 1901.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

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HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 709,387, dated September 16, 1902.

Application filed July 3, 1901. Serial No. 67,006. (No model.)

To all whom it may concern:

Be it known that I, ERNEST BETZ, a citizen of the United States, and a resident of Washington, in the District of Columbia, have made
5 a certain new and useful Invention in Hydrocarbon-Burners; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it appertains to make and use
10 the invention, reference being had to the accompanying drawings and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a side elevation of my burner.
15 Fig. 2 is a perspective view of the burner with cap-plate G removed. Fig. 3 is a plan view of the burner. Fig. 4 is a partial vertical longitudinal section of the same.

The invention relates to hydrocarbon-burners, and has for its object the provision of a simple and practical device of this character especially suited for burning kerosene-oil and arranged to heat the oil to effectually convert it into vapor, also providing for the admixture of heated air with such vapor for complete combustion thereof to obtain a flame of maximum calorific value.

A further object of the invention is to provide for such complete combustion as will
30 avoid the exhalation of odor from the burner.

With these objects in view the invention consists in the novel construction and combinations of parts, as hereinafter set forth.

Referring to the accompanying drawings,
35 the letter B designates the burner, and C the oil-feed pipe, supplied from a suitable oil-reservoir supported from some elevated point with relation to the burner, such pipe being provided with a valve to control the oil-feed.
40 The base-casting, usually of rectangular or box form, is provided below its top with an oil-chamber E, which when heated becomes a retort. At the side of or adjacent to the oil receptacle or retort E is provided a hot-air chamber E', through which the extension of the oil-feed pipe from the reservoir passes. This hot-air chamber is provided with an air-inlet in its bottom portion and with an air-exit e in its top, such air-exit being laterally
45 arranged and provided with a deflector plate or flange e' above said opening to guide the

rising heated air toward the mixing-tube located adjacent thereto. At the opposite side of the base a similar hot-air chamber having similar air inlet and exit passages is usually
55 provided, as shown.

The mixing-tubes F are supported by small arms attached to the top of the base near the air-openings in the top of the hot-air chamber.

From the oil receptacle or retort, being attached thereto by means of a threaded opening in its top, extends the coil-pipe c, which is disposed horizontally above the base and, extending downward, is connected to the burner-tube c', which extends under the mixing-tube and is provided with a burner-tip
65 projecting upward into the same.

Above the base is a deflector-cap G, which is designed to be secured to the base by means of attachment-lugs g therein being bolted to
70 similar lugs of said base. This cap G has small openings g² g² in its top wall and separated by the bridge-bars g³, located directly above the mixing-tubes to obstruct the direct draft immediately over the same. The cap
75 is designed to be provided with a downwardly and outwardly inclined flange, which extends nearly to the top of the base, leaving an opening between its margin and said base, said opening being continuous, except at the points
80 of attachment of the cap to the base. This flanged cap practically incloses the coil-pipe and the mixing-tubes and forms a flame-chamber of powerful heating capacity, whereby not only these parts are raised to high temperature, but also the base including its closed oil-chamber and hot-air chambers are heated, the former sufficiently to vaporize the oil therein and the latter to heat the draft-air to the mixing-tubes. The margin of the
85 depending flange of the cap is usually made of wave-like contour in order to subdivide the burning mixture of gas and air as it passes outward thereunder, in this wise giving it a spreading character, whereby its flames rising exteriorly around the cap are designed to envelop it, and thereby produce a mass of fire of very powerful character.

In operation, the valve of the oil-feed pipe being opened, the oil is allowed to pass into
100 the oil-chamber E, wherein it rises through the coil-pipe and passes out of the burner-

tips, falling upon the base-plate, where it is lighted. The burning oil soon heats up the burner-tips and coil, vaporizing the oil therein, and the vapor mixed with air becoming
 5 ignited heats up the parts further until the entire burner is raised to a high temperature, vaporizing the oil in the oil-chamber, as well as in the coil-pipe. A continuous flame of powerful character is designed to be produced
 10 by the burner.

The heating capacity of the burner is such that it burns up all the vaporized oil, which escapes, and the odor which may exhale when the supply is cut off is imperceptible.

15 Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a hydrocarbon-burner, the combination with the base, its oil-receptacle and hot-
 20 air chamber below its top, the inclosing deflector-cap supported from said base, and having a depending flange extending downward nearly to said top, the mixing-tube and coil-pipe within said cap, the burner extension of
 25 said coil-pipe under said mixing-tube and above the top of said base-plate, and the oil-feed pipe extending within the hot-air chamber to said oil-receptacle, substantially as specified.

30 2. In a hydrocarbon-burner, the oil-receptacle and the adjacent hot-air chamber forming a base, the pipe from said receptacle, and its burner-tip, on said base, the mixing-tube above said base, said chamber having air inlet and exit openings in its bottom and top
 35 walls respectively, the deflector-plate above said exit-opening, and the oil-feed pipe passing through said hot-air chamber, substantially as specified.

40 3. A hydrocarbon-burner, comprising the base, its oil-chamber and adjacent hot-air chamber, the mixing-tube supported therefrom, the coil-pipe from said oil-chamber extending to said mixing-tube, and provided

with a burner-tip, and the deflector-cap supported upon said base-plate, and having a top and a depending flange inclosing said tube and coil, said flange being of such height as to leave only a narrow opening therebetween and the base-plate, whereby the flame takes
 45 an upward rise from the burner-tip, is deflected within the cap, and falls the full depth of the flange in intimate contact with said tube and coil, and with the base-plate, and emerging under the cap again, rises exteriorly around the same, substantially as specified.
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4. A hydrocarbon-burner, comprising the base of box form divided by a partition to form an oil-receptacle and a hot-air chamber,
 60 the mixing-tube supported from said base, the cap supported upon said base, and having a top, and a depending flange inclosing said tube and coil, and the oil-feed coil-pipe extending from the oil-chamber upward between the base and cap, and downward under the mixing-tube, substantially as specified.
 65

5. A hydrocarbon-burner, comprising the base of box form divided by a partition to
 70 form an oil-receptacle and a hot-air chamber, the mixing-tube supported from said base, the oil-feed coil-pipe provided with a burner-tip, the cap supported upon said base, and having a depending flange inclosing said coil
 75 and tube, said flange being of such vertical extent as to leave only a narrow opening between its margin and the base, and said hot-air chamber having air inlet and exit openings in its bottom and top walls respectively,
 80 substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST BETZ.

Witnesses:

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