

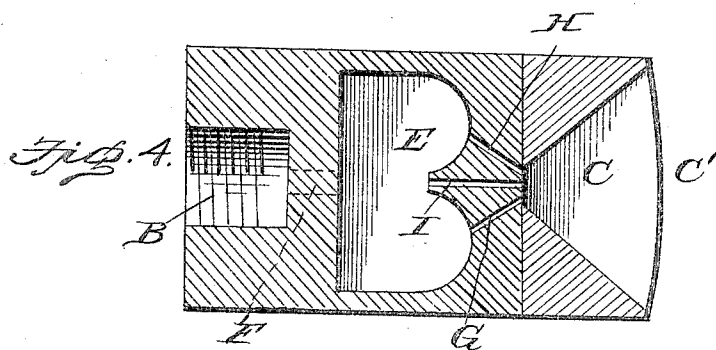
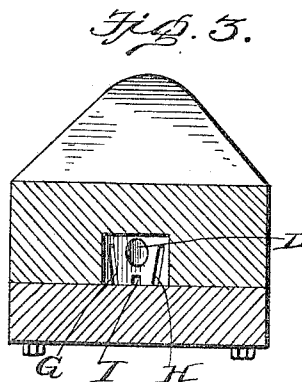
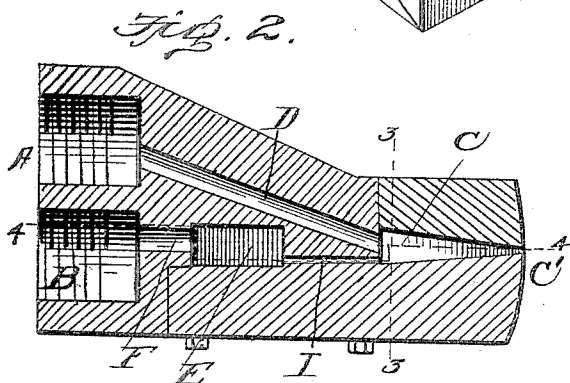
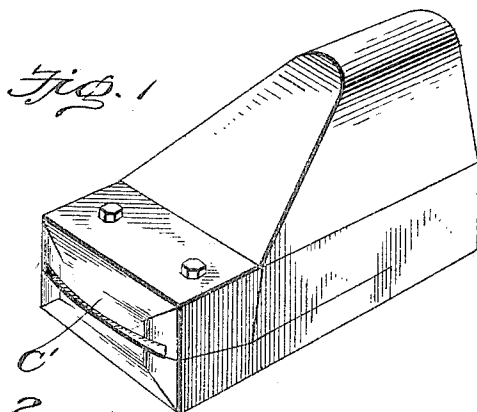
No. 640,378.

Patented Jan. 2, 1900

C. A. HAMMEL.
OIL BURNER.

(Application filed Apr. 19, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES A. HAMMEL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO JAMES A. KENWORTHY, OF SAME PLACE.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 640,378, dated January 2, 1900.

Applicator filed April 19, 1899. Serial No. 713,611. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. HAMMEL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Oil-Burners; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to improvements in oil-burners, and more particularly to that class of hydrocarbon-burners employed in furnaces, steam-boilers, and the like; and the object is to improve and simplify the construction and increase the efficiency and durability of the burner.

To this end the invention consists in certain features of construction and combination of parts, which will be hereinafter fully described and claimed.

In the accompanying drawings the same reference characters indicate the same parts of the invention.

Figure 1 is a perspective view of my improved burner. Fig. 2 is a central longitudinal section of the same. Fig. 3 is a transverse section on the line 3 3 of Fig. 2, and Fig. 4 is a horizontal section taken on the line 4 4 of Fig. 2.

A is a threaded orifice in the rear end of the burner, into which the oil-supply pipe is screwed. B is a like orifice, into which the steam-supply pipe is screwed.

C is a chamber communicating with the orifices A and B and in which the oil and steam are commingled before being injected into the combustion-chamber. The rear wall of chamber C is much narrower and deeper than the mouth thereof, and the top and bottom incline toward each other and broaden out laterally at the mouth.

C', the front face of the burner, is slightly curved, as shown in Figs. 2 and 4, the extent of curvature being about three-sixteenths of an inch in the center, the face of the burner being about two inches broad, and the mouth being about one thirty-second of an inch deep in the center and about three thirty-seconds of an inch at the sides, (a burner of above

dimensions being suitable for one-hundred-horse-power boiler.)

The face of the burner being curved, as shown, and the top and bottom of the mixing-chamber being flat and converging to the mouth and the center projecting beyond the sides, the mouth will be contracted or narrowed in the center and wider out toward the sides, giving to it the form shown in Fig. 1. This form of construction I have found in practice to be particularly desirable, as the flow of the steam and oil would be greatest at the center if the opening at the mouth were uniform; but by gradually contracting the opening as the center of the mouth is approached the flow of oil and steam through the mouth is equalized and a broad even flame produced.

E is the steam-expansion chamber and is connected with the steam-supply pipe by the duct F. It is also connected with the mixing-chamber C by ducts G, H, and I. The object of this chamber E is to equalize the pressure of the steam before it passes into the chamber C. It will be observed that the duct I is a small straight passage leading from the steam-chamber E to the mixing-chamber C and entering at a point directly under the oil-duct D, which leads the oil into the mixing-chamber C. The purpose of this small steam-duct I is to assist and cause the flow of oil to be more steady and even as the oil is discharged directly upon the steam issuing therefrom, which causes it to move along with a steady even flow. The steam-duct I also overcomes the resistance caused by the diagonal ducts G and H coming together directly in front of the oil-duct D. The ducts G and H lead convergently from the steam-chamber E to the mixing-chamber C. The object of this construction is to have one jet impinge upon the other, which thereby breaks up the oil flowing between them into minute atoms or particles. It will also be observed that the bottom of chamber C inclines upward and the top downward to the mouth thereof, and the steam and oil as they enter therein strike on the bottom and are deflected to the top, then back to the bottom, and so on back and forth until they pass out of the chamber. This impact is very

beneficial, as it aids in atomizing the oil and in properly mixing it with the steam before its exit from the chamber.

It is understood that regulating-valves are provided in the supply-pipe leading to the oil-reservoir and steam-supply, respectively, whereby the admitted amount of oil and steam may be regulated.

Mechanically atomizing and thoroughly and properly mixing of the oil and steam or air before leaving the orifice of the burner is the result attained by the construction of my burner.

The accompanying drawings show my invention in the best form now known to me; but many changes in the details might be made within the skill of a good mechanic without departing from the principle or sacrificing any of the advantages of this invention as set forth in the claims at the end of this specification.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. A hydrocarbon-burner comprising a mixing-chamber, and an oil-inlet duct communicating therewith, an expansion-chamber, and converging ducts leading from the expansion-

chamber to the mixing-chamber, and a duct leading from said expansion-chamber to the steam or air inlet pipe, substantially as and for the purpose set forth.

2. A hydrocarbon-burner comprising the mixing-chamber C opening into the atmosphere, the oil-duct D, the expansion-chamber E, the converging ducts G and H, and the longitudinal duct I leading from the expansion-chamber to said mixing-chamber, substantially as and for the purpose set forth.

3. A hydrocarbon-burner provided with the oil-inlet orifice A, an air-inlet orifice B, a mixing-chamber C opening into the atmosphere, an oil-duct D connecting the oil-inlet orifice A and the mixing-chamber C, the expansion-chamber E, the ducts G H and I connecting said mixing and expansion chambers C E, and the duct F extending from said air-inlet orifice B to the expansion-chamber E, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES A. HAMMEL.

Witnesses:

RUSS AVERY,

WM. H. AVERY.