Patented Aug. 16, 1938 2,127,267

UNITED STATES PATENT OFFICE

2,127,267

RETORT FOR VAPORIZING LIQUID FUEL

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Application April 21, 1934, Serial No. 721,835

1 Claim. (Cl. 48—102)

The purpose of this invention is to provide improved means in the nature of a retort for vaporizing liquid fuel, and said means is shown as particularly adapted for use in conjunction with apparatus in which the vaporized fuel is employed for heating the apparatus, and which is also arranged so that a portion of the heat produced therein is applied to the retort for vaporization of the fuel.

The invention consists in the elements and features of construction shown and described as indicated in the claim.

In the drawing:

Figure 1 is a top plan view of a portion of an apparatus embodying this invention in one of its forms.

Figure 2 is a vertical section at the line 2—2 on Figure 1.

Figure 3 is a vertical section at the line 3—3 on Figure 2.

Figure 3*a* is a section at the line 3^a—3^a on Figure 2.

Figure 4 is a vertical section of the oven of a heat-treatment apparatus equipped with a retort of the construction shown in Figures 1, 2 and 3.

In Figure 4 of the drawing there is shown an apparatus in the nature of an industrial appliance such as a heat-treating or baking oven in conjuction with which the retort which is the subject of this invention may be utilized. This view includes a retort which is slightly different in detail from the retort shown in the other figures of the drawing, but which involves the same principles of operation. In Figure 4, A is a casing made of refractory material, as fire brick, indicated at *a*, which may be molded integrally, and which is shown exteriorly provided with sheet metal surface covering indicated at a^1.

This casing contains an oven or heat-treatment chamber, A^1, the lower part of which, indicated at A^2, is separated from the upper part by means indicated at A^3, for supporting in heat-treatment position the substance to be heat-treated. Said supporting means may be in different forms according to the substance or article to be carried by it in the heat-treatment process. In either form this member, A^3, is removably supported and positioned in the chamber with clearance for the passage between it,—with the article or substance supported by it,—and the chamber wall, of the hot products of combustion from the burner or burners hereinafter further referred to located below said supporting member.

In the drawing the supporting member, A^3, is shown in the form of a shelf extending across the chamber, A^1, at an intermediate part of the dimension of the chamber from front to rear, said shelf being lodged at its ends on abutments formed by narrow vertical ribs, A^{10}, projecting inwardly from the casing wall, and preferably supported at the middle part of its length by a stool or post, A^{11}, which projects up from the bottom of the chamber.

An upwardly swinging door, A^4, at the front side affords access to the oven chamber for introducing and removing the supporting member, A^3, and/or the heat-treated article or substance. An aperture, a^4, at the upper side of the casing constitutes a vent passage for the hot products of combustion after they have done their work of heat treatment in the heat-treatment chamber; and the waste heat remaining after said products of combustion have parted with the greater portion of their heat, is utilized for heating a retort indicated at B, mounted in a chamber member, C, which is shown erected on top of the oven casing, A.

The retort member, in the form shown in Figures 1 and 2 and the form shown in Figure 4 may be understood as made of metal desirably thin for being quickly heated through by the waste heat from the heat-treatment chamber. In the form shown in Figure 2, the retort member, B, is an integral casting containing two compartments, b^3 and b^4, partitioned from each other by a vertical partition, b^1, which extends from the top wall of the retort nearly to the bottom, leaving at its lower end a narrow passage which constitutes the sole communication between the two compartments, and which may be referred to as the vent passage, b^2.

At the upper end the retort element is formed for separate threaded connection with each of the compartments, as indicated at b^{30} and b^{40}. A pipe member, b^{31}, screwed into the top of the retort at b^{30}, constitutes an upward extension of the compartment, b^3, at the upper end of which that compartment is connected as by an oil pipe line, E, with source of fuel oil.

The connection of the oil pipe line, E, with the retort chamber is made by means of a valve fitting indicated at E^4, having its valve adapted to restrict the flow of oil into the retort chamber very closely, so that in fact the oil will be delivered at its emergence form the oil conduit in a very slender jet or drops; and the valve fitting, E^4, for its attachment to the pipe extension, b^{31}, has its slender discharge nipple b^{33} screwed into

Whether, in any given instance, that temperature is reached, and whether the oil used is of the quality to be gasified at that temperature, is immaterial to the invention I am claiming, and in the foregoing description I use the terms "vapor" and "vaporizing", including, according to the common usage, gas and gasifying.

Attention is directed to my copending application Serial 673,497, filed May 29, 1933 (now Patent 2,071,421, issued October 23, 1937) and Serial 746,403, filed October 1, 1934.

I claim:

A gas generating apparatus comprising a retort whose chamber has a vertically extending part partitioned from the remainder and communicating therewith only at the lower end, and means for heating said retort through the agency of a current of hot gases directed against the exterior of the retort, said retort having a pipe connection affording an inflow passage for liquid fuel leading to the upper end of its vertically extending part and connected with a source of liquid fuel, said part being otherwise completely closed above its communication with the remainder of the chamber; said heating means being adapted to produce within the enclosing wall of said vertically extending part a temperature above that required for vaporizing the liquid fuel, the liquid fuel connection including a substantially vertically extending conduit member constituting an upward extension of said vertically extending part of the retort chamber and including also a fitting at the upper end of said extension member having a downwardly discharging port axially located with respect to the cavity of said extension member, the means by which the current of hot gases is directed against the retort including a conduit for said hot gases in an upwardly extending part of which conduit the retort is encompassed, and a shield interposed in said retort encompassing conduit under the retort for deflecting the heating gases from the bottom of the retort chamber, whereby the side wall of the retort chamber is more highly heated than the bottom.

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CAP AND TUBE ASSEMBLY

Filed July 9, 1937

Fig. 1.

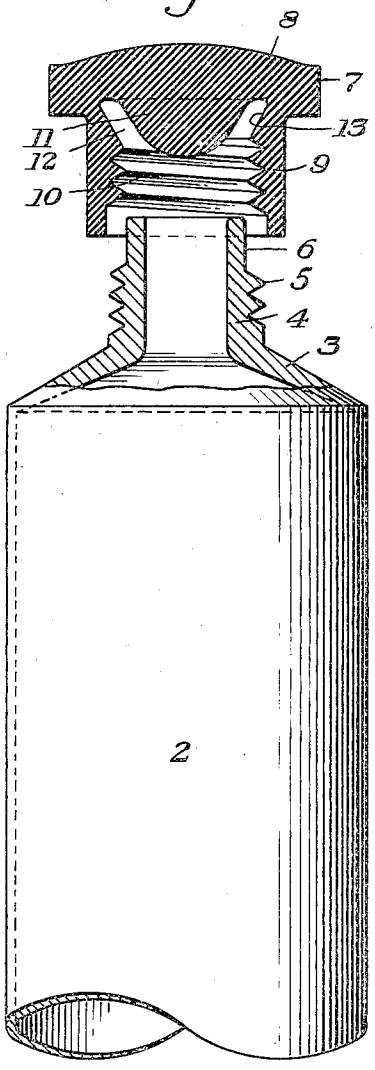
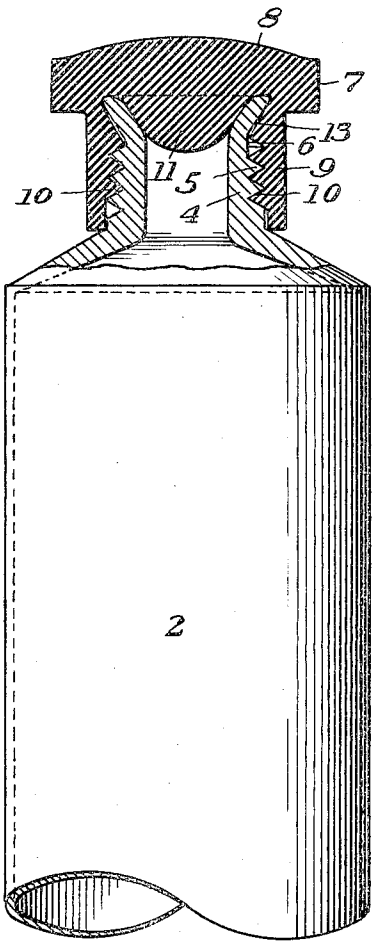


Fig. 2.



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