No. 762,183. PATENTED JUNE 7, 1904.

C. H. MONTGOMERIE Y AGRAMONTE.

HYDROCARBON GAS GENERATOR AND BURNER.

APPLICATION FILED NOV. 30, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

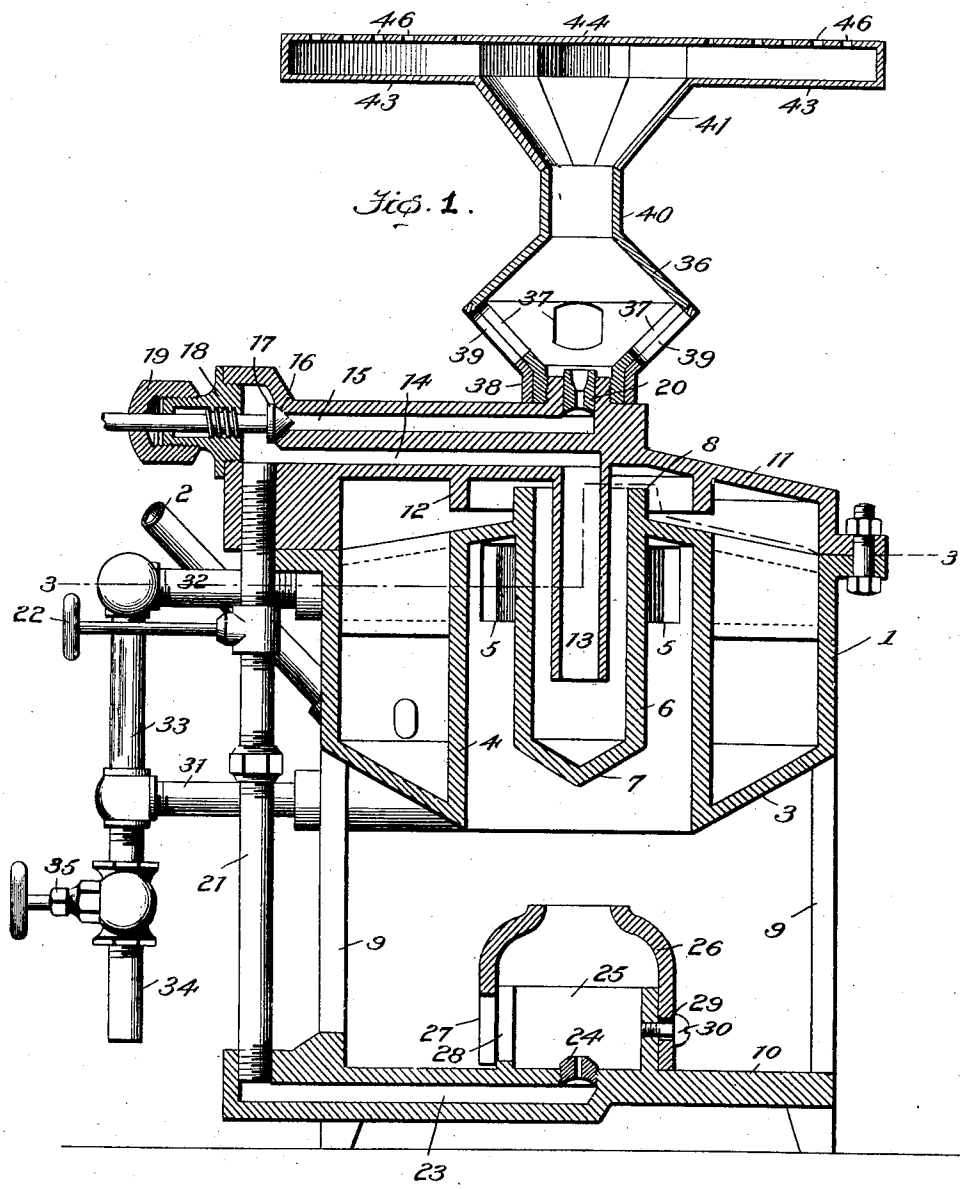


Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

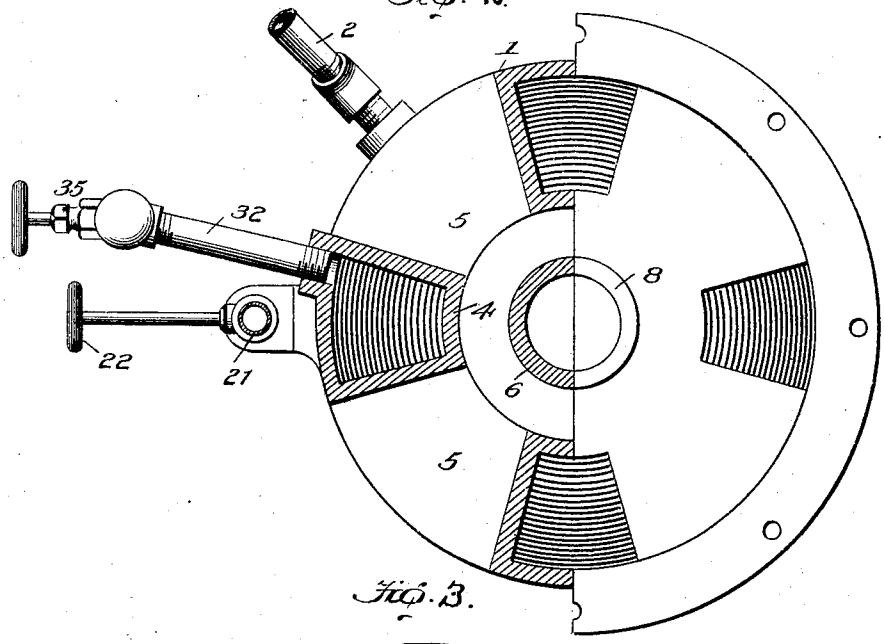
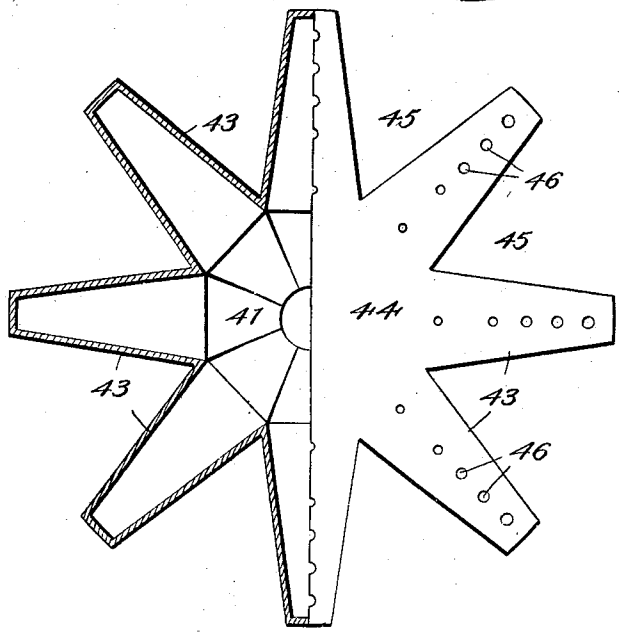


Fig. 3.



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UNITED STATES PATENT OFFICE.

CLARENCE HORACE MONTGOMERIE Y AGRAMONTE, OF MEXICO, MEXICO.

HYDROCARBON-GAS GENERATOR AND BURNER.

SPECIFICATION forming part of Letters Patent No. 762,183, dated June 7, 1904.

Application filed November 30, 1903. Serial No. 183,299. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE HORACE MONTGOMERIE Y AGRAMONTE, a citizen of the United States, residing at the city of Mexico, Republic of Mexico, have invented certain new and useful Improvements in Hydrocarbon-Gas Generators and Burners, of which the following is a specification, reference being had to the accompanying drawings.

This invention has relation to hydrocarbon-gas generators and burners; and it consists in the novel construction and arrangement of its parts, as hereinafter shown and described.

The object of the invention is to provide a generator wherein hydrocarbon oil is converted into gas and a burner mounted upon the generator for the purpose of consuming the said gas. The generator is of peculiar construction, as is also the burner. The burner is so constructed that the gas may expand in several different directions. Each member of the burner is provided with a number of holes of different sizes, the larger holes being located at the ends of the different parts of the burner. The purpose served by this device is the gradual expansion of the gas and the elimination of the roaring noise which usually accompanies the burning of gas mixed with oxygen under pressure. Consequently this burner is noiseless, or nearly so. Fuel-oil for this class of burner is preferably a distillate or any of the cheaper grades of refined petroleum.

In the accompanying drawings, Figure 1 is a transverse sectional view of the generator and burner. Fig. 2 is a top plan view of the generator, partly in section; and Fig. 3 is a top plan view of the burner, partly in section.

The generator consists of the retort 1, having an oil-inlet pipe 2 connected therewith. Through the said inlet-pipe the liquid fuel is conveyed to the retort 1 by a small air-pressure or by water-pressure. The said retort 1 is preferably cylindrical in shape and is provided with the bottom 3, made on the frustum of a cone. The center of the said retort 1 is provided with an opening, from the edge of which is erected a vertical chimney 4, which is closed at its upper end and open at its lower end. The laterally-extending passages 5 5 open at their inner ends into the upper portion of the said chimney 4 and extending radially through the retort 1 and open at their outer ends in the outer side of said retort 1. Toward the outer side of the retort 1 the vertical dimensions of the passages 5 5 are decreased, as indicated by the dotted lines in Fig. 1; but the lateral dimensions of the said passages 5 5 are increased, as shown in Fig. 2. The gasifying-chamber 6 extends down into the chimney 4 and is concentrically arranged with relation thereto. The lower end of the said gasifying-chamber 6 is made cone-shaped, as at 7, while the upper edge 8 of the said gasifying-chamber 6 projects above the top of the chimney 4. The retort 1 is mounted upon the uprights 9, which in turn are located upon the base 10. The retort 1, the chimney 4, the passages 5 5, the gasifying-chamber 6, the uprights 9, and the base 10 are all integrally cast together, so that the various parts may not be warped or twisted out of their proper relations to each other when subjected to intense heat.

The cap 11 is bolted or otherwise secured to the top of the retort 1. Said cap is provided on its under side with a concentrically-arranged depending flange 12, which is substantially in alinement with the vertical walls of the chimney 4. The lower edge of the said flange 12 projects below the upper edge 8 of the gasifying-chamber 6; but there is a space between the upper edge 8 of the chamber 6 and the lower side of the cap 11, and there is also a space between the lower edge of the flange 12 and the top of the chimney 4. The center of the cap 11 is provided with a downwardly-extending tube 13, which enters the gasifying-chamber 6 and terminates above the center of the bottom thereof. The horizontal passage 14 connects the upper end of the tube 13 and extends to one side of the apparatus, where it connects with the horizontal passage 15, which extends back to the center of the apparatus. The said passage 15 is provided with a valve-seat 16, against which the valve 17 is adapted to operate. The stem of the said valve 17 passes through the plug 18 and the stuffing-box 19, respectively. The gas-outlet tip 20 is inserted in the center of the

cap 11 and forms an outlet for the gas in the passage 15. The upper end of the vertical pipe 21 enters the outer end of the passage 14, said pipe being provided with a valve 22. The lower end of said pipe enters the outer end of the horizontal passage 23, located in the base 10. Said passage 23 extends to the center of the apparatus and is provided with an outlet-tip 24. The said tip 24 is nearly surrounded by a flange 25, over which is slipped a casing 26. The said casing 26 is provided with the lateral opening 27, which is adapted to register with a lateral opening 28 in the flange 25. The seat of the casing 26 is provided with an elongated horizontally-disposed slot 29, through which passes a screw 30, which is secured at its inner end to the flange 24. The casing 26 is thus so arranged with relation to the flange 25 that the said casing may be partially rotated about the said flange, so as to increase or diminish the capacity of the air-passage through the openings 27 and 28, and thereby regulate the flow of air to the interior of the said casing 26. The pipe 31 extends out from the lower side of the retort 1 and the pipe 32 extends out from the upper side of the retort 1. The outer ends of the said pipes are connected together by the glass tube 33, and consequently the height of the level of the oil within the retort 1 may be readily determined. The pipe 31 is provided with a drip-outlet pipe 34, which is controlled by the valve 35.

The burner proper is mounted on top and at the center of the cap 11. The said burner is provided with an enlarged air and gas chamber 36, which is provided with the lateral openings 37. The annular plate 38 fits closely against the outer side of the chamber 36 and is also provided with openings 39, which are adapted to register with the openings 37. The chamber 36 is stationary; but the plate 38 may rotate. The capacity of the openings 37 and 39 may be increased or diminished, and consequently the supply of air through the said openings into the chamber 36 may be regulated. The vertical tube 40 is located on the top and at the center of the chamber 36. The said tube 40 is provided with the flared or funnel-shaped outlet 41. The burner consists of the hollow radially-extending fingers 43, which are attached at their inner ends to the upper end of the funnel-shaped portion 41. The lateral or horizontal dimensions of the said fingers 43 gradually decrease toward the outer ends, while the vertical dimensions of said fingers remain substantially constant throughout. The said fingers are covered by a plate 44, which is scalloped out at its edges, as at 45, in conformity with the vertical walls of the fingers 43. The center of the said plate 44 is imperforated; but the projecting portions of the said plate over the fingers 43 are provided with the perforations 46, which vary in size. The smaller perforations are located nearest the center of the plate, and such perforations gradually increase in size toward the outer ends of the fingers 43.

The apparatus operates as follows: Oil is led into the retort 1 through the pipe 2, then by applying the flame of the torch or its equivalent to the said retort the contents thereof become heated and a vapor is formed. The said vapor ascends around the sides of the passages 5 5 and passes up under the cap 11. The vapor then passes under the flange 12 and up over the edge 8 and down into the gasifying-chamber 6, where the said vapor coming in contact with the hot walls of the said chamber is converted into gas. The said gas passes up through the tube 13 into the passage 14. The valve 22 is then opened and the gas passes down through the pipe 21 into the passage 23 and out through the tube 24, where it is mixed with air in the casing 26 and is ignited. The heat from the flame thus formed continues to keep the retort 1 and its attachments sufficiently heated to perform their respective functions. From the casing 26 the flame and heated products of combustion pass up through the chimney 4 and out through the passages 5 5. The interior formation of the said passages 5 5 is such that the gases are compressed vertically as they pass toward the outer side of the retort 1, but are permitted to expand laterally. The valve 17 is then opened and the gas is permitted to pass along the passage 15 and out through the tip 20. This gas is then mixed in the chamber 36 with air admitted through the openings 37 and 39. The mixture passes up through the contracted passage 40 and enters the funnel-shaped portion 41, where it is permitted to expand and enter the fingers 43. The mixture then passes out through the openings 46 and is then ignited and forms a flame adapted for domestic and heating purposes. The lateral or horizontal dimensions of the fingers 43 being gradually decreased toward the outer ends of said fingers and the size of the openings 46 gradually increasing from the center to the plate 44 to the outer edge thereof as the expansion or pressure on the said mixture becomes lessened by reason of its escapement through the first holes 46, the remaining holes being increased in diameter and the lateral dimension of the fingers decreasing in diameter, substantially a uniform tension is maintained upon the mixture throughout the length of the finger 43, and consequently the flame from the said perforation is substantially uniform and of the same heat intensity. At the same time the escapement of the mixture does not produce an objectionable hissing or roaring noise.

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

1. A generator consisting of a retort having an opening provided with vertical walls form-

ing a chimney and a gasifying-chamber located within said chimney and a burner located under said chimney.

2. A generator consisting of a retort having an opening provided with vertical walls forming a chimney with lateral passages extending through the retort and a gasifying-chamber located within said chimney and a burner located under said chimney.

3. A generator consisting of a retort having its bottom made on the frustum of a cone and having an opening at the apex of said cone provided with vertical walls forming a chimney, a gasifying-chamber located within said chimney and a burner located under said chimney.

4. A generator consisting of a retort having vertical walls forming a chimney concentrically arranged therein and provided with lateral passages leading from said chimney through the retort, a gasifying-chamber located within said retort and a burner located under said gasifying-chamber.

5. A generator consisting of a retort having an opening forming a chimney, a gasifying-chamber having vertical walls located in said chimney and having its lower end cone-shaped and a burner located under said chamber.

6. A generator consisting of a retort having an opening provided with unbroken vertical walls forming a chimney and having lateral openings passing from said walls through said retort, said chimney being closed at its top and open at its bottom and a burner located under said chimney.

7. A generator consisting of a retort, a gasifying-chamber held in elevated position in said retort and having a suitable outlet, and a flange extending from the top of the retort below the upper edge of said gasifying-chamber.

8. A generator consisting of a retort, a gasifying-chamber located within said retort and having an outlet located in the top of the retort and a depending tube surrounding said outlet and extending down into said gasifying-chamber.

9. A generator consisting of a retort having an opening provided with walls forming a chimney and having lateral passages, a gasifying-chamber located in said chimney, the walls of said retort, chimney, passages and gasifying-chamber being integral.

10. A generator consisting of a retort, a burner located over the gas-outlet thereof and having an enlarged mixing-chamber provided with lateral openings and a means for regulating the capacity of said openings, radially-extending burner-fingers communicating with said chamber, a plate covering said fingers and being imperforated at its center and having perforations varying in size located over said fingers.

11. A generator consisting of a retort provided with a vapor-gas outlet, a burner located over said gas-outlet and consisting of an enlarged mixing-chamber having openings and a means for regulating the capacity of said openings, radially-extending burner-fingers communicating with said chamber, said fingers decreasing in dimensions toward their outer ends, a plate covering said fingers and being imperforated at its center and having openings located therein over the fingers, said openings increasing in size toward the outer ends of the fingers.

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

CLARENCE HORACE MONTGOMERIE Y AGRAMONTE.

Witnesses:
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LOUIS HYDE COOKE.