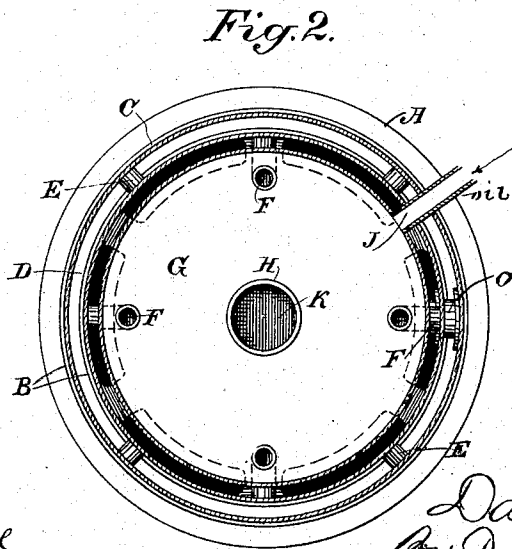
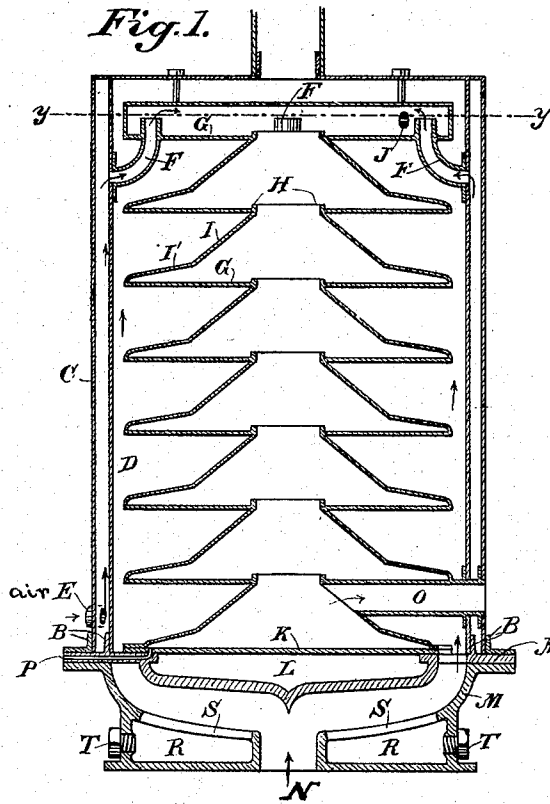


(No Model.)

D. BEST.
CARBURETER.

No. 565,828.

Patented Aug. 11, 1896.



Witnesses,
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UNITED STATES PATENT OFFICE.

DANIEL BEST, OF SAN LEANDRO, CALIFORNIA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 565,828, dated August 11, 1896.

Application filed December 20, 1895. Serial No. 572,722. (No model.)

To all whom it may concern:

Be it known that I, DANIEL BEST, a citizen of the United States, residing at San Leandro, county of Alameda, State of California, have invented an Improvement in Carbureters; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of gas-generators which are adapted to be used in connection with explosive-engines and in which the oil or substance to be vaporized is passed through a generating-chamber, where it is subjected to heat, either from the exhaust of the engine or otherwise, and the vapor thus produced is mingled with air which is admitted in proper proportions to produce an explosive compound.

My invention consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my generator. Fig. 2 is a horizontal section showing the various inlets on the line *yy* of Fig. 1.

A is a base-plate having annular upwardly-projecting flanges B around its upper surface. To these flanges are riveted the cylindrical shells C and D. The flanges are approximately about one inch apart, and when the shells are riveted to them they form an annular space between the two shells of about an inch in diameter. Into the lower part of this space are air-inlet openings E, of which there may be three or four around the circumference near the bottom to admit air, which passes up between the two shells. At the top of the inner shell are other openings F, leading from the upper part of this annular air-channel to the interior of the apparatus, so that air which is admitted through the passages E at the bottom will pass up between the two cylinders and at the upper part will pass to the interior of the apparatus.

Within the inner cylinder are a series of annular tables G, having an exterior diameter about an inch less than the diameter of the inner cylinder D, so as to leave a space around them from top to bottom. Through the center of these annular tables are formed openings which extend in line from top to bottom of the apparatus, forming practically an open channel. Around the inner openings are up-

wardly-projecting flanges H, and from the lower side of the inside opening of each table a diverging cone I extends downwardly and outwardly toward the outer periphery of the next lower table. These cones extend downwardly and outwardly at a steep angle until they reach a point near the table below, when the angle changes to a considerably less degree, as shown at I', and continuing in this direction the outer edges of these flattened cones I' unite with the outer peripheries of table below. These cones and tables may be cast or otherwise formed so that there is a continuous series of them extending from near the top of the apparatus to the bottom.

The hydrocarbon or other liquid from which the vapor or gas is to be produced is admitted into the upper part of the apparatus through any suitable inlet-pipe, as at J, and is distributed upon the upper annular table G until it reaches such a depth that it will flow over the inner upwardly-projecting flange or rim H, and when it flows over this flange it follows the lower inner surface of the cone I downwardly until it reaches the angle between the part I and the part I', which has a less angle. At this point the tendency of most of the oil will be to drop off and fall upon the next table G beneath, where it again accumulates until it has reached a sufficient depth to flow over the flange H of that table, when it again flows down the inner surface of the next incline or cone, and so on until it reaches the bottom.

The periphery of the lowermost of the cones I' rests upon a circular plate or bottom K, which is fitted upon the top of an essentially conically-shaped chamber L, and this intervening chamber prevents too great a direct heat upon the plate K. Below this chamber, and forming the bottom of the whole apparatus, is a concave bottom M, which is bolted to the flange of the plate A, and this forms a space between the conical or concave bottom L and the exterior bottom M. Through the exterior bottom M is an inlet-opening N, which connects with the exhaust from the engine, so that the heated air and products of combustion, as they are discharged from the engine, pass in through this opening N. Thence striking the pointed or conical bottom L, they are diverged in every direction beneath the bot-

tom L and delivered into the space between the inner cylinder D and the cones and tables I G, previously described. The heat thus passing up between the cones and the inner cylinder D will act first to heat the air which is passing up between the cylinders C and D and simultaneously to heat the tables G and cones I I', so that the hydrocarbon liquid distributed over the tables and flowing down in thin sheets over the inner sides of the cones will be vaporized. The air which has passed up through the space between the cylinders C and D enters, as before described, through the passage F, above the upper table G, and thence passes down through the central annular space formed through the tables and between the cones, where it is intimately mixed with the vapor of the hydrocarbon, and when it reaches the bottom is in readiness to pass out through the gas-outlet O, which opens from the lower part of the central chamber out through the side of the apparatus, and may be connected in any suitable way with the engine where the gas is to be used.

This apparatus may be employed for the vaporization of gasolene, coal-oil, or crude petroleum, or other form of hydrocarbon, but I prefer to employ a crude petroleum, or a cheap heavy oil, from which I am enabled to produce a much larger proportion of vapor than from the lighter hydrocarbon.

Any of the liquid which reaches the bottom unvaporized is delivered upon the flat bottom or plate K, and is discharged therefrom through an opening or channel P, connecting with the space above this plate in any suitable manner. In the present case I have shown this opening formed within a flange A, but it may be arranged in other suitable or desired manner.

When the apparatus is to be started from the cold state, I provide the necessary heat for vaporizing the oil and heating the air by means of small chambers or fireplaces R, which are formed beneath the bottom M, and have openings S leading from them directly into the space between the bottoms L and M. These fireplaces are ordinarily closed by screw-plugs or doors T, of any suitable description, and these doors are opened when the fireplaces are to be used for the introduction of any suitable fuel or heating material. As soon as the apparatus is sufficiently heated by these means the fireplaces are closed, and the heat from the exhaust of the engine will thereafter be sufficient for all purposes.

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

1. A gas-generator for explosive-engines consisting of concentric casings with exterior air-inlets and interior air-exits, cones disposed within the interior chamber, an inlet through which oil is admitted and distributed over the surfaces of the cones where it is vaporized and mingled with the air, an outlet through which the explosive gas or vapor thus

produced is discharged, and an intermediate space or passage through which heat is transmitted between the air-chamber and the oil-chamber.

2. A gas-generator for explosive-engines consisting of a series of cones having a central space, a passage by which oil is delivered so as to flow down over the interior surfaces of the cones, a casing exterior to the cones, a passage whereby the hot exhaust products of an engine are delivered into the space between the cones and the casing to heat the cones and vaporize the oil upon the interior, a second casing exterior to and concentric with the first named, with air-inlet passages at the bottom and passages at the top from which the air is delivered into the interior chamber of the cones to mingle with the vaporized oil, an exhaust-outlet for the products of combustion at the upper part of the apparatus, and a gas-outlet connecting with the interior of the cone-spaces for the delivery of the explosive gas.

3. A gas-generator for explosive-engines, consisting of a series of annular tables, with central openings and upwardly-projecting flanges around said openings, diverging cones connecting the inner periphery of each table with the outer periphery of the table below, and forming a continuous series of inclined surfaces, an oil-inlet through which the oil is delivered upon the uppermost of the tables so as to flow over the inner flange, and thence down the interior of the cones and the tables below successively, concentric annular casings surrounding the cones, forming an air-chamber between the two casings and a passage for the exhaust products from the engine between the inner casings and the cones whereby the air is heated and the oil is vaporized at the same time, inlet-passages for the air opening into the exterior air-chamber near the bottom, and exit-passages opening from said chamber into the oil-chamber, near the top, so that the heated air is delivered and passes down through the interior of the cones to mingle with the vapor produced from the oil, a gas-outlet connecting with said interior chamber near the bottom, and an inlet-passage through which the exhaust from the engine is delivered into the chamber intermediate between the cones and the air-chamber, and a passage at the top through which the exhaust products are discharged after passing through the apparatus.

4. A gas-generator for explosive-engines consisting of a series of annular tables having central openings and upwardly-projecting flanges around said openings, diverging cones connecting the inner peripheries of each table with the outer periphery of the next table below, said cones having different angles of divergence from the top to the bottom, and a passage by which oil is admitted above the upper table, concentric annular casings surrounding the cones, forming a passage between the cones and the inner casing for the hot exhaust products of the engine and an

annular chamber between the inner and outer casings, with openings at the bottom through which air is admitted into said chamber, other openings from the top of said chamber to the interior oil-chamber whereby the air is mingled with the vapor from the oil as it passes downward through the central passage, and an outlet at the bottom for the gas thus produced.

5. A gas-generator for explosive-engines, consisting of concentric chambers with an air-space between the two, passages by which air is admitted at the bottom, a series of tables with diverging connecting-cones uniting the inner peripheries of the tables with the exterior peripheries of the tables next below and forming a series of chambers from top to bottom, inlets by which the air is admitted from the exterior chamber above the uppermost table, an oil-inlet through which oil is delivered upon the uppermost table so as to flow down upon the inner sides of the cones to each table below successively, a chamber formed between the cones and the innermost of the surrounding casings, an opening through which the hot exhaust products from the engine are delivered into the lower part of said chamber to pass up between the exterior of the cones and the interior casing whereby the oil is vaporized and the air is heated, a discharge-opening at the top of the

casing for the delivery of the exhaust products, a gas-outlet connecting with the lower part of the interior chamber and an outlet for surplus oil which reaches the bottom of the chamber unvaporized.

6. A gas-generator for explosive-engines consisting of exterior concentric casings forming a chamber within which air passes upwardly from inlet-openings, and from which it is delivered to the interior of the apparatus at the top, a series of cones forming an interior chamber into which the air is delivered, a passage through which oil is delivered to the upper part of the cones so as to flow down over the interior surfaces thereof, a chamber intermediate between the cones and the exterior air-chamber, an inlet-opening at the bottom for the hot exhaust products of the engine and an outlet-opening at the top thereof, and supplemental fireplaces within the bottom of the apparatus having openings connecting with the heating-chamber whereby the apparatus may be heated before the engine is started.

In witness whereof I have hereunto set my hand.

DANIEL BEST.

Witnesses:

S. H. NOURSE,
GEO. H. STRONG.