(No Model.)

2 Sheets—Sheet 1.

D. BEST.

CARBURETER.

No. 589,634. Patented Sept. 7, 1897.

Fig. 2.

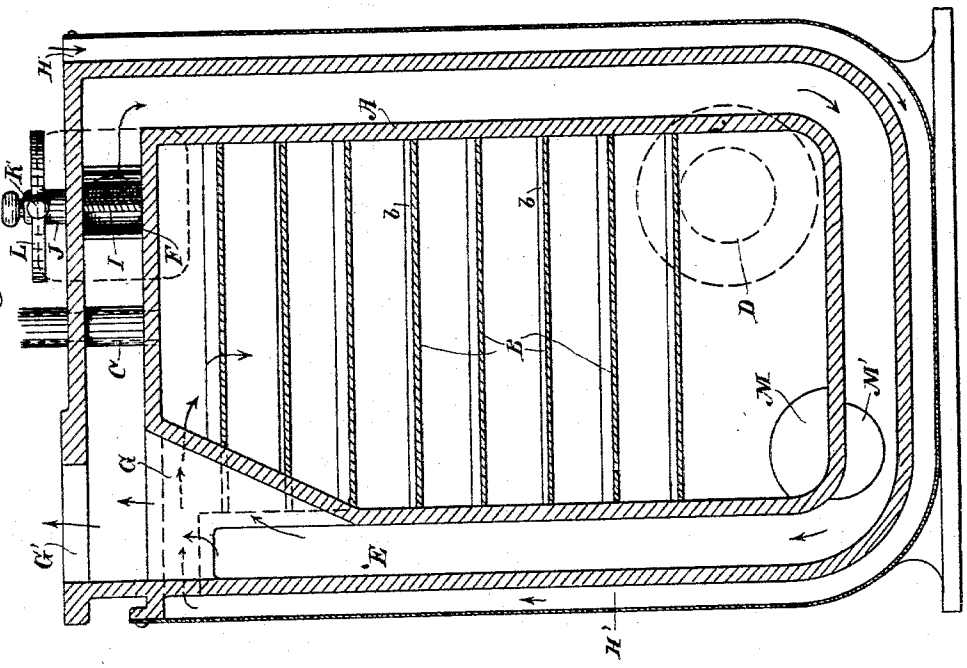
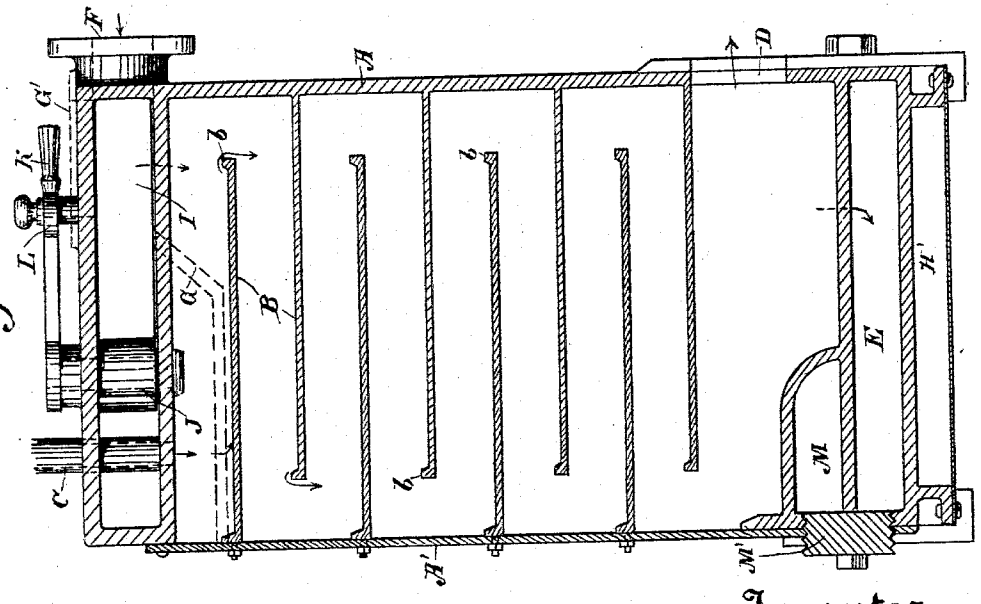


Fig. 1.



Witnesses,
J. H. Laurie
H. F. Ascheck

Inventor,
Daniel Best
By Dewey & Co.
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

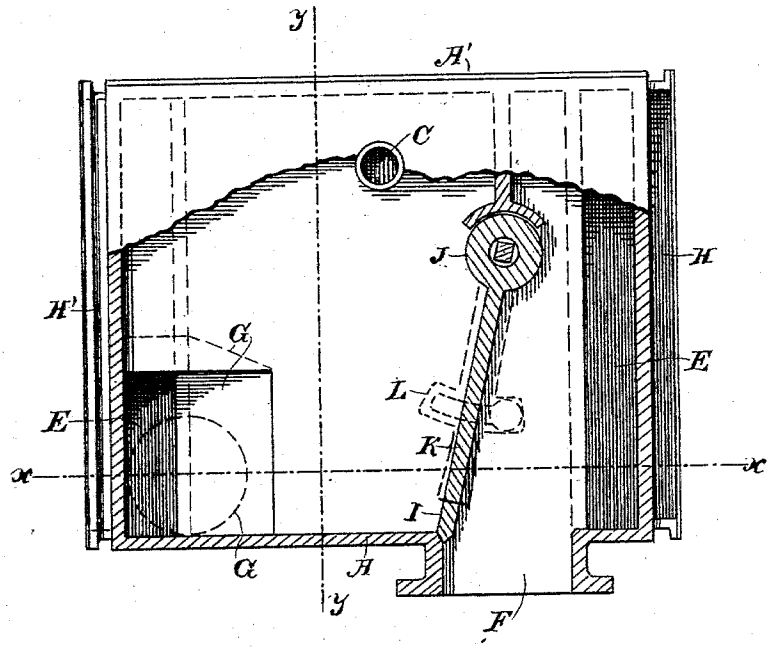
(No Model.) 2 Sheets—Sheet 2.

D. BEST.

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Fig. 3.



Witnesses,
J. H. Howse
F. F. Ascheck

Inventor,
Daniel Best
By Dewey & Co.
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DANIEL BEST, OF SAN LEANDRO, CALIFORNIA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 589,634, dated September 7, 1897.

Application filed January 21, 1897. Serial No. 620,132. (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 an apparatus which is especially designed to produce an explosive mixture of gas from crude or other hydrocarbons for use in engines and for other purposes.

It consists of an apparatus with means for distributing the hydrocarbon liquid over surfaces in thin sheets, means for admitting air which passes through the same chambers and mingles with the vapor of the hydrocarbon, means for directing the hot exhaust products of the engine around this chamber, and a means for directing the exhaust product so as to regulate the heat to which the vaporizing-chamber and the incoming air is exposed, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section through my apparatus on line *y y*, Fig. 3. Fig. 2 is a section taken through *x x* of Fig. 3. Fig. 3 is a top view, part of the cover being broken away.

In the present case I have shown my apparatus as rectangular in form. It consists of a casing A, having shelves or trays B fixed within it projecting alternately from opposite sides, so that a space would be left between one end of the uppermost tray and the adjacent side, the next tray below extending from this side beneath the uppermost tray and having a space between its end and the opposite side, thus formed alternately at opposite ends of the trays, so that the hydrocarbon liquid, which is admitted through an inlet-opening C, will fall upon the uppermost tray, spreading out over the surface, thence passing over a raised lip *b*. At the end of the tray it falls upon the next tray below, flowing over that tray and discharging over the lip thereof at the opposite end, passing alternately from side to side in thin sheets until it reaches the bottom of the apparatus. In the direction shown by section *y y* these trays extend entirely to the sides of the chamber A, leaving no openings on these sides, but only at the ends of the trays, as previously described. When the liquid reaches the bottom of the chamber, any unvaporized residue may be drawn off from time to time through a discharge opening or passage, as shown at D.

Around the two sides of the chamber A, against which the sides of the trays abut, is formed an exterior channel E, which extends down upon one side, thence beneath the bottom of the chamber A, containing the trays, thence upon the opposite sides.

The exhaust products from the engine are admitted through an opening, as shown at F, and when allowed to pass down through this passage around the inner tray-containing chamber and at the upper opposite side discharge through the opening G, the discharge-opening being made diverging, as shown, so as to give a free exhaust.

The air which is admitted into the inner chamber A passes in through a passage or opening H, which connects with an exterior passage H′. This passage extends around the two sides and bottom of the apparatus exterior to the channel E, through which the exhaust products pass, as just previously described, and this passage H′ is open at the top for the free admission of air, which is thus drawn in, passing around the heating-passage E, and is delivered into the interior chamber above the uppermost of the trays B. The air thus admitted is drawn in by the opening of the passage connecting with the engine, so that when the engine-piston moves in one direction it draws in a charge of explosive vapor formed by the mixing of the air with the vapor of the hydrocarbon, and this draft causes the air to enter the apparatus at each movement of the engine-piston, which operates as a suction. The air moves in the same direction in this apparatus that the liquid does, instead of moving in an opposite direction, and as it becomes more highly heated it extracts a greater amount of the heavier hydrocarbon vapor which remains toward the lower part of the apparatus.

In order to regulate the heat of the apparatus, I have shown a valve or damper I, which is fixed to a vertical shaft J, so as to stand within the passage through which the exhaust from the engine is admitted. The

upper end of the shaft J has a lever or handle K fixed to it, and a suitable rack or guide L, over which it is movable. When this handle is turned, the damper is turned with it. When the damper is turned in one position, it will divert all of the exhaust products from the engine through the passage around the carbureter, thus heating the interior chamber A and the exterior air-passage H′ to as high a degree as may be desired and producing the greatest amount of vapor that can be obtained from the hydrocarbon used. If, however, it be desired to reduce the temperature and the amount of vapor produced, it is only necessary to turn the valve or damper so as to partially or wholly cut off the exhaust and prevent its passing around the carbureter, in which case it passes directly to the discharge-passage G′, and thence escapes without passing around the carbureter. The damper may be fixed at any point intermediate between these two, so as to divide the escaping hot products, diverting a portion around the carbureter and the remainder directly to the discharge, and the heat applied to the carbureter may thus be regulated to any desired degree of nicety.

One of the sides A′ of the carbureter, which is at right angles with the air and heat passages, is so arranged as to be removed whenever desired, thus exposing the interior of the chamber A for cleaning or other purposes.

The apparatus is started up when cold by means of a chamber or fireplace M, formed near the bottom and adapted to receive a small quantity of any suitable combustible, which is ignited therein until the apparatus is sufficiently heated to produce a small quantity of explosive vapor; but after the engine is fairly started this combustible may be withdrawn and the chamber closed by a screw-plug M′ or otherwise, the heat from the engine being sufficient thereafter to produce a necessary amount of vapor.

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

1. An apparatus for producing an explosive vapor from hydrocarbons, consisting of a rectangular chamber having trays or shelves extending from side to side in one direction and having openings or passages at alternate ends in a direction at right angles thereto, a passage by which hydrocarbon oil is admitted upon the uppermost of the trays, an exterior passage extending continuously down upon the two sides of the chamber against which the sides of the trays abut and beneath the bottom of the chamber, having one end in communication with the exhaust from the engine and the opposite end communicating with the interior of said chamber whereby the liquid and air will move in the same direction from top to bottom of the apparatus and a passage at the bottom through which the vapor is withdrawn.

2. An apparatus for producing an explosive vapor from hydrocarbons, consisting of a rectangular chamber having trays or shelves, with passages that alternate at opposite ends, a passage by which hydrocarbon oil is admitted upon the uppermost of the trays, a continuous passage surrounding the chamber on two of its sides and bottom, said passage communicating at one of said sides with the exhaust from the engine and at the opposite side with the interior of the chamber, whereby the hot products from the engine are carried around the vaporizing-chamber and are then delivered into the same to mix with the liquid, and a passage below the lowermost tray from which the mingled air and vapor are withdrawn.

3. An apparatus for producing an explosive vapor consisting of a rectangular chamber having shelves or trays with passages that alternate at opposite ends, openings through which hydrocarbon liquid and air are delivered above the uppermost of the shelves, a passage below the lowermost shelf from which the mingled air and vapor are withdrawn, a continuous passage surrounding the chamber on two of its sides and bottom having one end connecting with the exhaust from the engine and the opposite end with a discharge-passage whereby the hot products from the engine are carried around the vaporizing-chamber and an exterior passage following the course of the exhaust-passage and through which the air admitted to the interior chamber passes in contact with the exhaust-passage so as to be heated thereby.

4. An apparatus for the production of an explosive vapor consisting of a rectangular chamber having shelves or trays arranged from top to bottom with openings at alternate ends, a passage by which the hydrocarbon liquid and air are admitted above the uppermost shelf, a passage below the lowermost shelf through which the vapor thus produced is withdrawn, a passage surrounding the sides and the bottom of the chamber, one end of said passage connecting with the discharge and the other receiving the exhaust products from the engine, an exterior passage inclosing this heat-passage, one end of which connects with the interior vaporizing-chamber and the other is open to the outer air, whereby the air is drawn in and heated before being admitted to the vaporizing-chamber, a damper arranged within the exhaust-passage and adapted to divert the hot exhaust products around the generator, or directly to the discharge-passage, or partially in each direction.

In witness whereof I have hereunto set my hand.

DANIEL BEST.

Witnesses:
J. D. FITZGERALD,
CHAS. E. KISTLER.