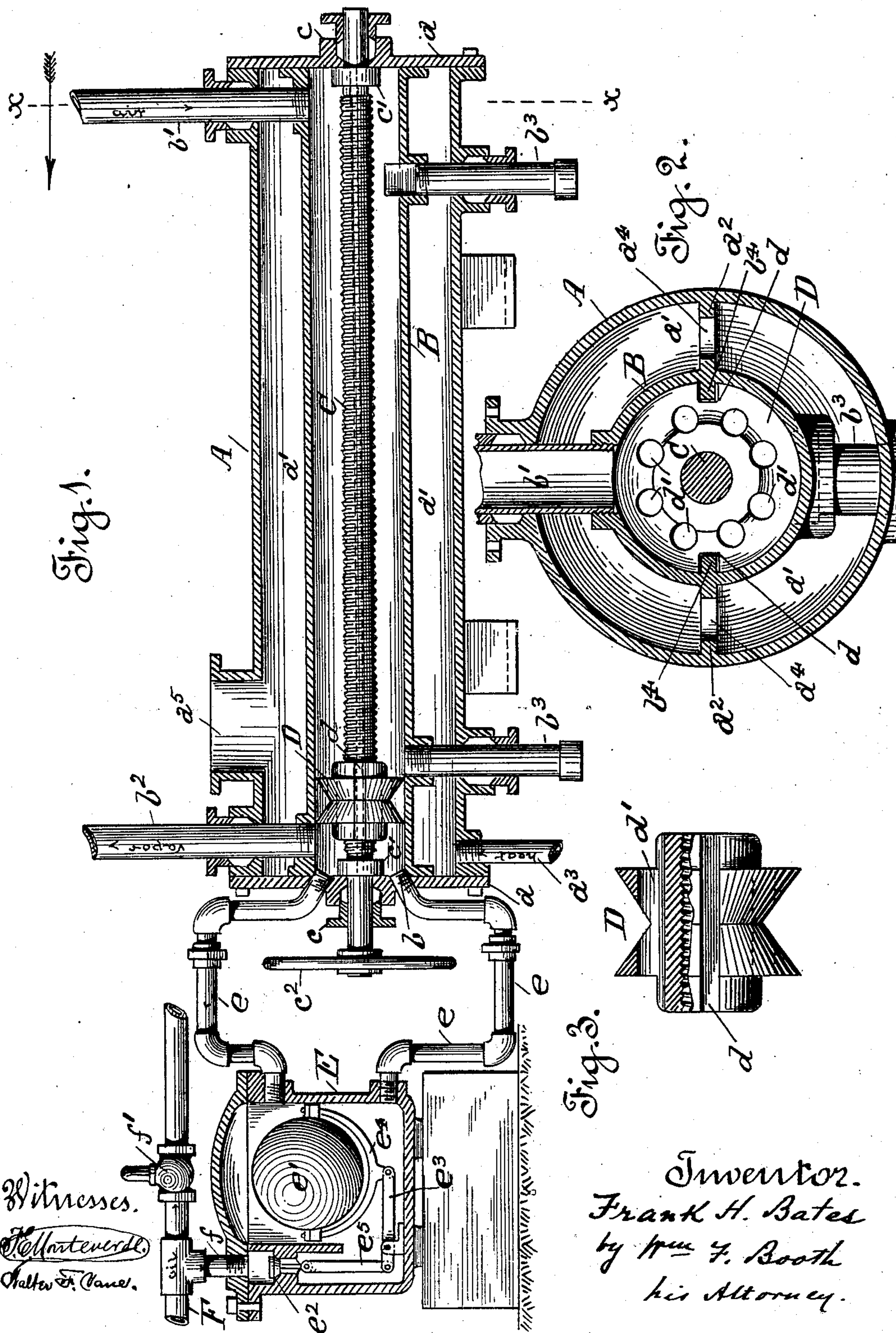


No. 763,039.

PATENTED JUNE 21, 1904.

F. H. BATES.
OIL GAS GENERATOR.
APPLICATION FILED MAY 6, 1903.

NO MODEL.



Inventor.
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by H. H. Booth
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UNITED STATES PATENT OFFICE.

FRANK H. BATES, OF SAN FRANCISCO, CALIFORNIA.

OIL-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 763,039, dated June 21, 1904.

Application filed May 6, 1903. Serial No. 155,872. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. BATES, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Vapor-Generators; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of generators in which vapor is driven off from liquid hydrocarbon by subjecting it to a suitable heating medium, usually the exhaust-gases from an explosive-engine, said vapor, with the necessary complement of air, being thence taken to operate the engine.

My invention consists in the novel constructions, arrangements, and combinations, which I shall hereinafter fully describe.

The object of my invention is to provide simple and effective means for maintaining the desired level of the oil in the vaporizing-chamber.

Referring to the accompanying drawings, Figure 1 is a longitudinal vertical section of my generator. Fig. 2 is an enlarged cross-section of same on line *xx* of Fig. 1. Fig. 3 is a broken sectional view, enlarged, of the scraper.

A is the outer shell, having the heads *a*. Within this shell is a vessel B, forming the vaporizing-chamber. This vessel is sufficiently smaller in diameter than the shell A to leave a circumscribing heating-space *a'*, said space being divided horizontally by the web *a''*, extending between the shell A and vessel B, Fig. 2. The inlet to this space *a'* for the heating medium is shown in Fig. 1 at *a'''*, so that the heating-gases pass into the shell A in the space below the web *a''* and thence flowing to the opposite end rise through ports *a''''*, Fig. 2, in the web to the space above and thence back in the upper space to the exit *a'''''*, Fig. 1. The oil is admitted to the vaporizing-chamber B at *b*. The air is admitted at *b'*, and the vapors pass off through the exit *b''* to the engine. From chamber B issue downwardly through the shell A to the exterior drains *b'''* of any suitable construction and connections.

Extending longitudinally through the oil-chamber B is a screw-threaded shaft or rod C.

The ends of this rod are mounted in suitable boxes *c* and have limiting-collars *c'*, and one end of the rod has a hand-wheel *c''* for turning it on its axis. Seated upon this rod and engaging its threads after the manner of a nut is a scraper D in the shape of a disk having its periphery single or multiple and operating in frictional contact with the inner wall of the chamber B. The form of scraper here shown has a double rim provided with an intervening valley the better to receive and discharge the scrapings and to enable it to scrape in both directions. Upon the inner wall of the chamber B, at opposite sides, are longitudinally-extending ribs or feathers *b''''*, which fit into grooves or seats *d'* in the sides of the scraper, Fig. 2, whereby the scraper is prevented from turning on its axis. It will readily be seen that if the threaded rod C be turned it will cause the scraper to travel along the ribs *b''''* throughout the length of the vaporizing-chamber B, thereby cleaning the walls of said chamber, and in order to not interfere with the passage of the vapor to its exit the scraper is perforated, as shown at *d''*.

In order to maintain constant the body or amount of oil in the generator, I have connected with the oil-chamber by the pipes *e* a casing E, which contains a float *e'*. The entrance of oil to this casing is controlled by a valve *e''*, which is operated by the float through a pivoted lever *e'''*, connected at one end with the yoke *e''''* of the float, and at the other end with a rod *e'''''*, joined to the valve *e''*.

F is the oil feed-pipe, which may be supposed to be connected with the pump or other source of oil-supply. This feed-pipe has a connection *f'* to the casing E above valve *e''*, and said pipe has also a relief-valve at *f''*, and it thence may be supposed to extend to a suitable tank, unnecessary to show. When the oil in the vaporizing-chamber of the generator falls below the level determined upon, the level of the oil in casing E falls also and the float descends. Through its connections the float opens valve *e''*, and the oil passes from the feed-pipe into the casing and thence to the generator, raising the level of the oil therein. The float under these conditions rises and closes the valve *e''*. The relief-valve

f' is set to operate at the desired pressure, so that it remains closed below said pressure, and the oil is supplied to the casing E; but when the valve e^2 is closed the relief-valve yields to the pressure of the pump, and though the pump continues in operation the oil bypasses to the tank. Further, the use of the relief-valve f' in connection with the float device permits of a delicate and suitable control of the level of the oil within the chamber B—a very necessary condition for economical working. The controlling-valve e^2 is best constructed as a puppet-valve, so as to offer a very slight difference in area above and below its seat, permitting of effective operation with but a slight pressure of the float due to buoyancy.

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

1. In a vapor-generator, and in combination with its vaporizing-chamber and oil-feeding connections thereto, a valve in said connections for controlling the supply of oil to maintain a constant level in said chamber, and a relief-valve for by-passing the excess of oil.

2. In a vapor-generator and in combination with its vaporizing-chamber and oil-feeding connections thereto, a puppet-valve in said connections for controlling the supply of oil to maintain a constant level in said chamber, and a relief-valve for by-passing the excess of oil, said relief-valve being disposed in the feed connections on the feed side of the puppet-valve and adapted by its regulation to equalize the pressure of vapor tension on the other side of said puppet-valve.

3. A vapor-generator comprising a vaporizing-chamber, means for heating it, an oil-supply casing communicating with said chamber and arranged to maintain the same level of oil in both casing and chamber, a feed-pipe to said casing from a source of oil-supply under pressure, a valve controlling the entrance of oil from the feed-pipe to said casing, devices in the casing affected by the varying level of the oil therein to operate the valve to admit and cut off the oil as required, and a relief-valve in the feed-pipe to maintain substantially the same pressure above and below the controlling-valve whereby the said valve is practically balanced.

4. A vapor-generator comprising a vaporizing-chamber, means for heating it, an oil-supply casing communicating with said chamber and arranged to maintain the same level of oil in both casing and chamber, a feed-pipe to said casing from a source of oil-supply under pressure, a puppet-valve controlling the entrance of oil from the feed-pipe to said casing, a float in said casing and connections therefrom to operate the valve to admit and cut off the oil as required, and a relief-valve in the feed-pipe to maintain substantially the same pressure above and below the controlling-valve whereby the said valve is practically balanced.

In witness whereof I have hereunto set my hand.

FRANK H. BATES.

Witnesses:

WALTER F. VANE,
D. B. RICHARDS.