

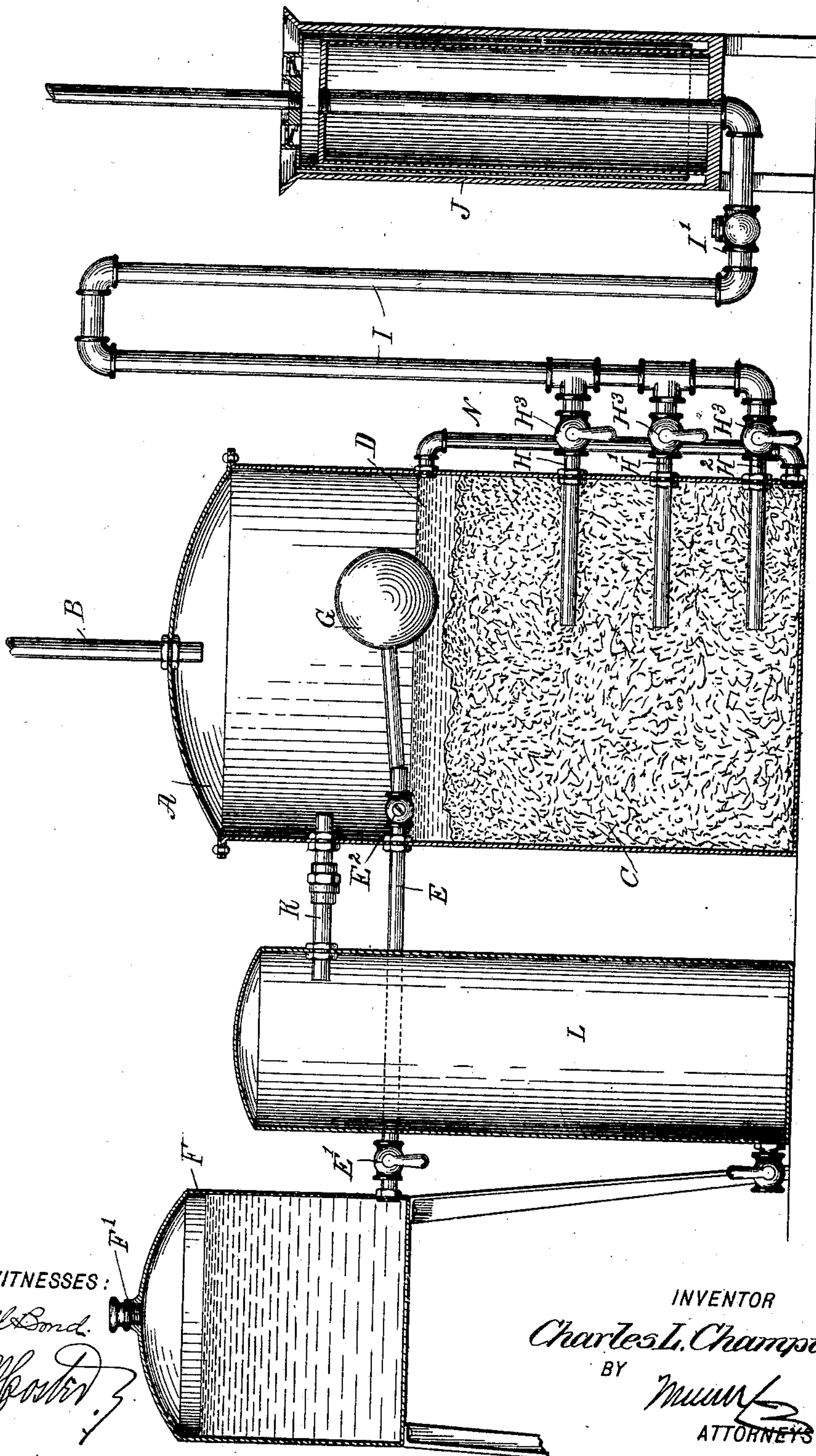
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C. L. CHAMPION.
CARBURETER.

(Application filed June 28, 1901.)

(No Model.)



WITNESSES:

A. Russell Bond.
Rev. J. W. Foster.

INVENTOR

Charles L. Champion

BY

Mumford
ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES L. CHAMPION, OF ST. LOUIS, MISSOURI.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 697,807, dated April 15, 1902.

Application filed June 28, 1901. Serial No. 66,385. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LINCOLN CHAMPION, a citizen of the United States, and a resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Carbureters, of which the following is a full, clear, and exact description.

The invention relates to the generation of gases by the use of hydrocarbon liquids, such as gasoline and the like; and its object is to provide a new and improved carbureter for use in dwellings, factories, &c., and arranged to furnish a supply of gas of uniform richness and in the quantities required for immediate consumption and no more, so as to obviate the storage of gas prior to its actual consumption.

The invention consists of novel features and parts and combination of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawing, forming a part of this specification, in which the figure is a sectional side elevation of the improvement.

A suitably-constructed generator-casing A is provided at its top with a gas-outlet pipe B for delivering the gas to the several burners in the dwelling or other place in which the gas is to be burned. The lower portion of the generator-casing A is filled with loose material C—such as sponge, cotton, excelsior, sand, ground coke, &c.—and on top of this material stands the hydrocarbon liquid D at a predetermined level, so that the material C is at all times submerged. The hydrocarbon liquid, such as gasoline, is discharged into the generator-casing A by a supply-pipe E, opening into the generator-casing A a distance above the top of the loose material C, and the said supply-pipe E is connected with a reservoir F, having a filling-plug F' and elevated to such an extent that the lower portion of the reservoir is approximately on a level with the predetermined level of the liquid D in the casing A. By the arrangement described the hydrocarbon liquid flows by its gravity from the reservoir into the generator-casing A. A shut-off cock E' is arranged in the pipe E near the reservoir F, and on the discharge end of the pipe E is arranged a valve E², controlled by a float G, rising and falling with the hydrocarbon liquid D, contained in the gen-

erator-casing A. By this arrangement the predetermined level of the liquid D is maintained constant in the casing A.

Into the loose material C discharge the air-supply pipes H, H', and H², located one above the other and extending through the wall of the generator-casing A to near the center of the inside thereof, as is plainly indicated in the drawing, and each of said pipes is provided with a cock H³ for opening or closing any one or all of the pipes whenever desired. The pipes H, H', and H² are connected with the lower leg of a U-shaped discharge-pipe I of an air-pump J of any approved construction. The pipe I rises above the top of the generator-casing A, so that it is impossible for any liquid contained in the casing A to pass up the pipe I into the pump J. A check-valve I' is arranged in the lower portion of the pipe I to prevent a backflow of air into the pump J.

The upper portion of the generator-casing A is connected by an overflow-pipe K with a closed safety-tank L, so that in case the liquid D should rise in the casing beyond its predetermined level then the liquid will flow through the pipe K into the safety-tank L, and consequently will not rise in the gas-outlet pipe B.

A circulating connection N, preferably in the shape of a pipe, connects the upper portion of the casing A with the lower part thereof to allow the liquid D to circulate in the loose material C at the bottom thereof to insure a proper mixing of the inflowing hydrocarbon liquid with the depleted one already contained in the casing and the loose material.

The operation is as follows: When the valve E' and any one of the valves H³ are opened and the pump J is set in motion, the air is forced by the pump J through the pipe I and one, two, or all of the pipes H, H', H² into the loose material C, which causes the air to be divided into very small parts, which rise bubble-like in the material C and through the liquid D, standing above the loose material C. The air during its passage through the material C and the liquid D becomes enriched, forming a hydrocarbon gas, which passes by the pipe B to the place of consumption at the burners in the house or other place. When it is desired to make the gas exceedingly rich, the valve in the pipe H² is opened, the

pipes H H' being closed, and when it is desired to decrease the quality of the gas the valve in the pipe H' is opened, the valves in the pipes H H² being closed, and a further
 5 decrease of the quality of the gas can be made by using the pipe H, the valves in the pipes H' H² being closed, the quality of gas depending entirely upon the depth of the air-inlet pipe in the loose material C and the
 10 course the air is made to travel within the submerged loose material C. The course of the air can easily be controlled by placing sheet metal or other suitable substance to guide the air in its passage through the loose
 15 material C.

It is understood that the loose material C retards the progress or movement of the air through the hydrocarbon liquid D, so that the air passing in small quantities into the
 20 generator-casing A requires about the same time to pass through the loose material C and the liquid D as larger quantities would require, and consequently a different quality of gas can be obtained by using the pipes H
 25 H' H², as stated above.

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

1. A carbureter having a generator-casing
 30 containing loose material, a hydrocarbon-liquid supply for the said casing and having its inlet above the said material, to completely submerge the latter on filling the casing with the hydrocarbon liquid to a desired level,
 35 means for maintaining the liquid at the desired level above said loose material, and an air-supply discharging into the said loose material below the top thereof, to divide the air into small parts which, in rising, pass through
 40 the hydrocarbon liquid into the upper portion of the casing, as set forth.

2. A carbureter having a generator-casing containing loose material, a hydrocarbon-liquid supply for the said casing and having its
 45 inlet above the said material, to submerge the latter on filling the casing with the hydrocarbon liquid to a desired level, a valve controlling the admission of the hydrocarbon liquid to the casing, a float arranged in the
 50 casing above the loose material and connected with the said valve, and an air-supply discharging into the said loose material below the top thereof, to divide the air into small parts which, in rising, pass through the hydrocarbon liquid into the upper portion of
 55 the casing, the said air-supply having a plurality of valved discharge-pipes opening into the loose material one above the other, as set forth.

3. A carbureter having a generator-casing containing loose material, a hydrocarbon-liquid supply for the said casing and having its
 60 inlet above the said material, to submerge the latter on filling the casing with the hydrocarbon liquid to a desired level, an air-supply discharging into the said loose material below the top thereof, to divide the air into small
 65 parts which, in rising, pass through the hydrocarbon liquid into the upper portion of the casing, and a circulating connection for connecting the hydrocarbon liquid in the casing with the lower portion of the loose material, to allow the liquid to flow by gravity into the loose material at the lower part thereof, as set forth.

4. A carbureter having a generator-casing containing loose material, a hydrocarbon-liquid supply for the said casing and having its
 70 inlet above the said material, to submerge the latter on filling the casing with the hydrocarbon liquid to a desired level, an air-supply discharging into the said loose material below the top thereof, to divide the air into small parts which, in rising, pass through the hydrocarbon liquid into the upper portion of
 75 the casing, an overflow above the predetermined level of the liquid, and a closed safety-tank connected with the said overflow, as set forth.

5. A carbureter having a generator-casing containing loose material, a hydrocarbon-liquid supply for the said casing and having its
 80 inlet above the said material, to submerge the latter on filling the casing with the hydrocarbon liquid to a desired level, an air-supply discharging into the said loose material below the top thereof, to divide the air into small parts which, in rising, pass through the hydrocarbon liquid into the upper portion of
 85 the casing, and an air-pump for the said air-supply having its discharge-pipe rising above the generator-casing, the discharge-pipe containing a check-valve, as set forth.

6. A carbureter, comprising a casing containing loose material, and having an outlet
 90 at its top, a reservoir for hydrocarbon liquid provided with a discharge-pipe opening into the casing above the loose material, an air-pump having a U-shaped discharge-pipe rising above the top of the casing, a series of
 95 pipes connected with one leg of said discharge-pipe and extending into the casing, the said pipes opening into the loose material one above the other, as set forth.

7. A carbureter, comprising a casing containing loose material, a hydrocarbon-liquid supply for the said casing and having its inlet above the loose material to submerge the
 100 latter, an air-supply discharging into the loose material below the top thereof, a pipe extending from the hydrocarbon liquid in the casing to the lower portion of the loose material, an overflow-pipe leading from the casing above the predetermined level of the liquid, and a tank connected with the said overflow-pipe,
 105 as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES L. CHAMPION.

Witnesses:

THOMAS MOEKLER,
 ROBT. E. MADDEN.