

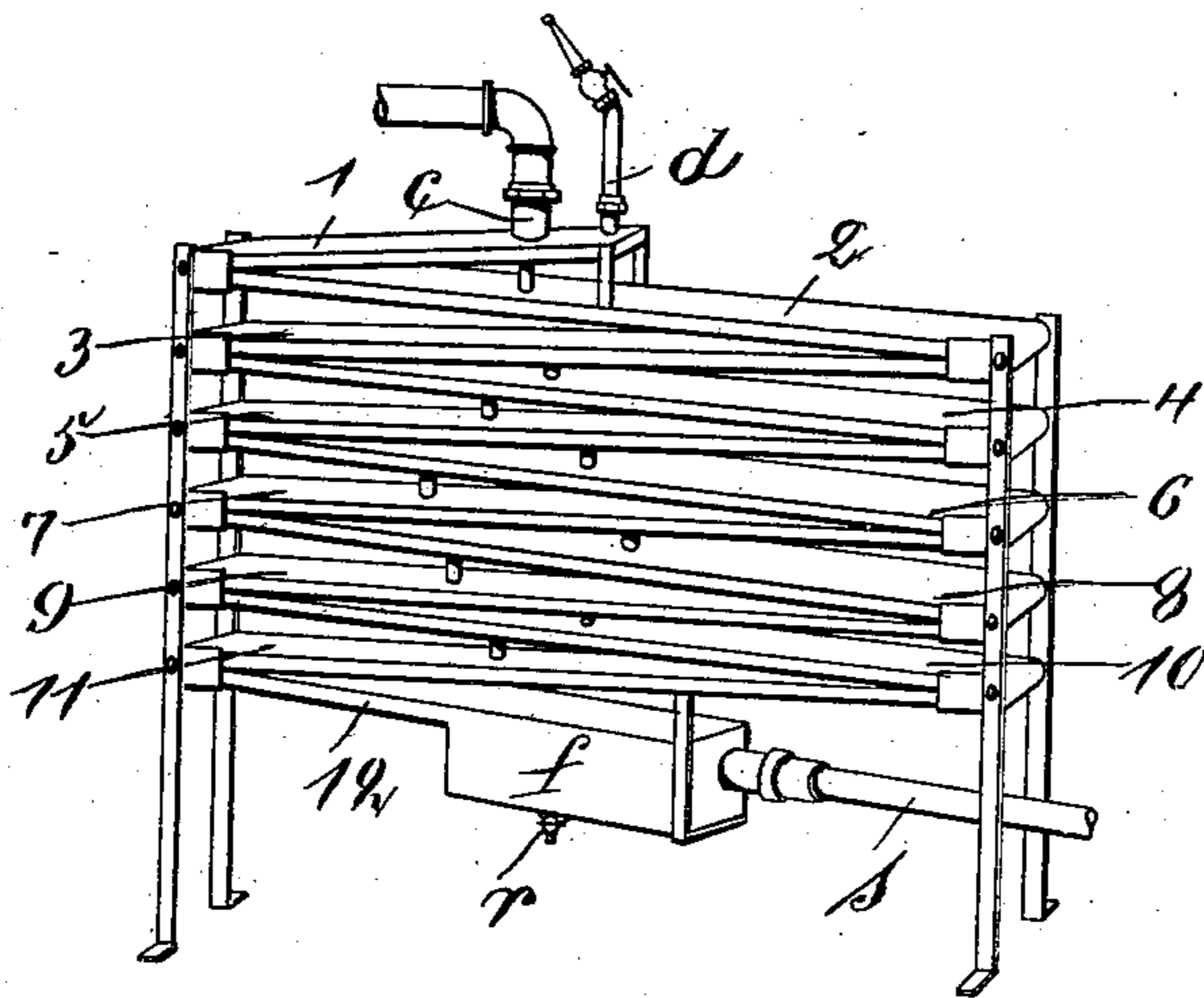
No. 742,452.

PATENTED OCT. 27, 1903.

B. DE LAITTE.
CARBURETER.

APPLICATION FILED AUG. 21, 1902

NO MODEL



Witnesses:
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UNITED STATES PATENT OFFICE.

BENOIT DE LAITTE, OF PARIS, FRANCE.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 742,452, dated October 27, 1903.

Application filed August 21, 1902. Serial No. 120,524. (No model.)

To all whom it may concern:

Be it known that I, BENOIT DE LAITTE, a subject of the Queen of the Netherlands, residing at Paris, France, have invented certain new and useful Improvements in Carbureters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and figures of reference marked thereon, which form a part of this specification.

This invention has for its object to provide an apparatus for making uniform mixtures of air and gas from combustible liquids—such, for instance, as gasolene, benzin, or other hydrocarbons and alcohol. The gas mixture obtained may be employed for lighting purposes or for operating gas-engines and the like. The processes usually employed permit the air to enter in a finely-divided form into the liquid hydrocarbon contained in the apparatus in order in this manner to bring the latter into thorough contact with the air. It is a well-known fact, however, that if the air to be saturated with hydrocarbon or other gas be allowed to pass through a more or less deep layer of the liquid hydrocarbon to be vaporized the upper layer of the liquid is more easily vaporized than the other part of the liquid, as in consequence of the vaporization the upper layer of liquid must necessarily take heat from the lower layers of the liquid, and thus lower the temperature of those layers, so that the vaporization can only proceed slowly, and for this reason it is necessary to heat the apparatus, causing the arrangement of the same to be inconvenient and the entire apparatus dangerous to work by reason of the readiness with which the vapor of the liquid ignites. The unfavorable action hereinbefore mentioned also arises if the liquid be passed through a round pipe arranged in a zigzag, as in this case also there is a somewhat thick layer of liquid which while flowing downward always becomes heavier and more dense, and consequently the evaporation is reduced, because with the decrease of the volume of liquid a diminution in the evaporating-surface takes place in consequence of the round section.

In order to avoid the drawbacks of the arrangements heretofore employed and to render possible a favorable vaporization of the combustible liquids and a thorough mixture of the vapor formed with atmospheric air, according to the present invention the liquid is conveyed in a zigzag worm or spiral-shaped vaporizing and mixing passage, the outer surface of which is exposed to the atmosphere and is blackened, so that the exposed surface of the liquid remains as far as possible unchanged until its complete vaporization.

In the accompanying drawing I have shown a perspective view of a vaporizing apparatus embodying the principal features of my invention.

The vaporizing apparatus consists of a long serpentine passage 1 to 12, which is flat but broad in form—that is to say, has in cross-section the form of an elongated rectangle. The floor of this passage is perfectly flat, so that the liquid introduced through the pipe *d* is forced to flow through the passages in a very thin and wide-spread layer in a zigzag form without remaining stationary and without accumulating anywhere. The exterior of this passage is in contact on all sides with the atmosphere, so that a constant equalization of temperature takes place. One end of the passage is provided with a pipe *c* for introducing air and a pipe *d* for introducing the liquid hydrocarbon and at the other end with a pipe *s* for carrying off the mixtures of gas formed. The length of the passage is always sufficient to allow the vaporization of the hydrocarbon liquid introduced to be completed before it has reached the end of the passage. By avoiding the accumulation of the liquid to be vaporized in the passage not only are the more easily volatilized substances mixed with the air, but an equal saturation of the air or gas with the whole of the hydrocarbon is obtained. The vaporizing-passage may be provided with a vessel *f* at its end, serving as a drip-pot, which has a tap *r* beneath it. This vessel *f* serves for catching the condensed products eventually forming in the passage from the steam or water vapor conveyed with the air, so that it is possible to obtain a gaseous mixture as far as possible free from water.

In order to make the working of the vaporizing-passage as uniform as possible, it is connected with an air and liquid dividing apparatus of any suitable form of construction.

5 It is only necessary that this construction should fulfil the requirement that the air-supply may remain always proportionate to the introduction of liquid. If a compressed-air meter be set in action and the vaporizing-
10 passage be uniformly supplied with compressed air, a uniform feed of the liquid hydrocarbon to be vaporized then takes place simultaneously, which liquid spreads out over the vaporizing-passage, is vaporized, and
15 mixes thoroughly with the air.

In consequence of the constant equalization of temperature between the atmospheric air and the walls of the vaporizing-chamber the entire vaporizing process develops uniformly,
20 as hereinbefore explained.

In order to facilitate the exchange or equalization of temperature, it is preferable to make the vaporizing-passage of somewhat blackened or black sheet metal.

25 The vaporizing-passage may be made worm-shaped or spiral instead of zigzag; but it must always consist of one pipe of broad but shallow and uniform section.

Having now particularly described and as-

certained the nature of my said invention and 30 in what manner the same is to be performed, I declare that what I claim is—

1. An apparatus for mixing combustible liquids with air under pressure, comprising an inclined, shallow rectangular tube, means 35 for supplying liquid to said tube at its highest point, means for supplying air to said tube near the liquid-supply, and means at the lowest portion of said tube for drawing off the gas mixture formed therein, substantially as 40 described.

2. An apparatus of the character described, comprising a vertically-mounted serpentine, shallow rectangular tube, a liquid-supply pipe *d* near the top of said tube, an air-supply pipe 45 *c* mounted near said liquid-supply pipe and in the path of travel of liquid fed through said latter pipe, a drip-pot *f* mounted on the lower end of said tube, a tap in said pot, and a gas-exhaust pipe in said drip-pot, substan- 50 tially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

BENOIT DE LAITTE.

Witnesses:

EDWARD P. MACLEAN,
PAUL F. PAQUET.