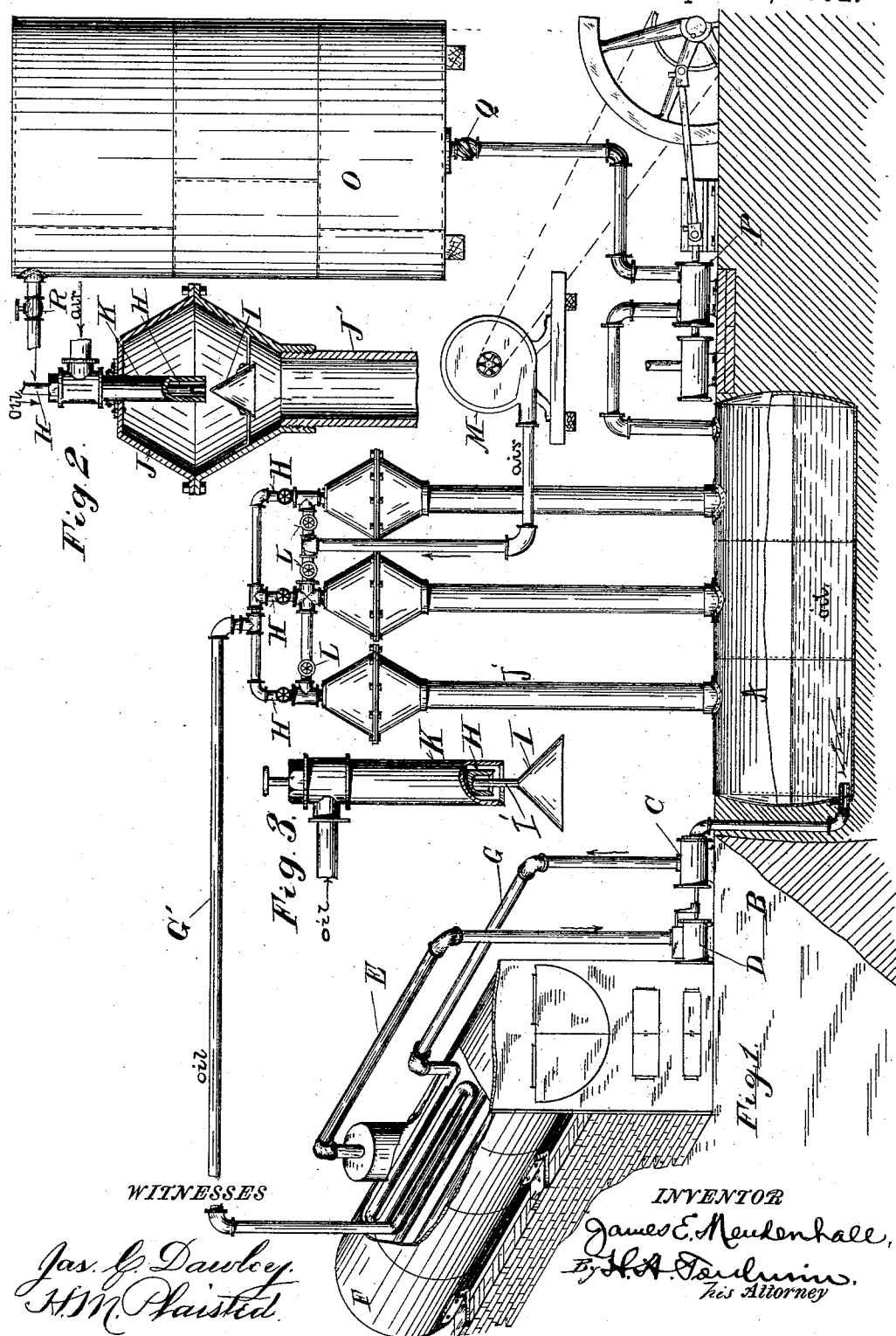


(No Model.)

J. E. MENDENHALL.
APPARATUS FOR CARBURETING AIR.

No. 483,003.

Patented Sept. 20, 1892.



UNITED STATES PATENT OFFICE.

JAMES E. MENDENHALL, OF SPRINGFIELD, OHIO, ASSIGNOR OF ONE-HALF
TO CHARLES E. FUNK, OF CHICAGO, ILLINOIS.

APPARATUS FOR CARBURETING AIR.

SPECIFICATION forming part of Letters Patent No. 483,003, dated September 20, 1892.

Application filed April 1, 1892. Serial No. 427,337. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. MENDENHALL, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Apparatus for Carbureting Air, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in apparatus for carbureting air.

My improvements have reference to means for heating the oil and deflecting and spreading means for receiving the heated oil and presenting it to an air-current adapted to absorb it; have reference to a special form of such distributor adapted to act also as a valve to shut off and regulate the flow of oil; have reference to the combination of a plurality of carburetors supplied by said air-blast and heated oil and to the location of such carburetors to return the surplus oil to the tank, and have reference to other points, herein-after described and claimed.

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 represents a perspective view of an arrangement illustrating my invention; Fig. 2, a detailed sectional view of a carburetor, and Fig. 3 a similar view of a distributor adapted to act as a valve.

The letter A designates a tank having a supply of oil adapted to be drawn therefrom by a pipe B, connected to a pump C, operated by a cylinder D, supplied by a steam-pipe E from the boiler F. A pipe G connects the pump with a pipe located in the steam-space in the boiler and is arranged back and forth therein or in any convenient manner in order to subject the oil to the heat of the steam and raise its temperature to approximately the same degree or sufficiently so to render the volatilization of the oil immediate when it reaches the carburetor. A pipe G' conducts the oil from the pipe in the steam-space of the boiler to one or more carburetors arranged in a series and having cock-controlled inlet-pipes H, each adapted to deliver regulated quantities of oil to a cone-shaped distributor I, mounted within a hood J, which distributor

receives by impact the air and oil and acts to diffuse or scatter the same under the action of an air-blast delivered through a pipe K, surrounding said inlet H, as shown in Fig. 2, and constituting a circular stream of air directed to impinge on the spread-out film of oil on said distributor and splash it about within the hood and absorb and vaporize it in its highly-volatile heated condition. The supply of air is regulated or shut off by valves L, Fig. 1, and a fan M or other blast means delivers the air to the inlet-pipes and carburetors. The vapor from the oil descends to the tank A, from which it is piped into a storage-tank O and compressed in its passage thereto by a compressor P, a check-valve Q preventing the return of the vapor from the tank. A supply-pipe R delivers the vapor to the boiler-grate or elsewhere, as it may be desired for general use. If the supply of oil to the carburetors be greater than can be readily vaporized, the surplus oil will be carried by the pipes J', on which the hoods are mounted, into the tank A, where it is received by the oil-supply and redelivered to the pipe in the steam-chamber. The air-blast and oil, being regulated in their quantity, may be adapted to afford little return of surplus oil.

In Fig. 2 the distributor I is fixed within the hood, the point of the cone being upward and the base overhanging the sides of the conducting-pipe J', but separated by an annular space from contact with the walls of the pipe or hood. In Fig. 3 the distributor is supported by a stem-rod I', passing up through a stuffing-box in the oil-pipe and provided with an adjusting-screw to raise and lower the distributor and shut off or regulate the amount of oil delivered from the said pipe H. The deflector is thus without connection with the sides of the hood or outlet-pipe J'.

Any number of carbureting-hoods may be supplied by the pipe G' and branches, and by means of the controlling-cocks the supply of oil and air may be respectively shut off from any one or more hoods, as desired. The steam heat from the boiler steam-space, being a moist heat, will not heat the oil beyond a certain point; but in its passage through the pipes subjected to the heat it is readily raised to the desired temperature.

The operation of the apparatus is as follows: The oil is supplied to the tank A to nearly its full capacity, from which it is drawn by the action of the steam-pump D and forced through the pipe G into the heating-pipes located in the steam-space of the boiler, during the passage through which it is raised to a high temperature. It is then forced onward through the pipe G' to the carburetors, passing the cock-controlled openings therein, and is spread out on the respective distributors, splashed and diffused about within the carburetors by the air-blast, and impacts on the said distributors simultaneously with the oil. In the highly-heated condition of the oil the air takes up the comminuted oil, forming a vapor, which passes down into the space within the tank A, from which it is drawn by the force-pump and compressed within the storage-tank O. It is drawn therefrom in suitable quantities as required and distributed to the boiler or other place where it is to be used. The surplus oil which may not be taken up by the air in the carburetors is not lost, but is returned to the tank A to be used again.

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

1. In a carbureting apparatus, the combination, with an oil-tank and the steam-chamber of a boiler adjacent to said tank, of conducting-pipes from said tank passing through said steam-chamber and having branches at the outer end thereof, a carburetor connected to each branch and consisting of a carbureting-hood receiving the oil from said branch and mounted upon the oil-tank, with which

it communicates in order to return the surplus oil thereto, a distributor mounted within each carburetor below the oil-entrance, an air-pipe adjacent to the oil-entrance and directed toward the said distributor, means to force a blast of air through said air-pipe in order to diffuse and scatter within the hood the heated oil received by said distributor, a storage-tank for the vapor, and a compressor located between the oil-tank and the storage-tank to transfer the vapor from the former to the latter, while the surplus oil returns to the oil-tank for further use.

2. In a carbureting apparatus, the combination, with an oil-tank and the steam-chamber of a boiler adjacent to said tank, of conducting-pipes from said tank passing through said steam-chamber and having branches at the outer end thereof, a carburetor connected to each branch and consisting of a hood or chamber, a conical distributor mounted within said hood, an oil-inlet to the carburetor, an air-pipe surrounding said oil-inlet and directing the blast of air against the said distributor, means to produce the air-blast, a storage-tank, and a compressor mounted between said storage-tank and hoods and having pipes connecting it with said hoods and storage-tank, respectively, whereby the heated oil is vaporized and stored under pressure.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES E. MENDENHALL.

Witnesses:

CLARA D. GREER,
ANNA BERRY.