UNITED STATES PATENT OFFICE.

WALTER M. JACKSON, OF PROVIDENCE, RHODE ISLAND.

PROCESS OF CARBURETING GAS AND AIR.

SPECIFICATION forming part of Letters Patent No. 228,357, dated June 1, 1880.

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To all whom it may concern:

Be it known that I, WALTER M. JACKSON, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in the Process of Carbureting Gas and Air; and I hereby declare that the following is a full, clear, and exact description of the same.

Carbureters as heretofore constructed and operated have been defective in their operation in consequence of the changes which take place in liquid hydrocarbons which are sufficiently volatile to enrich the gas or air passing through or over the same at the ordinary temperature and without artificial heat. The tendency of such volatile hydrocarbons during the process of evaporation is to refrigeration and consequent concentration. If a current of gas or air be passed over or through a volatile hydrocarbon, the evaporation of the hydrocarbon is accompanied by a loss of its heat, and its temperature is rapidly reduced. This loss of heat or production of cold increases by a rapid volatilization. Therefore the greater and more extensive the evaporating-surface the more rapid is the refrigeration and consequent concentration.

By exposing a thin film of the hydrocarbon to the action of the gas or air its evaporation is accomplished before it has time to refrigerate or concentrate, and then, by an arrangement of a reservoir automatic in its action, the films are constantly renewed from a volume of hydrocarbon which has not been acted upon by the circulating gas or air.

To carry out the process and attain a uniform result, to render the process practically void of danger, to make the process positive—in short, to do away with the objectionable features of carbureters generally—I construct of suitable material, preferably cast-iron, a hollow base about one inch high and of any desired area. Through this base I construct partitions, which may be corrugated to facilitate capillary attraction, or covered by a material which will answer such purpose. These partitions subdivide the interior of the vessel into gas-passages, so that the gas or air, in passing through the vessel, must take a prolonged or circuitous course. This vessel is made gas-tight and provided with an inlet and outlet pipe at its surface. It also has an opening at any desired location in its surface for the purpose of attaching a reservoir. I construct such reservoir of any suitable shape, preferably globular, of any suitable material, preferably of cast-iron. The reservoir has an outlet-pipe, which, when the reservoir is attached to the carbureting-vessel, extends into said vessel and down to a point close to its inner bottom surface. The outlet-pipe fastens into the reservoir by a countersunk shoulder provided with a lead ring. This outlet-pipe may be removed from the reservoir, when detached from the carbureting-vessel, for convenience of filling the reservoir with the hydrocarbon. The neck of the reservoir is also provided with a lead ring and countersink to make a gas-tight joint when screwed to the carbureting-vessel. Beneath the nose of the outlet-pipe in the carbureting-vessel I construct a depression or well to form a depth of fluid directly under, so that the reservoir, during the operation of supplying the thin film or layer of hydrocarbon, may not create a wave in the fluid and consequent jump in the light, or a wall may be placed around the outlet-tube to break the wave, or a stem or post may be inserted through the outlet, upon which the hydrocarbon flows down.

The reservoir being filled with the desired hydrocarbon, it is reversed and secured to the carbureting-vessel. The fluid immediately begins to flow into the vessel and continues so to do until it rises sufficiently high to seal the outlet-pipe and bottom of the partitions, when it ceases. The gas or air to be carbureted passes through the partitions and takes up the vapor of the hydrocarbon, reducing its level, and as soon as the outlet-pipe is unsealed the reservoir immediately restores the level. Thus it may be seen that I constantly supply a series of successive thin layers of a hydrocarbon which have not been acted upon by evaporation, and as the number of burners in use governs the rapidity of change in the level of the hydrocarbon within the carbureting-vessel, the process becomes automatic and self-controlling, and the power of the apparatus is the same, whether the reservoir has a thousand barrels contained therein or a single pint.

Carbureters have heretofore been constructed with double-acting valves which intermittently admitted small quantities of hydrocarbon to the carbureter, and the supply of oil to the carbureters has also been heretofore controlled by gas-pressure regulators, so as to increase or diminish the quantity of oil with the variation of the pressure of gas; but such carbureters did not expose thin films of oil automatically renewed by the evaporation on a plane non-absorbing surface to the gas or air, so as to prevent residual deposit.

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

The process of carbureting gas or air, consisting in exposing constantly-renewed thin films of volatile hydrocarbon, the supply of which is governed by the evaporation on a plane non-absorbing surface, to a passing current of gas or air, whereby the hydrocarbon is completely evaporated and residual deposits are prevented, as described.

WALTER M. JACKSON.

Witnesses:
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