W. M. JACKSON.

Carbureter.

No. 219,158. Patented Sept. 2, 1879

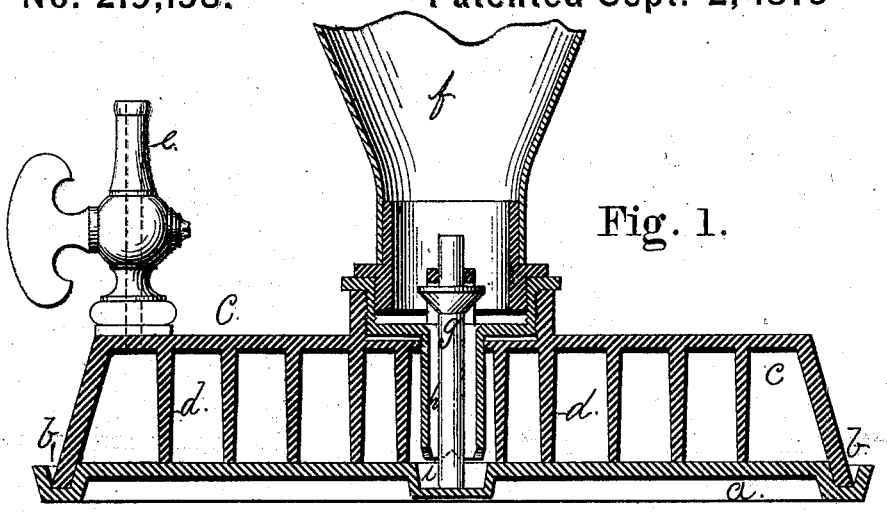

Fig. 1.

Fig. 2.

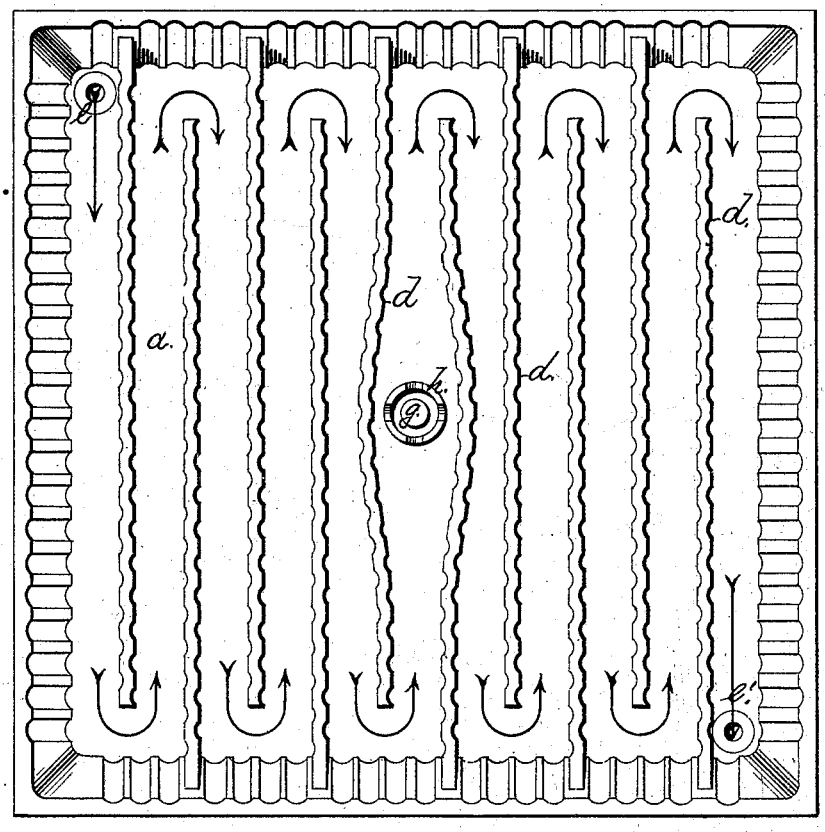

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Fig. 3.

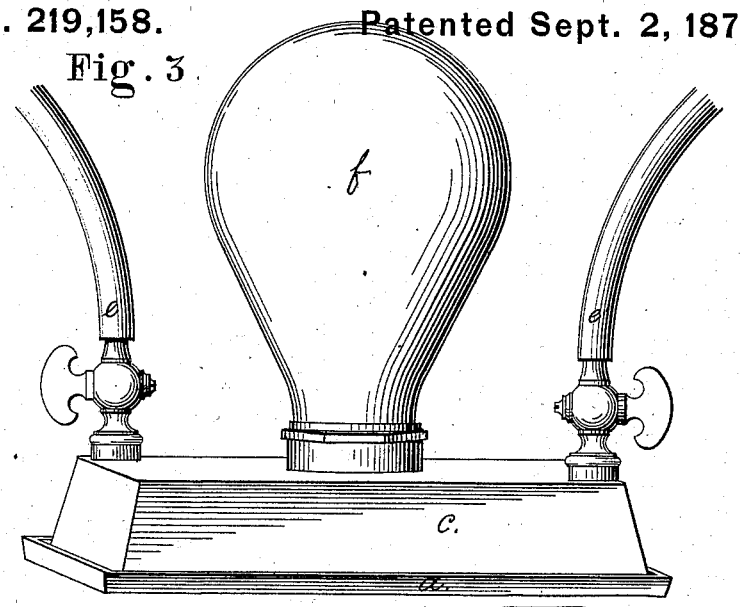
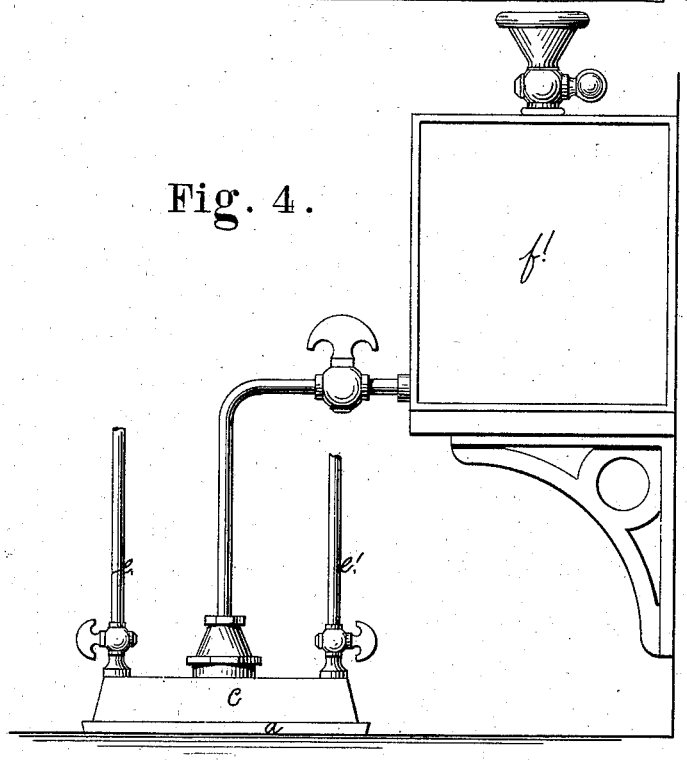


Fig. 4.



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WALTER M. JACKSON, OF PROVIDENCE, RHODE ISLAND.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **219,158**, dated September 2, 1879; application filed May 22, 1879.

To all whom it may concern:

Be it known that I, WALTER M. JACKSON, of the city and county of Providence, State of Rhode Island, have invented a new and useful Improvement in Carbureters; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to produce a carbureter in which a thin film of hydrocarbon is exposed to a large surface, so as to facilitate the vaporization of the same, and the gas or air is carried forward and backward over the same, so as to more readily absorb the hydrocarbon, and thus improve the illuminating quality of the gas.

Figure 1 is a sectional view of my improved carbureter, showing partitions dividing the whole into passages, and the inlet-pipe, as also the well under the same. Fig. 2 is a plan view, showing the partitions and the corrugations on the surfaces by which the evaporating-surface is increased, also the gas inlet and outlet. Fig. 3 is a perspective view of my improved carbureter; and Fig. 4 is a view showing the carbureter connected with a permanent tank, which may be in any part of the building, or outside the building.

My invention consists, first, in a carbureter, in the combination, with a carbureting-vessel, of vertical partitions subdividing the vessel or receptacle into gas-passages, the sides of said vertical partitions constructed with vertically-corrugated surfaces to facilitate the rising of the liquid hydrocarbon, and thus present a large surface of hydrocarbon to the action of the gas.

My invention further consists, in a carbureter, in the combination, with the carbureting-vessel having a well formed in its bottom, of a fountain-reservoir located upon the top of the carbureter, and provided with a discharge-pipe which extends downward into the well in the bottom of the carbureter.

My invention further consists, in a carbureter, in the combination, with the carbureting-vessel having a well formed in its bottom, of a detachable reservoir secured to the top of the carbureting-vessel, said reservoir provided with a pipe which extends downward into the well in the bottom of the carbureting-vessel, and a valve located in said pipe, the valve-stem resting upon the bottom of the well when the carbureter is in operation.

When gas is to be enriched or carbureted by passing the same through the vapor of hydrocarbon, it is important that the gas and the hydrocarbon should be thoroughly mixed and the gas uniformly charged, so as to produce a uniform light; and to produce these uniform conditions I pass the gas forward and backward through passages the surfaces of which are corrugated, for the purpose, first, of presenting a large surface on which the liquid hydrocarbon can ascend by capillary attraction, so as to facilitate the vaporization of the same; and, second, to subject the gas to a scrubbing action by passing along the corrugated surfaces, so that any excess of hydrocarbon taken up by the gas can be deposited on the irregular surfaces.

In the drawings, *a* is the bottom of my carbureter, provided with the grooves *b*, into which the upper portion is secured air and gas tight by solder or cement. C is the upper part of the carbureter, divided into a continuous channel by the partitions *d d*, the sides of which, as also all the interior surface, are corrugated or provided with small ribs. These corrugations or ribs are made of such size as to facilitate the rising of liquid hydrocarbon by capillary attraction; or the partitions may be made of, or covered by, a material that will facilitate the rising of the liquid hydrocarbon by capillary attraction.

e is the gas-inlet at one end of the passages, and *e'* the gas-outlet at the other end of the same. *f* is the reservoir of hydrocarbon, provided with the self-closing valve *g*, placed within the outlet-tube *h*. This outlet-tube reaches to the point at which it is desired to maintain the level of the liquid hydrocarbon—that is to say, if a film of one-sixteenth of an inch of liquid hydrocarbon is to be maintained within the carbureter the pipe *h* will extend to within one-sixteenth of an inch of the lower surface, so that gas will enter the reservoir as soon as the lower end of the pipe is exposed, and an additional supply will be furnished automatically from the reservoir until the end of the pipe *h* is again submerged and forms a

seal; but as such supply would be spasmodic and disturb the level of the film the end of the pipe *h* is provided with serrations or scallops, so that the gas can enter at specific points a little above the end of the outlet-pipe *h*.

The intention is to expose only a thin film of liquid hydrocarbon in the carbureter, and if the outlet-pipe were in close proximity to the lower surface it would be difficult to supply a thin film, as the gas must enter the reservoir at the same time the liquid is to be discharged. To facilitate the operation and prevent clogging of the outlet, and also to maintain a thin film, I provide a well, *i*, extending below the lower surface, and thus secure considerable space around the outlet of the pipe *h*, even when the end of the pipe *h* is nearly on a line with the lower surface, and a very thin film of liquid hydrocarbon can be uniformly maintained.

The reservoir *f* can be removed from the carbureter and filled, and can then be again secured, the valve *g* closing the outlet until it is secured, when the stem of the valve *g*, coming in contact with the bottom of the well, will raise the valve off its seat and supply the carbureter with a uniform film of liquid hydrocarbon, always maintaining the same level, so that the gas will pass through the passages filled with volatile hydrocarbon vapor of uniform density; and the irregular surface in the passages, while facilitating the vaporization, also facilitates the discharge of any excess of carbon absorbed when the gas first passes over and through the vapor, and when the temperature of the gas is higher than it is on leaving the carbureter, owing to the cooling effect of the vaporization of the liquid hydrocarbon.

f' is a large reservoir, which may be located in any place above the carbureter, and may be outside the building, so as to insure safety. This reservoir, as also the reservoir *f*, secured directly to the carbureter, should be surrounded by some slow conductor of heat, so as to prevent the expansion of the gas within the same and the consequent expulsion of the liquid.

The reservoir may be supplied with glass gages, so that the level of the liquid hydrocarbon can be known at all times.

This carbureter supplies a gas of uniform illuminating power, and requires no attention beyond the filling of the reservoir. It is automatic in its operation, simple in construction, and not liable to get out of order.

I am aware that different materials have been suspended in carbureting-vessels for the purpose of raising the hydrocarbon by capillary attraction; further, that receptacles for hydrocarbon have been located over the carbureter; and, further, that means have been provided for automatically supplying hydrocarbon to the carbureting-vessel, and hence I make no claim to such features of construction.

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

1. In a carbureter, the combination, with the carbureting-vessel, of vertical partitions subdividing the vessel or receptacle into gas-passages, the sides of said vertical partitions constructed with vertically-corrugated surfaces to facilitate the rising of the liquid hydrocarbon, substantially as set forth.

2. In a carbureter, the combination, with the carbureting-vessel having a well formed in its bottom, of a fountain-reservoir located upon the top of the carbureter, and provided with a discharge-pipe which extends downward into the well in the bottom of the carbureter, substantially as set forth.

3. In a carbureter, the combination, with the carbureting-vessel having a well formed in its bottom, of a detachable reservoir secured to the top of the carbureting-vessel, said reservoir provided with a pipe which extends downward into the well in the bottom of the carbureting-vessel, and a valve located in said pipe, the valve-stem resting upon the bottom of the well when the carbureter is in operation, substantially as set forth.

WALTER M. JACKSON.

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