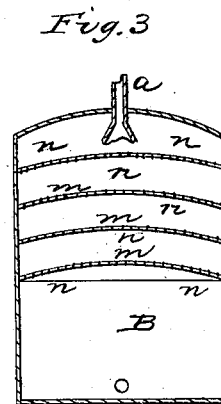
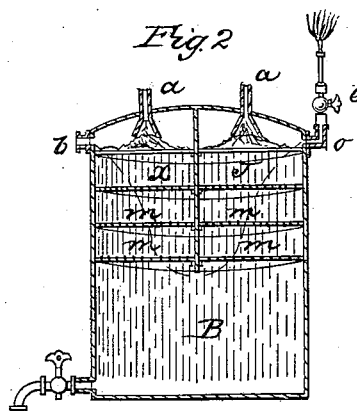
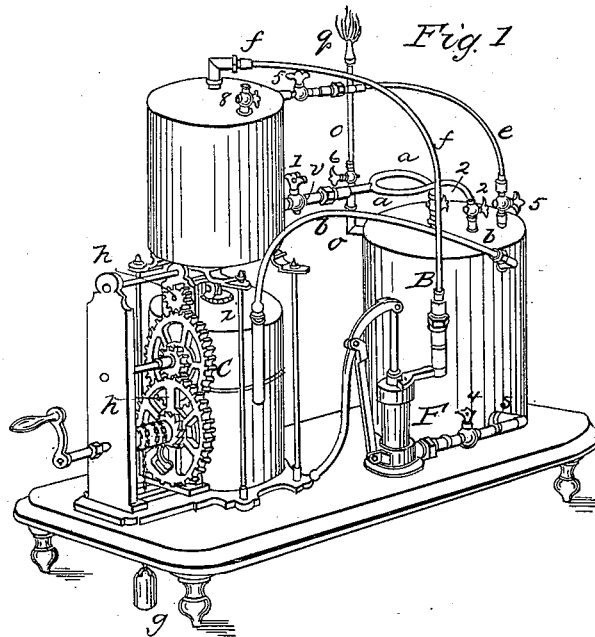


W. A. SIMONDS.

Air Carburetor.

No. 46,976.

Patented March 21, 1865.



WITNESSES
E. J. Lovett
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WARREN A. SIMONDS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND S. INGERSOLL LOVETT, OF SAME PLACE.

IMPROVED APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. 46,976, dated March 31, 1865.

To all whom it may concern:

Be it known that I, WARREN A. SIMONDS, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Method for Carbonizing the Air for Illuminating Purposes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the construction and relative position of two, three, or more vessels or reservoirs of any desired shape or size, and horizontal or perpendicular in their position. One vessel to be used as a reservoir for the fluids—such as light and volatile crude petroleum or naphtha—is elevated above, and from the bottom of which is a forked pipe connected to the top of the generator below, which conducts the fluid to said generator. This generator is divided into two compartments by a partition soldered across the centers and made tight around the top and sides to within a few inches of the bottom. In each compartment are a series of shelves of wire-gauze, more or less in number, as may be required, through which the liquids must flow and create a perfect shower for the air to be forced through by a pump or pressure-meter, which is operated by gears and weights from under the generator, the air being forced into one end of the generator or first compartment down with the shower and under the partition, then up through the shower to the escape-pipe into the regulator, thence to the burners. Whenever this method of carbonizing air is for illuminating hotels, factories, or dwelling-houses two reservoirs only will be needed, as the generator or carbonizer may be made sufficiently large to answer the double purpose of carbonizer and receiver; but for a steamboat or ships of any kind it is necessary to have three separate reservoirs, one to be used as an independent carbonizer, so as to secure the uninterrupted passage of air under the partition of compartments.

To enable others skilled in the art to make use of or manufacture my invention, I will proceed to describe its construction and operation.

Figures I and IV are perspective views of my apparatus as used for carbonizing the air

for illuminating purposes, the machine represented by Fig. I being intended for stationary use—such as hotels, factories, and dwellings—as the generator or carbonizer and receiver are combined in one reservoir, Fig. I, letter B, letter A being a reservoir of less than one-half in capacity than the receiver and generator B.

Fig. IV represents a machine with three independent reservoirs connected with each other by escape, supply, and equalizing pressure-pipes, with cocks attached to all the inlets and outlets of said vessels or reservoirs to be shut in case one or more should be removed to prevent the escape of the vapors, which might cause explosion in case they were near a fire or should be brought near to one by removal. Said machine is especially for steamboats or sailing-vessels.

Fig. II represents a section through the generator B, showing the partition *n*, wire-gauze strainers *m m*, which may be made of any desirable fineness, and through which the liquid must pass to create a shower to carbonize the air when forced through the inlet *b* into and down chamber or compartment *x*, under partition *n*, into and through chamber or compartment *y* to outlet *o*, into pipe *q* to regulator *f* or burner.

Fig. III is a sectional interior view of generator B, showing but one inlet of fluid and the wire-gauze strainers in their shape on one side of partition *n*, with plenty of room below to contain or hold the liquid distributed by the upper reservoir, A.

Fig. I. Letter A is the reservoir containing the fluid to be used for the work. This is filled by vent *8* or by the pump *F* through pipe *f*. Near the bottom of reservoir is the outlet-pipe *r*, with stop-cock *1* to shut off the escape of fluid when not wanted in the operation. The pipe *r* divides into two pipes, *a a*, which are entered into and fastened to the top plate of generator B. In each of these forks is a stop-cock, *2 2*, to regulate the flow by shutting off one or both in part. These two vessels A and B are also connected by a pipe, *e*, by which the pressure of the atmosphere is equalized in both. Stop-cocks *5 5* are used for regulating while the shower of fluid is evaporating. This generator B is shown in its interior arrangement by sections, Figs. II and III. The air-pump C is operated by the gearing-wheels *h h* and

shaft and wheel *i* with the weight *g*, and the air is forced through the india-rubber tube *b* into the generator at *b*, (see Fig. II,) forced through the gauze strainers *m m m m* of compartment *x*, passing under partition *n*, and up through the gauze strainers *m m m m* of compartment *y* to the outlet-pipe *o*, this air being forced through while the fluid is passing from reservoir A, through pipe *r* and forked pipes *a a*, and distributed in a shower over the wire-gauze strainers *m m m m*, down and under partition, and up through and against the shower, becomes impregnated with the hydrocarbon and other volatile vapors and reaches pipe *o* in condition for distribution to illuminate, as shown at *q* in Fig. I. The bottom of this generator has an outlet at *s*, whence, through pipe *d* with cock 4, the fluid is conducted to pump F and passed back through pipe *f* from reservoir B to A. In Fig. III a section of generator is shown, the circular shape of wire-gauze or strainers *m m m m* and partition *n*. This simple machine is intended for a stationary purpose.

Fig. IV. In the representation of this machine the reservoir A, generator B, and air-pump C are essentially the same as above described, and the only additions made for the use of steamboats or ships are the extra reservoir D, for the convenience of filling with fluids, and the gas-holder or regulator, the generator being entirely distinct and independent, and not therefore subject to any interruptions in the passage of the air under the partition *n* by the motion of the boat or ship, the fluid passing from the generator B at once to the receiver D, whence it is again pumped up to reservoir A, as before described. As the pipes and other parts of these two machines corresponding with each other are lettered alike, the description of Fig. I will answer for the description of Fig. IV.

The various cocks which have not been especially described are needed in case of removal or repairs of the machine, in which case they will distinctly separate each part by itself. Memorandum: First, in the reservoir A the distributing pipe or pipes may be placed in the bottom itself or near the bottom, as shown in drawings; second, in the shelves of the generator any substance like perforated metal or cloth strainers may be substituted for the wire-gauze, if they will answer the purpose; third, where economy of space is desired for operating the air-pump, springs may be substituted for weights.

In the arrangement of this apparatus for use on steamboats, ships, &c., the following is stated as the one I prefer, without, however, intending to confine myself thereto, as it is obvious that the same may be varied without departing from the principle of construction and arrangement. I place the reservoir A above or on the upper deck or level, a second vessel or generator below or on a second level, and a reservoir or receiver on a still lower or third level, said third vessel or receiver being con-

nected by any suitable arrangement of pipe or pipes and force pump or pumps for returning the fluid from the lower to the upper reservoir, and the several vessels being further connected by other pipes for equalizing the air pressure in all, as before explained. The relative position of the air-pump for forcing the air into the generator may be that shown in Fig. IV of the drawings, or any other substantially the same, and answering the same purpose.

It will be seen that by this arrangement the fluid enters the generator at the top, and, falling through the wire-gauze to the bottom, is passed off at once through a pipe or pipes to the lower vessel, thus keeping the middle vessel or generator free from fluid, which would be acted upon by the motions of the vessel, and thereby thrown into the pipes or connections, and which, if thus thrown in, would interfere with the production of gas.

The great difficulty in the way of employing upon steamboats and sailing-vessels the various carbureting apparatus heretofore used is found in the fact that they necessarily involve the use of fluid in the generator in such manner as to cause the obstruction of the pipes through which the carbureted air is carried off from the generator. This difficulty is entirely obviated by my invention, the fluid not absorbed passing out of the generator as soon as it reaches the bottom through an outlet for that purpose, connecting it with a lower vessel or compartment, as the case may be. From this lower vessel it is forced by a pump or other mechanical means back again to its source—the upper vessel or compartment—without contact with the outer air, thus avoiding loss of material in its transit, all substantially as explained.

The fluid in the air-blowing apparatus is also objectionable on steamboats and sailing-vessels. I therefore use a dry meter or blower containing no water or other fluid.

I do not claim the making of illuminating-gases from hydrocarbons and forcing air over or through the same, as these processes are well known. Neither do I claim any kind of mechanism required to be made to revolve in order to agitate hydrocarbon or other volatile liquids to facilitate vaporization.

I do not claim a reservoir with cotton suspended from near the top of the inside to the bottom when used for capillary attraction for vaporizing said carbons or liquids, as it is not new.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The arrangement and combination of the reservoir, generator, air-pump, and force-pump with the pipes connecting the same, substantially as described.

2. In combination, for the purpose of constituting a carbureting apparatus suitable for steamboats, ships, &c., the reservoir, generator, air-pump or dry meter, and receiver, or their equivalents, substantially as described.

3. The combination of the reservoir, genera-

tor, air-pump, receiver, and force-pump, or their equivalents, substantially as described.

4. The process of throwing back or returning the unabsorbed portion of the fluid employed to the head or upper reservoir without exposing it to the air, and therefore without loss of vapor or material, by means substantially as described.

5. In combination, the use of pipes connecting the reservoirs to equalize the atmospheric pressure in all of them, substantially as described.

6. The combination of reservoirs to be used

as distributors, generators, and receivers, as above described.

7. The pump, in connection with the receiver and distributor as above described in specification, substantially as described.

8. The combination of gearing and pumps in the direct production of gas, substantially as described.

WARREN A. SIMONDS.

Witnesses:

S. I. LOVETT,
THEO. VOELCKERS.