D. HURD.

Carburetor.

No. 47,550. Patented May 2, 1865.

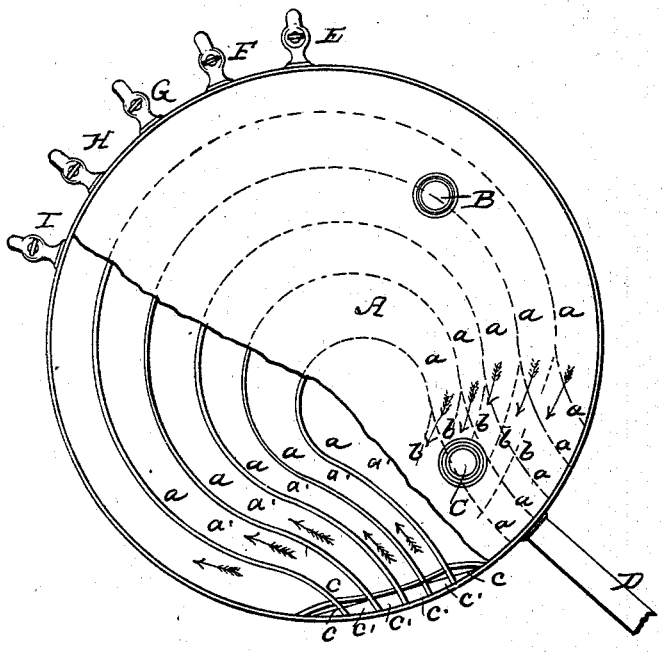
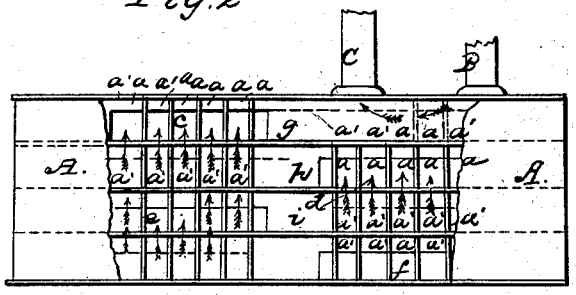


Fig. 2



Witnesses
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M. E. Mann

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UNITED STATES PATENT OFFICE.

DANIEL HURD, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF, EDWIN R. WARREN, AND AMASA E. SWIFT, OF SAME PLACE.

IMPROVED APPARATUS FOR CARBURETING AIR.

Specification forming part of Letters Patent No. **47,550**, dated May 2, 1865.

To all whom it may concern:

Be it known that I, DANIEL HURD, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Apparatus for Generating Gas; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and letters and figures marked thereon, which form a part of this specification.

In the aforesaid drawings, Figure 1 represents a plan or top view of my invention, part of the casing being broken away to show the interior arrangement; and Fig. 2 is a side elevation of the same, a part of the casing being broken away for a like purpose.

My invention has reference to that kind of gas generating apparatus in which the gas is produced by passing currents of atmospheric air over and in contact with naphtha and other similar volatile and inflammable hydrocarbons, and thereby impregnating the air with volatilized naptha and producing an inflammable gas especially adapted to the purposes of illumination.

The nature of my invention consists in arranging several series of concentric horizontal passages in a vertical pile, one series above another, in such a manner that being partially filled with naphtha, the air being admitted at one end of the lower series, it passes around in the said lower passages to the opposite end thereof, when it rises and enters the end of the series of passages immediately above said lower series and passes back in the reverse direction, and so on until it has passed through each series in the pile, when the air, having absorbed the volatile and inflammable portion of the fluid in said passages, is converted into an inflammable gas and passes out of the apparatus through the pipe which feeds the burners, thus producing a gas of high illuminating power, and at the same time an uniform and equal flow and pressure of gas at the burners.

To enable those skilled in the art to understand how to construct and make use of my invention, I will now proceed to describe the same with particularity, reference being made to the aforesaid drawings.

A represents a cylindrical case, made of tin or other suitable sheet-metal, of any suitable dimensions, the top and bottom of said case being soldered or otherwise hermetically attached to the upright wall thereof. This case A is then subdivided into a series of horizontal compartments by a series of partitions parallel to the ends of the case. (Shown in the drawings by the letters *g h* and *i*.) The number of these compartments may be varied as desired. In each of the said horizontal compartments there is a series of curved vertical partitions of the same height as said compartments, arranged parallel and concentrically, as shown in Fig. 1 by the letters *a*. The ends of said partitions extend out to and are joined with the cylindrical casing, excepting only those ends of the partition in the upper compartment, which are in proximity to the pipe C, where the said ends are drawn in toward said pipe, as shown by the dotted lines *b*, to conduct the gas to said pipe. These partitions form a series of parallel curved passages (marked *a'*) in each of the said compartments, each passage in each series lying in the same vertical line with corresponding passage in each of the other compartments. At the opposite end of the upper passages from that shown at *b* there is erected across said passages a barrier or dam, (marked *c*,) cutting all said passages at a short distance from the wall of the apparatus, as shown, and rising about two-thirds the height of the passages. The ends of this barrier are attached to the walls of the casing A. Between said barrier *c* and the cylindrical wall the floor *g* is cut away, forming a small opening, *c*, into the chamber below and into the series of passages between the horizontal partitions of floors *g h*. At the opposite end of the series of passages last mentioned there is arranged a similar barrier to the one marked *c* and just described, which is marked *d* in the drawings. Between the said barrier *d* and the cylindrical wall the floor *h* is cut away, forming a similar opening to the one before described, through into the chamber below and into the passages between the floors *h i*. At the opposite end of the last-mentioned passages a similar barrier is erected, (marked *e*,) with a similar opening into the passages below, at the opposite end of which is the corresponding barrier *b*.

B represents a pipe through which the naphtha is introduced into the apparatus. C is the

pipe through which the gas passes therefrom to supply the burners, and D is the pipe through which the atmospheric air is forced into the generator.

E is a stop-cock for drawing off the residuum in the upper compartment.

F, G, and H, respectively, are similar devices for effecting the same purpose in the other compartments, respectively, and I is a gage-cock to allow the naphtha to escape when too much is introduced into the apparatus, as hereinafter described.

The operation of my invention is as follows: The naphtha is introduced into the upper series of passages and fills the same up to a level with the top of the dam or barrier *c*, when it flows over said dam and falls through the opening *c'* into the passages below, which are likewise filled up to the top of the dam *d*, when it pours over it into the passages below, which are filled in like manner as before, and the naphtha flowing over the dam *e* fills the lower passages up to the top of the dam *f*, when, having no place to flow into, the gage-cock I, which is placed just at the same height as the top of the dam *f*, allows any surplus to flow out. All the passages being thus filled nearly full with naphtha there yet remains above the surface of the naphtha in each passage a small passage through which the air may pass. The air is now forced into the apparatus at that end of the passages in the lower compartment where the barrier *f* is placed through the pipe D by any suitable device, and the air passing over the said dam *f* passes around in the said passages over the naphtha until it reaches the opposite end of the said lower passages, when it rises through the hereinbefore-described opening in the floor *i* over the dam *e* into the passages between the floors *h* and *i*, where it passes back over the naphtha in said passages to the opposite side of the machine, when it rises over the dam *d* into the passages next above and passes back to the opposite end thereof, when it rises through the opening *c'* over the dam *c* into the passages in the upper compartment, and passes around in said passages and out at the ends thereof, (marked *b*,) and out through the pipe C to the burners, the atmospheric air introduced at the bottom of the apparatus having now become so thoroughly impregnated and infused with the volatilized naphtha absorbed in its reciprocating course through said passages as to have been converted into an inflammable gas of superior illuminating power.

Having fully described the construction and operation of my invention, I will now specify what I claim as new therein and desire to secure by Letters Patent—

The peculiar combination and arrangement of the cylindrical vessel A, the floors *g h i*, the peculiar curved vertical partitions *a*, and the barriers *c d e f*, constructed and operating as and for the purposes specified and shown.

DANIEL HURD.

Witnesses:
W. E. MAUS,
A. E. SWIFT.