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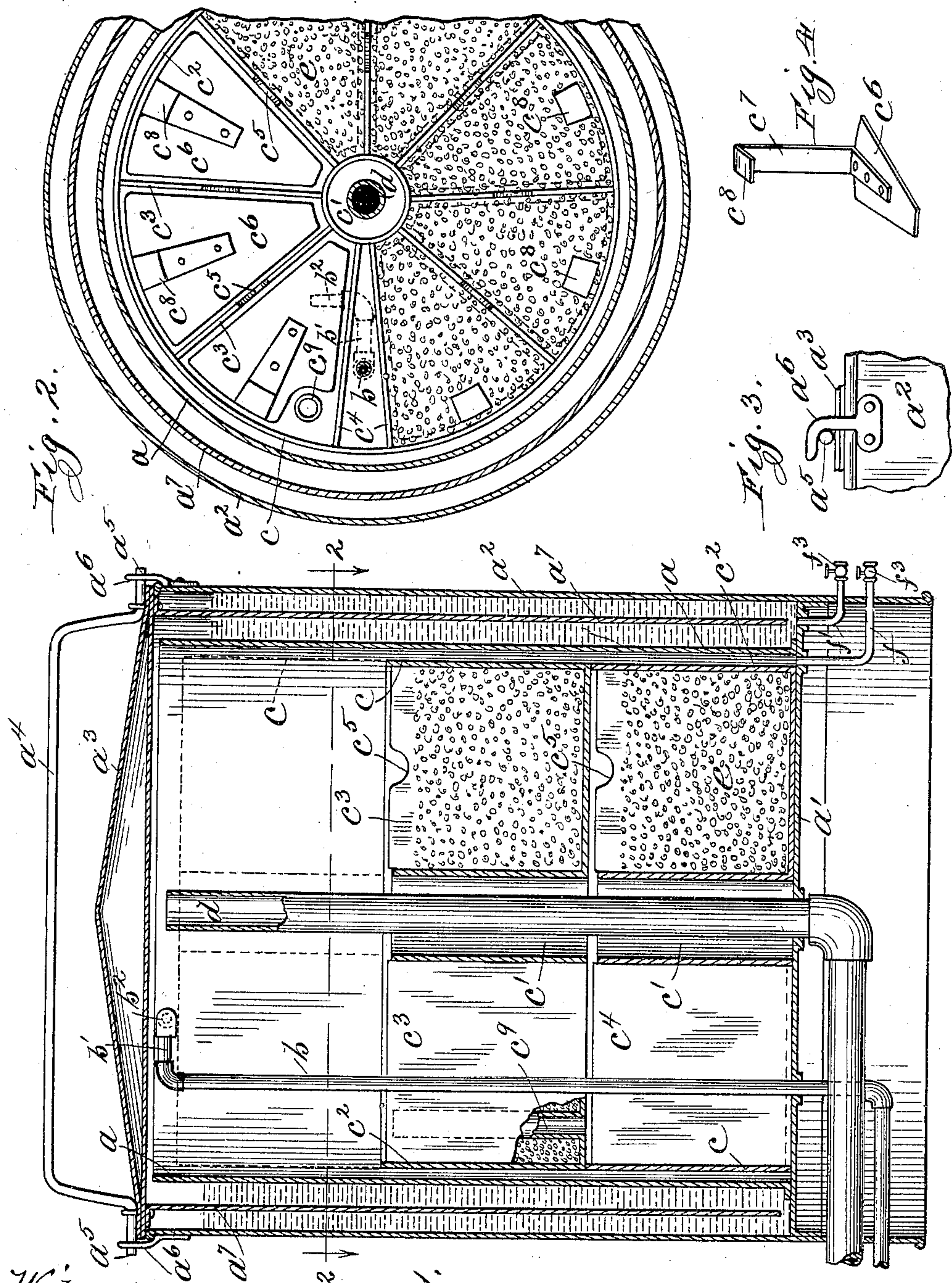
Patented June 26, 1900.

J. ROSS.

ACETYLENE GAS GENERATOR.

(Application filed Apr. 24, 1899.)

(No Model.)



Witnesses:
R. J. Jacker
Percy C. Gill

Inventor:
John Ross
By Ludington & Jones.
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN ROSS, OF LAFAYETTE, INDIANA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 652,372, dated June 26, 1900.

Application filed April 24, 1899. Serial No. 714,250. (No model.)

To all whom it may concern:

Be it known that I, JOHN ROSS, a citizen of the United States, residing at Lafayette, in the county of Tippecanoe and State of Indiana, have invented a certain new and useful Improvement in Gas-Generators, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to an acetylene-gas generator, my object being to provide an improved gas-generator of large capacity, steady action, and high efficiency.

To this end my invention consists of certain novel features of construction and combination of parts, which will be hereinafter more particularly described and claimed.

The special object of the present invention is to provide means whereby a large charge of carbid may be placed in the generating-chamber without a corresponding increase in the "after generation"—that is, the generation which takes place after the supply of water has been cut off and which is due to the moisture in the generating-chamber settling down upon the surface of the carbid, thereby generating a quantity of gas after the supply of liquid has ceased. This after generation has heretofore practically limited the quantity of carbid which could be placed in the generating-chamber at one time, and in accordance with the present invention I am enabled by a novel distribution of the carbid-receptacles to greatly increase the charge of carbid which the generator will accommodate without materially increasing the after generation. I provide a plurality of receptacles for the carbid so arranged that during the generation of the gas but a portion of the total charge of carbid—for instance, the carbid in but one of the receptacles—is exposed to the condensed moisture in the generating-chamber upon the shutting off of the liquid-supply. By this arrangement the after generation is due to the exposure of the surface of the carbid in but one of the carbid-receptacles, and I am thus enabled to double, treble, or otherwise increase the charge of carbid without materially increasing the after generation. I preferably arrange the

carbid-receptacles in layers, one above another, whereby the carbid in but one of the layers is subjected to the condensed moisture which produces the after generation, the liquid being passed successively from one layer to another during the progress of the gas generation.

In the preferred construction I provide a generating-chamber provided with layers of receptacles for the carbid, which receptacles consist of a series of compartments or pockets connected in series and having a fluid-inlet to discharge into one of the upper pockets or pans the generating fluid. Upon the exhaustion of the gas-producing substance in the first pocket the liquid passes through an overflow connection to the next pocket in series, and so on until all the pockets in that layer are exhausted and freed of the latent gas. In the last pan of the first layer is an overflow-discharge passage connected with a compartment or pocket in the next lower layer, this layer being similar to the first layer, and upon exhaustion of the carbid in the first compartment permitting an overflow into the next pocket of the series, and so on until all the pockets and all the layers are exhausted. It will be observed that this method brings into contact with the fluid only a small portion of the carbid at one time. Extending from the top of the generating-chamber and extending downward and outward is the gas escapment or outlet leading to the supply pipe or reservoir. Around the generating-chamber is provided a casing for holding water, into which dips the edge of the cover of the generator, whereby the generator is closed and sealed by a water seal, while the water constitutes a water-jacket. On the cover are provided hooks for fastening the cover, so that the pressure of the gas in the generator will not dislodge the same. The cover of the generator is preferably hollow and provided with an air-space, so that heat may not be so readily transmitted from the generating-chamber to the exterior. I have preferably fitted the cover as close to the top of the carbid-chamber as is possible, by which means I lessen the space in the generating-chamber and lessen the amount of air-space. On the top of the fluid-inlet pipe is provided

a movable nozzle, whereby when in use the nozzle will extend over the side of the adjoining pocket and when not in use may be swung or turned to a vertical position, so as not to interfere with the removal of the carbid-receptacles. In each pocket or pan I provide a false bottom, attached to which is a handle extending upward to the top of the carbid-pocket, by means of which the residue left after the generation of the gas may be readily removed.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a sectional view through the center of the generator. Fig. 2 is a sectional view on line 2 2, Fig. 1. Fig. 3 is a side view of the fastening devices for holding the cover to the body of the generator. Fig. 4 is a view of the residue-remover.

Like letters refer to like parts in the several figures.

The cylindrical generating-chamber a has a bottom a' , and surrounding the same is the water-casing a^2 . On the top of the chamber is the cover a^3 , composed of two plates, between which is an air-space to serve as an insulator. A handle a^4 , having extensions a^5 a^5 on the ends thereof, is adapted to engage the catches a^6 , mounted on the casing a^2 . Extending downward from the edge of the cover a^3 is the shell a^7 , adapted to extend downward and into the fluid between the generating-chamber a and the outer casing a^2 . Extending through the bottom a' of the generator is the vertical inlet-pipe b for the water, having at the top an arm b' and on the end of the arm b' the movable nozzle b^2 . Extending through the center of the bottom a' and to the top of the chamber a is the gas-outlet d , connecting the upper portion of the generating-chamber with the supply pipe or reservoir. Placed within the generator are the receptacles c c c for holding the carbid. These receptacles are preferably cylindrical, being provided with an opening c' through the center for the extension of the gas-outlet pipe d . Extending from the circumference c^2 of the carbid-receptacles c c c to the wall of the opening c' are radial partitions c^3 c^3 , dividing the cylindrical receptacles into a number of compartments or pockets. At one side of the receptacle c and between the radial partitions c^4 c^4 is an opening through the bottom, through which opening the inlet-pipe b extends. In the upper edges of the partitions c^3 c^3 are the overflow-openings c^5 c^5 . In the bottoms of the compartments are the false bottoms c^6 c^6 , having the upwardly-extending handles c^7 , which handles extend to the tops of the respective compartments, adjacent to the side wall c^2 , and are provided on the upper ends with handpieces c^8 , by means of which the same may be readily grasped. In the compartment farthest removed from the inlet-pipe an overflow-tube c^9 is provided, which extends through the bottom of the re-

ceptacle c and connects the top of the pocket in which it is placed with the next lower receptacle c . Extending from the bottom of the chamber a is the water-drain f , and extending from the bottom of the water seal is the water-drain f' , closed by the stop-cocks f^3 f^3 .

In the operation of the device of my invention I first fill the lower receptacle c approximately one-half full with the carbid to be used in the manufacture of the gas and then place the other carbid-receptacles, similarly filled, in position, as indicated in Fig. 1. While doing this the nozzle b^2 on the fluid-inlet b is turned upward, so that the receptacles may be readily placed in position. Upon placing the upper receptacles in position the nozzle b^2 is turned downward, so that it is in position to direct the fluid into the first pocket, shown in Fig. 2 to be the pocket to the left of the inlet-pipe b . The cover fitting into the water seal is then placed on the generator a and is slightly turned by means of the handle a^4 until the extensions a^5 a^5 engage the hooks a^6 a^6 on the generator side a^2 , and thereby fasten the top, so that the pressure of the gas from below will not raise the same. Water is then introduced into the inlet-pipe and passes to the first pocket. The gas from this pocket will be generated and fill the generating-chamber and will pass down and out through the gas-outlet d . Upon the exhaustion of the carbid in this pocket and the filling of the pocket with the exhausted carbid and water the water will flow into the next pocket, and so on in series until the top layer of carbid-receptacles is exhausted of its gas. In the last pocket next to the inlet-pipe b is the overflow-pipe c^9 , by which the water passes from the top of that pocket into the pocket of the next lower layer, and so on until the pockets are in turn exhausted. Should it be desired to shut off the generation of the gas before the exhaustion of the carbid in the chamber, the turning off of the liquid by any of the well-known means for that purpose will operate to terminate the gas generation, and any moisture such as is usually held suspended in the gas in the upper part of the generator will settle only upon the water or the carbid in the pockets in the top receptacles, and as the supply of gas above the top receptacle is very limited there will be a very limited supply of moisture to be precipitated, thereby resulting in a small after generation, as compared with devices of other construction. Upon the exhaustion of the carbid the water-inlet and the gas-outlet are cut off from the generator, the top is removed, the water drained out of the generator a by means of the water-drain f , the nozzle of the inlet-pipe b is turned upward, and the receptacles containing the hydrated calcium or residue may be removed, and the residue in the pockets of the receptacles may be also readily removed by lifting out the

false bottoms or scrapers, hereinbefore described. Upon the cleaning of these receptacles the false bottoms may be replaced and the receptacles recharged and the process
5 above described repeated.

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

1. In an acetylene-generator, the combination with an inclosing vessel a^2 , of a cover a^3 resting thereon, an inlet-pipe b passing through the lower end of said inclosing vessel and extended to a position near the top of the same, a gas-outlet pipe d passing through the lower end of said vessel and extending upward and opening near the top of the vessel and centrally located relatively to the walls of said inclosing vessel, and a plurality of receptacles for the carbid arranged to rest
10 one above the other, said receptacles each being of annular form to accommodate said gas-outlet pipe d and subdivided into compartments by radial partitions provided with overflow-passages, and an overflow-pipe c^9 provided in connection with each of the upper
15 annular receptacles and situated in one of the compartments thereof, communicating at the upper end with the said compartment and at the lower end with a compartment of the an-

nular carbid-receptacle situated beneath the same, substantially as described. 30

2. The combination with an inclosing vessel a^2 , of a cover a^3 fitting thereon, an inlet-pipe b passing through the lower end of the inclosing vessel and extending to a point near
35 the top of the same, a gas-outlet pipe d passing through the lower end of the inclosing vessel and extending upward to a position near the top of the same and situated centrally with relation to the walls of the inclosing vessel, a plurality of carbid-receptacles
40 of annular form to accommodate said outlet-pipe d , each of said receptacles being subdivided into compartments by means of radial partitions provided with overflow-passages, 45 an overflow-pipe c^9 in one compartment of each upper annular carbid-receptacle, one of the compartments of each annular receptacle being formed without a bottom to accommodate the passage of the inlet-pipe b , substantially as described. 50

In witness whereof I have hereunto subscribed my name in the presence of two witnesses.

JOHN ROSS.

Witnesses:

JAMES W. SCHOOLER,
JOHN F. DIEUHART.