No. 621,616. Patented Mar. 21, 1899.

R. D. PARKS.

ACETYLENE GAS GENERATOR.

(Application filed Apr. 14, 1898.)

(No Model.) 2 Sheets—Sheet 1.

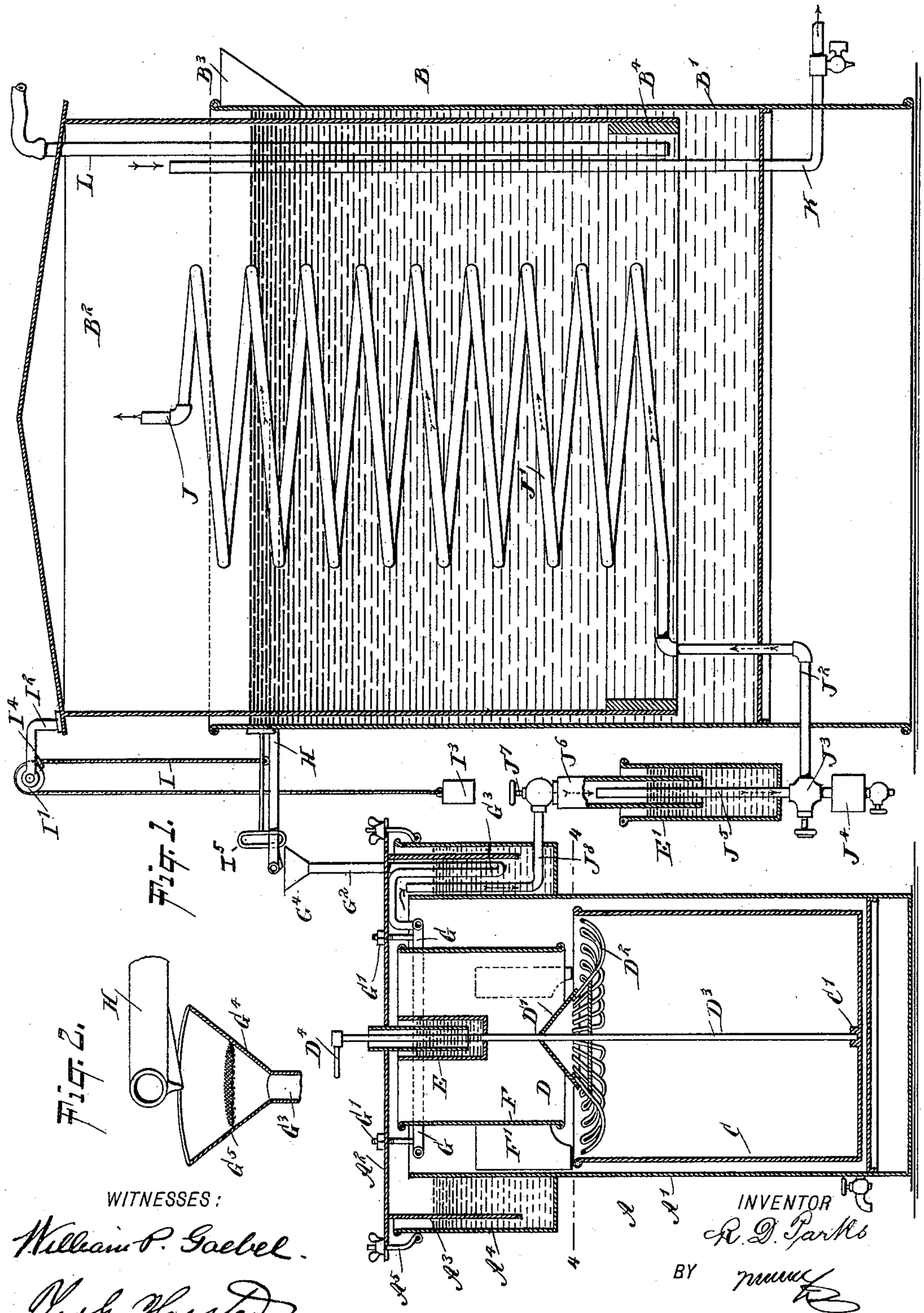

Fig. 1.

Fig. 2.

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Fig. 3.

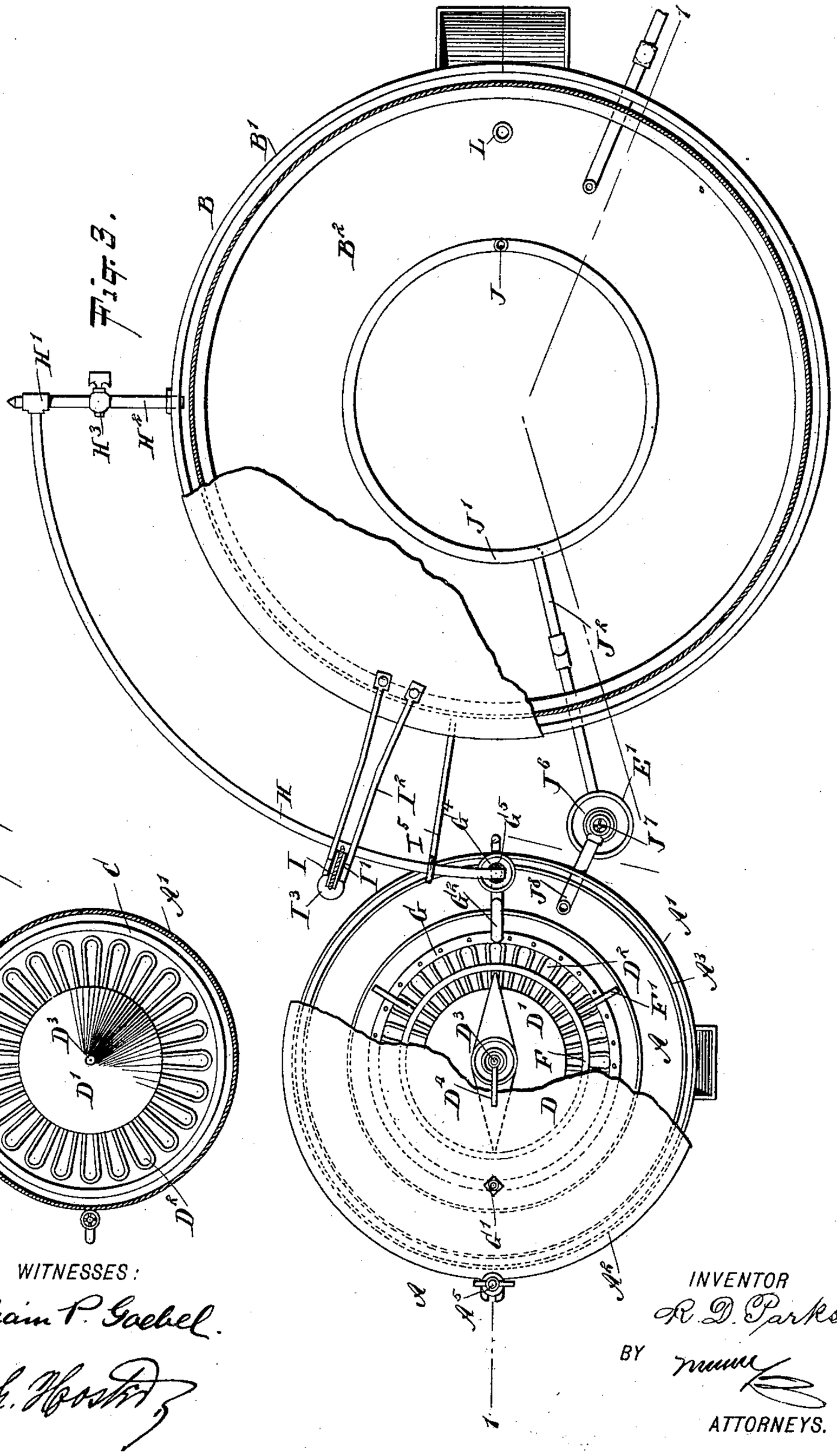

Fig. 4.

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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 621,616, dated March 21, 1899.

Application filed April 14, 1898. Serial No. 677,576. (No model.)

To all whom it may concern:

Be it known that I, ROBERT D. PARKS, of Pleasant Mounds, in the county of Blue Earth and State of Minnesota, have invented a new and Improved Acetylene-Gas Generator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved acetylene-gas generator arranged to generate gas only as required for consumption by automatically controlling the water-supply to a small portion of the charge of calcium carbid and by keeping the main portion of the carbid in a magazine free and clear from the water and the hydrate of lime.

The invention consists of novel features and parts and combinations of the same, as will be described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement on the line 1 1 of Fig. 3. Fig. 2 is an enlarged sectional side elevation of the adjacent pipes of the water-supply and water-delivery pipes. Fig. 3 is a plan view of the improvement with parts in section, and Fig. 4 is a sectional plan view of the generator on the line 4 4 of Fig. 1.

The improved acetylene-gas generator is provided with a generator proper, A, and a gasometer B, having the usual tank B′ and the bell B^2. The generator is provided with a casing A′, having a cover A^2, formed with a downwardly-extending annular flange A^3, reaching into water or other sealing liquid contained in a small tank A^4, carried on the upper end of the casing A′, the top of which terminates a short distance from the cover A^2, and the latter is removably connected by bolts A^5 with the said tank A^4.

In the casing A′ is set loosely an ash-receiver C, in the upper portion of which extends a calcium-carbid support D, formed with a centrally-arranged cone D′, supporting at its base a basket D^2, the outer edge of which reaches close to the inner face of the ash-receiver C. The basket D^2 is formed of wires and is shaped like an annular trough, so that the hydrate of lime or other residue from the decomposed calcium carbid can readily drop between the wires down into the ash-receiver C. The cone D′, as well as the basket D^2, is secured to a vertically-disposed rod D^3, set at its lower end in a suitable step C′ on the bottom of the ash-receiver C, the upper end of said rod extending through a water seal E to the outside of the casing. The upper end of the rod D^3 is provided with a suitable handle D^4, adapted to be taken hold of by the operator should it be necessary to turn or shake the rod D^3, and consequently the carbid-support, so that the hydrate of lime is agitated and readily drops through the wires of the basket down into the ash-receiver C.

A magazine F in the shape of an open-ended cylinder is supported by brackets F′ from the casing A′ directly above the calcium-carbid support D, the lower edge of the magazine being somewhat within the outer edge of the basket D^2, as will be readily understood by reference to Fig. 1. The magazine F is filled with a large amount of calcium carbid, and as the cone D′ extends up into said magazine it is evident that the calcium carbid passes down from the magazine onto the support D—that is, over the cone D′ down into the basket D^2—to be there charged at the outer end of the basket and outside of the magazine F with water for generating the acetylene gas.

The water for the generation of the gas is delivered to the calcium carbid in the basket D^2 in a series of drops from a water-delivery pipe G surrounding the magazine F and formed with spaced minute openings in the top, as is plainly shown in Fig. 3, so that the water passing into the pipe G passes out through the said openings to then drop downward outside of the magazine F into the carbid contained in the outer portion of the basket D^2. The pipe G is supported by bolts G′ from the cover A^2 and is connected with a pipe G^2, formed into a trap G^3, extending into the water contained in the tank A^4, to then extend upward through the cover A^2.

The upper end of the pipe G^2 is provided with a funnel G^4, containing a sieve G^5, and into said funnel G^4 discharges a water-supply pipe H, fulcrumed at H′ to a branch pipe

H^2, provided with a valve H^3 and attached to the tank B′ of the gasometer, so that the water contained in the said tank can readily pass through the said pipe H^2 into the pipe H to finally flow into the funnel G^4 and down the pipe G^2 to the pipe G for delivery in drops to the carbid, as previously explained. The pipe H^2 is connected with the tank B′, at or near the upper end thereof, below the water-level, so that water only flows through the pipe H to the funnel G^4 when the pipe H is in a horizontal or downwardly-inclined position; but the pipe H is adapted to be swung upward by the action of the gasometer-bell B^2 to bring the free end of the said pipe above the level of the water contained in the tank B′, so that the water does not flow out of the pipe H to the pipe G^2. For this purpose the pipe H is connected near its free end with one end of a rope I, extending upward and passing over a pulley I′, journaled in a bracket I^2, secured to the gasometer-bell B^2, the lower end of the rope I carrying a weight I^3. On the rope I is also secured a lug I^4, adapted to move in contact with the peripheral surface of the pulley I′ to prevent the weight I^3 from drawing the rope I farther downward over the pulley I′ at the time the bell B^2 moves approximately into a lowermost position.

The gas generated in the generator A is delivered to the gasometer-bell B^2 by a gas-pipe J, formed into a coil J′, extending through the water contained in the tank B′, so that the gas in its passage from the generator A to the bell B^2 is cooled. The lower end J^2 of the coil J′ connects with a valve J^3, supporting a valved condenser-casing J^4, in which the water of condensation may accumulate. A pipe J^5, leading upwardly from the valve J^3, extends through a water seal E′ into a pipe J^6, having a valve J^7, from which leads a pipe J^8 through the tank A^4 into the upper end of the casing A′ to allow the gas to pass from the latter through the several pipe connections, as described, into the bell B^2. A pipe K also leads from the bell B^2 to carry off the gas to the burners. The bell B^2 is provided at its lower end with a suitable weight B^4 to give the desired pressure to the gas contained in the bell. A funnel B^3 is connected with the upper end of the tank B′ for supplying the latter with the necessary amount of water.

The operation is as follows: When the machine is in operation and the magazine F is filled with calcium carbid, then the lower portion thereof gradually feeds into the basket D^2, as previously explained, to be acted on by the jets of water dropping down from the delivery-pipe G upon that portion of the carbid contained in the outer end of the basket. The gas generated passes through the pipe J from the generator A into the bell B^2, so that the latter rises in the tank B′, and in doing so moves the bell B^2 and pulley I′, together with the rope I, upward to impart an upward swinging motion to the pipe H, so that the free end thereof is raised above the level of the water in the tank B′, and consequently the supply of water to the pipe G is shut off. The generation of gas now ceases in the generator A. When the gas in the bell B^2 is used, then the bell gradually sinks, and in doing so permits the pipe H to swing back into a horizontal or downwardly-inclined position for the water from the tank B′ to flow through the pipe H to the funnel G^4 and to the pipe G for delivering the water in drops to the carbid to generate a fresh amount of gas. The residue or hydrate of lime from the burned carbid readily drops through the wires of the basket D^2 to accumulate in the receiver C. A new supply of carbid is continually fed to the basket from the superimposed magazine F. Thus it is evident that the generator is completely automatic in operation and a large amount of gas can be generated before a refilling of the magazine F with calcium carbid is rendered necessary. When the carbid in the magazine F has all been used, the valves J^7 and J^3 are closed, and the cover A^2 is then removed from the generator-casing, together with the pipe G, supported on the said cover. The magazine F can then be removed, and finally the ash-receiver C, with the basket D^2, to permit of emptying the ash-receiver of its contents. The several parts are then replaced and the magazine F refilled with calcium carbid.

In case too much gas is generated then the bell B^2 rises to such a height as to bring a vent-pipe L, carried by the bell B^2, out of engagement with the water contained in the tank B′, so that the gas in the bell can escape through the vent-pipe, which latter is preferably connected by a hose with the outer air.

A guide I^5, carried by the tank B′, is provided for the free end of the pipe H to move in.

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

1. An acetylene-gas generator provided with a carbid-support formed with a central solid cone portion, and a basket of the shape of an annular trough and supported from the base of the cone, substantially as shown and described.

2. An acetylene-gas generator provided with an ash-receiver and with a carbid-holder in the upper part of the ash-receiver, said holder being formed with a central solid cone portion and an annular trough-shaped basket supported from the base of the cone and extending to within a short distance of the inner surface of the ash-receiver, substantially as described.

3. An acetylene-gas generator provided with a carbid-support comprising a central solid cone portion, and a basket supported from the base of the cone, and a rod secured to the support for shaking the same to cause the hydrate of lime to drop through the basket, said rod extending through a water seal to the outside of the generator, substantially as shown and described.

4. An acetylene-gas generator provided with a generator-casing, an ash-receiver in the casing, a carbid-support in the upper part of the ash-receiver, a magazine above the carbid-support, and a rod secured to the support and having its lower end stepped in the ash-receiver and its upper end extending to the outside of the generator-casing, substantially as described.

5. In an acetylene-gas generator, the combination with a casing, and its cover, of an ash-receiver in the lower part of the casing, a magazine above the ash-receiver and provided at its center with a water seal, a rod stepped in the ash-receiver and extending through the said water seal and cover and provided with a handle, and a carbid-holder secured to the rod in the upper part of the ash-receiver, substantially as described.

6. In an acetylene-gas apparatus, the combination with a gasometer, of a generator-casing, a magazine in the upper part of the casing, a carbid-basket below the magazine and projecting beyond the same, a perforated water-pipe in the space between the magazine and casing, said pipe extending out through the cover of the casing and provided with a funnel at its end, a pivoted pipe connected with the gasometer-tank and discharging in the said funnel, and a connection between the pivoted water-supply pipe and the gasometer-bell, substantially as described.

7. In an acetylene-gas generator, the combination with a generator-casing having a water-tank surrounding its upper end, and a cover provided with a depending annular flange extending into the water of said tank, of a carbid-support, a magazine within the casing above the support, a perforated water-pipe supported from the cover in the space between the casing and magazine, and a pipe connected with the perforated pipe and formed into a trap in the said tank and then extended above the said casing, substantially as described.

8. In an acetylene-gas apparatus, the combination with a generator, and a gasometer connected with the generator, of a pivoted water-supply pipe connected with the water in the gasometer-tank, a pulley on the gasometer-bell, a cord having one end secured to said supply-pipe passed over said pulley and provided with a weight at the free end, and a stop on said cord, substantially as described.

ROBERT D. PARKS.

Witnesses:
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C. W. MARKS.