

**No. 676,702.**

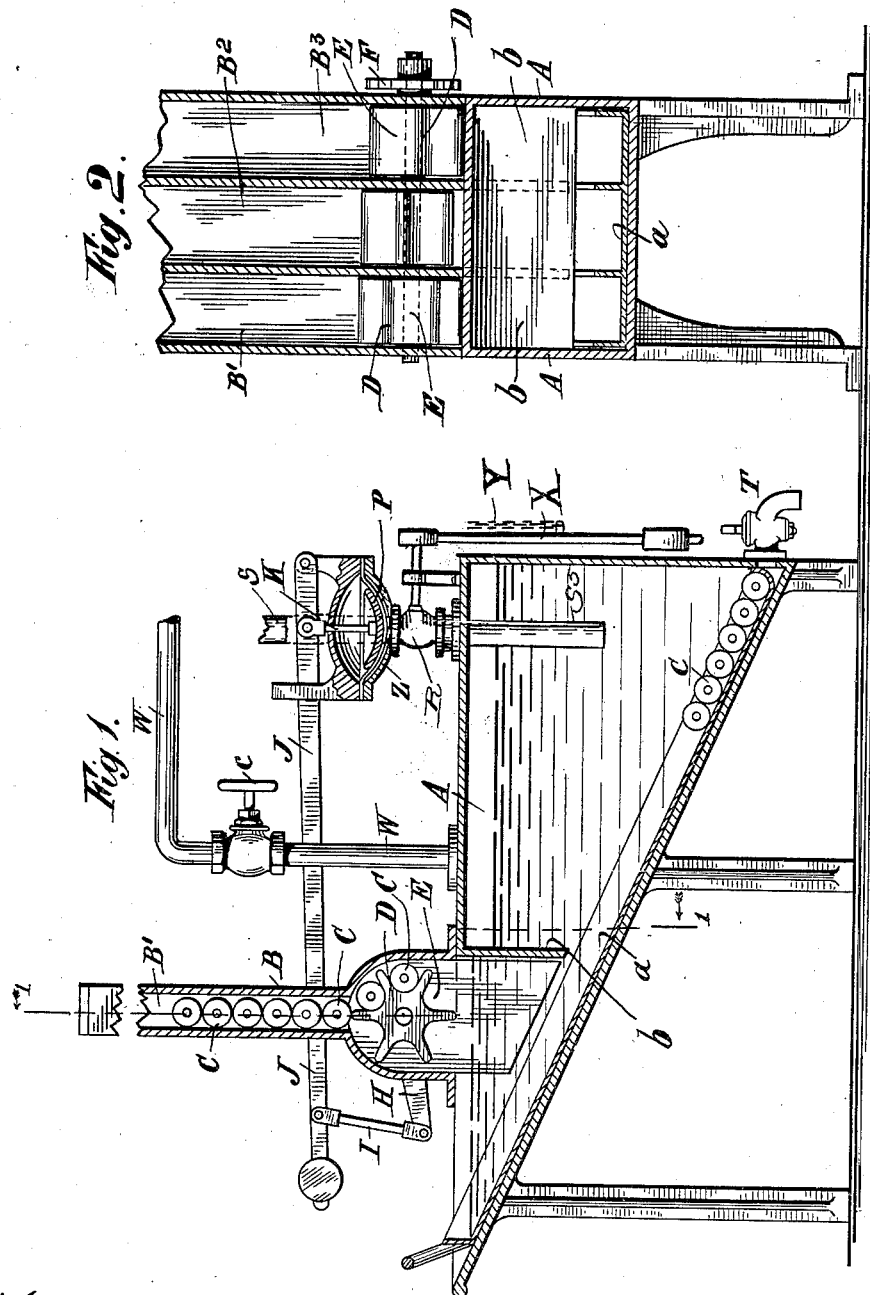
**Patented June 18, 1901.**

**G. SEAGRAVE.**  
**ACETYLENE GAS GENERATOR.**

(Application filed Dec. 10, 1900.)

(No Model.)

**3 Sheets—Sheet 1.**



*Witnesses:*

*[Signature]*

Bruce S. Elliott.

*Inventor*  
*George Seagrave*

By James L. Norris

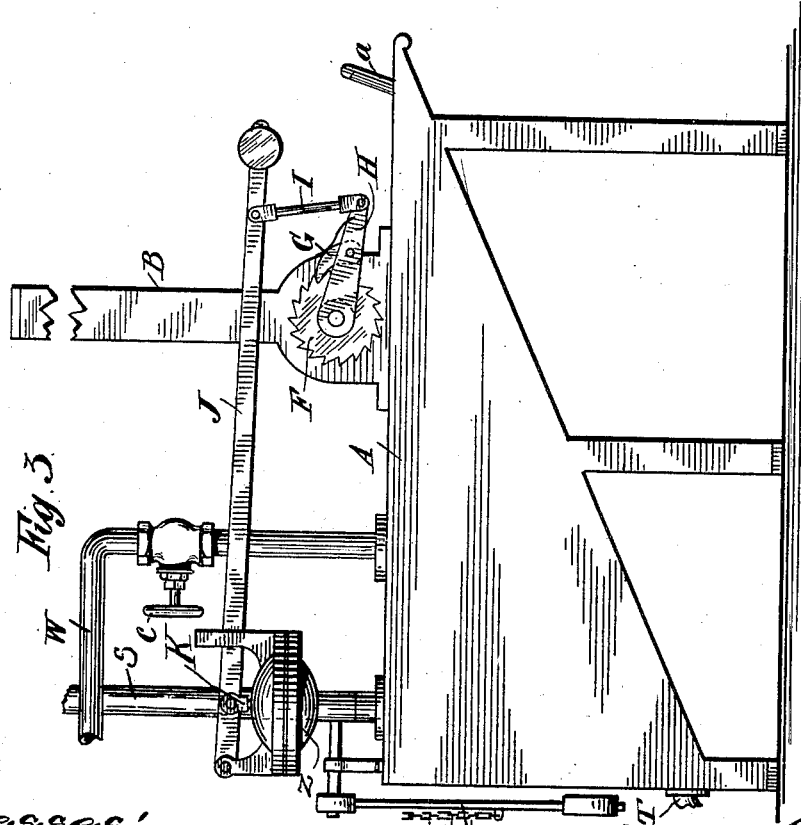
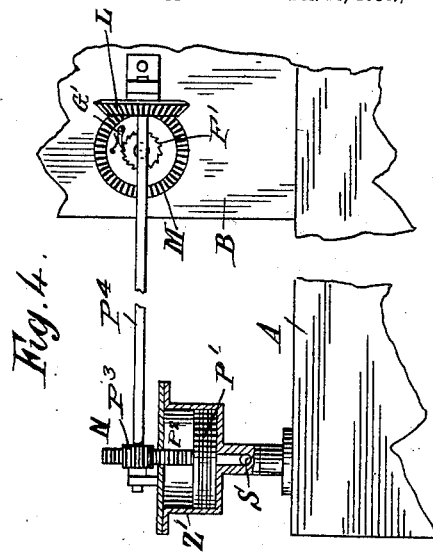
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G. SEAGRAVE.  
ACETYLENE GAS GENERATOR.

(Application filed Dec. 10, 1900.)

(No Model.)

3 Sheets—Sheet 2.



Witnesses:

*F. B. Keefe*

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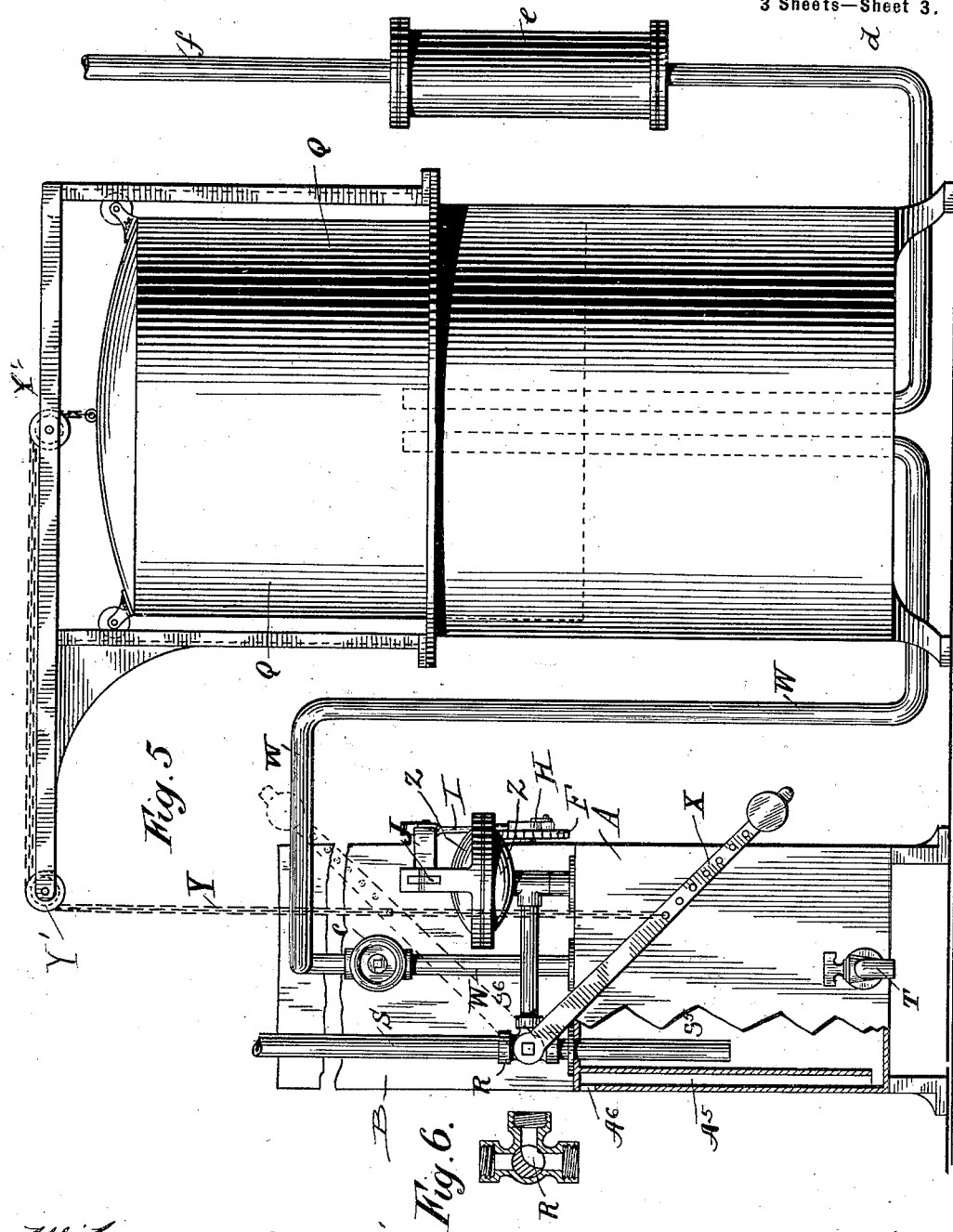
*By James L. Norris,*  
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ACETYLENE GAS GENERATOR.

(Application filed Dec. 10, 1900.)

(No Model.)

**3 Sheets—Sheet 3.**



*Witnesses:*

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Bruce S. Elliott

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# UNITED STATES PATENT OFFICE.

GEORGE SEAGRAVE, OF WALTHAMSTOW, ENGLAND.

## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 676,702, dated June 18, 1901.

Application filed December 10, 1900. Serial No. 39,391. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE SEAGRAVE, a subject of the Queen of Great Britain, residing at Belle-Vue Park, Walthamstow, Essex, England, have invented certain new and useful Improvements in and Connected with Apparatus for Generating Acetylene Gas, of which the following is a specification.

This invention relates to acetylene-gas apparatus, and it includes certain novel features, which will be hereinafter set forth and claimed.

In the drawings forming a part of this specification, Figure 1 is a sectional side elevation of a generator involving my improvements. Fig. 2 is a section in the line 1 1, Fig. 1. Fig. 3 is a side elevation of the machine from the side opposite to that shown in Fig. 1. Fig. 4 is a partial sectional side elevation of a different kind of regulator. Fig. 5 is a front elevation of a complete apparatus, the generator being partly in section. Fig. 6 is a sectional view of a three-way valve.

Like characters refer to like parts in all the figures of the drawings.

The apparatus includes a generating-chamber, as A, having a hopper B in communication therewith, the latter having three chambers, as B' B<sup>2</sup> B<sup>3</sup>, for containing the calcium carbide in the form of boxes or cartridges, as C. A rotatable drum or cylinder D is located in the hopper and has troughs E, into which the cartridges C fall, to be fed thereby into the generating-chamber A. The drum or cylinder D has rigidly secured to its shaft a ratchet-wheel F, so that it can be rotated step by step by a pawl, as G, carried by a lever, as H, loosely connected at one end to the shaft of said drum, the other end of the lever being pivoted to a link I, pivoted in turn to the counterweighted longitudinal lever J, adapted to be elevated by a suitable regulator. This longitudinal lever is fulcrumed on the casing Z of a diaphragm, as P, the casing being mounted on the generating-chamber. The diaphragm-rod is denoted by K, and it is jointed to the weighted lever J near its fulcrum, and when the diaphragm is forced upward the lever J will be lifted through the intermediate rod K to effect the feed of a cartridge C into the generator, and as the diaphragm falls the lever J will descend by its

own weight, during which the pawl travels idly over the teeth of the ratchet.

In Fig. 4 I have shown a different type of regulator, it consisting of a piston P', supported in the casing Z' and acted on in a manner similar to the diaphragm. This casing Z' communicates with the generator A through the pipe S<sup>6</sup> and valve R, as will be presently described. The rod of the piston P' is furnished with rack-teeth P<sup>2</sup>, meshing with the pinion P<sup>3</sup> on one end of the suitably-supported shaft P<sup>4</sup>, the opposite end of said shaft having the bevel-gear L, meshing with a corresponding bevel-gear M, loose on the shaft of the drum D. The gear M carries a pawl G' for operating the ratchet-wheel F', rigidly secured to said shaft, the construction just set forth serving when the piston is lifted to effect the feed of a cartridge into the generating-chamber A.

The bell or storage reservoir Q is connected by suitable mechanism with a three-way cock or valve, as R, in the water-supply pipe S, the other two branches being connected, respectively, with the generator and casing of the regulator by pipes, as S<sup>5</sup> and S<sup>6</sup>. The upper portion of the reservoir Q is suitably connected, as by the chain Y, running over suitably-placed guide-pulleys, as Y', with the counterweighted valve-actuating lever X, one end of which is fastened to the valve-stem. When the upper part of the reservoir falls, the counterweighted lever X, through the intermediate chain Y, will be lifted so as to operate the valve R, admitting water to the diaphragm and permitting the inflowing water to act on the diaphragm P and force the same upward and through the intervening mechanism to cause the drum D to rotate and effect the feed of the loaded calcium-carbide cartridges C into the generator A, where the carbide comes into contact with the water in said generator to generate gas, as is well known, the gas passing from said chamber into the piping W and from thence into the reservoir Q, causing the upper part thereof to rise, and consequently permitting the counterweighted lever X to fall and operate the three-way valve R to cut off the water-supply from the diaphragm and connect the latter with the water-chamber A, as indicated in Fig. 6. As the water-pressure is cut off

from the diaphragm P the same is forced down by the weighted lever J, and in doing so it expels the water contained in its casing Z into the communicating chamber A, thus assisting in the generation of gas and leaving an amount of water in the gas-generator ready for the next supply of calcium carbid, which takes place when the bell lowers again as the gas is consumed. The same operation takes place with the automatic regulator shown in Fig. 4. It will be apparent, therefore, that the several operations ensue in automatic sequence, it being necessary to simply supply the hopper B with a sufficient number of loaded cartridges C.

The troughs or grooves of the feeding-drum are made to contain carbid cartridges of certain sizes, so that the gas generated is only of sufficient quantity to fill the reservoir Q and its accessories at a certain pressure, and it is impossible by the mechanism shown to generate gas to a dangerous density, the supply of carbid only being renewed when the reservoir has become nearly exhausted, and I prefer that the cartridges should be perforated, and as they fall into the grooves or troughs of the feed-drum D they will be delivered thereby into the generator A to take their places in a tray or trays, as *a*, a web, as *b*, depending from the top of the generator leading sufficiently far under the water to prevent any gas escaping from said generator to the outside air or to the hopper B.

The tray *a* is removable through the opening of the generator A, so that the empty cartridges C may be removed and any "sludge" or sediment in the tray washed out. The tray *a* is divided into compartments to receive the respective cartridges as they gravitate from the feed-roll D.

A hand-operated cock is provided at *c* in the pipe W and acts in the usual manner, and the tank A may have a passage A<sup>5</sup> leading to the vent A<sup>6</sup> in said tank, as shown in Fig. 5.

A pipe, as *d*, leads from the reservoir Q to the purifier *e*, and a second pipe, as *f*, leads from the latter and is connected to a burner or burners. The chamber or tank A is furnished with the usual draw-off cock T.

The invention is not limited to the construction set forth herein, for changes may be made within the scope of the following claims.

I claim—

1. In an apparatus for generating acetylene gas, an expansible gas-holder, a generator, a water-supply pipe leading into the generator, and having a branch, a casing communicating with said branch, a three-way valve at the junction of the branch with the supply-pipe, connections between said gas-holder and the valve for actuating the latter, a water-operated device in said casing, carbid-feeding means, and mechanism controlled by said water-operated device for actuating the carbid-feeding means.

2. In an apparatus for generating acetylene gas, an expansible gas-holder, a generator, a water-supply pipe leading into the generator and having a branch, a casing communicating with said branch, a three-way valve controlling the flow of water to the generator and casing, respectively, connections between the gas-holder and the valve for actuating the latter, a water-operated device in said casing, a hopper communicating with the generator, a grooved drum in said hopper, and connections between said water-operated device and drum for operating the latter step by step.

3. In an apparatus for generating acetylene gas, an expansible gas-holder, a generator, a water-supply pipe for the generator, having a branch, a casing communicating with said branch, a three-way valve for controlling the flow of water to the generator and casing, respectively, connections between the gas-holder and the valve for actuating the latter, a water-operated device in said casing, a carbid-feeding drum, a ratchet-wheel connected with the drum, a pawl for engaging the ratchet-wheel, and means controlled by said water-operated device for actuating said pawl.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE SEAGRAVE.

Witnesses:

PERCY E. MATTOCKS,  
WM. O. BROWN.