

No. 622,276.

Patented Apr. 4, 1899.

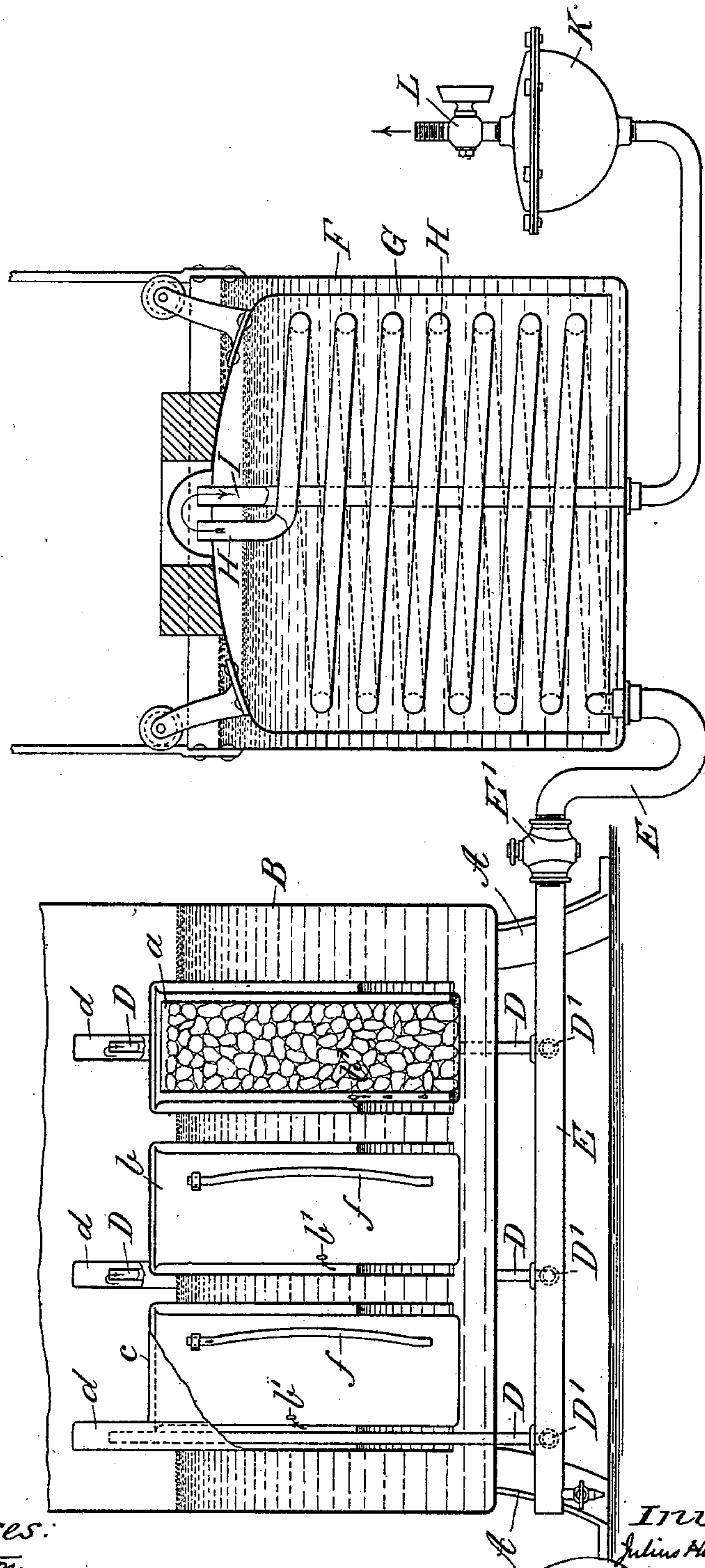
J. H. SCHULKE.
ACETYLENE GAS GENERATOR.

(Application filed Dec. 6, 1897.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.



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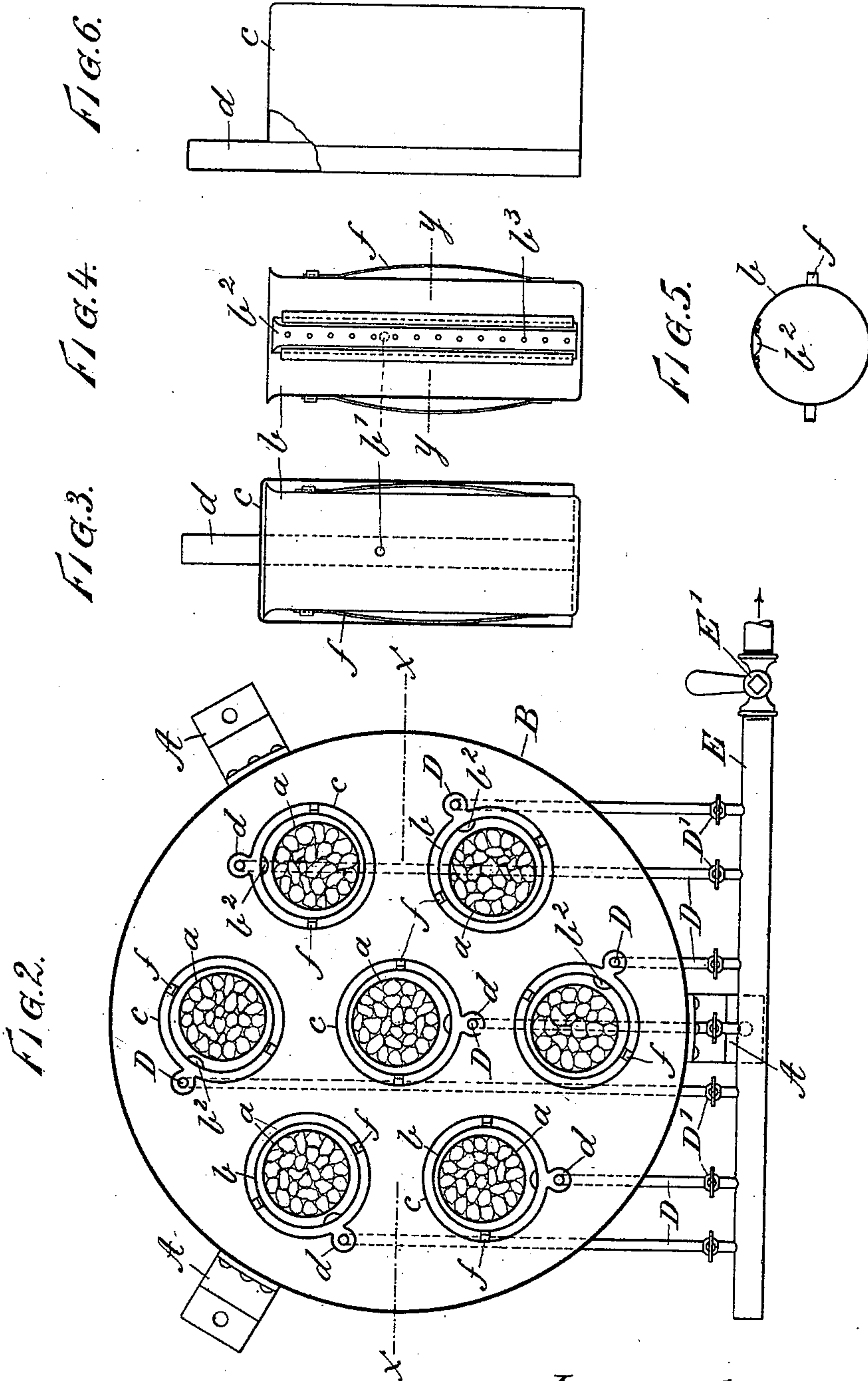
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JULIUS HEINRICH SCHÜLKE, OF BERLIN, GERMANY.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 622,276, dated April 4, 1899.

Application filed December 6, 1897. Serial No. 660,973. (No model.)

To all whom it may concern:

Be it known that I, JULIUS HEINRICH SCHÜLKE, engineer, a subject of the Emperor of Germany, and a resident of No. 94 Leipzigerstrasse, Berlin, in the Empire of Germany, have invented a new and useful Improved Acetylene-Gas Generator, of which the following is a full, clear, and exact description.

This invention relates to an apparatus for generating acetylene gas, such apparatus consisting of a generator, a pressure-regulator, and a receptacle acting as pressure-feeder and condensator. The operation of the apparatus is greatly simplified and made reliable by the combination of these three devices.

The generator is provided with carbide-receptacles which are constructed in such manner that an obstruction of the supply of water may not take place and the water being fed below, so that the upper layers of carbide first remain undecomposed and effect a drying of the acetylene gas which passes through same. Several of such carbide-receptacles are preferably combined in one generator, and the water-supply openings are arranged stepwise, one above the other, so that the receptacles do not act simultaneously but in successive order.

The carbide-receptacles are arranged in such manner that they float during the time that they have not generated any acetylene gas. The weight of the carbide is to be conveniently proportioned, or the carbide-receptacles are to be more or less weighted or rendered floating in such manner that they move downward only on an adequate decrease of the inner pressure and then operate for generating acetylene gas. In this manner the various parts or apparatus within the generator can only operate in successive order, the generation of acetylene gas thereby being considerably restricted and the intensity of the development of acetylene gas being capable of regulation by varying the depth of immersion of the various receptacles. The carbide-receptacles may preferably be provided with suitable marks indicating the height of the water-inlets, so that it can be readily seen in which apparatus the carbide is consumed.

In the accompanying drawings such an apparatus is shown as an example.

Figure 1 is a longitudinal section and part

elevation of the apparatus. Fig. 2 shows a plan view of the generator, and Figs. 3 to 6 show constructive details.

The generator consists of a water-receptacle B, resting upon supports A. In this receptacle a convenient number of generating vessels are inserted, each of which communicates with a gas-pipe D, connected with a pipe E, leading to a receptacle acting as pressure-feeder. The latter consists of a vessel F, filled with water and a movable bell G, which is suitably weighted. In the vessel F a pipe in the form of a condensing-coil is provided, which communicates with the pipe E and is adapted to separate the steam which is carried along with the acetylene gas.

The end of the condensing-coil terminates in the upper part of the bell G, above the surface of the water. On about the same level a gas-outlet pipe I also terminates, which leads to a pressure-regulator K of any suitable construction, with which the pipe L, leading to the burners and the like, communicates. The main pipe E may be controlled by a cock E' and each pipe D by a cock D'.

The carbide-receptacles consist of cylindrical casings *a*, of sheet metal, which are open at both ends. Each casing *a* is inserted into a cylinder *b*, closed at the bottom and open at the top, such cylinder being surrounded by a bell *c*, which is open at the bottom and closed at the top. The water in the vessel B passes from below into this bell *c*; but since the same is in communication with the interior of the carbide-receptacle *a* the water can only rise as high as the pressure of gas in the receptacle *a* and the bell *c* allows. The bell *c* is also provided with a gas-outlet channel *d*, with which the pipe D communicates.

The cylinder *b* is provided at a suitable height with an inlet-opening *b'*, Fig. 3. The cylinder *b* is preferably removably connected with the bell *c* by springs *f*, Figs. 3 and 4, so that both may be removed together. A channel *b²*, communicating with the opening *b'*, is attached at the inner wall of the cylinder *b*, such channel *b²* being provided with a vertical series of holes *b³* in its inner wall, so that the water will not be compelled to rise through all the decomposed carbide; but as the carbide

is decomposed the channel will fill up with water to the same height and enter through the corresponding hole b^3 .

The inlet-openings b' for the water are preferably arranged stepwise or at different levels, so that the various carbid vessels are operated in successive order.

It is recommended to keep the water-level in the receptacle B higher than the bells c , since it is of moment that on refilling the generator all the acetylene gas escapes. In this case only as much acetylene gas can be lost as is contained in the pipes D and E.

The apparatus operates as follows: Before the generating of the acetylene gas commences the carbid-receptacles float in such manner that the water penetrating into the bell c may still not reach the lowest water-inlet opening b' of one cylinder b . On opening the cocks E and D' the carbid-receptacles are brought into communication with the gasometer G, whereby the pressure is counterbalanced and the carbid-receptacles sink until the lowest water-inlet opening immerses below the water-level within the corresponding bell c , and consequently water passes into the first carbid-receptacle and acetylene gas is generated. When the gas-pressure increases, the carbid-receptacle ascends again until the supply of water is stopped, whereas when the gas-pressure decreases on account of the consumption of gas water flows into the carbid-receptacle. As long as the first carbid-receptacle is in operation the remaining carbid-receptacles cannot be set in operation, since by means of the gasometer a counterbalance of pressure takes place in such manner that the carbid-receptacles whose openings are situated at a higher level than that of the operating carbid-receptacle cannot sink to such an extent that their openings immerse below the water-level equal to all bells.

In case the first carbid-receptacle is exhausted, so that a development of gas may no longer take place, all the carbid-receptacles sink until the subsequent generating vessel begins to operate. The pressure prevailing

in the gasometer G may be varied, as desired, by means of a suitable weight or the pressure-regulator K.

By increasing the pressure the carbid-receptacles may be rendered inoperative, and by decreasing the pressure the carbid-receptacles are set in operation. On the apparatus operating automatically the pressure-regulator also serves for equalizing the differences in pressure.

Having particularly described and ascertained the nature of this invention, I declare that what I claim, and wish to secure by Letters Patent, is—

1. In an acetylene-gas generator, the combination of the water-receptacle B, a bell c placed upside down therein, a receptacle b having openings b' and arranged within the bell closed below and connected above with the bell, and a main pipe, a connection between the same and the bell, and a receptacle a for carbid within the receptacle b and open above and below, the said receptacles a and b being arranged in such a manner that they float in the water so that on a decrease of gas-pressure they sink and water may pass to the carbid through the openings b' of the bell b , whereas on an increase of gas-pressure the bell with the receptacle ascends and the feed-water is cut off, substantially as described.

2. In an acetylene-gas generator, the combination of a water vessel, the several bells placed upside down in the water, the receptacles for carbid inclosed within the bells, said receptacles floating in the water so that on a decrease of gas-pressure they sink and ascend on an increase of gas-pressure, a main pipe and connections therefrom to the bells, said bells having openings b' at various heights, substantially as described.

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

JULIUS HEINRICH SCHÜLKE.

Witnesses:

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