

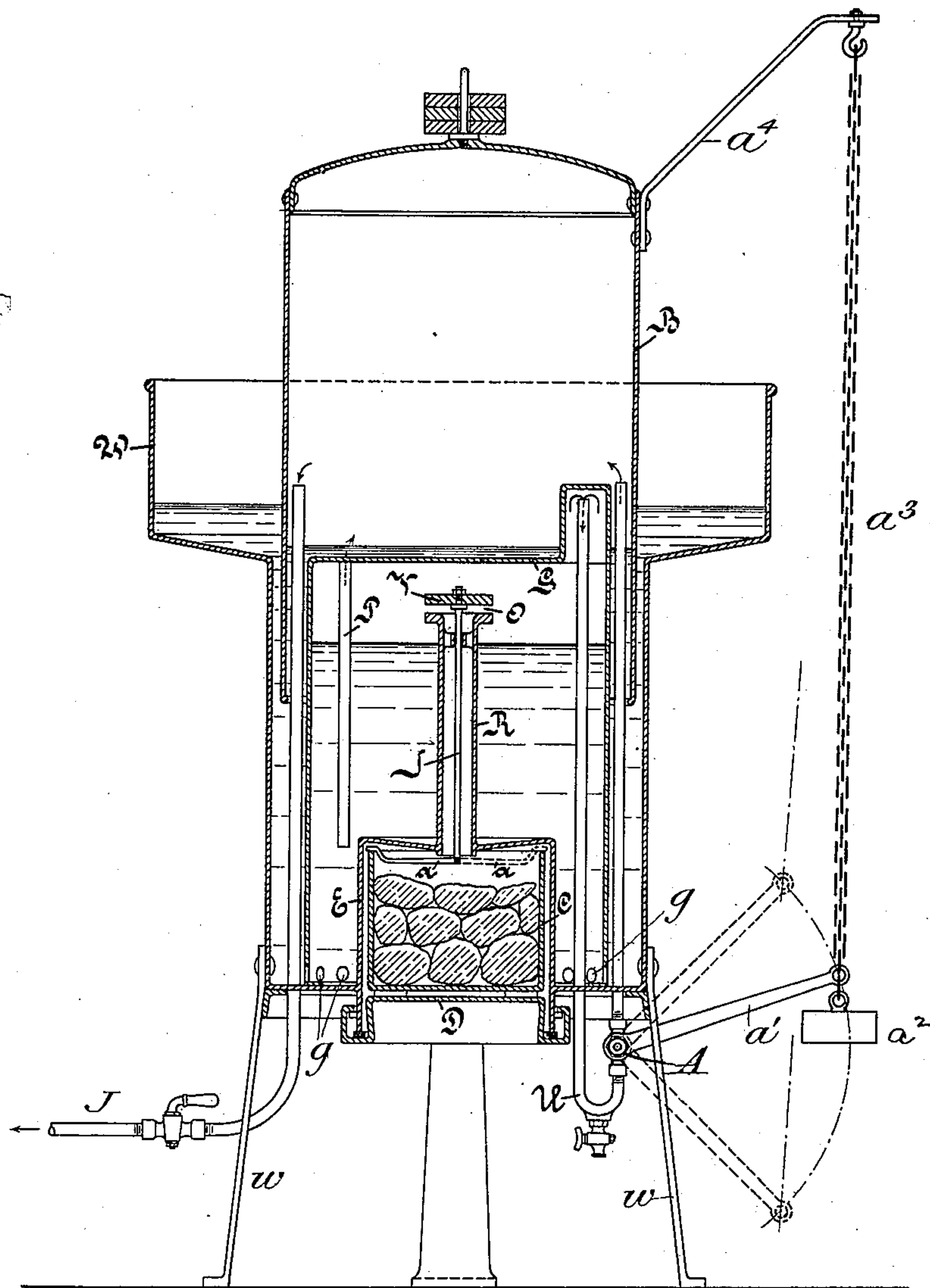
No. 618.455.

Patented Jan. 31, 1899.

O. ERNST & A. PHILIPS.  
ACETYLENE GAS GENERATOR.

(Application filed June 8, 1898.)

(No Model.)



Witnesses  
R. A. A. A.  
J. O. O. O.

Inventors  
Otto Ernst,  
Alfred Philip  
By Briesen Knauth  
their Attorneys

# UNITED STATES PATENT OFFICE.

OTTO ERNST AND ALFRED PHILIPS, OF HÖCHST-ON-THE-MAIN, GERMANY.

## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 618,455, dated January 31, 1899.

Application filed June 8, 1898. Serial No. 682,896. (No model.)

*To all whom it may concern:*

Be it known that we, OTTO ERNST, doctor of philosophy, a subject of the King of Prussia, German Emperor, and ALFRED PHILIPS, doctor of philosophy, a subject of the Queen of the Netherlands, both residing at Höchst-on-the-Main, Germany, have invented a new and useful Improvement in Apparatus for Producing Acetylene Gas, of which the following is a specification.

Our invention relates to an apparatus for producing acetylene gas which is automatically regulated and is provided with a removable carbide-box, the removal or insertion of which assists in the regulation of the apparatus, all as will be fully hereinafter described.

By our invention we have produced an apparatus wherein acetylene can be rapidly and economically produced from carbide of calcium and analogous substances and wherein the production, &c., of the acetylene is automatically regulated and in which a new charge of gas-producing material can be supplied in a few moments without interrupting the working of the apparatus and without the loss of gas or water.

In the accompanying drawing we have shown a vertical section of an apparatus embodying our invention. This apparatus, however, is only one of the many forms in which our invention may be clothed and is described merely by way of illustration in order to fully set forth one form of our invention, which at the present time is, in our opinion, the best.

In the drawing, W is the water-reservoir or outer casing. This water-reservoir or casing may be carried upon suitable legs *w* and is of greater diameter at the top than at the bottom. This casing, as its name indicates, is designed to hold water, and we have shown a charge of water therein. Located within this casing is a gas-collector G, which gas-collector is of less diameter than the water-reservoir and is provided at or near its bottom with a series of openings *g*.

Located within the gas-collector G is a generator-casing E, which is provided with an upwardly-projecting pipe R, open at the top and provided with a valve V, which is adapted to rest upon the top of the said pipe and to close the same hermetically. The valve V

is provided with a stem S, which is suitably guided and provided at its lower end with a spider *a*.

Located within the generator-casing E is a carbide box or receptacle C, which may contain carbide of calcium or other suitable substance. The lower end of the generator-casing E is closed by a removable bottom D, which may be held securely but removably in place in any suitable manner.

The gas-collector G is surrounded by a suitable gasometer B, which gasometer is or may be of the usual form capable of rising and falling and dips into the water intervening between the water-reservoir W and the gas-collector G. A draw-off pipe J leads from within the gasometer. A U-shaped pipe N extends from near the top of the gas-collector downward and thence upward into the gasometer. The office of this pipe is to conduct gas from the gas-collector G to the gasometer B. This U-shaped pipe is provided with a suitable valve A, operated by handle *a'*, provided with a weight *a''*, which is secured to an arm *a'''*, secured to a chain or other connection *a''''*, carried by the rising-and-falling gasometer B. The valve A under control of the parts just mentioned regulates the passage of gas through the U-shaped pipe, and consequently the supply of gas to the gasometer. A pipe P is provided opening into the gasometer through the top wall of the gas-collector, which pipe dips into the water in the gas-collector and acts as an escape-pipe for the gas contained in the gas-collector when the pressure therein becomes sufficient to lower the water-level therein.

The operation of the apparatus is as follows, the parts being supposed to be in the positions shown in the drawing: The spider *a* rests upon the carbide-receptacle C, and thereby supports the valve V above the top of the pipe R, leaving a space O, through which water may enter from the gas-collector and flow down the said pipe upon the carbide. The water being thus supplied to the carbide, gas is evolved and ascends the pipe R and flows into the gas-collector G. From the gas-collector G the gas flows through the U-shaped pipe N into the gasometer, where the gas is stored and from which it may be withdrawn by the draw-off pipe J. The gasometer rises



in the usual manner, pulling upon the chain  $a^3$  and manipulating the valve-arm  $a'$ , so that when the gasometer has risen to a predetermined height the valve-arm  $a'$  closes the valve A, thereby shutting off the flow of gas to the gasometer. When this occurs, gas continues to be evolved. The gas-collector slowly fills with gas, pushing down the water-level and cutting off the supply of water to the carbid, so that the only gas produced immediately will be that produced by reason of the water already in the carbid-receptacle. As this gas continues to be evolved the water-level is further depressed until it falls below the lower end of pipe P, when the gas in the gas-collector may escape through said pipe P into the gasometer. It will be seen therefore that the apparatus is efficient and reliable. When it is desired to replace a used-up charge of carbid with a new charge, the bottom B of the generator-chamber R is lowered, thus lowering the carbid-receptacle C and removing the same from the generator-chamber. As the carbid-receptacle is lowered the valve V, being no longer supported by the said carbid-receptacle, through the medium of the stem S and spider  $a$  falls into place on top of the pipe R, securely sealing said pipe and preventing the escape of gas or water through the said pipe. The carbid-receptacle C may be cleaned and refilled and replaced in the apparatus, or a new properly-filled receptacle may be employed. As the carbid-receptacle is restored to its place the upper edge thereof will come against the spider  $a$ , thereby lifting the same and lifting the valve V off the upper end of the pipe R through the medium of the stem S.

It will be observed, therefore, that we have produced a simple and efficiently-operating apparatus in which the parts may be readily replaced by other parts performing the same functions, which will be within the scope of our invention.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In an acetylene-generator the combination of a water-reservoir, a gas-collecting chamber contained within the circumference of said reservoir and communicating therewith, whereby a body of water may be contained in the apparatus common to both water-receptacle and gas-reservoir, a gasometer dipping into the said water and having its lower edge interposed between the water-reservoir and the gas-collector and provided with a suitable outlet, a pipe for conducting gas from the gas-collector into the gasometer, a carbid-receptacle and an automatically-controlled valve for controlling the supply of wa-

ter to the carbid-receptacle substantially as described and for the purposes set forth.

2. In an acetylene-generator the combination of a water-receptacle, a gasometer dipping into the water of the water-receptacle, a gas-collector contained within the circumference of the gasometer and in open communication with the water-reservoir whereby a single body of water may be common to the gas-collector and the water-reservoir, a pipe for conducting gas from the gas-collector to the gasometer and provided with a valve controlled by the rising and falling of the gasometer and a carbid-receptacle in communication with the gas-collector and an automatically-operated valve for regulating the admission of water to the carbid-receptacle.

3. In an acetylene-generator, the combination of a water-reservoir communicating with a suitable gasometer, a generator-chamber contained within the said water-reservoir and provided with a pipe R adapted to conduct both gas and water and extending upward to the surface of the water contained within the gasometer, which water envelops the pipe and surrounds the generator-chamber which chamber is adapted to receive water from the water-reservoir through the pipe, a valve closing the said pipe and provided with operative means partly contained within the generator-chamber and a removable carbid box or receptacle adapted to be inserted and removed into the generator-chamber and operating to unseat the valve when it is inserted into the generator-chamber to allow water to flow into the generator-chamber and gas to flow out of the generator-chamber, and to reseat the valve when it is removed from the generator-chamber in order to shut off the flow of water and gas.

4. In an acetylene-generator the combination of the water-reservoir W, the gas-collector G, the gasometer B dipping into the water-reservoir, the pipes P and U communicating between the gas-collector and the gasometer, the pipe U being provided with an automatically-operated valve A, a carbid-receptacle C, a pipe R for conducting water from the gas-collector to the carbid-receptacle and means for opening and closing the said pipe by the movement of the carbid-receptacle, substantially as described and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

OTTO ERNST.  
ALFRED PHILIPS.

Witnesses:

CHRISTIAN GEISS,  
JEAN GRUND.