

No. 679,964.

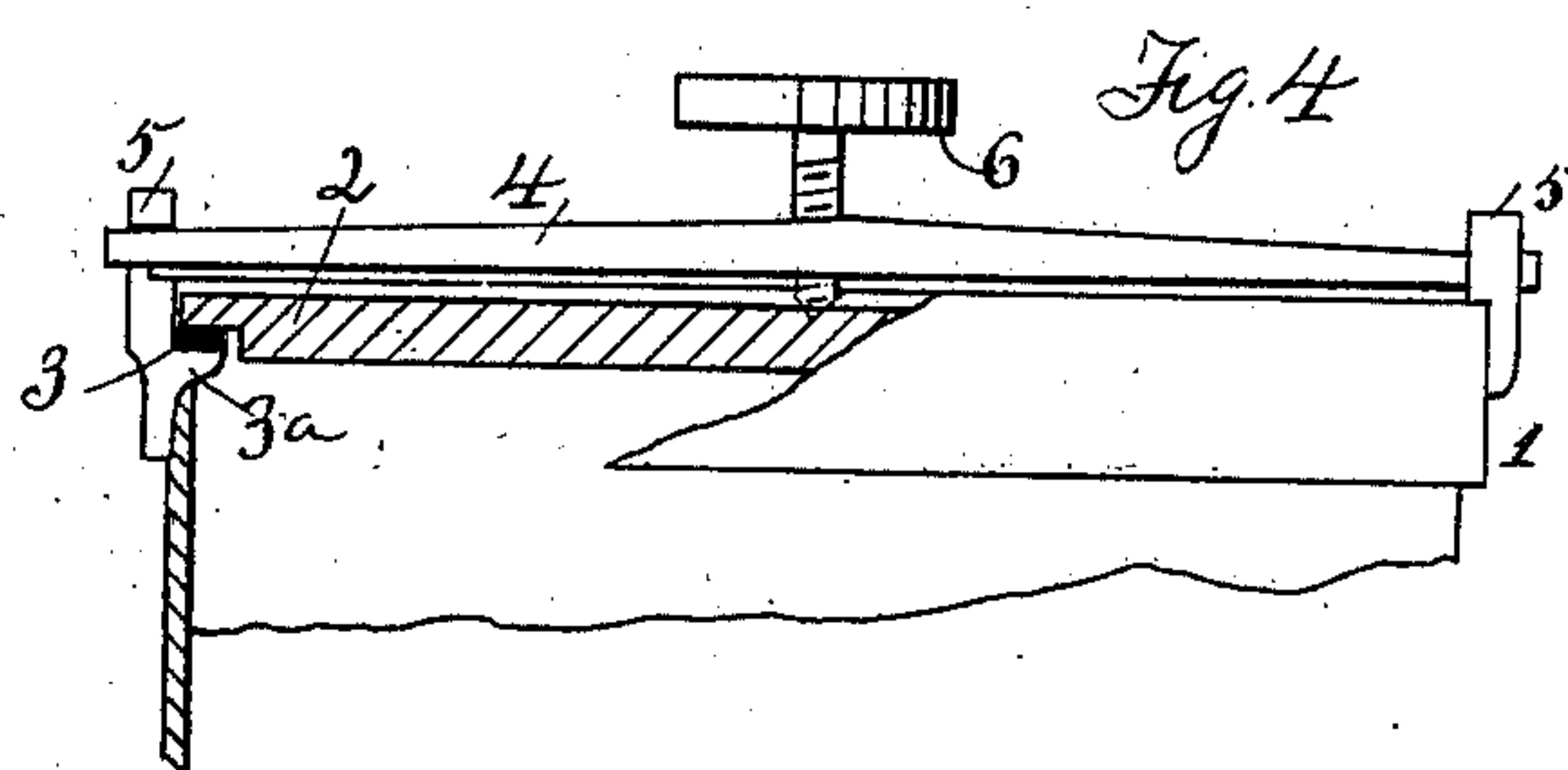
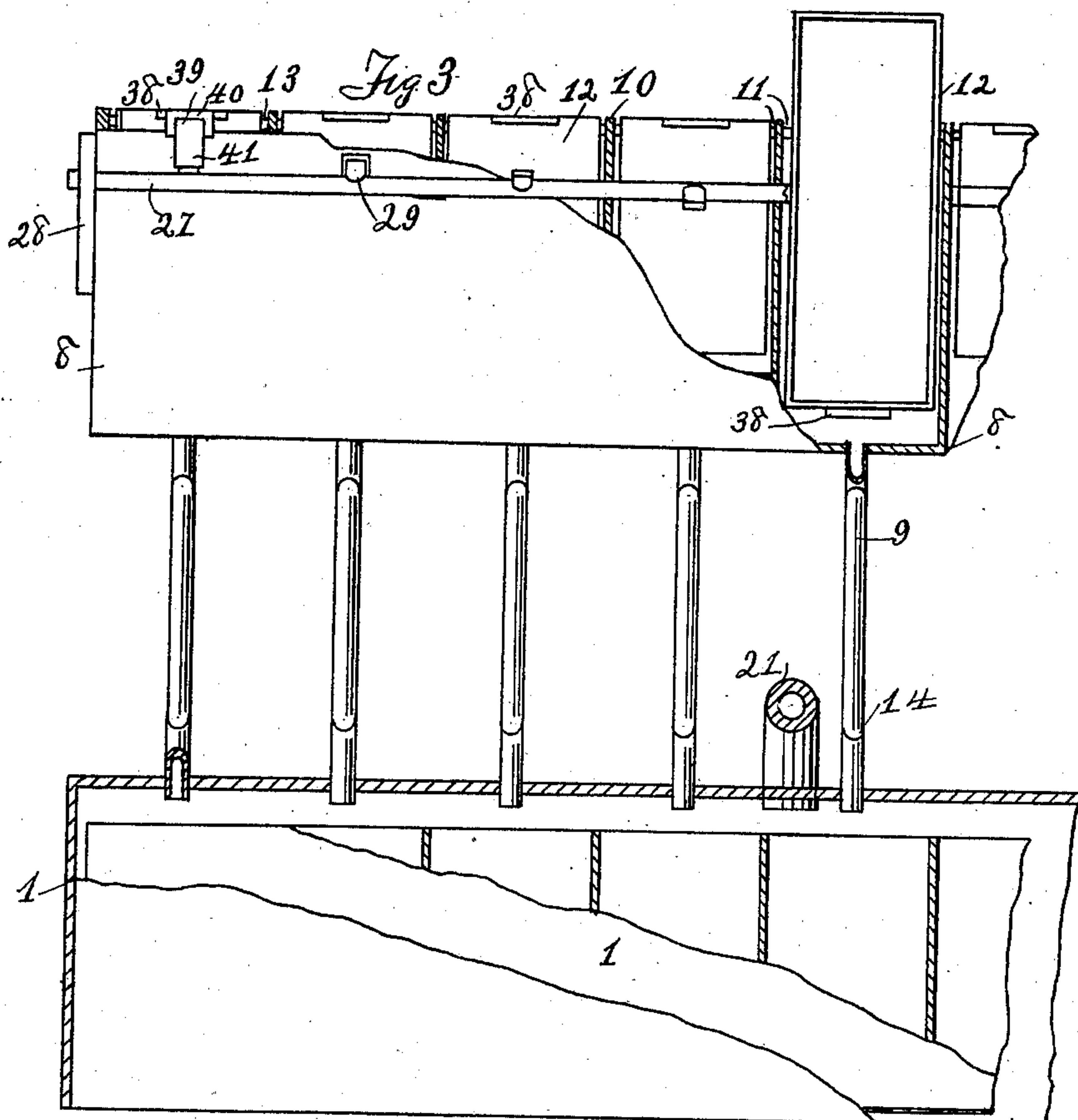
Patented Aug. 6, 1901.

J. J. HENDLER.
ACETYLENE GAS APPARATUS.

(Application filed Oct. 23, 1899.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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JOHN J. HENDLER, OF KANSAS CITY, MISSOURI, ASSIGNOR TO ALEXANDER GRAY, WILLIAM K. REEVES, AND EDWARD K. REEVES, COMPRISING THE FIRM OF THE INTERNATIONAL LIGHT AND HEAT COMPANY, OF SAME PLACE.

ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 679,964, dated August 6, 1901.

Application filed October 23, 1899. Serial No. 734,441. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HENDLER, a citizen of the United States, residing at Kansas City, in the county of Jackson, in the State of Missouri, have invented a certain new and useful Apparatus for Manufacturing Acetylene Gas, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to improvements in apparatus for manufacturing acetylene gas, having more particular reference to an arrangement of carbid-cells and water-cups and means for subjecting the smaller divided portions of the carbid in the cells successively to the action of the water, and thus providing for the continuous generation of the gas in such quantity as may be required to supply the demand upon the apparatus, this quantity depending upon the size of the carbid-cells and water-cups, and, again, the size of the carbid-cells and water-cups depending upon the intended use of the machine, whether it be a small machine for household use or a large machine for more extensive operations; and my invention consists in certain features of novelty hereinafter described, and pointed out in the claims.

Figure 1 represents an end elevation showing the wall of the gasometer partly broken away and the water-chamber in cross-section. Fig. 2 represents a detail view showing the water-chamber and a water-cup in cross-section and the arrangement for tripping or releasing the water-cup to empty the water therefrom. Fig. 3 represents a side elevation of the water-chamber and generating-chamber with the walls of each partly broken away, showing the water-cups and carbid-cells therein. Fig. 4 represents a detail top plan view, partly in cross-section, showing the door of the generating-chamber and the means for securing the same.

Similar numerals refer to similar parts throughout the several views.

1 represents the generating-chamber, provided with a door 2, seated upon a gasket 3, arranged upon the door-seat 3^a, secured upon the chamber-casing and secured by the bar 4, engaging the latches 5, and the set-bolt 6,

threaded through the bar and bearing against the door, thus securely preventing the escape of the gas as it is generated within the chamber. Within said chamber is arranged a series of cells 7 for containing the calcium carbid from which the gas is to be generated. For this purpose the calcium carbid of commerce is preferably used in portions of such size as to fit conveniently in the cells.

8 represents the water-chamber, supported upon the bent tubes 9, the further purpose of which tubes will be hereinafter noted. Said water-chamber is divided by the division-walls 10 into compartments 11, and in each of said compartments is provided a water-cup 12, pivotally mounted aside from its center upon the rod 13, extending longitudinally through the chamber. The number of said water-cups and compartments corresponds to the number of carbid-cells in the generating-chamber, and each compartment is provided with a double-bent or U tube 9, communicating with the generating-chamber immediately over the corresponding carbid-cell and providing a passage for the water from said compartment to the carbid-cell, as hereinafter noted. The lower bend 14 in said tubes also provides that said passage shall at all times be water-sealed to prevent the passage and escape of gas from the generating-chamber therethrough.

15 represents an inner casing, and 16 an outer casing, forming a chamber 17, containing water or other suitable liquid to provide a liquid-seal chamber in which the gasometer 19 is inverted, the liquid-seal gas-chamber 20 of which is over the inner casing.

21 represents a supply-pipe communicating between the gas-generator and the gas-chamber of the gasometer and provided with a valve 22 to shut off such communication and prevent the return or escape of gas from the gasometer. 23 represents the discharge-pipe leading from the gas-chamber to the service-pipe (not shown) for distribution. It will be observed that said supply-pipe and discharge-pipe simply pass through the top of the inner casing and do not extend into the gas-chamber, wherefore when the gasometer is empty it will rest closely upon the top of the inner casing and a very small amount

of air will be admitted into the gas-chamber, such construction providing an element of safety in the apparatus.

24 represents a guide-rod mounted upon the gasometer and passing through the guides 25 on the outer casing to give stability to and preserve the equilibrium of the gasometer as it rises and falls in the seal-chamber under the pressure of the gas within it. Such number of said guide-rods may be used as may be deemed necessary. Usually three or four will be sufficient, but, being identical, one only is shown.

26 represents a safety or escape pipe extending outside the gasometer and terminating a short distance above the bottom edge thereof, whereby before the gasometer is raised by upward pressure of the contained and incoming gas entirely out of the sealing liquid the gas will find vent and escape through said pipe, and thus prevent the gasometer from rising out of the sealing liquid and emptying its large amount of contained gas, with the serious consequences incident thereto. This, it will be observed, constitutes a very important feature of safety in the construction and operation of the apparatus.

For emptying the water-cups provision is made as follows: On a shaft 27, extending longitudinally parallel with the water-chamber and mounted on the arms 28, secured upon the casing, is provided a series of pins 29, so disposed upon said shaft as to be successively brought into operation as the shaft is turned, and corresponding in number to the number of water-cups on said shaft. At or near one end is fixedly mounted a ratchet-wheel 30. On said shaft, closely adjacent to said ratchet-wheel, is loosely mounted a sector 31, near the rear margin of which is pivotally mounted a pawl 32, arranged to engage the teeth of said ratchet-wheel and held in engagement therewith by the spring 33, also mounted upon the sector. In advance of said pawl an excision is made in said sector, forming a finger 34 thereon, and arranged in such position and relation that when said pawl is in normal position for operation, as shown in heavy lines in Fig. 2, said finger will extend in the path of a pin 35 on the trip-rod 36, mounted on the gasometer and passing through the guide 37, secured upon the casing 16. Upon the advance edge of the water-cup is provided a lip 38, and a trip 39, sliding in a sleeve 40 on the casing of the water-chamber, is arranged to engage said lip on the water-cup and normally hold said cup to contain the water therein. Said trip is provided with a tripping-finger 41, extending in the path of one of the pins 29 on the shaft 27. Now as the water from one of the water-cups is emptied upon the carbid in its cell gas is generated therefrom, which passes through the supply-pipe 21 into the gas-chamber of the gasometer, and the gasometer is elevated a certain distance. Then as the carbid in that particular cell becomes

exhausted and no more gas is generated therefrom and the gas in the gas-chamber is led away through the discharge-pipe and distributed the gasometer will descend until the pin 35 in the trip-rod engages the finger 34 on the sector, bringing the pawl into active engagement with the ratchet and turning the shaft 27, and thereby bringing the pin 29 into engagement with the tripping-finger 41, as shown in dotted lines in Fig. 2, releasing the trip 39 from the lip on the water-cup. The water-cup being thus released and being mounted aside from its center will under the force of gravity turn on its support, as shown in dotted lines in Fig. 2, emptying the water therefrom into its compartment, whence it will flow through the tube 9 into the corresponding carbid-cell below. The generation of gas then again proceeds and the gas passes through the supply-pipe 21 to the gas-holder, and as the gasometer rises the pin 35 will come in contact with the shoulder formed by the excision in the sector, moving the sector and carrying the pawl back ready to engage the succeeding tooth of the ratchet and restoring the finger to position to be engaged by the pin as the gasometer again descends.

When the carbid in all the cells has been exhausted, closing the valve 22 to prevent the flow of gas back from the holder, the door of the generating-chamber may be opened and the cells removed and the residuum emptied therefrom and a fresh supply of carbid placed therein and the cells replaced in the chamber, the water-cups restored to position and refilled, and the apparatus is again in condition for operation, the work of recharging the apparatus being without danger and requiring but little time and labor.

Thus is provided a continuously active and automatic generating apparatus cheaply constructed and possessing a number of advantages and important features of safety.

Having thus fully described my apparatus and its mode of operation, what I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with a liquid-sealed gas-holder provided with a supply-pipe and discharge-pipe, of a gas-generating chamber with which said supply-pipe communicates, a series of carbid-cells arranged in said chamber, a series of water-compartments mounted above said chamber, a series of water-sealed passages communicating severally and respectively with said compartments and with said cells, a series of water-cups eccentrically mounted in said compartments, means for retaining said cups in position to contain the water therein, and means for successively tripping said cups to empty the water therefrom, substantially as set forth.

2. In an apparatus for generating acetylene gas, the combination with a gas-generating chamber having a sealed door and provided with a gas-pipe leading therefrom, and a series of carbid-cells arranged in said chamber,

of a series of water-compartments, a series of water-cups eccentrically mounted in said compartments, a series of tubes forming water-sealed passages severally and respectively between said compartments and said cells, means for retaining said cups to contain the water therein and means for tripping said cups to empty the water therefrom, substantially as set forth.

3. In an apparatus for generating acetylene gas, the combination with a gas-holder provided with suitable supply and discharge pipes, a gas-generating chamber communicating through said supply-pipe with said holder, a series of carbid-cells in said chamber, a series of water-compartments, a series of water-sealed passages between said compartments and said carbid-cells, a series of water-cups eccentrically mounted in said compartments, and provided with marginal lips, trips mounted on the water-chamber casing arranged to engage said lips to retain said cups in position to contain the water, and means controlled by the rise and fall of the gas-holder for successively tripping said cups to empty the water therefrom, substantially as set forth.

4. In an apparatus for generating acetylene gas, having a suitable gas-holder, a series of water-compartments, a series of water-cups eccentrically mounted in said compartments, and provided with marginal lips, a series of trips mounted on the compartment-casing arranged to engage said lips, a shaft mounted adjacent to said compartments, a series of pins on said shaft arranged to successively engage said trips, a ratchet-wheel fixedly mounted on said shaft, a recessed sector loosely mounted on said shaft, a spring-controlled pawl mounted on said sector and arranged to engage said ratchet-wheel, a tripping-finger on said sector, and a tripping-rod mounted on the gas-holder provided with a tripping-pin arranged to engage said finger as the holder falls to trip said water-cups and empty the water therefrom, and to engage said shoulder of said recess as the holder rises and restore said pawl to position, substantially as set forth.

5. In an apparatus for generating acetylene gas, a series of water-compartments, water-sealed discharge-pipes communicating with said compartments, a series of water-cups mounted aside from the center of gravity in

said compartments, and a series of trips mounted on the casing of said compartments, and arranged to engage said water-cups to retain the same in position to contain the water therein, and a series of carbid-holders communicating through said pipes with said water-compartments, and means for disengaging said trips to permit the tilting of said water-cups to empty the water therefrom, substantially as set forth.

6. In an apparatus for generating acetylene gas the combination with a gas-generating chamber having a suitable gas-discharge pipe, and a series of carbid-cells arranged in said chamber, of a series of water-compartments corresponding with said series of cells, and having each separate and independent water-sealed communication with a corresponding carbid-cell, a series of water-cups mounted aside from their center of gravity in said compartments, and a series of trips mounted on the compartment-casing arranged to retain said water-cups in position to contain the water therein, substantially as set forth.

7. In an apparatus for generating acetylene gas the combination with a gas-generating chamber having a suitable gas-discharge pipe, and a series of carbid-cells arranged in said chamber, of a series of water-compartments corresponding with said series of cells, having each separate and independent communication with a corresponding carbid-cell and sealed to the passage of gas from the gas-chamber, a series of water-cups mounted aside from the center of gravity in said compartments and a series of trips mounted on the compartment-casing arranged to retain said water-cups in position to contain the water therein, substantially as set forth.

8. In an apparatus for generating acetylene gas, a water-compartment, a water-sealed discharge-pipe communicating with said compartment, a tilting water-cup mounted therein and arranged to be tilted by the force of gravity, a trip engaging said cup to retain the same in position to contain the water therein, and means for disengaging said trip to permit the tilting of said cup; substantially as set forth.

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Witnesses:

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