No. 616,546. Patented Dec. 27, 1898.

C. N. LIPPITT.

ACETYLENE GAS GENERATOR.

(Application filed Dec. 19, 1896.)

(No Model.) 2 Sheets--Sheet 1.

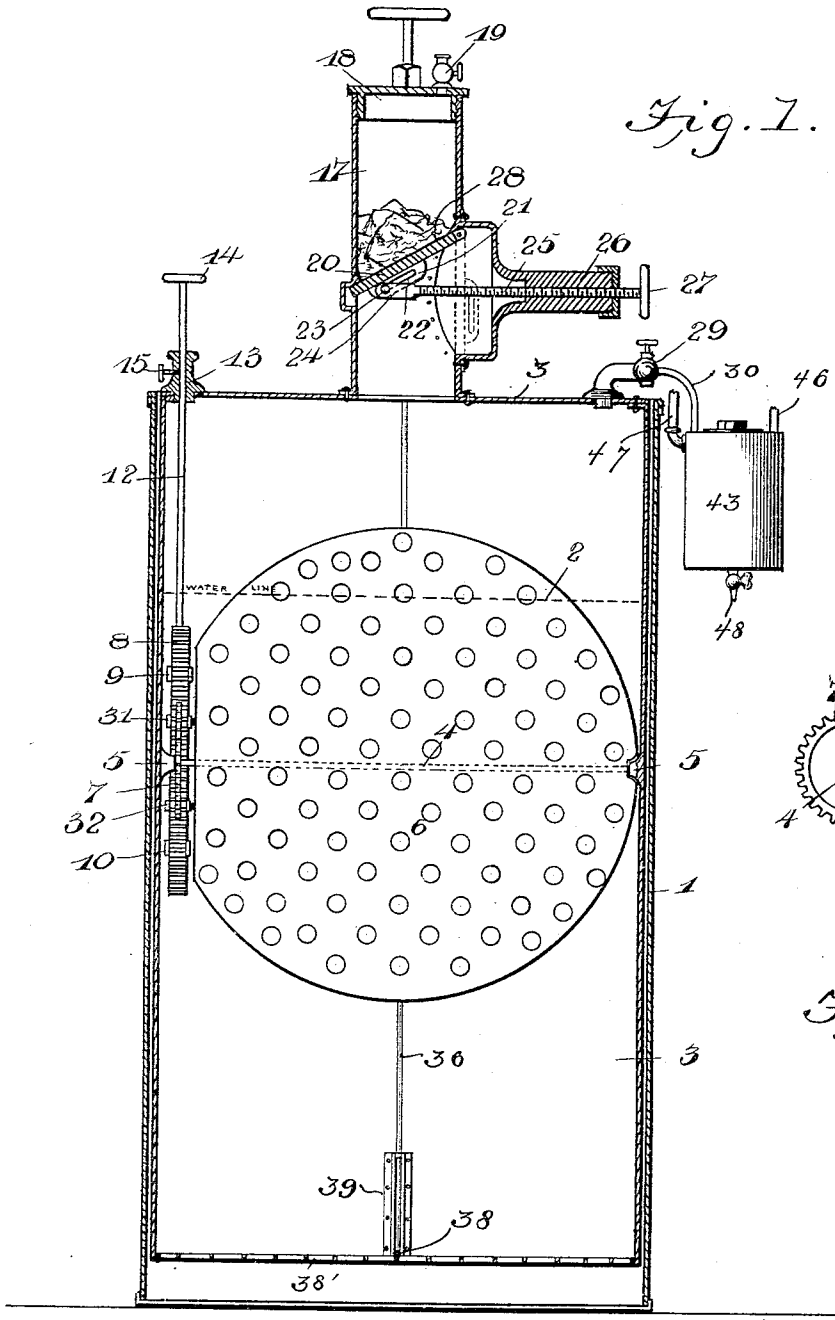


Fig. 1.

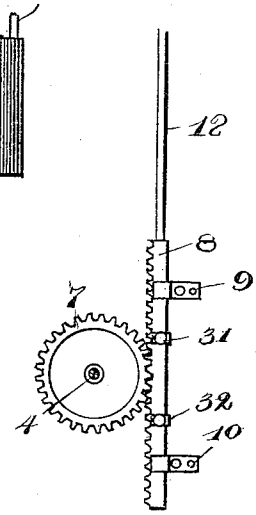


Fig. 2.

Witnesses
W. J. Doyle.
H. F. Ennis

Inventor
Chas. N. Lippitt.
By. H. B. Wilson.
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3.

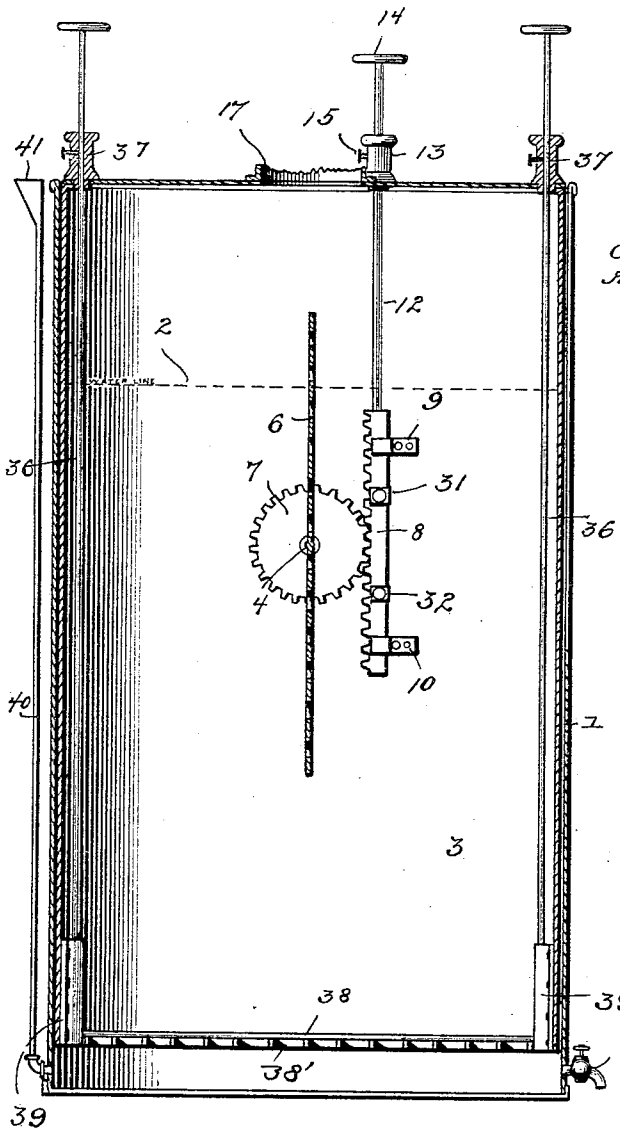


Fig. 4.

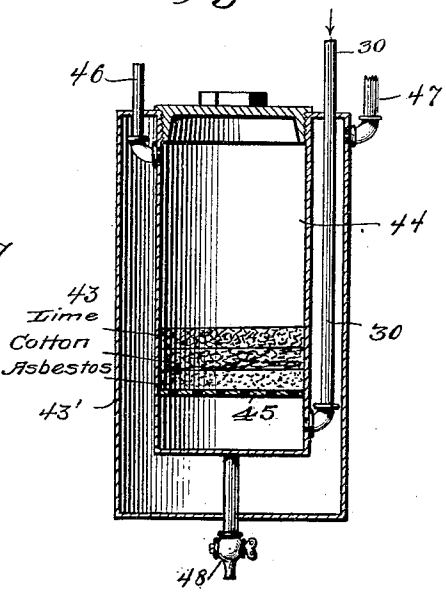
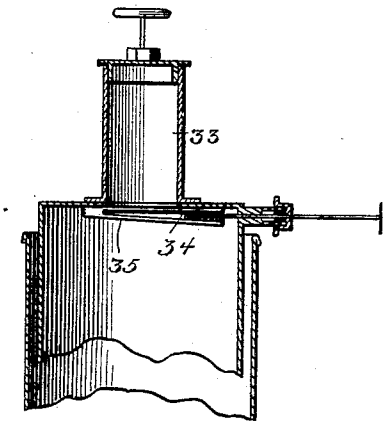


Fig. 5.



Witnesses
E. S. Monroe
H. F. Innis.

Inventor
Chas. N. Lippitt.
By H. B. Willson.
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES N. LIPPITT, OF BELOIT, WISCONSIN.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 616,546, dated December 27, 1898.

Application filed December 19, 1896. Serial No. 616,243. (No model.)

To all whom it may concern:

Be it known that I, CHARLES N. LIPPITT, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Acetylene-Gas Generators, Coolers and Purifiers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to acetylene-gas generators; and the object is to provide a simple, cheap, and reliable generator for general household use.

To this end the novelty consists in the construction, combination, and arrangement of the same, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same figures of reference indicate the same parts of the invention.

Figure 1 is a vertical section of my improved acetylene-gas generator. Fig. 2 is a detail elevation of the manner of operating the reversible shelf. Fig. 3 is a vertical section of the generator, taken transversely to the view shown in Fig. 1. Fig. 4 is an enlarged vertical section of the gas cooler and purifier, and Fig. 5 is a sectional elevation of a modification of the charging-chamber.

1 represents a cylindrical water-tank closed at the bottom and open on top, and the horizontal dotted line 2 represents the level of the water in said tank.

3 represents the gas-holder, it being likewise cylindrical and of a size to telescope easily inside of the water-tank 1, and is counterbalanced in the usual manner to rise and fall with the volume of gas contained inside.

4 represents a horizontal shaft journaled in bearings 5 5, secured to the opposite walls of the holder 3, and 6 is a circular perforated sheet-metal diaphragm rigidly mounted on said shaft. 7 is a spur gear-wheel likewise rigidly mounted on one end of said shaft.

8 represents a rack-bar having movement in guide-brackets 9 10, secured to the inside of the gas-holder 3, the teeth on said rack-bar meshing with the teeth on the gear-wheel 7.

12 represents a rod the lower end of which is fixed to the upper end of said rack-bar, its upper end extending through a stuffing-box 13 in the top of the holder 3 and terminating in a handle 14, by means of which the rack-bar may be operated.

15 represents a set-screw located in the stuffing-box, its inner end impinging on the rod 12 to secure it in position when desired.

31 and 32 represent two adjustable stops on the rack-bar, which serve to limit the vertical movement of said bar, and when the bar and its rod are at the upper end of its stroke the stop 31 is against the upper guide-bracket 9 and the perforated diaphragm is in a horizontal position. If the rod be now pushed downward until the stop 32 comes in contact with the bracket 10, the rack-bar turns the gear-wheel, shaft, and diaphragm one-half a revolution, which reverses the diaphragm from its first position, thus discharging the moist or pasty residue of the carbid in the water, and a fresh charge may be placed on the upper side of the diaphragm, which when exhausted is discharged in the same manner by reversing the diaphragm, which is done by raising the rod to its former position.

17 represents the charging-chamber, secured to the top of and in communication with the gas-holder 3. The chamber 17 is provided with an air-tight removable cover 18, in which is secured a vent or pet cock 19.

20 represents a hinged valve formed with a bracket 21, having a slot 22, which engages a bolt 23 in the bifurcated end of a socket 24, and 25 is a screw-rod, the inner end of which is journaled in said socket, while its screw-threaded portion extends through the internally-threaded stuffing-box 26 and its outer end is provided with the usual hand-wheel 27. When this valve is closed, its face is in contact with the diagonal valve-seat 28 in the chamber, and when the screw-rod is withdrawn the valve assumes an approximately vertical position, as shown in dotted lines in Fig. 1.

33 represents a modified form of charging-chamber. A horizontal valve 34 slides in inclined guideways 35, which serve to press the leather-covered face of the valve into intimate contact with its seat in the bottom of the chamber 33.

A valve 29 provides a closure in the pipe 30, which latter connects the interior of the gas-holder 3 with the cooler and purifier, to be later described.

36 36 represent vertical rods passing through stuffing-boxes 37 37, and they are connected at their lower ends by an integral horizontal bar 38, provided with transverse arms 38′, by means of which the spent calcium carbid in the bottom of the tank may be agitated to discharge the same from the tank.

39 39 are vertical guides in the bottom of the holder for the rods 36 36 to work in.

40 represents a pipe connected to the bottom of the tank and extending up the outside thereof, its upper end being formed with a funnel 41, and 42 is an ordinary stop-cock located in the opposite side of the tank. By opening this cock and passing water through the pipe 40 the bottom of the tank may be "slushed" out to carry off the refuse or spent carbid.

43 represents the combined gas cooler and purifier. It consists of a cylindrical casing 43′, in which is suspended a smaller cylindrical chamber 44. This inner chamber is provided with a perforated shelf 45, upon which is placed a layer of asbestos, a layer of cotton, and a layer of slaked lime, so that the acetylene from the holder is conducted through the pipe 30 to the bottom of the chamber 43, thence outward through the outlet-pipe 46 to the usual service gas-pipe.

47 represents a water-inlet pipe for introducing water into the cylinder 43.

To put the generator into operation, the tank 1 is filled with water to about the level of dotted line 2, the cover 18 is removed, a suitable quantity of calcium carbid is placed upon the valve 20, and the cover 18 replaced. The valve 20 is then opened by means of the screw-rod 25, permitting the calcium carbid to fall upon the perforated diaphragm 6 beneath the surface of the water, generating a sufficient quantity of acetylene gas to raise the gas-holder 3 and carry the diaphragm 6 above the surface of the water. The petcock is opened until all air has been expelled from the gas-holder 3, and when this is accomplished the valve 29 is opened and the acetylene gas passes through the cooler and purifier 43, ready to be delivered through the pipe 46 into the service-pipes for consumption.

If at any time the gas is generated faster than it is consumed, it accumulates in the gas-holder 6, raising the holder, so that the calcium carbid is lifted above the surface of the water in the tank 1, when the formation of gas is suspended until a quantity is used and the calcium carbid is permitted to again settle below the surface of the water.

When the carbid becomes exhausted, a fresh charge may be inserted into the chamber 17 by removing the cover 18 and after the cover is replaced dropped upon the diaphragm 6 by opening the valve 20. By this means a continuous generation of gas for an indefinite period is obtained without the admission of air into the generator or in any way interfering with the flow into the service-pipes.

I claim as my invention—

1. The water-tank, the gas-holder telescoping therein, a horizontal shaft journaled in bearings in said holder, a perforated diaphragm, and a gear-wheel fixed on said shaft, a pair of guide-brackets secured within said holder, a vertically-reciprocating rack-bar mounted in said brackets, adjustable stops mounted on said rack-bar, an operating-rod connected to said rack and extending outside through a stuffing-box on the holder, and a set-screw secured in said stuffing-box in the path of said rod in combination with a chamber located above and in connection with said gas-holder, and having a removable cover provided with a petcock, and an internal valve-seat and a lateral stuffing-box internally screw-threaded, a valve hinged in said chamber, and a threaded valve-stem extending through said stuffing-box and in operative contact with said valve, substantially as and for the purpose set forth.

2. The water-tank, the gas-holder, the perforated reversible shelf mounted in said holder, in combination with the agitator-bar 38 and the vertical rods 36 36, substantially as shown and described.

3. In an acetylene-gas generator, in combination, a liquid-reservoir, a gas-holder therein, a shaft journaled in the gas-holder, a shelf and a pinion fixed on said shaft, a rack-bar meshing with said pinion, a rod for moving the rack-bar, a charging-chamber having a removable cover and a movable bottom, said movable bottom being provided with a bracket having an elongated opening, a screw-rod having a swiveled forward end which forward end has an engagement with the elongated opening mentioned substantially as and for the purpose specified.

4. In an acetylene-gas generator, in combination, a liquid-reservoir, a gas-holder therein, a shaft journaled in the gas-holder, a shelf and a pinion fixed on said shaft, a rack-bar meshing with said pinion, a rod for moving the rack-bar, a charging-chamber above and opening into the gas-holder, a closure for the opening between the charging-chamber and the gas-holder, a bracket on the closure having an elongated opening, a screw-rod having a swiveled forward end which forward end has an engagement with the elongated opening mentioned, a nut for the screw-rod, a removable cover for the charging-chamber, a purifying and cooling chamber having communication with the gas-holder, and means for suspending that communication, substantially as and for the purpose specified.

5. In an acetylene-gas generator, in combination, a liquid-reservoir, a gas-holder therein, a shaft journaled in the gas-holder, a shelf and a pinion fixed on said shaft, a rack-bar meshing with said pinion, a rod moving

the rack-bar, a charging-chamber above the gas-holder having a removable cover and a movable bottom, a screw-rod for actuating the movable bottom, agitators located near the bottom of the liquid-reservoir, a rod for moving said agitators, a slushing-pipe communicating with the liquid-reservoir and a valve for drawing off the contents of the said reservoir, substantially as and for the purpose specified.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

CHARLES N. LIPPITT.

Witnesses:
F. F. LIVERMORE,
WM. RECKHOW.