No. 825,368.

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W. H. WHITE.

ACETYLENE GAS GENERATOR.

APPLICATION FILED DEC. 30, 1904.

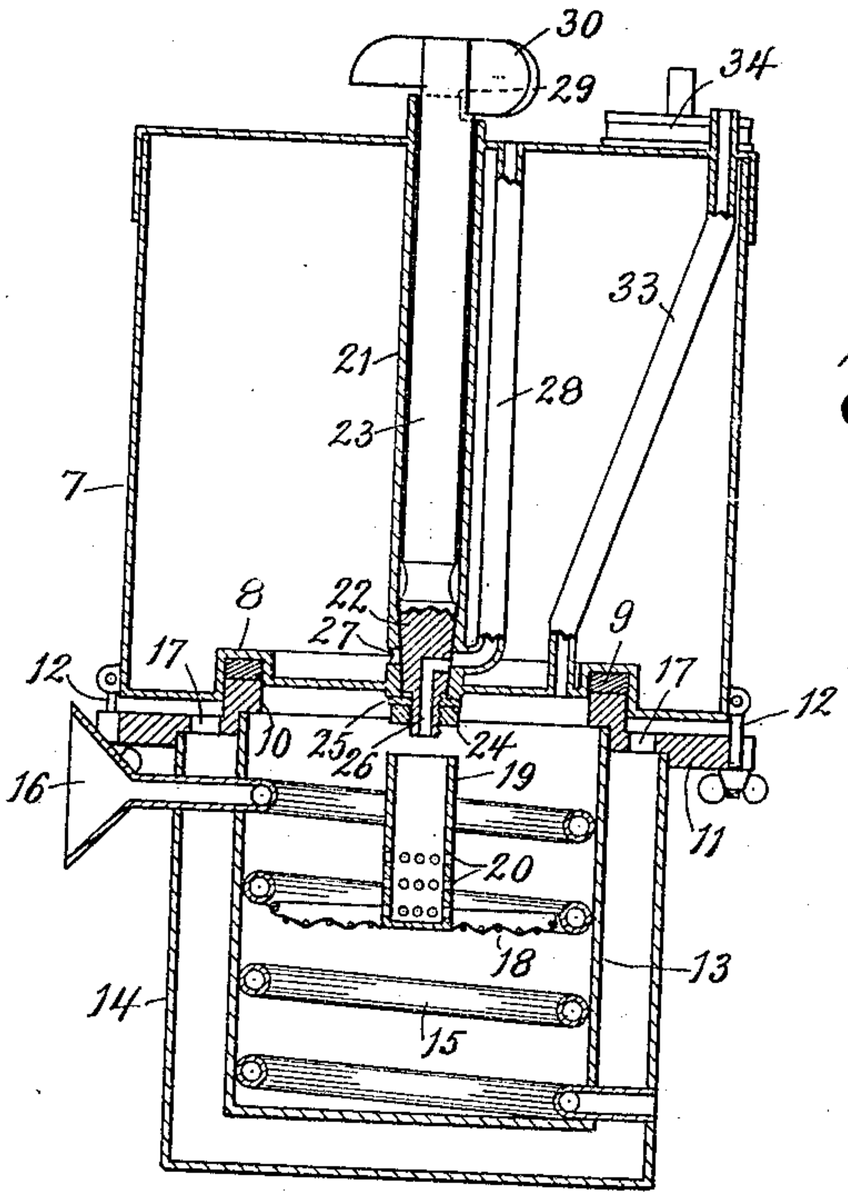
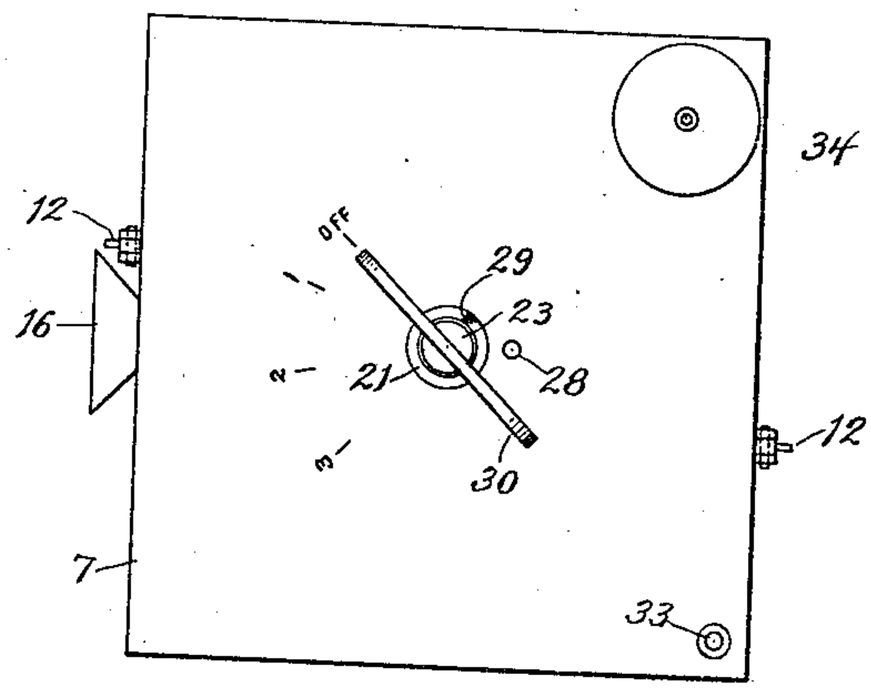


Fig. 1.

Fig. 2.



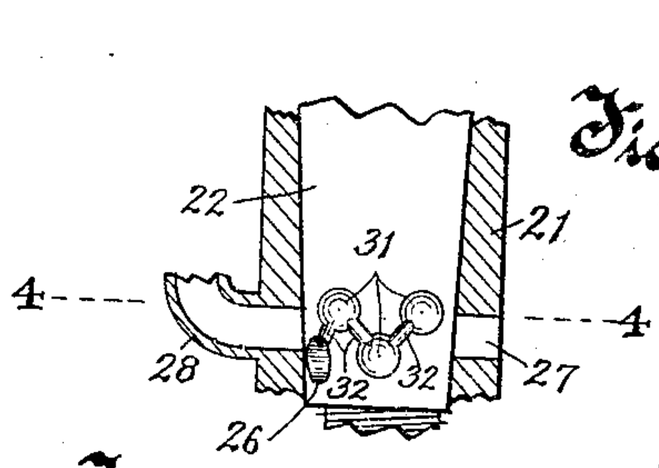


Fig. 3.

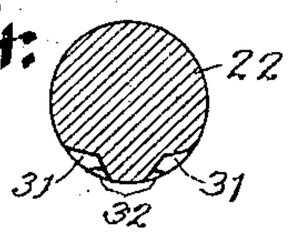


Fig. 4.

Witnesses.
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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS GENERATOR.

No. 825,368. Specification of Letters Patent. Patented July 10, 1906.

Application filed December 30, 1904. Serial No. 238,871.

To all whom it may concern:

Be it known that I, WALTER H. WHITE, residing in Kenosha, in the county of Kenosha and State of Wisconsin, have invented new and useful Improvements in Acetylene-Gas Generators, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to acetylene-gas generators, and has for its object to provide a generator especially adapted for use with acetylene-gas lamps for vehicles.

Another object of this invention is to provide a means for cooling the carbid-pot by circulating air through a coil therein.

Another object of this invention is to provide a double-shell casing for the carbid-pot, so that the outer shell thereof may be kept cool, and therefore adapted to be handled without danger of burning the hands.

Another object of this invention is to provide a valve of novel construction for controlling the admission of water to the carbid by degrees and adapted when closed to open the carbid-chamber to the atmosphere so as to relieve the pressure therein.

With the above and other objects in view the invention consists in the device, its parts, and combinations of parts as herein set forth, and their equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in the several views, Figure 1 is a vertical sectional view of an acetylene-gas generator embodying this invention, parts being sectioned in different planes to illustrate their construction. Fig. 2 is a plan view thereof. Fig. 3 is a sectional elevation of the water-admission valve, and Fig. 4 is a transverse sectional view of the valve-plug taken on the line 4 4 of Fig. 3.

In the drawings, 7 represents a water-reservoir of usual rectangular shape, having an annular groove 8 formed in its bottom and containing a rubber gasket 9, against which an upwardly-extending annular flange 10 of a plate 11 is clamped by means of winged nuts on bolts 12, which are pivoted to the lower end of the water-reservoir and swing into and engage with notches in the edge of the plate 11.

A carbid-pot comprising an inner cylindrical shell 13, surrounded by a larger outer cylindrical shell 14, is secured to the plate 11 by having these shells tightly secured within concentric stepped annular shoulders in the bottom of the plate 11, the inner sheli being so connected to the plate 11 as to prevent the passage of gas therebetween. The difference in the size of the two shells provides a space between them surrounding the sides and bottom of the inner shell.

A coiled tube 15 is located within the inner shell 13 against the walls thereof and its ends pass through the inner and outer shells 13 and 14, respectively, the upper end having a forwardly-extending funnel-shaped mouth 16 and the lower end discharging in the rear of the device, so that as the generator is carried forward with speed air will enter the funnel-mouth 16 and pass through the coil-tube 15 to cool the interior of the carbid-pot.

The plate 11 is provided with a series of perforations 17, which open the surrounding space between the two shells of the carbid-pot to the atmosphere, there being a space between the plate 11 and the bottom of the water-reservoir 7, as clearly seen in Fig. 1, thus allowing air to circulate through this surrounding space and cool the shells of the carbid-pot, so that the outer shell may be kept at a temperature which will enable it to be freely handled without burning the hands.

A circular screen 18 is mounted in the inner shell 13 at about the middle portion thereof, preferably on the coiled tube 15, and constitutes a support for the calcium carbid, permitting its ash to drop to the bottom of the inner shell. Supported on the middle portion of screen 18 is a cylindrical tube 19, which is provided with an imperforate bottom, but has rows of perforations 20 in its sides, near the lower end, so that water dropped therein will be fed to the calcium carbid through the perforations 20 on all sides.

The water-reservoir 7 has a tubular valve-casing 21, extending vertically therethrough and tapered at the lower portion of its bore to form a valve-seat for a tapering plug-valve 22, which is carried by a valve-stem 23, extending through said tubular casing. The plug-valve 22 is held tightly against its seat by means of a nut 24, threaded on the reduced lower end thereof, clamping a washer 25 against the lower end of the tubular casing

21. An angular passage-way 26 extends upwardly through the reduced end of the plug-valve 22 and opens at the tapering surface of the valve-plug to connect with an opening 27 through the tubular casing 21 and convey water from the water-reservoir 7 to the perforated tube 19 therebeneath in one position of the valve 22 and to register with an opening on the opposite side of the tubular casing 21, with which a tube 28 is connected. The tube 28 passes through the top of the water-reservoir 7 and opens into the atmosphere, so that the passage-way 26 connects the interior of the carbid-pot with the atmosphere to relieve the pressure within the carbid-pot when the valve is turned to shut off the supply of water thereto.

The upper end of the tubular casing 21 extends above the top of the water vessel 7 and is cut away to form a pair of stop-shoulders 29, against which the rear end of a handle-plate 30, which is set into a slot in the end of valve-stem 23, is adapted to engage to limit the degree of movement of the valve 22. The front end of said handle-plate is pointed and travels over graduation-marks on the top of the water-reservoir to constitute an indicator showing the position of the valve at a glance.

In order that the water may be fed to the calcium carbid at greater or less speed according to the demand, the valve 22 is provided with a series of depressions or pockets 31 in its tapering surface, which are connected by means of shallow grooves 32 with each other successively and finally with the opening of the passage-way 26. These pockets 31 are connected by the grooves in zigzag arrangement and are so located that each partially registers with the opening 27 as the valve 22 is turned, thus establishing a communication between the opening 27 and the passage-way 26.

The first pocket 31 registers with the opening 27 when the handle-indicator 30 points to the index-mark 1 and allows water to pass from the water-reservoir 7 through the opening 27 into the first pocket 31 and then by way of the tortuous passage formed by the grooves 32 and the other pockets 31 to the passage-way 26, the resistance of this winding restricted passage being sufficient to limit the flow of water to the slowest feed desired. The successive pockets 31 registering with the opening 27 as the indicator-handle 30 passes over the other index-marks increase the flow of water by cutting out more and more of the resistance to the passage of the water until the last pocket 31, registering with opening 27, supplies water as fast as it is ever desired.

With the particular construction of the valve as herein shown the passage-way 26 is not intended to register with the opening 27 direct but only by way of the pockets 31. Consequently the index-marks are only four in number to indicate the position of the valve when either of the three pockets 31 register with opening 27 and when the communication with said opening is broken by turning the last pocket 31 out of register therewith, as shown in Fig. 3, in which position of the valve the passage-way 26 connects with the vent-tube 28 and relieves the carbid-pot of its pressure.

A tube 33 passes through the water-reservoir 7, conveying the acetylene gas from the carbid-pot to the top of the water-reservoir, where it is adapted to be connected with the pipe which supplies gas to the lamp (not shown) and a vented screw-plug 34 is threaded in an opening in the top of the water-reservoir through which water may be inserted for charging the water-reservoir.

In operation the generation of acetylene gas is controlled by the operation of the handle 30, the moving of the handle from the off position to the position marked 1 serving to bring the first pocket 31 into register with the opening 27 and allowing a small quantity of water to pass from the water-reservoir through the tortuous passage formed by the grooves 32 and the pockets 31 to the passage-way 26, from which it drops into the perforated cylindrical tube 9, where it is distributed through the perforations 20 to the calcium carbid on all sides thereof. The resulting acetylene gas passes off through the tube 33 to the lamp or other device to be supplied and the carbid-ash settles through the screen 18 to the bottom of the carbid-pot as usual. The speed of the generation of gas will depend upon the position of the handle, which determines the quantity of water admitted to the carbid by the valve 22. When the handle 30 is turned to the off position, the supply of water to the carbid is stopped and the carbid-pot is opened to the atmosphere by the passage-way 26, registering with the opening of tube 28, so that the pressure within the carbid-pot is relieved.

In acetylene-gas generators for use with vehicle-lamps as usually constructed the carbid-pot after a continued use of the generator becomes heated to such an extent that it is frequently impossible to disconnect it for the purpose of recharging, and its high temperature also makes it impossible to freely handle it without burning the hands. The method of connecting the carbid-pot to the water-reservoir, as here shown and described, is such that the heat of the carbid-pot will not affect its removability, and the outer shell of the carbid-pot being spaced from the inner shell remains cool and permits of free handling thereof without burning. The coiled tube 15 has a tendency when the device is carried by a moving vehicle to keep the carbid-pot cool due to the passage of cool air therethrough.

What I claim as my invention is—

1. In an acetylene-gas generator, a water-reservoir having a groove therein, a gasket fitting in the groove, a plate having a flange to bear against the gasket, means for clamping the plate to the water-reservoir against the gasket, and a pair of shells fitting on concentric stepped shoulders of the plate with a space therebetween, said plate having openings therethrough connecting the space between the shells with the atmosphere.

2. In an acetylene-gas generator, a water-reservoir, a groove therein, a gasket seated in the groove, a plate clamped to the water-reservoir and having a flange bearing on the gasket, a carbid-pot comprising a pair of spaced shells mounted on concentric stepped shoulders of the plate, a coiled tube in the inner shell of the carbid-pot having its ends passing through the two shells of the carbid-pot, a funnel-shaped mouth on the front end of the coiled tube, a screen supported by the coiled tube, a perforated tube on the screen, a tubular casing passing through the water-reservoir above the perforated tube, a stem in the tubular casing, a tapering valve carried by the stem and fitting in a correspondingly-shaped seat in the casing, a passage-way through the valve, said valve having a series of pockets in its bearing-surface connected with each other and with the passage-way by grooves, said pockets being adapted to register with an opening in the tubular casing and permit the flow of water therethrough to the carbid-pot, means for turning the stem, and a tube connected to the valve-seat and passing through the water-reservoir to the atmosphere and adapted to register with the passage-way in the closed position of the valve so as to relieve the pressure in the carbid-pot when the water is shut off therefrom.

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

WALTER H. WHITE.

Witnesses:

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