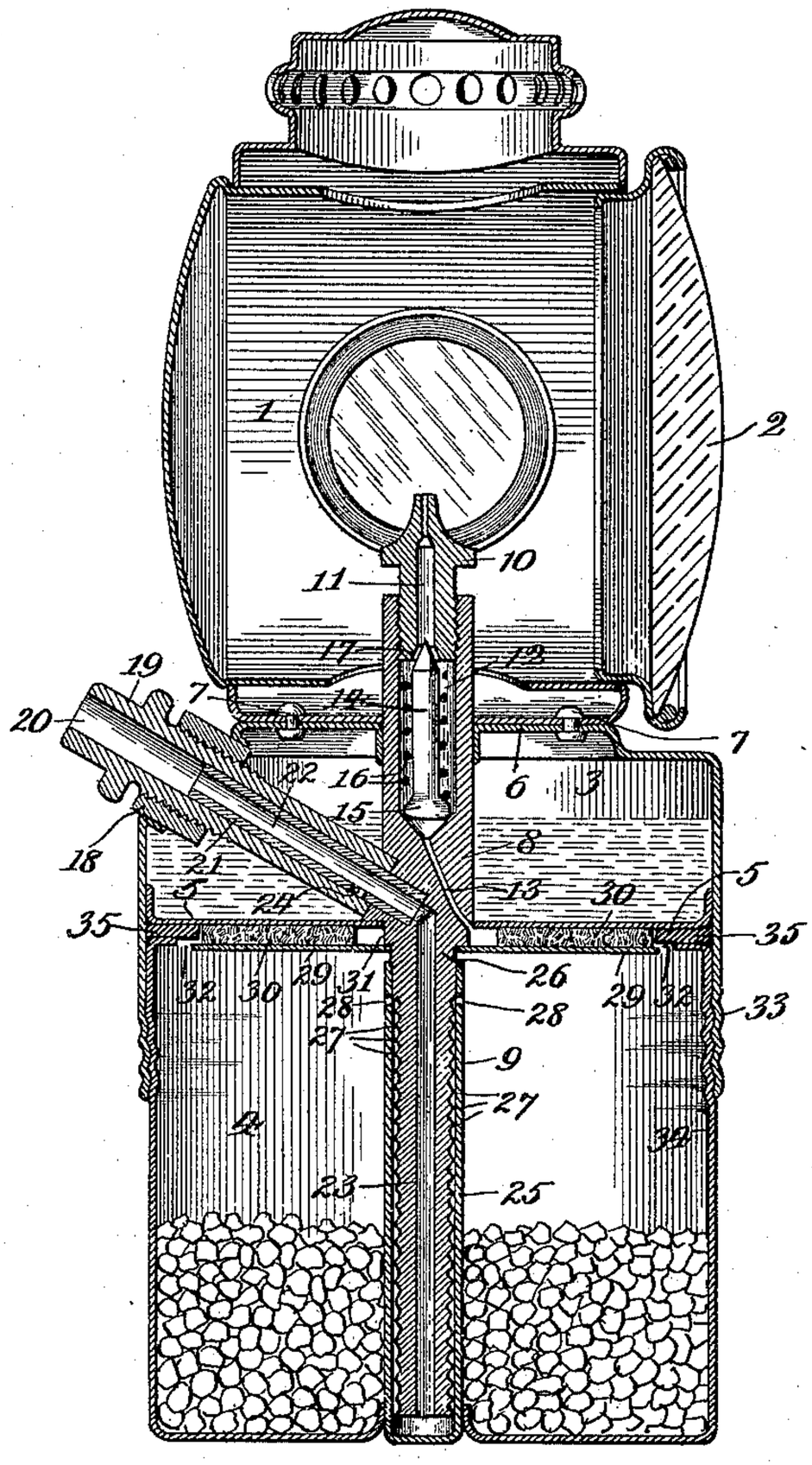
No. 638,897. Patented Dec. 12, 1899.

S. P. WATT.

ACETYLENE GAS GENERATOR.

(Application filed Nov. 28, 1898.)

(No Model.)



Witnesses:

Lutie S. Watts

Allan A. Murray

Inventor:

Sern P. Watt.

By Osburn, Nibbe & McElroy

Attys.

UNITED STATES PATENT OFFICE.

SERN P. WATT, OF CHICAGO, ILLINOIS.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 638,897, dated December 12, 1899.

Application filed November 28, 1898. Serial No. 697,637. (No model.)

To all whom it may concern:

Be it known that I, SERN P. WATT, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Gas Generator and Lamp, of which the following is a specification.

My invention relates to a device for generating acetylene gas; and its object is to provide for this purpose a novel and efficient generator in which the water-feed is positive and automatic in action.

My invention consists in providing a novel construction and arrangement of parts and passages between the water-chamber and the carbid-chamber for the purpose of obtaining the proper automatic feed, and for the sake of illustration only and without any intention of limiting myself to the particular application or construction of my generator I have shown such general features embodied in a lamp more particularly suitable for bicycles and other vehicles.

Other novel and advantageous features will be found in my invention, as will be apparent from the description hereinafter given.

In the accompanying drawing the figure represents a sectional elevation of a lamp embodying the principle of my invention, together with other features working in combination therewith in the lamp described.

The generator, as shown for convenience, comprises a lamp-body 1, a lens 2, a water-chamber 3, and a carbid or generating chamber 4. Between the chambers 3 and 4 is a suitable partition 5, forming the bottom of such water-chamber, which is provided with a top 6. The lamp-body may be secured to the top 6 of the water-chamber, and thereby connected to the other parts of the lamp by rivets 7 or in any other desired manner. It is obvious that the lamp may be constructed in any suitable manner to provide the necessary chambers.

A stem 8 extends, preferably, centrally through the chambers 3 and 4 and into the lamp-body. Its upper end is preferably of greater size or diameter than its lower end, which is in the form of a hollow tube 9, extending downward into the carbid-chamber nearly to the bottom thereof. This stem is provided at its upper end with a preferably screw-threaded tip or burner 10, which has a gas-passage 11, communicating with an enlarged passage or chamber 12 in the stem. The passage from the carbid-chamber is completed by a passage 13, which connects the carbid-chamber and the chamber 12. Within this latter chamber is a valve device comprising a valve-stem 14 and a head 15. This valve-stem 14 is surrounded by a suitable spring 16. The tendency of this spring is to hold the head downward and to keep the valve device from rattling. The head 15 is a loose fit in the chamber 12 and permits the passage of gas therearound. It is obvious that by screwing down the burner 10 the flow of gas may be cut off by the seating of the valve-stem 14 upon the valve-seat 17 in the burner.

Secured in any suitable manner in a side wall of the water-chamber is a nut 18, in which screws a stem 19, which has the functions of a water-inlet cap and a water-feed valve. It is provided with a central passage 20, receiving at its inner end within the water-chamber a hollow stem or tube 21, which is secured in the stem 8 in any suitable manner and whose passage 22 communicates with a passage 23, provided in such stem 8 and extending downward in the tube 9. This stem 21 has a port 24, governed by the stem 19 and adapted to communicate between the water-chamber and the passage 20. The object of this particular arrangement is to admit or cut off the water-supply to the carbid-chamber and also to provide for the feeding of water into the water-chamber.

A tube or elongated cap 25, closed at its lower end, is secured in any suitable manner in the bottom of the carbid-chamber, so as to be concentric with the lower portion of the tube 9, which extends almost to the closed end of such tube 25. The upper portion 26 of the stem 8, over which the tube 25 fits, is slightly larger than the lower portion or tube 9 to make space for the exterior screw-shaped threads or corrugations 27 upon tube 9, which I prefer to provide with such threads. The water is thus fed upward along a spiral path and then through one or more small holes or ports 28 in tube 25 into the carbid-chamber. The object of this construction is to provide

for a constant and uniform water-feed regardless of any jars to which the lamp may be subjected.

Arranged below the partition 5, and preferably parallel therewith, is a flat plate or disk 29, between which and said partition is arranged felt 30 or other porous material suitable for filtering the gas. This material is preferably so arranged as to leave an annular space 31 around the stem for the free flow of the gas to the passage 13. The gas enters the space between the disk and the partition at 32 around the circumference of such disk. I prefer to construct the lamp as shown, in which the sides 33 of the water-chamber are extended downward and provided with screw-threads engaged by similar screw-threads on the bottom shell 34, so that the carbid-chamber may be removed for loading purposes or otherwise. To make a gas-tight fit between the parts, I prefer to employ a suitable gasket 35, as shown.

In filling the water-chamber and also in starting the lamp the stem 19 is screwed outward, so as to uncover port 24, and water is then supplied through passage 20 into the water-chamber. The water also passes down the passage 23 to the bottom of the tube 25 and thence upward along spirals 27 and will flow slowly through the small ports 28 so long as the port 24 is open and so long also in the operation of the lamp as the pressure of gas will permit, as hereinafter set forth. This outward position of the stem or valve 19 is the operative position thereof and also the position in filling the water-chamber. The water passing through the holes or ports 28 enters the carbid-chamber and causes a generation of gas. The gas thus generated passes upward, is filtered by the material 30, and then flows through passages 13, 12, and 11 to the burner.

The device provides an automatic water-feed, inasmuch as the gas-outlet is restricted and the excess pressure of gas is exerted against the water in the tube 9, the flow through which is consequently dependent upon and proportionate to the pressure in the carbid-chamber. The feed of water into the carbid-chamber may be thus stopped until the pressure has sufficiently decreased by the consumption of gas to allow the water to again rise and flow into the carbid-chamber.

In case of an excessive or dangerous generation the gas will flow through the tubes 8 and 9 and out through the passage 20 of the water-feed valve, which thus possesses the function of a safety-valve, which is a function additional to those functions before named. When the pressure is sufficiently reduced in the carbid-chamber, the water will again fill up the tubes 8 and 9 from the head of water in the water-chamber and will enter the carbid-chamber as soon as permitted by the pressure of gas therein. The passage in the tube or stem 8 is subjected to a constant pressure, while the passage in tube 9 is subject to a pressure which may vary, such varying pressure being utilized to regulate the flow of water.

To stop the generation of gas, the valve 19 may be screwed inward to cut off the water-feed from the water-chamber, and no more gas being generated the light will become extinguished. The valve device in the outlet gas-passage forms a positive means for extinguishing the gas independently of the closing of the feed-valve 19 or in connection therewith by screwing the burner 10 inward to cause a seating of the valve-stem 14, and thereby cut off the supply of gas to the burner.

Although I have described more or less precise forms and details of construction, I do not wish to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents as circumstances may suggest or render expedient and without departing from the spirit of my invention.

I claim—

1. An acetylene-gas generator comprising a water-chamber, a carbid-chamber, a stem extending from the water-chamber into the carbid-chamber and having a passage communicating between such chambers, a tube encompassing said stem within the carbid-chamber and communicating with said passage and carbid-chamber and a combined water-inlet and water-feed device consisting of a hollow tube arranged within the water-chamber and communicating with said passage, such hollow tube having a port communicating with the water-chamber and a hollow screw-stem extending extraneous of the water-chamber and receiving said hollow tube and adapted to govern its port.

2. An acetylene-gas generator comprising a water-chamber having a water-feed opening therefor, a carbid or generating chamber, means of communication between said chambers, and a valve both for governing the flow of water through said communication and for feeding water into the water-chamber.

3. An acetylene-gas lamp comprising a water-chamber, a carbid-chamber, a passage extending from the water-chamber substantially to the bottom of the carbid-chamber and then extending upward and in free communication with the carbid-chamber toward its top and a valve device communicating directly with both the water-chamber and said passage for governing the water-feed into said passage and permitting water to be supplied to the water-chamber, said valve device always maintaining communication between said passage and the atmosphere.

4. An acetylene-gas lamp comprising a water-chamber, a carbid-chamber, a stem passing through the water-chamber and carbid-chamber and having a passage for supplying water to the carbid-chamber, a disk arranged near the top of the carbid-chamber around said stem and providing a passage around its edge, a filtering material interposed between the disk and the top of the chamber, and a

gas-outlet extending from the carbid-chamber near the central part of the disk and through said stem.

5. An acetylene-gas lamp comprising a water-chamber, a carbid-chamber, a tube having a passage extending from the water-chamber into the carbid-chamber in proximity to the bottom thereof, and a second tube closed at its bottom and surrounding the first tube, said first tube having spiral threads upon its exterior within the second tube.

6. An acetylene-gas lamp comprising a water-chamber, a carbid-chamber, a stem 8 extending from the water-chamber into the carbid-chamber and having a passage 23 communicating between the said chambers, the lower end of such stem being in the form of a tube 9 with exterior screw-shaped threads or corrugations 27, and a second tube 25 closed at its lower end and surrounding the tube 9, such tube having an opening 28 communicating with the carbid-chamber.

7. The combination of a water-chamber, a carbid-chamber, a stem 8 having a passage 23 leading into the carbid-chamber, a hollow stem 21 having a passage 22 communicating with the passage 23 and having a port 24 communicating with the water-chamber, and a valve 19 governing said port and having a passage 20 communicating with passages 22 and 23 and with the water-chamber when port 24 is open.

8. An acetylene-gas generator comprising a water-chamber, a carbid-chamber, said chambers being connected by a passage, and a combined water-inlet and water-feed device consisting of a hollow tube arranged within the water-chamber and communicating with said passage and with the atmosphere, such hollow tube having a port to also communicate with the water-chamber and a rotatable hollow stem extending extraneous of the water-chamber and receiving said hollow tube to govern its port.

SERN P. WATT.

Witnesses:
SAMUEL E. HIBBEN,
ALLAN A. MURRAY.