

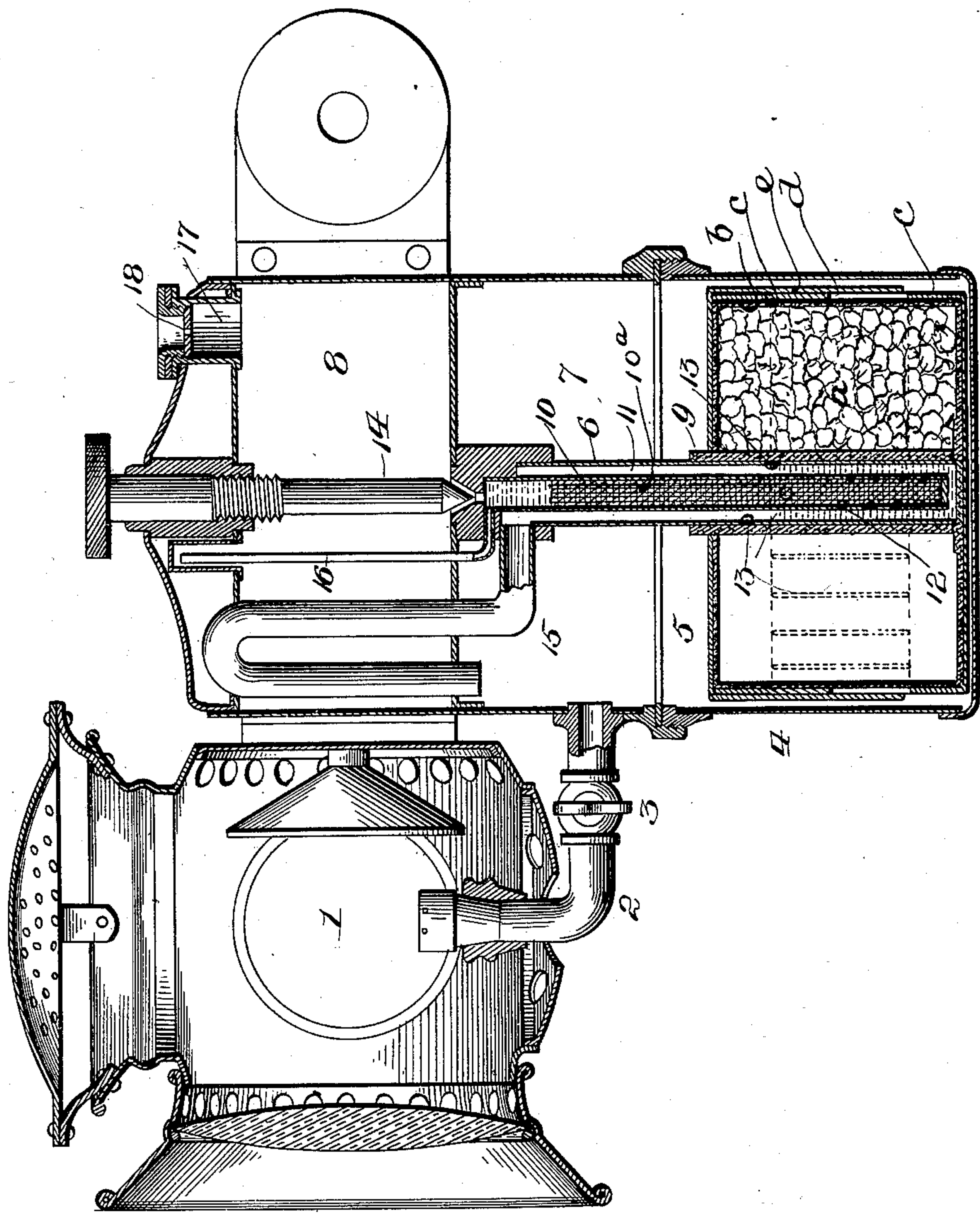
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Patented Nov. 13, 1900.

A. C. EINSTEIN.
ACETYLENE GAS GENERATING LAMP.

(Application filed Aug. 21, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 661,734, dated November 13, 1900.

Application filed August 21, 1899. Serial No. 727,987. (No model.)

To all whom it may concern:

Be it known that I, ALFRED C. EINSTEIN, a citizen of the United States, and a resident of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Acetylene-Lamps, of which the following is a specification.

My invention relates more particularly to improvements in acetylene-gas generators for use in connection with bicycle or other portable lamps, but is not restricted to such use.

One feature of my present invention consists in combining with a container a central tube with a perforation or perforations above the end thereof, a concentric tubular absorbent lining extending vertically through the carbide and serving to supply to the carbide by absorption and as it is needed the necessary liquid to generate the gas.

A further feature consists in providing, in connection with such carbide-container tube, a concentric liquid-feed tube spaced apart therefrom, so as to leave a liquid-space between it and the container-tube, said liquid-feed tube being closed at bottom, provided in its walls with a series of perforations through which the liquid may gradually escape, and also provided with an absorbent or equivalent filling which will prevent disturbance of the liquid contained therein resulting from jarring of the generator.

A further feature consists in establishing a communication between the gas-chamber and the annular space between the concentric liquid-feed and container tubes, whereby the liquid in said annular space is kept below the discharge-openings so long as an adequate pressure of gas exists in the chamber and whereby excessive gas-pressure may escape gradually through the openings in the liquid-feed tube and prevent sudden escape of said gas, which would result in flickering of the light.

A further feature consists in forming said gas communication through the medium of a gooseneck tube which extends from the upper end of the annular space upward to a point above the water-level in the reservoir and thence downward into the gas-chamber, with which it communicates, in order to bring the liquid-feed under complete control of the gas-pressure in said chamber.

My invention will be fully understood upon reference to the accompanying drawing, which for purposes of illustration represents in vertical section a bicycle-lamp embodying the features of my invention.

1 represents the lamp, having a burner-tube 2, controlled by a key 3 and connected with the generator 4. The generator comprises a container 5, a container-tube 6, closed at bottom, a gas-chamber 7, and a liquid reservoir 8. Carbide is introduced into the container 5, preferably in the form of a cartridge *a*, inclosed by an absorbent lining *b* and a cartridge-shell made up of a lower cup *c*, having vertical slits *d*, and an upper inverted cup *e*, telescoping on the lower cup *c*, as more fully described and claimed in my application, Serial No. 727,985, filed of even date herewith. The tube 6 depends from the reservoir 8 to the bottom of the container 5 and is surrounded by a cylindrical absorbent lining 9, extending vertically through the charge of carbide, which may be arranged in any suitable manner. Arranged concentrically within the tube 6 is a liquid-feed tube 10, depending from the reservoir 8 and of sufficiently-reduced diameter to leave a closed annular chamber 11 between it and the tube 6. The tube 10 is closed at its bottom and provided with a series of spirally-arranged perforations 12, through which liquid may escape into the annular space 11. Said tube 10 is further provided with a filling 10^a, of absorbent or equivalent material, which limits the volume of water standing therein and retards rapid flow sufficiently to avoid displacement of the water by jarring, and thereby prevents either an escape of gas or an abnormal feed of liquid.

From the space 11 liquid escapes through perforations 13 into the absorbent lining 9. Thence it passes gradually as required to the charge of carbide. The flow of liquid from the reservoir 8 to the tube 10 is regulated by the needle-valve 14. Communicating with the upper end of the annular space 11 is the gas-pressure tube 15, which extends, by means of a gooseneck, upwardly to a point above the water-supply, thence downwardly, and terminates in communication with the gas-chamber 7. The effect of this tube is to maintain at all times in the space 11 a gas-pressure corresponding to that in the chamber 7. When

the pressure in chamber 7 develops sufficiently, it will drive liquid in the space 11 upward and away from the escape-openings 13 and prevent the further flow of water to the carbid, thus cutting off generation of gas. If the pressure becomes excessive, the water will be forced downward in the space 11 far enough to permit escape of gas through the perforations 12. An important advantage in having the bottom of the tube 10 closed and perforated at the lower end only, as at 12, is that excessive pressure of gas is allowed to escape gradually as one or more of the openings 12 are uncovered by retreating water, and pressure is thus reduced gradually without visible effect on the flame of the lamp. Communicating with the liquid-tube 10, just beneath the valve 14, is a vent-pipe 16, which permits escape of surplus gas above the water-line in the reservoir 8 in the event that both the key 3 and valve 14 are shut off. Gas escapes from the reservoir 8 through the charging-opening 17 and through the port 18.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In an acetylene-generator, the combination with the container, the gas-chamber and reservoir of said container, of the container-tube 6 having liquid-discharge openings above its lower end, the liquid-tube 10 concentric with the tube 6 and leaving an annular space between them, having perforations above its end, and the gas-pressure pipe 15 communicating with the space between the tubes 6 and 10; substantially as set forth.

2. In an acetylene-generator, the combination with the container, the gas-chamber and

the reservoir of said container, of the tube 6 having perforations above its lower end, the concentric tube 10 forming with said tube 6 an annular space 11, having perforations above its lower end, the gas-pressure tube 15 communicating with the upper end of said annular space and extending upwardly to a point above the water-supply and thence downwardly, and terminating in communication with the gas-chamber 7; substantially as set forth.

3. In an acetylene-gas generator, the combination of the reservoir, carbid-chamber and gas-chamber, the water-feed comprising concentric perforated tubes, a gas-pressure pipe communicating between the gas-chamber and the space between the tubes, and the escape-vent 16 communicating with the inner water-tube; substantially as and for the purposes set forth.

4. In an acetylene-gas generator, the combination of a carbid-container, a water-reservoir, a gas-chamber, a tube leading from the water-reservoir provided with a filling and with escape-openings, a surrounding tube forming with the water-tube a back-pressure space, and perforated for gradual escape of water therefrom, a gas-pressure tube communicating between the gas-chamber and said back-pressure space, and a vent for escape of excessive gas, communicating with the water-tube; substantially as and for the purposes set forth.

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