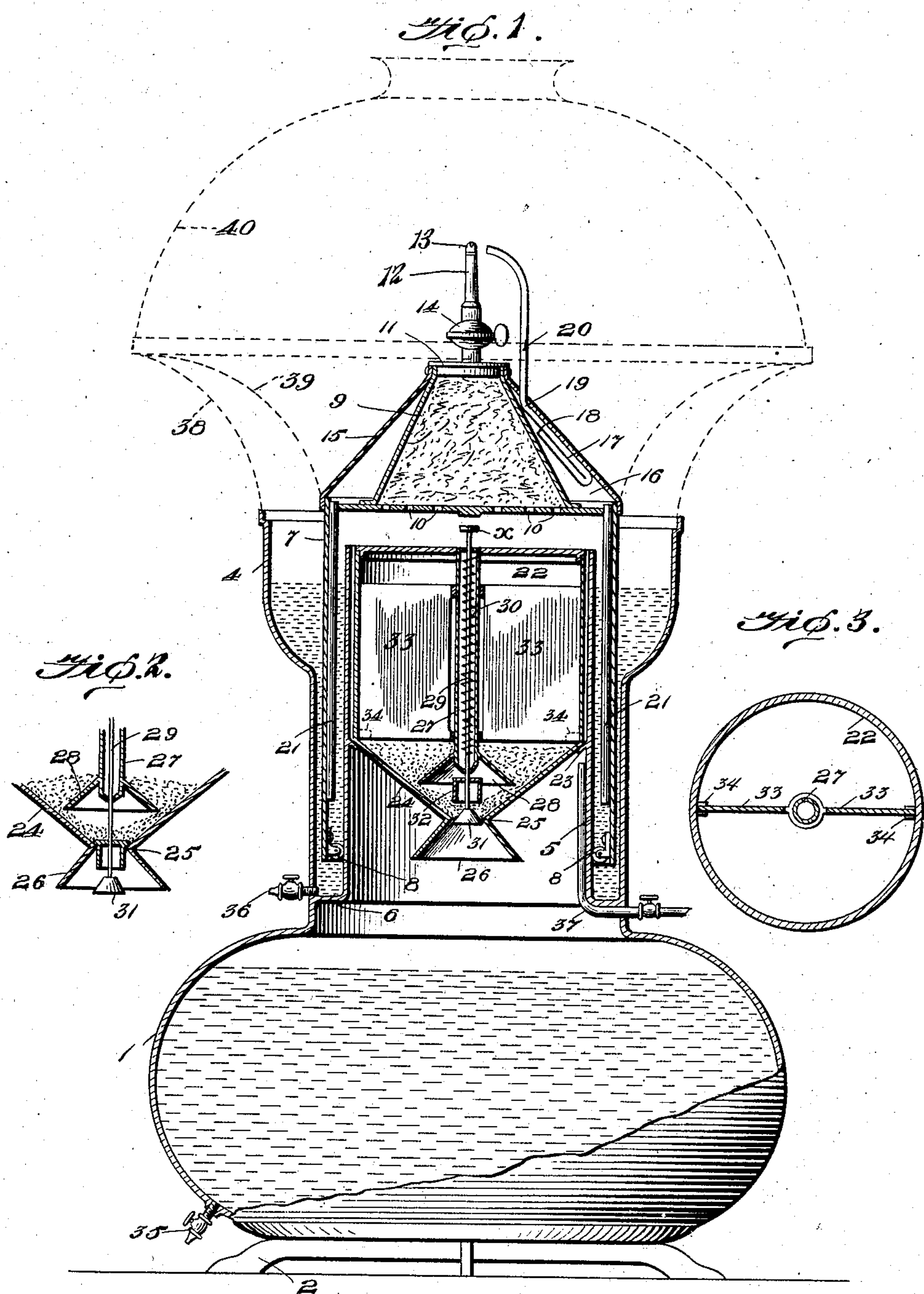


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PATENTED MAY 30, 1905.

S. N. BUSHEE.  
ACETYLENE GAS GENERATING LAMP.  
APPLICATION FILED OCT. 3, 1904.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## ACETYLENE-GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 791,135, dated May 30, 1905.

Application filed October 3, 1904. Serial No. 227,032.

*To all whom it may concern:*

Be it known that I, SAMUEL N. BUSHEE, a citizen of the United States, residing at Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Acetylene-Gas Lamps; 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.

This invention relates to portable acetylene-gas lamps designed for the purpose of generating gas, storing it within an expansible gasometer, feeding the gas to a burner on the lamp, and automatically feeding the required quantity of carbid to the generator at intervals dependent upon the quantity of gas consumed.

One of the objects of my invention is to provide a portable lamp of attractive appearance and of comparative small size and light weight which will be provided with the necessary apparatus within said lamp to generate gas, lead the same to an expansible gasometer, and feed the same to a burner.

Another object is to provide a safety outlet for any excess of gas in the gasometer-chamber caused by inexperience or inadvertence on the part of the user and to locate said outlet at such a point relatively to the burner that the excess of gas will be consumed.

Still another object is to provide means whereby only a sufficient quantity of carbid is deposited in the generator at the required intervals to keep the gasometer supplied with sufficient gas for consumption; and another object is to improve the feeding mechanism for the carbid.

These and other objects are attained by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a central vertical section of a lamp made in accordance with my invention. Fig. 2 is a detail sectional view of the lower end of the carbid-chamber and the feeding-valve in its lowermost position. Fig. 3 is a transverse section of the carbid-chamber.

Referring to the drawings for a more particular description of my invention, the numeral 1 denotes the hollow body portion or

generator-chamber, which forms the base of the lamp and which may be supported by suitable feet 2. Rising from the walls of the generator is a tubular extension 3, and at the upper end of said extension is an outwardly-flaring enlargement 4, thus affording space for a water jacket and seal, to be hereinafter described. The inner wall of the water seal is formed by a tubular portion 5 within the extension 3, and a partition 6 at the bottom separates said water-jacket from the generator-chamber. The gasometer-bell 7 moves within the space between the walls of the extension 3 and the inner tube 5, and at the lower end said bell is provided with a suitable number of antifrictional rollers 8, which bear upon the wall of said tube 5.

Attached to the top of the bell 7 is a purifier or filter 9, comprising a frusto-conical compartment filled with suitable material for drying and purifying the gas. The lower end of the filter 9 is open, and the upper wall of the gasometer-bell is perforated, as at 10, to permit the gas to pass into said purifier. A cover 11 is fitted upon the upper end of the purifier, and a burner-tube 12 extends through this cover and is provided with a suitable tip 13 and a cock 14. Surrounding the purifier-chamber, at a suitable distance therefrom, is a frusto-conical dome 15, connected at its lower edge to the outer edge of the bell 7, the space between the purifier 9 and the dome 15 forming an overflow-chamber 16 for receiving the excess of gas and permitting it to pass through the escape-pipe 17. This escape-pipe may be in the form of a doubled tube having an opening 18 near the top of the chamber 16, the tube then extending down to near the bottom of the chamber 16 and passing thence upward and out at 19, its outlet end 20 being located in such proximity to the burner-tip 13 that the escaping gas will be ignited and consumed. At suitable intervals within the gasometer-bell 7 and secured to the inner wall thereof is a series of overflow-pipes 21, said pipes terminating at some distance above the lower end of the bell and extending up and into the overflow-chamber 16 for a purpose which will presently appear.

The carbid-feeding devices are contained



within a casing 22, supported at its lower edge by lips 23, projecting inward from the inner wall of said tube 5. The casing 22 has an inclined or frusto-conical bottom 24, provided with an opening 25 at its lower end. Surrounding the opening 25 is an outwardly-flaring deflector 26, the purpose of which is to prevent the water which may return from the gasometer from collecting around the feed-opening 25, and thus clogging the feed. A tube 27 extends through the top of the casing 22 and terminates at a slight distance above the opening 25. A flaring flange 28 is secured near the lower end of the tube 27 to prevent an excessive quantity of carbid from falling upon the valve, and thus interfering with its operation. Within the tube 27 is a valve-stem 29, surrounded by a spiral spring 30, the upper end of which is secured to the tube 27 and the lower end to the stem 29. The upper end of said stem 29 is provided with a button  $x$ , and the lower end of said stem carries a conical valve 31, which normally closes the feed-opening 25. Secured to the stem 29 at a point just above the valve 31 is a cut-off cap 32, which serves to limit the quantity of carbid fed at each downward movement of the stem 29 and also renders my lamp absolutely safe should the spring break or become disconnected from the stem 29, as it would drop down and instantly close the exit-opening 25, the action of said cut-off being obvious from Fig. 6 of the drawings. The tube 27 carries a pair of wings 33, the outer edges of which are seated between lugs 34, forming a guideway. The interior of the carbid-chamber may be cleaned by removing the top or cover  $a$ , lifting the wings out of the guideway, and using a small brush. Said wings also serve as a partition for dividing the carbid, and thus assisting in regulating the feed.

A cock 35 at the bottom of the generator may be utilized for removing the spent products, and a cock 36 is to provide an outlet for the water in the water jacket and seal.

A pipe 37 extends into the side of the tubular extension 3 and up inside the tubular portion 5 of the lamp-body, the outer end of said pipe having provision for attaching a tube leading to auxiliary burners.

Any suitable arrangement of globes 38 39 40 may be provided and supported upon the upper portion of the lamp in any desired manner.

The operation of my invention may be described as follows: The carbid-chamber having been charged with a suitable quantity of comminuted material, the generator is supplied with a quantity of water. The water jacket and seal is also partially filled with water. By depressing the button at the upper end of the valve-stem a single charge of carbid is dropped into the generator, the spring then returning the valve to its closed po-

sition. As the gas is generated it gains access to the gasometer by passing up between the tubular portion 5 and the carbid-casing 22. The initial charge of carbid is fed to the generator by depressing the dome 15, which will push down the button  $x$  and open the feed-valve. When the bell 7 descends, it presses upon the button  $x$ , which causes another charge of carbid to drop into the generator, and this action is repeated as often as the gas-pressure is relieved from the gasometer. Should any person through carelessness or inadvertence open the feed-valve by pressing down upon the bell 7, and thus cause excessive generation, the excess of gas would force its way through the overflow-pipes 21 into the overflow-chamber 16, the gas finding an outlet at 18 through the escape-pipe 17 and an exit at 20, where the gas is ignited and consumed. The small quantity of water which may be thus carried into the overflow-chamber will then return to the water seal through pipes 21.

From the foregoing description, taken in connection with the accompanying drawings, it will be obvious that my invention provides an efficient acetylene-gas lamp having its own generator, an automatic carbid-feed, provision for excessive generation of gas, and a gas-purifier and water seal, all located within said lamp and going to make up a useful, inexpensive, and easily-managed device for its purpose.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an acetylene-gas lamp, a hollow lamp-body forming a generator, a water-jacket surrounding the upper portion of the generator-chamber, an expansible gasometer within the water-jacket, an overflow-chamber above the top of the gasometer, an overflow-pipe secured to the inner wall of the gasometer-bell and leading to the overflow-chamber, a bent escape-pipe leading from the overflow-chamber to the lamp-burner, and a carbid-feed within the lamp-body and above the generator, substantially as described.

2. In an acetylene-gas lamp, a hollow lamp-body forming a generator-chamber, a carbid-feed within the lamp-body and above the generator-chamber, an expansible gasometer surrounding the generator-chamber at its upper end, a water-jacket within which the gasometer-bell rises and falls, an overflow-chamber above the gasometer, an overflow-pipe leading from within the gasometer to said overflow-chamber, an escape-pipe leading from said overflow-chamber to the lamp-burner, a gas-purifier attached to the top wall of the gasometer-bell and communicating



therewith through perforations in said wall, and a burner at the top of the purifier, substantially as described.

3. In an acetylene-gas lamp, a hollow lamp-  
5 body forming a generator-chamber, a gasometer surrounding the upper end of the generator-chamber, a water-jacket in which the gasometer-bell rises and falls, an overflow-chamber above the gasometer, an overflow-  
10 pipe leading from within the gasometer to said overflow-chamber, an escape-pipe leading from said overflow-chamber to the lamp-burner, a carbid-feed within the lamp-body and above the generator-chamber, said carbid-  
15 feed comprising a casing having a frusto-conical bottom and an opening therein, a flaring deflector surrounding said opening, a valve

for closing said opening, a cut-off cap above said valve, a stem to which said valve and cut-off are secured, a tube through which said 20 stem passes, a flaring separator at the lower end of said tube, a spring surrounding said valve-stem, and means whereby said valve-stem is depressed to open the valve at each descent of the gasometer-bell, substantially 25 as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL N. BUSHEE.

Witnesses:

WILLIAM H. FOX,  
PATRICK COSTELLO.