No. 662,842. Patented Nov. 27, 1900.

S. P. WATT.

ACETYLENE GAS LAMP.

(Application filed Oct. 9, 1899.)

(No Model.)

Fig. 1

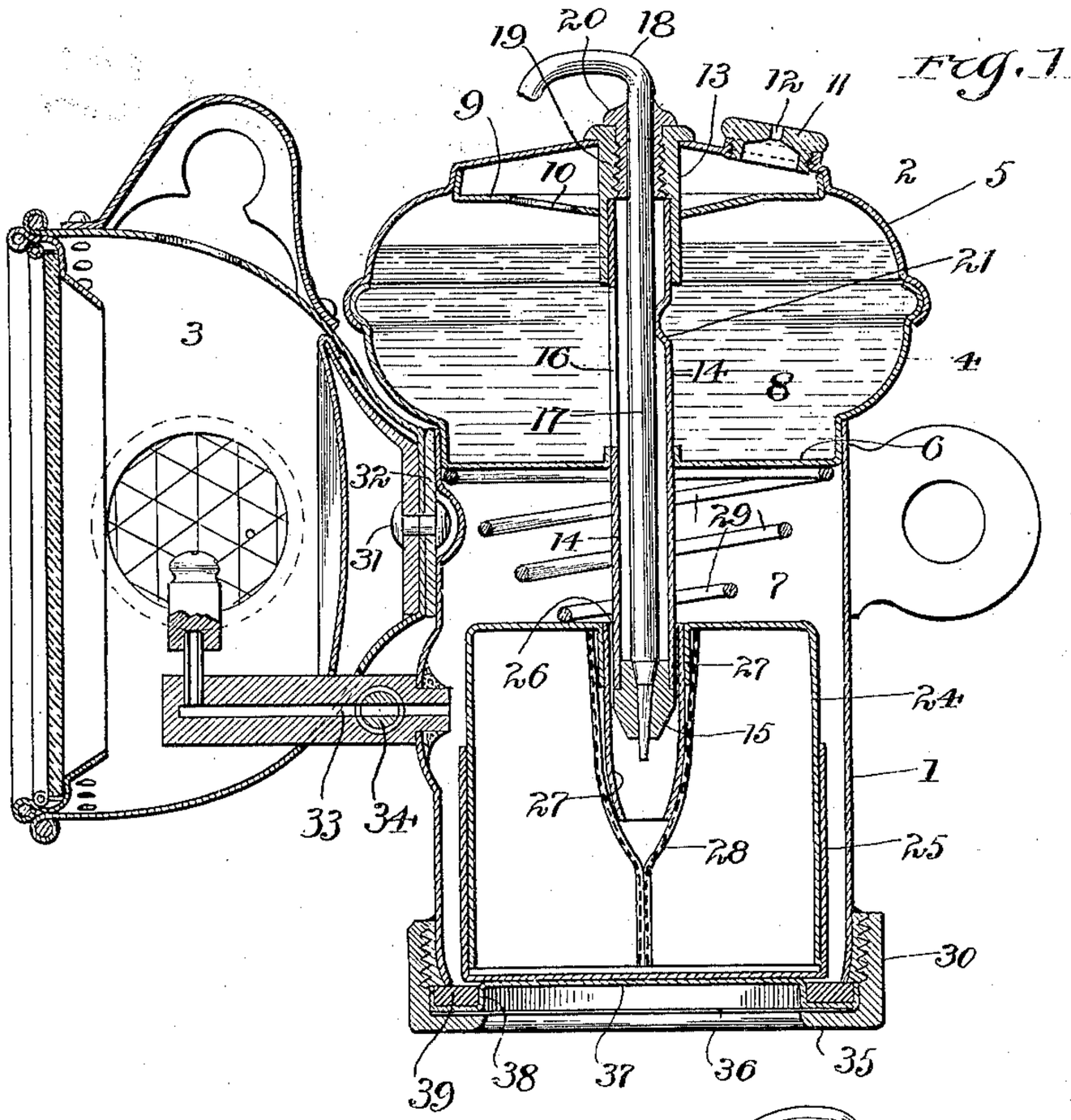


Fig. 2

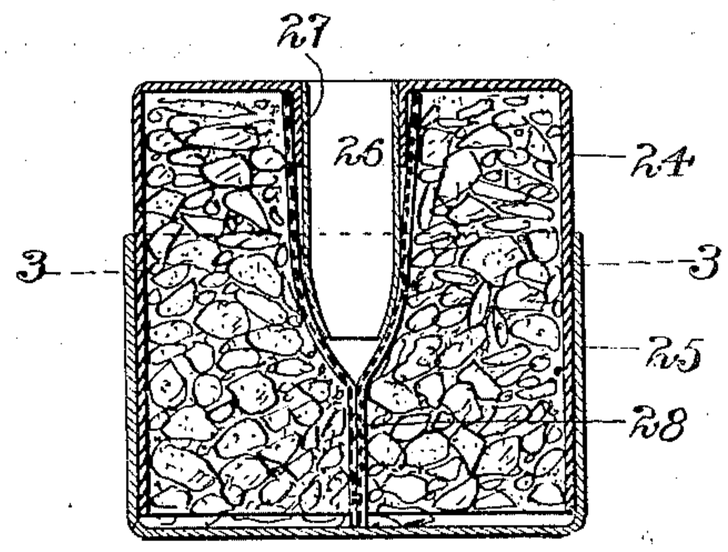


Fig. 4

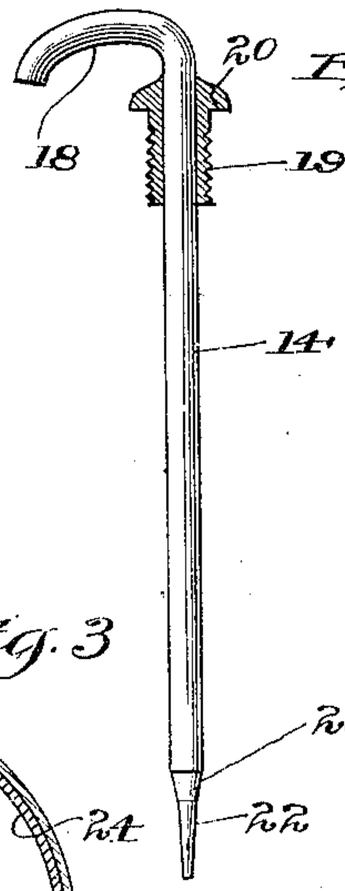
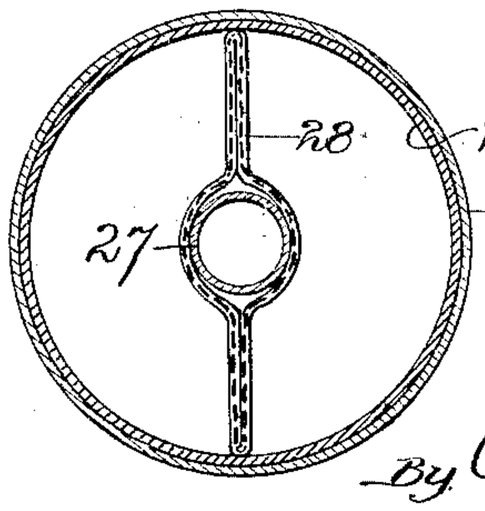


Fig. 3



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ACETYLENE-GAS LAMP.

SPECIFICATION forming part of Letters Patent No. 662,842, dated November 27, 1900.

Application filed October 9, 1899. Serial No. 733,077. (No model.)

To all whom it may concern:

Be it known that I, SERN P. WATT, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Acetylene-Gas Lamps and Generators, of which the following is a specification.

The object of my invention is to provide a novel and efficient construction and arrangement of carbid-cup and also a novel form of regulating the valve governing the water-feed. My invention embodies other advantageous features in construction and operation, which will be apparent from the description hereinafter given.

In the accompanying drawings, Figure 1 is a sectional elevation of my lamp or generator; Fig. 2, a section of the carbid-cup; Fig. 3, a horizontal section on line 3 of Fig. 2, and Fig. 4 a detail view of the feed-valve.

My lamp comprises, essentially, a casing having a cylindrical portion 1, forming the carbid or generating chamber, and an enlarged upper portion 2, preferably substantially elliptical in cross-section, and also a flame-chamber 3, secured to the casing, as hereinafter described.

The upper portion 2 of the casing may be made of two inverted-bowl-shaped shells 4 and 5, secured together at their rims or edges, as shown. The shell 4, which is substantially cylindrical at its lower portion, seats into and is secured to the open upper end of the cylindrical portion 1, and its bottom 6 forms the partition between the carbid-chamber 7 and the water-chamber 8.

So far as my present invention is concerned any suitable construction of parts to provide a water-chamber and a carbid-chamber may be adopted, and the above description applies to one construction which I have made and found satisfactory.

The upper shell portion 5 of the water-chamber has a splash-diaphragm 9 secured thereto, which diaphragm is slightly dished and provided with openings 10 into the water-chamber 8. The top of this shell has a water-inlet closed by a cap 11, which is provided with the usual small vent-opening 12. The function of this diaphragm is to prevent the splashing of water against the top of the shell 5 and through the opening 12.

A stem 13, having a screw-threaded bore, is secured to the top of the water-chamber and extends, preferably, central of the water-chamber. The bore at the inner end may be of greater diameter and unprovided with screw-threads. In this enlarged bore is secured a hollow stem 14, passing through and secured to the partition 6 and extending some distance into the carbid-chamber 7. Obviously any other suitable method of securing this hollow stem in place may be adopted; but the method shown and described is preferred. A plug 15 is secured in the open lower end of this stem and provided with a tapered hole or bore, forming a seat for a valve, as hereinafter described. A series of holes in the stem 14 within the water-chamber or its equivalent, as shown, one or more slits 16 therein, are provided to admit water into the stem.

The water-feed is regulated by a valve having a stem 17 within the hollow stem 14 and whose lower end, tapered as about to be described, seats in the plug or valve seat 15. This stem 17, which is provided with any suitable handle, such as 18, passes through and is secured to a screw 19, having a head 20. The head 20 forms an index determining when the valve is seated and also forms a positive stop to prevent undue pressure on the valve-seat. The stem 14 is preferably indented at 21, so as to bear against rod or stem 17 with a slight tension.

As shown particularly in Fig. 4, the valve end of the stem 17 is formed with a long taper 22 and farther up with a larger and more abrupt taper 23. The valve-seat is of course tapered to correspond. The abrupt taper serves the function of opening and closing more rapidly than the taper below, and when the valve is closed the pressure will be greatest at the abrupt taper, which is constructed to withstand such pressure. The longer taper serves the purpose of close regulation, and any great pressure when the valve is closed is taken by the abrupt taper and the long taper relieved.

The means for holding the carbid consists

of a carbid-cup 24, which is inverted upon and telescopes with an upright cup 25. The cup 24 has an opening 26 in its top, to which is secured a downwardly-extending tube 27, receiving the projecting stem 14 and valve-seat 15. If the tube 27 extends inwardly into the cup, the carbid-holding receptacle can of course be made more compact, and such tube will then serve to hold the distributer, as hereinafter stated; but it is obvious that this is simply a preferable construction, the limits of the carbid-receptacle being greater if the tube extended outwardly, although the operation would be the same so far as the water-feeding is concerned. Any suitable water-distributer may be used, such as the distributer 28, which comprises perforated plates having a flaring opening at the top, so as to receive the tube 27. A spring 29 is interposed in the carbid-chamber between the partition 6 and the top of the carbid-cup. The cap or closure 30 screws on the lower end of the casing 1 to close it. The distributer 28, as shown, consists of perforated plates in close proximity, so that the water fed from the top will feed rapidly by capillary attraction between the adjacent faces of the plates to all parts of the plates and practically uniformly so. Obviously there need not be two separate independent plates, but a single plate doubled upon itself at the bottom, so that practically two plates in close proximity will be formed.

The flame-chamber may be secured to the casing 1 in any suitable manner. As shown, it is secured by means of a rivet 31 to a band 32, extending around the casing. The outlet-passage 33 leads from the carbid-chamber into the flame-chamber and is preferably governed by a valve 34.

The closure or screw-cap 30 may have a solid bottom; but in the construction shown it has an annular bottom portion 35, upon which rests a loose disk 36. Upon this disk, near its edges, rests a plate, shaped substantially as shown, with a raised or elevated central portion 37 of less diameter than the cylinder 1 and with its margin so shaped as to form an annular groove or channel 38, in which is arranged a gasket 39, of rubber or other suitable material. When cap 30 is screwed on, the gasket is forced longitudinally against the end of the cylinder to make a gas-tight joint, without grinding as the movement or friction occurs between the disk 36 and the annular portion 35 of the cap. Furthermore, the bottom of the cup 25 rests upon the raised portion 37 of the gasket-plate, so as to be separated or isolated from the gasket to prevent sticking of such parts.

As shown in the drawings, the opening 10 in the splash-diaphragm is located on one side of the center opposite the water-inlet or out of alinement therewith, so as to effectually prevent splashing through the small vent-hole of the water-inlet cap.

To fill the lamp with carbid, the bottom cap 30 is removed and the carbid cup or receptacle will then drop out. The cup 25 is then withdrawn and the cup 24, which has been inverted, is filled with carbid on both sides of the distributer. There is no danger of the carbid entering the tube, as the distributer closes the same except for the passage of water and gas. The cup 25 is then telescoped onto the carbid-cup and the whole carbid-receptacle is then returned to place and the cap 30 screwed on.

When the carbid-cup is in place, the stem 14 and the valve project into the tube 27, and when the valve-handle 18 is operated the large taper 23 admits water rapidly and in quantity to the longer taper below, and a delicate graduated feed is obtained. By means of the tube 27 the valve parts are effectually shielded from contact with the carbid or the carbid dust or residue. The admitted water falls upon the distributer, whereby it is distributed or fed to the carbid, and the gas generated will pass through the distributer, and thereby be strained before passing through the outlet from the generating-chamber.

The increase in volume of the carbid owing to its reduction to residue is provided for by the telescoping cups, which may slide on each other against the tension of the spring.

In refilling, no difficulty is experienced in removing the residue, inasmuch as the cup 25 constitutes the entire bottom of the carbid-cup and is entirely removable, so as to let the residue fall out readily.

One serious objection in the use of an acetylene-gas lamp resides in the formation of carbid-dust, which mingles with the gas, causing stoppage of the burner, and also coats the interior of the generating-chamber. To overcome such objection is one of the objects of my present invention, and it is accomplished by the use of the peculiar construction of carbid-holder. The inverted cup of this holder has a single top opening, which is both a water-admission port and a gas-outlet, whereby the gas, with whatever dust may be in suspension, is caused to pass into close proximity to or through the water which accumulates around the outside of the lower end of stem 14 by reason of capillary attraction. The gas is thereby freed of its dust and after use the whole generating-chamber will be found free of such dust.

Although I have described more or less precise forms and details of construction, I do not intend 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 lamp or generator comprising a water-chamber, a carbid or generating chamber having a gas-outlet, a carbid-holding device consisting of two open-ended

cups inverted and sliding upon each other, both said cups having one closed end except that the upper one is provided at its top with a combined water-inlet and gas-outlet forming communication between said passage and the interior of the carbid-holding device, and a valve-governed water-supply pipe communicating with the water-chamber and the generating-chamber and extending into said top opening in the carbid-cup, said pipe being of slightly less diameter than said opening.

2. A carbid-holding receptacle for a gas lamp or generator comprising, in combination with a generating-chamber, an inverted cup therein adapted to contain carbid, normally closed at its bottom and at its top except for a single opening, a valve-governed water pipe or passage extending into said opening to admit water thereto, a water-distributer within the cup, separate and removable therefrom, and communicating with said top opening, combined with a valve-governed supply-pipe communicating with the water-chamber and the generating-chamber and extending into said top opening in the carbid-cup, said pipe being of slightly less diameter than said opening.

3. A carbid-holding receptacle for a gas lamp or generator comprising an inverted cup adapted to contain carbid and normally closed at its bottom, such cup having a single top opening, a water-distributer separate from and independent of the cup but communicating with such opening, a valve-governed water pipe or passage for directing water into such opening, said water-distributer communicating with such opening and comprising perforated plates in close proximity and having an outer fibrous covering through which the water is distributed and the gas filtered.

4. A carbid-holding receptacle for a gas lamp or generator comprising an inverted cup having a removable closure at its lower end and normally closed except for a single top opening, a tube communicating with such opening and secured to the cup, in combination with a valve-governed supply-pipe communicating with the water-chamber and extending into said tube, such pipe being of slightly less diameter than said tube.

5. A carbid-holding receptacle for a gas lamp or generator comprising an inverted cup closed at the top except for a single opening, a closure for the bottom of the cup, a tube secured in such opening, a water-distributer within the cup and a valve-governed water-pipe extending into such tube and of slightly less diameter thereby providing an annular space for the escape of gas from within the cup.

6. A carbid-holding receptacle for a gas lamp or generator comprising an inverted cup closed and imperforate at its top except for a single opening, a closure for the bottom of the cup, a tube secured in such opening and depending part way in the cup, a water-distributer independent of the cup and its closure and attachable to and removable from such tube which forms a guide and support for the distributer and means for feeding water through said top opening in the cup.

7. An acetylene-gas lamp or generator comprising a water-chamber, a generating-chamber having a gas-outlet, a hollow stem communicating with the water-chamber and extending into the generating-chamber, a valve-seat in the lower end of the stem and entirely within the generating-chamber, a valve therein having a valve-stem longitudinal of such hollow stem, and a carbid-holding receptacle located in the generating-chamber and normally closed and imperforate except for a top opening into which the stem extends and nearly fills, and a removable water-distributer within the receptacle and into which the hollow stem and valve extends.

8. An acetylene-gas lamp or generator comprising a water-chamber, a generating-chamber having a gas-outlet, a hollow stem communicating with the water-chamber and extending into the generating-chamber, a valve in said stem for governing the water-feed, and a carbid-holding receptacle located in the generating-chamber and normally closed except for a top opening formed by a depending tube into which the stem extends and a water-distributer removably secured to, but physically independent of, the tube and of the receptacle.

9. An acetylene-gas lamp or generator comprising a water-chamber, a generating-chamber having a gas-outlet, a hollow stem communicating with the water-chamber and extending into the generating-chamber, a valve-seat in the lower end of the stem, and entirely within the generating-chamber, a valve therein having a stem longitudinal of the hollow stem, and a carbid-holding receptacle located in the generating-chamber and normally closed except for a top opening into which the stem extends, and a water-distributer within such receptacle and into which the hollow stem and the valve extends, whereby the distributer constitutes both a water-distributer proper and a filter for the gas.

10. An acetylene-gas lamp or generator comprising a water-chamber, a generating-chamber having a gas-outlet, a hollow stem extending into and communicating with the water-chamber and communicating with the generating-chamber, such stem having an indentation, a valve seating in such stem and having a valve-stem extending longitudinally within the hollow stem in contact with such indentation.

11. In a water-chamber for acetylene-gas lamps, the combination with the shell or casing forming the water-chamber having a water-inlet in its top portion, of a splash-diaphragm arranged within the casing and below the water-inlet, said diaphragm having an opening for communication with the chamber below the diaphragm.

12. In a water-chamber for acetylene-gas

lamps, the combination with the shell or casing forming the water-chamber having a water-inlet in its top portion, with a cap normally closing the inlet, of a splash-diaphragm arranged within the casing and below the water-inlet, said diaphragm having an opening communicating with the space above and below the diaphragm, which opening is located out of alinement with the water-inlet.

13. The combination with a casing containing a top water-chamber and a generating-chamber below provided with a gas-outlet, such chambers having a communicating passage, a sleeve secured in the top of the water-chamber and having a screw-threaded bore, a governing-valve for such passage comprising a rotatable rod seating at its lower end in such passage, and a screw 19 screwing into said sleeve and provided with a head 20 abutting the top of the sleeve when the valve is seated.

14. The combination, with a water-chamber and a gas-generating chamber having an outlet, of a hollow stem 14 communicating with said chambers, a valve-seat 15 in said stem, and a valve having a stem 17 and a long taper 22 and a short taper 23 seating in said seat.

15. The combination with a water-chamber and a gas-generating chamber having an outlet, of a hollow stem 14 communicating with said chambers and projecting in the generating-chamber, a seat 15 in the stem, a valve governing the water-feed through the stem, an inverted carbid-cup 24 located in the generating-chamber and having an opening 26 in its top, a telescoping upright cup 25, a depending tube 27 in said opening and a water-distributer connected to said tube.

16. The combination, with a water-chamber, an acetylene-gas-generating chamber having a passage communicating with the water-chamber, of a valve-seat in such passage and a valve seating at its end on said seat and having a double taper thereat.

17. The combination, with a water-chamber, an acetylene-gas-generating chamber with a communicating passage between the chambers, of a valve-seat located in such passage and having a tapered bore, and a valve comprising a rod or stem whose end is double-tapered to seat in said seat, the taper at the extreme end being long and gradual and the taper thereabove being short and abrupt.

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