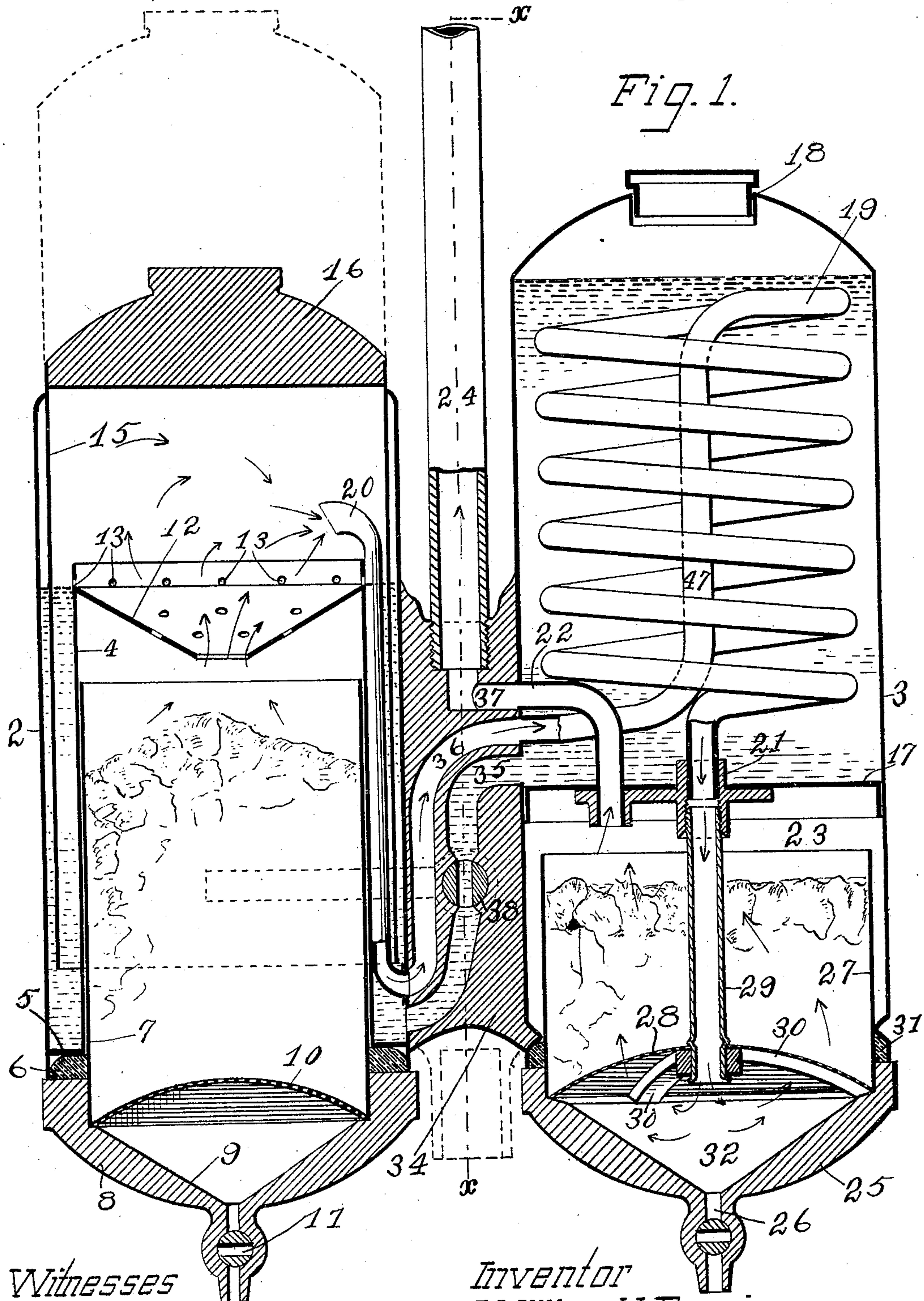


2 Sheets—Sheet 1.

No. 581,020.

Patented Apr. 20, 1897.



Witnesses

B. P. Shepherd
W. E. Goolley

Inventor

William H. Dennis

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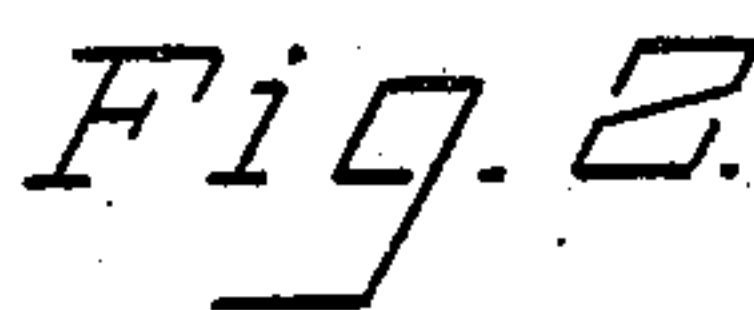
Paul Hawley
his attorneys

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2 Sheets--Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM H. DENNIS, OF MINNEAPOLIS, MINNESOTA.

ACETYLENE-GAS-GENERATING LAMP.

SPECIFICATION forming part of Letters Patent No. 581,020, dated April 20, 1897.

Application filed December 15, 1896. Serial No. 615,830. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DENNIS, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Acetylene-Gas Lamps, of which the following is a specification.

My invention relates to acetylene-gas lamps; and the object of this invention is to modify and improve the acetylene-gas lamp or generator shown and described in my application, Serial No. 610,280, filed October 28, 1896.

A further and particular object of the invention is to provide a neat and symmetrical lamp which will be capable of holding a large body of gas and wherein the pressure is at all times equalized; and, further, a lamp wherein a larger supply or head of water may be maintained; and, further, to render the two parts or cylinders of the lamp or generator practically the same in appearance; and, further, a detail object is to construct the lamp in a cheaper and more durable manner.

With these ends in view my invention consists generally in the combination of a suitable support with two cylinders or chambers, one devoted to the gas-generator and the other to the water-supply and gas-purifier, though the latter may, if desired, be omitted.

The invention consists, further, in particular means of joining the two cylinders and forming the ducts connecting the same; and, further, in a movable gas-holder used in connection with the generator.

The invention consists, further, in regulating means arranged in connection with the movable gas-holder; and, further, in particular constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of an acetylene-gas lamp or generator embodying my invention. Fig. 2 is a sectional view thereof on the line *x x* of Fig. 1 and showing particularly the means for regulating the flow of water to the generator.

As shown in the accompanying drawings, the lamp is in general appearance practically

the same as that described in my above-mentioned application and may, like that, be supported upon a standard. I have here shown the lamp provided with a bracket by which it may be fixed upon a side wall.

2 and 3 are the main cylinders or chambers of the lamp. The former is provided with an interior wall or chamber 4, the two being connected by the annular bottom 5. The edge of the cylinder 2 projects below this bottom 5 to provide space for the packing-ring 6 upon the cartridge 7. This cartridge is of a size to fit into the cylinder and is held therein by friction. The bottom 8 of the cartridge is preferably formed with the hopper or cavity 9 to receive the refuse. 10 indicates a screen bottom in the cartridge. The cartridge may at any time be drained through the valve 11.

In the upper part of the cylinder 4 is a perforated diaphragm or cone 12. As indicated, the water rises nearly to the top of the open-topped cylinder 4 and enters the cylinder and the cartridge through the small holes or perforations 13 provided in the upper part of said cylinder 4. From thence it flows downward and distributes itself over and through the diaphragm or cone 12, so that it is quite evenly distributed over the mass of calcium carbide in the cartridge 7. The top of the cylinder 2 is open to receive the movable gas-holder 15, which is itself open at the bottom and adapted to sink into the annular water-leg formed between the cylinders 2 and 4. The gas-holder has a solid heavy top 16, which has a weight to counterbalance the pressure of the gas in the upper part of the same and by which pressure of the gas is equalized regardless of its volume. The other cylinder 3 is divided into two parts by a partition 17, and about two-thirds of said cylinder is employed as a water-chamber, which may be filled through the opening 18 in the top. The lower part of the cylinder is employed as a gas-chamber, and in this the gas-purifying agent is placed, if used. In the upper part or water-tank portion of the cylinder 3 is a gas-coil 19, the gas in which is cooled by the surrounding water.

The upper end of the gas-coil 19 is connected with the gas-outlet pipe 20 in the gas-chamber of the generator. The lower end of the coil is fastened in the sleeve or collar 21 in

the partition 17. A pipe 22 conducts the gas from the chamber 23 beneath the partition 17 to the gas-pipe 24, with which the burners are connected. The lower end of the cylinder 3 is closed by the bottom 25, provided with the drip-cock 26, and which carries the cylinder or basket 27 to contain the purifying substance or agent.

28 is a screen or perforated bottom for the basket 27, and 29 is a central tube preferably fastened and supported by the spider-arms 30. The upper end of this tube 29 is threaded to enter the threaded lower end of the sleeve or coupling 21 in the partition 17, and when the bottom is turned it will be drawn up thereby, so that the packing-ring 31 will be compressed to make a gas-tight joint between the lower edge of the cylinder and the bottom 25. The bottom 25 is preferably formed with a residue-pocket 32 similar to that in the bottom of the other cylinder. The gas-pipe 20 leads from the space above the water-distributing cone or diaphragm and downwardly between the cylinder 4 and the gas-holder.

34 represents a casting upon which the two cylinders are secured, and this casting is cored to form the duct 35, the duct 36, and the duct 37. The duct 35 connects the lower part of the water tank or chamber in the cylinder 3 with the water-leg around the cartridge in the generator.

In the water-duct 35 I provide a small valve 38 of any suitable form and here considerably exaggerated in size. The water may be shut off or regulated by means of this valve, and to automatically control the flow of water I provide a lever 39 on the valve and connect the same with the movable gas-holder which forms the top of the generator. In order to permit a considerable latitude of movement, I prefer to connect the lever and the gas-holder by a light spring 40, counter-balanced on the opposite side by another spring 41. These springs are preferably inclosed in telescoping tubes, whereby the springs are concealed, and the upper ends of the springs are connected with the gas-holder by loose links or rings 43, which may be easily detached from the lugs 44 on the holder. The lower end of the spring 40 is preferably connected to the lever 39 by a hook 45 or other means, whereby the lever may be released to permit the closing of the valve by hand. The lever 39 is preferably provided with weights 46 to render its return movement automatic. The duct 36 serves to connect the lower end of the pipe 20 with the gas-coil, a part 47 of which extends upwardly to the top of the coil, from whence the gas flows downwardly and finally delivers into the tube 29 and the space beneath the purifier-basket. From thence the gas rises through the purifying substance and passes off to the burners through the pipe 22, duct 37, and gas-pipe 24.

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

1. In an acetylene-gas lamp, the combination, with a suitable cylinder provided with an annular water-leg, of a movable gas-holder forming the top of said cylinder and adapted to sink into said water-leg, a removable bottom for said cylinder, a cylinder or cartridge carried thereby and adapted to be inserted into the bottom of said cylinder, suitable means for packing the joint between the same, means for distributing water over the material in said cartridge, and a gas-outlet pipe leading from the top of said cylinder downward to a point beneath the lower end of said gas-holder, substantially as described.

2. In an acetylene-gas lamp, the combination, with a suitable cylinder provided with an annular water-leg, of a movable gas-holder forming the top of said cylinder and adapted to sink into said water-leg, a removable bottom for said cylinder, a cylinder or cartridge carried thereby and adapted to be inserted into the bottom of said cylinder, suitable means for packing the joint between the same, means for distributing water over the material in said cartridge, a gas-outlet pipe leading from the top of said cylinder downward to a point beneath the lower end of said gas-holder, and said gas-holder having a weighted top whereby the gas within the same is compressed and the pressure equalized, substantially as described.

3. The combination in an acetylene-gas lamp, of the two adjacent vertical cylinders or chambers of substantially the same height, one devoted to the purposes of a gas-generator and adapted to contain gas-producing material in its lower part, and the other having in its upper part a tank or chamber for water, and in its lower part a gas-chamber, with a valved water-duct connecting the water-chamber with the gas-generator cylinder, a gas-duct extending between them, a gas-coil or its equivalent arranged in said water-chamber, connected with said gas-duct and discharging into the gas-chamber beneath the water-chamber, and a gas-exit from the gas-chamber, substantially as described.

4. In an acetylene-gas lamp, the combination, with suitable means to contain gas-producing material, with means for supplying water thereto, a cylinder provided with a water-chamber and with a gas-chamber, one above the other, said cylinder having a removable bottom, and a central tube whereby the same is fastened, and a gas-coil provided in one of said chambers or compartments and communicating with said central tube, substantially as described.

5. In an acetylene-gas lamp, the combination, with a suitable generator portion, of the cylinder 3, provided in its upper part with a water-chamber and at its lower part with a gas-chamber 23, a gas-coil arranged in the upper part of said cylinder, of a removable bottom of the cylinder, the central tube provided thereon, means for securing said central tube in the partition between the cham-

bers or compartments of said cylinder, and a suitable packing arranged between the cylinder and said bottom, substantially as described.

5 6. The combination, with the cylinder 3 having the partition 17, of the bottom 25, the central tube provided thereon, and a sleeve in said partition to receive the end of said tube, and a suitable packing arranged between the cylinder and said bottom 25, substantially as described.

15 7. The combination, with a suitable generator, of the water-cylinder 3, a water-duct, and a gas-duct connecting said generator and said water-cylinder, the partition 17 in said cylinder 3, the gas-coil provided in the upper part of the cylinder 3, an opening in the upper part of said cylinder, a purifier cartridge or basket provided in the lower part of said cylinder 3, means for conducting the gas to a point beneath said basket, and a gas-outlet pipe leading from the lower part of the cylinder 3, substantially as described.

25 8. The combination, of the opposite and independent cylinders, one devoted to the purposes of a generator and the other adapted to contain water, the casting or block whereon said cylinders are secured, and the water and gas ducts provided in said casting or block, substantially as described.

35 9. The combination, in an acetylene-gas lamp, of a suitable cylinder or chamber, a movable gas-holder forming the top thereof, means within said cylinder to contain gas-producing material, means for supplying water thereto, a water-valve, a lever connected

therewith, and a suitable spring or yielding connection between said lever and the movable gas-holder, substantially as described.

10. The combination, with the generator-cylinder, of the movable gas-holder or top, the balancing-springs attached thereto, the water pipe or duct connected with said generator, the valve therein, a valve-lever, and means connecting the same with one of said springs, as and for the purpose specified.

11. The combination, with the generator-cylinder, of the movable gas-holder or top, the balancing-springs attached thereto, the water pipe or duct connected with said generator, the valve therein, a valve-lever, and detachable means connecting the same with one of said springs, as and for the purpose specified.

12. The combination, in a gas-generator, of a suitable tank or cylinder, with means to contain a gas-producing material and to supply water thereto, a movable gas-holder or top for said cylinder or tank, the water pipe or duct connected with said cylinder or tank, the valve therein, a valve-lever, the springs 40 and 41, said lever connected with one of the same, and detachable means connecting said springs with said movable gas-holder, substantially as described.

In testimony whereof I have hereunto set my hand this 25th day of November, A. D. 1896.

WILLIAM H. DENNIS.

In presence of—

C. G. HAWLEY,
W. E. GOOLEY.