(No Model.)

H. M. HANDSHY.

ACETYLENE GAS LAMP.

No. 591,132. Patented Oct. 5, 1897.

Fig. 1.

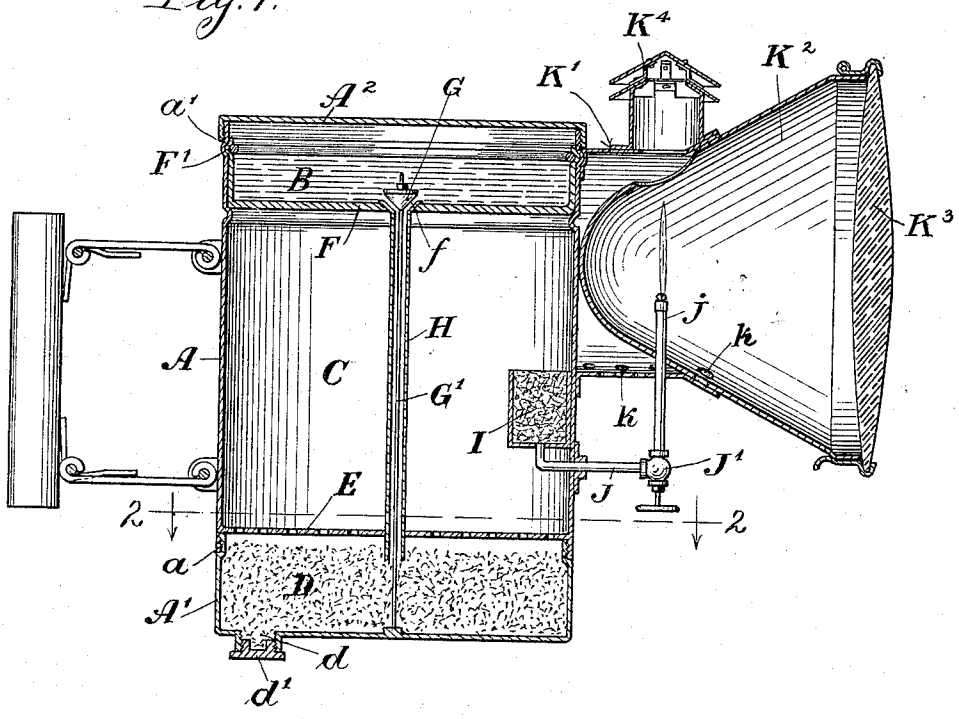
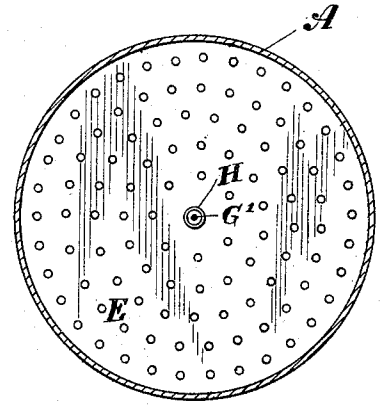


Fig. 2.



Witnesses:
R. J. Jacker.
J. W. Pherson

Inventor:
Henry M. Handshy
By Irvine Miller,
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HENRY M. HANDSHY, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHESTER J. McPHERSON, OF SAME PLACE.

ACETYLENE-GAS LAMP.

SPECIFICATION forming part of Letters Patent No. 591,132, dated October 5, 1897.

Application filed December 10, 1896. Serial No. 615,097. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. HANDSHY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lamps, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of a lamp embodying my invention, and Fig. 2 a plan section taken on the line 2 2 of Fig. 1.

This invention relates to lamps, and is more particularly designed for use on vehicles, more especially bicycles, although capable of other applications.

It has for its objects to produce a compact reliable gas-lamp which shall generate its own gas at a small cost, and shall be simple in construction and operation, giving a strong and steady light not easily extinguished.

To these and other ends the invention consists in certain novel features, which will be hereinafter described and then pointed out in the claims.

In the drawings I have illustrated my invention as applied to a bicycle-lamp.

A represents the generating portion or body of the lamp, constructed, preferably, of sheet metal in a cylindrical form and adapted to be connected to any suitable part of the bicycle by any of the means now adopted for this purpose to reduce vibration and shock to a minimum. This body portion A comprises three receptacles or chambers B, C, and D, the first, B, forming a water receptacle or chamber, the second, C, a storage and pressure receptacle or chamber, and the third, D, a receptacle or chamber for containing carbid of calcium. Between these two latter chambers is a perforated diaphragm E, and between the chambers B and C is a flexible or movable diaphragm F, having an opening *f*, controlled by a valve G, which is fixed. A pipe or conduit H extends from the valve-opening *f* to the chamber D, which latter is located below the chamber B, so that when the valve is open the water may flow by gravity from the latter chamber to the former.

I is a purifier preferably located within the chamber C and having leading from it the eduction-pipe J, which supplies the gas to the burner.

As to details of construction, which may be varied, it will be noted that that portion A′ of the body A which forms the bottom and side portions of the chamber D is removably connected to the main part of said body by a screw or slip-joint, as shown at *a*. An opening *d* in the bottom of the chamber D, closed by a screw, cap, or plug *d*′, may be employed either alone or in conjunction with the removable construction of the chamber D just described for the purpose of charging and cleaning the same.

The diaphragm F is preferably constructed of rubber, its edge being upturned and secured by a ring F′, as shown in Fig. 1, sprung into place, in conjunction with a groove *a*′, so that a gas-tight joint is formed at this point, while at the same time the entire diaphragm may be rapidly removed and replaced. Instead of rubber or the like, thin sheet metal, preferably corrugated, may be used for the diaphragm.

The chamber B is provided with a removable water-tight cover A^2 or any suitable means for filling the same. A sponge or other suitable absorbent for preventing splashing of the water in the chamber B may be employed.

The valve G is removably secured to the upper end of a stem G′, passing down through the pipe H, and secured to the bottom of the chamber D. This stem may be secured to the diaphragm E, or it may extend upward from the valve and be secured to the top A^2 of the chamber B.

The pipe H is shown secured to the diaphragm F and forming the valve-seat or a portion thereof, its lower end moving freely through the diaphragm E; but it is obvious that the lower end of the pipe may be secured to the diaphragm E, the diaphragm F being free to move on said pipe.

The purifier I is shown as a small receptacle filled with charcoal or the like, open at the upper end and having the eduction-pipe J opening into the lower end.

The pipe J is provided with a controlling-valve J′, by which the supply of gas to the burner is regulated and controlled.

The portion of the lamp heretofore described has for its functions the generation and storage of the gas. The burner K may or may not be mounted on the body A. As shown, it is mounted directly on the front of the body A, being supported by an annular connection K′, and comprising a reflector K^2, which also forms the combustion-chamber, and a lens K^3, which may be hinged, as shown, or otherwise removable to give access to the burner for lighting purposes, or it may be fixed and other means of access to the burner for this purpose employed, as is common in such lamps. A ventilator K^4 and suitable air-inlets *k* are also provided. The supply-pipe J is provided with a suitable burner *j* within the reflector K^2.

The apparatus thus organized operates as follows: The chamber D being filled with carbid of calcium and the chamber B with water this latter passes through the valve-opening *f* and down through the pipe H into the chamber D. Here it comes into contact with the carbid of calcium and generates acetylene gas, which, rising through the perforated diaphragm E, enters and fills the chamber C. As this latter chamber fills the pressure of the gas therein on the diaphragm F causes the latter to rise, whereupon the valve G gradually closes the valve-opening *f* and finally, when sufficient gas has accumulated, closes the same and cuts off the flow of water, thus arresting the generation of the gas. Upon the valve J′ being opened the gas in the chamber C passes through the purifier I, where it is deprived of its moisture and impurities, and thence through the pipe J to the burner *j*, where, when lighted, it burns with a steady brilliant flame, unaffected by the vibrations or shocks of the vehicle. As the pressure in the chamber C diminishes by reason of the outflow of gas the diaphragm F falls again and more water is admitted to the carbid-chamber, the supply being again cut off when the pressure in the chamber C is restored. The supply of gas is thus automatically regulated in proportion to the consumption, and is continuous until the materials are exhausted, when they can readily be replaced and the operation proceed as before. It will be noted that the gas is stored in a chamber where it is not in contact with water, whereby it is prevented from absorbing moisture. Furthermore, the entire generator is a closed compact body, the water being entirely inclosed, except when a small supply is needed for the generation of gas. These features are specially conducive to cleanliness and produce a lamp particularly adapted for vehicles, such as bicycles, and for any use where ready portability is desirable. The lamp is compact and reliable, produces a brilliant light at a small cost and with little heat, and is simple in construction and operation.

It is obvious that various modifications in the construction may be made without departing from the principle of my invention. For instance, the burner may be located at any desired distance from the generator proper, and several burners may be supplied from one generator, a feature particularly desirable in some vehicles. The gas and carbid chambers have been referred to as "separate" chambers, and I prefer so to make them, for the reason that the carbid is thus contained in a separate chamber and removable receptacle, and is thereby easily accessible; but it is obvious that the two chambers may be made practically one, the carbid being placed in the bottom of the gas-chamber, and the perforated diaphragm may be dispensed with, although I prefer to employ the same. A spring may be employed to aid in depressing the diaphragm F, and various other modifications will readily suggest themselves. I therefore do not wish to be understood as limiting myself strictly to the precise details of construction hereinbefore set forth, and shown in the drawings.

I claim—

1. A lamp for bicycles, &c., having a generator comprising a water-chamber, a gas-chamber separated therefrom by a flexible diaphragm, a chamber containing carbid of calcium connected with the two other chambers, and a valve controlling the connection between the water and carbid chambers and operated by the pressure of the gas in the gas-chamber upon the flexible diaphragm, substantially as set forth.

2. A lamp for bicycles, &c., having a generator comprising a water-chamber, a gas-chamber separated therefrom by a flexible diaphragm having a valve-opening, a chamber containing carbid of calcium below the water-chamber, and a fixed valve against which the flexible diaphragm is pressed by the gas in the gas-chamber to close the valve-opening and stop the flow of water, said diaphragm reacting when the pressure falls to reëstablish the flow, substantially as set forth.

3. A lamp for bicycles, &c., having a generator comprising in a single closed body a water-chamber, a fixed gas-chamber not in direct communication therewith, a flexible diaphragm between said chambers having a valve-opening, a carbid-of-calcium chamber, and a fixed valve against which the flexible diaphragm is pressed by the gas in the gas-chamber to close the valve-opening and stop the flow of water, said diaphragm reacting when the pressure falls to reëstablish the flow, substantially as set forth.

4. A lamp for bicycles, &c., having a generator comprising in a single closed body a water-chamber, a gas-chamber below the same and separated therefrom by a flexible

diaphragm having a valve-opening, a chamber containing carbid of calcium below the gas-chamber and separated therefrom by a perforated diaphragm, a pipe extending from the valve-aperture of the flexible diaphragm to the carbid-chamber, and a fixed valve against which the flexible diaphragm is pressed by the gas in the gas-chamber to close the valve-opening and stop the flow of water, said diaphragm reacting when the pressure falls to reëstablish the flow, substantially as set forth.

HENRY M. HANDSHY.

Witnesses:
D. W. ROSS,
B. BRANNON.