

G. M. OTTO.
HAND LANTERN.
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979,994.

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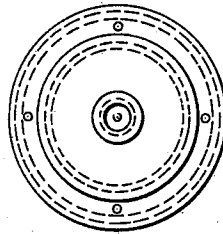
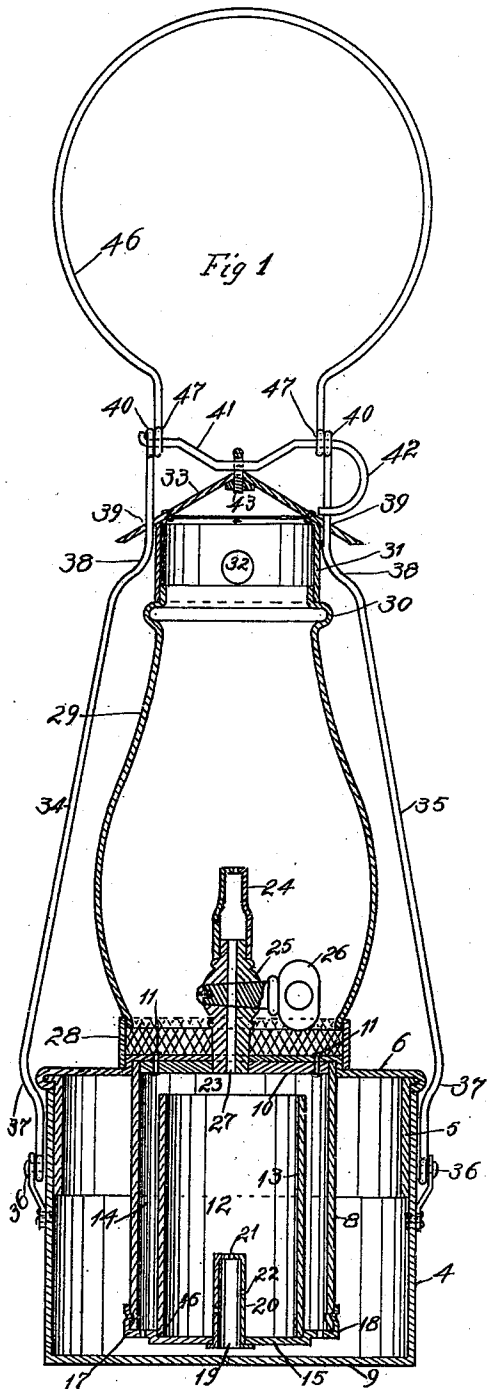


Fig. 3

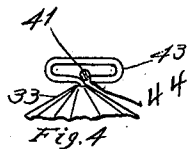


Fig. 4

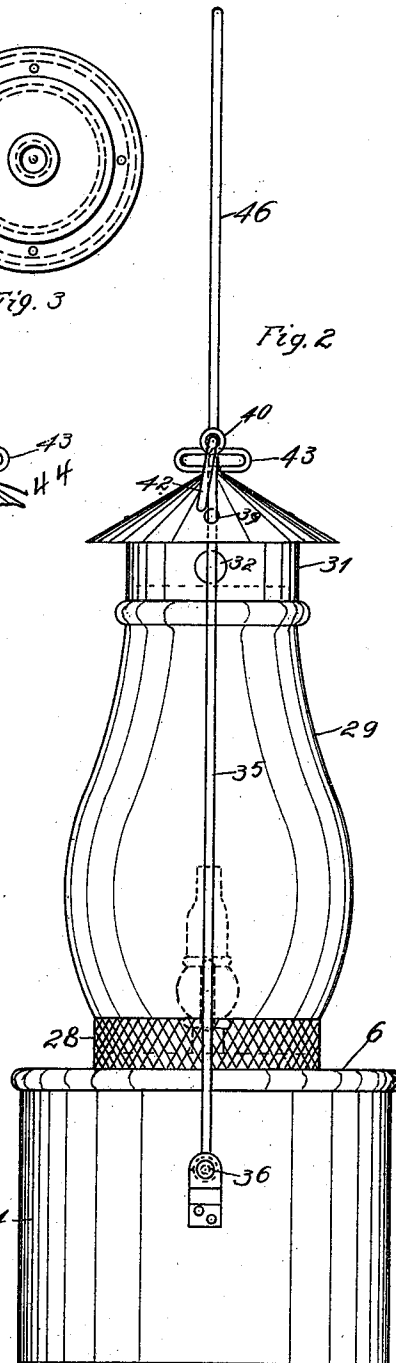


Fig. 2

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UNITED STATES PATENT OFFICE.

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HAND-LANTERN.

979,994.

Specification of Letters Patent.

Patented Dec. 27, 1910.

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To all whom it may concern:

Be it known that I, GILBERT M. OTTO, a citizen of the United States, and a resident of Oaklawn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hand-Lanterns, of which the following is a full, clear, and exact specification.

This invention relates to improvements in hand lanterns, that is to say, those provided with a bail for their suspension from the arm or hand of the user, and consisting of a transparent dome, such for example as glass removably secured at its bottom to the top of an oil reservoir from which a burner projects upwardly into a dome-like structure, said reservoir being connected by wires with a perforated cap into which the upper end of the dome projects, the bail of the lantern being pivoted in said cap, so that the lantern may swing freely upon the arm or on the hand of the user.

The object of my invention, broadly stated, is an acetylene gas lantern, that is to say a hand lantern, the base of which is so constructed as to constitute an acetylene gas generator with a burner projecting therefrom into the transparent dome of the lantern, and such a lantern shall be so constructed that all of its parts may be of the simplest form and cheapness, combined with minimum ease of access for thorough cleansing and recharging purposes.

A further object of my invention is to have an acetylene gas hand lantern so constructed throughout that its several parts, so far as need be, may be disconnected, one from the other, without the employment of packings or set screws, while at the same time a leakage and waste of gas, or the accidental detachment of any of its parts, when in its operative position, is practically impossible.

With these ends in view, my invention finds embodiment in certain features of novelty in the construction, combination and arrangement of parts by which the said objects and certain other objects are herein-after attained, all as fully described with reference to the accompanying drawings, and particularly pointed out in the claims.

In said drawings:—Figure 1 illustrates a longitudinal section of an acetylene gas hand lantern in which my invention finds embodiment; Fig. 2 is a side elevation thereof; Fig.

3 is a plan view of the reinforcing disk for sustaining the burner thereof; and Fig. 4 a detail side elevation of the cone cap.

Similar characters of reference indicate the same parts in the several figures of the drawings.

The base of my lantern structure consists of a cup-shaped vessel 4, in which fits telescopically a similar vessel 5, which two vessels constitute the water reservoir of the acetylene gas generator of my lantern. The top plate 6 of the vessel 5 being provided with a raised circular or dome portion 7 which, for cheapness and convenience of construction, is raised out of the metal of said top plate.

Fitting within the dome portion 7 is one end of a hollow cylinder 8, normally open at its lower end, which projects downward to a point near the bottom 9 of the vessel 4, which hollow cylinder 8 may be clamped against the vertical sides of the dome 7, by a thickened plate 10, and maintained against the top of the dome by bolts 11—11, but, instead of so clamping, the cylinder 8 may be soldered in place without detriment to it or to the plate 10, the function of which is distinctively for another purpose hereinafter described.

Projecting upwardly within the cylinder 8 is a calcium carbide holder 12, consisting of a hollow cylinder 13 slightly shorter in length and less in diameter than the cylinder 8, and sufficiently in both these respects to provide an annular chamber 14 between the calcium carbide holder and the cylinder 8, and an open upper end for the annular chamber.

The cylinder 13 has its lower end soldered to a bottom piece or cup 15 provided with a shoulder 16 for strengthening the soldered joint between the cylinder and its cap, and is also provided with a shoulder 17 adapted to fit against the bottom end of the cylinder 8 from which there upwardly extends a rim or flange 18 fitting and embracing the outer wall of the lower end of the cylinder 8, which said cap 15 has a whole surface to removably sustain the calcium carbide holder in its operative position within the cylinder, and to close the bottom end of the annular chamber 14.

In the bottom cap 15 is an opening 19 surrounded by an open end tube 20 formed with or soldered to the cap, which tube pro-

jects upward in the calcium carbid holder well toward the center of its height, and is closed but for a perforation 21 in its upper end through which water from the reservoir
 5 may discharge to contact with the calcium carbid contained in the holder for the generation of acetylene gas, and if desired, or necessary, the tube may have a number of perforations 22 through its sides at intervals of its length.

The annular chamber 14 and any unoccupied space in the calcium carbid holder next above the calcium carbid therein, together with the space 23 next above said holder,
 15 constitute an acetylene gas chamber, from which gas is supplied to a burner 24 secured to the top of an upright valve stem 25, provided with a valve 26, which stem 25 projects through the top of the dome 7, and
 20 is screwed into the somewhat thick plate 10, before described, whereby a regulated supply of gas may be discharged from the reservoir, through the passage 27, in the valve stem, to the burner 24 and there ignited,
 25 and, in this connection, it is proper to add that the valve structure and the burner are and may be of any ordinary construction commonly used for acetylene gas purposes.

The plate 10, for cheapness, is preferably
 30 of cast metal, but may be of any other material suitable for a firm and rigid support for a valve structure and necessary, because commercial usage and salability requires that the walls of the water chamber shall be
 35 of sheet metal of a thinness making it impossible as a support for the burner structure, which must be removable for cleansing purposes, due to more or less frequent obstructions therein from solid particles carried by the gas discharge therethrough.

Seated upon the top of the generator, and sufficiently loose against the side walls of the dome 7, for convenient removability, is a band-like ring 28, preferably provided
 45 with a series of perforations for ventilating and cooling purposes, and especially for removably confining against lateral movement a transparent dome or globe 29, preferably of glass, which is supported, through its
 50 lower end, by resting upon the top of the dome 7, as shown in Fig. 1, and by means of a bead 30 toward its upper end, in turn supporting a band 31, provided with openings 32, and closed by a cone like clamping
 55 cap 33, serving to prevent air currents through the end of the ring, and at the same time operating to hold the globe 29 seated against movement during the use of the lantern, as will now be described.

At each side of the lantern are wires or
 60 rods 34 and 35, pivoted to headed rivets or bolts 36—36, secured to and projecting from the walls of the water chamber at diametrically opposite points thereof.

The rods 34 and 35 are each provided

with outward bends 37—37 toward their lower ends, and whence they converge toward their upper ends, and are provided, adjacent the band 31, with inward bends
 38—38, continuing thence along parallel
 70 lines, and, passing through perforations 39, in the clamping cap 33, terminate in eyes 40—40 at their upper ends.

Bearing in the eyes 40—40 is a double crank arm 41 of wire, bent to form a handle
 75 42 for operating it by hand, to which crank arm the clamping cap is secured by means of an eye bolt 43, and in such relation that when the crank arm is depressed, to the position shown in Fig. 1, the clamping cap
 80 will be moved downwardly, forcing with it the band 31 and the globe 29, thereby firmly pressing and holding the globe against its seat on top of the generating structure until the crank arms are released from their de-
 85 pressed position through turning their handle 42 in one direction or the other—as may be.

As a means for locking the crank arm and the clamping cap against accidental dis-
 90 connection, the crank arm seats between the walls of a depression 44 (see Fig. 4) formed by the bend adjacent the shank of the eye bolt and the free end thereof, and by having the handle 42 in such relation to the crank
 95 arm that when the crank arm is seated between the walls of the recess in the eye bolt it will have moved slightly beyond its center and be prevented from a further or return movement by the contacting engage-
 100 ment of the handle with the rod 35.

In the operation of my acetylene gas lantern, with the several parts in the position indicated in Fig. 1, the calcium carbid
 105 chamber charged and the water chamber substantially filled by water, water will rise through the tube 24 and discharge to contact with calcium carbid, resulting in the generation of acetylene gas, which may then
 110 be ignited by applying a flame at the upper end of the burner 24, the amount of gas used, and, therefore the extent of the flame having been regulated by turning the valve or cock 26 accordingly.

When it is no longer desirable to use the
 115 lantern, the crank arm 41 is actuated by its handle 42 to release the pressure exerted by their clamping cap 33, following which the globe 29, together with the band 31, may be
 120 lifted until access to the cock 26 is had for shutting off the supply of gas to the burner 24 when the globe is lowered to its seat and the clamping cap again tightened thereon. If, at the moment of shutting off the supply of gas to the burner 24, there is any
 125 calcium carbid in the chamber 12, gas will continue to generate until, by its pressure, water will be forced out of the calcium carbid holder, or, to such an extent that the level of the water therein will be below the
 130

opening lowest down in the perforated tube 20, and, as a result, a further generation of gas substantially ceases until the cock 26 is again opened, while, in the meantime, there
 5 will remain in the annular chamber 14, and between the upper surface of the calcium carbide and the cock, sufficient gas to supply immediate demands of consumption while a further supply of gas is being generated.
 10 In this connection, it will be observed, that so long as the depth of water in the water chamber, surrounding the gas generating chamber, has its level above the flange 18, there is no possibility of gas escaping from
 15 the generating chamber, except through the cock 26. There is, however, no liability of this ever to occur, for the reason that the capacity of the water supply chamber is substantially greater than that necessary to
 20 exhaust all of the calcium carbide possible in the calcium carbide holder, and that it is the general and uniform practice, when recharging the carbide chamber of acetylene gas generators, to refill the water supply
 25 chamber, and this is particularly true when one function of the water is to seal the gas generating chamber against an accidental discharge of gas. In this connection, it is important to observe that by the construc-
 30 tion shown and described, I have eliminated any necessity for the use of packings for tightening joints, or set screws for securing any of the parts together, and thereby the possibility of any leakage due to the use of
 35 either and the frequent renewal of joints where either packings or set screws are employed, and at the same time have made possible the production of an acetylene gas hand lantern, both practical and serviceable,
 40 and from which is entirely eliminated any possible explosion or fire liable to follow a very small leakage.

When the carbide is exhausted, or when, for any other reason, it is desirable to refill
 45 the calcium carbide holder, the globe 29 and the clamping cap are removed and set to one side, whereupon the top portion of the telescoping water chamber is removed, the calcium carbide holder pulled out of the tube,
 50 and after being thoroughly cleansed and refilled is inserted to its operative position in the tube, and after refilling the water chamber its two parts are telescoped to a closed position, the globe replaced and tightened
 55 upon its seat, unless immediate use of the lantern is desired, in which case the valve is first opened and a match applied to the burner before relocking the globe.

From the foregoing it will be seen that I
 60 have devised an acetylene gas hand lantern, minimum in simplicity, cheapness of cost, accessible for cleansing purposes, refilling and recharging, of a lightness making it convenient to carry, and, as a whole, an article
 65 that has many advantages in use, as well as

commercially, over those in which oil and candles as heretofore have been universally and exclusively employed.

Having described my invention, what I claim and desire to secure by Letters Pat- 70 ent is:—

1. A hand lantern comprising in combination an acetylene gas generator apparatus, a burner therefor, a transparent globe surrounding and projecting above said burner, 75 a detachable collar loosely supported upon the top of the generator apparatus and forming a seat for and surrounding said globe, a suspending frame secured to said apparatus, a bail therefor, and a locking means supported by said frame adapted to removably 80 clamp and lock the globe upon its seat, substantially as described.

2. A hand lantern comprising in combination an acetylene gas generator apparatus, 85 a burner therefor, a transparent globe mounted above and supported loosely upon the top of said apparatus, a suspending frame, and a bail therefor, a cap, a pivoted locking device forming the top bar of said 90 frame and actuating said cap toward and thereby removably locking the globe in its operative position, substantially as described.

3. A hand lantern comprising in combination an acetylene gas generator apparatus, 95 a burner therefor, a transparent globe surrounding said burner, a base support for said globe, a suspending frame, a cap sleeved thereon, a collar separated therefrom, means for depressing said cap against the collar 100 and locking the cap and collar in a position tightening and maintaining the globe upon its base support, substantially as described.

4. A hand lantern comprising in combination an acetylene gas generator apparatus, 105 a burner therefor, a stationary transparent globe, a generator suspending frame, a pivoted bail therefor, a cap located within said frame, and a bell-crank pivoted in and connecting the upper ends of said frame, 110 suspending said cap, and adapted to actuate the cap to a position locking and unlocking the globe upon its seat, substantially as described.

5. A hand lantern comprising in combination an acetylene gas generator apparatus, 115 a burner therefor, a transparent globe surrounding and projecting above said burner, a suspending frame secured to said apparatus, a cap, a locking device permanently sus- 120 pending said cap, a perforated collar separate therefrom seated upon the globe and actuated by the depression of the cap to lock the globe upon its seat, substantially as described. 125

6. A hand lantern comprising in combination a light supplying device, a frame pivoted thereto, a transparent globe supported from said lighting device, a cap above said globe, an eye bolt secured to the cap and pro- 130

vided with a recess, a crank arm pivoted in the frame and adapted to move the cap to a position locking the globe upon its base support, said crank arm being adapted to engage said recess, substantially as described.

7. A hand lantern comprising in combination a light supplying means, a transparent globe therefor, a suspending frame, a crank arm provided with a handle, a cap, an eye bolt suspending said cap from the crank arm and provided with a recess, and means whereby, when the cap is depressed to its lowest position, the crank arm will be off its

dead center and seated in said depression and a handle of the crank arm will be in engagement with the frame and lock the crank arm against further movement, substantially as described.

In witness whereof, I have hereunto set my hand and affixed my seal, this 15th day of September, A. D. 1909.

GILBERT M. OTTO. [L. S.]

Witnesses:

F. E. BROM,

JNO. G. ELLIOTT.