No. 630,975. Patented Aug. 15, 1899.

G. DAWSON.

ACETYLENE GAS GENERATOR.

(Application filed Nov. 2, 1898.)

(No Model.)

Fig. 1

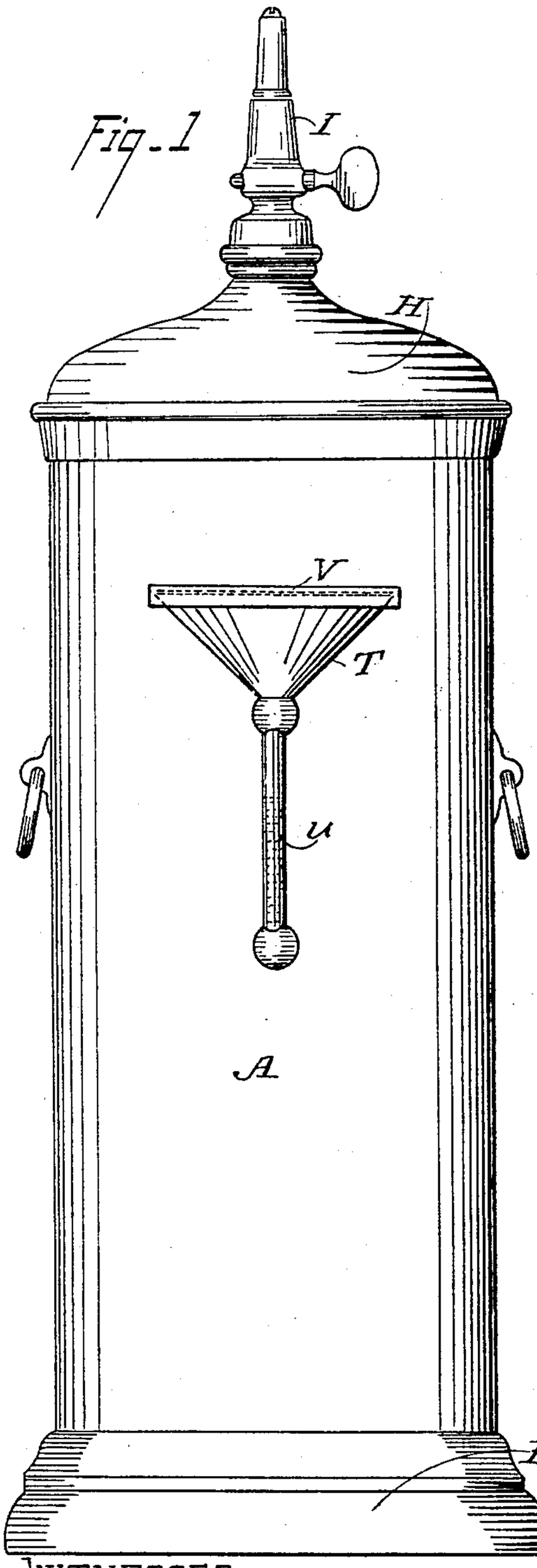
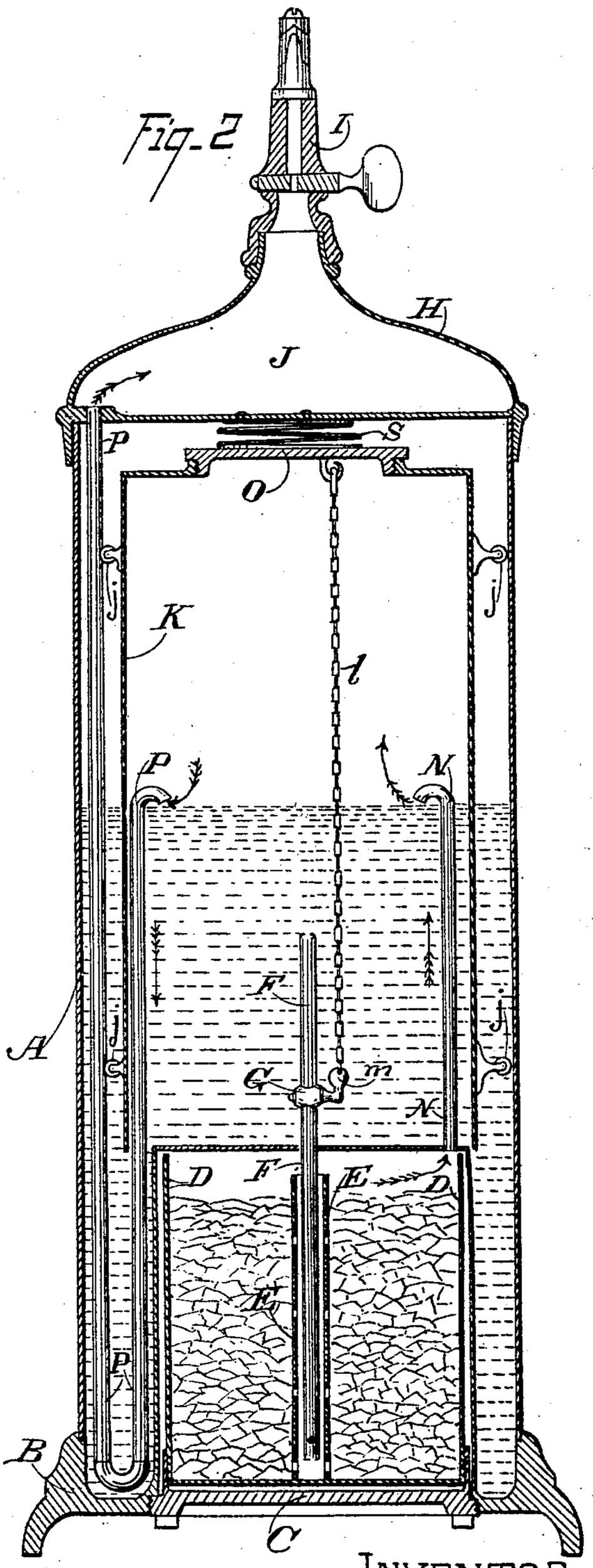


Fig. 2



WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE DAWSON, OF SAN FRANCISCO, CALIFORNIA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 630,975, dated August 15, 1899.

Application filed November 2, 1898. Serial No. 695,322. (No model.)

To all whom it may concern:

Be it known that I, GEORGE DAWSON, a subject of the Queen of Great Britain, residing in the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Acetylene-Lamps; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

The object of my invention is to provide a portable lamp for generating and burning acetylene gas; and it consists of the mechanism and devices hereinafter described.

Referring to the accompanying drawings, Figure 1 is an elevation of my lamp, and Fig. 2 is a sectional elevation showing its interior arrangement.

A represents an outer case, which I prefer to make cylindrical in form. Its lower end fits and is secured in a base B. This base has a central opening in it, the edge of which opening is tapped with screw-threads to receive a plate C, which is correspondingly screw-threaded around its edge, which plate forms the floor or bottom of the calcium-carbid chamber. Upon this floor is secured an outer annular wall D and a central perforated pipe or tube E, the space between the central tube and outer wall forming the gas-generating vessel, in which the calcium carbid is placed, the whole being removable by unscrewing the bottom from the base B.

In the bottom of the main cylinder an inverted water-tight chamber is formed, large enough to receive the generator vessel, and in the center of the top of this chamber is a vertical pipe F, which extends upward into the main vessel and partly below it, so that when the generating-chamber is placed and screwed into position the part which extends below the top of the chamber enters the central perforated pipe E of that vessel. In the length of this pipe above the top of the inverted chamber is a cock G, which is operated in the manner hereinafter described.

The main body or cylinder A has a tight removable cover H placed upon its upper end which is so shaped as to have a burner-tip I secured upon its top, and underneath this tip is a space J, which forms a supply-chamber, as hereinafter described. When the cover H is removed, the main vessel A is filled with water to a point indicated in Fig. 2 and an inverted bell or gas-holder K is placed in the vessel, so as to rise and fall under the gas-pressure in the usual way. This bell or gas-holder is guided in its movements by rollers *j j*, which bear against the inside of the vessel or against some permanent part of the apparatus. Suspended from the top of the bell or gas-holder is a chain or other flexible connection *l*, the lower end of which is attached to a weighted lever-arm *m* of the cock G, the weight being sufficiently heavy to depress the lever and turn the plug of the cock when it is not drawn upwardly by some means. The cock G is so constructed that it is open when its weighted lever-handle is in a horizontal position, but is closed when the lever is in either its raised or lowered position. When the upper end of the chain is detached from the top of the gas-holder and slackened, the weight will cause the lever-arm to drop to its lowest position, and thereby rotate the valve-plug and close the valve. A removable head or section O is formed in the top of the gas-holder, and the chain is attached to the under side of this removable section, so that when the top H of the main vessel is removed the section O can be detached and the chain either attached or detached, as desired.

The water in the main tank covers the open top of pipe F, so that when the cock is open water will descend through this pipe into the perforated stand-pipe E of the generator to supply water to attack and decompose the calcium carbid.

N is a pipe which connects the gas-space in the top of the generator-chamber with the space under the gas-holder above the water, and P is a delivery-pipe which leads the gas from under the gas-holder to the supply-chamber J underneath the gas-tip. In the present drawings this pipe is represented as passing down through the water to near the bottom of the main tank, where it is bent upon itself, so as to extend directly up to the floor of the top piece, through which it passes; but it could be variously arranged.

The generator-chamber having been charged with calcium carbid and screwed into place and water introduced into the main

chamber through the top, as above described, the gas-holder is inserted into the main vessel in proper position and the chain attached to its top. The gas-holder is then raised by hand, so as to cause the chain to raise the weighted lever and open the cock. Water will then descend through the pipe F and pass through the lower perforation in the stand-pipe E and attack the lower stratum of calcium carbid in the generator. Gas is thus generated, which rises into the space above the carbid, and thence passes up through the pipe N into the space under the gas-holder until the pressure of gas raises the gas-holder, thereby causing it to draw the chain taut and close the cock. At this time the gas-chamber J is fully charged and the gas-tip can be opened and the gas lighted. As the pressure of gas under the gas-holder is reduced by the consumption at the burner the gas-holder will descend, thus slacking the chain until the weighted lever of the cock falls far enough to open the cock and allow an additional quantity of water to pass down into the generator and attack a fresh body of the carbid, thereby supplying gas to increase the pressure under the gas-holder and again forcing the gas-holder upward, so as to tighten the chain and close the cock. This operation is repeated as long as the supply of carbid in the generator lasts.

A funnel T on the outside of vessel A connects by a pipe with the inside water-chamber, and a water-gage U indicates the height of the water in the vessel. As the level of the water in the chamber is lowered by the waste into the generator other water is supplied through the funnel and pipe to maintain the proper level. The funnel not only serves as a means of introducing additional water into the main chamber, but is a reservoir that will prevent overflow in case the gas-pressure in the chamber raises the level of the water in the supply-pipe. It has a tight cover V, which closes the top of the funnel and prevents the escape of gas and the consequent odor.

A light coiled spring S has its upper end secured to the under side of the horizontal floor of the top or cover H. The lower end of this spring can be attached to the top of the gas-holder or it can remain free. In either case the spring serves as a pressure-spring when the gas-holder is filled with gas, and thereby serves to give an elastic resisting force to the internal gas-pressure and also to increase the pressure capacity of the gas-holder.

This lamp is portable and can be made quite small to serve as a hand-lamp, or it can be made larger, according to the necessity, or it may be made large enough to supply several burner-tips, in which case the supply-pipe could be connected with the top of the lamp and pipes led to the various burner-tips to be lighted.

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

1. In an acetylene-gas lamp, a main vessel for containing water; a generator below the water-chamber; a gas-holder in the water-chamber; means for supplying water to the generator automatically by the rise and fall of the gas-holder; pipes for conducting the gas from the generator to the space under the gas-holder; a chamber in the top of the lamp; and a pipe for conducting the gas from the gas-holder to said chamber, substantially as described.

2. In an acetylene-gas lamp; an outside inclosing case; a base or stand for said case; an opening in said base; an inverted chamber above said opening; a removable generator vessel fitted to enter said inverted chamber; a plate adapted to close the opening and support said generator vessel; a perforated stand-pipe in the center of the generator vessel; a water-compartment above and around said inverted chamber; a gas-holder fitted to rise and fall within the main casing; means for automatically supplying water in limited quantities from the water-chamber into the perforated stand-pipe of the generator vessel by the rise and fall of the gas-holder; a cover for the main vessel; a gas-chamber in said cover; means for conducting the gas from the gas-space in the gas-holder to the chamber in the cover; and one or more gas-tips connected with the gas-chamber above the cover, substantially as described.

3. In an acetylene-gas lamp; an outer shell or casing; a base for said casing; a gas-generator in the lower part of said casing above the base; a water-chamber inside said casing above the generator; a gas-holder adapted to rise and fall within said water-chamber; means for automatically supplying water in limited quantities to the generating-chamber by the rise and fall of the gas-holder; a cover for the main casing; a gas-chamber in said cover; means for conducting gas from the gas-space in the gas-holder to the gas-chamber in the cover; a spring interposed between the top of the gas-holder and the cover; and one or more gas-burners connected with the gas-chamber in the cover, substantially as described.

In witness whereof I have hereunto set my hand this 2d day of April, 1898.

GEORGE DAWSON.

Witnesses:
CHAS. J. ARMBRUSTER,
J. A. BAYLESS.