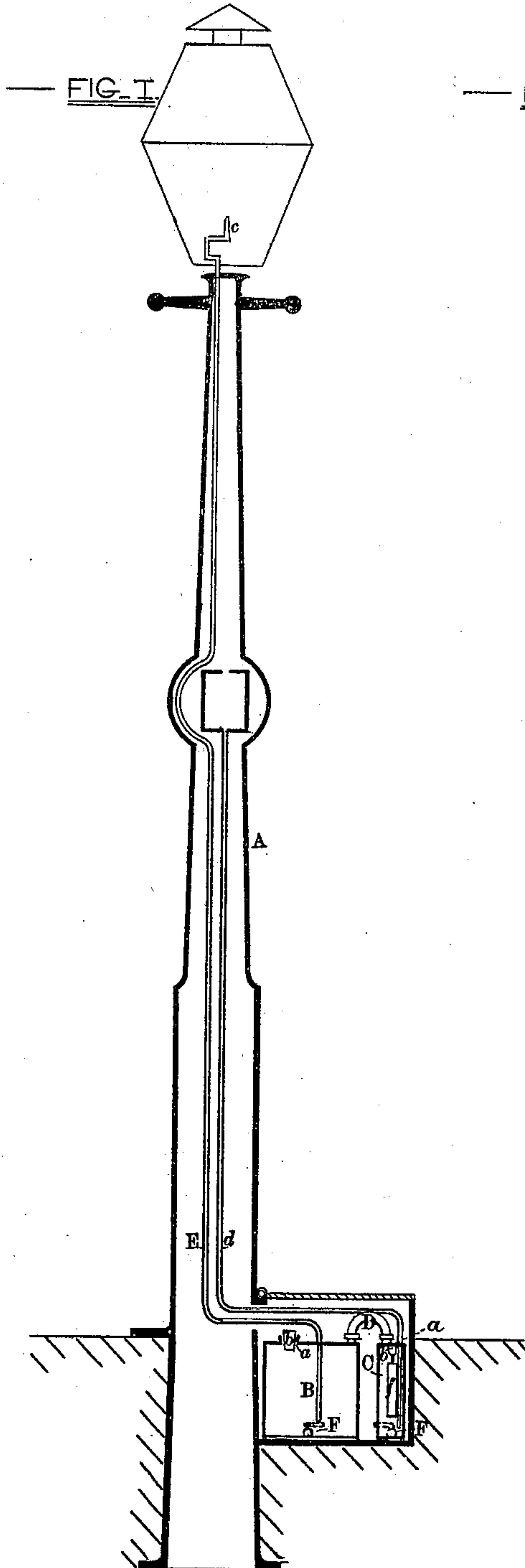


H. CLARKE  
STREET-LAMP.

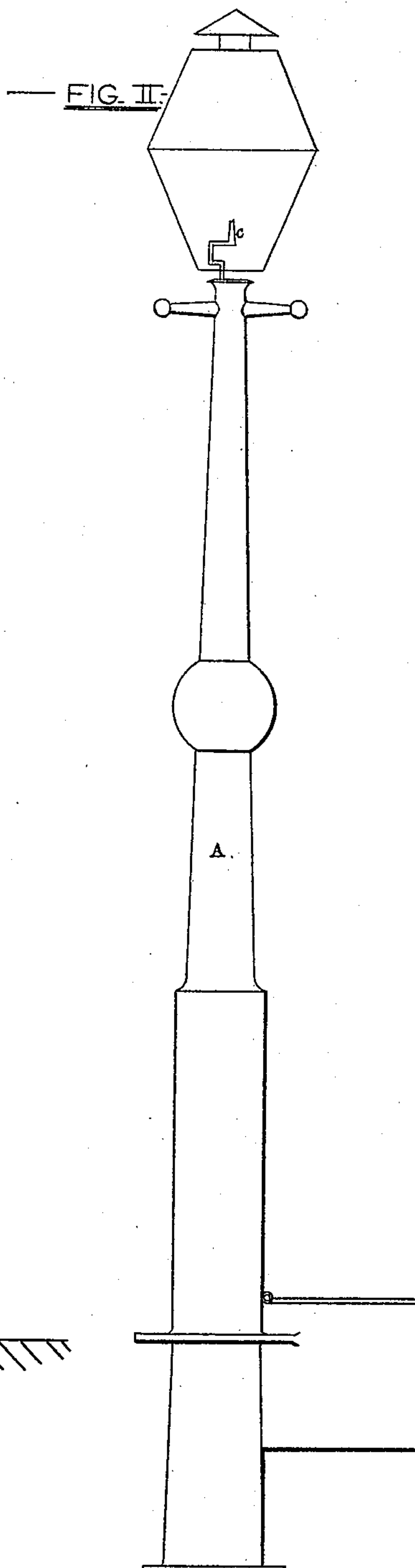
No. 174,661.

Patented March 14, 1876.



— WITNESSES —

*Joseph Bragg*  
*Woodruff W. Wharton*



— INVENTOR —

*Henry Clarke*  
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attys.

# UNITED STATES PATENT OFFICE.

HENRY CLARKE, OF BALTIMORE, MARYLAND.

## IMPROVEMENT IN STREET-LAMPS.

Specification forming part of Letters Patent No. **174,661**, dated March 14, 1876; application filed August 21, 1873.

*To all whom it may concern:*

Be it known that I, HENRY CLARKE, of the city of Baltimore and State of Maryland, have invented certain Improvements in Street-Lamps, of which the following is a specification; and I do hereby declare that the same is a full, clear, and exact description of my said invention, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to certain improvements in gasoline, or other street-lamps, in which the illuminating fluid is forced by the generation of hydrogen or other gas from a reservoir, in which it is stored, to a burner situate within the lantern, and to means employed to maintain a constant and uniform pressure upon the burner by the use of a counterbalancing column of liquid, preferably that which is used in the generation of the gas.

The object of this invention is to produce means whereby a very volatile and inflammable oil can be used with safety. This result is accomplished by removing the oil-reservoir as far as possible from the burner, the oil having no other communication with the open air, yet being maintained at a required height by the pressure of acidulated water communicated to the oil through an intervening medium of hydrogen or other gas, generated as required, to maintain the uniform pressure in the vessel itself.

My invention consists in certain gasoline and gas generating reservoirs, conveniently placed within the lamp-post, or at some point near thereto, and in certain attachments to the said reservoirs, and dependent thereupon, together producing the results hereinafter specified. With this view, the gasoline-reservoir is provided with a pipe leading to the burner, and a pipe connecting it to the gas-generating reservoir, in which is contained a mixture of sulphuric acid and water acting upon a bar of zinc hanging therein.

The hydrogen gas, liberated by this well-known process, permeates the spaces above the liquid in the two reservoirs, and establishes a like pressure on each. By this pressure, the gasoline is forced to the burner, and a portion of the acid and water forced into a

pipe, and to an elevation sufficient to counterbalance the gasoline, but which, owing to the difference in the specific gravity of the two bodies, must necessarily be at a point considerably below the burner.

In the further description of my invention, which follows, due reference must be had to the accompanying drawing, in which—

Figure I is a vertical section of a street-lamp, showing my invention as attached thereto. Fig. II is an exterior view of the same.

Similar letters of reference indicate similar parts in both figures.

A represents the lamp-post. B and C are respectively the gasoline and gas generating reservoirs. Both reservoirs are provided with the charging-apertures *a*. D is a pipe forming a communication between the two reservoirs. Suspended from the stopper *b*, or from some other convenient place, is a bar of zinc, *f*, which, when acted upon by the dilute acid, liberates the hydrogen in the water, causing a pressure in the two reservoirs. By reason of the pressure of gas thus generated, the gasoline is forced into the conducting-pipe E, and thence to the burner *c*, where it, after being vaporized by the heat of the flame, is consumed, emitting a brilliant light. The dilute acid, by reason of the pressure of gas, is forced into the pipe *d*, where it all times counterbalances the column of gasoline, although, owing to its greater specific gravity, it is of a different level. The depth to which the zinc bar is allowed to penetrate the generating-reservoir is governed by the height to which the gasoline is to be raised, as when the level of the liquid in the reservoir falls below the end of the zinc bar the generation of gas ceases. To allow for any variation in the volume of the acid mixture, or any increased or diminished pressure in the gasoline-reservoir by reason of atmospheric changes, the upper end of the pipe *d* is enlarged. This, as the liquid is diffused over a large surface, affects the height of the column to a very slight degree; it also prevents any great variation of pressure by reason of the inaccurate adjustment of the zinc bar.

Although in this description of my invention I have specified hydrogen gas as the



active agent in elevating the gasoline to the burner, other gases may be used, generated by any of the well-known methods, provided that the pressure is limited by the fall in level of the liquid used. F F are discharge-cocks, to be used as may be found necessary.

I am aware that raising burning-fluid to the burner by pressure acting on the fluid is not, as a principle, new, and to claim such is not my intention; neither do I claim, broadly, the counterbalancing action of a column of liquid; but my invention consists in the apparatus and appliances hereinbefore described, and hereinafter claimed.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent of the United States, is—

The combination of the lamp-post A, gasoline-reservoir B, gas-generating chamber C, connection D, and pipes *d* and E, the pipe *d* being enlarged at its upper end, substantially as and for the purposes specified.

In testimony whereof, I have hereunto subscribed my name in the city of Baltimore, this 11th day of August, in the year of our Lord 1873.

HENRY CLARKE.

Witnesses:

THOS. MURDOCK,

A. CONTEE WORTHINGTON.