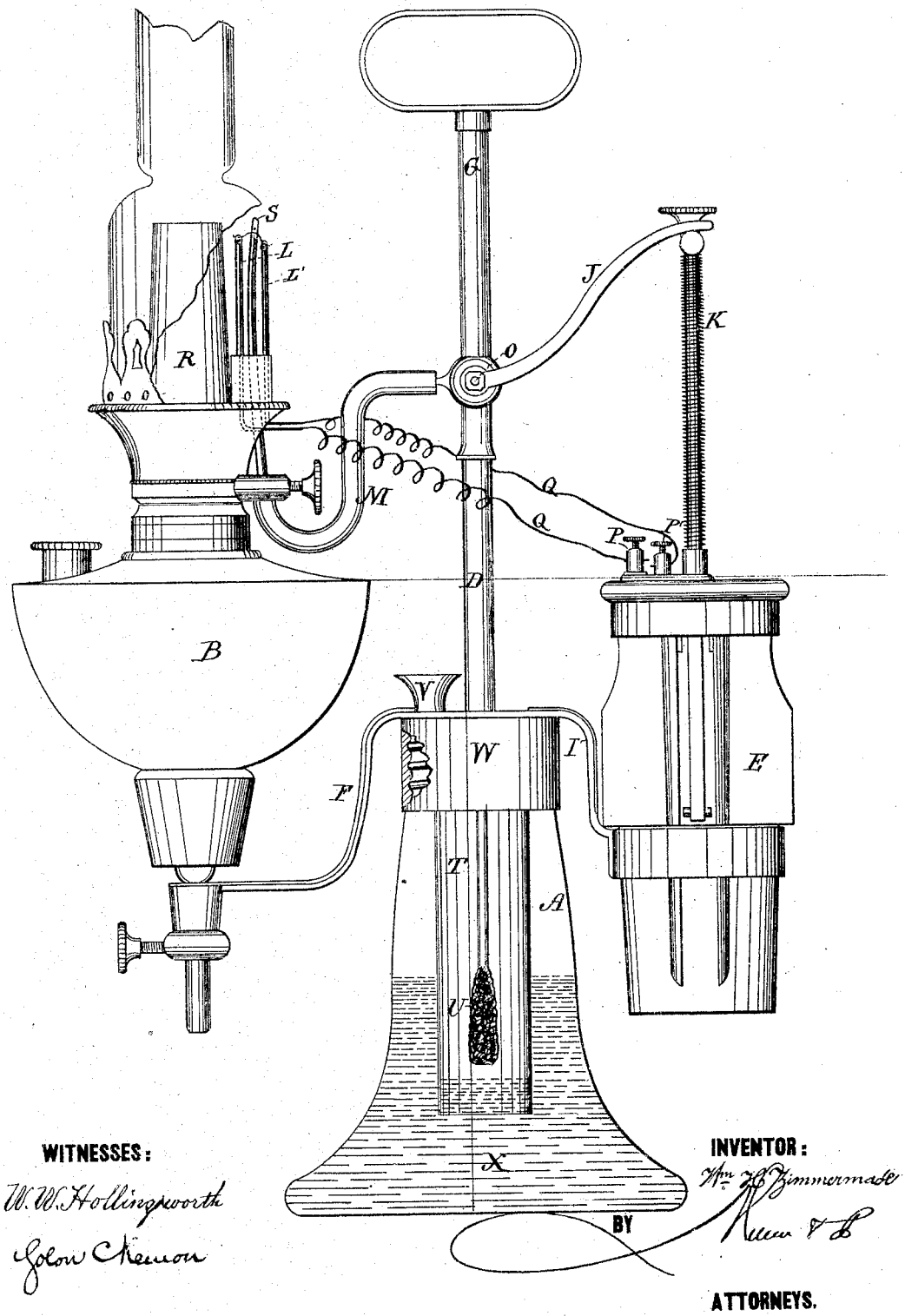
# W. H. ZIMMERMAN.

## Hydro-Electric Lamp.

No. 160,739. Patented March 9, 1875.

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# UNITED STATES PATENT OFFICE.

WILLIAM H. ZIMMERMAN, OF CHESTERTOWN, MARYLAND.

## IMPROVEMENT IN HYDRO-ELECTRIC LAMPS.

Specification forming part of Letters Patent No. **160,739**, dated March 9, 1875; application filed January 11, 1875.

*To all whom it may concern:*

Be it known that I, Prof. WILLIAM H. ZIMMERMAN, of Washington College, Chestertown, in the county of Kent and State of Maryland, have invented a new and Improved Hydro-Electric Lamp; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, in which the figure is a side elevation.

The object of this invention is to provide a lamp in which the principles of the galvanic battery and a Döbereiner apparatus are combined and utilized in an improved manner for the purpose of rendering the lamp self-lighting. It consists in the peculiar construction and arrangement of parts, as will first be fully described, and then pointed out in the claims.

In the drawing, A represents the pedestal or supporting-base of the lamp. This said pedestal is hollow, and is partially filled with dilute sulphuric acid X, which, with the zinc U, suspended in the bell-jar T, forms the necessary elements of the Döbereiner apparatus for generating hydrogen. W is a detachable cap which forms the top of the said apparatus, and is fastened thereto, preferably by means of a screw-thread blown in the glass neck. Said cap is provided with inlets V for the acid and water, and has attached a vertical tube, D, which communicates with the hydrogen-space in the bell-jar, and to which is screwed the detachable supporting-handle G. I is a bracket attached to said cap, in which is supported a small bichromate-of-potash battery, E, and F is another bracket upon the opposite side of the lamp, which terminates in a socket in which the lamp B is adjustably held by a binding-screw. R is the burner-cone of the lamp, near which is located a tube, S, connecting, through rubber pipe M, with the tube D. Said tube S has, near its extremity, a small orifice through which a jet of hydrogen is directed upon the wick. Just below said orifice is a piece of platinum wire, which forms the circuit between the two electrodes L L′. Said electrodes are insulated in the burner-frame, and connected, by wires Q, with the binding-screws P P′, which are electrically connected with the two elements of the battery. J is a lever, which is attached to a cock, O, that makes and closes communication between the tube S and the bell-jar T. K is an extension-rod attached to the zinc of the battery, and provided with a spiral spring which habitually holds the said zinc out of contact with the exciting liquid. The said extension-rod is provided with any suitable connection with lever J, for the purpose of rendering the action of the battery and the escape of hydrogen at the wick synchronous.

The operation of the above-described lamp is very simple, all that is necessary to light the same being to elevate the wick and depress rod K, which latter action heats the platinum wire by the electric current thus established, and the liberated jet of hydrogen being ignited therefore ignites the wick.

I am aware of the fact that it is not new to combine the principle of the galvanic battery with that of the Döbereiner lamp for the purpose of securing a ready light, and I do not claim such, broadly.

Devices heretofore employed for this purpose, however, have proven to be useless for all practical purposes by reason of the clumsiness of the construction, the inconvenience in using, and the difficulties of keeping the parts clean and in repair, which objection my devices are intended to obviate.

Having thus described my invention, what I claim as new is—

The hydro-electric lamp, consisting of a hollow base or pedestal, A, for forming the Döbereiner apparatus, the coil-oil lamp B, the battery E, and the supporting-frame W I F, all combined and arranged substantially as and for the purpose described.

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Witnesses:
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