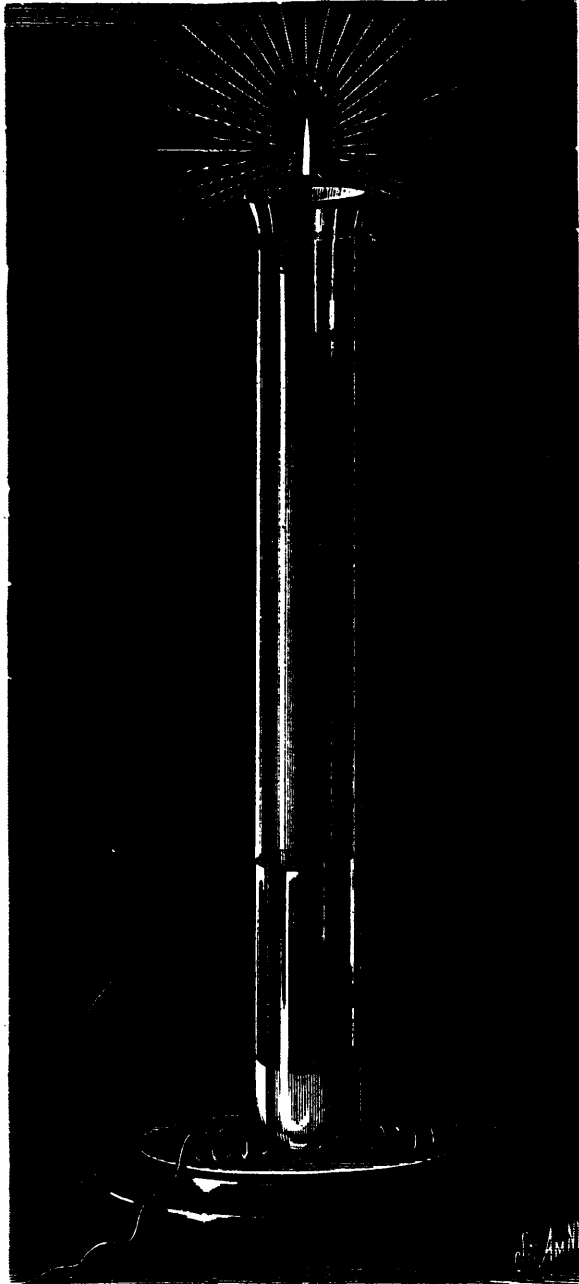


MODIFICATION OF THE REYNIER AND WERDERMANN ELECTRIC LAMP.

BY GEO. M. HOPKINS.

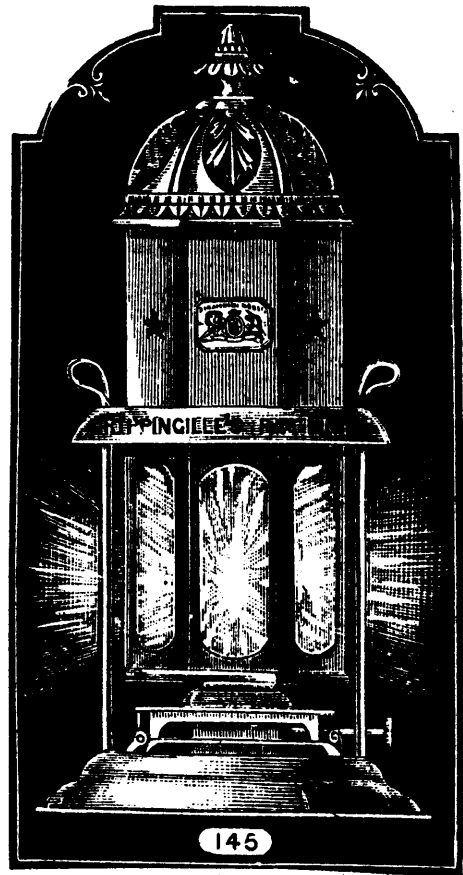
In the Reynier and Werdermann systems of electric lighting the light is produced by the incandescence of a slender pencil of carbon and by a small voltaic arc between the end of the pencil and the carbon block forming one of the electrodes. In the Reynier system the carbon block is in the form of a wheel that



SIMPLE ELECTRIC LAMP.

revolves slowly by contact with the end of the carbon pencil. In the Werdermann system the carbon block is stationary. In both systems the pencil is carried forward as it is consumed, by gravity of a simple weight or of the parts of the lamp and the pencil, and Mr. Reynier, in a recent description of his lamp, proposes to employ hydrostatic pressure as a means of carrying forward the pencil. This is not a new idea, the principle having been already applied to feeding carbons in electric lamps.

The lamp shown in the accompanying engraving embodies the principle of the Werdermann and the Reynier, and the carbon



pencil is carried upward by a float which creates the required pressure between the electrodes and presents a ready means of moving the carbon with a gentle, continuous pressure.

This lamp is as simple in its construction as any having means of feeding the carbons, and it is as inexpensive as it is simple. With appropriate battery power it will give a light equal to at least two five-foot gas burners.

The test tube which contains the water and the cork float, is 9 inches high and about $1\frac{1}{8}$ inch in diameter. From the base rise two wires, which are formed into a circular loop at the top for receiving the carbon button forming one of the electrodes. This carbon button is circular and somewhat conical, and is held in place by simply crowding it into the loop. It is arranged eccentrically in relation to the top of the test tube, to admit of turning it so as to present a new surface to the end of the carbon pencil, and it is inclined so that the upward pressure of the carbon pencil will insure a contact between the button and the pencil, and between the pencil and the small carbon block below and in front of the button. This block is inserted in the coil formed on the end of the wire which extends over the side of the test tube and downward to the base, where it is connected with one of the battery wires.

The looped wire that supports the carbon button and the wire supporting the carbon block are inserted in the base, and form a support for the test tube.

The carbon pencil is $\frac{1}{16}$ inch in diameter and 9 inches long. The cork that buoys it up has in its center a small tube for receiving the lower end of the carbon pencil; for this tube a very small quill answers well.

The carbon button and the carbon block are cut from a hard piece of battery carbon or from a piece of gas retort carbon.

The test tube is nearly filled with water, which bears up the cork float and brings the upper end of the carbon pencil into contact with the carbon button; the pressure of the pencil against the inclined surface of the button throws the pencil into contact with the carbon block, completing the electrical circuit.

Six cells of Grenet battery, each consisting of a zinc plate, 3x6 inches, placed between two carbon plates of the same size, will