(No Model.) 2 Sheets—Sheet 1.

W. SAWYER.

Electric Lamp.

No. 227,386. Patented May 11, 1880.

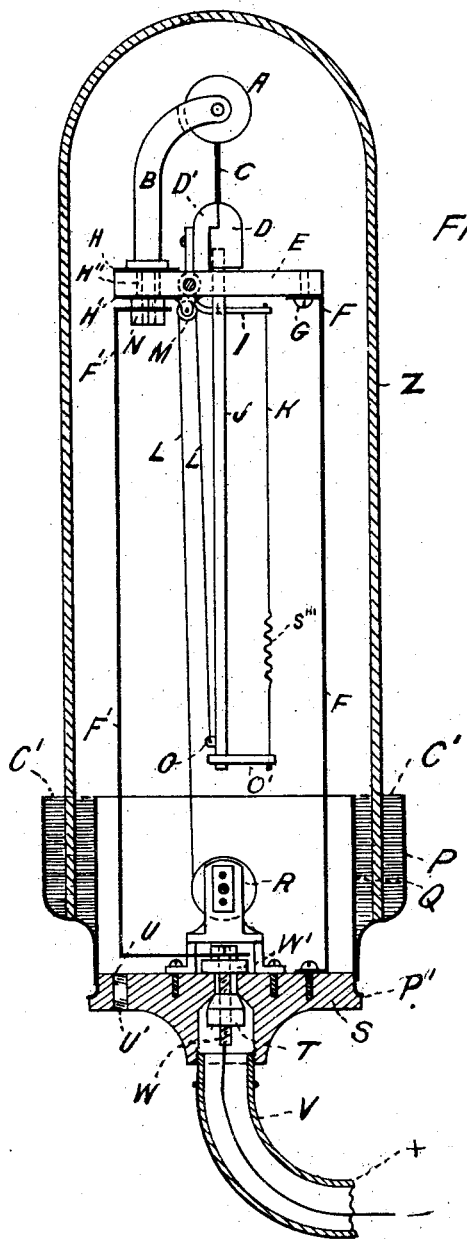

FIG. 1.

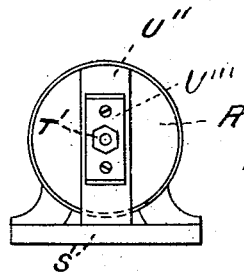

FIG. 2.

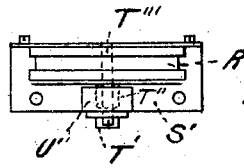

FIG. 3.

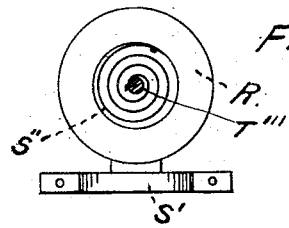

FIG. 4.

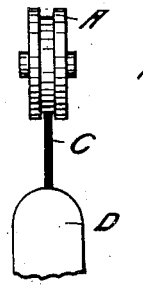

FIG. 5.

WITNESSES.

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(No Model.) 2 Sheets—Sheet 2.

W. SAWYER.

Electric Lamp.

No. 227,386. **Patented May 11, 1880.**

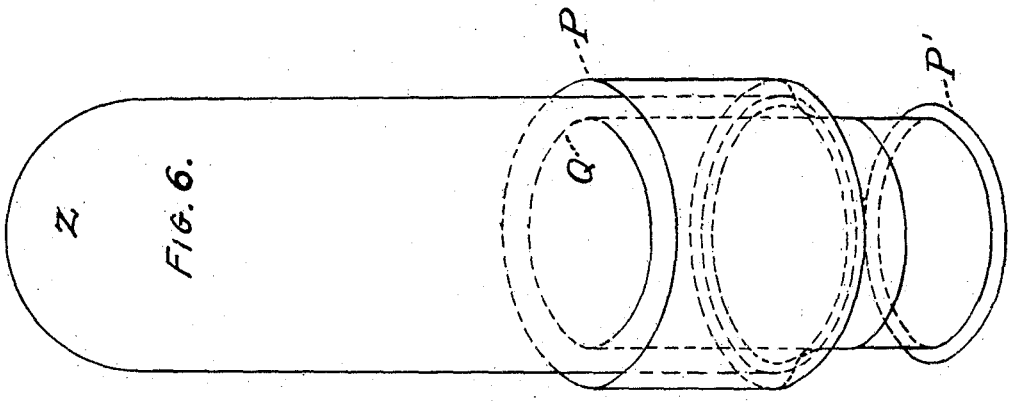

FIG. 6.

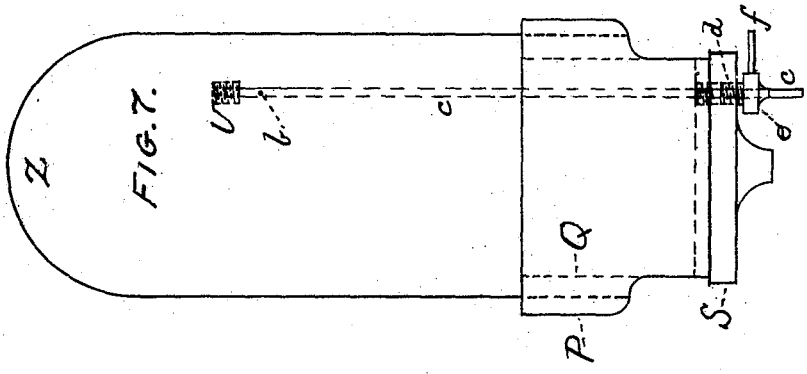

FIG. 7.

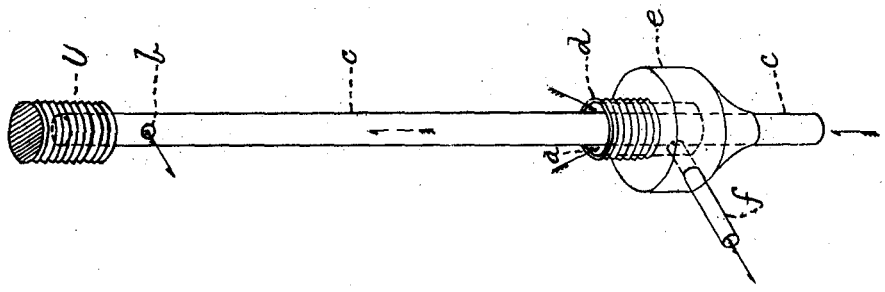

FIG. 8.

WITNESSES.
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UNITED STATES PATENT OFFICE.

WILLIAM SAWYER, OF NEW YORK, N. Y., ASSIGNOR TO THE EASTERN ELECTRIC MANUFACTURING COMPANY, OF MIDDLETOWN, CONN.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 227,386, dated May 11, 1880.

Application filed March 26, 1880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SAWYER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Lamps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to that class of electric lamp in which a pencil of carbon is heated to incandescence in a hermetically-sealed glass globe filled with nitrogen gas or exhausted of air; and it differs from other inventions mainly in the following particulars, to wit: that the base of the lamp-globe is embedded in a cup having an annular space, the advantages of which will be described hereinafter; that the carbon pencil impinges in a grooved roller-connection, whereby perfect contact is insured; and that the base of the lamp is in two sections, soldered or brazed together, whereby taking the lamp apart, &c., when renewal of the carbon pencil becomes necessary, is facilitated.

In the drawings accompanying and constituting a part of this specification, Figure 1 is a sectional view of the lamp. Figs. 2, 3, and 4 are different views of mechanism for feeding the carbon pencil upward when disintegration or breakage occurs. Fig. 5 is a front view of the pencil of carbon and its connections. Fig. 6 is a view of the setting of the lamp-globe in its metal base. Fig. 7 shows the manner in which the lamp and the compound tube for charging the same with nitrogen are arranged, and Fig. 8 shows the compound nitrogen-charging tube and its connections.

Like letters indicate like parts in all the drawings.

Referring to Figs. 1 and 6, Z is the globe of the lamp. Q is a thin brass tube turned to a shoulder at P′. P is an exterior tube turned in at the lower end, so as to fit tightly the outside of the interior tube, Q. The joint thus made is brazed or soldered, and in the annular space thus formed the glass globe is set, as shown.

I prefer that the concentric cylinders shall be made of thin brass spun into the proper shape; but it is obvious that the annular space between P Q may be formed either by turning in a lathe or by direct casting of the metal.

In the annular space between P Q, I pour any elastic or other cement or sealing material, C′, and while still hot I set the globe Z in place. The result is a joint that is practically hermetical, no air or gas being possible of leakage in this direction, except by passing down one side of the globe and up the other through the whole mass of cement. This, however, is not the chief advantage of sealing the globe in an annular space. It is a well-known fact that in all incandescent lamps both the globe and its base become considerably heated. The result is unequal expansion and consequent leakage. In my arrangement the unequal expansion of the globe and its cup is compensated for, as I will make clear.

At any given temperature the metal cup expands more than the glass globe. The result is, that there is a tendency to leakage in the cement-filled space between the globe and the outer side of the cup P; but, on the other hand, this tendency to leak is offset by the tendency of the inner side of the cup to compress the cement contained between itself and the inner side of the globe, the inner side of the cup expanding more than the glass. In cooling the reverse action takes place.

To complete the cup, I braze or solder to the lower open end of the tube Q the metal stopper S, which alone carries the mechanism of the lamp. This I prefer to do after the globe itself is cemented in place. By thus brazing or soldering I am enabled to make an air-tight joint; and whenever it becomes necessary to renew the incandescing carbon pencil I have only to unsolder the joint at P′, without disturbing the sealing of the globe in the cup P Q, and remove the entire mechanism of the lamp.

The stopper S is drilled and threaded, so that it may be screwed onto any ordinary gas-fixture, V, to which one pole of the generator of electricity, +, (not shown,) is connected, while an inclosed insulated wire from the other pole of the generator, —, makes connection

descence, the combination of a carbon pencil, C, and a single grooved roller, A, in the groove of which the pencil impinges.

2. In an electric lamp operating by incandescence, the combination of a carbon pencil, C, and a single roller-connection, A, provided with a square groove, in which the pencil impinges.

3. In an electric lamp operating by incandescence, a single connection, A, provided with a square groove, in which a pencil of carbon, C, impinges.

4. In an electric lamp operating by incandescence, the combination, with a globe, Z, of a holder, P Q, whose two concentric sides constitute an annular space in which the globe is embedded, substantially as shown and described.

5. In an electric lamp operating by incandescence, the combination of a globe, Z, a holder, P Q, whose two concentric sides constitute an annular space, and a sealing material, C′, in the space between the globe and the two concentric sides of the holder, as set forth.

6. In an electric lamp operating by incandescence, the combination, with a metal holder in which the lamp-globe is permanently sealed, of a metal base supporting the lamp mechanism and brazed or soldered to the metal holder, in order that the incandescing carbon may be renewed, when desired, without disturbing the sealing of the globe, by simply unsoldering or unbrazing the metal base.

7. In an electric lamp operating by incandescence, a metal support for the globe constructed in two sections, one section carrying the mechanism of the lamp and the other carrying the globe, the two being joined by brazing or soldering them together, as and for the purpose specified.

WM. SAWYER.

Witnesses:
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LEONARD SAWYER.