N. E. REYNIER.

ELECTRIC LIGHT.

No. 191,177. Patented May 22, 1877.

Fig. 1.

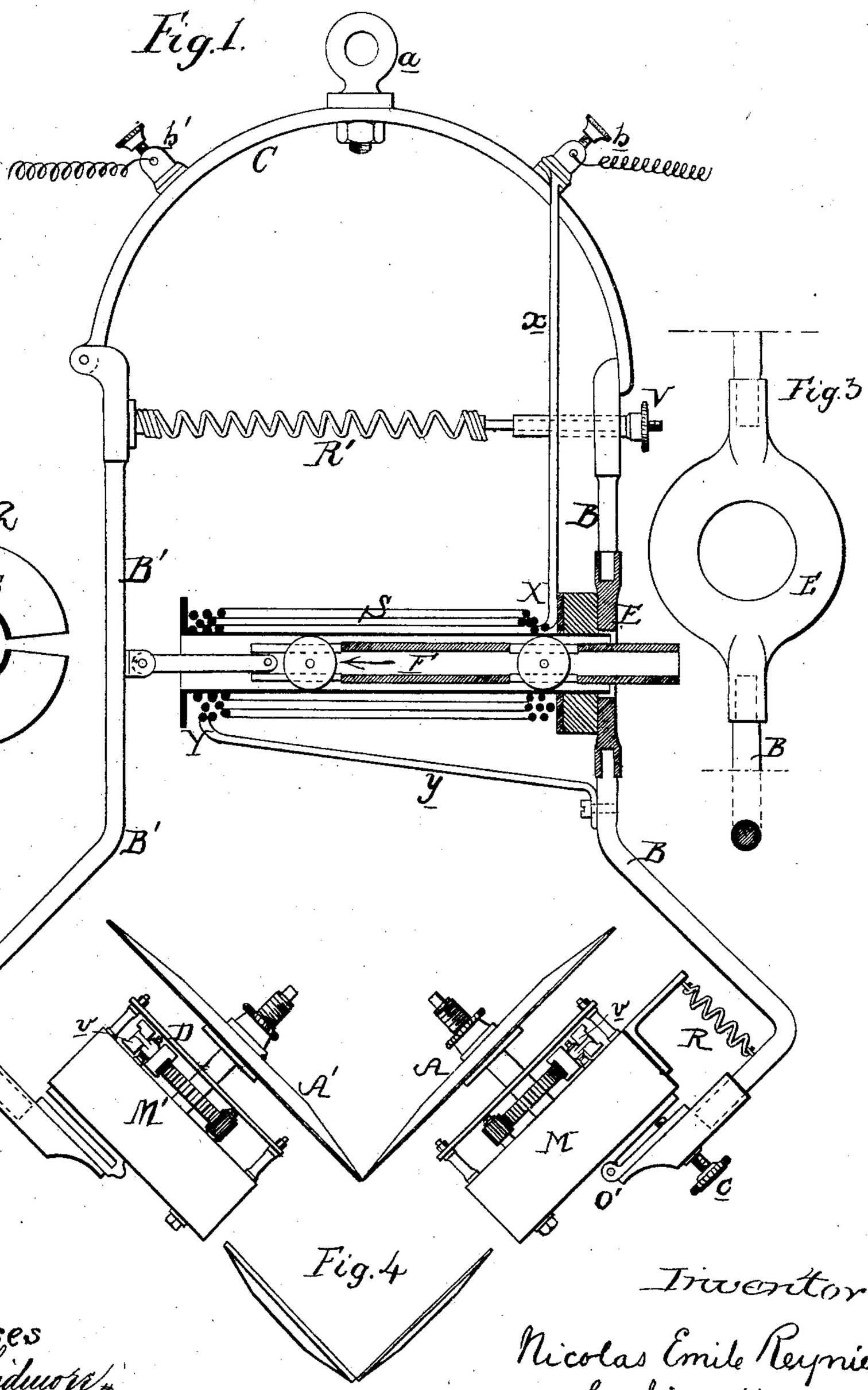

Fig. 4

Witnesses
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UNITED STATES PATENT OFFICE.

NICOLAS EMILE REYNIER, OF PARIS, ASSIGNOR TO CHARLES BONAVENTURE MARIE DU BREIL, OF QUIMERCH EN BANNALEC, FRANCE.

IMPROVEMENT IN ELECTRIC LIGHTS.

Specification forming part of Letters Patent No. **191,177**, dated May 22, 1877; application filed March 29, 1877.

To all whom it may concern:

Be it known that I, NICOLAS EMILE REYNIER, of Paris, France, have invented certain Improvements in Electric Lamps, of which the following is a specification:

The object of my invention is to so construct an electric lamp, in which the light is furnished by two carbons connected to the opposite poles of an electrical machine, that the carbons will not be so rapidly consumed as in the machines now in use, and that, as said carbons are consumed, they will advance toward each other uniformly instead of intermittently, as in the ordinary electric lamps.

This object I attain in the manner which I will now proceed to describe, reference being had to the accompanying drawing, in which—

Figure 1 represents a side view, partly in section, of my improved lamp; Figs. 2 and 3, views of parts of the lamp, and Fig. 4 a view of a modified form of the carbon plates.

A and A′ are the circular disks or plates of carbon, secured to the central stem of the clock-movements M M′, respectively, the latter motor being rigidly secured to the arm B′, while the movement or motor M is hinged, at O′, to the arm B, and is maintained by the spring R in contact with the set-screw *c*, by which the said motor and carbon plate A may be adjusted to the requisite angle. The arms B and B′ are connected to an arched plate, C, which is furnished with a suspension-hook, *a*, the arm B being rigidly secured to the arch C, while the arm B′, carrying the carbon plate A′, is hinged to the arch at O. A spring, R, regulated by the thumb-screw V, tends to cause the arms B and B′, and consequently the carbons A and A′, to approach each other.

The arm B is separated into two parts by the non-conducting ring E, to which is secured the bobbin of a solenoid, S, and in the interior of this bobbin is arranged to slide the soft-metal bar F, connected to the arm B′. One of the wires of the electrical machine or battery is connected to the insulated binding-screw *b*, which communicates with one end of the solenoid, at X, through the rod *x*, while the opposite end of the solenoid communicates, through the rod Y, with the lower part of the arm B, and through the latter with the carbon plate A. The other electric wire is connected to the non-insulated binding-screw *b*′, and communicates, through the arm B′, with the carbon plate A′.

I prefer to interpose a diaphragm, D, between each carbon and its motor, to protect the latter from the heat generated, while a small fan, *v*, operated by each motor, creates a constant current of fresh air.

The parts being in the position shown in Fig. 1, and the motors M M′ being set in motion, as soon as the electric circuit is formed the solenoid S will draw the soft-metal bar in the direction of the arrow, and thus, against the action of the spring R′, will cause the carbon plates to separate, when the electric arc will appear, and a brilliant light be the result. The tension of this spring R′ being properly regulated, it will be seen that the more intense the electric current is the farther apart will the solenoid tend to force the two carbons; but as these carbons are consumed the distance between them would be increased and the electric current become less intense, did not the action of the spring accord with the intensity of the current, and always maintain the edges of the carbons at the same distance apart from each other. In other words, the carbons are caused, by the counteracting forces of the spring and the solenoid, to gradually advance toward each other in exact proportion to their consumption.

It will be seen, therefore, that by the above-described construction I entirely overcome the objection to the ordinary electric lamps, in which the carbons are caused to approach each other intermittently, and by having circular disks of carbon, to which a rotary motion is imparted, I obtain economy in construction, while the carbons last longer in proportion than the ordinary carbon rods, disks of the above-described construction lasting from eighteen to twenty hours.

If an electrical machine or pile with reversed currents is used, the carbons may be of the same size; but where the current is continuous the negative carbon should be about two-thirds as thick as the positive one, since the latter is consumed faster than the former. I

have found that these carbon plates cannot well be made of the ordinary retort carbon, and consequently I use a compound of about one hundred parts of carbon to twenty parts of sugar and five of iron filings.

I also cover the upper surface of each carbon with a plate of metal, nickel or copper, in order to prevent the electric arc from rising in the angle between the two carbons, and also to reflect the small portion of the light which does rise therein.

The lamp may be suspended from above, or secured to, a wall or a horizontal surface, as circumstances may suggest.

I claim as my invention—

1. The combination, in an electric lamp, of the arms B and B′, carrying the carbons, with the spring R′, and with the solenoid S connected to one arm, and the soft-metal bar to the other, as set forth.

2. A carbon disk for an electric lamp, the said disk being formed of a compound of carbon, sugar, and iron-filings, in about the proportions described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NICOLAS EMILE REYNIER.

Witnesses:

ALFRED COINY,

ROBT. M. HOOPER,

U. S. Consulate General.