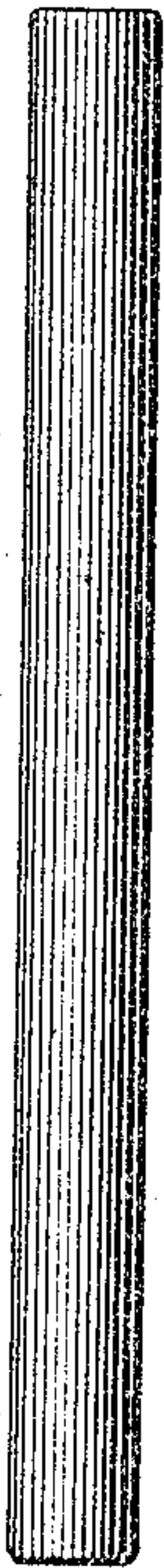


I. LADOFF.
ELECTRICAL CONDUCTOR FOR ILLUMINATING PURPOSES.
APPLICATION FILED JAN. 4, 1904.

955,273.

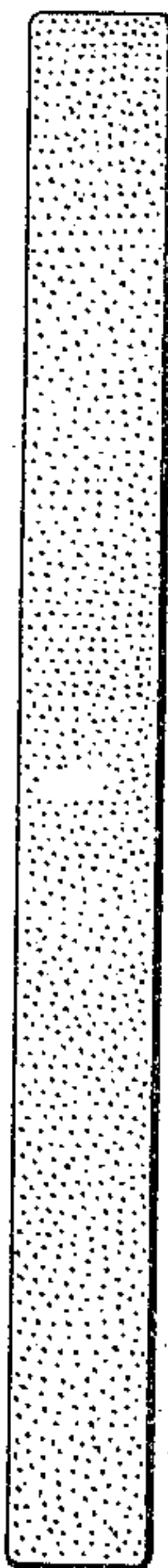
Patented Apr. 19, 1910.

Fig: 1.



HOMOGENEOUS AND UNIFORM ASSOCIATION THROUGHOUT ENTIRE
CONDUCTOR OF ELECTRO-LUMINOUS SUBSTANCE AND MORE
CONDUCTIVE SUBSTANCE.

Fig: 2.



Witnesses
Max B. A. Dörffig
Philip B. Kerk

I. Ladoff Inventor
By his Attorney Walter D. Edmunds.

UNITED STATES PATENT OFFICE.

ISADOR LADOFF, OF SCHENECTADY, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THIRTY ONE-HUNDREDTHS TO PHILIP C. PECK, OF NEW YORK, N. Y., AND SEVENTY ONE-HUNDREDTHS TO ANNA M. LADOFF, OF SCHENECTADY, NEW YORK.

ELECTRICAL CONDUCTOR FOR ILLUMINATING PURPOSES.

955,273.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed January 4, 1904. Serial No. 137,698.

To all whom it may concern:

Be it known that I, ISADOR LADOFF, a citizen of the United States, residing in Schenectady, county of Schenectady, and State of New York, have invented certain new and useful Improvements in Electrical Conductors for Illuminating Purposes, of which the following is a specification.

My invention relates to the constitution of that part or parts of an electrical conductor which are adapted to produce illumination when the current is turned on, as for instance the pencils of the arc light.

In the accompanying drawings, Figure 1 is an elevation of one of said conductors; Fig. 2 is a central longitudinal section of Fig. 1.

My researches have demonstrated that certain substances, including metals and their oxids, possess properties, which impart to the electric light, derived from conductors containing them, exceptional, if not hitherto unattained, candle power, besides other desirable qualities such as unprecedented whiteness, *i. e.* absence of the red lines objectionable for instance in lights derived from the usual carbon conductors; besides which such conductors so containing the aforesaid substances are much more durable than others previously known. Types of the substances to which I refer are titanium, also its oxid rutile, also silicon, also its oxid silica etc. Such substances have hitherto proved unavailable, on an industrial scale at least, for the purposes in hand, largely on account of their inadequate electrical conductivity, and they may be classified generally for the purposes of this specification as being substances, including metals, which for the purposes of electric lighting possess exceptional electroluminous but when arced inadequately conductive properties. I have discovered that these substances may be employed in electrical conductors for lighting purposes with industrial economy and with the advantages described, provided they are intermingled, in such conductors, with another substance inadequately electroluminous, as for instance metal, possessing the requisite conductivity and stamina to, as it were, support them within and by itself in a state akin to, if not actually of, mechanical suspension.

In Letters Patent of the United States No. 840,634 granted to me on the 8th day of January 1907, I have particularly described the processes devised by me for combining in pencils or electrodes for arc lighting the said titanium with iron. In producing pencils for the arc light comprising silicon, substantially the same processes and methods are employed by me, though the proportions may be considerably varied without losing characteristic advantages attributable to the silicon, my experience leads me to conclude that the best results may be obtained from not to exceed 50% of silicon and say preferably between 15% and 30%. Arc light pencils so constituted are preferably prepared as follows: An alloy of silicon and iron for instance commercial "ferro-silicon" containing the former in the required proportions is first pulverized. To the resulting powder is added a sufficient quantity of any available binding material, as for instance water, glycerin, tar, linseed oil, or the like, to impart to the powder adhesion and plasticity such as to enable the material to be pressed or squirted into the desired form in molds under hydraulic or other pressures, after the manner, for instance, in which carbon pencils are now produced for a similar purpose. The resulting pencils should next be allowed to dry in the open air under room temperature for several hours, it being important, as will be appreciated, to avoid a too rapid drying, which tends to distort the shape of the pencils. After this preliminary drying, the pencils are further dried in an oven at a temperature of about 200 degrees C. or thereabout for about forty eight hours. After this the pencils are placed carefully in carbon and subjected for about two days and two nights to a temperature of from 1200 to 1500 degrees C., after which they are cleaned and thus finished ready for use. I do not, however, wish to be limited to the aforesaid particular method of producing my silicon filament, as the same results may obviously be obtained by combining the silicon with the other element to be associated therewith in any other more convenient mechanical or other way.

It will be understood that though silicon in elemental state possesses considerable electrical conductivity, its oxid is practically

a non-conductor, and that silicon, when arced, is transformed into its oxid.

What I claim as new and desire to secure by Letters Patent is the following, viz:—

- 5 1. An arc light pencil composed of silicon associated with iron.
2. An arc light pencil comprising silicon associated with iron.
3. An arc light pencil composed of silicon
- 10 homogeneously and uniformly associated with iron throughout the body of the pencil.
4. An arc light pencil comprising silicon

homogeneously and uniformly associated with iron throughout the body of the pencil.

5. An arc light pencil composed of silicon associated with a more conductive metal substantially as described. 15

6. An arc light pencil comprising silicon associated with a more conductive metal substantially as described.

ISADOR LADOFF.

Witnesses:

LEOPOLD MINKIN,
HENRY E. STERN.