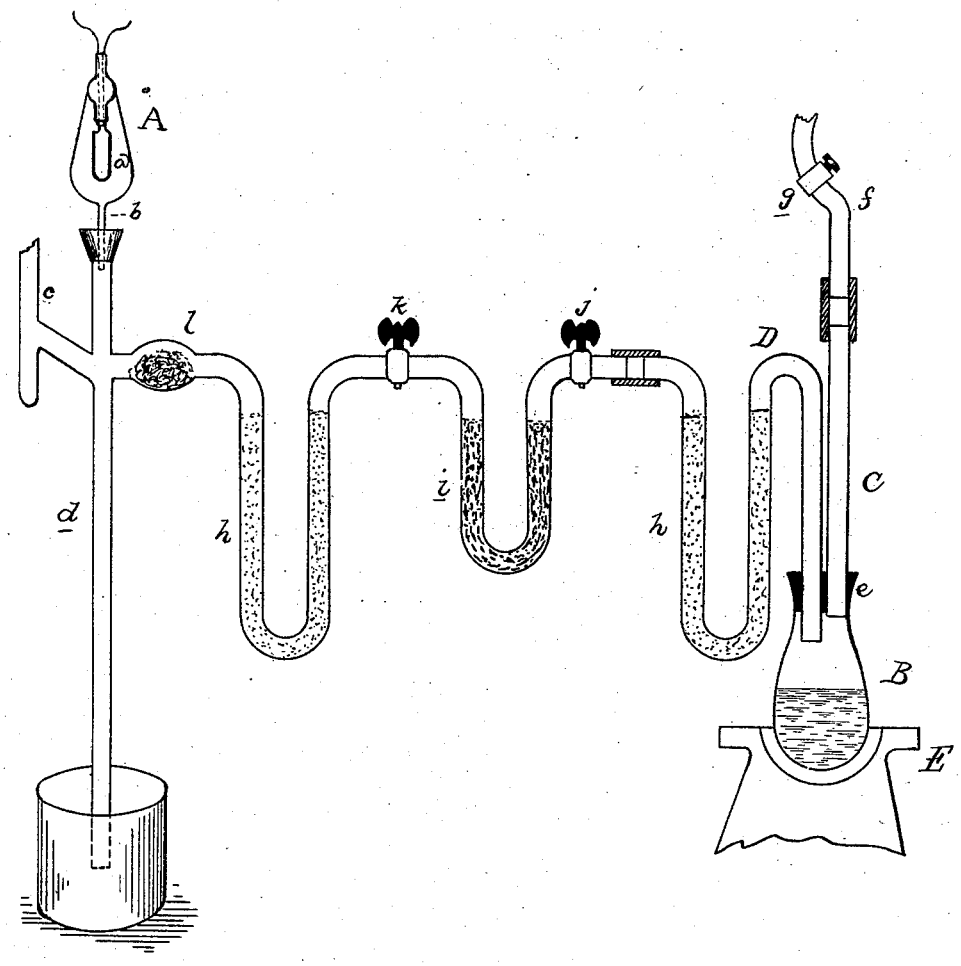
(No Model.)

T. A. EDISON.

INCANDESCENT ELECTRIC LAMP.

No. 297,581. Patented Apr. 29, 1884.



WITNESSES:

Edw. C. Rowland

H. W. Seely

INVENTOR:

Thomas A. Edison,

By Richd. N. Dyer,

Atty.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 297,581, dated April 29, 1884.

Application filed September 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in the Manufacture of Incandescing Electric Lamps, (Case No. 483,) of which the following is a specification.

The object of this invention is to render the inclosing-globes of incandescing electric lamps as free from air as possible; and said invention consists in providing such globes with a residual atmosphere of carbonic monoxide as nearly as possible free from air. To accomplish this, I first remove the air from the globe as completely as it can be done with a Sprengel vacuum-pump, and then fill the globe with carbonic monoxide in a pure state and free from moisture. This is in turn pumped out, and the globe is refilled with the gas, this being repeated until the small amount of residual gas remaining in the globe consists almost entirely of carbonic monoxide, and this of course to the exclusion of the same amount of air.

A convenient apparatus for carrying out my invention is represented in the accompanying drawing.

A represents the inclosing-globe, and *a* the carbon filament of an incandescing electric lamp. Such globe is attached by tube *b* to the Sprengel vacuum-pump, of which *c* is the supply-tube and *d* the fall-tube.

B is a glass vessel, closed by an air-tight rubber stopper, *e*, in which are inserted tubes C and D. The tube C opens in the air, terminating in a rubber tube, *f*, provided with a pinch-cock, *g*, so that the opening may be closed. The tube D connects the vessel B with the Sprengel pump. This tube contains phosphoric anhydride *h h*, or similar drying agent, and caustic potash *i*. It is provided with stop-cocks *j* and *k*, and with a bulb, *l*, containing cotton for preventing the substances in the tube from being drawn out when the pump is working. The vessel B contains sulphuric acid and ferro-cyanide of potassium, and means (represented at E) are provided for heating the same. Such heating produces carbon monoxide. The stop-cocks *j* and *k* are left closed, and the cock *g* open until the vessel B becomes full of this gas, which displaces the air previously contained therein. The gas is then allowed to enter the lamp, from which the air has been exhausted, its moisture being removed by the phosphoric anhydride, and any carbonic acid which may have been given off is taken up by the caustic potash. After the globe is filled with the carbon monoxide the gas is pumped out and a second quantity allowed to enter. This is removed, and these operations are continued until only the smallest possible amount of carbonic monoxide, remains in the globe. During the latter stages of the operation the carbon filament of the lamp is heated to high incandescence by an electric current in order that the occluded gases may be driven off. The lamp is sealed off at *b*, and is then ready for use.

I am aware that British Patent No. 192 of 1879 describes the passing of a stream of carbon gas constantly through openings in a lamp-globe. This, however, forms no part of my invention, which relates only to lamps having sealed globes.

What I claim is—

The sealed globe of an incandescing electric lamp, provided with a residual atmosphere consisting almost entirely of carbonic monoxide, substantially as set forth.

This specification signed and witnessed this 12th day of September, 1882.

THOS. A. EDISON.

Witnesses:

WM. A. STERN,

H. W. SEELY.