

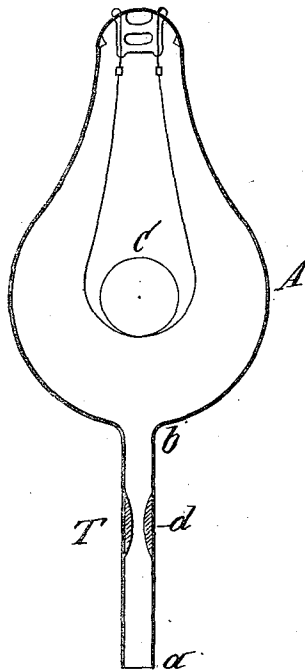
(No Model.)

A. MALIGNANI.

PROCESS OF EVACUATING INCANDESCENT LAMPS.

No. 537,693.

Patented Apr. 16, 1895.



Witnesses

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ARTURO MALIGNANI, OF UDINE, ITALY.

PROCESS OF EVACUATING INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 537,693, dated April 16, 1895.

Application filed August 15, 1894. Serial No. 520,395. (No specimens.) Patented in Italy January 7, 1894, XXVIII, 3,550, LXX, 46; in Austria March 16, 1894, No. 44,486; in Hungary May 5, 1894, No. 354, and in Belgium July 16, 1894, No. 110,854.

To all whom it may concern:

Be it known that I, ARTURO MALIGNANI, a subject of the King of Italy, and a resident of Udine, in the Kingdom of Italy, have invented a certain new and useful Improved Process for Evacuating Incandescent Lamps, of which the following is a full, clear, and exact description, and for which I have obtained a patent in Italy, dated January 7, 1894, Vol. XXVIII, No. 3,550, Att. LXX, No. 46; in Belgium, dated July 16, 1894, No. 110,854; in Austria, dated March 16, 1894, Reg. 44, Fol. 486, and in Hungary, dated May 5, 1894, No. 354.

The present invention consists of a process for evacuating incandescent lamps and bulbs.

Reference being had to the accompanying drawing, the bulb A is provided with a small glass tube T for the purpose of extracting the air and the gases therefrom as hereinafter specified. Substances, adapted under certain circumstances to generate gases or vapors, such as arsenic, sulphuric or iodine are then introduced into the interior of the bulb A advantageously at about the center of the tube T. The gases thus generated are intended to combine with the gases generated by the filament of the lamp when brought to incandescence and form a liquid or solid precipitation.

The most convenient method is to dissolve or dilute a powder in or with appropriate liquids, such as alcohol, essence of tremandra or the like in which case the same can be applied most easily. The lamp is then connected with a vacuum pump of any kind by means of the tube T and exhausted to the extent of about two millimeters of mercury. The vacuum having been obtained, the lower end of the tube is soldered up and the carbon filament is then brought to intensive incandescence, which has the effect of generating the gases contained therein. During this time the part containing the substance, is heated by suitable means such as a spirit lamp or the like, which causes the said substances to be transformed into gases or vapors. These latter then combine with the gases and vapors generated by the filament to form a solid or liquid precipitation, so that an almost perfect vacuum is obtained. The introduction of a small quantity of ether vapors or other hydrocarbonates into the lamp renders the combination of the above gases and vapors easier and more energetic and assists the production of

the vacuum. After having obtained the vacuum it only remains to solder up the tube T at the lower part *b* of the bulb so that the latter can be removed and the lamp is ready for sale. These operations can be performed very quickly as it is possible to obtain a vacuum in from one to three minutes and even less, according to the nature of the filament, which varies. The quantity and nature of the gases generated by the filament vary also, so that it is necessary that the substances, the vapors of which are to be precipitated in a solid or liquid state, should be carefully chosen due regard being had to the nature of the filament and the proportion should be varied accordingly.

I claim as my invention—

1. A process for producing a vacuum in the bulbs of incandescent lamps consisting in first introducing into a tubular elongation of said bulb suitable substances capable of being gasified by heat and combining with the gases generated by the filament when brought to incandescence to form solid or liquid precipitations, then exhausting the said bulb by means of a pump and sealing the said tubular elongation up, then bringing the filament to intensive incandescence and simultaneously heating the substance in the elongation aforesaid and finally sealing off the said elongation in the manner and for the purpose substantially as described.

2. In a process for producing a vacuum in the bulbs of incandescent lamps consisting in first introducing into a tubular elongation of the bulb a substance or substances having the qualities specified, exhausting the bulb by means of a pump, sealing the said tubular elongation then bringing the filament to intensive incandescence and simultaneously heating the said substance or substances in the elongation and sealing off the said elongation, the application in the bulb of ethers or other suitable hydrocarbonates during the process in the manner and for the purpose substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ARTURO MALIGNANI.

Witnesses:

ADOLF LINDERMANN,
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