Aug. 25, 1925. 1,551,527

M. PIRANI

APPARATUS FOR PREPARING ELECTRIC LAMPS

Filed Dec. 27, 1922

Fig. 1.

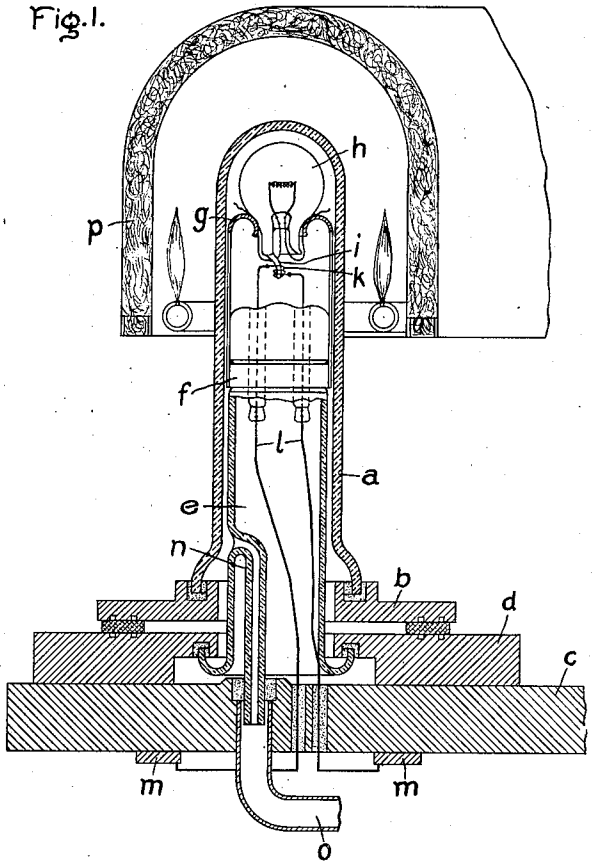


Fig. 2.

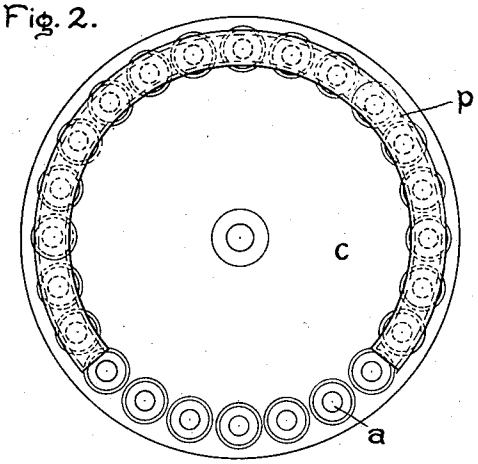
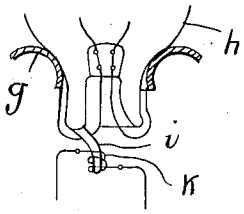


Fig. 3.



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UNITED STATES PATENT OFFICE.

MARCELLO PIRANI, OF WILMERSDORF, NEAR BERLIN, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

APPARATUS FOR PREPARING ELECTRIC LAMPS.

Application filed December 27, 1922. Serial No. 609,316.

To all whom it may concern:

Be it known that I, MARCELLO PIRANI, a citizen of the German Realm, residing at Wilmersdorf, near Berlin, Germany, have invented certain new and useful Improvements in Apparatus for Preparing Electric Lamps, of which the following is a specification.

My invention relates to apparatus for preparing electric lamps and more particularly electric lamps of the bulb type.

Heretofore, devices for exhausting, sealing or filling incandescent lamps have been made in which quite a number of lamps are carried through each step at once. Devices of this type are large and are made with the container and the feeding apparatus inseparable. The apparatus therefore is slow to cool.

In many cases it is desirable to quickly cool lamps especially where the lamps are filled with a gas and it is an object of my invention to therefore reduce to a minimum the amount of apparatus to be cooled. It is also an object to separate the heating apparatus from the container or containers in which the bulbs are placed. I contemplate also making a device of the above character in which the container is movable with respect to the heating apparatus and to provide other details of improvement for increasing the efficiency and serviceability of such equipment.

The means for accomplishing all this is hereinafter more fully described and claimed.

Referring to the accompanying drawing, Fig. 1 is a section through one form of device of my invention; Fig. 2 is a plan view of the same; Fig. 3 is an enlarged drawing of the details within the container about the holder *g* and about the heating device *k*.

Referring more in detail to the drawing, the container *a* which is of metal or glass, but preferably of the latter, is mounted on the flange *b*, which latter is removably placed on the disc *d*. The disc *d* in turn is set on the rotating carrier *c*. It will be seen that the sleeve *e*, which may be of glass, is secured to the disc *d*. On the top of the sleeve *e*, the cup *f* is located, which cup in turn is secured to a holder *g* upon which the lamp bulb is fastened. It will be observed that the small pump tube *i* of the bulb *h* reaches into the fusion or sealing device *k* with which the inlet wires *l* are connected and which wires pass through the flange *b*. These wires pass through the carrier *c* and the passageway is made airtight. These wires terminate in the friction contacts *m* on the under side of the carrier *c*. Within the sleeve *e* there is provided a tube *n* which opens into the space between it and the container. The latter is connected through the medium of an air-tight connection of the duct *o*, which duct is used for both exhausting and feeding purposes. Above the carrier *c* there is arranged a heating box *p*. In the construction shown this heating box is made in a circular form. As indicated in Fig. 2, the circle is not completed in order that the lamps may be mounted, cooled and removed. The lamps *h* are placed on the holder *g* over which the container is placed and made air-tight. Therefore the container is exhausted by way of the tube *o* and this of course also exhausts the bulb *h*. In this condition the container is caused to travel through the heating box as the carrier *c* advances in its rotation. When the exhaustion is completed, the current is sent over slip rings *m* through the melting off device *k* whereupon the lamp *h* is sealed and shut off. The container is cooled off as it issues from the heating box by means of an air blast which is caused to play upon the container, after which it is finally taken off and the feeding lamp removed, whereupon the operation is repeated.

If the lamps are to be filled with gas, then after the exhaustion and the passage through the heating box *p*, the cooling off operation first takes place, after which the gas filling operation follows, which gas may be argon. The gas reaches the bulb through the tube *n* and by way of the duct *o*. After the gas has been supplied, the small pump tube *i* is sealed off as before by the sealing device *k* wherein the tube *i* is heated. In order to facilitate the removal of the container after the operation is completed, the duct *o* is finally connected with the outside air. It will be understood that any suitable air playing device may be used to cool off the container after it leaves the heating apparatus.

The object in making the container preferably of glass is that both the heating and the cooling operations are hastened. Fur-

thermore, it is advantageous to be able to continuously observe the operations in the container.

In the construction of apparatus which I have shown, the container and interior equipment is preferably given such a shape that the dead space is reduced to a minimum. The object in this is to enable the apparatus to be quickly cooled at the end of the operation. Upon the rotating carrier *c* I may place a large number of containers and with this container, controls for carrying out the various working steps are so connected that when a container approaches the starting point, it can be removed and the completed lamp taken out.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. A device for exhausting envelopes for electric glow lamps and the like, said device having a plurality of containers each having a connection for creating a vacuum within the container, a lamp envelope within each container, an oven for heating said containers during their evacuation, said containers being mounted on a carrier arranged to pass each container through the oven while the latter is being heated.

2. A device for exhausting envelopes for electric glow lamps and the like and for heating the envelopes while the latter are being exhausted, said device provided with a plurality of containers each container having a connection for creating a vacuum in the container, a lamp envelope within each container, an electric heater within each container for sealing off the envelop therein, an oven for heating said containers, said containers being mounted on a carrier, means for moving the carrier whereby the containers may be passed through the oven a plurality at a time, and means outside of said containers for heating the oven.

In witness whereof, I have hereunto set my hand this 4th day of December, 1922.

MARCELLO PIRANI.