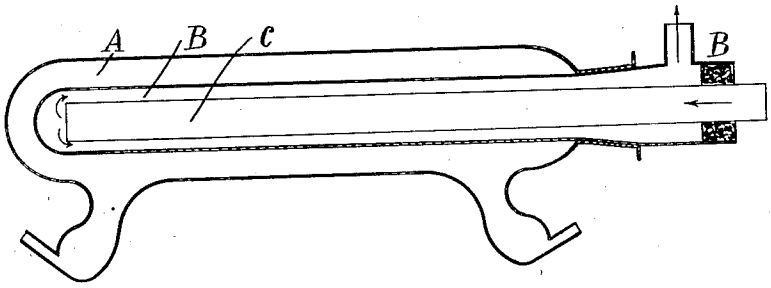
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E. GOLTSTEIN

MERCURY VAPOR LAMP

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E. Goltstein
inventor

By: Marks & Clark
Attys.

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EWALD GOLTSTEIN, OF BONN, GERMANY.

MERCURY-VAPOR LAMP.

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This invention relates to mercury vapor lamps for the treatment of materials, more especially for treating liquids, and of the kind in which the material to be treated is led through the interior of the glowing tube in such a manner that it acts as a cooling medium.

The object of the present invention is to improve this type of mercury vapor lamp by constructing the re-action space (through which the material to be treated is passed) as a return to reflux cooler and by locating the same directly in the interior of the glowing tube, that is, so that it is separated from the glowing tube by a single wall of partition which is pervious to the rays.

According to a further feature of the invention the re-action is introduced through an aperture in the glowing tube and is constructed and arranged in relation to the latter in such a manner that it projects at both ends over the electrode vessels and is also kept permanently free from air or gas by the material flowing through it.

The accompanying drawing illustrates a constructional example of mercury vapor lamp in accordance with the invention.

"A" represents the glowing tube with the two electrode vessels underneath, and a re-action space in the form of a container B (formed after the manner of a test tube) is inserted into the glowing tube through an aperture at the end thereof.

The open end of the container B is connected to the glowing tube A while the closed end floats freely therein, this arrangement having the advantage that fluctuations in temperature cause no tension which might give rise to breakage of the lamp. Chiefly, however, it also makes it possible for the glowing tube of the lamp to be made of glass, and only the container made of quartz or any other suitable material, both parts being connected together firmly and so as to be air-tight in a known manner by grinding, for example, with the use of a lacquer. There are very good reasons why this is a particular advantage. The air-tight leading-in of the conductors always entails difficulties in the case of quartz; the air-tight closure can never be permanently preserved and therefore the duration of burning of quartz lamps is limited. In the case of glass this defect does not occur as it is well known that metals can be fused with glass in an air-tight manner. Moreover, ultra-violet light is injurious to the eyes. This fact is also disposed of when glass is used. Finally quartz lamps can only be made in limited sizes; on the other hand lamps as shown in the drawing which only contain a simple quartz tube, can be made much larger. Moreover this arrangement satisfies the essential requirement of being able to clean the container in the simplest manner.

The inner end of the container B is closed as shown and the material to be treated is conveyed through the inner tube C so that the material may adopt the path indicated by the arrows: The advantage of this arrangement is that on the one hand the glowing tube is intensively cooled by the material flowing through the reaction space, while on the other hand the container B is automatically kept free from air or gas.

As shown the re-action space is arranged directly inside the glowing tube, that is to say, it is separated therefrom by a single wall or partition of quartz or equivalent material and by the construction adopted it is possible without any difficulty to regulate the stream of material to be exposed to the rays in such a manner that owing to the eddying of its particles it is completely penetrated by the rays.

As is evident from the drawing the re-action space projects over the electrode vessels at both ends, this being advantageous for the operation of the lamp owing to the avoidance of mercury deposits upon the re-action space.

Having now described my invention what I claim is new and desire to secure by Letters Patent is:—

1. Apparatus for subjecting materials to the action of ultra-violet rays comprising an elongated mercury vapor lamp, and a tube therein, said tube extending into the lamp and closed at its inner end, its outer end being fastened to the lamp, said tube being adapted to contain material to be acted on by the rays from said lamp.

2. Apparatus for subjecting materials to the action of ultra-violet rays comprising an elongated mercury vapor lamp, a tube therein, said tube extending into the lamp and closed at its inner end, its outer end being fastened to the lamp, and a second tube, open at both ends, extending into said first mentioned tube through a stopper in the outer end thereof whereby material to be treated is conducted into said tube.

3. A mercury vapor lamp comprising in combination an outer vessel comprising electrodes, a container secured in an air-tight manner within said vessel and having its inner end closed and an open-ended tube arranged within the inner container so that the material to be treated may be fed therethrough and through the annular space between said tube and said container.

4. A mercury vapor lamp comprising an outer vessel of a material impervious to ultra violet rays, an inner container formed of material pervious to ultra violet rays, said inner container having an outlet and being secured in an air-tight manner within the outer vessel, and an open ended tube arranged within the inner container so that the material to be treated may be passed therethrough and through the annular space between said tube and said inner container.

In testimony whereof I have signed my name to this specification.

EWALD GOLTSTEIN