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PRODUCING LIGHT OF DIFFERENT COLORS

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It is known to introduce into discharge tubes with positive column light or so-called luminous tubes, containing a rare gas such, for example, as neon or argon, a substance, for example mercury, the vapour of which exercises a certain influence on the color of the light radiated. It is also known that in the case of luminous tubes filled with neon and mercury, the light has a substantially red color when the circuit is closed for the first time. This color gradually changes into blue because the mercury evaporates in consequence of the rise of temperature. If the current is interrupted, the mercury gradually condenses again so that when after some seconds the circuit is closed again, the said phenomena are produced anew. It has been suggested already to make use thereof for obtaining a lighting with changing hues.

Which of the substances present in the tube, predominates in the radiation of light, depends on various factors, for example, on the current density, the temperature and the diameter of the tube.

According to the invention, this circumstance is made use of for producing a peculiar effect which, for example, is particularly suitable for an artistic lighting or for purposes of advertisement.

The invention essentially consists in rendering the current density within the tube variable with respect to space, said density being so chosen that at the high current density it is the light of the rare gas and at the low current density it is the light of the vapour that predominates.

The different regions of the tube, in which the current density is also different, will emit light of different colors. In the case of a filling of neon and mercury, for example, the regions of great current density will substantially emit the red neon light whereas the regions of smaller current density substantially yield the blue mercury light.

In this case it may be so arranged that a current of almost constant intensity flows through a tube, which in different places has different cross sections.

An installation embodying the invention is diagrammatically represented, on the accompanying drawing.

In the drawing is shown, by way of example, a tube which permanently emits at the same time light of several colors. The tube is fed, through a steadying resistance, by a transformer and is provided in the usual manner with metal electrodes and a transformer. The nature and pressure of the gas filling is so chosen in relation to the diameter of the tube that the current intensity has the desire values. The filling may, for example, consist of neon and mercury.

The tube is constructed in such a manner that towards one of its ends the diameter gradually increases, which causes that the light in the narrow end is, for example, of a bright red and, towards the other end of the tube, gradually changes into blue. It is obvious that, remaining within the scope of the invention, it is possible to introduce all kinds of variations and combinations in order to produce peculiar multi-colored effects with tubes of the kind under consideration.

What I claim is:

1. A discharge tube for the generation of positive column light which in addition to at least one rare gas also contains at least one vapour, the tube comprising a part having an inner diameter gradually increasing from one end of said part to the other.

2. A discharge tube for the generation of positive column light which contains an inert gas and mercury vapor, the tube comprising a part having an inner diameter gradually increasing from one end of said part to the other, the variation in diameter being such that at one point the radiation of the gas predominates and at another point the radiation of the vapor predominates.

In testimony whereof I affix my signature, at the city of Eindhoven, this 17th day of December, A. D. 1925.

GUSTAV ZECHER.

United States Patent Office

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