Feb. 25, 1936. S. LOEWE ET AL 2,031,722

BRAUN TUBE

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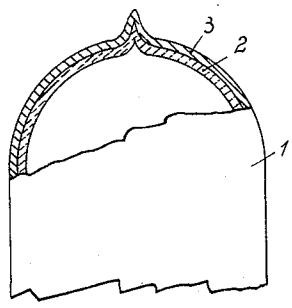


Fig. 1.

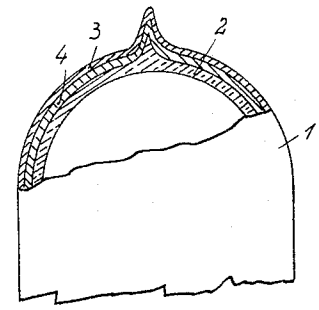


Fig. 2.

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BRAUN TUBE

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3 Claims. (Cl. 250—27.5)

In the case of highly evacuated discharge vessels composed of fragile material such, for example, as glass it may occur, particularly if the vessels are of relatively large size or, as for example in the case of Braun tubes, possess an extended form, that the wall of the vessel does not withstand the outer pressure of the air and the vessels are caused to collapse, i. e., implode.

It has already been proposed to protect discharge vessels, in which this danger of implosion exists, by fitting the same into suitable boxes composed of sheet metal or the like, or to surround the same with a wire structure.

According to the invention, vessels of this nature are furnished with an anti-implosion means, which is considerably more simple to produce, and which may also be employed in those cases in which the known protective means cannot be made use of either for electrical or for optical reasons.

For this purpose the discharge vessel is furnished with an elastic and preferably firmly adhering preferably transparent coating.

A coating of this nature may, in accordance with the invention, consist of an elastic varnish of suitable composition, for example an artifical resin or the like, which may be applied by painting the same on, by immersion or by spraying on. The varnish may, if desired, contain an addition of asbestos meal, fibres, paper pulp or the like. The said additions may also be applied with the use of water-glass or the like as binding agent. In the same manner it is also possible to furnish the glass bulb with a rubber skin or a coating composed of another plastic mass. A rubber coating of this nature may be produced by immersing the glass bulb in a rubber solution and if necessary vulcanizing the dried coating. On the other hand it is also possible to produce rubber caps or suitable shaped rubber coverings (for example rubber sleeves) separately, slip the same over the bulb, and if desired connect them firmly therewith by cementing or the like. In place of a coating composed of rubber there may also be employed one composed of paper, silk or other suitable woven materials, which may also be connected with the bulb by cementing or the like.

If the transparency of the bulb is to be maintained there are employed in accordance with the invention coatings composed of transparent material, preferably of transparent varnishes.

In those cases in which the vessels are greatly heated when in operation, and the resulting heat requires to be discharged to the greatest possible extent by radiation, the preferably transparent coating may either contain itself an addition of black substances, such for example as carbon or graphite, or be provided thereunder with a good heat-radiating coating. The bulb in this case is first furnished with a coating of good heat-radiating material, to which there is then applied the actual anti-implosion coating.

The bottom of the Braun tube on the inner side of which a fluorescent substance is arranged according to the invention may be especially furnished with such transparent coating.

In the drawing there are shown by way of example two forms of embodiment of the discharge vessel according to the invention, in these

Fig. 1 shows a bulb furnished with simple anti-implosion means, according to the invention, whilst in

Fig. 2 there is provided between the wall of the bulb and the protective coating a further good heat-radiating coating.

In the drawing 1 is the discharge vessel having the glass wall 2, the protective coating 3 consisting of varnish or one of the substances referred to above, and 4 the heat-radiating layer interposed between the glass wall and the protective layer.

Discharge vessels which are furnished with the anti-implosion means according to the invention are subject to a much smaller extent to the danger of implosion than the vessels hitherto known, since on the one hand, by reason of the anti-implosion layer, the powers of resistance of the vessel are considerably increased, and because the vessel on the other hand, even should implosion take place, collapses without the possibility of small fragments resulting in large number. The protective effect of the anti-implosion layer is based in particular on the fact that damage to the surface of the glass wall such as may otherwise occur even upon the slightest blow, and lead subsequently to implosion, is safely avoided by reason of the elastic layer.

We claim:

1. A Braun tube including an evacuated bulb having a bottom furnished at its inside with a coating of fluorescent material, the side walls of the bulb being furnished at their outside with a coating of good heat radiating material and with a further elastic, firmly adhering coating of transparent material, said further coating being arranged on the first said coating for the purpose of preventing an implosion of the bulb.

2. A Braun tube including an evacuated bulb having a bottom furnished at its inside with a coating of fluorescent material, the side walls of

said bulb being furnished at their outside with an elastic, firmly adhering coating consisting of rubber for the purpose of preventing an implosion of the bulb, the bottom of the Braun tube being furnished at its outside with a coating of transparent material.

3. A Braun tube including an evacuated bulb having a bottom furnished at its inside with a coating of fluorescent material, the side walls of said bulb being furnished at their outside with an elastic, firmly adhering coating consisting of a varnish with an addition of fibrous material for the purpose of preventing an implosion of the bulb.

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