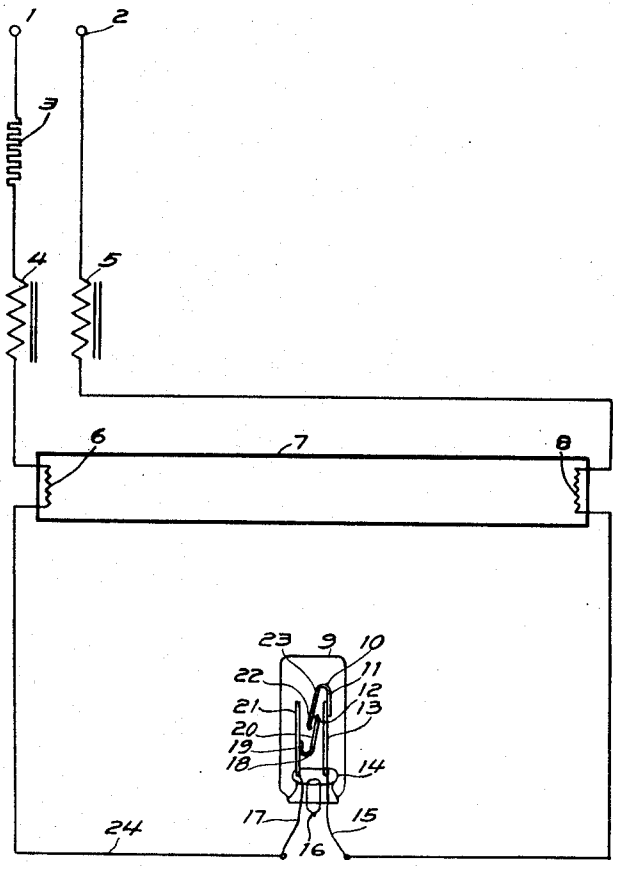
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AUXILIARY DISCHARGE TUBE FOR IGNITING, PREFERABLY ON DIRECT CURRENT, ELECTRIC DISCHARGE TUBES

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AUXILIARY DISCHARGE TUBE FOR IGNITING, PREFERABLY ON DIRECT CURRENT, ELECTRIC DISCHARGE TUBES

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This invention relates to an auxiliary discharge tube for igniting electric discharge tubes filled with gas and/or vapour, in particular such a discharge tube of lower pressure and with at least one preheatable electrode, through which a preheating current controlled by the auxiliary discharge tube passes during the start.

The invention originated mainly in connection with the work performed for attaining a safe and effective starting of such discharge tubes on direct current. It is a known fact that, when ignition is effected with direct current, the process becomes dependent upon polarity, and in order to avoid the risk of faulty connection of the connecting elements in the lighting device, it has been suggested to provide the auxiliary discharge tube controlling preheating and starting with symmetrically arranged electrode devices. The auxiliary discharge tube was thus made with both electrodes consisting of identical bimetal strips, which makes the auxiliary discharge tube symmetric and independent of how it is being turned when connected.

For facilitating the start, a choke is often utilized. In the case of such symmetric construction of the auxiliary discharge tube, the following unfavourable effect is often met with. The bimetal strips meet with so strong springiness that breaking the contact between them is delayed too much for utilizing the effect from the choke.

The purpose of this invention is an improved construction of symmetric relays for igniting electric discharge tubes of the above mentioned type, by which is obtained a butt end contact of the movable bimetal electrodes at the moment of contact, so that breaking of the auxiliary relay circuit is accelerated and attained at a point of time when a voltage shock can be obtained from the choke.

According to this invention, the auxiliary discharge tube is provided with two stationary electrodes, suitably formed by wires, and two movable electrodes consisting of bimetal strips bent to V-shape, one of the movable electrodes being attached with one leg at the top to one of the stationary electrodes with its bend turned upwards, and with its other leg movable towards the other stationary electrode, while the other movable electrode with one leg is attached at the lower end to the last mentioned stationary electrode with its bend turned downwards, and its other leg movable towards the first mentioned stationary electrode.

The risk of springy contact resulting can be eliminated further by shaping the movable leg

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of the bimetal strips at its end bent in a direction away from the stationary electrode, with which it is intended to come into contact when moving.

Though the auxiliary discharge tube mentioned mainly was designed for improving the process of ignition in the case of operation on direct current, it can also be used for starting on alternating current. In the case of direct current operation it is suitably provided with activated electrodes. A suitable filling for the auxiliary discharge tube is composed of about 50% nitrogen and 50% argon at a pressure of about 23 millimeters.

An example of design according to this invention is shown in the enclosed drawing in the form of a connecting arrangement for a luminescent tube with both electrodes made preheatable.

Depending upon how earthing of the direct current network is effected, the choke should be connected to a suitable pole in the network. The connecting problem can, however, be eliminated if the choke is made with double windings, as shown in the example mentioned, in which the choke winding 4 is connected to one electrode 6 of tube 7, and the other choke winding 5 to the other electrode 8 of the tube. The choke windings 4 and 5 are further connected to poles 1 and 2 of the direct current network in such a manner that an ohmic resistance 3 as a supplementary impedance is shown arranged in the connection of winding 4.

Shunting the discharge path of tube 7, a preheating circuit 24 is provided, containing an auxiliary discharge tube in accordance with this invention. This auxiliary discharge tube consists of an envelope 9 with a fused-in foot 14, through which two feeders 15 and 17 are passing. These feeders are in the interior of the tube changing into stationary electrodes 13 and 21, consisting of wires of suitable thickness and stability. To the upper part of electrode 13 one leg 11 of a bimetal strip bent to V-shape is attached, the bent portion 10 of which is turned upwards, and the free leg 23 of which is movable when heated towards the stationary electrode 21. The end 22 of leg 23 is bent away from the stationary electrode 21.

To the lower part of the stationary electrode 21 one leg 19 of a bimetal strip bent to V-shape is attached so that the bent part 18 is turned downwards. The movable leg 20 of the last mentioned bimetal strip when heated moves towards the stationary electrode 13, and the end

portion 12 of leg 20 is bent backwards in a direction away from the stationary electrode 13.

16 is the designation of a point tube for the auxiliary discharge tube.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An auxiliary discharge tube for controlling preheating current to gas filled discharge tubes having at least one preheatable electrode, said auxiliary tube having two parallel spaced stationary electrodes and two movable electrodes, each of said movable electrodes consisting of bimetal strips bent to V-shape to form a pair of legs, one leg of one of said movable electrodes being attached to the upper part of one of said stationary electrodes with its bend turned upwards and with its other leg movable towards the other stationary electrode, one leg of the other movable electrode being attached to the lower part of the other stationary electrode, with its bend turned downwards and its other leg movable towards the said first-mentioned stationary electrode, said movable legs being adapted to contact the respective stationary electrodes when heated by low discharge therebetween.

2. An auxiliary discharge tube as set forth in claim 1 in which the end of the movable leg of each bimetal strip is bent away from the stationary electrode with which it is intended to come into contact.

3. An auxiliary discharge tube according to claim 1 having a filling of approximately 50% nitrogen and 50% argon at a pressure of about 23 millimeters.

4. An auxiliary discharge tube according to claim 1 provided with activated electrodes.

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