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3,119,048

DEVICE FOR ADJUSTING FLUORESCENT LAMP

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Fig. 1.

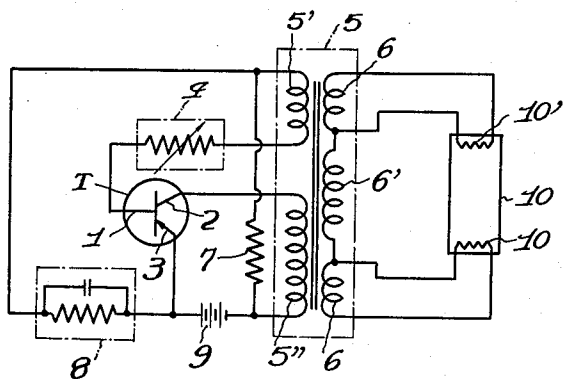
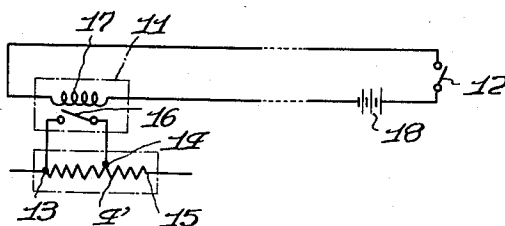


Fig. 2.



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1 Claim. (Cl. 315-200)

The present invention relates to a device for adjusting a fluorescent lamp or lamps.

An object of the present invention is to provide a new device capable of carrying out a continuous or stepwise control of the brightness of a fluorescent lamp or lamps.

Other and further objects and features of the present invention will appear clearer from the following description of preferred embodiments which are described by way of example with reference to the accompanying drawings, wherein:

FIG. 1 is a connection diagram of one embodiment of this invention;

FIG. 2 is a connection diagram of an adjustable resistor of another embodiment of this invention.

Referring to FIG. 1, the device comprises a transistor T comprising a base 1, a collector 2, and an emitter 3, a fluorescent lamp 10, an oscillation output transformer 5 having primary windings 5', 5'', a secondary winding 6', and two secondary windings 6 for heating the filaments 10' of the fluorescent lamp 10, and resistors 7 and 8 for feeding a bias current to the base 1 from a direct current source 9. The circuit consisting of said transistor, resistors, and primary windings of said transformer 5 is connected, as shown in the drawing, to form a back coupling oscillator.

According to the present invention, a variable resistor 4 is inserted in the base circuit of said transistor T to control the base current of said transistor, said variable resistor 4 being adjusted to its low value at the normal starting of the fluorescent lamp so as to facilitate the starting of said lamp, and being adjusted to its larger value after complete starting of said lamp. In the latter case, the base current of the transistor decreases and oscillation of the transistor becomes weak, whereby the output voltage of the transformer 5 decreases, thus weakening the brightness of the fluorescent lamp. For restoring the brightness of the lamp, it is only necessary to adjust the variable resistor 4 to the same position as the starting position.

When in such a manner as described above, a variable resistor 4 is inserted in the base circuit of the transistor, the electric power loss due to insertion of said resistor 4 is very low, because the base current of the transistor is very weak, and the collector current, that is, the output current of the oscillation circuit can be adjusted. Accordingly, the oscillation circuit comprising the transistor T can be safely adjusted without decreasing the efficiency of said oscillation circuit, whereby the brightness of the fluorescent lamp can be continuously adjusted.

The above-mentioned embodiment may be modified by substituting said variable resistor 4 with such a resistor 4' having an adjustable tap 14 as shown in FIG. 2 and by connecting said tap 14 through an open-type contact 16 of a relay 11. Coil 17 of the relay 11 is connected to another direct current electric source 18 through a con-

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trol switch 12. In this example, when the control switch 12 is closed to make the transistor oscillate, an electric current flows through the coil 17 of the relay 11, whereby the contact 16 is closed, and the terminal 13 and tap 14 of the resistor 4' are short-circuited. Accordingly, the resistance of the resistor 4' decreases, and the oscillation power becomes large, whereby the fluorescent lamp fluoresces.

On the other hand, when the switch 12 is opened, the coil 17 of the relay 11 is opened, and the contact 16 is opened as shown in the drawing, whereby the part of the resistor 4' between the terminal 13 and tap 14 is inserted in series in the collector circuit of the transistor, thus weakening oscillation of the transistor circuit and brightness of the fluorescent lamp. The adjustable resistor 4' may be provided with more taps than one. In this case, brightness of the fluorescent lamp can be stepwise adjusted by exchanging position of the tap to be connected.

According to the present invention, as described above, the brightness of a fluorescent lamp can be continuously or stepwisely adjusted by controlling the oscillation circuit comprising a transistor, said circuit being inserted in the circuit of the fluorescent lamp, and said control being carried out by adjusting a resistor connected to the base circuit of said oscillation circuit.

The above-description relates to the case wherein one fluorescent lamp is controlled, but the same device can be applied to control of a plurality of fluorescent lamps which are connected in parallel or series.

What I claim is:

- 1. A device for controlling the brightness of a fluorescent lamp, comprising in combination,
 - a transistor oscillator including a base, collector and emitter;
 - an output transformer in back coupling to said transistor including primary and secondary windings, said secondary winding being designed to be coupled to a fluorescent lamp to heat the filaments thereof;
 - a first D.-C. current source;
 - a base circuit having base bias means coupled between said base and said source;
 - a variable resistor in said base circuit in series with said base including a center tap to said resistor;
 - an open contact relay including a relay coil between said tap and one end of said resistor;
 - a second D.-C. current source actuating said relay coil; and,
 - a control switch for said second source, whereby, when said control switch is closed a current flows through said relay coil closing said relay, short circuiting said resistor, decreasing the resistance at starting said fluorescent lamp and increasing said resistance when said control switch is released.

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