COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

APPLICATION FOR A STANDARD PATENT

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Fluorescent Lamp Stabilizer Circuit Device

which is described in the accompanying complete specification.

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DATED this FIFTEENTH day of OCTOBER 1990

Ho Teng-Tien, SHI-H-LI TAO

By:

Registered Patent Attorney

TO:
THE COMMISSIONER OF PATENTS
OUR REF: 144700
S&F CODE: 56395
COMMONWEALTH OF AUSTRALIA

THE PATENTS ACT 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR PATENT

In support of the Application made

by Ho Teng-Tien and SHiH-Li TAO

for a patent for an invention entitled:

Fluorescent Lamp Stabilizer Circuit Device

We Ho Teng-Tien and SHiH-Li TAO

do solemnly and sincerely declare as follows:

1. I am/We are the applicant(s) for the patent.
   (or, in the case of an application by a body corporate)

2. I am/We are the actual inventor(s) of the invention.
   (or, where a person other than the inventor is the applicant)

Set out how Applicant(s)
derive title from actual inventor(s) e.g. The Applicant(s) is/are the assignee(s) of the invention from the inventor(s)

Declared at Taiwan this 5th day of September 1990

Signature of Declarant(s)

To: The Commissioner of Patents
Claim

1. A fluorescent lamp stabilizer circuit device, comprising two transistors, two capacitors, two Resistors, an inducer and a fluorescent lamp tube, said transistors being alternatively switched on/off, characterized in that:
   a first charging circuit is formed by one transistor, one resistor and one capacitor such that, when the first transistor is switched on and the second transistor is switched off, the first capacitor is charged to the voltage range of power supply;
   a second charging circuit is formed by the second transistor, second resistor and second capacitor such that, when the first transistor is switched off and the second transistor is switched on, the second capacitor is charged to the range of power supply voltage plus the terminal voltage at the first capacitor so as to provide an impulse terminal voltage at the second capacitor double that of power supply voltage permitting said impulse terminal voltage to instantaneously turn on said fluorescent lamp tube via said inducer;
   one of said capacitors, the inducer and the fluorescent lamp tube are connected in parallel to form a resonance circuit to provide damped oscillation so as to eliminate flashing when said fluorescent lamp tube is turned on; and
   said inducer restrains the current through said fluorescent lamp tube so as to drop the voltage at said fluorescent lamp tube to a rated voltage range once said fluorescent lamp tube is turned on.
Complete Specification for the invention entitled:

Fluorescent Lamp Stabilizer Circuit Device

The following statement is a full description of this invention, including the best method of performing it known to me/us.
FLUORESCENT LAMP STABILIZER CIRCUIT DEVICE

ABSTRACT:
A fluorescent lamp stabilizer circuit device of the type comprising two transistor switches which are alternatively switched on/off so as to control two charging circuits to provide an impulse voltage double that of power supply voltage for charging a fluorescent lamp tube to give off light. A resonance circuit is provided to generate damped oscillation so as to drop output voltage to the fluorescent lamp tube to a rated range immediately after the fluorescent lamp tube is turned on.
FLUORESCENT LAMP STABILIZER CIRCUIT DEVICE

BACKGROUND OF THE INVENTION:

The present invention relates to fluorescent lamp stabilizer circuit devices, and more particularly relates to a fluorescent lamp stabilizer circuit device which permits an unserviceable fluorescent lamp tube to keep serving and can eliminate flashing problem while turning on a fluorescent lamp.

In a fluorescent lamp device, a stabilizer is used with a starter to heat the tungsten filaments at the two opposite ends of a fluorescent lamp tube permitting the mercury vapor in the tube to be acted by a stream of electrons from the cathode thereof so that the fluorescent substance coated on the inside of the tube gives light. In this structure, the starter may trip off easily after having been used for a certain period of time, to cause the tungsten filaments at the two opposite ends of a fluorescent lamp tube to be constantly in a heated or extinguished status to damage the fluorescent substance coating. Under this condition, the starter and the fluorescent lamp tube
must be replaced. Further, flashing problem may happen frequently when turning on a fluorescent lamp.

SUMMARY OF THE INVENTION:

It is an object of the present invention to provide a fluorescent lamp stabilizer circuit device which overcomes or at least reduces the above problems.

Accordingly, the invention provides a fluorescent lamp stabilizer circuit device, comprising two transistors, two capacitors, two Resistors, an inducer and a fluorescent lamp tube, said transistors being alternatively switched on/off, characterized in that:

- a first charging circuit is formed by one transistor, one resistor and one capacitor such that, when the first transistor is switched on and the second transistor is switched off, the first capacitor is charged to the voltage range of power supply;

- a second charging circuit is formed by the second transistor, second resistor and second capacitor such that, when the first transistor is switched off and the second transistor is switched on, the second capacitor is charged to the range of power supply voltage plus the terminal voltage at the first capacitor so as to provide an impulse terminal voltage at the second capacitor double that of power supply voltage permitting said impulse terminal voltage to instantaneously turn on said fluorescent lamp tube via said inducer;

- one of said capacitors, the inducer and the fluorescent lamp tube are connected in parallel to form a resonance circuit to provide damped oscillation so as to eliminate flashing when said fluorescent lamp tube is turned on; and
said inducer restrains the current through said fluorescent lamp tube so as to drop the voltage at said fluorescent lamp tube to a rated voltage range once said fluorescent lamp tube is turned on.

An advantage of a preferred embodiment of the present invention is that a fluorescent lamp stabilizer circuit device eliminates the use of a starter and permits a fluorescent lamp tube to keep working when its tungsten filaments are burnt out or damaged.

BRIEF DESCRIPTION OF THE DRAWING:

The present invention will now be described by way of example with reference to the annexed drawing of Fig. 1, which is a circuit diagram of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT:

Referring to Fig. 1, a fluorescent lamp stabilizer circuit device of the present invention is generally comprised of transistors GB1, GB2, capacitors C1, C2, Resistors RB1, RB2, inducer L and fluorescent lamp tube R. The whole circuit comprises total five terminals, in which terminals 1 and 2 are for AC power input. The positive end of capacitor C1 is connected to terminal 1. Resistor RB1 is connected between terminal 1 and the base of transistor GB1. The emitter of transistor GB1, the positive end of capacitor C2, one end of inducer L
and the positive end of resistor RB2 are respectively connected to terminal 2. The opposite end of resistor RB2 is connected to the base of transistor GB2. The collector of transistor GB1, the emitter of transistor GB2 and the negative side of capacitor C1 are each connected to terminal 3. The other end of inducer L and one end of fluorescent tube R are connected to terminal 5. The collector of transistor GB2, the negative end of capacitor C2 and the opposite end of fluorescent lamp tube R are respectively connected to terminal 4. The whole circuit structure of the fluorescent lamp stabilizer circuit device forms two charging circuits and a resonance circuit and the operation of which is outlined hereinafter. When AC power is connected between terminals 1 and 2 and if terminal 1 is positive and terminal 2 is negative, transistor GB1 is turned on immediately and transistor GB2 is cut off, i.e. transistors GB1 and GB2 compensate each other. Therefore, terminals 1, 3 and 2 form a charging circuit to charge capacitor C1 to the voltage range V12 at terminals 1 and 2. If terminal 2 is positive and terminal 1 is negative, transistor GB1 is cut off and transistor GB2 is turned on when AC power is connected thereto, and terminals 2, 4 and 3 form a circuit permitting the voltage at capacitor C1 and the voltage V12 from power source to be added together for charging capacitor C2. Therefore a transient voltage, the value of which is double over the voltage from power source, can be obtained at terminals 2 and 4, which transient voltage is an impulse voltage discharged to inducer L
and fluorescent lamp tube R so as to instantly turn on fluorescent lamp R. At the same time, a discharge current is sent through inducer L to cause inducer L to produce an impedance which restrains the current. Because capacitor C2, inducer L and fluorescent lamp tube R are connected in parallel to form a resonance circuit, capacitor C2 produces damped oscillation while discharging, and therefore flashing problem is eliminated when fluorescent lamp tube is charged to produce light. Because tungsten filament is eliminated from the present invention and a fluorescent lamp tube is started by transient impulse voltage before normal voltage is supplied, a waste fluorescent lamp tube can still be re-used even if the tungsten filament of which is burned out or damaged.
The claims defining the invention are as follows:

1. A fluorescent lamp stabilizer circuit device, comprising two transistors, two capacitors, two Resistors, an inducer and a fluorescent lamp tube, said transistors being alternatively switched on/off, characterized in that:

   a first charging circuit is formed by one transistor, one resistor and one capacitor such that, when the first transistor is switched on and the second transistor is switched off, the first capacitor is charged to the voltage range of power supply;

   a second charging circuit is formed by the second transistor, second resistor and second capacitor such that, when the first transistor is switched off and the second transistor is switched on, the second capacitor is charged to the range of power supply voltage plus the terminal voltage at the first capacitor so as to provide an impulse terminal voltage at the second capacitor double that of power supply voltage permitting said impulse terminal voltage to instantaneously turn on said fluorescent lamp tube via said inducer;

   one of said capacitors, the inducer and the fluorescent lamp tube are connected in parallel to form a resonance circuit to provide damped oscillation so as to eliminate flashing when said fluorescent lamp tube is turned on; and

   said inducer restrains the current through said fluorescent lamp tube so as to drop the voltage at said fluorescent lamp tube to a rated voltage range once said fluorescent lamp tube is turned on.

2. A fluorescent lamp stabilizer circuit device substantially as hereinbefore described with reference to the drawing.

DATED this SIXTEENTH day of NOVEMBER 1992

Ho Teng-Tien
SHIH-LI TAO

Patent Attorneys for the Applicants
SPRUSON & FERGUSON