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(54) **Instant start solid state ballast for fluorescent and gas-discharge lamps.**

(57) The standart Ballasts and starters used for the fluorescent lamps are based on the voltage kicks of a dying magnetic field in iron core. This is a somewhat artificial way of obtaining the voltage gradient necessary to establish an arc in the long vacuum tube. To facilitate this arc a cathode heating has been added for electron emission and arc starting.

4- This very short durated voltage is enough to strike an arc even for a very low (140 V) network and light a lamp without a starter.

5- This high voltage is harmless since it has the secondary coil in series as a ballast in the lamp circuit.

In the new design:

1- Instead of a weak voltage increase a dependable high voltage level is created by the sound autotransformer principle.

2- Instead of having the fully rated voltage primary coil, a much shorter one is subjected to the rated voltage for a few seconds and also protected from damage by a carefully chosen PTC (Positif Temperature Coefficient Thermistor) to separate the primary from the rated voltage circuit.

3- Therefore, with the aid of the PTC, from a 1 : 2 ratio autotransformer a voltage of $3 \times V$ (rated) is obtained instantly.

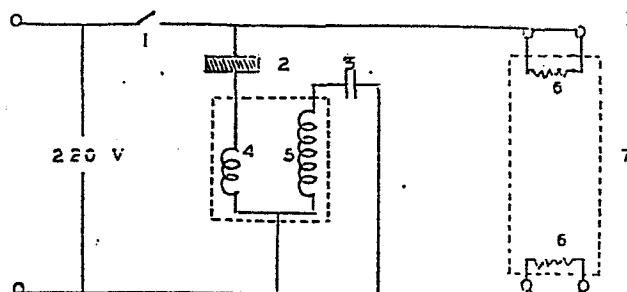


FIG. 1

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20 INSTANT START SOLID STATE BALLAST FOR FLUORESCENT AND GAS
DISCHARGE LAMPS

The standart Ballasts and starters used for the fluorescent lamps
 are based on the voltage kicks of a dying magnetic field in iron
 25 core. This is a somewhat artificial way of obtaining the voltage
 gradient necessary to establish an arc in the long vacuum tube. To
 facilitate this arc a cathode heating has been added for electron
 emission and arc starting.

30 In the new design:

- 1- Instead of a weak voltage increase a dependable high voltage
 level is created by the sound autotransformer principle.
- 35 2- Instead of having the fully rated voltage primary coil, a much
 shorter one is subjected to the rated voltage for a few seconds
 and also protected from damage by a carefully chosen PTC

1 (Positif Temperature Coefficient Thermistor) to separate the
primary from the rated voltage circuit.

3- Therefore, with the aid of the PTC, from a 1 : 2 ratio auto-
5 transforme a voltage of $3 \times V$ (rated) is obtained instantly.

4- This very short durated voltage is enough to strike an arc even
for a very low (140 V) network and light a lamp without a
starter.

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5- This high voltage is harmless since it has the secondary coil
in series as a ballast in the lamp circuit.

Thus the advantages are:

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1- Very small amount of iron and copper is used.

2- High power factor.

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3- Instant start.

4- No need of a starter and preheated cathodes.

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5- Longer life for the lamps even the use without a cathode.

6- Simultaneous operation of any number of lamps connected in
parallel.

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7- From 130 - 250 V voltage change no appreciable in light output.

8- The saving in power use is 500% around 150 V and 200% around
220 V compared to the old system.

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1 CLAIMS:

1- The use of PTC (2) on the primary to permit very short windings
(4).

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2- Use of auto-transformer principle to obtain high voltages
easily (4), (5).

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3- This high voltage and the use of a small capacitor (3) permit
the simultaneous parallel operation of several lamps (7).

4- A safe high voltage during operation for the independent control
of lamps lighting due to the open primary (2).

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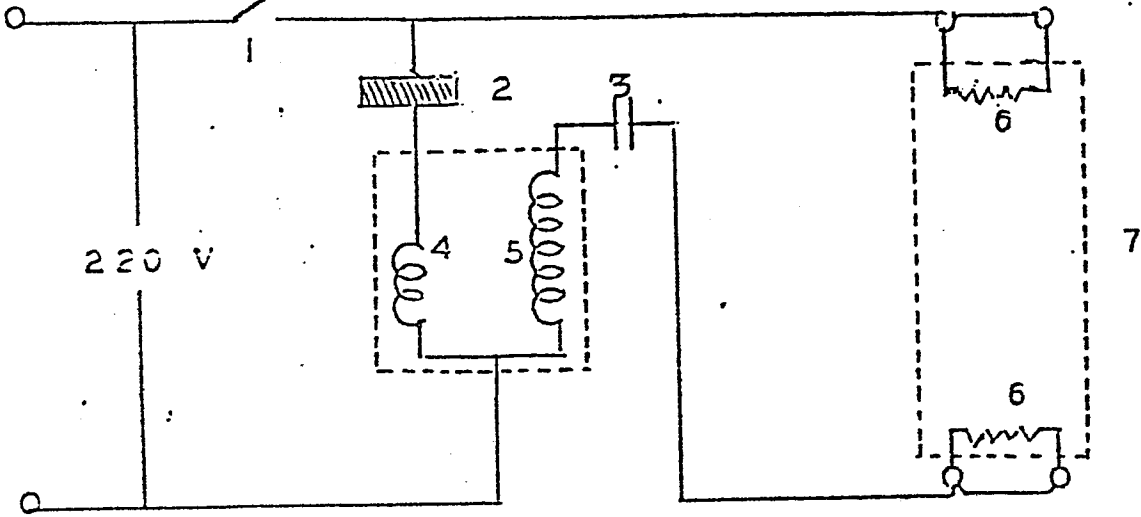


FIG. 1