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FLASHER CIRCUITS

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Fig. 1

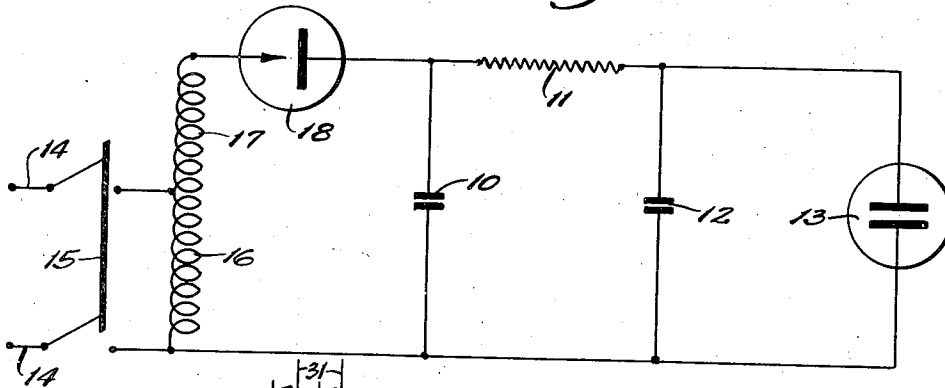


Fig. 2

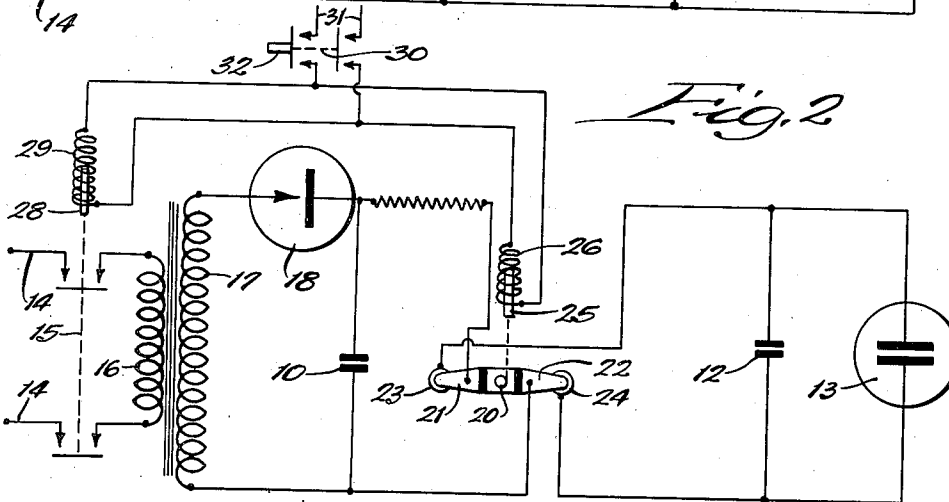
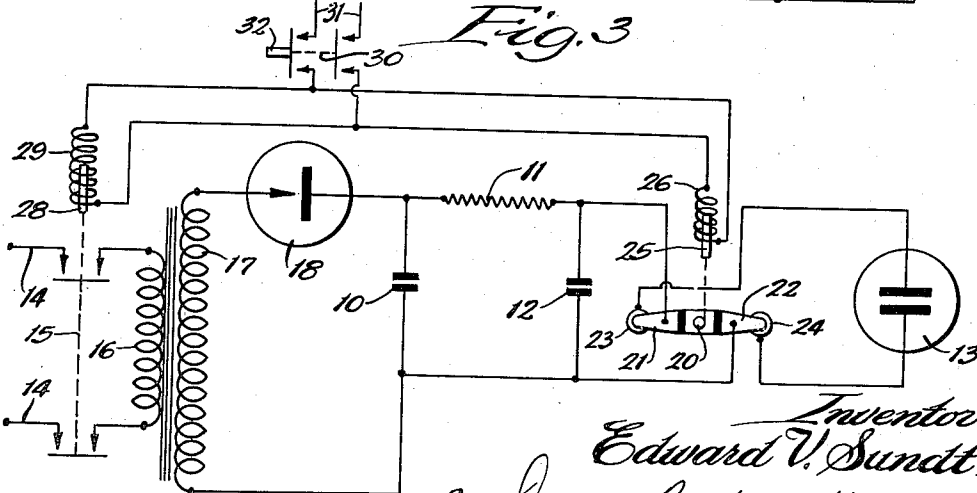


Fig. 3



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FLASHER CIRCUITS

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6 Claims. (Cl. 177-346)

1

This invention relates to flasher circuits for intermittently flashing a light.

The principal object of this invention is to provide an improved flasher circuit for intermittently flashing a light following a momentary application of voltage to the circuit. In this connection the flasher circuit includes a first condenser of relatively large capacity, a resistance, and a second condenser of relatively small capacity connected in series across the first condenser and a gaseous discharge tube connected across the second condenser. When a voltage is momentarily applied to the first condenser it becomes charged and then gradually discharges through the resistance and the second condenser and gaseous discharge tube intermittently to charge the second condenser and flash the gaseous discharge tube until the first condenser is substantially completely discharged.

A further object of this invention is to provide the flasher circuit with a rectifier so that the first condenser may be charged by the momentary application of an alternating voltage. In such event the rectifier may be connected in series with the first condenser and a transformer may be utilized for applying the alternating voltage.

Such a flasher circuit is particularly adaptable for use as an attention getting device. For example, the circuit may be utilized for flashing a small neon lamp on a telephone annunciator circuit in place of the conventional annunciator drops on a telephone switchboard. It may also be utilized for flashing neon and other gaseous tube signs for advertising purposes. If desired, the application of the voltage to the flasher circuit may be controlled by a suitable switch.

Inasmuch as the discharge through the gaseous discharge tube is essentially a D. C. discharge there is a tendency to disintegrate the negative electrode thereof. A further object of this invention, therefore, is to provide means for reversing the polarity of the discharge through the gaseous discharge tube, thereby prolonging the life of the same. This may be accomplished, for example, by providing a switch for reversibly connecting the gaseous discharge tube with the flasher circuit.

Still another object of this invention is to provide a synchronizing means for reversing the polarity of the discharge through the gaseous discharge tube when the storage condenser is substantially completely discharged so that uniform operation of the flasher circuit may at all times be maintained.

2

Other objects and advantages will become apparent to those skilled in the art upon reference to the accompanying specification, claims, and drawing, in which—

Fig. 1 is a diagrammatic illustration of a simplified form of this invention;

Fig. 2 is a diagrammatic illustration similar to Fig. 1 but illustrating the manner in which the gaseous discharge tube and its associated condenser may be reversibly connected into the flasher circuit;

Fig. 3 is a diagrammatic view similar to Fig. 2 but illustrating the manner in which the gaseous discharge tube may be reversibly connected across its associated condenser.

Referring now to Fig. 1, the flasher circuit includes a storage condenser 10 of relatively large capacity. Voltage is momentarily applied to the storage condenser 10 to charge the same. A leakage resistance 11 and a condenser 12 of relatively small capacity are connected in series with each other and across the storage condenser 10, and a gaseous discharge tube 13, such as a conventional neon lamp, is connected across the second condenser 12.

When the storage condenser 10 is charged, the charge gradually leaks off through the leakage resistance 11 to charge the condenser 12, and when the condenser 12 has been charged to the flashing point of the gaseous discharge tube 13, the latter flashes and the charge on the condenser 12 discharges therethrough. Immediately the condenser 12 is again charged up to the flashing or discharge point of the gaseous discharge tube 13 and the cycle is repeated. In this way the second condenser 12 is charged and the gaseous discharge tube is flashed intermittently so long as sufficient charge remains in the storage condenser 10. The frequency with which the gaseous discharge tube 13 flashes depends upon the relation between the resistance value of the resistance 11 and the capacity value of the condenser 12. The interval of time during which the gaseous discharge tube 13 intermittently flashes depends upon the capacity of the storage condenser 10. Thus the gaseous discharge tube 13 is caused to flash intermittently for an interval of time following a momentary application of voltage to the storage condenser 10.

While the storage condenser 10 may be directly charged by a D. C. voltage, I prefer to charge the same from an alternating voltage supplied by wires 14. The alternating voltage from the wires 14 is applied through a double pole, single throw switch 15 to the primary 16 of a step-up auto-

3

transformer having a secondary 17. The secondary of the step-up transformer is connected in series with the storage condenser 10 through a rectifier 18. The rectifier 18 operates to place a positive charge on the condenser plate adjacent the rectifier so as to perform the sequence of operation as described above.

The switch 15 may be utilized for controlling the momentary application of alternating voltage to the flasher circuit but if the source of alternating voltage is momentary in character the switch 15 is not needed.

Upon closure of the switch 15 alternating voltage is applied to the transformer and is rectified by the rectifier for charging the storage condenser 10 and in turn intermittently to charge the second condenser 12 and flash the gaseous discharge tube 13.

The arrangement of Fig. 2 is substantially the same as that of Fig. 1 and like reference characters have been utilized for like parts. In Fig. 2, however, there is provided a double pole, double throw switch 20 having switch arms 21 and 22 for engaging contacts 23 and 24. The switch arm 21 is connected to the resistance 11 and the switch arm 22 is connected to the transformer. The contact 23 is connected to one side of the condenser 12 and gaseous discharge tube 13 and the contact 24 is connected to the other sides thereof. The switch 20 may be operated by an armature 25 controlled by a solenoid 26.

When the switch 20 is in the position shown in Fig. 2, the connections are the same as those illustrated in Fig. 1, and, therefore, the arrangement operates in exactly the same manner as that of Fig. 1. When, however, the solenoid 26 is energized to step the switch arms through 180° to cause the switch arms 21 and 22 to engage the contacts 24 and 23 respectively, the second condenser 12 and the gaseous discharge tube 13 are reversely connected in the flasher circuit so that the condenser 12 is reversely charged and the direction of current flow through the gaseous discharge tube 13 is reversed. Except for these reversals the operation of the flasher circuit is the same as pointed out above. By so reversing the direction of current flow through the gaseous discharge tube, the tendency to disintegrate one of the electrodes thereof is eliminated. Each time the solenoid 26 is energized, the reversing switch 20 is stepped through 180° as shown.

Also in Fig. 2 the double pole, single throw switch 15 may be operated by an armature 23 controlled by a solenoid 29 so that when the solenoid 29 is energized the switch 15 is closed. The solenoids 29 and 26 may be connected in parallel and through a switch 30 to a source of voltage 31. A push button 32 may be provided for the switch 30 for substantially simultaneously momentarily energizing the solenoids 26 and 29. When the push button 32 is pressed the solenoid 26 steps the reversing switch 20 and the solenoid 29 closes the switch 15 to charge the storage condenser 10. When this is accomplished the push button 32 is released and the switch 15 opens but the switch 20 remains in its shifted position. The gaseous discharge tube then discharges in one direction. When the push button 32 is again pressed the reversing switch 20 is stepped through 180° as shown, and the switch 15 is closed to charge the storage condenser 10. Here, however, the direction of subsequent discharge through the gaseous discharge tube 13 is reversed. Hence upon each manual manipulation of the push button 32 the storage condenser 10 is charged and

4

the direction of discharge through the gaseous discharge tube is reversed. The solenoids 26 and 29 form a synchronizing means so that the reversal of the gaseous discharge tube is made while the storage condenser 10 is substantially completely discharged. This provides for uniform and even operation of the flasher circuit.

The flasher circuit of Fig. 3 is substantially the same as that of Fig. 2 and operates in substantially the same manner. Accordingly, like reference characters have been utilized for like parts. In Fig. 3, however, the reversing switch 20 is located between the second condenser 12 and the gaseous discharge tube 13 so that only the latter is reversed. The manner of operation is identical.

While for purposes of illustration several forms of this invention have been disclosed, other forms thereof may become apparent to those skilled in the art upon reference to this disclosure, and, therefore, this invention is to be limited only by the scope of the appended claims and prior art.

I claim as my invention:

1. A flasher circuit comprising, a first condenser of relatively large capacity, a resistance and a second condenser of relatively small capacity connected in series across the first condenser, a gaseous discharge tube connected across the second condenser, and means for momentarily applying a voltage across the first condenser to charge the same and in turn intermittently to charge the second condenser and flash the gaseous discharge tube.

2. A flasher circuit comprising, a first condenser of relatively large capacity, a resistance and a second condenser of relatively small capacity connected in series across the first condenser, a gaseous discharge tube connected across the second condenser, means for momentarily applying a voltage across the first condenser to charge the same and in turn intermittently to charge the second condenser and flash the gaseous discharge tube, means for reversing the direction of current flow through the gaseous discharge tube and means for synchronizing the last two mentioned means to reverse the direction of current flow through the gaseous discharge tube when the first condenser is discharged.

3. A flasher circuit comprising, a rectifier and a first condenser of relatively large capacity connected in series, a resistance and a second condenser of relatively small capacity connected in series across the first condenser, a gaseous discharge tube connected across the second condenser, and means for momentarily applying an alternating voltage across the rectifier and first condenser to charge the first condenser and in turn intermittently to charge the second condenser and flash the gaseous discharge tube.

4. A flasher circuit comprising, a rectifier and a first condenser of relatively large capacity connected in series, a resistance and a second condenser of relatively small capacity connected in series across the first condenser, a gaseous discharge tube connected across the second condenser, means for momentarily applying an alternating voltage across the rectifier and first condenser to charge the first condenser and in turn intermittently to charge the second condenser and flash the gaseous discharge tube, means for reversing the direction of current flow through the gaseous discharge tube, and means for synchronizing the last two mentioned means to reverse the direction of current flow through the gaseous discharge tube when the first condenser is discharged.

5

5. A flasher circuit comprising, a transformer, a rectifier and a first condenser of relatively large capacity connected in series, a resistance and a second condenser of relatively small capacity connected in series across the first condenser, a gaseous discharge tube connected across the second condenser, and means for momentarily applying an alternating voltage to the transformer to charge the first condenser and in turn intermittently to charge the second condenser and flash the gaseous discharge tube.

6. A flasher circuit comprising, a transformer, a rectifier and a first condenser of relatively large capacity connected in series, a resistance and a second condenser of relatively small capacity connected in series across the first condenser, a gaseous discharge tube connected across the second condenser, means for momentarily applying an alternating voltage to the transformer to charge the first condenser and in turn intermittently

6

to charge the second condenser and flash the gaseous discharge tube, means for reversing the direction of current flow through the gaseous discharge tube, and means for synchronizing the last two mentioned means to reverse the direction of current flow through the gaseous discharge tube when the first condenser is discharged.

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