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ELECTRIC DISCHARGE DEVICE

Filed March 6, 1931

Fig. 1

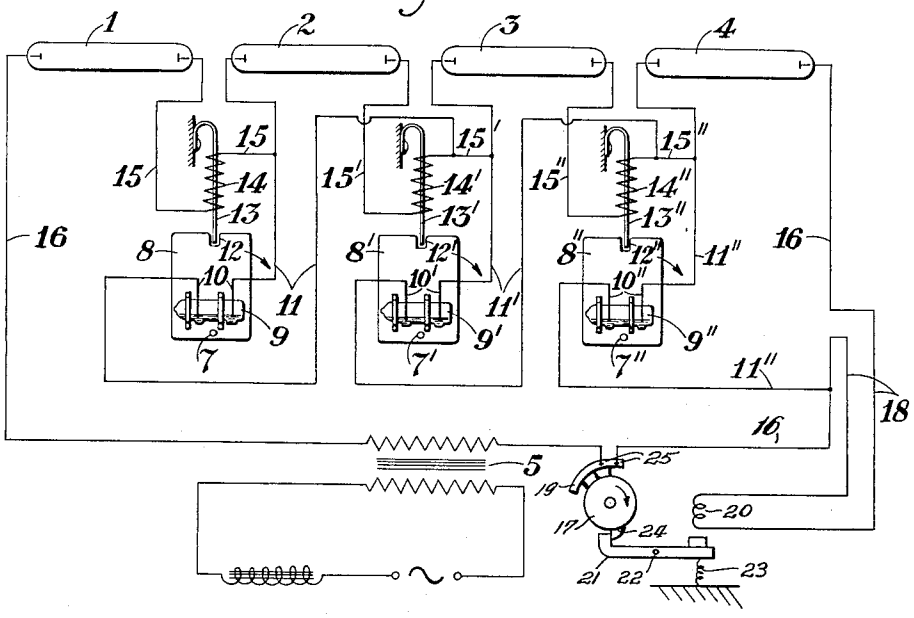
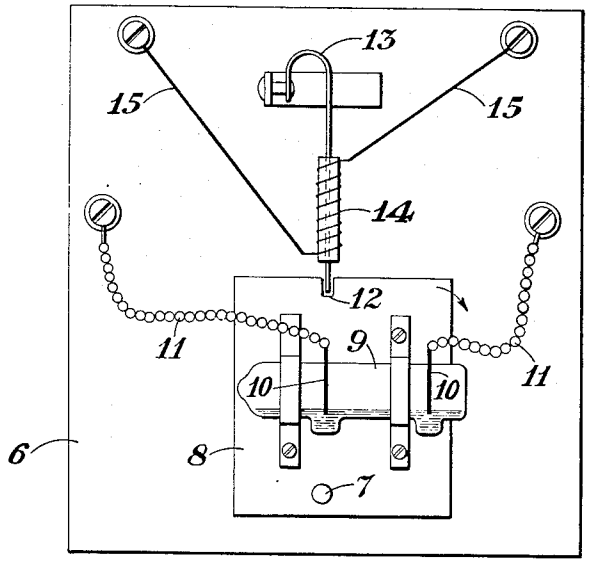


Fig. 2



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ELECTRIC DISCHARGE DEVICE

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1 Claim. (Cl. 177—346)

The present invention relates to electric discharge devices generally and more particularly the invention relates to starting and operating methods and means for such devices.

The object of the invention is to provide a starting and operating means for gaseous electric discharge devices whereby a plurality of such devices may be started into operation in sequence with an appreciable or an inappreciable lapse of time as desired between the starting of each device.

In accordance with this object each of the electric discharge devices are started by being connected in series to the electric discharge device preceding it in the circuit and a thermostatic element actuating a switch is provided in the circuit to accomplish the connecting of each electric discharge device in series in any desired time relation so that the electric discharge devices are started into operation in sequence with an appreciable or an inappreciable time lapse between the starting of each of said devices. The invention comprises a thermostatic element actuating a mercury switch, the heater of said thermostatic element being included in the current supply lead of each of the respective electric discharge devices as it is started into operation.

In the drawing accompanying and forming part of this specification an embodiment of the invention is shown for purposes of disclosure, in which

Fig. 1 is a schematic view of a plurality of electric discharge devices and the starting and operating circuit therefor, and

Fig. 2 is a front elevational view of the switch mechanism.

Like numbers denote like parts in both the figures.

Referring to Fig. 1 the four gaseous electric discharge devices 1, 2, 3 and 4 when operating are connected in series to the secondary winding of a transformer 5 by leads 15, 15' and 15'', said transformer 5 furnishing a suitable potential to start and operate said electric discharge devices 1, 2, 3 and 4. The leads 11, 11' and 11'' of the switches 9, 9' and 9'' conduct the current from said transformer 5 to said electric discharge devices 1, 2, 3 and 4 during the starting operation of the electric discharge devices. The method of mounting and the actuating means of the switches 9, 9' and 9'' is shown in detail in Fig. 2 in which mercury switch 9 is mounted on plate 8, said plate 8 being swivelled on pin 7 of main support plate 6, thermostatic element 13 is fastened to main plate 6 and is equipped with heater 14 connected to current leads 15, said thermostatic element 13 being a bimetallic strip and being adapted to fit into slot 12 of plate 8.

In the starting of said devices 1, 2, 3 and 4 the switches 9, 9' and 9'' are in their contact making position in which position current flows through leads 11'', 11' and 11 and heater 14 to electric discharge device 1. The electric discharge device 1 is started immediately on the application of potential to the circuit. Heater 14 heats thermostatic element 13 which bends to tilt plate 8 on pin 7 in the direction indicated in the drawing. The time required for this operation may be regulated as desired. Immediately on the breaking of contact in switch 9 electric discharge device 2 is connected in series with said device 1 and is started and thereupon current flows to electric discharge device 1 over leads 15 and 15' and through heater 14', electric discharge device 2 and heater 14, as will be apparent to those skilled in the art. Electric discharge devices 3 and 4 are started into operation in turn in a like manner by breaking of contact in switches 9' and 9'' respectively. The control mechanism of a time switch, which may be a clock mechanism, or a commutator as is well known in the art, is connected to lead 16 by leads 18 at a part of said lead 16 between said device 4 and the connecting point of lead 11'' with said lead 16. The control mechanism consists of an electro-magnet 20 the coil of which is connected to the lead 18 and the armature of which is mounted on a lever 21. The lever 21 is pivoted at 22 and is held in position against the stop 24 of the disc 17 by the spring 23. The disc 17 is driven by a clock mechanism in the direction indicated by the arrow. Said disc 17 has a bridging contact 19 mounted thereon which bridges the contacts 25 of the lead 16. The part 19 of the time switch is normally in its closed position in which position the circuit of the discharge devices 1, 2, 3 and 4 is closed. Immediately on the start of electric discharge device 4 the control mechanism 20 of the switch is energized releasing the disc 17 which revolves slowly. After a predetermined length of time the switch opens when said bridge 19 has traveled past one of said contacts 25 and said electric discharge devices 1, 2, 3 and 4 stop operating. The lever 21 returns to its original position. After a predetermined length of time the part 19 of said switch is returned by the revolving disc 17 where it is

held by the lever 21 to its closed position and the sequential starting of electric discharge devices 1, 2, 3 and 4 again takes place as heretofore described. When the lamp 4 starts again the time switch repeats the operation described above. The difference between the time of starting electric discharge devices 4 and 1 may be the same as that between 1 and 2, for example, or different as desired.

While we have shown and described a particular embodiment of our invention it will be understood that numerous substitutions, modifications and changes in the form and details of the device may be made by those skilled in the art without departure from the broad spirit and scope of the invention, for example, other suitable switch means may be used in place of time switch 17, other thermostatic means may be used to tilt the mercury switches and other switch mountings may be used, and the timing of the contact breaks in switches 9, 9' and 9'' and 17 may be the same or different as desired.

What we claim as new and desire to secure by Letters Patent of the United States, is:

An advertising device comprising in combination, a current source, a plurality of gaseous electric discharge lamps, a plurality of heater resistances connected in series with said lamps, each of said resistances being connected intermediate two of said lamps, each one of said lamps and an adjacent resistance forming a group, a plurality of short circuits one around each of said groups excepting the first of said groups, a plurality of thermostatic switches one for each of said short circuits, each one of said switches being mounted in heat receiving relation to one only of said resistances, each of said switches being moved from a contact making to a contact breaking position by the heat of its corresponding resistance, and in this latter position breaking one of said short circuits around one of said lamps and one of said resistances to connect said lamp and said resistance into an effective series circuit across the terminals of said current source.

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