

July 16, 1946.

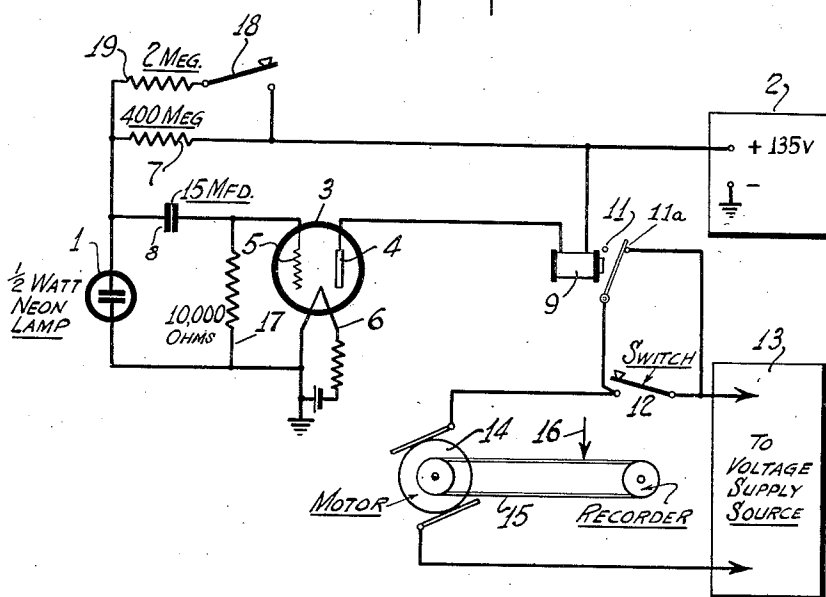
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2,404,001

PERIODIC MOMENTARY SWITCH

Filed Sept. 10, 1942.

Fig. 1.



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2,404,001

PERIODIC MOMENTARY SWITCH

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Application September 10, 1942, Serial No. 457,844

7 Claims. (Cl. 234—1.5)

1 This invention relates to a new and useful periodic momentary electric switch.

An object of this invention is to provide a novel electrical switch which is particularly adapted for actuating a telegraph recorder tape puller motor.

A feature of this invention is the arrangement of the electron discharge device with a recorder tape puller motor so that automatic intermittent operation may be obtained when the recorder is in an inactive state.

In the telegraph recorders as known in the prior art there is a danger of the ink drying up or congealing in the siphon of the recorder during the periods when it is idle. This is particularly true when the recorder is located in a place where the atmosphere is very dry. It is a disagreeable and time-consuming task to free a clogged siphon after the ink has congealed.

This invention overcomes the above-mentioned difficulty in a simple and expedient manner by providing an improved circuit arrangement in which the recorder tape puller motor switch is shunted by an automatic switch which closes the motor circuit for approximately a half-second every hour or so, so that the paper will then move a few inches and thus permit enough ink to flow through the siphon to prevent stoppage. This is accomplished by employing a gaseous discharge device which will flash intermittently at a frequency determined by its characteristic and the associated circuit elements.

This invention will best be understood by referring to the accompanying drawing in which the single figure is a circuit diagram of the invention.

Referring now in detail to the drawing, there is shown a gaseous discharge device 1, which may be in the form of a neon lamp, or any other type which will flash and conduct current upon a rise of voltage. Device 1 is connected in circuit with a source of direct current voltage supply 2 and an amplifier electron discharge device 3 having an anode 4, grid 5 and cathode 6. A charging resistance 7 of relatively high value, such as in the order of 400 megohms, is connected in series between the voltage supply source 2 and the gaseous discharge device 1, and is arranged in circuit with a condenser 8 of approximately 15 microfarads so that the neon lamp will not glow unless more than the critical ignition voltage is impressed upon it by the discharge of the condenser. The neon lamp 1 is of the type which will remain lit until the voltage supply falls below the extinction voltage, which is gen-

2 erally a few volts less than the ignition voltage. The building up of a sufficient voltage across the device 1 will be delayed until the condenser 8 is charged. Finally, when the ignition voltage is reached, the condenser 8 will then discharge through the neon lamp. With this arrangement the electron discharge device 3 normally conducts current therethrough. A circuit is thus provided through the electron discharge device 3 and is such that the anode 4 is connected to energize the magnet of a relay 9, having back contact 11A connected in shunt with a control switch 12. The forward contact 11 is not connected to any circuit. The switch 12 is arranged in series with a motor 14 and a voltage supply source 13, so as to control the operation of motor 14, which pulls the telegraph recorder tape 15. The siphon for supplying the ink to tape 15 is indicated at 16. In the operation of this switch the gaseous device 1 will flash intermittently at a frequency determined by its characteristics, the applied potential and the values of condenser 8 and charging resistance 7. Finally, when the ignition voltage is reached the condenser discharges through device 1 and the grid resistance 17. When the voltage falls below the extinguishing point, the discharge stops and the condenser begins to get another charge from the voltage supply source 2, and the cycle of operation thus repeats itself. The time between discharges can be adjusted to any desired value by the proper choice of the values of the condenser 8 and resistance 7. The supply voltage and characteristics of the particular discharge device used also are factors in determining the time adjustment.

The discharge current from the condenser 8 sets up a voltage across the charging resistor, which is in series with the discharge path. This developed voltage applies a cut-off potential to the triode amplifier 3. The cut-off of the tube's plate current deenergizes the magnet and releases the telegraph relay 9, the back contact 11A closes the circuit and operates the puller motor 14 for the short duration of the discharge of device 1 if the recorder is in an inactive state with switch 12 open. The insertion of the grid resistor 17 increases the length of time of discharge, but as such is no disadvantage in this invention. For the purpose of actuating the motor 14 independent of the discharge device 1 and condenser 8, a test switch 18 is connected through a two megohm resistance 19, and because it has a lower value of resistance than the charging resistor 7 it is used to decrease the period of operation to a

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few seconds to facilitate test or adjustment of the relay.

No means is provided to prevent the device from actuating when the recorder is in constant use because its action does no harm when the recorder is in constant use. If it is anticipated that the recorder is to be in constant use the device could, if preferred, be removed as a whole. As an alternative, a switch could be placed in any one of a number of places to prevent actuation. (For instance, the switch could be placed to break one of the connections between the relay and switch 12; or the switch could be placed to break the plus 135 volt line going to the 400 megohms resistance.)

While only one circuit arrangement is shown, it is to be understood that this device is useful in connection with any siphon type of recorder which must stand idle for long periods of time.

I claim:

1. A periodic momentary switch for actuating a telegraph recorder motor, comprising an electromagnetic relay, an electron discharge device having anode, control grid and cathode electrodes, a source of direct current voltage, a resistance, a condenser and a gaseous discharge device, said electron discharge device having its anode, cathode circuit connected in series with said source of direct current voltage and said electromagnetic relay, the control grid, cathode circuit of said electron discharge device connected in series with said condenser, resistance and said gaseous discharge device, whereby the recorder motor is intermittently operated by said relay when the control grid bias voltage is increased by the discharge of said condenser.

2. A periodic momentary switching system for intermittently moving a telegraph recorder tape comprising an electric motor circuit, a telegraph recorder having a tape arranged to be moved by said motor, means for applying ink to said tape, a gaseous discharge device, a source of voltage, a charging resistance connected in series with said source of voltage and said gaseous discharge device, a charging condenser connected to said charging resistance and across said gaseous discharge device, means to complete said electric motor circuit, whereby the frequency of intermittent operation of said closing device is governed by the value of said source of voltage, said resistance and said condenser for momentarily providing the current flow between a source of voltage and said motor circuit to prevent the recorder ink from congealing in said means.

3. A periodic momentary switch for actuating a telegraph recorder tape motor comprising an electron discharge device having an anode, a control grid and cathode, a first source of voltage, an electromagnetic relay, a charging resistance and a gaseous discharge device connected in series with said first source of voltage, a grid resistance connected to the grid cathode circuit of said electron discharge device, a condenser connected to one side of first mentioned resistance and said control grid, said condenser and said gaseous discharge device being also connected in series with said control grid and said cathode, a second source of voltage, the windings of said electromagnetic relay being connected to said first source of voltage and said anode, the contacts of said electromagnetic relay being connected in series with said second source of voltage and said tape motor, whereby the tape motor is intermittently moved when said condenser discharges through said grid resistance and causes said elec-

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tron discharge device to stop conducting current through said relay windings and complete the circuit through its contact and move said motor to prevent the recorder ink from congealing during idle periods of operation.

4. A periodic momentary switching system for actuating a telegraph recorder tape motor comprising an electron discharge device having an anode, a control grid and a cathode, a first source of voltage, a relay device, a second source of voltage, a charging resistance, a grid resistance connected to the grid cathode circuit of said electron circuit device, a charging condenser connected to said control grid and to one side of said charging resistance, a neon lamp arranged in circuit to be normally inactive until a voltage is impressed upon it, said electron device having its anode, cathode circuit connected to said relay device and said first source of voltage, said charging resistance and said neon lamp connected in series with said first source of voltage, the control grid cathode circuit being connected to said charging condenser whereby the tape motor is intermittently moved when said condenser is discharged through the circuit including the neon lamp causing said grid resistor to apply a cut-off potential to said electron discharge device and completing the circuit through said relay and said second source of voltage and moving said tape motor to prevent the recorder ink from congealing during idle periods of operation.

5. A momentary switch comprising a first source of direct current voltage, an electron discharge device having at least anode, control grid and cathode electrodes, a charging resistance of relatively high value, a charging condenser connected to said control grid and to one side of said charging resistance, a gaseous discharge device, an electric motor, a second source of voltage having one side connected to said electric motor, a grid resistance connected between said control grid and cathode circuit of said electron discharge device, an electromagnetic relay having its actuating winding connected in series with said first mentioned source of voltage and said anode cathode circuit, the contacts of said relay being connected in series between said electric motor and the other side of said second source of voltage, one electrode of said gaseous discharge device being connected in series with said charging resistor and said first mentioned source of voltage, the other electrode of said gaseous discharge device being connected to said cathode circuit, whereby the energy actuating said electromagnetic relay is released upon discharge of said charging condenser which causes the electron discharge device to be biased to cut-off by a voltage developed in said grid resistor making the electromagnetic relay contact to release and close a circuit between said motor and said second source of voltage.

6. A periodic momentary switch for actuating a telegraph recorder motor comprising a relay having at least a winding and contact means associated therewith, an electron discharge device having anode, control grid and cathode electrodes, a first and a second source of voltage, a charging resistance having one terminal connected to a positive side of said first source of voltage, a charging condenser having one terminal connected to said control grid, a gaseous discharge device having one terminal connected to the other terminal of said charging condenser and also to the other terminal of said charging resistance, the other terminal of said gaseous discharge de-

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vice being connected to said cathode, a telegraph recorder motor having one terminal connected to a terminal of said second source of voltage, said electron discharge device having its anode connected to one side of said relay winding, said cathode electrode being also connected to the negative side of said first source of voltage, the other side of said relay winding being connected to the positive side of said first source of voltage, the contact means of said relay being connected to the other terminal of said second source of voltage and the other terminal of said telegraph recorder motor whereby the motor is intermittently operated by said relay when the control grid voltage is increased by a discharge of said charging condenser.

7. A periodic momentary switch for actuating an electric motor comprising a relay having at least a winding and contact means associated therewith, an electron discharge device having anode, control grid and cathode electrodes, a first and a second source of voltage, a charging resistance having one terminal connected to a positive side of said first source of voltage, a charging

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condenser having one terminal connected to said control grid, a gaseous discharge device having one terminal connected to the other terminal of said charging condenser and also the other terminal of said charging resistance, the other terminal of said gaseous discharge device being connected to said cathode, a resistance connected between said grid and said cathodes, a motor having one terminal connected to a terminal of said second source of voltage, said electron discharge device having its anode connected to one side of said relay winding, said cathode electrode being also connected to the negative side of said first source of voltage, the other side of said relay winding being connected to the positive side of said first source of voltage, the contact means of said relay being connected to the other terminal of said second source of voltage and the other terminal of said motor whereby the motor is intermittently operated by said relay when the control grid voltage is increased by a discharge of said charging condenser.

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