

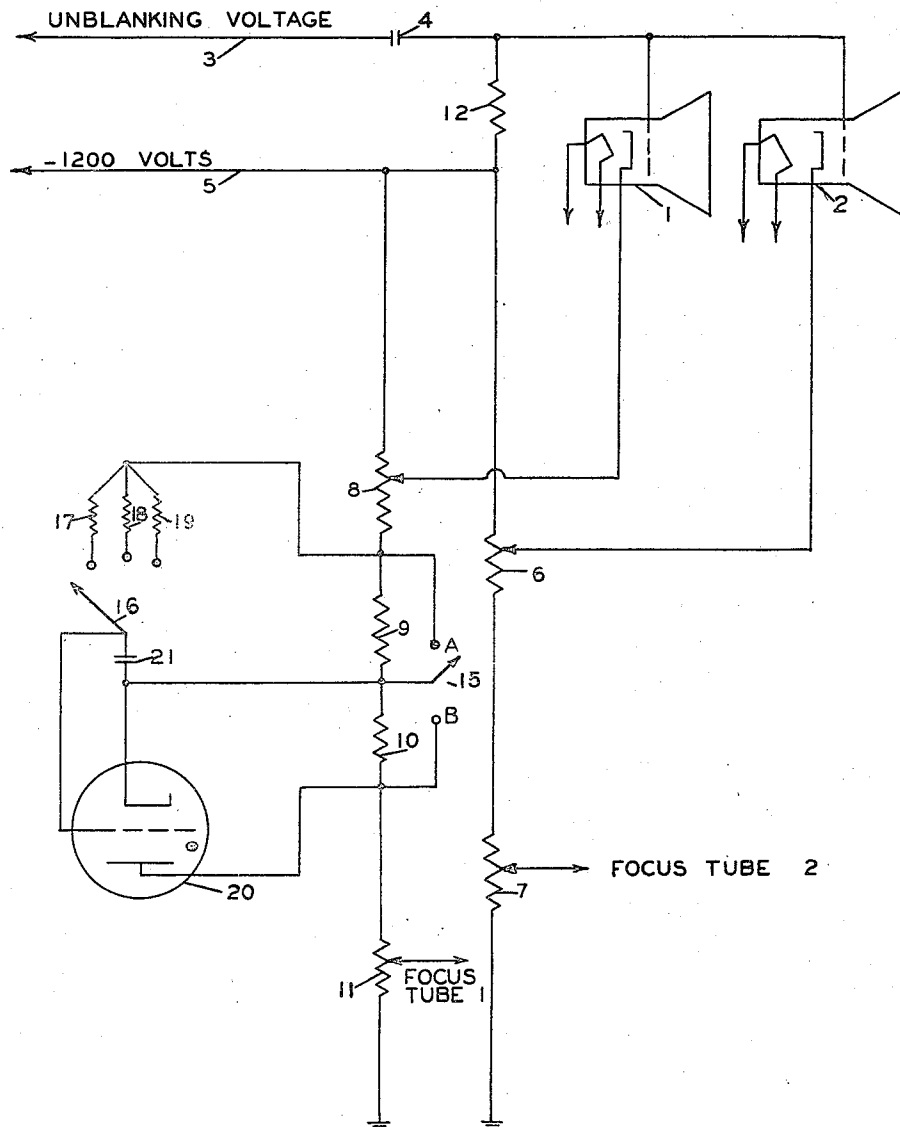
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PARALLEL CATHODE RAY TUBE

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PARALLEL CATHODE-RAY TUBE

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2 Claims. (Cl. 315—9)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to an adjustable cathode ray tube presentation timing device and more particularly to a means and a method for obtaining a cathode ray tube image for a short interval of time.

The objects of the present invention comprise the provision of an adjustable means and a method for causing a visual presentation to appear upon the screen of a cathode ray tube for a controlled and a predetermined period of time; the provision of an improved time delay short circuiting device in a potential dividing circuit that forms a part thereof; the provision of an improved circuit that contains a pair of individually adjustable cathode ray tubes, one of which operates continuously for the purpose of providing an uninterrupted presentation upon the screen thereof, and the other of which provides an image that is substantially a duplication at any time of the image that is displayed upon the screen of the first cathode ray tube but that is of a short duration only; to a method of connecting two cathode ray tubes in parallel in such a manner that one tube operates continuously and the second tube is excited momentarily for a period of time that depends upon the time constants of a resistance-capacitance network in which the second tube is connected; and an improved method for timing an image on the screen of a cathode ray tube to a very short elapsed period for particular uses such as in the photographic study of trace characteristics and the like.

The above objects of the present invention are augmented by additional objects that appear herein and that will be apparent to persons who are interested and informed in the subject matter to which the present invention pertains from the following description of an illustrative circuit diagram of one embodiment of the invention that is shown in the single figure in the accompanying drawing.

The circuit that is shown in the accompanying drawing comprises a pair of cathode ray tubes 1 and 2 that have their grids connected in parallel on the unblanking voltage side 3 of a circuit that applies voltage to the tubes 1 and 2 thru a condenser 4. The voltage supply side 5 is applied to the cathode of the tubes 1 and 2 thru voltage dropping resistors 6 and 8 that provide individual control for the tubes 1 and 2. A resistor 12 pro-

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vides a voltage drop when an unblanking voltage is impressed at the lead 3.

Cathode bias for the tube 2 is adjustably controlled by a potential divider 6. The tap on the potential divider 6 is adjusted to hold the tube 2 so that its biasing voltage is below cut off and so that there is a continuous presentation upon the screen of the tube 2. The electron beam of the tube 2 is focused upon the screen thereof by operation of the potential divider 7 in usual manner.

Cathode bias for the tube 1 is determined by the series combination of resistors 8-11, inclusive, of which the resistors or potential dividers 8 and 11 are variable.

The cathode of the tube 1 is adjusted above cut off by the adjustment of the potential divider 8 so that the tube 1 normally is not conducting.

A preferably quick acting relay operated switch 15 is disposed in the potential divider circuit of the tube 1 and normally is in engagement with the contact A. The electron beam focus of the tube 1 is adjusted by operation of the potential divider 11.

During the normal or focusing operation of the tubes 1 and 2, the switch 15 is in engagement with the contact A and another switch 16 is in engagement with any one of a desired plurality of resistors of different values, such as the resistors 17, 18, and 19, or the like.

With the switch arm 16 on one of the contacts 17, 18, or 19, and inclusive of the other components that are in the circuit at that time, the switch 16 is preset to determine the presentation time of the tube 1.

When the switch arm 15 is positioned on the contact B it short circuits the plate of a gas triode 20 to the cathode and short circuits the resistor 10 out of the potential divider circuit. When the switch arm 15 is positioned upon an alternate contact A, the resistor 9 is shorted out of the potential divider circuit of the tube 1 and the resistance 10 is reinserted therein.

The reinserting of the resistor 10 and the shorting out of the much smaller resistor 9 in the potential dividing circuit, introduces resistance into the potential divider circuit, thereby decreasing the current thru the potential divider. The smaller value of current flowing thru the resistor 8 drops the biasing voltage on the tube 1 from a nonconducting to a conducting value, thereby giving an image upon the tube 1 until the tube 20 ionizes or fires as a result of a decreasing bias on the gas tube 20, thereby effectively shorting the resistor 10, whereupon the image upon the tube 1 disappears.

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The time that elapses during the presentation of the image upon the screen of the tube 1 is the sum of the times required for the switch 15 to go from the contact B to the contact A and the time determined by the constant of the resistance 17, 18, or 19 and the condenser 21.

In order to restore the entire circuit to its original state, the switch arm 15 is returned from the contact A, to the contact B. When the switch arm 15 is so positioned, the device is in condition for the repetition of the described cycle.

The components that are shown in the accompanying drawing may, if preferred, be replaced by other components of substantially equivalent functions for acquiring particular advantages that may be inherent therein, within the scope of the present invention.

The switch arm 15 and the contacts A and B may, if preferred, be replaced by a push button that is spring pressed, or the like. In such an adaptation, the normal position of the push button switch is with the part thereof that corresponds to the switch arm 15 in the accompanying drawing, in releasable engagement with the part that corresponds with the contact B in the illustrated circuit. In the push button type of switch, the depression of the push button changes the contact from B to A, as illustrated herein.

The cathode ray tube 1 may, if desired, be replaced by a plurality of tubes that have separate or individual potential dividers and timing circuits for each tube, upon the screen of which a brief period presentation is to be made. With such an assembly, a brief tube presentation upon one of the tubes is initiated each time a key that governs that tube is depressed. The depression of such a key corresponds to transferring the switch 15 from the contact B to the contact A in the illustrated circuit. The tube so actuated corresponds to the tube 1 in the illustrated circuit.

It is to be understood that the particular arrangement of components that is shown and described herein, and the particular components that are cited herein, may be altered somewhat, or similarly functioning substitutions may be made therein, without departing from the scope of the present invention as defined by the appended claims.

What I claim is:

1. A cathode ray tube presentation timing sys-

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tem including a first cathode ray tube, a screen portion of said first tube adapted for providing a continuous presentation, a second cathode ray tube which is normally blanked, a screen portion for said second tube, means for controlling the bias voltage of said second tube, said means including potential dividing resistors, a gas-filled triode having a plate and cathode connected across one of said potential dividing resistors, switching means, normally short circuiting said plate and cathode, for placing said one of said resistors in the circuit of the bias voltage controlling means to momentarily energize and unblank said second tube.

2. A cathode ray tube presentation timing system including a normally blanked cathode ray tube having a screen portion which is to be momentarily energized, comprising a source of cathode bias voltage, a first voltage dividing resistor in the cathode bias voltage circuit for regulating the bias voltage a second resistor in series with said first resistor, a normally short circuited gas filled triode having said second resistor across its cathode and anode and switching means in the short circuit of said resistors and said triode for selectively unshort circuiting the cathode and plate of said triode together with said second resistor to momentarily energize said cathode ray tube, time delay means in the grid-cathode circuit of said gas-filled triode to cause it to fire after a given time thereby deenergizing said cathode ray tube.

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