

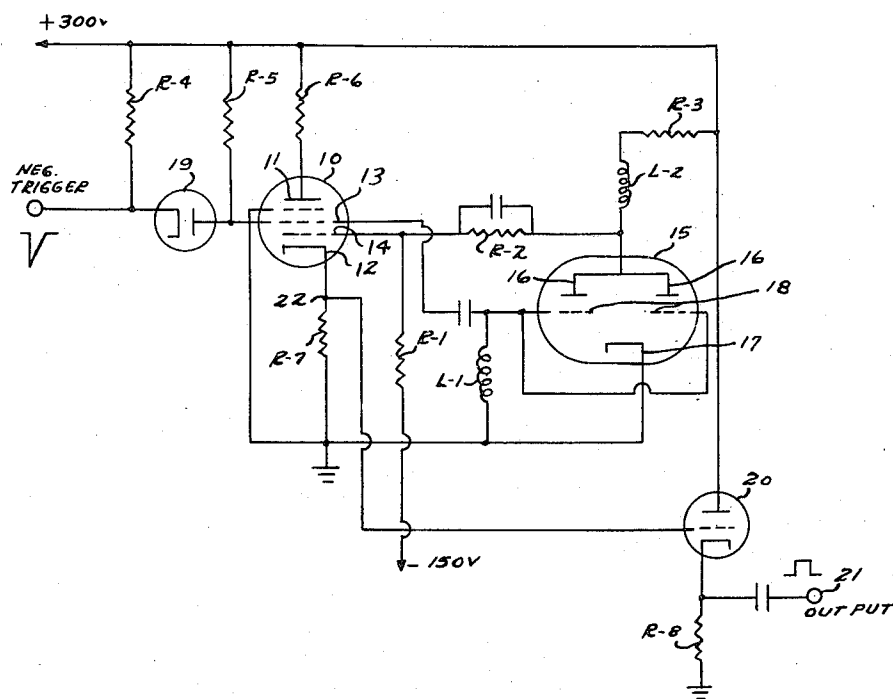
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J. F. BRUMBAUGH ET AL

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PULSE FORMING CIRCUIT

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INVENTORS
J. F. BRUMBAUGH
R. H. KETZLAFF
BY *Wade County*
ATTORNEY
Richard J. Kilbourn
AGENT

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PULSE FORMING CIRCUIT

Joseph Frank Brumbaugh, Benton Harbor, and Allen H. Retzlaff, Watervliet, Mich., assignors to the United States of America as represented by the Secretary of the Air Force

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This invention relates to a fast operating pulse forming circuit.

One object of the invention is to provide a fast operating circuit capable of producing short rectangular pulses of controllable width wherein there are no operable controls which require critical adjustments.

This and other objects will be more fully understood with reference to the following detailed description taken in connection with the drawing wherein the single figure is a circuit diagram showing one embodiment of the invention.

In the drawing, reference numeral 10 refers to a tube having at least an anode 11, a cathode 12, a screen grid 13 and a control grid 14. The control grid 14 is connected to a point on a voltage divider made up of resistor elements R-1, R-2, and R-3. Tube 15 is a double triode having anodes 16, cathode 17 and control grids 18. Control grids 18 of tube 15 are connected to screen grid 13 of tube 10 and anodes 16 are connected at a point on the voltage divider between the resistance elements R-2 and R-3. The negative trigger is applied to the screen grid 13 across a resistor R-4 and through a diode 19. A coil L-1 is connected between the cathode 17 and the control grids 18 of tube 15. A cathode follower output tube 20 has its control grid connected to a point 22 in the cathode circuit of tube 10. The output is taken off at terminal 21.

In the operation of the device, tube 10 is held nonconducting by means of the negative bias applied to its control grid by the voltage divider action of R-1, R-2, and R-3. Tube 15 is normally conducting because of the zero bias on the grid. A negative trigger is applied to the cathode of tube 19 across R-4 causing tube 19 to conduct and thus a negative going peak is applied to the screen grid of tube 10 and to the control grid of tube 15. This negative going peak cuts off tube 15 and thereby allows its plate voltage to rise. This rise in plate voltage is directly coupled to the control grid of tube 10 thus allowing this tube to start to conduct. The rise in voltage at point 22 due to current flow through R-7 is coupled to tube 20 thus allowing this tube to start conducting. Screen grid current flowing in tube 10 flows through resistor R-5 thereby lowering the anode voltage of tube 19 thus cutting off this tube which isolates the circuit from the trigger source. The corresponding lowering of the screen grid voltage of tube 10 is coupled to the grid of tube 15. The plate voltage on tube 10 supports conduction in this tube. The voltage drop on the grid of tube 15 shock excites coil L-1 into oscillation. The voltage across L-1 becomes positive going due to flywheel action thus raising the grid voltage on tube 15 allowing it to conduct. This lowers the anode voltage of tube 15 and also the voltage applied to the grid of tube 10 which causes tube 10 to be cut off. This causes the voltage at 22 to drop thus cutting off tube 20. The resulting pulse appearing across R-8 is available at output 21. The circuit is now in its original state and is capable of accepting another trigger pulse. The width of the pulse ap-

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pearing at output terminal 21 can be determined by the selection of the value for coil L-1. There is thus provided a fast operating pulse forming circuit wherein there are no operational controls which require critical adjustment.

While one specific embodiment has been described in some detail, it will be understood that numerous changes may be made without departing from the general principles and scope of the invention.

We claim:

1. A pulse forming circuit comprising: a first tube which is normally nonconducting having an anode, a cathode, a control grid and a screen grid, a second tube which is normally conducting having an anode, a cathode and a control grid, means for connecting the screen grid of said first tube to the control grid of said second tube, means for applying a negative trigger to the control grid of said second tube to thereby cut it off, means to apply the output of said second tube to the control grid of said first tube to allow it to conduct when said second tube is cut off, a coil connected between the control grid and cathode of said second tube means for shock exciting said coil into oscillation whereby said second tube is caused to start conducting by the first positive going voltage due to said oscillation, a cathode follower output circuit and means for applying the output of said first tube to said cathode follower.

2. A pulse forming circuit comprising: a first tube having an anode, a cathode, a control grid and a screen grid, a second tube, which is normally conducting, having an anode, a cathode and a control grid, means for connecting the screen grid of said first tube to the control grid of said second tube, means for connecting the control grid of said first tube to the anode of said second tube whereby said first tube is cut off when said second tube is conducting, means for applying a negative trigger pulse to the control grid of said second tube to stop conduction therein, said last-named means including a diode having its anode connected to the screen grid of said first tube and its cathode connected to a trigger input terminal, a coil connected between the cathode and control grid of said second tube, means for shock exciting said coil into oscillation whereby said second tube is caused to start conducting by the first positive going voltage across said coil due to said oscillation, an output circuit and means for applying the output of said first tube to said output circuit.

3. A pulse forming circuit comprising: a first tube having an anode, a cathode, a control grid and a screen grid, a second tube which is normally conducting, having an anode, a cathode and a control grid, means for connecting the screen grid of said first tube to the control grid of said second tube, means for connecting the control grid of said first tube to the anode of said second tube whereby said first tube is cut off when said second tube is conducting, means for applying a negative trigger pulse to the control grid of said second tube to stop conduction therein, said last-named means including a diode having its anode connected to the screen grid of said first tube and its cathode connected to a trigger input terminal, a coil connected between the control grid and cathode of said second tube, means for shock exciting said coil into oscillation whereby said second tube is caused to start conducting by the first positive going voltage across said coil due to said oscillation, said last-named means including a voltage drop resistor connected to the screen grid of said first tube, a cathode follower output circuit, means for applying the output of said first tube to said cathode follower circuit.

4. A pulse forming circuit comprising: a first tube having an anode, a cathode, a screen grid and a control grid, a second tube having an anode, a cathode and a control grid, a voltage divider, means for connecting the

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control grid of said first tube to a point on said voltage divider, means for connecting the anode of said second tube to a second point on said voltage divider, said second point being at a higher potential level than said first point, means for connecting the screen grid of said first tube to the control grid of said second tube, means for applying a negative trigger pulse to the screen grid of said first tube and to the control grid of said second tube to thereby cut off said second tube and allow said first tube to start conducting, a coil connected between the grid and cathode of said second tube, means for shock exciting said coil into oscillation whereby said second tube is caused to conduct by the first positive going voltage across said coil due to said oscillation and thereby cut off said first tube, a cathode follower output circuit connected to the cathode circuit of said first tube.

5. A pulse forming circuit comprising: a first tube having an anode, a cathode, a screen grid and a control grid, a second tube having an anode, a cathode and a control grid, a voltage divider, means for connecting the control grid of said first tube to a point on said voltage divider, means for connecting the anode of said second tube to a second point on said voltage divider which is at a higher potential level than said first point, means for connecting the screen grid of said first tube to the control

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grid of said second tube, means for applying a negative trigger pulse to the control grid of said second tube to thereby cut it off and allow said first tube to start conducting, said last-named means including a diode having its anode connected to the screen grid of said first tube and its cathode connected to a trigger input terminal, a coil connected between the cathode and control grid of said second tube, means for shock exciting said coil into oscillation whereby said second tube is caused to conduct by the first positive going voltage across said coil due to said oscillation and thereby cut off said first tube, said last-named means including a voltage drop resistor connected to the screen grid of said first tube, an output circuit connected to a point in the cathode circuit of said first tube.

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