

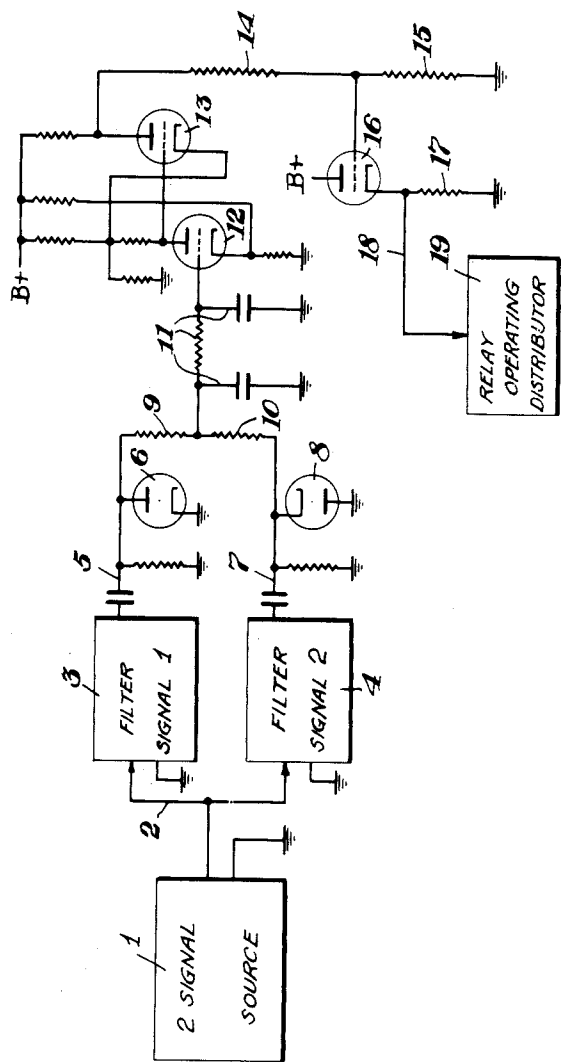
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G. R. CLARK

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SELECTIVE SIGNAL CIRCUITS

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INVENTOR.
GILBERT R. CLARK

BY

R. P. Morris
ATTORNEY

UNITED STATES PATENT OFFICE

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SELECTIVE SIGNAL CIRCUITS

Gilbert R. Clark, Nutley, N. J., assignor to Federal Telephone and Radio Corporation, New York, N. Y., a corporation of Delaware

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1 Claim. (Cl. 250-27)

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This invention relates to selective signal operative circuits and more particularly to circuits providing selective relay operation in response to the exceeding of a predetermined ratio between two signals.

In a copending application of J. A. Herbst and applicant, Serial No. 691,282, filed August 17, 1946, now Patent No. 2,523,300, a printer telegraph circuit is illustrated provided with a receiving circuit which has therein means for segregating marking and spacing signals for selective operation of a printing telegraph relay system. The present application describes and claims in more particularity the signal selector circuit which may, for example, be used in printer telegraph systems.

It is an object of my invention to provide a selective control system which will provide for selective operation in response to differences of two or more signals.

It is another object of my invention to provide a signal selective circuit wherein two signals are separated and rectified, the rectified voltages being applied in opposite polarity to an electron discharge device so that the device will operate selectively in response to a difference in the signals.

It is a further object of my invention to provide a system responsive to received signals of different frequencies which will be very sensitive to small differences in amplitude and will produce control voltages substantially independent of variations of amplitude difference beyond a predetermined level.

According to a feature of my invention, I may provide means such as filters for separating two signals. These separated signals may be rectified and applied differentially to the grid of an electron discharge device. When one of these voltages, preferably the positive voltage, exceeds the negative voltage applied to the grid, this tube is designed to operate to pass signals. In the output of this electron discharge device is provided another current limiting device which preferably is also an electron discharge means. This second electron discharge means is so biased, that of the signals passed by the first, only that portion below a predetermined amplitude will be further passed on. This signal then, in the output of the second electron discharge means, will have an output pulse duration substantially equal to the time at which the positively applied voltages exceed the predetermined level of the negatively applied voltages and of an amplitude determined by the second

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electron discharge device. These output pulses may then be applied through a third electron discharge device so biased that upon application of these pulses, the output energy will be greatly increased. The output energy of this third tube may be taken across a low impedance means, such as a cathode follower for example, and applied to a relay operating distributor means or to other means for controlling a relay operation.

While I have outlined above the general objects and features of my invention, a better understanding thereof and further objects and features will be had from the particular description of an embodiment thereof made with reference to the accompanying drawing, the single figure of which is a schematic circuit diagram partly in block form illustrating an example of a circuit in accordance with my invention.

Turning to the figure, reference character 1 represents a signal source which preferably contains components of two different signals. These different signals may be, for example, different frequencies, for example, source 1 may constitute a radio receiver of the type disclosed in the copending application Serial No. 691,282, referred to above. The output signal from 1 may be applied over line 2 to the signal filters 3 and 4 respectively, which serve to segregate the different frequency signals. It is clear that if desired, other types of segregating networks for different types of signals may be used in place of such filters. The output energy from filter 3 may be applied over coupling network 5 to a rectifier 6. Similarly, the output from filter 4 may be applied over coupling network 7 to a rectifier 8 coupled in opposite polarity to rectifier 6. The output of rectifiers 6 and 8 may then be applied over potential dividing resistors 9 and 10 and a coupling network 11, which may serve to smooth out the rectified energy, to the grid of an electron discharge device 12. Electron discharge device 12 is preferably so biased that it will respond to the predominance of the positive voltage over the negative voltage to produce output in the plate circuit of this tube. With such a system, it is clear, however, that the output energy passed will vary in amplitude in accordance with the amplitude of the different signals. For best operation, however, it is desirable that the energy be limited to a predetermined maximum value. Accordingly, a second electron discharge device 13 is provided coupled to the output of electron discharge device 12. This second electron discharge device is so biased that in the absence of operation of dis-

charge device 12, it passes a small current and will act as a current limiter upon application of energy from 12 to pass energy of a predetermined limiting amplitude regardless of the magnitude of the voltage applied to its grid.

It will be clear from the circuit so far described that because of the differential combination of the output from filters 3 and 4 a voltage will be applied to the grid of electron discharge device 12 which is either positive or negative. This tube in conjunction with electron discharge device 13 serves as a D. C. limiter producing output energy at a constant low amplitude potential if the resultant voltage on the grid of tube 12 is even slightly negative and producing a constant high positive potential if the resultant on the grid of tube 12 is even slightly positive. Accordingly, the output of electron discharge tube 13 effectively produces a regeneration of pulse input signal in accordance to which of the filter outputs is stronger regardless of the absolute magnitude of the energy applied thereto.

The output energy from the tube 13 is coupled over voltage dividing resistors 14, 15 to the input grid of a third tube 16. Tube 16 is so biased that when low voltages appear in the output of tube 13 only a small operating energy will be produced in this tube while, upon application of positive pulses to tube 12 and consequent increase to a higher amplitude, the output energy from tube 16 may be produced at a higher value also substantially constant. The output energy from tube 16 may be taken out over a cathode follower resistor 17 over line 18 and applied to a relay operating distributing means 19 or other relay control circuits.

It will be evident that many changes in the circuit as described herein may readily occur, to those skilled in the art. The specific example herein given is made merely by way of example and is not considered as a limitation on the scope of my invention.

I claim:

A selective control apparatus for a telegraph system comprising an input circuit, a pair of selector circuits each responsive to a signal of a different frequency, a first rectifier coupled across one of said selector circuits so as to produce a positive output in response to a signal of a first frequency, a first load resistor shunted

across said first rectifier, a second rectifier coupled across the other of said selector circuits so as to produce a negative output in response to a signal of a second frequency, a second load resistor shunted across said second rectifier, a potential dividing resistance network serially connected between the outputs of said rectifiers, a first grid controlled vacuum tube normally biased to be conductive upon receipt of a positive voltage upon the grid thereof, a resistance-capacity filter network serially disposed between the substantial midpoint of said potential dividing resistance and the grid of said tube, a second grid controlled vacuum tube coupled to the output of said first tube said second tube normally biased to pass a small current in one operating condition of said first tube, corresponding to the predominance of positive output of said first rectifier and to pass a larger current of predetermined magnitude in a second operating condition of said first tube, corresponding to the predominance of negative output of said second rectifier, load means responsive to the output of said selector circuits, an amplifier coupled between the output of said second tube and said load means, to energize said means in accordance with the signal frequencies applied to said rectifiers.

GILBERT R. CLARK.

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