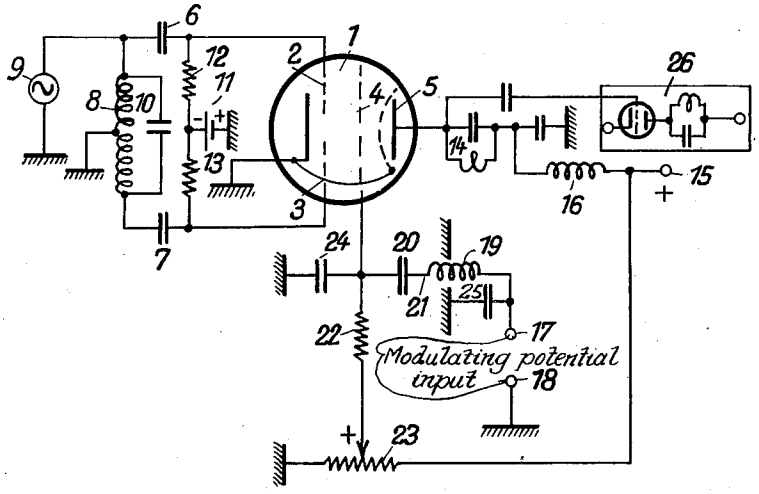
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TRANSMISSION AND MODULATING ARRANGEMENT

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Inventor:

Karl Schlesinger.

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TRANSMISSION AND MODULATING ARRANGEMENT

Kurt Schlesinger, Berlin, Germany

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4 Claims. (Cl. 179—171)

The subject matter of the invention is a transmission arrangement, more particularly for short or ultra-short wave purposes, which permits of a very extensive modulation.

According to the invention, there is employed a screening grid modulator tube controlled by a high frequency generator and by the modulation waves. This modulator screening grid tube contains two control grids with equal control effect. To the two control grids there is conducted in phase opposition energy from the oscillatory circuit of the control generator tuned to a frequency —*n*—, whilst the anode output circuit of the modulation tube is connected to a circuit tuned to the frequency —2*n*—. The control grids of the modulator tube are highly negatively biased to such extent that the control effect of the negative half-waves of the control wave is suppressed and only the positive half waves of the control-waves produce variation of the anode current. It is thus accomplished that the control effects of the two grids do not compensate each other, but are added together, in such fashion that the anode circuit of the tube tuned to the frequency —2*n*— is excited twice by each control wave. The modulation, in accordance with the invention, takes place at the screening grid of the tube. As modulator tube there is employed a tube with greatest amplification factor. Following the modulating arrangement there is preferably connected a resonance amplifier arrangement.

A form of embodiment of the arrangement according to the invention is illustrated by way of example in the drawing. In the same **1** is the dual control grid screening grid tube having the two control grids **2** and **3**, the screening grid **4** and the anode **5**. The two control grids **2** and **3** are linked up through the medium of the condensers **6** and **7** with the oscillation coil **8** of the circuit **10** tuned to the frequency *n* (for example, corresponding to a wave length of 14 metres) and excited by the control generator **9**, the coil **8** being earthed at the centre. At the same time the two control grids are supplied with the requisite negative bias from the potential source **11** through the medium of the two resistances **12** and **13**. In the anode circuit of the anode **5** there is provided the circuit **14**, which is tuned sharply to the frequency 2*n* (for example, corresponding to a wave length of 7 metres). The anode potential may conveniently be fed by the terminal **15** over the choke **16**. The modulating potential is conducted at the terminals **17** and **18** over the choke **19** and the condenser **20** through the medium of the screened connection **21** to the screening grid **4** of the tube, which is positively biassed by the terminal **15** through the medium of the resistance **22** and the potentiometer **23**. The modulated potential is tapped at the circuit **14**, and if necessary amplified in the resonance amplifier **26**. The condensers **24** and **25** may conveniently be furnished with a size of 10 cm. each, the condenser **20** with one amounting to .1 mf., and the resistance **22** with .01 megohm. The bias of the screening grid should be selected in such fashion that the total of screening grid potential and modulating potential is always smaller than the difference between anode potential and maximum potential of the oscillatory circuit provided in the anode circuit of the tube.

This condition does not require to be adhered to if, in accordance with the invention, there is provided between the screening grid and the anode an intercepting grid, which is connected for example with the cathode in the manner known per se. In this case greater oscillation circuit potentials are quite readily permissible.

The arrangement according to the invention operates with a very high efficiency, and enables a modulation of the transmission wave to be obtained amounting to 85–90%. The arrangement according to the invention is suitable to a particularly high degree for television purposes.

I claim:

1. In a transmission system, preferably for television purposes using short or ultra-short carrier waves a modulation tube, a high-frequency control generator and a modulation source, said modulation tube containing a cathode, an anode, a screening grid and two control grids of equal control effect, means for exciting said control grids in counter-phase by the oscillatory circuit of said high frequency control generator, means for connecting said molulation source to said screening grid, an output circuit sharply tuned to twice the frequency of said high frequency control generator connected to said anode, means for negatively biassing said two control grids by an amount sufficient to suppress the control effect of the negative half-waves of the control waves, said output anode circuit coupled with a transmission circuit.

2. In a transmission system, preferably for television purposes using short or ultra-short carrier waves a modulation tube, a high-frequency control generator and a modulation source, said modulation tube containing a cathode, an anode, a screening grid and two control grids of equal control effect, means for exciting said control grids in counter-phase by the

oscillatory circuit of said high frequency control generator, means for connecting said modulation source to said screening grid, an output circuit sharply tuned to twice the frequency of said high frequency control generator connected to said anode, means for negatively biassing said two control grids by an amount sufficient to suppress the control effect of the negative half-waves of the control waves, said output anode circuit coupled with a transmission circuit, and means for biassing the screening grid so selected that the total value of the screening grid bias and the modulatng potential at any moment will be smaller than the difference between anode potential and maximum potential of the transmission circuit.

3. In a transmission system, preferably for television purposes using short or ultra-short carrier waves a modulation tube, a high-frequency control generator and a modulation source, said modulation tube containng a cathode, an anode, a screening grid and two control grids of equal control effect, means for exciting said control grids in counter-phase by the oscillatory circuit of said high-frequency control generator, means for connecting said modulation source to said screening grid, an output circuit sharply tuned to twice the frequency of said high-frequency control generator connected to said anode, means for negatively biassing said two control grids by an amount sufficient to suppress the control effect of the negative half-waves of the control waves, said output anode circuit coupled with a transmission circuit, and means for biassing the screening grid so selected that the total value of the screening grid bias and the modulating potential at any moment will be smaller than the difference between anode potential and maximum potential of the transmission circuit, said anode output circuit connected to resonance amplifiers.

4. In a transmission system, preferably for television purposes using short or ultra-short carrier waves a modulation tube, a high-frequency control generator and a modulation source, said modulation tube containing a cathode, an anode, a screening grid and two control grids of equal control effect, means for exciting said control grids in counter-phase by the oscillatory circuit of said high frequency control generator, means for connecting said modulation source to said screening grid, an output circuit sharply tuned to twice the frequency of said high frequency control generator connected to said anode, means for negatively biassing said two control grids by an amount sufficient to suppress the control effect of the negative half-waves of the control waves, said output anode circuit coupled with a transmission circuit, and means for biassing the screening grid.

KURT SCHLESINGER.