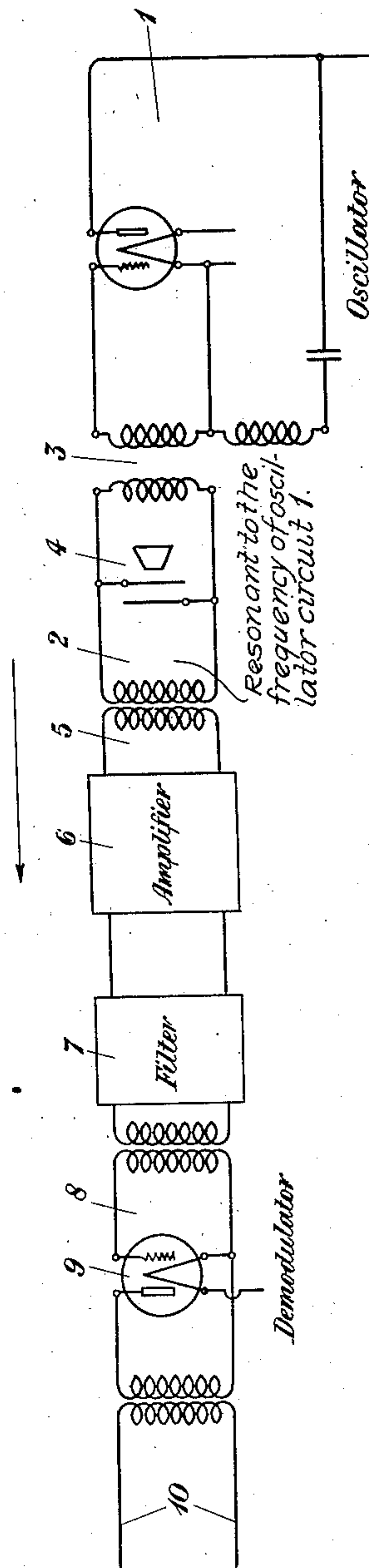


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H. M. BASCOM
TRANSMISSION SYSTEM
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UNITED STATES PATENT OFFICE.

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TRANSMISSION SYSTEM.

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This invention relates to transmission circuits and more particularly to arrangements for improving the transmission on circuits utilizing the condenser type of transmitter.

6 An illustration of a circuit arrangement wherein a condenser transmitter might be utilized would be a loud speaker circuit. It has been the practice heretofore to utilize with the condenser transmitter as its source
10 of energy a battery of constant potential. The energy delivered to the receiving circuit from the transmitter with such an arrangement is small due to the very small variation in the electrostatic capacity of the trans-
15 mitter when subject to sound vibrations. This is an inherent limitation of the condenser transmitter arrangement and it has been the practice to utilize therewith multi-stage audio-frequency amplifiers. These au-
20 dio-frequency amplifiers, however, are subject to inductive disturbances of audible frequency and hence will amplify the noise as well as the speech and so introduce considerable noise into the receiving circuit. It is
25 in general the purpose of this invention to provide arrangements whereby this noise or inductive disturbance may be eliminated from a transmission circuit utilizing a condenser type of transmitter. In the arrange-
30 ments of the invention this is accomplished by substituting for the battery formerly utilized as the source of energy for the transmitter an oscillator or source supplying current of super-audio or carrier frequency.
35 The condenser transmitter will be included in a circuit tuned to the frequency supplied from the oscillator and hence will modulate the carrier or inaudible frequency with the speech currents. The amplifiers provided
40 will be adjusted to efficiently amplify the carrier frequency but will not efficiently amplify the inductive disturbances or noises of audible frequency. Hence the noise will not be amplified with the carrier modulated by
45 the speech. Associated with the amplifiers may be provided high pass filters to pass the carrier frequencies but which will eliminate any of the noise of audible frequency passed by the amplifiers. A demodulator will be
50 provided at the receiver. With such an arrangement the efficiency of the condenser transmitter may be materially increased and the disturbances or noises introduced in the circuit eliminated. Other features and ob-
55 jects of the invention will appear more fully

from the following detailed description of its operation.

In the drawing is illustrated a circuit diagram of the arrangements of the invention. A transmission line is shown comprising an
60 oscillator circuit 1. The oscillator circuit is shown as a vacuum tube oscillator arrangement but any source of high frequency oscillations might be employed which will generate oscillations of a frequency above the
65 limits of audibility. The oscillator circuit 1 is associated by transformer 3 with the transmitter circuit 2 in which is included a condenser transmitter 4. Circuit 2 is tuned to be resonant to the frequency of the oscil-
70 lations supplied from circuit 1. The sound vibrations impressed on transmitter 4 will vary its electrostatic capacity and hence change the tuning of circuit 2. This will
75 have the effect of modulating the high frequency current from source 1 with the speech vibrations. The modulated high frequency current will be transmitted to circuit 5 which
80 may include amplifying apparatus illustrated schematically as 6. The amplifiers 6 will be adjusted to efficiently amplify the high frequency modulated current which is above the limits of audibility but will not efficiently
85 amplify any inductive disturbances or noises within the audible range. In the output of the amplifiers 6 may be provided a high pass filter illustrated schematically as 7 which will readily allow the transmission of currents of the order of the modulated
90 high frequency currents but which will attenuate and practically extinguish currents within the audible limits which might be transmitted by amplifiers 6, such as currents due to inductive disturbance. The
95 high frequency currents modulated by the speech will then be transmitted to circuit 8 which will include a demodulator, illustrated as the vacuum tube device 9. The speech component will then be taken off the high frequency current and transmit-
100 ted to a circuit 10 which may include receiving apparatus. With this arrangement the efficiency of the condenser type of transmitter may be materially increased and the noises or disturbances transmitted to the re-
105 ceiving circuit may be greatly reduced.

While the invention has been disclosed in certain specific arrangements which are deemed desirable, it is understood that it is
110 capable of embodiment in many and widely

varied forms without departing from the spirit of the invention as defined by the appended claim.

What is claimed is:

- 5 A transmission line comprising a source of high frequency oscillations above the ordinary telephonic range, a circuit associated with said source and tuned to be resonant at the frequency of said oscillations, a con-
- 10 denser transmitter associated with said circuit whereby the resonance of said circuit may be varied as the electrostatic capacity of said transmitter varies, an amplifier asso-

ciated with said circuit and adjusted to efficiently amplify said high frequency oscillations, a filter associated with the output of said amplifier and adapted to readily transmit said high frequency oscillations and to attenuate frequencies within said telephonic range, and demodulating apparatus 20 associated with said filter in said line.

In testimony whereof, I have signed my name to this specification this 7th day of May 1924.

HENRY M. BASCOM.