

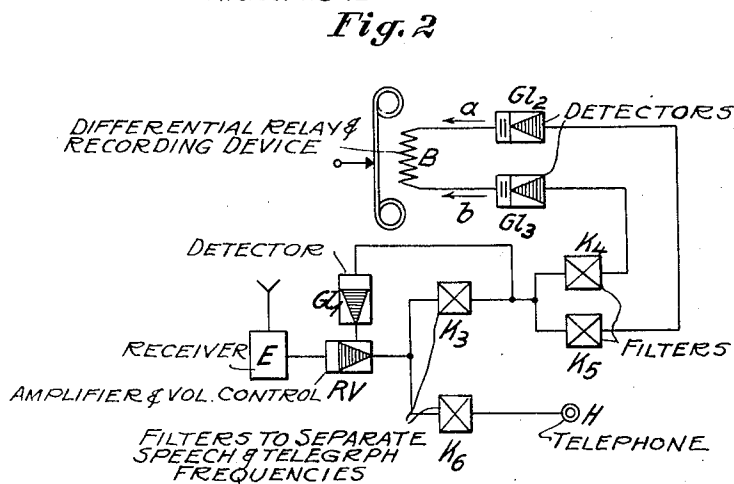
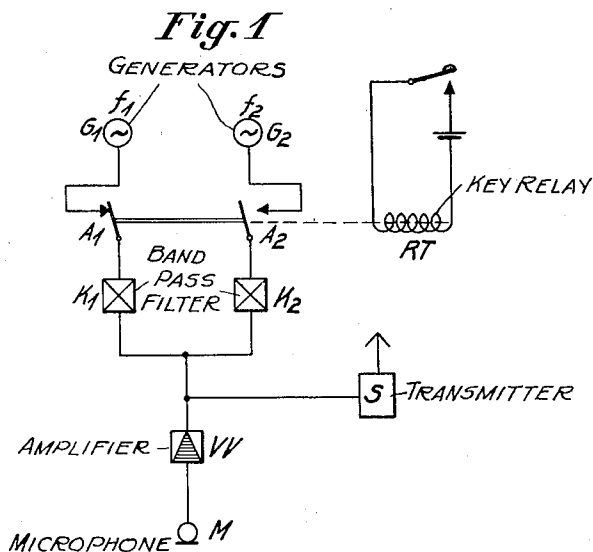
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WIRELESS TRANSMISSION OF TELEGRAPH IMPULSES

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WIRELESS TRANSMISSION OF TELEGRAPH
IMPULSES

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3 Claims. (Cl. 250—8)

On transmitting wireless signals, additional disturbing voltages and fluctuations in sound volume (fading) must often be taken into account at the receiving station.

According to the invention, a reduction of the influence of the disturbing voltages can be obtained in transmitting the telegraph signals as double-current signals on two carrier waves or on one carrier wave with two modulation frequencies and in applying them at the receiving station to a compensation (differential) circuit. In such a method, one of the frequencies produces a positive current at the receiving station and the other a negative current. Both currents may be sent, for instance through a differential relay which is not operated as soon as a positive and a negative current occur at the same time. It results therefrom that disturbances existing on both waves do not give rise to false signals. The elimination of disturbances will be the more complete the nearer the two telegraph frequencies are lying together.

Such a telegraph system furthermore offers the advantage that it permits of carrying out a simple fading regulation. Since a double-current signal at the receiving station always involves the existence of a signal current, the amplitude of these signals may be taken as a measure of the attenuation inherent in the transmission path. This condition can be utilized for the purposes of an automatic attenuation regulation, which fact is of further advantage in the case of simultaneous telegraphy and telephony. The special control frequency usually employed for fading regulation can then be dispensed with, if the telegraph frequency is used for this end.

Figures 1 and 2 illustrate a constructional example of the invention, Fig. 1 representing the transmitting station and Fig. 2 the receiving station.

The two generators G_1 and G_2 which produce the adjacent frequencies f_1 and f_2 are, through the key relay RT, alternately applied to the transmitter S which emits a carrier frequency. The band-pass filters K_1 and K_2 confine the telegraph spectrum in such a manner, that frequencies interfering with the telephone set, consisting of the transmitter M and the input amplifier VV, are screened out.

The frequencies emitted in this way are received by means of a receiver E, which is followed by a control amplifier RV common to telegraphy and telephony. The incoming current passing through the control amplifier, is branched off to the filters K_3 and K_4 . The filter K_3 rejects the speech frequencies and enables

the telegraph frequencies to reach another current branching tap, in the two branches of which are inserted filters K_4 and K_5 each letting through one of the two telegraph frequencies. The telegraph frequencies separated in such a manner from one another are rectified by means of detectors Gl_1 and Gl_2 and led to the differential relay set B of a given constructional design. If Gl_2 is energized, a direct current flows in the direction of the arrow *a*, if Gl_1 is energized, in the direction of the arrow *b*. In the case of a simultaneous operation, owing to interfering currents, no signals will therefore be received, on account of the balance in B, (provided the interfering impulses have the same amplitude as the signals). Behind the filter K_3 , part of the telegraph frequency current is branched off and after having been rectified in the detector Gl_1 , led to the control amplifier RV, in order to effect an amplitude regulation in a well-known manner, for instance, by means of a potential shift of its grid.

The filter K_4 , which is so designed as to enable the telegraph frequencies to be rejected and the speech frequencies to be transmitted, permits of carrying the speech currents on to the receiving set H.

The control amplifier RV common to the telegraph—and speech frequencies, is used simultaneously, for fading regulation on transmitting speech, since it is controlled by means of the permanently existing telegraph frequency signals.

I claim:

1. Means for receiving signals composed of double current impulses at different frequencies and continuous voice modulated oscillations including, signal absorption means, an amplifier including volume control means connected with said absorption means, means for separating the voice frequency modulated signals from the other signals, a plurality of filter circuits each tuned to one of the frequencies of the double current signals, said filter circuits being connected with said amplifier, a rectifier connected with each filter circuit, a differential relay connected with said rectifiers, and a rectifier having its input terminals connected to the output of said amplifier and its output terminals connected to the volume control means in said amplifier.

2. Means for receiving signals composed of double current impulses of different frequencies comprising, signal absorbing means tuned to a band of frequencies, an amplifier connected with said absorbing means, said amplifier including automatic volume control means, a filter circuit

connected with said amplifier, a rectifier connected with the output of said filter circuit, means connecting said volume control means in said amplifier with the output of said rectifier, a plurality
 5 of filter circuits connected with said last named filter, rectifying means connected with each of said filter circuits, and a differential relay connected with said rectifiers.

3. Means for receiving signals composed of
 10 double current impulses of different frequencies and continuous voice modulated oscillations comprising, signal responsive means tuned to a band of frequencies, an amplifier connected with said

signal responsive means, said amplifier including volume control means, a plurality of filter circuits connected with said amplifier, an indicator connected with one of said filter circuits, a rectifier
 80 connected with the output of another of said filter circuits, means connecting said volume control means with the output of said rectifier, a plurality of filter circuits connected with said last named filter, rectifying means connected with each of said last named filter circuits, and a differential recording means connected with said
 85 last named rectifiers.

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