Jan. 27, 1925. 1,524,645

M. LATOUR

RECEIVING APPARATUS FOR ELIMINATING STATIC

Filed Aug. 19, 1921

Fig. 1

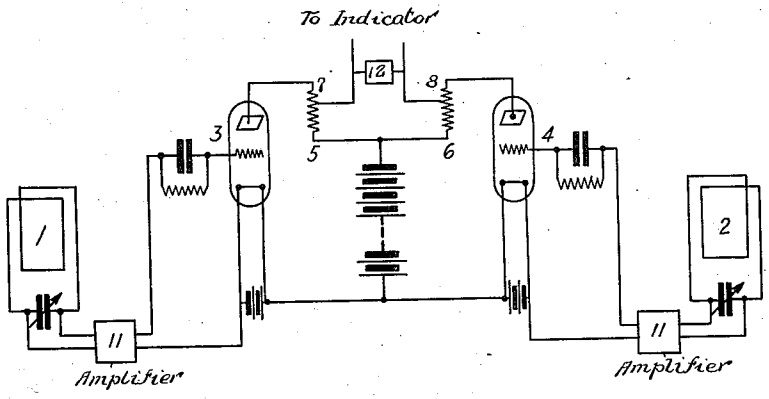
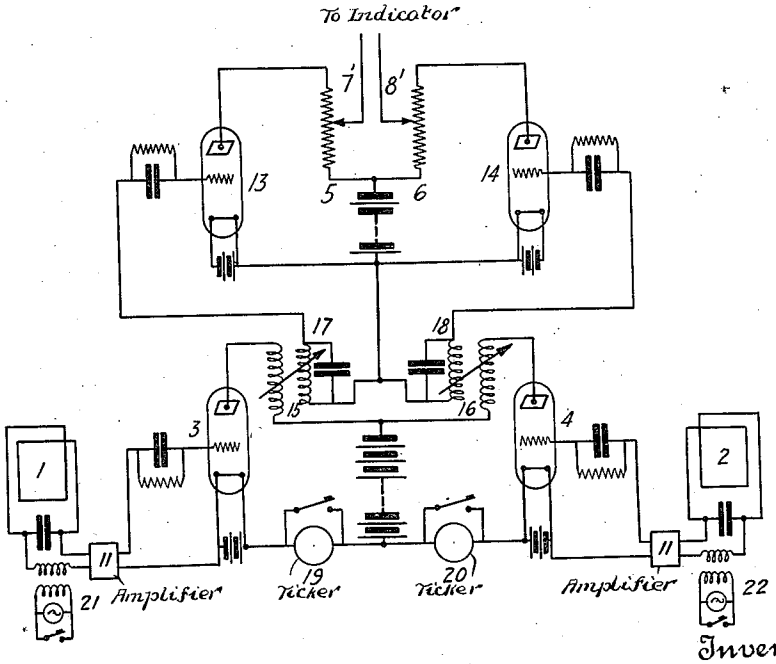


Fig. 2



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UNITED STATES PATENT OFFICE.

MARIUS LATOUR, OF PARIS, FRANCE.

RECEIVING APPARATUS FOR ELIMINATING STATIC.

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(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, MARIUS LATOUR, a citizen of the Republic of France, and a resident of Paris, France, have invented a certain new and useful Improvements in Receiving Apparatus for Eliminating Static (for which I have filed an application in France May 25, 1920, Patent No. 526,674), of which the following is a specification accompanied by drawings.

This invention relates to circuit arrangements applicable to wireless telegraph receivers. The object of the circuit arrangement is to reduce the disturbances caused by atmospheric disturbances caused by atmospheric discharges, and particularly in case continuous waves are used and the receiving is registered.

In accordance with the present invention two signals received are opposed to each other after detection, in the manner which is hereinafter set forth.

In the drawing Fig. 1, is a diagrammatic illustration of a system for receiving waves which are not modulated in transmission at musical frequency.

Fig. 2 is a modification for receiving signals modulated at a musical frequency at the transmitter.

In accordance with the arangement shown in Fig. 1, continuous waves are received without the use of the heterodyne. One signal is received on the frame 1 tuned exactly to the wave length to be received, and the other signal is received on the frame 2 which is slightly detuned with respect to this wavelength. The arrangement comprises detector tubes 3 and 4 having resistances 5 and 6 in the plate circuits. A registerable direct current potential is collected between points 7 and 8 of the resistances, and this current substantially represents the transmission freed from all atmospherics, because in accordance with the hypothesis of energizing two frames by a shock, after detection, the atmospherics assume the same aspect in the two receiving circuits. This direct current potential could be amplified in accordance with the arrangement described in a French Patent No. 512,629, granted October 18, 1920, entitled: Proportional amplifying arrangement for direct current potentials to be used for the transmission to a distance of pictures and for telegraph relays.

Preferably, high frequency amplifiers 11, having one or a plurality of stages should be interposed between the frames and the detector tubes. In order to facilitate elimination of atmospherics at this time, the amplifiers should work preferably near the point where they commence to oscillate. A potential limiting arrangement such as a galena crystal or a valve 12, could be shunted between the points 7 and 8 so as to short circuit atmospherics having an excessive value and which would not be balanced.

In case the continuous oscillations are modulated at the sending station to a musical frequency, a double detecting arrangement may be provided in the manner shown in Fig. 2.

The plate circuits of tubes 3 and 4 comprise in this case transformers 15, 17, and 16, 18, tuned to the tone of the modulation, or a multiple resonance amplifier having a musical frequency, instead of the resistances that were provided in the previously described example. The current of musical frequency thus received at the station as well as the disturbing currents that may enter into such circuits, will be rectified or detected for a second time e. g. by means of tubes, 13 and 14. Only after this second detection will we observe an opposition of the two currents received in the resistances 5 and 6.

If the station itself does not send out musical tones, provision may be made for a second rectifying or detection, by using in the two receiving circuits two synchronous tickers, 19, 20. These tickers could be arranged on the outgoing transformers 15 and 16.

If heterodyne receiving is desired, preferably two distinct heterodynes 21, 22, should be used that separately energize the frames 1 and 2. Each one will give currents of a higher or lower frequency than the current to which the frames are tuned, and each heterodyne will have the same difference with respect to this frequency.

Having described my invention what I claim is:

1. In systems for reducing static interference in radio reception, the combination of two loop antennæ, a plurality of detectors, one for each antenna, having a portion of their output circuits, comprising a source

of direct current, common to both, a resistance in the output circuit of each detector, and indicating apparatus and connections from the indicating apparatus to a point on each of said resistances.

2. In systems for reducing static interference in radio reception, the combination of two loop antennæ, one of said antennæ being tuned and the other detuned with respect to the signal frequency, a plurality of detectors, one for each antenna, having a portion of their output circuits, comprising a source of direct current, common to both, a resistance in each of the output circuits and an indicator connected across both of said resistances.

3. In systems for reducing static interference in radio reception, the combination of two loop antennæ, one of said antennæ being tuned and the other detuned with respect to the signal frequency, receiving and detecting apparatus for each aerial, means for modulating signal currents to produce a component of audible frequency, a plurality of detecting means for said audible frequency currents, having a portion of their output circuits, comprising a source of direct current, common to both, a resistance in the output circuits of each of said last mentioned detecting means, and an indicator connected across both of said resistances.

4. In systems for reducing static interference in radio reception, the combination of two loop aerials, one tuned and the other detuned with respect to the signal frequency, detecting apparatus, amplifiers in the circuits between the detectors and the aerials, indicating apparatus, second amplifying apparatus in the circuits betwen the indicating apparatus and the detectors, having a portion of their output circuits, comprising a source of direct current, in common, and a resistance in the circuit of the indicating apparatus, part of said resistance being in the output circuit of one of the amplifiers connected thereto and part in the output circuit of the other amplifier also connected to the indicating apparatus.

MARIUS LATOUR.