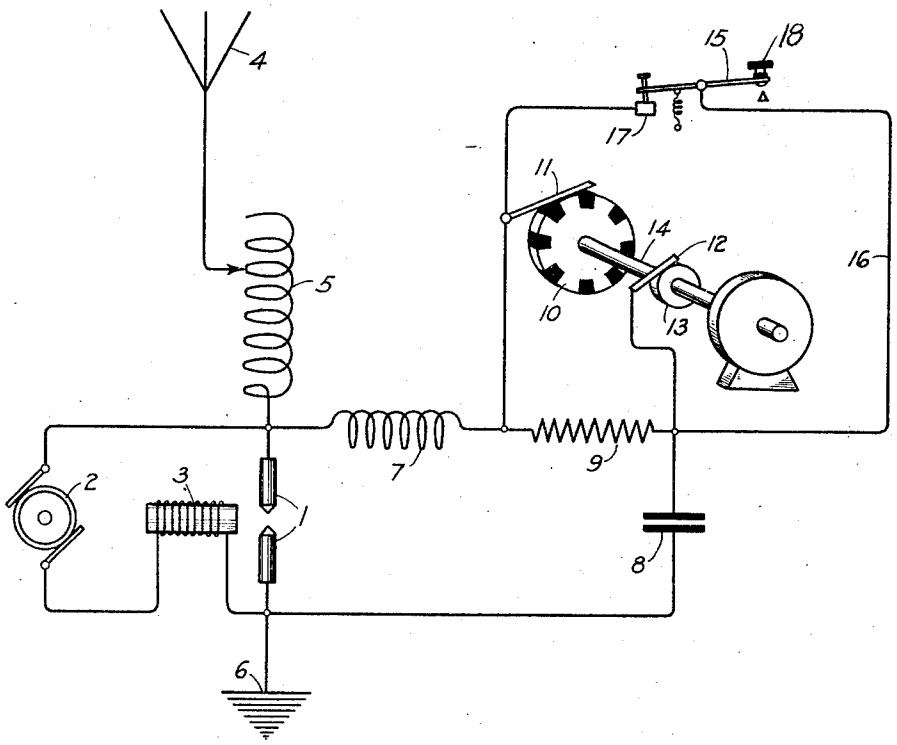
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G. H. CLARK

RADIO SIGNALING APPARATUS

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RADIO SIGNALING APPARATUS.

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To all whom it may concern:

Be it known that I, GEORGE H. CLARK, a citizen of the United States, and a resident of Brooklyn, New York, have invented certain new and useful Improvements in Radio Signaling Apparatus, of which the following is a specification accompanied by drawings.

The present invention relates to improvements in radio signaling with continuous waves. As is well known, high frequency continuous waves or oscillations are incapable of audible reception without special means utilized either at the transmission station or at the receiving station.

In case that the waves are modulated at an audible rate at the transmitting station no special means are necessary at the receiving station for detection and any receiving set equipped for detection of damped waves will detect the modulated continuous waves. In modulating the wave at the transmission station it is usual to superimpose an E. M. F. of low frequency on the main E. M. F. in the antenna or change the constants in the antenna at an audible rate in order to produce the modulation.

Instead of thus changing the constants of the antenna or adding currents from another source I periodically absorb at an audible rate portions of the signal waves so that the same do not get in the antenna. Thus the signal current in the antenna is in effect interrupted at an audible rate by the absorption in a non-radiating circuit of portions of the generated oscillations.

While my invention is applicable to various types of high frequency continuous wave generating systems, it is described in connection with an arc converter system which has the so-called non-radiating "absorption circuit" for producing the signal. Normally in this particular embodiment of the invention the current is periodically absorbed in this absorption circuit at an audible rate and a telegraph key working in conjunction with the modulating or periodically absorbing means, sends substantially all of the oscillations into the absorption circuit in one position and in the other sends the interrupted wave into the antenna. In this way the dots and dashes of the signal are in effect interrupted at an audible rate and the signals can be indicated by receiving stations even though they are not equipped with high frequency continuous wave receiving apparatus.

One object of my invention is therefore to alternately send the oscillating current into the antenna and the absorption circuit, such alternation taking place at an audible rate.

A second object is to provide means for sending all of the oscillatory current into the absorption circuit at desired intervals so as to produce the signaling characteristics such as by dots and dashes.

Further objects of the invention will appear in the following description in which the single figure of the drawing represents an arc converter system embodying my invention.

In the drawings, 1 is an arc fed by a generator 2 and having a field coil 3 to provide the field for influencing the arc in the well known way. The antenna 4 is connected to the upper electrode through adjustable loading coil 5 and the lower electrode is connected to the ground at 6. For absorbing the generated oscillations an absorption circuit is connected to the arc which consists of an inductance 7, capacity 8 and resistance 9. In shunt to resistance 9 I have arranged an interrupting device consisting of a disc 10 having alternate conducting and non-conducting portions and on this disc bears a brush 11 which is joined to one side of the resistance 9. A brush 12 engaging a disc 13 on shaft 14 is connected to the other side of the resistance. When the brush 11 is on one of the conducting sections of disc 10 resistance 9 is short circuited and when the brush rests on the insulating sections the short circuit around the resistance is removed. Telegraph key 15 is connected through wire 16 to one side of resistance 9 and contact 17, which the key is adapted to engage in one position, is connected to the other side of the resistance. When the key is in the position shown in the drawing the resistance 9 and interrupting device are short circuited and the values of the inductance 7 and capacity 8 are such that substantially all of the oscillations produced by the arc generator are absorbed in this absorption circuit so that there is no radiation. The interruption device continues to rotate but on account of the resistance being short circuited by the key it produces no effect.

To signal, the operator will press down

on button 18 of the telegraph key and break engagement with contact 17. This removes the short circuit around resistance 9. Continuous and unbroken oscillations would be sent into the antenna as long as the key is depressed were it not for the interrupting device, but during the time that the telegraph key is held down to make a dot or dash, the interrupting device 10 is continually establishing and removing a short circuit around resistance 9 so that the dot or dash current in the antenna is composed of a group of continuous waves. When the brush is on the conducting segment of disc 10, the key being down, the resistance 9 is momentarily short circuited and a portion of the dot or dash is absorbed in the absorption circuit. Immediately afterwards when the brush engages the insulating section this short circuit is removed and another portion of the dot or dash is sent into the antenna. In this way signaling is produced by means of unvarying wave lengths and a portion of the groups of waves of the signal are periodically absorbed at an audible rate.

While I have described my invention in connection with an arc converter system, it is not limited to such an arrangement as signal waves can be absorbed in a non-radiating circuit at regular intervals regardless of the type of oscillation generator employed.

Having described my invention what I claim is:—

1. The method of signaling with high frequency continuous oscillations which consists in producing electrical oscillations of constant amplitude, diverting portions thereof to an absorbing means at an audio frequency during signaling periods; and diverting all thereof to the absorbing means during non-signaling periods.

2. The method of signaling with high frequency continuous oscillations which consists in producing groups of oscillations of equal amplitude at code signal frequency, and absorbing portions thereof at an audio frequency.

3. The method of signaling with high frequency continuous oscillations which consists in producing oscillations by the successive and alternate interaction of a radiating circuit and a non-radiating circuit with a generator at audio frequency, during signaling periods, and suspending the succession during non-signaling periods.

4. In a radio signaling system, a generator of continuous oscillations, an antenna circuit, an absorbing circuit, means for delivering oscillations alternately to said antenna circuit and to said absorbing circuit at an audio frequency during signaling periods, and means for confining said oscillations to said absorbing circuit during non-signaling periods.

5. In a radio signaling system, a generator of continuous oscillations, an antenna circuit, and absorbing circuit adapted to absorb energy therefrom, means for rendering said absorbing circuit alternately ineffective and effective at an audible frequency, and means for rendering it steadily effective at a code signaling frequency.

6. In a radio signaling system, an arc oscillation generator, an antenna connected thereto, an absorption circuit also connected thereto and comprising impedance and resistance elements, a commutator device adapted to shunt said resistance periodically at an audio frequency rate, and a key also adapted to shunt said resistance at a signaling rate.

GEORGE H. CLARK.