

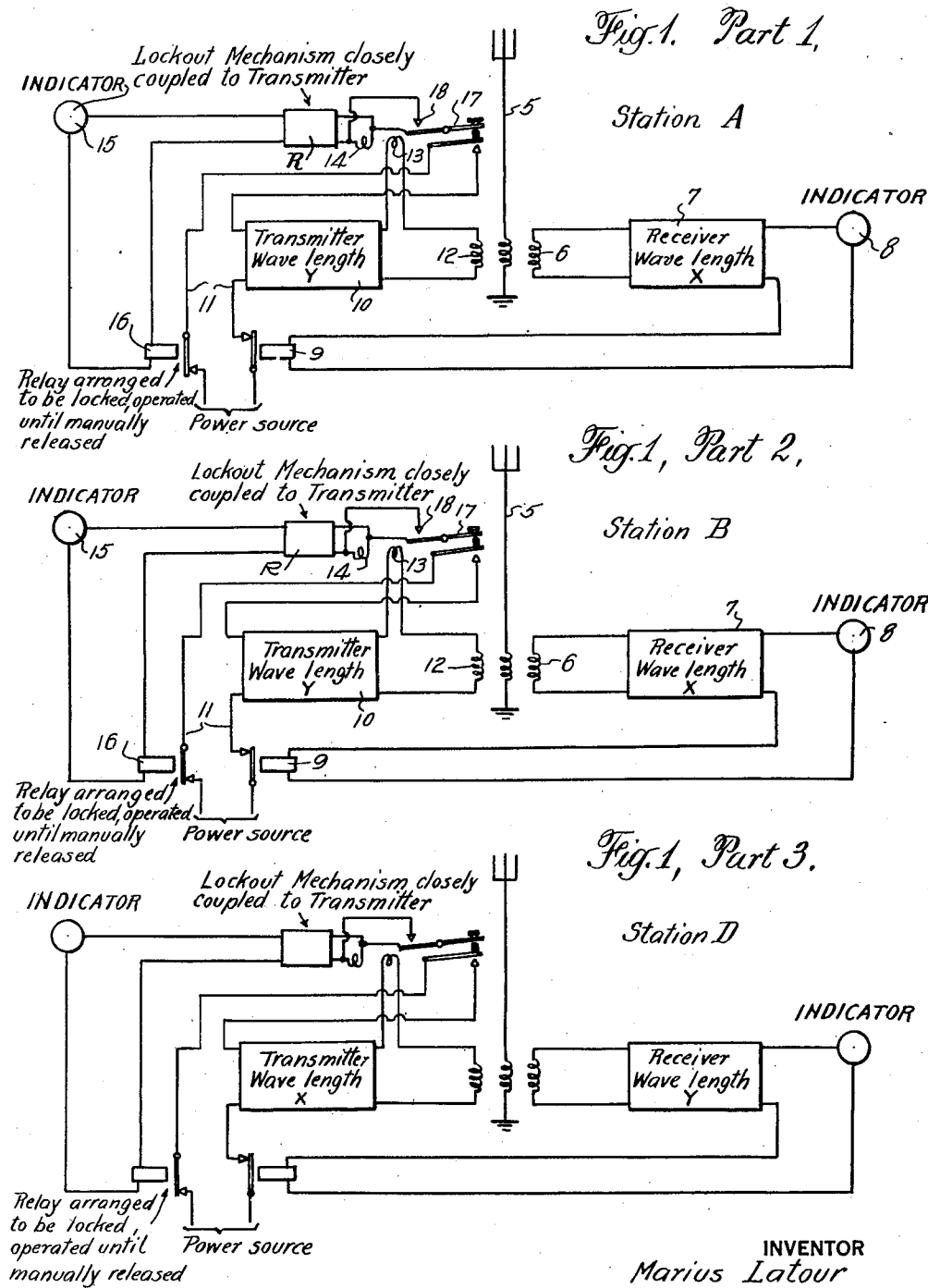
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ELECTRICAL SIGNALING SYSTEM AND METHOD

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ELECTRICAL SIGNALING SYSTEM AND METHOD.

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My invention relates to signaling systems, both of the radio and wired types and methods of signaling.

Heretofore, if communication was desired between say stations A, B, C, D, E and F, it was necessary to allocate a different stand-by wavelength for each station and design the apparatus of each station for sending out all of these stand-by waves.

Such a procedure possesses many disadvantages, some of which are as follows:

The range of wavelengths is necessarily large requiring complicated sending apparatus at each station and largely increasing the possibilities of interference with other stations due to the great number of wavelengths required. Again where it is desired to utilize transmission lines for signaling as well as for their usual uses, the multiplicity of wavelengths complicates the construction of resonant shunts required for shunting the usual apparatus connected in the transmission lines such as power transformers, disconnecting switches, etc. The station called will fail to know which station is calling and as a consequence will be ignorant as to what wavelength to respond with.

Some of the principal objects of my invention are the elimination of the above mentioned difficulties. Other objects and advantages will be apparent from the following description of my invention.

The drawing, comprising Figure 1, parts 1, 2 and 3, diagrammatically represents three wireless signaling stations adapted to receive and transmit messages in accordance with the present invention.

The stations for example may be divided into two groups although I do not limit myself to two groups except for purposes of description of my invention. A, B and C may constitute one group, while D, E and F may constitute the other group. Stations A, B and C are arranged to transmit on wavelength γ and receive on wavelength α while stations D, E and F are arranged to transmit on wavelength α and receive on wavelength γ . Each station also has a characteristic calling signal which may preferably consist of certain combinations of dots and dashes of the Morse code. Each station may also be equipped with automatic or manual switching arrangements or a combination automatic and manual arrangement whereby the station is either in a condition

to send or receive but never in a condition to do both simultaneously.

Suppose station A of one group desires to communicate with station D of the other group whose call signal consists of say three dots. Station A sends out three dots on the γ wavelength. The call selector mechanism at station D responds and may give a signal to the operator at station D, without in any way affecting the stations E and F. Station D after receiving the signal from station A may now desire to answer. The operator of station D adjusts his system to transmit on wavelength α the call signal for station A, which prepares station A for the answering signal from station D.

Now when station A is communicating with station D, station B may also attempt to communicate with station D. This, of course, is undesirable as interference would result. The operator at station B would of course adjust his system to send out three dots on wavelength γ in order to call station D. However, as soon as he adjusted the antenna at station B it would be influenced by station A sending out signals to station D on the γ wavelength and would actuate appropriate mechanisms to prevent station B from transmitting. Interference would be similarly prevented between stations D, E and F in the other group.

Intercommunication could also be carried on between stations in one group. If station A desired to communicate with station B, it would send out the code signal corresponding to station B on wavelength α . This would then prevent stations C, D, E and F from communicating with station B or A by the employment of suitable interlocking mechanism at the various stations.

For a more complete understanding of the invention, reference is made to Figure 1, in which part 1 represents station A arranged to transmit signals on γ wavelength and receive signals on α wavelength. Part 2 of this figure represents station B similarly arranged to transmit signals on γ wavelength and receive on α wavelength, while part 3 of this figure shows a third station D arranged to transmit signals on α wavelength and receive signals on γ wavelength.

The equipment at each of these stations is identical, so that it is only necessary to describe that shown at station A. At this station there is provided an antenna 5 coupled 110

by the secondary winding 6 of a transformer to a receiver 7 which may be of any well-known type. In the output circuit of this receiver there is provided an indicator 8 which may be in the form of telephones, and a relay 9 for a purpose to be described. At 10 there is shown transmitting equipment which may also be of any well-known type, which is energized from any suitable power source through conductors 11. The output circuit of this transmitter is coupled to the antenna 5 through a winding 12 of a transformer, and includes a coil 13 coupled to a second coil 14 for the purpose of actuating a lock-out mechanism R, which includes in its output circuit an indicator 15 and a relay 16.

The operation of the equipment of station A is as follows: In transmitting signals, the key 17 is employed to modulate the current derived from the power source; and the transmitter 10 by means of the winding 12 and the antenna 5, transmits the modulated carrier wave. When the key 17 is depressed, its contact 18 short-circuits the coil 14 and thereby disables the lock-out mechanism R so that the relay 16 is not operated to open one of the conductors 11 of the power source. When station A is receiving, the signal is intercepted on the antenna 5 and signal energy is transferred through the transformer winding 6 to the receiver 7. The relay 9 in the output of the receiver is energized at this time and opens one of the power leads 11 so that the transmitter is disabled during the time that the receiver is functioning to receive signals.

In the event that station B attempts to communicate with station D or any other station in that group, the transmitter at A will be disabled in the following manner: The signal energy intercepted by the antenna 5 is transferred through the transformer winding 12 into the output circuit of the transmitter 10, and the coil 13 transfers this energy through the transformer winding 14 to the lock-out mechanism R. This mech-

anism energizes the relay 16 to open the left hand power lead 11. The indicator 15 indicates that the transformer is disabled.

While I have shown and described a preferred embodiment of my invention I do not limit myself to the embodiment; but may employ such other modifications as come within the spirit and scope of my invention.

Having described my invention what I claim is:

1. In combination, a group of signaling stations receiving on a certain wavelength and sending on another wavelength and another group of signaling stations receiving on said another wavelength and sending on said certain wavelength, each of said stations in each group having a characteristic call signal, and means responsive to the transmission of signals through certain of said stations for disabling certain of said other stations.

2. The method of signaling which consists in dividing the signaling stations into groups, arranging each of the stations of one group to transmit on one wave length and receive on another wave length, arranging each of the stations of a second one of said groups to receive at said first wave length and to transmit at said other wave length, and permitting only a limited number of stations in each group to transmit and receive simultaneously.

3. The method of signaling which consists in arbitrarily dividing signaling stations into groups, arranging each of the stations of a group to transmit at one wave length and receive on a second wave length, arranging the stations of the second group to receive on said first wave length and to transmit on said second wave length, employing code signaling whereby any one of the stations of one group may render effective a second station in the wanted group, and employing other signals transmitted between said stations to maintain the remaining stations in an inactive condition.

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