

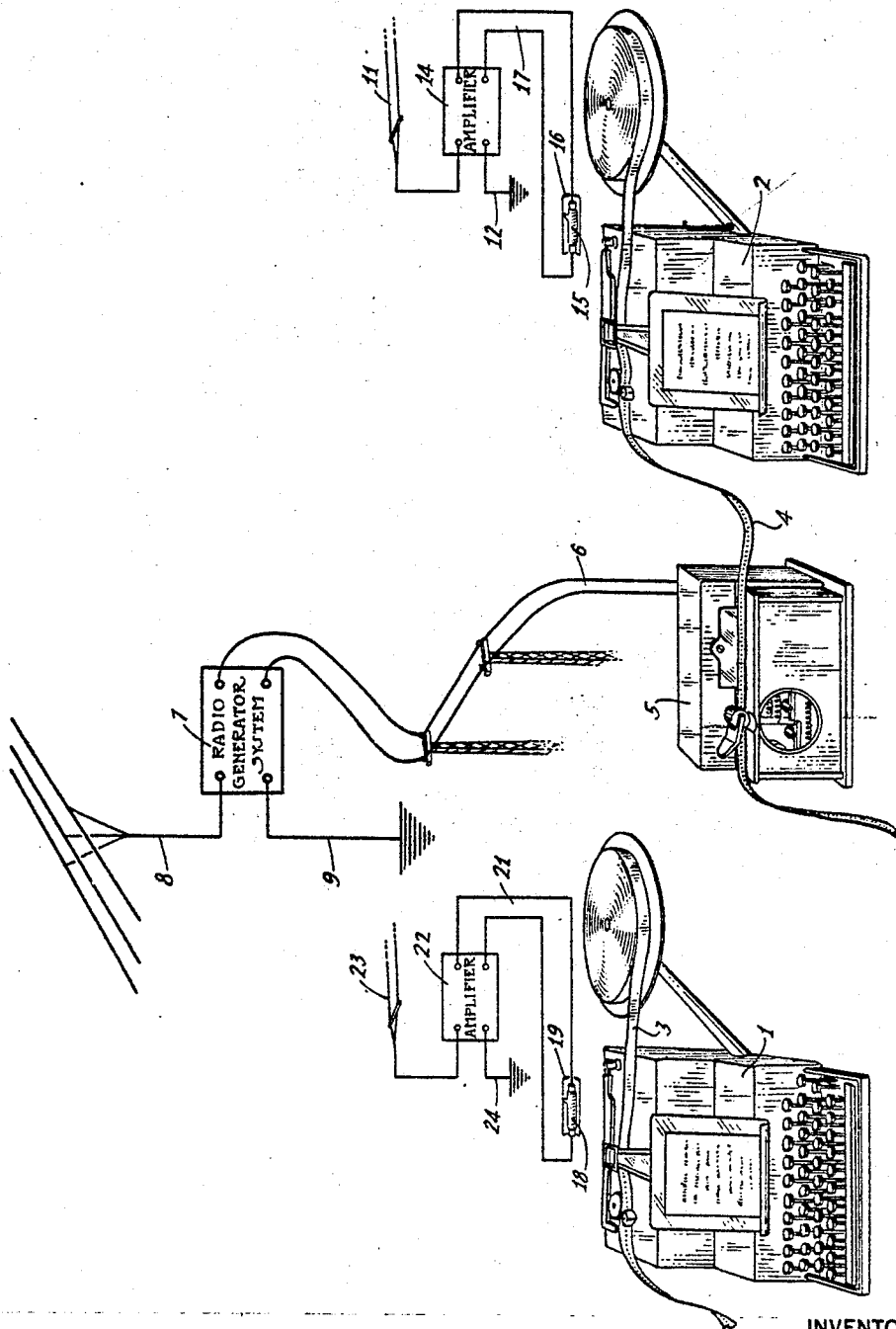
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V. H. BROWN
SIGNAL MONITORING SYSTEM
Filed Jan. 25, 1926



INVENTOR
VINCENT H. BROWN
BY *James Adams*
ATTORNEY

UNITED STATES PATENT OFFICE.

VINCENT H. BROWN, OF OZONE PARK, NEW YORK, ASSIGNOR TO RADIO CORPORATION OF AMERICA, A CORPORATION OF DELAWARE.

SIGNAL-MONITORING SYSTEM.

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My invention relates to means for monitoring the output of a remote controlled radio transmitter system.

An object of my invention is to provide means for informing the sending operator of a radio transmitting system that the remote controlled radio sending apparatus is operating correctly.

Another object of my invention is to provide a noiseless indicator of radio signals in combination with an automatic control apparatus for a remote sending device.

Another object of my invention is to provide a plurality of independent signal monitoring systems adapted to cooperate with automatic remote control operating equipment whereby accurate indications of the operation of a plurality of signal transmitting systems may be made without mutual interference at a single point.

The development of commercial radio telegraphy has proceeded to the point where it is found desirable to control the transmitting generators by some other means than the manual key, and to control several generators from a single point. This is done by means of the well known Kleinschmidt or Creed perforator machine systems connected through telegraph lines, which may be from 35 to 200 miles long, to the generators. The distance of separation between the transmitting operator and the station he controls has been found to introduce difficulties in maintaining continuity of operation. Thus it may be possible for the transmitting operator and his automatic equipment to continue sending when the transmitting generator has ceased to function, and it may require a substantial portion of an hour to notify him of the fact that his messages are not being transmitted.

The obvious remedy is to provide a local receiving apparatus at the central transmitting office for each transmitting operator, tuned to the generator which he is controlling. This simple expedient has, however, been found unsatisfactory because of the fact that continuous wearing of head phones seriously fatigues the sending operator, thereby reducing the speed at which he is able to operate his transmitter and likewise reducing the accuracy with which he is able to transmit messages. Substitution of loud speakers for the head phones has been found equally objectionable because of the noise in the transmitting room produced

thereby, and because of interference between the sounds of the various loud speakers of the respective members of the group of operators.

My invention comprises a neon glow tube positioned adjacent to the automatic perforator in front of the operator, and connected through an amplifier to a local radio receiving apparatus which is adapted to receive signals from the radio transmitter controlled by that operator. This glow tube then responds by flashes in the code, according to the message being transmitted, and this indicates conclusively when the transmitter is operating properly.

Other objects and structural details of my invention will be apparent from the following description when read in connection with the accompanying drawings, wherein:

The single figure is a diagrammatic representation of circuits and apparatus embodying my invention.

In the figure, 1 and 2 are automatic perforators of the Kleinschmidt or Creed type, having key boards, which when actuated, perforate a paper tape by a system which can be converted into current impulses according to the Morse code. The paper tapes are indicated at 3 and 4, and a relay 5 converts the perforations into electrical pulses. The relay 5 is connected through a transmission line 6 to a radio generator system 7 which cooperates with an aerial 8 and ground 9. The telegraph transmission line 6 may vary in length in commercial practice from a few miles to several hundred miles, according to the convenient geographic location of the sending generator and the commercially advantageous location of the office.

At the office is provided a small receiving antenna 11 having a ground 12 and detector and amplifying apparatus 14. A neon glow tube 15 in a suitable holder 16 is conveniently supported adjacent to the transmitting operator and the perforator 2 is connected by office number leads 17 to the detector amplifier system 14.

Other perforators will be equipped with other glow tubes. For instance, perforator 1 may have another neon tube 18 in a holder 19 nearby, connected by leads 21 to a detector amplifier system 22 which is connected between another local antenna 23 and a ground 24.

In the operation of my device messages

may be given simultaneously to the operators in charge of the perforators 1 and 2 and are then simultaneously punched up on the paper tapes. The punched tapes then travel through their respective relays, that from perforator 2 going through relay 5 and through transmission line 6, controlling the generator 7, and radiating the signals from the antenna 8. Simultaneously the tape 3, from perforator 1 is converted into signals by a similar system. The simultaneously transmitted messages are then received by their respective transoceanic receiving stations.

Simultaneously some of the transmitted energy is intercepted by the central office receiving antennae 11 and 23. These antennae are tuned to the frequency of the respective stations, and signals therefrom are, therefore, supplied to the glow tubes 15 and 18. This energy causes the respective tubes to flash the Morse code of the signal. They are conveniently under the eyes of the transmitting operator and he is, therefore, readily able to observe the flashed code signal as it is transmitted from this remote transmitting station. As long as the code flashing continues at clear brilliance he knows that his transmitting apparatus is functioning properly, and if he wishes he may read the code and verify the accuracy of transmission. An interruption of the transmitted message is then promptly indicated by a change in the character of the flashing signal. A complete cessation indicates that his transmitting apparatus has ceased to function for some reason, and he is thus notified. His correspondent at the transoceanic receiving apparatus does not receive the message and the sending operator does not continue punching up tape uselessly, but may institute immediate measures for finding and ending the transmission difficulty.

Each operator thus has a visual indication of the proper functioning of his transmitting apparatus, which is ordinarily perceptible to him only and to none of the other operators. There is thus no confusion between the signals of the various transmitting operators and no confusing noise from the monitoring system.

By this means I am enabled to improve the accuracy of monitoring transmitted radio signals and to avoid confusion and interference between the various monitoring systems of a number of transmitters which are controlled from a central point.

While I have shown but one embodiment of my invention in the foregoing drawing and description it is capable of various

modifications therefrom without departing from the spirit thereof, and it is desired therefore that only such limitations shall be imposed thereon as are required by the prior art or indicated by the appended claims.

I claim as my invention:

1. A radio transmitting system comprising a code sending machine, a transmitting antenna system located at a point geographically remote therefrom, a land line connecting said code sending machine and said antenna system, a second antenna system located at a point adjacent said code sending machine, said second named antenna system being tuned to the frequency of said first named antenna system and adapted to receive signal energy therefrom, and means associated with said second named antenna system for giving a visual signal indication of the signal energy transmitted from said code sending machine by said first named antenna system, said visual indicating means being located adjacent said code sending machine and within the immediate field of vision of the operator, whereby an exact reproduction of the transmitted code is at all times visible to the said operator.

2. A radio transmitting system comprising a code sending machine, a transmitting antenna system located at a point geographically remote therefrom, a land line connecting said code sending machine and said transmitting antenna system, a second antenna system located at a point adjacent said code sending machine, said second named antenna system being tuned to the frequency of said first named antenna system and adapted to receive signal energy therefrom, and means associated with said second named antenna system for giving a visual indication of the signal energy transmitted from said code sending machine through said first named antenna system, said visual signal indicating system being located within the field of vision of the operator at the said code sending machine and including a neon lamp connected with said second antenna system and located at said code sending machine and adapted to be actuated by the signal pulses received upon said second named antenna system, whereby an exact visual reproduction of the signal energy transmitted in the form of dots and dashes is reproduced at said code sending machine and the operator is able to obtain a visual indication of the transmitted signal.

VINCENT H. BROWN.