

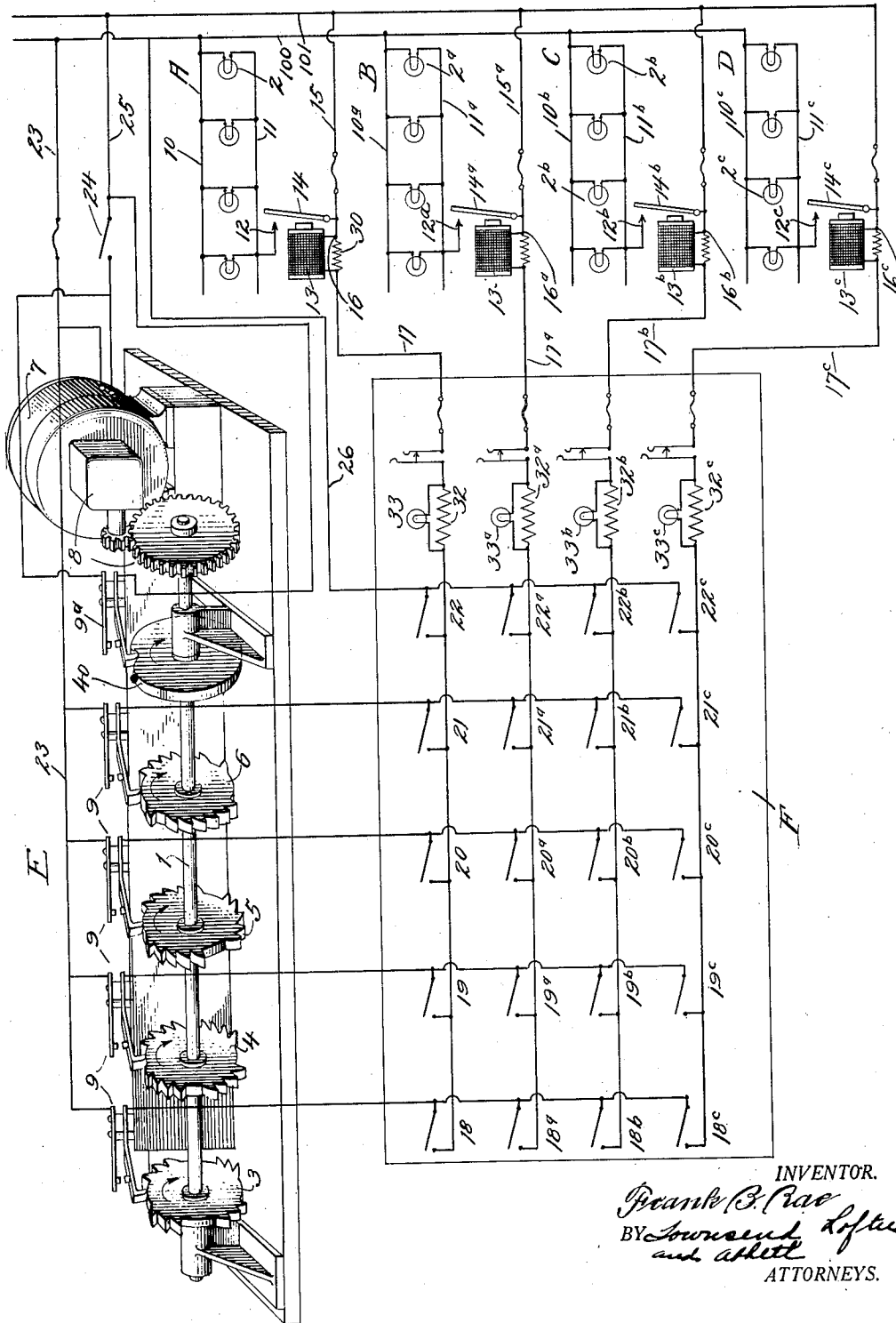
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SIGNAL SYSTEM

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UNITED STATES PATENT OFFICE

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SIGNAL SYSTEM

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- This invention relates to signal systems and particularly to that class of signals employed to convey intelligence by code numbers, the signals being produced by intermittent flashes or the lighting and extinguishing of electric lamps in such a manner and time that the periods of lighting correspond with the numerals of the code conveying the signal or message.
- 10 The application of the system as herein described refers particularly to a police signaling system designed to attract the attention of police officers in whatever section of the city or territory the officer may be at the time
- 15 and to instruct them by code signal to report by telephone to headquarters; to proceed to a designated point or to perform such duties as the particular code signal observed may indicate.
- 20 The object of the present invention is to generally improve and simplify the construction and operation of signal systems of the character described, to provide a signal system which is adapted to operate signals in a
- 25 number of different or separated districts by means of a transmitter located at a central station, to provide a transmitter whereby a signal may be transmitted to one district or several districts simultaneously, and further,
- 30 to provide a transmitter whereby one signal may be transmitted to one district and other signals transmitted to other districts simultaneously.
- 35 The invention is shown by way of illustration in the accompanying drawing which is a diagrammatic view showing the transmitter and a plurality of signal circuits operated thereby.
- 40 In carrying out the invention as described herein, and for the purpose of simplifying the description it will be assumed that the town or territory in which the system is established is divided into four districts such as indicated at A, B, C and D and that the
- 45 districts are supplied with electric light and power by a single alternating current system, a pair of conductors of which are shown at 100, 101. Each district is provided with a plurality of signal lamps such as indicated at
- 50 2. The lamps may be placed at a considerable elevation and suspended at the intersection of streets. The lamps are enclosed by suitable globes of any desired color which may be so designed that when the lamp and supporting fixture is properly mounted a maximum illumination is projected in the four directions leading from the intersection of the streets. By the use of well known types of units the lights are observable at a considerable distance and are visible both day and night. The signal lamps in the several districts are controlled by a transmitter generally indicated at E which is located at the central police station. This transmitter consists of a shaft 1 upon which is mounted a plurality of code wheels such as indicated at 3, 4, 5 and 6.
- The shaft, together with the code wheels, is continuously rotated when the transmitter is in operation and they are driven at a suitable speed through means of an electric motor 7 and a gear reduction 8 of suitable construction. A circuit making and breaking switch such as indicated at 9 cooperates with each code wheel as shown in the drawing and this switch serves the function of actuating the signal lamps 2 in the several signal circuits such as indicated at A, B, C and D, and as these circuits are identical, the description of one should suffice.
- Referring to the circuit A it will be noted that the terminals on one side of the lamps 2 are connected with a wire 10 in turn connected to the line conductor 100 while the opposite terminals are connected with a bus wire 11. This wire is, in turn, connected with a contact 12 of a relay generally indicated at 13. The armature 14 of this relay is connected by a wire 15 with the conductor 101 of the distributing system so that when the relay is energized and the contacts are closed, current will flow from the conductor 101 through the relay contacts to the bus wire 11 and then through the signal lamps of the system to the wire 10, completing the circuit to the conductor 100 and lighting the lamps. From the relay lever or armature 14 a connection 16 is made with the actuating coil of the relay to put it in circuit with the conductor 101. The opposite side of the actuating coil

13 is connected with a conductor 17 which extends to the transmitter at the central station from which the signals are controlled and transmitted. The wire 17 is connected at a switch board F with one side of each of a group of switches 18, 19, 20, 21 and 22.

These switches are adapted to close a circuit to one terminal of the respective switches 9 and as the other terminal of each of the switches 9 is connected through a wire 23 with the conductor 100, a signal circuit is established whenever one of the switches 18, 19, 20 and 21 is closed. The main controlling switch 24 may also be mounted on the switch board and this switch will be referred to as the motor switch as it closes the circuit to the motor 7 through the feed wire 25 from the conductor 101. The other terminal of the motor 7 is connected to the conductor 100 by means of the branch wire from wire 23.

The switches 18, 19, 20 and 21 control circuits to the switches 9 operated by the code wheels 3, 4, 5 and 6, while the switch 22 controls a circuit through wire 26 leading to the conductor 100 which will cause the signal lamps to burn continuously. One relay only is usually required in connection with each signal circuit, but in the event it becomes necessary to operate more lamps upon one circuit this can be done within reason through the contacts of a single relay.

With a transmitter such as here illustrated it is possible to simultaneously transmit the same code signal on one or more circuits or to transmit separate code signals upon different circuits simultaneously. For instance, with the motor switch 24 closed and the shaft 1 carrying the code wheels rotating, if the operator wishes to transmit a signal consisting of three flashes upon all of the circuits he would close the switches 18, 18^a, 18^b, and 18^c as these switches control the circuit to the switch 9 operated by the code wheel 3 which thus sends out three flashes. On the other hand if the operator desires to send a code signal consisting of three flashes on the signal circuit A only he would close the switch 18. If it was desired to simultaneously transmit code signal 4 on circuit B he would also close switch 19^a, as the code wheel cooperating therewith will transmit 4 flashes, and if he desires to simultaneously transmit a signal of five flashes on circuit C he will close switch 20^b, etc. It is thus possible to transmit the same signal to all circuits in unison, or it is possible to transmit different signals on different circuits simultaneously.

The three flash signal transmitted on the circuit A may be a signal for Officer O'Keefe to call headquarters by telephone, the four flash signal transmitted on the circuit B may be a call for Officer Brown to call headquarters, etc. In other words it is possible to signal several police officers at the same time or to send out general calls for all

officers to concentrate at a certain point or to perform other duties as the signal may indicate.

The switches indicated at 22, 22^a, 22^b and 22^c do not require the operation of the motor and transmitter as they are connected with the conductor 100 of the power circuit and the signal lights in any circuit may thus be operated continuously whenever desired. The current flow through all of the circuits is identical and the description of one should accordingly suffice.

If the transmitter is in operation due to the closing of the motor switch 24, and switch 18 is closed, a circuit can be traced as follows. Current enters on the wire 15 from the conductor 101 and passes through coil 13 of the relay. Current then flows through wire 17, switch 18, and then when the corresponding switch 9 is closed returns to the conductor 100. This closes the contact 12 and the major portion of the current will flow through the contacts, the bus wire, the lamps and will return to conductor 100 by way of wire 10. A portion of the current will flow through a resistance indicated at 30 which shunts the coil 13 to allow a larger flow of current in the control circuits. This will pass through wire 17, switch 18 and switch 9 as just described. This circuit is intermittently opened and closed as the code wheel 3 rotates due to the fact that the contacts of the switch 9 are separated and closed as the code wheel rotates, and it is due to switch 9 that the relay 13 is intermittently energized and that the contacts 12 are intermittently opened and closed to transmit flashes through the signal lamps 2.

A resistance indicated at 32 is inserted in each circuit and it is adjusted to have a difference of potential at its terminals of approximately six volts. The opposite terminals of the resistance are connected with a small lamp 33 and as the energy which lights this lamp must flow through the relay it not only indicates the signal which is being transmitted, but also shows that the circuit between the station and the relay is operating properly. In other words, a tell-tale light for each circuit is mounted on the switch board at the station, the function of which is that of visibly indicating whether the circuits are working or not.

By again referring to the drawing it will be noted that shaft 1 is provided with a stop wheel, generally indicated at 40, and a co-operating switch 9^a. This switch serves the function of a full revolution switch in the motor circuit and is provided for the purpose of stopping the revolution of shaft 1 at the end of one or more full revolutions so that the machine is in the correct position for starting when a signal is to be transmitted. The circuit through the switch 9^a is normally broken when the transmitter is not being op-

erated, but the circuit is closed the moment after switch 24 is closed as rotation of the shaft 1 will close the switch 9^a. This establishes a circuit through the motor which shunts the switch 24. If the switch 24 is opened during the sending of a signal, switch 9^a will remain closed until the stop wheel reaches a predetermined position. At this point the holding or shunt circuit is broken and the motor will come to a stop, all code wheels being thus in proper position when the machine is again started.

While certain features of the system are more or less specifically described and illustrated, I wish it understood that various changes may be resorted to within the scope of the appended claim.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

A signal system of the class described, comprising a central station, a plurality of signal stations, line wires extending from the central station to each of the signal stations, signal devices included in the line wires and means at the central station for transmitting the same or different code impulse combinations over said line wires simultaneously or independently to operate said devices, said means comprising a shaft and means for rotating it, a plurality of code wheels of different code characters on said shaft, a circuit breaker for each of said code wheels operated thereby, a plurality of groups of switches equal in number to the number of line circuits, each group having a number of corresponding switches equal in number to the number of circuit breakers, a source of electric energy, connections from one side of the source and through the respective line wires to one terminal of each of the switches in the respective groups, connections from the second terminals of the corresponding switches in each group to one of the terminals of the corresponding circuit breakers and connections from the other terminals of the circuit breakers to the other terminal of said source.

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