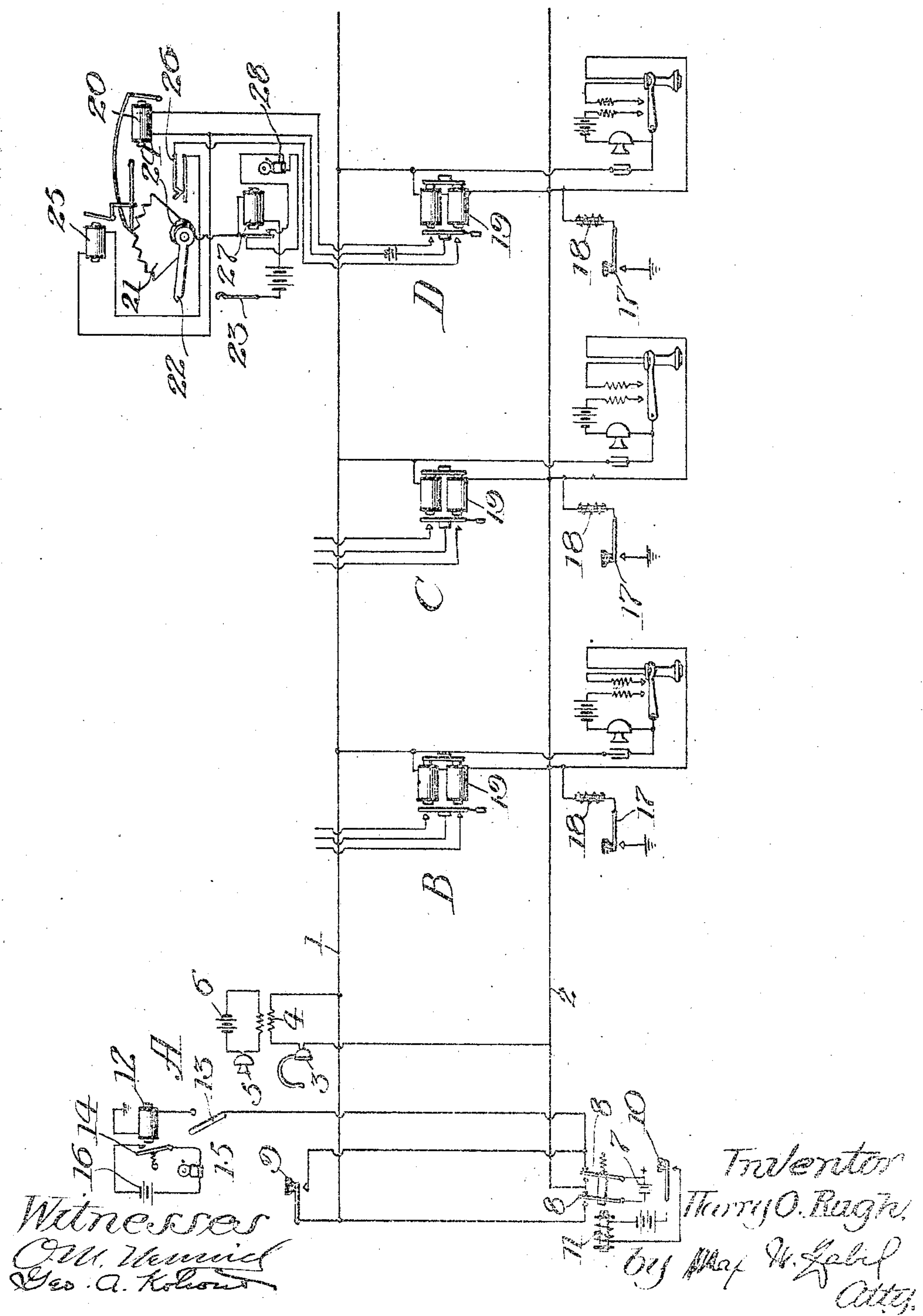


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UNITED STATES PATENT OFFICE.

HARRY O. RUGH, OF SANDWICH, ILLINOIS, ASSIGNOR TO SANDWICH ELECTRIC COMPANY, OF SANDWICH, ILLINOIS, A CORPORATION OF ILLINOIS.

SIGNALING SYSTEM.

960,586.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HARRY O. RUGH, citizen of the United States, residing at Sandwich, in the county of Dekalb and State of Illinois, have invented a certain new and useful Improvement in Signaling Systems, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to signaling systems, and has for its object the provision of an improved system of inter-communication between a train despatcher and the various stations connected with his office in the operation of railway telephone systems. In systems of this kind, the despatcher is usually present at his telephone set, and is communicating almost continuously with one or the other of the various stations on his line. Selective signaling means have been provided, whereby the despatcher can call any desired station, but it has heretofore been impracticable to call a despatcher's office from the various substations, should the despatcher be temporarily away from his telephone.

It is one of the objects of my invention to avoid this difficulty.

I will describe my invention more in detail by reference to the accompanying drawing, illustrating the preferred embodiment thereof, in which I have shown a central station A, uniting three substations, B, C and D. I have shown two line conductors, 1 and 2, as uniting the various stations. At the despatcher's station A, I have shown a despatcher's telephone set, consisting of the receiver 3, the induction coil 4, transmitter 5, and battery 6, which in this instance are shown permanently connected to the line wires. I further provide at the central station means for sending signaling impulses to the substations, and for releasing said signaling means at the substations, which signaling means consists of a battery 7 having the reversing springs 8, 8, which, in connection with contact points, as shown, are adapted to reverse the polarity of the battery 7 upon the line wires 1 and 2. I also show a key 9, which is adapted to be actuated to transmit positive battery impulses over the line wire 1, and back over the line wire 2, from the battery 7,

which serves to operate the selector mechanism at the substations, as will be more clearly described hereafter.

When the required number of positive impulses have been sent and the signal received at the substation, depressing the key 10 serves to actuate the relay 11, which thereby draws over the reversing springs 8, 8, to reverse the polarity of the current of the battery 7 upon the line wires 1 and 2, and release the signaling means at a station selectively, and restore it to normal. The improved means which I employ at the central or despatcher's station to call a despatcher consists of a relay 12, which, through the interposition of key 13 is adapted for connection to battery 7, independently of line wires 1 and 2, normally at the central station.

It will be seen from the illustration that when the despatcher leaves his telephone set and sets over his key 13 in anticipation of a call, the positive battery current is connected to one terminal of the relay 12, but said relay is not otherwise associated with the line wires 1 and 2. On the other hand, the negative terminal of the battery 7 is normally associated with the line wire 2. When the relay 12 is actuated, said relay being connected to the ground, as will be more fully described hereinafter, it closes the circuit through its armature 14, thus to actuate a local signal 15 through the agency of the battery 16. The relay 12, therefore, it will be seen, does not obstruct nor in any way interfere with the line wires 1 and 2, when it is placed in operative position. Now, in order to operate this relay 12, I show at each substation a contact lever 17, which, through the agency of the impedance coil 18, is adapted to ground the line wire 2, when said lever 17 is actuated. Thus, it will be seen that any substation can actuate the relay 12, as circuit is established when the lever is depressed, as follows: from the ground, through the lever 17, impedance coil 18, line wire 2, reversing spring 8, battery 7, reversing spring 8, lever 13, relay 12, to ground, thus calling a train despatcher when temporarily absent.

At each substation I have shown the polarized relays 19, 19, which, through the agency of the positive impulses going out over the line wire 1 and coming back over

the line wire 2, are adapted to step up the selective mechanism to call a desired substation, and said relays when oppositely actuated serve to release the substation selective mechanism. I have shown only at station D the complete selective substation mechanism, as it is similar in stations C and D, except that the contacts on the selective mechanism are placed at different angles, whereby the desired station may be called by the train despatcher by operating the key 9, or released by operating the key 10.

Referring more particularly to station D, I have shown the relay 20, as susceptible to what I have called positive impulses to step up the mechanism 21, which thereby causes its contact lever 22 to form electrical contact with the spring 23, when said step-up mechanism 21 is properly actuated. A spring 24 serves to restore the step-up mechanism to normal, when the relay 25 is actuated by negative impulses coming through the relay 19. Positive impulses actuating said relay 19 to cause operation of the relay 20, the relay 25 serves to release the step-up mechanism, as stated. When the step-up mechanism 21 comes to its normal position, it opens the circuit through the spring 26, thus to prevent further actuation of the relay 25 by positive or negative impulses. When the lever 22 is associated with the spring 23, circuit through relay 27 is established which calls the local signal 28, and

thereby notifies the despatcher that he is desired at the central station.

I have used the same numerals at the substations as used at the train despatcher's station.

While I have herein shown the preferred embodiment of my invention, what I claim as new and desire to secure by Letters Patent is:

A signaling system comprising line conductors uniting a central station and a plurality of substations, a telephone set at each substation having a switch-hook, a despatcher's telephone set at the central station normally in condition for use and connected with said line conductors, selective signaling devices associated with said line conductors whereby the central station can selectively call any substation, a local signal at the central station, means associated with one line conductor for controlling said signal and switching means associated with the same line conductor operable independently of said switch-hooks at each substation for operating said local signal when the despatcher's telephone set is temporarily unoccupied.

In witness whereof I hereunto subscribe my name.

HARRY O. RUGH.

Witnesses:

MAX W. ZABEL,
O. M. WERMIEL.