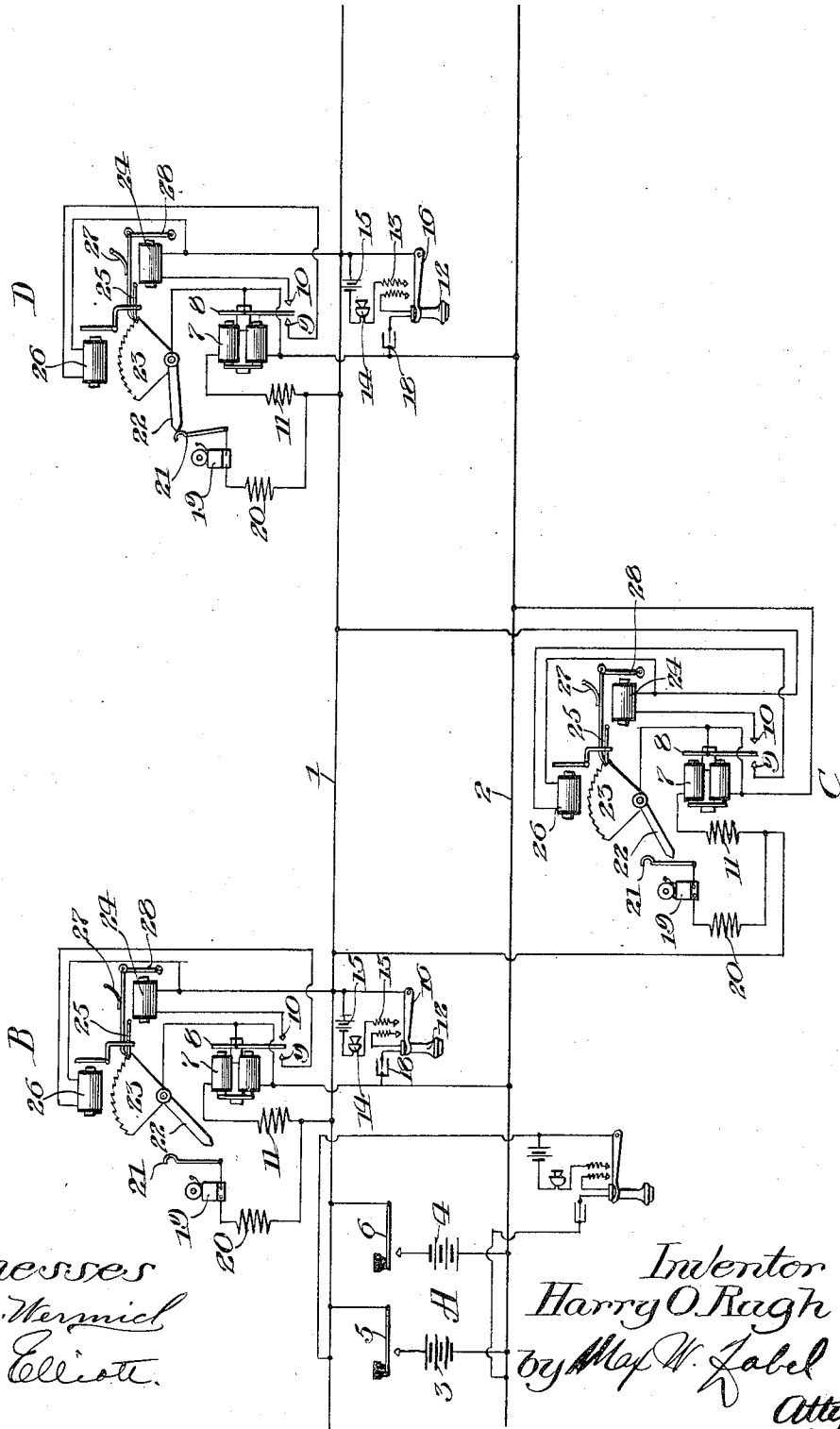


H. O. RUGH.
 SIGNALING SYSTEM.
 APPLICATION FILED JAN. 20, 1910.

1,064,997.

Patented June 17, 1913.



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SIGNALING SYSTEM.

1,064,997.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed January 20, 1910. Serial No. 539,164.

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 selective signaling system, in which the various devices at the substations are operated through the agency of current supplied at the central station.

There are also several novel features with respect to the operating parts at the substations for operating step-by-step selective mechanism in connection with calling devices at the central station.

I will describe my invention more in detail by reference to the accompanying drawing illustrating one embodiment thereof.

In this drawing, I show line wires 1 and 2, which connect a central station A with substations B, C and D. At the central station I have shown, for convenience, two sources of current, 3 and 4, respectively, which are designed, through the agency of keys 5 and 6, to impress at will currents of unlike polarities upon the line conductors 1 and 2. At each of the substations I have shown a controlling relay 7, which is polarized, and which has an armature 8 associated with two contacts 9 and 10, so arranged that when current of one polarity is impressed upon the line conductors 1 and 2, it will actuate the armature 8 to close contact with one contact element 9, for instance, and when current of opposite polarity is impressed upon the line wires 1 and 2, the armature 8 takes an alternative position, and contacts with the element 10. The relay 7 is bridged across the line conductors 1 and 2, a high resistance 11 being included in this bridge in order to minimize the amount of current flowing through the bridge. There is also bridged across the line conductors 1 and 2 at the substation a telephone set consisting of the receiver 12, induction coil 13, transmitter 14, battery 15, switch 16 and condenser 18. A similar telephone set is bridged across the circuit at the central station.

I employ a local signal 19 at the substa-

tions, which is included in circuit with the resistance 20, and is connected between the line wire 1 and the contact element 21, which contact element is designed to be engaged by movable contact element 22, connected at selected times to the other line wire 2. The movable contact element 22 is under the control of step-by-step selector mechanism 23, which is movable in response to a magnet 24, whenever said magnet is connected to the line conductors 1 and 2, and receives battery impulses, which occur whenever the armature 8 contacts with the element 10. A retaining pawl 25 holds the element 23 in a given position and is under the control of a magnet 26, which magnet is also connected at one of its terminals to the line wires 1, and at the other terminal, to the contact element 9, so that said magnet 26 receives current when the armature 8 engages the element 9. A leaf spring 27 holds the armature 28 in its non-attracted position.

Now, whenever it is desired to call a given station, say, the station D, impulses of given polarity through the agency of the key 5 are impressed upon the line wires 1 and 2, the first of which impulses serves to attract armature 8 to a position where it contacts with the element 10, and this same first impulse thereupon makes one operation of the magnet 24. The armature 8 remains in this given position during the time the impulses from key 5 continue, thereby to step up element 23 to its desired position. When the element has reached its desired position, namely, so that the element contacts with the element 21, this same battery current flows through the signal 19 and actuates it. Thereafter, an actuation of key 6 moves the armature 8 in its alternative position, and permits battery current to flow through the magnet 26, which thereby releases the retaining pawl 25, and allows the element 23 at all the stations to go back to normal. In sending impulses to call a given station, impulses are sent so rapidly that the passage of the element 22 past the element 21 of a station not desired to call is of sufficient rapidity not to actuate in a signal-giving manner the signal 29.

While I have herein shown and particularly described the preferred embodiment of my invention, I do not limit myself to the precise construction and arrangement as herein set forth, but

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

1. A selective signaling system comprising a central station and substations united by a common line circuit, a step-by-step selector mechanism at each substation, a plurality of magnets at each mechanism for controlling same, a controlling relay at each mechanism to connect either magnet to the line circuit, and switching devices and a source of current at the central station for operating said magnets and said controlling relay.
2. A selective signaling system comprising a central station and substations united by a line circuit, a step-by-step selector mechanism at each substation, a step-up magnet for same, a release magnet for same, a controlling relay for associating either of said magnets with said line circuit, and switching devices and a source of current at the central station for selectively operating said controlling relay and said magnets.
3. A selective signaling system comprising a central station and substations united by a common line circuit, a step-by-step selector mechanism at each substation, a step-up magnet for same, a release magnet for same, a local signal for each selector mechanism and controlled thereby, a controlling relay for associating either of said magnets with said line circuit, and switching devices and a source of current at the central station for selectively operating said

controlling relay, said signal and said magnets over said common line circuit.

4. A selective signaling system comprising a central station and substations united by a common line circuit, a step-by-step selector mechanism at each substation, a step-up magnet for same, a release magnet for same, a polarized, two-position controlling relay for associating either of said magnets with said line circuit, and switching devices and a source of current at the central station for selectively operating said controlling relay and said magnets over said common line circuit.

5. A selective signaling system comprising a central station and substations united by a common line circuit, a step-by-step selector mechanism at each substation, a plurality of magnets for controlling same, a local signal for each selector mechanism and controlled thereby, a controlling relay for associating either of said magnets with said line circuit, and switching devices and a source of current at the central station for selectively operating said controlling relay, said signal and said magnets over said common line circuit.

In witness whereof, I hereunto subscribe my name this 16th day of November A. D., 1909.

HARRY O. RUGH.

Witnesses:

MAX W. ZABEL,
J. ELLIOTT.