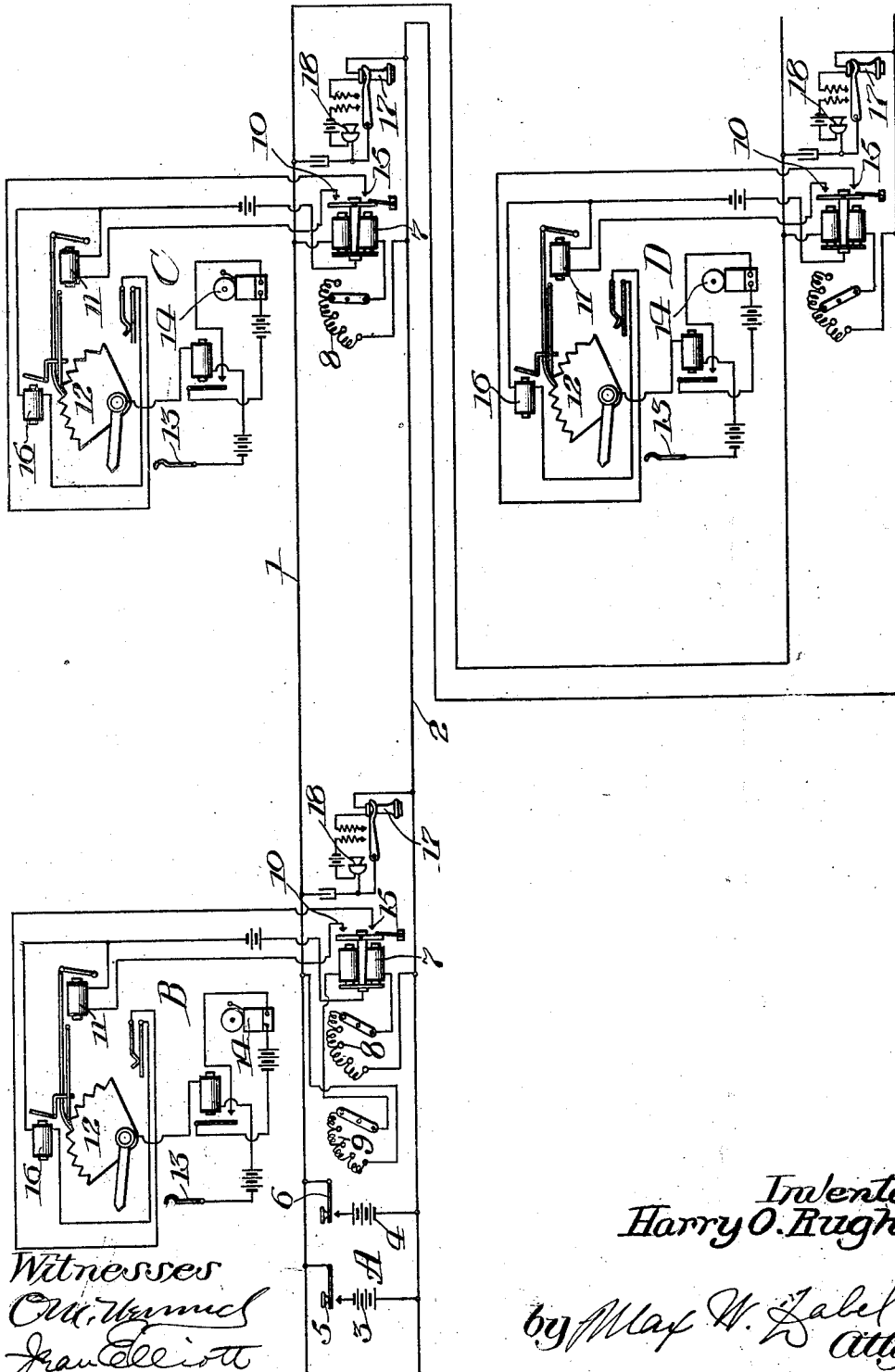


H. O. RUGH.
 SIGNALING SYSTEM.
 APPLICATION FILED MAY 4, 1909.

1,037,330

Patented Sept. 3, 1912.



Witnesses
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UNITED STATES PATENT OFFICE.

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SIGNALING SYSTEM.

1,037,330.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed May 4, 1909. Serial No. 493,942.

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 improved means for operating substation signaling devices.

My invention, in its preferred form, is applicable to step-by-step selectors, in which an operating relay for said selectors is bridged across the line conductors at the substations, and my invention contemplates the inclusion of resistances of such character in the relay circuit as to properly distribute the relay-operating current throughout the various relays.

I will explain my invention more in detail by reference to the accompanying drawing, in which I have shown a central station A and substations B, C and D, which stations are connected together by means of the metallic conductors 1 and 2. At the central station I have shown two batteries 3 and 4, which can be connected to the line conductors by means of keys 5 and 6, one of said keys sending positive battery impulses over line conductors, and the other, negative, the positive impulses preferably stepping up the selector mechanism, and the negative releasing same to normal.

The substation apparatus consists preferably of a polarized relay 7, bridged across the line conductors, which relay has in its preferred form in the bridge connection a resistance included on either side thereof said resistances being respectively numbered 8 and 9. The resistances, as shown, are adjustable, so that the relay-operating current may be adjusted to proper operation of the relay. I find, in practice, that it is wise to gradually decrease this resistance 8 from the central station toward the end of the line, in order to compensate for the resistances of the line conductors and the leakage.

The polarized relay is provided with a contact point 10, which is susceptible to posi-

tive impulses to operate the relay 11, thereby to step-up the selecting device 12, so that it may engage the contact spring 13, and thereby establish a local circuit to operate the bell 14. The polarized relay is also provided with a contact point 15, which, in this instance, is susceptible of negative influences to operate the relay 16, thereby to release the selector 12 and restore it to normal. At each substation I have also shown the receiver 17 and transmitter 18, together with the associated instrumentalities.

From the foregoing, it will be apparent that I am able to compensate for line resistance and leakage, so that all the relays may operate properly. This is due to the proper selection of the resistance in series with each selector operating relay, and thus its proper current supply is provided. By splitting the resistance as I have shown at one of the stations and having one between each terminal of the relay and its corresponding line wire, I am able to compensate properly even though one or the other of the line wires may be temporarily defective or a portion of the relay winding be grounded upon the framework.

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:—

A step-by-step signaling system having metallic line conductors for uniting a central station and substations, a step-by-step selector at each substation, a relay bridged across the line conductors at each selector for operating said selector, electrical resistances in series with each relay, to evenly distribute the relay operating current, one of said resistances being included between each terminal of the relay and its associated line conductor, and means at the central station for supplying said relay operating current.

In witness whereof, I hereunto subscribe my name this 19th day of April A. D., 1909.

HARRY O. RUGH.

Witnesses:

MAX W. ZABEL,
JEAN ELLIOTT.