

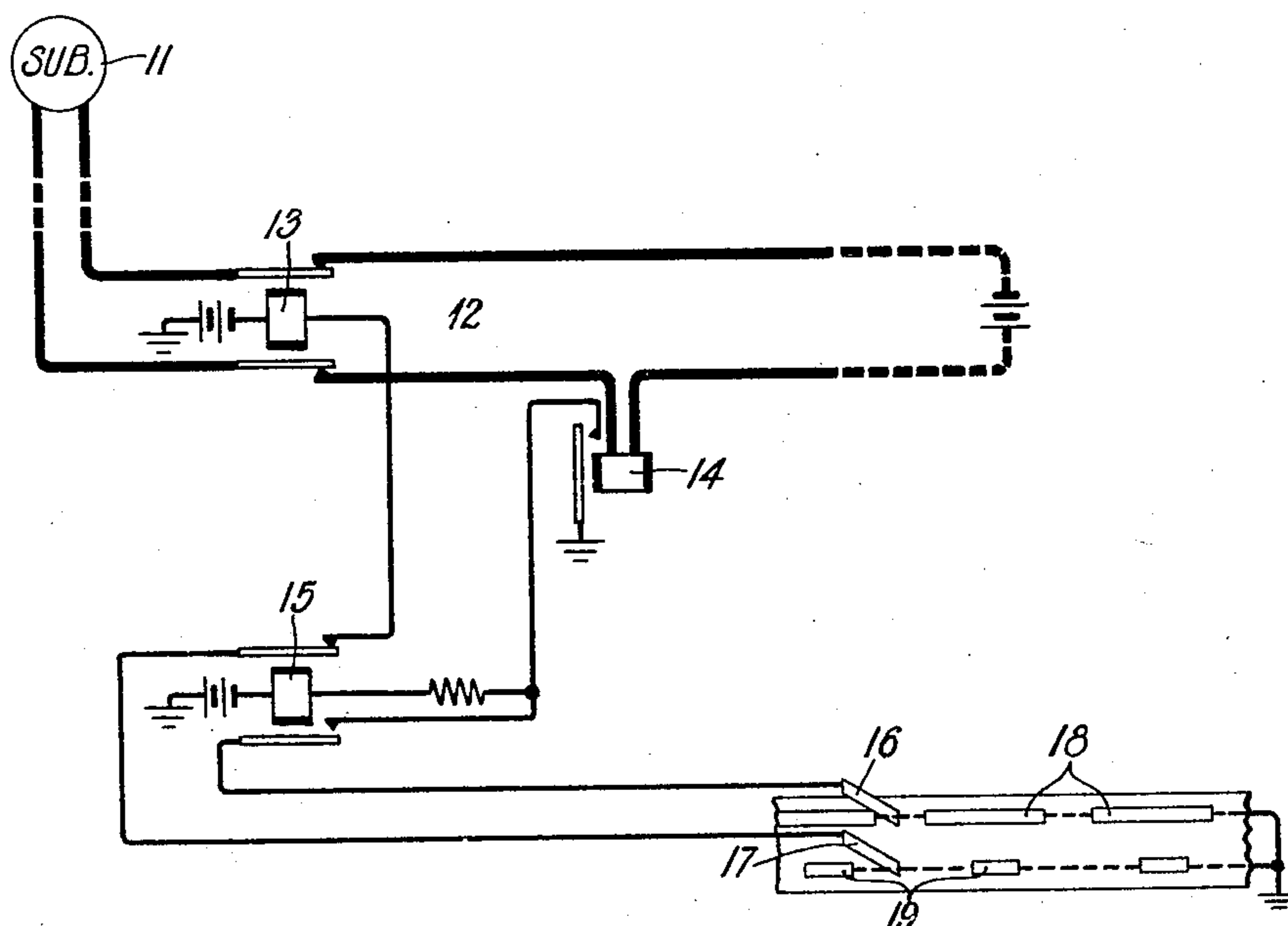
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A. RAYNSFORD

SIGNALING SYSTEM

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SIGNALING SYSTEM.

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This invention relates to signaling systems and more particularly to telephone exchange systems and means therein under the control of a calling subscriber to control the release of an established connection.

In telephone systems employing machine switching apparatus of the power driven type, the calling subscriber's substation set is supplied with current for talking purposes from a battery in a trunk circuit associated with the first selector or so-called district selector, the current passing during the conversation, to the subscriber's line through the winding of a supervisory relay. This supervisory relay is thus under the control of the calling subscriber's switchhook and is employed to initiate the release of the established connection when the calling subscriber desires to terminate the conversation. In systems of this character, heretofore known, provision has been made to delay the release operations for a brief interval, following the deenergization of the supervisory relay, so that a false release may not occur if the calling subscriber accidentally jiggles the switchhook to cause the momentary release of the supervisory relay. The present invention provides improved means controlled by the supervisory relay to initiate the release operations, and to provide for delaying such release momentarily whereby the release operations are made more positive, and false releasing from a momentary deenergization of the supervisory relay is more surely obviated.

In the drawing, the figure shows diagrammatically release control circuits arranged in accordance with the present invention.

In accordance with the prior art, such as is disclosed in Fig. 3 of the patent to W. H. Matthies No. 1,567,072 issued December 29, 1925, the release is initiated by the closure of a back contact of the supervisory relay, the circuit of the release relay being closed following the making of the back contact of the supervisory relay, after a delay measured by the making of one contact of a continuously rotating interrupter and the subsequent making of a second contact of the interrupter. The delay so measured by the interrupter has been deemed sufficient to prevent the operation of the release relay should the supervisory relay be only momentarily released. The present invention, in the specific embodiment chosen for illustration here-

in, provides for the initiation of the release at a break contact of the supervisory relay, the circuit of the release relay being closed after a delay measured by the opening of one contact of a continuously rotating interrupter followed by a subsequent making of a second contact of the interrupter. The purpose of changing the initiation of the release from the back contact of the supervisory relay to the front contact thereof, is to obviate failure of the initiation of release due to vibration of the selector frame which at times might prevent the back contact from making firmly. Further, the improvement in the releasing circuit, and particularly the provision of a new type of interrupter provides a delay in the establishment of the circuit of the release relay following the deenergization of the supervisory relay thereby lessening the occurrence of premature releases.

The invention may be best understood from a detailed consideration of the drawing which disclose a subscriber's substation 11 connected to the trunk 12, over contacts of relay 13 and through the winding of supervisory relay 14. During the conversation relay 14 is held energized over the calling subscriber's line and holds relay 15 energized over an obvious circuit. When the calling subscriber desires to release the connection and replaces the receiver on the switchhook, the circuit of relay 15 is opened at the break contact of relay 14, but relay 15 cannot release until the interrupter brush 16 leaves a grounded segment 18 of the interrupter, since relay 15 is locked to this interrupter brush over its own lower front contact. When brush 16 leaves a segment 18 and relay 15 releases, the circuit of release relay 13 is prepared from battery through the winding of relay 13 over the back contact of relay 15 to the interrupter brush 17. As soon as the interrupter advances to a point where a segment 19 engages with the brush 17 this circuit is completed and release takes place.

By thus placing the initiation of the release under the control of a front contact of the supervisory relay, which is not as subject to faulty operation from external causes such as vibration as a back make contact would be, the release is rendered much more positive.

What is claimed is:

1. In a signaling system, a first relay, a

second relay, a circuit for energizing said first relay, means for opening said circuit, a timing device, means for holding said first relay energized under the control of said timing device for an interval after said circuit is opened, and a circuit for said second relay established upon the release of said first relay and after the expiration of a second interval measured by said timing device.

10 2. In a signaling system, a first relay, a second relay, a circuit for energizing said first relay, a third relay for opening said circuit, a timing device, means for holding said first relay energized under the control
15 of said timing device for an interval after said circuit is opened by said third relay, and a circuit for said second relay established upon the release of said first relay, and after the expiration of a second interval
20 measured by said timing device.

3. In a signaling system, a first relay, a second relay, a circuit for energizing said first relay, means for opening said circuit, an interrupter having a plurality of contacts,
25 means for holding said first relay energized over a first contact of said interrupter for an interval after said circuit is opened, and a circuit for said second relay established upon the release of said first relay and after
30 the closure of a second contact of said interrupter.

4. In a telephone system, a calling line, a

first relay, a release relay, a supervisory relay, said supervisory relay being main- 35
tained energized over the calling line under the control of the calling subscriber, a circuit for energizing said first relay controlled at a front contact of said supervisory relay, a timing device, a holding circuit for said first relay under the control of said timing 40
device effective for an interval after the release of said supervisory relay, and a circuit for said release relay established upon the release of said first relay and after the expiration of a second interval measured by 45
said timing device.

5. In a telephone system, a calling line, a first relay, a release relay, a supervisory relay, said supervisory relay being main- 50
tained energized over the calling line under the control of the calling subscriber, a circuit for energizing said first relay controlled at a front contact of said supervisory relay, an interrupter having a plurality of con- 55
tacts, means for holding said first relay over a first contact of said interrupter for an interval after the release of said supervisory relay, and a circuit for said release relay established upon the release of said first relay and after the closure of a second con- 60
tact of said interrupter.

In witness whereof, I hereunto subscribe my name this 26th day of May A. D., 1927.

ARTHUR RAYNSFORD.