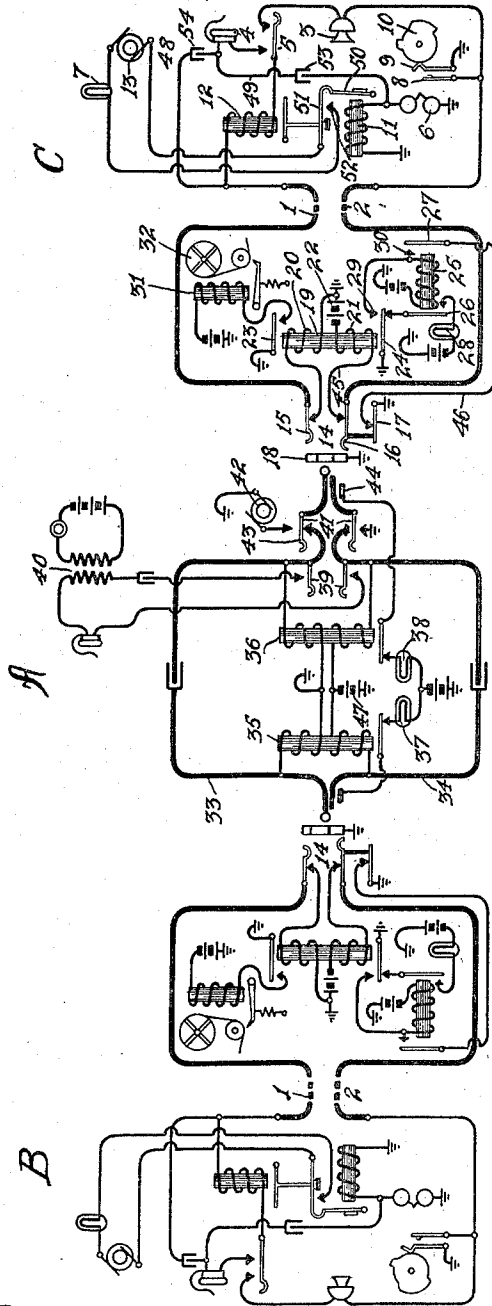


C. S. WINSTON.
 COMBINED TELEPHONE AND SIGNALING SYSTEM.
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COMBINED TELEPHONE AND SIGNALING SYSTEM.

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Specification of Letters Patent.

Patented May 15, 1917.

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To all whom it may concern:

Be it known that I, CHARLES S. WINSTON, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Combined Telephone and Signaling Systems, of which the following is a specification.

My invention relates to combined telephone and signaling systems and is more particularly available for a combined police and telephone system. In the description herein I am explaining my invention as applied more particularly to such a combined police and telephone system, although of course not intending to thereby limit myself to the specific application of the invention as herein set forth.

In the particular form of the invention as herein disclosed I provide a central station and a plurality of police telephone substations, which substations have means to transmit a code signal to the central station which may be recorded if desired. The substations also have means for receiving not only an audible but also a visual signal for the purpose of attracting the attention of the patrolmen in the district so as to respond promptly to a call from the central station.

I will describe this particular form which my invention may take more in detail by referring to the accompanying drawing illustrating such an embodiment diagrammatically. In the illustration I show a central station A which serves a plurality of substations, the substations B and C for instance, line wires 1 and 2 uniting said central station with said substations. At the substation which represents a police telephone box, I have the transmitter 3, receiver 4 and switch-hook 5 for conversational purposes. A call bell 6 is also provided together with a visual calling signal, in this case the lamp 7. The substation also has a central station call device consisting of the springs 8 and 9 and the movable element 10 to control the circuit closure between said springs in accordance with a predetermined code corresponding to the particular substation. Two relays 11 and 12 are also provided at the substation whose purpose will be presently explained. The lamp 7 is adapted to receive its current from any suitable source of current which may be a lighting circuit

in close proximity to the police call box and which is here represented diagrammatically by the generator 13. The line wires 1 and 2 for the substations terminate at the central station in jacks 14 consisting of the tip and sleeve springs 15 and 16 respectively, the auxiliary spring 17 and the grounded thimble 18. Back contacts are provided for these three springs, the spring 17 being grounded. The terminating line at the central station also has the differential control relay 19 between whose two windings 20 and 21 a battery 22 is connected, one terminal of the battery being grounded as shown. These two windings 20 and 21 are wound in such a manner that current flowing serially through them will leave this relay unresponsive. Current in either winding 20 or 21 however will cause energization of the relay and the attraction of its two armatures 23 and 24. A further relay 25 is provided at the central station in connection with the incoming line circuit having two armatures 26 and 27, the armature 26 controlling the circuit through the line signal 28, one terminal of which signal is connected through battery to ground as shown. One terminal of the relay 25 is connected to the front contact 29 and also the front contact 30, the other terminal of this relay 25 being connected through battery to ground. The armature 23 of the relay 19 controls a circuit through the register relay 31 which controls the tape register 32 upon which the code of the incoming call is registered upon a suitable tape as well understood. One terminal of this relay is under the control of the armature 23, the other terminal being connected through battery to ground as shown. The cord circuit at the central station includes the tip and sleeve conductors 33 and 34 respectively, the clearing out relays 35 and 36 and the clearing out lamps 37 and 38. Through the agency of the listening key 39 an operator's set 40 may also be included in circuit and through the agency of the ringing key 41 the ringing generator 42 whose one terminal is grounded may have its other terminal connected to the tip strand of the cord circuit through the agency of the spring 43 as readily apparent. The circuit through the supervisory lamps is controllable through the thimble conductor 44 of the plug and the grounded thimble 18 of the jack.

In the operation of this system if the substation C is desirous of calling the central station A, then the call sending device 10 is actuated which transmits a code over the line wire 2, which circuit may be traced from the ground through the spring 9, spring 8, line wire 2, conductor 45, winding 21, through battery to ground. This energizes the relay 19 in accordance with the impulses transmitted by the calling device 10, thereby actuating the armature 23 of said relay in accordance with the code. The actuation of the armature 23 closes the circuit through the relay 31 in accordance with the received code, thereby to register upon the tape of the registering device 32 the code coming in over the circuit. At the same time armature 24 is drawn up in response to the energization of the coil 21, the movements of this armature 24 also corresponding to the code, thereby closing a circuit which can be traced from the ground through the armature 24, contact 29, relay 25, through battery to ground. This causes the armatures 26 and 27 to be attracted, the attraction of the armature 27 completing a circuit which can be traced from ground through spring 17, conductor 46, armature 27, contact 30, relay 25, through battery to ground, thereby locking this relay 25 in its energized condition until the insertion of a plug into the jack 14 corresponding to this line, whereby the circuit completed by the spring 17 is broken. The energization of the relay 25 as stated causes the attraction of its armature 26 which also then remains in an attracted position, whereupon a circuit is completed from ground through spring 24, armature 26, line signal 28 through battery to ground. The continuity of this circuit, the armature 26 remaining attracted until the insertion of the plug, depends upon the position of the armature 24. This armature is attracted and released in response to the incoming code and the lamp 28 thereby is ignited and extinguished in accordance with this code, but of course remains illuminated after the cessation of the impulses because the armature 24 falls back against its back contact. The operation of the sending device 10 thus registers the call upon the register 32 and causes the lamp 28 to burn intermittently during the receipt of the code and then to burn continuously thereafter until a plug is inserted in the corresponding jack, whereupon the circuit through the relay 25 is broken, to thereby release the armature 26 and thus to cause extinguishment of the lamp 28. Should the receiver 4 be removed from the switchhook 5 before the call device 10 is actuated, this will not affect the operations of the register 32 or the lamp 28 as the closure of the circuit at the switchhook permits the current from battery 22 to thread the

coils 20 and 21 in series and this of itself does not energize the relay 19 as previously set forth. Upon insertion of the plug into the jack the circuit through the lamp 28 is broken as well as the circuit through the relay 19, current being then supplied to the line circuit from the battery 47 shown in the cord circuit. The operator may then by means of the listening key 39 ascertain the connection desired and complete the same or take such other information from the patrolman at the police box as may be necessary.

Should the central station be desirous of calling any substation, the substation C for instance, then after the insertion of the plug into the jack the ringing key 41 is actuated, whereupon a circuit is completed from the ground through the generator 42, spring 43, spring 15, line wire 1, conductor 48, conductor 49, and the call bell 6 and relay 11 in parallel to the ground. This will actuate the bell 6 and at the same time draw the armature 50 of the relay 11 inwardly to thereby release the spring 51 which has a tendency to bend downwardly, whereupon circuit is completed between the spring 51 and the contact 52. Alternating current from the generator 42 may be employed because it is merely necessary to attract the armature 50 once in order to release the spring 51. The closure of the circuit through the spring 51 establishes a circuit through the lamp 7, thereby illuminating this lamp, which is preferably placed in some accessible place where it may be most readily visible to the man on the beat. This lamp 7 remains burning, of course until such time as a patrolman responds to the call. Immediately the patrolman responds and removes the receiver 4, a circuit is established from ground through battery 47, sleeve side of the cord circuit, line conductor 2, transmitter 3, switchhook 5, relay 12, line conductor 1, spring 15, tip strand of the cord circuit through a winding of the relay 36 to ground. This energizes the relay 12 to attract its armature, thereafter raising the spring 51 to break the circuit through the lamp 7 and permit it again to rest on the top of the armature 50, which in the meantime has moved to its retracted position. Completion of this circuit of course also energizes the relay 36 to discontinue the signal of the lamp 38 as readily apparent. The talking circuit at the substation is traced of course rather through the condenser 54 than the relay 12 as is obvious. The condenser 53 of course prevents battery current from actuating the relay 11.

From what has been described it is thought the nature of my invention will be readily apparent to those skilled in the art.

Having however thus described one form

which the invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A system of the character described
5 having a central station and a plurality of substations each united with the central station by a line circuit, means at the central station for registering a code call, means at each substation for actuating said call
10 receiving means, a line signal at the central station, a relay associated with the line circuit to partially control said line signal, a second relay controllable by said first relay to also control said line signal, said
15 second relay having means to establish a locking circuit therethrough, and means at a substation for controlling the actuation of one of said relays.

2. A system of the character described
20 having a central station and a plurality of substations each united with the central station by a line circuit, means at the central station for registering a code call, means at each substation for actuating said call
25 receiving means, a line signal at the central station, a relay associated with the line circuit to partially control said line signal, a second relay controllable by said first relay to also control said line signal, said
30 second relay having means to establish a locking circuit therethrough, a jack for said line circuit, and means associated with said jack to control the circuit through said second relay, and means at a substation for
35 controlling the actuation of one of said relays.

3. A system of the character described having a central station and a plurality of substations each united with the central station by a line circuit, means at the central
40 station for registering a code call, means at each substation for actuating said call receiving means, a line signal at the central station, a relay associated with the line circuit to partially control said line signal, a
45 second relay controllable by said first relay to also control said line signal, said second relay having means to establish a locking circuit therethrough, a jack for said line circuit and means associated with said jack
50 to control the circuit through said second relay, means whereby said first relay controls said registering device, and means at a substation for controlling the actuation
55 of one of said relays.

4. A system of the character described having a central station and a plurality of substations each united with the central station by a line circuit, means at the central
60 station for registering a code call, means

at each substation for actuating said call receiving means, a line signal at the central station, a relay associated with the line circuit to partially control said line signal, a second relay controllable by said first relay to also control said line signal, said
65 second relay having means to establish a locking circuit therethrough, a jack for said line circuit and means associated with said jack to control the circuit through said second relay, means whereby said first relay
70 controls said registering device, said first relay having two coils differentially wound, and means at a substation for controlling the actuation of one of said relays.

5. A system of the character described having a central station and substation united by a line circuit, means at the central station for registering a code call,
75 means at the substation for actuating said call receiving means, a telephone set including a switch-hook at the substation, a locking relay at the substation responsive to signaling current transmitted from the central station, a signal at the substation,
80 a local operating circuit for said signal under the control of said relay, and an electromagnet at the substation operated responsive to the switch-hook at the substation when answering the call for restoring the
85 locking relay thereby opening the local operating circuit of said signal.

6. A signaling system of the class described comprising a central station, a plurality of substations connected to said central station, means at the central office for
90 registering a code call from one of said substations, a signal also at the central station responsive to said code call, means at said substation for actuating said call receiving means and said signal, a telephone
100 including a switchhook at said substation, a self-locking relay at said substation responsive to signaling current transmitted from the central station, a signal at said substation adapted to be controlled by the
105 armature of said self-locking relay, an electromagnet at said substation operated responsive to the switchhook at said substation when answering the call for restoring
110 the locking relay, and a central office link circuit for interconnecting said substations in conversational circuits.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two
115 witnesses.

CHARLES S. WINSTON.

Witnesses:

GEORGE E. MUELLER,
M. R. ROCHFORD.