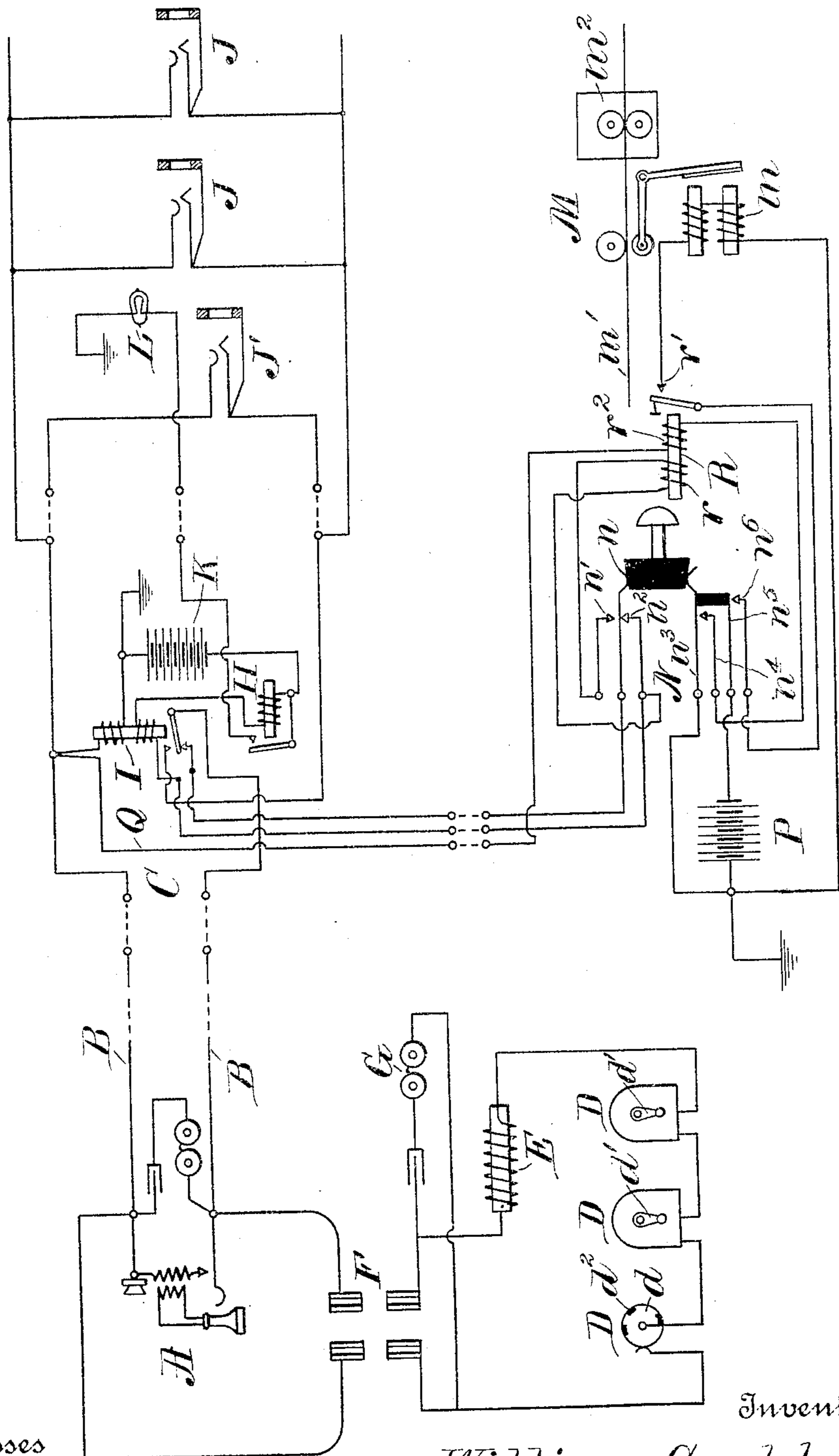


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PATENTED NOV. 7, 1905.

W. GECKLER.  
TELEPHONE NIGHT WATCH SYSTEM.  
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Witnesses  
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# UNITED STATES PATENT OFFICE.

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## TELEPHONE NIGHT-WATCH SYSTEM.

No. 803,890.

Specification of Letters Patent.

Patented Nov. 7, 1905.

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*To all whom it may concern:*

Be it known that I, WILLIAM GECKLER, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Telephone Night - Watch Systems, of which the following is a specification.

My invention relates to improvements in auxiliary signaling systems designed to operate in conjunction with existing telephone-lines without interference with the regular telephone-service of such lines.

The principal object of this invention is to provide an extra revenue to telephone companies by operating a night-watch system in conjunction with the existing telephone connection between the company's central exchange and a subscriber's station.

Night-watch systems employed in factories, warehouses, and other large buildings in which the watchman is required in making his rounds to register at certain points in the building where are located time-registering devices are well known. I propose by my invention to establish at such registering-stations instead of the local registering devices signal-transmitting devices which are connected to the telephone-line and which can be operated by the watchman at times corresponding to the times that he was formerly supposed to visit the local registering devices or at other suitable times. These signal devices transmit their signals over the telephone-line to a time-recording device at the central exchange, which automatically registers the time at which the watchman visited a given station. This is done without in any way disturbing the regular service of the line.

My invention consists, further, in the combination and arrangement of circuits and apparatus hereinafter more fully described, and particularly pointed out in the claims.

Referring to the accompanying drawing, which is a diagram illustrating an embodiment of my invention, A represents a subscriber's telephone instrument located in a building provided with my improved night-watch system, and B B a telephone-line leading from said subscriber's instrument to a central-energy exchange C.

In carrying out my invention I locate in different portions of the protected building any desired number of watchmen's signaling devices, consisting each in the case shown of an intermittent circuit-breaker D, adapted to

be operated manually or otherwise by the watchman in making his rounds. Such signaling devices are well known in the art and will therefore not be here described in detail. In the drawing the one on the left is shown with its cover removed to show the circuit-interrupting means. These signaling devices are placed in serial connection with each other and with a high-resistance retarding or impedance coil E. This serial circuit is arranged to be closed across the telephone-line, preferably by means of a knife or snap-switch F. A large loud-ringing extension-bell G is also closed across the telephone-line by the switch F, which controls the night-watch service, and is preferably located where it may be heard from any point in the building.

In the drawing I have shown at the central exchange a portion of the connections of a central-energy multiple switchboard, in which H represents the line-signal relay; I, the cut-out relay; K, the signaling-battery; L, the line-signal lamp; J J, multiple jacks, and J' the answer-jack.

The apparatus for the night-watch service operating in conjunction with the regular central-exchange equipment consists of an electromagnetically-operated watchman's time-recorder M, operated by current from a battery P, a relay R for controlling the operation of said recorder, and a shift-key N, through which said relay is connected to the regular switchboard equipment. This shift-key further acts to prevent interruption of the ordinary operation of the exchange when the night-watch apparatus is not in use. For this purpose a spring  $n$  and normally closed contact  $n'$  of the shift-key are connected in series with the back-stop contact and coil of the cut-out relay I. The object of this will appear more fully from the operation of the system, which is as follows: Assuming that the knife-switch F connecting the signaling devices to line at the subscriber's station is closed and the shift-key N is cut in, so that the spring  $n$  thereof engages the normally open contact  $n'$  and springs  $n^3 n^5$  engage the normally open contacts  $n^4 n^6$ , the night-watch system will be in condition for operation and current will flow from the signal-battery K through the coil of line-relay H, one winding of relay I, one winding  $r$  of relay R, contacts  $n n'$  of shift-key N, through forward contact and armature of relay I to line, and thence through signal devices and impedance-coil at subscriber's station back through top winding of

relay I to battery K. The current passing thus will not energize the relay H, owing to the resistance of the coil E, but will energize the more sensitive relay R, causing it to attract its armature and hold the same away from the back contact  $r'$ .

While the night-watch system is in operation the watchman in the building where the subscriber's instrument is located is supposed to send to the central exchange a signal from each of the devices D at regular prescribed times, as stated. In sending these signals he rotates the disk  $d$  of the signal device, as by handle  $d'$ , and the rotating of this disk, having interruptions  $d^2$  thereon, interrupts the flow of the current passing, as above described, and each time this current is interrupted the armature of the relay R will cease to be attracted magnetically and will therefore, at each interruption of the current, engage the contact  $r'$ . Each time that this happens the circuit from the battery P is closed through the magnet-coils  $m$  of the recording device, thus causing said device to record the signal sent in by the watchman. The tape  $m'$  of this recording device is driven by a time-clock mechanism  $m^2$  in the well-known manner, so that the signals recorded on the tape will register with the time marked thereon, thereby registering the exact time at which the watchman sent in the signal. Should the receiver at the subscriber's station be removed from its hook, as in sending a call, this will cause current to flow from battery K through coil of relay H and will cause the signal-lamp L to light up. The operator at the central exchange will then insert her plug in the answering-jack in reply to the signal. When this is done, the relay I will become energized by its tip-winding, will attract its armature and break the circuit through the coil of the relay H, and thus extinguish the lamp L in the usual manner. Now since the forward contact and armature of relay I are in series with the coil of relay R as well as with relay H the circuit through the coil  $r$  of relay R will also be broken. To prevent this action from rendering the relay R dead or inactive when the subscriber's receiver is removed as described, I provide this relay with an extra winding  $r^2$ , connected in multiple, as by wire Q, with the tip-winding of relay I, so that whenever the central operator inserts her plug to answer a call the current will pass through this coil  $r^2$  of the relay R. Thus the relay R will be at all times energized while the night-watch system is in use. When the shift-key N is not cut in, current from the battery K will flow through coil of relay H, one winding of relay I, spring  $n$ , and normally closed contact  $n^2$  of shift-key N, armature of relay I over line to subscriber's station, and there through the signal devices and impedance-coil, provided the switch F is closed, back over the telephone-line to the

battery K. The line-signal relay H will not be operated by this current, however, owing to the high resistance of the impedance-coil E.

It will be seen from the foregoing that there is positively no interference between the night-watch service and the regular telephone-service and that the existing central switchboard connections are practically undisturbed.

By means of the loud-ringing extension-bell G the watchman may be called from any part of the building, in which case he is supposed to answer the call at the subscriber's telephone instrument, and in case this call is not answered the watchman will have to account for it, from which it will be seen that this arrangement affords an additional means for keeping a check on the watchman.

Obviously, while I have shown one line only leading into the central exchange, any number of subscribers' lines may be provided with systems of the character described. Furthermore, I do not wish to be understood as confining myself to the specific embodiment of my invention herein shown, but

What I claim is—

1. The combination with a telephone-line leading from a subscriber's station to a central exchange, of watchman's signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a watchman's time recorder at the central exchange, and means controlled by said signaling apparatus and acting through the telephone-line-signal equipment of said central exchange, for operating said recording device.

2. The combination with a telephone-line leading from a subscriber's station to a central exchange, of watchman's signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a watchman's time-recorder at the central exchange, and means controlled by said signaling apparatus acting in conjunction with the telephone-line-signal apparatus at said exchange, for operating said recording device.

3. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of the subscriber's telephone instrument, a signal-recording device at the central exchange, and means controlled by said signaling apparatus and operated by current from the telephone-line-signaling-current source, for operating said recording device.

4. The combination with a telephone-line leading from a subscriber's station to a central

tral exchange, of signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a signal-recording device at the central exchange, and a relay controlled by said signaling apparatus and operated by current from the telephone-line-signaling-current source, for operating said recording device.

5. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of the subscriber's telephone instrument, a signal-recording device at the central exchange, means controlled by said signaling apparatus and operated by current from the telephone-line-signaling-current source for operating said recording device, and means for sustaining the action of said recorder-operating means when the line-signal circuit of said exchange is broken in answering a telephone-line call.

6. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a signal-recording device at the central exchange, a relay controlled by said signaling apparatus and operated by current from the telephone-line-signaling-current source, for operating said recording device, and means for sustaining the action of said relay when the line-signal circuit of said exchange is broken in answering a telephone-line call.

7. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a signal-recording device at the central exchange, and a relay controlled by said signaling apparatus and normally energized by current from the telephone-line-signaling-current source.

8. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a signal-recording device at the central exchange, a relay controlled by said signaling apparatus and operated by current from the telephone-line-signaling-current source, and means arranged to connect said relay normally in series with said signaling apparatus and source of line-signaling current.

9. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a signal-recording device at the central exchange, a relay controlled by said signaling apparatus and operated by current from the telephone-line-signaling-current source, and means arranged to connect said relay normally in series with said signaling apparatus and source of said telephone-line-signaling current, and means to maintain the action of said relay when the telephone-line-signal circuit is broken in answering a line-call.

10. The combination with a telephone-line leading from a subscriber's station to a central exchange, of watchman's signaling apparatus and an auxiliary line call-signal device located at the subscriber's station, means to connect said signaling apparatus and call-signal device across the telephone-line independently of the subscriber's telephone instrument, a watchman's time-recorder at said exchange, means at said exchange controlled by said signaling apparatus and operating in conjunction with the line-signal equipment of said exchange for operating said time-recorder, the said auxiliary line-signal device adapted to be operated by regular line-call apparatus of said exchange.

11. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling apparatus located at the subscriber's station, means to connect said signal devices across the telephone-line independently of the subscriber's telephone instrument, a signal-recording device at the central exchange, a relay for operating said recording device, a line telephone-signal battery at said exchange, means to connect said relay normally in circuit with said battery through the windings of the line-signal and cut-off relays and through the signaling apparatus at the subscriber's station without interfering with the telephone-service of the line, and means for sustaining the action of said relay when the circuit of the telephone-line-signal current is broken in answering a line-call.

12. The combination with a telephone-line leading from a subscriber's station to a central exchange, of a plurality of circuit-interrupting series-connected signaling devices located at said subscriber's station, means to connect said signaling apparatus across said telephone-line independently of said subscriber's telephone instrument, a watchman's time-recorder at the central exchange, and means controlled by said signaling devices and operated by current from the telephone-line-signal-current source and acting through the telephone-line equipment of said central exchange for operating said recording device.

13. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling devices located at said subscriber's station, means to connect said signaling devices across said telephone-line independently of the subscriber's telephone instrument, a signal-recording device at the central exchange and a source of current for operating the same, a relay for controlling the operation of said recording device, said relay adapted to be normally excited by current from the line-signaling-current source at said exchange and to be excited by current from the cord-circuit of said exchange when the line-signaling circuit is broken by the insertion of the operator's plug in the answer-jack, and an operator's switch device adapted and arranged to maintain the normal line-signal circuit, to connect the windings of said recorder-relay in their respective circuits and to connect the recorder-operating current to said recorder-relay, substantially as described.

14. The combination with a telephone-line leading to a central exchange, of signaling means located at a distance from said exchange and arranged to be connected across the telephone-line independent of a subscriber's telephone instrument, a signal-receiving device located at said central exchange, and means adapted and arranged to be connected in circuit with the said signaling means and the telephone-line-signaling circuit, for controlling said signal-receiving device.

15. The combination with a telephone-line leading to a central exchange, of signaling means located at a distance from said exchange and arranged to be connected in the telephone-line circuit independent of a subscriber's telephone instrument, a signal-receiving device located at said central exchange, a relay at the exchange for operating said sig-

nal-receiving device, said relay connected in the line-signal circuit, operated by current from the line-signal-current source and controlled by said distant signaling means.

16. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling means located at the subscriber's station, a retarding-coil also located at said subscriber's station in circuit with said signaling means, means to connect said signaling means and retarding-coil across said telephone-line independent of the subscriber's telephone instrument, a signal-receiving device at the central exchange, and means controlled by said signaling means and operated by current from the telephone-line-signaling-current source at said exchange, for operating said signal-receiving device.

17. The combination with a telephone-line leading from a subscriber's station to a central exchange, of signaling means located at the subscriber's station independent of the subscriber's telephone instrument, a signal-receiving device, a source of current and a relay for operating the same at said central exchange, a source of telephone-line-signaling current also at said exchange, means to connect said relay in circuit with said source of telephone-line-signaling current and said signaling means at said subscriber's station over the telephone-circuit and through the windings of the exchange-signal relays, for operating said relay, without interfering with the telephone-service of the line.

In testimony whereof I affix my signature in presence of two witnesses.

WM. GECKLER.

Witnesses:

S. SCHWARZSCHILD,  
HENRY SUTTON.