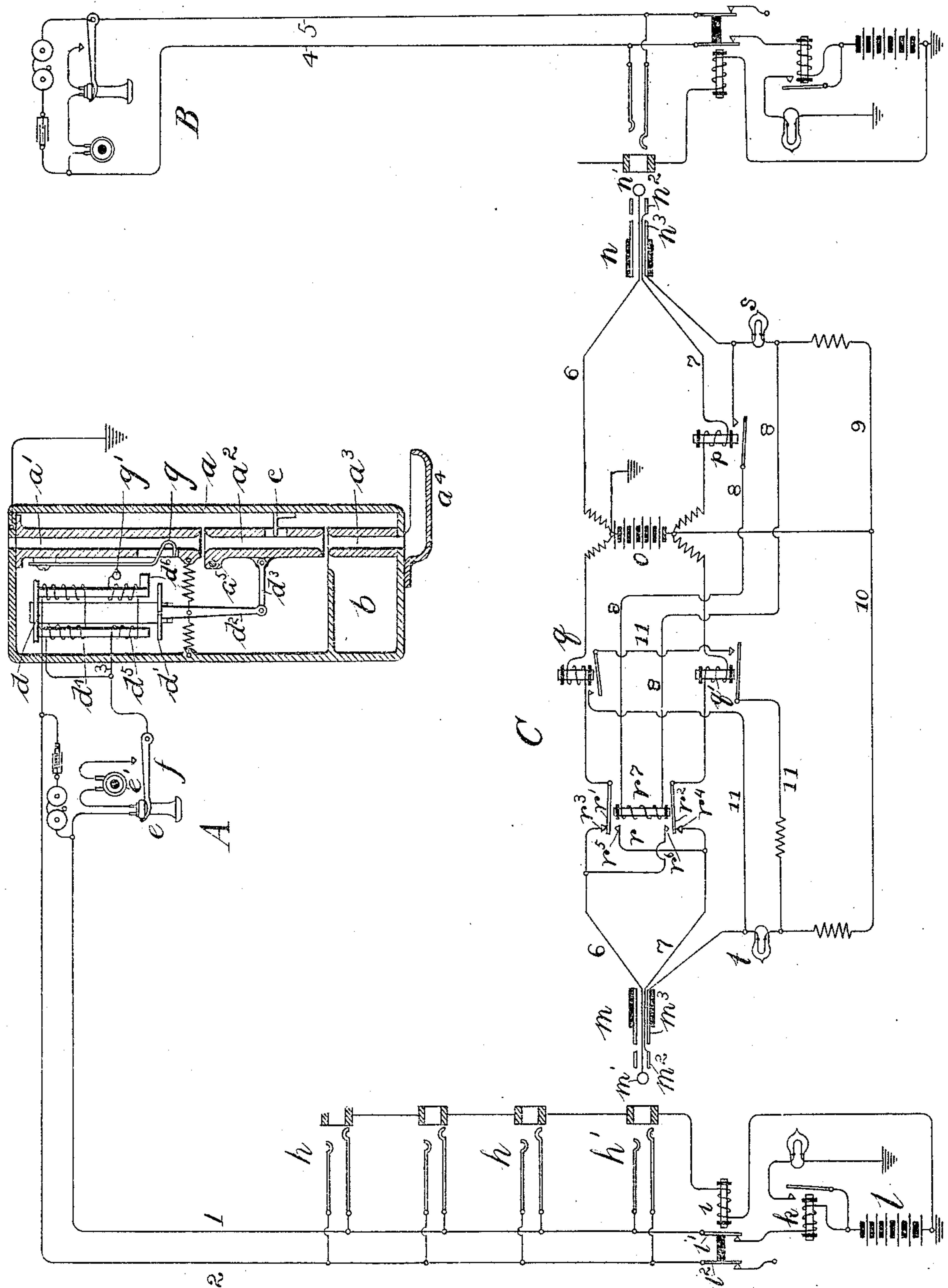


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W. W. DEAN.
TELEPHONE TOLL LINE SYSTEM.

APPLICATION FILED JAN. 14, 1902.



Witnesses:

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UNITED STATES PATENT OFFICE.

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TELEPHONE-TOLL-LINE SYSTEM.

No. 848,448.

Specification of Letters Patent.

Patented March 26, 1907.

Application filed January 14, 1902. Serial No. 89,665.

To all whom it may concern:

Be it known that I, WILLIAM W. DEAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Telephone-Toll-Line Systems, (Case 44,) of which the following is a full, clear, concise, and exact description.

My invention relates to a telephone-toll-line system, and has for its object to provide an improved toll-box in which the coin may be returned to the depositor if the central office cannot be signaled or if communication cannot be had with the desired party.

Another object is to provide improved electromagnetic mechanism for controlling the disposition of a coin within the toll-box, with circuits by which said mechanism can be operated from a distant point.

A third object is to provide improved supervisory signal apparatus for use with the mechanism and circuits aforesaid.

One feature of my invention consists in the provision of a coin-chute in the toll-box leading through the box to the exterior, so that a coin deposited in the chute will pass through the box and be refunded to the depositor unless the coin is stopped by the mechanism within the box, and the mechanism within the toll-box which stops and controls the disposition of the coin is made dependent upon the completion of the signaling-circuit to the central office and is normally inoperative to stop the coin, so that if the circuit or apparatus is out of order and the central office cannot be signaled the coin will not stay in the box, but will pass through and be refunded to the depositor.

Another feature of my invention consists of an electromagnetic coin-distributing apparatus in the toll-box for controlling the disposition of the deposited coin; an electric circuit for said coin-distributing apparatus, including a source of current; an electromagnetic switch, preferably located at the central office, for changing the electrical condition of the circuit to cause the operation of the coin-distributing apparatus, and means controlled through the agency of the telephone-switch at the called station for actuating the electromagnetic switch which controls the coin-distributing apparatus. To describe this feature more particularly, I

preferably provide a polarized electromagnet in the toll-box at the substation of the line, said polarized electromagnet having a tilting armature and mechanism operated thereby to stop the coin in its passage through the chute or to direct it into the cash-box, according to the direction of movement of the armature. This polarized electromagnet is connected with the line-circuit, which includes a line-signal at the central office and a line-battery. Contacts are provided in the toll-box, which are adapted to be actuated by a coin deposited therein to close the line-circuit, whereby current is passed through the polarized magnet in a direction to cause said magnet to stop the falling coin.

At the central office a battery is provided in the plug-circuit, the connections of said battery being such that when the answering-plug is connected with the toll-line in response to a signal transmitted, as above described, the current will flow in the same direction in which current previously flowed from the line-battery—that is, the position of the coin-distributing mechanism controlled by the polarized electromagnet in the toll-box will not be changed.

An electromagnetic switch is provided in the plug-circuit for reversing the connections of the battery in the plug-circuit with the line, whereby the polarized coin-distributing electromagnet at the substation is actuated to throw the coin into the cash-box. When the plug-circuit is used to connect the telephone-line with the called line in response to a call initiated at the substation of the first-mentioned or toll line, the electromagnetic reversing-switch is brought under the control of the called subscriber, preferably by including said reversing-switch in a local circuit controlled by the supervisory relay which is associated with the called line. When the called subscriber responds by removing his telephone from its hook, the circuit through the reversing-switch is closed and the switch actuated, whereby the polarized electromagnet at the substation of the toll-line responds to the reversal of current in its windings and throws its tilting armature to the other side, whereby the coin within the chute is directed into the cash-box.

If the line of the called subscriber should be busy, so that connection with his line could

not be had, as desired, or if for any reason the called subscriber should not answer, the reversing-switch will not be operated, and when the central-office operator removes her answering-plug from the spring-jack of the toll-line and the subscriber at the toll-line substation replaces his telephone on its hook the armature of the coin-distributing magnet will fall back to its original position, leaving the chute clear, so that the coin may fall out and be refunded to the depositor. One pole of the battery in the plug-circuit at the central office is grounded, and at the substation the deposit of a coin in the toll-box throws a ground upon one side of the telephone-line independent of the telephone-switch. The telephone-switch is adapted in its alternative positions to open the other side of the line or to connect it with the the first-mentioned side, and so to ground. Since the connections of the plug-circuit with the line may be reversed by the electromagnetic switch before referred to, I have provided two supervisory relays for the toll-line, the lamp or other subsidiary signal being under the control of both said relays acting jointly. The subscriber at the toll-line station may thus operate his supervisory signal by moving his telephone-switch, whether the connections of the plug-circuit are reversed or not, since one or the other of the relays will always respond to the opening of the line at the substation.

Another feature of my invention consists in mounting the movable contact-piece which is engaged by a deposited coin in the toll-box near the pole of the electromagnet whose circuit is closed thereby, and making the contact-spring of iron or otherwise providing it with an armature portion which is adapted to be held by the magnet-pole when moved into contact therewith in closing the circuit. The circuit is thus maintained closed independent of the deposited coin.

I will describe my invention more particularly by reference to the accompanying drawing, which is a diagram illustrating by means of conventional symbols a telephone toll-line extending from a toll-station to a central office, with another line also extending from its substation to the same central office, and the plug-circuit apparatus at the central office for connecting the two lines together, the system being constructed and operating in accordance with my invention.

The telephone toll-line consists of two limbs or line conductors 1 2, extending from the multiple spring-jacks at the central office C to the toll-line substation A. At the substation the usual transmitting and receiving telephones and gravity telephone-switch are provided, together with a call-bell for receiving signals. The call-bell is included in a permanent bridge across the limbs 1 2 of the telephone-line, said bridge including a condenser, so that the bridge is kept open as to

direct currents, while permitting the passage of alternating currents to ring the bell.

A toll-box or prepayment device *a* is associated with the telephone-line at the substation. This toll-box is provided with a coin-chute leading in three sections *a'* *a*² *a*³ through the box to a refund-tray *a*⁴ at the bottom. The upper and lower sections *a'* *a*³ of the coin-chute are rigidly mounted; but the middle section *a*² is hinged at its upper end upon a pin *a*⁵, and while it is further arranged in the position illustrated, in alinement with sections *a'* *a*³ so that a coin dropped in the top of the chute may pass through to the refund-tray *a*⁴ without obstruction, yet said middle section *a*² is adapted to be swung about its pivot *a*⁵ to one side or the other to stop the coin or direct it into the cash-box *b*. The side of the middle section *a*² has a hole therein, and a stop *c* is stationarily mounted upon the frame of the toll-box opposite said hole, so that when the section *a*² is swung to the right the stop *c* will enter the chute through the hole to arrest a falling coin. When the section *a*² is swung to the left, its lower end is brought in position to register with the opening in the cash-box so that a coin falling through the chute is directed into the cash-box.

In the upper part of the toll-box the polarized coin-distributing electromagnet *d* is provided, said magnet having a centrally-pivoted tilting armature *d'*, which is connected, by means of an arm *d*² and a link *d*³, with the pivoted middle section *a*² of the coin-chute to operate the same. When the polarized electromagnet is energized in one way, the tilting armature is thrown in a counterclockwise direction to swing the section *a*² of the chute to the right and introduce the stop *c* therein, and when said electromagnet is energized in an opposite way the armature is tilted to the other side and swings the section *a*² to the left to bring the lower end thereof in alinement with the opening in the cash-box.

The magnet *d* is provided with two windings *d*⁴ *d*⁵. The winding *d*⁴ is of low resistance—say fifty ohms—and the winding *d*⁵ is of very high resistance—say five hundred ohms. The low-resistance winding *d*⁴ is included in series in a bridge of the line with the telephone-receiver *e* and transmitter *e'*, said bridge being controlled by the switch-hook *f*. The circuit may be traced as follows: from limb 2 of the telephone-line, through the winding *d*⁴ of the polarized coin-distributing electromagnet to the switch-lever *f*, from the switch-lever *f* to its contact, thence through the transmitter *e'* and receiver *e* to the other side or limb 1 of the line. When the telephone-receiver is on its hook in the normal idle position of the substation apparatus, the bridge is broken by the switch-hook at its contact between the winding *d*⁴ and the transmitter *e'*. The other winding

d^5 of the polarized electromagnet is included in a conductor 3, which extends from the contact-point g' in the toll-box to the bridge-circuit, which includes the telephone apparatus, a , a point between the winding d^4 and the telephone-switch lever f . In other words, the winding d^5 is connected with the limb 2 of the telephone-line through the winding d^4 only and independent of the telephone-switch.

An iron contact-spring g is mounted upon the side of the upper section a' of the coin-chute extending down opposite the contact-point g' and having a tongue which enters the coin-chute through an opening in the side thereof in position to be engaged by a falling coin. The iron contact-spring g is mounted opposite a laterally-extending pole-piece d^6 , provided upon the core of the polarized electromagnet in position to be attracted and held thereby. The framework of the toll-box, with which the contact-spring is electrically united, is connected to earth or other return-conductor.

At the central office the limbs 1 2 of the telephone-line terminate in springs of the line-jacks h h' and also in the springs of the answering-jack h' . The connections of the line-springs of the answering-jack with the limbs of the telephone-line are reversed relatively to the connections of the line-springs of the line-jacks therewith—that is to say, the limb 1 is connected with the long line-springs of the line-jacks and with the short line-spring of the answering-jack, and limb 2 is connected with the short line-springs of the line-jacks and the long line-spring of the answering-jack. The limbs 1 2 terminate in armatures i' i^2 of the usual cut-off relay i , which armatures normally rest upon back contacts, but are adapted to be disconnected therefrom when the cut-off relay is energized. The back contact of the armature i^2 has no connection; but the back contact of the armature i' is connected to ground through the line-relay k and line-battery l . The line-relay k controls a subsidiary line signal-lamp in the usual manner. The winding of the cut-off relay i is included in a grounded circuit from the test-rings or third contacts of the several line-jacks and answering-jack in the usual manner, which circuit is adapted to be completed from a battery in the plug-circuit to energize the cut-off relay when either of the spring-jacks is plugged into. This is well known in the art and needs no particular description.

I have also illustrated an ordinary telephone-line extending in two limbs 4 5 from a substation B to a spring-jack at the central office C, the telephone-line 4 5 being provided with the usual telephone-switch at the substation thereof for opening and closing the circuit of the line.

Coming now to a description of the ap-

paratus in the plug-circuit, the answering-plug m and the connecting-plug n are each provided with three contact surfaces or portions in accordance with the usual design. The tip and ring contacts m m^2 of the answering-plug are connected, respectively, with the tip and ring contacts n' n^2 of its mate by cord strands or link conductors 6 7 through the windings of the usual repeating-coil.

The battery o is connected in a bridge of the plug-circuit between the windings of the repeating-coil, as shown and as is well understood in the art. The pole of the battery which is connected with the link conductor 6, leading to the tip n' of the connecting-plug, is grounded.

A supervisory relay p is included in the conductor 7 between the ring-contact n^2 of the connecting-plug and the battery o , and supervisory relays q q' are included in conductors 6 7, respectively, between the battery o and the tip and ring contacts, respectively, of the answering-plug.

An electromagnetic reversing-switch r is provided in the plug-circuit between the battery o and the answering-plug. This reversing-switch consists of two armatures r' r^2 , connected, respectively, with the conductors 6 and 7, leading to the poles of battery o . Outer contacts r^3 r^4 are connected, respectively, with the tip and ring contacts of the answering-plug m , and the inner contacts r^5 r^6 are connected with the ring and tip contacts, respectively, of said plug in a reverse manner from the connection of the contacts r^3 r^4 . The magnet r^7 of the reversing-switch is placed between the armatures r' r^2 and is adapted when energized to attract said armatures, breaking their engagement with contacts r^3 r^4 and causing them to make engagement with contacts r^5 r^6 , respectively. The magnet r^7 may be of low resistance—say forty ohms—and may be included in a shunt-circuit 8 about the supervisory signal-lamp s , which is associated with the connecting-plug. This circuit 8 is controlled by the supervisory relay p , which is associated with the connecting-plug and responds to the flow of current in the called line. The supervisory lamp s is connected, as usual, in a conductor 9, extending from the third contact n^3 of the connecting-plug to the free pole of the battery o . A supervisory signal-lamp t is also provided for the answering-plug and is included in a conductor 10, extending from the third contact m^3 of the answering-plug to the free pole of the battery o .

A shunt-circuit 11 is provided for the supervisory signal-lamp t , said shunt-circuit containing a forty-ohm resistance and including serially the two armatures of the relays q and q' , so that said shunt-circuit is controlled jointly by said relays. In order to close the low-resistance shunt around the signal-lamp t , it is necessary that both relays

q and q' be excited—that is, either relay q or q' will, if deenergized, open the shunt 11 and cause the signal-lamp t to be lighted.

While I have for convenience illustrated two batteries in the drawing, (marked l and o .) it will be understood that in practice these may be one and the same battery.

The operation of the system may be traced as follows: Supposing that subscriber A desires telephonic communication with subscriber B, he first removes his telephone-receiver e from its switch-hook f , thus closing the bridge across the limbs 1 2 of his telephone-line, and then he inserts a suitable coin in the coin-chute a' of his toll-box. The coin in passing down strikes the inwardly-projecting end of the iron contact-spring g and forces the same over into engagement with its contact-anvil g' , thus closing the branch circuit 3 through the high-resistance winding d^5 of the electromagnet to ground. Current will thus flow from the grounded-line signal-battery l at the central office through the line-relay k , armature i' of the cut-off relay to the limb 1 of the telephone-line, thence through the subscriber's telephone apparatus to his switch-hook f , to the branch wire 3, and thence to ground through the winding d^5 of the electromagnet. The magnet being energized, its pole-piece attracts and holds the iron contact-spring g , so that the circuit is held closed independent of the coin. Current flows through the coil d^5 of the magnet in a direction to throw the tilting armature thereof in a contra-clockwise direction and swing the central section a^2 of the coin-chute to the right, whereupon the stop c entering the coin-chute will arrest the coin in its downward course.

Should the circuit or apparatus be out of order, so that the central office could not be signaled in this way, magnet d of course would not be energized, and the central section a^2 of the coin-chute remaining in alignment with the lower section a^3 the coin would pass through into the return-tray a^4 , and thus be refunded to the depositor.

Circuit being completed through the line-signal relay k at the central office, the line-lamp is lighted, and the operator perceiving the signal will insert her answering-plug m into the answering-jack h' of the toll-line. The jack is constructed to establish the connection of the plug-circuit with the line before completing the circuit which includes the cut-off relay of the line, so that the flow of current will not be interrupted through the magnet d at the substation. The connection of the battery o with the line by means of the answering-plug is the same as the previous connection of the line-battery l —that is, the direction of the current flowing will not be changed. It will be noted that when the answering-plug at the central office is inserted in the answering-jack of the line the

grounded battery o of the plug-circuit instead of being connected with the limb 1 of the telephone-line will be connected with the limb 2 thereof, so that current will flow through the windings d^4 and d^5 of the magnet d at the substation in series. The flow of current through the magnet will now no longer be dependent upon the telephone-switch at the substation, since the current is supplied over limb 2 of the line, which is independent of said switch.

I have omitted from the drawing the operator's apparatus for listening in and ringing, since this is well known in the art, and its illustration would merely confuse the drawing and obscure the more important features.

Having ascertained the number of the called subscriber, the operator then inserts the other or connecting plug of the pair into the spring-jack of the called line. This brings the supervisory relay p under the control of the telephone-switch at the called station—that is, station B. When the called subscriber answers by removing his telephone from its hook, he closes a low-resistance bridge of the line, whereby current from battery o is permitted to flow through the supervisory relay p , which attracts its armature and closes the shunt-circuit 8, containing the magnet r' of the reversing-switch. Current then flows from the grounded battery o through the low-resistance shunt-circuit 8 to the third contact n^3 of the connecting-plug and thence to ground in the usual manner by way of the cut-off relay of the called line.

When the magnet of the reversing-switch receives current, its armatures r' r^2 are attracted, thus reversing the connection of the battery o with the toll-line 1 2. This reversal of current causes the polarized electromagnet d at the substation to tilt its armature in a clockwise direction, thus swinging the section a^2 of the coin-chute to the left, releasing the coin and directing the same into the cash-box.

Should the called party not respond, the subscriber at the toll-line station may attract the attention of the operator by vibrating his telephone switch-hook, thus opening and closing the circuit of the limb 1 of the telephone-line which is connected at the central office with the side 6 of the plug-circuit which includes the relay q . Since there is a permanent ground on the other side 2 of the telephone-line at the substation by way of the two windings of the magnet d , the relay q' when the reversing-switch is inert will remain excited, and when the subscriber vibrates his telephone switch-hook to open and close the circuit of the other side 1 relay q will alternately be energized and deenergized, thus alternately completing and breaking the shunt about the signal-lamp t , whereby said lamp is caused to flash. If after the called party has answered and the reversing-switch

has been operated the calling subscriber at the toll-station desires to signal the operator, he may do so in the same manner, both relays responding together.

5 If for any reason the called subscriber did not respond to the call, or if his line is already busy, so that connection could not be made therewith at the central office, the operator would inform the subscriber of that fact and
10 tell him to replace his telephone on its hook and that his coin would be refunded to him. She thereupon removes her answering-plug from the jack of his line, thus substituting the line-battery on the limb 1 for the battery
15 of the plug-circuit which is connected with the limb 2. The limb 1 being controlled by the telephone-switch, when the subscriber at the toll-line replaces his telephone on its switch the circuit of the magnet *d* will be
20 broken, and the magnet being deenergized will allow the central section *a*² of the coin-chute to swing back to its normal vertical position, thus releasing the coin and allowing it to fall into the return-tray. The iron con-
25 tact-spring *g* will simultaneously be released from the pole-piece of the magnet and will move back to its normal position within the coin-chute.

Having thus described my invention, I
30 claim as new, and desire to secure by Letters Patent, the following:

1. The combination with two united tele-
phone-lines, of a toll-box at the substation of
35 one of the lines, said toll-box having an electromagnetic coin-distributing apparatus for controlling the disposition of a deposited coin, a circuit for said coin-distributing appa-
40 ratus, including a source of current, means at the substation for closing said circuit, an electromagnetic switch for changing the di-
rection of flow of said current in the circuit, to cause the operation of the coin-distributing apparatus, and means, controlled through
45 the agency of the telephone-switch at the substation of the other line, for actuating said electromagnetic switch, substantially as set forth.

2. The combination with a telephone toll-
line extending from a substation to a central
50 office, of a toll-box associated with the line at the substation, said toll-box having a coin-chute leading through the same, and a cash-box in the interior, a polarized electromagnet having a tilting armature and mechanism
55 operated thereby to stop the coin or to direct it into the cash-box, according to the direction of movement of the armature, said magnet being connected with the line, a line-signal at the central office, a line-battery,
60 switch-contacts, actuated by a deposited coin in the toll-box, for closing the line-circuit, whereby current is directed through the polarized magnet in a direction to cause the same to stop the falling coin, a plug and plug-circuit for making connection with the line, a

battery in the plug-circuit, normally con-
nected therewith so that when the plug-cir-
cuit is connected with the line current will
flow in the same direction as current from
the line-battery, an electromagnetic switch 70
for reversing the connections of the battery in the plug-circuit, whereby the polarized
electromagnet is actuated to throw the coin
into the cash-box, means for connecting the
line with another line, and means, controlled 75
through the agency of the telephone-switch at the substation of the last-mentioned line, for operating said electromagnetic switch, as set forth.

3. The combination with two telephone- 80
lines extending from substations and united at a central office, of a toll-box at the substation of one of said lines, a polarized electro-
magnet connected with said line, distribut-
ing mechanism operated by said magnet 85
adapted to control the disposition of a deposited coin, a source of current at the central office connected with the toll-line, electro-
magnetic switching mechanism adapted when
operated to reverse the connection of said 90
source of current with the toll-line to energize said polarized electromagnet and operate said coin-distributing mechanism to
throw said deposited coin into the toll-box,
and circuit connections controlled through 95
the agency of the telephone-switch at the substation of said other line, for operating the said electromagnetic switching mechanism.

4. The combination with two telephone- 100
lines extending from substations and united at a central office, of a toll-box at the substation of one of said lines, an electromagnetic
coin-distributing apparatus in the toll-box
controlling the disposition of a deposited 105
coin, a circuit for said electromagnetic coin-distributing apparatus, a source of current in said circuit adapted to operate said coin-dis-
tributing apparatus to dispose of a deposited
coin, electromagnetic mechanism at the cen- 110
tral office controlling said circuit, and circuit connections for said electromagnetic mechanism controlled by the telephone-switch at
the substation of said other line; whereby the
disposition of the deposited coin at said first- 115
mentioned substation is dependent on the response of the subscriber at the other substa-
tion.

5. The combination with a telephone toll-
line, of a toll-box at the substation thereof, 120
said toll-box having a coin-chute, a battery in the circuit of the line, an electromagnet in the toll-box connected in the circuit, a mov-
able contact-piece and a contact-anvil there-
for associated with the coin-chute, said con- 125
tact-piece being adapted to be engaged by a deposited coin and pushed into engagement with the anvil, said contact-piece having an
armature portion which is moved into en-
gagement with the magnet-pole when the 130

contact is closed, and adapted to be held by the magnet-pole to maintain the circuit closed independent of the coin, as described.

6. The combination with a telephone toll-
 5 line extending from a substation to a central office, of a toll-box associated with the line at the substation, said toll-box having a coin-chute leading through the box to the exterior thereof, a line-signal and a source of current
 10 connected with the line at the central office, switch-contacts associated with the coin-chute adapted to be actuated by a coin therein, said switch-contacts controlling the flow of current in the line-circuit to actuate said
 15 line-signal, an electromagnetic coin-distributing device actuated by current from said central source in said circuit, adapted to stop said coin, and means for subsequently operating said device by current from said source
 20 to direct the coin within the box.
7. The combination with a metallic-circuit telephone-line having a polarized magnet in the line-circuit at the substation, of a return-conductor, means for connecting either side of
 25 the line to said return-conductor, a switch for opening one side of the line at the substation, a plug-circuit at the central office adapted to be connected with the line, a source of current, a bridge of the plug-circuit including
 30 said source of current, one pole of said source of current being connected to the third conductor aforesaid, a switch for reversing the connection of the limbs of the plug-circuit with the telephone-line, two supervisory re-
 35 lays, one in each limb or side of the plug-circuit, and a supervisory signal controlled jointly by said relays, substantially as set forth.
8. The combination with a toll-box, of a
 40 chute leading through the box to the exterior thereof, whereby a deposited coin may pass through and be refunded to the depositor, a cash-box, mechanism actuated through the agency of a deposited coin for stopping the
 45 coin in its passage through the box, means for operating said mechanism to release and refund the coin, and means for operating said mechanism to direct the coin into the cash-box.
- 50 9. The combination with a calling and a called telephone-line, each extending from a substation to a central office, of means at the central office for connecting the lines together, a toll-box at the substation of the
 55 calling-line, a coin-distributing apparatus in said toll-box responsive to current in the line, a source of current, an electromagnetic switch at the central office adapted to change the flow of current in the calling-line to operate said
 60 coin-distributing apparatus, a telephone-switch at the substation of the called line

for determining the flow of current in said called line, and a relay in the circuit of the called line, controlling said electromagnetic switch, whereby the operation of the tele- 65 phone-switch at the called station automatically brings about the operation of the electromagnetic coin-distributing apparatus at the calling-station, as set forth.

10. The combination with a telephone- 70 line extending in two limbs from a substation to a central office, of a toll-box for the line at the substation having a coin-distributing electromagnet therein, said electromagnet having two windings, a bridge of the line 75 including one of said windings, and a telephone-switch for controlling said bridge, a branch circuit from the winding in said bridge to earth including the second winding and a contact controlling said branch circuit, 80 the telephone-switch being located between the point of connection of the two windings and the limb 1 of the telephone-line, a line-battery at the central office normally connected with the limb 1 of the telephone-line, a 85 plug and plug-circuit for making connection with the line, means associated with the plug-circuit for cutting off the line-battery from the limb 1, and a grounded battery 0 in the plug-circuit, said battery 0 being connected 90 with the other limb 2 of the telephone-line when the plug-circuit is united therewith, whereby the circuit through the coin-distributing magnet at the substation is made independent of the telephone-switch thereat 95 when the plug-circuit is connected with the line, substantially as set forth.

11. The combination with a telephone-line extending from a substation to a central office, of a toll-box associated with the line at 100 the substation having a coin-chute leading through the box to the exterior thereof, a source of current and a line-signal connected with the line at the central office, a switch associated with a coin-chute and actuated by 105 a coin therein, adapted to complete the line-circuit to operate said line-signal, and electromagnetic mechanism actuated by current from said source in the circuit to stop a coin falling through said chute; whereby 110 the coin is stopped in the interior of the box when the line-circuit and apparatus is normal and operative, but is refunded to the depositor if the same is out of order.

In witness whereof I hereunto subscribe 115 my name this 7th day of November, A. D. 1900.

WILLIAM W. DEAN.

Witnesses:

DE WITT C. TANNER,
 W. W. LEACH.