No. 859,549.

PATENTED JULY 9, 1907.

W. W. DEAN.

COIN COLLECTING APPLIANCE.

APPLICATION FILED JAN. 14, 1902.

4 SHEETS—SHEET 1.

Fig. 1.

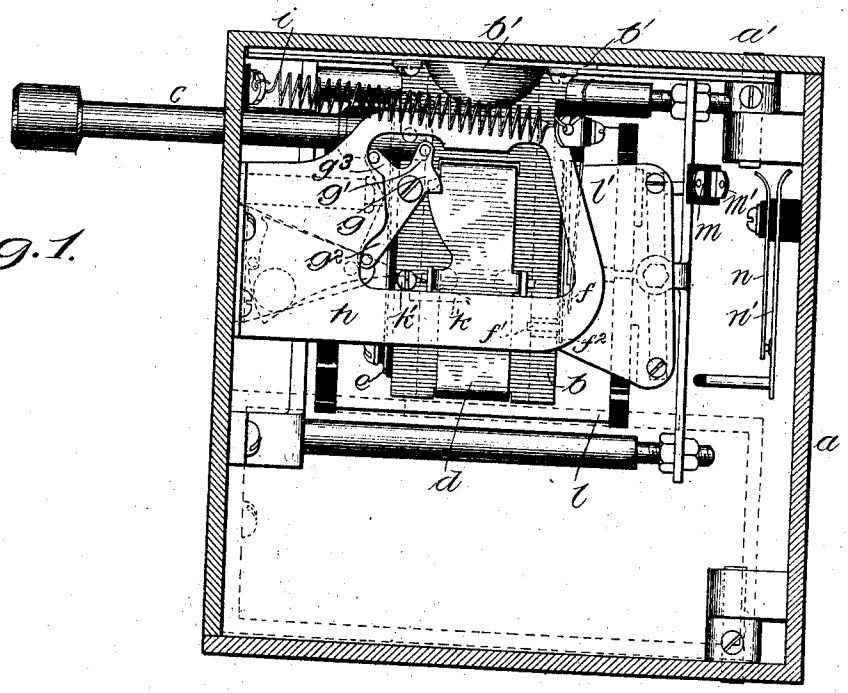
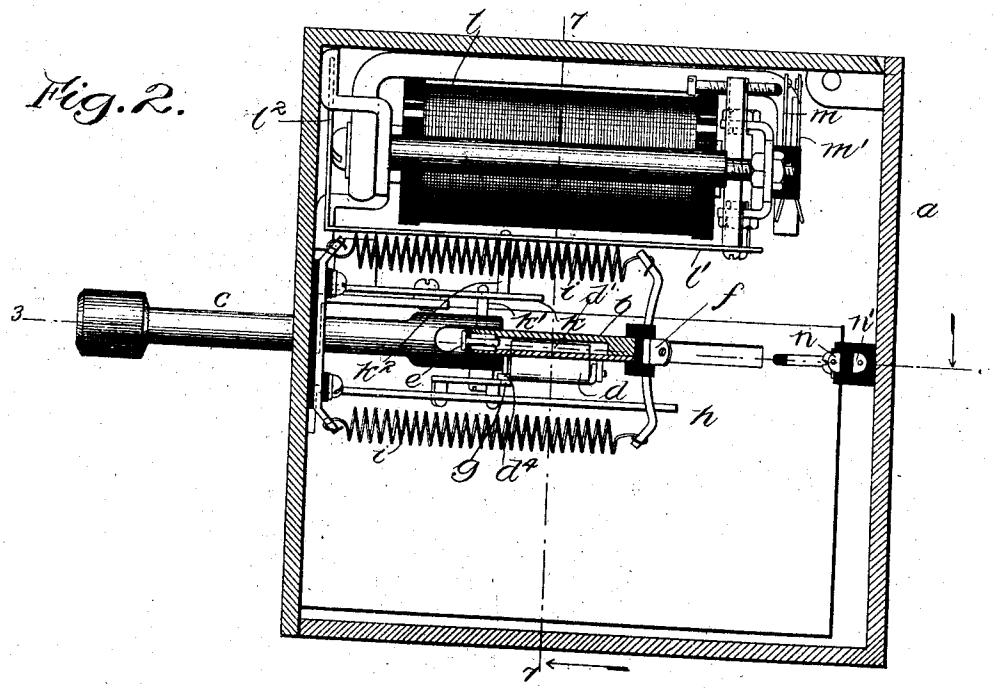


Fig. 2.



Witnesses:
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N. N. Leach

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4 SHEETS—SHEET 2.

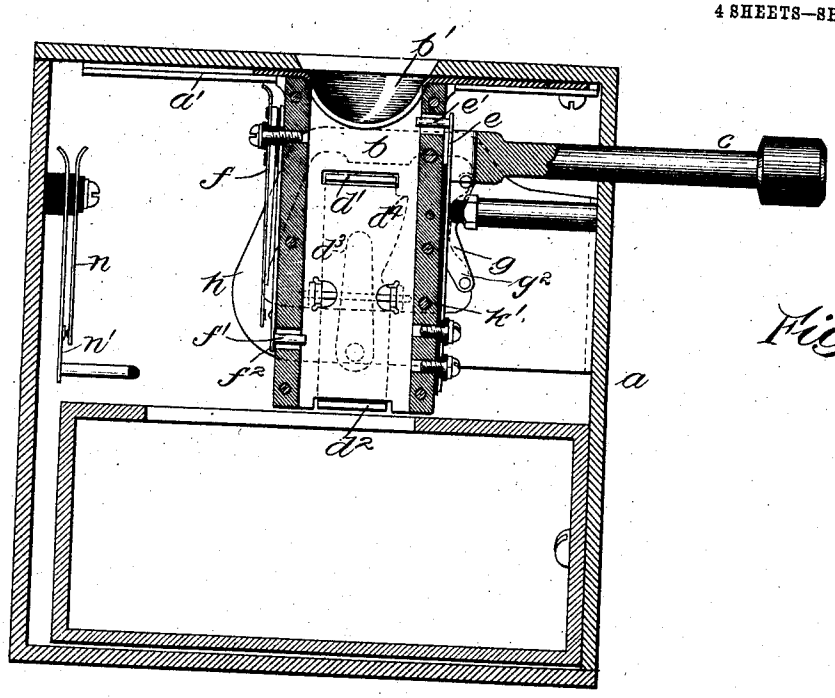

Fig. 3.

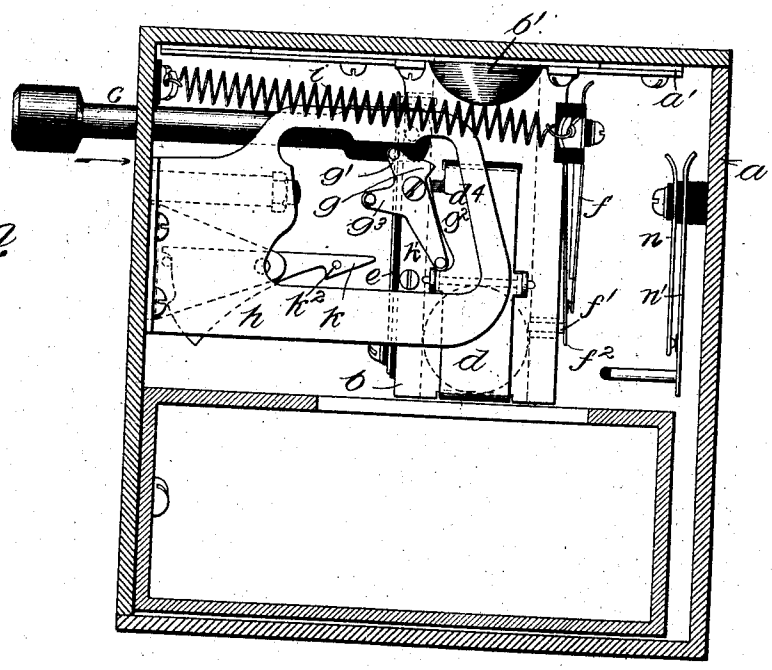

Fig. 4.

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4 SHEETS—SHEET 3.

Fig. 5.

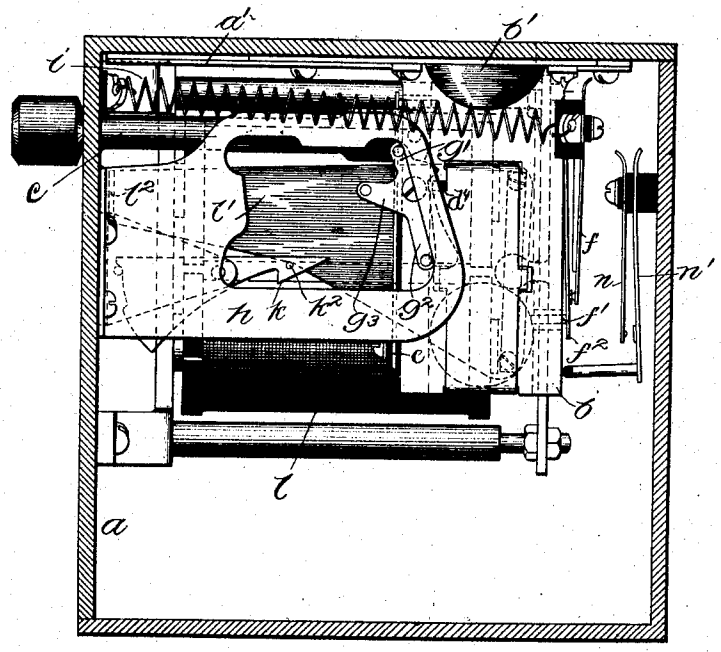
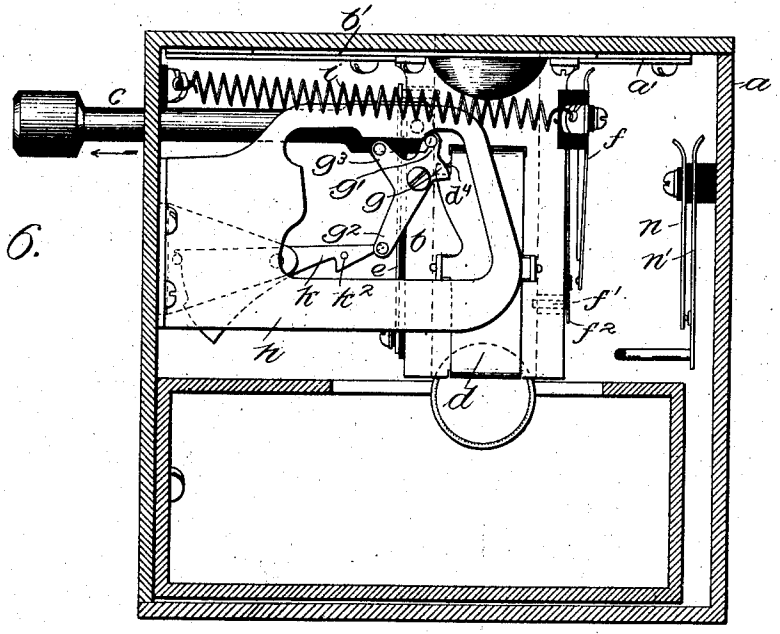


Fig. 6.



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4 SHEETS—SHEET 4.

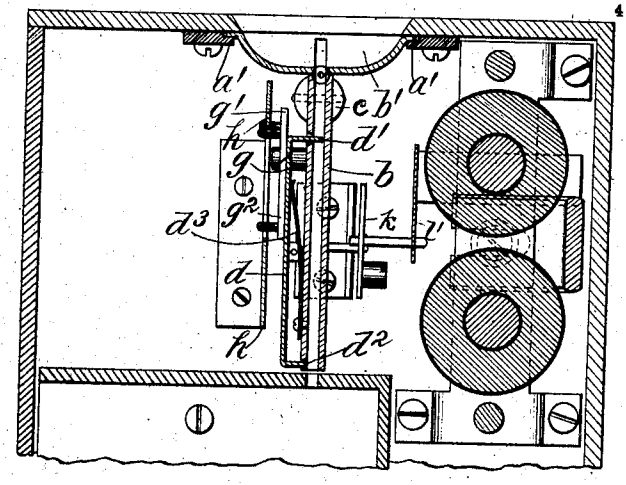


Fig. 7.

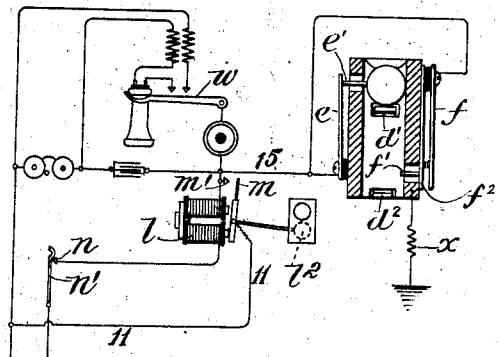
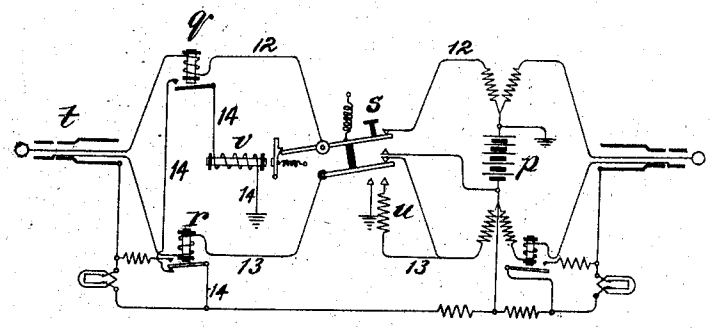
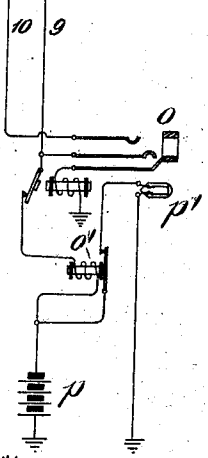


Fig. 8.





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W. W. Leach.

Inventor:

William W. Dean,

By Fenwick & Barton

Att

UNITED STATES PATENT OFFICE.

WILLIAM W. DEAN, OF CHICAGO, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

COIN-COLLECTING APPLIANCE.

No. 859,549. Specification of Letters Patent. Patented July 9, 1907.

Application filed January 14, 1902. Serial No. 89,663.

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 Coin-Collecting Appliances, (Case 42,) of which the following is a full, clear, concise, and exact description.

My invention relates to toll apparatus for telephone exchanges, and its object is to provide improved mechanism and circuits by which the surrender of a coin by the subscriber may be made necessary to a complete use of the telephone by him.

In accordance with my invention, a temporary coin receiver is provided in association with the toll box at the telephone substation, said receiver being constructed to detain a coin in a position accessible to the subscriber, a contact device being arranged to be actuated by the coin in the receiver, to control a signal at the central office, and mechanism is arranged to be manually operated by the subscriber after he is actually put in communication with the called party, to transfer the coin from the temporary receiver to the cash box. The mere preliminary or tentative deposit of the coin in the receiver is sufficient to transmit the signal and gain the attention of the central office operator, but since the coin is maintained accessible to the subscriber, he may at any time before the operation of the transferring mechanism withdraw the said coin. The toll apparatus which permits this is of considerable advantage, since if the line is out of order, or if the desired connection cannot be obtained, the subscriber can take back his coin independent of any action on the part of the central office operator. But in order to compel the transfer of the coin to the cash box when the desired connection has been obtained, I provide blocking mechanism, as, for instance, a short circuiting switch, which may be actuated through the agency of apparatus at the central office to render the substation telephone inoperative until said blocking mechanism has been reversed or counteracted, and restoring mechanism is arranged to be operated in the transfer of the coin to the cash box, so that the subscriber is enabled to restore his telephone apparatus to operative condition by actuating the mechanism which transfers the coin.

A signal may be arranged to be displayed at the substation simultaneously with the operation of the blocking mechanism, so that the subscriber on seeing the signal will know that the desired connection has been obtained and that he has only to actuate his toll device in order to obtain complete use of his telephone.

I will describe my invention particularly, by reference to the accompanying drawings, and the several features and combinations which I regard as novel will be pointed out in the appended claims.

Figure 1 is a vertical sectional elevation of the toll box, with the coin-carrier in its normal idle condition; Fig. 2 is a plan view of the mechanism in the interior of the box, the upper part of the coin receiver being cut away to disclose parts lying below; Fig. 3 is a vertical sectional view on line 3—3 of Fig. 2, looking in an opposite direction from the view of Fig. 1; Figs. 4, 5 and 6 are sectional elevations similar to Fig. 1, but showing the coin-carrier and associated parts in the positions which they would assume at different stages in the operation of the device, a portion of the mechanism of the toll box being omitted for clearness; Fig. 7 is a transverse section on line 7—7 of Fig. 2; and Fig. 8 is a diagram illustrating a telephone toll line extending from a substation to a central office, the system being organized and equipped in accordance with my invention.

Corresponding letters of reference indicate the same parts wherever they appear in the drawings.

I will first describe the subscribers toll apparatus at the substation.

The box *a* is made in two parts which are hinged together, as shown in Fig. 1, said parts being normally locked together, but adapted to be opened out when unlocked, to permit access to the interior of the box. The coin-carrier *b* within the box comprises a vertical chute, rectangular in cross-section, with a plate *b'* at the top fitting closely against the under side of the top of the box, and adapted to slide to and fro in tracks *a' a'*. A plunger *c* is mounted on the forward edge of the coin-carrier and projects out through the front of the box, carrying upon its end a button by which it may be pressed in to move the coin-carrier. The plate *b'* is dished as shown, so that a coin held in the upper part of the chute may readily be grasped and removed, if desired. An oval hole is cut in the top of the toll box, as shown in Figs. 3 and 7, with which hole the dished portion of the plate registers when the coin-carrier is in its normal position.

A cash box is provided in the lower part of the toll box, underneath the coin chute, and has a slot cut in its top registering with the opening of the chute, so that a coin released from the chute will fall into the cash box.

Two coin-stops d' d^2 are provided in association with the chute, formed upon the upper and lower ends, respectively, of a vertical rocking-lever *d* which is pivoted in its center to ears formed on the side of the coin chute. The coin chute has holes cut in its side wall, through which holes the stops d' d^2 are adapted to be entered by the lever *d*, to arrest a falling coin. The lever *d* is normally held by means which I shall pres-

ently describe, in the position shown in Fig. 7, the upper stop d' being held within the chute so that a coin cannot be pushed down the chute further than this stop. When the lever is released, it is moved by a spring d^3, the upper stop d' being withdrawn from the chute and the lower stop d^2 interposed therein, thus releasing a coin which may be held at the top of the chute, allowing it to fall as far as the bottom, and there stopping it until the lever is rocked back again, whereupon the coin will be released and fall into the cash box. It will be seen that as long as the lever d is in the position illustrated in Fig. 7 (also in Figs. 1, 2 and 3) a coin, although placed in the upper end of the chute, may be taken out again by the subscriber if he wishes; but as soon as the lever is released and changes its position, the coin will fall down the chute beyond the reach of the depositor; not, however, immediately passing out of the chute into the cash box, but being detained at the lower end by the stop d^2, as described.

A spring e, shown in Figs. 3 and 8, is mounted upon but insulated from the coin chute, and carries a pin e' upon its end which normally projects within the coin chute in position to be engaged by a coin held in the upper part of the chute by the stop d'. Thus when a coin is inserted in the chute it serves to complete electrical connection from the spring e to the metallic framework of the toll box.

A pair of springs $f f^2$ is mounted on the edge of the coin chute, which springs are normally insulated from one another. The spring f^2, however, carries a stud or pin f' upon its end, which projects into the coin-chute near the bottom, in position to be engaged by a coin held by the lower stop d^2. The coin pushes the spring f^2 into contact with spring f, making an electrical connection between them. The spring e and the spring f are electrically connected, and the spring f^2 is mounted directly upon the metallic coin chute in electrical connection therewith. In other words, the contacts controlled by spring e and by spring f, respectively, are connected in multiple.

I will now proceed to describe with reference to Figs. 1, 4, 5 and 6 the means which I have provided for rocking the lever d in and out to interpose one or the other of the stops d' d^2 in the coin chute. The upper portion of the lever d is formed with a projecting shoulder d^4, which is beveled as shown, and a cam g, pivoted to the coin chute, is adapted to engage said beveled shoulder and thus force the upper end of the lever in, carrying the stop d' into the coin chute. The cam g, however, may be rotated to release the lever d, whereupon the spring d^3 (shown in Fig. 7) mounted upon the coin chute underneath the lever, will force the upper end of said lever outward, thus withdrawing the stop d' from the coin chute and interposing the other stop d^2 at the lower end thereof.

In order to rotate the cam g and also to furnish stops for limiting the movement of the sliding coin carrier, I have provided the cam g with two lever arms $g' g^2$, each carrying upon its end a pin projecting horizontally, as shown in Fig. 7. A cam plate h is provided, as shown, having cam surfaces upon which the pins carried by the lever arms $g' g^2$ are adapted to ride, whereby as the coin-carrier is moved to and fro, the cam g is rotated or rocked on its pivot to move the stop lever d at the proper time. A third lever arm g^3 is provided for the cam g, said lever arm also having a pin on its end adapted to engage the cam plate h. This third lever arm g^3, however, has no active part in the moving of the cam, but serves as a stop to limit the movement of the coin-carrier, in a manner which I shall hereafter describe.

Two springs i i are attached to the coin-carrier and anchored upon the toll box, as shown, which tend to yieldingly maintain the coin-carrier in the position shown in Fig. 1 and to return it to this position when released, after being pushed in.

A detent k normally engages a pin k' mounted on the side of the coin chute, as shown in Fig. 2, and prevents the coin carrier from being moved unless the detent is raised.

A polarized electromagnet l is mounted in the toll box at the side of the coin-carrier, as shown most clearly in Figs. 1 and 2. A signal arm l' is mounted upon the armature of said electromagnet and carries upon its end an indicator or target l^2, which is adapted to be displayed in an opening of the toll box, as shown diagrammatically in Fig. 8. The arm l' rests upon a pin k^2 carried by the pivoted detent k, so maintaining the detent in engagement with the pin k' mounted on the coin chute. The detent k is provided with a counter-balance which is adapted to raise the detent from the pin k', when said detent is relieved from the pressure of the arm l'.

A pair of contacts m m' is associated with the armature of the electromagnet l and said contacts are adapted to be closed together when the magnet rocks its armature.

Contact springs n n', which are normally in engagement with each other, are arranged to be separated by the coin carrier b when it is pushed clear in. The contact spring n' carries an insulating stud which is in a position to be struck by the edge of the coin-carrier, so that the spring is thus pushed back and breaks engagement with the other spring n.

In Fig. 8 I have illustrated diagrammatically the circuits and apparatus of a telephone line equipped with my improved toll apparatus, a portion of the central office switching mechanism being also shown. The line extends in two limbs 9 10 from the substation to a springjack o at the exchange switchboard. The limb 9 is extended through the contacts of the usual cut-off relay and through the winding of the line relay o' to the free pole of the grounded central office battery p. A line signal lamp p' is shown in a local circuit controlled by the relay o'. The springjack o has the usual short and long line springs, which are connected with the limbs 10 and 9 of the telephone line, and also has the usual test ring or third contact, which is connected to earth through the winding of the cut-off relay.

I have indicated a pair of plugs and their plug circuit for making connection with the line, each of said plugs having the usual tip and ring contacts, which are united with the corresponding contacts of the mate plug by conductors 12—13 which include the windings of the usual repeating coil. I have shown the battery p connected in the bridge of the plug circuit between the windings of the repeating coil. It is understood, of course, that in accordance with the usual practice a single central battery is preferably employed, connected with the several lines and also with the several

operators' plug circuits; but as is usual for clearness of illustration two separate batteries are shown, which are both marked with the same reference letter p, because one and the same battery is referred to.

A switch s is provided for controlling the connection of the conductors leading from the answering plug t to the battery p. The circuit is normally completed as shown in the drawing, but when the key s is depressed, it will be seen that both conductors 12—13 leading to the tip and ring contacts of the answering plug, will be connected in multiple with the free pole of the battery, conductor 12 being connected directly therewith, and conductor 13 through the resistance u. The switch s when operated also serves to connect the conductor 13 directly to earth.

Two relays q and r are provided in the conductors 12 and 13, respectively, between the answering plug and the switch s, so that said relays are thus in the path of current from battery p to the subscriber's line with which the answering plug may be connected. An electromagnetic tripping device v is provided for the switch s, said switch when once depressed being held down until released by the operation of said tripping device. The tripping magnet is included in a local circuit 14, which is controlled at the front contact of relay q and the back contact of relay r, said circuit being thus completed only when the relay q is excited and the relay r simultaneously inert.

At the substation the usual telephone apparatus, which need not be particularly described, is included in a bridge of the line controlled by the gravity telephone switch w. The magnet l of the toll device is included in the conductor 9 at the substation, and the contacts n n' are interposed to control the circuit of said conductor. A branch 15 to earth from the conductor 9 between the magnet l and the telephone apparatus is provided, said ground branch 15 including a resistance x and being controlled by the multiple contact devices e and f of the toll box.

The operation of the system may be traced as follows: When the subscriber at the toll station desires an exchange connection he inserts a coin in the top of the coin chute and so completes the circuit of the branch 15 to earth through the resistance x. The line relay o' at the central office is thus excited by current from battery p flowing over limb 9 of the telephone line to earth at the substation, so that said line relay is excited and brings about the display of the line signal p'. If for any reason the line is out of order, or if the central office operator does not respond, the subscriber may simply take back his coin, but ordinarily the operator will observe the signal and will insert her answering plug t in springjack o and communicate with the subscriber by telephone in the usual way to learn the number of the subscriber wanted. It is understood, of course, that each plug circuit is provided with the usual listening and ringing keys with their accessory apparatus, but this has been omitted from the drawing for clearness. After the desired connection has been made and the called party has responded, the operator may depress the blocking switch s, whereby the connection of the tip of the answering plug with the battery will be reversed, so that both the tip and ring contacts of the answering plug will be connected in multiple with the same pole of the battery, the resistance u being also interposed in conductor 13 between the relay r and the battery, said conductor 13 being also grounded at the switch s. The magnet l at the substation is polarized, so that it has up to this point been unaffected by the current flowing through it, but by the operation of the switch s the flow of current through the magnet l at the substation is reversed, current flowing out over the tip of the plug to the conductor 10, through the bridge containing the subscriber's telephone apparatus, which bridge has been closed by the switch w to the point where the grounded branch 15 is connected. Here the current divides, part flowing to earth through the resistance, and the other part flowing back through the magnet l, in a reverse direction to the previous flow, over the limb 9, to the ring contact of the plug, thence through relay r to earth at the switch s. A portion of the current from battery p will, of course, flow directly from the free pole of the battery p, through the winding of the induction coil, and through the resistance u to earth; but a sufficient portion of the current to operate the magnet l will flow to line, as previously traced. When the magnet l is excited, it closes the blocking switch m m', displays the signal l^2 and unlocks the toll device, so that the plunger c may be pushed in. The subscriber's telephone is now short-circuited at the switch m m', so that he cannot telephone, but the display of the signal l^2 indicates to him that he has only to press the plunger c and deposit the coin to restore his telephone apparatus to operative condition.

Upon the initial movement of the coin chute, the pin upon the end of the lever g' is engaged by a projecting portion of the cam plate h and the cam g is rotated in a contra-clockwise direction, as shown in Fig. 4, thus releasing the stop lever d. The spring d^3 is thus permitted to rock the lever d upon its pivot, so withdrawing the upper stop d' from the coin chute and interposing the lower stop d^1 therein. The coin, therefore, falls down the chute until it strikes the lower stop d^2, where it is held, engaging the pin f' carried by the spring f^2 and so forcing said spring into engagement with the spring f and reëstablishing the electric circuit which has been momentarily broken while the coin dropped from the upper stop to the lower one. The parts are now in the position illustrated in Fig. 4. The coin is shown in dotted lines at the bottom of the chute. The subscriber, however, is compelled to go on and push the plunger c in as far as it will go. He will be unable to use his telephone until he has pushed in the plunger far enough to separate the contacts n n'. It will be noted that the stop arm g^3 has now been swung around, so that the coin chute cannot be returned to its initial position, since upon the retrogression of the plunger the pin carried upon the end of the arm g^3 would strike the inner end of the cam plate shown immediately to the left in Fig. 4. Further retrogression of the plunger would therefore be impossible, so that the carrier could not be returned completely to its initial position. In order to swing this locking lever g^3 out of engagement, it is necessary to push the plunger clear in, as shown in Fig. 5, and in doing this the contacts n n' are separated, as shown. Then, when the plunger is released, the springs i i return the coin chute to its initial position, and in returning, the pin upon the end of the lever arm g' strikes a projecting portion of the cam plate h, a

shown in Fig. 6, so that the cam g is rotated and engages the cam surface d^4 of the lever d, thus rocking the lever to withdraw the lower stop and interpose the upper one. The coin which was held by the lower stop is thus released and falls down into the cash box. The rotation of the cam from the position shown in Fig. 5 to the position shown in Fig. 6, it will be seen, moves the locking lever arm or stop g^3 into a position such that it will no longer prevent the return of the carrier to the initial position. In returning, the parts take their original positions, as shown in Fig. 1. The operation of the plunger c, when a coin is in the chute, thus serves to ground the limb 10 of the telephone line through the resistance x and simultaneously open the limb 9 at the switch $n\,n'$. The circuit of relay q is thus completed while relay r is deprived of current. The local circuit 14, containing the restoring or tripping magnet v at the central office, is thus completed, whereby said magnet is excited and trips the key s, which returns to its original position, establishing the normal connection of the battery p with the plug circuit. The instant the contacts $n\,n'$ are separated, the magnet l is deprived of current, so that it allows its armature to fall back, restoring the blocking switch $m\,m'$ to its original position. Finally, as the coin chute returns to its original position, after having been pushed in, the coin is released by the stop d^2 and is thus transferred to the cash box. As soon as the contacts $n\,n'$ are released by the return of the coin chute to its original position, the telephone circuit is completed and the subscribers may converse.

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

1. The combination with a telephone line extending from a substation to a central office, of a toll box at the substation having a coin receiver constructed to permit the manual withdrawal of a deposited coin therefrom, a cash box, mechanism constructed for manual operation by the subscriber arranged to transfer the coin from the receiver into the cash box, a contact associated with said coin receiver and controlled by the coin therein, a circuit including a source of current and a signal device at the central office, controlled by said contact, a blocking device arrange dt o prevent telephonic communication over the line, means controlled at the central office for actuating said blocking device, and mechanism actuated in the operation of the coin-transferring mechanism arranged to counteract said blocking device.

2. The combination with a telephone line extending from a substation to a central office, of a toll device at the substation having a temporary coin receiver, a cash box, mechanism arranged for manual operation by the subscriber for transferring the coin from the temporary receiver to the cash box, a switch associated with said receiver and adapted to be controlled by the coin therein, a signal at a distant point and electrical means for actuating the same controlled by said switch, a detent arranged to normally prevent the operation of the transferring mechanism, and electrical means arranged to withdraw said detent, controlled through the agency of a switch at the distant point where the signal is located.

3. In a toll box for telephone pay stations, the combination with a manually-operated movable coin-carrier for depositing a coin, said carrier being constructed to retain the coin in an accessible position until the said carrier is moved, means actuated in moving the carrier for transferring the coin to an inaccessible position, switch contacts associated with the carrier adapted to be closed by a coin placed therein, an electric circuit controlled by said switch contacts and a switch adapted to maintain the circuit closed after the transfer of the coin.

4. The combination with a telephone toll line extending from a substation to a central office, of a toll box at the substation having a movable coin-carrier and means adapted to move the same, stops controlling the passage of a coin through said coin-carrier, means actuated in the movement of said coin-carrier to deposit a coin in the box for operating said stops, an electromagnet and a blocking device operated thereby for preventing telephonic communication from the substation, means controlled through the agency of a switch at the central office for exciting the magnet to operate said blocking device, and mechanism actuated in the movement of the coin-carrier for counteracting said blocking device, whereby the deposit of a coin by said carrier restores the operative condition of the apparatus.

5. The combination with a telephone line extending from a substation to a central office, of a toll box at the substation having a movable coin-carrier and means adapted to move the same, stops controlling the passage of a coin through said coin-carrier, means actuated in the movement of said coin-carrier to deposit a coin within the box for operating said stops, an electromagnetic switch for rendering the telephone apparatus inoperative, a circuit including a source of current for operating said electromagnetic switch, a switch contact in the toll box controlling the last-mentioned circuit, and means actuated in moving the carrier to deposit a coin within the box for changing the said switch contact, whereby the electromagnetic switch is changed to restore the operative condition of the telephone apparatus by the deposit of a coin by said movable carrier, as set forth.

6. In a toll box, the combination with a coin chute adapted to slide to and fro within the box and a plunger for reciprocating said coin chute, said box having an opening through which a coin may be inserted in the chute, of upper and lower stops associated with the coin-chute for controlling the passage of a coin through the same, and stop actuating mechanism actuated in the movement of the coin chute for interposing and withdrawing said stops to control the coin, as described.

7. In a toll box for telephone pay stations, the combination with a manually-movable coin-carrier for depositing a coin within the box, of a detent normally preventing the movement of said carrier, an electromagnet for removing said detent, a signal and means actuated through the agency of said magnet in the removal of the detent for operating said signal, whereby the display of the signal indicates the release of the coin-carrier.

8. The combination with a telephone line extending from a substation to a central office, of a toll box at the substation, a manually-movable coin-carrier for the toll box for depositing coins therein, a detent normally preventing the movement of the coin-carrier, an electromagnet, mechanism operated thereby for withdrawing the detent, and a blocking device simultaneously actuated through the agency of said magnet, for preventing telephonic communication over the line, and means controlled from the central office for actuating said electromagnet.

9. In a toll box for telephone pay stations, the combination with a movable coin-receiving carrier adapted for manual operation to deposit a coin within the box, of a stop normally preventing the movement of the carrier, an electromagnet and mechanism operated thereby for removing the stop, and means controlled at a distant point for exciting said magnet.

10. The combination with a toll box having a movable coin-carrier for depositing coins therein, said carrier being constructed to normally maintain a deposited coin in an accessible position, of an electrical contact associated with the carrier and controlled by a coin therein, a signal circuit controlled by said contact, mechanism actuated in the initial movement of the carrier constructed to transfer the coin to an inaccessible part thereof, a contact associated with the carrier and controlled by the coin when transferred, a contact device controlled in the movement of the coin-carrier, electromagnetic mechanism controlled through the joint agency of the two last-mentioned contacts, and discharging mechanism arranged to transfer the coin from the carrier into the interior of the toll-box.

11. The combination with a toll box for telephone pay

stations having an opening therein, of a coin chute arranged to be moved to and fro within the box, the mouth of said coin chute normally registering with the opening in the toll box, through which opening a coin may be inserted in the chute, a stop normally interposed in the chute and arranged to hold the coin from falling beyond the reach of the subscriber, a signal-controlling contact associated with the chute controlled by a coin held by said stop, and mechanism actuated in moving the coin chute arranged to withdraw the stop to release the coin.

12. The combination with a toll box having a movable carrier for depositing coins therein, said carrier being constructed to retain the coin temporarily during its journey and finally discharge said coin into the cash box, of an electrical contact associated with said carrier and adapted to be closed by the coin therein, a contact arranged to be opened in moving the carrier to one end of its journey, and an electric circuit controlled through the agency of said contacts acting jointly.

13. The combination with a telephone line extending from a substation to a central office, of a toll device at the substation having a cash box, a temporary coin receiver, stops arranged to control the transfer of a coin from said temporary receiver to the cash box, manually operated mechanism arranged to actuate said stops, a contact associated with said receiver and adapted to be closed through the agency of a coin therein, a circuit including a signal device at the central office controlled by said contact, a blocking device constructed to render the substation telephone apparatus inoperative, means controlled at the central office for actuating said blocking device, and means controlled jointly by the coin in the receiver and by the operation of said coin-transferring mechanism, arranged to counteract said blocking device, whereby the telephone apparatus is restored to operative condition by the deposit of a coin by said coin transferring mechanism.

14. The combination with a toll box having a reciprocating carrier for depositing coins therein, of a contact associated with the carrier and arranged to be controlled by the coin therein, a contact carried by the toll box arranged to be controlled by the movement of the carrier to the end of its journey, a circuit electrically controlled by said contacts jointly, and coin discharging mechanism arranged to be actuated by the carrier in returning to its initial position for discharging the coin therefrom.

15. The combination with a toll box having a manually-operated transfer device for depositing coins therein, of a circuit controlling switch arranged to be actuated in moving the transfer device to the end of its journey, coin-discharging mechanism arranged to be actuated by the said transfer device upon a return to its initial position, a locking device arranged to be actuated by a partial movement of the transfer device to prevent the return thereof, and restoring mechanism for the locking device arranged to be actuated in the movement of the carrier to the end of its journey to permit the return of the carrier, as described.

16. The combination with a toll box having a coin chute, of an upper and lower stop adapted to be interposed in said coin chute, electrical contact devices operated by a coin when held by said stops, manually-operated stop-actuating mechanism for interposing said stops in the coin chute and withdrawing the same therefrom, and electric switch mechanism controlled through the joint agency of said manually-operated mechanism and a coin held by the lower stop.

17. In a toll box, the combination with a manually operated movable coin chute, of an upper and lower stop and a stop lever adapted to interpose the stops in the chute and withdraw them therefrom, a cam for rocking said stop lever, and mechanism actuated in the movement of said coin chute for actuating said cam.

18. In a toll box, the combination with a reciprocating coin chute, of a stop normally maintained in the chute near the top to prevent a coin from falling beyond the reach of the subscriber, a second stop adapted to be interposed in the chute at a lower point, stop actuating mechanism actuated in the movement of the chute for withdrawing the upper stop and interposing the lower one, electrical contact devices operated by the coin while said coin is held by either of said stops, electric switching mechanism controlled jointly by the coin when held by the lower stop and by the movement of the carrier to the end of its journey, said stop actuating mechanism being arranged to be moved upon the return of the carrier to its initial position, to withdraw the lower stop to discharge the coin.

19. In a toll box, the combination with a reciprocating coin-chute, of a stop normally maintained in the chute near the top and arranged to prevent a coin from falling beyond the reach of the subscriber, a second stop arranged to be interposed in the chute at a lower point, stop actuating mechanism constructed to be moved in the movement of the chute and arranged to withdraw the upper stop and interpose the lower one, electric contacts associated with the coin chute and arranged to be controlled by the coin when held by either stop, a contact arranged to be controlled in the movement of the carrier to the end of its journey, an electric circuit controlled jointly by the aforesaid contacts, means arranged to withdraw the lower stop to discharge the coin in the return of the carrier to its initial position, a locking device g^3 constructed to be set in the initial movement of the coin chute, said locking device being arranged to be restored in the movement of the chute to the end of its journey.

20. The combination with a toll box having a reciprocating coin chute arranged to slide to and fro within the box, said box having an opening through which a coin may be inserted in the chute, of a centrally-pivoted rocking lever d carrying upper and lower stops d' d^2 and constructed to enter either of said stops into the coin-chute, the lever being arranged to be normally held in position to interpose the upper stop, to hold a coin in an accessible position, a plunger arranged to reciprocate the coin-chute, a switch contact associated with said chute arranged to be opened in moving said plunger, said lever being arranged to be actuated in moving the coin-chute, to withdraw the upper stop and interpose the lower one, whereby the coin is transferred to the lower portion of the chute, a switch contact closed by the coin within the chute, and an electric circuit controlled through the agency of said switch contacts acting jointly.

21. In a toll box, the combination with a coin chute, of a centrally pivoted lever therefor, an upper and a lower stop carried by said lever and registering with openings in said chute, a rotatable cam normally engaging said lever to interpose said upper stop in the chute, said stop being adapted to detain a coin placed within the chute in a position accessible to the depositor, manually operated mechanism adapted to rotate said cam to withdraw the same from engagement with said lever, and means actuated when said cam is rotated adapted to move said lever to withdraw the upper stop from the chute and interpose the lower stop therein.

22. In a toll box, the combination with a movable coin chute, of a plunger adapted to reciprocate the same, of an upper and a lower stop and a centrally pivoted stop lever adapted to interpose the stops in the chute and withdraw them therefrom, a rotatable cam mounted upon said coin chute and adapted to rock said lever, and a cam plate engaging said cam when the coin chute is moved to rotate the same.

23. The combination with a toll box, of a movable coin receiver associated therewith and a plunger adapted to reciprocate the same, of a cash box, an upper and a lower stop for said coin receiver controlling the passage of a coin therethrough and into the cash box, said upper stop being normally interposed in said chute to detain a deposited coin in a position where it protrudes outside the box, a centrally pivoted lever controlling said stops, electrical contacts closed by a coin when held by either of said stops, and mechanism operated in the movement of said coin receiver adapted to rock said lever.

24. The combination with a telephone line extending from a substation to a central office, of a toll box at the substation, a movable coin carrier for the toll box adapted to deposit coins therein, a plunger adapted to recipro-

cate said coin-carrier, a detent normally preventing the movement of the coin carrier, an electromagnet, and means controlled at the central office adapted to complete a circuit for the magnet to actuate the same, mechanism operated by said magnet when energized adapted to withdraw said detent, a short circuit of the telephone apparatus simultaneously completed by said magnet, and contacts included in the circuit of said magnet opened in the movement of the coin-carrier to deposit a coin in said box; whereby the operative condition of the telephone apparatus is restored by the deposit of a coin by said coin-carrier.

In witness whereof, I, hereunto subscribe my name this 18th day of December A. D., 1901.

WILLIAM W. DEAN.

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