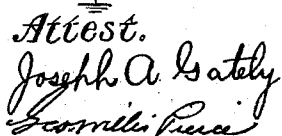
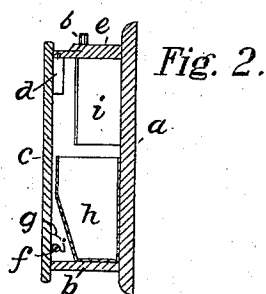


G. K. THOMPSON.
TELEPHONE TOLL APPARATUS.

Patented Oct. 1, 1895.



Inventor,
George K. Thompson

UNITED STATES PATENT OFFICE.

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TELEPHONE-TOLL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 547,405, dated October 1, 1895.

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To all whom it may concern:

Be it known that I, GEORGE K. THOMPSON, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Telephone-Toll Apparatus, of which the following is a specification.

This invention relates to auxiliary apparatus used in connection with telephone sub-stations or public toll-stations where a certain specified piece of money is required to be deposited in a cash-box before the called-for connection with another station will be made by the operator at the central station, at which the line-conductors of the said stations terminate. In the special type of such apparatus to which my invention belongs the line-circuits are arranged in the usual manner, and a person at one sub-station who wishes to converse with another at a second sub-station, connected with or through the same central station, can call up the central-station operator by the usual means and ascertain whether the wished-for sub-station can be obtained, and, provided it can, the operator will proceed to loop the two sub-station circuits together after the person making the call has deposited the required single coin into a coin-chute, which, in co-operation with a manually-operated device, momentarily closes a normally-open circuit, including an audible signaling apparatus through the sub-station transmitter-battery and one helix of the induction or repeating coil, and transmits a predetermined signal to the central station which is heard by the operator.

The invention consists of a mechanical device having a curved coin-chute, into one side of which projects a pin carried by a spring-retracted slide provided with a depressible-knob. When a coin is inserted it passes around and under the said pin and comes to rest upon two detaining abutments, one of which is fixed, while the other is movable. The movable abutment consists of one edge of a spring retracted and pivoted lever, which is provided with means for momentarily closing two normally-separated springs, (after the coin has been forced through the chute by the depression of said knob,) thereby closing a circuit through a buzzer or other audible

signaling apparatus, the transmitter-battery, and one helix of the induction or repeating coil. An essential feature of my invention is that before the said normally-separated springs are brought into contact with one another and a signal sounded in the circuit, the coin must have passed down the chute beyond recovery, all of which I will now proceed to describe in detail, reference being had to the drawings, in which—

Figure 1 is a perspective view of the box inclosing my auxiliary coin-controlling apparatus used in connection with the sub-station telephonic outfit. Fig. 2 is a vertical section of the same; and Figs. 3, 4, and 5 are, respectively, front, edge, and rear elevations of the operating parts of the invention detached from the inclosing box. Fig. 3 also shows the apparatus associated with the electrical circuits from a sub-station to a central station. Fig. 6 shows the invention in connection with a common battery system, in which the source of electricity for energizing the sub-station transmitters is located at the central station.

In Figs. 1 and 2, A represents the coin-controlled signaling device as it appears when ready to be attached to the back-board of a telephone sub-station set.

In Fig. 2 *i* indicates the location of the mechanism secured to the back *a*, directly under the external coin-opening *e*, and *h* is a removable cash-box into which the coins fall, resting upon the bottom *b* of the box. *c* is a removable front provided with one or more hooks *g* upon its inner surface, near the bottom thereof, which embrace the rod *f*, extending from one side of the box to the other. *d* is a lock whose bolt enters the top part of the box.

Referring to Figs. 3, 4, and 5, 1 represents a metal plate or backing which sustains all of the parts of the device, and 3 is another metal plate in front of plate 1 and separated therefrom by a distance represented by the thickness of the interposed plates 2, which are of irregular shape to allow for a curving coin-passage, fall, or chute 4, which extends entirely across and between plates 1 and 3, the latter part of the chute being straight and vertical. The bolts 5 5 5 extend through the

back *a* of the box and pass through the plates 1, 2, and 3 with a smaller diameter, so that a shoulder is provided against which the plates are pressed by the nuts 50, thus holding all the parts together and to the back *a*.

10 is a strap or bridge secured to the plate 1 by screws 12 and 13, and has an extension 8 projecting outward at right angles thereto.

14 is a flat piece of metal upon the rear side of plate 1. Its lower end fits under the bridge-piece 10 and terminates in the right-angled projection 9. At its upper central portion is secured a pin 16, which projects through a slot 17 in the plate 1 and across the width of the coin-chute 4, and to the projection 15 is secured a pin 19, which extends through and beyond a slot 20 in the plate 1.

7 is a spindle provided with a knob 6, and extends through the guide or projection 8 and is secured to the projection 9 of the metal slide 14.

18 is a spiral spring between the knob 6 and the guide 8 and holds the slide 14 in an upward position.

34 is a stud provided with a screw-thread upon which is a double set of nuts and washers 35 and 36, which bind the ends of the two wires 40 and 41.

j and *k* are two normally-separated flat springs secured at one end in slots cut in the insulating-block 21 attached to the plate 1, and are secured in place by the outer insulating-cover 22 by means of the screw 37 and the bolt 23. The springs are provided with stop-pins 26 and 27. The bolt 23 has secured to its rear side a clip 35, and by means of the binding-nuts 25 on its front side holds the end of wire 38.

28 is a lever pivoted at 27^a in a space made by cutting away a portion of the plate 3, and the edge of the said lever is held to the edge of the plate 3 by means of the spiral spring *n*. To the free end of the lever 28 is pivoted a hook-lever 29, through one end of which extends the free end of spring *m*, which is held under the nut 5, as shown. The pin 19 extends under the hook 29 and with the spring *m* regulates its position.

Wire 40 extends from spring *j* to the stud 34 and includes the helices of an intermittently circuit-breaking signaling-instrument B. The spring *k* is connected by wire 36 to the clip 35 and from the stud 23 by wire 38 to the back contact of hook-switch S, which is connected by wire 41, through the transmitter T, to the stud 34. A wire 42 connects, as a bridge between, the wires 38 and 41 and includes the transmitter-battery C and the primary *i*² of the induction-coil. The secondary *i*³ of the induction-coil is in the main circuit L with the receiver, and the said circuit is connected directly with the operator's telephone *t*², none of the central-office apparatus being shown.

It will be seen that wires 38, 41, and 42 constitute the usual primary circuit of a telephone outfit and that the wires 38, 42, 41, and

40, with the terminal springs *j* *k*, constitute a normally-open shunt-circuit around it.

In the operation of the invention, when a coin is inserted in the external opening *e* it passes down the curved chute 4, around and under the pin 16, into the position shown by the dotted circle P and comes to rest between the fixed abutment 5 and the edge of the lever 28. Then the knob 6 is depressed, which causes the pins 16 and 19 to go downward, the former to force or impel the coin P through the chute into the cash-box *h*, and the latter to allow the hook 29 to be forced down by the spring *m*, although the hook may be made so heavy as to operate by gravity alone. As the coin is forced down the spring *n* yields, and as the coin is about to fall through the lever 28 has been moved over to the position shown in dotted lines and the hook 29 has been forced down, as shown also in dotted lines, until its point 32 has commenced to press the spring *k* against the spring *j*. As the coin falls the spring *n* pulls the lever 29 back, when the two springs *k* and *j* are firmly pressed together, and when the knob is released the spring 18 retracts the pin 19 and the hook 29 is returned to its normal position. If the knob is depressed without the presence of a coin in the chute, the end 32 of the hook-lever 29 strikes the end of spring *k*, but does not close it to spring *j*. While the two springs *k* and *j* are in contact a circuit is made from battery C, primary *i*², wire 38, springs *k* and *j*, wire 40, including signaling apparatus B, wire 41 to other pole of battery, and as the armature of B opens and closes the circuit thus made a sound is heard in the telephone coil *t*² by the operator by induction through the coil I, and when the knob is released and the circuit opened the sound ceases.

The operation of the invention may be divided into two stages, the first of which is when the coin is impelled or forced by the pin 16 from its lodgment upon the two abutments against the yielding lever 28, which, with the hook-lever 29, is brought into the position shown in dotted lines, and the second stage is when the coin falls down the chute and the spring *n* suddenly pulls the lever 28 back to its normal position, the under edge of the hook-lever 29 sliding on the pin 19 and bringing the spring *k* into contact with the spring *j*, closing the circuit and sounding an alarm or signal. The first stage is a manual operation and the second is an automatic operation and is effected after the coin has passed down the chute. While the knob 6 is held down the signal-circuit remains closed; but when the knob is released the hook-lever 29 is returned to its normal position by the pin 19, as described, and the signal-circuit cannot be closed again unless another coin is inserted. Thus in case the toll demanded for the telephone connection calls for the insertion of a plurality of coins of any one denomination each of which when inserted is to cause a signal to be sounded, as described,

no person can produce a plurality of signals by fraudulent manipulation.

In Fig. 6 the transmitter-battery is located at the central station M, and conversation between two connected sub-stations is carried on by means of the battery and the repeating-coil B', the operator's receiving-telephone t^2 being bridged in between the conductors of the circuit L, all in a manner well understood. At the sub-station N the bell is in one bridge and the telephones in another, as is common in such circuits. I place the coin-controlling device in a bridge between the conductors of the circuit L, the wire 40 from the spring j connecting to one conductor and the wire 38 from the complementary spring k connecting to the opposite conductor. The buzzer B may be in either wire 38 or 40. I have shown it in the former. The operation is obvious from the previous explanation.

Having now fully described my invention, I claim—

1. The combination in a telephone circuit including a battery, one winding of an induction or repeating coil, and a receiving telephone; of two normally open branches one of which includes a signaling instrument; a circuit-closer for one of said open branches adapted to be operated through a mechanically impelled coin as set forth.

2. In a signaling device, a normally open primary circuit including a signaling instrument, a battery, and the primary helix of an induction coil; a secondary circuit including a receiving telephone; and means for closing said primary circuit, consisting of a spring retracted lever, operated by a mechanically impelled coin as set forth.

3. In an auxiliary signaling apparatus combined with the instruments and circuits of a telephone station, a normally open circuit including a signaling instrument, the transmitter battery, and the primary helix of the induction coil; with means for closing said circuit, consisting of a spring retracted lever, operated by a mechanically impelled coin as set forth.

4. In a signaling device, a normally open primary circuit including a signaling instrument, a battery, and the primary helix of an induction coil; and a secondary circuit including a receiving telephone; means for closing said primary circuit, consisting of a coin-chute and a spring retracted lever, provided

with a hook; and actuated against the tension of the spring by a mechanically impelled coin in said chute whereby when the coin has been forced through the said chute, the said lever and hook operate to close the said circuit.

5. In a coin controlled device, a curved slot or chute provided with a solid and a movable abutment, the latter consisting of a pivoted spring retracted lever having a pivoted hook lever at its extremity; spring retracted coin impelling mechanism; a normally open primary circuit including a signaling instrument, a battery, and the primary helix of an induction coil; and a secondary circuit including a receiving telephone; whereby when a coin rests upon said abutments, and the said mechanism is operated, the coin is forced through the chute and the said primary circuit is closed, as set forth.

6. A coin controlled signaling device, consisting of a curved coin chute in which are two abutments, one solid and the other movable; spring retracted coin impelling mechanism, having a pin in the coin chute; a spring retracted circuit closing lever provided with a pivoted hook; two normally separated springs forming the terminals of a local circuit which includes a signaling instrument, a battery, and the primary helix of an induction coil; a secondary circuit including the secondary helix of the said induction coil, and a receiving telephone; whereby upon the insertion of a coin into the said chute, and the operation of the said mechanism, the said local circuit is closed, and a signal sounded inductively in the receiving telephone, substantially as described.

7. In a coin controlled signaling apparatus, the combination with a telephone circuit, of a battery, a signaling instrument, a normally open circuit, and circuit closing mechanism for said open circuit, operated in part by a mechanically impelled coin in the coin-chute, and in part automatically, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 6th day of May, 1895.

GEORGE K. THOMPSON.

Witnesses:

GEO. WILLIS PIERCE,
JOSEPH A. GATELY.