F. D. POWELL.

TELEPHONE SIGNALING APPARATUS.

APPLICATION FILED MAR. 27, 1911.

1,045,077. **Patented Nov. 19, 1912.**

2 SHEETS—SHEET 1.

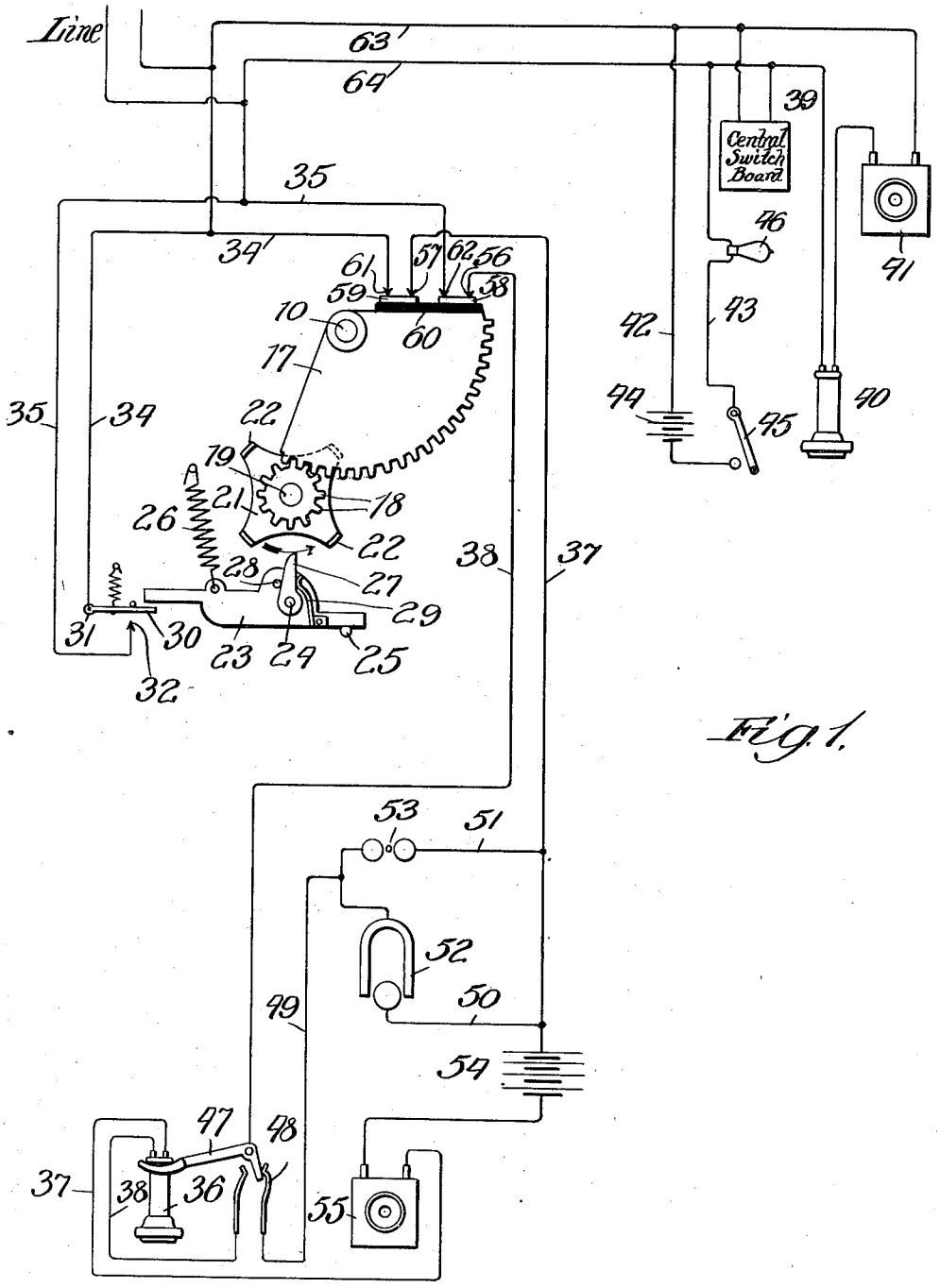

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

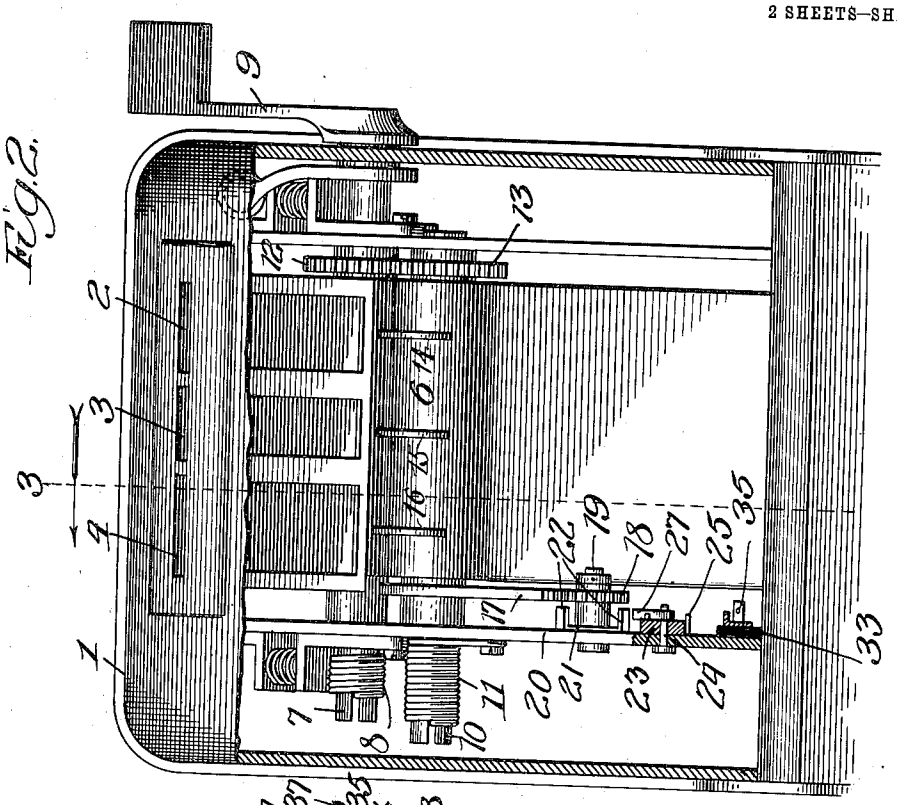
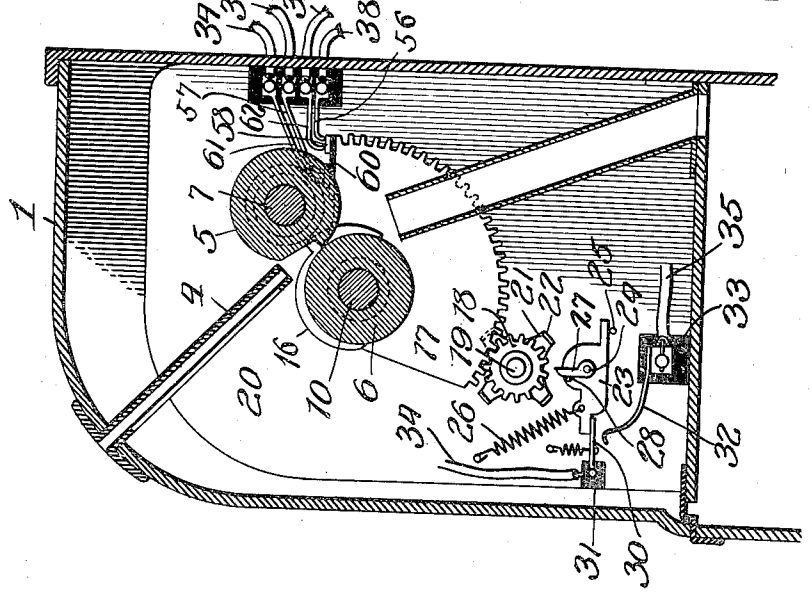


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TELEPHONE SIGNALING APPARATUS.

1,045,077. Specification of Letters Patent. Patented Nov. 19, 1912.

Application filed March 27, 1911. Serial No. 617,276.

To all whom it may concern:

Be it known that I, FRANK D. POWELL, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Telephone Signaling Apparatus, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding numerals of reference in the different figures indicate like parts.

My invention relates to a telephone signaling device for signaling a central office from a pay or toll sub-station in which coins of varying denominations may be deposited as tolls in a coin controlled receptacle, and said invention consists in an improvement upon the device shown and described in Letters Patent to F. D. Powell and C. S. Ellis, No. 880,571, dated March 3, 1908, for an improvement in coin registering mechanism.

The object of my invention is to provide simple and effective means, in conjunction with the mechanism described in said patent, for receiving and depositing a coin, whereby a patron may, in the usual well known way, call for his party, whereupon the central operator, in recognition of his demand, may switch a signaling device at the central office into circuit with the mechanism of said coin controlled receptacle, so that the value of the coin deposited at the sub-station may be indicated at the central office by means of a light or other local signaling apparatus, acting in conjunction with said coin controlled mechanism and in such a way as to break the talking circuit with said station during the operation of the signal and again close it automatically after said signal is given, thereby preventing the patron from communicating with his party and otherwise avoiding confusion until the operator is assured that the proper toll is paid. To these ends my invention consists in the combination of elements hereinafter more particularly described and definitely pointed out in the claims.

In the drawings, Figure 1, is a diagrammatic view illustrating a telephone exchange system comprising a central office and signaling apparatus connected with a toll station having a local telephone and a coin receptacle. Fig. 2, is a front view, partly in vertical section of a portion of a coin box embodying features of my invention together with such of the elements of said patented device as will enable its operation to be understood, and Fig. 3, is a vertical sectional view taken upon the line 3———, Fig. 2, viewed in the direction of the arrow there shown.

Referring to the drawings, 1 represents generally a coin receptacle of the type described and shown in said Letters Patent above referred to, having coin chutes 2, 3 and 4, leading to coin-rollers 5 and 6, the former being mounted rigidly upon a shaft 7, held in a normal position by means of a spring 8 and actuated by means of a crank or lever 9, while the latter is loosely mounted upon a shaft 10 said shaft having a spring 11 for returning it to a normal position. Gears 12 and 13, serve to maintain said rollers in fixed relation to each other. Dogs 14, 15 and 16, normally held in inoperative positions by means of springs, serve to lock the roller 6 to the shaft 10 when a coin is introduced between said rollers and the crank 9 actuated. The dogs and the engaging elements upon the shaft are so adjusted as to cause the shaft to be rotated to a greater or less degree to conform to the relative value of the coin deposited, as described in said patent. Rigidly mounted upon the shaft 10 is a gear segment 17, the teeth of which are in engagement with a pinion 18 having a hub which is journaled upon a stud 19 upon a vertical partition 20. A rotary trip member 21, having equidistant, laterally projecting arms 22, is rigidly mounted upon the hub of said pinion. A lever 23, is pivotally supported at 24 upon the partition 20, being held in a normal position against a stop 25 by means of a spring 26. A pawl 27, is pivotally mounted at 24, upon said lever and held normally against a stop 28 by means of a light spring 29, Fig. 1. The free end of the lever 23 is in operative proximity to a circuit closer or line-spring 30 mounted upon an insulating block 31 and adapted when depressed to engage a contact spring 32, upon an insulating block 33, said contact elements being adapted to close a circuit with limbs 34, 35, connected with a system of circuits as shown in Fig. 1. In

the figure referred to, 36 represents a telephone as provided at each of the sub-stations in connection with limbs 37, 38 which terminate at a switch-board 39, with which is connected the usual central telephone 40, transmitter 41, a normally open shunt circuit having limbs 42, 43, in which is interposed a battery 44, a switch 45 and a signaling device 46, preferably in the form of a lamp.

Interposed in the telephone circuit at the sub-station is the usual fork 47 in normal contact with a line-spring 48, limbs 49, 50 and 51, magneto 52, bell 53, battery 54 and transmitter 55.

The limbs 37, 38 are provided with contact elements 56, 57 in normal contact with contact plates or members 58, 59, mounted upon the sector 17, with insulating material 60 interposed between them. The limbs 34, 35 are also in normal contact at 61, 62 with said plates 59 and 58. Leading from the limbs 34, 35, are limbs 63 and 64 which form a continuation of the limbs 37 and 38 to complete the usual connection with the central office.

The operation of said device is as follows: When a patron desires to call a party, he removes the telephone-receiver 36 from the hook, which closes the talking circuit with the central operator through the limbs 37, 38, contact plates 58, 59, portions of limbs 34 and 35, and limbs 63 and 64. He then calls for the number desired, when the operator asks for the toll and closes the switch 45 in the signal circuit. The patron then deposits the requisite coin in one of the coin-slots 2, 3 or 4 according to the toll required, moves the crank 9, Fig. 2, to its extreme abnormal position and then releases it. The forward movement of the crank serves to pass the coin between the rollers 5 and 6, which results in temporarily locking the latter to the shaft 10, which is rotated a predetermined distance in accordance with the value of the coin deposited. This, in turn, causes the segment 17 to be actuated accordingly and, in turn, to rotate the trip member 21, so that one or more of the arms 22 moving in the direction indicated by the arrow shown in Fig. 1, will engage the back of the pawl 27 and pass it, said pawl being permitted to move forward by the yielding of the spring 29. It will be noted that the movement of the crank 9, to deposit the coin, serves to break the circuit with the local telephone 36 by moving the contact plates 58, 59 away from the line springs 56 and 57, which circuit cannot be closed until after the deposit of a coin. When this is accomplished, the segment 17 is returned to its normal position as indicated in Figs. 1 and 3, by the recoil of the spring 11, Fig. 2. This causes the action of the rotary trip member 21 to be reversed, so as to bring one or more of the arms 22 into engagement with the face of the pawl 27, and inasmuch as the back of the pawl rests against a rigid stop, the pressure of the arm upon the pawl causes the lever 23 to be moved downwardly against the action of the spring 26 into contact with the member 30, thereby closing the circuit between the limbs 34 and 35, and the signal lamp 36. Upon the passage of the arm 22, the lever 23 will be restored to its normal position and the signal circuit broken. This operation will be repeated as many times as there are given units of value in the coin deposited. When the requisite signal is given, the central operator closes the circuit with the station called for, and the segment 17 having been returned to its normal position, the talking circuit with the calling station will likewise be closed.

From the foregoing it will be apparent that it will be impossible for a dishonest person to talk to another without first paying the proper toll, inasmuch as the talking circuit with the sub-station is necessarily broken until the signal is given showing the value of the coin deposited; and if an insufficient sum is paid, the operator can withhold giving the number called for until an additional coin is deposited.

I do not wish to be confined to any particular kind of signal nor to the specific manner shown for closing the signal circuit as it is obvious that either or both may be accomplished without departing from the spirit of the invention.

Having thus described my invention, I claim:—

1. In a telephone system, the combination with a pay station and a central office, of a telephone circuit, a shunt circuit, a switch and signaling device at said central office in said shunt circuit, a coin receptacle at said pay station in said shunt circuit, coin controlled means therein for closing said signaling circuit as many times as there are predetermined units of value in a deposited coin and coin-controlled means for breaking said telephone circuit during the operation of said signaling device.

2. In a telephone system, the combination with a pay station and a central office, of a telephone circuit, a shunt signaling circuit, a coin receptacle at said pay station located in said shunt circuit, a coin-controlled signaling device for indicating the value in predetermined units of a deposited coin, a switch in said shunt circuit and coin-controlled means for breaking said telephone circuit when said signal is brought into operation and for closing it at the end of said signals.

3. In a telephone system, the combination with a pay station and a central office, of a telephone circuit, and a signaling circuit,

signaling mechanism at said central office, a coin receptacle at said pay station in said signal circuit, a plurality of coin chutes for coins of different denominations, means for positively feeding the same to said receptacle, coin-controlled means for closing said signal circuit to indicate the value in units of the several coins fed thereto and coin-controlled means for automatically closing one of said circuits when the other is open.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses, this 25th day of March 1911.

FRANK D. POWELL.

Witnesses:

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