

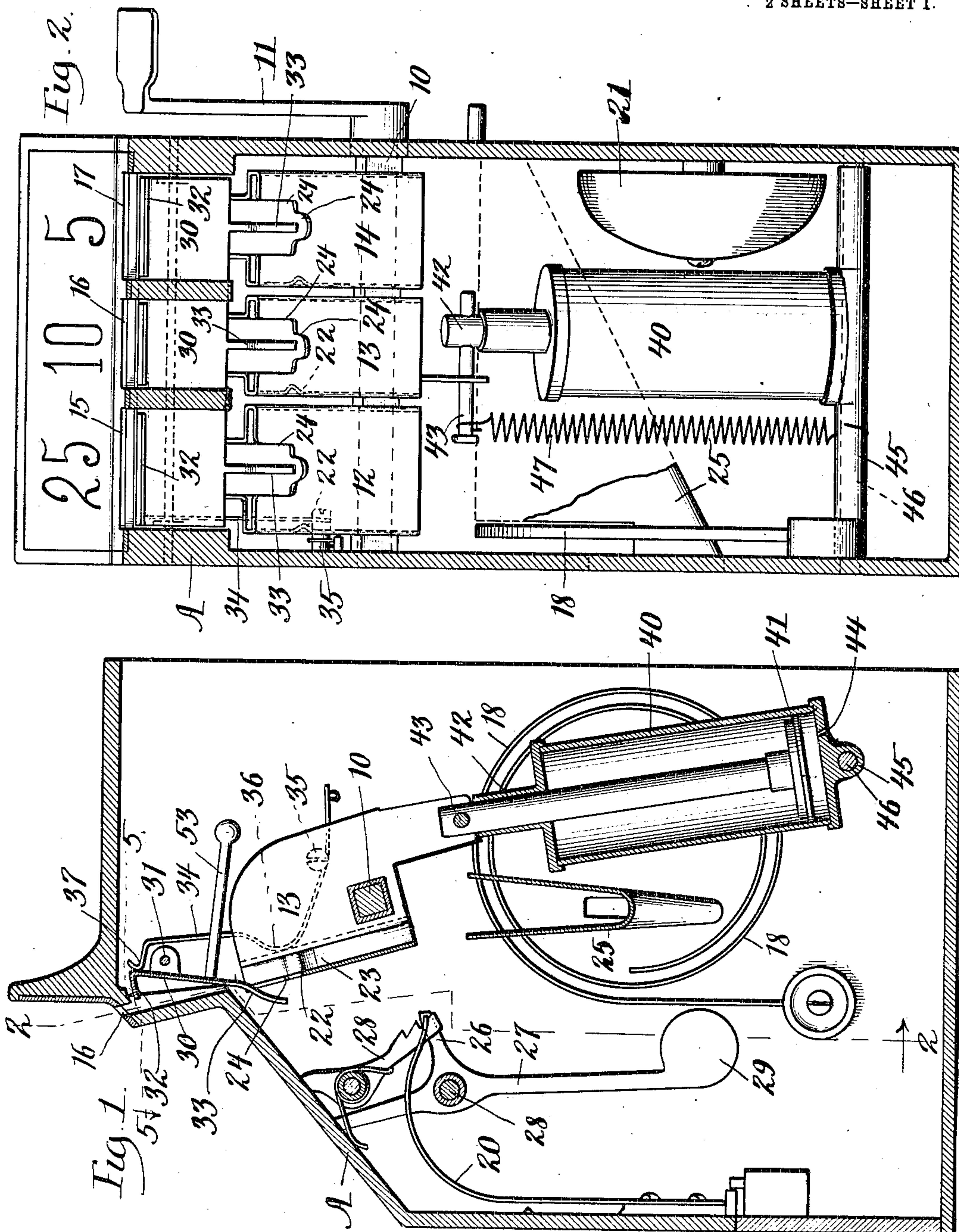
No. 837,256.

PATENTED NOV. 27, 1906.

E. P. BAIRD.  
TELEPHONE TOLL APPARATUS.

APPLICATION FILED MAY 11, 1903.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

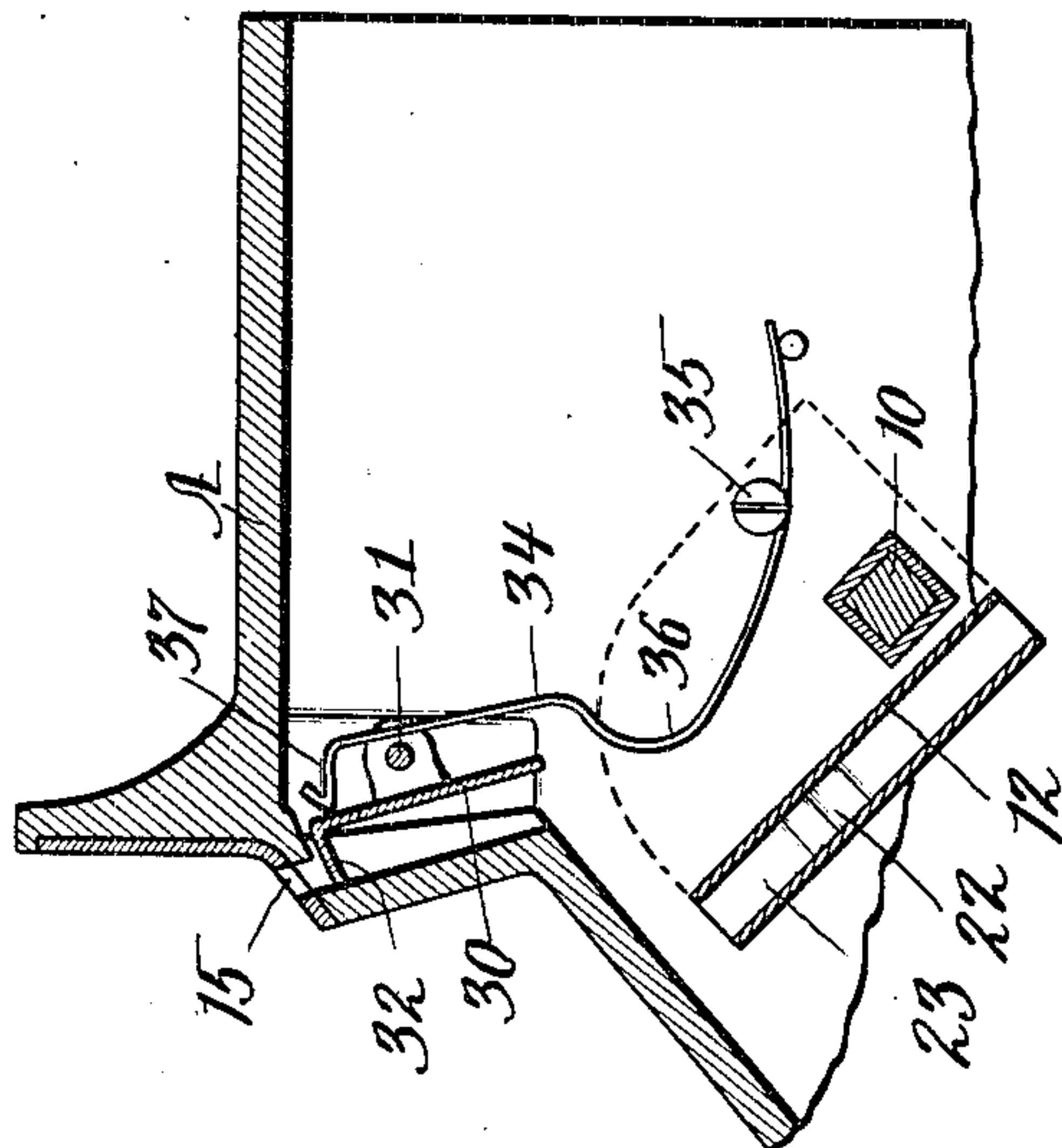


Fig. 3.

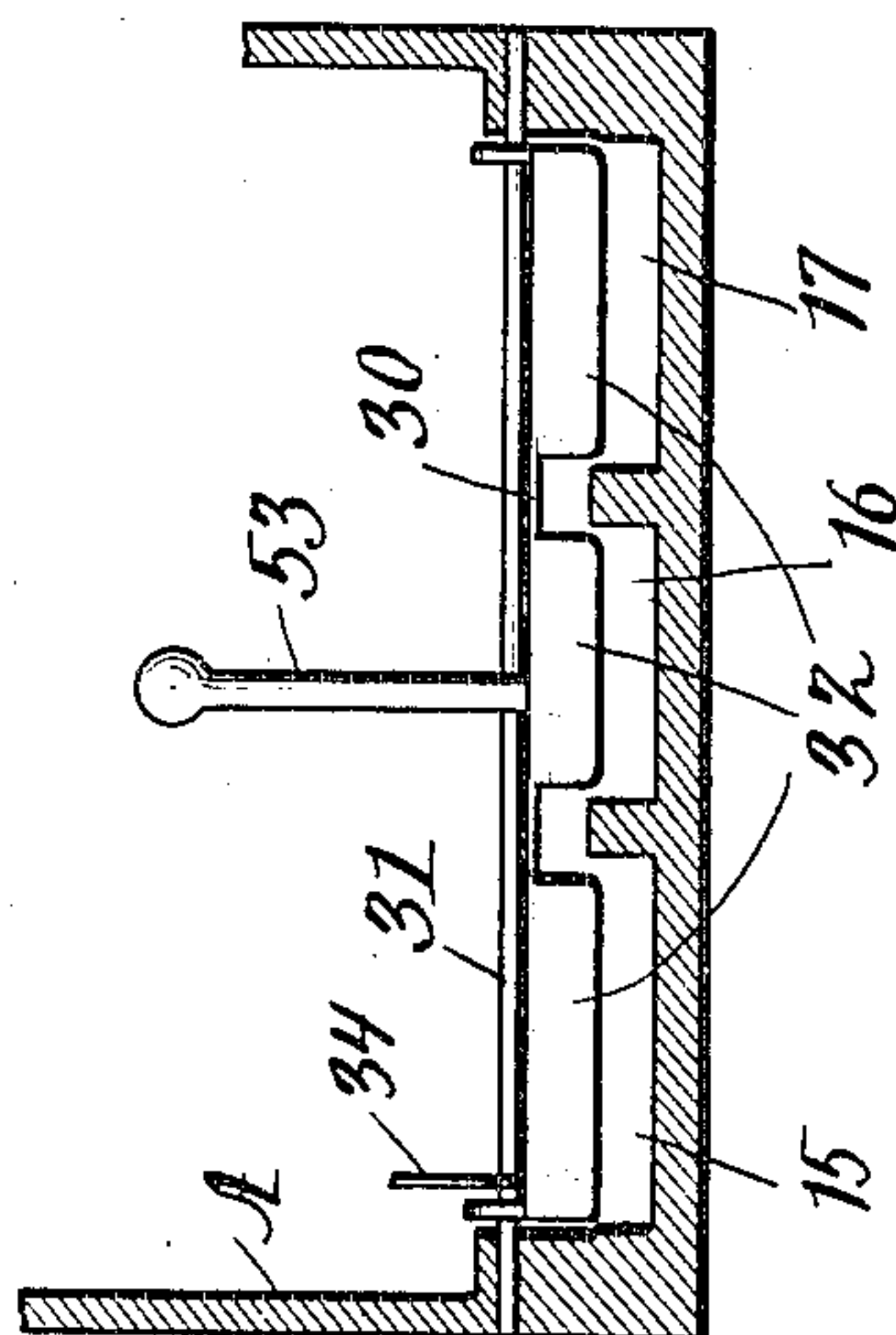
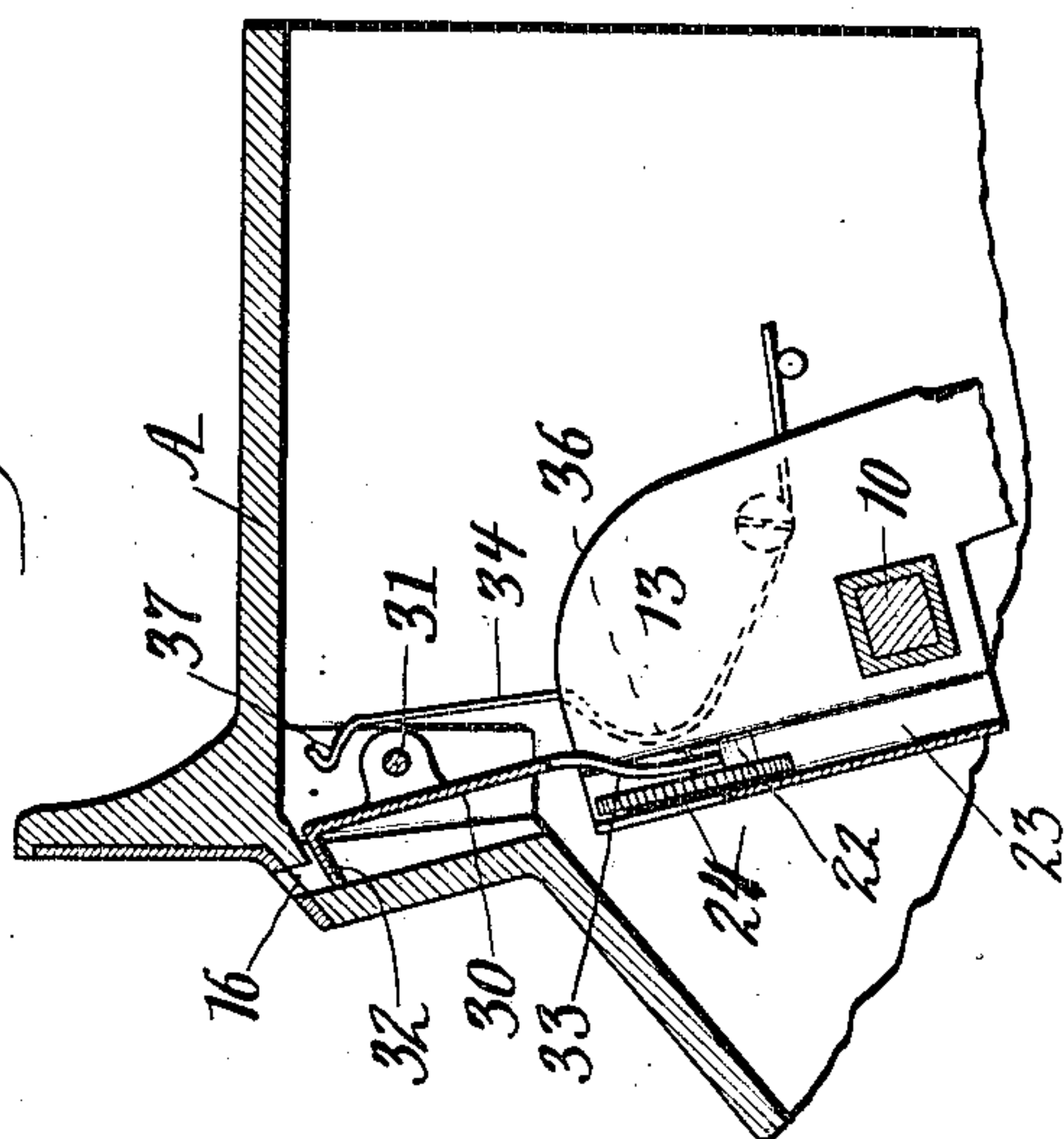


Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## TELEPHONE TOLL APPARATUS.

No. 837,256.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed May 11, 1903. Serial No. 156,508.

*To all whom it may concern:*

Be it known that I, EDWARD P. BAIRD, a resident of the city of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Telephone Toll Apparatus, of which the following is a full, clear, and exact description.

The invention relates to toll apparatus for telephones, and more particularly to devices for receiving or collecting toll and provided with signaling means, whereby the operator at a central exchange will be notified of the deposit of coins.

The invention designs to provide improved mechanism for preventing simultaneous operation of the signal devices and resultant confusion therefrom; improved means which prevent deposition of a coin into the apparatus while a coin remains in the coin-shifting mechanism; improved means for preventing deposition of a coin while the coin-shifting mechanism is out of normal position, so the coin would not gravitate into the coin-shifting mechanism; improved means for simultaneously closing all the coin-receiving slots in apparatus designed to receive coins of different denominations, and improved means for retarding the movement of the coin-shifting means, so vibration of the apparatus sufficient to produce vibration of a sound-producing body which resembles the proper signal is impossible and to improve the construction of toll apparatus for telephones.

With these objects in view the invention consists in the several novel features herein-after set forth, and more particularly defined by claims at the conclusion hereof.

In the drawings, Figure 1 is a vertical section of an apparatus embodying the invention. Fig. 2 is a section taken on line 2 2 of Fig. 1. Fig. 3 is a detail view showing the parts in position assumed when a coin has been deposited. Fig. 4 is a similar view showing the slot-closure held in closed position by spring-arm which is controlled by the carrier. Fig. 5 is a section on line 5 5 of Fig. 1.

A denotes an inclosing case of any suitable construction, which is usually secured to the back board of a telephone set, so audible signals produced therein will be clearly conducted over the telephone-line to the central ex-

change. An operating-shaft 10 is journaled in the case, extends transversely across the case, and has an actuating handle or crank 11 on the outside of the case, and which is rigidly secured to a projecting terminal of said shaft. A series of coin carriers or shifters 12, 13, and 14, which are rigidly secured to the operating-shaft, provide means for receiving and shifting coins or toll-representing checks of different denominations to respectively operate relatively distinctive signal devices.

The case is provided with coin-receiving slots 15, 16, and 17, wherethrough coins can be deposited into each of the carriers. Each carrier when shifted with a coin of proper size and denomination operates a signal device. The signal devices are distinctive from each other, so the exchange operator can ascertain the denomination of the coin or check which has been deposited. Carrier 12 is designed to shift a coin to cause actuation of a gong 18, carrier 13 causes vibration of a flexible strip or "buzzer" 20, and carrier 14 causes actuation of a bell 21. Each carrier is provided with a suitable channel 23, wherein a coin of proper size will be held by a stop 22 and is notched or cut away, as at 24, to expose a portion of a coin for engagement with the operating part of a signal-actuating device. Coins or slugs which are too small to be held in the carriers fall through coin-channels 23 and into a runway 25, which conducts them to the outside of the case and refunds them. Carrier 12 will shift a coin to sweep against an arm 26 of a spring-pressed lever 27, pivotally sustained by cross-rod 28 and provided with a hammer 29, adapted to engage gong 18. Carrier 13 sweeps a coin held therein over the free flexible terminal of strip 20, and carrier 14 shifts a coin to operate a lever (not shown) similar in construction to lever 27 and in similar manner actuates bell 21. A spring-pressed pivoted dog 28 prevents retraction of each carrier until the coin has been discharged. Each carrier shifts a coin so it will first operate one of the signal devices and then discharge the coin.

The particular construction of the carriers and signal-operating devices form no part of the present invention, such being similar to the construction illustrated in Letters



Patent No. 678,633, dated July 16, 1901, and for a fuller description thereof reference may be had to said patent.

In the present invention all of the carriers  
5 are preferably shifted by a single actuating-  
crank 11 to simplify the construction and to  
avoid the use of separate retracting means,  
such as a spring for each carrier. To prevent  
10 simultaneous shift of several coins by the  
carriers and simultaneous actuation of a plu-  
rality of the signal devices, all of the coin-re-  
ceiving slots are obstructed by a valve 30,  
formed of a plate extending transversely  
15 across the case in back of said slots, pivotally  
sustained at 31 and having forward exten-  
sions 32, adapted to obstruct the passage of  
coins into said slots. Valve 30 is provided  
with a plurality of inclined fingers 33, ar-  
20 ranged, respectively and normally, in the path  
of coins passing into each of the carriers and  
adapted to be deflected by a coin in transit  
to the carrier sufficiently to oscillate the  
valve and hold extensions 32 in position to  
25 close the coin-receiving slots. A weighted  
arm 53 holds the valve normally in open po-  
sition. (Seen in Fig. 1.) A spring 34, secured  
to the case at 35, has a part 36, which nor-  
mally engages one of the carriers, and a ter-  
30 minal 37, adapted to engage the upper end  
of the valve and overcome the force of weight  
53 to close slots 15, 16, and 17 immediately  
upon shift of the carriers or any part of the  
coin-shifting mechanism. Valve 30 is nor-  
35 mally relieved of the pressure of spring 34, so  
the valve is free to be held by weight 33 only  
and will respond sensitively to a gravitating  
coin in transit to the carriers. Fingers 33  
effect closure of all of the coin-receiving slots  
40 when a coin is deposited into either of the  
carriers. Spring 34 effects closure of said  
slots when the coin-shifting mechanism is  
operated and the coin-channels of the car-  
riers are displaced from normal position and  
45 are out of registry with the coin-receiving  
slots.

In practice it has been found that attempts  
are made to produce vibration of the sound-  
yielding bodies which sometimes suffice to  
50 deceive the exchange operator by forcibly  
shifting the coin-shifting mechanism and ac-  
tuating-crank into its extreme positions, or  
until the shifting mechanism engages the  
means which are provided for limiting the  
travel of the crank and carriers. To render  
55 such attempts futile, the movement of the  
coin-shifting mechanism in both directions is  
retarded by a pneumatic cushion which com-  
prises a cylinder 40, and a piston 41, traveling  
in the cylinder and secured to a piston-rod 42,  
60 which is pivotally connected by a pin 43 with  
one of the carriers of the coin-shifting me-  
chanism. A leak-port 44 serves as a restrict-  
ed outlet and inlet for air. The cylinder has  
its lower end secured to a sleeve 45, which is  
65 pivotally sustained by a cross-rod 46, se-

cured in the side walls of the case, and in  
such manner that the cylinder and piston  
will be positioned in accordance with the rel-  
ative position of pin 43, which moves in a  
curved path, and cross-rod 46. A spring 47, 70  
having its lower end connected with sleeve  
45 and its upper end with pin 43, restores to  
and retains in normal position all of the coin-  
shifting mechanism. The cushion retards  
75 the movement of said mechanism in both di-  
rections, and the positive connection with the  
movable element of the cushion so retards  
the movement of the crank-handle and car-  
riers that it is impossible to produce material  
vibration of sound-yielding bodies by rapid 80  
movement of the parts, which are shiftable  
by the depositor.

The particular construction and connec-  
tions of the cushion may be used to advan-  
85 tage when a duplex audible signal is employed.

The operation is as follows: When a coin  
of proper size is deposited into either of the  
carriers, the coin will engage the correspond-  
ing finger 33 and effect closure of all of the  
90 coin-receiving slots and prevent deposit of an  
additional coin into any of the slots until the  
valve 30 is again released. Finger 33 rests  
against a coin in the carrier and holds valve  
30 in closed position until the carrier is shifted.  
The depositor will then operate crank 11 to 95  
shift the coin and operate the corresponding  
signal device and then discharge the coin from  
the carrier into the chamber within the case.  
Before the coin in the carrier moves out of  
engagement with finger 33 spring 34 is re- 100  
leased by the carrier and presses the valve 30  
into position to hold the valve in closed po-  
sition until the coin-shifting mechanism is re-  
stored to normal position after discharge of  
the coin. Weight 53 will then restore the 105  
valve to normal position after retraction of  
the coin-shifting mechanism, and the device  
will then be in readiness for further opera-  
tion. Movement of the carriers and crank in  
both directions will be against the retarda- 110  
tion of the pneumatic cushion.

An important advantage of the invention  
is that all coin-receiving slots are closed when  
a coin has been deposited and also when the  
115 coin-carriers are out of normal positions and  
when the device is rendered inoperative by  
failure of a carrier to retain its normal po-  
sition or in event an irregular coin or slug se-  
cures the coin-shifting mechanism against  
retraction. The valve and its operating 120  
parts are so constructed that it will respond  
to a gravitating coin. The parts which are  
movable by the depositor are all retarded, so  
they cannot be tampered with for the pur-  
pose of vibrating the sound-yielding bodies 125  
to simulate the signals produced by deposition  
of a coin. The term "coin" as used herein  
is to be understood as including all tokens or  
checks as well as coins.

Having thus described the invention, what 130



I claim as new, and desire to secure by Letters Patent, is—

1. In a telephone toll apparatus, a casing having a coin-slot therein, a coin-shifting means in said casing, and means operated by the insertion of a coin to prevent the insertion of another coin into the coin-slot while said coin is engaged with the coin-shifting means.

2. In a telephone toll apparatus, a plurality of coin-shifters each having a coin-slot communicating therewith, and means for closing all of said slots against the deposit of a coin by the insertion of a coin in any one of said coin-shifters.

3. In a telephone toll apparatus, a plurality of coin-shifters each having a coin-slot communicating therewith, a common actuating-handle for said shifters, and means for closing all of said slots against the deposit of a coin when said carriers are out of normal position or by the insertion of a coin in any one of said coin-shifters.

4. In a telephone toll apparatus, a plurality of coin-shifters each having a coin-slot communicating therewith, a common actuating-handle for said coin-shifters, a pivoted valve common to all of said coin-slots, and fingers on said valve, one for each coin-slot, constructed and arranged to engage a coin in its shifter to move said valve to close all of said coin-slots against ingress of coins thereto.

5. In a telephone toll apparatus, a coin-shifter having a coin-slot communicating therewith, and a slot-closure operated by the deposit of a coin in the coin-shifter to pre-

vent the insertion of another coin while said coin-shifter is occupied.

6. In a telephone toll apparatus, a coin-shifter having a coin-slot communicating therewith, and a slot-closure cooperating with the coin-shifter to prevent the deposit of a coin in the coin-slot while a coin is located in the coin-shifter or while the coin-shifter is out of normal position.

7. A telephone toll apparatus having a coin-receiving slot, and comprising coin-shifting mechanism, a slot-closure adjacent to said slot normally held in open position, means engaged by the coin for shifting said closure when a coin is deposited, and means controlled by the coin-shifting mechanism for shifting the closure.

8. In a telephone toll apparatus having a coin-receiving slot, and comprising coin-shifting mechanism, a slot-closure adjacent to said slot normally held in open position, and a yielding arm for shifting said closure when the coin-shifting mechanism is operated.

9. A telephone toll apparatus having a coin-receiving slot, and comprising coin-shifting mechanism, a slot-closure adjacent to said slot normally held in open position, a finger controlling said slot-closure and arranged to be shifted by a coin, and a yielding arm arranged to shift said closure when the coin-shifting mechanism is operated.

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