

No. 753,411.

PATENTED MAR. 1, 1904.

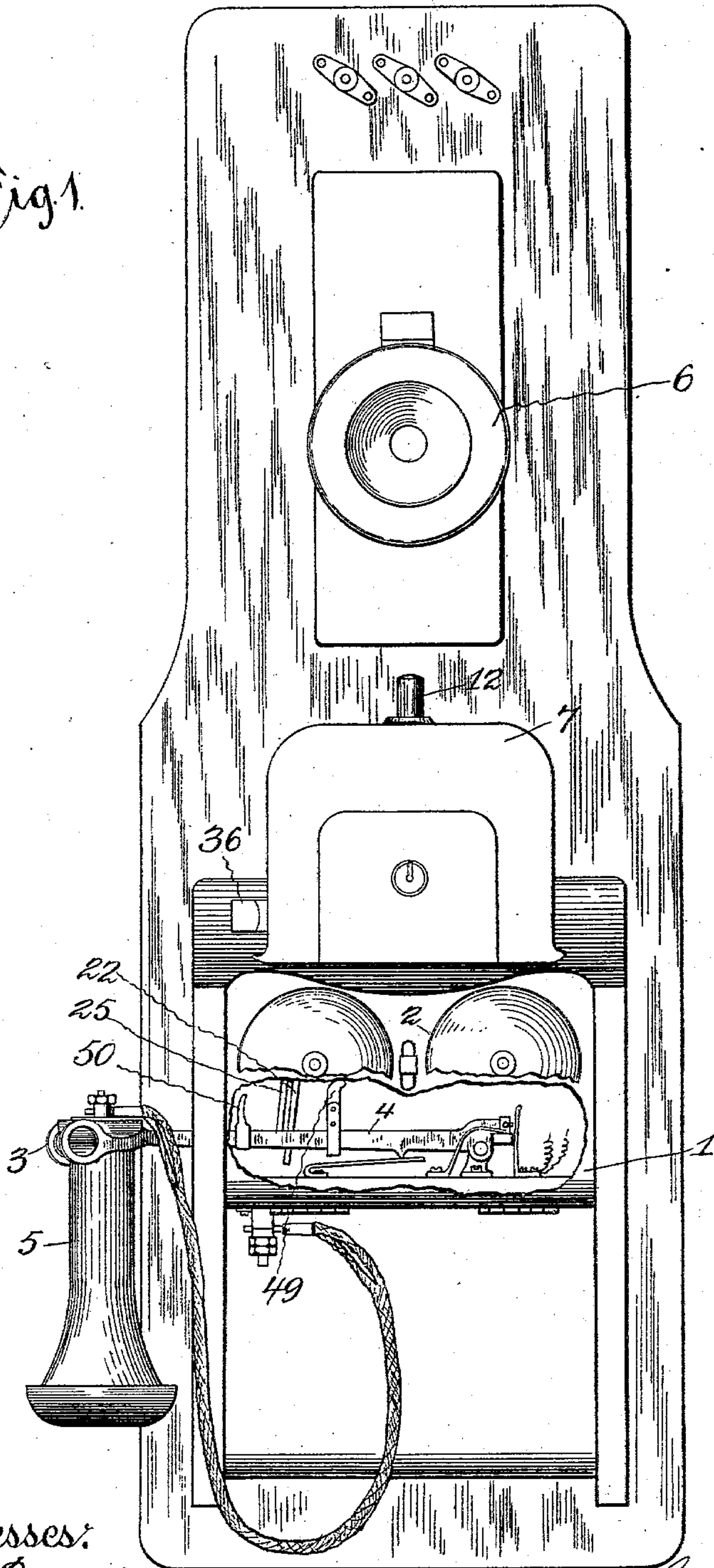
G. A. LONG.  
TELEPHONE TOLL APPARATUS.

APPLICATION FILED APR. 15, 1902.

NO MODEL.

5 SHEETS—SHEET 1.

*Fig. 1.*



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5 SHEETS—SHEET 2.

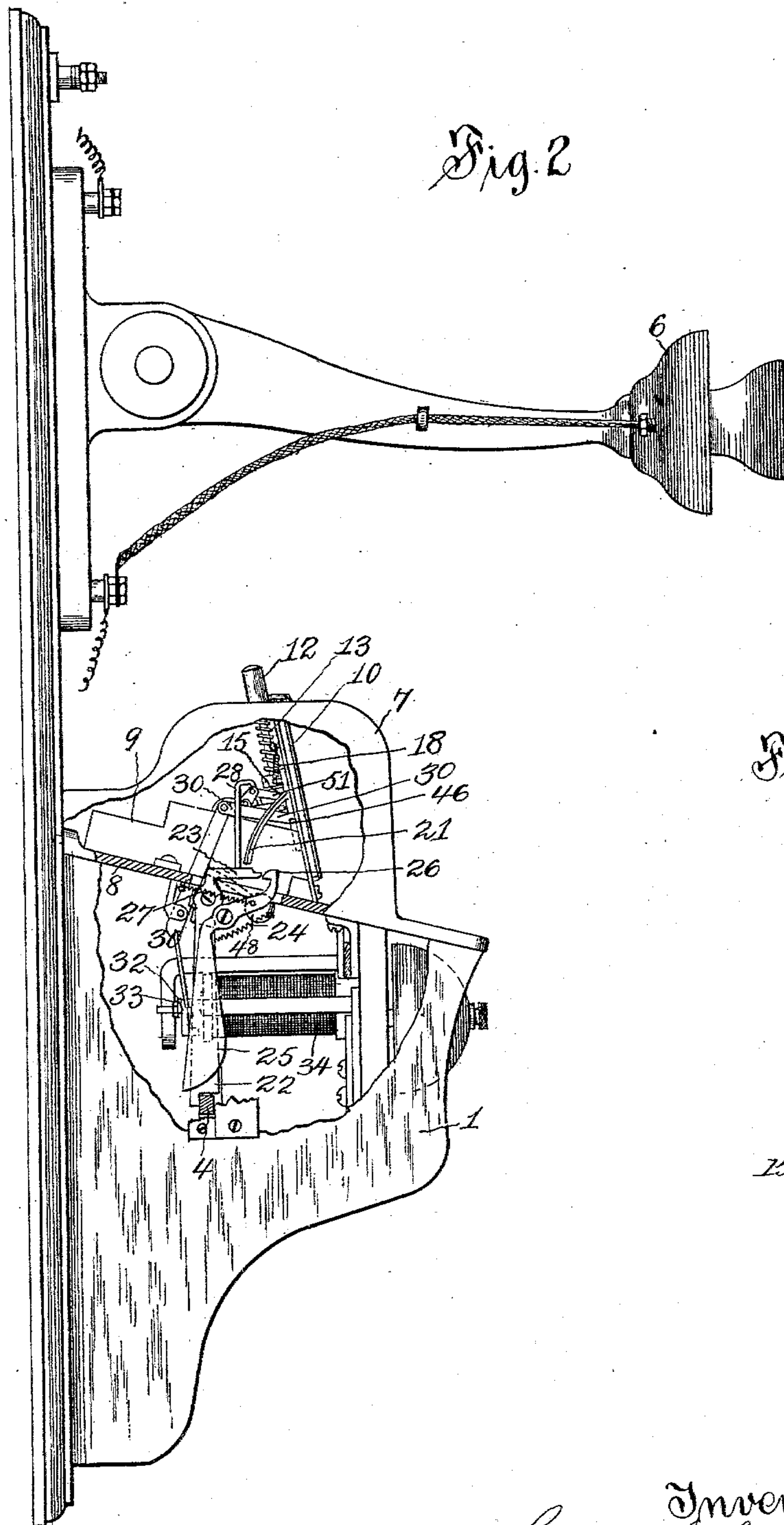
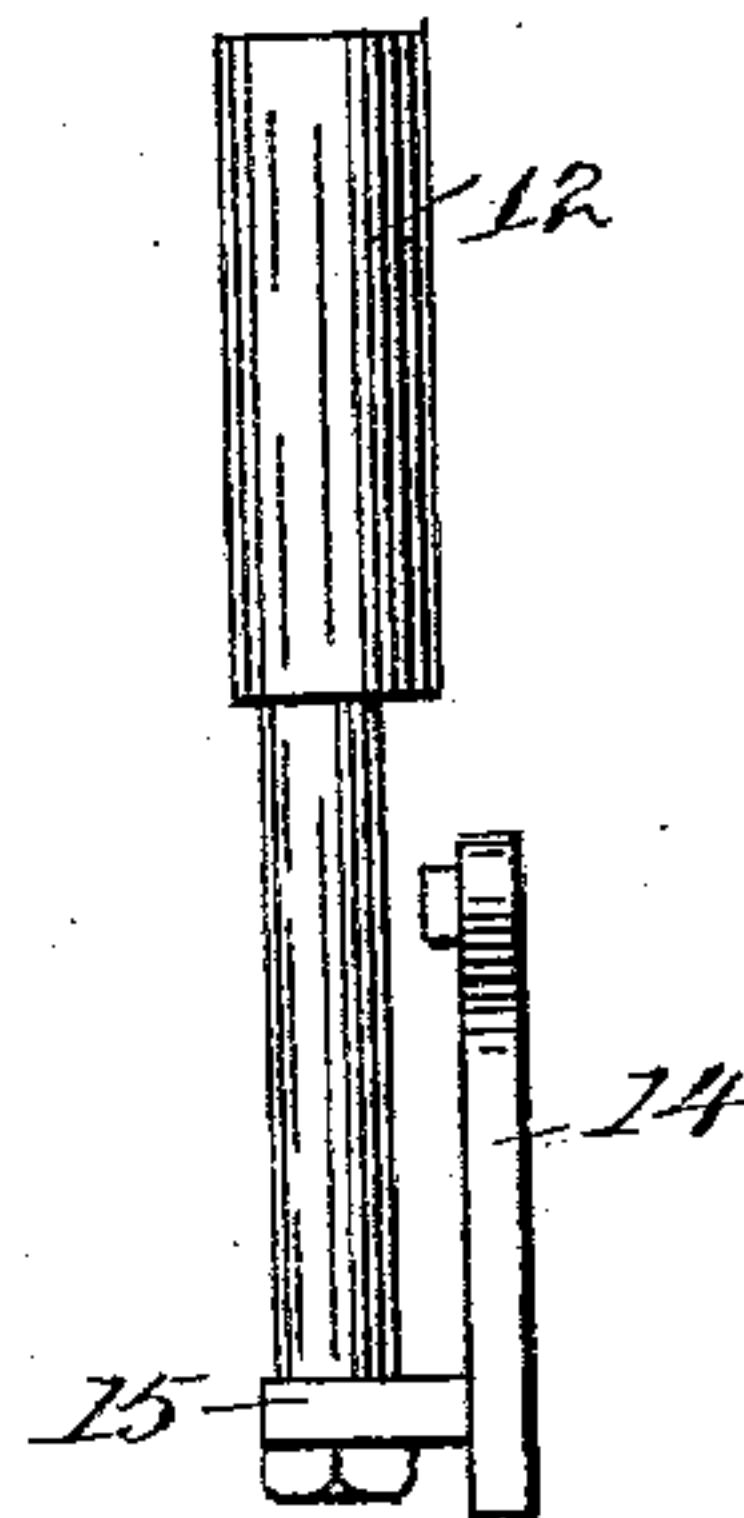


Fig. 13.



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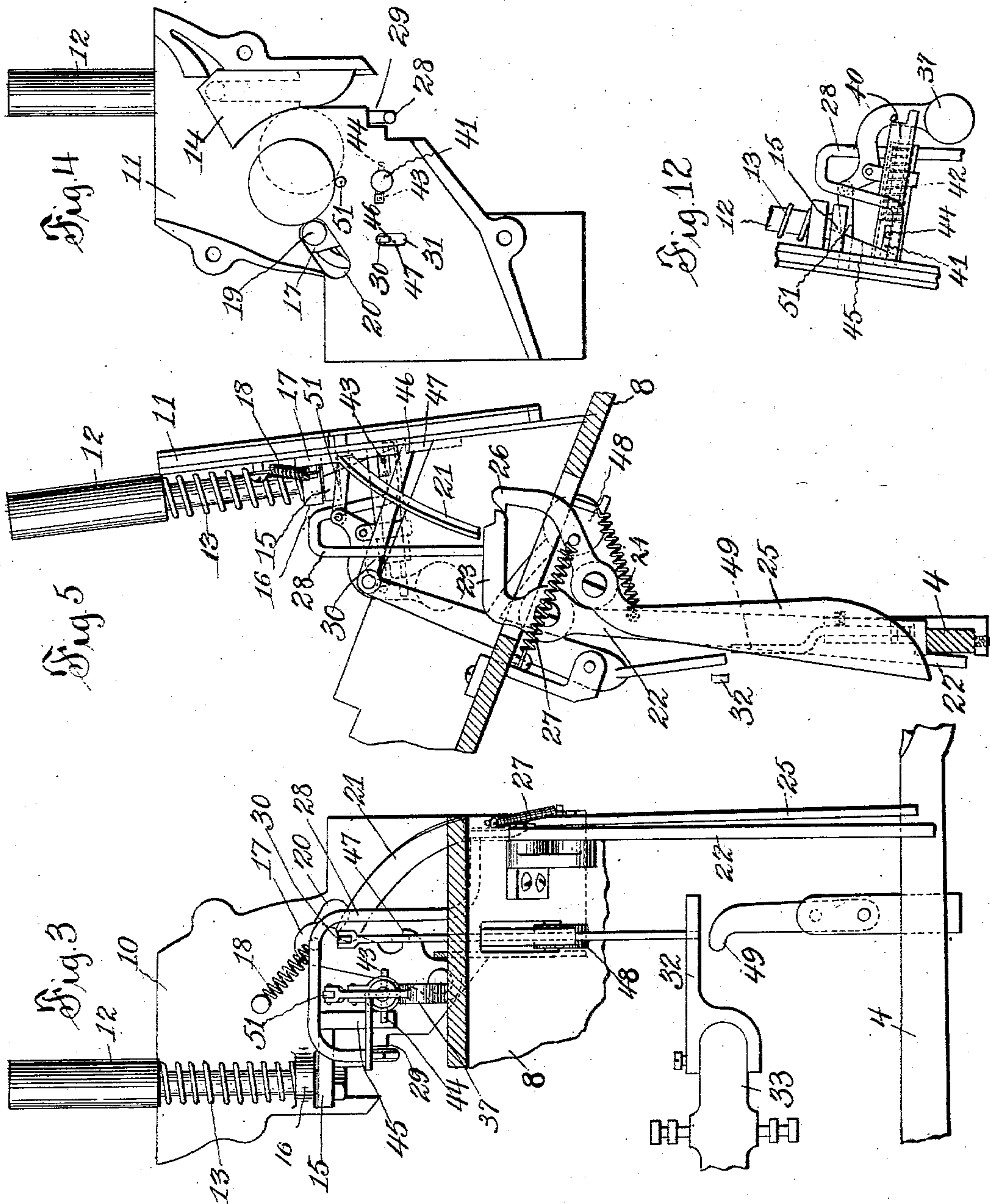
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5 SHEETS—SHEET 3.



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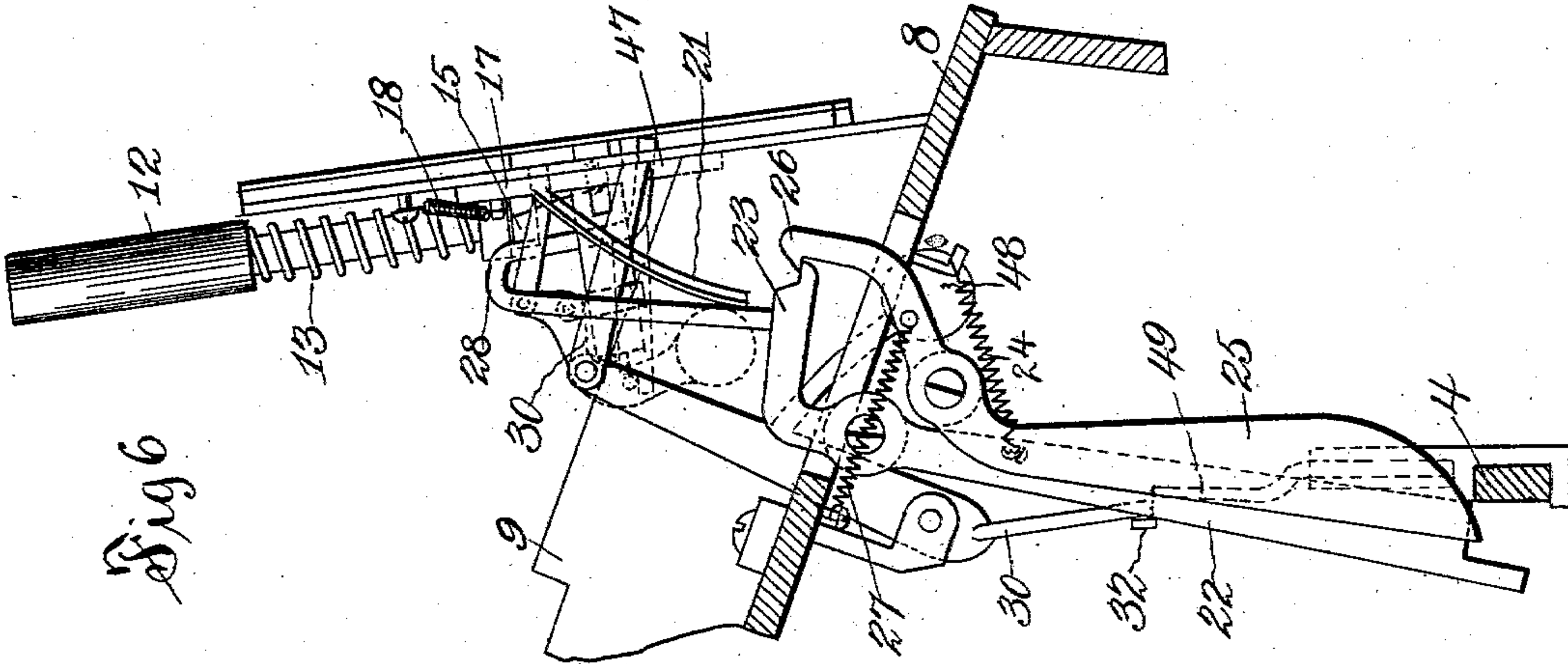
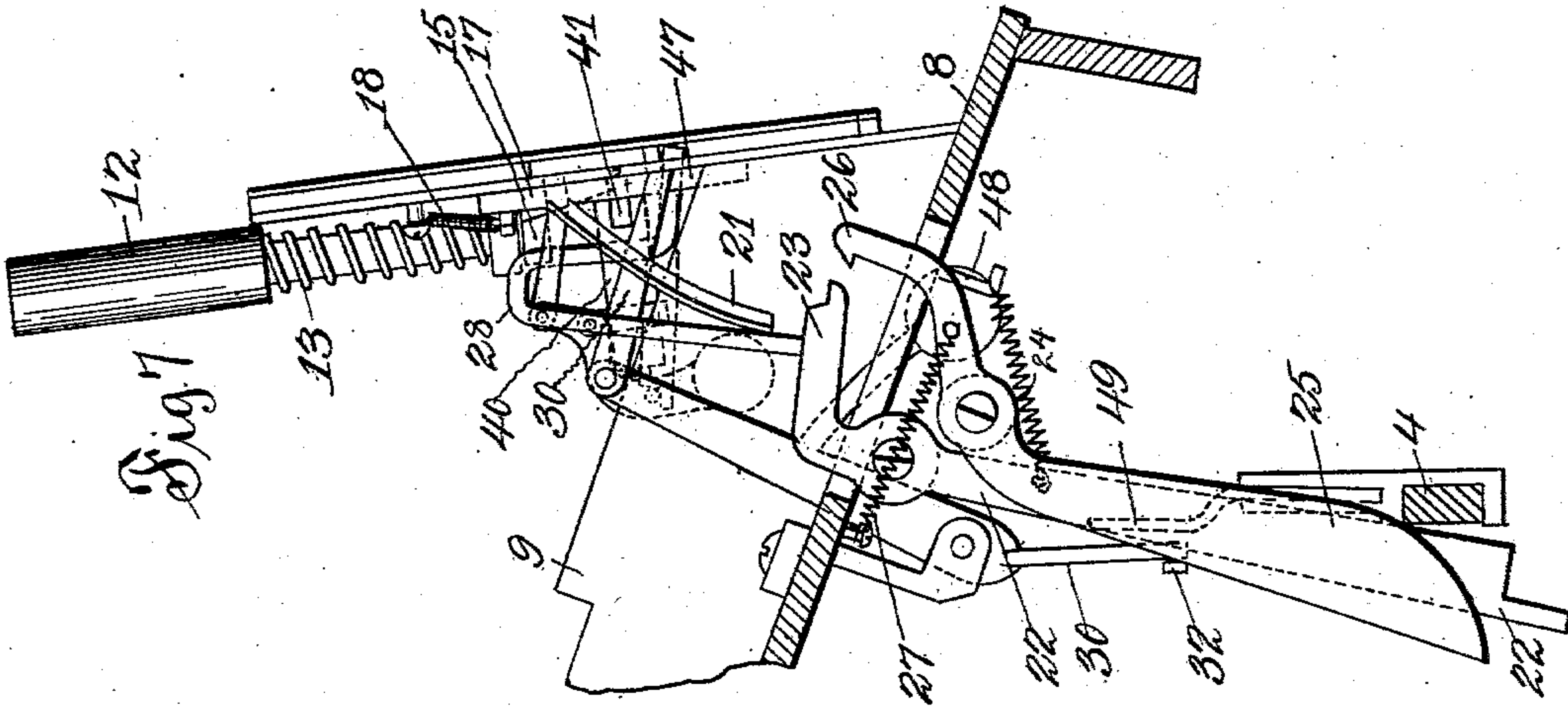
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NO MODEL.

5 SHEETS—SHEET 4.



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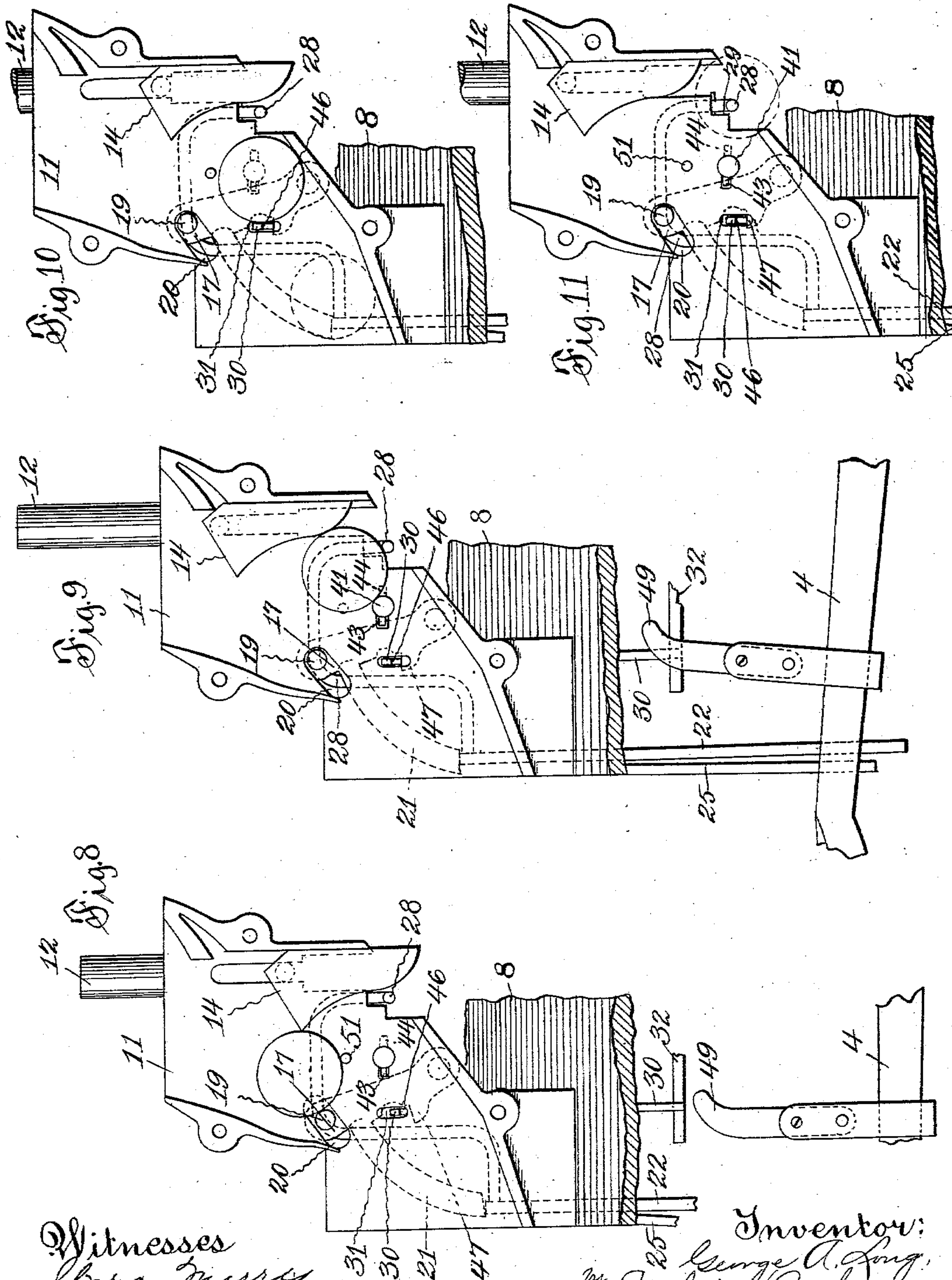


G. A. LONG.  
TELEPHONE TOLL APPARATUS.

APPLICATION FILED APR. 15, 1902.

NO MODEL.

5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

GEORGE A. LONG, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE GRAY TELEPHONE PAY STATION COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## TELEPHONE TOLL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 753,411, dated March 1, 1904.

Application filed April 15, 1902. Serial No. 103,065. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE A. LONG, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Telephone Toll Apparatus, of which the following is a specification.

My invention relates to that class of telephone instruments in which a signal is conveyed to the central office, this signal denoting that the user has complied with the requirements imposed for the use of the instrument; and the object of my invention is to provide a device of this class in which such signal may be conveyed to the central office and in case the desired connection cannot be had that the coin or token deposited for such use may be returned to the user, these objects being performed without the use of extra wiring or any alteration of the instruments regularly used for conveying messages.

One form of device in which my invention may be embodied is illustrated in the accompanying drawings, in which—

Figure 1 is a front view of a set of telephone instruments embodying my improvements with parts broken away to show construction. Fig. 2 is a view in side elevation of a set of telephone instruments with parts broken away to show construction. Fig. 3 is a view in rear elevation, showing the coin-operated mechanism for controlling the use of the telephone. Fig. 4 is a detail view, in front elevation, of the same with the plate of the coin-channel removed and looking in the opposite direction from the point of view of Fig. 3. Fig. 5 is a detail diagram view illustrating the position of the parts shown in Fig. 4 and looking from the left of Fig. 4 with parts in normal position. Fig. 6 is a detail diagram view illustrating the parts shown in Fig. 4 when in position to unlock the switch-hook. Fig. 7 is a detail diagram view showing the position of the parts of Fig. 4 with the switch-hook released and moved upward. Fig. 8 is a detail diagram view showing the position of the parts looking from the left of Fig. 2 after the switch-

hook has been unlocked, but before its upward movement. Fig. 9 is a detail diagram view showing the position of the parts of Fig. 2 after the switch-hook has been released and moved upward. Fig. 10 is a detail view showing the position of the parts with the coin in its normal position of rest in the device. Fig. 11 is a view similar to Fig. 10, the coin being shown in dotted lines as passing to the money-drawer. Fig. 12 is a detail view showing the device for releasing the coin. Fig. 13 is a detail view showing the connection between the plunger and follower.

My invention herein illustrated and described is designed especially for use in connection with a telephone pay or toll station adapted for use in connection with what is known as a "common-battery" or "central-energy" system of telephone service. In such a set of instruments at the subscriber's station there is the usual call-bell, transmitter, and a telephone or receiver, the latter hanging on a switch-hook in the usual manner. A feature of this system is that the battery is located at some central station and the local battery of the old form of telephone apparatus is done away with in this new system.

In the within drawings my invention is shown as applied in connection with the signal and switch box, and my improved apparatus is preferably mounted above the switch-box. In calling the central office under this new system the lifting of the telephone or receiver from the switch-hook permits the latter to rise, which operation conveys a signal to the central office that the instrument is wanted for use. In embodying my invention for this form of apparatus I lock the switch-hook normally and provide means for unlocking it by the performance of some act imposed for the use of the instrument, as the insertion of a coin or token into the mechanism. The coin drops into the instrument to a position where it is arrested in a runway. A trip device is then operated which will unlock the switch-hook lever and leave the coin in a position of rest while the instrument is being used or until it is determined whether the



proper connection can be had. If the instrument is used, as soon as the receiver is replaced on the switch-hook the latter is moved, and its movement releases the coin and causes it to be discharged into a money-receptacle. If it is found, however, that the desired connection cannot be had, the operator at the central office causes the call-bell to sound and the movement of the armature of the magnet is utilized to discharge the coin from the runway into a position out of the case where it is accessible and can be removed by the person who deposited it.

In case the telephone instrument, with the switch-hook normally locked, is located in the office of a subscriber to whom a call is sent the latter may insert a coin in the coin-slot, push down the plunger, locking the switch-hook, and remove the receiver, which allows the switch-hook to lift and releases the mechanism. After the call has been answered the central office causes the coin to be returned to the subscriber in the manner above described. On hanging up the receiver the apparatus is again locked for use as a toll-station.

In the accompanying drawings the numeral 1 denotes a signal and switch box, 2 the call-bells, 3 the switch-hook, 4 the switch-hook lever, 5 the receiver, and 6 the transmitter, of a set of telephone instruments. These parts are all of a well-known type and especially known in connection with the common-battery or central-energy system of telephone instruments above described.

A case 7 is mounted on top of the signal and switch box 1, and this case incloses my improved mechanism for controlling the movements of the switch-hook lever or arm 4, the case being closed by a door which is secured by a lock, the case forming the coin-receptacle. A base 8 is secured in any suitable manner within the case, preferably so that the latter may be removed without disturbing the base. A support 9 is mounted on the base, and to this support a channel-plate 10 is secured. This channel-plate contains a runway 11, adapted to receive a coin of suitable size inserted through the opening or slot in the top of the case 7. A plunger 12 is mounted in rear of the coin-plate, with its upper end projecting through the wall of the case 7. This plunger is held at the upper limit of its play, as by means of a plunger-spring 13 thrusting against a projection 16 from the back of the channel-plate. The lower end of the plunger is secured to a projection 15 from a follower 14. This follower is located on the opposite side of the channel-plate from the plunger 12, the projection 15 extending through a slot in the channel-plate. A trip-lever 17 is located on the back of the channel-plate, being pivoted thereto at its lower end, a trip-lever spring 18 holding said lever in a normal position. This trip-lever bears a stud 19, extending through a slot 20 in the wall of the channel-plate, this stud be-

ing located in the runway 11. The trip-lever also bears a trip 21, located at the back of the channel-plate 10.

A lock 22 is pivoted on the base 8 in the form shown to an extension from the under side of the base. This lock has an arm 23, arranged preferably above the base 8 and underlying the end of the trip 21, a spring 24 being employed to hold the lock in its normal position. The lower end of the lock is adapted in its normal position to overlie the switch-hook lever 4, a shoulder preferably being formed on the lock, against which the lever presses, the upper end of the lock being arranged to engage a catch 26, adapted to hold the lock out of position overlying the switch-hook lever 4. A spring 27 is employed to hold the catch in its normal position. The lower end 25 of this catch is formed with a cam-surface, so that as the switch-hook rises the catch is forced backward by contact of the switch-hook lever with this cam-surface.

A retaining-holder 28 is arranged to hold the coin in its position of rest in the coin-channel, but to be withdrawn when the coin is to be retained in the money-receptacle. This holder in the form shown consists of a rod secured to the lock-arm 23 and controlled in its movements by said lock-arm. This holder extends upward in rear of the channel-plate and projects forward through a slot or opening 29 in the rear wall of the channel-plate.

A delivery-holder 30 is pivotally mounted on the base and projects upward and forward through an opening or slot 31 in the rear wall of the channel-plate. The upper portion or end of this delivery-holder is pivoted to the main or body part. The working end of this delivery-holder has a shoulder 46, which is adapted to be engaged by a trigger 47, located on the trip-lever 17. A counterpoise 48 tends to hold this delivery-holder with its end normally located in the runway in the channel-plate. The lower end of the delivery-holder 30 lies in front of an arm 32, with which it is adapted to be engaged, this arm 32 being secured to the armature 33 of the electromagnet 34 of the telephone apparatus. This delivery-holder is adapted to be withdrawn from the coin-slot when a coin is to be delivered to the user of the instrument.

A check 49 is secured to the switch-hook lever 4 and is adapted to prevent the delivery-holder from being withdrawn from the runway in any movement of the armature except when the switch-hook is at the lower limit of its play.

A casing 40 is secured to the back of the channel-plate, and in this casing is located a release 41. This release projects through an opening in the back of the channel-plate, and a spring 42 normally holds it in a position with its end located in the runway 11. This release is provided with a release-pin 43 and



a withdrawing pin 44 located, preferably, on diametrically opposite sides. A cam 45 on the lower end of the plunger 12 acts upon the withdrawing pin when the plunger is moved  
 5 down to withdraw the pin from the runway. The release-pin 43 is so located as to rest against the trip-lever 17, so that as the latter is swung on its pivot it is disengaged from the release-pin and allows the release to be  
 10 moved with its end located in the runway and under the impulse of the spring 42.

A counterpoise 37 is pivotally mounted on the case 40, and a guide-pin 51 is pivotally connected to this counterpoise, the opposite  
 15 end of the guide-pin passing through the rear wall of the channel-plate to a position in the runway. One end of the release 41 is adapted to strike this counterpoise 37 and forces the guide-pin 51 into the channel when the re-  
 20 lease is withdrawn. It will be seen from this construction that when the end of the release is in the runway the guide is withdrawn, and vice versa.

A guard 50 is secured to the switch-hook lever in position to protect the opening in the box through which the lever passes and to prevent manipulation of the mechanism from the outside and by means other than those intended.

30 The operation of the device is as follows: The parts of the mechanism being in the relative position shown in Figs. 2, 3, and 4, a coin is inserted in the coin-slot in the wall of the case 7 and falls downward, resting against  
 35 the guide-pin 51 and between it and the follower 14. (See dotted lines of coin in Fig. 4.) As the follower is pushed downward the coin is forced against the trip-lever stud 19, which is forced downward along the slot 20. This  
 40 downward movement of the plunger and follower causes the trip-lever 17, through the stud 19, to be swung on its pivots, carrying the trip 21 against the lock-arm 23, forcing said arm downward and the lock 22 backward.  
 45 In this movement the catch 26 engages the arm 23, thus holding the lock in a position out of the path of movement of the switch-hook lever 4. (See Fig. 6.) The retaining-holder 28 having advanced through the opening or slot 29 into  
 50 the coin-channel is now in a position to arrest the coin when it shall be released from the guide-pin 51. This swinging movement of the trip-lever disengages the release-pin 43 from said lever and also the trigger 47 from the de-  
 55 livery-holder 30, the latter being thus projected into the runway in position to arrest a coin therein. The working end of the delivery-holder 30 is pivoted in order that it shall work freely into and through the opening 31  
 60 after the trigger 47 in its downward movement has been disengaged from the shoulder 46 of the delivery-holder. The withdrawal of the trip-lever from the pin 43 does not effect the release 41, for the reason that the cam-  
 65 surface on the lower end of the plunger en-

gaging the withdrawing pin 44 holds the re-  
 lease at the backward limit of its play and al-  
 lows it to move into the runway as the plun-  
 ger moves upward and the cam-surface 45  
 moves along the pin. This movement of the  
 70 release 41 into the runway permits withdrawal of the guide-pin 51 and allows the coin to move downward, resting upon the release 41 and the retaining-holder 28. The receiver being now  
 75 taken from the switch-hook the switch-hook lever moves upward against the cam-surface on the lower end 25 of the catch, carrying said catch back and freeing the catch-hook from engagement with the lock. The lock is pre-  
 80 vented from moving forward by reason of the switch-hook lever being interposed in front of it, this movement of the lever, in fact, throw-  
 ing the lower end of the lock back a trifle and advancing the retaining-holder a slight dis-  
 85 tance farther into the coin-channel. The apparatus may now be used for the purpose of conversation. As the receiver is replaced on the switch-hook the lever is drawn downward, releasing the lock and catch, which are re-  
 90 turned to their normal position by means of the relative springs. This movement with-  
 draws the retaining-holder from the coin-channel and a coin falls into the case 7 or coin-  
 95 receiver. When the parts have been operated to present the coin to the release and de-  
 livery holders in its position of rest, as above described, the receiver having been removed from its hook, if the central office shall find that the desired connection cannot be ob-  
 100 tained the user is so notified. By now again pushing the plunger downward the release 41 is withdrawn from the runway by the opera-  
 tion of the cam-surface 45 against the withdrawing pin 44, and the coin falls to a posi-  
 105 tion resting against the delivery-holder 30. The receiver now being placed on the switch-hook the check 49 prevents any movement of the delivery-holder 30 until the switch-hook has reached the lower limit of its play, at  
 110 which point the check has passed below the lower end of the delivery-holder. The central office now operates the call-bell in the usual manner, energizing the magnet 34, which vibrates the armature 33. This vibra-  
 115 tion of the armature carries with it the arm 32, swinging the lower end of the delivery-holder 30 and withdrawing its upper end from the coin-slot. This movement allows the coin to travel along the coin-channel into a clip 36 outside of the case 7, from which po-  
 120 sition it may be removed by the user.

The term "telephone toll apparatus" has been used in connection with the description of the apparatus herein, in which a coin is used to operate the device to indicate to the  
 125 central office that the requirements imposed for the use of the instrument have been complied with; but it is understood that this term "telephone toll apparatus" as used in the specification and in the claims shall apply to  
 130



my apparatus, in which some act must be performed by the user before the required signal may be observed at the central station, whether the requirement be the depositing of  
 5 a coin or token or the operation of a register, as by a key, or any other act.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in said coin-channel, a trip-lever with a part projecting into the coin-channel and bearing a trip  
 15 arranged to operate the lock, a guide-pin movable in and out of the channel and acting in connection with the projection from the trip-lever to release the lock, and means for operating the follower.

2. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in the coin-channel, a trip-lever having a part projecting  
 25 into the coin-channel and bearing a trip arranged to operate the lock, a guide-pin movable in and out of the channel and operating in connection with the projection from the trip-lever, a holder projecting into the coin-channel and arranged to receive and hold a  
 30 coin, means for releasing said holder in the movement of the switch-hook lever, and means for operating the follower.

3. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in the coin-channel, a trip-lever having a part projecting into the coin-channel and bearing a trip  
 40 adapted to operate the lock, a guide-pin operating in connection with the projection from the trip-lever, a retaining-holder projecting into the coin-channel and connected with the lock, a delivery-holder projecting into said  
 45 coin-channel and connected with the armature of the electromagnet for operating the call-bell, the electromagnet, the armature arranged to be vibrated when the magnet is energized, and means for operating the follower.

4. In a telephone toll apparatus, in combination with the switch-hook lever, a lock adapted to prevent movement of said lever, a catch arranged to hold the lock from engagement with the lever and having a cam arranged in  
 50 the path of movement of the lever to disengage the catch from the lock, a coin-channel, a fol-

lower located in the channel, a trip-lever having a part projecting into the channel and bearing a trip arranged to operate the lock, a guide-pin operating in connection with the projection  
 60 from the trip-lever, a retaining-holder secured to the lock and projecting into the coin-channel, a delivery-holder with one end projecting into the coin-channel said holder being operatively connected with the armature  
 65 of the electromagnet, the electromagnet, the armature adapted to be vibrated when the magnet is energized, means for energizing the magnet, and means for operating the follower.

5. In a telephone toll apparatus, in combination with a switch-hook lever, a lock arranged to prevent movement of said lever, a coin-channel, a follower arranged in said channel, a trip-lever with a part projecting into the coin-channel and bearing a trip arranged to  
 75 operate the lock, a removable guide-pin movable in and out of the channel acting in connection with the projection from the trip-lever to release the lock, means for operating the guide-pin, and means for operating the fol-  
 80 lower.

6. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of the lever, a coin-channel, a follower located in the channel, a release, a cam on the follower to operate the release, and a trip-lever to operate the lock and also to engage said release.

7. In a telephone toll apparatus, in combination with a switch-hook lever, a lock arranged to prevent movement of said lever, means for operating the lock, a coin-channel, a follower located in the channel, a guide-pin and a release operatively connected to project into the channel, and a cam on the follower  
 95 adapted to operate the release.

8. In a telephone toll apparatus, in combination with the switch-hook lever, a lock arranged to prevent movement of said lever, a retaining-holder borne by said lock, means for  
 100 operating the lock, a coin-channel, a follower located in the channel, a guide-pin and a release operatively connected and projecting into the channel, a stud from the trip-lever projecting into the channel, and a delivery-  
 105 holder operatively connected to the armature of the magnet of the telephone.

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