

(No Model.)

3 Sheets—Sheet 1

T. A. DULL.  
TELEPHONE CONTROLLING DEVICE.

No. 582,187.

Patented May 11, 1897.

Fig. 1

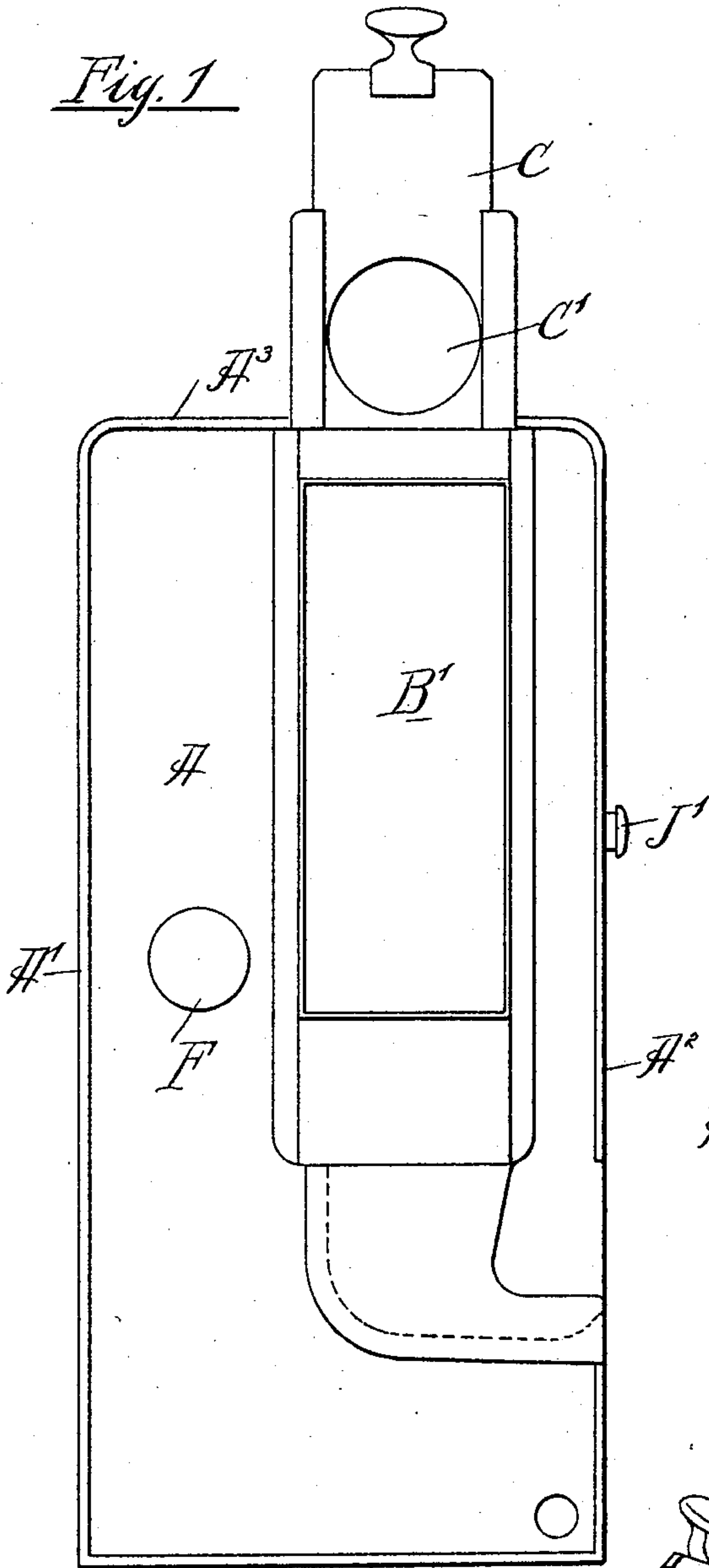


Fig. 2

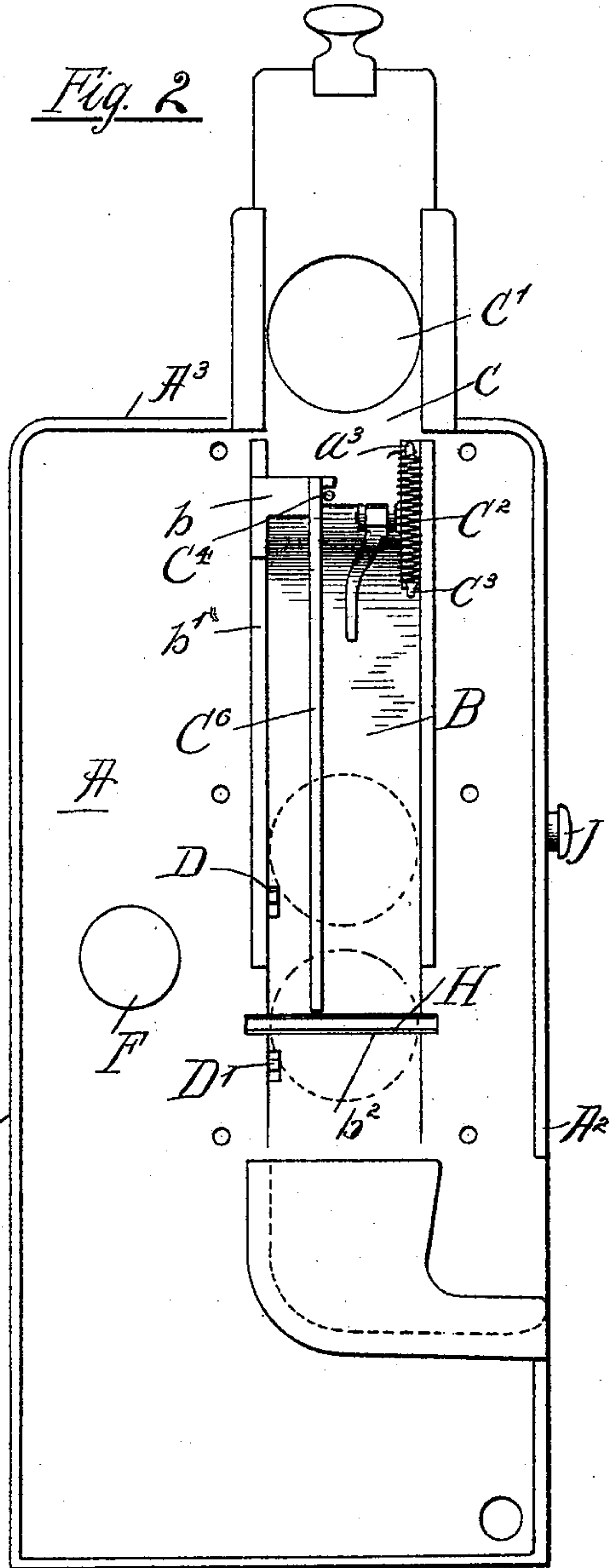
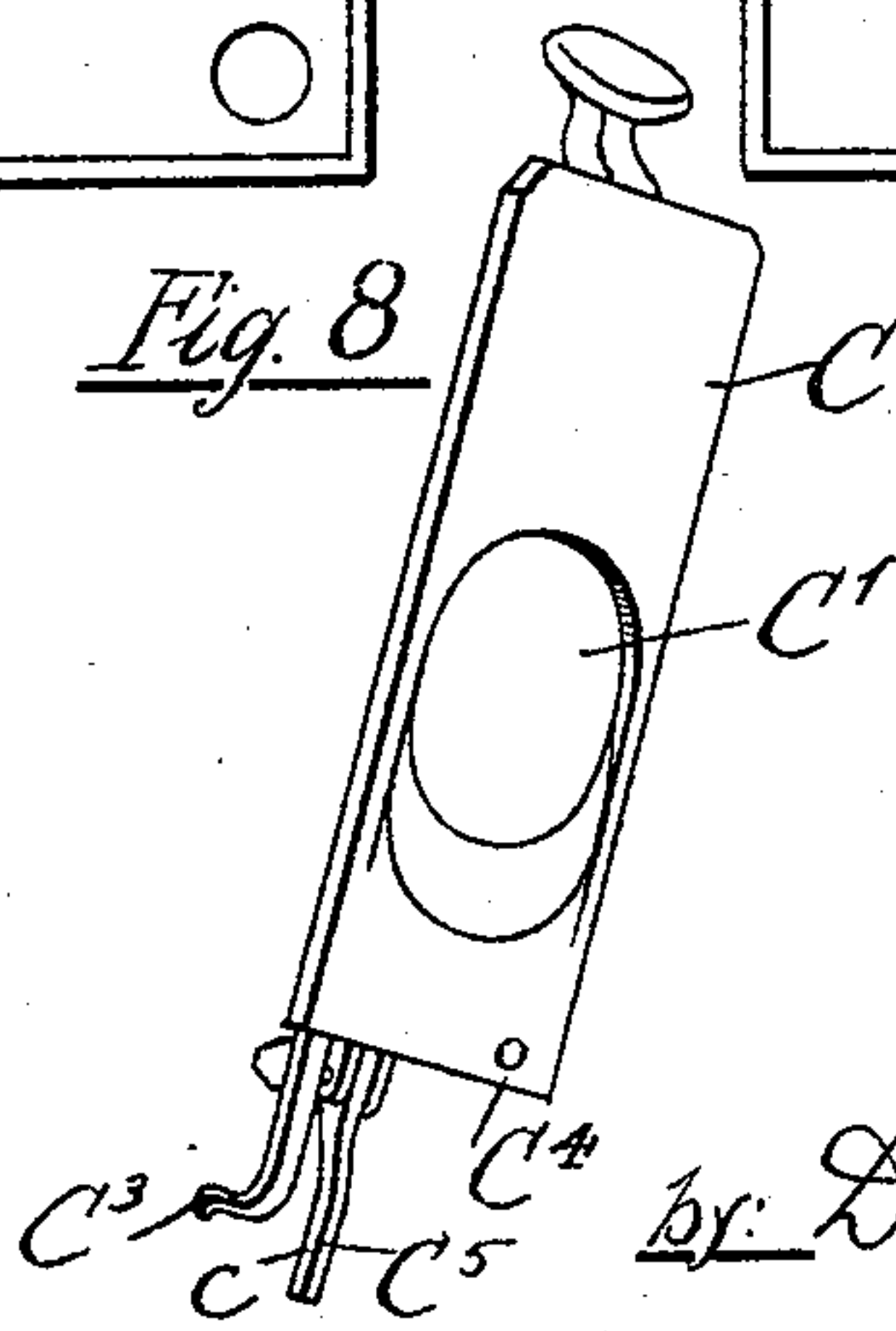


Fig. 8



Witnesses

L. Clifton Hamlin  
John W. Adams.

Inventor  
Thompson A. Dull

by Dayton, Pool & Brown  
his Attorneys

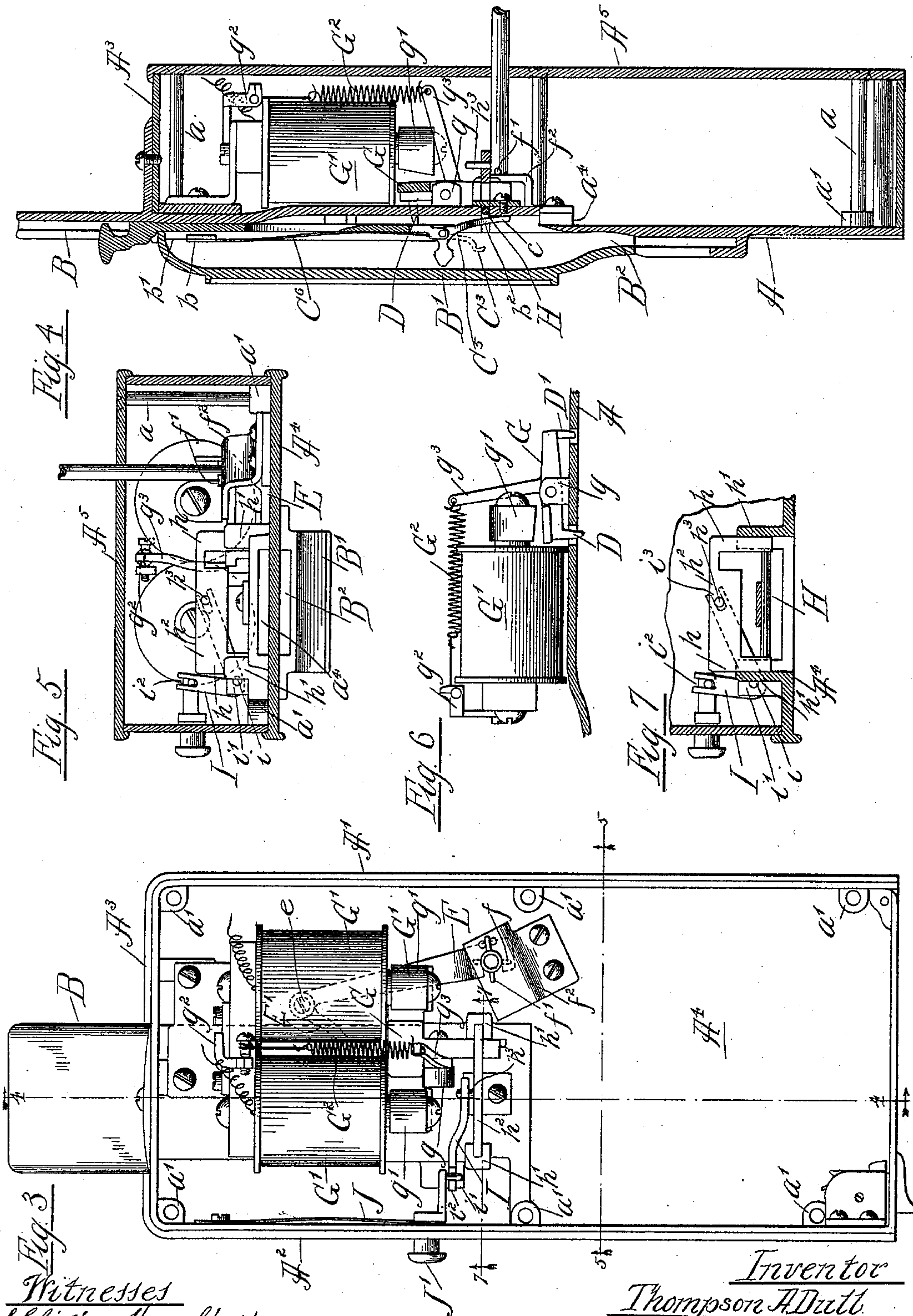
(No Model.)

3 Sheets—Sheet 2.

T. A. DULL.  
TELEPHONE CONTROLLING DEVICE.

No. 582,187.

Patented May 11, 1897.



Witnesses  
Clinton Hamlin  
John W. Adams.

Inventor  
Thompson A. Dull.  
by Dayton, Poole & Brown  
his Attorneys

(No Model.)

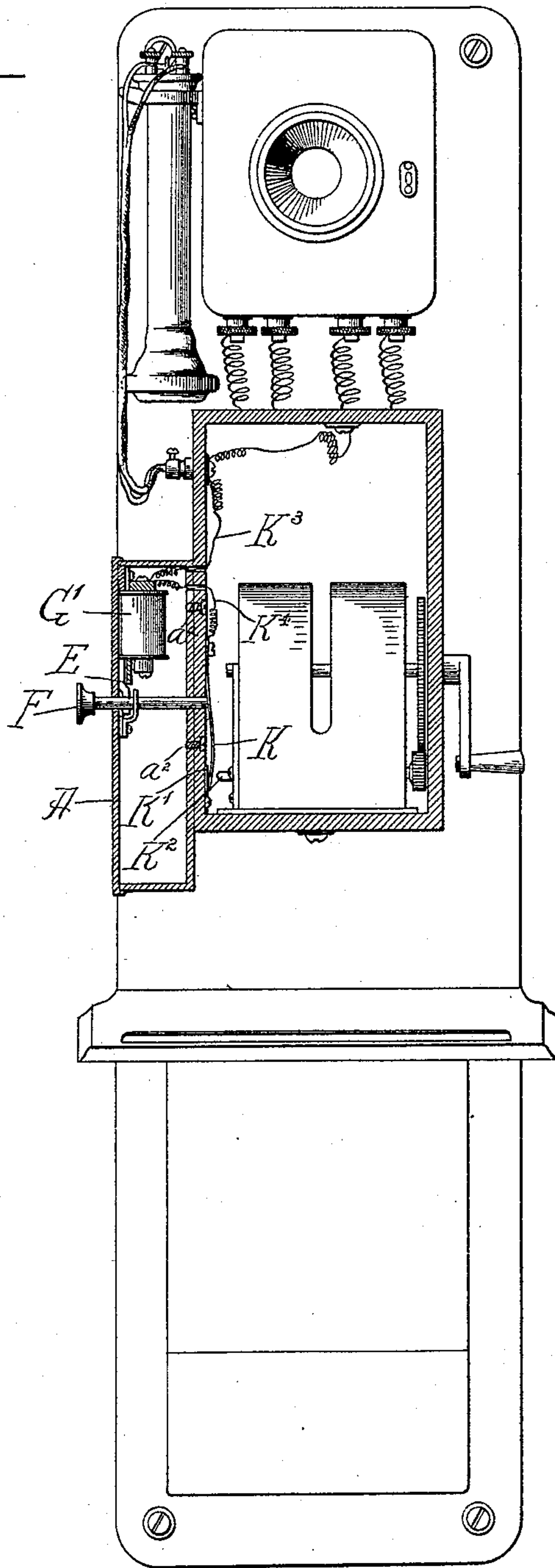
3 Sheets—Sheet 3.

T. A. DULL.  
TELEPHONE CONTROLLING DEVICE.

No. 582,187.

Patented May 11, 1897.

Fig. 9



Witnesses

*L. Clifton Hamblin*  
*John W. Adams*

Inventor  
*Thompson A. Dull*

by *Dayton, Pool & Brown*  
*his Attorneys*



# UNITED STATES PATENT OFFICE.

THOMPSON A. DULL, OF CHICAGO, ILLINOIS.

## TELEPHONE-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 582,187, dated May 11, 1897.

Application filed October 14, 1895. Serial No. 565,537. (No model.)

*To all whom it may concern:*

Be it known that I, THOMPSON A. DULL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Telephone-Controlling Devices; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in coin-actuated telephone-controlling devices of that class in which a coin, tablet, check, or other arbitrarily-selected device must first be deposited in the slot of the attachment in order to render the telephone operative.

Among the objects of the invention are to provide an extremely strong, simple, and compact attachment so constructed as to be capable of attachment without material change to any of the telephone outfits now commonly in use; to provide a construction in which the coin having been once deposited in the slot it shall be absolutely in the control of the telephone attendant at "central" and may be transferred to the coin-receptacle or refunded to the depositor, as desired; in which, when one coin of the proper kind has been placed in the slot, a second cannot be inserted until the first has passed through and in which the travel of the coin through the chute is under the control of positive actuating devices; in which the control and operation of the device is effected by simply passing the main circuit therethrough without the use of any additional "local" or auxiliary circuits or switches, and in which the construction and arrangement of the parts are such that it will be impossible to "pick" or fraudulently operate the controlling mechanism or to defraud the device by recovering back the coin after it has been used to operate the controlling mechanism.

The invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims, and will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a front elevation of a complete device embodying my invention. Fig. 2 is a similar view with the front covering-cap re-

moved, exposing the interior of the coin-chute. Fig. 3 is a rear elevation with the back wall of the casing removed to expose the arrangement of the mechanism therein. Fig. 4 is a transverse vertical section taken on line 4 4 of Fig. 3 and looking in the direction of the arrows. Fig. 5 is a horizontal section taken on line 5 5 of Fig. 3 and looking upwardly. Fig. 6 is a detail view showing the armature in side elevation, one of the magnets, and the spring which normally holds the armature from contact with the magnet and the upper stop in the path of the coin. Fig. 7 is a fragmentary sectional detail taken on line 7 7 of Fig. 3 and looking in the direction of the arrows. Fig. 8 is a perspective view of the coin-carrier. Fig. 9 is a vertical sectional view taken through the magneto-box and the attachment, showing the manner of applying the latter to the magneto-box and the circuit connections of the same.

As shown in said drawings, A designates as a whole the case, which is of oblong rectangular form and conveniently comprises side walls  $A^1$   $A^2$  and a top wall  $A^3$ , made integral with a single strip of sheet metal bent into proper form, a bottom wall hinged at one of the corners of the box and adapted to drop down when unlocked at its opposite end, and front and back sides  $A^4$   $A^5$ , provided with marginal flanges which extend outside of and embrace the edges of the side and top pieces. The parts of the case are secured together in assembled position by means of through-bolts or screws  $a$ , which are inserted from the rear through the back plate  $A^5$  and threaded into suitable bosses  $a'$  upon the inner side of the front plate  $A^4$ . The box thus constructed is secured to the outside of the call-box of the telephone with its back resting against the latter by means of screws  $a^2$ , inserted from the inside of the telephone-box out through the wall thereof and threaded into the back plate  $A^5$  of the case, thus obviously rendering it impossible when the telephone-box is closed and locked for unauthorized persons to tamper either with the attaching-screws or those securing the parts of the box together, while the box may be readily removed and taken apart when necessary.

Now describing the coin-controlling mechanism proper, B designates a vertically-ar-



ranged chute or guideway formed in the outer surface of the front plate  $A^4$  and covered throughout the greater portion of its length by means of a removable cap-plate  $B'$ . Within said chute  $B$  is arranged to slide a coin-carrier  $C$  of peculiar construction and adapted to completely occupy the upper part of the chute, so as to preclude the possibility of inserting or passing anything into the chute alongside the carrier. The upper end of said guideway is open at its front side, so as to expose a coin-aperture  $C'$ , formed in the coin-carrier  $C$ , when the latter is in its normal uppermost position. The coin-carrier is held normally at the upper limit of its movement by means of a coiled contractile spring  $C^2$ , secured at its upper end to a lug or projection  $a^3$  and connected at its lower end with an outwardly-projecting hook  $C^3$ , mounted upon the lower end of the carrier.

$C^4$  designates a stop-stud mounted upon the lower end of the carrier, adapted to engage with a laterally-projecting part  $b$  on one of the guide-ribs  $b'$  of the guideway  $B$ , so as to limit the upward movement of the carrier under the action of the spring  $C^2$ .

The thickness of carrier  $C$  is slightly greater than that of the coin which it is adapted to receive—as, for instance, a nickel—and the lower half of the coin-aperture is beveled or chamfered at its rear side to a knife-edge in front, as shown more clearly in detail in Fig. 8. At a point some distance below the upper end of the guideway  $B$  and within the covered portion of said chute the latter is deepened or recessed back into the front plate, so as to provide room for the passage of the coin downward behind the carrier  $C$ , the effect of this arrangement being that as soon as the coin is carried downward by the depression of the carrier  $C$  the beveled or chamfered lower side of the coin-aperture permits the coin to slip out of the coin-carrier and drop down behind the latter until arrested by means of a stop  $D$ , projecting through the back wall of the chute into the path of the coin, as hereinafter described.

$E$  designates a bent swinging locking-lever pivoted upon the inside case at  $e$ . The shorter end  $E'$  of the lever  $E$  projects normally through the side wall of the chute in position to be engaged and pressed outwardly by the edge of the coin in its passage downward to the position in which it is first arrested.

$F$  indicates a push-button located at one side of the chute  $B$  and provided at points within the casing with stops  $f f'$ , which limit the extent of its inward movement. The longer end of the lever  $E$  is arranged to normally swing by gravity into contact with the side of said push-button and to rest with its end interposed between the stop  $f$  and the apertured bracket-support  $f^2$ , which forms the bearing for the spindle of the push-button, so as to prevent inward movement of the button, but to release the latter when the lever is oscillated by the coin, as described.

The stop or detent  $D$ , which arrests the coin in its first position, or that in which the locking-lever is held back, is mounted upon and projects outwardly from an oscillatory armature  $G$ , pivoted upon a suitable lug  $g$  on the inside face of the front plate  $A^4$ . The armature  $G$  is acted upon by an electromagnet  $G'$ , suitably secured within the casing, and is held normally away from the poles  $g' g'$  of the magnet in position to project the detent  $D$  into the path of the coin by means of a coiled spring  $G^2$ , secured at its upper end to a suitable bracket  $g^2$  and acting at its other end upon a rigid arm  $g^3$ , projecting rearwardly from the lower part of the armature.

$D'$  designates a second stop or detent mounted upon the armature  $G$  and also arranged to project outwardly through the back wall of the chute into the path of the coin, said detent  $D'$  being, however, arranged below the pivotal axis of the armature, so as to be retracted when the detent  $D$  is projected, and vice versa.

With the foregoing arrangement it will be obvious that upon the passage of current through the electromagnet the armature will be drawn toward the poles  $g' g'$  and thus oscillated upon its pivot, so as to retract the upper detent  $D$  and project the lower detent  $D'$ , thereby permitting the coin to be dropped from its first position, but arresting it again in the position indicated in Fig. 2. It is while held in this second position and while within control of the operator at "central" that the coin may be recovered by the depositor, at the option, however, of the operator at "central," and mechanism for thus returning the coin to the owner is arranged as follows:

$H$  designates a transversely-arranged ejector-bar arranged to lie normally within a depression  $b^2$ , extending across the rear side of the chute  $B$ , and provided with right-angled rearwardly-projecting guide-arms  $h h$ , which extend back through suitable apertures and are adapted to slide within suitable guides  $h' h'$ , mounted upon the rear inner side of the front plate. At their inner ends said guide-arms  $h h$  are connected by means of a cross-bar  $h^2$ .

$I$  designates a bell-crank lever pivoted at  $i$  to a suitable bracket or projection  $i'$  in such manner as to oscillate in a plane parallel with the plane of movement of the ejector-bar  $H$ . Each end of said bell-crank lever is slotted, as at  $i^2 i^3$ , one of said ends being arranged to engage with a stud  $h^3$ , projecting from the central part of the cross-bar  $h^2$ , and the opposite end being engaged with a similar stud formed upon the free end of a plate-spring  $J$ , secured against the inner side of the side wall  $A^2$  of the case and arranged to spring normally outward into contact with said outer wall.

$J'$  designates a push-button secured to the lower end of said plate-spring and arranged to project outwardly through the side wall of the casing, by means of which said spring



may be forced inwardly, thereby oscillating the bell-crank lever I and projecting the ejector-bar H.

At a point a short distance below the ejector-bar H the deeper or recessed part of the coin passage or chute B terminates in an opening or slot  $a^4$ , thereby forming a direct passage for the coin into the box. From the slot  $a^4$  a second passage or chute  $B^2$ , forming a continuation of the chute B, leads downwardly upon the outside of the front plate  $A^4$ , but within the cap  $B'$ , said passage being turned in a nearly horizontal direction across the face of the box and terminating at the edge of the box in an upwardly-directed portion, which prevents the coin from dropping out. The extreme end of the horizontal part of the chute is left open, so as to expose the coin to view and permit its removal by the owner. The object of thus deflecting the lower portion of the chute horizontally across the box is to prevent the possibility of operating the locking-lever by inserting a wire or metal strip upwardly within the chute. Obviously, when thus arranged, if the current be cut while the coin is in its second position, the detent  $D'$  will be retracted by the action of the spring  $C^2$  upon the armature and the coin be permitted to drop into the lower part of the locked coin-receptacle. If, however, while the coin is held in this second position the push-button  $J'$  be forced inwardly, the coin will be forced outwardly by the ejector-bar H off from the end of the detent  $D'$  and will drop down through the outer chute leading to the open part of the chute, where it may be removed.

Inasmuch as the coin-carrier is returned to its normal uppermost position by the spring thereof as soon as pressure is released it is possible to insert a second coin into the carrier before the first has passed entirely through the chute. In order, therefore, to prevent the carrier from being depressed a second time while a coin remains in the passage, a suitable clearing device  $C^5$  is pivoted to the lower end of the carrier, having a depending finger or arm  $c$ , adapted to engage at its end with the upper edge of a coin, and a horizontally-arranged weighted arm  $c'$ , which insures the swinging back of the depending arm against the rear side of the chute in position to engage the coin. Obviously if a coin be held by either stop the clearer will, by engagement therewith, prevent the carrier from being depressed, while if for any reason a coin should simply become stuck in the chute, but not positively held, the clearer will push it through.

In order that the coin may be held yieldingly against the back side or bottom of the chute after the carrier has returned to its upper position, a spring  $C^6$  is secured to the laterally-projecting part  $b$  and arranged to depend within the chute in such position as to act at its free end upon the coin when within this part of the chute.

As is well understood, in telephone outfits as usually constructed the magneto or "call" device is normally either short-circuited or cut out of circuit, the taking down of an ear-phone or the pressing of a button or other operation being necessary to break this short circuit or close the magneto to "line" before a signal can be sent out upon the line to "central" to notify the operator that a connection is desired, and in the present application of my attachment the control of the telephone is maintained by reason of the fact that the sending out of the magneto or call current to "line" or "central" is controlled solely by the push-button F.

It will be obvious from the foregoing that in use with the various kinds of telephones the particular location of the coin-operated controlling attachment will be varied, depending upon the construction of the magneto or other call box and the arrangement of the call-circuit therein. In the present case, in which the attachment is illustrated as applied to an ordinary Viadock magneto-box, in which box the magnet is normally cut out of circuit, the case A is applied to one side of the magneto-box, with the spindle of the push-button arranged to project inwardly through the side wall thereof in the same location and in lieu of the push-button ordinarily used in that box to operate the switch which sends the magneto-current out to "line." Upon the inside of the call-box is secured a spring-strip terminal K, having its free end arranged opposite the end of the push-button F and arranged to lie normally in contact with a second terminal  $K'$ , said terminals K and  $K'$  being in the call or bell circuit.

$K^2$  designates a third terminal arranged opposite the free end of the terminal K, and with which the latter is adapted to contact when forced inwardly by the push-button, thereby closing the circuit of the magneto to line. Obviously when the push-button is forced inwardly the free end of the spring-strip will be forced out of contact with the terminal  $K'$  and the circuit around the magneto thus broken; but at the same time the circuit through the magneto will be closed, thereby rendering it possible to send a call out upon the main line to "central" by turning the handle of the magneto in the usual manner.

The coils  $G' G'$  of the electromagnet G are simply connected in circuit with the main telephone-circuit without the intervention of switches or additional connections. For security and to avoid outside wiring the line-wire is led from the inside of the magneto or call box to the coils  $G' G'$  and back, as clearly indicated at  $K^3$  and  $K^4$ , Fig. 9. It is to be noted in this connection that the coils  $G' G'$  of the magnet are so wound and the tension of the armature-spring  $G^2$  so adjusted that the magnet is not affected or operated by the ordinary talking-current or by the stronger



magneto-current generated in calling up, but that it is only when additional strength from an extra battery or current is thrown into the line by the operator at "central" that the magnet affects its armature.

The operation of the device thus constructed and arranged is as follows: The would-be communicant having placed a proper coin in the coin-aperture of the coin-carrier, the latter is depressed. As soon as the coin reaches the recessed or enlarged portion of the chute the beveled lower side of the coin-aperture causes it to drop down behind the latter, forcing the projecting end E' of the locking-lever laterally outward with its edge in its downward passage, and thus releasing or unlocking the push-button F. While the coin is still in contact with the end of the locking-lever it is arrested by the upper detent D, as indicated in dotted lines in Fig. 2. The depositor now forces in the unlocked push-button and rings the call-bell, notifying "central" that a connection is desired. The operator at "central" in obedience to this call makes the proper connection and calls up the subscriber wanted. In case the proper connection has been made and the toll therefore earned the operator at "central" thereafter simply throws in the extra battery or other additional current, which operates the electromagnet G' and retracts the detent D, thus permitting the coin to drop down to the second position, and thus immediately throws the said extra battery or additional current out again, whereupon the detent D', now holding the coin in its second position, is retracted by the return of the armature, and the coin drops into the receptacle. If, however, upon being "rung up" and asked for a given connection, the operator at "central" finds that the desired subscriber's line is "busy," is out of repair, or if for any other reason the proper connection cannot be made, she informs the depositor and instructs him to push the button J' and get back his coin, at the same time throwing in the additional current necessary to operate the magnet and permit the coin to drop from the first to the second position, leaving the extra battery to line long enough for the depositor to operate the push-button, as instructed. The depositor upon receiving this information presses the button J', thereby forcing the coin outwardly free from the lower detent and permitting it to drop into the outer chute and so out to the exterior of the box, from where it may be removed and, if desired, again deposited in the slot after a suitable interval has passed to permit the wires to become clear.

While I have herein illustrated what I deem a preferred embodiment of my invention, yet it will be obvious that various modifications may be made in the mechanical details without departure from the spirit of the invention and without the exercise of more than ordinary mechanical skill. I do not therefore wish to be limited to the precise details

illustrated herein, except as made the subject of specific claims.

It will be observed that the arrangement is such that if a coin of a smaller size than that of the predetermined size be inserted in the chute it will pass readily into the coin-receptacle and will not have the effect of allowing the telephone user to actuate the device, as above explained, while it will be obvious that a coin of larger size could not be inserted into the chute.

The device is intended to be operated by a five-cent piece or nickel, but it will be manifest without further explanation or illustration that it may be so altered as to be operated by a coin of any other size or denomination without changing the spirit of my invention. These and other modifications of my invention are intended to be embraced herein, and I do not desire to have my claims limited except as herein stated.

I claim as my invention—

1. The combination with a telephone-exchange system, of a coin-actuated telephone-controlling device, comprising a coin-receptacle, a coin-chute leading thereto, a movable member projecting within the coin-chute, a circuit-controlling device operated by said movable member, a pivoted armature mounted within the receptacle and provided with projections forming stops adapted to be alternately projected within said chute upon the oscillation of the armature, an electromagnet adapted to oscillate said armature, a passage leading from the coin-chute to the exterior of the box, and an ejector adapted to force the coin from engagement with one of said stops into said passage, substantially as set forth.

2. The combination with a telephone-exchange system, of a coin-actuated telephone-controlling device, comprising a coin-receptacle, a coin-chute leading to the interior thereof, a movable member normally projecting within said chute, a locking-lever actuated by said movable member, a push-button controlled by said locking-lever, a pivoted armature mounted within said receptacle, upper and lower stops connected with said armature, and adapted to be alternately projected within the path of the coin, an electromagnet arranged to act upon said armature, a spring acting upon the armature in opposition to the electromagnet, a downwardly-directed coin-passage leading to the exterior of the box, and an ejector arranged to force the coin from engagement with one of said stops into said passage, substantially as set forth.

3. The combination with a telephone-exchange system, of a coin-actuated telephone-controlling device, comprising a coin-receptacle, a chute leading thereto, a stop arranged within said chute, a second passage leading from the stop to the exterior of the receptacle, and an ejector arranged to force the coin from engagement with said stop into the passage leading to the exterior of the receptacle, said ejector comprising a transverse bar arranged



within the chute, inwardly-projecting guide-arms, a connecting cross-bar, a bell-crank lever connected at one end with said cross-bar and at its other end acting to hold the ejector normally retracted, and a push-button extending through the wall of the casing and adapted to operate said bell-crank lever, substantially as set forth.

4. The combination with a coin-actuated mechanism comprising a coin-receptacle and a coin-chute leading to the interior thereof, of a vertically-reciprocating coin-carrier occupying the entrance end of said chute and adapted to convey the coin downwardly to an enlarged portion thereof, said carrier being provided with a coin-aperture having a beveled side wall adapted to permit the coin to pass readily therefrom into said enlargement of the chute, and means upon the carrier located below the coin-aperture thereof, adapted to engage the coin and force it downward in a succeeding movement of the carrier, substantially as set forth.

5. The combination with a coin-actuated mechanism comprising a coin-receptacle and a coin-chute leading to the interior thereof, of a vertically-reciprocating coin-carrier occupying the entrance end of said chute and adapted to convey the coin downwardly to an enlarged portion thereof, said carrier being provided with a coin-aperture having a beveled side wall adapted to permit the coin to pass readily therefrom into said enlargement of the chute, means upon the carrier located below the coin-aperture thereof adapted to engage the coin and force it downward in a succeeding movement of the carrier, and a spring arranged to normally hold the carrier at its upper limit.

6. The combination with a coin-actuated mechanism comprising a coin-receptacle, and a coin-chute leading to the interior thereof, of a coin-carrier arranged within said chute and adapted to convey the coin to an enlarged portion of the chute, said carrier being provided with a coin-aperture having a beveled side wall adapted to permit the coin to pass

readily therefrom, and a pawl mounted upon said carrier and arranged to engage a coin within the enlarged part of the chute, substantially as set forth.

7. In a coin-actuated telephone device, the combination of a coin-receptacle, a coin-chute leading to the interior of the receptacle, an electrically-operated coin-detent within said chute, an electromagnet arranged to operate said detent to hold a coin in position to be recovered while the magnet is energized and mechanism for ejecting the coin, substantially as described.

8. In a coin-actuated telephone-controlling device, the combination of a coin-receptacle, a coin-chute leading to the interior of the receptacle, an electrically-operated coin-detent within said chute, an electromagnet arranged to operate said detent to hold a coin in position to be recovered while the magnet is energized, said magnet being at all times connected in circuit with the main line and mechanism operated by a push-button for ejecting the coin, substantially as described.

9. In a coin-actuated telephone-controlling device, the combination of a coin-receptacle, a coin-chute leading to the interior of the receptacle, an electrically-operated coin-detent within said chute, an electromagnet arranged to operate said detent to hold a coin in position to be recovered while the magnet is energized, said magnet being connected in circuit with the main line and so constructed as to be operated only by a current stronger than that employed in sending call-signals and mechanism operated by a push-button for ejecting the coin, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 8th day of August, A. D. 1895.

THOMPSON A. DULL.

Witnesses:

TAYLOR E. BROWN,  
E. P. McCONNELL.