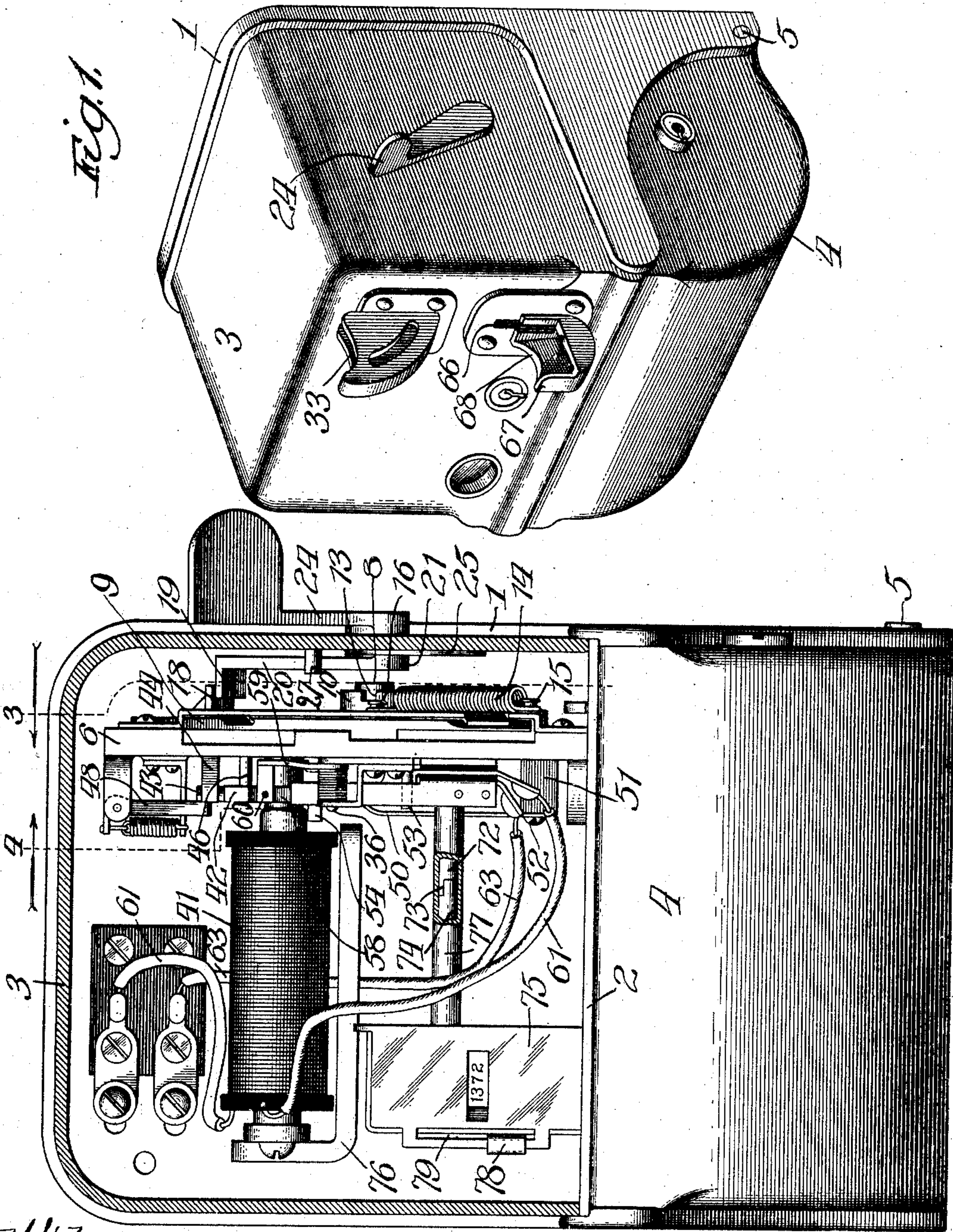


928,188.

C. S. ELLIS.
COIN BOX FOR TELEPHONES.
APPLICATION FILED JUNE 17, 1907.

Patented July 13, 1909.
5 SHEETS—SHEET 1.



Witnesses:
Chas. E. Gaylord,
Chas. H. Buell.

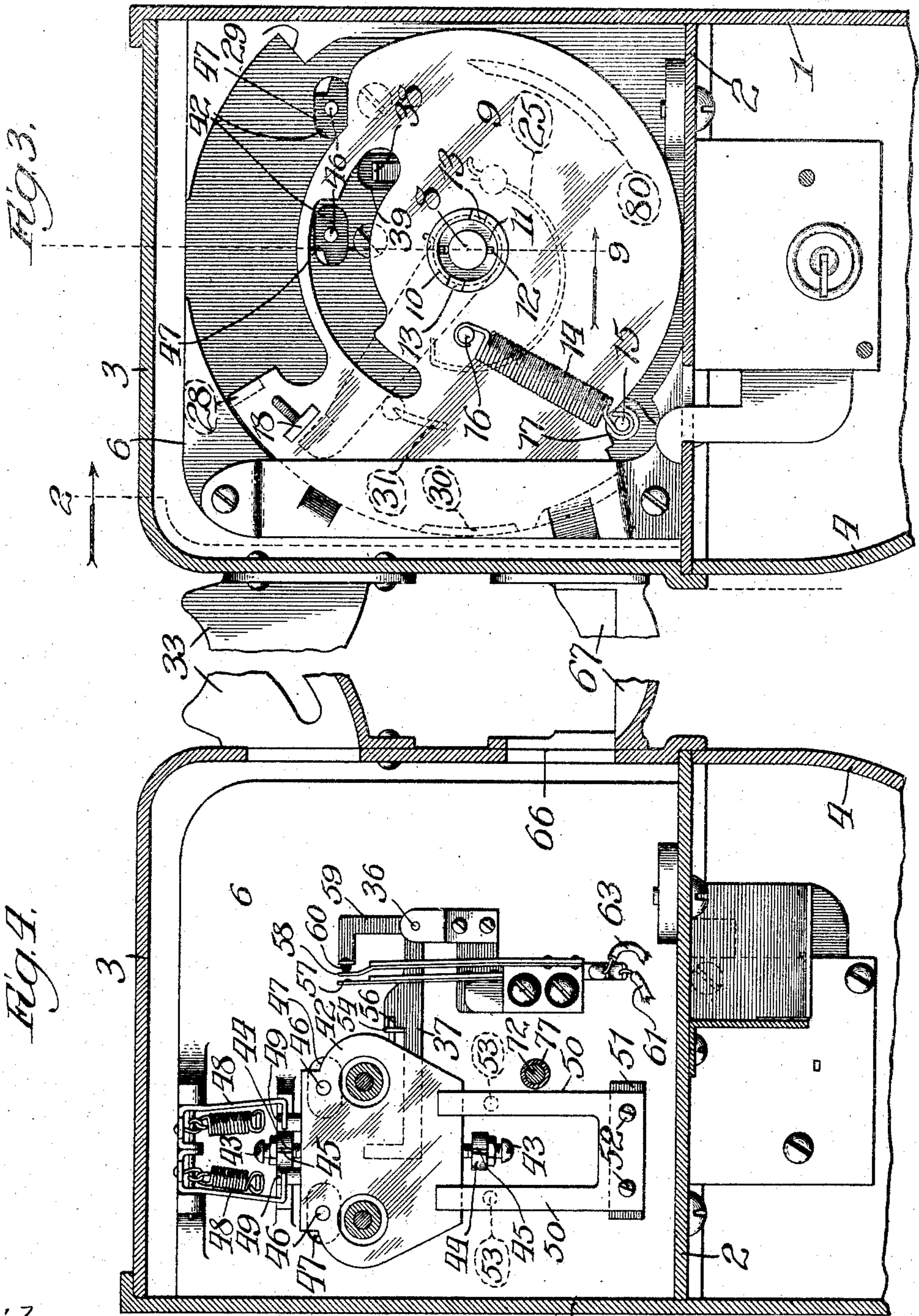
Fig. 2.

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5 SHEETS—SHEET 3.

Fig. 5.

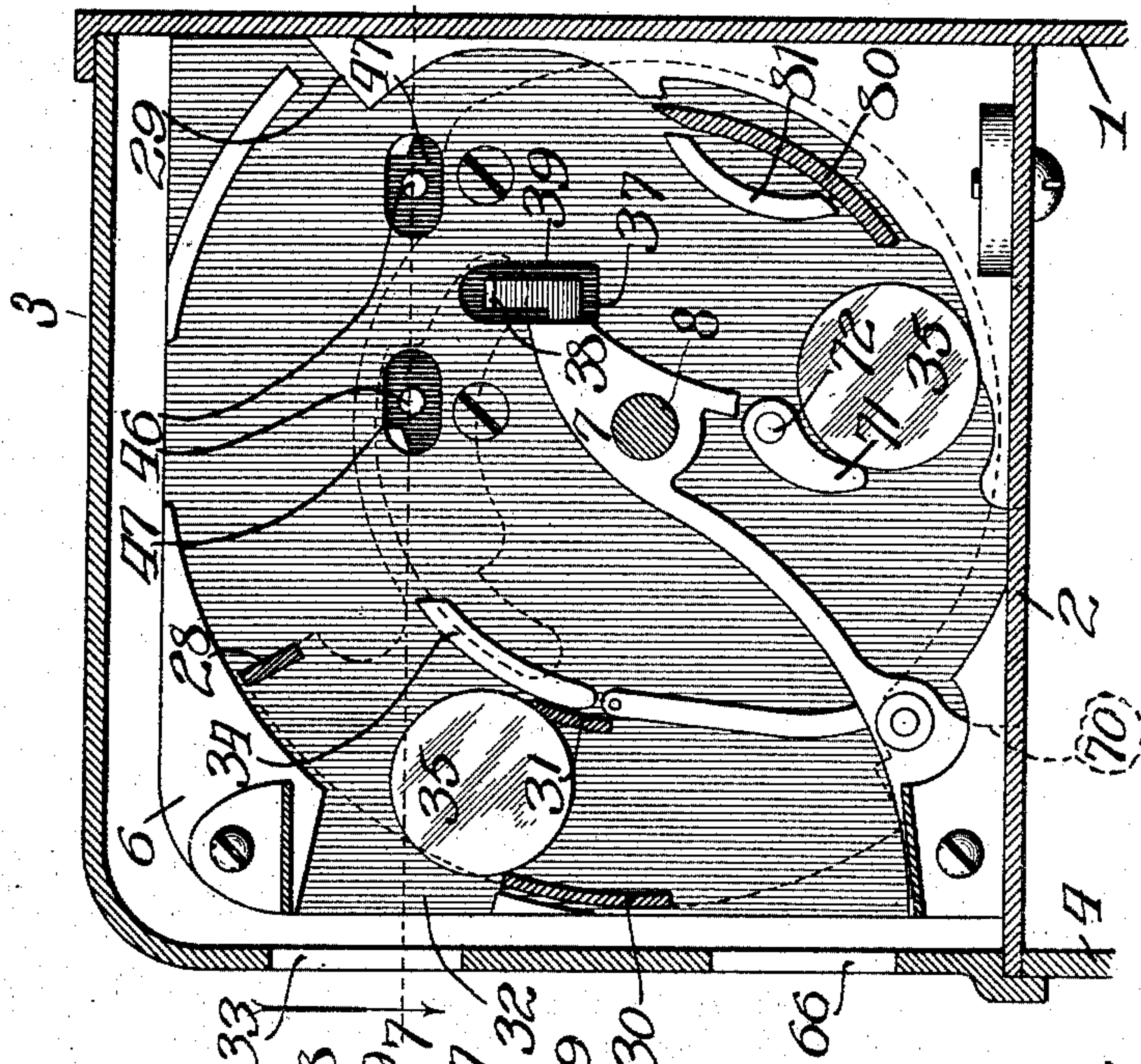
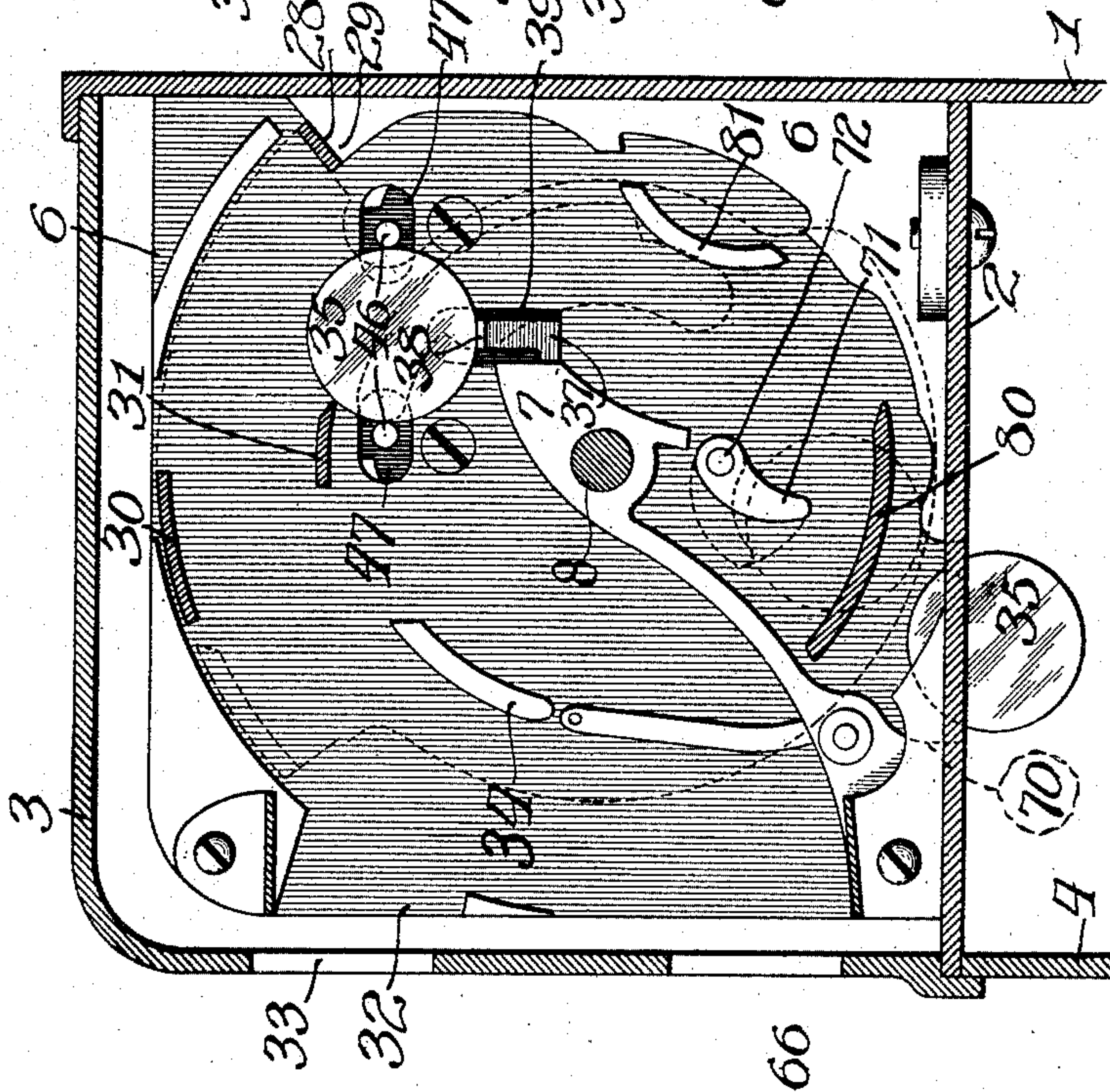


Fig. 6.



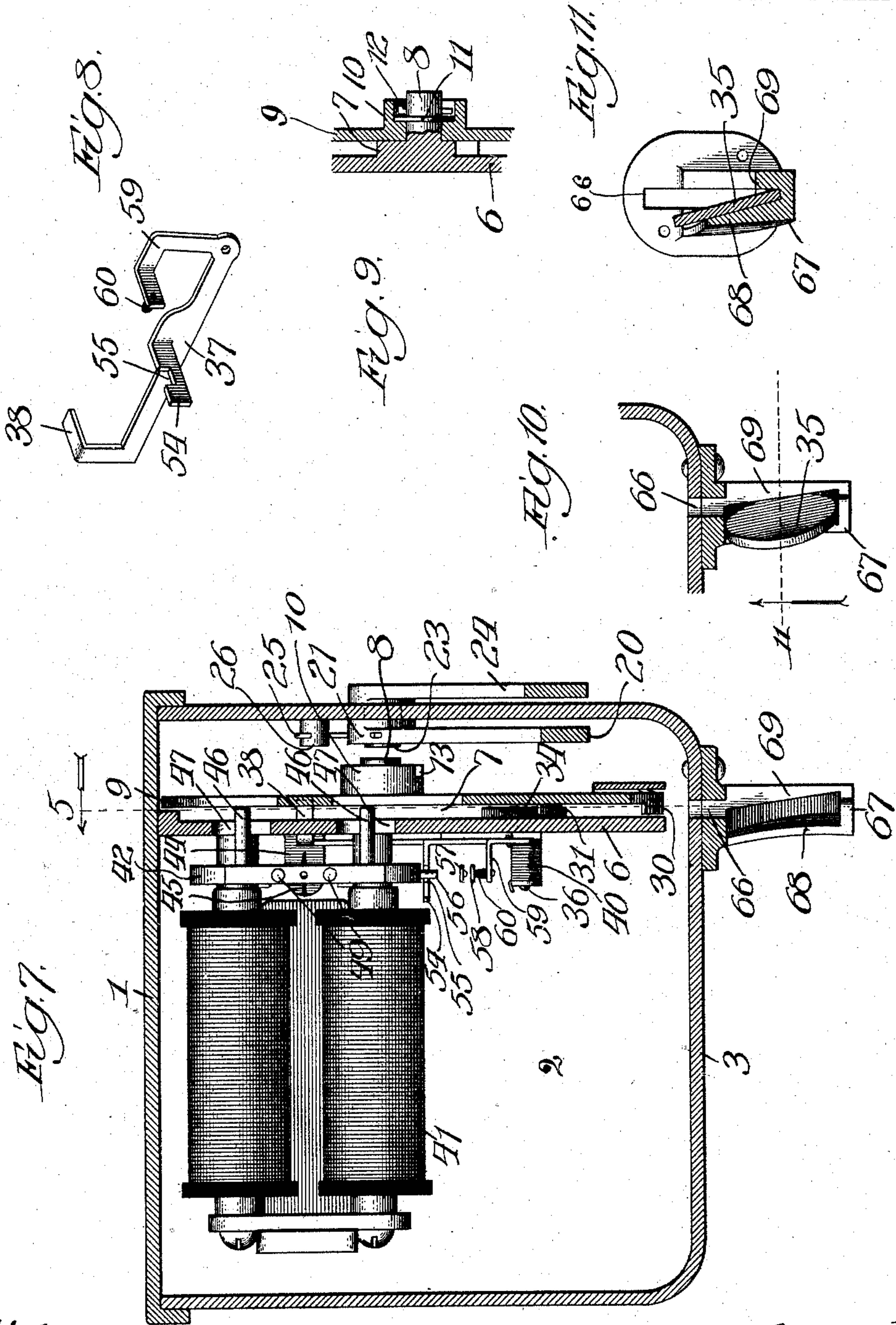
Witnesses:
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5 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

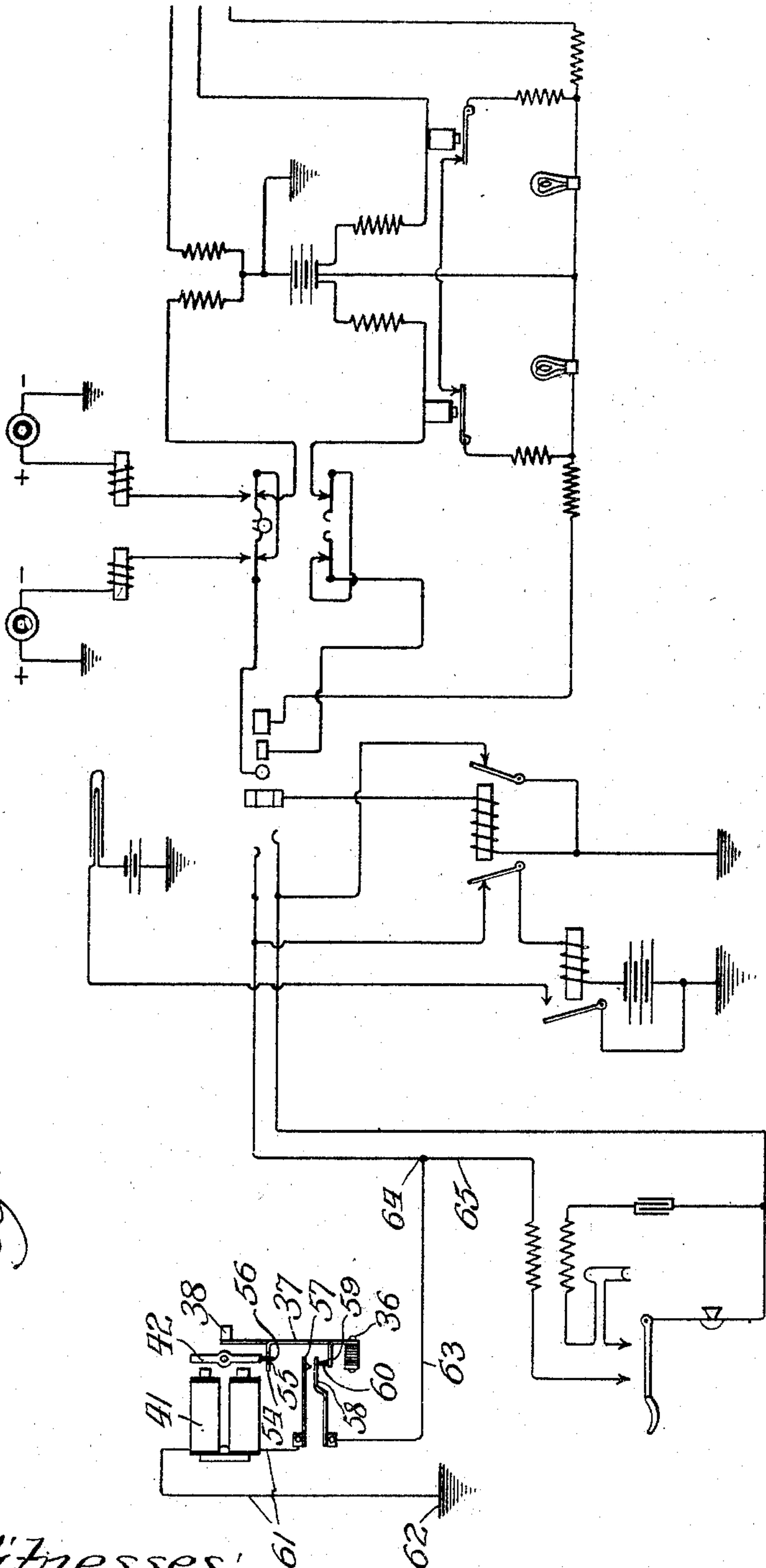


Fig. 12.

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UNITED STATES PATENT OFFICE.

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COIN-BOX FOR TELEPHONES.

No. 928,188.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed June 17, 1907. Serial No. 379,399.

To all whom it may concern:

Be it known that I, CHARLES S. ELLIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Coin-Boxes for Telephones, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding letters of reference in the different figures indicate like parts.

The object of my invention is to provide certain improvements in coin-boxes for telephones, and more especially that class in which a coin registering mechanism is employed.

To this end my invention consists in so constructing and combining the several parts as to simplify the operations thereof and render them more certain and positive; all of which is hereinafter more particularly described and definitely pointed out in the claims.

In the drawings, Figure 1, is a perspective view of my improved coin-box, Fig. 2, is a vertical sectional view thereof, taken upon the line 2, Fig. 3, viewed in the direction of the arrow there shown, Fig. 3, is a vertical sectional view taken upon the line 3, Fig. 2, viewed in the direction of the arrow there shown, Fig. 4, is a like view taken upon the line 4, Fig. 2, viewed in the direction of the arrow there shown, Fig. 5, is a like view taken upon the line 5, Fig. 7, showing one coin in its first position after having been placed in the coin slot, and another in position to be deposited in the coin-box, Fig. 6, is a like view showing one coin in a secondary or "contact" position, while the other is shown as it would appear while being dropped into the box, Fig. 7, is a horizontal sectional view in plan, taken upon the line 7, Fig. 5, Fig. 8, is a perspective view of the contact lever, Fig. 9, is a vertical sectional view taken upon the line 9, Fig. 3, viewed in the direction of the arrow there shown, Fig. 10, is a plan view, partly in section, cut through the return slot of the box, Fig. 11, is a sectional view taken upon the line 11, Fig. 10, viewed in the direction of the arrow there shown, and Fig. 12, is a diagrammatic view of the electric circuits employed in connection with said coin-box.

Referring to the drawings, 1 represents generally the main frame or casing of my improved device which is formed from cast metal and is provided with a horizontal partition 2, between the top and bottom, for the purpose of separating the coin controlling and registering mechanism from the coin-box. A removable casing 3, provided with a suitable lock for locking it in position, is located above the partition 2, while a coin-box 4 is hinged at 5, Figs. 1 and 2, to the bottom of the casing and secured in a closed position by means of any approved form of lock.

Rigidly attached to the rear of the case 1 and to the horizontal partition 2, is a vertical frame-plate or partition 6, Figs. 2 to 7 inclusive, provided with a rib 7, having a journal 8 thereon, more clearly shown in Figs. 7 and 9, upon which is mounted a revoluble disk 9, having a hub 10, a portion of which is arranged to form an annular flange around the journal. A washer 11 is placed upon said journal and the disk is secured in place by means of a pin 12 within the annular space formed by the hub. Notches 13, 13, Figs. 2, 3 and 7, are formed in the hub to permit the introduction of the pin, said notches being so placed that the pin can only be inserted in the bore of the journal when the disk 9 is in a predetermined position, for the purpose hereinafter described. A coiled spring 14, Figs. 2 and 3, has one end thereof attached to a stud 15 upon the partition plate 6, while the other is attached to a similar stud 16 upon the disk 9. A portion of the periphery of the disk is cut away concentric with its axis, as shown in Fig. 3, so as to leave a shoulder 17 upon said disk which is adapted to abut against the stud 15 to limit the movement of said disk against the action of the spring, the latter being intended to hold said disk normally in the position shown in Fig. 3.

A projecting lug 18 is formed upon the face of the disk, which is adapted to be engaged by a projection 19, Fig. 2, upon an arm 20, having a hub 21 which is rigidly attached by means of a pin to a short shaft 23, Figs. 2 and 7, said shaft being projected through a bore in the casing 3 and rigidly attached to or integral with an operating arm or lever 24 upon the outside of the case. A bent spring 25, shown in Figs. 2 and 7,

and indicated in dotted lines in Fig. 3, having one end attached to the arm 20 and the other to a stud 26, Fig. 7, serves to hold the operating arm 24 in a normal position in which the arm 20 rests against a stop 27, Fig. 2, formed upon the casing 3.

A lug 28 shown in section in Figs. 5 and 6 and indicated in dotted lines in Fig. 3, is formed upon the inner face of the disk 9, and is adapted to be engaged by a shoulder 29 upon the plate 6 for limiting the extent of movement of the disk 9 away from its normal position. That portion of the segment of said disk at the left of the shoulder 17 is made to describe an arc of a larger radius than that upon the right, and a depression is formed in the plate 6 having a peripheral curve conforming to said larger arc. Curved projections 30 and 31, Figs. 3, 5, 6 and 7, are formed upon the inner face of the disk, one at the periphery, and the other between that and the axis and at such a distance apart as to prevent the passage of a coin between them; said projections being intended as coin-carriers for the purpose hereinafter shown, and are so located upon the disk that when the latter is in its normal position, said carriers will stand in operative proximity to a coin-chute 32 in communication with the usual coin-slot 33, formed in the case. A rib 34 is formed upon the face of the plate 6 just within the path of the lug 31 to prevent the coin from going too far when dropped into the chute. The coin 35 is shown in Fig. 5, in its initial position resting upon the parts 30, 31.

Pivoted upon a stud 36, Figs. 2, 4 and 7, upon the opposite side of the plate 6 from the disk 9, is an electric contact lever 37, better shown in Figs. 4 and 8, having a laterally bent arm 38, arranged to project through an opening 39, Figs. 3, 5 and 6, formed in the plate 6 so as to permit said arm to extend into the path of the coin for the purpose hereinafter stated. A light coiled spring 40, Fig. 7, upon the stud 36 tends to lift the free end of the lever arm 37.

A polarized magnet 41, Figs. 2 and 7, of well known construction, is mounted within the case in operative proximity to a well known form of tilting armature 42, pivotally mounted upon a vertical axis upon set screws 43, Figs. 2 and 4, secured in brackets 44, attached to the plate 6. The threaded opening in each of said brackets for the reception of the set-screw is made slightly smaller than the diameter of the screw and a slot 45, Figs. 4 and 7, is formed in each of said brackets to enable the parts to spread when the screw is inserted and the elastic pressure of the parts upon the screw by reason of such spreading action serves to hold the screws in proper adjustment and to prevent them from becoming loose. Lock-nuts may also be employed, but I do not re-

gard them as essential. The usual coin supporting pins 46 upon the armature are arranged to pass through enlarged openings 47 in the plate 6, so as to stand normally in the path of the coin; said pins being so spaced, as shown in Fig. 6, as to permit the coin to pass between them and rest upon the arm 38. Spring controlled lever arms 48, Figs. 2 and 4, of a well known form, are arranged to engage upwardly projecting pins 49, Fig. 4 upon the armature, for yieldingly holding the latter in a normal position. The springs for actuating these levers are comparatively light and the action of the latter is supplemented by means of parallel springs 50, Figs. 2 and 4, which are preferably made integral at the base and rigidly attached to a bracket 51, upon the plate 6 by means of screws 52. These springs rest normally against studs 53, shown in Fig. 2 and indicated in dotted lines in Fig. 4, so that they can have no effect upon the armature except to aid in returning it to a normal position. The conditions under which these springs are utilized and the necessity for their use will be explained in connection with the description of the operation of the mechanism.

A laterally projecting arm 54, Figs. 2, 4, 7, 8 and 12, having a notch 55, Figs. 7, 8 and 12, in its upper edge, is formed upon the contact lever arm 37 and is so adjusted that when the lever is in its normal position, a pin 56 upon the armature 42 will be in engagement with said notch, as shown in Figs. 4, 7 and 12, thereby serving to lock the armature in its normal position. Contact springs 57, 58, Figs. 2, 4, 7 and 12, are rigidly attached to the plate 6, but insulated therefrom and from each other, the contact points of said springs being, of course, normally separated. An arm 59, projecting upwardly and laterally, is formed upon the lever 37, Figs. 2, 4, 7, 8 and 12, which arm is provided with a contact knob 60 of insulating material, adapted to engage the spring 58 and move it into contact with its fellow when the lever 37 is depressed by the weight of a coin upon the arm 38 as hereinafter stated. The contact spring 57 is connected by means of a wire 61 which runs to ground at 62, as shown in Fig. 12, and which is connected with the coils of the magnet 41, while the spring 58 is connected by means of a wire 63 at 64, Fig. 12, with the usual telephone circuit wire 65 connected with the local telephone and the central office. Aside from the lever 37 and the novel features immediately connected therewith for making the electrical contact and for locking and releasing the armature, the features of the diagrammatic view, shown in Fig. 12, are well known to the art and from no part of my invention.

The tilting of the armature 42 upon its vertical axis, as hereinafter described, serves,

by withdrawing one of the pins 46 from the support of the coin, to release the latter and permit it to roll down an inclined path formed by the rib 7, Figs. 5 and 6, upon the plate 6, to a delivery slot 66 with which is connected a return coin-holder 67, Figs. 1, 3, 4, 7, 10 and 11, adapted to receive coins when returned to the customer. The holder or coin pocket in question, constitutes one of the novel features of the invention. One wall of the coin pocket in question is inclined obliquely to the vertical as shown in Figs. 7, 10 and 11, and the plane of the coin is at an angle to that of the slot 66, the opposite wall 69 of said pocket having its upper edge substantially upon a level with the bottom of the slot 66 and its inner face commencing in a plane about midway between the walls of said slot. This construction causes the coin 35 to rest in an inclined position against the wall 68, as shown in Figs. 10 and 11, in which position it offers no obstruction to the passage of a subsequent coin through the slot 66, from whence it is free to roll upon the ledge formed by the top of the wall 69, when, there being nothing to restrain it, it falls to the floor. The object of this construction is to prevent the clogging of the return coin-chute in case the customer shall fail to remove the coin from the coin-pocket when returned to him. The tilting of the armature in an opposite direction from that described, permits the coin 35 resting upon the arm 38 to fall in an opposite direction, when it comes to rest in the position of the lowermost coin shown in Fig. 5, adjacent to a coin-slot 70, indicated in dotted lines in Figs. 5 and 6, leading through the partition 2 to the coin-box. In the position described, the coin is adapted to rest against an arm 71 upon the end of a rock-shaft 72, which latter is also shown in Fig. 2. Said shaft is journaled in the plate 6, and is made in two parts jointly connected as shown at 73, Fig. 2. The other portion 74 of said shaft is connected with a tape registering mechanism, not shown nor herein claimed, inclosed within a removable case 75, fitted between the partition 2 and the magnet bar 76. Between the case 75 and the plate 6 is a loose sleeve 77 through which the two-part shaft is projected and by which the joint is held in place. The registering case is arranged to slide into position upon suitable guides, in which position it may be locked by means of a flat keeper 78 extending through a slot 79 into contact with any suitable locking connection. When it is necessary to remove the registering mechanism for repairs, the part 3 is taken off, the keeper 78 withdrawn, when the case 75 may be pulled out lengthwise of the shaft 72, which is permitted by the joint 73, the part 74 being drawn out through the sleeve while the other portion remains in place. This feature is of great importance

not only in assembling but in disconnecting the mechanism for repairs or for the insertion of new registering tapes.

A shoulder or projection 80 upon the inner face of the disk 9, indicated in dotted lines in Fig. 3 and shown in full lines in Figs. 5 and 6, is adapted, when the disk is actuated, to engage the coin and force it against the arm 71, thereby rocking the shaft 72 and operating the registering mechanism. A further movement of the disk serves to push the coin into the coin-box through the slot 70, when the arm 71 is returned to its normal position by means of a spring, not shown. A rib 81, upon the plate 6, insures the proper positioning of the coin in front of the part 80.

The operation of said device is as follows: A party desiring to make a call upon the telephone, first removes the receiver from the hook which closes the circuit between the wire 65, Fig. 12, and his telephone; but no signal can be given to the central office until a coin is deposited. He then drops a coin in the slot 33 and operates the arm 24 by pushing it back to its full limit. This, in turn, actuates the arm 20, causing the part 19 to engage the bracket 18 upon the disk 9, thereby rotating said disk upon its axis until the shoulder 28, Fig. 6, is brought into contact with the stop 29. The coin 35 having lodged upon the projections 30, 31, in the position shown in Fig. 5, is carried by the movement of the disk upon said supports until the disk is stopped, when it falls by gravity upon the arm 38, between the pins 46, as shown in Fig. 6. This causes the depression of the lever arm 37, which carries with it the arm 54, thereby releasing the pin 56 upon the armature from engagement with the notch 55. At the same time the arm 59 is actuated to force the part 60 against the contact spring to move it into contact with the spring 57, which closes a circuit with and causes the lighting of a signal lamp at the central office. The customer then calls for his party, who is duly signaled, and if no response is obtained, the operator closes a switch to send a negative current through the magnet 41, thereby tilting the armature so as to withdraw the pin 46 upon the left of the coin, (see Fig. 6) which permits the latter to roll down the inclined way formed by the rib 7 to the opening 66 and pocket 67. Should the party called for respond, a reverse current is sent through the magnet, thereby tilting the armature in an opposite direction and causing the coin to fall that way, when it reaches the position shown at the bottom in Fig. 5, and there remains until another coin is deposited and the lever arm 24 is again actuated to place the newly deposited coin in a signaling position. This movement causes the part 80 to engage the first coin and move

it forward into contact with the arm 71, thereby causing its registration, when it falls into the coin box. As soon as the coin is removed from the arm 38, the lever 37 is
 5 lifted, the circuit with the magnet is broken by the separation of the contact springs 57, 58, and the armature is restored to its normal position in which it is locked by the engagement of the pin 56 with the notch 55.

10 The electrical signaling circuit which is closed by the movement of the lever arm 37 when depressed by the weight of a coin, is through the magnet 41, as stated; but it should be understood that while the strength
 15 of the current is sufficient to light a signal lamp at the central office, it is not sufficient to actuate the armature. When it is desired to tilt the latter, to restore or deposit the coin, the central operator utilizes a current
 20 of higher voltage. This feature, *per se*, forms no part of my invention. It has been found, however, that owing to the "reluctance" of the magnet, it will not always be returned to its normal position immediately
 25 upon breaking the circuit, and hence I have devised the springs 50 to insure such return. Should a second coin be deposited in the slot 33 before moving the lever 24, it will merely lodge against the first without
 30 clogging the device, and upon actuating said lever will fall behind the part 30 after the passage of the latter and pass out through the slot 66 and be restored to the owner.

It is obvious from the foregoing that two
 35 movements of the lever arm 24 are required to place a coin in a signaling position and to deposit the same coin in the coin-box. It follows, therefore, that in the absence of a second movement, there will always be a
 40 coin in the lower part of the passageway. Should it become necessary to repair the registering mechanism, the workman might be able to abstract this coin. This contingency has, however, been provided against by so
 45 connecting the disk 9 to the hub 8 that the locking pin 12 can only be removed from the journal when the disk is rotated to the right to its full limit, thereby causing it to push the last coin into the coin-box and cause its
 50 registration.

The mechanism by which the clogging of the return coin chute is prevented has already been described.

By means of my improved mechanism I
 55 am enabled by the deposit of a coin to signal the central office and to maintain such signal as long as desired by the use of but a single contact, where a number have been heretofore required.

60 It will be noted that when the coin actuating disk is rotated to move a coin to the contact lever, there is nothing to interfere between the receiving slot and the return coin-chute; so that if a coin be placed in the
 65 receiving slot at such a time it will fall di-

rectly into the return slot and be returned to the party attempting to deposit it. It follows from the foregoing that the device cannot become clogged either from an attempt to do so or by carelessness.

Having thus described my invention, I claim:—

1. A device of the class described, in which is combined a coin-channel leading to a coin-controlled contact-lever in a normally open
 75 line circuit, with a branch leading therefrom to a coin-box slot, electrical means controlled from a central office for releasing a coin into said coin-box branch, an oscillatory disk for positively conveying said coin from
 80 said branch to a coin-box slot, and means for detachably connecting said disk, said means being adjusted to require the movement of said disk to an extreme abnormal position
 85 before being released.

2. A device of the class described, in which is combined a coin-slot, a coin-box, an interposed coin signaling mechanism, a coin channel leading to said signaling mechanism and thence to said coin-box and an oscil-
 90 latory coin-carrying disk controlled from without for positively and simultaneously conveying one coin to said signaling mechanism and another to said coin-box.

3. A device of the class described, in which
 95 is combined a coin controlled signaling mechanism, a coin-channel leading to said signaling mechanism, a continuation of said coin-channel leading to said coin-box, an oscillatory disk controlled from without for con-
 100 veying coins, means for yieldingly holding said disk in a normal position, means for limiting its movement, a projection upon said disk extending into the coin-path for conveying a coin to said signaling mechanism,
 105 and a secondary projection for positively moving a coin to the coin-box opening after the coin has passed the signaling mechanism.

4. A device of the class described, in which
 110 is combined a coin controlled signaling mechanism, a coin-channel leading thereto as well as to a discharge opening, and an oscillatory disk actuated from without for positively conveying a coin to a signaling position, said
 115 disk having a projection leading into the coin-channel, said projection being adjusted to engage a deposited coin only when in its normal position to convey the same to a signaling device while permitting all coins de-
 120 posited while said disk is in an abnormal position, to pass to the discharge opening.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses, this fourteenth day of June
 125 1907.

CHARLES S. ELLIS.

Witnesses:

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 CARRIE E. JORDAN.