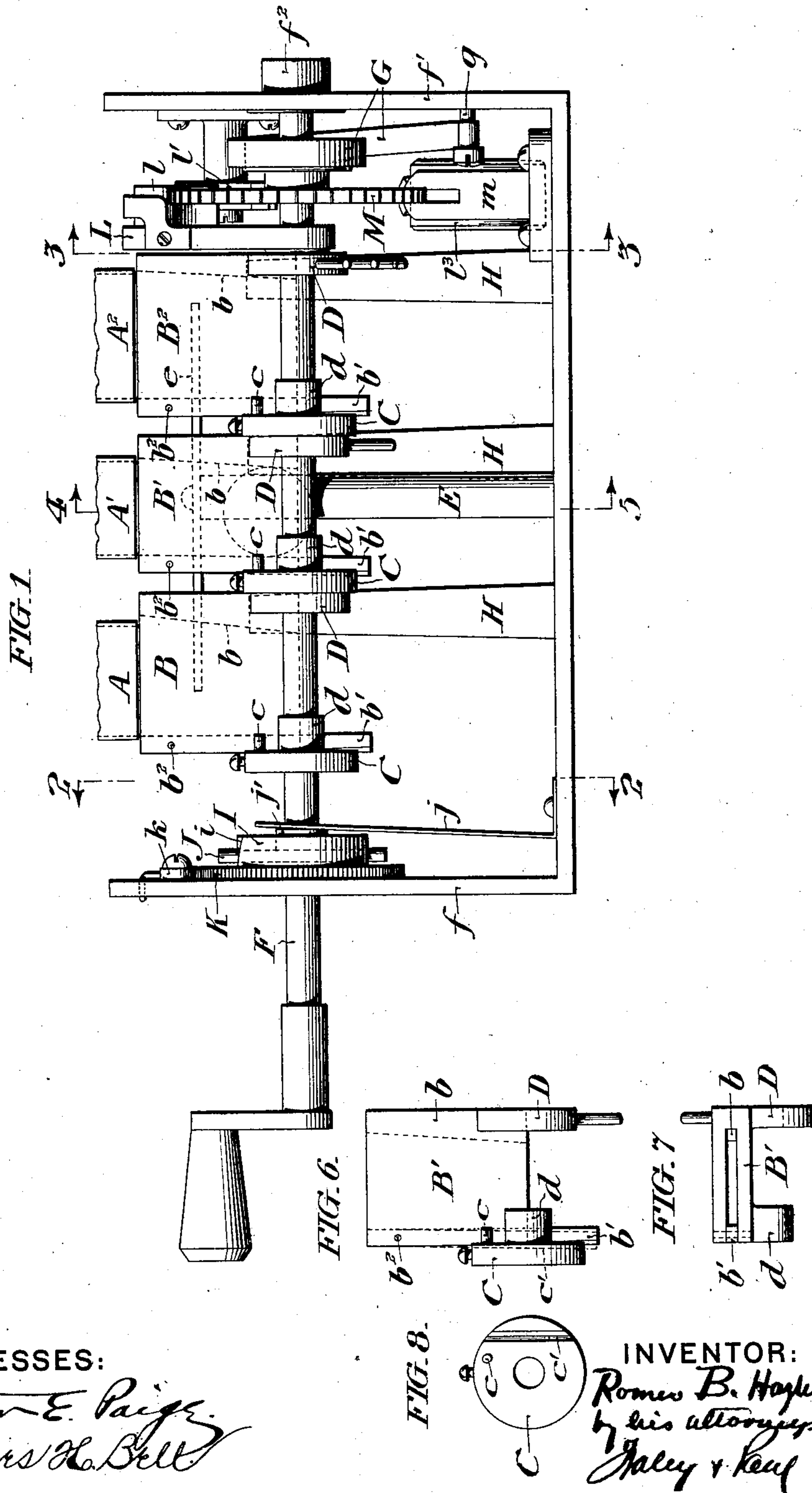


R. B. HAZLETT.
ELECTRICAL COIN INDICATING DEVICE.

APPLICATION FILED JAN. 15, 1902.

NO MODEL.

5 SHEETS—SHEET 1.



WITNESSES:
Arthur E. Paige
James H. Bell

INVENTOR:
Romeo B. Hazlett
by his attorneys
Malley & Keef

No. 734,127.

PATENTED JULY 21, 1903.

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5 SHEETS—SHEET 2.

FIG. 3.

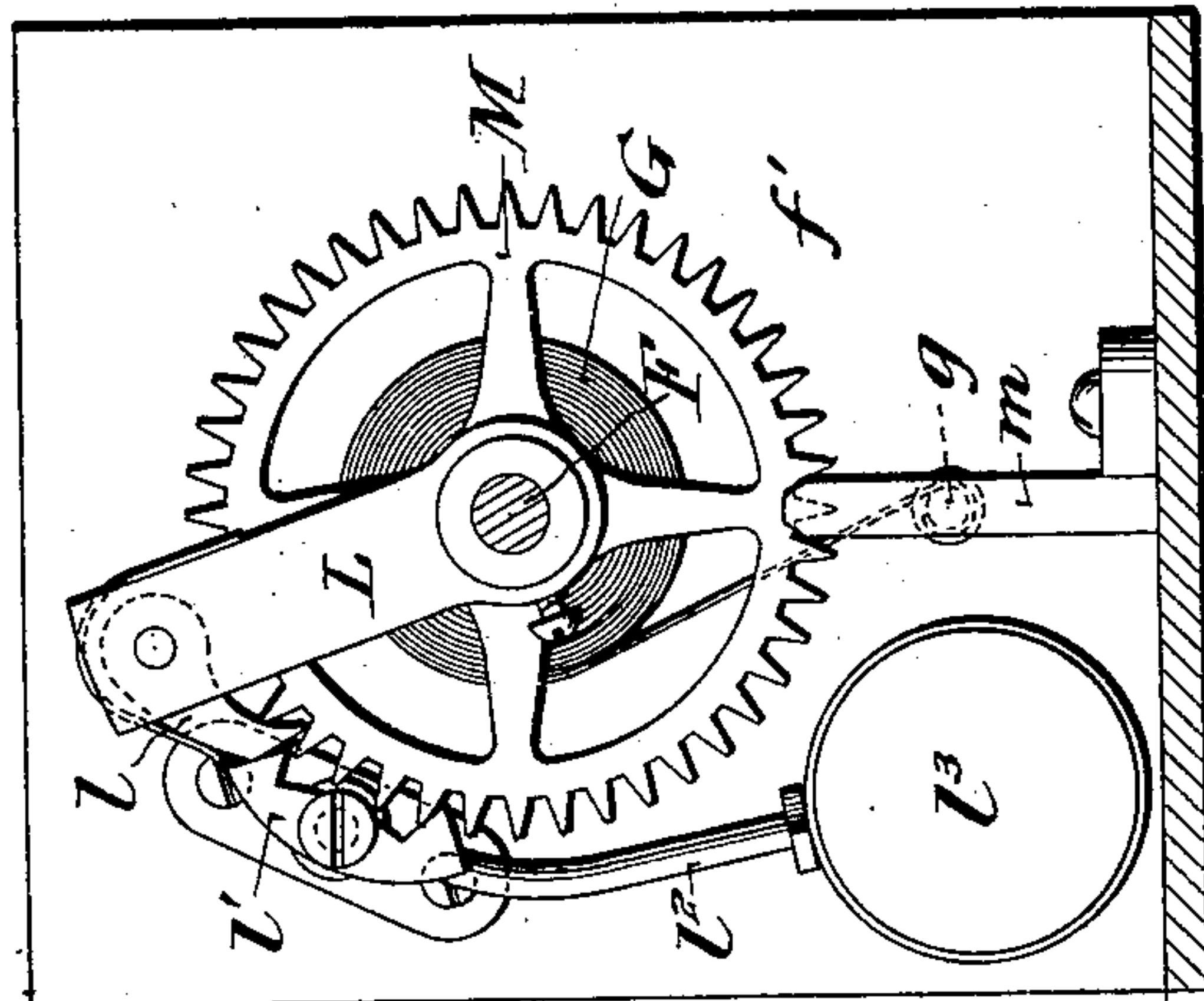
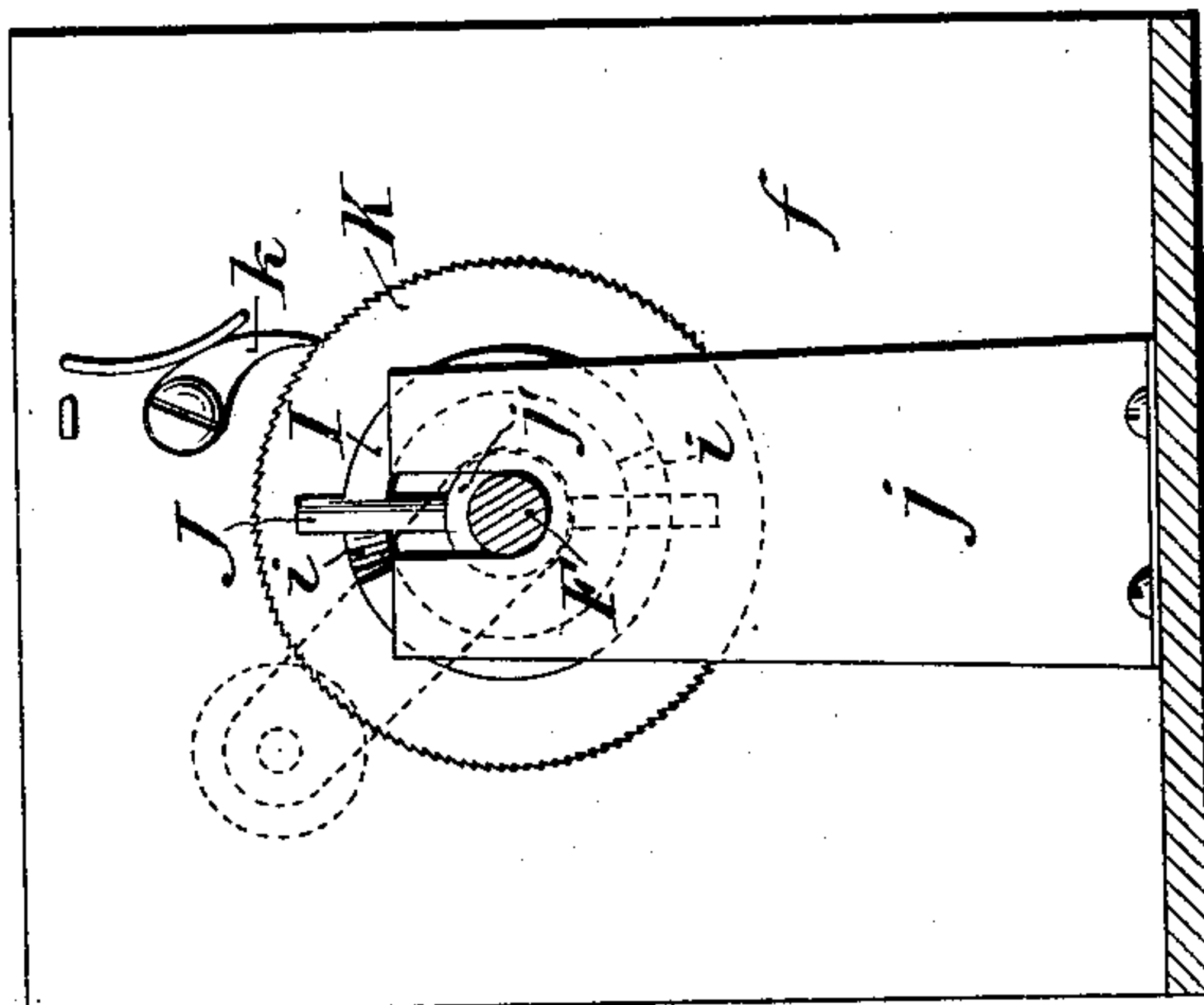


FIG. 2.



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5 SHEETS—SHEET 3.

FIG. 3.

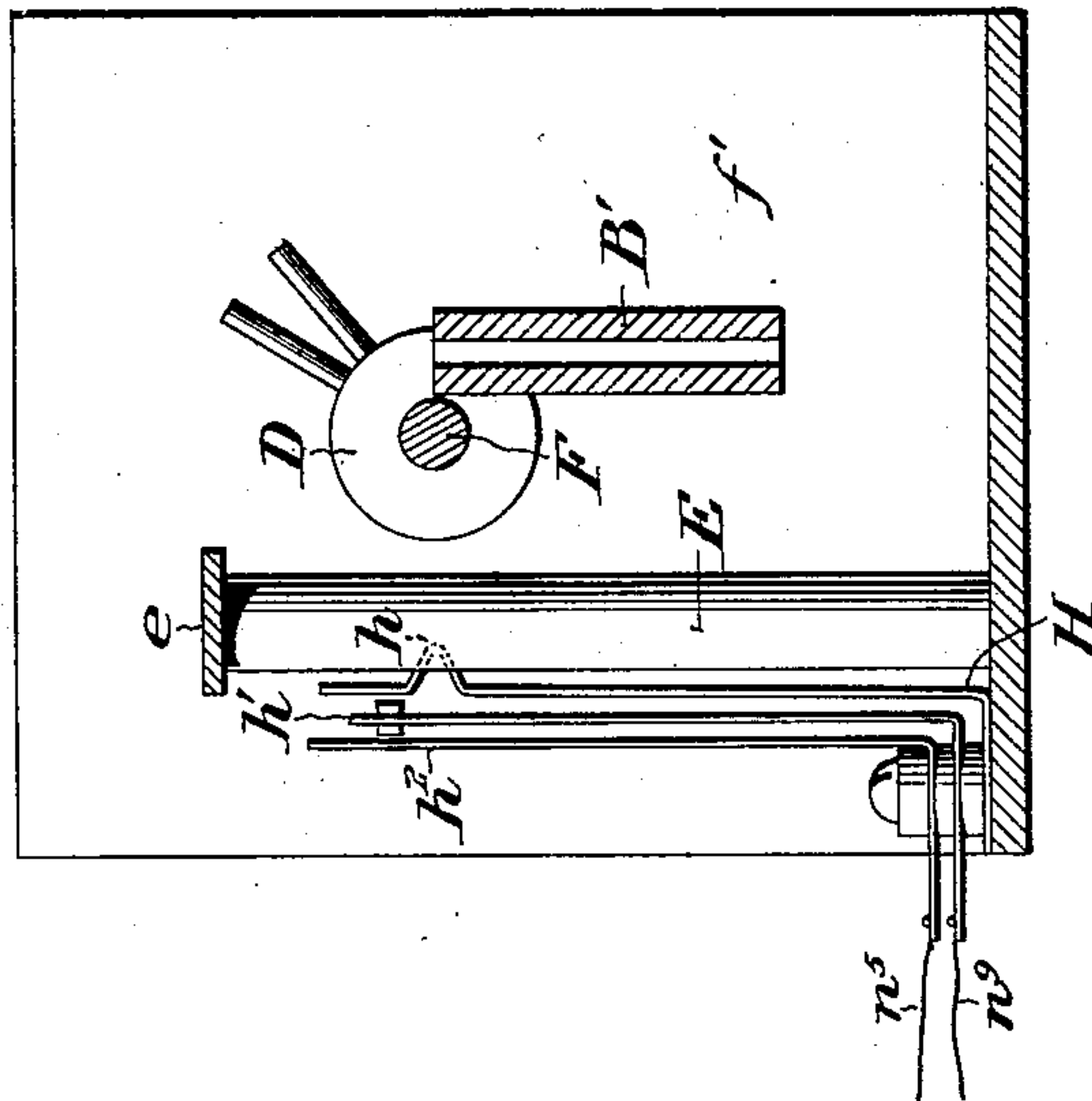
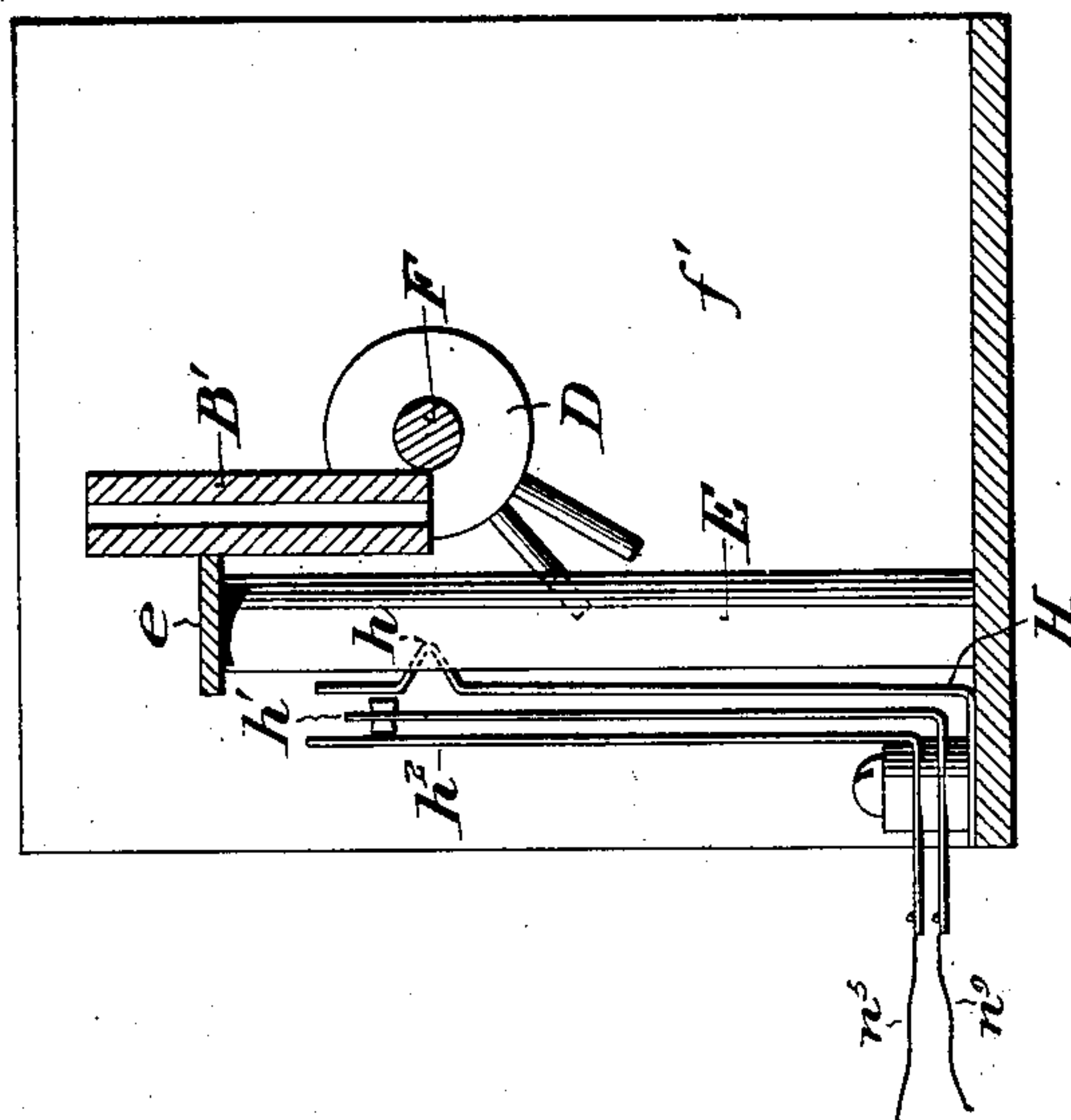


FIG. 4.



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PATENTED JULY 21, 1903.

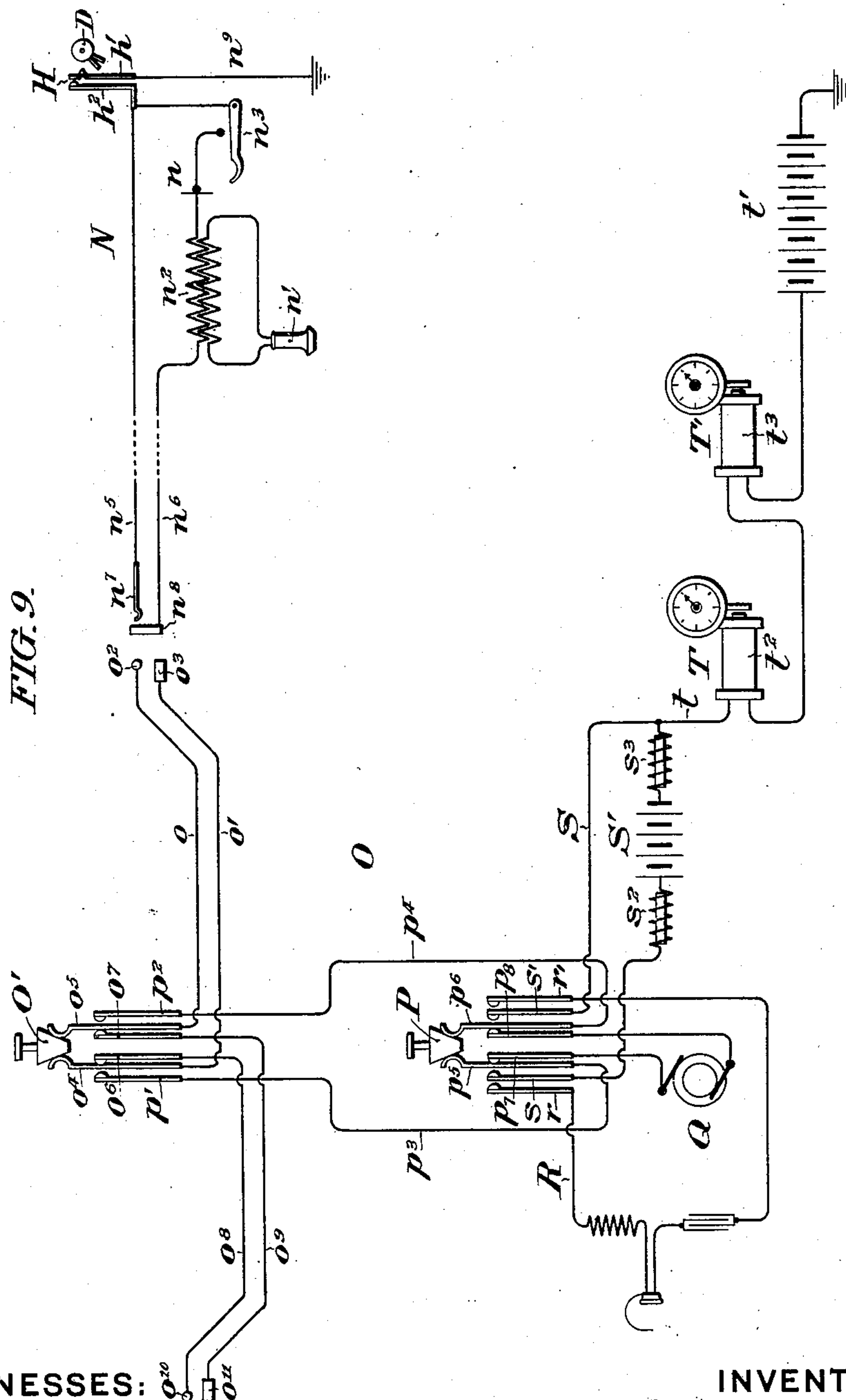
R. B. HAZLETT.

ELECTRICAL COIN INDICATING DEVICE.

APPLICATION FILED JAN. 15, 1902.

NO MODEL.

5 SHEETS—SHEET 4.



WITNESSES:

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INVENTOR:

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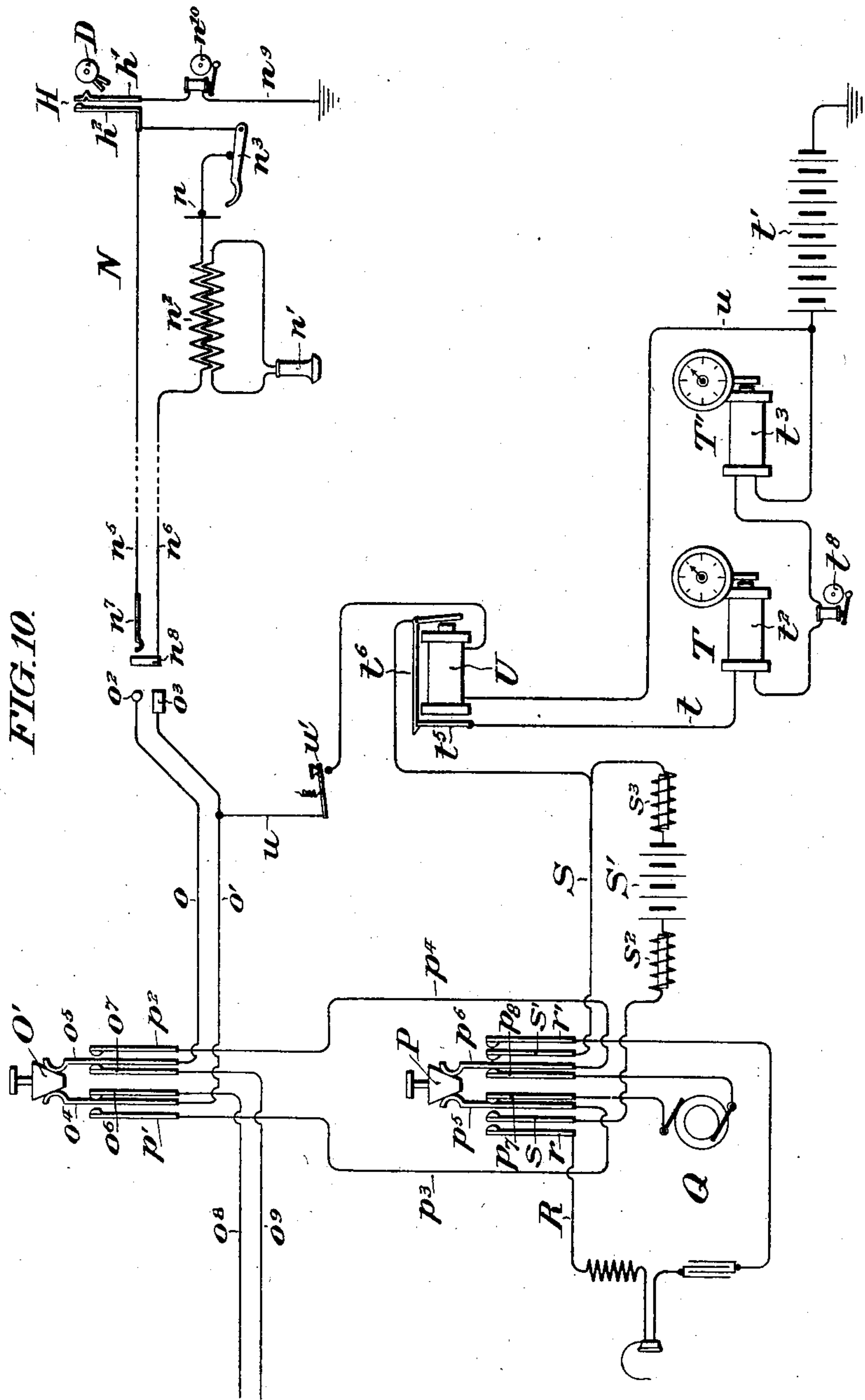
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R. B. HAZLETT.
ELECTRICAL COIN INDICATING DEVICE.

APPLICATION FILED JAN. 15, 1902.

NO MODEL.

5 SHEETS—SHEET 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ROMEO B. HAZLETT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
CHARLES E. WILSON, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRICAL COIN-INDICATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 734,127, dated July 21, 1903.

Application filed January 15, 1902. Serial No. 89,796. (No model.)

To all whom it may concern:

Be it known that I, ROMEO B. HAZLETT, a citizen of the United States, residing in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Electrical Coin-Indicating Devices, whereof the following is a full and complete specification, sufficient to enable one skilled in the art to construct the invention.

To facilitate the understanding of the following specification, reference is to be had to the accompanying drawings.

My invention relates to an electrical coin-indicating device by means of which a deposit of any particular coin within it is electrically indicated at a distance therefrom.

My invention is applicable to the collection of tolls at a pay telephone-station, and I have in the drawings and specification of this case disclosed a set of wiring connections by means of which it may be utilized for this purpose; but it will be understood that the application of my invention is not thus limited, as it may be used to indicate at a distance the deposit of a particular coin for whatever purpose the collection of the coin or its indication is desired.

In general my device consists of a series of coin-pockets adapted to receive current coins of the different denominations and which when any one has been filled with the coin which it is adapted to receive may be so rotated or otherwise moved as to effect the making and breaking by means of movable contact-points of an electrical circuit, the contact-points being so arranged in number or otherwise as to indicate at any point of the circuit which of the coin-pockets has moved, and consequently what coin has been deposited.

In the accompanying drawings, Figure 1 is a front elevation of my coin collecting and indicating device. Fig. 2 is a cross-section along the line 2 2, Fig. 1. Fig. 3 is a cross-section along the line 3 3, Fig. 1, looking in the opposite direction. Figs. 4 and 5 are cross-sections along the line 4 5, Fig. 1, showing different positions of the coin-pockets. Figs. 6 and 7 are isolated views of one of the coin-pockets. Fig. 8 is an isolated side view of one of the disks C, Fig. 1. Figs. 9 and 10

are diagrammatic representations of the electrical circuits which may be employed when the coin-indicator is used to indicate at a central telephone-station the deposit of coin at a distant pay-station.

The apparatus shown in Fig. 1 is understood to be inclosed in a box or other suitable receptacle for holding the money to be collected. The box must be fitted with slots capable of receiving, respectively, nickels, dimes, and quarters, (or other current coins.) Slotted coin-tubes leading from these slots are shown in the drawings and lettered, respectively A A' A². Immediately contiguous to the ends of these tubes are three corresponding rotating coin-pockets B B' B². (Shown in their upright position in Fig. 1.) Each of these coin-pockets is in the shape of an elongated rectangle, corresponding to the shape of the coin which is to be introduced therein, as seen in Fig. 7. The orifice of each coin-pocket is at its upper end slightly larger than the coin which it is adapted to receive. One of the short sides *b* of each pocket slopes inwardly, as seen in Fig. 6, so that although the pocket may be open at the bottom the coin cannot escape therefrom. The opposite short wall of each coin-pocket is formed by a narrow swinging bar *b'*, freely pivoted near its upper end at *b*², so that the entrance of the coin into the pocket occasions as the coin descends the inwardly-sloping wall *b* an outward thrust upon the lower end of the bar *b'*. This bar, it will be noted, projects below the lower end of the coin-pocket. Each of the coin-pockets has fixed to the forward side of its lower corners two journaling-lugs D *d*, upon which the pockets are free to swing or rotate around the bar F. Normally, however, they remain in the upright position, due to the fact, as seen in Fig. 4, that the pockets rest at their backs in stable equilibrium against a fixed cross-piece *e*, mounted upon a post E. The shaft F is formed with a handle at its left-hand end and rotates in suitable journals formed in the walls *f f'* of the housing of the apparatus, a collar *f*² at the right-hand end preventing its withdrawal therefrom. The shaft F has fast upon it three disks C C C, each mounted immediately alongside of one of the rotating coin-pockets, and each disk has set in its side

a pin c , which when the shaft F is in the position of the drawings prevents the possibility of the pocket moving forward, so as to rotate upon the shaft. Each of these disks has also formed in the side next to the pocket a groove c' , (see Fig. 8,) which is normally vertical and in line with the swinging bar b' , which forms the adjacent end of the coin-pocket next to the disk.

From a consideration of the parts which have thus far been described it will be observed that upon manually rotating the shaft F by drawing the handle toward the operator no motion will be given to any of the coin-pockets, provided no coin has been deposited in them, by reason of the stable equilibrium of these pockets against the cross-piece e , for the bars b' , hanging vertically, do not engage with the groove c' or any of the disks C . If a coin of less diameter than that for which a particular pocket is intended is dropped into a coin-chute—as, for instance, if a dime or five-cent piece is dropped into the chute intended for quarters—the coin will fall through the coin-pocket without effecting any engagement of the pocket and shaft. A coin larger than that for which a particular pocket is intended will not enter its coin-chute. If, however, a proper coin be dropped into one of the pockets, the pressure of the coin as it descends along the sloping wall b will push the bar b' outward, thereby forcing it into engagement with the groove c' of the adjacent disk, so that if the shaft F is then rotated it will occasion at the same time the similar rotation of the pocket containing the coin to the position of Fig. 5, while the empty pockets will remain in their upright position.

Near the right-hand end of the shaft F the inner end of a coiled band-spring G is made fast to it, the outer end of the spring being made fast to a fixed post g . The rotation of the shaft F in the direction which has been indicated is against the torsional effect of this spring, so that if it has been thus rotated until any pocket containing a coin has been inverted, so as to discharge its coin immediately the handle is released by the operator, the shaft F and with it (by means of engagement of pin c) the inverted pocket will return to the position shown in the drawings, owing to the torsional effect of the spring G upon the shaft. Upon reaching the upright position the pocket again comes to a rest against the cross-piece e , and the shaft F can rotate no farther, owing to the stop-pin mentioned.

Immediately behind each of the larger journaling-lugs D is mounted an upright spring-plate of the electrical switch H , as best seen in Figs. 4 and 5. Near the top of each spring-plate a forwardly-projecting elbow h is formed, and behind each is a flexible electrical contact h' , which when pushed back touches the fixed contact h^2 , closing an electrical circuit $n^5 n^9$, within which all of these switches are in parallel. Each of the journaling-lugs D has inserted within its periph-

ery one or more projecting spokes, the number being arranged for convenience of indication so as to correspond to the multiples occurring in the values of the coins which their respective pockets are adapted to receive. Thus supposing that coin-pocket B is adapted to receive a nickel, the lug D attached to it will have inserted in it one spoke. If the pocket B' is adapted to receive a dime, its lug D should have two spokes, and if the pocket B^2 is adapted to receive a quarter its lug D should have five spokes. The length of these spokes is such that as each one of them passes the elbow h immediately behind it the spring-plate is forced back sufficiently to close the contact between h' and h^2 and momentarily close the circuit $n^5 n^9$. It is, however, necessary that during the forward rotation of the shaft F for the purpose of inverting a coin-pocket no contact should occur between these spokes and the elbow h . To effect this, the shaft F is mounted freely in its journals, so as to allow free lateral play therein. To occasion this lateral motion at the proper time, an annular cam-ring I is mounted so as to freely surround the shaft where it is journaled in the left-hand housing-wall f . This cam-plate has two deep notches cut in it upon opposite sides, one of the edges of each notch forming a cam-incline i , while the opposite edge of the notch is much more steep. A cross-pin J is inserted through the shaft, the ends of which ride along the cam-ring I , being forced against it by a spring-plate j , fixed at the bottom of the housing and engaging a fixed collar j' upon the shaft, against which it exerts a constant thrust to force cross-pin J against the cam-ring. In the normal position of the apparatus, as shown in the drawings, the cross-pin has entered the two notches, one at either side. When the shaft F is rotated forward, the ends of the cross-pin must ride up the two cam-inclines i , for rotation of the cam-ring I in that direction is forbidden by a spring-pressed detent k , which engages a toothed wheel K , fast to the cam-ring. By thus riding up the cam-inclines i the shaft F and all that it carries is forced a corresponding distance toward the right. This shifts all of the coin-pockets, including the large journaling-lugs D , sufficiently to cause the spokes which project from them to pass the elbow h immediately behind them without contact, so that the inversion of the coin-pockets is occasioned without closing the circuit $n^5 n^9$. When, however, the shaft F has been given a complete half-turn, the cross-pin J again slips into the notches of the cam-ring, and the shaft is laterally restored to the position of the drawings by the pressure of the spring-plate j . When now the handle is released and the shaft returns to its normal position under the torsional effect of spring G , the ends of the cross-pin J do not ride up the steeper edges of the notches opposite the cam-inclines i , but instead the entire cam-ring rotates with it, this motion being per-

mitted by the detent k riding over the teeth of the wheel K until a semirotation has been effected. It therefore results that during this return movement of the shaft, by which any one of the coin-pockets which has been inverted is restored to its normal position, the spokes projecting from the journaling-lugs D of that pocket ride over the elbow h and occasion as many successive closings of the circuit $n^5 n^9$ as there are spokes.

In order that the return movement of the shaft under the influence of the spring G may not be too rapid, I provide for an escapement as follows: Made fast to the shaft toward its right-hand end is the arm L, (see Fig. 3), carrying a spring-depressed pawl l . An escapement-wheel M is mounted freely upon the shaft within the range of this pawl, being held from sidewise motion during the lateral movement of the shaft by a crotch m , mounted at the bottom of the housing. The pawl l is of sufficient width to allow contact with the escapement-wheel M to be maintained irrespective of its lateral motion with the shaft in either direction. An ordinary escapement-anchor l is pivoted on a stud made fast to the right-hand housing and in the plane of the escapement-wheel. The lower edge of the escapement-anchor carries an arm l^2 , carrying the weight l^3 . During the semirotation of the shaft F, which occurs when the handle is turned forward, the escapement-wheel M is stationary, the pawl l riding freely over its teeth; but when the semirotation has been completed and the return of the shaft occurs pawl l engages the escapement-wheel, and the return can consequently only occur as fast as the escapement-anchor will permit, the motion being regulated by the vibration of the weight l^3 . This rapid vibration of the weight has a further useful function in causing a considerable jarring of the apparatus during the return of the pocket to its normal position, so that in case by accident a coin should be wedged in the pocket it would be jarred out before the pocket is reseated.

Thus far I have described only one form of mechanism whereby the deposit of a particular coin affects the electrical circuit with which my coin-indicating device is connected. It will be understood, however, that many other forms of mechanism may be devised whereby the motion of the coin-pockets may actuate electrical switches inserted in a circuit, so that at any point in the circuit a signal may be received indicating what coin has been deposited. In the simplest use of my device this circuit may be unconnected with other uses and may be extended to any point where it is desired that registration may be had of tolls collected by the coin-collecting device, for which purpose the instrument T (see Fig. 9) or any other instrument whereby the making and breaking of the circuit is indicated may be inserted in the circuit at that point. In order, however, to more fully illustrate the capabilities of my invention, I have

chosen to explain its use for the purpose of collecting tolls at a pay telephone-station not provided with an attendant and have illustrated and will now describe the system of wiring connections and devices by means of which I am enabled to use my device in connection with a telephone-circuit for the purpose of indicating to the operator at the central station that the proper coin has been deposited. I have also shown how a further registration of the sum-total of all the coins thus deposited may be made at another office, so that the amount collected by the coin-collecting device may be known.

Referring to Fig. 9, N is the pay-station, comprising such essential elements as the transmitter n , receiver n' , induction-coils n^2 , and hook-lever n^3 . The pay-station N is connected by the line-wires $n^5 n^6$ with the respective terminals $n^7 n^8$ in a socket at the central station O. The line-wire n^5 is in shunt connection with the spring element h^2 of the coin-controlled switch H, above described, whose other spring element h' is connected by the wire n^9 with the ground. The central station O comprises the cord-circuits $o o'$, provided with the plug-terminals $o^2 o^3$, which are adapted to respectively engage the pay-station socket-terminals $n^7 n^8$. The cord-circuit includes the ringing switch-key O' , whose spring-terminals $o^4 o^5$ are arranged to connect with the spring-terminals $o^6 o^7$ of the cord-circuits $o^8 o^9$, provided with the plug-terminals $o^{10} o^{11}$, when the key is raised, and the terminals $o^4 o^5$ are disconnected from the terminals $o^6 o^7$ and connected with terminals $p' p^2$ when the key O' is depressed. The terminals $p' p^2$ are respectively connected by the wires $p^3 p^4$ with the terminals $p^5 p^6$ of the key P. The terminals $p^5 p^6$ are normally in contact with the terminals $p^7 p^8$ of the ringing-current source Q; but depression of the key P breaks such connection and connects the parallel bridge-circuits R S across the line-circuit. The bridge-circuit R, provided with the terminals $r r'$, includes the operator's telephone instruments and the bridge-circuit S, provided with the terminals $s s'$, includes the source of current for the talking-circuit, consisting of the battery S' , whose opposite sides are connected in the bridge-circuit through the reactance-coils $s^2 s^3$. A shunt-circuit t extends from the bridge-circuit S to the ground and includes the devices to manifest the deposit of coin at the pay-station N, comprising the instrument T at the operator's position, the instrument T' in the auditing department of the central station, and the indicating-current source, consisting of the battery t' . Each of the instruments T T' comprises a relatively movable index and graduated dial and both are designed to shift their indexes one graduation with each electric impulse which is transmitted through their respective coils $t^2 t^3$. However, the instrument T is designed to merely temporarily indicate the amount deposited at

the pay-station N for a single call and is adapted to be reset to zero by the operator at whose position it is located. On the contrary, the instrument T' is designed to manifest the total amount received at the pay-station N and is excluded from the control of the operator. In order to distinguish between the instruments T T', I shall hereinafter term the former the "indicator" and the latter the

10 "register."
The above-described apparatus may be operated to take a coin-signal as follows: The central-station operator depresses the switch-key P and the switch-key O', and thus establishes connection through the shunt t from
15 battery t' , through coil t^3 of the register T', coil t^2 of the register T, bridge-circuit S, switch-terminal s' , switch-terminal p^6 , wire p^4 , switch-terminal p^2 , switch-terminal o^5 ,
20 wire o , plug-terminal o^2 , socket-terminal n^7 , line-wire n^5 , and switch-terminal h^2 . As hereinbefore described, the switch-terminal h^2 is placed in electrical connection with the switch-terminal h' by the deposit of a
25 coin. The terminal h' being connected with the wire n^9 to ground, the indicator T and register T' are actuated in accordance with the coin deposited. It is to be noted that during this operation the battery S' is
30 bridged across the circuit through the retardation-coils s^2 s^3 , and the operator's instrument being also bridged across the line by the circuit R the apparatus is maintained in condition to enable the central-station operator to receive sound-signals transmitted
35 from the pay-station N. The indicator T and register T' being operated by the short-circuiting of the line through the ground-wire n^9 , as above described, it is evident that any
40 accidental grounding of the line-circuit would suffice to operate the indicating devices and make a false record of the receipt of coin. Therefore I provide means to enable the central-station operator to test the line for
45 grounds before placing the apparatus in position to receive a coin-signal, as follows:

For simplicity of illustration I have shown the test-circuit as a shunt u , extending directly from the cord-circuit o' to the battery
50 t' and comprising the switch-key u' independent of the key O'. It is to be understood, however, that the test-circuit may be so arranged as to be controlled by the switch-key O'.

55 In the form shown the shunt-wire t , extending from the bridge-circuit S to the indicating instrument, includes the automatic switch, consisting of the drop t^5 and the detent-lever t^6 , which latter normally upholds the drop t^5
60 in the normal position. (Shown in Fig. 10.) The test-circuit u extends through the coil of the switch-relay U, which is in operative relation with the detent-lever t^6 and is operated as follows: Before manipulating the
65 switches O' P to take a coin-signal as above described the operator depresses the switch-

key u' , so as to complete the circuit from the ground through battery t' , shunt u , switch-relay U, switch u' , cord-circuit o' , plug-terminal o^3 , and socket-terminal n^8 to the line
70 n^5 n^6 . The indicating-circuit remaining open at the coin-controlled switch H. during the test, no current is sent through relay U by the manipulation of the test-switch u' , and the drop t^5 and detent t^6 remain connected
75 unless an accidental ground connection exists upon the line. However, in the latter event a current is transmitted from battery t' through the relay U, which actuates the detent t^6 , releases the drop t^5 , and thus opens
80 the indicating-circuit, so that the subsequent manipulation of the keys O' and P by the central-station operator does not include the indicating devices in the circuit. Inasmuch
85 as the indicating-circuit would be placed out of service for the time being by the above-described operation of the relay U, I find it convenient to provide an audible signaling
device at the pay-station N by including in
90 circuit with the wire n^9 the single-stroke bell n^{10} , which will make an audible signal each time the circuit is closed at the switch H. The audible signal is transmitted by the
95 telephone instruments at the pay-station N through the line to the receiver of the operator's set in the bridge R at the central station. I also find it convenient in some instances to provide an audible coin-signaling
100 device at the central-station operator's position and for this purpose include in the circuit extending to the coil t^2 the single-stroke bell t^8 , the arrangement being such that an audible signal is given by said bell t^8 , caused
105 by the electrical impulse designed to actuate the indicator T.

Having thus described my invention, I claim—

1. In a coin-indicating device, the combination of a series of movable coin-pockets each adapted to receive a coin of a different
110 denomination; actuating means common to all of the pockets normally disconnected therefrom; means whereby when the proper coin has been placed in any one of the pockets such pocket is so connected with the com-
115 mon actuating means that it may be moved irrespective of the others; an electrical circuit containing switches in parallel; and connections whereby the motion of a coin-pocket operates its respective switch, substantially
120 as described.

2. In a coin-indicating device, the combination of a horizontal shaft, a coin-pocket adapted to receive a coin and rotatably
125 mounted on the shaft but out of line therewith so that the weight of the pocket normally sustains it against rotation with the shaft in one direction and a stop arranged to prevent rotation with the shaft in the other
130 direction, whereby the coin-pocket is normally sustained in an upright position notwithstanding the rotation of the shaft; means

whereby upon the insertion of the proper coin the pocket is caused to rotate simultaneously with the shaft until the coin is discharged; connections whereby a return motion of the shaft restores the pocket to its upright position; and means, substantially as described, whereby rotation of the coin-pocket makes or breaks an electric circuit so as to indicate to any point in that circuit the motion of the coin-pocket, substantially as described.

3. In a coin-indicating device, the combination of a series of coin-pockets each fitted to receive a coin of a different denomination and all rotatably mounted on a single shaft; means whereby rotation of said pockets upon the shaft can only occur when the proper coin has been inserted in the proper pocket; projections from each coin-pocket corresponding in number to the multiples of value represented by the coins for which they are respectively adapted; a series of electrical switches, corresponding and in proximity to said coin-pockets, which are closed when the coin-pockets rotate as many times as there are projections to the coin-pocket; and an electrical circuit which is closed by the touching of these contact-points, whereby the circuit is made as many times as there are projections upon the coin-pocket which has been rotated, substantially as described.

4. In a coin-indicating device, the combination of a horizontal shaft, a coin-pocket adapted to receive a coin and rotatably mounted on the shaft but out of line there-with so that the weight of the pocket normally sustains it against rotation with the shaft in one direction and a stop arranged to prevent rotation with the shaft in the other direction; means for retaining the pocket in a position of upright stable equilibrium; a movable side in the pocket; a disk fixed upon the horizontal shaft in proximity to this side of the pocket having a groove which is in alinement with the movable side of the pocket when the latter is in its upright position; and means whereby the deposit of the proper coin in the pocket advances the movable side of the pocket into engagement with this groove; substantially as described.

5. In a coin-indicating device, the combination of a rotating shaft; a coin-pocket freely swinging thereon upon journaling-lugs fixed to the side of the pocket out of line there-with so that there is an unobstructed opening through the pocket, means whereby when the proper coin is inserted in the pocket, the pocket will be so connected with the shaft as to rotate therewith; one or more spokes projecting from said journaling-lugs; switches for an electrical circuit in the path of the extremity of said spoke or spokes, whereby the circuit is closed by each spoke as the pocket

rotates upon the shaft, substantially as described.

6. In a coin-indicating device, the combination of a rotating shaft which is capable of lateral movement; a coin-pocket swinging freely upon said shaft; means whereby when filled with the proper coin said coin-pocket may be inverted by rotating the shaft; means whereby upon release of the shaft after such rotation it returns to its original position carrying the coin-pocket with it; an electrical circuit having a switch with spring contact-points mounted in proximity to the coin-pockets; means carried by the pocket adapted, when in the plane of the contact-points, to close the circuit; means for causing the rotating shaft to move laterally in one direction as it is rotated to invert the coin-pocket so as to move the circuit-closing means carried by the pocket out of the plane of the contact-points of the switch; and means for moving the shaft laterally in the opposite direction to return it to normal position at the completion of the inversion of the coin-pocket so that on the reverse rotation of the shaft the circuit-closing means carried by the pocket will be in the plane of the contact-points; substantially as described.

7. In a coin-indicating device, the combination of a rotating shaft capable of rotating freely in one direction and combined with spring-pressure whereby upon its release it is returned to its initial position; a coin-pocket freely swinging upon said shaft and in stable upright equilibrium thereon; means whereby the insertion of the proper coin causes the pocket to be inverted by rotation of the shaft; means whereby the pocket is rotated to its normal position during the rotation of the shaft after inversion; an escapement-wheel upon said shaft; and means whereby during rotation of the shaft to invert a coin-pocket such rotation is free from the escapement, but during its return is subject to control thereby, substantially as described.

8. In a coin-indicating device, in combination with the coin-pockets and means for inverting the same for discharge and then restoring them to their initial position; an escapement-wheel with connections whereby the return of the pocket is controlled by the escapement in combination with a weight fixed to the escapement which by its inversion jars the coin-pocket so as to discharge a coin improperly adhering thereto, substantially as described.

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