

No. 867,955.

PATENTED OCT. 15, 1907.

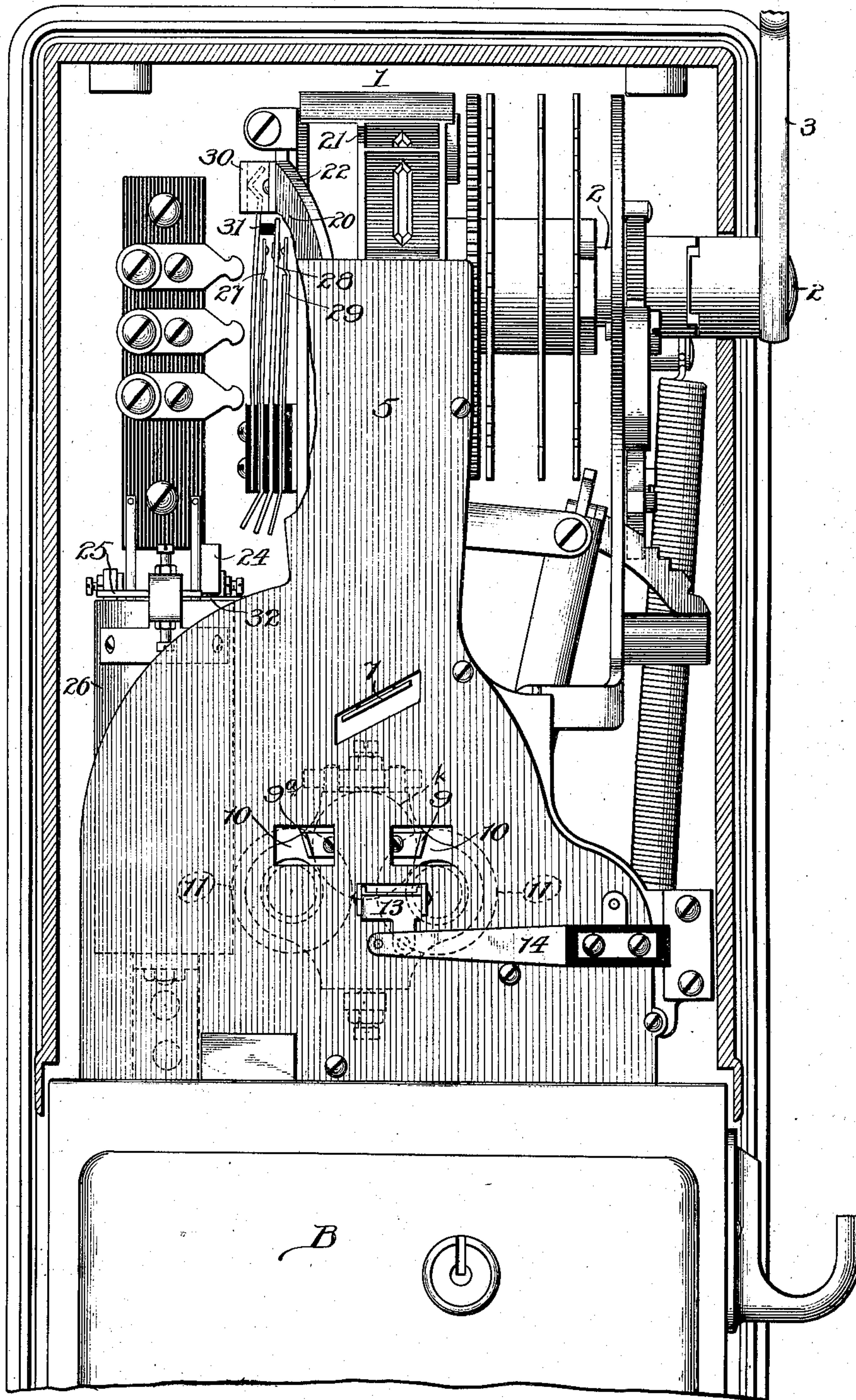
A. F. DIXON.

CIRCUIT FOR COIN COLLECTORS.

APPLICATION FILED MAR. 4, 1907.

4 SHEETS—SHEET 1.

Fig 1



Witnesses:

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Inventor:

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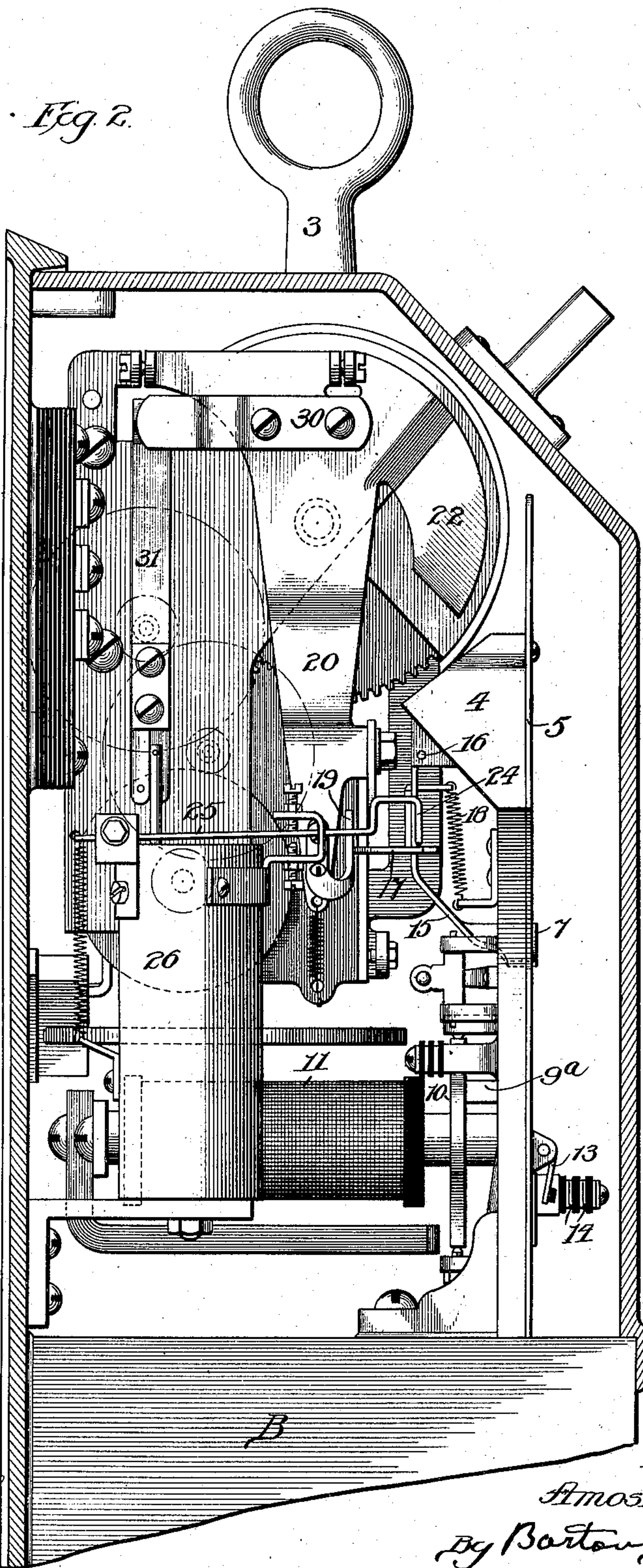
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4 SHEETS—SHEET 2.



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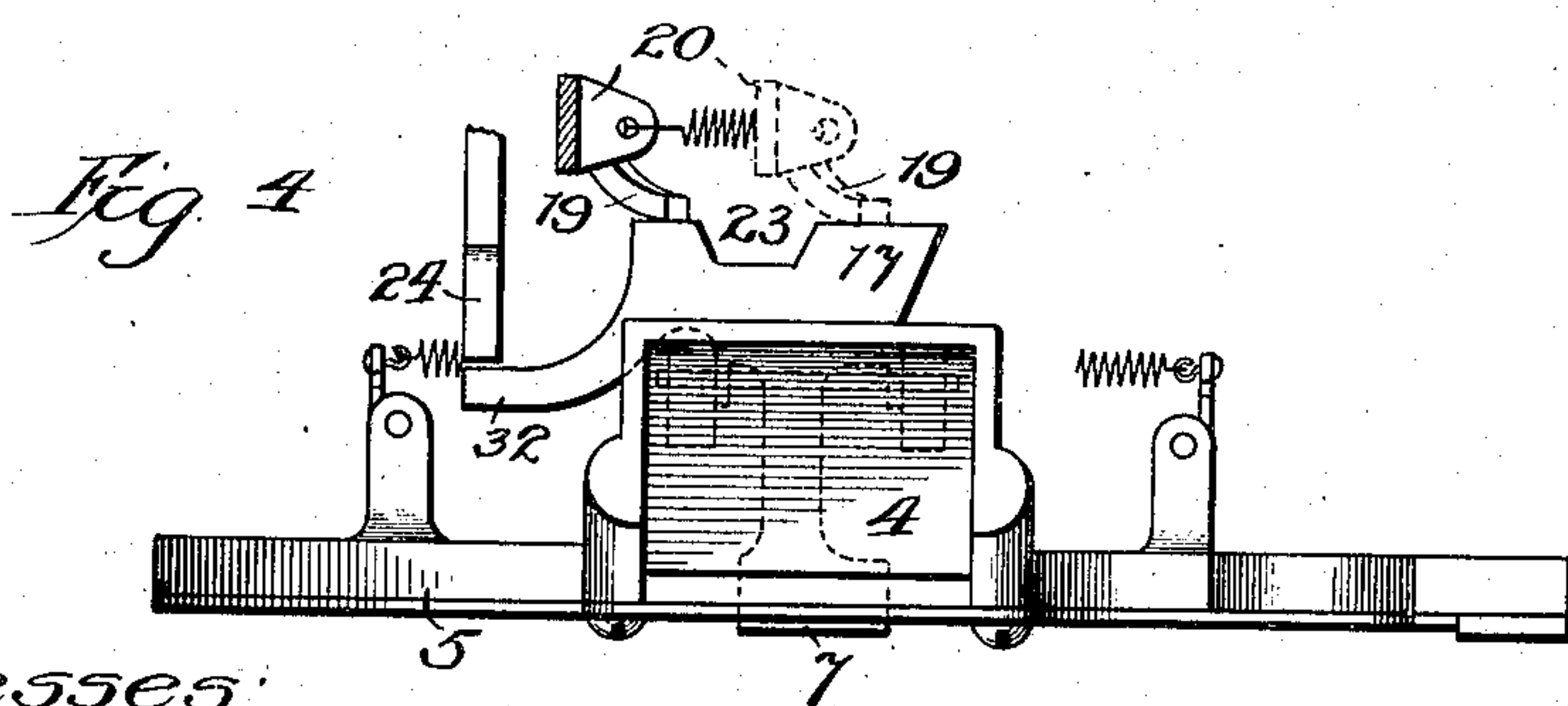
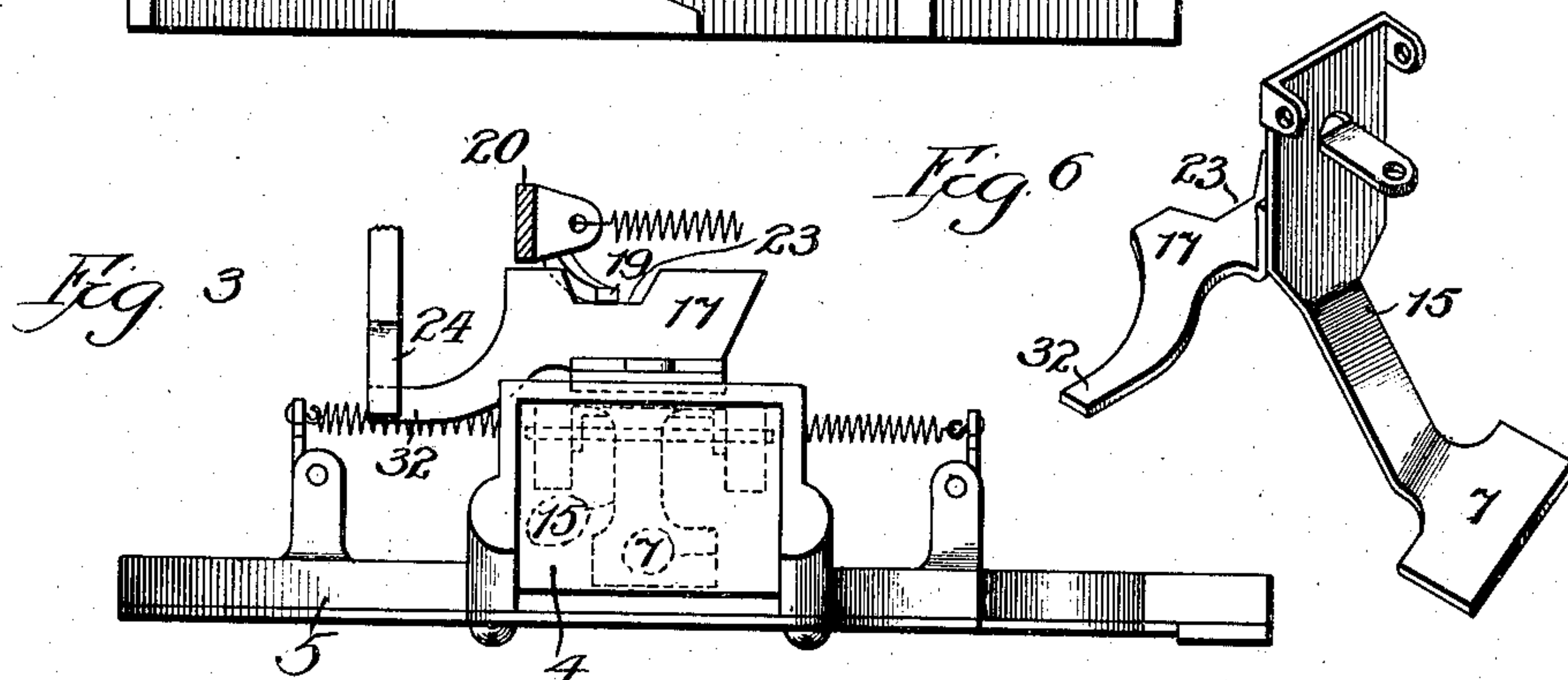
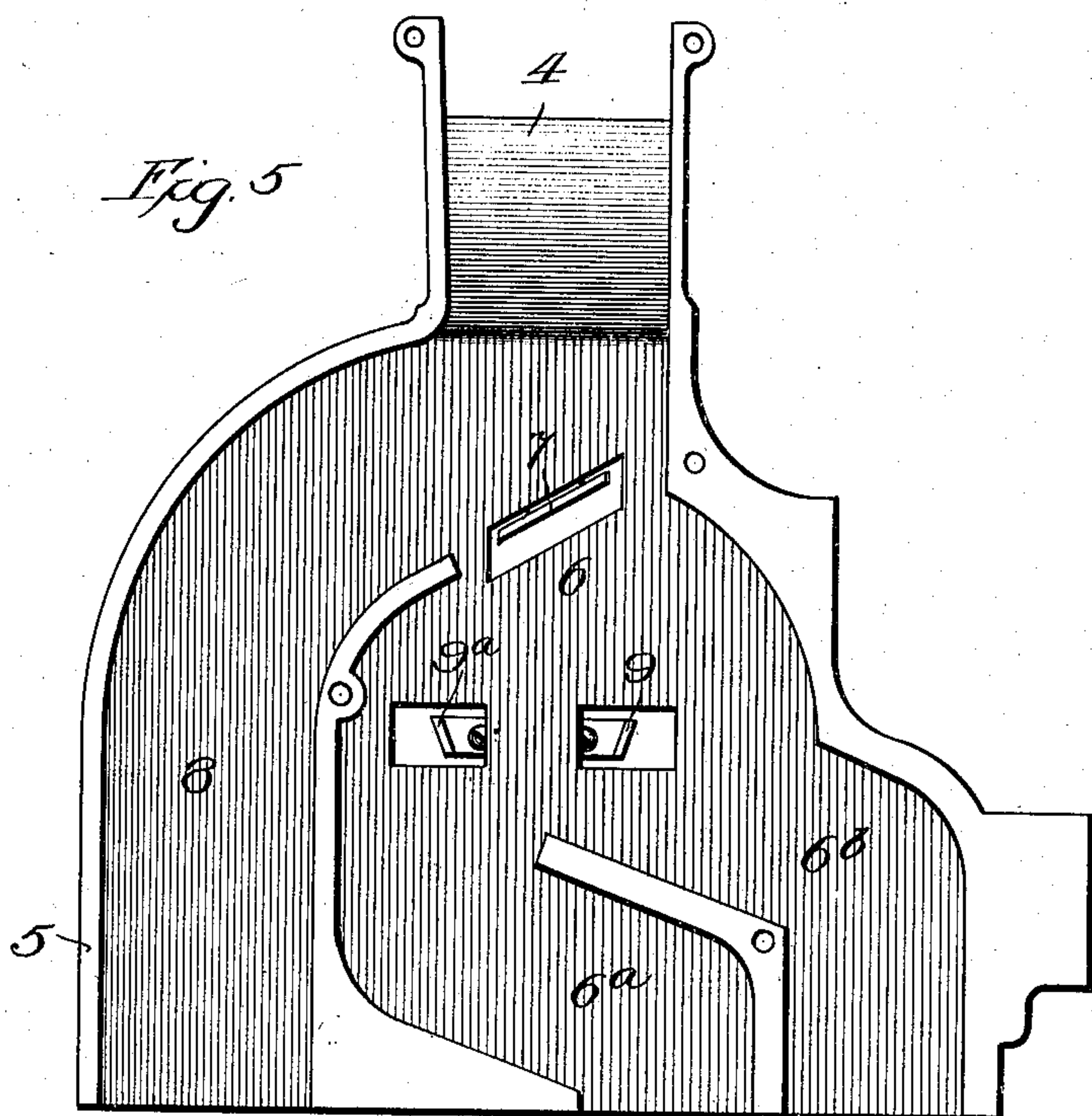
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4 SHEETS—SHEET 3.



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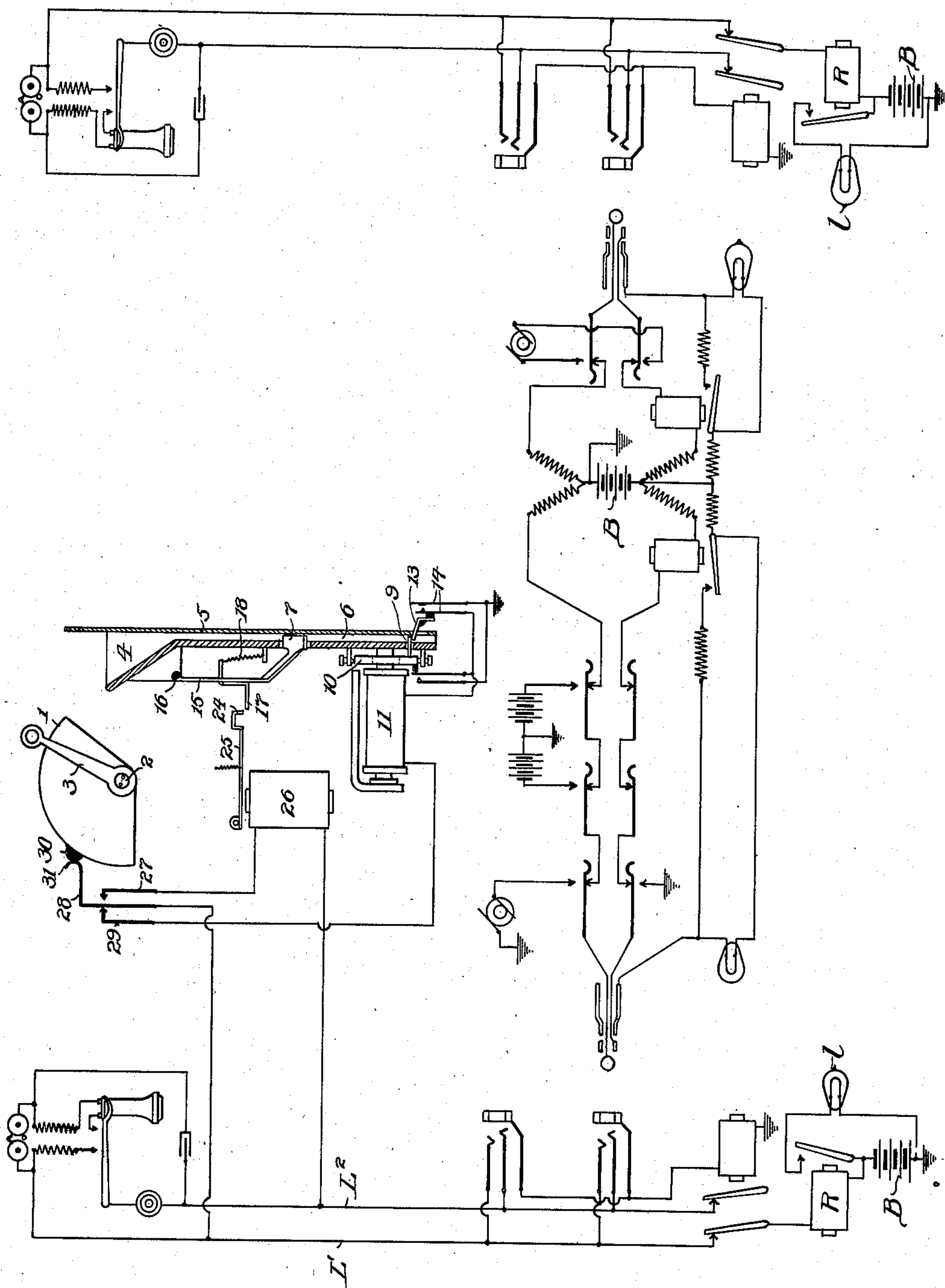
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4 SHEETS—SHEET 4.



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Fig. 1

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# UNITED STATES PATENT OFFICE.

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## CIRCUIT FOR COIN-COLLECTORS.

No. 867,955.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed March 4, 1907. Serial No. 360,314.

*To all whom it may concern:*

Be it known that I, AMOS F. DIXON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Circuits for Coin-Collectors, of which the following is a full, clear, concise, and exact description.

My invention relates to a coin collecting-telephone system, and its object is to provide a circuit for a combined local and toll coin-collector.

My invention is applicable to coin collectors where the deposit of a coin of predetermined size is required of a subscriber in order to signal the central office. If the call is for a local connection, the coin will be deposited in the cash box or refunded in the usual manner; if the call is for a toll connection, means are provided, in the apparatus employed in connection with the circuit of my invention, for operating signals to inform the central office operator of the character of the coin deposited in payment for such toll connection.

The mechanism with which my invention is used may consist in the combination of two mechanisms which are in general similar to those disclosed respectively in patent to Charles E. Scribner, No. 728,309, issued May 19th, 1903, and in the patent to Frank R. McBerty and Howard B. Holmes, No. 846,500, issued March 12, 1907.

A particular feature of my invention contemplates means by which the fraudulent manipulation of the coin-collector is prevented.

I will describe my invention by reference to the accompanying drawings, which illustrate my invention and also show the mechanism in connection with which it is employed.

Figures 1 and 2 are front and side elevations, respectively, of a coin collector adapted for use with my invention, with the cover in section; Figs. 3 and 4 are fragmentary detail views of the mechanism for controlling the operation of a stop or guide which projects into the coin chute; Fig. 5 is a detail view of the coin chute, with its front wall removed; Fig. 6 is a perspective detail view of one of the parts; Fig. 7 is a diagram of the circuits which may be employed in connection with the coin box.

Similar reference characters designate the same parts in each of the figures of the drawings.

The coin collector mechanism shown in the drawings is the invention or inventions of others, but I shall first describe the same in order that the operation of the circuit of my invention may be more readily understood.

The temporary coin-receiver or carrier 1 is mounted upon a rocking-shaft 2, which is adapted to be actuated

through the medium of the operating handle 3, to move the coin-receiver forward, so that a coin held in said coin-carrier will be dropped into the mouth or opening 4 of the coin chute 5.

Referring more particularly to Figs. 1 and 5, the coin chute has a passage or chamber 6, the opening into which is in alinement with the mouth 4 of the coin chute. The entrance to the channel 6 is normally blocked by an obliquely disposed stop or guide 7, so that when said stop is in position, a coin will be deflected into a channel or passage 8 leading into the cash box B. The channel 6 has a branch 6<sup>a</sup> leading into the cash box and a refund chute 6<sup>b</sup> leading to the outside of the coin collector, respectively.

Two stops or pins 9, 9<sup>a</sup>, normally project into the channel 6 in position to arrest a falling coin and support the same between them. These two stops are mounted upon a centrally-pivoted rocking lever 10, which forms the armature of a polarized electromagnet 11. Said armature may be normally held in its central position by the usual spring-actuated pivoted levers which engage the armature upon opposite sides of its pivoted point. The structure and function of these parts are well-known, and are substantially the same as those shown in the above-mentioned patent to Scribner, and hence a detailed description thereof is deemed unnecessary. It is sufficient to say briefly that when a coin is in position on the stops 9, 9<sup>a</sup>, it operates a lever 13 in the usual way to close contact springs 14. The armature 10 is adapted, as usual, to be tilted to one side or the other, according to the direction of the current in the coils of the polarized electromagnet, and thus the pin 9 or 9<sup>a</sup>, as the case may be, is withdrawn to refund the coin *k* through the channel 6<sup>b</sup> or to deposit it in the cash box through the channel 6<sup>a</sup>. It will be understood, therefore, that when a coin *k* is in position, resting upon stops 9, 9<sup>a</sup>, it is designed to close a signaling circuit and indicate to the central office in the usual manner, that a connection is desired. If the call is for a local connection, the coin *k* is deposited or refunded, in the usual manner. If a toll connection is desired, the coin *k* is refunded, and the subscriber informed later by the toll operator as to the amount to be deposited in the coin box in payment for such service. This toll passes directly from the temporary coin-receiver, through the passage 8 of the coin chute, into the cash box. It will be seen, therefore, that it is necessary that under certain conditions, the stop 7 shall be withdrawn in order that a coin of a predetermined character may pass into the channel 6 to signal the central office; and that under other conditions, the



stop 7 shall remain in its normal position for the purpose of guiding the deposited coin directly into the cash box.

The stop 7 projects through an opening in the casing of the coin chute 5. Said stop forms the free end of a bent lever 15, which is pivoted at its opposite end, as at 16. The lever 15 carries a cam plate 17, which projects rearwardly from the same. A spring 18 tends to operate the lever 15 so as to withdraw the stop 7, but such movement of the lever is normally blocked by the engagement of the cam surface of the plate 17 with an extension 19 of a caliper lever 20.

I will now describe the means and the conditions under which the removal of the stop 7 is effected. The toll signal mechanism shown in the drawings is substantially the same as that fully shown and described in the before-mentioned patent of McBerty and Holmes, and hence I shall only describe so much of the same as may be necessary to an understanding of the combination shown herein.

The coin-carrier 1 has an opening 21 in one of its side walls, through which a coin held in said receiver may project. Said coin during the advance movement of the coin carrier is adapted to operate the caliper lever 20, preferably by engaging a curved arm 22 thereof, the extent of displacement of said lever depending upon the diameter of the deposited coin. Referring to Fig. 4, the normal position of the lever 20, and its position as shifted by a coin of the largest diameter that can be inserted in the coin receptacle are shown in dotted and full lines, respectively. A coin held in the carrier is not released therefrom until it has passed beyond the lower end of the arm 22, that is it is not released until the caliper lever 20 is moved to the utmost extent that a coin of such diameter will operate the same.

As before stated, the plate 17 is spring-pressed into engagement with the extension 19 of the lever 20. As the lever 20 is moved to the left, a depression 23 on the cam face of the plate 17 permits said plate and lever 15 to spring backward, thus withdrawing the stop 7 from the coin chute. (See Fig. 3). If the coin is of such denomination, as for example, a five-cent piece, as will finally set the lever in the position that will permit such withdrawal of the stop 7, as shown in Fig. 3, and, if the retraction of the lever 15 is not otherwise blocked, as will hereinafter be set forth, the coin *k* will fall directly from the carrier 1 into the passage 6. Coins of lesser or greater diameter will not so set the lever 20, and hence such coins will be deflected into the cash box. It is evident, therefore, that means are provided whereby in initiating a call for a connection, a coin of predetermined size will be deposited from the carrier 1 into the coin chute 6 to be arrested by the stops 9, 9<sup>a</sup>, in position to signal the central office, and that any coin of a different diameter will be automatically prevented from entering the passage 6.

In the structure thus far described, all coins except, for example, a nickel, are deposited from the carrier 1 through the passage 8 into the cash box, a nickel, however, falling into the passage 6. In case a toll connection is desired, coins other than a nickel would have to be deposited and the denomination of the coin signaled to the operator in the usual manner. It would be ad-

vantageous, as well as less confusing, if coins of any or of different denominations could be used in payment for toll. For example, if the toll required is twenty-five cents, it is desirable that a single coin of that denomination, or a combination of dimes and nickels, or five nickels may be used. Accordingly, a stop or barrier 24 is provided, which after the central office operator has plugged in in answer to a call, blocks the retraction of the lever 15 and of the stop 7 and hence guides all deposited coins whatever their denominations, into the passage 8. The stop 24 forms the downturned end of the armature 25 of a blocking magnet 26, which has its circuit completed only when the central office operator has plugged in and the subscriber has also placed a suitable coin in the carrier 1 and operated said carrier to deposit the coin. One point of control of the circuit through the magnet 26 is at the central office. The other point of control is at the normally-open switch springs 27, 28. An arm 30 carried by the lever 20 normally holds the spring 31 in such position that said spring presses the switch springs 27 and 28 open and closes the switch springs 28 and 29. When the caliper lever 20 is moved by a coin in the initial movement of said lever, the arm 30 is also moved releasing the spring 31, which swings back thus closing springs 27 and 28. It will be apparent, therefore, that in case the operator has plugged in, the circuit through the blocking magnet 26 is completed and its armature attracted, thus inserting the stop 24 in the path of movement of the arm 32 of the plate 17 and blocking the movement of said plate.

Another feature shown in the drawing, and which comprises more particularly my invention, is means for preventing fraudulent operation of the toll mechanism. For instance, with the mechanism thus far described, it is apparent that a calling party could "beat" the coin-collector by the following method: After having deposited a nickel to signal the central office with a view to asking for a toll connection, the calling party could hold down the handle 3. The operator, upon learning that a toll connection was desired, would refund the nickel. When the toll operator had secured the desired connection, she would tell the calling party to deposit the required toll. The calling party would thereupon release the handle 3, and the signal mechanism in returning to normal position would, for example, give one stroke on the gong, such signal indicating to the central office operator the deposit of a nickel, which nickel, however, is the one which has been refunded. In order to prevent such fraudulent operation, the signal circuit is open through the springs 28 and 29, as above described, while the signal mechanism is set, and hence it is impossible to signal the central office except by releasing the handle 3.

I will now briefly describe the operation of the system, in this connection more particularly referring to the circuit diagram shown in Fig. 6.

The subscriber desiring a connection, either local or toll, deposits a nickel into the opening in the casing leading to the carrier 1 and then pulls down the lever 3, thereby tilting the carrier into position to deposit the coin into the mouth 4 of the coin chute 5. In the initial movement of the carrier, the coin moves the lever 20, and the contacts of springs 27 and 28 are closed and



those of 28 and 29 are opened. The extension 19 of the lever 20 being moved and held in the position shown in Fig. 3, the stop 7 is withdrawn from the entrance to the passage 6, since, although the circuit through the blocking magnet 26 has been closed at 27, 28, it is still open at the central office. The nickel, therefore, falls in position on the stops 9, 9', and closes the contacts 14, 14'. Upon the handle 3 being released, the carrier 1 returns to its initial position, and the contacts of springs 28 and 29 are closed. A signaling circuit is then closed from ground through contacts 14, 14', the polarized electromagnet 11, contacts of springs 28, 29, over the line L', through the line relay R, battery B, to ground. The line lamp *l* is thus lighted, in a manner well understood. The operator at the central office plugs in and inquires as to the wishes of the calling party. If a local connection is desired, no further deposit of coin is required, and the coin *k* held on the stops 9, 9' is deposited or refunded, as the case may be, in the usual manner. In case a toll connection is desired, the nickel used to signal the central office is returned, and the toll operator informs the calling party of the amount required to obtain such connection. The calling party then deposits in the opening leading to the carrier 1 a coin, in whole or part payment of the toll, and again depresses the lever. In this case, as before, the carrier in its initial movement causes the deposited coin to operate the lever 20 and moves the arm 30 so as to open contacts 28, 29 and close contacts 27, 28. Since the operator has plugged in, a metallic circuit is closed through the blocking magnet 26 which is bridged across the lines L' L<sup>2</sup>, the contacts of said bridge being closed at springs 27, 28. The blocking electromagnet thereupon attracts its armature 25 and the barrier 24 is moved down back of the arm 32 of the plate 17, thus blocking the withdrawal of the stop 7, whatever may be the character of the deposited coin. Such coin is then directed by the stop 7 through the channel 8 into the cash box. Upon the release of the handle 3, the denomination of the deposited coin is indicated to the central office operator through the toll-signal mechanism in a well-known manner, and as fully described in the before-mentioned patent of McBerty and Holmes.

Having thus fully described my invention, I claim:—

1. The combination with a telephone line extending from a subscriber's station to a central office, and provided with electromagnetically-operated line signaling means at the central office, of toll indicating mechanism at the subscriber's station, contacts in the line signaling circuit arranged to be closed by the operation of said toll mechanism in initiating a call for a connection, additional contacts in said line signaling circuit arranged to be automatically opened during the operation of said toll indicating mechanism and to be reclosed only upon the return of the same to its initial position.
2. The combination with a signaling circuit, of a telephone line extending from a subscriber's station to a central office, and provided with electromagnetically-operated signaling means at the central office, of a coin receiving apparatus at the subscriber's station provided with a movable coin carrier, coin-actuated contacts in said signaling circuit adapted to be closed by a coin re-

leased from said coin carrier, and additional contacts in said signaling circuit constructed and arranged to be opened by the movement of said coin carrier and to be reclosed only upon the return of said carrier to its initial position.

3. The combination with a telephone line extending from a subscriber's station to a central office and provided with electromagnetically operated line signaling means at the central office, of a combined local and toll mechanism located at the subscriber's station and comprising toll indicating mechanism and line indicating mechanism, contacts in the line signaling circuit arranged to be closed in the manipulation of said mechanisms in initiating a call for a connection, additional contacts in said line signaling circuit arranged to be automatically held open during the operation of said toll indicating mechanism and to be re-closed only when said toll indicating mechanism is in its initial position.

4. The combination with a telephone line extending from a subscriber's station to a central office and provided with electromagnetically-operated line signaling means at the central office, of a coin collector comprising toll indicating mechanism and line signaling mechanism at the subscriber's station, contacts in the line signaling circuit arranged to be closed by a coin in the operation of said mechanisms in initiating a call for a connection, additional contacts in said line signaling circuit arranged to be automatically opened during the operation of said toll indicating mechanism and to be reclosed only when said toll indicating mechanism is in its initial position.

5. The combination with a telephone line extending in two limbs from a subscriber's station to a central office, and provided with an electromagnetically controlled line signal at the central office, of toll indicating mechanism and coin-actuated line signaling mechanism at the subscriber's station, means associated with said toll indicating mechanism for governing the transfer of a coin to said line signaling mechanism in initiating a call for a connection, an electromagnet in a bridge of the line, a connection switch at the central office controlling the closure of the circuit of said electromagnet, means controlled by said electromagnet for preventing the transfer to the line signaling mechanism of coin deposited in the payment of toll, and a normally-open switch in said bridge arranged to be automatically closed in the operation of said toll indicating mechanism.

6. The combination with a telephone line extending in two limbs from a subscriber's station to a central office, and provided with an electromagnetically controlled line signal at the central office, of toll indicating mechanism and coin-actuated line signaling mechanism at the subscriber's station, means associated with said toll indicating mechanism for governing the transfer of a coin to said line signaling mechanism in initiating a call for a connection, and contacts in said line signaling circuit arranged to be automatically opened during the operation of said toll indicating mechanism and to be re-closed only when said toll indicating mechanism is in its initial position, an electromagnet in a bridge of the line, a connection switch at the central office controlling the closure of the circuit of said electromagnet, means controlled by said electromagnet for preventing the transfer to the line signaling mechanism of coin deposited in the payment of toll, and a normally-open switch in said bridge arranged to be automatically closed in the operation of said toll indicating mechanism.

In witness whereof, I, hereunto subscribe my name this 1st day of March A. D., 1907.

AMOS F. DIXON.

Witnesses:

RALPH G. JOHANSEN,  
ROY T. ALLOWAY.