

No. 885,280.

J. F. OHMER.

PATENTED APR. 21, 1908.

ACTUATING MECHANISM FOR FARE REGISTERS.

APPLICATION FILED JUNE 13, 1907.

4 SHEETS—SHEET 1.

Fig. 1.

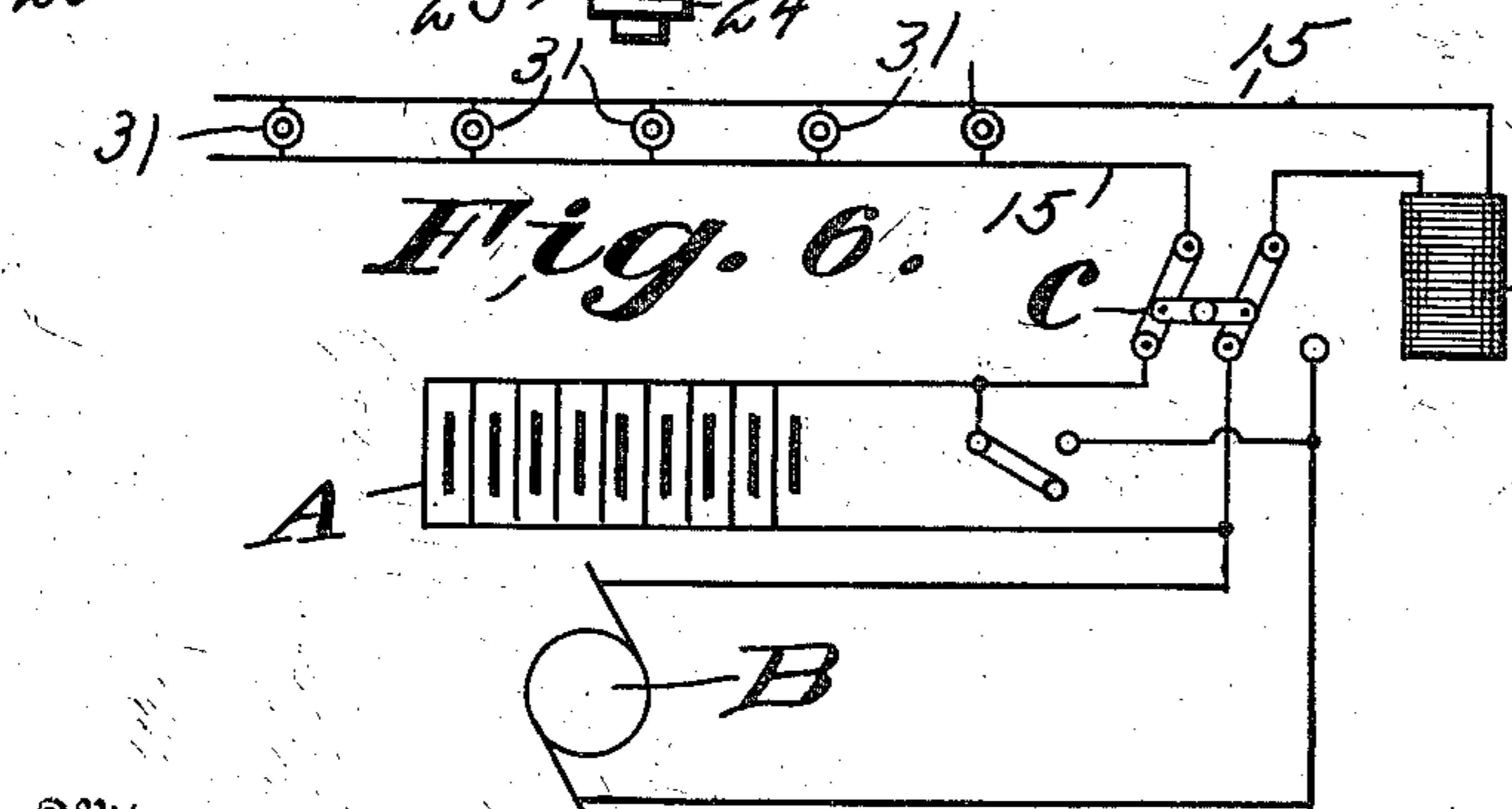
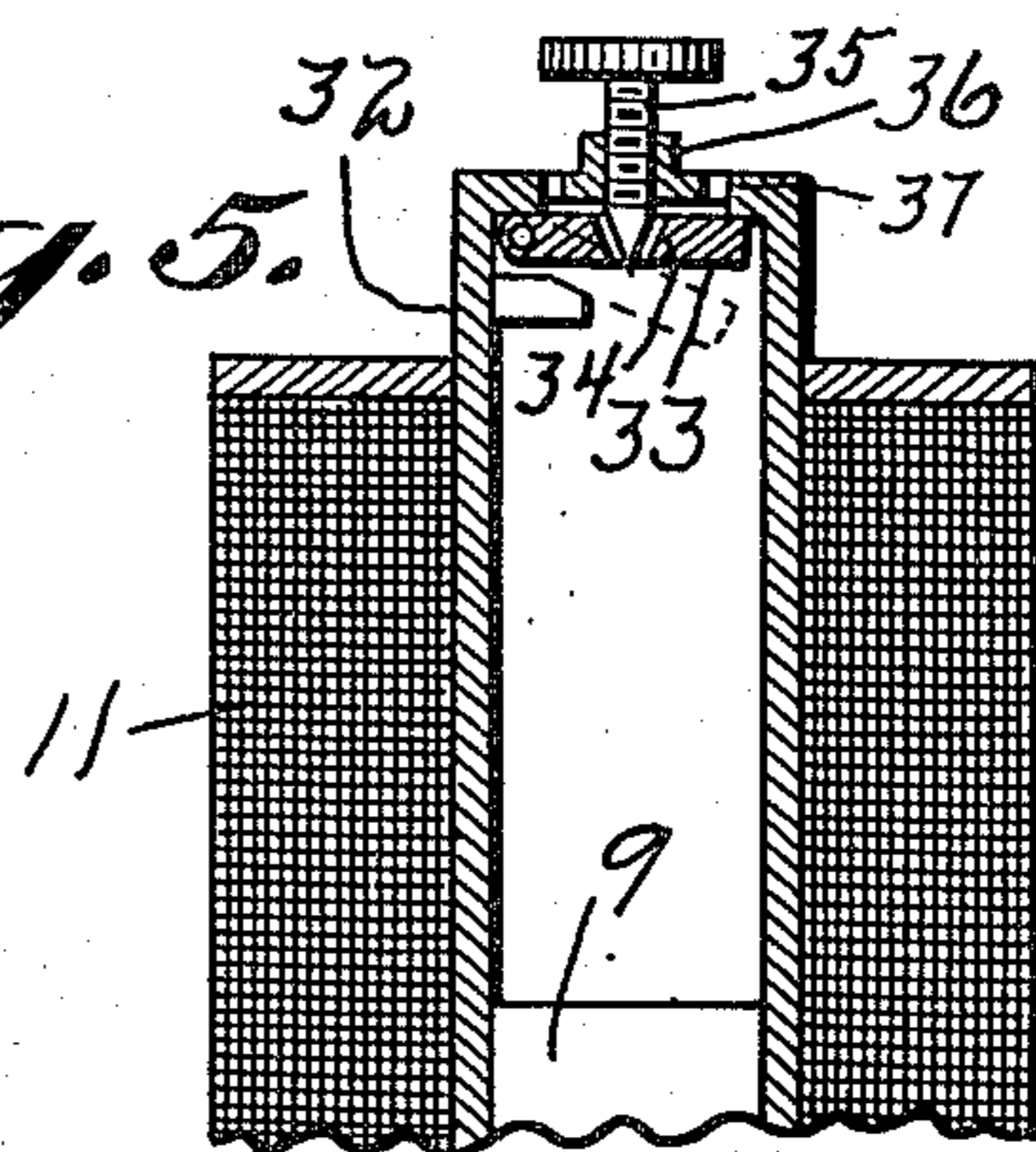
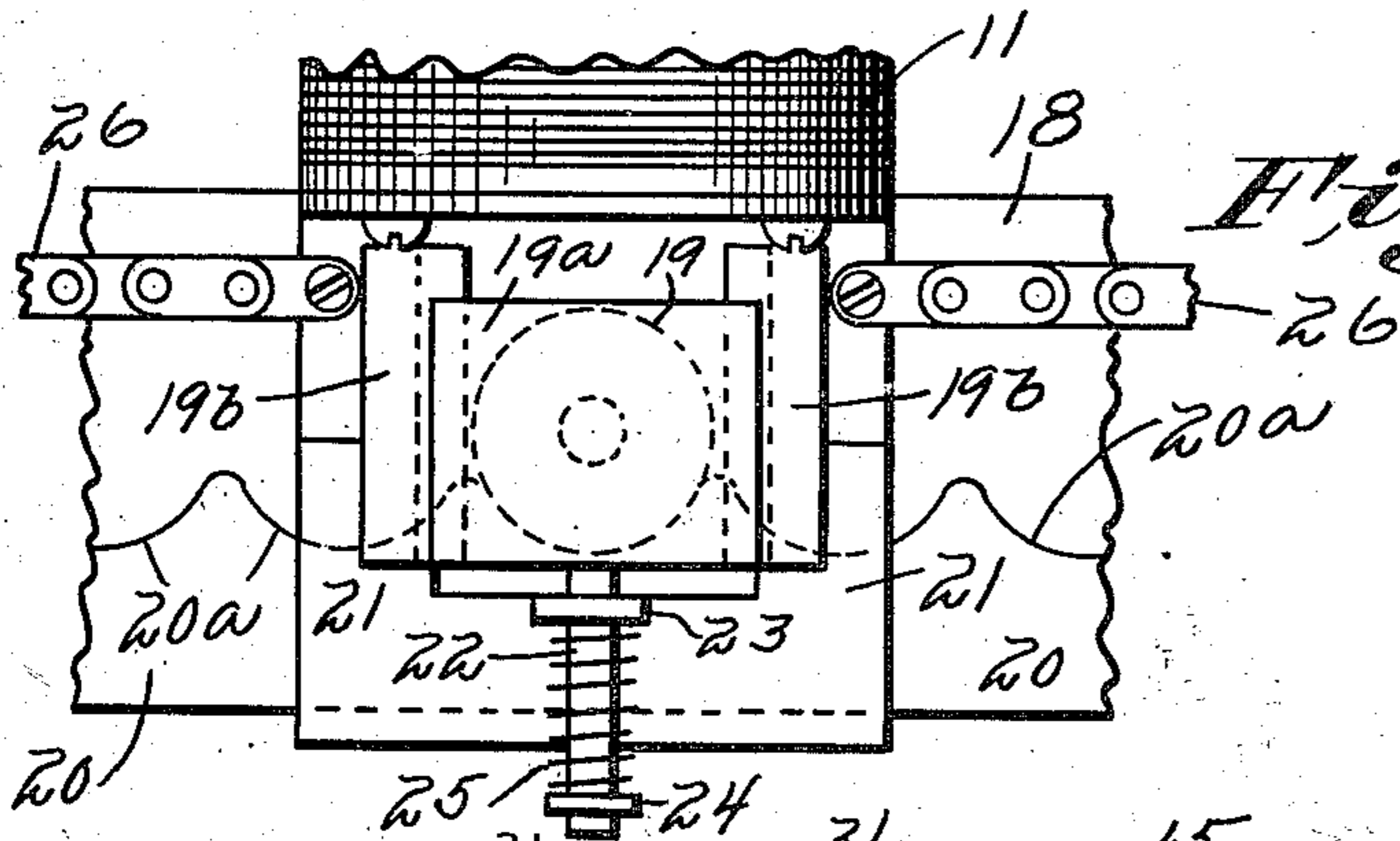
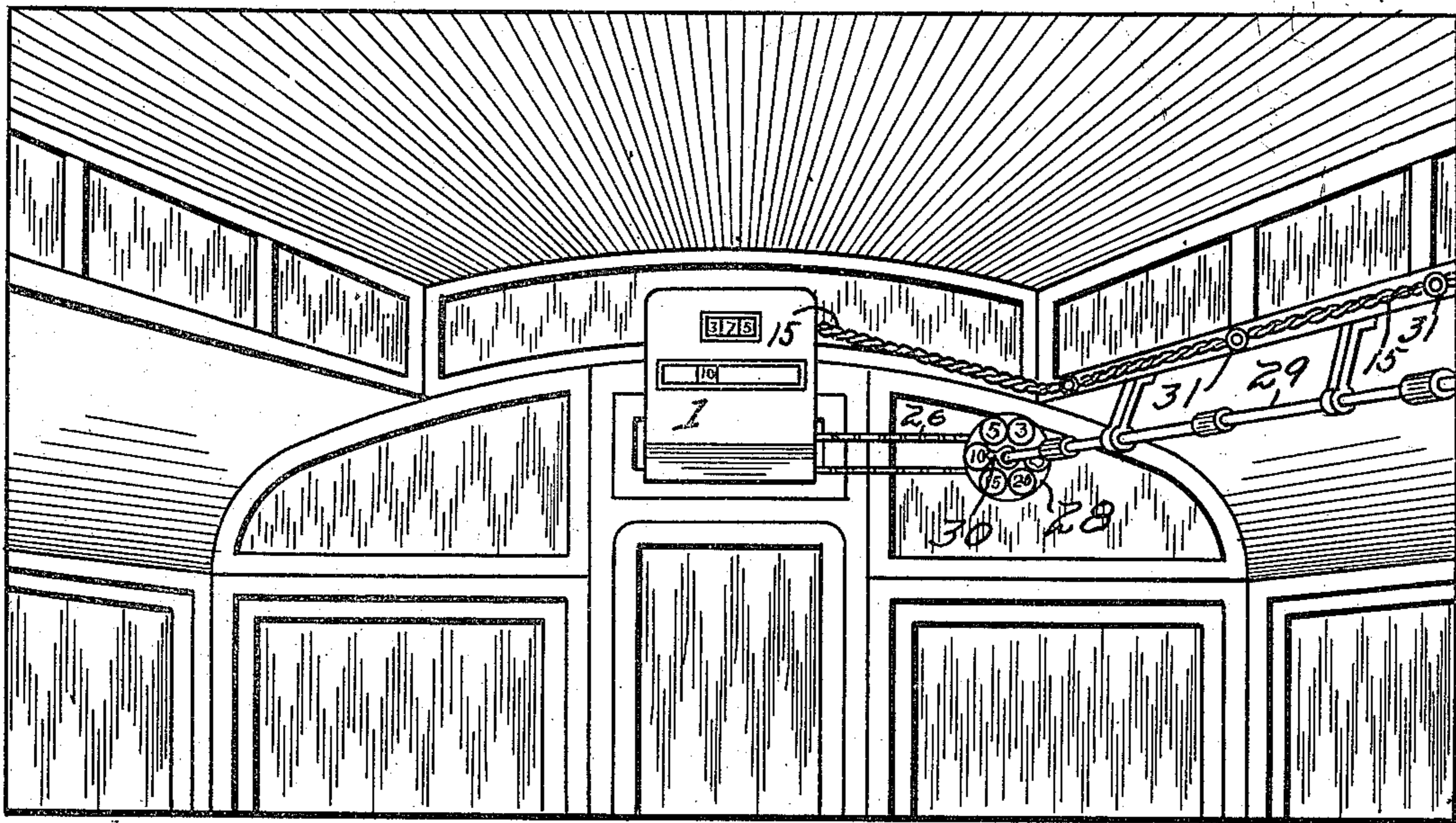


Fig. 7.
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4 SHEETS—SHEET 2.

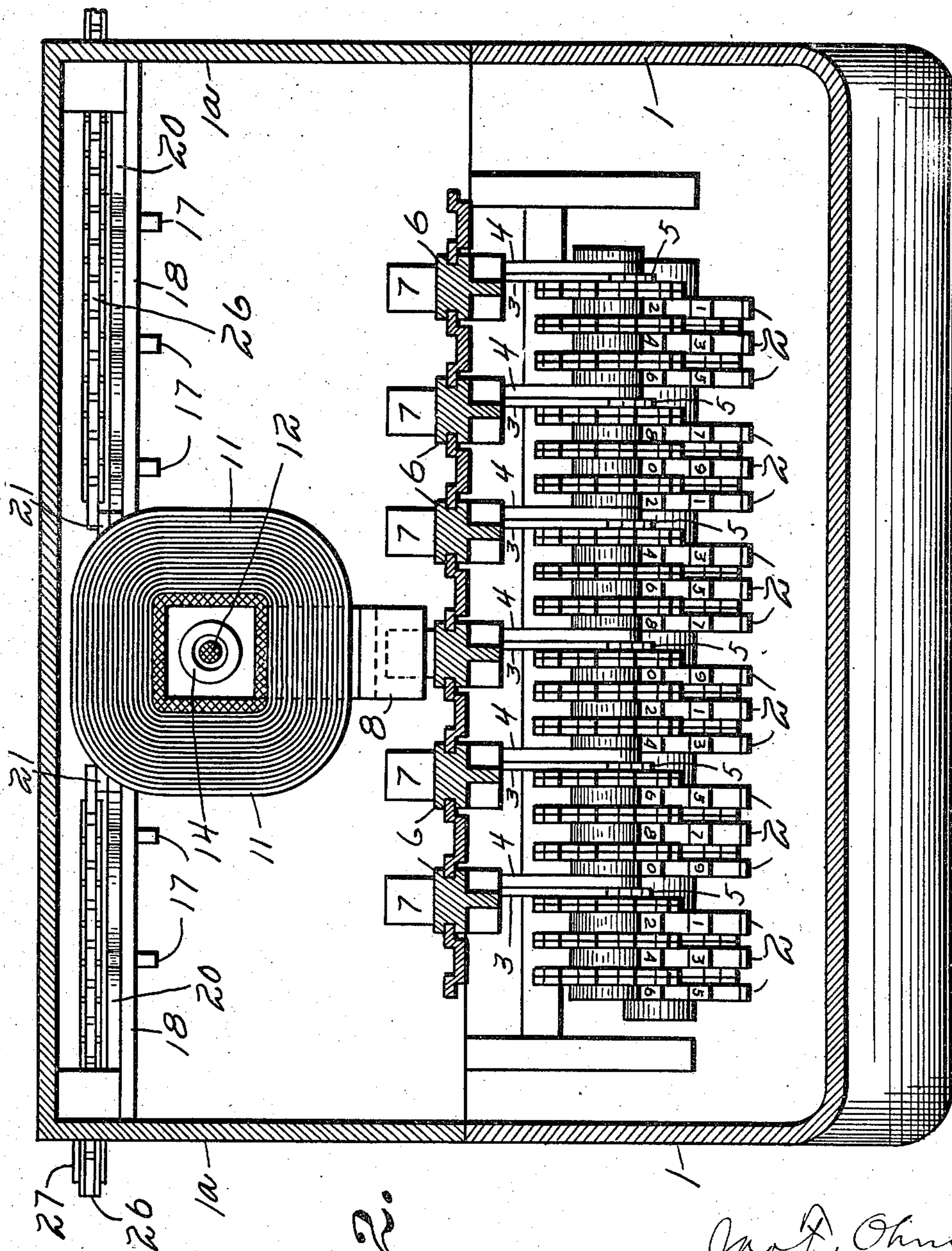


Fig. 2.

Witnesses

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4 SHEETS—SHEET 3.

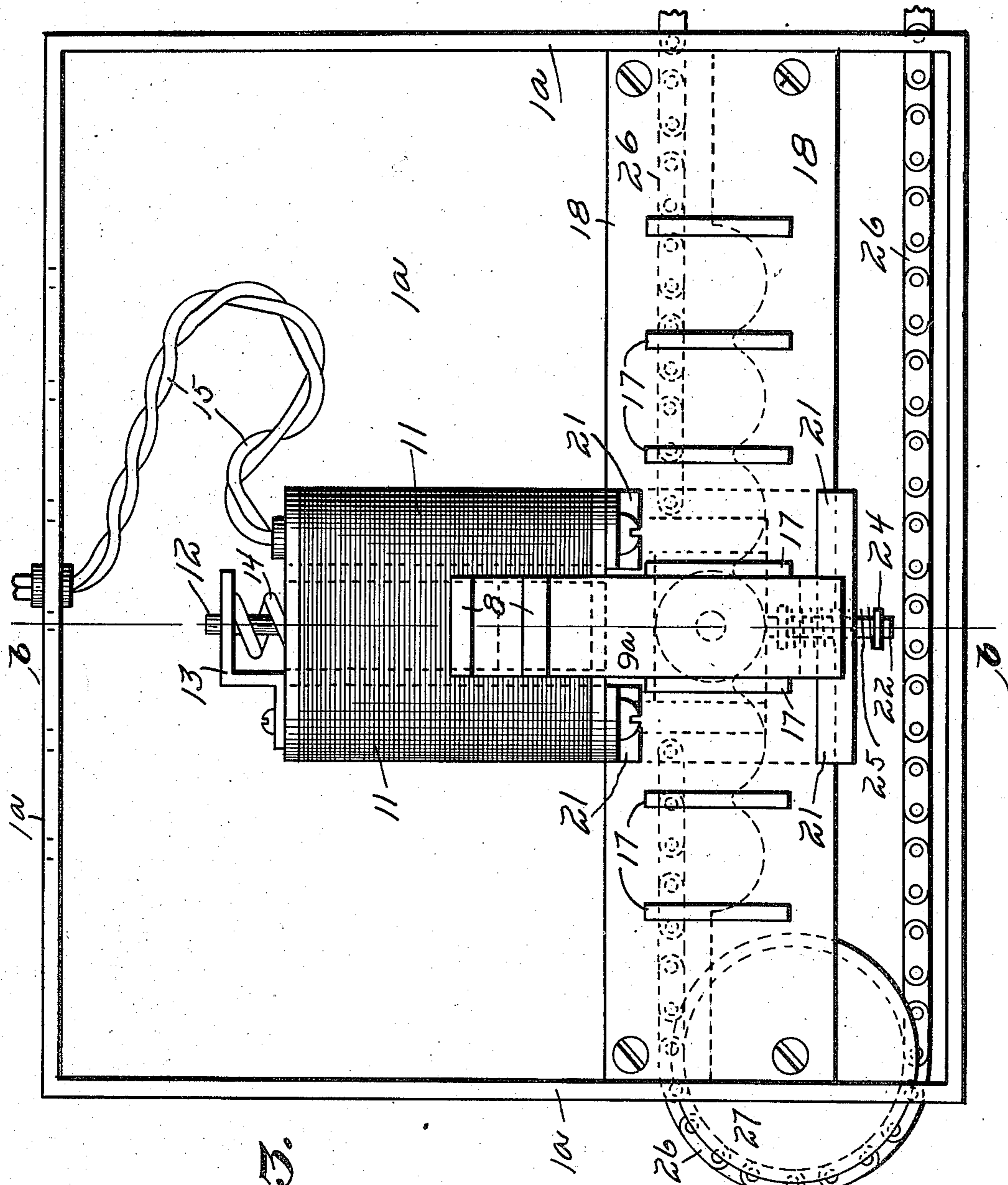


Fig. 3.

Witnesses

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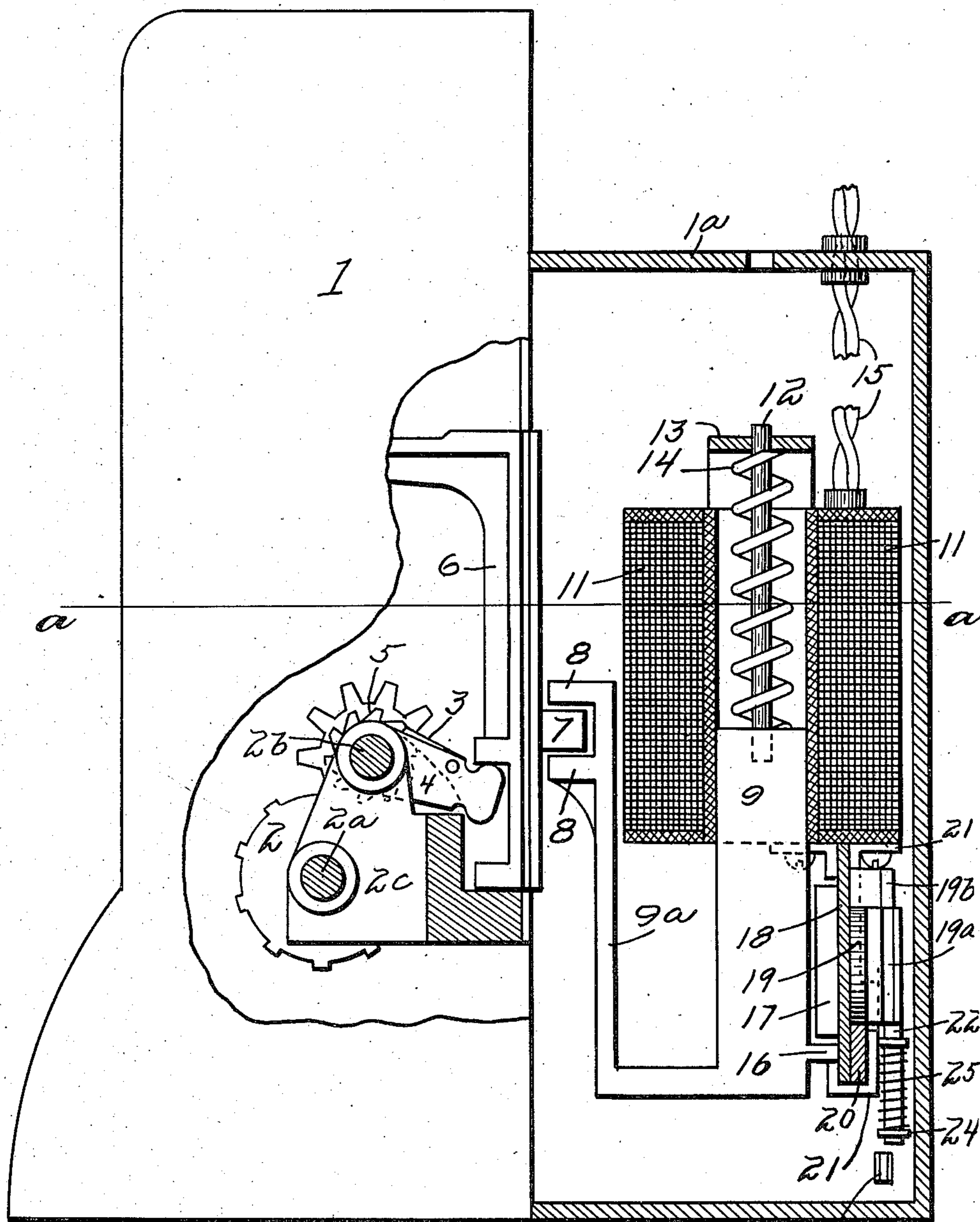


Fig. 4.

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Witnesses

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UNITED STATES PATENT OFFICE.

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ACTUATING MECHANISM FOR FARE-REGISTERS.

No. 885,280.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed June 13, 1907. Serial No. 378,734.

To all whom it may concern:

Be it known that I, JOHN F. OHMER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Actuating Mechanism for Fare-Registers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in actuating mechanism for fare registers.

More particularly, the invention appertains to electrical means for actuating the counters of a fare register through which the fare collections are registered. The actuator through which a single counter or a plurality of counters are operated, has heretofore been manually operated to impart the necessary movement to a counter where the machine contained a single bank of counters, or to the several banks of counters where the machine contained more than a single bank of counters. In other words, the actuator is shiftable when employed in a machine having a plurality of banks of counters, in selecting a predetermined counter for operation, but in a machine having a single bank of counters for registering a single denomination of fare, the actuator is not shiftable. In either event, the present means for operating the actuator to impart movement to the counters is applicable.

With the present invention, the actuator is electrically operated to cause a registration of a fare on a counter, instead of pulling upon a rope or actuating member on the interior of a car as heretofore. The conductor may push a button to electrically connect an electro-magnet or solenoid through which the actuating member of the counters is operated.

Preceding a more detail description of the invention, reference is made to the accompanying drawings, of which—

Figure 1, is an elevation of the end of a car showing the interior thereof and in which a fare register or machine with the necessary equipment is illustrated. Fig. 2, is a cross-sectional view through the machine and the operating mechanism on the line *a a* of Fig. 4.

Fig. 3, is a front elevation of the operating mechanism shown in the rear of the machine as depicted in Fig. 4, and comprising in part an electro-magnet or solenoid through which the counters are operated. Fig. 5, is a detail of the electro-magnet or solenoid, the carriage upon which it is supported and the track upon which the carriage travels in the setting operations. Fig. 6, is a diagram of one form of electric circuit through which the magnet or solenoid is energized. Fig. 7, is a detail of a portion of the magnet or solenoid showing a form of dash pot for cushioning the core or member of the magnet which is actuated by the magnet when the latter is energized, and through which the fare counters are actuated.

In a detail description of the invention, similar reference characters indicate corresponding parts.

The machine or register may be of a single fare capacity or it may have a plurality of banks of counters for registering a greater number of fares or different denominations of fares. In either event, my improved electro-mechanical means are equally available, and I do not desire to be limited in its application.

The machine or register comprises no part of the present invention but is illustrated in the drawings to enable a more complete description and understanding of the mechanism comprised within the scope of the present invention. This being the case, the mechanism of the machine or register proper will be briefly described as it is briefly illustrated.

Within the machine or register casing 1, there is arranged one or more banks of fare counters 2 with their actuating devices comprising a pawl 3, a pawl carrier 4, a ratchet wheel 5 which cooperate with each bank of counters. The counters 2 and their cooperating ratchet wheels and transfer wheels are mounted upon shafts 2^a and 2^b in a suitable number of brackets 2^c.

6 indicates the individual actuating member of which there is one associated with each bank of counters and through which the pawl carrier 4 of each bank of counters is actuated in a well-known manner.

It will be understood that in a machine having a single bank of counters for registering a single class of fares, but one individual actuating member is used.

Referring now to the mechanism through

the instrumentality of which these individual actuating members 6 are selected for operation and subsequently operated, this mechanism is inclosed in a casing 1^a secured at the rear of the machine casing, and in describing the same more particularly, Figs. 3 and 4 are referred to.

18 designates a horizontal guide or plate rigidly secured to the interior of the casing 1^a of the operating mechanism. Movable on this guide or plate 18 is a carriage 21 which laps over or incloses the upper and lower edges of said guide or plate in a manner that permits said carriage to freely travel to various points thereon to be selected by the setting mechanism hereinafter described. Supported upon this carriage 21 is a roller 19 which rides in and out of a series of uniform recesses 20^a in the upper edge of a rigid horizontal bar 20 attached to or an integral part of the guide or plate 18. This roller 19 serves to arrest the movements of the carriage 21 and to maintain the carriage temporarily at any of its set positions, while at the same time permitting said carriage to be moved to other points on the guide or plate 18. Owing to the functions of this roller 19, it must have a yielding support such as a slide 19^a which is adapted to move vertically in side guides 19^b fixed to one side of the carriage 21; the slide 19^a is normally under spring tension to maintain the roller 19 in contact with the recesses in track 20^a before referred to. This spring tension is provided by extending a pin 22 downwardly from the slide 19^a and through a guide lug 23 on the carriage 21. The said pin has a fixed collar 24 on its end and inclosed between the guide lug 23 and said collar, there is a normally open coil spring 25. Attached to opposite sides of the carriage 21 is an actuating chain or flexible connection 26 through which the carriage is set to selected positions depending upon the specific counter to be operated to record the fares as collected. This chain 26 passes around a pulley 27 at one end of the frame or casing 1^a and thence around a sprocket chain (not shown) in the rear of the setting dial 28 as seen in Fig. 1. The sprocket wheel referred to has a fixed connection with a setting rod 29 extending on the interior of the car and also fixed to said setting rod 29 in the front of the dial 28 is a pointer 30 which is moved concurrently with the sprocket wheel to the desired positions as indicated on the dial 28. This operation of setting the carriage to the desired position is well understood as it is a feature of many of my former patents which need not here be specifically mentioned.

Coming now to the electro-mechanical devices embraced within the present invention, 11 designates the winding of an electro-magnet or solenoid, the metallic shell of which is constructed of brass and is rigidly supported

upon the carriage 21 as shown in Fig. 4. This magnet or solenoid is energized from any source of electrical supply, such as a storage battery A or a generator B, or it may be supplied with electrical energy from the source which supplies the lamps on the interior of the car. The feed wires 15 forming the electrical circuit in which the magnet or solenoid is placed, are of sufficient length to permit the magnet or solenoid being moved with the carriage to the desired points in selecting a counter to be operated. The core 9 or that member which is attracted by the magnet, in the present adaptation, terminates in an up-turned arm 9^a on the exterior of the magnet or solenoid; this portion 9^a performs the functions of an actuator for the individual actuating members 6 of the fare counters. The upper end of the core or member 9 is provided with lateral extensions 8 which inclose the lug 7 projecting from the rear side of each of the individual actuating members 6, whenever the carriage 21 moves the solenoid to a position previously determined, as for example, when a definite counter is to be operated. Extending vertically from the inclosed end of the core 9, is a stem 12 which projects through an opening in a guide or bracket 13 secured to the top of the magnet or solenoid; this stem 12 is surrounded by a coil spring 14 inclosed between the bracket 13 and the core 9, the function of said spring being that of a cushion to normally maintain the core 9 in the lower position as shown in Fig. 4. In the top of the casing 1^a there is a series of openings which permit the stem 12 to project therethrough whenever the core of the magnet or solenoid is elevated which takes place whenever the current is sent therethrough.

In Fig. 7, I have shown a form of substitute for the spring 14 constituting an air cushion or dash pot 32, in the axis of the magnet or solenoid. On the interior of said dash pot there is a flap valve 33 hinged at one side; this valve has a needle valve seat 34 to receive the needle point of a valve 35; the latter valve screws through a cap 36 in the end of the dash pot. The cap 36 has a sufficient number of air ports 37 communicating with the dash pot to admit air to and discharge from the dash pot. When the magnet core moves downward, the flap valve 33 is drawn down by suction approximately to the position shown in dotted lines and is limited to such movement by a stop 38. When thus moved down, air is drawn in through the several ports 37—34, and when the magnet core is again moved up by the magnet becoming energized, this air serves as a cushion gradually escaping through said ports. I do not desire to limit myself to any particular means for cushioning the core as this result may be obtained in a variety of ways. The circuit wires 15 are

properly insulated and extend on the interior of the car as shown in Fig. 1, and at suitable points along said wires there are arranged proper push buttons or circuit closers

5 31. Along the carriage-supporting plate 18 there are arranged a series of vanes 17; the spaces between each two of these vanes are in alinement with the several banks of counters and their individual actuating members 6 so
10 that the extension 9^a of the solenoid core when in an operative position stands in the front of said spaces. The vanes 17 act as stops to prevent the solenoid core from being elevated when not in a proper position.
15 the rear side of said core having a lug 16 which lies below the vanes 17 when the core is in its normal or lower position—see Fig. 4. When the carriage moves the solenoid to each position to actuate the counters, the
20 lug 16 moves within the space between the vanes. It will be understood that the electro-magnet or solenoid is stationary when the register or machine contains but a single bank of counters, for example, in a machine
25 having a single fare capacity. In such event the carriage 21 is not employed.

The operation of my improved actuating mechanism is briefly described as follows: In Fig. 1, it will be noted that the pointer
30 30 indicates a 10c. fare on the setting indicator 28, the setting rod 29 having been rotated to bring the pointer to such position. The same operation of the setting rod moves the carriage 21 to the individual actuating
35 member 6 of that particular bank of counters, and the core extension or actuator 9^a is moved to an operative relation with the lug 7 of said individual actuating member; one of the circuit closers or buttons 31 is then
40 pressed by the finger to energize the solenoid and thereby elevate the magnet core and the actuator 9^a, the latter at the same time elevating the individual actuating members 6 to operate the counters. When the pres-
45 sure is relieved from the button, the circuit is opened, the solenoid is demagnetized and the core 9 is returned to its normal position under the action of the spring 14.

Referring to the diagram Fig. 6, the solenoid may be placed in circuit with either the
50 storage battery A or the generator B through means of a switch C, two of the terminals of which are connected with the feed wires 15 and the other two terminals of which may
55 be connected with either the battery wires or the generator wires; as now shown the switch terminals are connected with the battery wires.

As hereinbefore stated, when the register
60 employs but a single bank of counters; the electro-magnet is not movable to various points as it is when several banks of counters are employed; this also dispenses with the employment of the setting mechanism which
65 is shown in Fig. 1 and elsewhere.

I claim:

1. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters, a movable solenoid including a core having
70 an extension adapted to be brought into operative relation with each of said individual actuating members, and means for energizing said solenoid to actuate the core and the core extension therewith to move the
75 individual actuating member.

2. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters, a solenoid including a core having an exten-
80 sion adapted to engage each of said actuating members to operate the same, means for moving the solenoid to a position to effect an engagement between the core extension and a predetermined counter-actuating member,
85 and means for energizing the solenoid to actuate the core and its extension.

3. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank, a solenoid
90 including a movable core having an extension adapted to engage any predetermined actuating member of the counters, a carriage supporting the solenoid, means for moving said carriage to set the solenoid in an opera-
95 tive position with the actuating member of the counter to be operated, an electric circuit in which the solenoid is placed, and a circuit closer controlling the current and the closing of which energizes the magnet and actuates
100 the core and the extension thereof, substantially as specified.

4. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters,
105 a movable solenoid including a core with an extension adapted to be brought into operative relation with each of said individual actuating members, means for energizing the solenoid to actuate the core and its ex-
110 tension to move the individual actuating member, and means for returning the core and its extension to normal position.

5. In an actuating mechanism for fare registers, a plurality of fare counters, an in-
115 dividual actuating member for each counter, a solenoid including a core with an extension thereon adapted to engage each of said individual actuating members, a carriage upon which said solenoid is mounted, an auxiliary
120 counter-selecting indicator, and setting mechanism connected with the solenoid carriage and whereby the fare of the counter to be selected for operation is simultaneously indicated on the auxiliary indicator and the
125 solenoid is moved to a position to effect an engagement between its core extension and the individual actuating member of the selected counter.

6. In an actuating mechanism for fare 130

registers, a series of banks of counters, an actuating member for each bank of counters, a movable solenoid including a core with an extension adapted to be brought to a position to engage any one of the actuating members of said counters, an auxiliary indicator upon which the fares are indicated that are registrable upon the several banks of counters, setting mechanism to simultaneously indicate upon said indicator the fare of the bank of counters selected for operation and to move the solenoid to a position to effect an engagement between its core extension and the actuating member of the selected counter, and means for energizing the solenoid to actuate the core and extension and therewith said counter-actuating member.

7. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters, a movable solenoid including a core and core extension, the latter lying parallel with the solenoid and exterior thereto, said core extension being adapted to engage any one of the individual counter-actuating members, a carriage supporting said solenoid, setting mechanism connected with said carriage and through which the solenoid is moved into operative relation with the predetermined bank of counters, an electric circuit having its terminals connected with the opposite poles of the solenoid, and a series of circuit closers arranged and operating, substantially as specified.

8. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters, a solenoid including a core with an extension adapted to engage any one of said actuating members, a carriage supporting said solenoid in the rear of said actuating members, an auxiliary indicator, setting devices connected with said auxiliary indicator and the carriage and whereby the fare to be registreed is indicated and the counter of such fare is simultaneously selected for operation by the movement of the solenoid thereto, and means for energizing the solenoid when set to such operative position and whereby the core extension is actuated to operate the actuating member of the selected counter.

9. In an actuating mechanism for registers, a bank of counters, an actuating member to operate said counters, an electro-magnet to move the actuating member, and

means for energizing the electro-magnet including a core with an extension adapted to engage the individual-actuating member of the counters and thereby to actuate the counters.

10. In an actuating mechanism for fare registers, a bank of counters, an actuating member for said counters, an electro-magnet including a core with an extension adapted to move said actuating member, means for arresting the movement of the actuating member, an electric circuit in which the electro-magnet is placed, and a series of circuit closers controlling said circuit.

11. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters, a movable electro-magnet adapted to be moved into operative relation with each of said individual actuating members, said electro-magnet having an extended core adapted to engage and lift the actuating members of the counters, means for energizing the electro-magnet to actuate the actuating member to move a specific bank of counters.

12. In an actuating mechanism for fare registers, a series of banks of counters, an actuating member for each bank of counters, a movable solenoid adapted to be brought into operative relation with a selected actuating member, said solenoid including an extended core adapted to engage the actuating member of a selected counter, and means for energizing the electro-magnet to actuate the actuating member so selected.

13. In an actuating mechanism for fare registers, the combination with a series of banks of counters, an individual indicator for each bank of counters, an actuating member for each bank of counters and its indicator, of a movable solenoid adapted to be brought into operative relation with a selected actuating member, said solenoid including a core with an extension adapted to engage said actuating member, an electric circuit including said magnet, and a series of circuit closers controlling said circuit.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN F. OHMER.

Witnesses:

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