No. 787,163. PATENTED APR. 11, 1905.

A. FEVOLA.

REGISTER SYSTEM.

APPLICATION FILED SEPT. 9, 1904.

2 SHEETS—SHEET 1.

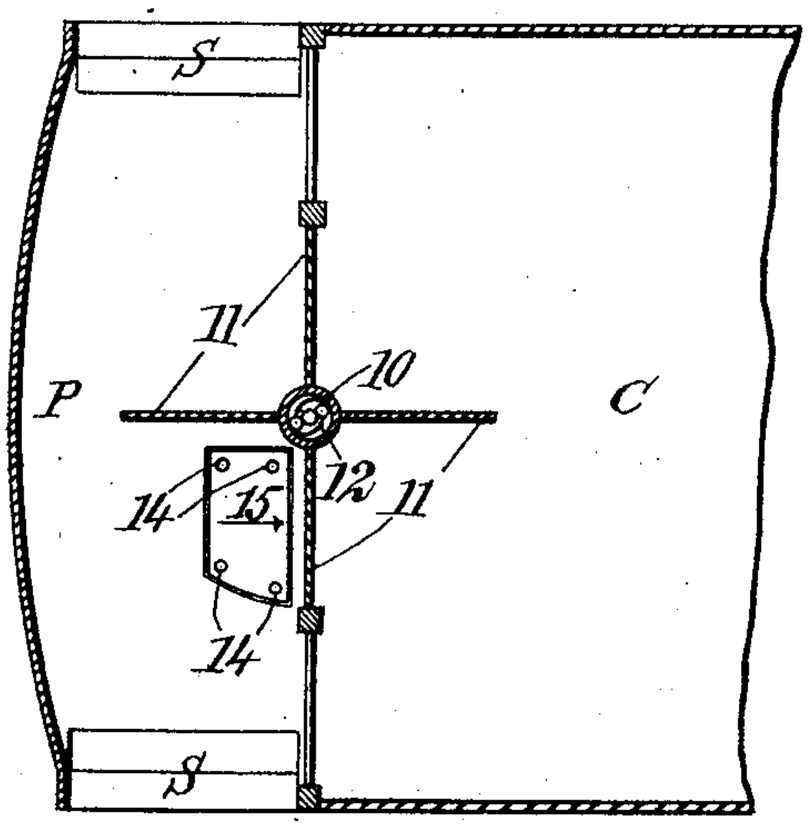

Fig. 2.

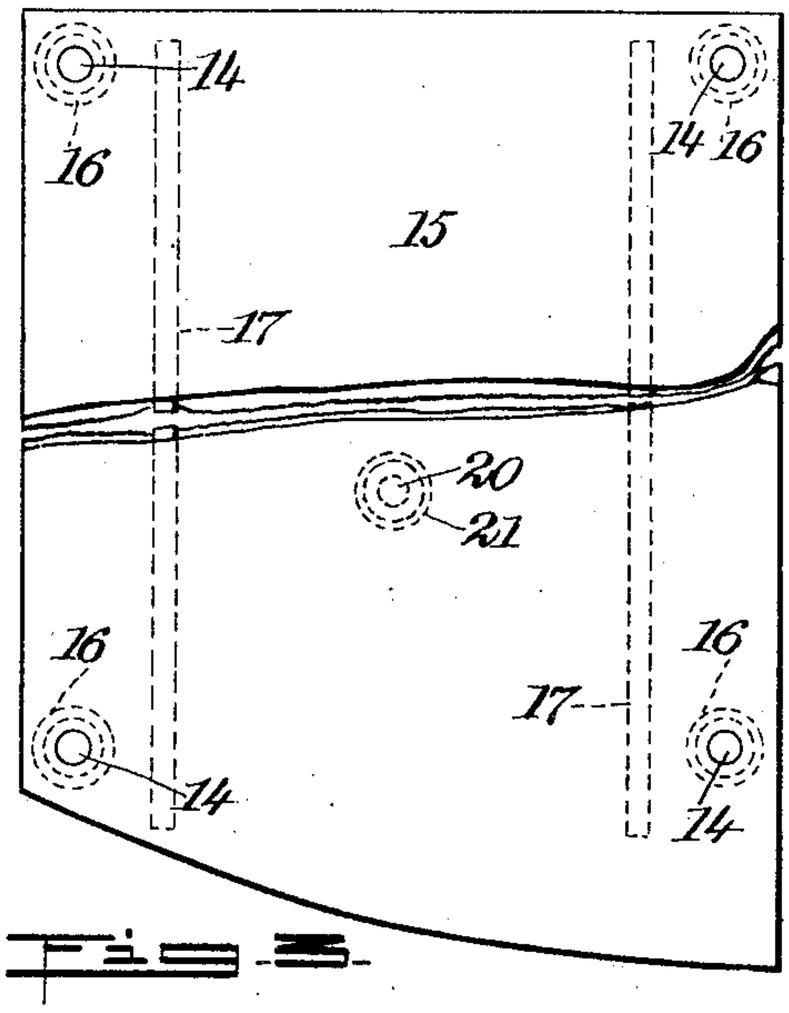

Fig. 5.

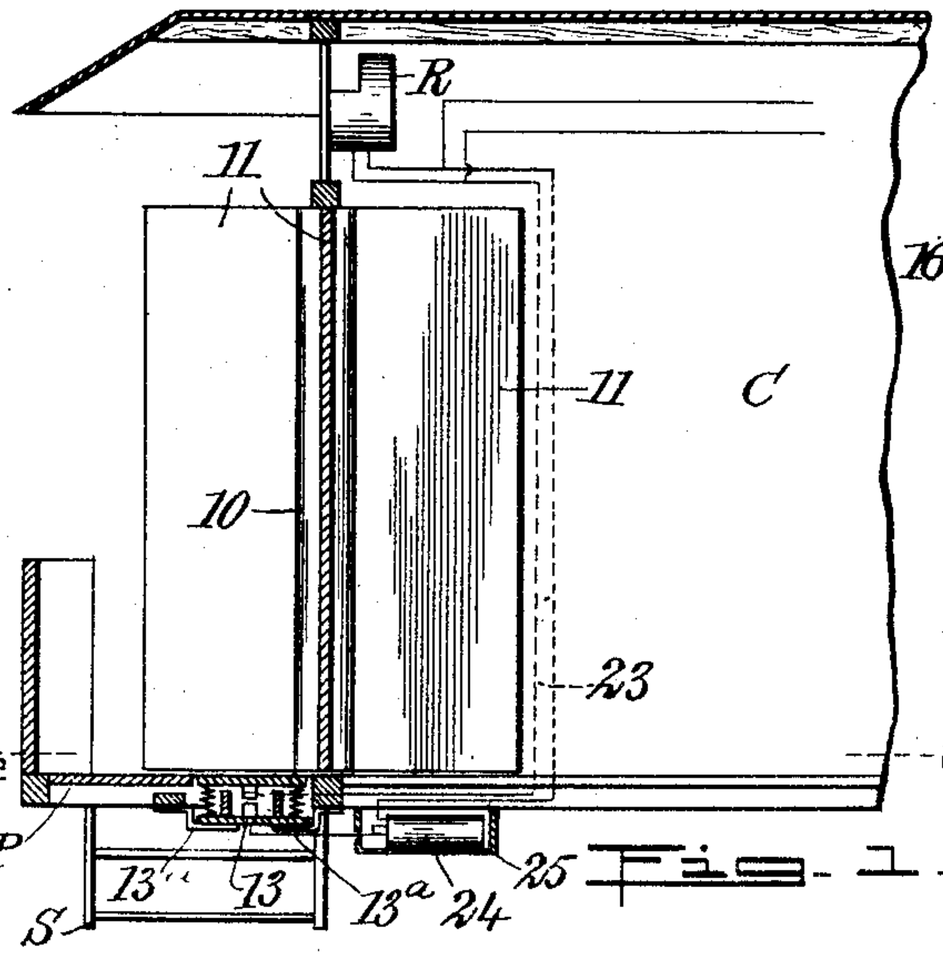

Fig. 1.

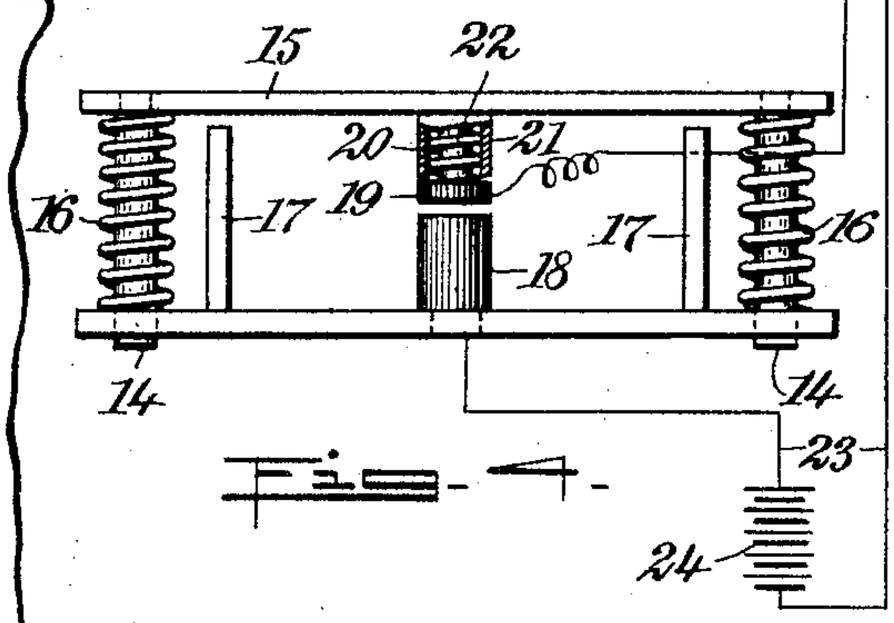

Fig. 4.

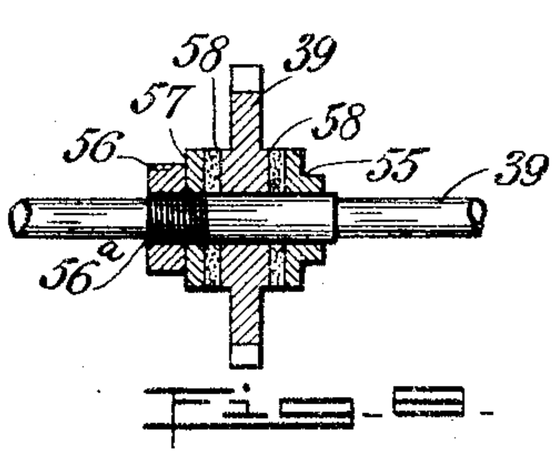

Fig. 3.

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2 SHEETS—SHEET 2.

Fig. 5.

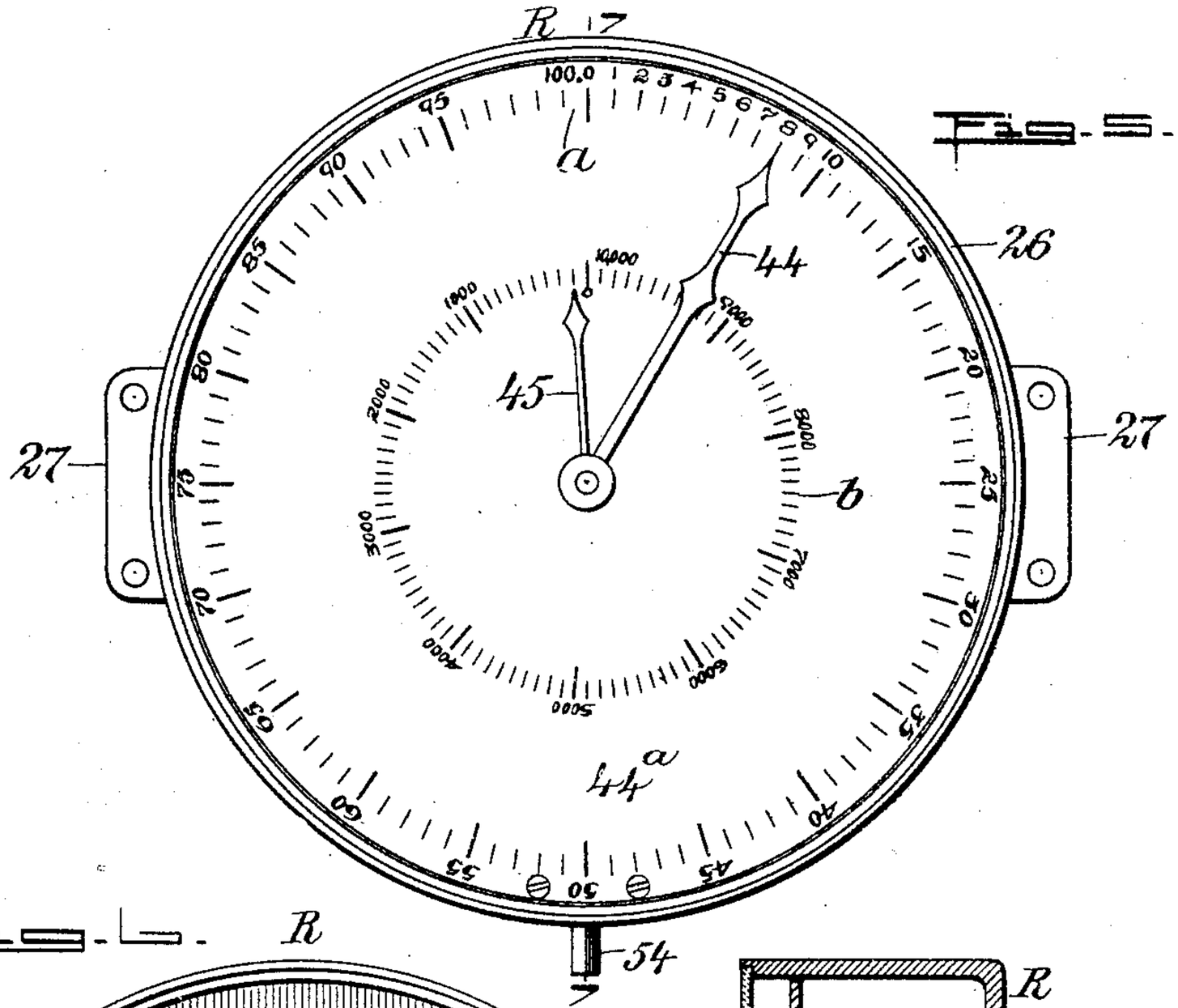


Fig. 6.

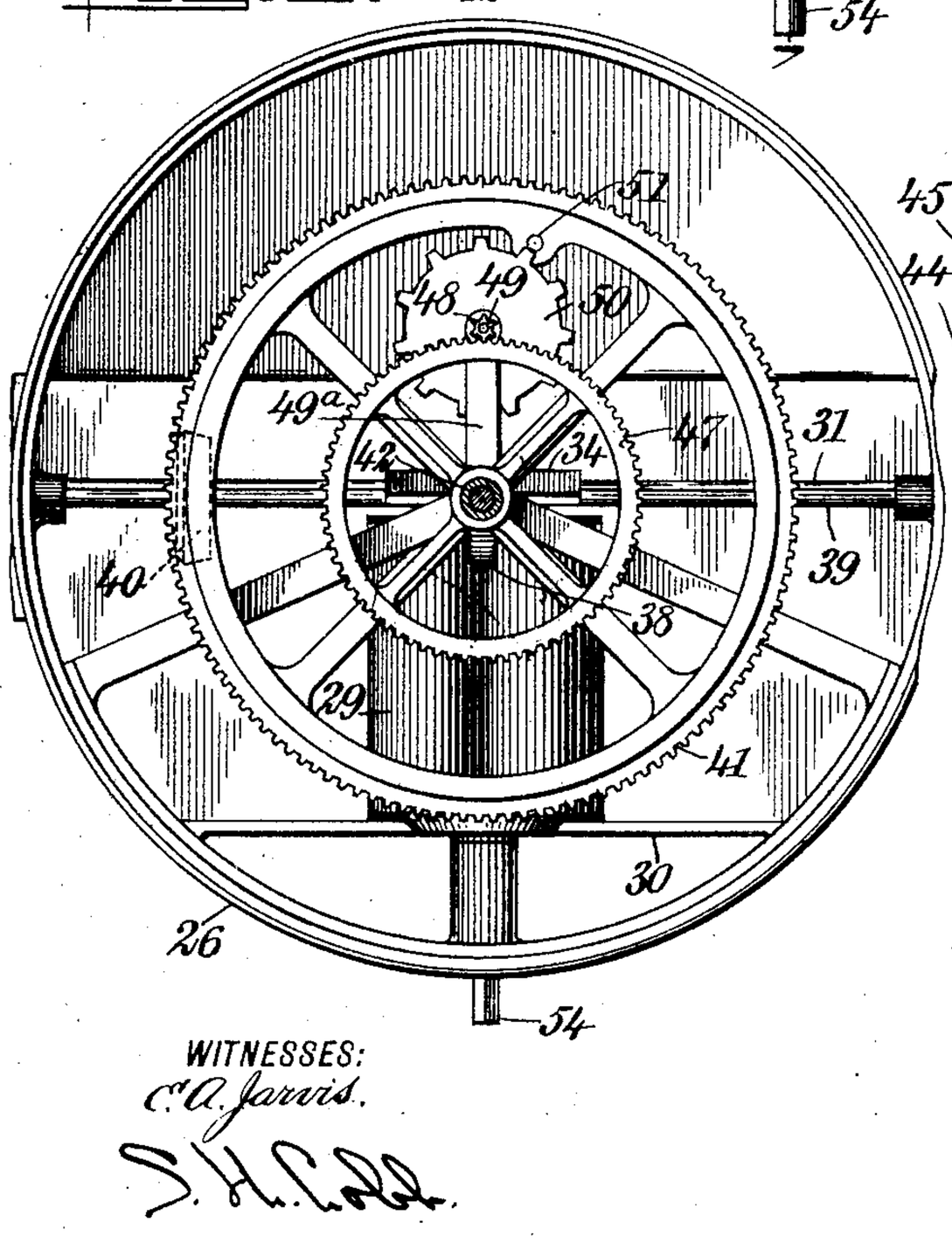
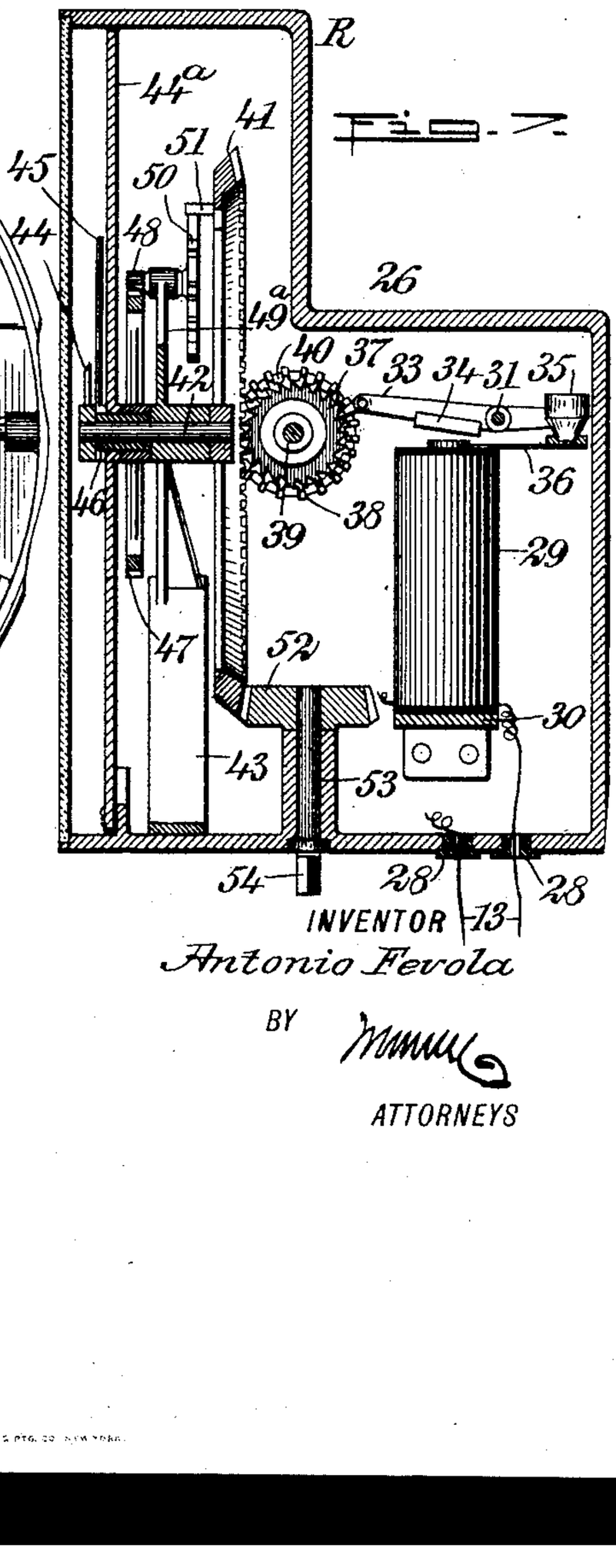


Fig. 7.



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UNITED STATES PATENT OFFICE.

ANTONIO FEVOLA, OF YONKERS, NEW YORK, ASSIGNOR OF ONE-HALF TO THOMAS LISA, OF YONKERS, NEW YORK.

REGISTER SYSTEM.

SPECIFICATION forming part of Letters Patent No. 787,163, dated April 11, 1905.

Application filed September 9, 1904. Serial No. 223,856.

To all whom it may concern:

Be it known that I, ANTONIO FEVOLA, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Register System, of which the following is a full, clear, and exact description.

My invention relates to systems for registering the number of persons passing some predetermined point, it being especially useful in recording the number of passengers carried by such a public conveyance as a street-car. Its principal objects are to provide a convenient apparatus which will operate but once for each passenger, giving a registration of the exact number using the vehicle.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a vertical longitudinal section taken through the contact device of one embodiment of my invention, shown as applied to a car. Fig. 2 is a horizontal section therethrough on the line 2 2 of Fig. 1. Fig. 3 is a broken top plan view of the contact device. Fig. 4 is a side elevation thereof, parts being broken away and a portion of the connected circuit being indicated. Fig. 5 shows the register in front elevation. Fig. 6 is a similar view with the face removed. Fig. 7 is a central vertical section therethrough, and Fig. 8 is a sectional detail showing the frictional connection between the ratchet-wheel and its shaft.

C designates a portion of a car or similar structure, having a platform P, to which lead steps S. Between the platform and the interior of the car is the usual door-opening, in which is mounted a rotatable door 10, having intersecting partitions 11 11, preferably separated by angles of ninety degrees. This door is constrained to rotate in one direction only by ratchet mechanism 12, thus furnishing an ingress-passage which, as illustrated, is at the right of the door-opening, considered from the side of the platform, and an egress-passage at the opposite side. Associated with the door, and shown in the present instance as situated at the ingress side and upon the platform, is a contact device, which may comprise a supporting member 13, suitably held in brackets 13^a below the platform and having openings, through which pass rods or projections 14, extending from a tread section or plate 15. This tread-section is supported by springs 16, which are shown as of spiral form and encircling the rods 14, and is limited in its downward movement by stop members 17. Fixed near the center of the support is a contact member 18, while the tread-section carries in alinement with this a companion contact member 19, which may be provided with a stem 20, operating in a socket 21 and held pressed normally outward at some distance from the socket by a spring 22, permitting the member 19 to yield and adapt itself to the movement of the tread-section. The springs 16 are preferably so selected that they offer a resistance to the weight of the person passing over the tread-section such that when this is less than a certain amount the movement will not be sufficient to make the contact. This provides for the passage over the contact device of persons so young or small that their weight will not effect registration and who would not be subject to the payment of a fare. The contact members are placed in circuit by conductors 23 with a suitable battery 24, which may be carried within a box or compartment 25 below the car-bottom, and with a register R. This register, as illustrated, comprises a casing 26, at each side of which is a lug 27, by which it may be secured in place upon the car-wall. In the lower portion of the casing openings may be formed, insulated by bushings 28, through which the conductors pass, and are connected to the winding of an electromagnet 29, conveniently supported upon a bridge or cross-bar 30. Extending transversely of the casing is a shaft 31, upon which is fixed a lever 33. This lever carries an armature 34, movable toward and from the magnet-poles, it being held normally out of contact therewith by a weight 35, situated upon the outer end of the lever. The upward movement of the armature may be limited by the contact of its weight with an arm 36, project-

ing from the magnet. Upon the opposite end of the lever from its weight is pivoted a pawl 37, which is held against upward movement, but is preferably permitted to yield downwardly. This pawl coöperates with a ratchet-wheel 38, mounted upon a transverse shaft 39, which has fast upon it a bevel-pinion 40. With this pinion meshes a bevel-gear 41, fixed upon a shaft 42, extending axially of the casing and journaled in a convenient support 43. At the forward end of this shaft is secured a hand or registering member 44, operating in proximity to a dial 44ª, divided at *a* into a suitable number of equal parts, here shown as one hundred. The dial is also provided with an inner series of divisions at *b*, these also, if desired, numbering one hundred. Over the latter scale moves a hand 45, fixed upon a sleeve 46, surrounding the shaft 42, the inner end of the sleeve having fastened upon it a gear 47, meshing with a small pinion 48 upon a shaft 49. This shaft is illustrated as journaled in an upward extension or arm 49ª from the support 43 and has fixed to rotate with it a toothed wheel 50, with which may contact a pin or projection 51 from the outer side of the gear 41.

When a passenger enters the rotating door, which he can only do at one side, his weight, if it be sufficient—say exceeding fifty pounds—depresses the tread-section until the members 18 and 19 contact. This closes the circuit and causes a current from the battery to energize the electromagnet, drawing down the armature, the pawl of which rotates the ratchet-wheel sufficiently to advance the hand 44 through one division of the scale *a*, indicating the advent of a passenger who must pay a fare. Upon the passenger leaving he passes through the egress-passage, and as this avoids the placing of his weight upon the tread-section there is no registration. It will be obvious that to maintain the integrity of this apparatus passengers will be prohibited from riding on the platform. As the weight of the person is removed from the tread-section the springs elevate it to its normal position, opening the contact device and breaking the circuit, which allows the weight 35 to raise the armature from the magnet-poles, the pawl yielding downwardly and slipping by the ratchet-teeth. When the hand 44 has completely encircled the scale *a*, the projection upon the gear 41 will come in contact with a tooth upon the wheel 50 and in its passage will rotate the associated gearing sufficiently to advance the hand 45 over one division of the scale *b*. This may continue until the last-named hand has made the round of its scale, when one hundred of the unit groups, or ten thousand passengers, will have been indicated.

If desired, means may be provided for restoring the hands to zero, this being illustrated in the present instance as consisting of a bevel-pinion 52, meshing with the gear 41 and being carried by a shaft 53, journaled in a suitable boss or bearing in the casing. The outer end 54 of this shaft may be of such form as to receive and permit its rotation by a key or the like in the possession of an inspector or other authorized person. To allow the hands to be moved in the reverse direction to that which they take in registering, the ratchet-wheel 39 may be connected with its shaft by a friction device, which is shown as consisting of a collar 55, fixed to the shaft, the ratchet-wheel being forced toward this collar by a nut 56, turning upon a threaded portion 56ª of the shaft. The nut preferably contacts with a metallic washer 57, while between this washer and the wheel and between said wheel and the collar may be interposed friction-washers 58 of leather or other suitable material. Thus it will be seen that the forcing of the ratchet-wheel against the upper side of the pawl under the influence of the rotation of the shaft 53 will cause the friction device to slip and the rearward movement of the hands to occur. The frictional engagement is sufficient, however, to provide for the normal operation of the gearing in registration.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a structure in which is an opening and a register associated with said structure, of a support mounted below the structure-opening and itself having a plurality of openings, a tread-section movable in the structure-opening and having projections extending through the tread-section openings, springs interposed between the support and tread-section and surrounding the projections, and contact members in circuit with the register, one of said contact members being carried by the tread-section and being movable independently thereof.

2. In a register system, the combination with a contact device, of an electromagnet in circuit therewith, a movable armature, a pawl pivoted thereon, a casing within which the electromagnet is mounted, a shaft extending transversely of the casing, a ratchet-wheel having frictional engagement with the shaft and which is engaged by the pawl, a bevel-pinion fixed to the shaft, a hand-shaft, a bevel-gear fast upon the hand-shaft and meshing with the pinion, a pin extending from the gear, a hand-sleeve rotatable about the hand-shaft, and gearing associated with the hand-sleeve and actuated by the pin.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ANTONIO FEVOLA.

Witnesses:
MARSTON VAN COTT,
JAMES CHINNERY.