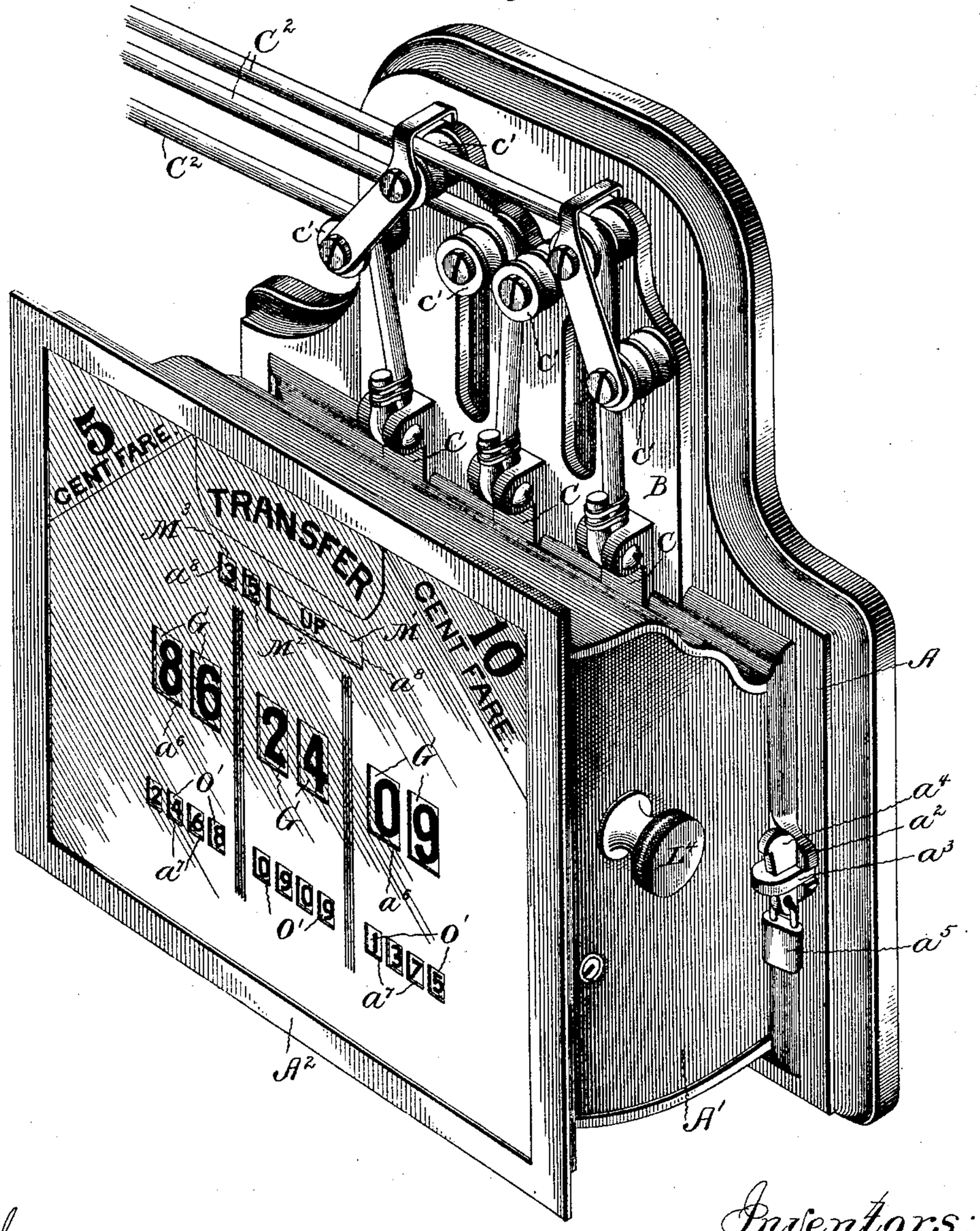
(No Model.) 11 Sheets—Sheet 1.

F. C. BOYD & C. E. GIERDING.

FARE REGISTER.

No. 559,321. Patented Apr. 28, 1896.

Fig. 1.



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(No Model.) 11 Sheets—Sheet 2.

F. C. BOYD & C. E. GIERDING.

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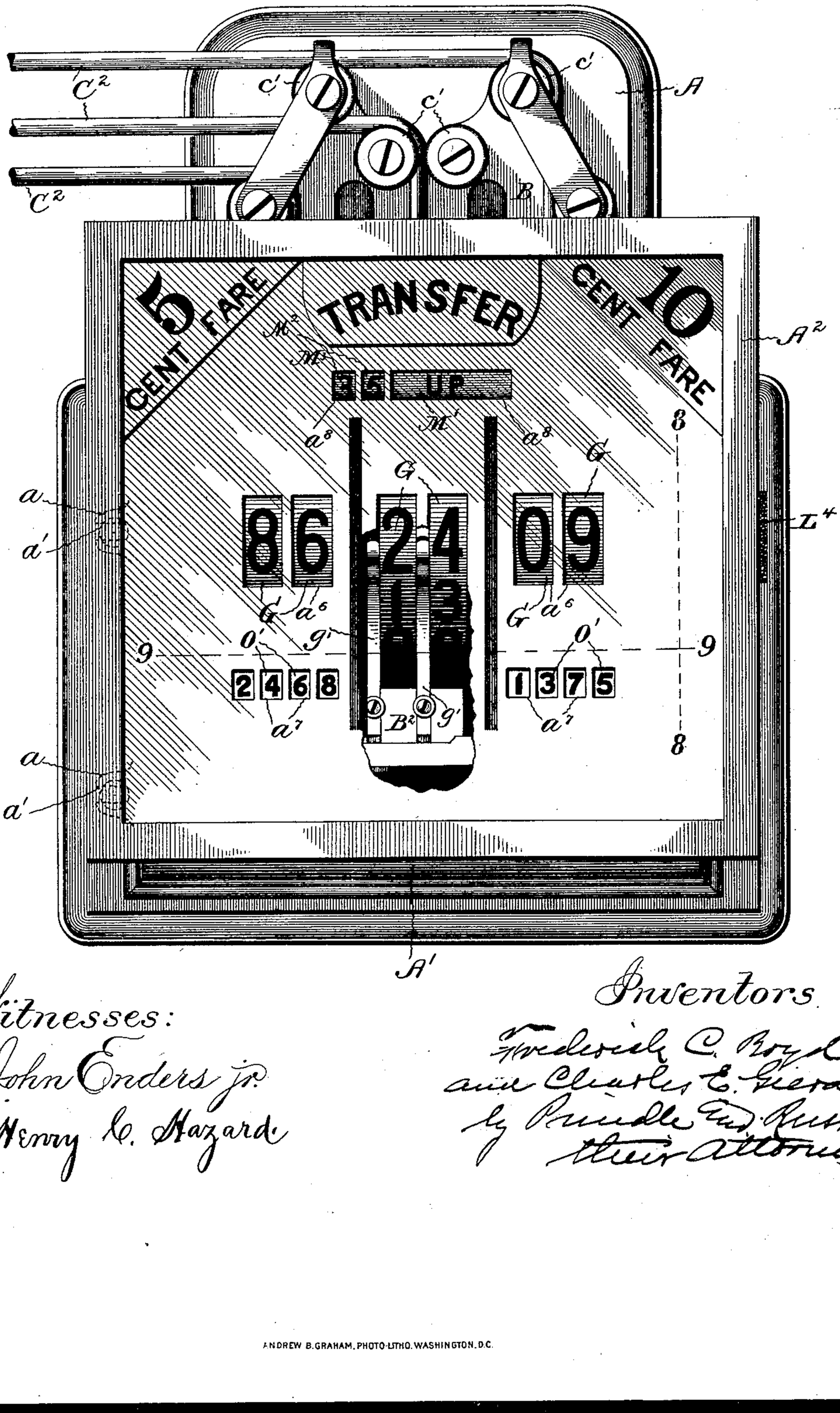
Fig. 2.



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(No Model.) 11 Sheets—Sheet 3.

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Fig. 3.

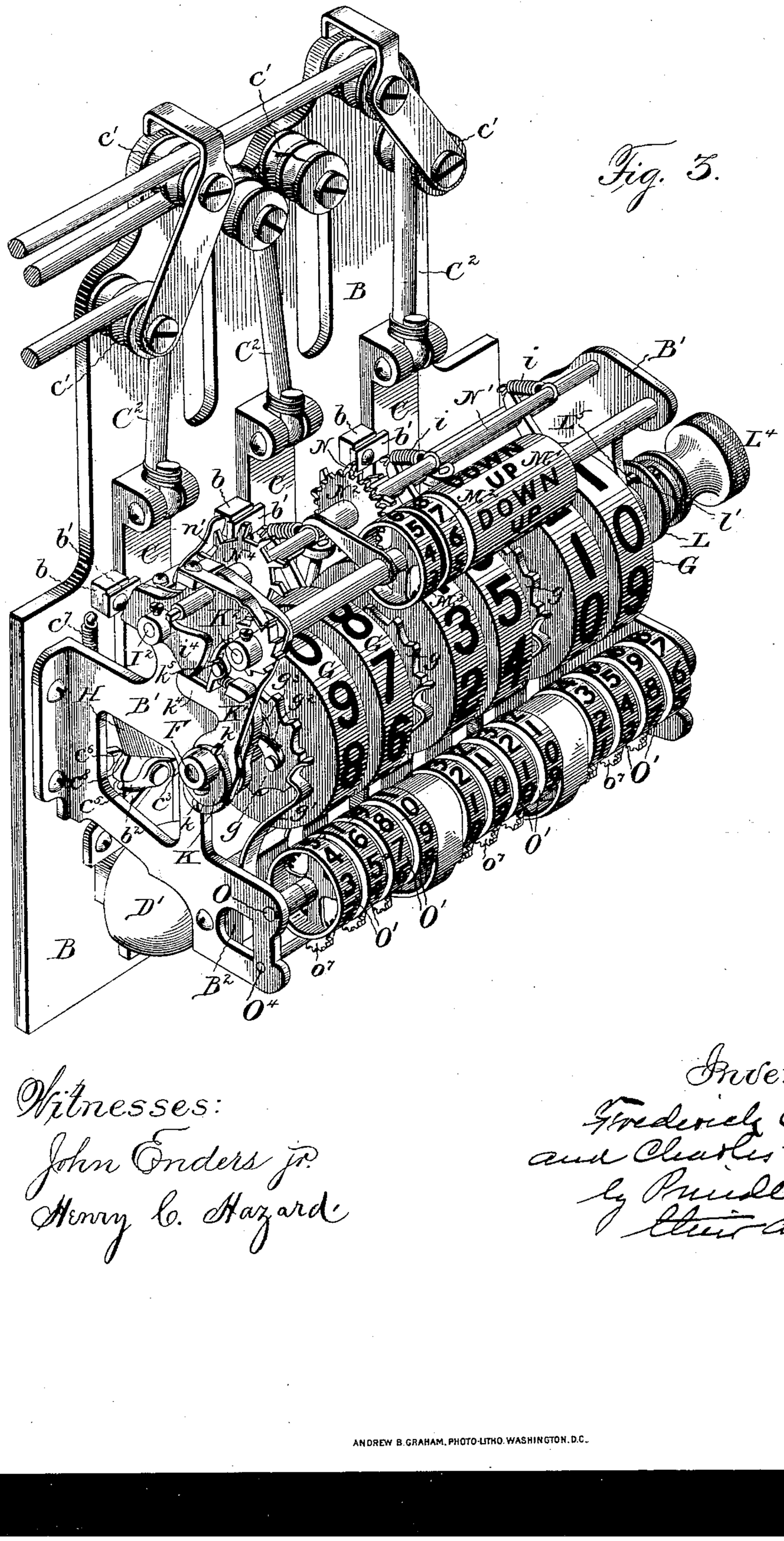

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Fig. 4.

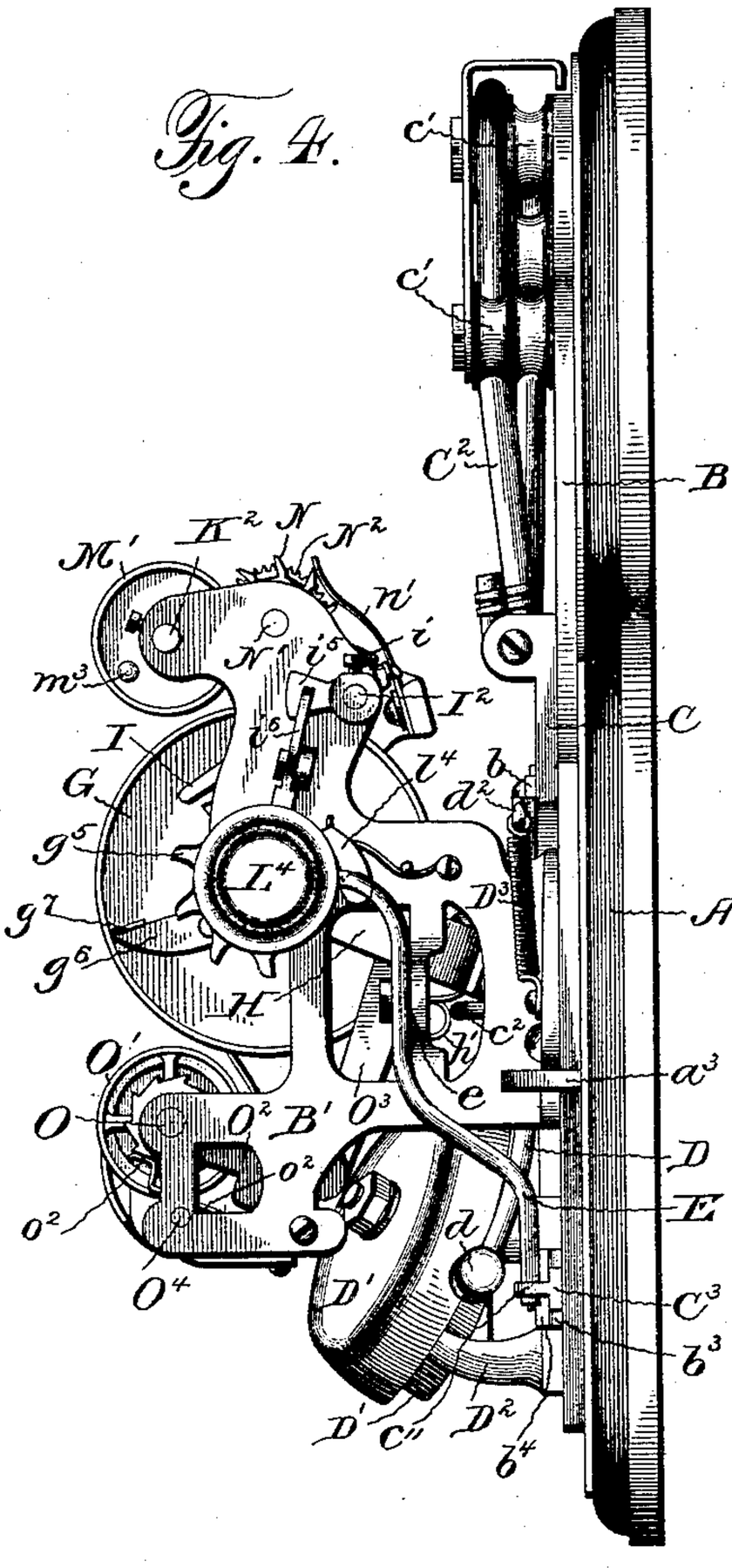
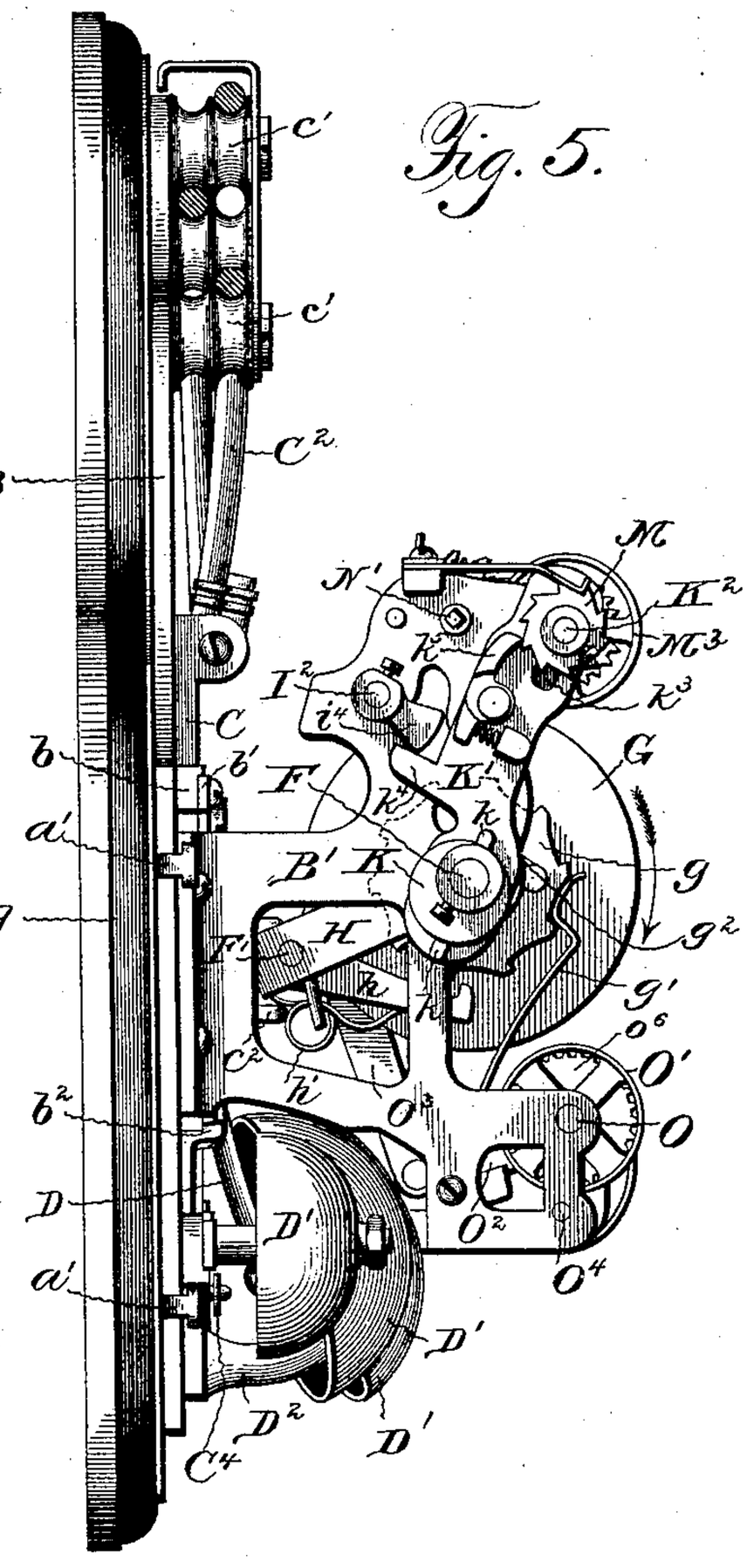


Fig. 5.



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FARE REGISTER.

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Fig. 6.

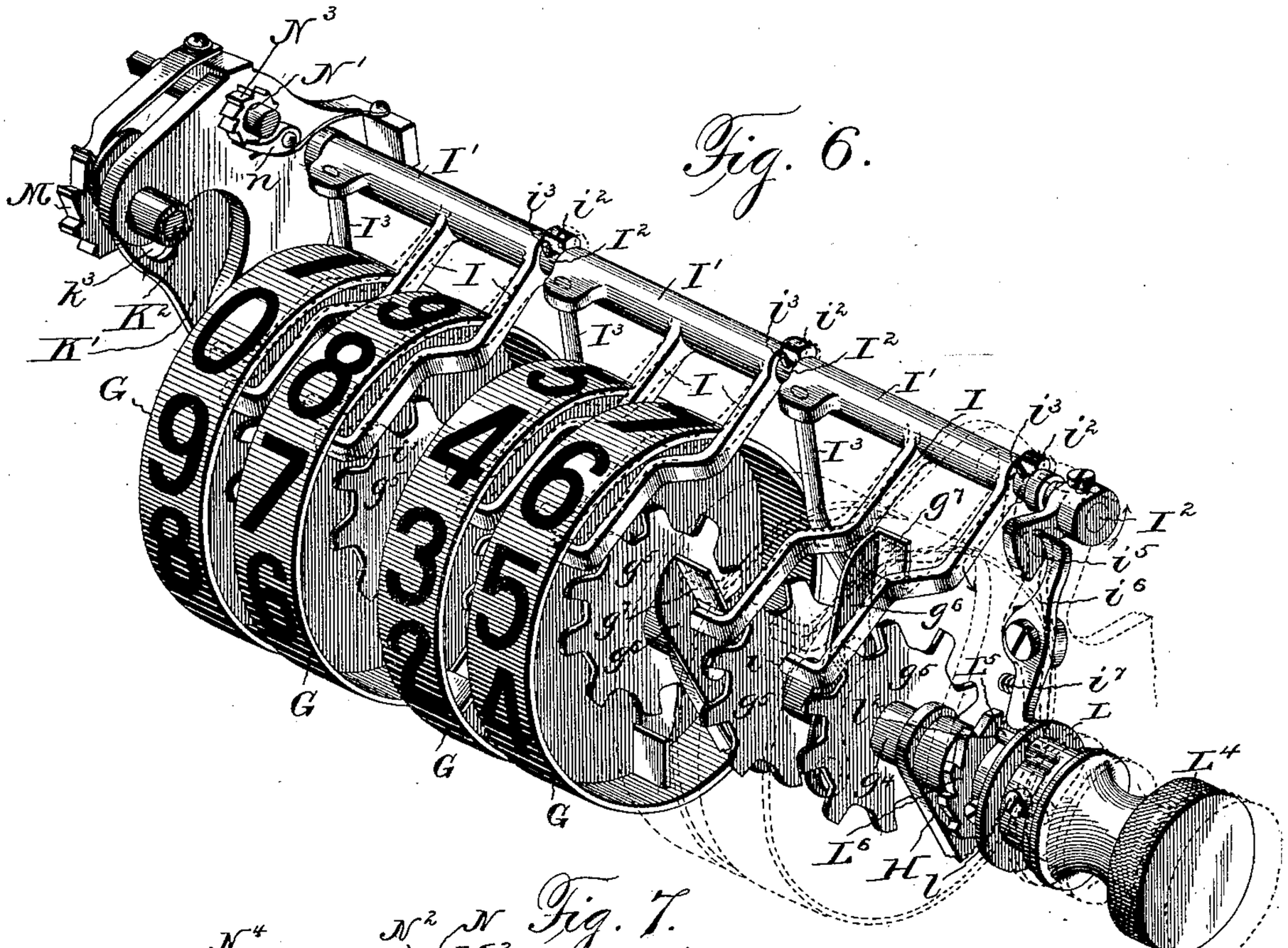

Fig. 7.

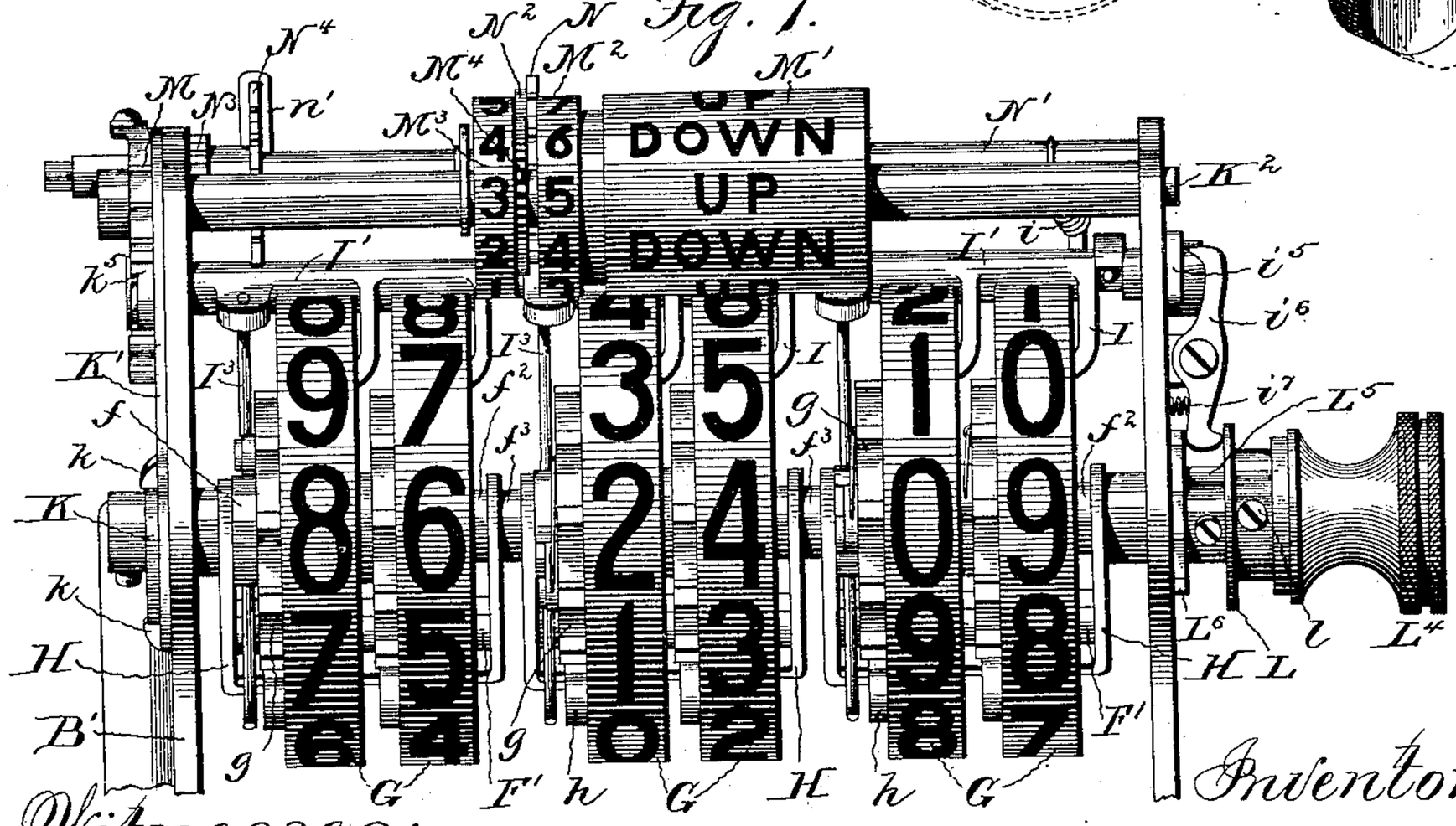

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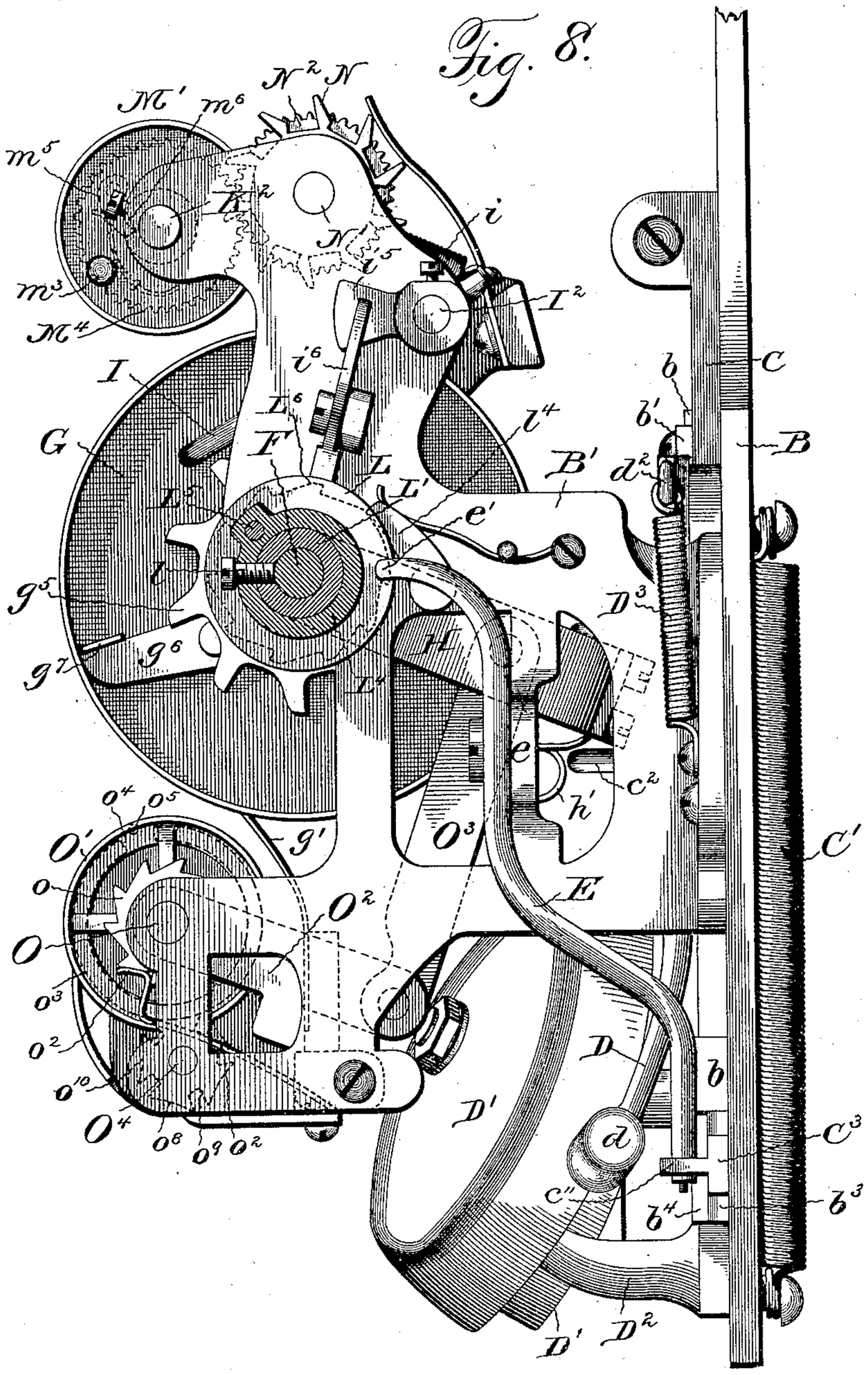
Fig. 8.



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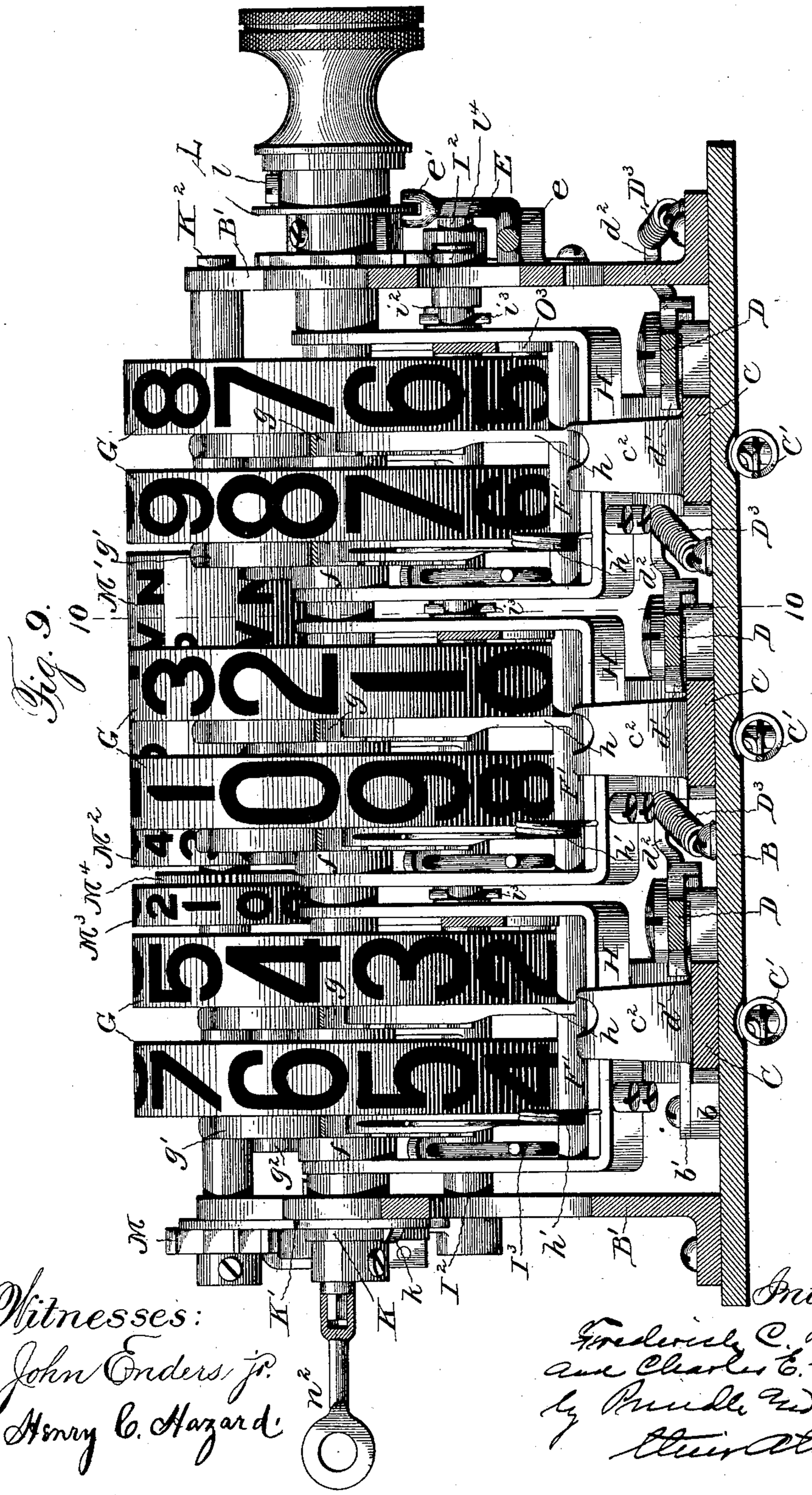

Fig. 9.

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FARE REGISTER.

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Fig. 11.

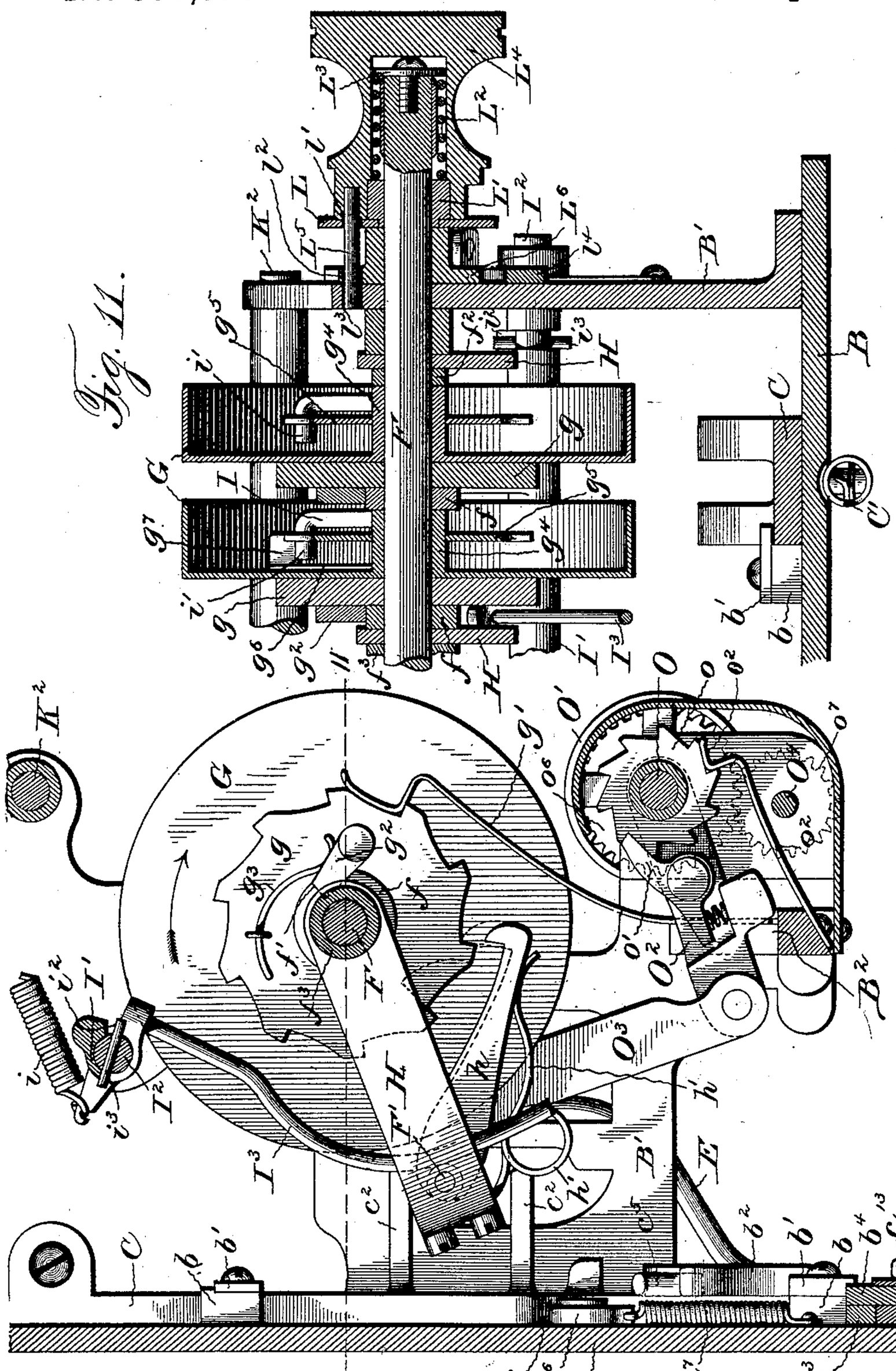
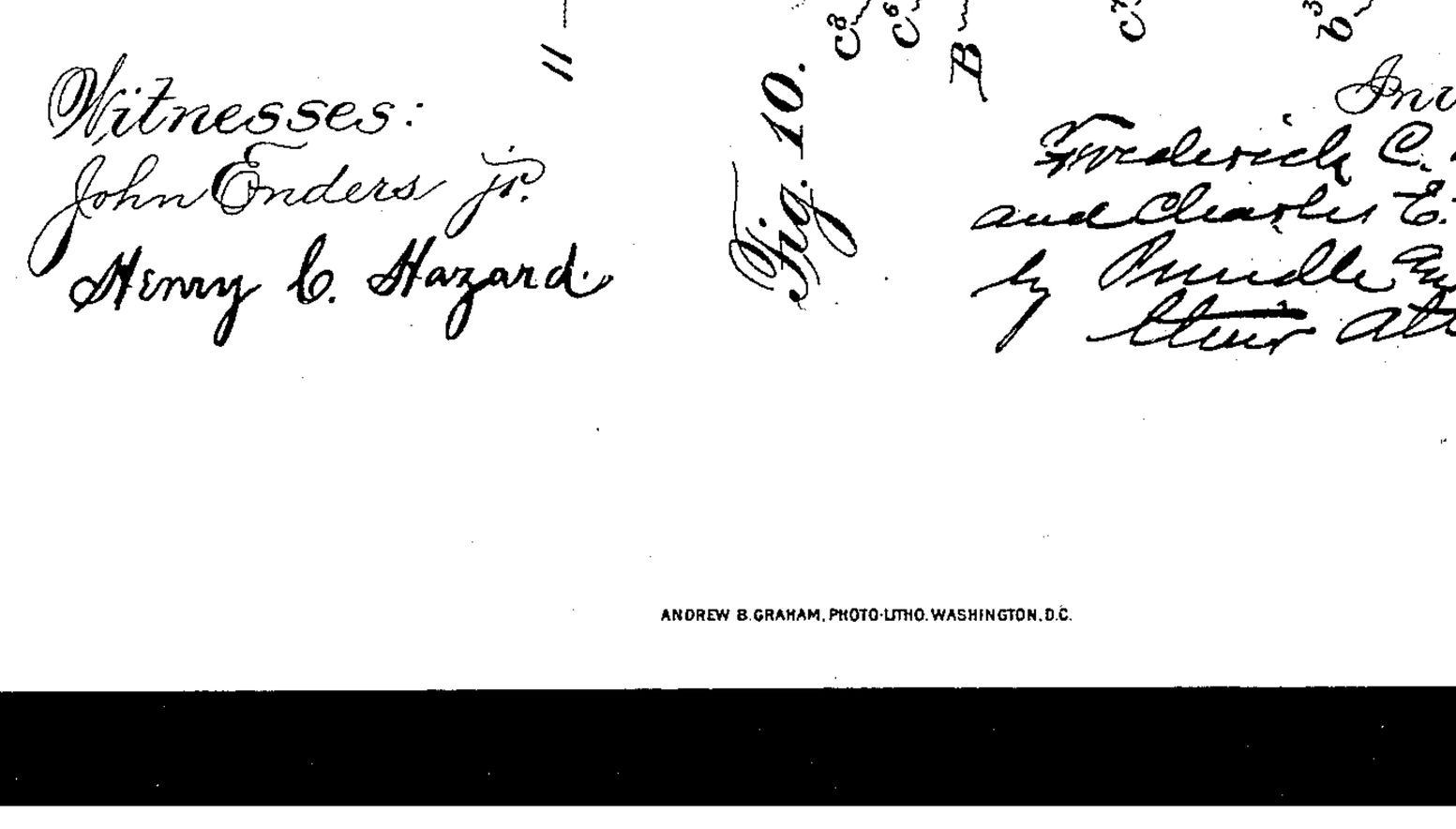


Fig. 10.



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FARE REGISTER.

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Fig. 12.

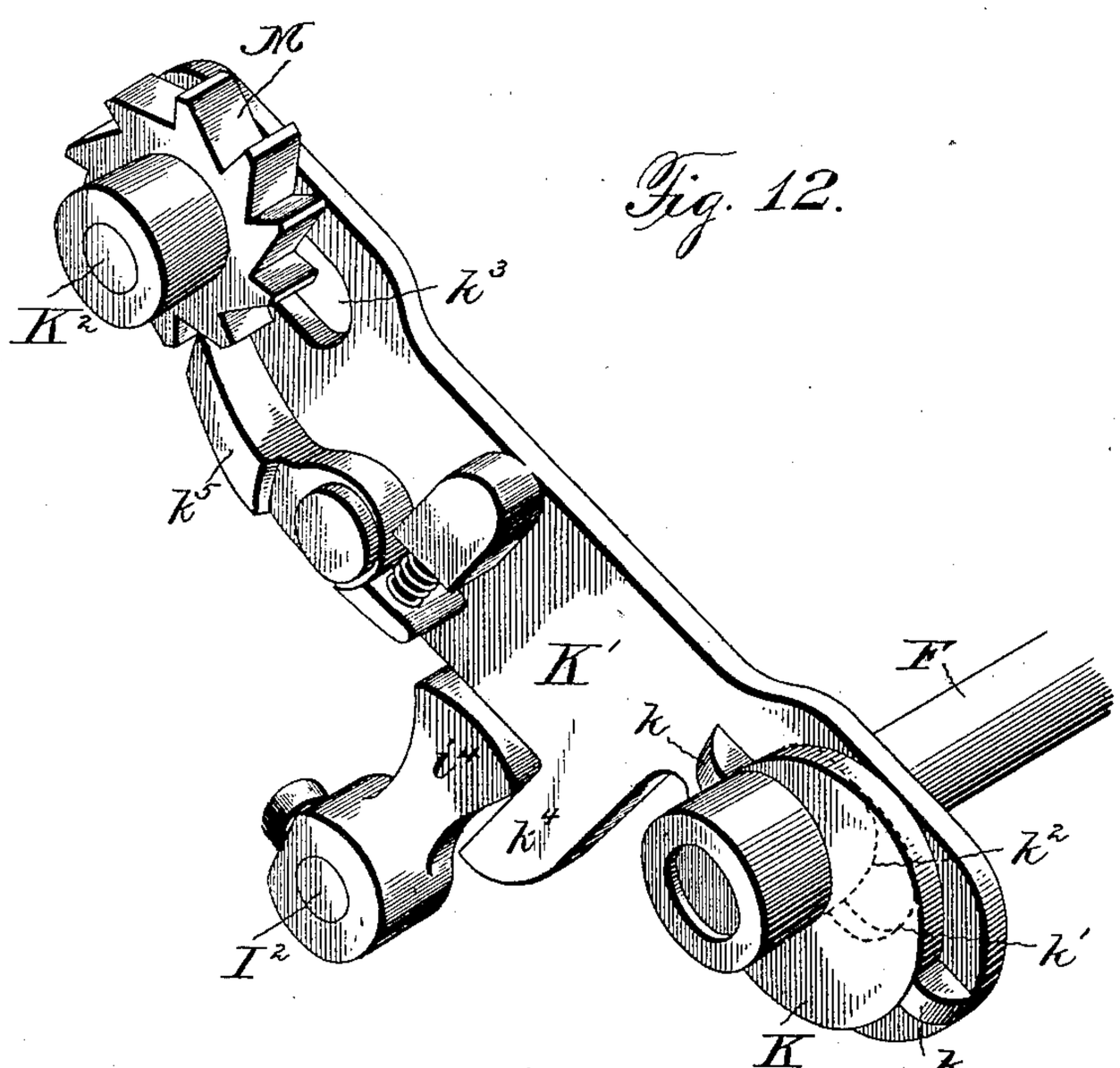
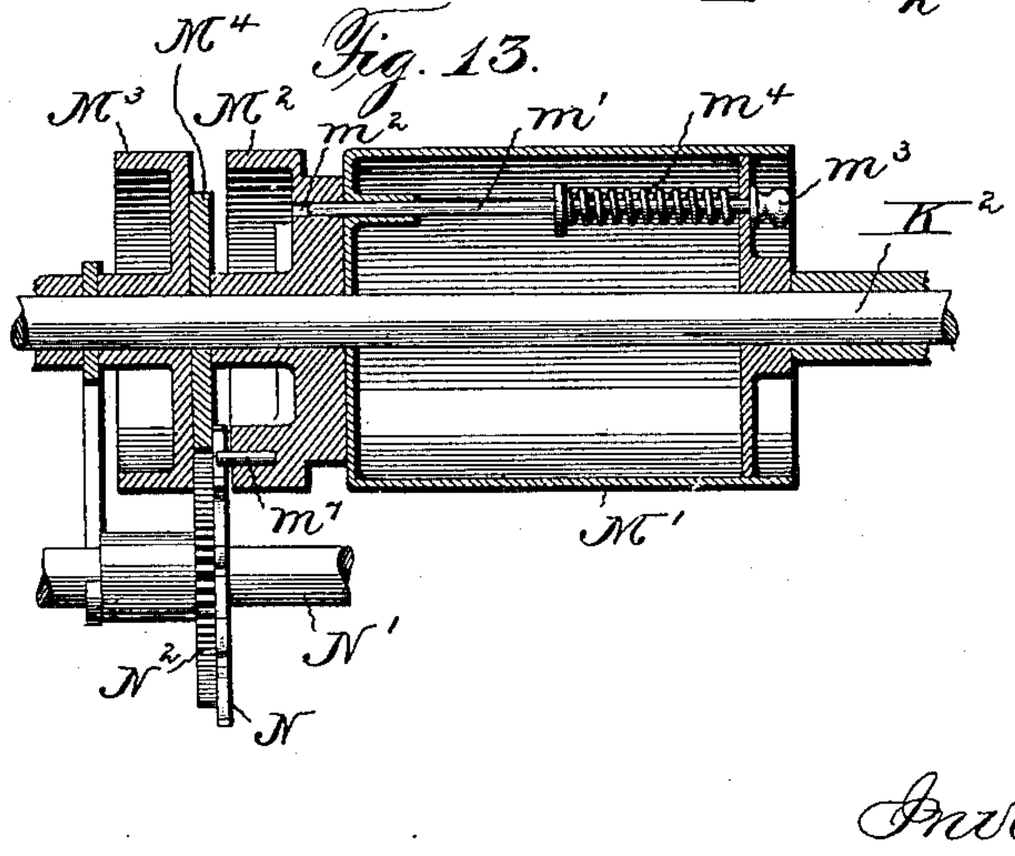


Fig. 13.



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F. C. BOYD & C. E. GIERDING.

FARE REGISTER.

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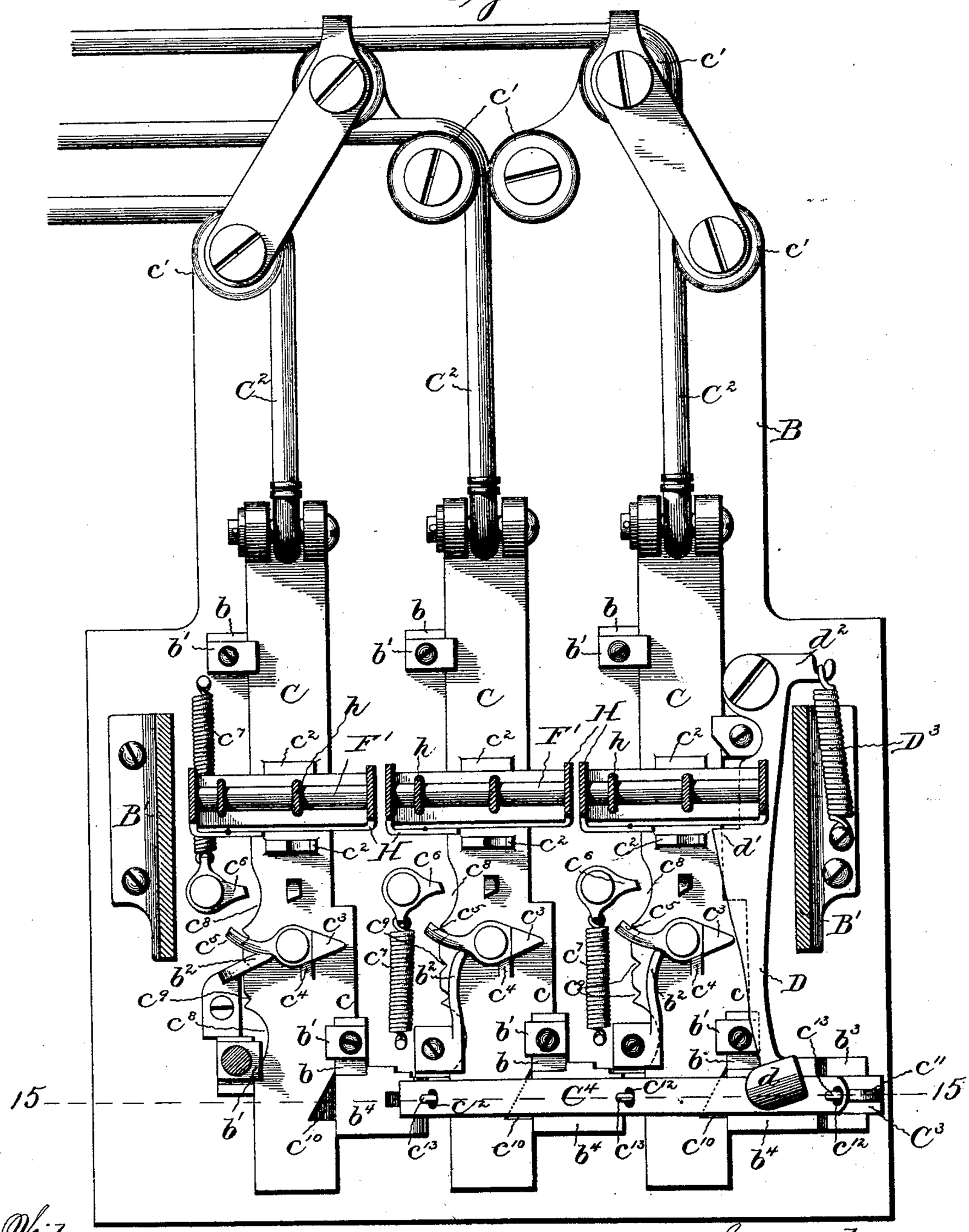
Fig. 14.



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F. C. BOYD & C. E. GIERDING.

FARE REGISTER.

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Fig. 15.

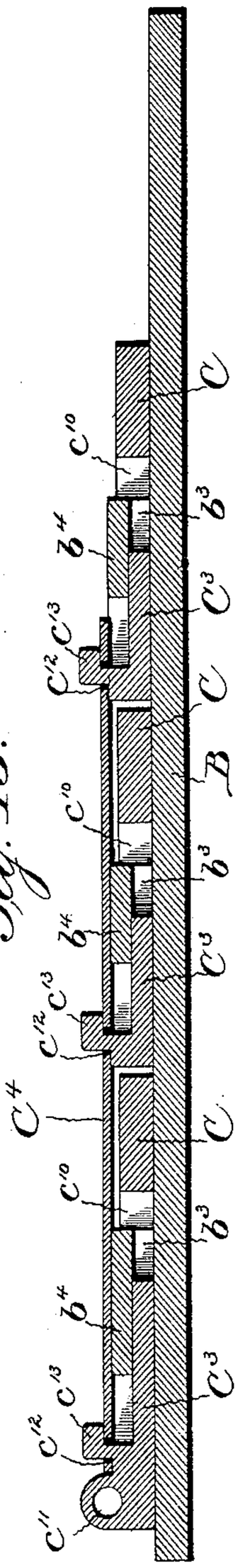
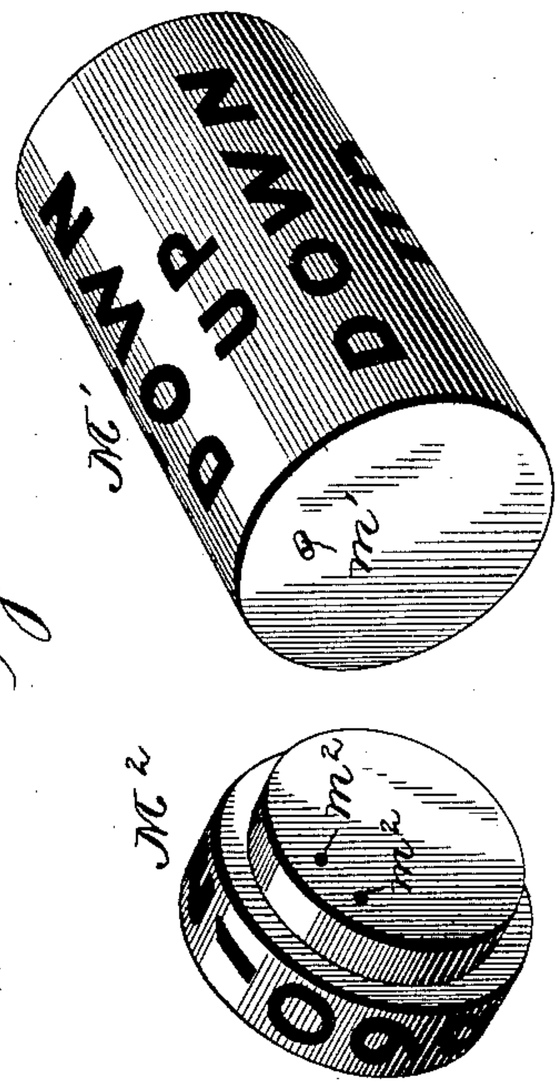


Fig. 16.



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UNITED STATES PATENT OFFICE.

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FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 559,321, dated April 28, 1896.

Application filed May 7, 1895. Renewed January 24, 1896. Serial No. 576,741. (No model.)

To all whom it may concern:

Be it known that we, FREDERICK C. BOYD and CHARLES E. GIERDING, of New Haven, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Fare-Registers; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a perspective view of our machine as arranged for use; Fig. 2, a view of the same in front elevation with a portion of the front of the casing and a portion of one of the totalizing-registers removed; Fig. 3, a perspective view of the same with the casing removed; Fig. 4, a view showing in side elevation the machine with the casing removed; Fig. 5, a similar view from the other side of the machine; Fig. 6, a detail perspective view, on an enlarged scale, showing the operation of the zero-stop devices; Fig. 7, a detail view, on an enlarged scale, showing in front elevation the means for setting the trip-register and operating the zero-stop devices; Fig. 8, a view, on an enlarged scale, of a section on line 8 8 of Fig. 2; Fig. 9, a similar view of a section on line 9 9 of Fig. 2; Fig. 10, a view of a section on line 10 10 of Fig. 9, showing the means for operating the dogs to prevent overthrow of the register-wheels as the respective actuating-slide is moved; Fig. 11, a view of a section on line 11 11 of Fig. 10; Fig. 12, a detail perspective view showing, on an enlarged scale, the mechanism for rocking the shaft carrying the arms to engage the zero-stops on the register and rotating the zero-register and direction-indicating cylinder; Fig. 13, a view of a longitudinal section of the direction-indicating cylinder and zero-registering wheels, showing the connections between such wheels and those between the cylinder and units-wheel which allow of setting of the cylinder with reference to such wheel; Fig. 14, a view in front elevation showing the trip-register-actuating mechanism with the register-wheels and alarm-bells removed; Fig. 15, a detail view showing, on an enlarged scale, a transverse section of the slide-locking devices on line 15 of Fig. 14; and Fig. 16, a detail perspective view showing the connections between the trip-indicating cylinder and the units-wheel of the zero-register.

Letters of like name and kind refer to the same or like parts in each of the figures.

The object of our invention has been to provide an improved fare-register; and to this end our invention consists in the apparatus and in the parts thereof constructed, arranged, and combined as hereinafter specified.

While we shall show and describe our invention as embodied in a triple machine for registering the receipts of two fares of different rates and transfers, we desire it to be understood that the machine can be adapted to register a greater or smaller number of different fares, with or without transfers, by increasing or diminishing, accordingly, the number of registering mechanisms within the casing and changing the display-openings and markings of the casing-front to correspond with the kinds of registrations to be made.

In the machine shown in the drawings there are three different series of trip-registers with totalizing-registers, and one direction-indicator, with registering mechanism to keep account of the number of trips.

As the machine is intended to register the receipt of both five and ten cent fares and transfers separately, the front of the casing is provided with suitable markings adjoining the display-openings to indicate the kinds of fare which are to be kept account of by the respective registering-wheels, whose numbered fares appear through the openings. The markings on the casing-front, as shown in Figs. 1 and 2, consist of the word "Transfer" above the central display-opening and the combinations of figures and words "5-cent fare" and "10-cent fare" adjoining the right and left hand openings, respectively. Obviously these markings can be changed, as desired, if the machine is to be arranged to register only different fares without transfers, or fares and tickets, since the series of registering-wheels are arranged to register or add up units of any denomination.

Should it be desired to register fares or

tickets of only one denomination, all but one of the series of registers with their actuating devices and totalizers can be dispensed with and the machine can be made correspondingly narrower than that shown, the casing having then to have only the display-openings for the single-trip register, the totalizer therefor, and the direction-indicator with its zero-register.

As will be seen from the drawings and the description hereinafter given, the construction of our mechanism especially well adapts it to any desired change as to the number of series of register-wheels with their actuating devices to suit it for the registration of any desired number of different units, whether payments of money of different values, tickets, transfers, or other things.

In the drawings, A designates the back to which the machine is fastened and upon which it is supported, such back being adapted to be attached to the wall or end of a car or other support. Secured to this back by forked lugs a a, engaging headed studs a' a' on the back A, and a forked lug a^2, engaging slotted stud a^3, also on the back, and held down in engagement with such stud by a tapered pin a^4, passing through a slot in the latter and held in place therein by lock a^5, is the casing A', having the hinged front A^2, provided with glass-covered openings a^6 a^6 a^6 for the main or trip registers, a^7 a^7 a^7 for the totalizers, and a^8 a^8 a^8 for the direction-indicating cylinder and register.

As indicated hereinbefore, there are on the front of the casing of the present machine markings which indicate that the register-wheels displayed through the openings on the left and right, respectively, register five-cent and ten-cent fares, while those displayed through the middle openings register receipts of transfers.

Fixed within the casing A' is the frame for supporting the operating parts of the apparatus. Such frame consists, broadly, of the bed-plate B, having the uprights B' B', standing at right angles to it. Guided between pairs of lugs b b b b on this bed-plate are the reciprocating slides C C C, one for each fare or other unit to be registered, which are held in place between the lugs by the clips b' b' b' b', attached to the lugs and projecting over portions of the outer or front faces of the slides. Each slide has a shoulder c, adapted to engage one of the lugs b, so as to limit its motion in a downward direction under the stress of its retracting-spring C', which, being attached at one end to a lug on the rear side of the slide projecting through a slot in bed-plate B, has its other end fastened to the bed-plate B. The upper end of each slide is connected with a pull-cord C^2, by which it can be drawn up against the stress of its respective spring, such cord being guided in any desired direction over one or more pulleys c', journaled upon extensions of the bed-plate B. Upon the front face of each slide are two lugs c^2 c^2, which are to engage and move a swinging frame, to be hereinafter described, as the slide is reciprocated.

A bell-striking lever D, (see Figs. 8 and 14,) provided with a suitable striker-head d, is pivoted to the bed-plate B near each slide, and has a shoulder d', with its under side inclined and its upper side abrupt, as shown in Fig. 14, adapted to be engaged by the trip-pawl c^3, pivoted upon the slide. The downward swing of the lever D, engaging the nose of this pawl, is limited by the lug c^4 on the slide, so that as the slide is pulled up against the stress of spring C' the pawl is held from yielding, and, riding up along the inclined side of shoulder d', cams the striking-lever D outward to carry its head d away from the bell D', secured on support D^2 on the bed-plate B. A spring D^3, engaging the arm d^2 of lever D, (see Fig. 14,) yields as the lever is thus forced back by pawl c^3, and then, as the latter passes over the abrupt upper end of shoulder d', swings the lever inward again to strike the bell and sound an alarm. As the slide descends again, the nose of the pawl, striking the abrupt upper end of the shoulder, yields and swings upward on the slide. After it has thus passed below the shoulder d' it is swung into its normal position against lug c^4 by the engagement of its tail c^5 with the arm b^2 on the bed-plate B.

To insure a full movement of each slide in either direction before it returns, we employ substantially the same mechanism which is employed for that purpose in the machine shown and described in our United States Patent No. 520,912. This consists of a pawl c^6, pivoted to the bed-plate B at a point close to the respective slide C, engaged by a spring c^7, which tends to hold it, with its nose projecting inward, toward the slide in a direction substantially at right angles to the side of the latter. The radial length of this pawl is greater than the distance between its pivot and the slide, so that it cannot swing into its normal position under stress of its spring excepting when the recesses c^8 c^8 in the side of the slide come opposite the pawl-pivot. These recesses being so situated that they are brought opposite such pivot, as the slide reaches the upper and the lower limits of its movement, respectively, have their sides which are toward each other inclined, as shown, so as to cam the nose of the pawl easily outward to let them pass as the slide is reciprocated. The portion of the side of the slide which is between these recesses is provided with a series of notches c^9 c^9, over which the pawl rides as the slide moves in either direction. Any return movement of the slide before the recess c^8 at the end of the series of notches is brought to the pawl will cause the positive engagement of one of such notches with the nose of the pawl, so that the slide is only free to continue its motion in the same direction as before until such motion is completed. Near its lower end each slide is provided with a

locking-notch c^{10} to be engaged by a locking-bolt C^3, (see Figs. 14 and 15,) which, reciprocating at right angles to the slide, is guided between guide-ribs b^3 b^3 on the bed-plate B, being held down in place between such ribs by plate b^4. This notch is preferably made ratchet-shaped, having its upper side inclined, as shown, and the engaging nose or end of the bolt is similarly shaped.

The bolt C^3, which is arranged to lock the slide which, being at the right hand of the machine, is to actuate the ten-cent-fare register-wheels, is provided with an eye c^{11}, which is engaged by the end of the lever E, (see Fig. 8,) pivoted to one of the frame-uprights B′ at *e*. A plate C^4, provided with slots c^{12} c^{12} c^{12}, engaging lugs c^{13} c^{13} c^{13} on the respective bolts, serves to connect them all and cause them to move simultaneously to lock and unlock the bolt as the end of lever E which engages eye c^{11} is moved in and out, respectively. The other end of this bolt-actuating lever is forked at *e′* for a purpose to be explained hereinafter.

Journaled in bearings in frame-uprights B′ B′ is the main shaft F, upon which are rotatively mounted the three sets of trip-register wheels G G G. As shown, there are two of these wheels in each set; but, if desired, there can be three or more without departure from our invention. Each of these wheels has its periphery provided with numbers running consecutively from "0" to "9," inclusive, and on one side has attached to and rotating with it a ratchet-wheel *g*, (see Fig. 10,) having ten teeth, which are engaged by a spring-pawl *g′*, attached to the cross-bar B^2 of the frame and adapted by its engagement with the ratchet-wheel teeth to hold the respective numbered wheel G normally at rest in position to display one of its figures through the opening in the casing-front. As the wheel is turned during the operation of the machine to bring another figure to the opening the spring-pawl *g′* yields to permit the passage of a ratchet-tooth under it, and then snaps in between such tooth and the succeeding one to hold the wheel as turned. Upon the side of each of these ratchet-wheels *g* we pivot a pawl g^2, engaged by a spring g^3 and having its nose arranged to engage a collar *f*, fixed on the shaft F, such collar being provided with a notch *f′*, which, as the shaft is rotated in the direction indicated by the arrow in Figs. 5 and 10, will engage the pawl and then cause the ratchet-wheel *g* carrying the pawl, and consequently the wheel G to which the ratchet-wheel is attached, to rotate forward with the shaft. Upon its side opposite to the ratchet-wheel *g* each wheel G has a hub g^4, upon which is fixed a ten-toothed wheel g^5. (See Figs. 4, 6, 8, and 11.) A plate g^6, fixed to wheel G on the same side as wheel g^5, has a lug g^7, forming a zero-stop, situated beyond the periphery of the latter wheel, so as to leave a space between it and the teeth of such wheel.

For each pair of wheels G G there is a swinging frame H, having its arms extending upwardly on opposite sides of the pair pivoted upon the shaft F. A washer f^2 is placed upon the shaft between the end of the hub of the right-hand wheel of each pair and the adjoining arm of the respective swinging frame, and another washer f^3 is preferably placed between the adjoining arms of the separate frames. Each of such frames has its cross-bar situated between the lugs c^2 c^2, so as to be swung thereby as the slide is reciprocated, and also has a transverse rock-shaft F′ pivoted in its arms between the cross-bar and the shaft F. This rock-shaft, like the one shown and described in our patent above referred to, carries fixed to it several pawls *h* *h*, one for each ratchet-wheel *g* on the register-wheels G G, to be turned as the frame is swung, which pawls are held pressed toward their respective ratchet-wheels by springs *h′*, each of which is attached at one end to the frame H and at the other bears upon one of the pawls. As in the mechanism shown and described in said patent, these pawls have their noses or portions to engage the ratchet-wheels of different lengths, the one on the pawl for actuating the units-wheel G being longer than that for the next or tens wheel, and the ratchet-wheel which is attached to the units-wheel has one of the spaces between its teeth made deeper than the others, so that as the long nose of its actuating-pawl *h* falls into such deep space the shorter nose of the other pawl can engage a tooth of the ratchet-wheel on the tens-wheel G, so as to rotate the two latter connected wheels one space as the pawl-carrying frame is swung upward by its actuating-slide. The deeper space in the units ratchet-wheel is so arranged as to be brought around to the respective actuating-pawl when the units-wheel G has been rotated to bring the figure "9" around opposite the display-opening.

Where three register-wheels are used in each set instead of the two shown in the present case, the three-pawl arrangement with correspondingly-constructed ratchet-wheels set forth in our patent referred to can be employed.

To prevent overthrow or over-registration as a frame H is swung to actuate the respective register-wheels, we provide for each toothed wheel g^5 a stop-dog I, (see Figs. 4, 6, 7, 10, and 11,) attached to a rocking sleeve I′, journaled upon the shaft I^2, which is journaled in the uprights B′ B′ of the frame of the machine. A spring *i*, attached at one end to an arm on this sleeve and at the other to a support on the machine-frame, as the shaft N′, to be hereinafter described, tends to move such sleeve so as to carry the arm or lug *i′ i′* on the stop-dogs down between the teeth on the toothed wheels g^5 g^5. A curved arm I^3, attached to the sleeve and engaging the rock-shaft F′, is so shaped as to hold the sleeve I′ turned against the stress of spring *i*, so

as to keep the stop-dogs I I away from the toothed wheels until the pawl-carrying swinging frame has swung a certain distance in its register-actuating direction, and then allow the sleeve to rock to bring the stop-dogs thereon into position to engage the teeth on the respective wheels g^5 g^5 as the travel of the slide is completed and before the register-wheels can be thrown beyond their proper position. The curvature of the arm I^3 with reference to the travel of the rock-shaft F' with the swinging frame H is such that the stop-dogs I I are normally held swung inward, so as to be out of the paths of the zero-stops g^7 g^7 on the respective wheels G G, leaving the latter free to be turned forward by the step-by-step actuating mechanism to carry the zero-stops past the stop-dogs in the continued operation of the machine.

On one end of each sleeve I' is a shoulder i^2, to be engaged by a pin i^3 on rock-shaft I^2, such pin being situated so as to be normally out of engagement with said shoulder while the sleeve is turned to hold its stop-dogs I I away from the toothed wheels g^5 g^5, or is rocked to carry the dogs in between the teeth of the latter in the manner above described, and to engage the shoulder and rock the sleeve when the shaft I^2 is turned in the direction indicated by the arrow in Fig. 6. This backward rocking of the sleeve by the shaft I^2 is sufficient to move the stop-dogs I I out into the paths of the zero-stops g^7 g^7 on the wheels G G as the latter are turned to set them to zero, and the stop-engaging lugs i' i' of the dogs are so situated as to be engaged by the stops when the wheels have been rotated to bring their zero-marks opposite the display-openings.

To rock the shaft I^2 to hold the stop-dogs out in the paths of the zero-stops while the register-wheels are being set to zero and to insure that the dogs shall be out of such paths during the normal operation of the machine and free to act as devices to prevent over-registration, we have provided certain shaft rocking, holding, and tripping devices connected with and operated by the register-wheel-setting mechanism. For this purpose the shaft F, which, as we have have already set forth herein, has fixed on it collars with notches f' f', to engage the pawls g^2 g^2, so as to cause the register-wheels G G to rotate with the shaft when the latter is turned in a direction which is forward with reference to the rotation of the wheels during the registration, is on one end provided with an eccentric cam K, engaging on its opposite sides the lugs k k (see Fig. 12) on the sliding plate K', guided at one end by a longitudinal slot k', engaging the hub k^2 of the cam, and at the other end by a similar slot k^3, engaging the shaft K^2, journaled in the side plates or uprights B' B' of the machine-frame. An arm k^4 (see Figs. 3, 5, and 12) on plate K' is in position to engage an arm i^4, fixed on rock-shaft I^2, so as to turn such shaft to swing the stop-dogs out into the paths of the zero-stops g^7 g^7, when the cam K, turning with shaft F, moves the plate K' longitudinally toward shaft K^2. The relative position of arms k^4 and i^4 is such that the rock-shaft is turned back in the manner described before the register-wheels have turned with shaft F far enough to bring their zero-markings around to the display-openings.

It will be understood that the rocking of rock-shaft I^2, caused by the camming outward of plate K', swings the stop-dogs outward because of the engagement of pins i^3 i^3 on shaft I^2 with the shoulders i^2 i^2 on the dog-carrying sleeves I' I'. To hold the rock-shaft I^2 as thus rocked, so as to maintain the stop-dogs in position to engage the zero-stops as the wheel-setting rotation of shaft F is continued and the plate K' is retracted by the action of cam K, the other end of such rock-shaft is provided with another arm i^5, fixed to it so as to swing close to the adjoining frame-upright B'. Pivoted to such upright near this arm is a spring-pressed pawl i^6, having its nose adapted to snap down behind arm i^5 when the rock-shaft has been rocked to swing the stop-dogs outward. The spring i^7 then holds such pawl in position to lock the arm, and consequently the rock-shaft, from return movement. The tail of this pawl is in position to be engaged and moved inward to cause a releasing of arm i^5 by the collar L on the sleeve L' sliding upon the end of shaft F and normally pressed inward on the latter by the spring L^2, (see Fig. 11,) surrounding the shaft between sleeve L' and a head L^3, secured to the outer end of the shaft. The inward travel of the sleeve L' under stress of this spring causes the collar L to press the tail of pawl i^6 inward to cause it to release the arm i^5 on the rock-shaft I^2, so that the springs i i i can rotate the sleeves I' I' I' to move the stop-dogs into their normal positions again. This rotation of sleeves I' I' by the springs returns the rock-shaft to its normal position again, because of the engagement of shoulders i^2 i^2 i^2 with pins i^3 i^3 i^3.

Secured to sleeve L' by means of a screw l (see Figs. 6, 7, and 9) is the turning-knob L^4, by which shaft F is to be rotated to set the register-wheels to zero. This knob, being made hollow to accommodate the end of shaft F and the spring L^2 as the knob is moved in and out with reference to the shaft, has a pin L^5, which, passing through holes l' and l^2 in collar L and ratchet-wheel L^6, respectively, is adapted to be brought into and out of engagement with hole l^3 in the adjoining frame-upright B' by in-and-out reciprocation of the knob on the shaft. The ratchet-wheel L^6 being fixed on the shaft F, so that the latter must turn with it as it is rotated by the pin L^5 on the knob, is engaged by a spring-pressed pawl l^4, so as to prevent the shaft from being rotated to any considerable extent in a backward direction when the knob L^4 has been pulled out to disengage pin L^5 from hole l^3.

The engaging-nose of this pawl l^4 is so situated with reference to a tooth of the wheel L^6 when the shaft is at rest in its normal position as to allow a slight backward rotation of the shaft, but only enough to carry the pin L^5 of the pulled-out knob out of line with hole l^3, so that it will rest against upright B′ and keep the knob in its outward position.

The collar L engages the fork e' (see Fig. 9) in the end of lever E, so that as long as the knob L^4 is pulled out from its normal inward position said lever will hold the bolts C^3 C^3 C^3 in position to lock the actuating-slides C C C to prevent operation of the same. Inward movement of the knob under stress of spring L^2 will then swing lever E so as to retract all the bolts and leave the slides free to be moved for the ordinary operation of the machine.

The described arrangement of ratchet-wheel L^6 and pawl l^4, by allowing the knob and shaft to be turned back enough to bring the pin L^5 out of line with hole l^3 and against the frame-upright which keeps the pin and knob in their outward position, makes possible the ready locking of the machine against operation by unauthorized persons pulling on the pull-cords should the conductor wish to temporarily leave the car. For such locking all that the conductor has to do is to pull out L^4, turn it to the right as far as pawl l^4 and ratchet-wheel L^6 will allow, and then let it go. To throw the machine into operative condition again, the knob is simply turned to the left until its pin L^5 comes to hole l^3, and is then allowed to fly inward under stress of spring L^2. The shaft K^2 is provided with a ten-toothed ratchet-wheel M, engaged by the spring-pressed pawl k^5 on sliding plate K′, so that at each outward reciprocation of such plate by the action of cam K as the shaft F is rotated to set the wheels G G to zero the ratchet and shaft will be given a one-tenth rotation. Fixed upon this shaft K^2 is the direction-indicating cylinder M′, having on its periphery the markings to indicate the direction of successive trips. As shown, such markings consist of the alternating words "Up" and "Down," so arranged that the step-by-step rotation of the shaft K^2 by pawl k^5 will bring them successively to the display-opening a^8 in the upper part of the casing-front. A register-wheel M^2 upon shaft K^2, close to the end of cylinder M′, having ten figures on its periphery running from "0" to "9," inclusive, is connected with the cylinder by a spring-pressed pin m' on the latter engaging either of the two holes m^2 m^2 (see Fig. 16) in wheel M^2, such holes being so situated with reference to each other that the changing of the pin m' from one to the other will change the figure "1" on the wheel from a position opposite one of the direction-markings on the cylinder to one opposite the next of such markings. This arrangement allows for ready adaptation of the machine to different car-lines which differ as to their first trips being up or down.

To enable the change to be most readily made so as to bring the desired trip indication on the cylinder opposite to or in line with the figure "1" on wheel M^2, which forms the units-wheel of the zero-register, to keep account of the number of times that the trip-register is set to zero at the ends of the trips, the pin m' is extended out through the right-hand end of the cylinder M′ and is provided with a projecting head m^3, by which when the casing is opened the pin can be pulled out to disengage it from the hole in wheel M^2. The wheel and cylinder are then free to be turned with reference to each other to bring the pin and the other hole m^2 into line with each other. The pin being then allowed to move inward under stress of its spring m^4 engages such hole and locks the cylinder and wheel together in their new relative adjustment. The spring m^4 being within the cylinder and bearing against an abutment therein engages a collar on the pin. A second wheel M^3, forming the tens-wheel of the zero-register, is journaled upon shaft K^2 close to the wheel M^2, and has connected with it a spring-pressed pawl m^5, (see Fig. 8,) whose nose engages the hub of wheel M^2, which is provided with a pawl-engaging notch m^6, arranged so that the latter wheel can turn freely forward with reference to the tens-wheel; but when the tens-wheel is turned forward by the setting means, to be described, the notch will, when the "0" on the tens-wheel comes opposite that on the units-wheel, engage the pawl-nose and cause both wheels to turn back together.

The units-wheel M^2 is provided with a pin m^7 (see Fig. 13) near its periphery, which, as such wheel rotates to bring its "9" figure to the display-opening a^8, comes in contact with a tooth on the ten-toothed wheel N, fixed on shaft N′, journaled in uprights B′ B′, and as the rotation of wheel M^2 is continued rotates such wheel N one tooth. Attached to and rotating with wheel N is the gear-wheel N^2, meshing with gear M^4 on the tens-wheel M^3, so as to rotate the latter through one-tenth of a rotation at each step-by-step motion of toothed wheel N, which takes place at each complete rotation of the units-wheel M^2. Upon the shaft N′ we have fixed a ratchet-wheel N^3, (see Fig. 6,) which, being engaged by the spring-pressed pawl n on one of the frame-uprights B′, prevents rotation of such shaft and the gear-wheel N^2 thereon in a direction to turn the tens-wheel backward, while leaving such shaft and the gear and toothed wheels carried thereby free to rotate in the other direction. To check the turning of the shaft each time that it is given one of its step-by-step rotations, we provide it with a toothed wheel N^4, engaged by an arresting spring-pressed pawl n', attached to the frame-up-

right and having a beveled nose adapted to engage two adjoining teeth on the wheel in the manner shown in the drawings.

One projecting end of shaft N′ is squared to receive a key n^2, by which it can be rotated to cause the gear-wheel N^2 to rotate the tens-wheel M^3 forward to bring it and the units-wheel M^2, with the cylinder M′, connected with the latter, to the zero or starting point, ready for another series of trip indications and registrations of the number of times the main or trip-register wheels have been set to zero.

Upon a shaft O, supported at its opposite ends in frame-uprights B′ B′, we journal the totalizing-registers for the separate sets of trip-registers. As shown, there are in each totalizing-register four numbered wheels O′ O′ O′ O′, having their peripheries provided with figures running consecutively from and including "0" up to and including "9." Of these wheels the first or units wheel has on one side a ten-toothed ratchet-wheel *o*, engaged by a spring-pressed pawl *o*′, carried by an arm O^2, pivoted upon shaft O close to the ratchet-wheel. Such arm is swung to rotate the ratchet-wheel, and consequently the units register-wheel O′, by a link O^3, connecting the arm O^2 with the swinging frame H, which actuates the respective trip-register, the step-by-step motion of the units-wheel of the totalizer being made simultaneous with that of the first or units wheel of the trip-register. A spring-pawl o^2, (see Figs. 4, 8, and 10,) attached to the cross-bar, engages each ratchet-wheel *o*, so as to hold it from back rotation and keep it from being accidentally moved forward when the arm O^2 is not being actuated. All the wheels O′ O′ O′ O′, except the last one, have, on the side away from the ratchet-wheel *o*, annular flanges o^3, cut away at o^4, and pins o^5, situated opposite the respective notches, but radially beyond the peripheries of the flanges o^3. All but the first of the wheels O′ O′ have on their sides toward the ratchet-wheel *o* the gears o^6, (see Fig. 10,) which mesh with gear-wheels o^7 o^7 o^7, journaled upon shaft O^4. Each of these gear-wheels o^7 has fixed to it a disk o^8, (see Fig. 8,) provided with notches o^9 o^9 to be engaged by the pin o^5 adjoining the wheel O′, and between such notches has the concave faces o^{10} o^{10}, forming shoes to ride upon the flange o^3 on such wheel when the pin o^5 is not engaging and turning the disk. Each gear-wheel o^7 is of such size as to cause a forward turning of a wheel O′ through one-tenth of a rotation each time that itself is given a partial turn by the engagement of the pin on the next lower wheel O′ with one of the notches o^9 in disk o^8. With this construction, as any actuating-slide is moved to operate its respective trip-register, the units-wheel of the respective totalizer will be turned one space, and as, during continued operation of the machine, the units-wheel of the totalizer is caused to complete a rotation through ten spaces the registration will be carried to the tens-wheel, which is moved one space for every rotation of the units-wheel. The registration is thus carried up through the series of wheels in each totalizer, each higher wheel being moved forward one space for each time that the next lower wheel rotates once.

When the notched disks o^8 are not being rotated by pins o^5, the concave faces on the disks, riding upon the peripheries of the flanges o^3 o^3, securely lock such disks, and consequently the gear-wheels o^7 o^7 and the gears o^6 o^6 on wheels O′ O′, against rotation.

In-order that, as different slides C C C are actuated to register different kinds of fares or transfers, sound-signals may be given which will call attention to the variation in registration, we prefer to make the bells D′ D′ D′ for the separate trip-registers so that they will sound differently. For this purpose they may be made to vary in size, as indicated in the drawings, or they could be of different materials or shapes.

The operation of our machine, which will be understood from the foregoing description and the drawings, is, briefly, as follows: As any one of the actuating-slides is pulled up against the stress of its returning-spring by the respective pull-cord the units-wheels of the corresponding trip and totalizing registers are moved forward one step to bring the next higher numbers on their peripheries around to the respective display-openings and an alarm is sounded on the bell for that slide and register. As the slide is drawn up and then returned by its spring its lugs, engaging the cross-bar of the swinging frame H, move it up and down to actuate the pawls *h h*. As the operation of the slide is repeated to register more than nine fares, the second pawl on the frame H causes the tens-wheel of the trip-register to be moved in the manner fully indicated hereinbefore. In the meantime the units-wheel of the respective totalizer is being moved step by step, the registrations as they continue being carried on to the tens, hundreds, and thousands wheels by the carrying or transfer means which have been described. At the end of a trip, when it is desired to set all the trip-registers to zero for another trip, the knob L^4 is pulled out against the stress of spring L^2 until the pin L^5 is clear of the retaining-hole l^3 in frame upright B′ and is then turned to the left to rotate shaft F. This pulling out of the knob causes the collar L to move the forked lever E so as to carry all the slide-locking bolts C^3 C^3 C^3 inward into the locking-notches C^{10} C^{10} C^{10} in the respective slides, so that the latter cannot be actuated during the setting operation. As in the movement of the shaft F the notches *f*′ *f*′ in the collars *f f* come around to the pawls g^2 g^2 on the different trip-register wheels, such wheels are caused to rotate with the shaft. Rotation of the latter has in the meantime, by the cam mechanism described, rocked shaft I^2 to swing all the stop-dogs I I outward into the paths of

the zero-stops on the wheels G G, and such shaft is held thus rocked by the engagement of pawl i^6 with its arm i^5. As the wheels are brought around so that their zero-stops engage the stop-dogs, their zeros will be opposite the display-openings in the casing front, and the pin on the knob L^4 will be in line with hole l^3 again. The rotation of shaft F and trip-register wheels being stopped by the engagement of the zero-stops with the stop-dogs the knob is let go and is thrown inward to carry its pin L^5 into hole l^3, and so lock it and the shaft from further turning. The inward movement of the knob causes the collar L′ to trip the pawl i^6, holding the rock-shaft arm i^5, and to swing the lever E to retract all the slide locking-bolts C^3 C^3 C^3. As the arm i^5 is released by pawl i^6 the springs i i i rock the sleeves I′ I′ I′ and swing the stop-dogs in out of the path of the zero-stops until arms I^3 I^3 I^3 on such sleeves engage the rock-shafts F′ F′ F′ on the frames H H H again. The apparatus is then ready for another registration, the trip-register mechanisms having been set to zero without disturbing the totalizing devices, which keep account of or add up the entire number of receipts of fares and transfers for all the different trips.

While the shaft F is being turned to set the trip-register to zero in the manner just above described, the cam K, by moving plate K′, causes the shaft K^2, carrying the direction-indicating cylinder, to turn through one-tenth of a rotation to bring the proper direction-indicator for the next trip to the display-opening. This motion of the shaft turns the units-wheel of the zero-register one space, so as to cause it to register the setting of the trip-register. The registrations of this zero-register are carried from the units to the tens wheel in the way which has been fully described hereinbefore.

Where it is desired to change the direction-indicator for the first trip, the spring-pin m' on the cylinder is drawn out and the latter and the units-wheel of the zero-register are rotatively adjusted with reference to each other to bring a different hole m^2 in the wheel M^2 in line with the spring-pin, which will fly into such hole and lock the cylinder and wheel together in their new adjustment.

The setting of the zero-register will be fully understood from our former patent referred to.

Having thus described our invention, what we claim is—

1. In a fare-register, in combination with the register wheel or wheels of a trip-register, a rotary setting-shaft therefor, gathering connections between the shaft and wheel or wheels whereby the rotation of the shaft will bring the zero-mark on each wheel around to a given starting-point, a cam on such shaft, a reciprocating plate actuated by such cam, a pawl on the plate, a rotary shaft carrying a ratchet-wheel engaged by the pawl, and a zero-register actuated by such shaft, substantially as and for the purpose shown.

2. In a fare-register, in combination with the register wheel or wheels of a trip-register, a rotary setting-shaft therefor, gathering connections between the shaft and wheel or wheels, whereby the rotation of the shaft will bring the zero-mark on such wheel around to a given starting-point, a cam on such shaft, a reciprocating plate having bearings to engage the cam so as to be positively reciprocated thereby in both directions, a pawl on the plate, a rotary shaft carrying a ratchet-wheel engaged by the pawl, and a zero-register and direction-indicator, actuated by the turning of the latter shaft, substantially as and for the purpose described.

3. In a fare-register, in combination with a rotary setting-shaft, a trip-register having one or more register-wheels, journaled to rotate about the shaft, means for actuating such trip-register, gathering connections between the shaft and register wheel or wheels, whereby, as the shaft is rotated in one direction, each wheel will be turned to bring its zero-mark around to a given starting-point, the cam on the shaft, the reciprocating plate having bearings engaging the cam, a pawl on the plate, a rotary shaft carrying a ratchet-wheel engaged by the pawl, a zero-register and a direction-indicator, both on the latter shaft, and connections between them and the shaft, whereby each time that the latter is moved by the pawl engaging its ratchet-wheel, the zero-register is moved and the direction-indicator is changed, substantially as and for the purpose specified.

4. In a fare-register, in combination with a rotary setting-shaft, a trip-register having its wheel or wheels journaled to rotate about the shaft, means for actuating such trip-register, gathering connections between the wheel or wheels and setting-shaft whereby as the shaft is rotated each wheel will be turned to bring its zero-mark around to a given point, a cam on the shaft, a reciprocating plate having a slot engaging a hub on the cam, and suitable bearings engaging the cam, a rotary shaft engaging a second slot in the plate, a ratchet-wheel on the latter shaft and a pawl on the plate to engage the ratchet-wheel, the zero-register having its wheels mounted on the shaft, and its units-wheel rotating therewith, and the direction-indicating cylinder, also, mounted on and rotating with such shaft, substantially as and for the purpose described.

5. In a fare-register, in combination with the single rotary setting-shaft, and the series of separate trip-registers having their register-wheels journaled and supported upon such shaft, gathering connections between the shaft and all of the trip-register wheels, whereby, as the shaft is rotated all the wheels will be simultaneously brought with their zero-marks around to a given line, a single

zero-register, and direction-indicator, and connections between them and the setting-shaft whereby the zero-register and direction-indicator are actuated to change the registration and indication each time that the setting-shaft is turned, substantially as and for the purpose specified.

6. In a fare-register, in combination with the zero-register, and the direction-indicating cylinder, adjustable connections between the cylinder and the register, to cause them, normally, to rotate together while allowing them to be rotatively adjusted with reference to each other, substantially as and for the purpose shown.

7. In a fare-register, in combination with the zero-register and the direction-indicating cylinder, the one having a portion provided with two holes, and a movable pin on the other, adapted to be moved into engagement with either hole to cause the register-wheel and cylinder to rotate together, substantially as and for the purpose set forth.

8. In a fare-register, in combination with the direction-indicating cylinder, and means for rotating the same, a spring-pressed pin on the cylinder, and the zero-register having its units-wheel provided with the two pin-engaging holes situated on different radii, substantially as and for the purpose described.

9. In a register, in combination with a rotary setting-shaft and a register-wheel, means for connecting the shaft and wheel together as the former is rotated in one direction, a zero-stop on the wheel, a cam rotated by the shaft, a movable stop-dog, and connections between the latter and the cam whereby rotation of the setting-shaft causes the stop-dog to be moved over into the path of the zero-stop, substantially as and for the purpose specified.

10. In a register, in combination with a rotary setting-shaft, and a register-wheel, means for connecting the shaft and wheel together as the former is rotated in one direction, a zero-stop on the wheel, a movable stop-dog, a spring holding the dog out of the path of the zero-stop, a cam actuated by the setting-shaft, and connections between the cam and dog whereby the latter is moved out into the path of the zero-stop as the shaft is rotated, substantially as and for the purpose shown.

11. In a register, in combination with a rotary setting-shaft, and two or more register-wheels each provided with a projecting zero-stop, means for connecting the wheels and shaft together as the latter is rotated to set the wheels; a series of zero-stop-engaging dogs, one for each wheel, mounted on a rocking piece, a spring tending to rotate such piece to hold the dogs normally out of the paths of the respective zero-stops on the register-wheels and cam mechanism actuated by the shaft to rock the dog-carrying rocking piece against the stress of the spring to move such dogs into the paths of the zero-stops, substantially as and for the purpose set forth.

12. In a register, in combination with a rotary setting-shaft, and a register-wheel carrying a projecting zero-stop, gathering connections between the shaft and wheel to cause the latter to rotate with the former as the shaft is rotated in the wheel-setting direction, a zero-stop-engaging dog, means for normally holding it out of the path of the stop on the wheel, cam mechanism actuated by the shaft to move the dog into the path of the zero-stop, and means for retaining the dog in such position until the zero-stop is brought by the rotation of the wheel into engagement with it, substantially as and for the purpose described.

13. In a register, in combination with a rotary setting-shaft, and a register-wheel carrying a projecting zero-stop, gathering connections between the shaft and wheel to cause the latter to rotate with the former as the shaft is rotated to set the wheel, a movable zero-stop-engaging dog, yielding means for holding it normally out of the path of the zero-stop on the wheel, mechanism actuated by the shaft as it is turned, to move the dog out into the path of the zero-stop, and a pawl engaging a part moving with the dog to hold the latter out in its stop-engaging position, substantially as and for the purpose specified.

14. In a register, in combination with a rotary setting-shaft, and a register-wheel carrying a projecting zero-stop, gathering connections between the shaft and wheel to cause the latter to rotate with the former as the shaft is rotated to set the wheel, a rocking piece carrying a dog to engage the zero-stop, an arm connected with the rocking piece to move the same, a spring acting upon the rocking piece to turn it so as to carry the stop-dog out of the path of the zero-stop on the wheel, cam mechanism actuated by the rotation of the setting-shaft to rock the rocking piece against the stress of the spring, and a catch to engage the arm, substantially as and for the purpose shown.

15. In a register, in combination with a rotary setting-shaft, and one or more register-wheels carrying a projecting zero-stop, gathering connections between the shaft, and each wheel to cause the latter to rotate with the former as the shaft is rotated in wheel-setting direction, a rocking piece carrying a zero-stop-engaging dog for each wheel, an arm connected with the rocking piece to actuate it, a spring acting upon the rocking piece to turn it so as to carry the stop-dogs out of the path of the respective zero-stops, a reciprocating plate carrying a part to engage and move the arm, a pawl to engage and hold the arm as moved by the plate, and a cam actuated by the rotary setting-shaft to cause reciprocation of the plate, substantially as and for the purpose set forth.

16. In a register, in combination with a rotary setting-shaft and one or more register-wheels, carrying projecting zero-stops, gathering connections to connect the shaft and

the wheels together as the former is turned to set the latter, a rock-shaft carrying an arm and a pin, a sleeve mounted on the rock-shaft, and having a shoulder to be engaged by the pin on the rock-shaft, a stop-dog for each register-wheel, carried by the sleeve, and mechanism actuated by rotation of the setting-shaft, to move the arm on the rock-shaft to carry the stop dog or dogs thereon out into the paths of the respective zero-stops, substantially as and for the purpose described.

17. In a register, in combination with a rotary setting-shaft, and one or more register-wheels carrying projecting zero-stops, gathering connections to connect shaft and wheels together as the former is rotated to set the latter, a rock-shaft carrying an arm, a sleeve rotatively mounted on such shaft carrying a stop-dog for each zero-stop and a shoulder, a pin on the rock-shaft to engage the shoulder, cam mechanism actuated by rotation of the setting-shaft to move the arm on the rock-shaft to cause the latter to rotate the sleeve to bring the stop dog or dogs thereon into the paths of the respective zero-stops, and a spring acting to rotate the sleeve in the opposite direction, substantially as and for the purpose specified.

18. In a register, in combination with a rotary setting-shaft, and one or more register-wheels carrying projecting zero-stops, gathering connections to connect the shaft and wheels together, as the former is rotated to set the latter, a rock-shaft having an arm, a sleeve rotatively mounted on the shaft provided with a shoulder and carrying a zero-stop-engaging dog for each register-wheel, a spring tending to rotate the sleeve in a direction to move the stop dog or dogs out of the paths of the respective zero-stops, means on the rock-shaft for engaging the shoulder on the sleeve, cam mechanism actuated by the rotation of the setting-shaft to move the arm on the rock-shaft, so as to rotate the sleeve against the stress of its spring and a pawl to engage and hold such arm to retain the stop dog or dogs in the paths of the respective zero-stops, substantially as and for the purpose shown.

19. In a register, in combination with a rotary setting-shaft, and one or more register-wheels carrying projecting zero-stops, gathering connections between shaft and wheels to connect them together as the shaft is rotated to set the wheels, a rock-shaft having an arm, a sleeve rotatively mounted on the rock-shaft, provided with a shoulder and carrying a stop-dog for each register-wheel, a spring tending to rotate the sleeve to move the dog or dogs out of the paths of the zero-stops, means on the rock-shaft to engage the sleeve-shoulder, mechanism actuated by rotation of the setting-shaft to move the arm on the rock-shaft to rotate the sleeve to move the stop dog or dogs thereon out into the paths of the respective zero-stops, a pawl to engage the rock-shaft arm and means for tripping such pawl when the zero-stop on each wheel comes into engagement with its stop-dog, substantially as and for the purpose set forth.

20. In a register, in combination with a register-wheel having a toothed wheel rotating with it, and a projecting zero-stop, means for giving the register-wheel a step-by-step rotation, a swinging dog, means for causing such dog to move into engagement with the toothed wheel at each movement of the register-wheel, setting mechanism to set the latter to zero, and connections between such mechanism and the dog whereby such dog is moved into the path of the zero-stop on the wheel, substantially as and for the purpose described.

21. In a register, in combination with a register-wheel having a toothed wheel rotating with it, and a projecting zero-stop, the actuating mechanism for giving the register-wheel a step-by-step rotation, a stop-dog, means for moving it into and out of the path of the teeth on the toothed wheel as the register-actuating mechanism moves forward and back, respectively, setting devices for setting the wheel to zero, and connections between such devices and the stop-dog to move the latter out into the path of the zero-stop on the register-wheel, substantially as and for the purpose specified.

22. In a register, in combination with a register-wheel having a toothed wheel rotating with it, and a projecting zero-stop, means for actuating the wheel to move it step by step, a stop-dog, a spring forcing the same toward the toothed wheel, means controlled by the wheel-actuating devices whereby the dog is allowed to engage the toothed wheel, and is moved away from the same as such devices move forward and back, setting mechanism to set the wheel to zero, and connections between the same and the dog whereby during the setting operation, the dog is moved out into the path of the zero-stop, substantially as and for the purpose shown.

23. In a register, in combination with a register-wheel having a toothed wheel rotating with it, and a projecting zero-stop, the actuating mechanism for giving the register-wheel a step-by-step movement, a stop-dog, a spring tending to force such dog into the path of the teeth on the toothed wheel, an arm for moving the dog, engaged by the register-wheel-actuating mechanism, so as to hold the dog away from the toothed wheel, while such mechanism is retracted, setting devices for setting the wheel to zero, and connections between the same and the stop-dog whereby, during the setting operation, the dog is moved into the path of the zero-stop, substantially as and for the purpose set forth.

24. In a register, in combination with a register-wheel having a toothed wheel rotating with it, and a projecting zero-stop, the actuating mechanism for giving the register-wheel a step-by-step rotation, a stop-dog, a spring tending to force the same into the path of the

teeth on the toothed wheel, the arm connected with the dog engaged by the register-wheel-actuating mechanism, a rotary setting-shaft, means for connecting it and the register-wheel together as it is rotated in one direction, and cam mechanism actuated by such shaft to swing the dog away from the toothed wheel into the path of the zero-stop on the register-wheel, substantially as and for the purpose described.

25. In a register, in combination with a register-wheel having a toothed wheel rotating with it, and a projecting zero-stop, the actuating mechanism for moving the register-wheel step by step, a stop-dog to prevent over-registration, means for causing it to engage the toothed wheel, setting devices for setting the wheel to zero, connections between the same and the stop-dog, whereby the latter is swung out into the path of the zero-stop on the register-wheel as the latter is being set to zero, and means for retaining the dog in such position until the zero-stop engages it, substantially as and for the purpose specified.

26. In a register, in combination with a register-wheel having a projecting zero-stop, a stop-dog to engage the latter, means for holding it normally out of the path of the zero-stop, a rotary setting-shaft, connections between the latter and the register-wheel whereby the wheel and shaft are connected together as the latter is rotated to set the wheel, mechanism actuated by the shaft to swing the stop-dog into the path of the zero-stop, means for holding the dog in such position, and a movable piece on the setting-shaft to engage and trip the dog-holding device, substantially as and for the purpose shown.

27. In a register, in combination with a register-wheel having a projecting zero-stop, a stop-dog to engage the latter, a spring acting to hold the dog normally out of the path of the stop, a rotary setting-shaft, connections between the latter and the wheel whereby the two are connected together as the shaft is rotated to set the wheel mechanism actuated by the shaft to swing the stop-dog out into the path of the zero-stop, an arm connected with the dog, a pawl to engage such arm and retain the pawl in the path of the zero-stop on the register-wheel, and a movable piece on the setting-shaft to trip such pawl, substantially as and for the purpose set forth.

28. In a register, in combination with a register-wheel having a projecting zero-stop, a stop-dog to engage the latter, a spring acting to hold the dog normally out of the path of the stop, a rotary setting-shaft, connections between the latter and the wheel whereby the two are connected together as the shaft is rotated to set the wheel, mechanism actuated by the shaft to move the dog out into the path of the zero-stop during the setting operation, a dog-retaining arm, a pawl to engage such arm and keep the dog out in the path of the zero-stop until the latter engages it, and a spring-pressed head on the shaft having a portion to engage and trip the pawl, substantially as and for the purpose described.

29. In a register, in combination with a register-wheel having a projecting zero-stop, the stop-dog, a spring acting to hold the latter normally out of the path of the stop, a rotary setting-shaft, connections between the latter and the wheel to connect the two together as the shaft is rotated to set the wheel, mechanism actuated by the shaft to move the dog out into the path of the zero-stop during the setting operation, a dog-retaining arm, a pawl to engage the same, a head rotating with the setting-shaft, but made movable in and out on the same, and having a portion to engage and trip the pawl as the head is moved inward, a pin on the head, and a stationary piece having a pin-engaging hole, situated so that the pin comes in line with it as the shaft and head are turned to bring the zero-stop on the register-wheel in contact with the stop-dog, substantially as and for the purpose specified.

30. In a register, in combination with one or more register-wheels, the rotary setting-shaft, and means for connecting the shaft and the wheels together as the shaft is turned in one direction, a head rotating with the shaft, but made movable in and out on the same, a pin on the head, a stationary piece having a hole to engage the pin, a ratchet-wheel rotating with the head and shaft, and a pawl engaging such ratchet-wheel to limit any continued rotation of the shaft in the direction to cause setting of the register wheel or wheels, substantially as and for the purpose shown.

31. In a register, in combination with one or more register-wheels, the rotary setting-shaft, and means for connecting shaft and wheels together, as the former is rotated in a direction to set the latter to zero, a head rotating with but made longitudinally movable on the shaft, a pin on the head, a stationary piece having a pin-engaging hole, a ratchet-wheel fixed on the shaft, and having a hole through which the pin on the head passes, and a pawl to engage the ratchet-wheel to prevent the wheel and shaft from rotating in any direction, but that required for setting the register-wheels, substantially as and for the purpose set forth.

32. In a register, in combination with one or more register-wheels and means for actuating the same, the rotary setting-shaft for setting such wheel or wheels to zero, the movable head on the shaft rotating with the latter but made capable of sliding longitudinally thereon, means for locking the head from turning while it occupies one position on the shaft, a lock for the register-wheel-actuating devices, and connections between such lock and the movable head whereby as the latter is moved to unlock it and leave it free to turn, the lock for the register-wheel-

actuating device is moved into locking position, substantially as and for the purpose described.

33. In a register, in combination with one or more register-wheels, and the moving actuator for the same, provided with a locking-shoulder, the rotary shaft for setting the register-wheels, the head rotating with but made longitudinally movable on the shaft, means for locking it from turning as it is moved to one position, a lock to engage the shoulder on the register-wheel actuator, and a lever connected with such lock and the head, whereby as the head is moved from and to the position in which it is locked, the slide-lock is moved into and out of engagement with the shoulder on the actuator, substantially as and for the purpose specified.

34. In a register, in combination with one or more register-wheels, and the moving actuator for the same provided with a locking-shoulder, the rotary shaft for setting the wheels to zero, the head rotating with but made longitudinally movable on the shaft, a pin on the head, a stationary piece having a retaining-hole into and out of engagement with which the pin can be moved by reciprocating the head on the shaft, a spring acting to press the head toward such piece, a lock to engage the shoulder on the actuator, and a lever connected with the lock and the head, substantially as and for the purpose shown.

35. In a register, in combination with several sets of registering-wheels, and separate actuators therefor, locks for the actuators to hold them from movement, a rotary setting-shaft, connections between the same and all the register-wheels of the different sets, whereby rotation of the shaft in one direction will set all the wheels, a head rotating with such shaft but made movable longitudinally thereon, a pin on the head, a stationary piece having a hole to receive the pin, a spring forcing the head toward such piece, a lever connected with the head, and connections between the lever, and several locks for the register-wheel actuators whereby, as the head is moved to carry its pin in and out of the retaining-hole, the several locks will be moved out of and into position to lock the respective actuators, substantially as and for the purpose set forth.

36. In a register, in combination with one or more register-wheels, and an actuator therefor, a lock for the actuator, the rotary setting-shaft for setting the wheel or wheels to zero, a head on the shaft rotating with it, but made longitudinally movable thereon and having a pin, a stationary piece having a hole to engage this pin and hold the head from turning, a spring acting to force the head toward such piece, a lever connected with the head, and the actuator-lock, and means for preventing continued backward movement of the setting-shaft adapted to allow sufficient back rotation of the shaft and head to bring the pin on the retracted head out of line with the retaining-hole therefor in the fixed piece, substantially as and for the purpose specified.

In testimony that we claim the foregoing we have hereunto set our hands this 8th day of April, A. D. 1895.

FREDERICK C. BOYD.
CHARLES E. GIERDING.

Witnesses:
HENRY G. NEWTON,
JOSEPH E. HOWD.