(No Model.) 2 Sheets—Sheet 1.

R. CLARKE.

FARE REGISTER.

No. 416,211. Patented Dec. 3, 1889.

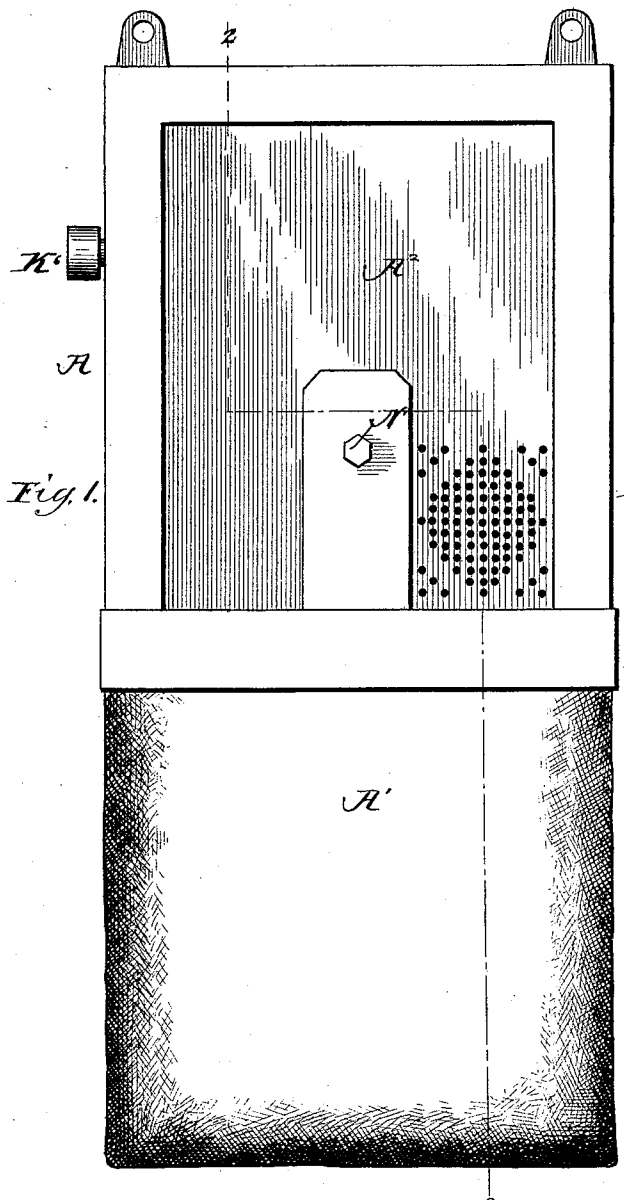


Fig. 1.

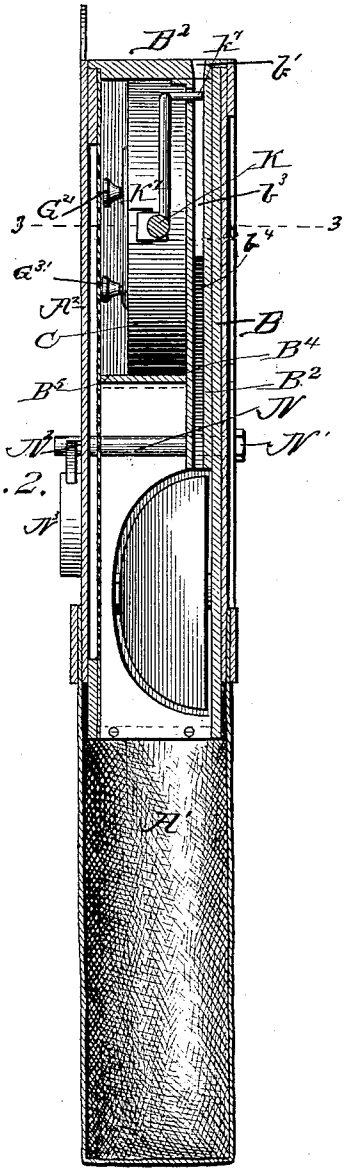


Fig. 2.

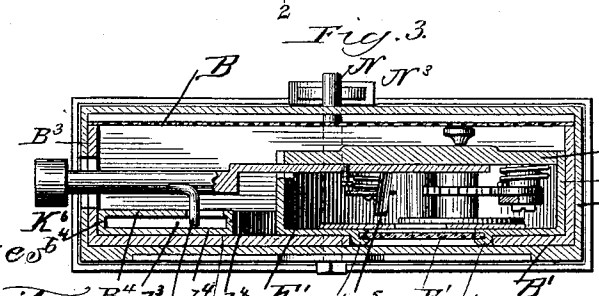


Fig. 3.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

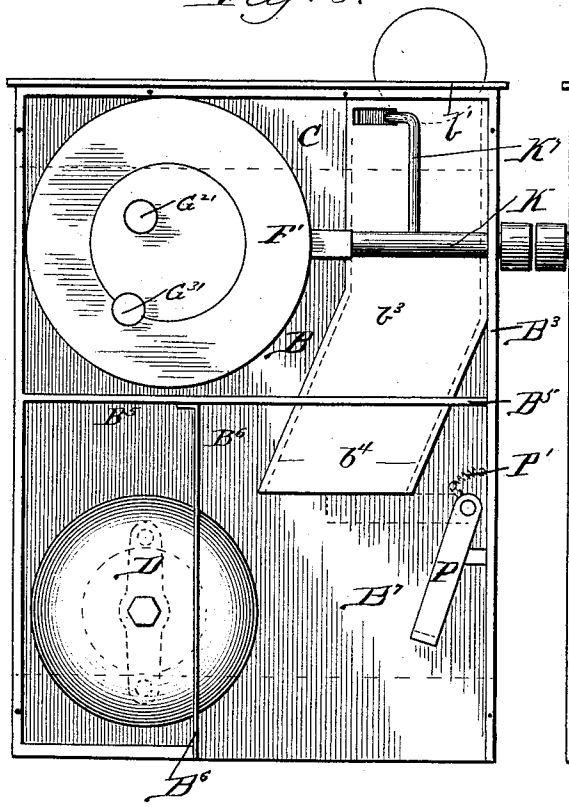


Fig. 4.

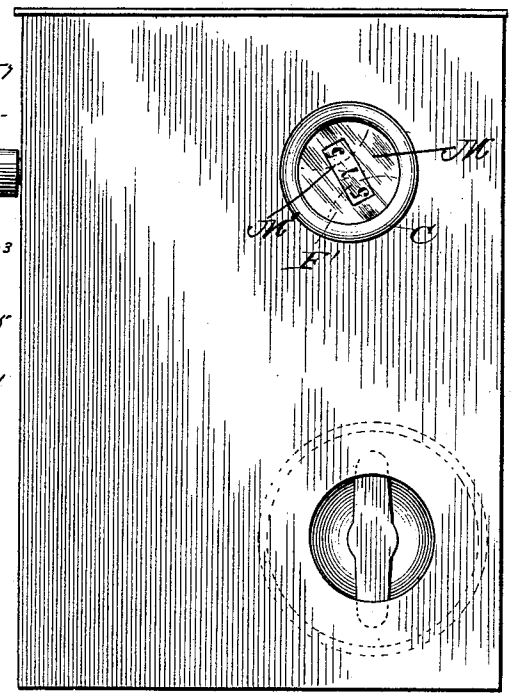


Fig. 6.

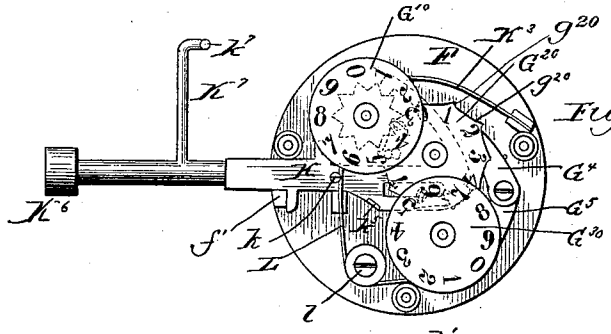
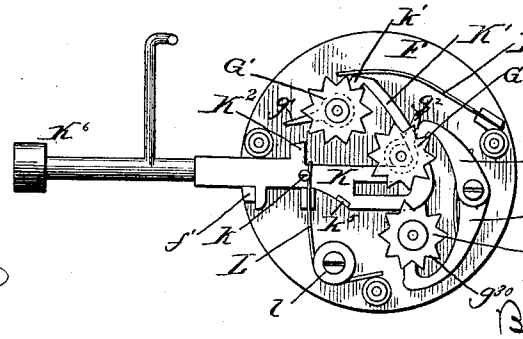


Fig. 7.



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UNITED STATES PATENT OFFICE.

ROBERT CLARKE, OF KANSAS CITY, MISSOURI.

FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 416,211, dated December 3, 1889.

Application filed April 19, 1889. Serial No. 307,725. (No model.)

To all whom it may concern:

Be it known that I, ROBERT CLARKE, a citizen of the United States, residing at Kansas City, county of Jackson, and State of Missouri, have invented certain and new useful Improvements in Fare-Registers, set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

Figure 1 is a rear elevation. Fig. 2 is a longitudinal section at the line 2 2 on Fig. 1. Fig. 3 is a transverse section at the line 3 3 on Fig. 2. Fig. 4 is a rear elevation of a box containing the operating mechanism and bell withdrawn from the outer case. Fig. 5 is a front elevation of the same. Fig. 6 is a plan of the registering mechanism. Fig. 7 is a plan of the same mechanism with the registering-disks removed, showing the operative mechanism more clearly.

The general design of this invention is to provide a registering mechanism and a bell associated therewith, all included within a case which contains a coin-receptacle, an aperture in said case through which the coin is introduced being guarded by a trip, the movement of which operates the registering mechanism, the bell being in such position with respect to the unavoidable course of the coin in falling into the receptacle that it will be struck by the coin and sounded, the registering mechanism, including the registering-wheels on which the registration is read, being entirely concealed within the outer case, said case being securely locked, so that the operator, who is supposed to be unprovided with any means of opening the lock or otherwise obtaining access to the case, cannot observe the indication of the register, whose indication, if it is allowed to operate normally, must agree with the number of coins contained in the receptacle, each coin as it enters having sounded the bell.

A represents the outer case, which contains as a part of it the coin-receptacle A′, which, as represented, is a flexible bag; but this is not material. It may be a rigid case constituting a continuation of the upper portion A^2.

B is the back or principal plate of an interior case or frame, upon which the registering mechanism, bell, and other parts are mounted.

C is the case in which the registering mechanism proper is contained, said case C being mounted on the interior frame or case.

D is the bell.

I will first describe the registering mechanism, which, it will be seen, is capable of being operated independently of the remainder of the invention. This registering mechanism comprises the frame F, having journaled on it three spur-wheels G′, G^2, and G^3, each having rigid with it a registering-dial G^{10} G^{20} G^{30}, respectively, said dials having stamped upon their upper surfaces ten figures, from 0 to 9, inclusive.

K is a reciprocating plunger, which is guided by suitable lugs on the frame F, the spring L being coiled around a stud *l* on the frame F and engaging a projection *k* on the plunger and tending to hold the latter at the outer limit of its motion, where it is stopped by the stud *f*′ on the frame F. The plunger K has the arm K′ terminating in a tooth *k*′, which engages the spur-wheel G′ at the outward movement of the plunger. The same wheel is engaged at the inward movement of the plunger by the tooth K^2 on said plunger, which comes into engagement with the spur-wheel on the opposite side from that at which it is engaged by the tooth *k*′. A detent-pawl K^3 is provided, consisting merely of a flat spring made rigid with the frame at one end, the other end being adapted to engage a tooth of the spur-wheel G′ when the tooth *k*′ is out of engagement therewith. An inward movement of the plunger carries the tooth *k*′ out of engagement with the spur-wheel G′, and a little further movement causes the tooth K^2 to engage with the spur-wheel on its opposite side and rotate it such a distance that when the plunger is returned by the spring L the point of the tooth *k*′ on the end of the arm K′ enters behind the next succeeding tooth of the spur-wheel following the one behind which it has been before engaged, and in the completion of the outward movement of the plunger further rotates the wheel a distance sufficient to bring the tooth fully into the next notch in the wheel following the one with which it was before engaged, so that a

complete inward and succeeding outward movement of the plunger rotates the wheel G′ the distance from one tooth to the next, which is one-tenth of a revolution, the wheel having ten teeth, one corresponding to each figure on the registering-dial attached to it. At a suitable point the hub of the wheel G′ has a single tooth g', which is longer than the teeth of the spur-wheel and protrudes far enough from the axis of the wheel to engage the spur-wheel G^2 and actuate the latter one tooth's distance at each complete revolution of the wheel G′. A spring-actuated pawl G^4 engages the wheel G^2 and locks it after each movement, said wheel having, like the wheel G′, ten teeth, so that each actuation of it rotates it one-tenth of a revolution. Rigid with this wheel G^2 there is one long tooth g^2, which engages the wheel G^3 in the same manner and rotates the last-mentioned wheel one tooth's distance—that is, one-tenth of a revolution—for each complete revolution of the wheel G^2, and a locking-pawl G^5, similar to G^4, is provided, which in a similar manner engages and locks the wheel G^3 after each tenth of a revolution.

In order that the dials G^{20} and G^{30} may not be caused to move more than one figure's space when the wheels G^2 and G^3 are engaged by the teeth g' and g^2, which actuate them, respectively, I provide the plunger K′ with a tooth k^5, projecting across the planes of the wheel G^3 and dial G^{20}, and I provide the periphery of the dial with notches g^{20}, one at each figure. The tooth k^5 is in such position on the plunger K that at the most inward position of the plunger it stands in one of the notches g^{30} of the wheel G^3 and in one of the notches g^{20} of the dial G^{20}. The movement of the plunger therefore, which causes the teeth g' and g^2 to actuate the spur-wheels G^2 and G^3, respectively, also locks said wheels by the engagement of the tooth k^5, as described, so that only one-tenth of a revolution can be made at that reciprocation of the plunger.

The distance between the tooth k' and the tooth K^2 is such that the wheel G′ cannot be entirely free from engagement with both of said teeth at the same time; but when one passes out of engagement the other has already passed into engagement on the opposite side of the wheel. It is thereby rendered impossible to rotate the wheel G′ without reciprocating the plunger.

The registering-dials are covered by a plate M, provided with a slot M′, extending in the direction of the plane of the axes of the wheels G′ and G^3, wide enough to uncover a figure on each, and the dials G^{10} and G^{30}, being separated at their edges a distance sufficient to disclose between them a figure on the dial G^{20}, (which is located back of the plane of the dials G^{10} and G^{30},) there will be disclosed through the slot M′ one figure on each of the three dials, and the mechanism being set with 0 exposed on all three of the dials at the slot, the number at any time exposed through the slot, made up of three figures on the three dials, respectively, will indicate the number of times the plunger has been reciprocated since the dials were set at 0.

The entire mechanism, including the slotted plate M, is preferably covered by a secure case C, which is made fast to the frame F, which, with said covering-case, makes a complete inclosing-case for the registering mechanism. The covering-case C has a central aperature filled by a transparent pane F′, which lies over the slot M′, and through said pane the registration may be read. The shaft of each of the wheels G^2 and G^3 is extended through the back of the case—that is, through the frame-plate F—and outside of the same is provided with a handle G^{21} and G^{31}, respectively, by means of which the dials G^{20} and G^{30} may be set at 0 at starting. The dial G^{10} may be readily set at 0 by means of the plunger.

The entire registering mechanism thus inclosed in the case described is suitably secured to the interior case or frame, and with said frame is entirely inclosed within the case A, so that the registration which the register indicates cannot be observed without withdrawing the interior case or frame and the entire mechanism which it supports, including the register, from the case A. The interior case or frame comprises the back or principal plate B, to which the remaining parts are secured, and a bolt N is inserted through the front and back plates of the case A, passing through the plate B′, said bolt having a head N′ at one end and a slot N^2 at the other end, into which slot the padlock N^3 may be locked, thus preventing the removal of the frame and mechanism from the case A.

I will now describe the interior case or frame and the remaining mechanism mounted thereon. This frame is adapted to telescope endwise into the case A, and it has a top plate B′, which, when it is thus inserted, closes the end of the case A. To the back or principal plate B of the interior case or frame the register-case F F′ is secured at a point near the upper end—that is, immediately below the top plate B′. The stem of the plunger K protrudes out through the side plate B^3 of the interior case or frame, and the side of the frame A is slotted from the upper end downward a short distance to allow the projecting knob or handle K^6 of said plunger to pass down as the interior case or frame is telescoped into the case A and protrude beyond the case A when the interior case or frame is fully inserted within it. In the end B′ of the interior case or frame there is provided a slot b', adapted to admit a coin, and from the plunger K an arm K^7 extends upward and has the finger k^7 bent across immediately below the slot b'. The dimension of the slot and the position of the finger k^7 in respect thereto are such that a coin of the size designed to be admitted into the coin-receptacle attached to this register-case cannot pass through the

slot on account of presence of the finger when the plunger is in its outermost position, nor until said plunger has been pressed far enough inward to so fully actuate the first register-wheel G′ that the completion of its actuation one-tenth of a revolution must of necessity be effected by the return movement of the plunger.

From the coin-aperture downward in the direction of the coin-receptacle a suitable guide-channel b^3 is provided for the coin between the plates B^2 and B^4, said channel being guarded edgewise by the ribs b^4 b^4, which intervene to separate the plates a suitable distance greater than the thickness of the coin to allow the coin to move freely, and said channel, after extending directly downward to a point a little below the plunger K, is deflected edgewise toward the bell, which is located directly underneath the registering mechanism. The channel thus deflected extends through the transverse partition B^5, which separates the registering mechanism from the bell, and ends just above the level of the upper edge of the bell, a partition B^6, extending vertically downward from the transverse partition B^5 across the bell to the lower edge of the interior case or frame, being cut away only sufficiently to avoid contact with the bell, which would deaden its sound; but the partition B^5 is not sufficiently cut away to leave any considerable aperture between it and the bell, and the two partitions B^5 and B^6 thus separate a space B^7, into one side of which the bell protrudes and through the top of which the coin-channel protrudes, and the bottom of which opens directly into the top of the coin-receptacle. The coin emerging from the channel b^3 with an oblique direction downward toward the bell, strikes and rings while passing on through this space, and then immediately falls, rebounding toward the side of the case into the receptacle. In order to prevent the extraction of coins from the receptacle by inverting the device and causing the coins to fall back out of the receptacle, with a possibility that they might enter the lower end of the channel, I provide the gate P, pivoted to the interior case or frame and adapted to swing upward to close the lower end of the channel b^3, so that when the device is inverted, before a coin can fall into the channel-mouth at the bottom that mouth will be closed by the gate. This gate may be held up against the channel-mouth by a very light spring P′, whose tension will be certain to be overcome by the weight of the coin, if it is preferred to do so rather than depend on gravity to close it promptly when the device is inverted. It will be observed that even if a coin should be extracted by any possible manipulation of the device a discrepancy would thereby be caused to exist between the contents of the receptacle and the indication of the register, so that the fact could not escape detection.

I do not limit myself to actuating the plunger K at will by means of its protruding end or handle, but it may be actuated directly by the coin in being pushed in past the obstructing finger K^7. I prefer, however, since it in no way prevents the accuracy of the registration or the certainty of any other of the effects sought, to let the handle protrude, as illustrated, because thereby I am able to avoid any danger of the coin sticking or of the mechanism being difficult to operate by the coin directly.

I claim—

1. In a fare-box, in combination with a receptacle to receive the coin, an aperture in the case to admit the coin, a bell located in the path of the coin from the aperture to the receptacle, and thereby adapted to be sounded by the contact of the coin against it, and a registering mechanism having its actuating-arm protruded across the path of the coin and obstructing the entrance of the latter until the arm is moved sufficiently to actuate the registering mechanism, substantially as and for the purpose set forth.

2. In combination with the case comprising the coin-receptacle, the registering mechanism, and the bell inclosed within the case, the case having an aperture to admit the coin, and the registering mechanism having its arm provided with a part which obstructs said aperture, and having a channel leading from said aperture to the coin-receptacle, the bell being located so as to protrude into said channel and be struck by the coin as it passes, an automatic gate P to obstruct the channel, adapted to open toward the receptacle and to close toward the aperture to prevent the removal of coins from the receptacle, substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Kansas City, Missouri.

ROBERT CLARKE.

Witnesses:
XAVIER GANTER,
G. H. SMITH.