

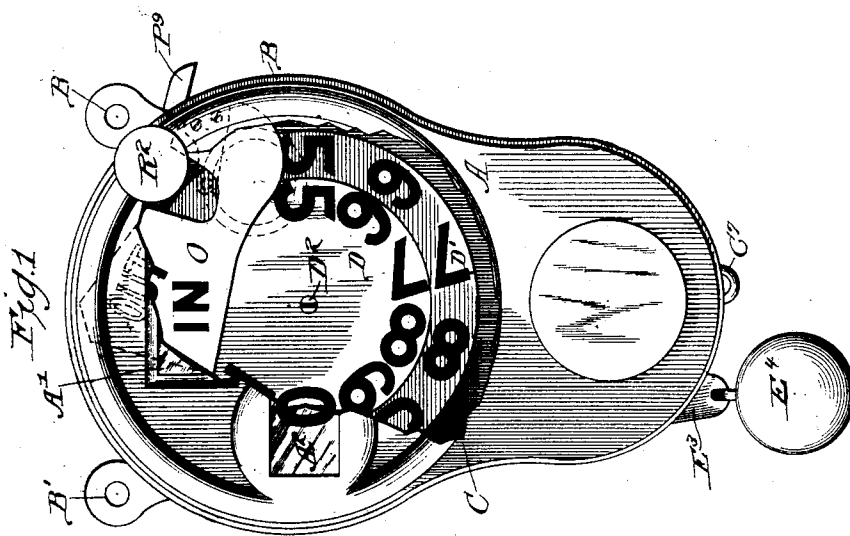
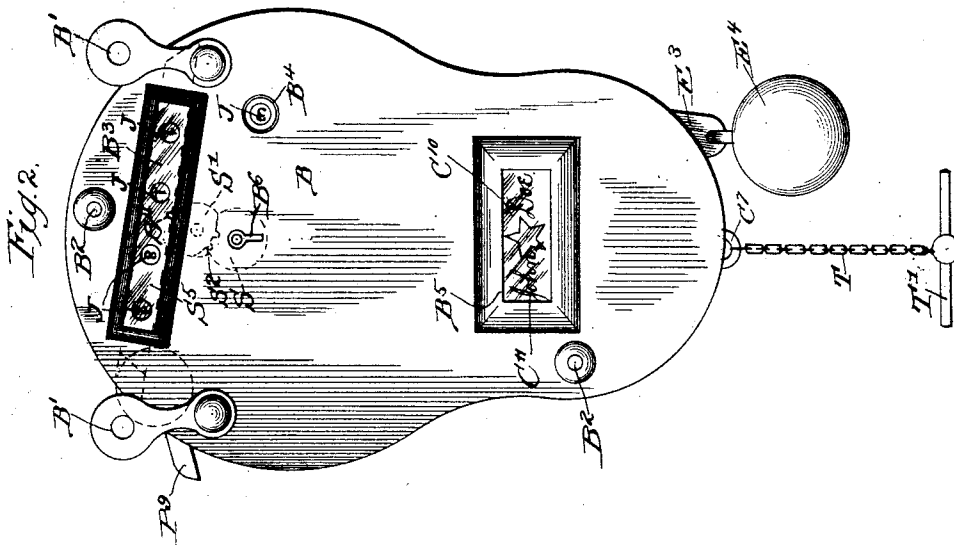
(No Model.)

3 Sheets—Sheet 1.

C. E. PRATT.  
FARE REGISTER.

No. 512,057.

Patented Jan. 2, 1894.



Witnesses;  
Wm. J. Fleming  
M. M. P. Green.

By Charles E. Pratt <sup>Inventor;</sup>  
 Francis W. Parker, <sup>Attorney.</sup>

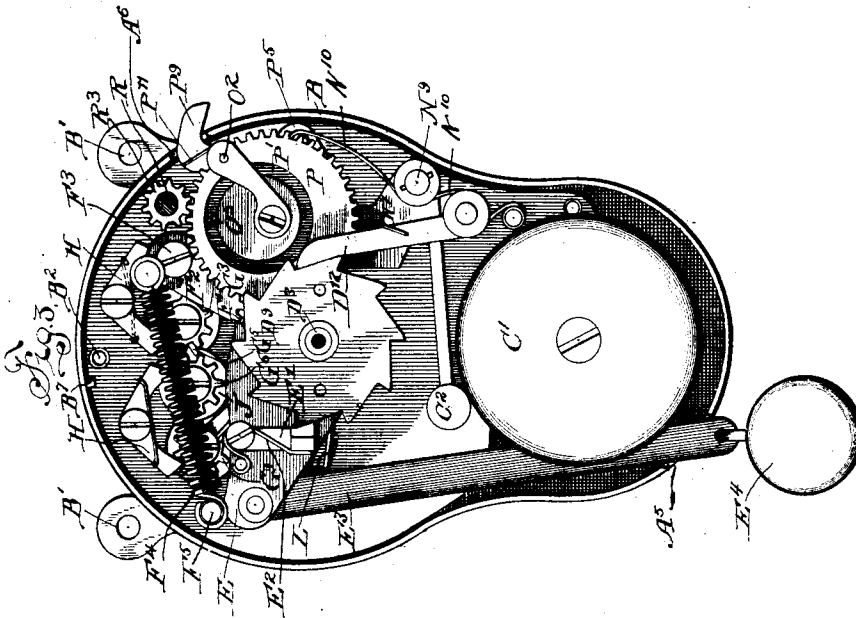
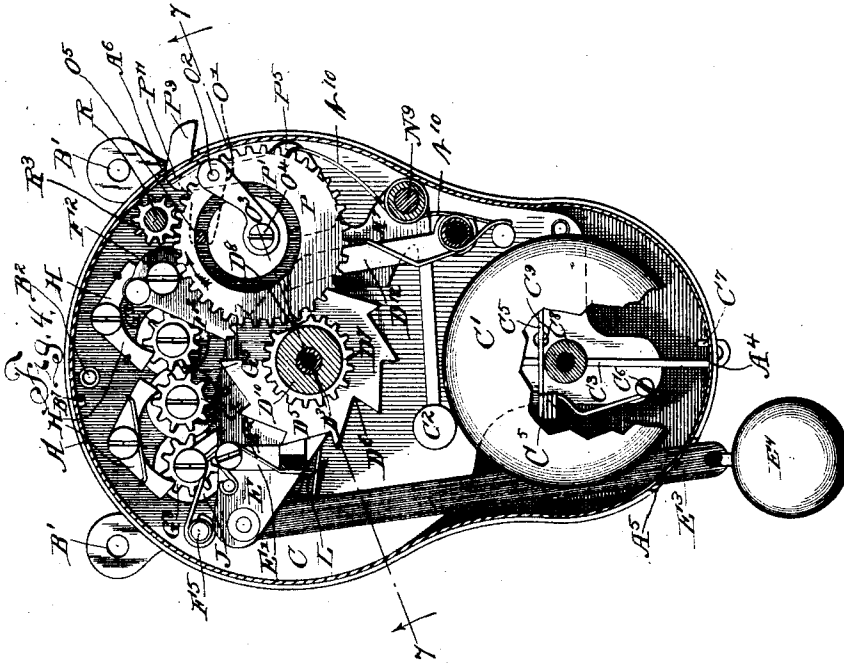
(No Model.)

3 Sheets—Sheet 2.

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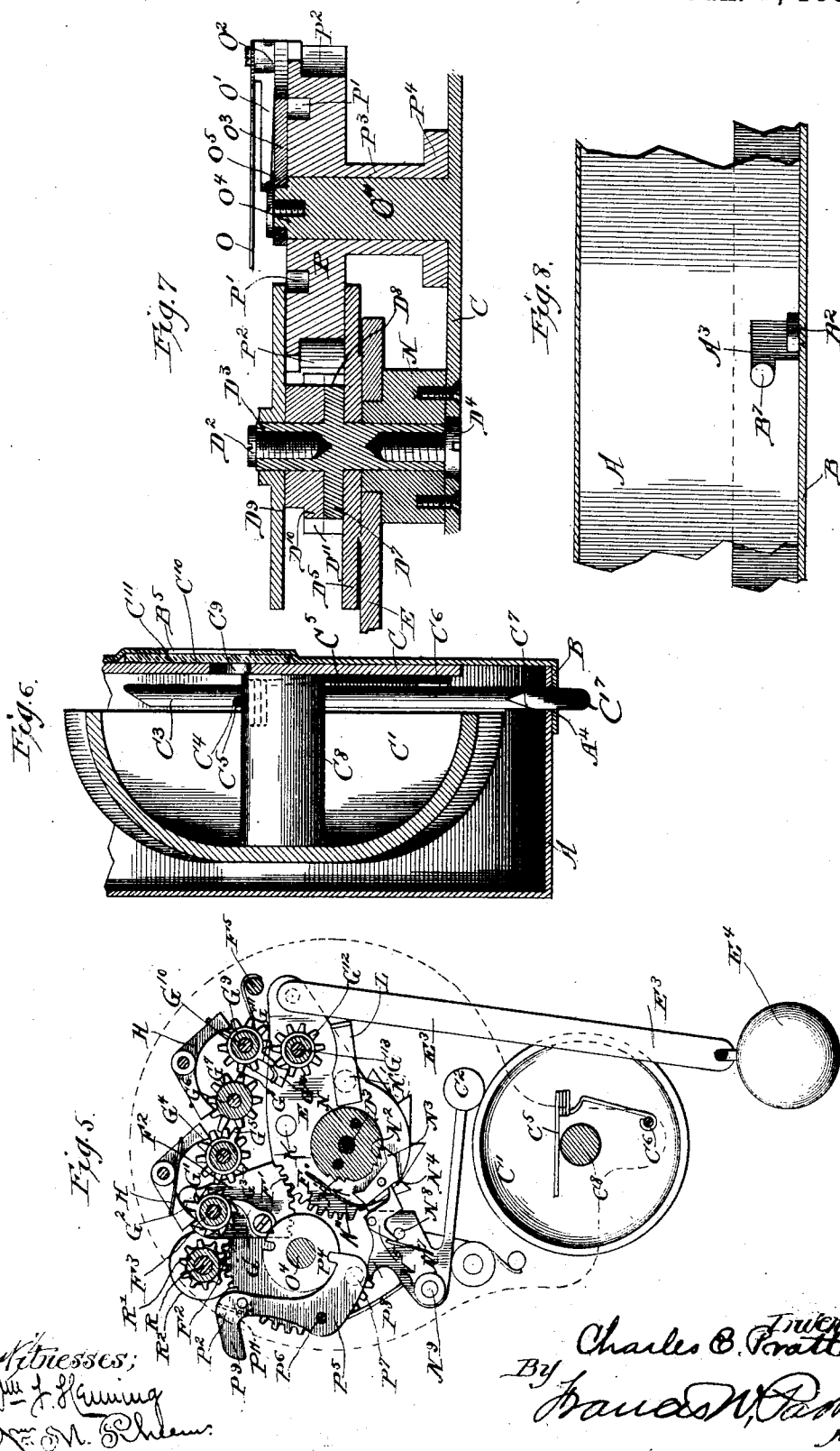
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No. 512,057.

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# UNITED STATES PATENT OFFICE.

CHARLES E. PRATT, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE INTERNATIONAL REGISTER COMPANY, OF SAME PLACE.

## FARE-REGISTER.

SPECIFICATION forming part of Letters Patent No. 512,057, dated January 2, 1894.

Application filed January 5, 1893. Serial No. 457,364. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. PRATT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Fare-Registers, of which the following is a specification.

My invention relates to fare registers such as are used for registering the fares of passengers on street cars and the like, and has for its objects to provide a simple, light, convenient, and secure register; also, to provide such a register with a sealed lock so that the register cannot be opened by any person without the breaking of the seal; also, to provide means for preventing access to the device.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a front view with parts broken away; Fig. 2, a rear view; Fig. 3, a horizontal vertical section taken from a point beneath the dials. Fig. 4 is a horizontal vertical section taken from a point beneath the tens dial and the direction indicator. Fig. 5 is a horizontal vertical section taken immediately back of the base plate looking from the back. Fig. 6 is a detail cross-section through the bell and locking mechanism. Fig. 7 is a cross-section on the line 7—7, of Fig. 4. Fig. 8 is a detail of the two parts of the case.

The same or like parts are indicated by the same letters in all the figures.

A is the front of the case, having the window A' through which the direction indicator is read, and the lower window A<sup>2</sup> through which the trip fares are read, and it is provided with the angular aperture A<sup>3</sup> see Fig. 8 at one end, and two small apertures A<sup>4</sup> at the other end Fig. 4, by the aid of which the front part of the case is secured to the rear, and with the aperture A<sup>5</sup> through which the operating pull E<sup>3</sup> projects, and the aperture A<sup>6</sup> through which the end P<sup>9</sup> of the dog P<sup>5</sup>, to control the direction indicator, projects.

B is the back of the case having the supporting links B' B' by which it is suspended, the screw holes B<sup>2</sup> B<sup>2</sup> whereby the base plate is secured to the back, the upper window B<sup>3</sup> through which the total registration may be examined, the small window B<sup>4</sup> through which

the ten thousands wheel J may be read, the seal window B<sup>5</sup>, and the keyhole B<sup>6</sup>.

B<sup>7</sup> Figs. 3, 4, and 8 is a pin on the inside of the upwardly turned flange on the rear of the case B adapted to be received into the lateral portion of the angular aperture or slot A<sup>3</sup> when the parts are properly brought to position.

The rear plate B has apertures similar to and registering with the apertures A<sup>4</sup> in the front portion of the case A.

C is the base plate having at the lower end thereof the bell C' and the bell hammer C<sup>2</sup>.

C<sup>3</sup> is a pin having the depression C<sup>4</sup> Fig. 6 to receive one end of the spring C<sup>5</sup>, which spring is secured at C<sup>6</sup> on the base plate back of the bell. At the other end of the pin C<sup>3</sup> is the bent portion C<sup>7</sup> so that the two parts of the bend pass through the two apertures A<sup>4</sup> A<sup>4</sup> and the corresponding apertures in the back of the case when the parts are in position; and the pin B<sup>7</sup> is in the lateral portion of the slot A<sup>3</sup> forming a bayonet joint which aids in holding the two portions of the case together with the registering mechanism between them.

C<sup>8</sup> is a pin on which the bell is supported. C<sup>9</sup> Fig. 6 is an aperture through the base C of the case back of the spring C<sup>5</sup>, and C<sup>10</sup> is a window of glass, or other such material to cover the aperture C<sup>9</sup>.

C<sup>11</sup> is a card back of such window bearing the name, seal, or stamp of the person in authority.

Referring to the trip registering mechanism D is the inner or units disk or dial, having the figures from 0 to 9, and D' is the tens dial having in like manner, the figures from 0 to 9. They are so positioned that the figured margin of each lies under the window A<sup>2</sup>. The dial D is secured by means of the screw D<sup>2</sup> Fig. 7 on the front end of the shaft D<sup>3</sup>, the rear end of which is secured by a similar screw D<sup>4</sup> led into a recess in the base plate C Fig. 7. Midway on this shaft D<sup>3</sup> is secured the ratchet wheel D<sup>5</sup> Fig. 4, toothed as indicated and provided at one point with the deep notch D<sup>6</sup>, and attached rigidly to the gear wheel D<sup>7</sup>, the cogs of which are cut away at one point, as D<sup>8</sup>. Journaled upon this shaft D<sup>3</sup> is the

ratchet wheel  $D^9$  and the collar  $D^{10}$  and gear  $D^{11}$ , which are all riveted together, the gear  $D^{11}$  having its teeth cut away at one side the same as the gear wheel  $D^7$ . The dial  $D'$  is secured upon this last mentioned ratchet wheel  $D^9$  so as to rotate therewith.

$D^{12}$  and  $D^{13}$  are spring actuated dogs to lock the ratchet wheels  $D^9$  and  $D^5$  from reverse motion.

10 Pivoted upon the collar  $N$  encircling the shaft  $D^3$  is the lever  $E$ , which carries the dog  $E'$  Fig. 4, the same being pressed into the teeth of the ratchet wheel  $D^9$  by means of the spring  $E^2$ , and this lever  $E$  at its outer end is pivotally connected with the pull  $E^3$ , which projects through the aperture  $A^5$ , and is provided with the knob  $E^4$ . The dog  $E'$  is cut away so that while its rear portion engages the inner ratchet at every action its outer portion only engages the front ratchet wheel when the rear portion of the dog has fallen into the deep notch  $D^6$  in the wheel  $D^5$ , and by this means whenever the pull is drawn down, one or both of the trip dials operate, and thus the fares of a given trip are indicated in units and tens by simply pulling on the knob. The permanent register consists of the dials  $J$ , the gear wheels  $G^3$ ,  $G^6$ ,  $G^9$ , and  $G^{12}$ , the ratchet wheel  $G'$  and the plate  $F^2$ . Each action of the lever  $E$ , however, causes the operation of the registering mechanism proper, for said lever is provided with gear teeth at  $F$  in which mesh the teeth  $F'$  on the plate  $F^2$  which is pivoted on the shaft  $F^3$ . This latter plate  $F^2$  is itself a lever and to its outer end is secured one end of the spiral spring  $F^4$ , the other end of which is secured to the post  $F^5$ . Thus the spiral spring  $F^4$  acts in opposition to the pull of the operator to return the pull  $E^3$  and other parts to normal position.

On the rear side of the plate  $F^2$  is the spring actuated dog  $G$  Fig. 5, which engages the ratchet wheel  $G'$  on the shaft  $F^3$ , and from which projects the pin  $G^2$  to engage the teeth of the pinion  $G^3$  on the shaft  $G^4$ . This pinion has one long tooth  $G^5$  to engage the teeth of the pinion  $G^6$  on the shaft  $G^7$ . The pinion  $G^6$  has a long tooth  $G^8$  to engage the pinion  $G^9$  on the shaft  $G^{10}$ . The pinion  $G^9$  has a long tooth  $G^{11}$  to engage the pinion  $G^{12}$  on the shaft  $G^{13}$ .

$G^{14}$  is a dog pivoted on the shaft  $G^{10}$  and adapted to lock the pinion  $G^{12}$ .

15  $H$  are spring actuated dogs to lock these several pinions from reverse movement. On the end of these shafts  $F^3$ ,  $G^4$ ,  $G^7$ ,  $G^{10}$ , and  $G^{13}$  upon which the pinions and the ratchet wheel are secured are placed disks  $J$  provided with numbers about their outer edges, and as the lever  $F^2$  moves back and forth with each operation of the lever  $E$ , the ratchet wheel  $G'$  moves one point and brings a new number into view through the window  $B^3$ . When this ratchet wheel and shaft have moved once around, the projecting finger  $G^2$  will engage the next pinion  $G^3$  and move it one point so as to advance the disk controlled by said pin-

ion one number, and so on throughout the series, one being added each time to the total indicated by all the figures exposed to the window  $B^3$ . The disk  $J$  on the last shaft  $G^{13}$  in the series is seen through the window  $B^4$ , this being a convenience of arrangement to get the parts into the smallest possible compass. Thus as the trip registering mechanism operates, one unit is added each time to the permanent register or the total indicated thereby.

80  $K$  is a pin on the back of the lever  $E$  adapted to engage the upwardly projecting pin  $K'$  on the base plate, the two serving as a stop to limit the motion of the pull  $E^3$ ; and  $L$  is a shield or guard plate alongside of the pull to prevent access to the operating mechanism through the aperture of the pull.

85  $N$  is a collar surrounding the shaft  $D^3$  and serving as a pivot for the lever  $E$ , and provided with the oppositely faced ratchet teeth  $N'$   $N^2$  for the dog  $N^3$  pivoted on the lever  $E$ . This dog is provided with a back tip  $N^4$  to engage one extremity of the pivoted dog  $N^5$ , which is pivoted on one end of the elbow crank lever  $N^7$ , and whose other extremity engages the pin  $N^8$  on such elbow crank lever. The other end of the elbow crank lever  $N^7$  carries the bell hammer  $C^2$ , and this lever  $N^7$  is pivoted on the shaft  $N^9$  and is forced toward the bell by the spring  $N^{10}$ . Thus by the same motion of the pull which operates the trip register and the permanent register, the dog  $N^3$  is moved, carrying with it the dog  $N^5$ , and withdrawing the hammer  $C^2$  from the bell until the motion is continued far enough to free the tip of the dog  $N^5$  from the tip  $N^4$  on the dog  $N^3$ , whereupon the bell hammer is released and thrown against the bell to sound the alarm.

The dog  $N^3$  engaging the ratchet teeth  $N^2$  will not permit of the discontinuance of the operation after it has once begun, for by this dog, the pull is stopped from reverse motion after the end of the dog  $N^3$  has engaged the first tooth  $N^2$ . As soon as the bell hammer is released, the dog  $N^3$  is tipped upon its pivot so as to free it from the teeth  $N^2$  and a new operation can be performed.

The direction indicator and the releasing mechanism therefor consist of the following features:

120  $O$  is a plate having the words "Out" and "In" or the like thereon, and it is secured to an arm  $O'$  pivoted at  $O^2$  to a plate  $O^3$  which is secured on the shaft  $O^4$ .

125  $O^5$  is a pin at the extremity of the arm  $O'$ . The shaft  $O^4$  is secured rigidly upon the base plate  $C$ . On the shaft  $O^4$  is journaled the gear wheel  $P$ , having the eccentric groove  $P'$  in its surface to receive the pin  $O^5$ , Fig. 3, and this gear wheel is cut away at  $P^2$   $P^2$  at diametrically opposite points. At the rear side of the gear wheel is the sleeve  $P^3$  having the rear part  $P^4$  with two notches one or the other of which notches receives one end of the dog  $P^5$  Fig. 5. The dog  $P^5$  is pivoted at  $P^6$ , and

provided with a pin  $P^7$  near the tip  $P^8$  of the dog  $N^5$ . The pin  $P^7$  will pass the tip  $P^8$  except when the dog  $N^5$  is partially turned so as to withdraw the bell hammer from its position near the bell, and in such cases, the tip  $P^8$  engages the pin  $P^7$ , and prevents the rocking of the dog  $P^5$  on its pivot.  $P^9$  is the outwardly projecting end of such dog which projects through the aperture  $A^6$ .  $P^{11}$  is a guard on such dog which substantially closes the hole through which it passes so as to prevent the introduction of a tool or wire into the interior.

$R$  is a shaft inserted in a suitable bearing  $R'$ , and this shaft carries an outer thumb piece  $R^2$  and a pinion  $R^3$  to engage the gear  $P$ . By means of this thumb piece, shaft, and pinion, the gear  $P$  provided with the eccentric groove can be rotated when the dog  $P^5$  is rocked inwardly so as to disengage its tip from the slot in the part  $P^4$ .

It is evident that many of these features could be dispensed with without departing from the spirit of my invention, and also that some of the features of the combination will operate successfully and satisfactorily if associated with other devices or forms of devices. I do not therefore wish to be limited to the precise forms of constructions shown, or the details as shown, or to the entire combination.

The trip registering mechanism consists of the two dials numbered about their peripheries, and situated so that the numbered edge or periphery of each will come back of the window  $A^2$ . The inner dial  $D$  is the units dial, and it is controlled by the rear ratchet wheel  $D^5$ . The outer dial  $D'$  is the tens dial, and it is controlled by the ratchet wheel  $D^6$ . The ratchet wheel  $D^5$  has a deep notch  $D^6$ , and by each pull of the pull  $E^3$ , the ratchet wheel  $D^5$  is moved forward one tooth by the engagement of the dog  $E'$  on the lever  $E$  therewith. This of course moves the units dial one point forward to indicate another fare taken, and when the units dial has completed the revolution, the outer portion of the dog  $E'$  will engage the outer ratchet wheel, for the reason that the inner portion, which has, up to that time, engaged the ordinary teeth of the ratchet wheel  $D^5$  will sink deeper into the deep notch  $D^6$ , thus permitting the outer portion of such dog to engage the tooth of the outer ratchet wheel. Thus by each pull upon the knob or ball  $E^4$ , the pull  $E^3$  is brought downwardly and the lever  $E$  is moved about its pivot block  $N$ , and an additional fare is indicated on the trip register. The two ratchet wheels are kept from reverse motion by the dogs  $D^{12}$   $D^{12}$ .

One portion of the lever  $E$  is made the arc of a circle, whose center is the center of the shaft  $D^3$  about which center the lever  $E$  is pivoted. This arc shaped portion is indicated at  $F$ , and is toothed as shown.  $F'$  is a similar toothed lever pivoted on the shaft  $F^3$  as shown in Fig. 5, and the radial distance from the

center of shaft  $F^3$  to the teeth upon the lever  $F'$  is or should be the same as the radial distance from the center of the shaft  $D^3$  to the teeth upon the lever  $E$ . These two toothed portions engage each other so that by every motion of the lever  $E$ , the lever  $F'$  is moved. This lever, whenever moved, by the engagement of the dog  $G$  with the ratchet wheel  $G'$  moves the latter one tooth, and thus causes the numbered disk on the other end of shaft  $F^3$  to move forward one number. The successive arrangements of gears, disks, and projecting points associated with the shafts  $G^4$ ,  $G^7$ ,  $G^{10}$ , and  $G^{13}$  is designed to secure a permanent registration of all the fares; the first shaft  $F^3$  and its mechanism and the dial  $J$  thereon indicating the units, the second tens, the third hundreds, the fourth thousands, and the fifth tens of thousands, and these registrations are seen through the windows  $B^3$  and  $B^4$ . The dogs  $H$   $H$  and  $G^{14}$  prevent the reverse motion of these several pinions. The pin  $K$  on the back of the lever  $E$  engages the pin  $K'$  on the base plate to limit the motion of the pull  $E^3$ . The lever  $E$  finds a stop in the opposite direction against the pin  $F^5$  as shown in Figs. 3 and 4. The collar  $N$  on which the lever  $E$  is pivotally placed is itself fixed upon the plate  $C$ , and has upon its surface the ratchet teeth  $N'$  and  $N^2$  adapted to engage respectively the extremities of the dog  $N^3$  which is pivoted on the lower side of the lever  $E$ . This dog has a back tip  $N^4$ , and is itself adapted to receive one end of the dog  $N^5$ , so that as the lever  $E$  is moved about its pivot by the downward motion of the pull, the dog  $N^3$  immediately engages the teeth  $N^2$  so as to prevent the reverse motion of the parts and compel the operator to complete the operation, the dog  $N^3$  engaging the dog  $N^5$  whose other end engages the pin  $N^3$ , so that by the further motion of the lever  $E$  in the direction indicated by the arrow in Fig. 5, the dog  $N^3$  is rocked upon its pivot  $N^3$  so as to retract the hammer  $C^2$  from the bell. The reverse motion cannot take place until this motion has continued so far as to release the end of the dog  $N^5$  from the tip  $N^4$ , and when this occurs, the bell hammer is released, and at the same time, the dog  $N^3$  is freed from its ratchet teeth  $N^2$  and the parts are restored to their original position. The dog  $N^3$  will engage the ratchet teeth  $N'$  being forced there against by the spring  $N^{11}$ , so that after releasing the bell hammer the parts must be freed so as to be restored to their original positions before a new operation of the pull can begin, and when this occurs, or when the pull has been released so that the spring  $F^4$  brings the lever  $E$  back against the post  $F^5$ , the dog  $N^5$  will resume the position shown in Fig. 5, back of the tip  $N^4$ , so that as soon as the pull begins, if not before, the dog  $N^3$  will be released from the ratchet teeth  $N'$  and put in engagement with the ratchet teeth  $N^2$ . Thus the operator when he begins to move the pull must complete the motion, and he must complete

it far enough to cause the bell to ring, and he must free the parts and let them resume their original positions before beginning the downward pull again.

Referring to the direction indicator; it consists primarily of the plate O having the words "In" and "Out" thereon, which are adapted to be successively exposed through the window A'. This direction indicator plate is secured upon the arm or piece O' which carries the pin O<sup>5</sup>, which engages the eccentric groove P' in the gear P. The arm O' is pivoted at O<sup>2</sup> to the plate or arm O<sup>3</sup> which is secured to the shaft O<sup>4</sup>. From this it is clear that by the rotation of the gear P, the engagement of the pin O<sup>5</sup> with the groove P' will bring such pin toward and from the center of shaft O<sup>4</sup>, and thus the indicator is moved up and down across the window A' so that the words "Out" and "In" are successively exposed as stated above. This gear P is moved by means of the pinion R<sup>3</sup> which engages with it, and which is fixed on the shaft R which is adapted to be received into the vertical collar or hollow shaft R', and upon the outer end of which is the thumb piece R<sup>2</sup>, by turning which the pinion R<sup>3</sup> is turned, and hence the gear P rotated to cause the action last above described. On the inner end of the shaft O<sup>4</sup> upon which the gear P is journaled is the rearwardly projecting part P<sup>3</sup> which is rigid or continuous with the gear P, and has at its inner end the plate P<sup>4</sup> notched to receive one end of the dog P<sup>5</sup>. This dog is pivoted at P<sup>6</sup>, and has a rearwardly projecting pin P<sup>7</sup> to engage the tip P<sup>8</sup> on the lever or dog N<sup>5</sup>. The pin P<sup>7</sup> and tip P<sup>8</sup> are in such relative positions that they may move past each other freely when the dog N<sup>5</sup> is in its normal position as indicated in Fig. 5. The outer end of the dog or lever P<sup>5</sup> projects through the aperture A<sup>6</sup> and terminates in the thumb piece P<sup>9</sup> by pressing on which the dog may be rocked on its pivot. The guard P<sup>11</sup> prevents access to the interior through the aperture A<sup>6</sup>. By pressing P<sup>9</sup>, the inner end of the dog P<sup>5</sup> is freed from the disk P<sup>4</sup>, and then by rotating the thumb piece R<sup>2</sup> the direction indicator may be shifted. On the opposite side of the disk P<sup>4</sup> is a similar notch, so that when the direction indicator has been shifted, the parts are again locked. The gear P is adapted to engage the pinions D<sup>7</sup> and D<sup>11</sup> so that when it is rotated, they also are rotated; and since the trip registering disks D, D' are controlled by said pinions, they also are brought to zero with the shifting of the direction indicator. These pinions D<sup>7</sup> and D<sup>11</sup> are cut away, as indicated at D<sup>8</sup>, so that when they come around to the zero point, they are no longer engaged by the rotating gear P, and hence, when brought to zero cannot be further moved. The disk P<sup>4</sup> is notched or slotted at diametrically opposite points so as to allow the dog P<sup>5</sup> to stop the rotation of the gear P when it has completed a half rotation, which is just enough to shift the direction indicator. The gear P

is itself cut away at the points P<sup>2</sup> P<sup>2</sup> at diametrically opposite points so as to clear the pinions D<sup>7</sup> D<sup>11</sup>. The arrangement of the pinions is such as indicated in Fig. 4, so that if an attempt be made to reverse the motion of the gear P to a direction opposite that of the arrow in Fig. 4, its teeth will engage the teeth of the pinions D<sup>7</sup> and D<sup>11</sup>, and thus it will be locked from motion, the pinions D<sup>7</sup> and D<sup>11</sup> acting as a dog to prevent the reverse motion, they being locked by the dogs D<sup>12</sup> and D<sup>12</sup>. The relation of the pin P<sup>7</sup> on the lever and dog P<sup>5</sup> to the tip P<sup>8</sup> of the lever or dog N<sup>7</sup> is such that as soon as the pull is drawn down far enough to cause the dog N<sup>3</sup> to engage the second of the teeth N<sup>2</sup>, the tip P<sup>8</sup> is thrown around to such a position that the pin P<sup>7</sup> engages therewith, and the shifting mechanism can therefore not be operated until the operation of ringing is completed.

The key-hole B<sup>6</sup> opens into an aperture S within the case, which itself opens into another aperture which contains the rotating part S' having the teeth S<sup>2</sup> adapted to be engaged by the key. The part S' is pivoted to the back B. From this part projects the finger S<sup>4</sup> which controls the slide S<sup>5</sup> so that by operating the key, the slide may be moved back and forth to conceal or reveal the permanent registration.

T is a chain depending from the curved portion of the pin C<sup>3</sup>, and carrying the bar T'. By this means the device when in position to be used may be secured close to the person.

The use and operation of the seal lock of my invention are as follows: When the device is in position for use, the front and rear portions of the case are securely fastened together by a bayonet joint at the top illustrated in Fig. 8, and by the engagement of the parts C<sup>3</sup> and C<sup>7</sup> with the set of registering holes in the two overlapping portions of the back and front parts of the case. In this position, the pin C<sup>3</sup> is held from withdrawal by means of the spring C<sup>5</sup> which lies in the cutaway portion C<sup>4</sup>. The only way therefore to open the case is to release these parts, and this can be done only by thrusting in a key or pin through the aperture C<sup>9</sup> against the spring C<sup>5</sup> to release it from its engagement with the pin C<sup>3</sup>, whereupon the pin C<sup>3</sup> with its parts C<sup>7</sup> may be withdrawn, and the two parts of the case may be separated. This, however, requires the breaking of the glass C<sup>10</sup>, and the perforation or destruction of the seal card C<sup>11</sup>, which bears the signature of the person in charge. While the case is thus closed, ready for use, the guard L protects the aperture A<sup>3</sup>, to prevent the introduction of a wire along the pull E<sup>3</sup>, and thus to prevent interference with the mechanism. At the same time, the guard P<sup>11</sup> on the dog P<sup>5</sup> in like manner protects the aperture A<sup>6</sup>.

I claim—

1. In a register, a direction indicator consisting of a rotatable part with an eccentric groove therein, an indicator pivoted at one

point and provided with a finger to extend into the eccentric groove at another point so that by the motion of the rotating part, the indicator is moved as the finger travels to or  
5 from the center of rotation.

2. In a register, the combination of a gear with an eccentric groove in the flat side thereof, an arm secured on the shaft on which the gear rotates, an indicator pivoted at the ex-  
15 tremity of such arm and provided with a finger which projects into the groove and means for rotating such gear.

3. In a register,—the combination of a gear with an eccentric groove in the flat side thereof, an arm secured on the shaft on which the gear rotates, an indicator pivoted at the ex-  
15 tremity of such arm and provided with a finger which projects into the groove, and means for rotating such gear, and a locking dog to

prevent such rotation, but controlled from 20 without the register.

4. In a register, the combination of a gear with an eccentric groove in the flat side thereof, an arm secured on the shaft on which the gear rotates, an indicator pivoted at the ex- 25 tremity of such arm and provided with a finger which projects into the groove, and means for rotating such pinion, and a locking dog to prevent such rotation, but controlled from without the register, and a bell hammer, and 30 interlocking portions on the hammer-lever and dog so that the gear cannot be released when the bell hammer has been moved away from the bell in the process of striking.

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