

W. J. MACKLE.
RECORDING FARE BOX.

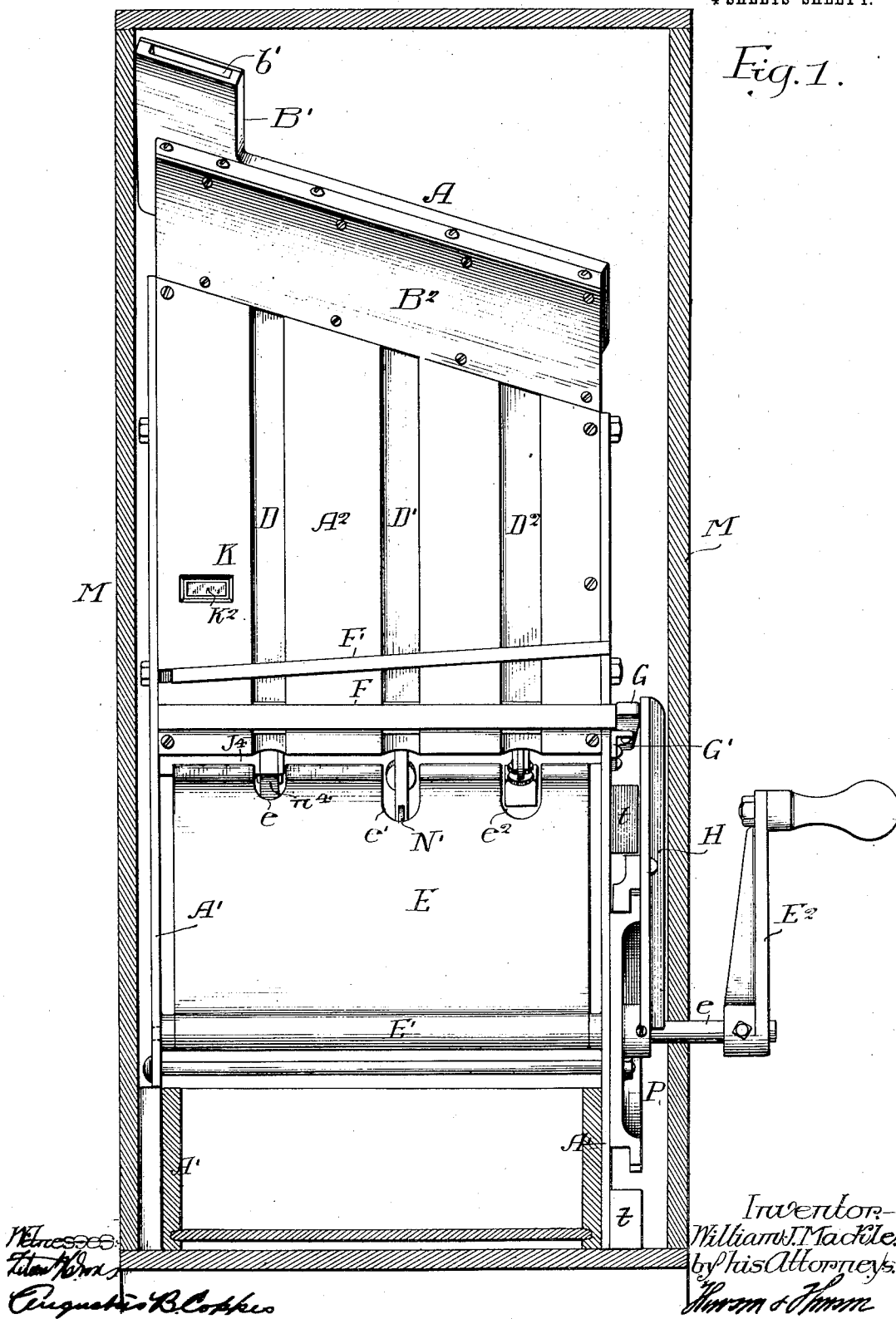
APPLICATION FILED AUG. 29, 1908.

1,004,447.

Patented Sept. 26, 1911.

4 SHEETS—SHEET 1.

Fig. 1.



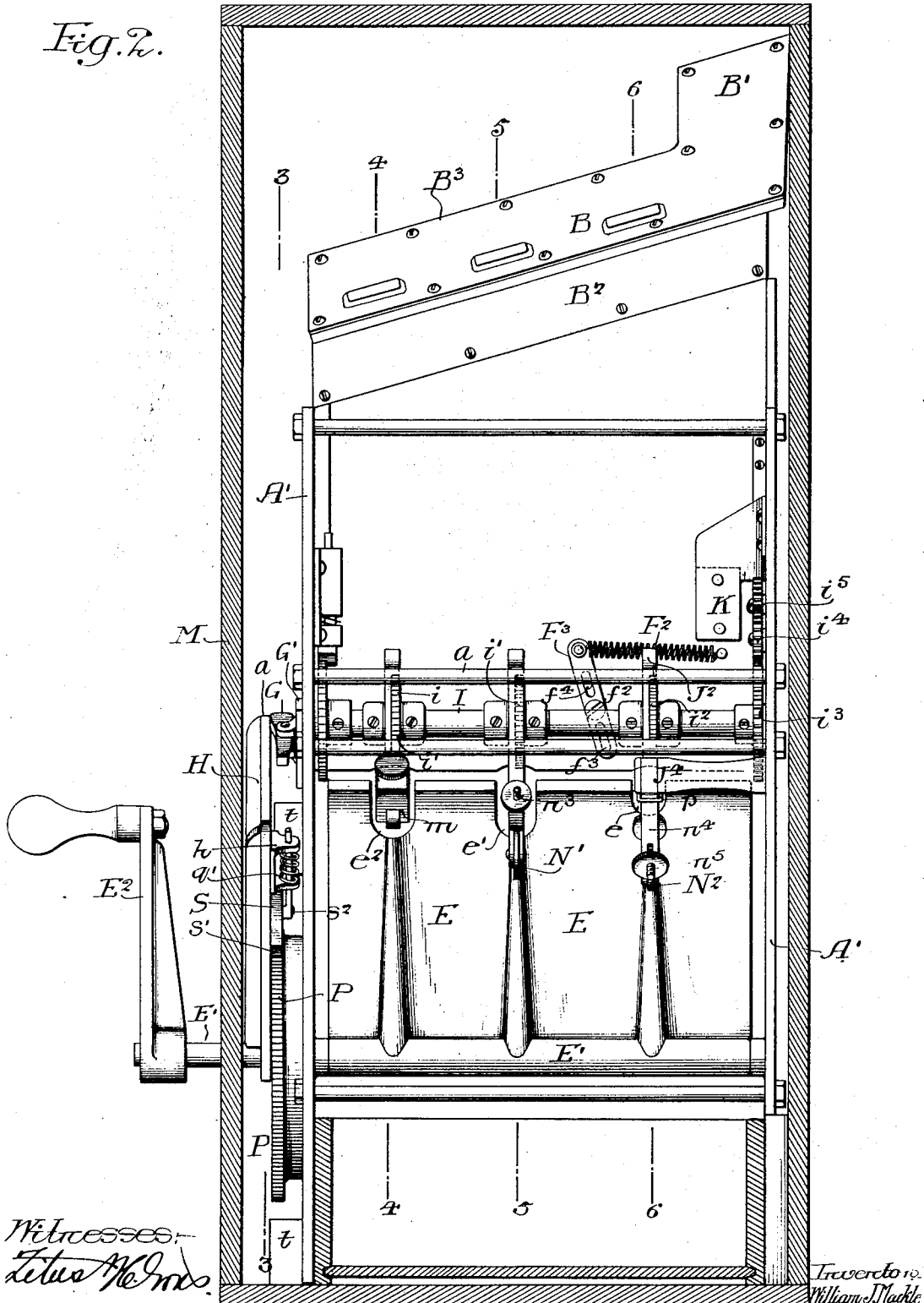
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4 SHEETS—SHEET 2.

Fig. 2.



Witnessed
J. W. Mc
Augustus B. Coppes

Inventor
William J. Mackle
by his Attorneys,
J. W. Mc

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4 SHEETS—SHEET 3.

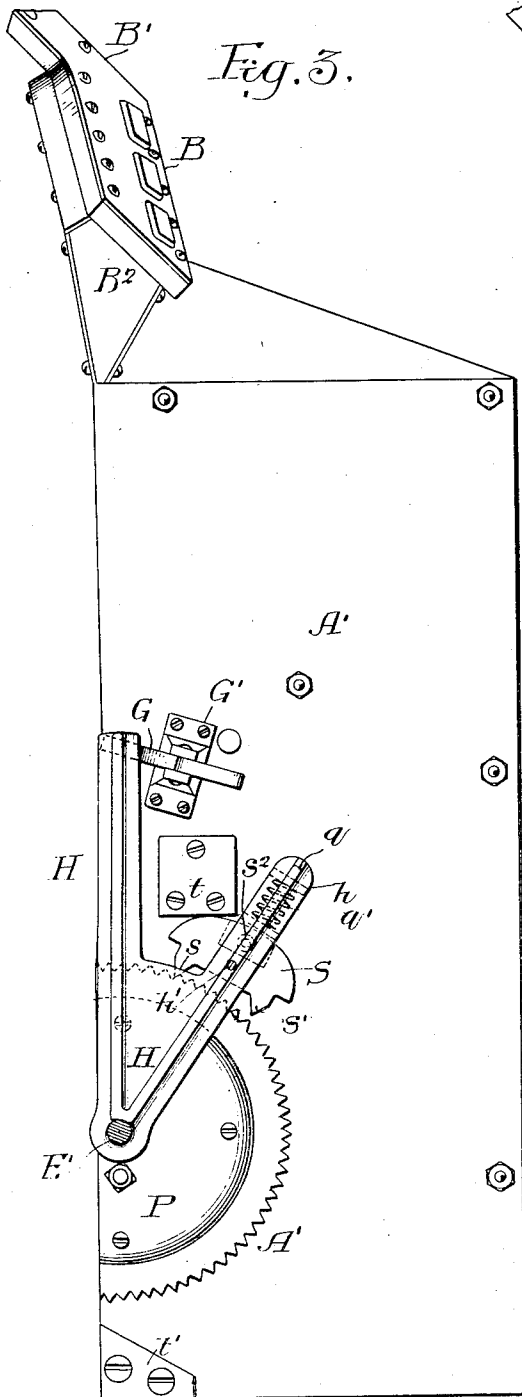


Fig. 3.

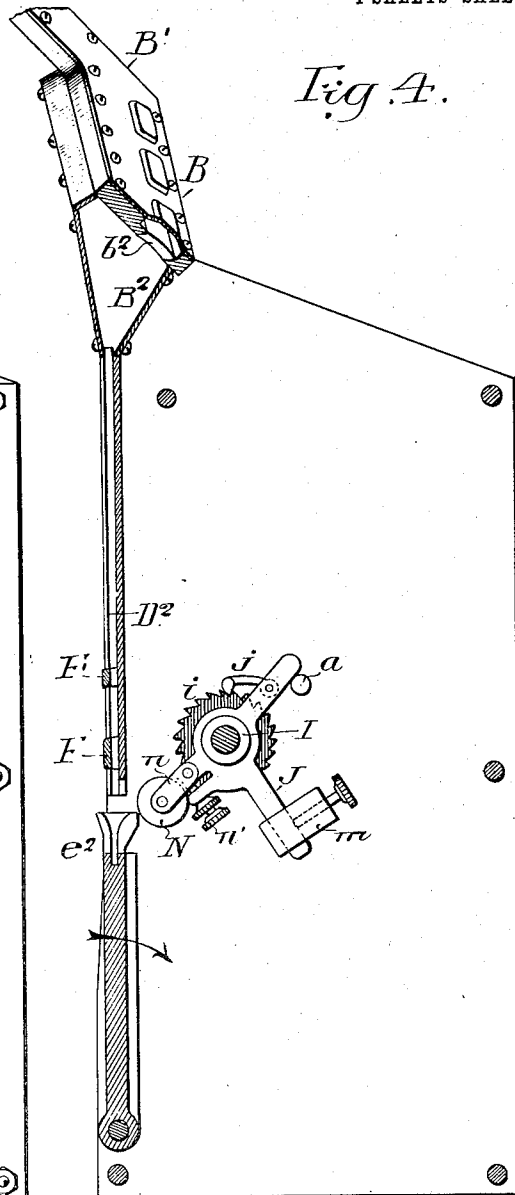


Fig. 4.

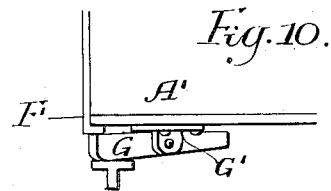


Fig. 10.

Witnesses:
L. W. Moore.
Augustus B. Coppers

Inventor—
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by his Attorney—
H. W. Moore

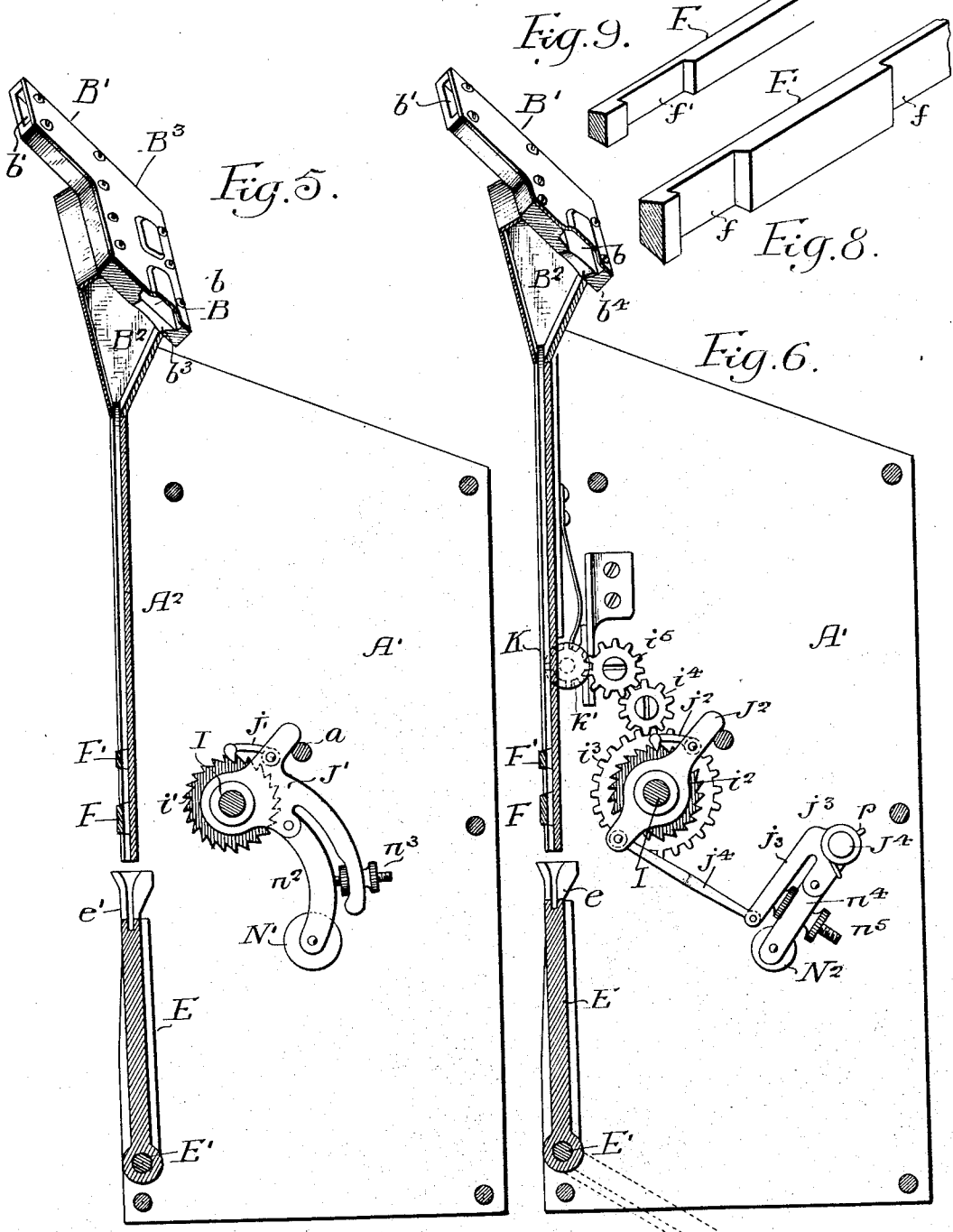
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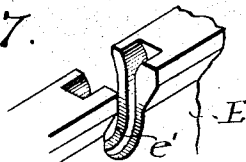
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1,004,447.

4 SHEETS-SHEET 4.



Witnesses:
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Inventor:
William J. Mackle
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UNITED STATES PATENT OFFICE.

WILLIAM J. MACKLE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE J. G. BRILL COMPANY,
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RECORDING FARE-BOX.

1,004,447.

Specification of Letters Patent. Patented Sept. 26, 1911.

Application filed August 29, 1908. Serial No. 450,809.

To all whom it may concern:

Be it known that I, WILLIAM J. MACKLE, a citizen of the United States, residing in St. Louis, Missouri, have invented certain
5 Improvements in Recording Fare-Boxes, of which the following is a specification.

My invention relates to that type of fare box in which the coin is placed in the fare receiving opening and a record is made of
10 the fare.

One object of my invention is to improve the construction of fare recording boxes particularly used on passenger cars, although the invention may be used in collecting ad-
15 missions at places of amusement.

Another object of the invention is to utilize the coins themselves as a means for actuating the registering mechanism.

These objects I attain in the following manner, reference being had to the accom-
20 panying drawings, in which:—

Figure 1, is a face view illustrating my improved fare register; the casing being shown in section; Fig. 2, is a rear view, also showing the casing in section; Fig. 3, is a vertical sectional view on the line 3—3, Fig. 2; Fig. 25 4, is a vertical sectional view on the line 4—4, Fig. 2; Fig. 5, is a vertical sectional view on the line 5—5, Fig. 2; Fig. 6, is a vertical sectional view on the line 6—6, Fig. 2; Fig. 7, is a detached perspective view illustrating one of the notches in the carrier; Figs. 8 and 9, are detached perspective views of the notched bars; and Fig. 10 is a detail view
35 showing the lever for actuating the bars.

A is the fare recording device, which is an independent structure mounted within the casing M of any form desired. This fare recording device has side members A', and
40 an inclined chute structure B extending from one side member to the other and in this member B is a chute b communicating at one end with a chute or channel b' in an extension B'. This extension projects through
45 the casing M and is in such a position that a passenger can place his fare in the shape of a coin in the chute b'.

A² is a vertically arranged plate extending from one side member to the other and
50 in this plate are vertical grooves d, d', d², undercut at each side, adapted to receive the coins of different denominations. There are three grooves in the present instance, but there may be as many grooves as desired
55 according to the number of different coins

used. In the present instance the device is adapted to receive 25¢. pieces, 10¢. pieces and 5¢. pieces.

D is a slot for the 10¢. pieces; D' is the slot for the 5¢. pieces and D² is the slot for
60 the 25¢. pieces. These slots D, D' and D² communicate with the channel b at the upper end of the device, there being an opening in the channel at each slot to allow the coins to drop into a hopper B², which is mounted be-
65 tween the plate A² and the chute structure B, as clearly shown in Figs. 3 and 4. The slot for the smallest coin is near the chute b' so that the larger coins will pass over the opening while the smallest coin will pass
70 through the opening into its hopper B²; the second smallest coin will pass through the central opening and the largest coin will pass through the last opening.

A plate B³ is removably secured to the
75 chute structure B so that in the event of any coin becoming clogged the plate can be removed. I form a boss on the plate opposite the openings b², b³, b⁴, so as to give the coins sufficient room to pass into the opening. The
80 hopper B² is divided into a series of compartments, one for each denomination of coin so that after the coins pass from the slot b they are separated from the other coins and deposited in the receptacle at the bot-
85 tom of the box.

E is a pivoted carrier mounted on a shaft E' which has its bearings in the side members A' and extending through the casing M at one end of this shaft is a handle E²
90 by which it can be reciprocated. In the upper edge of the carrier E are three notches e, e', and e² alining with the channels D, D' respectively and these notches are curved at each side to receive the coin as shown in
95 Fig. 7. The coin after it is received is allowed to fall into one of the notches e, e', e² according to its denomination and when the carrier is moved back it actuates the regis-
100 tering device. In order to prevent any more than one coin entering the notches e, e', e² in the carrier E, I provide check bars F, F' adapted to undercut grooves in the plate A² and these check bars are made as clearly
105 shown in Fig. 8; the check bar F having grooves f adapted to aline with the channels D, D', D², and the bar F' has grooves f' adapted to aline with the channels D, D', D². The bar F has a limited movement in
110 one direction, while the bar F' has a limited

movement in the opposite direction. These bars are returned to their normal position by the spring F^2 , which is attached to a fixed point and to one arm of a lever F^3 , which is pivoted at f^2 . This lever is slotted at each end and pins f^3 , f^4 , on the bars F , F' respectively extend into the slots. At one end of the device is a lever G adapted to a bracket G' secured to one of the end frames A' and one arm of this lever is in line with the bar F , as shown in Figs. 1, 3 and 10. This lever is actuated by an arm H mounted on the shaft E' so that when the arm is in position, as indicated in Fig. 3, the lever G is pushed in and the bar F is forced into its furthest position, while the bar F' is retracted. While in this position the slots f' in the bar F' are opposite the channels D , D' , D^2 , so that any coin dropped into the box will be held by the bar F' and the fare which is placed in the box is not registered at once, but the movement of the handle E^2 will register a coin previously placed in the box.

When the arm H is moved away from the lever G it releases the slide bars F , F' , and the spring F^2 moves them into the opposite position. The slots f' in the bar F' aline with the grooves D , D' , D^2 and the slots f in the bar F move out of line, thus the coin is allowed to pass through the slots f' and rest upon the bar F until the arm H is brought back to its position, as shown in Fig. 3, moving the lever G and actuating the bars F , F' , so as to bring the slots in the bar F in alinement with the grooves D , D' , D^2 , and the slots in the bar F' out of alinement. This allows the coin held by the bar F to drop into its notch in the carrier E and to be discharged on the next movement of the carrier, but in its movement to the discharge point, it actuates the register to indicate the amount of the coin deposited.

In order to move the register the proper amount for a particular coin I provide the following construction:— I is a shaft situated back of the plate A and mounted in bearings in the side frames A' and on this shaft are three ratchet wheels i , i' , i^2 , all of the same diameter in the present instance and on the end of the shaft is a gear wheel i^3 which meshes with an intermediate i^4 , which in turn meshes with a second intermediate i^5 and this intermediate engages a pinion k in the shaft k' of the register K , which may be made in the ordinary form. This register is attached to the plate A^2 and there is a glazed opening k^2 in which the numbers are exposed and there is an opening in the casing M through which the numbers can be seen from the exterior of the box. Mounted loosely on the shaft I are three pawl carriers J , J' , J^2 , each having a pawl j , j' , j^2 , respectively engaging its particular ratchet wheel, a pawl being hung

to one arm of each carrier. Each of the means for actuating the register are slightly different from the others.

As shown in Fig. 4, the carrier J has an arm to which is pivoted a link n , and resting against this arm is a set screw n' . The arm carries a roller N which is in the path of the coin passing through the slot D^2 . This carrier J in the present instance has a third arm on which is an adjustable weight m . When the carrier E is moved back in the direction of the arrow, Fig. 4, the coin in the notch of the carrier, which is the largest coin in the present instance, comes in contact with the roll N , pushing it back, and causing the pawl carrier to turn on the shaft I , the pawl passing freely over a number of ratchet teeth until the coin clears the roller N , when it will be moved back to its normal position by the weight until it strikes a stop a extending from one side member A' to the other. As it moves back it turns the register a certain number of teeth, in the present instance to indicate that a 25¢. piece has been inserted in the fare box.

The pawl carrier J' , as illustrated in Fig. 5, has a long link n^2 and on a long arm of the carrier J' is a set screw n^3 adapted to regulate the position of the arm N^2 and on the end of this arm is a roller N' in line with the notch e' in the carrier. This roll is so positioned that when the coin is dropped into this notch, in the present instance a 5¢. piece, it strikes the roller N' , which will move the pawl carrier J so that the pawl will pass over a given number of teeth; the number being less than that for the 25¢. pieces, and the carrier will return by its own weight until it strikes the bar a , registering a 5¢. piece. The pawl carrier J^2 , Fig. 6, does not carry its roll directly, but the roll N^2 is carried by the arm n^4 hung from a carrier J^3 pivoted to a stud J^4 attached to one of the side plates A' . A nut n^5 on a threaded stud carried by an arm j^3 regulates the position of the arm n^4 . The arm j^3 is connected by a rod j^4 to an arm on the pawl carrier J^2 . The coin, which is a 10¢. piece in the present instance, as it passes the roll N^2 as the carrier E is brought down, pushes back the roll and the arm J^3 and moves the pawl carrier J^2 the proper number of teeth and the pawl carrier is retracted in the present instance, not only by the weight of the parts, but by the spring p , which is attached to the stud J^4 and rests against the arm J^3 . Additional studs or springs may be used on each one of these pawl carriers, if desired.

In order to vibrate the carrier E and prevent the carrier E being retracted until it has discharged the coin it is carrying, I secure a ratchet disk P to one of the side frames A' , as illustrated in Figs. 2 and 3, and I mount a double pawl S on an exten-

sion h of the arm H ; the pawl being pivoted at h' to said extension and having two teeth s, s' , one engaging the teeth of the ratchet disk P , when in one position, and the other engaging the ratchet teeth when in the other position. Pivoted to the pawl S at s^2 is a rod q adapted to an opening in the end of the extension h , and on this rod is a spring q' . The pawl and rod are so arranged that the pivot s^2 of the rod may be forced on either side of the center, holding the pawl in the position in which it is shifted. When the arm is raised to the position shown in Fig. 3, the pawl S strikes the fixed stop t , forcing the tooth s into engagement with the ratchet teeth and disk P and withdrawing the tooth s' , so that when the handle E^2 is moved to carry a coin to the discharge point after it commences its movement, it cannot be retracted as the pawl tooth s will prevent it from moving backward so that it must move the entire distance until the pawl S strikes the lower stop t' , throwing the tooth S' into engagement with the teeth of the disk P and throwing out the tooth s , then the carrier can be returned to its normal position, as shown in Fig. 4.

The operation of the fare register is as follows:—As above remarked, the device is arranged to receive and register 25¢. pieces, 10¢. pieces, and 5¢. pieces, and any one of these pieces placed in the channel b' will pass through the inclined channel B and drop into its particular groove; its downward passage being stopped by the notched bar F' . If there is a coin already in the carrier E the carrier is turned to discharge its coin and the coin will actuate the register. On moving the carrier the arm H will also move the releasing bars F, F' , allowing the coin to drop through the notch in the bar F' onto the bar F . Then, as the carrier is returned, the arm H will again actuate the bars F, F' through the medium of the lever G , moving the bar F so that its notch will align with the channel in which the coin is, causing the coin to drop through the notch in the bar F into its notch in the carrier E . The coin will remain in the notch of the carrier and as the carrier is moved it will strike the roller on the pawl carrier opposite the notch and will actuate the register to indicate the amount of the coin. The movement of the carrier must continue until the bar S is shifted and this will bring the carrier in such position that the coin will fall out of the carrier by gravity into any suitable receptacle. Upon the return of the carrier to its normal position the parts will be set to receive another coin.

I claim:—

1. The combination in a fare register of a frame having a series of vertical grooves therein, differing in width to accommodate

coins of different dimensions, an inclined channel extending from and communicating with the several grooves, so that a coin passing down said channel will enter its proper groove, a pivoted carrier mounted under the frame and having a series of notches in line with the grooves, means for turning the carrier so that a coin passing from one of the grooves into a notch will be discharged, and registering mechanism having operating means extending into the path of the coin as it is carried from the groove.

2. The combination in a frame, of a series of vertical notches differing in width to accommodate coins of different dimensions, an inclined channel communicating with the several vertical grooves, a chute communicating with the channel, said chute being extended so as to receive a fare, a pivoted carrier mounted under the frame and having a series of notches alining with the grooves, said notches also differing in width so as to accommodate coins of different dimensions, and a register actuated by the carrier.

3. The combination in a fare register, of a frame having a series of vertical grooves differing in width to accommodate coins of any dimensions, a structure having an inclined channel therein, said channel communicating with the several vertical grooves, a hopper at one end of the structure communicating with the channel, a pivoted carrier mounted under the frame and having a series of notches of different widths alining with the grooves in the frame, a shaft, pawl and ratchet mechanism preventing the return of the carrier unless moved to its full extent, means for shifting the ratchet at each end of the movement of the carrier, and a registering device actuated by the coin mounted in the carrier.

4. The combination in a fare register, of a frame having a series of vertical grooves for the reception of coins of different dimensions, a channel communicating with the said grooves, a hopper into which the coin is placed, a detaining bar extending across the grooves, a carrier for receiving the coin, and means for turning the carrier, said retaining bar being actuated on the turning of the carrier.

5. The combination in a fare register, of a frame having a vertical groove therein, two notched bars extending across the groove, a carrier for receiving a coin from the groove, means for actuating the bars so that one bar will allow the coin to pass while the other bar will hold it.

6. The combination in a cash register having a series of vertical grooves for the reception of coins, an inclined channel connected with the several grooves, a hopper connected to the channel, a pivoted carrier arranged to receive the coins from the

groove, two notched bars, one mounted above the other, means for actuating the bars in unison so as to allow the coins to pass one bar and to be held by the other on its way from the channel to the carrier.

7. The combination in a fare register, of a frame having a vertical slot therein, a channel communicating with the slot, two bars extending across the slot, a lever connected to the two bars, a spring acting to retain the bars in a normal position, a carrier, an arm connected to the carrier acting upon the bars so that one bar will move in one direction while the other bar is moved in the opposite direction, so that one bar will release the coin while the other will retain it.

8. The combination in a fare register, of a frame having a series of vertical grooves therein of different widths to accommodate coins of different denominations, a channel communicating with the several grooves, a carrier notched to receive the coins from the several grooves, two notched bars extending across the entire series of grooves, one being inclined in respect to the other, so that the space between the bars will accommodate coins of different dimensions.

9. The combination in a fare register, of a frame, a series of vertical grooves therein of different widths, a channel communicating with the grooves, a pivoted carrier having notches alining with the grooves, two bars extending across the frame notched to allow for the passage of the coins, a lever connected to both bars, a spring acting to retain the bars in a normal position, a lever at one end of the frame arranged to press against one bar, an arm acting in unison with the carrier and adapted to act upon the lever to shift the bars to allow a coin in one of the grooves to pass into position.

10. The combination of a frame having a series of vertical grooves therein differing in width, a channel communicating with the several grooves, a pivoted notched carrier, the notches being directly under the several grooves in the frame and being of a width to receive coins of different sizes, a registering device, a shaft geared to the registering device, a series of ratchet wheels on the shaft, a series of pawl carriers opposite each

notch in the carrier, a pawl mounted on each pawl carrier engaging the ratchet wheel so that a coin dropping in the notch in the carrier will actuate one of the pawl carriers, which in turn will actuate the registering mechanism.

11. The combination in a register of a carrier having a notch to receive a coin, a shaft, a register geared to the shaft, a ratchet wheel on the shaft, a pawl carrier adapted to swing on the shaft, a pawl on the carrier engaging the ratchet wheel, an arm on the carrier, a roller carried by the arm, said carrier being in line with the notch in the coin carrier, with a set screw for adjusting the arm carrying the roller.

12. The combination in a fare register of a frame having a series of grooves therein for the passage of the coin, a pivoted carrier having notches arranged opposite the grooves and adapted to receive a coin, a shaft, a register geared to the shaft, a series of mechanisms carried by the shaft and having actuating arms, said arms being differently arranged in respect to the notches in the carrier, so that when the arms are engaged by the coin mounted in the carrier the shaft will be moved a greater or less distance as it is actuated by the coin.

13. The combination in a fare register, of a frame having a series of grooves therein for the coin, a coin carrier notched to receive the coin from the grooves, a shaft on which the coin carrier is mounted, an arm on the shaft, a fixed toothed wheel or segment, an arm on the shaft, a double toothed pawl, a pin adapted to the pawl and a spring for retaining the pawl in the position to which it is adjusted, the pivot of the pawl being on one side or the other of the center, two fixed stops to limit the movement of the arm so as to shift the pawl to throw one or the other of the teeth into engagement with the teeth of the fixed segment.

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

WILLIAM J. MACKLE.

Witnesses:

HUBERT E. LAWLESS,
EUGENE W. NORD.