July 25, 1933. C. F. WEBB 1,919,581

COIN FREED MECHANISM

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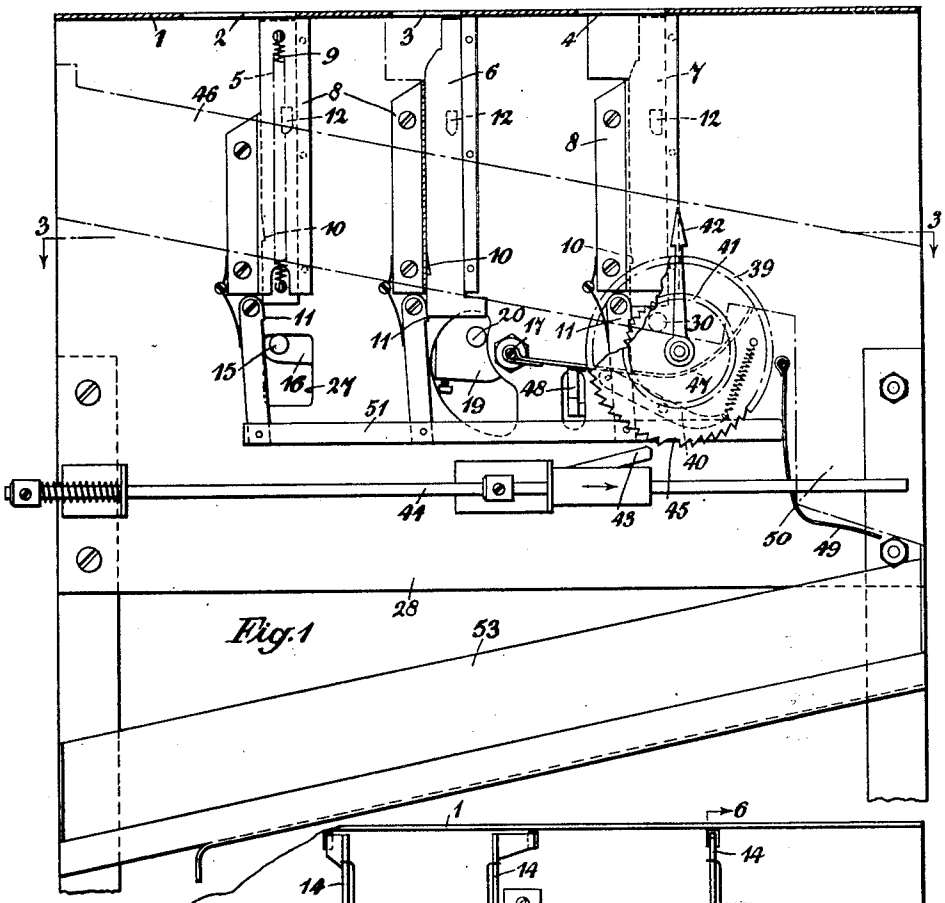


Fig. 1

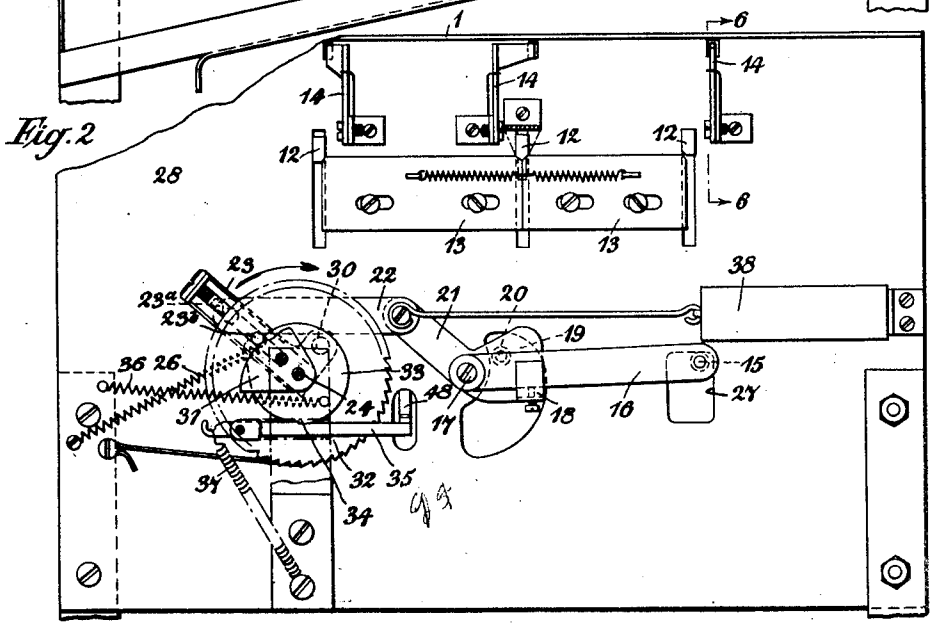


Fig. 2

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COIN FREED MECHANISM

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Fig. 3

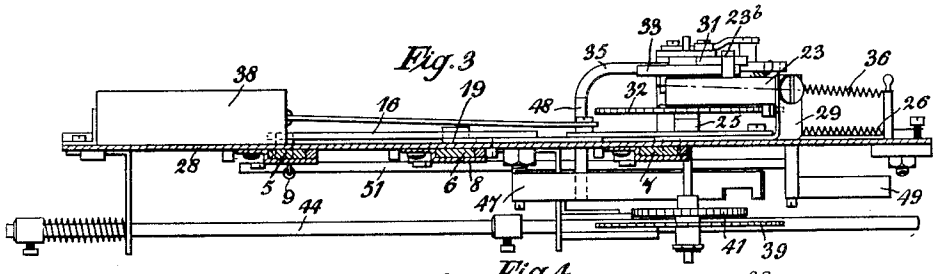



Fig. 4

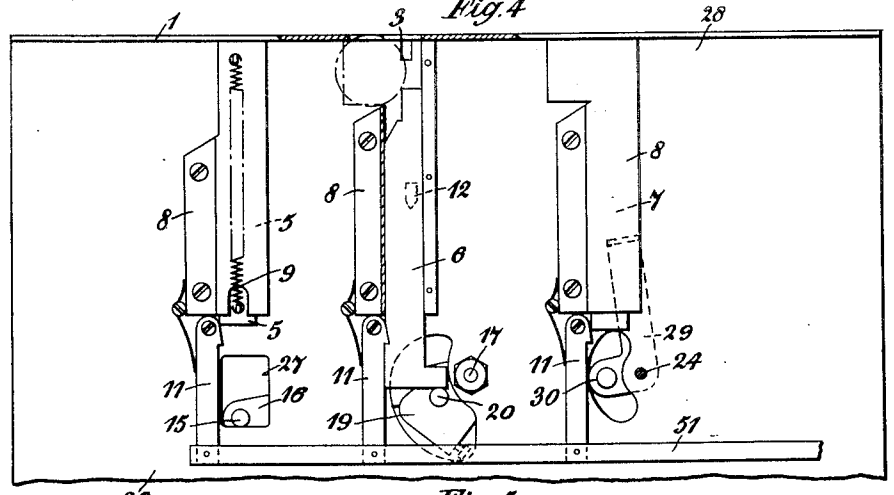
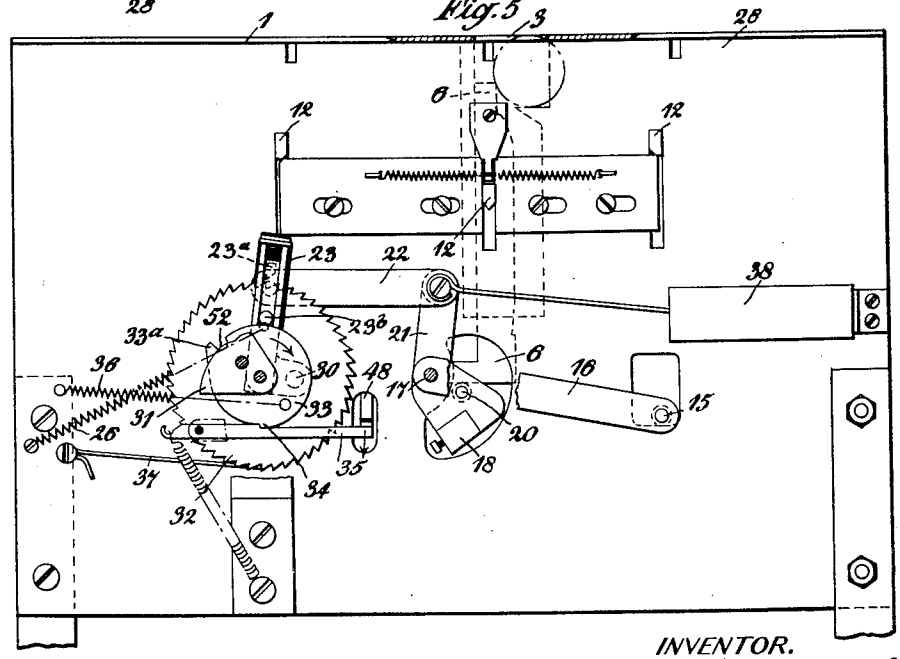



Fig. 5




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COIN FREED MECHANISM

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Fig. 4

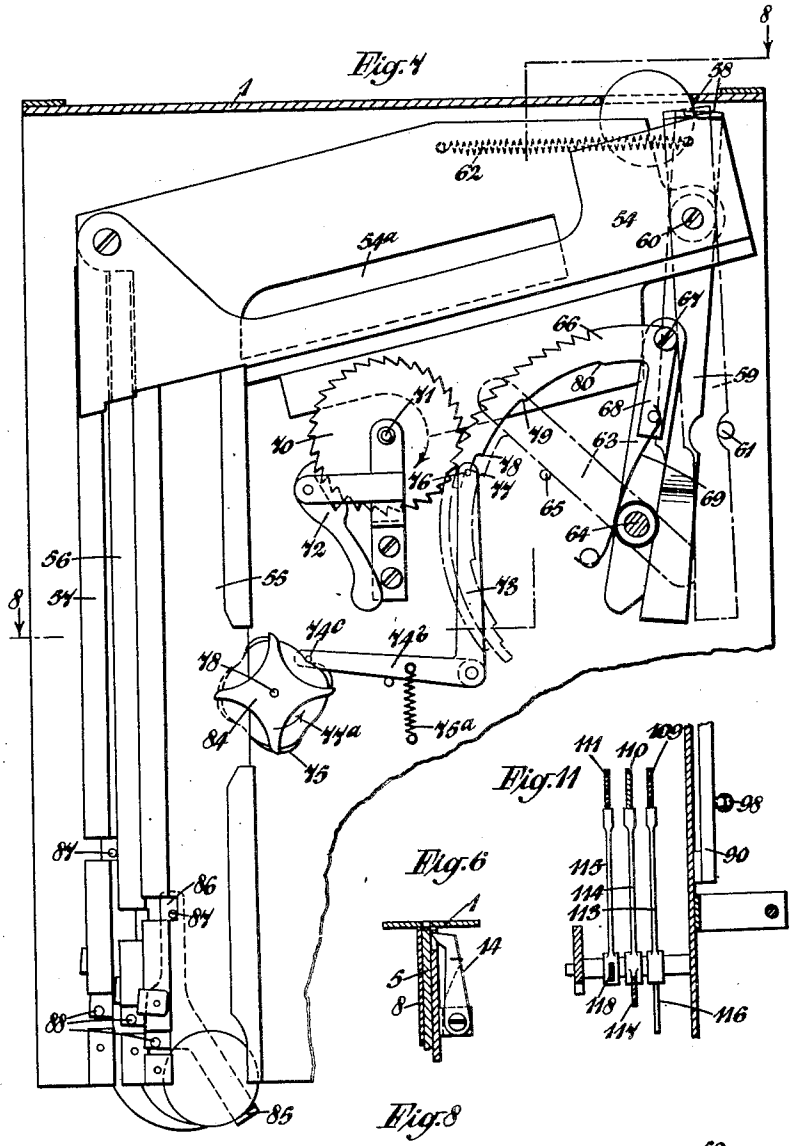


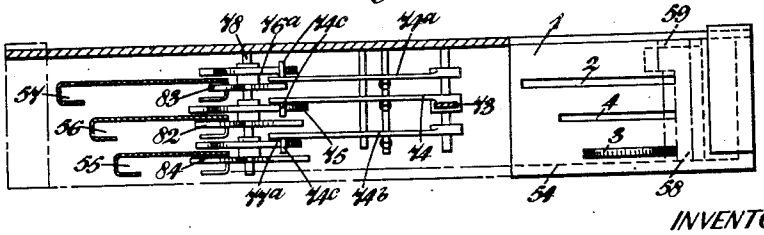

Fig. 11




Fig. 6




Fig. 8




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COIN FREED MECHANISM

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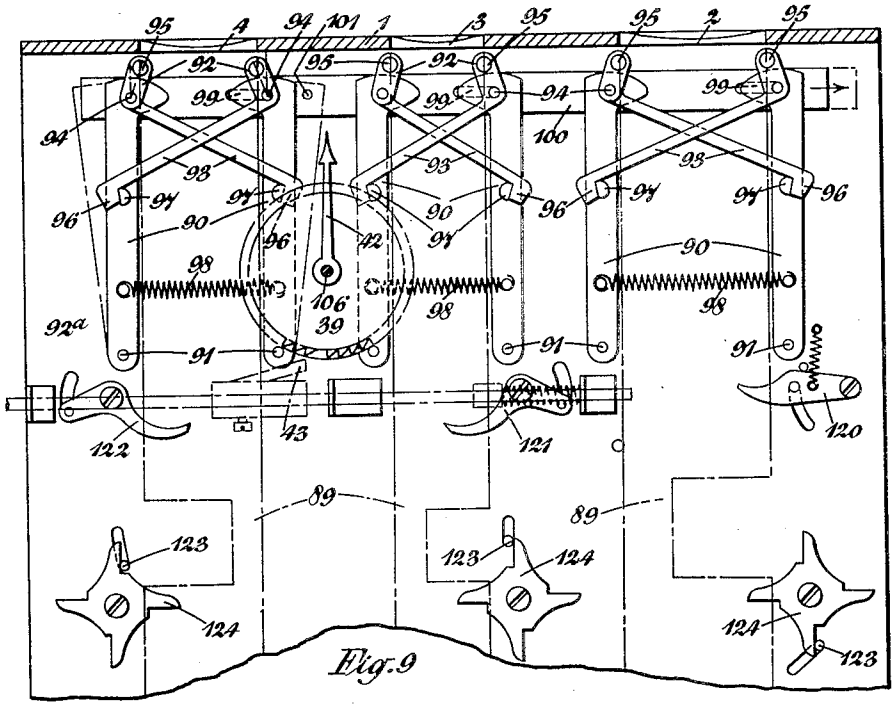


Fig. 9

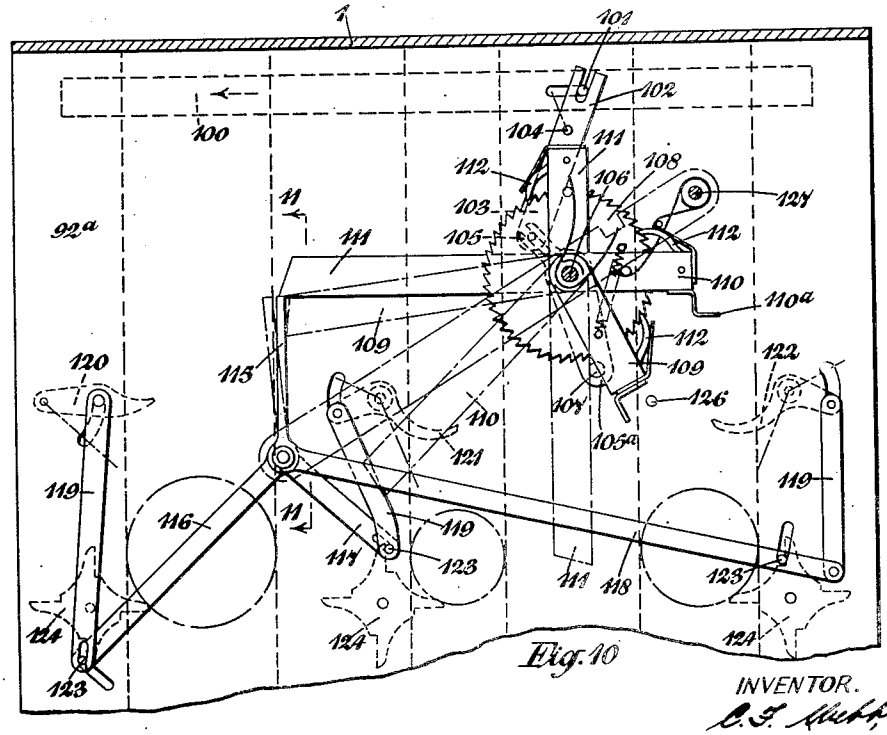


Fig. 10

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Patented July 25, 1933 1,919,581

# UNITED STATES PATENT OFFICE

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## COIN FREED MECHANISM

Application filed August 19, 1931, Serial No. 558,151, and in Great Britain October 9, 1930.

This invention is for improvements in or relating to means for checking the payment in coin of fares, admission fees and the like, which is arranged to indicate the receipt of money paid in respect of fares in a vehicle or a seat in a theatre or the like, or for the occupation of a booth or for any other purpose where money is paid in respect of the services to be rendered, either for a certain duration of time or over a certain prearranged distance.

According to this invention there is provided a coin actuated mechanism operable to indicate upon the insertion of one or more of a range of coins of different denominations, the services to be rendered for said payment, which comprises means operable automatically upon the insertion of a coin to effect the movement of an indicator an amount which is proportionate to the alleged value, and not necessarily the size of, the coin inserted, and controlling means operable to return the indicator to a zero indication as the service is being rendered, or when the service has been rendered.

In order that the invention may be fully understood, reference is directed to the accompanying drawings in which:—

Figure 1 illustrates a vertical sectional view in front elevation of a mechanism constructed in accordance with this invention,

Figure 2 is a rear view of a portion of the mechanism illustrated in Figure 1,

Figure 3 is a sectional plan on the line 3—3 of Figure 1,

Figure 4 is a view of a portion of the mechanism illustrated in Figure 1 with parts thereof in a different position,

Figure 5 is a view similar to Figure 2, but illustrating parts of the mechanism in a position corresponding to the position of the parts illustrated in Figure 4,

Figure 6 is a section on the line 6—6 of Figure 2, illustrating a detail,

Figure 7 illustrates a sectional front elevation of a modified form of mechanism to that illustrated in Figures 1 to 6,

Figure 8 is a section on the line 8—8 of Figure 7,

Figure 9 illustrates a sectional front elevation of a further modified form of mechanism,

Figure 10 is a sectional rear elevation of the mechanism illustrated in Figure 9, and

Figure 11 is a section on the line 11—11 of Figure 10.

Referring to Figures 1 to 5 a construction of mechanism is illustrated which comprises a casing the upper panel 1 only of which is shown and is provided with three coin slots 2, 3 and 4 arranged respectively to receive pennies, sixpences and shillings, the slots being arranged in longitudinal alignment with one another. Beneath each of the slots a vertically disposed, slidable member 5, 6 and 7 respectively, is arranged in guides 8 in such a manner that a coin when pressed into the corresponding slot moves the slidable member downwardly against the influence of a spring such as 9, Figure 1. At the lower end of each slidable member a tooth 10 is provided which is arranged, when the member is in the fully depressed position, to engage with a spring controlled detent 11 which maintains the member in the depressed position until released by the detent in a manner hereinafter described. A projecting lug 12, Figures 1 and 2, is formed upon each of the slidable members and is arranged to coact, during its depression, with a pair of spring controlled slidably mounted plates 13 which form a "gate". The members of the gate have only sufficient free movement to enable one sliding member to be depressed at one time and ensures that when one of the said members 5, 6 and 7 is in the depressed position none of the other members may be depressed. A spring controlled stop 14, Figures 2 and 6 is arranged to extend across each of the coin slots when the corresponding slidable member 5, 6 or 7 is in the depressed position to prevent the insertion of a further coin until said member is restored to the normal position and moves the stop clear of the coin slot by engagement with the inclined under edge of the stop. The lower end of the member 5 is arranged when depressed to engage with and move a pin 15 carried upon one end of an arm 16 pivotally mounted at 17 and which is arranged when depressed to engage with an abutment 18 provided upon an arm 19 of a bell crank lever also pivotally mounted at 17. The arm 19 is provided with a pin 20 with which the member 6 is arranged to engage so as to move the bell crank lever when the said member is depressed. The other arm 21 of the bell crank lever is connected by a link 22 to an actuating arm 23 freely mount-

ed upon a spindle 24 carried in a bearing 25, Figure 3, on the machine frame. The arm 16 is maintained in a normal position (Figure 2) by a spring 26 secured to the arm 23 which causes the pin 15 to abut against the upper edge of an aperture 27 formed in a plate member 28 of the machine frame. The depression of the arms 16 and 19 by the members 5 and 6 causes the actuating arm 23 to be rotated in the direction of the arrow, Figure 2, against the action of the spring 26 by an amount determined by the value of the coin inserted, whilst the actuating arm 23 is provided with an extension 29 which carries a pin 30 arranged to be engaged and moved by the member 7 when depressed so as to rotate the arm 23 also an amount determined by the value of the coin inserted in the slot 4. In order that the proportionate movements of the actuating arm 23 may be effected, the length of the arms 16 and 19 and the connections thereof to the arm 23 are proportioned in conjunction with the amount of movement of the members 5 and 6 which is effected by the coins, (namely, a penny and sixpence, respectively) to effect a rotation of the arm 23 about the spindle 24 through the required angle. The insertion of a shilling into the slot 4 is arranged to depress the member 7 by the requisite amount necessary to effect direct rotation of the arm 23 through the desired angle.

The actuating arm 23 is provided with a spring controlled pawl 23*a* slidably mounted in a radial direction upon the said arm and a pin 23*b* is secured to an extension of the pawl and is normally arranged in contact with a fixed cam 31 which maintains the pawl 29 out of engagement with the teeth of a ratchet wheel 32 which is keyed to the spindle 24.

A disc 33 is mounted so as to pivot freely upon the spindle 24, and is arranged to coact with the pin 30 of the pawl in a manner hereinafter described. The cam is provided with a tooth 34 normally arranged in engagement with a spring-controlled coin actuated detent 35, so as to maintain the disc in a normal position about the spindle 24 against the influence of a spring 36. A spring-controlled detent 37 is arranged in engagement with the ratchet wheel so as to ensure that the same may be rotated in one direction only.

A dash-pot device 38 is operatively connected to the actuating arm 23 and arranged to control the speed of operation thereof.

A resetting wheel 39, provided with the same number of teeth as the ratchet wheel, is freely mounted upon one end of the spindle 24 and is provided with a spring controlled detent 40 arranged in engagement with a toothed detent wheel 41 keyed to the said spindle, the arrangement being such that the spring controlled detent normally ensures that the resetting wheel rotates with the said detent wheel and spindle 24, but in circumstances hereinafter described may be moved relatively to the spindle by virtue of a yielding action of the spring controlled detent 40 relatively to the detent wheel. A pointer 42 is secured to the boss of the resetting wheel 39 and is arranged to travel over a scale (not shown) so as to constitute an indicator. A resetting pawl 43 is mounted adjacent to the resetting wheel 39 upon a slidably mounted and yieldingly controlled rod 44 which is arranged to be operated by an authorized person for the purpose of resetting the pointer. The resetting wheel is provided with a mutilated tooth 45, which, when disposed adjacent to the resetting pawl, ensures that the said pawl is unable to effect rotation of the resetting wheel.

A coin chute 46 is arranged to receive coins inserted into the mechanism, and one end of a lever 47 is arranged to extend into the chute so as to be disposed in the path of coins passing down the chute and an extension 48 of the lever 47 extends above the coin actuated detent pawl 35, so that the passage of a coin down the chute 46 disengages the said detent from the tooth 34 in the disc 33. A pivoted member 49 is disposed within a downward extension 50 of the chute 46 so as to be moved by a coin falling down the said chute extension and is arranged when so moved to move a bar 51 operatively connected to the detents 11. This arrangement ensures that when the member 50 is moved by a coin the detents are moved and permit any of the members 5, 6 and 7 which have been depressed and retained in the depressed position by one of the detents, to be returned to the normal position.

The operation of the mechanism is as follows:—

A coin of the desired value is pressed into the appropriate slot such, for example, as a sixpence, into the slot 3 as shown in Figure 4, so as to move the corresponding vertically slidable member 6 in a downward direction until the spring controlled detent 11 engages with the tooth 10 of said member and retains the same in the depressed position. As the member 6 is being depressed it contacts with the pin 20 and moves the arm 19 about the pivot 17 and this movement effects rotation of the actuating arm 23 about its pivot through an angle corresponding to six teeth of the ratchet wheel 32. During this movement the pawl 23*a*, which is carried by the said arm, is maintained out of engagement with the ratchet wheel 32 by the edge of the disc 33. When the coin is pressed completely through the slot, it falls into and passes along the chute 46 and strikes against the end of the lever 47 and depresses the same so that the extension 48 of the lever disengages the detent 35 from the tooth 34 on the disc 33. The said disc is thereupon rotated about its axis by the spring 36 until a shoulder 33*a* thereon engages with the pin 23*b* of the pawl 23*a* and

permits the pin to be radially inward of the arm 23 by its spring into a depression 52 formed in the disc 33 so that the said pin moves into engagement with the adjacent tooth of the ratchet wheel 32. The coin thereafter passes down the chute extension 50 into contact with the pivoted member 49 and causes the detents 11 to be moved so that the depressed slidable member 6 is released. The actuating arm 23 is thereupon rotated counter-clockwise, Figure 2, by the spring 26 and moves the ratchet wheel 32 therewith through an angle corresponding to six teeth of the said wheel until the arm 23 reaches its normal position. This movement of the ratchet wheel 32 causes the pointer 42 of the indicator to be moved over a number of divisions determined by the value of the coin inserted, for example, six divisions. The pawl 23*a* is disengaged from the ratchet wheel at the end of the return movement of the arm 23 by engagement of the pin 23*b* of the pawl with the fixed cam 31. The coin passes from the chute extension 50 into a further chute 53 from which it is arranged to fall into a till.

When the invention is applied to road vehicles the conductor actuates the resetting pawl 43 periodically, for example, at the end of each fare stage, and each actuation is arranged to move the pointer 42 of the indicator back one unit or division. Thus, when the journey for which payment has been made is completed the pointer will again be in the normal or zero condition and will indicate to the conductor that the passenger has completed the journey for which the fare was originally paid.

It is to be understood that the resetting pawl above referred to may be actuated by Bowden cable mechanism or by electro-magnetically actuated mechanism, or by any convenient impulse generating mechanism.

It will be appreciated that the insertion of a coin or coins of the correct value into any or each of the slots 2, 3, 4 causes the pointer 42 to register the corresponding number of units on the scale of the indicator, the final position of the pointer indicating the total amount of the fare or the like paid, the pointer then being moved back in unitary stages by an authorized person until the pointer is again set at the zero position.

When a series of mechanisms, as hereinbefore described, are employed, for example, in connection with the seats of a public vehicle, all the resetting pawls are preferably arranged to be actuated together by a single control and this may be effected by Bowden cable connections or by electro-magnetic apparatus which comprises an electro-magnet or solenoid for each of the mechanisms which when energized is arranged to move an armature operatively connected to the resetting pawl 43 of the mechanism. All the electro-magnets or solenoids are connected in parallel or series with a master switch which is arranged under the control of an authorized person, such as the conductor of the vehicle, so that each closing of the switch causes all the resetting wheels of the various mechanisms to be returned towards the zero position by one unit.

The mutilated tooth 45 of each resetting wheel is arranged to be brought adjacent to the resetting pawl when the pointer of the indicator reaches the zero position, as indicated in Figure 1, so that actuations of the resetting pawl thereafter do not cause any further rotation of the resetting wheel and pointer until a further coin has been inserted into the mechanism and the pointer set to indicate the payment made.

Referring to Figures 7 and 8 a modified form of mechanism is illustrated which is provided with a casing, the upper panel 1 only of which is shown, which is provided with three slots 2, 3 and 4 formed therein for the reception respectively of pennies, sixpences and shillings. Each slot is formed of a length which ensures that no coin of larger diameter than that of the required denomination can be inserted therein and the slots are arranged in side by side relationship with one another with one end of the slots aligned as shown in Figure 8. Beneath each of the coin slots a chute, such as 54, Figure 7, is arranged to receive an inserted coin and is inclined rearwardly and also downwardly from a point adjacent to the coin slot. An opening 54*a* is formed in the rear wall of each chute 54, through which a coin of smaller diameter than a predetermined diameter is arranged to fall and is conducted to the exterior of the mechanism. Each chute 54 is arranged in communication at its lower end with a corresponding vertically disposed coin chute 55, 56, 57. Beneath the aligned ends of the coin slots 2, 3 and 4, there is arranged a horizontal extension 58 of a vertically disposed double-armed lever 59 pivotally mounted at 60 which is maintained in a normal position, indicated in Figure 7 in dot and dash lines, against a fixed stop 61 by means of a spring 62. A spring controlled double armed setting lever 63 is pivotally mounted at 64 to the frame of the mechanism so as to be normally inclined away from the double armed lever 59 in an upward direction with the lower end of the said setting lever abutting against the lower end of the double armed lever, as indicated in dot and dash lines, Figure 7. The setting lever 63 is arranged, in the normal position, to abut against a fixed stop 65. A toothed segment 66 is pivotally mounted at 67 upon the upper end of the setting lever 63 and is provided with an extension 68 arranged under the influence of a spring 69 so as normally to press the toothed segment into engagement with the teeth of an escapement wheel

70 pivotally mounted upon a spindle 71 to the frame of the mechanism. The teeth of the segment and the escapement wheel are of a saw-tooth configuration and are arranged so as to permit the teeth of the segment to ride freely past the teeth of the escapement wheel when the setting lever and the segment are moved in a clockwise direction, Figure 7, whilst ensuring that the teeth of the segment are arranged in driving relationship with the teeth of the escapement wheel when the setting lever and the segment are moved in a counter-clockwise direction. A gravity controlled escapement 72 is arranged to co-operate with the teeth of the escapement wheel so as to control the speed of rotation of the said wheel in a clockwise direction and ensure that the said wheel cannot rotate in the opposite direction.

A pivotally mounted, double armed detent lever 73, 74 is arranged under the influence of a spring 75*a* so that a pin 76 on one end thereof is normally maintained in engagement with the inner edge of the segment 66 and is arranged to co-operate with a series of notches 77, 78, 79 and 80 in a manner hereinafter described. The detent lever is provided with two additional arms 74*a* and 74*b* which are aligned with the arm 74. The free ends of the arms 74, 74*a* and 74*b* are each provided with a pin 74*c* and arranged respectively to co-operate with three cams 75, 76*a* and 77*a* freely mounted upon a spindle 78 carried by the frame of the mechanism. The cams are each arranged when rotated in a manner hereinafter described, to move the detent lever by different amounts and the notches 77, 78, 79 and 80 of the segment are arranged to extend to different radial distances towards the theoretical centre from which the segment is generated. The notch 77 is arranged to have the greatest radial distance whilst the notches 78, 79 and 80 extend progressively outwardly from the pivot 64 and are located respectively along the segment by distances corresponding to one, six and twelve teeth of the segment from the notch 77.

The arrangement is such that if the said lever 63 and segment 66 are moved in a counter-clockwise direction, Figure 7, in a manner hereinafter described, so that the notch 77 is arranged in engagement with the pin 76 of the detent lever as shown in Figure 7, an actuation of the detent lever by one of the cams 75, 76*a* or 77*a* permits the segment to move about its pivot 64 an angular distance corresponding to either one tooth, six teeth or twelve teeth.

Each of the cams 75, 76*a*, 77*a* is provided with four peaks upon its actuating surface and the cams are firmly secured respectively to one of three four-toothed star wheels, 82, 83, 84, each arranged to extend into one of the vertically disposed coin chutes 55, 56, 57 so that a coin falling down any of the said chutes strikes a tooth of the corresponding star wheel and rotates the same a quarter of a revolution, the cam secured thereto also being rotated by the same amount.

A pivotally mounted stop 85, Figure 7, is arranged to extend below each of the vertically disposed coin chutes 55, 56, 57. Each stop 85 is provided with an upwardly directed extension 86 to which an actuating pin 87 is secured arranged to extend into the corresponding vertically disposed coin chute. The arrangement is such that a coin descending any one of the coin chutes 55, 56 or 57 strikes the corresponding actuating pin 87 and moves the stop 85 connected thereto clear of the coin chute, but the said stop is arranged to return to its normal position under the influence of gravity and also by the coin striking a return pin 88 provided on the member 85 so as to intercept the falling coin and maintain the same in position in a lower portion of the chute. The lower portions of the chutes 55, 56, 57 are arranged to be visible through a window provided in the casing of the mechanism and the movement of the stops ensures that an incoming coin releases a coin held in position in the respective chute by the stop 85, whilst being itself retained in position by the said stop until a further coin passes down the said chute.

A resetting wheel and pointer (not shown) are provided upon the spindle 71 in a similar manner to the resetting wheel 39 and pointer 42 described with reference to Figures 1 to 6 and a resetting pawl (not shown) is also provided in a similar manner to the construction above described.

The operation of the mechanism is as follows:—

A coin of a desired denomination is pressed into the appropriate slot of the mechanism such, for example, as a sixpence in the slot 3 as illustrated in Figures 7 and 8, and thereby deflects the extension 58 of the double armed lever 59 which is thereby moved about its pivot 60 so that the lower end thereof rotates the setting lever 63 about its pivot 64 in a clockwise direction. This movement causes the toothed segment to be moved against the influence of the spring 69 freely past the teeth of the escapement wheel 70 so that the notch 77 is brought into engagement with the pin 76 of the detent lever 73. This position of the parts of the mechanism is clearly illustrated in Figure 7. The coin thereafter travels down the corresponding inclined chute 54 and provided it passes the opening 54*a* successfully, falls down the vertically disposed chute 55. In passing down the said chute the coin rotates the star wheel 84 a quarter of a revolution and the cam 77*a* therewith. The rotation of the cam moves the levers 74*b* and 73 so as to disengage the pin 76 from the notch 77 and place it in the

path of movement of the notch 79. The toothed segment 66 thus released is rotated by the spring 69 until the notch 79 engages with the pin 77. This movement causes the escapement wheel 70 to be rotated through an angle corresponding to six teeth so that the pointer carried by the spindle 71 indicates the value of the coin inserted into the slot of the mechanism. A dash pot device (not shown) may be operatively connected to the lever 73 to ensure that it is maintained in the position to which it is moved by the cams 76*a*, 75 or 77*a* so as to intercept the respective notch 78, 79 or 80.

It is to be observed that when any coin is inserted into one of the slots of the mechanism and moves the setting lever 63 and segment 66 so as to establish the aforesaid driving relationship between the segment and the escapement wheel 70 and the coin is then withdrawn, no actuation of the indicator is effected as it is necessary for the coin to pass down the corresponding chute 55, 56 or 57 before the escapement wheel can be rotated and the pointer moved to give an indication. The pointer is arranged to be returned to the zero position by actuation of the resetting pawl above referred to in a similar manner to the pointer described with reference to Figures 1 to 6.

Referring to the mechanism illustrated in Figures 9, 10 and 11, the top panel 1 of the mechanism is provided with three slots 2, 3 and 4 for the insertion respectively of pennies, sixpences and shillings. Beneath each slot is a coin chute 89 shown in dot and dash lines, Figure 9, and a pair of actuating levers 90 pivotally mounted at 91 to a vertically disposed frame member 92*a* of the mechanism. Each pair of levers 90 constitutes part of a device for testing the diameter of inserted coins. Each device comprises a pair of crossed, double armed levers 92, 93, each pivotally mounted at 94 to one of the pair of levers 90 and provided at the upper end of the arm 92 with a pin 95. The arm 93 is provided with a hook 96 normally arranged in the path of movement of a projection 97 provided upon the lever 90 to which the other of the pair of bell crank levers is pivoted. The pairs of levers 90 are maintained in a normal position as illustrated in Figure 9 by springs 98. The arrangement is such that a coin of predetermined diameter when inserted into the appropriate slot 2, 3 or 4 engages the corresponding pair of pins 95 and rocks the corresponding pair of bell crank levers 92, 93 about their pivots so as to move the hooks 96 clear of the projections 97 before the coin engages the upper curved ends of the pair of actuating levers 90. The coin is thereby operable to move the pairs of levers 90 apart against the influence of the spring 98. If the coin inserted is less than the predetermined diameter, the hooks 96 will not be moved clear of the projections 97 when the coin engages the upper ends of the levers 90 and any attempt to force the coin into the slot merely enhances the locking engagement between the hooks 96 and projections 97 so that it is impossible to press the coin through the slot.

A shifting gate or other device (not shown) may be employed for preventing the insertion of more than one coin into the machine at one time.

One of each pair of pivot pins 94 is arranged to extend into a slot 99 formed in a horizontally disposed bar 100 so that movement of the said pin 94 with its lever 90 causes the bar 100 to be moved in the direction of the arrow, Figure 9, without effecting the other pairs of levers 90. The bar 100 is connected by a pin 101 extending through a slot in the frame member 92*a* with one arm of a double armed lever 102, 103 pivotally mounted at 104. The other arm 103 of the lever is connected by a pin and slot to one arm 105 of a double armed lever 105, 105*a* pivotally mounted about a spindle 106 carried in bearings in the frame member 92*a*. The arm 105 is provided with a pin 107 and the arrangement is such that the movement of the bar 100 in the direction of the arrow, Figure 10, by the insertion of the correct coin in any of the slots 2, 3, 4, moves the arm 105 and pin 107 in a clockwise direction, Figure 10, through a predetermined angle.

The spindle 106 has a ratchet wheel 108 keyed thereto and three double armed levers 109, 110, 111 are mounted freely upon the said spindle. One end of each of the said double armed levers is normally aligned with one another, so that only the arm of the lever 111 is visible in Figure 10. The other arm of each of the said levers is provided with a spring-controlled pawl 112 arranged to engage with the teeth of the ratchet wheel 108. The levers 109, 110, 111 are normally maintained in the full line positions illustrated in Figure 10 by corresponding pivoted catches 113, 114 and 115, the catch 115 only of which is visible in Figure 10. The said catches are provided, respectively, with extensions 116, 117 and 118, (Figure 10) connected at their free ends by links 119 to yieldingly controlled levers 120, 121, 122 one end of each of which is arranged to extend into one of the coin chutes 89. A pin 123 provided upon each of the extensions 116, 117, 118 is arranged to extend into the path of movement of a rotatable star wheel 124, one tooth of each of which is normally arranged to extend into one of the aforesaid coin chutes for a purpose hereinafter described.

The spindle 106 is provided with a resetting wheel 39 and pointer 42 similar to those described with reference to the preceding constructions and a resetting pawl 43 is also provided for the purpose hereinbefore de-

scribed; the pawl 43 is shown in dot and dash lines, Figure 9.

The operation of the mechanism is as follows:—

The insertion of a coin into one of the slots 2, 3 or 4 moves the bar 100 and pin 107 as hereinbefore described, and immediately the coin passes between the inwardly projecting upper ends of the levers 90, the said levers, bar 100 and pin 107 return to the normal position under the influence of the spring 98 connected to the lever 90. The coin, in falling down the chute 89 strikes the lever 120, 121 or 122 extending into the chute and moves the corresponding catch 113, 114 or 115 clear of the lever 109, 110 or 111 into the position indicated in dot and dash lines, Figure 10. The lever 109, 110 or 111 thus released falls, with the assistance of a spring, and rotates about the spindle 106. This rotational movement of the lever 109 is limited by a stop 126, Figure 10, and ensures that when the said lever is released by the insertion of a penny into the slot 2, the pawl 112 mounted on the said lever rotates the ratchet wheel 108 an amount corresponding to one tooth. The lever 110 is similarly arranged to rotate the wheel 108 an amount equal to six teeth when a sixpence is inserted into the slot 3, the said lever being limited in its movement by an extension 110*a* thereon abutting against a stop 127 on the frame of the mechanism. The lever 111 is limited in its movement when released by the insertion of a shilling into the slot 4, by abutting against the pin 107 and is arranged to rotate the wheel 108 an amount equal to twelve teeth.

It will thus be observed that the pointer 42 is rotated in a clockwise direction, Figure 9, an amount corresponding to the value of the coin inserted into mechanism in a similar manner to that described in connection with the preceding constructions.

The initial movement of the pin 107 in a clockwise direction upon the insertion of a coin into one of the slots 2, 3, 4 moves any of the levers 109, 110, 111 which has previously been released, back into the normal position in which it is re-engaged by the corresponding catch 113, 114 or 115. The arms of the levers 109, 110 and 111 which co-act with the catches 113, 114 and 115 are shown in the released positions by the dot and dash lines in Figure 10.

A coin passing down any of the chutes 89 is normally retained therein, opposite to a window (not shown) provided in the casing of the mechaism, by the tooth of the corresponding star wheel 124. The pin 123 when moved with the catch extension 116, 117 or 118 forces the corresponding star wheel 124 and permits the coin to drop into a till by rotating the star wheel, the newly introduced coin being retained within the chute 89 by the next tooth of the star wheel which is maintained against rotation by the return to the normal position of the pin 123.

It is to be understood that coin testing means other than those described may be incorporated into the mechanisms as desired. The mechanisms may be grouped when convenient, with a common coin container associated with the chutes of all the mechanisms in a particular group.

When a mechanism of any of the types hereinbefore described is employed in conjunction, for example, with each seat in a public vehicle a central indicator board may be provided for the use of the conductor upon which two electric lamps are arranged for each seat. One lamp is controlled by a seat actuated switch and indicates, when illuminated, that the corresponding seat is occupied whilst the other lamp is controlled by a switch comprising a pair of spring contacts operated by a cam mounted upon the resetting wheel of the coin freed mechanism associated with the seat, the arrangement being such that the lamp is illuminated unless the pointer of the mechanism is located at zero. Thus, the conductor is informed if any seat is occupied and if so, whether the next fare stage has been paid for.

The resetting pawl of each mechanism may be provided with an actuating member arranged to extend exteriorly of the casing and an actuation of which is adapted to operate the resetting wheel independently of the main control, (for example, the master switch hereinbefore described). Thus, if a conductor observes from the central indicator board that a seat is vacant, but that the pointer is set to indicate that a payment made in respect of the seat is unexpired, he may reset the mechanism associated with the seat to zero by means of the independent actuating member.

If desired, the cam mounted upon the resetting wheel may be arranged to close a pair of spring contacts when the pointer is in the zero position and establish an electrical circuit arranged to actuate an audible or a relatively large prominent signal. Further, the circuit controlling the audible signal may include a seat operated switch so that the signal is operated only when the seat is occupied and the pointer in the zero position.

The constructions of mechanisms hereinbefore described have the advantage that they may be constructed to give indications of the value of the inserted coins quite apart from the relative diameters of the coins. For example, a penny, although of much greater diameter than a sixpence, is readily arranged to move the pointer of the indicator one unit only and the sixpence six units or any other number of units such as eight. A shilling may also be arranged to move the pointer any number of units other than twelve, for example, sixteen units.

What I claim is:—

1. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, a rotatable indicator, a rotatable actuating member for said indicator, means including a slipping clutch device for operatively connecting said actuating member and said indicator, mechanism operable directly by the delivery of a coin to said first named means for moving said actuating member and the indicator connected therewith in one direction a predetermined extent proportional to the value of said coin, and operator controlled zeroizing mechanism operable to move said indicator in stages relatively to said actuating mechanism to return the indicator to a zero indicating position.

2. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, a rotatable indicator, a rotatable ratchet wheel, means including a slipping clutch device for operatively connecting said ratchet wheel and said indicator, actuating means for said ratchet wheel operable by a coin delivered to said first named means to a predetermined extent proportional to the value of said coin, whereby a corresponding movement of said ratchet wheel and indicator is effected, and operator controlled zeroizing mechanism operable to move said indicator relatively to said ratchet wheel to return the indicator to a zero indicating position.

3. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, a rotatable indicator, a rotatable ratchet wheel, means including a slipping clutch device for operatively connecting said ratchet wheel and said indicator, an actuating arm for said ratchet wheel, a system of levers of different lengths associated with said actuating arm and operable respectively by a coin delivered to said first named means to move said actuating arm a predetermined extent, whereby a movement of the ratchet wheel and indicator proportional to the value of said coin is effected, and operator controlled zeroizing mechanism operable to move the indicator relatively to said ratchet wheel to return said indicator to a zero indicating position.

4. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, a rotatable indicator, a rotatable ratchet wheel, means including a slipping clutch device for operatively connecting said ratchet wheel and said indicator, an actuating arm for said ratchet wheel, a system of levers of different lengths associated with said actuating arm and operable respectively by a coin delivered to said first named means to move said actuating arm a predetermined extent relatively to said ratchet wheel, yielding means for opposing such movement of said arm, locking means for retaining said arm in the position to which it is thus moved, mechanism operable by the said coin for releasing said locking means to establish a driving connection with said ratchet wheel, whereby the latter is moved with the indicator by the yielding means a predetermined extent proportional to the value of said coin, and operator controlled zeroizing mechanism operable to move the indicator relatively to said ratchet wheel for returning the indicator to a zero indicating position.

5. A coin actuated mechanism which comprises in combination means for the reception of a plurality of coins of different denominations, an indicator, a driving member movable in one direction by a coin delivered to said means to establish a driving connection between said member and said indicator, yielding means for opposing such movement of said driving member, locking means for retaining said member in the position to which it is thus moved, selective mechanism operable by the coin for releasing said locking means and for limiting the movement of said driving member and said indicator by said yielding means to a predetermined extent proportional to the value of said coin, and operator controlled zeroizing mechanism operable to return said indicator in stages to a zero indicating position.

6. A coin actuated mechanism which comprises in combination, means for the reception of a plurality of coins of different denominations, an indicator, an escapement wheel, a toothed driving member operable to be moved in one direction by a coin delivered to said means to a position in which a driving connection is established between said member and said escapement wheel, yielding means for opposing such movement of said driving member, locking means for retaining said member in the position to which it is thus moved, an operative connection between said escapement wheel and said indicator including a slipping clutch device, selective mechanism operable by the coin for releasing said locking means and limiting the effective movement in response to said yielding means of said driving member and the corresponding movement of said escapement wheel and said indicator to a predetermined extent proportional to the value of said coin, and operator controlled zeroizing mechanism for moving the indicator relatively to the escapement wheel operable to return said indicator in stages to a zero indication.

7. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, an indicator, yielding means operatively connected to said indicator to move the same, locking means for retaining said yielding

means in a normal position against movement, means actuated by a coin delivered to said first named means for releasing said yielding means for movement to a predetermined extent proportional to the value of said coin, operator controlled zeroizing mechanism operable to return said indicator progressively to a zero indication, for the purpose specified, and mechanism operable automatically by a coin as it is inserted to restore said yielding means to the normal position.

8. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, an indicator, a series of yieldingly controlled members and a yielding control therefor, one of said members being appointed for each denomination of coin and each operatively connected to said indicator and operable to move the same a predetermined extent proportional to the value of the respective denomination, a plurality of devices for retaining said members against such movement, mechanism operable by a coin delivered to said coin receiving means for releasing one of said devices, whereby said yielding control moves the appropriate member and the indicator therewith the predetermined extent, and operator controlled zeroizing mechanism operable to return said indicator progressively to a zero indication, for the purpose specified.

9. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, an indicator, a series of yieldingly controlled members and a yielding control therefor, one of said members being appointed for each denomination of coin and each operatively connected to said indicator and operable to move the same a predetermined extent proportional to the value of the respective denomination, devices for retaining said members in a normal position against movement, mechanism operable by a coin delivered to said coin receiving means for releasing one of said devices whereby said yielding control moves the member from a normal position and the indicator therewith the predetermined extent, operator controlled zeroizing mechanism operable to return said indicator progressively to a zero indication, for the purpose specified, and mechanism operable automatically by a coin as it is inserted to restore a released member to normal position.

10. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, a rotatable indicator, a ratchet wheel, means including a slipping clutch device for operatively connecting said wheel and indicator, a plurality of yieldingly controlled arms and a yielding control therefor, one of said arms being appointed for each denomination and each operatively connected to said ratchet wheel to drive the same in the forward direction of the indicator a predetermined extent proportional to the value of the respective denomination, means for retaining the arms against movement, mechanism operable by an inserted coin to release the appropriate arm so that the yielding control moves the arm and indicator therewith the predetermined extent, and operator controlled zeroizing mechanism operable to move said indicator relatively to said ratchet wheel to a zero indicating position.

11. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, a rotatable indicator, a ratchet wheel, means including a slipping clutch device for operatively connnecting said wheel and indicator, a plurality of yieldingly controlled arms and a yielding control therefor, one of said arms being appointed for each denomination, and each operatively connected to said ratchet wheel to drive the same in the forward direction of the indicator a predetermined extent proportional to the value of the respective denomination, means for retaining the arms against movement in a normal position, mechanism operable by an inserted coin to release the appropriate arm from the normal position so that the yielding control moves the arm and indicator therewith the predetermined extent, operator controlled zeroizing mechanism operable to return said indicator to a zero indication by movement relatively to said ratchet wheel, and mechanism operable automatically by any coin of said denominations as it is inserted, to restore any released arm to normal position.

12. A coin actuated mechanism which comprises in combination means for the reception of coins of a plurality of denominations, an indicator, yieldingly controlled means operatively connected to said indicator and a yielding control therefor, detent mechanism for normally maintaining said yieldingly controlled means in a predetermined position against said yielding control, said detent mechanism being releasable by a coin delivered to said coin receiving means, whereby said yieldingly controlled means and said indicator are moved by said yielding control a predetermined extent proportional to the value of the inserted coin, operator controlled zeroizing mechanism operable to return said indicator progressively to a zero indication, a coin display window, and coin retaining mechanism operatively controlled by said detent mechanism to retain the last inserted coin of each denomination displayed in said window and to release a previously inserted coin so retained.

CHRISTOPHER FREDERICK WEBB.