P. G. JACOBSON.

COIN COUNTER.

APPLICATION FILED APR. 24, 1912.

1,118,651.

Patented Nov. 24, 1914.

4 SHEETS—SHEET 1.

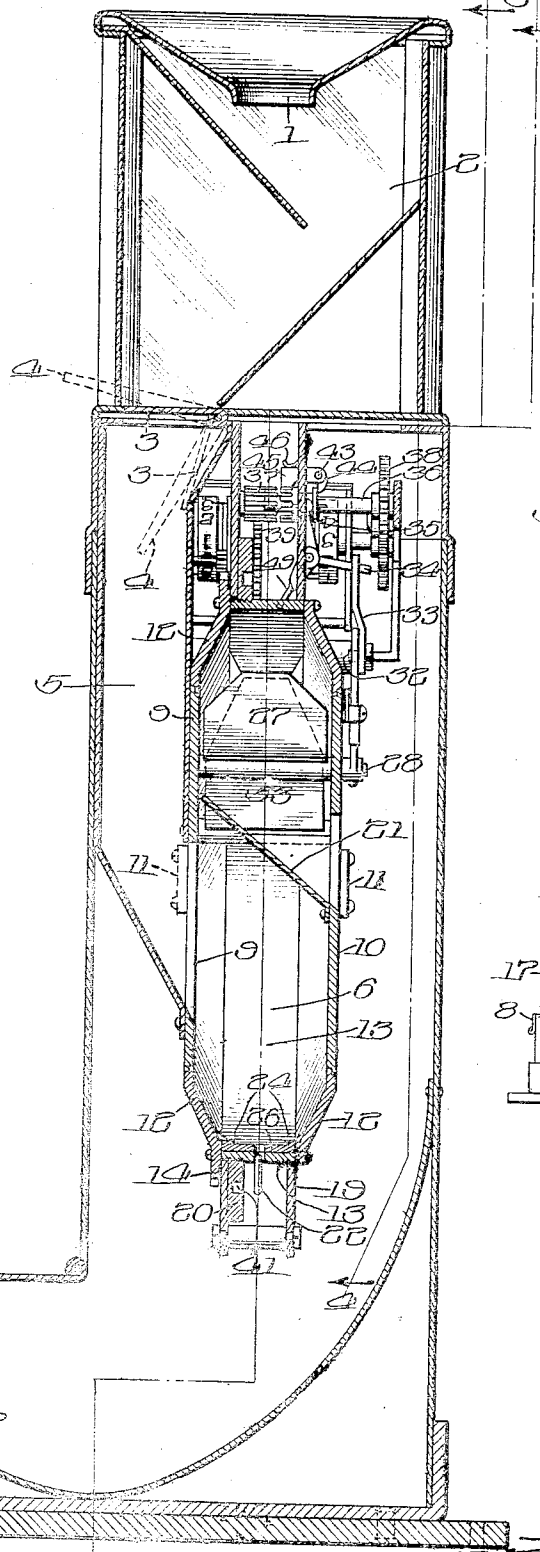


Fig. 2.

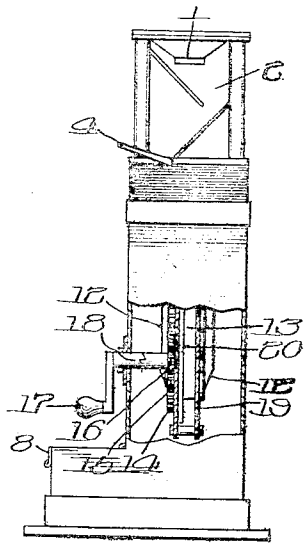


Fig. 1.

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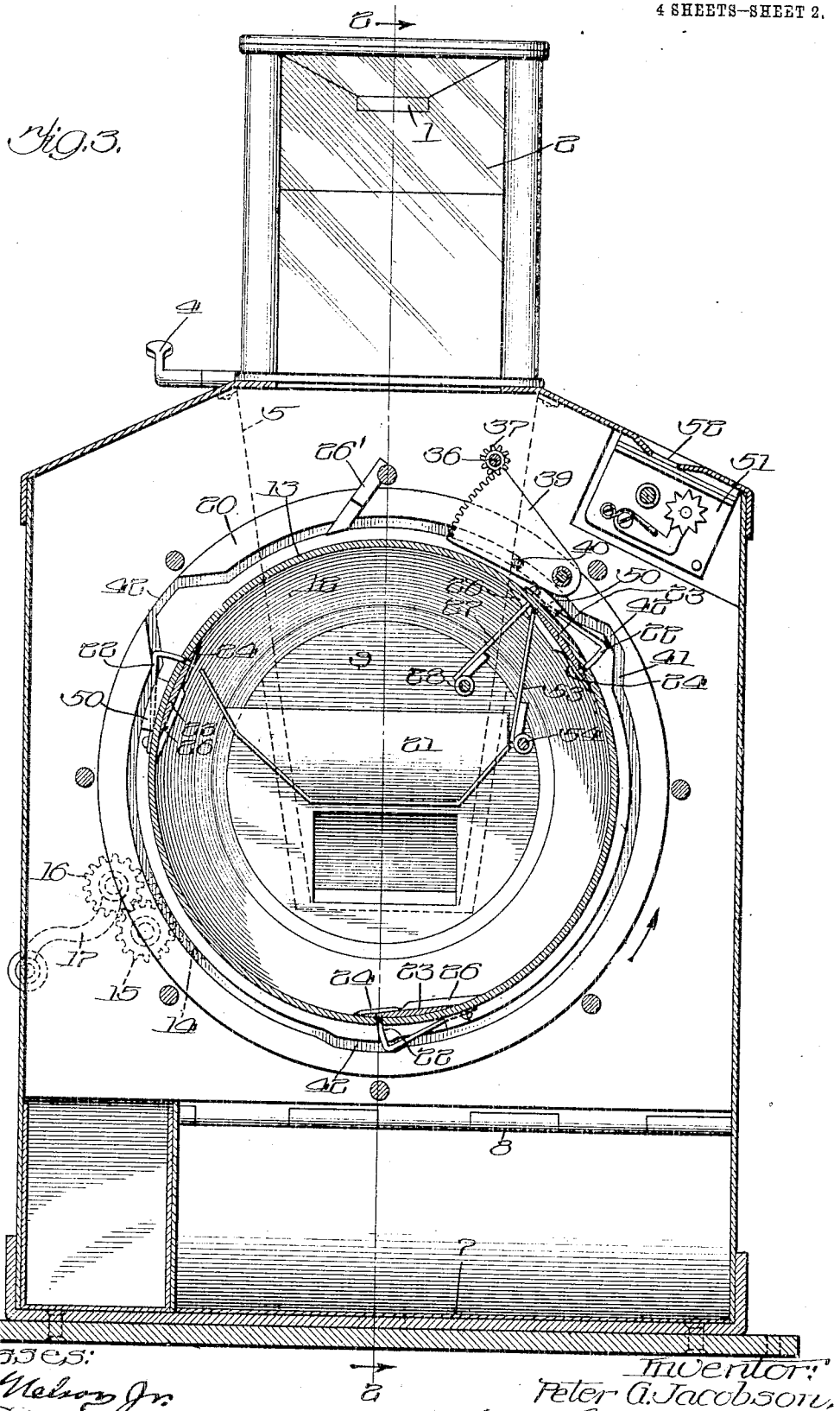
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4 SHEETS—SHEET 2.

Fig. 3.



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4 SHEETS—SHEET 3.

Fig. 4.

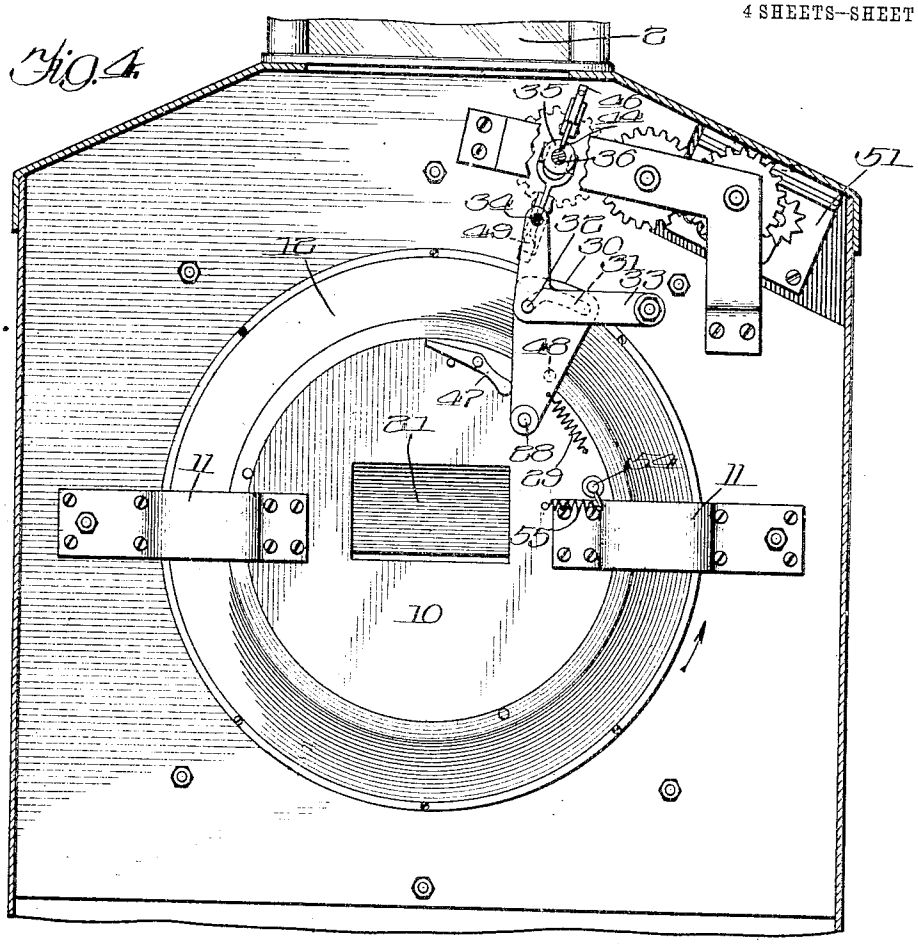


Fig. 5.

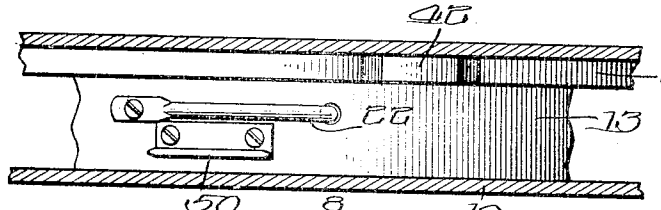


Fig. 8.

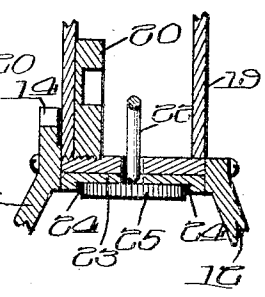


Fig. 6.

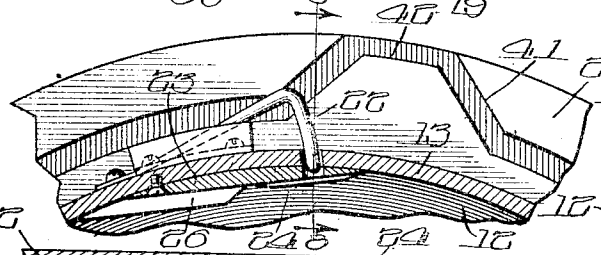
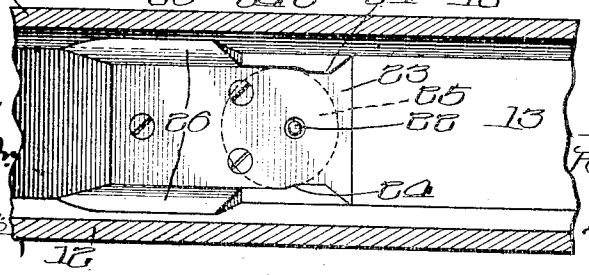


Fig. 7.



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4 SHEETS—SHEET 4.

Fig. 9.

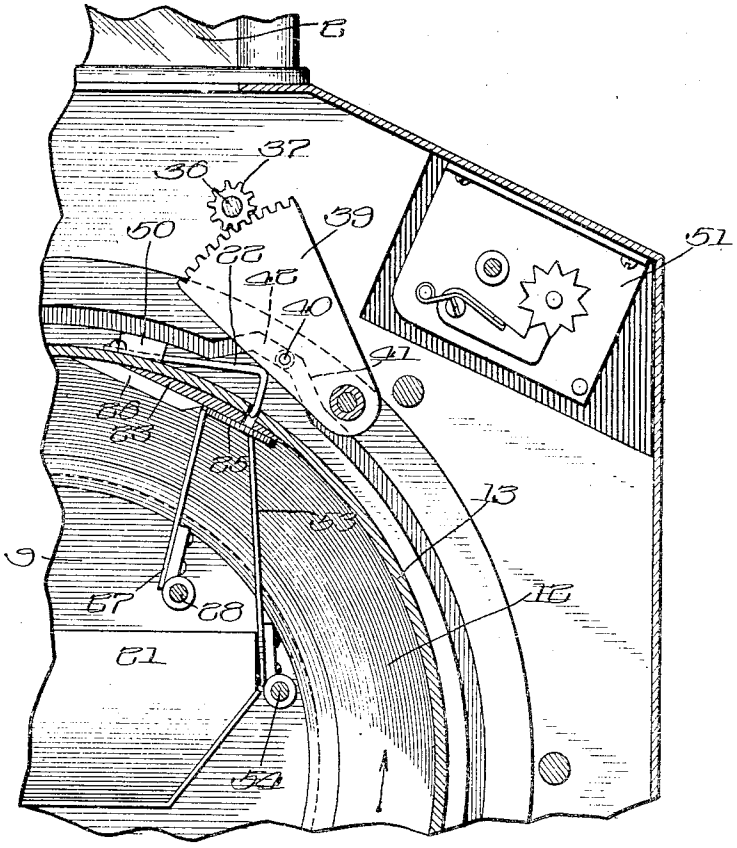
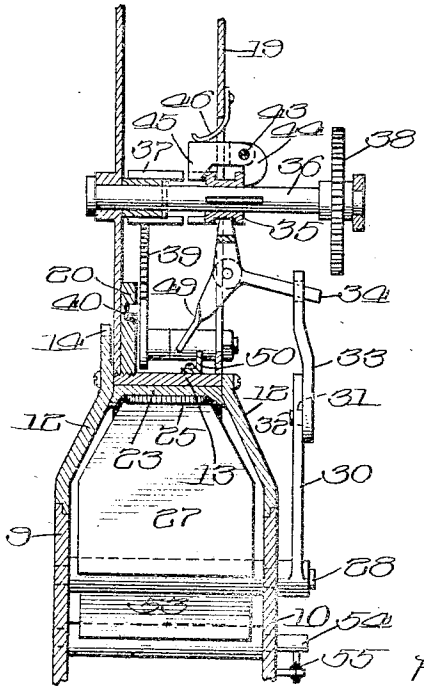


Fig. 10.



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UNITED STATES PATENT OFFICE.

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COIN-COUNTER.

1,118,651. Specification of Letters Patent. Patented Nov. 24, 1914.

Application filed April 24, 1912. Serial No. 692,919.

To all whom it may concern:

Be it known that I, PETER G. JACOBSON, citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Coin-Counters, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to mechanism for counting coins, the term "coin" having the usual meaning and also embracing, for the purpose of my invention, arbitrarily devised tokens of value.

My invention finds a very useful embodiment in connection with registering fare boxes, though it is not to be limited to such an application.

The invention has for one of its objects the provision of improved means whereby coins may be engaged by coin retainers (these coin retainers being individual to and adapted to select coins of different values when the apparatus is designed to count coins of different values though I do not limit myself to the counting of coins of different values) and be presented by the coin retainers to coin counting mechanism. This feature of my invention is realized by the provision of a hollow rotatably mounted drum whose interior receives the coins where they are engaged by the coin retainers which are preferably mounted to move with the drum, the drum being preferably mounted to rotate in a plane transverse to the horizontal so that the coins fall to the bottom of the drum where the coin retainers are adapted to catch up the coins, these coin retainers being desirably provided upon the cylindrical wall portion of the drum so as to pass under the coins as the drum turns. In this way the coin retainers are bound to engage the coin and carry the same with the drum and when the coin retainers are individual to coins of different values the coins are selectively engaged and are carried upwardly to mechanism that is adapted to register their value.

My invention has for another object the provision of improved means for counting or registering the values of coins.

There are other features and characteristics of the invention which will be understood from a description of the preferred embodiment thereof shown in connection with the drawings that illustrate the preferred embodiment of the invention when embraced within a registering fare box.

In the drawings Figure 1 is a side elevation, partially broken away, of a fare box constructed in accordance with the invention; Fig. 2 is a sectional view generally taken on line 2 2 of Fig. 3; Fig. 3 is a sectional view generally taken on lines 3 3 of Fig. 2; Fig. 4 is a sectional view generally taken on line 4 4 of Fig. 2; Fig. 5 is a plan view of a part of the structure; Fig. 6 is a view in sectional elevation of the mechanism portion shown in Fig. 5; Fig. 7 is a bottom view of the mechanism portion shown in Figs. 5 and 6; Fig. 8 is a sectional view on line 8 8 of Fig. 6; Fig. 9 is a view of a portion of the mechanism which is shown in Fig. 3 but on a larger scale than shown in Fig. 3; Fig. 10 is a view of a portion of the mechanism shown in Fig. 2 but on a larger scale than the illustration of Fig. 2.

Like parts are indicated by similar characters of reference throughout the different figures.

The fare is deposited in the form of a single coin that is a measure of the fare or a plurality of coins of minor value that in the aggregate equal the fare, the coin passing through the mouth 1 of the coin chute into a receptacle 2 having transparent wall portions so that the fare may be seen by the conductor. The floor of the receptacle is provided with a trap door 3 upon which the deposited coins lodge within view. If coin of sufficient value has been deposited by the passenger in the receptacle 2 the conductor will depress the lever 4 that is in fixed relation with the trap door so as to lower the trap door to effect the discharge of the coin therefrom. In Fig. 2 the depressed position of the trap door 3 is indicated by dotted lines. Suitable means are employed for restoring the trap door after its depression. The coins which are discharged from the trap door find downward passage through a vertical chute 5 into the interior of a hollow cylindrical drum 6 having short axial length.

Coins passing through the vertical chute 5 are, after being counted by the mechanism which is to be described, discharged from the cylinder 6 into the coin receptacle 7 provided with a closure 8 affording access to the coin receptacle. The drum 6 has two stationary wall portions 9 and 10, the wall portion 9 having an opening therein that

registers with the lower terminal opening of the chute 5 for the purpose of admitting coin to the drum interior. Both stationary wall portions 9 and 10 are held stationary by means of brackets 11 (Figs. 1 and 4). The wall portions 9 and 10 are of disk formation whose peripheral edges are formed as indicated clearly in Figs. 2 and 10 to constitute bearings for the annular wall portions 12 which are joined by the annular wall portion 13. One of the annular wall portions 12 of the drum has its exterior periphery formed with gear teeth 14 that are in mesh with a pinion 15 in mesh with another pinion 16, which latter pinion may be rotated by the conductor, the pinion 16 being provided with a handle 17 for the purpose. The handle 17 is provided with a clutch 18 whereby it may be turned in one direction only. The rotatable portions 12 and 13 of the drum are further supported by an anuular framework 19 surrounding and affording a direct bearing support for the drum portion 13. One of the plates of the framework 19 intervenes between the toothed portion 14 and the cam element 20 (whose function is to be described) surrounding and turning with the drum portion 13. The coins are received by the portion of the drum that happens to be lowermost and are caught, by devices to be described, so that they may be carried to a position overlying the coin discharge chute 21 from which the coins are discharged into the coin receiving receptacle at 7, the coin ejecting finger 22 moving inwardly for the purpose of dislodging the coin when it overlies the chute 21, there being a coin ejecting finger 22 in association with each device that retains coin while being carried upwardly.

Referring more particularly to Figs. 3, 6, 7, 8, 9, and 10, coin retainers 23 that are individual to coins of differing values are distributed throughout the interior of the drum portion 13 at suitable intervals, there being as many coin retainers 23 as there are coin of differing values to the counting of which the machine is adapted. In the embodiment of the invention shown I have illustrated but three coin retainers, but it is understood that in practice the number may be varied to suit requirements. The coin retainers 23 are provided with flat faces that are directed toward the axis of the drum and against which the coins are held as they are brought to their positions above the chute 21. Each coin retainer is provided with insetting coin engaging lugs 24 disposed parallel with the plane of the drum, the lugs 24 of the different coin retainers being spaced varying distances apart so that the lugs 24 of each coin retainer will engage and hold but one coin, a coin 25 being shown as being held by a pair of lugs 24 in Figs. 7 and 8. The faces of the coins when held by their retainers are substantially parallel with the axis of rotation of the drum whereby the location of the coins within suitable retainers as the drum is rotated is assured. That is, the coin retainers and the coins they hold are transversely disposed with respect to the plane of movement of the coin retainers. Coins of smaller diameter than the space between the lugs 24 will pass between these spaces and coins of larger diameter are prevented from coming within the planes of the lugs 24 by the diverging wings 26 that are separated by a space smaller than the diameter of the coins which are not to be permitted to be engaged by the lugs 24. Thus the lugs 24 of one coin retainer are permitted to hold pennies only, lugs 24 of another coin retainer are permitted to hold five cent pieces only, the lugs 24 of another coin retainer are permitted to hold ten cent pieces only, etc. The drum rotates in the direction indicated by the arrows in Figs. 3, 4 and 9. The coin ejecting fingers 22 are mounted upon the exterior of the drum as indicated in Figs. 3, 5 and 6 and are adapted to have their free ends projected through the drum portion 13 where the coins are held by the lugs 24 when the drum has been rotated far enough to permit the fingers to be depressed by a stationary shoe 26^1. When the fingers are thus engaged by the shoe 26^1 the coins are dislodged from the lugs 24 that hold them and are passed by the chute 21 into the ultimate coin receptacle beneath the closure 8. The fingers 22 are of spring formation and return to their outer positions, when free of the depresser 26^1, as a consequence of their own resilience.

I will now describe the mechanism by which the coins are counted. The blade 27 is fixedly mounted upon a shaft 28 at its inner end, this shaft being operated upon by a spring 29 to hold the blade 27 that it carries within the path of the traveling coin, the blade being of such a length that it is not engaged as the drum rotates except by the coin when held between the lugs 24 (Fig. 9). When thus engaged by coin the shaft 28 is turned in a counter-clockwise direction against the force of the spring 29, similarly turning a plate 30 having a deflected slot 31 at its upper portion. This deflected slot receives a pin 32 carried upon and inwardly projecting from an elbow of a bent arm 33 swingingly mounted at one end and loosely engaging one end of a clutch shifting lever 34 at its other end (Figs. 4 and 10). When the shaft is thus turned in a counter-clockwise direction the pin 32 is brought from the left hand end of the slot 31 (Fig. 4) beyond the bend in said slot a distance corresponding to the thickness of the coin that then intervenes between the free end of the blade 27 and the coin retainer 23. The bent arm 33 is thus caused to rise and in

rising moves the clutch lever 34 upwardly whereby this clutch lever is caused to shift the clutch member 35 longitudinally of the counting train shaft 36 upon which said clutch is splined. The clutch member 37, complemental to the clutch member 35, is loose upon the shaft 36 but is caused to rotate with said shaft when the clutch member 35 has been shifted as stated whereby the counting motion which is imparted to the clutch member 37 by the mechanism to be described is communicated to the counting train 38 that operates any suitable form of counting or indicating mechanism such as that of an ordinary cyclometer. The clutch member 37, being formed to constitute a counting gear element, is in mesh with a segmental gear 39 that carries a pin 40 received within the cam groove 41 of the cam 20. The cam groove 41 has portions 42 that are individual to the coin retainers and which project outwardly to differing extents (when differing coin values are to be counted) whereby the pin 40 is caused to move outwardly to corresponding extents so that the segmental cam 39 is swung through differing arcs that correspond to the values of the different coins whereby the value wheel 37 is correspondingly turned to cause the corresponding ultimate operation of the visual portion of the counter.

It will be understood from the mechanism which has been described that, as the invention is embodied, the segmental gear 39 operates each time the pin 40 is engaged by a cam portion 42 but that such operation is not effective unless the blade 27 has been operated upon by a coin 25 for the purpose of bringing the clutch member 35 into engagement with the clutch member 37. When the coin that is being counted has escaped the blade 27, the spring 29 will turn the shaft 28 in a clockwise direction to restore the pin 32 to the left end of the slot 31 thereby to shift the clutch lever 34 to withdraw the clutch member 35 from the clutch member 37. A fixed pivot 43 constitutes the bearing for a dog having one portion 44 engaging with the front of the clutch member 35 and another portion 45 for engaging between the teeth of the clutch member 35 that face the clutch teeth of the clutch member 37. When the clutch member 35 is moved toward the clutch member 37 the dog structure 44—45 is rotated in a clockwise direction against the force of a spring 46 to permit the engagement of the clutch members 35 and 37. When the clutch member 35 is restored to its idle position the front end thereof engages the portion 44 to act in coöperation with the spring 46 to engage the portion 45 with the teeth of the clutch member 35 whereby the shaft 36 is locked during the periods of disengagement of the clutch members. In the event of the failure of the spring 29 to restore the shaft 28 to its normal position such result is assured by a lever 47 that has a stationary pivotal axis between its ends, the left end of this lever (Fig. 4) being engageable by pins 48 (one pin 48 being associated with each coin retainer) for the purpose of thrusting the right end of the lever 47 against the plate 30 to insure the location of the pin 32 in the left end of the slot 31.

To insure the engagement of the clutch members 35 and 37 the proper length of time, the clutch shifting lever 34 is provided with a third branch 49 and the coin retainers, or some of them, are provided with fins or lugs 50 of lengths (measured peripherally of the drum) that correspond to the coin retainers and the values of the coins thereby to be held, these fins or lugs 50 being mounted upon the exterior of the drum portion 13. When the clutch members have been brought into engagement, the clutch lever branch 49 is located to the right of the corresponding lug or fin 50 (Fig. 10) and is prevented from returning until such lug or fin has been moved clear of the clutch lever branch 49 whereby the clutch members 35 and 36 are, with certainty, maintained in engagement during the entire time the pin 40 is moving outwardly in the cam slot portion 42 that is engaging the same, during which outward movement of the pin 40 the operation of the counter is taking place.

Any suitable form of visual mechanism may be employed. I have shown the location of the visible portion of the counting mechanism at 51 (Fig. 3), the casing having an aperture 52 through which the readings may be taken.

A blade 53 is provided for engaging the coins to hold them in their retainers during at least part of the time that the coins are engaged by the blade 27 to insure the retention of the coins in their retainers while they operate upon the blade 27, this construction being provided to guard against jarring or vibration. The blade 53 is mounted upon a shaft 54 that has turning effort exerted thereupon in a clock-wise direction by a spring 55 (Fig. 4).

While I have shown my invention as being embodied in a registering fare box, it is obvious that the invention has for its purpose the counting of coins or tokens and I therefore do not limit my invention to its embodiment in a registering fare box. As the invention is embodied the drum constitutes a temporary receptacle for the coin and also a carrier for the coin retainers whereby the coin retainers are moved in a plane transverse with respect to the horizontal and while the drum thus has a double function, I do not wish to be limited to both of these functions.

While I have herein shown and specifically described one embodiment of my in-

vention, it is obvious that changes may readily be made without departing from the spirit thereof and I do not therefore wish to be limited to the precise details of construction shown.

Having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A coin counter including counting mechanism containing a segmental gear, a pinion in mesh therewith, and two clutch members in engageable and separable relation for rendering the counting mechanism operative and inoperative; a coin retainer; cam mechanism for moving the segmental gear, the cam mechanism and coin retainer being together operable when the coin is being moved to be counted; and mechanism for engaging said clutch members and operated by the coin within the retainer.

2. A coin counter including counting mechanism containing a segmental gear, a pinion in mesh therewith, and two clutch members in engageable and separable relation for rendering the counting mechanism operative and inoperative; a coin retainer; cam mechanism for moving the segmental gear, the cam mechanism and coin retainer being together operable when the coin is being moved to be counted; mechanism for engaging said clutch members and operated by the coin within the retainer; and means operating independently of the coin for maintaining the clutch members in engagement when the coin counting mechanism is being operated to count the coin.

3. A coin carrier including a rotatable drum and coin holding portions carried thereby each for holding a coin differing in size from the coins to be held by the others, each of said coin holding portions being provided with relatively diverging wings separated by a space smaller than the diameter of the coins which are not to be held by the corresponding coin holder and which space permits the passage of coins to be held by the coin holder to such coin holder.

4. A coin carrier including a rotatable drum and coin holding portions carried upon the interior face of the cylindrical wall portion of the drum and each including insetting lugs, the lugs of the different coin holders being spaced varying distances apart to enable each coin holder to hold coin of differing value from that held by the other coin holders.

In witness whereof, I hereunto subscribe my name this 22nd day of April, A. D. 1912.

PETER G. JACOBSON.

Witnesses:
G. L. Cragg,
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