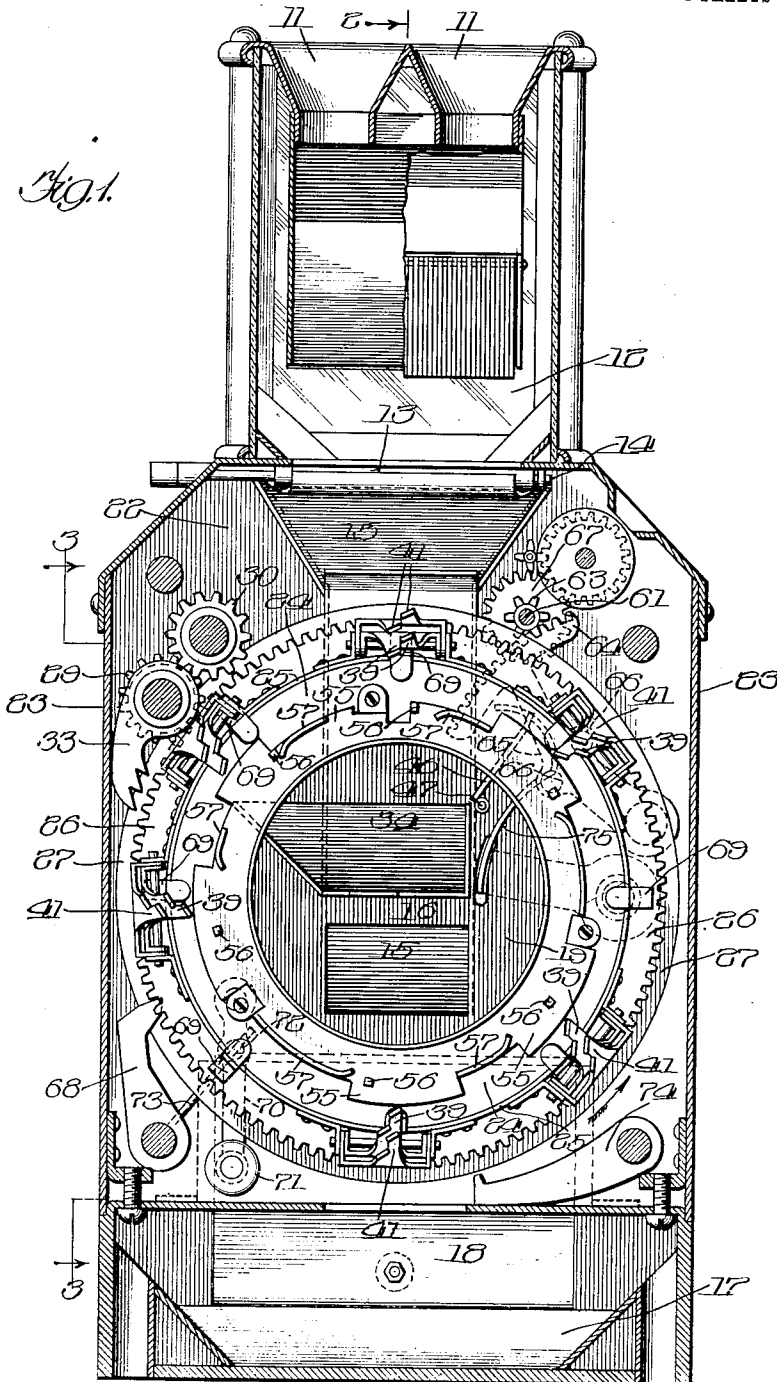


P. G. JACOBSON.
COIN COUNTER.
APPLICATION FILED NOV. 25, 1912.

1,118,652.

Patented Nov. 24, 1914.

4 SHEETS—SHEET 1.



Witnesses:
J. M. Nelson Jr.
Edwin Nelson

Inventor:
Peter G. Jacobson
By H. L. Gregg, Atty.

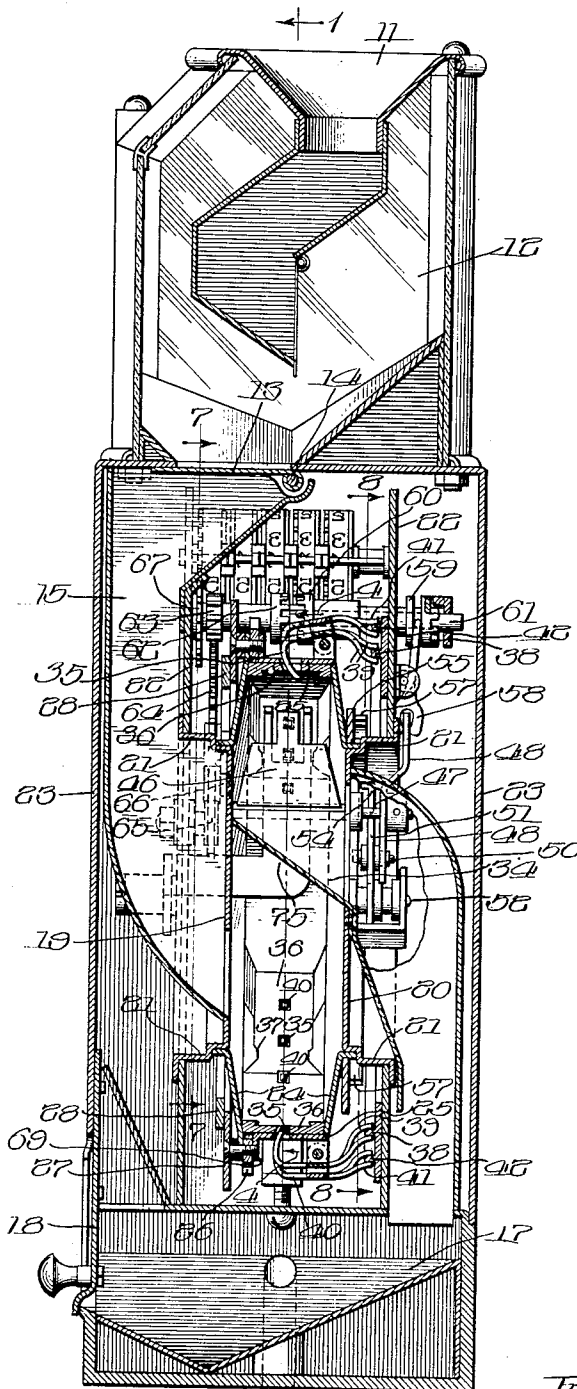
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4 SHEETS-SHEET 2.

Fig. 5.



Witnesses:

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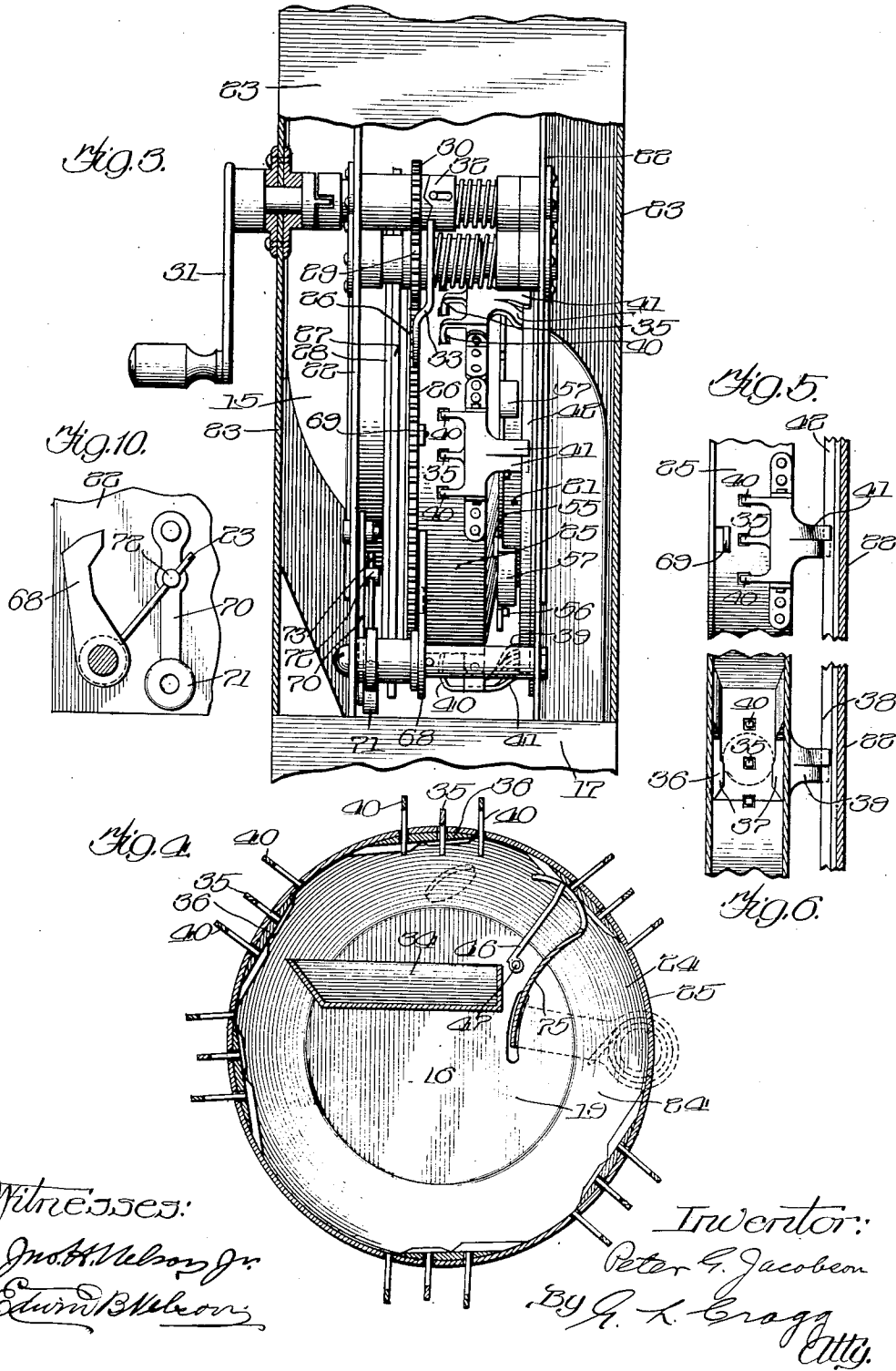
By J. K. Briggs
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P. G. JACOBSON.
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4 SHEETS-SHEET 3.



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P. G. JACOBSON.
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 4 SHEETS—SHEET 4.

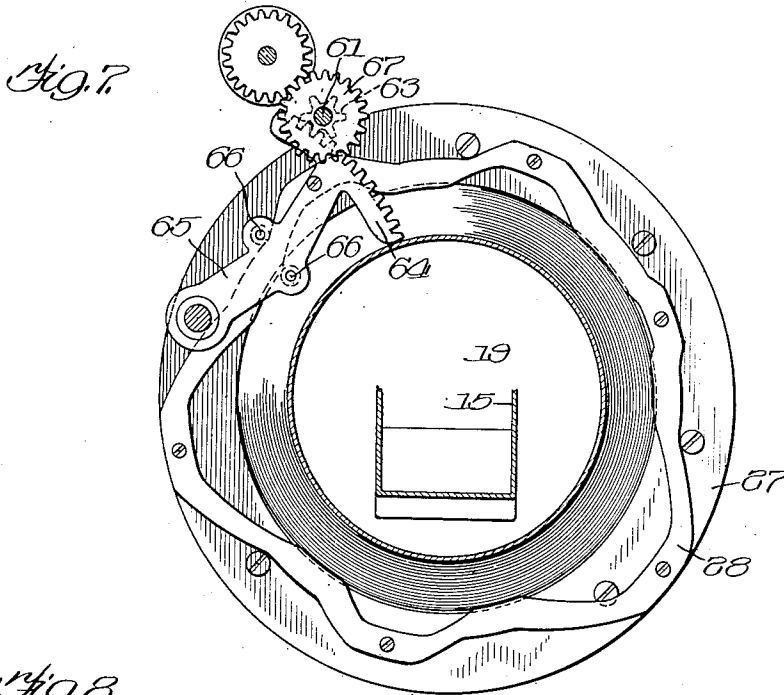
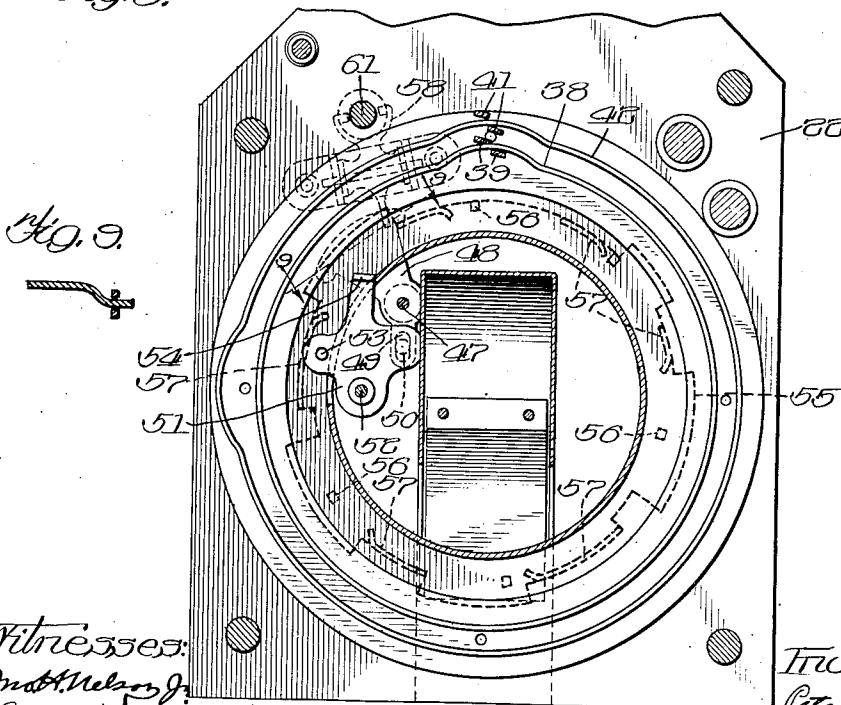


Fig. 8.



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UNITED STATES PATENT OFFICE.

PETER G. JACOBSON, OF CHICAGO, ILLINOIS.

COIN-COUNTER.

1,118,652.

Specification of Letters Patent.

Patented Nov. 24, 1914.

Application filed November 25, 1912. Serial No. 733,424.

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
10 a part of this specification.

My invention relates to coin counters and, in its preferred embodiment, is an improvement upon the structure shown in my application Serial No. 692,919, filed April 24, 1912, though the invention is not to be limited to such an embodiment.

My invention has for one of its objects the provision of means for preventing a tamperer from so tilting or positioning the coin counter that coins will escape the same. In this way all coins which enter the counter are sure to be recorded and charged against the one in charge of the counter.

The invention has for another of its objects the provision of means for insuring the passage, one by one, of the coins to be counted, there being employed coin knockers or ejectors for dislodging coins that may be lodged upon other coins which are about
30 to act upon the counting mechanism.

My invention has other characteristics and will be fully explained by reference to the accompanying drawings showing the preferred embodiment thereof and in
35 which—

Figure 1 is a sectional elevation on line 1 1 of Fig. 2; Fig. 2 is a sectional elevation on line 2 2 of Fig. 1; Fig. 3 is a sectional elevation on line 3 3 of Fig. 1; Fig. 4 is a sectional view on line 4 4 of Fig. 2; Fig. 5 is a plan view, partially in section, of a part of the structure; Fig. 6 is a view, looking from within, of the structural portion shown in Fig. 5; Fig. 7 is a sectional elevation on line 7 7 of Fig. 2; Fig. 8 is a sectional elevation on line 8 8 of Fig. 2; Fig. 9 is a sectional view on line 9 9 of Fig. 8; and Fig. 10 is a detail view of part of the mechanism as it appears in Fig. 1.

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

The invention is shown in the drawings as being embodied in the form of a fare box, though the invention is not to be restricted

to this employment. In the device illustrated, the fare is deposited in the form of a single coin that is a measure of the fare or a plurality of coins of a minor value that in aggregate equal the fare, the coins
60 passing through the mouth 11 of the coin chute into a coin receptacle 12 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 13
65 fixed upon a shaft 14 that may be turned by the conductor or other attendant for the purpose of causing the transportation of the coin toward the counting mechanism and the ultimate receptacle, whereafter the trap door
70 is restored to its normal position. The coins which are discharged from the trap door find downward passage through a vertical chute 15 into the interior of a hollow cylindrical drum 16 having short axial length.
75 The coins passing through the vertical chute 15 are, after being counted by the mechanism which is to be described, discharged from the cylinder 16 into the coin receptacle 17, provided with a closure 18 for affording access to the coin receptacle, this closure being in the form of a vertically sliding door. The drum 16 has two stationary wall portions 19 and 20, the wall portion 19 having an opening therein that registers with
85 the lower terminal opening of the chute 15 for the purpose of admitting coins to the drum interior.

Both stationary wall portions are provided with outsetting extensions 21 which are directly secured to the main side plates 22 of the frame of the machine which is mounted within the sheet metal case 23. The wall portions 19 and 20 are of circular formation whose peripheral portions constitute bearings for the annular wall portions 24 which are joined by the annular wall portion 25. A spur gear 26 is screwed into firm engagement with extended portions of the wall portions 24 and 25, the
90 fastening screws also serving to unite the cam holding plate 27 with the gear 26, the plate 27 carrying a cam 28. The gear 26 is in mesh with a pinion 29 which in turn is in mesh with a pinion 30 adapted to be rotated by a crank 31, the crank being associated with ordinary clutching mechanism
100 32 by means of which the crank, when rotating in one direction, will force the rotation of the gear 26 but will not effect this
110

result from rotating in the reverse direction. The usual holding pawl 33 engages the teeth of gear 26 so as to prevent this gear from rotating in one direction and to permit it to rotate in the proper direction, when the fare box is normally positioned.

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 34 from which the coins are discharged into the coin receiving receptacle 17, the coin ejecting finger 35 moving inwardly for the purpose of dislodging the coin when it overlies the chute 34, there being a coin ejecting finger 35 in association with each device that retains a coin while being carried upwardly. Coin retainers 36 that are individual to coins of differing values are distributed throughout the interior of the drum at suitable intervals, there being as many coin retainers as there are coins of differing values to the counting of which the machine is adapted. By way of example, there are two coin retainers for United States five cent pieces, one coin retainer for Canadian five cent pieces, one coin retainer for United States pennies, and two coin retainers for United States ten cent pieces. The coin retainers 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 34. Each coin retainer is provided with inseting coin engaging lugs 37, the lugs 37 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 being indicated in position by a dotted circle in Fig. 6. 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 is assured as the drum rotates. 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 36 of a pair will pass through such space and coins of larger diameter are prevented from coming within the planes of the lugs 36. Thus the lugs 36 of one coin retainer are to be permitted to hold pennies only, lugs 36 of another coin retainer are to be permitted to hold United States five cent pieces only, etc. The rotatable portion of the drum turns in the direction indicated by the curved arrow in Fig. 1. The coin ejecting fingers 35 are pivotally mounted upon the rotating portion 25 of the drum so as to be individual to associate coin retainers and are adapted to have their free ends projected through

this drum portion where the coins are held by the lugs 36 when the drum has been rotated far enough to permit the ejecting fingers to be depressed by a stationary cam 38 which is desirably in the form of a thin ridge which is straddled by the bifurcated outer ends 39 of the ejecting fingers, so that the fingers are moved positively in both directions without reliance upon any spring structure. When the high portion of the cam ridges 38 engage the bifurcated parts 39 of the ejecting fingers such ejecting fingers are forced inwardly to eject coins and when the lower portion of the cam ridge 38 engages the bifurcated ends 39 of the ejecting fingers such ejecting fingers are withdrawn. A pair of supplemental ejecting fingers 40 is mounted upon the same shaft with each ejecting finger 35, the fingers 40 associated with each finger 35 being joined by a web so that the fingers 40 will be forced to move together, this web having a bifurcated tail 41 whose bifurcated portions straddle a cam ridge 42. The fingers 40 of each pair enter the drum as do the fingers 35 and are properly spaced apart to engage the faces of any coins which are piled upon the coins that should be snugly contained in the coin retainers. The fingers 40 are operated after the coin retainers have received the coins they are properly to hold so that any other coins piled thereupon will be ejected. The cam ridge 42 may have as many outwardly projecting bulges for this purpose as desired, there being two such bulges illustrated in Fig. 8 which serve to operate upon the supplementary ejecting fingers to cause them to enter the interior of the drum for the purpose stated, the lower portion of the cam ridge 42 withdrawing the supplemental fingers.

I will now describe the mechanism by which the coins are counted. A blade 46, within the drum, is fixedly mounted upon a shaft 47 at its inner end. An exterior portion of this shaft carries a cam plate 48 having a depending portion which is slotted at 49. A pin 50 is in engagement with this slot and is carried upon a plate 51 pivoted at 52. The plate 52 carries a pin 53 and an inwardly extending projection 54. The axes of the shafts 47 and 52 are stationary, these shafts being mounted upon the stationary wall portion 20 of the drum. A cam plate 55 is fixed upon the drum wall portion 24 to rotate therewith. This cam plate 55 carries outwardly projecting lugs 56 each individual to a coin retainer. The cam plate 55 also carries cams 57 which project outwardly as do the lugs 56. The cams 57 are intended to cooperate with the inward extension 54 of the plate 51. The lugs 56 are intended for cooperation with the pin 53 that extends inwardly similarly to the extension 54. The portions of the plate of the

cam plate 55 proper intervening between the cams 57 have no function except to support the lugs 56. The cams 57 are of differing lengths corresponding to the values of the coins to be held by the coin retainers to which the cams 57 are individual. The major portions of the cams 57 lie in the same circle while the other portions of these cams are inturned. The outer or free end of the arm or blade 46 is adapted to engage the bottoms of the coin retainers when such retainers are free of coins whereby the coins, when in the retainers, are adapted to move the blade 46 and thereby effect the movement of the plate 48 fixed upon the shaft 47 upon which the blade 46 is fixed. The plate 48 is rocked in a clockwise direction (as viewed in Fig. 8) whereby the blade 51 is, through the intermediation of the pin and slot connection 49, 50, rocked in a counter-clockwise direction to bring an end of the inwardly extending projection 54 into line with the outer circle of the cams 57, the inwardly extending curved entrance to these cams being provided to insure the passage of the projection 54 into engagement with the dwells of the cams 57. As the cam plate brings the exit end of each cam out of engagement with the inwardly extending projection 54 the next adjacent lug 56 strikes the pin 53 to restore the plate 51 to the normal position illustrated whereby the plate 48 is also restored as is the blade or arm 46 fixed with respect to the plate 48 whereby the arm 46 is again positioned to be operated upon by the succeeding coin carried into engagement with its free or outer end by the rotation of the drum wall 25. It will be observed that the dwells of the cams 57 vary in length whereby the relative periods within which the plate 51 occupy the position to which it is thrust by the clockwise moving plate 48 vary. It is during these varying periods that the totalizing or recording mechanism is operated to vary the extents according to the values of the coins being counted, the dwells of the cams 57 having lengths proportional to the coin values and increasing in length as the values of the coins increase and as cams are individual to the coin retainers that are to hold coins of corresponding values the values of the coins are totalized as the drum 16 is rotated. When the plate 48 is moved in a clockwise direction, due to the action of a coin upon the arm 46, said plate operates upon a clutch lever 58 to move the clutch collar 59 inwardly, this clutch collar having a hub continuation that terminates in a clutch member 60, the elements 59 and 60 being splined upon a shaft 61, so as to rotate therewith while being movable longitudinally therewith. The clutch member 62 complementary to the clutch member 60 is loose upon the shaft 61, a hub portion of the clutch mem-

ber 62 having fixed thereupon a spur pinion 63 which constitutes a part with the counting train and is in constant mesh with a contiguous segmental counting train 64. The segmental gear 64 is provided upon the outer end of a pivoted arm 65 carrying two cam rollers 66 between which the outwardly projecting cam 28 passes as the drum rotates with the support 27 for said cam 28. Whenever the clutch members 60 and 62 are coupled the segmental gear 64 operates the counting train when this segmental gear is moved outwardly by the cam 28, there being as many dwells to cause such outward movement of the segmental gear 64 as there are coin retainers, these dwells having lengths proportionate to the values of the coins retainable by corresponding coin retainers.

As the invention is illustrated, the shaft 61 is provided with a counting gear wheel 67 which is fixed thereupon and which is rotated when the clutch members 60 and 62 are coupled each time the segmental gear 64 is moved outwardly, the extent of such rotation obviously varying with the variation of the outward movement of the segmental gear 64, which latter movements vary in the manner which has been described. Thus the counting train means at the segmental gear 64, is made or broken at the clutch members 60, 62, and is continued at the pinion 67, it being unnecessary further to describe the totalizing mechanism whose operation is due to the rotation of this pinion 67. When the segmental gear 64 is upon the portions of the cam 28 that are concentric with the drum 16, no movement of the wheel 67 can occur and when the segmental cam 64 moves inwardly no movement of the wheel 67 can occur, separation of the clutch elements 60 and 62 occurring shortly after the rollers 66 enter the outer portions of the cam 28 that are concentric with the drum 16, such separation being timed by the cams 57 and lugs 56 in a manner which has been described, the engagement of these clutch members enduring from the time they are brought together upon the entry of the projection 54 into engagement with the cams 57 until the lugs or pins 56 strike the pin 53. It will be seen that the segmental gear 64 is caused to turn each time its rollers 66 encounter an inclined portion of the cam 28 but that such turning has no effect unless the segment 64 is moved outwardly at a time when the clutch members 60 and 62 are in engagement.

Viewing the structure as it appears in Fig. 1, if it was tilted upon its base toward the right it might be possible for its custodian to cause some of the coins to escape counting, it being possible to cause the coins to clog the machine. I guard against this result by means of the structure shown in

Figs. 1 and 10 which includes a holding pawl 68 whose detaining nose is normally out of the range of the holding lugs 69 traveling with and fixed with respect to the gear

5 26. When the machine is tilted as described the holding pawl 68 is thrust into the path of the next lug 69 to prevent rotation of the drum. This result is secured by the action of gravity. I employ an arm 70 having a
10 fixed axis of rotation at its upper end and carrying a weight 71 at its lower end. The arm also carries a guide 72 rotatably mounted upon the arm 70 and having a fixed axis of rotation with respect to the arm. The
15 guide 72 has a diametrical passage therethrough that receives a pin 73 fixed with respect to the holding pawl 68. Such a construction forces the movement of the holding nose of the pawl 68 into the path of the
20 next lug 69 when the machine, as viewed in Fig. 1, is tilted toward the right. If it should be attempted to defeat the purpose of the machine by turning it upside down the holding pawl 74 will engage the teeth
25 of the gear wheel 26 directly. To prevent the purposes of the holding pawls 68 and 74 from being defeated by the action of a magnet I make these elements of non-magnetic material. The element 75 has the fur-
30 ther purpose of holding the coins in their retainers before the arm 46 engages the same, a feature forming no part of my present invention, a form thereof having been disclosed in my co-pending application.

35 While I have herein shown and particularly described the preferred embodiment of my invention I do not wish to be limited to the precise details of construction shown as changes may readily be made without departing from the spirit of the invention, but
40 Having thus described my invention I claim as new and desire to secure by Letters Patent the following:—

1. A coin counter including a hollow rotatably mounted drum into which coin to be
45 counted may be received and from which the coins may be discharged after counting; a coin retainer carried by the drum and located within the drum interior; coin counting
50 mechanism whose operation is governed by a coin in the coin retainer and to which the coin is brought by the coin retainer; coin ejecting means individual to and traveling with the coin retainer, this coin ejecting means
55 operating upon the face of a coin that may be upon the coin in the coin retainer to enable the coin counting mechanism alone to be subject to the action of the single coin belonging in the coin retainer; a coin ejecting
60 device individual to and traveling with the coin retainer; and means for causing the latter coin ejector to engage the face of the counted coin and force its removal from the coin retainer.

65 2. A coin counter including a hollow rota-

tably mounted drum into which coins to be counted may be received and from which the coins may be discharged after counting; a coin retainer carried by the drum and located within the drum interior; coin counting
70 mechanism whose operation is governed by a coin in the coin retainer and to which the coin is brought by the coin retainer; coin ejecting means operating upon the face of a coin that may be upon the coin in the coin
75 retainer to enable the coin counting mechanism alone to be subject to the action of the single coin belonging to the coin retainer, the said coin ejecting means having two spaced apart coin face engaging portions; a
80 coin ejecting device; and means for causing it to engage the face of the counted coin and force its removal from the coin retainer, the latter coin ejecting device also including a coin face engaging finger which is disposed
85 between the coin engaging portions of the first aforesaid coin ejecting device.

3. A coin counter; a coin retainer carried by the drum and located within the drum interior; coin counting mechanism whose
90 operation is governed by a coin in the coin retainer and to which the coin is brought by the coin retainer; coin ejecting means individual to and traveling with the coin retainer, this coin ejecting means operating
95 upon the face of a coin that may be upon the coin in the coin retainer to enable the coin counting mechanism alone to be subject to the action of the single coin belonging in the coin retainer; a coin ejecting de-
100 vice; and means for causing the latter coin ejector to engage the face of the counted coin and force its removal from the coin retainer.

4. A coin counter; a coin retainer carried
105 by the drum and located within the drum interior; coin counting mechanism whose operation is governed by a coin in the coin retainer and to which the coin is brought by the coin retainer; coin ejecting means oper-
110 ating upon the face of a coin that may be upon the coin in the coin retainer to enable the coin counting mechanism alone to be subject to the action of the single coin belonging to the coin retainer, the said coin
115 ejecting means having two spaced apart coin face engaging portions; a coin ejecting device; and means for causing it to engage the face of the counted coin and force its removal from the coin retainer, the latter coin
120 ejecting device also including a coin face engaging finger which is disposed between the coin engaging portions of the first aforesaid coin ejecting device.

5. A coin counter including counting
125 mechanism having clutch members for rendering the same operative or inoperative; a coin operated clutch actuating device for rendering the counting mechanism operative and including a pivotally mount-
130

ed plate 48; a pivotally mounted plate 51
operated by the plate 48 and provided with
a cam engaging portion 54; a moving cam
57 engaged by the portion 54 to maintain
5 the clutch members in engagement; an ele-
ment 56 for restoring the plates 51 and 48 to
normal position when the separation has
occurred between the cam 57 and the cam
engaging portion 54; and means operating
10 independently of the coin being counted for

operating the coin counter while the clutch
members are in engagement.

In witness whereof, I hereunto subscribe
my name this 30th day of October A. D.,
1912.

PETER G. JACOBSON.

Witnesses:

G. L. CRAGG,
E. L. WHITE.