July 8, 1947. J. JORGENSEN 2,423,502

COIN COUNTING AND SORTING MACHINE

Filed April 13, 1942 4 Sheets-Sheet 1

Fig. 1.

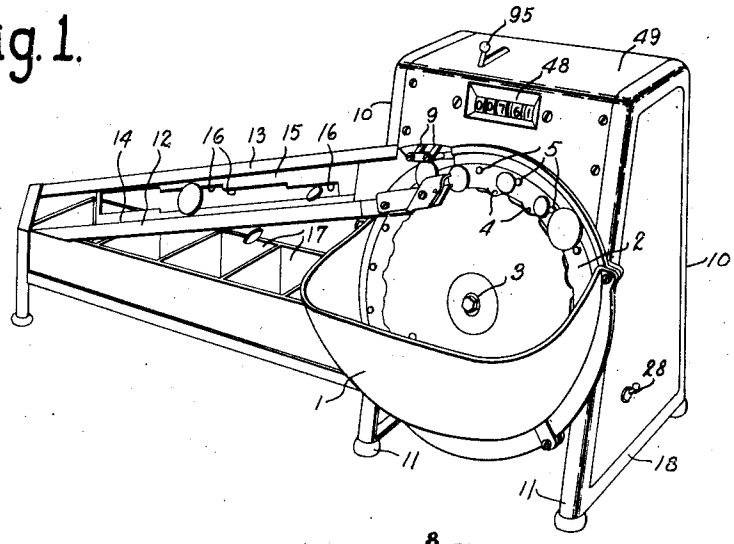
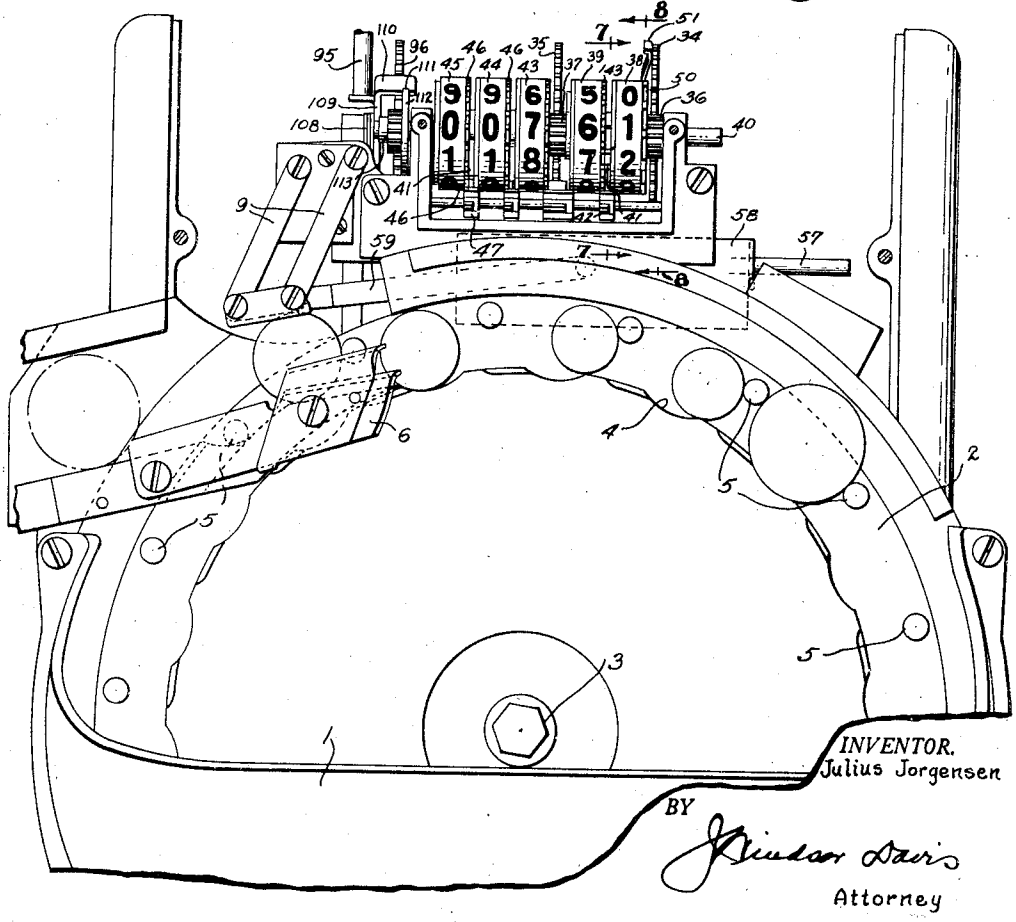


Fig. 2.



INVENTOR.
Julius Jorgensen

BY

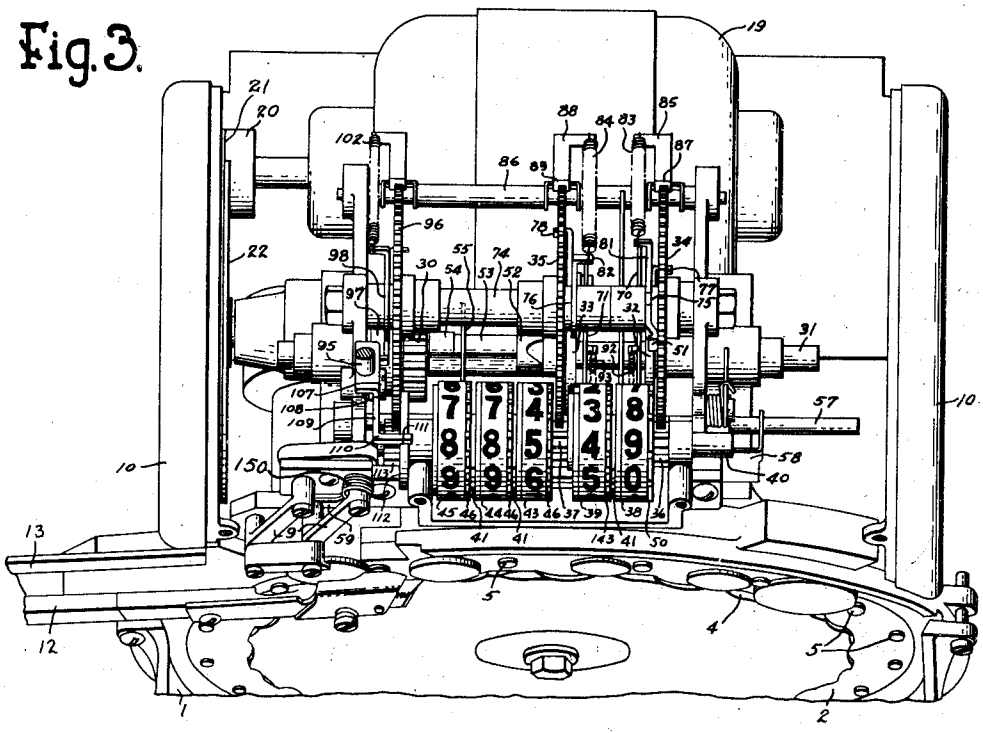
Attorney

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COIN COUNTING AND SORTING MACHINE

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Fig. 3.



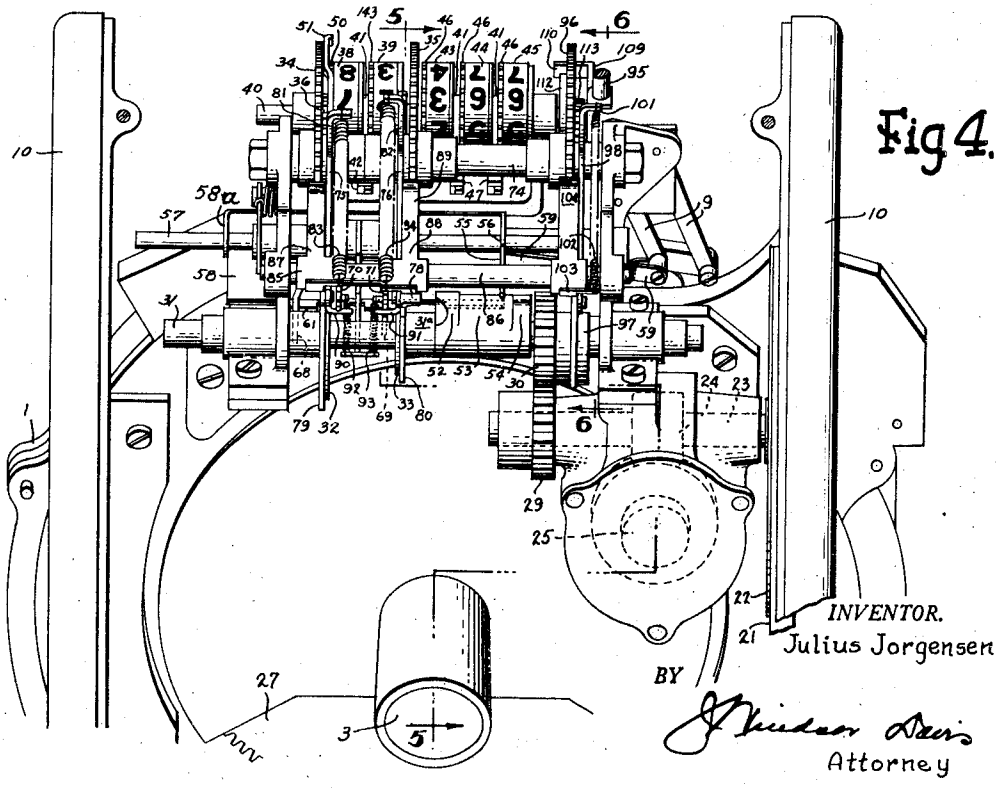


Fig 4.

INVENTOR.
Julius Jorgensen

BY

Attorney

July 8, 1947. J. JORGENSEN 2,423,502

COIN COUNTING AND SORTING MACHINE

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Fig. 6.

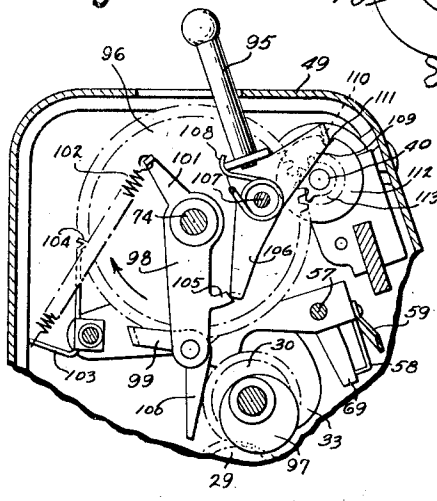


Fig. 7.

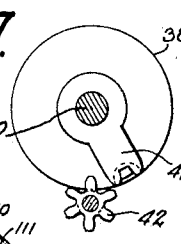


Fig. 8.

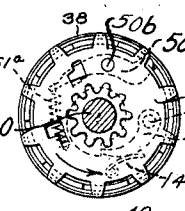


Fig. 5.

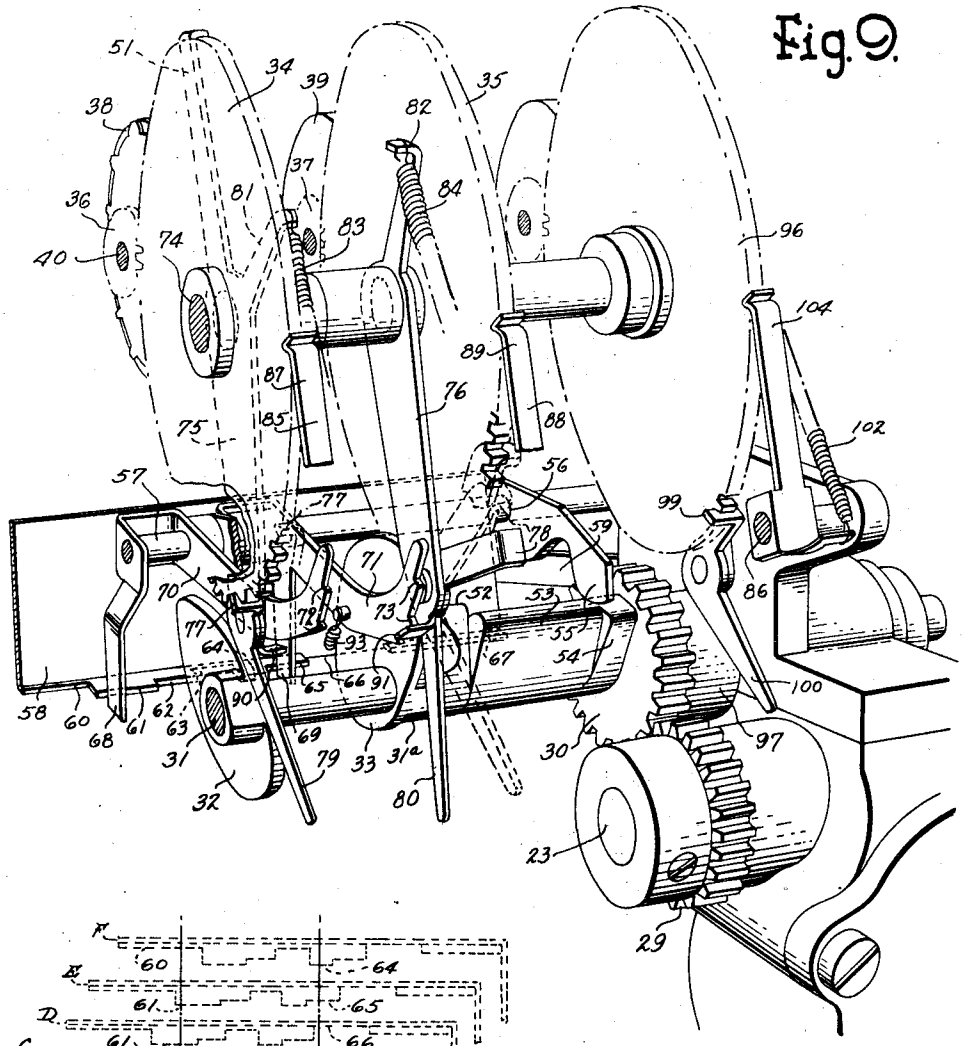
INVENTOR.
Julius Jorgensen
BY
Attorney

July 8, 1947. J. JORGENSEN 2,423,502

COIN COUNTING AND SORTING MACHINE

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Fig. 9.



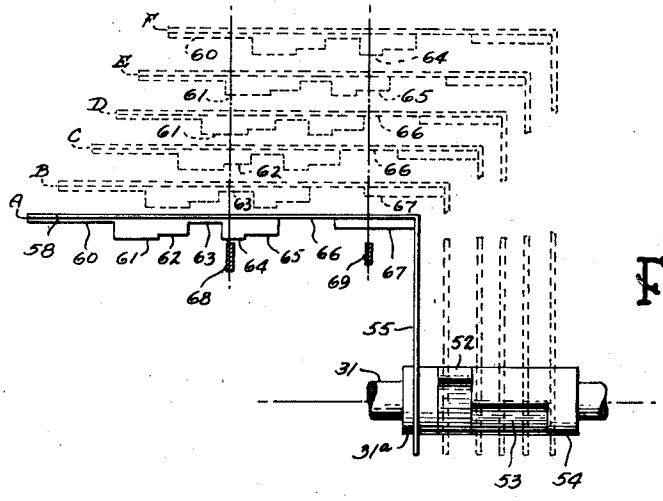


Fig. 10.

INVENTOR.
Julius Jorgensen

BY J. Winston Sears
Attorney

Patented July 8, 1947

2,423,502

UNITED STATES PATENT OFFICE

2,423,502

COIN COUNTING AND SORTING MACHINE

Julius Jorgensen, Detroit, Mich.

Application April 13, 1942, Serial No. 438,671

16 Claims. (Cl. 235—32)

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This invention relates to coin counting and sorting machines and has for its object to provide a machine which will add the money value of a batch of coins whether of the same or different denomination and which, after addition thereof, will sort the coins.

I am aware that there are numerous coin sorting devices of record and I am also aware of machines which will count the number of coins which are passed through it. However, it is of substantial advantage in the case of collectors for milk and paper routes, of street car conductors, of banking institutions and of numerous other businesses to be able to compute the value of a group or batch of coins. If the collector doubts the computation the batch is kept intact and he may thereafter check the computation.

Another object is to provide a machine having a basket attachment for reception of a large or small number of coins of the same or of miscellaneous value in combination with a rotor which will pick up the coins, one at a time, from the basket and which will transport them past a lever mechanism which sets the counting mechanism into action, the entire machine being capable of motor actuation and hence very rapid operation.

Another object is to provide a computing machine having counting mechanism driven by a motor and merely indexed to counting position by the coins. In other words, the coins themselves do not cause any actuations of the counting mechanism but merely control the positions of center fingers and levers so that the computing effort comes from the motor driven shaft. One advantage of this is that the action is very reliable and positive and differences in weight of coins of the same value do not affect the operation.

Another object is to provide a machine of high accuracy even though the thickness and diameter of coins of the same value may vary due to differences in usage and care. The diameter of a penny and of a dime, for instance, should differ by approximately fifty thousandths of an inch, but if the dime is new and the penny old and worn that difference may be substantially reduced. I, therefore, employ the coins as actuators of the indexing device and operate the device through levers which substantially multiply the differences thus reducing the chances of error and, in

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fact, eliminating errors unless the coins are almost identically of the same diameter.

Other objects and advantages will become more fully apparent as reference is had to the accompanying drawings wherein my invention is illustrated, and in which

Fig. 1 is a perspective view of my improved computing and sorting machine,

Fig. 2 is an enlarged frontal close-up of the upper portion of the computing machine with the cover removed,

Fig. 3 is a top plan view of the showing of Fig. 2,

Fig. 4 is a rear elevation of the showing of Fig. 2,

Fig. 5 is a vertical transverse section taken along the line 5—5 of Fig. 4,

Fig. 6 is a similar section taken along the line 6—6 of Fig. 4,

Fig. 7 is a detail section taken along the line 7—7 of Fig. 2,

Fig. 8 is a detail section taken along the line 8—8 of Fig. 2,

Fig. 9 is a perspective of the principal operating parts, and

Fig. 10 is a showing of an indexing member with its various positions shown diagrammatically.

The coin pick-up

More particularly 1 indicates a basket-like receiver for coins which, in the machine as here illustrated, may be of all the several denominations below one dollar in value. The rear wall of the receiver 1 is composed of a disc 2 rotatable with the driven shaft 3. Near the periphery of said disc 2 is a ledge 4, and outwardly of the ledge is a plurality of spaced lugs or stops 5. As the disc rotates the coins take their place on the ledge and are carried upwardly out of the basket one at a time by the lugs 5 since the lugs project outwardly but a slight amount from the face of the disc. The pick-up is best illustrated in Figs. 2 and 5.

As the coins are carried across the top of the disc they are forced into a take-off in the form of a stationary plate 6 having a cut-out 7 (Fig. 5) directly in the path of the coins and forming a groove with the disc substantially tangent to the circle of the ledge 4. Outwardly of the plate 6 is a second plate 8 overlying it and spring

pressed in the direction of the disc to exert yielding pressure on the coins traveling along the groove. The lugs 5 drive the coins through the groove past the plate 8 at which point they actuate control levers 9, to be hereinafter described, and thereafter they roll freely down the groove and into the sorting device now to be described.

The sorting device

The basket 1 is mounted on the frame-work 10 which has legs or base members 11. Attached to these frame members is the sorting device composed essentially of two spaced bars 12 and 13, the lower one of which has a ledge 14 formed in the top thereof and the upper one of which has a ledge 15 formed in the bottom thereof. The two bars are parallel and inclined rearwardly as viewed in Fig. 1 with the frontal walls of the ledges coplanar. The ledge 15 is notched along its length, as at 16, so that the smallest coin (a dime) will fall between the bars at the first notch 16, but all other coins will continue to roll along the ledge 14 until the next notch 16 is reached whereupon the next larger coin (penny) will fall between the bars, and so on. Below the bars are baskets 17 to catch the coins of each denomination. These baskets may be individually removable or it may be in the form of a single basket with compartments therein removable as a whole.

Referring first to Fig. 5, anchored to the members 18 of the frame 10 is a motor 19, although it will be understood that the machine may be operated manually if desired. The motor 19 has a pulley 20 having a belt 21 therearound which drives the pulley 22 of a shaft 23 which is geared at 24 to a shaft 25. On the end of the shaft 25 is a pinion gear 26 in mesh with a large gear 27 fixed to the back of the disc 2 and rotatable about the axis of the shaft 3. It will thus be seen that when the motor 19 is energized by throwing the switch 28 (Fig. 1), the shaft 23, the gears 24, shaft 25, gears 26 and 27 and the disc 2 will rotate and will continue to rotate so long as the motor runs. And it will be seen that so long as the disc 2 rotates it will pick-up coins and feed them over the ledge or run-way 4 and past the levers 9.

The registering mechanism

Referring now to Fig. 9, the shaft 23 also has a gear 29 thereon in engagement with a gear 30 of the cam shaft 31. Carried by the shaft are two large or primary cams 32 and 33. Immediately above and parallel to the face of each cam 32 and 33 is a gear train composed of a large gear 34 and 35 respectively, in mesh with small coaxial gears 36 and 37 respectively. The gears 36 and 37, as seen also in Fig. 2, are fixedly secured to wheels 38 and 39 respectively, the gears and wheels all being mounted upon and rotatable with respect to the fixed shaft 40.

Secured to the sidewall of the wheel 38 is a gear segment 41 of the type illustrated in Figs. 2 and 7, composed of one female tooth for engagement once each rotation with a tooth of a gear 42 to impart rotation thereto through a small arc each time it passes thereover. Fixed to the adjacent wheel 39 is a large gear 143 (Fig. 2) in constant mesh with the gear 42, the gear segment 41 and the gear 143 residing between the wheels 38 and 39.

The operation is as follows: rotation of the gear 34 by the cam 32, as will be hereinafter described in connection with the indexing means, rotates

the gear 36 and the wheel 38. This wheel 38 indicates units from zero to nine inclusive and indicia is placed on its periphery accordingly. When the wheel 38 reaches the numeral nine the gear segment 41 is so placed that further rotation causes it to engage the gear 42 thus rotating it and the wheel 39 through a distance equal to one digit on the wheel 38. The wheel 39 is the tens wheel and is provided with peripheral indicia the same as wheel 38. It will be thus seen that if, for instance, the wheel 38 registers "5" and it is then rotated through five more digits that it will register "0" and the wheel 39 will register "1."

In order to permit larger amounts than tens to be registered other wheels 43, 44 and 45 are added on the same shaft 40. These wheels are each equipped with a gear 46 exactly similar to the gear 143, above described. Between the wheel 43 and the gear 46 of the wheel 44, and also between the wheel 44 and the gear 46 of the wheel 45 is a gear segment 41, and coaxially with the gear 42, on the same shaft therewith, are similar gears 47. The operation is the same as above described so that when the wheel 39 rotates from the position where it exposes the numeral "nine" to the position to expose the "zero" the wheel 43 is rotated by its segment 41, and so on. The machine, as illustrated, is thus capable of recording $999.99, which is read through the window 48 of the sheeting 49 which covers the operating mechanism.

The description of the operation, as above described, assumed that the coins were of one cent or of five cent denomination, in which case all actuation would originate at the wheel 38 and, hence, with the gear 34 and cam 32. However, the machine will register ten, twenty-five and fifty cent pieces, and, in this case, the wheel 39 may rotate alone or both wheels 38 and 39 may have to rotate. This is the purpose of the cam 33 and the gear train 35 and 37.

The cam 32 is given a lead with respect to the cam 33 so that in case of a twenty-five cent piece, for instance, the "five" digit will be added to the exposed number of the wheel 38 with a possible rotation of one digit by the wheel 39 before the "two" digit is added to the wheel 39. The wheel 39 may thus be rotated by the wheel 38 acting through a gear segment 41, the gear 42 and the gear 143, or it may be actuated by the gear train 35, 37.

The selection of movements of the wheels and the extent of the movement is controlled by an indexing mechanism which will now be described.

Indexing

Referring again to Fig. 9, the shaft 31 has a series of indexing cams 52, 53 and 54 thereon, the elongated cam 53 being, in fact, several cams of the same size and shape placed side by side. An indexing finger 55 has a neutral position immediately adjacent the cam 33 where the shaft is round as indicated in Fig. 10 at 31*a* just to the left of cam 52. The finger 55 is rigidly secured to, and projects laterally from, a rock bar 58 which is pivotally mounted on a shaft, or rod 57, the shaft passing through a suitable aperture in the finger 55, as indicated at 56 and an apertured ear 58*a* which projects laterally from the other end of the rock bar. A link 59 (see Fig. 2) connects the rock bar to the parallel swinging control levers 9 so that when these levers are caused to be swung by a coin passing from the disk 2 to the coin chute formed by the bars 12 and 13, the rock bar will be moved to the left, as shown in Fig. 2 and to the right, as shown in

Figs. 9 and 10, an amount dependent upon the size of the coin. Obviously a dime will cause the rock bar to be moved, or slid, along the shaft 57 a certain predetermined distance, while each of the larger sized coins, viz: a penny, nickel, quarter or half-dollar, will cause the rock bar 58 to be slid a greater distance to the right in Figs. 9 and 10, dependent upon the diameter of the coin. When the registering mechanism is in neutral position, the finger 55 is located in alignment with the cylindrical portion 31*a* of the shaft 31. When the rock bar has been moved to the right in Figs. 9 and 10 by a dime, the finger 55 will align with the cam 52; for a penny, five cent piece or quarter the finger will be aligned with the elongated cam 53, while for a half-dollar the finger will be aligned with the cam 54.

The rock bar 58 has a ledge 60 which varies in width along its length to provide a plurality of shoulders 61, 62, 63, 64, 65, 66 and 67. Upon elevation of finger 55 and rocking of the bar 58 one or the other of these shoulders will contact one or the other or both of the lower ends 68 or 69 of bell cranks pivotally mounted on the shaft 57 with their outer ends 70 and 71, respectively, having notches 72 and 73 in the lower edge thereof. The amount of rocking will obviously depend on the height of the shoulder which contacts the ends 68 and 69.

The gears 34 and 35 are rotatably mounted on a common shaft 74. Alongside each of these gears and freely mounted on the shaft 74 are the arms 75 and 76, each having a greater length than the radius of the gears 34 and 35 and having pawls 77 and 78, respectively, pivotally mounted thereon and having cam contacting arms 79 and 80, respectively, in the plane of the cams 32 and 33, respectively.

The arm 75 has an extension 81 and the arm 76 has an extension 82. Attached to each of these extensions are the springs 83 and 84, respectively. The spring 83 is attached at its other end to a bell crank 85 (as best seen in Figs. 3 and 4) pivotally mounted on a stationary shaft 86 and having a pawl 87 at its outer end in engagement with the gear 34 to prevent coasting of the gear. The spring 84 is similarly attached at its outer end to a bell-crank 88 pivotally mounted on the shaft 86 and having a pawl 89 in engagement with the gear 35. The springs 83 and 84 thus urge the arms 75 and 76 away from the reader as viewed in Figs. 4 and 9, and hence try to swing the cam contacting arms 79 and 80 into engagement with their cams 32, 33 respectively for maximum elevation thereby. However, the arm 75 has a flange 90 and the arm 76 has a flange 91 adapted to engage the notches 72 and 73 respectively of the arms 70 and 71, the arms 70 and 71 being spring pressed downwardly by the springs 92 and 93 (see Fig. 4).

Mounted upon one side of the unit wheel 38 is a sprocket wheel 50, between the projecting teeth of which is adapted to be engaged a small laterally projecting flange formed at the outer end of an arm 51 which is formed integrally with the arm 75. When the arm 75 is in neutral position, the laterally projecting flange of the arm 51 will engage between the teeth of the sprocket wheel 50 and hold the sprocket wheel 50 and gear 38 from movement and will also prevent coasting of the gear 38 and wheel 50 after the latter has been actuated in a manner presently to be described. The provision of the gear 42 between the unit wheel 38 and the gear 143 secured to the side face of the tens wheel 39 and the provision of the similar gears 47 and 46 between the wheels 39, 43, 44 and 45 serves to prevent coasting of these wheels. The sprocket wheel 50 is integrally united with the small gear 36 which is driven by the large gear 34 and when the gear 36 is rotated by means of the large gear 34, rotation thereof is imparted to the wheel 38 by means of a spring pressed pivoted pawl 50*a* (see Fig. 8) mounted upon a pin 50*b* secured in the sprocket wheel 50 and projecting laterally from the inner face thereof into the interior of the wheel 38. The pawl 50*a* is normally held by an expansion spring 51 with the tooth end of the pawl in engagement with the inner cylindrical face of the wheel 38, this face of the wheel being provided with suitable slots, or grooves, for engagement by the toothed end of the pawl 50*a*, so that the wheel 38 will be held with its indicia in proper position for registry with the observation window 48. Each of the wheels 39, 43, 44 and 45 are similarly constructed.

The operation of the indexing mechanism is as follows: Suppose that a twenty-five cent piece is being impelled past the levers 9 thus rocking these levers by an amount proportionate to the diameter of the coin. This causes the link 59 to be pulled to the left, as viewed in Fig. 2, thus traversing the rock-bar 58 and the finger 55 to the right as viewed in Fig. 9. Each coin will traverse the rock bar and finger a different amount because each is of different size. A dime will traverse the finger 55 in the path of the cam 52 while a penny, a nickel and a quarter will traverse it to some point in the path of the composite cam 53, and a half a dollar will traverse it in the path of the cam 54. It will be remembered that the shaft 31 with the cams 52, 53 and 54 is motor driven so that as the cam 53 rotates it elevates the finger 55 causing the bar 58 to rock and forcing one of the shoulders, 61, 62, 63, 64, 65, 66, 67 against the arm 68 or 69 or both.

Fig. 10 illustrates which shoulder is called upon to do the actuating. The full line position A shows the finger 55 in neutral position, riding on the cylindrical portion 31*a* so that it is not subject to elevation. Traversal of the finger and rock-bar to the position B is brought about by insertion of a dime and causes actuation of the arm 69 by the shoulder 67. The position C is brought about by insertion of a penny and causes actuation of the arm 68 by the shoulder 62, the position D by insertion of a nickel and causes actuation of the arm 68 by the shoulder 61, the position E by insertion of a quarter and causes actuation of both arms 68 and 69 by the shoulders 61 and 65 respectively, and the position F by insertion of half a dollar which causes actuation of the arm 69 by the shoulder 64. These shoulders vary in height in order to impart different movements to the arm 68 and 69. Thus, in the case of a dime the shoulder 67 actuates the arm 69 by an amount just sufficient to trip the arm 71 so that the flange 91 may fall into the second notch 73. The normal position of the flange 91 is in the first or outermost notch 73, and when in the normal position the arm 80 is not sufficiently in the path of the cam 33 to be actuated thereby. However, when the flange 91 drops back one notch the cam will then strike the arm 80, rocking it about its pivotal mounting on the arm 76, thus first elevating the pawl 78 into engagement with a tooth of the gear 35 and thereafter impelling the gear 35 through a short arc sufficient to cause rotation of

gear 37 and the register wheel 39 through one digit.

A penny will function similarly but the action will be through the shoulder 62, the arm 68, the arm 70, the notches 72, the arm 79, cam 32, pawl 77, gear 34 and register wheel 38.

A nickel will function exactly the same as a penny except that the wider shoulder 61 actuates the arm 68 a greater amount thus raising the arm 70 to an extent such that the flange 90 on arm 75 completely clears the notches 72 so that the full lift of the cam 32 can be imparted through the arm 79 to the pawl 77, the full lift impelling the gear 34 through an arc sufficient to cause the unit wheel 38 to rotate through five digits.

A quarter will cause the shoulder 61 to impart through the arm 68 the full lift of the cam 32 to the arm 79 and pawl 77 as described in the case of a nickel, and it will also cause actuation of arm 69 by the shoulder 65. The shoulder 65 is of a width such that the flange 91 will fall back two notches 73. The position of the parts as shown in Fig. 9 of the drawings are for this setting, the flange 90 being in completely released position with respect to notches 72, and the flange 91 being in engagement with the third notch 73. As the shaft 31 and cams 32 and 33 rotate the cam 32 will impart its full lift to the arm 79 thus swinging the pawl 77 into engagement with the teeth of the gear 34 and rotating the unit wheel 38 through five digits. These five digits may be added to a previous registering so that the addition of these five may cause rotation through one digit of the tens wheel 39 because of the action of the segment 41 and gear 42 as previously described. For this reason the movement of the unit wheel 38 is completed before the cam 33 begins to impart its lift to the arm 80 and pawl 78 by which the gear 35 and tens wheel 39 is then rotated through two digits.

A half dollar will cause the finger 55 to travel to a position in the path of the cam 54 and will traverse the rock-bar 58 to the position F of Fig. 10 where the shoulder 64 will raise the bell crank arm so that the flange 91 will not engage any of the notches 73 thus permitting the cam 33 to impart its full lift to the arm 80, the full lift impelling the gear 35 and rotating the tens wheel 39 through five digits.

After each upward actuation of either of the gears 34, 35 is completed by the throw of their respective cams 32 and 33, and the cam rider arms 79 and 80, the throw of each of the cams 52, 53 and 54 will have passed the finger 55 permitting the rock bar 58 to move away from the arms 68 and 69 thus allowing the arms 70 and 71 to rest upon the lateral flanges 90 and 91 of the arms 75 and 76 respectively. The throw of the cams 32 and 33, however, pushes the arms 75 and 76 forwardly (Fig. 9) an amount sufficient to bring the flanges 90 and 91 into alignment with the outermost or first of the notches 72 and 73 of the arms 70 and 71 respectively which are pulled down by the springs 93 to cause the arms 75 and 76 to be locked in their neutral position, the pawls 77, 78 dropping out of engagement with the teeth of gears 34, 35. By the time this action has occurred the finger 55 is riding on the cylindrical or concentric portion of the cams 52, 53, 54, thus permitting the torsion spring 150 (Fig. 3) one end of which is anchored and the other end of which engages one of the control arms 9, to return the latter to their neutral or initial position and to slide the rock bar 58 and finger 55 to the neutral position indicated at A in Fig. 10.

It will of course be understood that the disc 2 operates in timed relationship with the drive shaft 31 and the pins 5 are so spaced on the disc that the shaft 31 will complete a full revolution during the time that elapses after one pin 5 passes any given point until the following pin reaches that point, or more specifically the point where a coin of any denomination engages the control device carried by the arms 9 until a coin ahead of the following pin engages the control device. Obviously the timing is such that the sliding movement of the rock bar 58 and finger 55 leads or is ahead of the swinging or rocking movement thereof in order that the finger 55 may be brought into alignment with the proper one of the cams 52, 53, 54 for the respective coin and the corresponding shoulders on the rock bar aligned with the arms 68 and 69. It will be noted that the throw of each of the cams 52, 53 and 54 is the same; the variation in the amount of movement of the arms 68 and 69 being effected by the difference in the heights of the shoulders 61, 62, 64 and 65 on the rock bar. It will also be seen that although the throw of the cams 32 and 33 is sufficient in the constructional example illustrated to rotate each of the gears 34 and 35 a distance sufficient to register five digits on the unit and tens register wheels 38 and 39 respectively on each rotation of the drive shaft 31, the wheel 38 will only be moved one digit for a penny because the rock bar will only lift the bell crank arm 70 enough to let the flange 90 of the arm 75 engage in the second notch 72 thus permitting the pawl 77 to drop back but one notch or tooth of the gear 34 thereby preventing the cam rider arm 79 from engaging the cam 32 thus causing only the outermost portion of the throw of the cam to be effective.

The resetting mechanism

The machine is equipped with a resetting mechanism such that an operator may return all wheels 38, 39, 43, 44 and 45 to show a zero setting through the window 48 at any time merely by actuating a trip handle 95. This part of the machine is best seen in Figs. 6 and 9.

Mounted on and rotatable with respect to the shaft 74 is a gear 96 of substantially the same size as the gears 34 and 35. A re-set cam 97 is provided on the motor driven shaft 31 below the gear. Journalled on the shaft 74 alongside the gear 96 is an arm 98 of greater length than the radius of the gear 96 and having a detent pivotally mounted on the lower end thereof composed of a pawl 99 and a cam contacting arm 100, the detent thus being capable of acting as a tappet between the cam 97 and the gear 96 in a manner analagous to those previously described in connection with gears 34 and 35. The arm 98 has an extension 101 on the opposite side of the shaft 74 from the detent, and a spring 102 is connected thereto. The other end of the spring is connected to the outer end of an arm 103 of a bell crank pivotally mounted on the stationary shaft 86 and having a pawl 104 on its other end for engagement with the teeth of the gear 96 to prevent coasting. The arm 98 is thus spring biased in the direction to cause engagement of the arm 100 with the cam 97. In order to lock the arm 98 into a position to remove the arm 100 from the path of the cam 97, I provide a lug 105 for engagement with an arm 106 journalled on a fixed

pivot 107 and biased by a spring 108 in the direction of contact with the lug 105.

The arm 106 extends upwardly beyond its pivot 107 into a further arm 109. Along the length of this arm 109 the trip handle 95 is securely mounted. The outer end of the arm is bent to form a pawl 110 for engagement with a depression 111 in a disc 112 fixedly mounted on the shaft 40 upon which the registering wheels are mounted. Coaxial with and fixed to the disc 112 is a gear 113 in constant mesh with the large gear 96.

The operation is as follows: with the parts in the position illustrated, and best seen in Fig. 6, the re-set mechanism is not functioning. If the lever 95 is pushed to the left the arm 106 will be swung from the path of the lug 105 thus permitting the arm 98 to swing the arm 100 into contact with the cam 97. At the same time the pawl 110 is lifted from its locking position with respect to the depression 111 so that the gear 113 and disc 112 are free to rotate. As the cam 97 rotates it will actuate the arm 100 thus lifting the pawl 99 into engagement with the gear 96 so that continued rotation of the cam 97 will cause the gear 96 to rotate through an arc. This will cause the gear 113 and the shaft 40 to rotate through an arc equal to one digit on any or all register wheels. At every revolution of the cam 97 a similar actuation is again imparted to the gear 113, disc 112 and shaft 40 until the pawl 110 again drops into its recess 111.

The shaft 40 is stationary for all registering operations, rotation of the wheel 38 being effected by the rotation of the gear 36 and sprocket wheel and the pawl connection 50*a* shown in Fig. 8 between the sprocket wheel 50 and wheel 38. A similar connection, as hereinbefore set forth, is provided between the gears 43 and wheel 39 and between each of the gears 46 and the remaining register wheels 43, 44 and 45. The shaft 40 has formed thereon a number of shoulders 40*a*, one for each register wheel and located within the inner part of each wheel. Each of the register wheels is preferably formed as a cup-shaped member having an annular cylindrical portion on which the indicia are suitably printed or marked on the outside surface thereof and a flat bottom side wall portion. This side wall portion of each wheel has a pin 140 (see Fig. 8) projecting laterally therefrom upon which is pivotally mounted a pawl 141 the end of which is adapted to engage with the shoulder 40*a*, the pawl being held in engagement with the shaft 40 by means of the leaf spring 142, all as shown in Fig. 8. As the wheels 38 are driven in a counter-clockwise direction (Fig. 8) during registering operation while the shaft 40 remains stationary, the pawl 141 is inoperative. When, however, the shaft 40 is driven to perform a resetting operation in a clockwise direction, as indicated by the arrow in Fig. 8, the pawl 141 will be held by the spring 142 in the path of movement of the shoulder 40*a* and will cause the register wheel to be moved. It will be understood that the location of the shoulder 40*a* and pawl 141 are so arranged with respect to each other and the indicia of the registering wheel that the distance from the free end of the pawl to the shoulder 40*a* will be in accordance with the numeral of the registering wheel exposed through the window 48 at the time the resetting mechanism is set in operation and that the shoulder 40*a* and pawl 141 for each of the registering wheels will come into operation for each wheel in accordance with the amount of travel required by each wheel to return to its position of zero reading.

What is claimed is:

1. A coin computing machine comprising a plurality of axially aligned register wheels each having indicia thereon adapted to be progressively exposed to view, two sets of gear trains for rotating said wheels respectively through progressive arcs, a motor driven shaft having two spaced primary cams thereon, pivotally mounted pawls rockable into and out of engagement with one gear of each train respectively, said pawls being disposed for operation respectively by said primary cams and indexing means for selecting the tooth of the gear with which each of said pawls engages whereby the length of the arc of travel to be imparted to each of said gear trains is determined, comprising a notched trip arm for positioning each pawl relative to its associated gear and in position to be actuated by its cam, a rock-bar having a flange provided with notches of different depths engageable by said trip arms and slidable to selectively position said notches adjacent said trip arms, secondary cams also mounted on said motor driven shaft, a finger rigidly secured to said rock-bar and movable to positions in the paths of said secondary cams for operation thereby to position said trip arms and pawls, a rock-lever connected to said rock-bar for imparting movement thereto, and means for impelling coins against and past said rock-lever whereby said rock-lever is swung through an arc proportionate to the diameter of the coin.

2. A coin computing machine comprising a plurality of axially aligned register wheels each having indicia thereon adapted to be progressively exposed to view, two sets of gear trains for rotating said wheels respectively through progressive arcs, a motor driven shaft having two spaced primary cams thereon, pivotally mounted pawls rockable into and out of engagemet with one gear of each train respectively, said pawls being disposed for operation respectively by said primary cams, said register wheels progressively registering units, tens and hundreds, the primary cam for the gear train actuating the units wheel being set ahead of the primary cam for the gear train actuating the tens wheel, and indexing means for selecting the tooth of the gear with which each of said pawls engages whereby the length of the arc of travel to be imparted to each of said gear trains is determined, comprising a trip arm for each pawl having a plurality of pawl positioning notches, a rock-bar having a flange provided with notches of different depths engageable by said trip arms, said bar being slidable to selectively position said notches adjacent said trip arms, means for impelling coins past a station, means operable in proportion to the diameter of a coin impelled past said station for sliding said rock bar, means for thereafter rocking said bar to engage and move said trip arms whereby said trip arm notches are set to position said pawls, and primary cams for rocking said pawls into engagement with said gear trains and for thereafter advancing said gear trains.

3. In a coin counting machine a plurality of register wheels including a unit wheel and a tens wheel, transfer mechanism between each wheel and the next adjacent wheel, an independent gear train for each of said unit and tens wheels, a drive shaft, a cam on said shaft for each gear train, a driving connection having a variable

stroke between each of said gear trains and said drive shaft, a coin actuated mechanism including an element adapted to be moved an amount corresponding to the diameter of the coin passing through said coin actuated mechanism, cams carried by said drive shaft, one for each of said gear trains, said driving connection comprising a pivoted pawl interposed between each of said cams and its respective gear train, said pawls being adapted to occupy any one of a plurality of stroke starting positions, and means actuated by said element for setting each pawl at a particular starting position in accordance with the value of the coin passing through said coin actuated mechanism, said last named means comprising latch means for engaging each of said pivoted pawls and holding it at said starting position, said latch means being formed to engage each pawl for holding it out of engagement with its respective cam prior to the operation of said element.

4. In a coin counting machine a plurality of register wheels including a unit wheel and a tens wheel, transfer mechanism between each wheel and the next adjacent wheel, an independent gear train for each of said unit and tens wheels, a drive shaft, a driving connection of variable effect between each of said gear trains and said drive shaft, a coin actuated mechanism including an element adapted to be moved an amount proportionate to the varying values of coins as determined by their diameters passing through said coin actuated mechainsm, cams carried by said drive shaft, one for each of said gear trains, said driving connection comprising a pivoted pawl interposed between each of said cams and its respective gear train and adapted to drivingly engage said gear train, means actuated by said element for setting said pawls in accordance with the values of the coins passing through said coin actuated mechanism comprising: a control member mounted for swinging and reciprocating movement, a plurality of additional cams on said drive shaft, and a cam rider attached to said control member for engagement with said additional cams to cause swinging movement to be imparted to said control member; means for controlling the point of engagement of each of said pawls with its respective gear train comprising a latch for controlling the positioning of each of said pawls and means for actuating said latches by said reciprocating and swinging control member.

5. A coin counting machine comprising a plurality of register wheels including a unit wheel and a tens wheel, transfer mechanism between each wheel and the next adjacent wheel, drive means, an independent gear train connected to each of said unit and tens wheels, a coin actuated device including an element mounted for reciprocating and rocking movement, a variable stroke driving mechanism adapted to drive each of said gear trains and adapted to be driven by said drive means and means interposed between said mechanism and said element and adapted for actuation by the latter to adjust the strokes of said mechanism in accordance with the different values of coins that actuate said coin device as determined by the diameters of said coins, said mechainsm comprising a pivoted pawl adapted to drive said gear train, a cam on said drive means adapted to impart a stroke of predetermined maximum amplitude to said pawl said stroke adjusting mechanism comprising latch means actuated by said element to various positions for preventing maximum amplitude of stroke from being imparted to said pawls and means on said element corresponding to the value of the coin being measured for selecting the amplitude of stroke to be imparted.

6. A coin counting machine comprising a plurality of register wheels including a unit wheel and a tens wheel, transfer mechanism between each wheel and the next adjacent wheel, a drive shaft, an independent gear train connected to each of said unit and tens wheels, a coin actuated mechanism including an element mounted for reciprocating and rocking movement, a driving connection of variable effect between each of said gear trains and said drive shaft and means interposed between said driving connection and element for actuation by the latter to set said driving connection in accordance with the different values of coins that actuate said coin mechanism as determined by the diameters of said coins, said driving connection of variable effect comprising a pivoted pawl, a cam on said drive shaft adapted to impart a predetermined amplitude of movement through said pawl to said gear train for coins of higher denomination and latch means actuated by said element for preventing said cam from imparting full amplitude of motion to said gear train through said pawl when coins of lesser denomination pass through said coin actuated mechanism, said element being provided with a plurality of spaced actuating members adapted to be brought into operative relationship with said latch operating means in accordance with the values of said coins as determined by the diameters thereof, a plurality of additional cams carried by said drive shaft, a cam rider connected to said element for selective engagement with said additional cams and for producing a rocking movement of said element for actuating either or both of said latch mechanisms.

7. In a registering mechanism, the combination of a registering wheel, a drive gear connected to drive said wheel in an advancing direction, a cam, means for actuating said cam, a lever mounted for rotation about the axis of said drive gear, and a bell crank pivotally mounted on the end of said lever, one arm of said bell crank being adapted to drivingly engage said drive gear and the other arm being adapted for engagement with said cam for actuation thereby.

8. In a registering mechanism, the combination of a registering wheel, a drive gear connected to drive said wheel in an advancing direction, a cam, means for actuating said cam, a lever mounted for rotation about the axis of said drive gear, a bell crank pivotally mounted on the end of said lever, one arm of said bell crank being adapted to drivingly engage said drive gear and the other arm being adapted for engagement with said cam, yieldable means urging said lever in a direction to engage said bell crank with said cam, and trip means for supporting said lever against the action of said yieldable means.

9. In a registering mechanism, the combination of a units register wheel, a tens register wheel, transfer gearing for driving said tens wheel from said units wheel, means for advancing said units wheel and means, in addition to said transfer gearing, for advancing said tens wheel, said advancing means each comprising a variable stroke device constructed and arranged to be preset to impart different predetermined advances to the associated wheel, a single check-calipering device mounted for movement to different positions,

means for feeding checks individually to said calipering device to thereby move it to a position corresponding to the size of the check being calipered, means operable by said calipering device to select for operation and preset the stroke of the selected variable stroke devices in accordance with the position of said calipering device and means for thereafter actuating said selected variable stroke devices through said preset strokes.

10. In a registering mechanism, the combination of a units register wheel, a tens register wheel, transfer gearing for driving said tens wheel from said units wheel, means for advancing said units wheel, means, in addition to said transfer gearing, for advancing said tens wheel, said advancing means each comprising a variable stroke device constructed and arranged to be preset for predetermined different strokes so as to impart different predetermined advances to the associated wheel, a single check-calipering device mounted for movement to different positions, means for feeding checks individually to said calipering device to thereby move it to a position corresponding to the size of the check being calipered, means operable by said calipering device to select for operation and preset the stroke of the selected variable stroke devices in accordance with the position of said calipering device, said selecting and presetting means comprising a shiftable rock bar carrying a plurality of indexing cams, said rock bar being connected for shifting by said calipering means to selectively position said cams in presetting relation with respect to said variable stroke devices, said cams having different heights for presetting said devices for said different predetermined strokes, and means for thereafter actuating said selected variable stroke devices through said preset strokes.

11. In a coin registering machine the combination of a register comprising a units and a tens wheel, a drive shaft, variable stroke motion transmitting mechanism adapted to drive said units wheel, additional variable stroke motion transmitting mechanism adapted to drive said tens wheel, means for selectively connecting said mechanisms to be driven by said shaft, coin calipering means, means for passing a coin through said calipering means, and stroke setting means, operated by said calipering means, for varying the stroke of said motion transmitting mechanism in accordance with the diameter of the coin calipered, said connecting means being connected to be controlled by said calipering means.

12. In a coin registering machine, the combination of a register comprising a units and a tens wheel, a transfer mechanism connecting said units wheel to drive said tens wheel, drive means, a variable stroke motion transmitting mechanism adapted to be driven by said drive means, and adapted to drive said tens wheel, a second variable stroke motion transmitting mechanism adapted to drive said units wheel, coin calipering means, means controlled by said calipering means for selecting the mechanism to be actuated and for presetting the stroke of said mechanism, power means, and means for thereafter connecting said selected motion-transmitting means with said power means for actuation thereby.

13. In a coin counting machine, the combination of a register comprising a units wheel and a tens wheel, transfer mechanism connecting adjacent wheels, a drive shaft, gears, one associated with said units and one with said tens wheel, for driving said wheels, a pawl carrier associated with each gear and mounted to rotate about the axis of the associated gear, a pawl mounted on each carrier and adapted to move to and from engagement with the associated gear, means actuated by said drive shaft for moving a pawl into engagement with its associated gear and for thereafter rotating said carrier and pawl to advance said gear to a predetermined position, a plurality of stops associated with each pawl, means for disengaging said pawl from said gear and for returning said pawl to one of said stops, coin calipering means, and means operated by said calipering means for positioning the stops corresponding with the coin calipered, said returning means serving to position the pawls against said stops as they are positioned.

14. In a coin counting machine the combination of a register comprising a plurality of juxtaposed registering wheels and transfer mechanism connecting adjacent wheels, a coin diameter calipering mechanism, means for passing coins through said mechanism, a drive shaft, gear means for actuating one of said wheels, a variable stroke motion transmitting device connected to drive said gear means, means for adjusting the stroke of said device to correspond with the diameter of the coin being calipered, means for connecting said device with said drive shaft, said stroke adjusting and said connecting means being controlled by said calipering mechanism.

15. In a coin counting machine, the combination of a register comprising a units and a tens wheel, transfer mechanism connecting adjacent wheels, a drive shaft, gears, one associated with said units wheel and one with said tens wheel, for driving said wheels, a pawl carrier associated with each gear and mounted to rotate about the axis of the associated gear, a pawl mounted on each carrier and adapted to move to and from engagement with the associated gear, means actuated by said drive shaft for moving a pawl into engagement with its associated gear and for thereafter rotating said carrier and pawl to advance said gear to a predetermined position, control means including a plurality of stops associated with each pawl, means for disengaging said pawl from said gear and for returning said pawl to one of said stops, coin calipering means, and means operated by said calipering means for positioning the stops corresponding with the coin calipered, said positioning means comprising a selector mounted adjacent said control means and having abutments of different heights arranged adjacent each other, means connecting said selector for movement by said calipering means to position abutments corresponding to the diameter of the coin calipered in operating relation with respect to said control means, and additional means operated by said shaft for operating said abutments against said control means to position said stops, said returning means serving to position the pawls against the stops as they are positioned.

16. In a coin registering machine, the combination of a register comprising a units and a tens wheel, a transfer mechanism connecting said units wheel to drive said tens wheel, drive means, a variable stroke motion transmitting mechanism adapted to be driven by said drive means, and adapted to drive said tens wheel, a second variable stroke motion transmitting mechanism adapted to drive said units wheel, a single coin calipering means, and selecting and presetting means controlled by said calipering means, comprising trip devices adapted to preset the

stroke of the respective mechanisms, an operator having pairs of operating abutments, adapted to actuate the trip devices, and power means for operating said selected variable stroke mechanisms after said trip devices have been actuated.

JULIUS JORGENSEN.

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