

Nov. 2, 1937.

J. W. HESS

2,097,792

COIN COUNTING MACHINE

Filed April 6, 1932

3 Sheets-Sheet 1

Fig. 1.

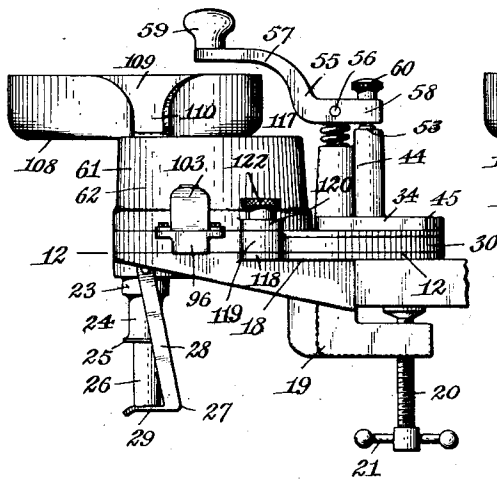


Fig. 2.

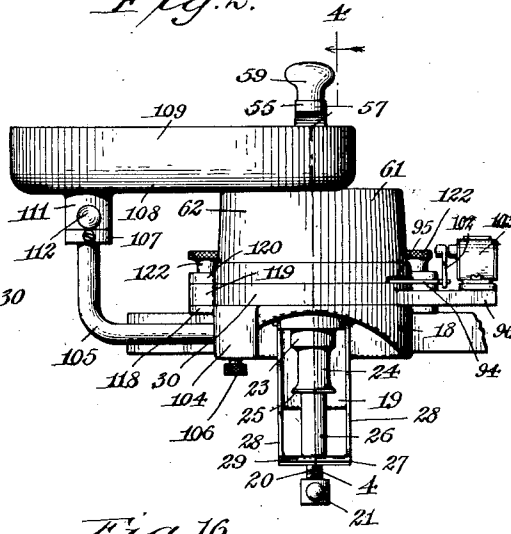


Fig. 3.

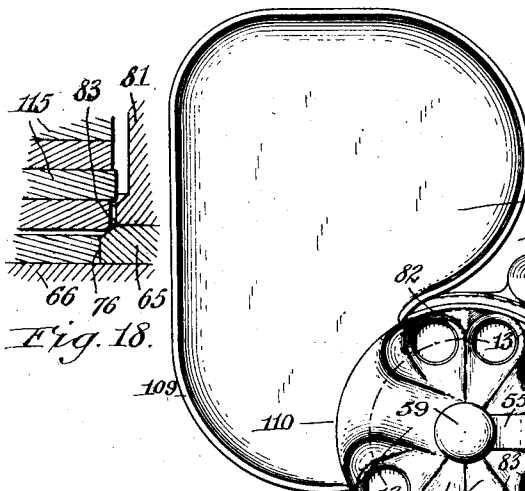


Fig. 16.

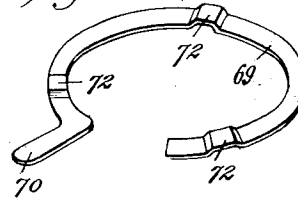


Fig. 18.

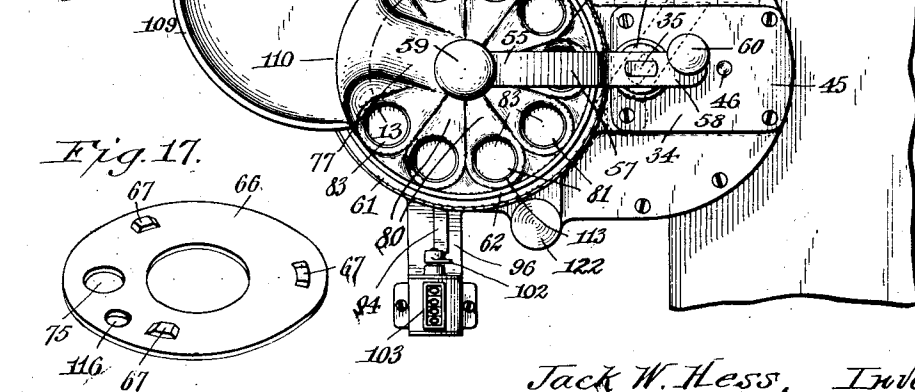
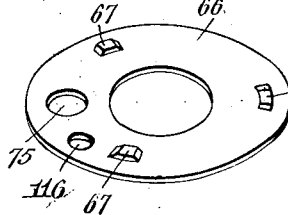


Fig. 17.



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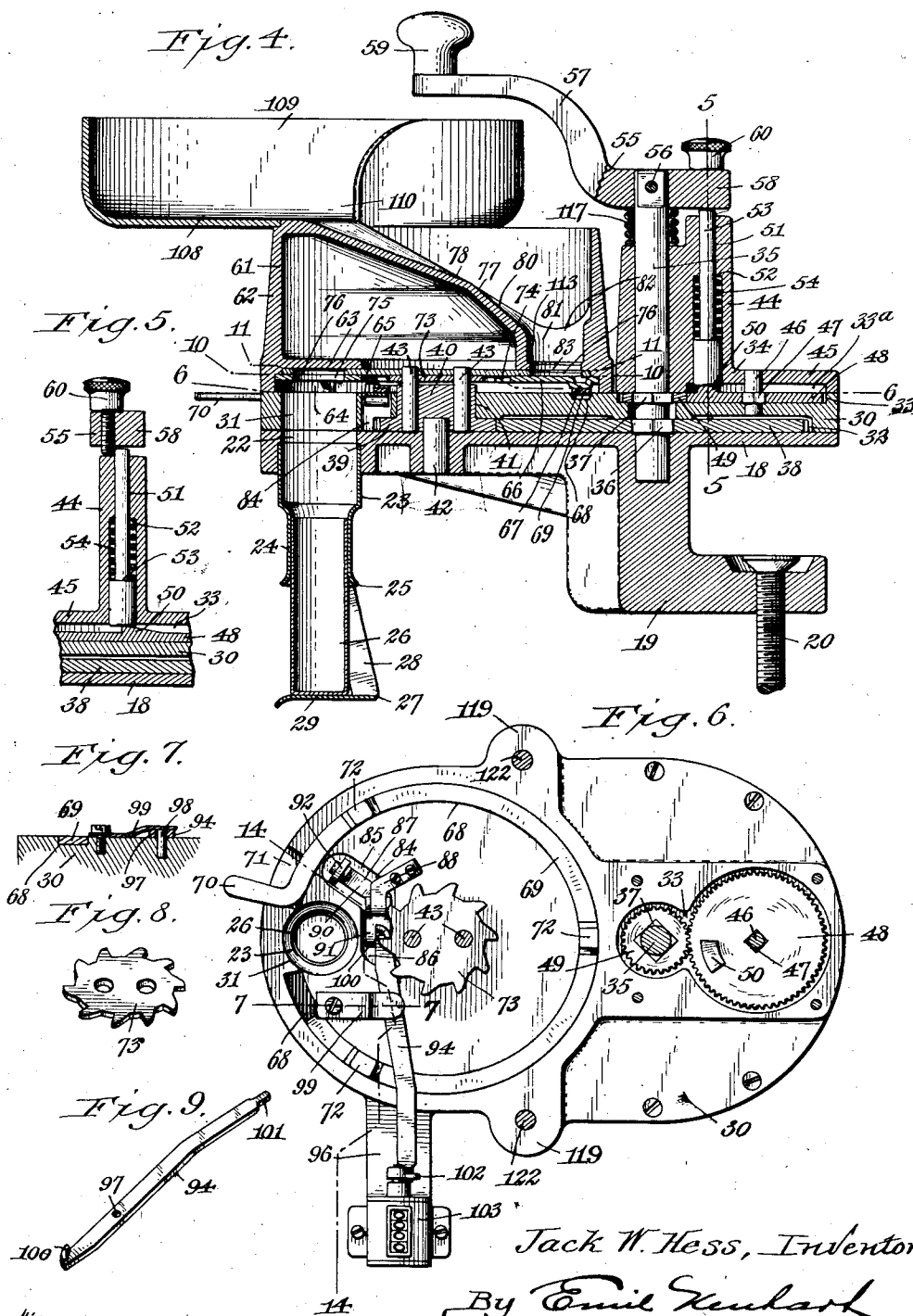
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3 Sheets-Sheet 2



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COIN COUNTING MACHINE

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3 Sheets-Sheet 3

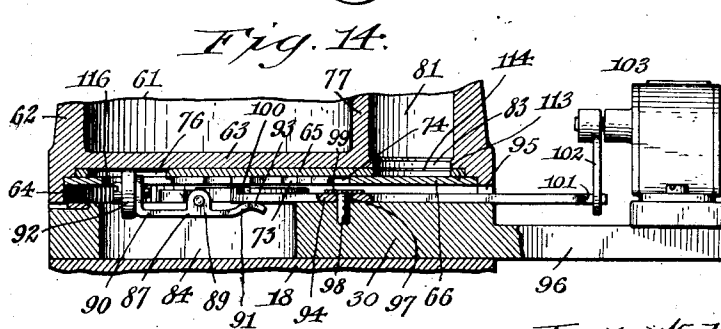
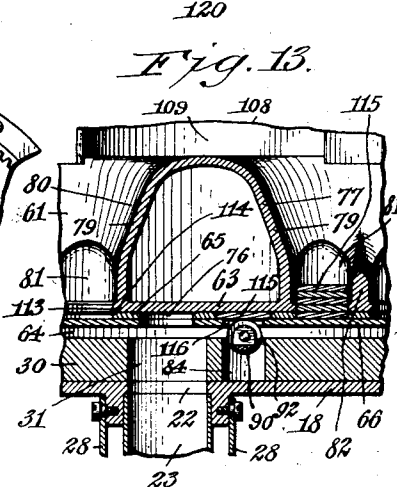
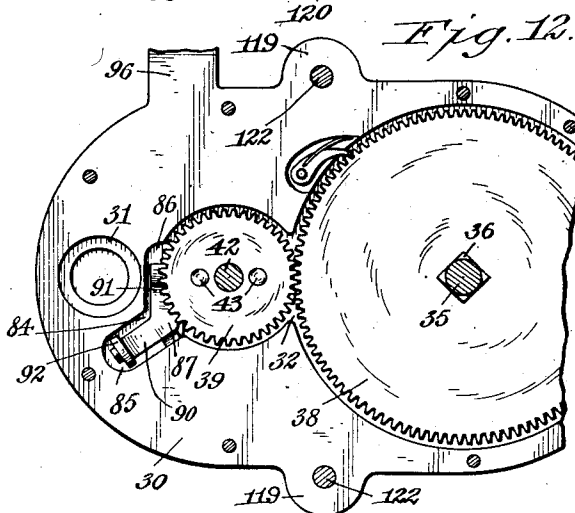
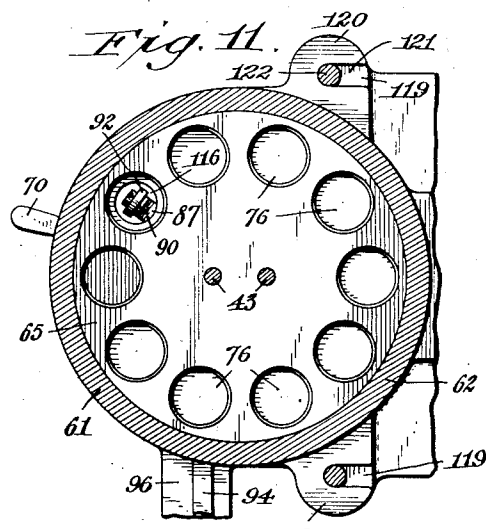
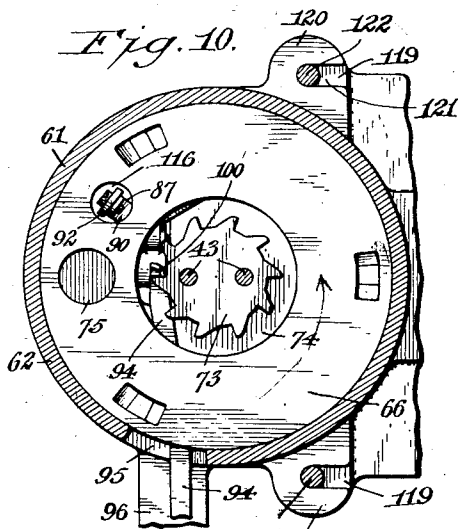
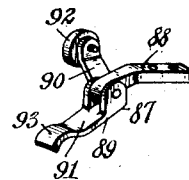


Fig. 15.



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UNITED STATES PATENT OFFICE

2,097,792

COIN COUNTING MACHINE

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Application April 6, 1932, Serial No. 603,561

15 Claims. (Cl. 133—8)

My invention relates to improvements in coin counting machines, and more particularly to a small portable machine for use in small banks, commercial businesses, and churches.

5 Coin counting machines now manufactured are expensive and quite complicated, and are therefore used only by large banks and large corporations; the price of the same being prohibitive for use by small banks, commercial houses, churches, and the like.

10 It is the primary object of my invention to provide a simple and inexpensive coin counting machine whereby coins of different denomination can be accurately counted and delivered into paper wrappers or rolls, or into any other receptacles; provision being made when delivering them to wrappers or rolls to automatically stop the operation of the machine after being actuated to deliver the desired number of coins to a wrapper or roll.

15 Another object of my invention is the provision of a comparatively small and compact machine which can be operated by an inexperienced person, and through the medium of which the possibility of error in the count is eliminated, owing to the use of a counter which registers the actual number of coins delivered from the machine.

20 Another object is the provision of a machine of the kind mentioned wherein a counter is provided and provision made for automatically bringing the machine to a stop when operated to deliver a predetermined number of coins from the machine; thus making it unnecessary for the operator to pay any attention to the coin-counter until the machine is brought to a stop, at which time the counter will disclose the actual number of coins delivered into a wrapper or roll provided to receive the same.

25 Another object is the provision of a new and novel coin distributing bowl whereby the coins are distributed to a coin carrier which, under a predetermined movement of the prime actuator, will deliver out of the machine forty nickels, forty quarters, fifty pennies, or fifty dimes, a change of coin carrier and coin bowl only being necessary when the number of coins vary, this change being effected by substitution of another coin bowl to which the coin carrier is attached.

30 A further object of my invention is the provision of a coin counting machine provided with counting mechanism which will register a predetermined number of coins under a predetermined degree or cycle of operation of the machine, and wherein provision is made to prevent retrograde movement of the operating mechanism, thus

guarding against any error in the count of the coins delivered from the machine as disclosed on the coin counter.

35 A further object is to provide a coin counting machine of the kind mentioned, having an operating lever, a coin carrier from which coins are delivered in succession from the machine and wherein a predetermined movement of said operating lever will cause said coin carrier to move so as to deliver from the machine a predetermined number of coins, all of which is associated with a stop device to stop the movement of said operating lever after having completed its predetermined movement.

40 A further object is to provide a coin bowl having a circular series of coin openings and a distributor for distributing the coins delivered into the bowl to said openings.

45 A still further object of my invention is to provide a coin counting machine in which dimes and pennies may be counted without change or substitution of parts, and in which nickels and quarters may be counted without change or substitution of parts; also wherein provision is made for adjusting the machine to prevent the passage of two thin or worn coins from the machine when only one is intended to be delivered therefrom.

50 With the above and other objects in view to appear hereinafter, the invention consists in the novel features of construction and in the arrangement and combination of parts to be hereinafter described and more particularly pointed out in the subjoined claims.

In the drawings:

Fig. 1 is a side elevation of my improved coin counting machine.

Fig. 2 is a front elevation of the same.

Fig. 3 is an enlarged plan view.

Fig. 4 is an enlarged vertical section taken on line 4—4, Fig. 2, looking in the direction of the arrow crossing said line.

Fig. 5 is a vertical section taken on line 5—5, Fig. 4.

Fig. 6 is a horizontal section taken on line 6—6, Fig. 4.

Fig. 7 is a section taken on line 7—7, Fig. 6.

Fig. 8 is a detached perspective view of the counter-actuating ratchet secured to the under side of the coin carrier or disk.

Fig. 9 is a detached perspective view of the counter-actuating lever operated by the counter-actuating ratchet.

Fig. 10 is a horizontal section taken on line 10—10, Fig. 4.

Fig. 11 is a horizontal section taken on line 11—11, Fig. 4.

11—11, Fig. 4, the actuating shaft and its bearing being omitted.

Fig. 12 is an enlarged horizontal section taken on line 12—12, Fig. 1, looking up.

5 Fig. 13 is an enlarged curvilinear section taken on line 13—13, Fig. 3.

Fig. 14 is an enlarged section taken on line 14—14, Fig. 6.

10 Fig. 15 is a detached perspective view of the coin-actuating trip whereby actuation of the counter is controlled.

Fig. 16 is a detached perspective view of the coin-disk adjusting-ring.

15 Fig. 17 is a detached inverted perspective view of the support for the coin carrier or disk.

Fig. 18 is a detail view of part of the coin carrier.

The device has a suitable base 18 adapted to be secured to a table, desk, or similar article of 20 furniture, and for this purpose this base is provided with an angular depending lug 19 forming a yoke-like portion adapted to straddle the table or desk, with the under side of the base proper resting thereon. Through this angular lug a securing screw 20 is passed having a suitable handle or finger-hold 21 at its lower end by means 25 of which the machine may be clamped in place, the major portion of the machine overhanging the table or support.

30 The said base may, however, be differently constructed and may rest upon a table or other support, or be given sufficient weight to retain its position without providing securing means for the same; or, if desired, it may be provided 35 with means other than that shown for securing it to a table or other support.

In this base 18 is a coin delivery-opening 22 into which is fitted a coin-delivery tube 23, the 40 upper end of which is of a size to readily permit the passage therethrough of the largest coin to be counted by the machine. The coin delivery-tube is removably entered in the coin delivery opening 22 in any approved manner so that it can be easily removed, yet be retained in position during the operation of the machine. The 45 coin delivery-tube shown in the drawings is one designed to deliver pennies and dimes, and it is therefore reduced in diameter along its lower portion, as at 24, and at its lower end it is flared outwardly, as at 25, so that coin wrappers or rolls, such as shown at 26, can be conveniently inserted into the coin delivery-tube. These coin 50 wrappers or rolls are of the type having their lower ends closed and their upper ends open, and they are held in position by means of a swinging support 27 comprising two arms 28 pivotally secured at their upper ends to the base 18 and being connected at their lower ends by a flat member 29 serving as a supporting table for the coin 60 wrappers or rolls.

A coin wrapper or roll 26 is inserted into the coin delivery tube 23, after having swung the support 27 out of line therewith, and after a wrapper or roll is inserted in the tube 23 to the 65 desired height this support is swung in line with said tube and the wrapper or roll lowered against the flat supporting table 29 so as to have a full support thereagainst.

On the base 18 a gear housing 30 is secured in 70 any suitable manner. This gear housing is in the form of a thick plate conforming in outline to that of the base and having a coin delivery opening 31 therethrough in registration with the coin delivery opening 22 in the base. The said 75 plate is also provided with a depression 32 in its

lower side and with a depression 33 in its upper side, the depression 32 being closed at the bottom by the base and serving as a gear chamber, while the depression 33 is closed at the top by a casting or member 34, serving as a combined 5 bearing member and pin guide; the construction of and exact purpose for which will appear hereinafter. The base 18 and gear housing 30 constitute a support for the various machine parts.

An operating shaft 35 is vertically disposed in 10 member 34 and has its lower end journaled in the base 18 and it also has square or other non-circular portions 36, 37 thereon within the depressions 32 and 33, respectively.

Arranged within the depressions 32 in the gear 15 housing is a gear wheel 38; it having a square axial opening to receive the square portion 36 of the operating shaft. This gear wheel meshes with a pinion 39 also within the depression 32 and having an upwardly-extending hub 40 journaled in an opening 41 formed in the gear housing and extending upwardly a distance above the 20 upper surface of the same. The pinion is therefore rotatable within the opening 41 and also on a spindle 42 secured in the base 18 and extending upwardly into an axial bore formed in said pinion. Passed through or otherwise applied to the pinion 39 are driving pins 43 arranged at diametrically opposite points and projecting upwardly from the upper end face of the hub 40 25 of said pinion.

The casting or member 34 is applied over the upwardly-opening depression 33 in the gear housing 30 and has an upright portion 44 and a base 35 45 from which said upright portion rises, the dimensions of said base being sufficient to fully cover the depression 33 in the plate or gear housing 30.

Journalled in said gear housing and in the base 40 45 of member 34 is a stub shaft 46 having a square portion 47 which is passed through a correspondingly formed axial opening in a gear wheel 48 arranged within the depression 33. This gear wheel is in mesh with a pinion 49 also arranged in the depression 33 and fastened to the operating shaft 35, said pinion having a square axial opening adapted to receive the square portion 37 of said shaft.

The casting or member 34 is secured to the gear housing 30 by means of screws or otherwise, and the operating shaft 35 extends upwardly through the upright portion thereof and is therefore journaled therein. The base 45 of said casting or member has its under side provided with a depression 33^a which has substantially the same area and contour as the gear wheel 48, this being necessary to provide space for a lifter wedge 50 formed on or secured to the upper surface of said gear wheel.

Arranged within the upright 44 of the casting 60 is a guide bore 51 enlarged at its lower end to form a downwardly-facing shoulder 52 therein, and vertically movable in said guide bore is a stop pin 53 which has an enlarged lower end to slidably fit the enlarged portion of said bore, and between which and the shoulder 52 a spiral spring 54 is arranged, said spring bearing at opposite ends against said enlarged portion and shoulder and surrounding the small portion of the stop pin. This stop pin is normally depressed by the spring 54 and lies with its lower end against the upper face of the gear wheel 48 in the circular path of the lifter wedge 50, and as the wedge travels underneath and in contact with the stop pin it lifts said stop pin so that it pro- 75

jects upwardly above the upper end of the upright portion 44 of the casting or member 34.

Pivotaly secured to the upper end of the operating shaft 35, which may be termed a prime mover, is an operating lever 55, the pivot 56 connecting the lever with said shaft being between the ends of the lever so as to provide a long arm 57 for said lever and a short arm or extension 58, the short arm or extension lying over the upper end of the stop pin 53 when said lever is in its position of rest. The long arm 57 of said lever is preferably curved upwardly to clear other parts of the machine, and at its outer end it has a handle or finger-hold 59.

Passed through the short arm or extension 58 of said operating lever is a striker in the form of an adjustable screw 60, which may be positioned to cause the lower end thereof to be projected from the under side of said lever so that when the lever is positioned over the stop pin 53, said adjustable screw will engage the latter and prevent movement of the lever and rotation of the operating shaft, unless the operator depresses the long arm 57 of said lever so as to swing the short arm or extension 58 upwardly sufficiently to have the projecting end of the adjustable screw pass over the projecting end of the stop pin.

Arranged on the gear housing is a coin bowl 61, which in preferred form has a circular peripheral wall 62 and a bottom 63 spaced from the lower edge of said circular peripheral wall to provide a chamber 64 between said bottom and the top of the gear housing. The hub 43 of the pinion 39 extends into said chamber 64, and rotatable therewith is a coin carrier or disk 65 which, under a certain adjustment, rests against the bottom 63 of the coin bowl and is supported by a circular plate or disk 66, which may be termed a disk support and which is vertically adjustable within said chamber, said plate having protuberances 67 on its under side arranged in a circular series and spaced apart equi-distantly. Any number of these protuberances may be provided, although three are shown in the drawings, and while these are shown as stamped from the supporting plate, they may be otherwise formed or applied.

The gear housing 30 is provided in its upper face with a parti-circular groove 68 in which an adjusting medium in the form of an open ring or annulus 69 is rotatably arranged, said adjusting ring having an actuating handle 70 projecting from one end thereof and extending through a peripheral slot 71 in the gear housing leading into one end of the groove 68 therein, the slot 71 being of a length to permit movement of the actuating handle 70 through a short space. The said adjusting ring is provided with upwardly-extending protuberances 72 which are spaced apart to correspond to the spacing of the downwardly-extending protuberances 67 on the supporting plate or disk 66. When the handle of the adjusting ring 69 is at one end of the slot 71, the protuberances 72 thereon will be positioned underneath the protuberances 67 on the supporting plate 66 and thus cause said supporting plate and the coin disk 65 carried thereby to be elevated, the coin disk then being in firm but movable contact with the bottom 63 of the coin bowl.

When the protuberances 72 on the adjusting ring 69 are moved out of line with the protuberances 67 on the supporting plate, the latter and the coin disk are slightly lowered under gravity, the purpose for which will appear hereinafter.

The upwardly-projecting portions of the driving pins 43 are passed through correspondingly spaced pin holes in the coin disk 65 and through a ratchet wheel 73 secured to the under side of said coin disk by means of screws or otherwise, said ratchet wheel having similar pin holes and being disposed within a comparatively large opening 74 formed centrally in the supporting plate 66.

It will thus be apparent that upon rotation of the operating shaft 35, the gear wheel 33 will be rotated and cause rotation of the pinion 39, and through the medium of the driving pins 43 cause rotation of the ratchet wheel 73 and the coin disk 65; also that the supporting plate or disk which supports the coin disk, is non-rotatable and only vertically movable to elevate or permit the lowering of the coin disk supported thereby, and moreover, that the change in position of this supporting plate or disk is accomplished by rotative movement of the adjusting ring 69.

Rotative movement of the supporting plate or disk 66 may be prevented by any approved means permitting movement vertically of said disk, and said plate or disk is provided with a coin delivery opening 75 co-axial with the coin delivery openings 31 and 22 and the coin tube 23.

As clearly shown in Fig. 11, the coin disk 65 has a circular series of coin openings 76 therein, and in the particular construction shown in the drawings, ten such openings are shown. The particular coin disk and coin bowl illustrated is therefore usable when counting pennies and dimes. The coin openings have the upper portions of their walls beveled, as clearly shown in Figure 18, and while the coin disk is constructed of sheet or plate material having a thickness equaling that of an unworn coin, coins which are badly worn when deposited in the coin openings would enable the second lowest coin in a stack to enter a coin opening in the coin disk and thus prevent movement of the disk. However, by beveling the upper edges of the walls of the coin openings in the disk the beveled portions of these walls will tend to wedge the stack of coins upwardly and separate the lowermost coin from the remaining coins in the stack so that regardless of the thickness of the coins they will be effectively advanced in their course of travel in successive order.

The coin bowl 61 is provided with coin scatter- ing or distributing means and for this purpose has a radial elevated portion 77 therein, which rises from the bottom 63 and is preferably cast in piece therewith and with the peripheral wall 62. As clearly shown in Fig. 4, this radial elevated portion extends beyond the axis of the bowl, and it slopes under different inclinations from adjacent its point of attachment or connection to the peripheral wall to within a short distance of said wall at a diametrically opposite point, as at 78. This elevated portion also slopes in a more pronounced or abrupt manner laterally in opposite directions, as at 79. Grooves 80 are formed in the sloping walls of this distributor or radial elevated portion which lead to vertical coin pockets 81 within the bowl, said radial elevated portion forming a portion of each of the coin pockets, the peripheral wall of the coin bowl forming a portion of each of the pockets and radial walls 82 completing the cylindrical walls of the coin pockets by reason of their connecting the radial elevated portion with the peripheral wall. The radial walls 82 of said coin pockets have their upper edges beveled from opposite sides, as shown in Fig. 13, and the sharp edges of

these walls are continued upwardly and inwardly onto the sloping walls of said elevated portion to define the grooves 80 which are in reality upwardly and inwardly converging continuations of the coin pockets. The bottom wall 63 of the coin bowl has coin openings 83 formed therein, one opening being provided for each coin pocket within the bowl, and these coin openings are arranged in a parti-circular series, eight in number being provided when ten coin openings are formed in the coin disk 65. These coin openings 83 are spaced apart to correspond to the spacing of the coin openings in the coin disk, and the radial elevated portion 77, which serves as a coin distributor, occupies the space of two coin openings arranged directly underneath in the coin disk.

Formed in the gear housing 39 is an angular opening 84 having two portions or legs 85, 86 disposed at an obtuse angle to each other, and in this opening is a trip device 87 adapted to be actuated by coins carried along in their path to the delivery openings 75, 31 and 22 by the coin disk 65. The openings 75, 31 and 22 with that portion of the chamber 64 lying between the openings 75 and 31, constitute a coin delivery passage leading to the delivery tube 23 removably secured in the opening 22.

The outer end of the portion or leg 85 of the angular opening 84 is in circular alignment with the coin openings in the coin disk 65, and the trip device partly positioned in said angular opening comprises a bracket arm 88 which is fastened against the upper face of the gear housing 39 by means of screws, or otherwise, and overhangs said angular opening 84, and a trip lever 89 which is pivotally secured to the overhanging portion of said arm. Said trip lever is pivotally secured between its ends to said bracket arm to provide two lever arms 90, 91 disposed at an obtuse angle to each other, the lever arm 90 being in the portion or leg 85 of said angular opening and the lever arm 91 in the portion or leg 86 thereof.

On the outer end of the lever arm 90 a contact or trip roller 92 is rotatably mounted, the outer end of the other lever arm 91 having an upwardly convexed terminal 93, which lies in contact with the under side of a counter-actuating lever 94 extending from a point above the angular opening outwardly through a slot 95 arranged in the peripheral wall of the coin bowl along its lower edge, the projecting end of said lever 94 extending along a supporting arm 96 projecting outwardly from the gear housing 39.

Counter-actuating lever 94 has a pivot hole 97 therethrough, preferably nearer its inner end than its outer, and a pivot pin 98 extending upwardly from the gear housing 39 enters said pivot hole. Said lever is retained on its pivot 98 by means of a flat pressure spring 99 secured to the gear housing 39 and having its free end bearing against the upper side of said lever directly over its pivot. The inner end of said lever is provided with an arcuate cam or lip 100, the outer convex side of which is adapted to be engaged by the teeth of the counter-actuating ratchet wheel 73. Said lip is normally positioned in a plane beneath the ratchet wheel, as clearly shown in Fig. 14, and in order to cause actuation of the lever 94 it is necessary that the inner end thereof be elevated. This is accomplished by downward pressure directed against the trip roller 92 at the outer end of the arm 90 of the trip lever 89 so as to force the outer end of the other arm 91 upwardly, and as this last-mentioned arm is in contact with the under side of the counter-actuat-

ing lever 94 at its inner end, the arcuate lip projecting upwardly from said lever will be elevated so as to be positioned in the plane of the ratchet wheel 73, preferably between two adjacent teeth thereof. The pivot hole 97 in said actuating lever may have its wall rounded or slightly enlarged to permit of such upward movement of lever 94, yet have said lever retain pivotal connection with the pivot pin 98.

The outer end of the counter-actuating lever 94 is diminished in width to form a pivot stud 101, which is entered in a slot formed in the recorder lever 102 of a counter 103 of common construction secured to the supporting arm 96. This counter is preferably one which can be quickly set to zero without affecting the position of said counter-actuating lever; any one of several common types of counters being adaptable for use in connection with my improved coin counting machine.

Formed on the base 18 is a boss 104 in which an angular supporting rod 105 is secured by means of a set screw 106, or otherwise, and fastened to said supporting rod near its upper or outer end is a collar 107.

108 designates a coin feeding table or hopper having an upstanding flange 109 extending almost entirely around its edge, the space between the ends of said flange forming a coin delivery passage 110 and the region of said table or hopper beneath said opening receiving support from the peripheral wall of the coin bowl. This table or support is provided with a depending boss 111 into which that portion of the supporting rod above the collar 107 extends, and it is secured to said rod by means of a thumb screw 112. With the feed table or hopper positioned as shown in Fig. 3, the feed passage 110 therein is aligned with the radial elevated portion or distributor 77 of the coin bowl.

The coins to be counted are placed on this table or within this hopper, and by means of the hand, directed through the passage 110 at the delivery end thereof onto the receiving end of the distributor 77, which is on a level with said table or hopper and from which they are directed into the various grooves 80 in said bowl and enter the coin pockets 81 to which said grooves lead, and it may here be stated that the upper portions of said pockets are of slightly greater diameter than the openings 76 in the coin disk, the walls of said pockets being provided with slight inward flanges 113 at their lower ends which reduce the extreme lower portions of the coin pockets to a size slightly smaller in diameter than the openings in the coin disk 65. The walls of said last-mentioned coin openings are slightly beveled, as at 114, the bevels preferably lying underneath the flanges 113 of the coin pockets in the coin bowl.

The coins are directed into the coin pockets of the coin bowl in the manner shown in Fig. 13 wherein the coins are designated by the numeral 115, and due to the formation of the walls of said coin pockets and the bevels at the upper ends of said walls, also the gradual outward enlarging of the grooves 80 in the distributor, any coins that do not lie flat within the pockets will gradually assume such position, as the flat or horizontally positioned coins beneath are delivered from the coin pockets.

Before starting the counting of coins delivered into the bowl, the operating lever 55 will be positioned as shown in Fig. 3; the adjustable screw 59 being in contact with the upper projecting end of the stop pin 53, said stop pin being so posi-

tioned by reason of the lifter wedge 50 on the gear wheel 48 being in contact with the lower end of said stop pin. The operator will ascertain whether the counter is set at zero and, if not so arranged, will manipulate the counter in the usual way so as to position all counter wheels thereof at zero. Having applied a coin wrapper or tube, such as 26, to the delivery tube 23, he will depress the operating lever 55 so as to permit the projecting end of the striker or adjusting screw 60 to travel over the projecting end of the stop pin 53 when causing said lever to travel in a circular path, with the result that the operating shaft 35 will be rotated; thus rotating the gear wheel 38, and by reason of said gear wheel being in mesh with the pinion 39, causing rotation of the coin disk 65. At the same time, the pinion 49 on the operating shaft 35 will cause rotation of the gear wheel 48, thus moving the lifter wedge 50 from its position underneath the stop pin so that the spiral spring 54 will cause said stop pin to be lowered.

As arranged, the gear wheel 48 will make one complete revolution during the time the pinion 49 meshing therewith makes two complete revolutions and the pinion 39 will make five revolutions during the time the gear wheel 38 on the operating shaft makes two revolutions. Therefore, as the operating shaft completes its first cycle of circular movement, the short arm is free to move over the stop pin without the latter offering obstruction to its travel, and as said shaft completes its second cycle of movement, the lifter wedge on the gear wheel 48 will assume a position underneath the stop pin 53 and elevate the same so that the striker or adjustable screw 60 on the operating lever will engage the upper projecting portion of the stop pin; said stop pin having been forced upwardly by the lifter wedge 50 on the gear wheel 48, just as the shaft 35 approached the end of its second cycle of movement. Meanwhile, the coin disk 65 will have been caused to make five complete revolutions, since it is directly connected with the pinion 33 through the medium of the driving pins 43, and since the coins within the coin pockets 81 are stacked so that the lowermost coin in each stack enters a coin opening in the coin disk as such opening is brought into registration with the coin pocket. The lowermost coins of the stacks are carried or conveyed along with the coin disk in its rotative movement and are supported by the supporting plate or disk 66, which in addition to serving to support the coin disk also serves to support the coins carried forward along their path of movement by said coin disks. Since the coin disk 65 serves to feed or convey the coins successively to the delivery opening 75 in the coin supporting disk 66, said disk 65 may also be termed a coin conveyer disk. The coins cannot be discharged from the coin disk, due to the fact that delivery of the coins only takes place as the successive coin openings 76 in the coin disk 65 are brought into registration with the coin delivery opening 75 in the coin supporting plate or disk, and at such times they will drop down into the wrapper or roll 26 prepared therefor.

Prior to reaching the coin opening in the supporting plate or disk, the coins pass over an opening 116 in said supporting plate 66 into which the trip roller 92 of the trip device 87 extends. This trip roller normally has its highest point projecting above the level of the upper surface of the supporting plate or disk 66 and consequently the successive coins carried forward by the coin

disk 65 and supported by the supporting disk 66 as well as the coin disk itself, will hold said roller depressed. Under such conditions, the trip device maintains the adjacent end of the counter-actuating lever 94 in elevated position, thereby holding the cam or arcuate lip 100 of said lever in position to be engaged by the teeth of the ratchet wheel 73; said wheel, of course, being rotated with the coin disk 65.

As the riding or inclined side of each tooth on the ratchet wheel engages the cam or arcuate lip of the actuating lever 94, said lever is swung on its pivot, and since the portion of the lever extending outwardly from its pivot is longer than the portion extending inwardly for engagement with the ratchet wheel, comparatively little movement of the inner portion of said lever will cause considerable movement of the outer portion, and as said outer portion is connected with the counter, the counter will be actuated so as to register an additional count for each coin delivered.

If, for any reason, a coin opening 76 in the coin disk 65 is devoid of a coin and under such condition passes the trip roller 92 of the trip device, said roller will enter such coin opening and disengagement of the trip device from the counter-acting lever 94 momentarily takes place; such disengagement being maintained only until said roller is again depressed to a certain degree by the coin disk, thus the trip device serves as a counter-skip device which, however, in no manner stops the operation of the machine. Consequently, after having made two complete cycles of movement of the operating lever 57 and the counter discloses a count of forty-nine, the operator will be informed that one coin was missed in the system of delivery. At this time the striker or adjustable screw 60 will be in contact with the projecting upper end of the stop pin 53. The coin wrapper or roll 26 can then be removed from its support and a coin of proper denomination taken from the feed table or hopper or from the coin bowl and be inserted into the wrapper or roll, which may then be closed and assurance had that the roll contains the exact number of coins necessary to make the sum marked upon the roll; these rolls usually containing fifty cents in pennies, five dollars in dimes, two dollars in nickels, and ten dollars in quarters.

If, for any reason, coins are to be counted in bulk and not be delivered into coin wrappers or rolls, the tube support 29 is swung out of alignment with the coin delivery tube 23, the coin support being retained in position by reason of the arms 28 being resilient and frictionally retained in place.

Bulk counting is highly desirable in many lines of business, and in churches. Delivery men in laundries, bakeries, and in other lines of business, may, before giving an accounting of their day's work, separate their coin according to denomination and pass the same through the machine regardless of the number of each denomination. In such cases the striker or adjustable screw 60 is elevated so that the operating lever may be continued in its circular movement without being stopped by the pin 53, regardless of the number of times it is necessary to repeat its cycle of movement. The procedure for counting in bulk is similar to that already described in reference to counting a predetermined number and stopping when a coin wrapper or roll is filled, or supposed to be filled. When counting coins in bulk, the upward and downward movement of the stop

pin 53, occasioned, respectively, by the lifter wedge 50 on the gear wheel 48 and the spiral spring 54 surrounding the stop pin, is an idle movement ineffective on any other part or parts of the machine.

In order to maintain the operating shaft 35 in proper position and also to maintain the operating lever 57 so that it will require pressure when necessary to lift the striker or adjustable screw 60 over the projecting end of the stop pin 53, a spiral spring 117 surrounds said operating shaft and bears at one end against the under side of the operating lever and at its other end against the top of the casting or member 44, part of which serves as an elongated bearing for the operating shaft 35 and part as a housing or guide for the stop pin 53.

Although I provide for change of coin bowl and coin disk when counting nickels or quarters, and dimes or pennies, it is not found necessary to change the bowl and coin disk when counting dimes and pennies, nor when counting nickels and quarters, as a coin bowl and coin disk having openings to receive quarters will also receive nickels and count the same, and a coin bowl and coin disk having openings to receive pennies will also receive dimes and count the same. It has, however, been found that there is a difference in the thickness of dimes and pennies, and that occasionally dimes are worn comparatively thin. Consequently, it is of decided advantage to provide the proper clearance for pennies between the coin supporting disk 66 and the bottom of the coin bowl. For best results I have discovered that a lowering of the supporting plate or disk 66, when counting pennies will prevent, or at least minimize, possibility of clogging the machine, and when rotating the adjusting ring 69 and moving the protuberances 67 on the coin supporting disk will rest upon the protuberances 72 on the adjusting ring, and it may here be stated that the two sets of protuberances 67 and 72 are inclined at opposite ends so that one set will ride freely underneath the other. While dimes which are badly worn can be counted when the coin supporting plate or disk is lowered, I find it of advantage to lift this supporting plate or disk so that there is no possibility of two badly worn dimes being delivered at one time and counting as a single delivery. This comparison also applies as to nickels and quarters. An adjustment of the supporting plate or disk 66 to assure positive and reliable delivery of pennies may at times create slight trouble in delivering dimes if two badly worn dimes are in a stack, one directly above the other, and for this reason I have provided the adjustment for varying the height of the space at the final points of deposit of the coin preparatory to delivering the same out of the machine.

When a machine is provided with a coin bowl constructed to aid in counting pennies and dimes, the bowl will, as stated, have eight coin pockets and delivery openings, whereas the coin disk associated therewith will have ten coin openings, and as two complete revolutions of the operating shaft will deliver fifty pennies and fifty dimes out of the machine, it will be apparent that the standard number of coins will be placed in wrappers or rolls. However, a delivery of an equal number of nickels and quarters would not be according to standard, and for this reason, as well as for the reason that the size of the coin openings in both the coin bowl and the coin disk

would be too small for nickels and quarters, the coin bowl and coin disk are removed from the device when preparing to count coins of such denomination and a bowl and disk having larger coin openings substituted therefor. In order to do this it is simply necessary to loosen the thumb screw 112 on the feeding table or hopper, and swing the latter outwardly away from the coin bowl. The coin bowl can then be removed and as provision is made for readily accomplishing this and also for attaching a substitute bowl, a quick replacement of bowls can be effected. For this purpose the gear casing 36 and the base 18 have lugs 118, 119, respectively, projecting therefrom, and the coin bowls have two outstanding lugs 120, which are slotted as at 121. Passed through the slots 121 and threaded into the lugs 118 and 119 are thumb screws 122, the heads of which bear against the upper sides of the slotted lugs 120 on the coin bowl and hold said bowl firmly in place. When removing the coin bowl it is simply necessary to loosen said thumb screws 122 whereupon the bowl may be slid outwardly and lifted from the gear casing.

A coin bowl designed for counting nickels and quarters has a coin disk provided with eight coin openings, and the bowl is similarly constructed except that it may have six or seven coin pockets and coin openings. The operation of the device is exactly the same as when counting pennies or dimes, and two complete cycles of movement of the operating lever 55 will cause the coin disk to make five revolutions and thus deliver forty nickels or forty quarters. If desired, the coin supporting plate or disk 66 may be adjusted as needed, and it has been found that such adjustment is more often required for changing from the counting of pennies to dimes, or reversely, than from nickels to quarters, or reversely. Four different coin delivery tubes 23 are used interchangeably, all of such tubes being of the same diameter at their upper ends so that they fit properly into the base of the machine, but the lower ends are of a diameter to conform to the particular wrapper or roll to be inserted into them.

The coin openings 76 in the coin disk have the upper portions of their walls beveled, as best shown in Fig. 18, and this coin disk may be made slightly thicker than the thickness of the coins carried thereby, so that the next to the lowermost coins in the stacks of coins engage the beveled wall portions of the openings 76 as said coin disk is being moved. The coin disk consequently lifts all except the lowermost coins in the stacks so as to provide the proper clearance for the coin disk to pass underneath all of the coins, except the lowermost ones, which it carries with it. It is therefore impossible to clog the machine, due to more than one coin in each stack being engaged by the coin disk, even though the lowermost coins are badly worn. The thickness of the coin disk may be such that it approximately equals that of a new coin, or it may be slightly thicker than a new coin, but in any event more than a single coin in each stack will not be engaged by it even though the lowermost coins are badly worn, since the bevel of each opening in the coin disk commences in a plane beneath the upper surface of a badly worn coin, necessitating the bevel engaging the second coin in the stack upon movement of the disk and causing the second coin to be lifted with those above it, and the disk to ride underneath the lifted coins.

Having thus described my invention, what I claim is:

1. In a coin counting machine, a coin bowl having a parti-circular series of openings in its bottom and a radial distributor within said bowl elevated from said bottom and partly surrounded at its bottom by said coin openings, said distributor having a top surface inclined inwardly and downwardly from the periphery at one side of said bowl and abrupt downwardly inclined surfaces leading from said top inclined surface to said coin openings.

2. In a coin counting machine, a circular coin bowl having a peripheral wall, a bottom, a distributor elevated from said bottom and extending inwardly from one side of said peripheral wall, and coin openings arranged in the bottom of said coin bowl at the base of said distributor, said distributor having a top wall inclined inwardly and downwardly from said peripheral wall and radially from said inwardly and downwardly inclined portion toward said coin openings.

3. In a coin counting machine, a circular coin bowl having a peripheral wall, a bottom, a distributor extending inwardly from a parti-circular region of said peripheral wall and being otherwise separated therefrom by an intervening space partly surrounding said distributor, said distributor having a portion inclined inwardly and downwardly from said peripheral wall and portions inclined downwardly radially from said inwardly and downwardly inclined portion, said radially inclined portions being of greater inclination than said inwardly and downwardly inclined portion, and coin pockets formed in said bowl at the base of said distributor and having openings at their lower ends formed through the bottom of the bowl, the radially inclined portions of said distributor leading to said coin pockets.

4. In a coin counting machine, a rotatable shaft vertically disposed, an operating lever at the upper end of said shaft adapted to be moved in a circular path to rotate said shaft, a spring-actuated stop pin parallel with said shaft and normally held out of the path of said operating lever by said spring, a rotatable element having a lifter wedge thereon to elevate said stop pin at a predetermined point in each cycle of movement of said rotatable element, and means to rotate said element from said operating shaft, said stop pin when elevated by said lifter wedge preventing rotative movement of said operating shaft.

5. In a coin counting machine, a vertically disposed operating shaft, a pinion on said shaft, a gear wheel in mesh with said pinion having a lifter wedge rising therefrom and arranged off center thereon, a stop pin parallel with said shaft normally spring-pressed against said gear wheel and adapted to be lifted against the action of its spring by said lifter wedge, and an operating lever secured to said shaft and having an extension provided with a striker adapted to engage said stop pin when elevated by said lifter wedge.

6. In a coin counting machine, a rotatable shaft, an elongated bearing in which said shaft is rotatably mounted, a pinion on said shaft, a gear wheel rotated by said pinion and having a lifter wedge on its upper face arranged off center thereon, a stop pin slidably mounted and having an enlarged lower end resting on said gear wheel in the circular path of said lifter wedge, a spring surrounding said stop pin and bearing against the enlarged portion thereof to hold the same against said gear wheel, an operating lever pivotally secured to the upper end of said shaft and having

an extension thereon provided with an adjustable striker adapted to engage said stop pin when elevated by said lifter wedge, and a spring surrounding said shaft and bearing at one end against said bearing element and at its other end against said operating lever, said spring retaining said lever in normal position and permitting the same to be tilted on its pivot so as to free said striker from engagement with the upper end of said stop pin and permit further actuation of said shaft.

7. In a coin counting machine, a support having a substantial circular groove therein, an open adjusting ring arranged within said groove and having protuberances spaced around the same and accessible means for moving said ring within said groove, a coin bowl carried by said support and having a bottom separated therefrom by a chamber, a coin disk within said chamber having a circular series of coin openings therein, and a disk support within said chamber supporting said coin disk and having protuberances thereon opposing the protuberances of said adjusting ring, said last-mentioned protuberances being moved underneath the protuberances of said supporting disk to elevate the same and the coin disk carried thereby or to be moved out of registration therewith to lower said supporting disk and coin disk.

8. In a coin counting machine having a coin-conveying device provided with a series of coin openings therein, a counter actuating device comprising a trip device, a counter actuating lever movable into either of two positions under the influence of said trip device, said trip device being actuated to enter any of said coin openings devoid of coins, and a lever actuating element actuating said counter actuating lever only when in one of its two positions effected by said trip device.

9. In a coin counting machine having a coin-conveying device provided with coin openings therein, a trip device in the path of said coin openings adapted to be controlled in action by coins conveyed in said coin openings, a counter actuating lever associated with said trip device and caused to move into either of two positions under the influence of said trip device, and means rotatable with said coin disk and actuating said counter actuating element only when in one of its two positions.

10. In a coin counting machine, a rotatable device provided with circular series of coin openings adapted to receive coins and be brought successively to a delivery point, a supporting disk carrying said rotatable device and having a large axial opening, a ratchet wheel secured to a rotatable part of said machine, a trip device pivotally supported and having a roller in the path of coins passed through the machine and being adapted to be actuated when a coin is not pocketed in one of said openings, an actuating lever pivoted between its ends and having at one end an engaging portion normally arranged in the path of the teeth of said ratchet wheel by said trip device, and means to cause said engaging portion to be moved out of the path of the teeth of said ratchet wheel when the roller of said trip device enters an opening from which a coin is omitted.

11. In a coin counting machine, means for counting coins comprising coin-actuating mechanism including a lever pivoted between its ends for arcuate movement and movement at least at one end thereof at a right angle to said arcuate

movement, a trip device in the path of coins passed through the machine controlled in action by said coins and the absence of a coin or coins intended to pass therethrough, said trip device

5 serving to move said lever at a right-angle to its arcuate movement, and a movable lever-actuating element actuating said lever according to the presence or absence of coins at said trip device during the operation of the machine.

10 12. In a coin counting machine, means for counting coins comprising a counter, a movable actuator, a lever extending from said actuator to said counter pivoted between its ends for arcuate movement and having one end connected to said

15 counter and its other end adapted for additional movement other than said arcuate movement so as to be engaged or not be engaged by said movable actuator, and a trip device controlled by the presence of coins to cause actuation of said

20 counter in accordance with the number of coins passing through the machine.

13. In a coin counting machine, a coin supporting disk having protuberances at one side

thereof, and means for axially shifting said disk comprising a rotatable device having protuberances adapted for movement to engage or disengage the protuberances of said disk.

14. In a coin counting machine, a coin-supporting disk having spaced protuberances on its underside, an annulus provided with a corresponding number of protuberances and being rotatably adjustable to move the protuberances thereof into or out of engagement with the protuberances of said disk.

15. In a coin counting machine, counter-actuating mechanism comprising a trip device having a trip lever pivotally secured between its ends and having a roller at one end thereof, a counter-actuating lever pivotally secured between its ends for arcuate movement, and a ratchet wheel adapted to actuate said counter-actuating lever when the roller end of said trip lever is depressed, said counter-actuating lever being moved out of co-action with said ratchet wheel when the roller end of said trip lever is elevated.

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