

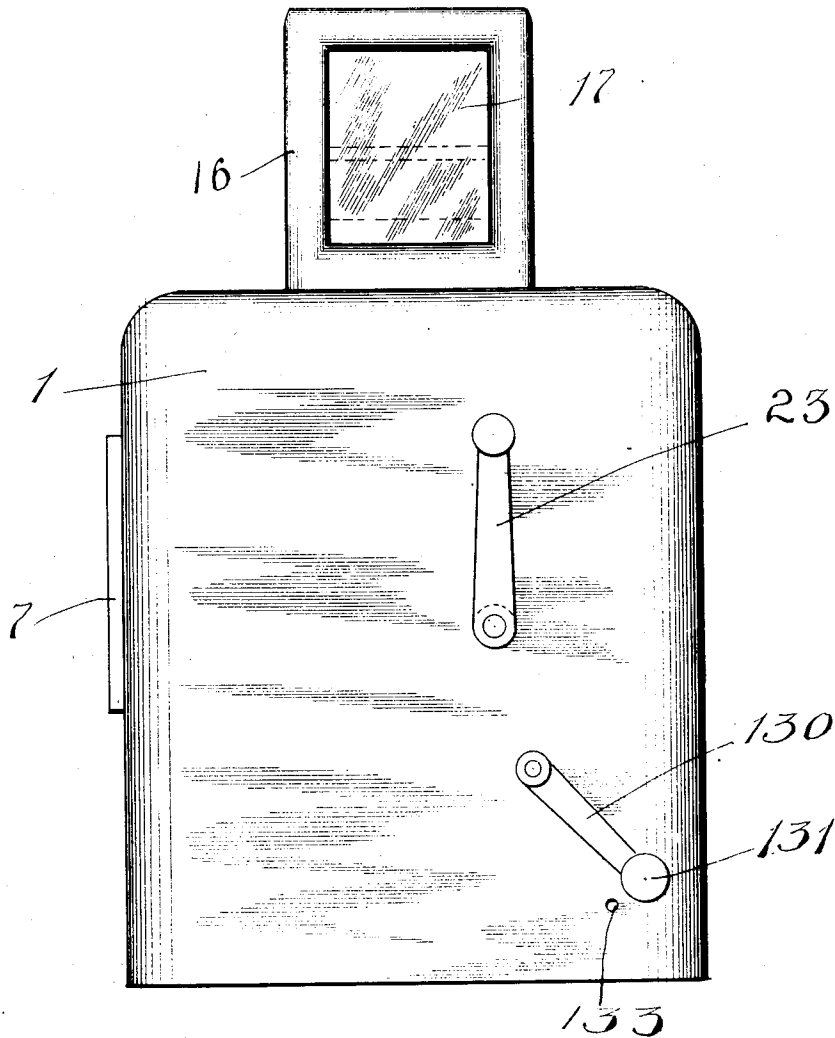
J. M. JOHNSON.
COIN COUNTING MECHANISM.
APPLICATION FILED JUNE 26, 1909.

1,096,172.

Patented May 12, 1914.

9 SHEETS—SHEET 1.

Fig. 1



WITNESSES

J. O. Angell
C. E. Kinnah

INVENTOR

Jay M. Johnson.

Charles H. Kinnah

ATTY

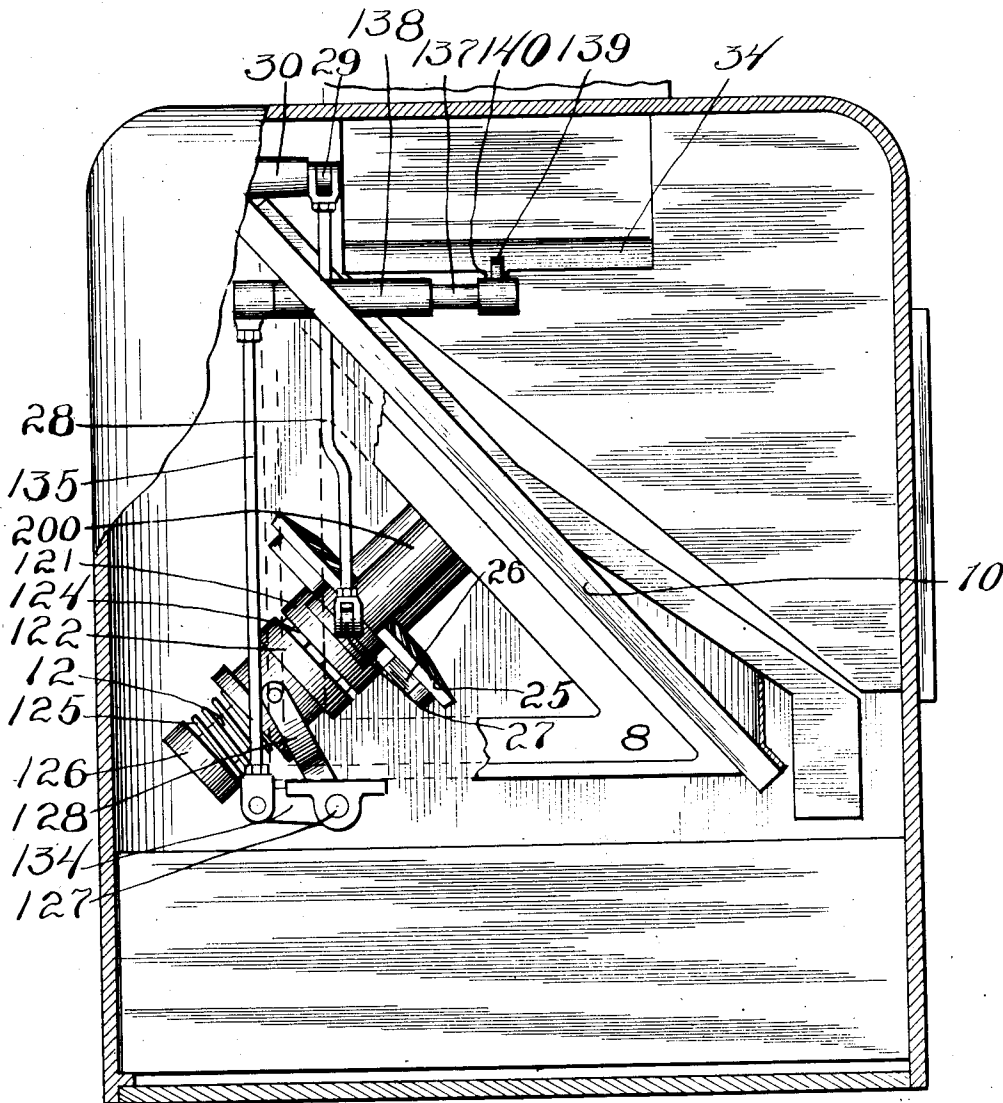
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9 SHEETS-SHEET 2.

Fig 2



WITNESSES

J. O. Angell
 C. E. Farnham

INVENTOR

Jay M. Johnson.

By Charles E. Jones

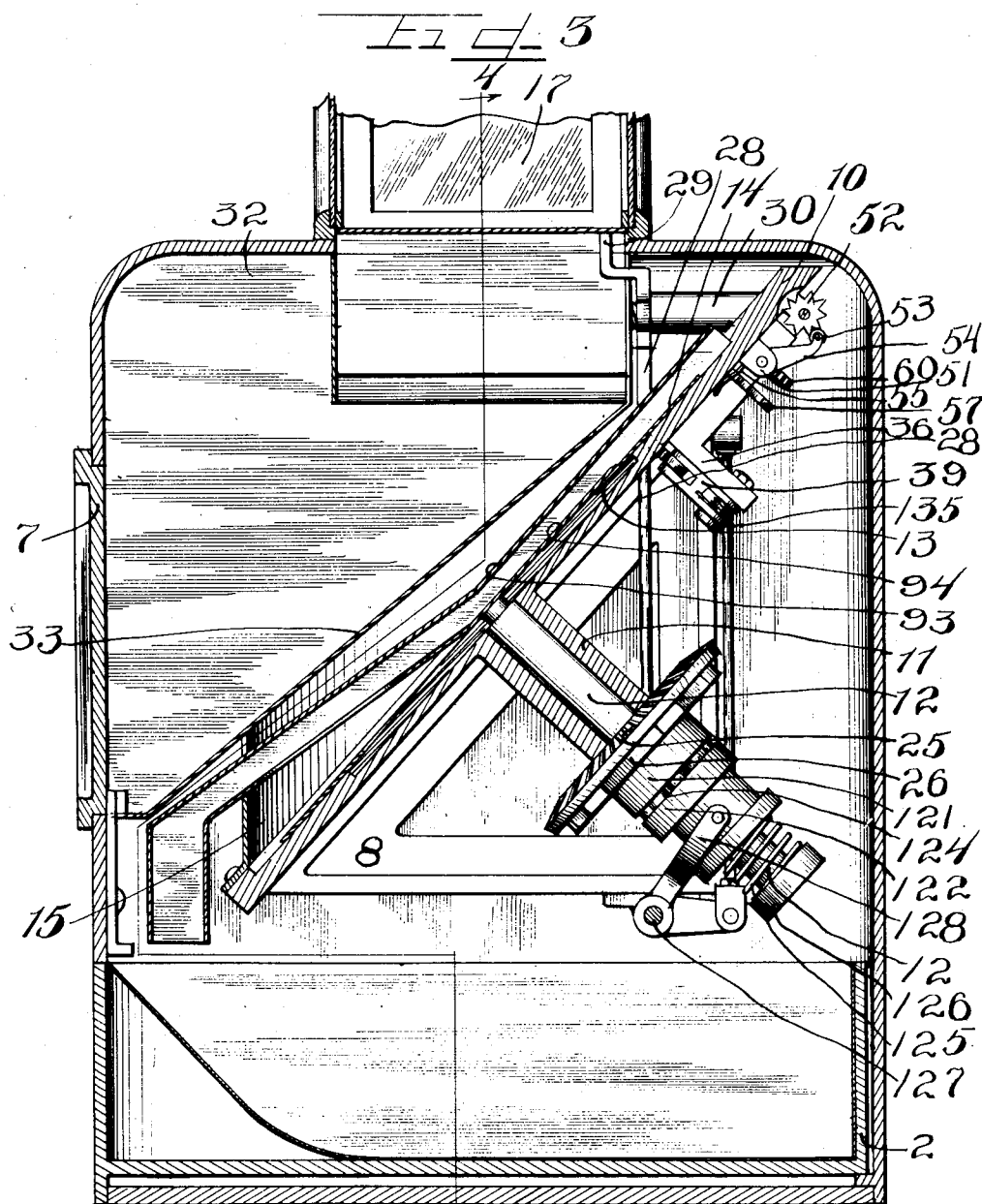
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9 SHEETS—SHEET 3.



WITNESSES

J. H. Angell.
 J. B. Hannan.

4

INVENTOR

Jay M. Johnson.

Charles E. Rice

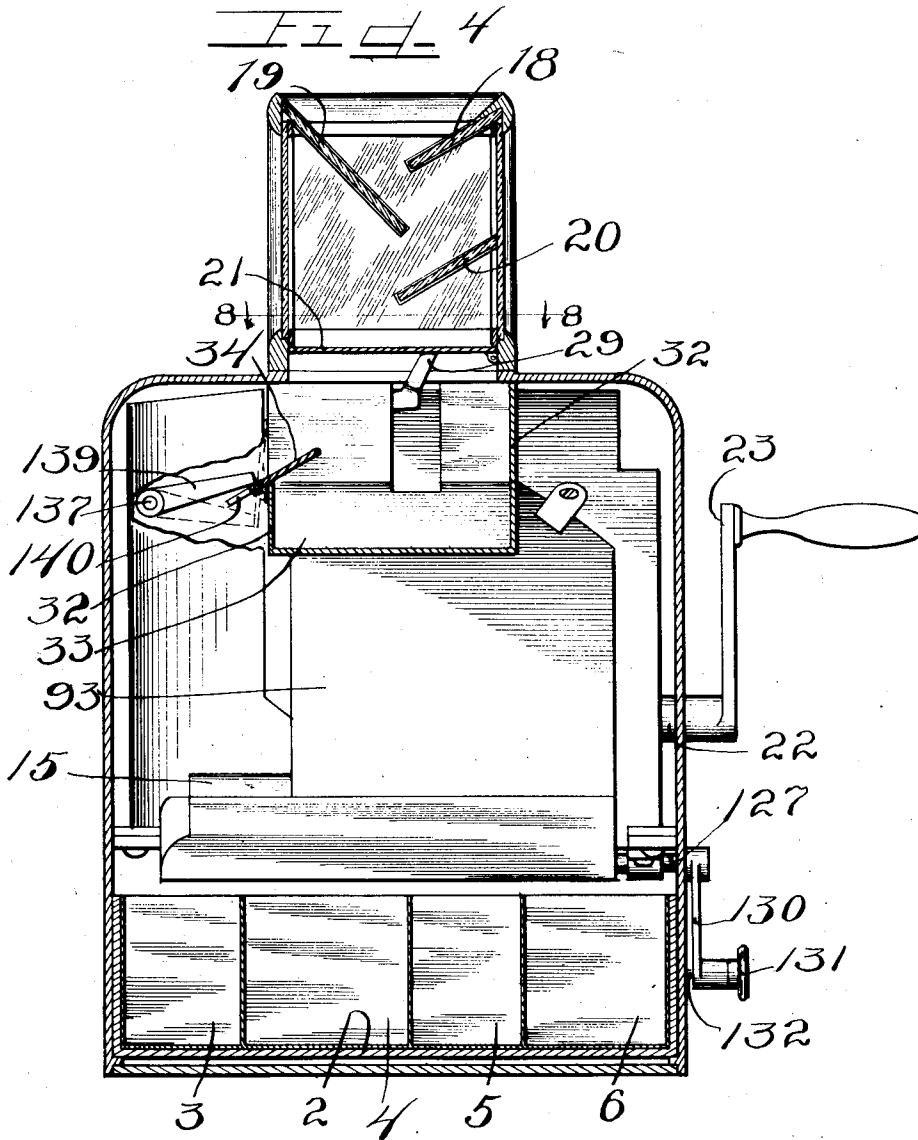
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9 SHEETS—SHEET 4.



WITNESSES

J. H. Angell.
 J. B. Hannah.

INVENTOR

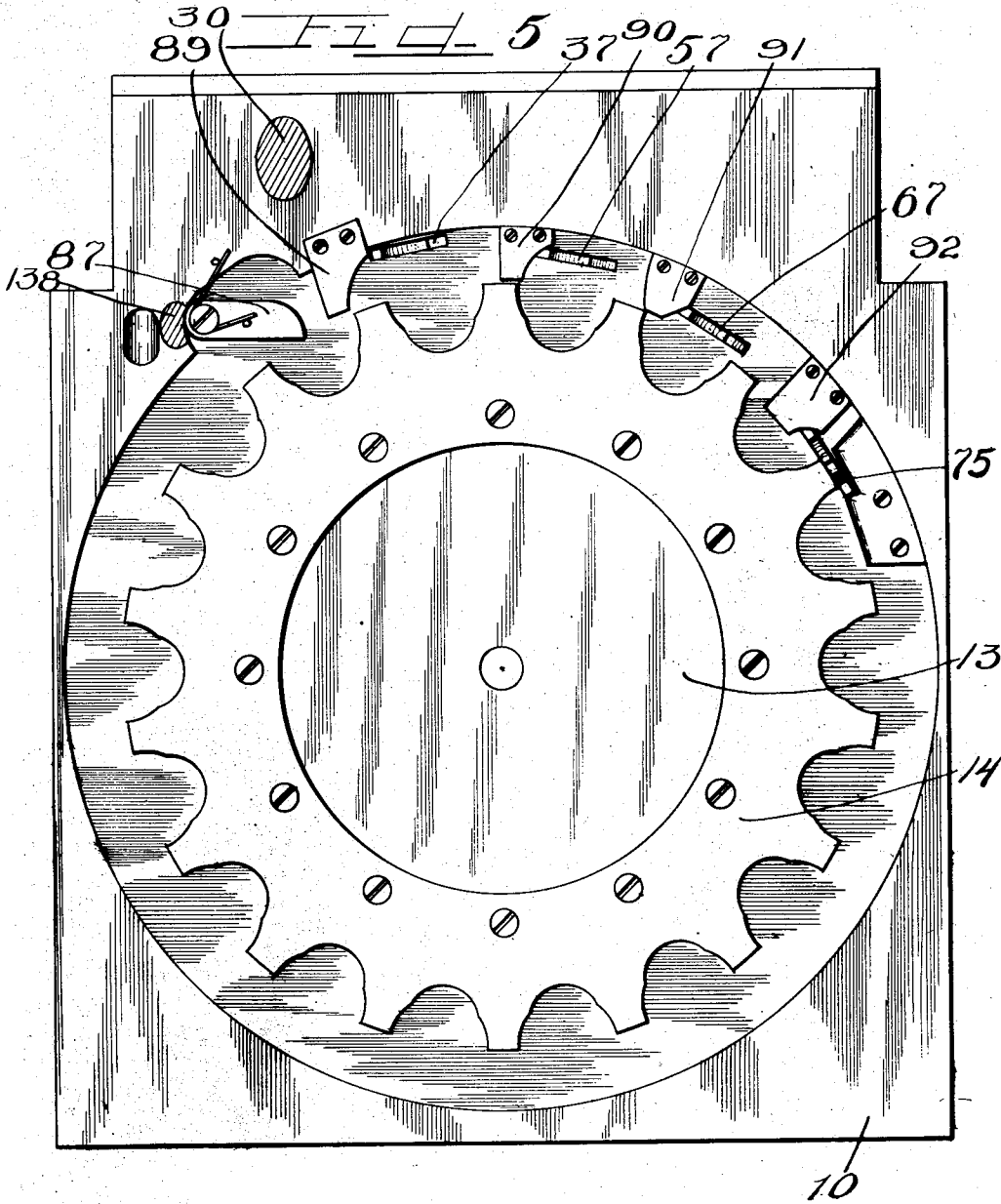
Jay M. Johnson.
 Charles T. Twiss, ATTORNEY.

J. M. JOHNSON.
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9 SHEETS—SHEET 5.



WITNESSES

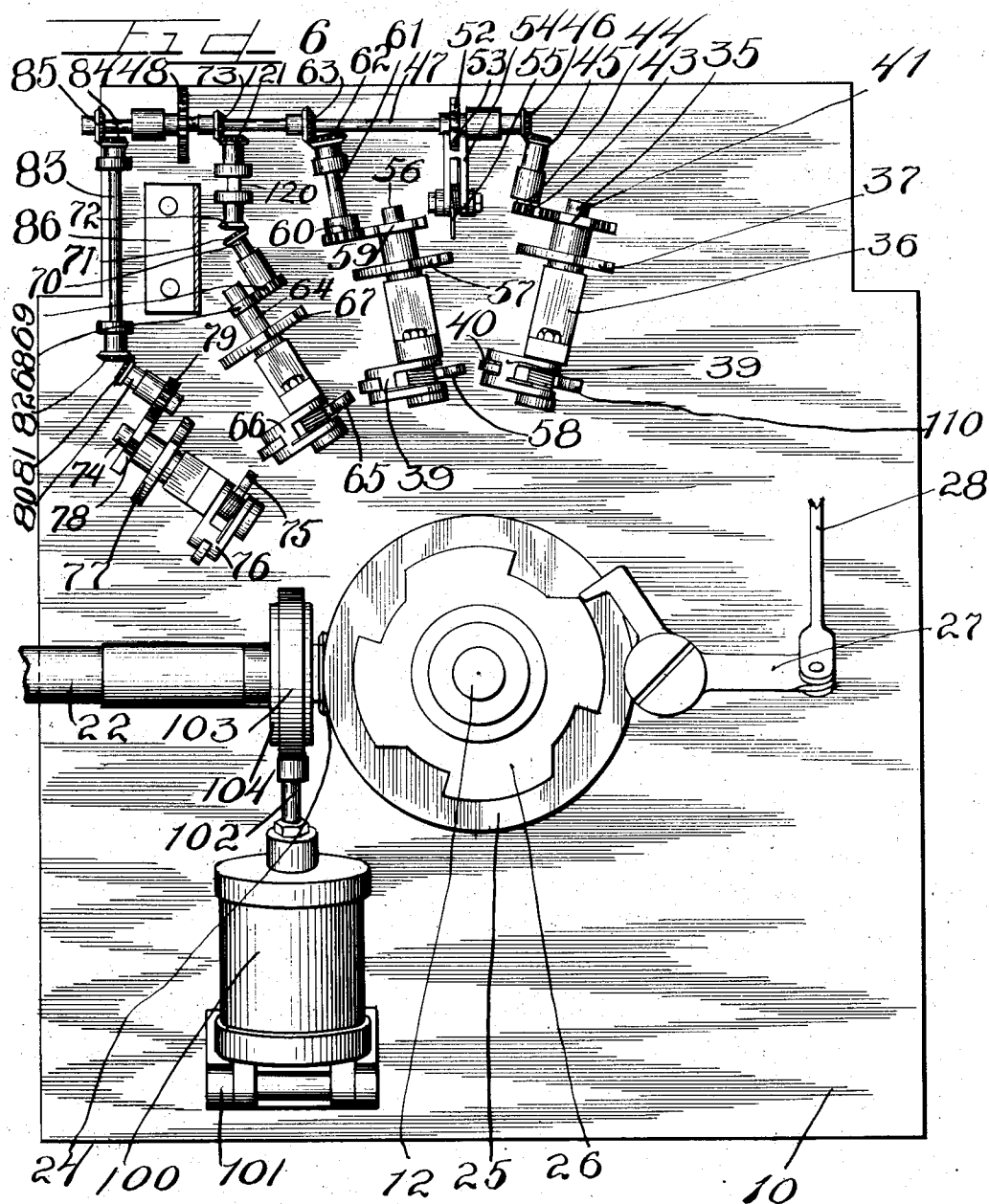
J. H. Angell.
 W. E. Hannah.

INVENTOR

Jay M. Johnson.
 Charles E. Stearns
 ATTORNEY

Patented May 12, 1914.

9 SHEETS—SHEET 6.



Witnesses

J. H. Angell.
J. H. Angell.

Inventor

Jay M. Johnson.

Charles Jones

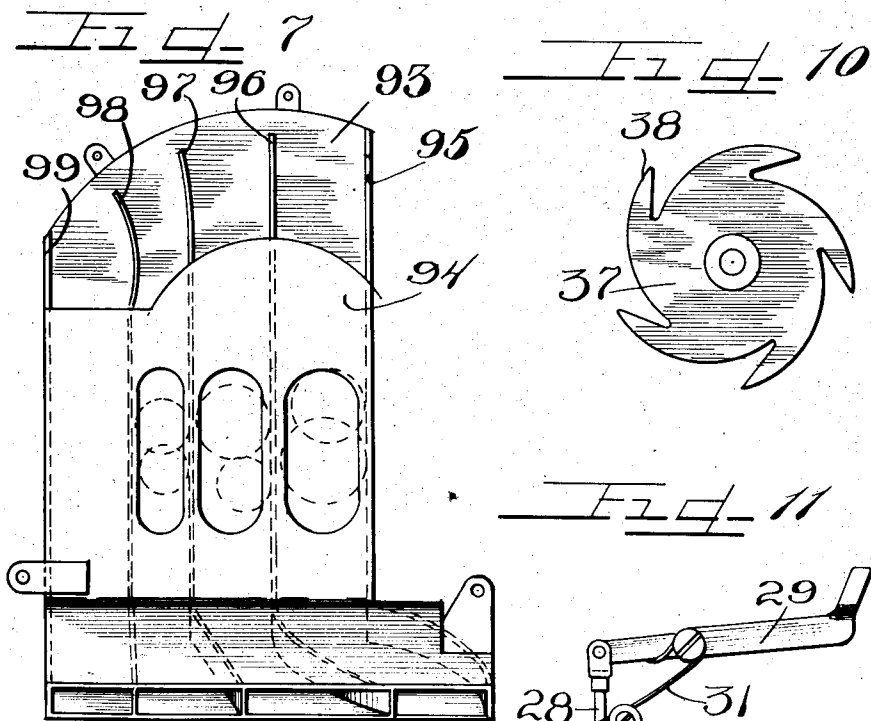
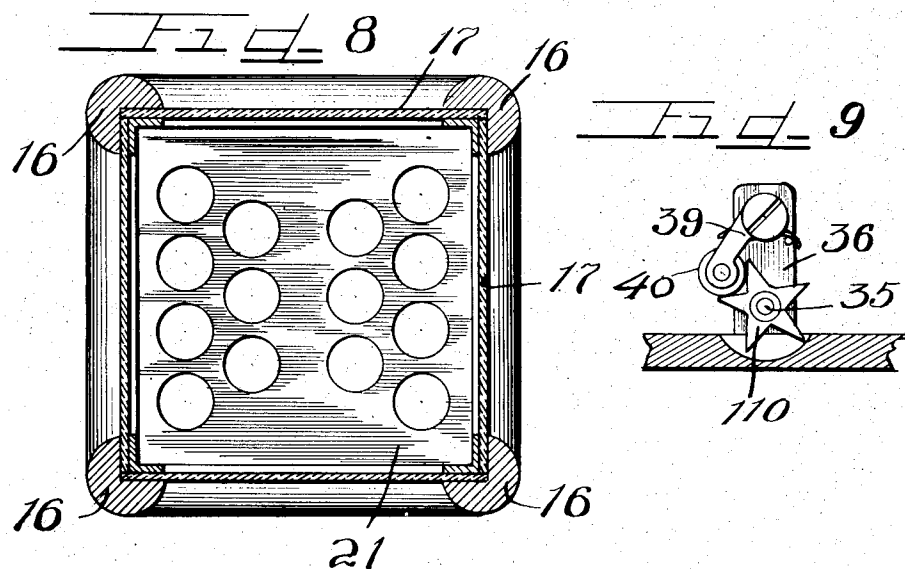
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J. M. JOHNSON.
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1,096,172.

Patented May 12, 1914.

9 SHEETS—SHEET 7.



WITNESSES

J. H. Angell
 R. E. Hannah

INVENTOR

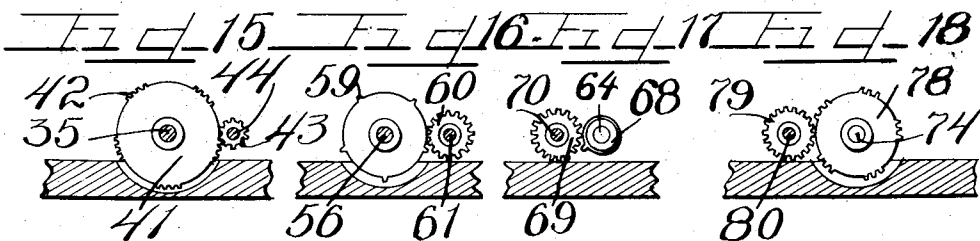
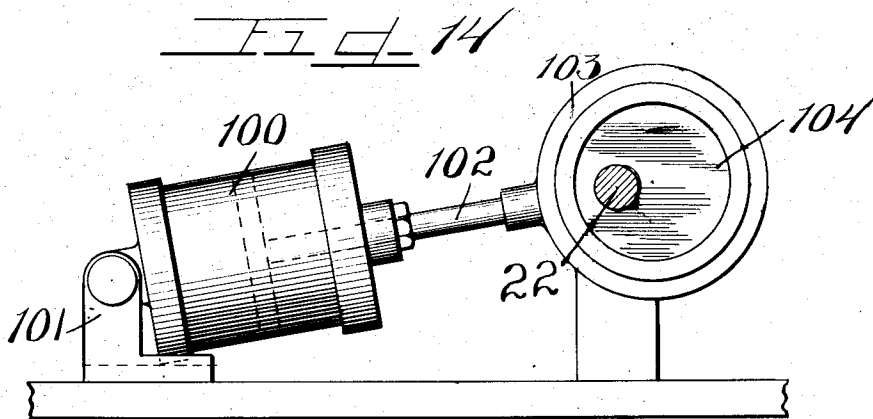
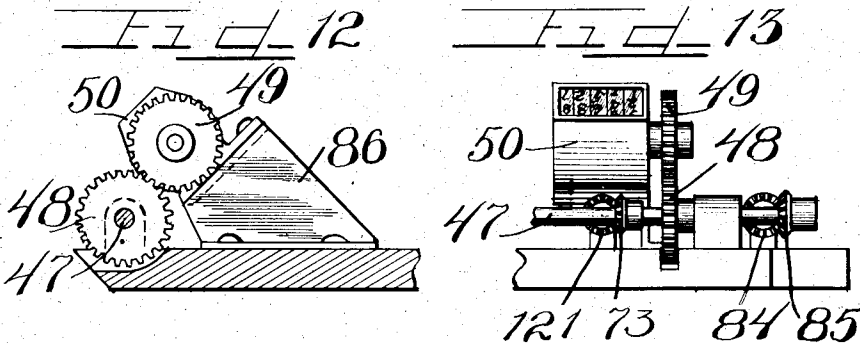
Jay M. Johnson.
 Charles E. Jones
 Atty.

J. M. JOHNSON.
 COIN COUNTING MECHANISM.
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1,096,172.

Patented May 12, 1914.

9 SHEETS—SHEET 8.



WITNESSES

J. H. Angell
 J. H. Hamah

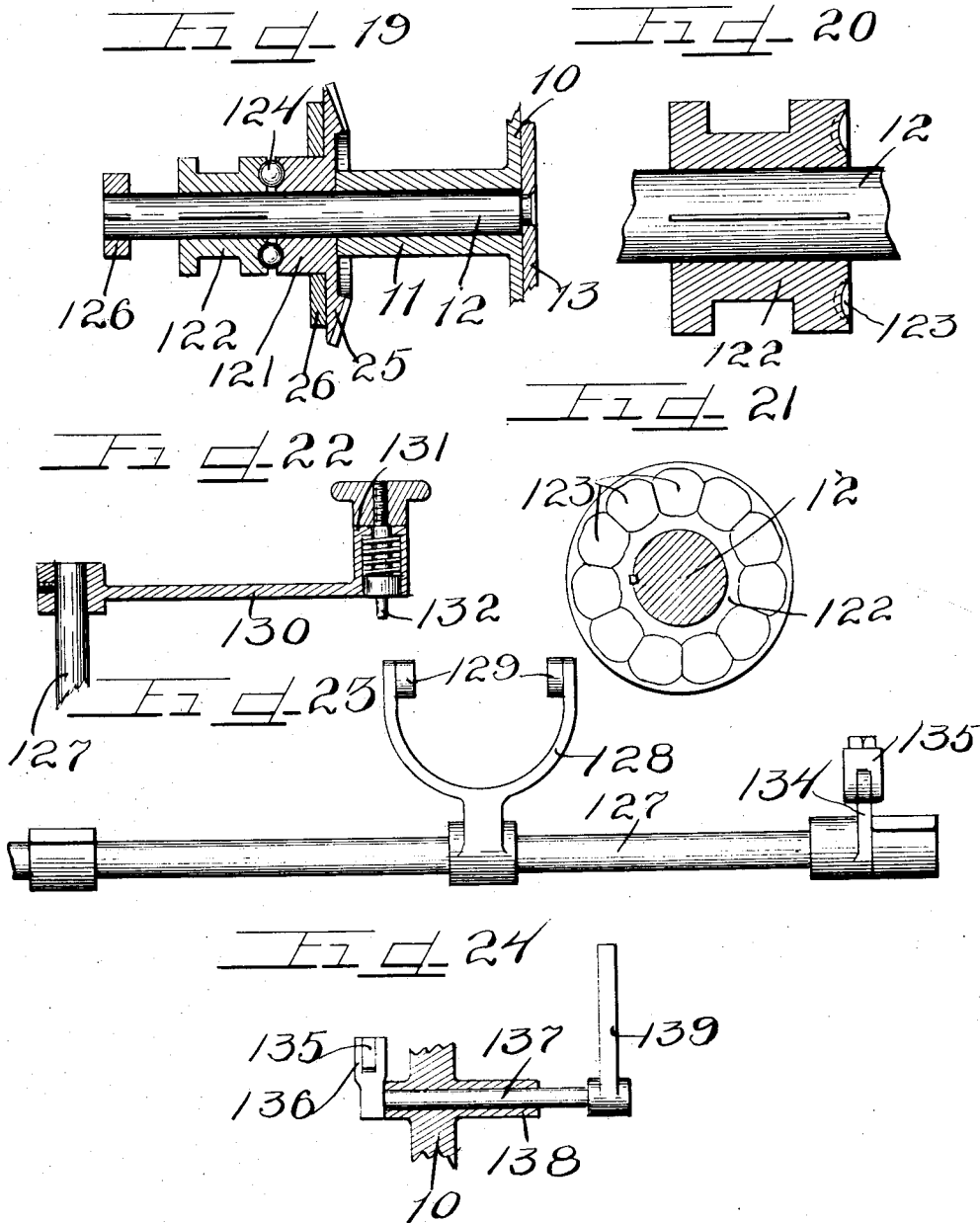
INVENTOR

Jay M. Johnson.
 Charles J. Jones, Atty.

1,096,172.

Patented May 12, 1914.

9 SHEETS-SHEET 9.



WITNESSES:

J. H. Angell.
 J. H. Hamann

INVENTOR

Jay M. Johnson.

Charles W. Tice, Atty.

UNITED STATES PATENT OFFICE.

JAY M. JOHNSON, OF CHICAGO, ILLINOIS.

COIN-COUNTING MECHANISM.

1,096,172.

Specification of Letters Patent.

Patented May 12, 1914.

Application filed June 26, 1909. Serial No. 504,510.

To all whom it may concern:

Be it known that I, JAY M. JOHNSON, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Coin-Counting Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numbers of reference marked thereon, which form a part of this specification.

This invention relates to that class of coin counting and registering mechanism set forth in my prior application for patent filed on the 5th day of April, 1909, Serial No. 487,970, and in which was shown a street railway or other fare box or case provided with mechanism for counting and registering on separate recording mechanisms the number of coin of each kind deposited in the box. This necessitated taking the sum or totals from the respective registers, computing the value of the same in money and adding the results to obtain the total value of the coin received or deposited. This was objectionable as affording too large an opportunity for error and as occasioning considerable labor in computation when the fares were turned in to the central office or the totals were to be determined.

The object of this invention is to provide a coin counting and registering mechanism in which any indiscriminately mixed coin of a plurality of denominations may be automatically separated, accurately counted to indicate a predetermined series, such as five cent fares, and the results totaled upon a single recorder or register.

It is also an object of the invention to afford a mechanism in combination with a device of the class described in which foreign objects dropped into the machine are separated from the coin to prevent clogging or injury to the machine.

It is also an important object of the invention to afford a construction in which a part of the counting mechanism acts to trip the coin to discharge the same into the appropriate chute from whence it passes to the appropriate tray or receptacle for that coin.

It is further an object of this invention to provide means for automatically releasing the actuating mechanism when the resistance of the carrying element and counting mechanism becomes abnormal due to jamming of

a coin, admission of any foreign element or for any other reason.

It is further an object of this invention to provide mechanism for throwing the machine out of operation and for delivering the coins into a compartment separate from the money drawer.

It is further an object of this invention to provide means whereby any coin falling into the wrong chute before being counted is returned to the hopper to be again removed by the carrying element and counted.

It is further an object of this invention to provide mechanism whereby any coin may be delivered to be inspected by the conductor before being counted to prevent any spurious coins being taken.

It is an important object of the invention to afford an exceedingly simple, accurate and positively acting mechanism in which mistake in counting is impossible and in which, whatsoever the shape or condition of the coin, its value will be accurately totaled upon a register.

It is also an object of the invention to afford in connection with a device of the class described a brake mechanism adapted to control the rate of rotation of the carrying element within reasonable limits and to insure uniformity of the rate of operation.

The invention consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a side elevation of a device embodying my invention. Fig. 2 is a view of the opposite side of the machine with the wall of the casing broken away. Fig. 3 is a central vertical section thereof showing the same embodied as a fare box. Fig. 4 is a section on line 4-4 of Fig. 3. Fig. 5 is an enlarged face view of the carrying element of a part of the frame with the casing and chutes removed. Fig. 6 is a rear elevation thereof. Fig. 7 is an inner face view of the chutes. Fig. 8 is an enlarged section on line 8-8 of Fig. 4. Fig. 9 is an enlarged view in elevation of the controlling brake for one of the counting star wheels. Fig. 10 is an enlarged face view of one of the counting and tripping star wheels. Fig. 11 is an enlarged fragmentary detail of a part of the trip levers for operating the bottom of the coin box. Fig. 12 is a view in side elevation of the register. Fig. 13 is a front elevation thereof. Fig. 14 is an enlarged side elevation of

the fluid controlled brake for regulating the rate of operation of the machine. Figs. 15, 16, 17, and 18 are respectively fragmentary details showing the mutilated gears for the quarter, for the nickel, for the penny and for the dime registering mechanism. Fig. 19 is an enlarged section taken longitudinally of the driving shaft. Fig. 20 is an enlarged section of one member of the ball clutch. Fig. 21 is an enlarged face view of one of the clutch members. Fig. 22 is a section of one of the actuating cranks showing the locking means. Fig. 23 is a detail of the mechanism for throwing the machine out of operation. Fig. 24 is an enlarged detail of the mechanism for closing the shutter to prevent coin passing into the hopper.

As shown in the drawings, the mechanism is wholly contained within a casing 1, constructed of cast metal, pressed steel, or any suitable material to afford a receptacle for the mechanism not adapted to be readily opened by an operator or employee. In the bottom of said casing, as shown, is provided a drawer 2, provided with a suitable lock and which opens through the front side and bottom of the casing and contains compartments, 3, 4, 5, and 6, adapted to receive each one of the denominations of coin adapted to be registered in the machine. Also provided in the front of the casing is a door 7, likewise capable of being locked, which opens into a chamber above the drawers to receive all the coin therein should the machine refuse to operate and which is adapted to permit the operator inspecting and removing any spurious coins. Secured in the casing or receptacle above the drawer on each of the side walls thereof are triangular frames 8, as shown two in number and which affords at the front a support inclined at an angle of approximately 45 degrees for a bed plate 10, which is rigidly secured thereto by means of screws or bolts and which, as shown, is provided near its center with a rearwardly and downwardly directed integral sleeve 11, as shown in Fig. 3, in which is journaled a shaft 12, on which is rigidly secured a face plate 13, sunk in the face of the base plate 10, until the face is flush with the face of said face plate and on which is rigidly secured by means of screws or otherwise an annular rim 14, having a notched periphery and which affords the carrying element for the coin in passing to the counting mechanism. Said base plate 10, as shown, is provided with a raised surface peripherally surrounding the carrying element 14, and affording a channel around the periphery thereof of a width to permit the coin to fall into the recesses or pockets in the said rim of the carrying element and rigidly secured on said base plate beyond said coin recess or sunk portion and extending across the bottom of said base

plate is a metallic inclined wall 15, affording a hopper adapted to direct all coin falling thereinto upon the periphery of said wheel or carrying element.

Secured on the top of the casing or receptacle 1, is the coin box or tray, which, as shown, is substantially rectangular in form and comprises upwardly directed posts 16, rabbeted on their inner sides to receive therebetween plates of glass 17, or other suitable transparent medium to permit the contents of the coin or fare box to be always in view. Also secured in said fare box are inclined deflectors or guides 18, 19, and 20, of which the inwardly and downwardly inclined deflectors 18 and 20, are on the same side of the coin box and the deflector or incline 19, is on the opposite side and projects therebetween breaking joints in such a manner as to prevent the removal of the coin after it has once been dropped into said box. Hinged in the bottom of the coin box is a floor 21, provided with a plurality of apertures therethrough and as shown, circular, and means are provided for supporting said bottom in its closed position to receive the coin thereon when dropped into the fare box and to support the same until automatically dumped into the machine.

Extending through one of the side walls of the casing is an actuating shaft 22, provided with a crank and handle 23, for actuating the same and on the inner end of said shaft, as shown, is provided a miter pinion 24, which meshes with a miter gear 25, loose on the shaft 12, as shown in Figs. 3, 6, and 19, and which drives said shaft through the medium of a clutch. Said clutch is formed by the hub 121, of the gear and a clutch member 122, each of which is provided with a plurality of recesses 123, adapted to receive the balls 124, therein. A strong pushing spring 125, is secured on shaft 12, between the bottom of the clutch member 122, and an adjustable collar 126, and which holds the clutch in operative position. When, however, the resistance of the carrying mechanism becomes abnormal, as, for instance, by a jammed coin, etc., the actuating shaft will resist rotation but, if forced, the clutch member 122, will yield against tension of the spring 125, resulting in rotation of the gear 25, only and the shaft 12, is not rotated. Should the machine become inoperative, means are provided for adjusting the clutch out of operation and securing the same in said position. Said means comprises a shaft 127, journaled in the casing, which at one end projects through the side of the casing. A yoke 128, is rigidly secured on said shaft 127, and the arms thereof are provided with anti-friction rollers 129, which engage in an annular groove in the clutch member 122. Rotation of said shaft in one direction depresses

5 this clutch member 122, against tension of
 the spring, permitting the gear 25, to freely
 rotate without actuating the shaft 12. For
 this purpose a crank 130, is secured on the
 10 outer end of shaft 127, and the handle 131,
 thereof is provided with a spring pressed
 locking dog 132, which is adapted to engage
 in either of the apertures 133, in the wall of
 the casing. Two of said apertures are pro-
 15 vided, one for locking the crank when the
 clutch is in operation and the other for lock-
 ing the crank when the clutch is shifted out
 of operation. Secured on the hub of said
 20 miter gear 25, is a cam 26, as shown having
 four comparatively broad throws and pivotally
 supported by a stud shaft 200, secured
 to the base plate 10, is a lever 27, one end of
 25 which extends into engagement with said
 cam 26, to be oscillated thereby and on the
 other end of which is a connecting rod 28,
 which extends upwardly and at its upper
 end is connected with a lever 29, pivoted on
 the base plate by means of a bracket 30, and
 30 which extends forwardly into position to
 support said pivoted bottom 21, of the coin
 box, but which is retracted mechanically by
 said cam and the action of a spring 31, se-
 cured to the rod 28, and the lever 29, as
 shown in Fig. 11, permitting said bottom of
 35 the coin box to fall after the lever 27, has
 passed each throw on said cam.

Extending below the bottom 21, of the
 coin box, is a compartment which comprises
 an inclined bottom 33, and side walls 32,
 35 access to which is had by means of the door
 7, as shown in Fig. 3. Pivoted on one side
 of said chute is an inclined plate or shutter
 34, and upon which the free edge of the bot-
 tom 21, of the coin box falls to afford an in-
 40 cline from which the coin thereon slide into
 the hopper 15. Means are provided for clos-
 ing said shutter to deliver all the coins into
 the compartment or any coin therein for in-
 spection and removal should it be desired.
 45 For this purpose a lever 134, is secured to
 the shaft 127, to the outer end of which is
 connected a rod 135, which at its upper end
 is connected to a lever 136, on a shaft 137,
 50 journaled in a suitable bearing sleeve 138,
 integral with one of the frame members 8.
 An arm 139, is secured on said shaft 137,
 which is adapted to engage a lug 140, on the
 shutter 34, and actuate the shutter to close
 the entrance to the hopper 15, as shown in
 55 dotted lines in Fig. 4. Said carrying ele-
 ment 14, as shown, comprises a plate of
 steel or other suitable material of a thickness
 corresponding approximately to the thin-
 nest coin likely to be carried thereby and as
 60 shown, it provided in its periphery with
 notches or pockets equal distances apart and
 affording an inner or bottom portion hav-
 ing a curvature on one radius to receive
 coins of small diameter and a recess of
 65 larger radius above the same for coins of

larger diameter, as, for instance, quarters
 and nickels. Arranged about the periphery
 of said carrying element or wheel and on the
 rear side of the base plate, are the counting
 mechanisms. The counting mechanisms in 70
 the present machine are not intended to
 count a higher denomination than quarters.
 They are four in number, and are arranged
 in the order of the size of the coins to be
 counted—thus, for the largest coin or quar- 75
 ters coming first, nickels second, pennies
 third, and dimes fourth.

The counting mechanism for quarters
 comprises a shaft 35, journaled in a bracket
 36, on the rear side of the base plate 10, 80
 so that said shaft lies radially of the car-
 rying element. Secured on the inner end of
 said shaft 35, is a star wheel 37, as shown,
 provided with five forwardly hooked teeth
 38, which project through the base plate 85
 into the path of the moving coin, as shown
 in Fig. 3, the hook of said teeth being such
 that the forward movement of the coin
 against the tooth does not tend to elevate the
 edge of the coin until the next succeeding 90
 tooth engages beneath the coin. A star
 wheel 110, is secured on the opposite end of
 shaft 35, from the wheel 37. Secured on the
 bracket 36, is a spring detent 39, to the end
 of which is secured a roller 40, adapted to 95
 engage the teeth of the star wheel 110, which
 prevents the wheel 37, from rotating more
 than one notch or tooth and insures correct
 positioning thereof after each count. On
 the outer extremity of the shaft 35, is a 100
 mutilated gear 41, as shown, provided with
 five groups of spur teeth, each group con-
 sisting of four teeth, as indicated at 42,
 in Fig. 15, between each group of teeth the
 periphery of said gear being cut away to 105
 afford sufficient clearance for the pinion 43,
 secured on a shaft 44, on the opposite end
 of which is a miter gear 45, which meshes
 with a corresponding miter gear 46, on the
 end of the registering shaft 47. On said 110
 registering shaft is a gear wheel 48, as shown
 in Fig. 6, which meshes with the master gear
 wheel 49, of the register, indicated as a
 whole by 50. In consequence, each tooth on
 the quarter star wheel rotates the shaft 47, 115
 a distance corresponding with four teeth on
 the mutilated gear 41, and sufficiently to
 clear the pinion 43, therefrom, each of said
 teeth and the travel necessary to clear the
 pinion causing sufficient rotation of the 120
 shaft 47, to register one nickel or five cents
 on the register or all adapted to register
 five counts on the register. A bracket 51, is
 secured on the base plate and secured on the
 shaft 47, is a star wheel 52, adapted to be 125
 engaged at all times by an anti-friction
 roller 53, carried on the end of a detent arm
 54, the spring 55, of which at all times holds
 said roller firmly upon said star brake wheel
 or cam, thus insuring each rotation or move- 130

ment of the shaft 47, shall indicate the equivalent of five cents or a multiple of five cents.

The nickel counting mechanism is identical in all respects with the mechanism for counting quarters with the exception of the radial shaft 56, which is provided with a star counting wheel 57, identical in construction with the star counting wheel 37, and is provided at its inner end with a star wheel 58, identical in construction with the corresponding star wheel on the inner end of the shaft 35, and is likewise similarly engaged by a detent 39, is provided at its outer end with five spurs or teeth 59, spaced equal distances apart, as shown in Fig. 16. Said teeth are adapted to engage and rotate a pinion 60, on a shaft 61, so that in rotating said shaft 56 completely once, each of said teeth would engage the pinion 60, and rotate the shaft 61, sufficiently to register five nickels on the register and for said purpose said shaft 61, is provided at its outer end with a bevel pinion 62, which meshes with a corresponding bevel pinion 63, secured on a shaft 47. The star wheel 58, as in the case of the corresponding star wheel before described, insures the adjustment of the mutilated gear into position to permit the shaft 43, or the shaft 61, rotating freely and independently thereof except when said shafts 56 or 35 are rotated by a passing coin. The shaft 64, for pennies is provided with a star wheel 65, thereon at its inner end such as before described and similarly engaged by a detent 66, and is provided with a counting star wheel 67, thereon identical with those before described and near its outer end is provided with a mutilated gear 68, having a single tooth thereon which meshes with a pinion 69, on a shaft 70, as shown in Fig. 17, and on the end of which is provided a bevel pinion 71, which meshes with a corresponding bevel pinion 72. Said pinion 72, operates a shaft 120, on the end of which is a pinion 121, meshing with a bevel pinion 73, of like size on the shaft 47. Obviously, a complete rotation of the shaft 64, is necessary to afford one throw of the shaft 70. This movement is communicated to the shaft 47, by the medium of the bevel pinion or gear 73, affording a sufficient movement to register one nickel on the veeder, although, inasmuch as there is but a single tooth on the mutilated gear 68, the register will not be effected until the passage of the fifth penny.

The construction for dimes is substantially that before described. The shaft 74, is provided with its star wheel 75, and detent 76, such as before described, and also secured thereon is the counting star wheel 77. Said dime counting shaft 74, is provided on its extremity with a mutilated gear

78, having five groups of teeth or spurs, each group being three in number and meshing with a pinion or gear 79, secured on a shaft 80. As shown, a pinion or gear 81, is secured on said shaft 80, and meshes with a pinion 82, on a shaft 83, having on its outer end a relatively small pinion 84, meshing with a larger pinion 85, on the shaft 47, the size of said intermeshing pinion 84—85 being such as to afford a two to one movement. In consequence, each actuation of the shaft 74, by a passing dime records two nickels on the register.

The counter 50, is rigidly secured upon the bracket 86, and is actuated through the medium of the shaft 47, when any of said counting shafts is rotated or partly rotated.

The periphery of the respective counting star wheels projects as before described through the base plate into position for the teeth thereof to be engaged by passing coin. Pivotaly engaged on said base plate adjacent the teeth of the carrying element is a spring controlled stripper plate 87, elevated sufficiently to clear the carrying element but to engage the outermost coin should more than one be carried in any pocket of the carrying element.

Secured to the base plate in close proximity to the carrying elements and projecting over the channels of the coin at each of the counting stations are guide plates 89, 90, 91, and 92. These, as shown, project into close proximity with the periphery of the carrying element and are sufficiently elevated to permit the coin to pass beneath the same and serve to thrust the coin down past the star wheels, as shown in Fig. 5. Said guide plates, however, are cut away on their rear side to immediately clear the coin after it has partially passed the star wheel and at the moment the next succeeding tooth on the star wheel rises with some violence beneath the coin to trip the same from the carrying element.

For the purpose of catching and guiding the various denominations of coin when tripped from the carrying elements, as before described into the appropriate tray or receptacle therefor, chutes are provided comprising a top plate 93, which extends over and is secured on the base plate beyond the coin channel, a bottom plate 94, and longitudinal division strips 95, 96, 97, 98, and 99, arranged appropriate distances apart to afford therebetween channels or chutes for quarters, for nickels, for pennies and for dimes, each of the chutes so formed leading downwardly and discharging into the appropriate compartments 3, 4, 5, and 6, in the drawer 2. Said bottom plate 94, is provided with slots in all except the last chute which open directly into the hopper 15, as shown in Figs. 3 and 7, which permit

any coins accidentally received in the wrong chute to return to the hopper to be carried by the carrying element to properly register the same.

6 The fluid brake before mentioned comprises a cylinder 100, pivotally engaged upon the base plate on a bracket 101 and provided with an internal piston shown in dotted lines in Figs. 6 and 14, the piston
10 rod 102, of which is provided on the outer end with an eccentric collar 103, which engages around an eccentric 104, on the shaft 22. Any suitable retarding valve may be
15 employed within the piston to regulate the flow therethrough. This may afford a fixed flow therethrough or the flow may be regulable in any suitable manner, and, of course, either air or a liquid such as oil may be employed within the cylinder to control or
20 limit the rotation of the shaft.

The operation is as follows: The mechanism being tightly inclosed within a metallic casing is not likely to be tampered with by an employee or otherwise, and the
25 coin having been delivered thereto is not readily accessible to any one not possessed with the proper key or combination for opening the drawer and door. When the coin is dropped into the coin box it falls
30 upon the inclines and thence passes by gravity to the pivoted bottom 21, of the coin pockets which is supported and remains supported until the shaft 12, has been rotated one fourth of a revolution. The lever 27,
35 is now tripped, actuating the lever 29, and permitting the bottom of the cash box to fall inwardly to rest upon the inclined shutter or plate 34, in which position the coin slide therefrom into the hopper while other
40 objects than coin on said bottom fall through the holes in said bottom and thence upon the bottom 33, of the chute and are delivered to a position adjacent the door where the same may be removed and thus do not reach
45 the counting mechanisms at all. The coin, however, having fallen into the hopper 15, are taken up by the carrying element, successive coin irrespective of size engaged in the respective pockets of the engaging elements, and are swept upwardly thereby toward the top of the machine. Should more than one coin be engaged in a pocket the
50 stripper 87, forces the uppermost of said coin from the pocket so that after passing said stripper but a single coin can be found in each pocket. Immediately passing the stripper, the coin passes beneath the guide plate 89, which prevents the same from leaving the coin channel and the periphery of
55 the coin, (if it is a quarter) is engaged by the outermost forwardly hooked teeth of the counting star wheel 37. The forward movement of the carrying element serves to rotate said quarter counting wheel one tooth
60 and just as the register is effected on the

register the rear edge of the coin clears the presser or guide plate 89, and simultaneously under the action of the star wheel and detent 39, the next succeeding tooth on said
counting star wheel is projected somewhat
70 violently forward tripping the coin sufficiently to dislodge the same from the pocket whereupon the same falls from the chute and slides to the proper compartment in the drawer. In a similar manner nickels (which
75 are of a considerable less diameter) pass beneath the guide plate 89, but entirely clear the quarter counting star wheel 37, and instead engage the upwardly projecting teeth of the counting star wheel 57, the operation of which is identical with that
80 already described with reference to the quarter counting star wheel, and in consequence, the forward movement of the nickel rotates said star wheel one tooth and as the rear
85 edge of the nickel clears the presser plate 90, the next succeeding tooth trips or displaces the nickel sufficiently for it to slide down the chute to its proper compartment in the drawer. In the same manner pennies and dimes are counted in each instance
90 each counting mechanism acting entirely independently upon the register, inasmuch as the mutilated gears on the respective counting shafts are wholly out of mesh with the
95 pinions to be operated thereby until the first initial movement of the star counting wheel when actuated by a coin brings the gear into engagement. Said counting mechanisms are also arranged so that whatsoever
100 the arrangement of the coin in the pockets of the carrying wheel but one counting mechanism can act at a time—in consequence each acts independently to afford its characteristic count and whatsoever the rate of
105 rotation of the wheel the star brake wheels and detents act always to arrest the mechanism with the tooth of the counting star wheel in proper position to be engaged by the next successive coin of that denomination. In this manner the record of all the coin counted is carried and totaled on the register, the quarter counter registering five
110 nickels with each rotation of the shaft, the nickel registering once with each actuation, pennies registering once on the veeder with each complete revolution of the counting star wheel therefore, and, in a similar manner, because of the arrangement of the two
115 to one gears, the dime wheels register two nickels with each actuation thereof. It is seen that should a coin under any circumstances fall into the wrong chute said coin is returned to the hopper and no coin can
120 therefore pass into the wrong drawer nor can any coin escape being registered. Should the machine from any cause become clogged the carrying element and registering mechanism may be instantly thrown out of operation by means of the crank 130, and held
125
130

in said position. Simultaneously, as said mechanism is thrown out of operation, the shutter is closed preventing any of the coin from falling into the hopper and adapting the coin being delivered into the compartment adjacent the front door. It is further seen that if the resistance of the carrying element is abnormal or greater than the resistance for which the spring is set, said clutch automatically becomes inoperative until the obstruction is removed and should the operator force the actuating mechanism, it can result in no harm to the machine. Of course, other denominations may be counted and registered, if desired, and in a similar manner half dollars or dollars could be counted, if preferred. Ordinarily, however, with machines of this type no coin larger than quarters will be dropped into the machine.

Should foreign objects of any kind find their way into the machine, very usually—in fact, almost invariably they are delivered through the chute 33, into the front part of the casing above the coin chutes and in no way affect or clog the machine. Should they be sufficiently small to find their way into the coin channel they are ordinarily refused and simply lie inert in the hopper until removed therefrom at night or may be carried around upon the carrying element sufficiently to be engaged by the stripper bar whereupon they fall back into the hopper. Should, however, one of said elements clog the machine, the operating mechanism may be adjusted as above set forth and in any event, breakage of any part of the machine cannot occur, and no object (unless it is shaped identically with the coin to be actuated) can be counted. Should an object reach the first counting wheel, said wheel will immediately discharge the same from the pocket and it falls through the appropriate chute into the drawer.

Of course, I am aware that other mechanisms may be employed to afford a total registering register and counter for the purpose specified. I am aware also that any coin of any kind, size or denomination may be counted and registered in a total sum by a machine embodying my invention, and, of course, very numerous details of construction may be varied and the particular details of the counting and tripping mechanisms are not indispensable for other elements may be used in lieu thereof or in conjunction therewith. I therefore do not purpose limiting this application for patent otherwise than necessitated by the prior art, as very many details of construction and operation may be varied without departing from the principles of this invention.

I claim as my invention:

1. The combination with a rotating carrying element for engaging and carrying indis-

criminate mixed coins on the periphery thereof, of a series of register actuating mechanisms arranged about the same and positioned at different distances from the periphery of the carrying element, a shaft, a register operated thereby, and mechanical connections between said shaft and said register actuating mechanisms whereby each register actuating mechanism actuates said shaft characteristically.

2. The combination with a carrying element for coins, a series of register actuating mechanisms arranged radially about the same, a shaft, a register operated thereby, mechanical connections between said shaft and said register actuating mechanisms whereby each register actuating mechanism actuates said shaft characteristically, and mechanism for actuating the carrying element adapted to automatically become inoperative when abnormal resistance is encountered.

3. A coin separating and counting mechanism embracing a hopper to receive a mass of indiscriminately mixed coins, a carrying element to convey said coins one by one from said mass of indiscriminately mixed coins, register actuating mechanisms arranged around said carrying mechanism in position to be selectively actuated by the respective coin in accordance with their denomination and adapted to eject the coins from the carrying elements simultaneously with their actuation by said coins and a register operatively connected to be actuated independently and characteristically by each of said register actuating mechanisms.

4. In a machine of the class described separating and counting mechanisms embracing a hopper adapted to receive coin indiscriminately mixed, a plurality of counting mechanisms, one for each denomination of coin, a rotatable carrying mechanism adapted to engage and carry coin one by one from the mass into operative relation with the respective register actuating mechanisms, a register adapted to be actuated by each of said register actuating mechanisms, and mechanism associated with each register actuating mechanism for discharging the coin from the carrier after the count is registered.

5. A coin separating and counting mechanism embracing a hopper, a rotative carrying element having the periphery thereof projecting thereinto and adapted to carry the previously mixed coin therefrom one by one, actuating mechanisms arranged peripherally around the carrying element, a register, an actuating shaft therefor, and a mutilated gear actuated by each of said actuating mechanisms to rotate said shaft sufficiently to afford the characteristic count on the register for every denomination of coin.

6. A device of the class described embracing a separating and counting mechanism, a hopper for receiving the indiscriminately mixed coins, a shutter pivoted at the mouth thereof, a rotative carrying element adapted to carry the coin from the hopper, a fare box supported above the hopper and having a swinging bottom, means operated simultaneously with the separating mechanism to drop the swinging bottom and whereby the coins are discharged into the hopper, a compartment adjacent the hopper, mechanism for actuating the carrying element adapted to automatically become inoperative when abnormal resistance is encountered and mechanism adapted to close the shutter and allow the coins to fall into the compartment above the hopper when the carrying element is rendered inoperative.

7. The combination with a carrying element of a plurality of shafts disposed radially thereto, a counting star wheel on the end of each in position to be engaged by coin of suitable diameter in passing the same, a mutilated gear rigidly connected with each star wheel, a shaft, gears thereon adapted to be operated by said mutilated gears successively, and a single register operated by the shaft and adapted to record the count for each coin selectively and independently.

8. In a machine of the class described a carrying element for carrying a plurality of indiscriminate coins, a plurality of elements, each adapted to be actuated by the proper coins as the carrying element carries the same therepast, a register and operative connections between the respective actuating elements and the register whereby each actuates the register to register its count independently of the other elements.

9. In a machine of the class described a plurality of actuating mechanisms for coin of different denominations, a total adding register, mechanisms registering directly from each actuating mechanism to the total register and a carrying wheel adapted to gather a plurality of coins from an indiscriminately mixed mass and to present said coins while on said wheel to actuate the proper actuating mechanism.

10. In a machine of the class described mechanisms appropriated to different money denominations, a register actuated thereby and a carrying element adapted to gather and advance a plurality of coins from an indiscriminately mixed mass adapting the coins while on said carrying element to selectively actuate the proper mechanisms.

11. In a machine of the class described register actuating mechanisms appropriated to different money denominations, a register, independent transferring mechanisms for the register actuating mechanisms, each adapted to actuate the register independ-

ently of the others in transferring a count, a carrying element adapted to mesh the articles to be counted with the appropriate mechanism for actuating the register actuating mechanisms and each transferring mechanism adapted to elevate the coins from the carrying element after the coins are counted.

12. In a machine of the class described register actuating mechanisms appropriated to different money denominations, a register, independent transferring mechanisms for the register actuating mechanisms, each adapted to actuate the register independently of the others in transferring a count, a carrying element adapted to mesh the indiscriminately mixed coins to be counted with the appropriate actuating mechanism for actuating the transferring mechanisms, said mechanisms adapted to elevate the coin from the carrying element after the coins have been counted, and independent receptacles for receiving coins of one size.

13. In a machine of the class described a receptacle for receiving indiscriminately mixed coins, means for singly removing a plurality of the coins from the receptacle, a register actuating mechanism for the different denominations of coin adapted to actuate a register to register the coins in a predetermined series while on said coin removing means.

14. In a machine of the class described a receptacle for receiving a mass of coins of various denominations, means having a plurality of carrying pockets for removing the coins from the receptacle, a single register for all of the coins, and mechanisms, each actuated by all of the coins of one denomination, adapted to register the coins in a predetermined series one count on the register for each sum of a predetermined amount removed from the receptacle.

15. In a machine of the class described a carrying disk for coins of indiscriminately mixed denominations, a register, register actuating mechanisms arranged about the carrying element at different distances from the axis thereof, each register actuating mechanism actuated by coins of a certain denomination, and transferring mechanisms, all adapted to transfer the count of the indiscriminately mixed coins.

16. In a machine of the class described, a carrying element for coins of mixed denominations and separate mechanisms independently actuable arranged about the carrying element at different distances from the axis thereof and appropriated to mixed denominations of coin all adapted to register the count of the mixed denominations of coin thereto in a predetermined series.

17. In a machine of the class described a register, a single carrying element adapted to carry a plurality of indiscriminately

mixed coins, and mechanisms actuated by the coins while on the carrying element and adapted to actuate the register to register one count on the register for each sum corresponding to the series being counted.

18. In a machine of the class described a carrying element having a periphery adapted to carry a plurality of coins of various denominations, a register, register actuating mechanisms disposed successively around and beyond said periphery, each selectively operated by a different denomination of coin and all of the register actuating mechanisms appropriately actuating said register.

19. In a machine of the class described, a carrying element for coins of mixed denominations, a register, integral sorter and register actuating mechanisms, each selectively and simultaneously operated by a different denomination of coin and all of the register actuating mechanisms appropriately actuating said register, independent of any of the other register actuating mechanisms which register to the same register and means for receiving the different denominations of coins after they have operated their respective register actuating mechanisms.

20. In a device of the class described a rotative carrying element for coins of mixed denominations, a register, register actuating mechanisms arranged about the carrying element at different distances from the axis thereof and adapted to be selectively actuated by the coins as the carrying element is rotated and transferring mechanisms, each adapted to actuate the register independently of the others to register like amounts on the register.

21. In a device of the class described a carrying element for indiscriminately mixed coins, a register, actuating mechanisms arranged about the periphery of the carrying element at different distances from the periphery thereof and adapted to be actuated by the indiscriminately mixed coins as the carrying element is rotated, transferring mechanisms each adapted to actuate the register independently of the others to register like amounts on the register, an independent chute opposite each actuating mechanism and means for sorting the indiscriminately mixed coins into their respective denominations.

22. In a device of the class described a rotative carrying member for coins of various denominations, a register, a shaft for integral sorting and actuating the same, actuating mechanisms, operated by the respective denomination of coins, and transferring mechanisms actuated by the said mechanisms, each adapted to actuate the shaft and all adapted to remain neutral except the one transferring the count.

23. In a device of the class described a register, a shaft for integral sorting and actuating the same, actuating mechanisms, transferring mechanisms actuated by said actuating mechanisms, each adapted to actuate the shaft and all adapted to remain neutral except the one transferring the count, a carrying element for moving indiscriminately mixed coins to selectively actuate the actuating mechanisms before the coins are separated into their respective denominations and means for actuating the carrying element.

24. In a device of the class described a register, a shaft for actuating the same, actuating mechanisms, transferring mechanisms actuated by the actuating mechanisms, each adapted to actuate the shaft and all adapted to remain neutral except the one transferring the count, a carrying element for moving indiscriminately mixed coins to selectively actuate the actuating mechanisms means for actuating the carrying element, and a fluid controlled mechanism for regulating the rate of operation of the actuating means.

25. In a device of the class described a carrying member for indiscriminately mixed coins, a register, mechanisms operated by the respective denomination of coin for registering thereto for the coins of all denominations, independent chutes for the different denomination of coins, independent compartments into which said chutes discharge, and said chutes provided with apertures to permit coins of the wrong denomination falling therefrom before passing into the compartment for the chute.

26. In a device of the class described a casing, a hopper therein adapted to receive mixed coin, a carrying element for singly removing indiscriminately mixed coins from the hopper, a register, mechanisms actuated by the coins while on the carrying element for registering to the register, a shaft for actuating the carrying element, and mechanism for actuating said shaft comprising in part a clutch adapted to automatically release the actuating mechanism from the shaft.

27. The combination with a carrying element of a plurality of shafts disposed radially thereto, a counting star wheel on the end of each shaft in position to be engaged by coins of suitable diameter in passing the same, a mutilated gear rigidly connected with each star wheel, a shaft, gears thereon adapted to be operated by said mutilated gears successively, a register operated by the shaft adapted to register the count for each coin selectively and independently and a presser plate arranged to hold the coin down while actuating the counter and to release the same with the

rise of the next succeeding tooth whereby the coin is discharged from the carrying element.

28. In a device of the class described a carrying member for coins of mixed denomination, a register, a shaft for actuating the same, and actuating and sorting mechanisms operated by the respective denomination of coin for registering thereto the count of the coins of all denominations.

29. In a device of the class described a carrying member for coins of mixed denomination, a register, mechanism operated by the respective denomination of coins for simultaneously registering thereto and sorting the coins of all denominations and mechanism for actuating the carrying member adapted to automatically become inoperative when abnormal resistance is encountered.

30. A device of the class described comprising an inclined rotatable disk for gathering and carrying coins from a mass of different coins, registering mechanism, and means selectively operating said registering mechanism to cause actuation thereof by means of the disk carried coins.

31. In a device of the class described, an inclined rotatable disk, means thereon for carrying coins of different denominations, a register, and a plurality of means actuated by the coins while on said disk and adapted to selectively actuate said register depending upon the size of the coin.

32. In a device of the class described, an inclined rotatable disk for carrying coins of different denominations, a register, a plurality of gear trains, and means actuated by the coins while on said disk for selectively actuating the register through one of said gear trains.

33. In a device of the class described, an inclined coin carrying disk for carrying coins of different denominations, a register to receive the count of said coins, and a gear train for each denomination of coin to actuate said register, said coins acting while on said disk to select the respective gear trains to properly actuate said register.

34. In a machine of the class described, a rotatable disk, means thereon for carry-

ing coins of different denominations, a register, a selective notched element adapted to be operated by coins of one value on the disk, and a gear train adapted to be operated by said element to actuate said register.

35. In a fare register, a hopper receiving mixed coins of different denominations, a disk inclined for lifting the coins from said hopper, mechanism differentially movable by the coins as they are moved by said disk, and a totalizer operated in accordance with the differential mechanism to indicate the total value of the coins.

36. In a fare register, a hopper receiving mixed coins of different denominations, a rotative inclined disk forming one wall of said hopper, face projections on said disk to engage and move coins singly from said hopper, mechanism differentially movable by the coins as they are moved by said disk, and a totalizer operated in accordance with the differential mechanism to indicate the total value of the coins.

37. In a device of the class described a coin carrying element, said element adapted to properly carry coins of different denominations, a totaling register adapted to sum up the coins of different denominations, and a selective mechanism to drive said register, the proper elements of said selective mechanism being operated according to the denomination of the particular coin on the carrying element.

38. A fare register adapted to receive an indiscriminate mass of coins of various denominations, a rotatable disk for carrying the coins, a plurality of register mechanisms normally at rest and adapted to be driven by coins of certain denominations carried on said disk, a register connected thereto to register the number of coins collected, and sorting means for the coins afforded by said registering mechanism.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JAY M. JOHNSON.

Witnesses:

C. G. HANNAH,
LAWRENCE REIBSTEIN.