C. M. GREY.

COIN HANDLING MACHINE.

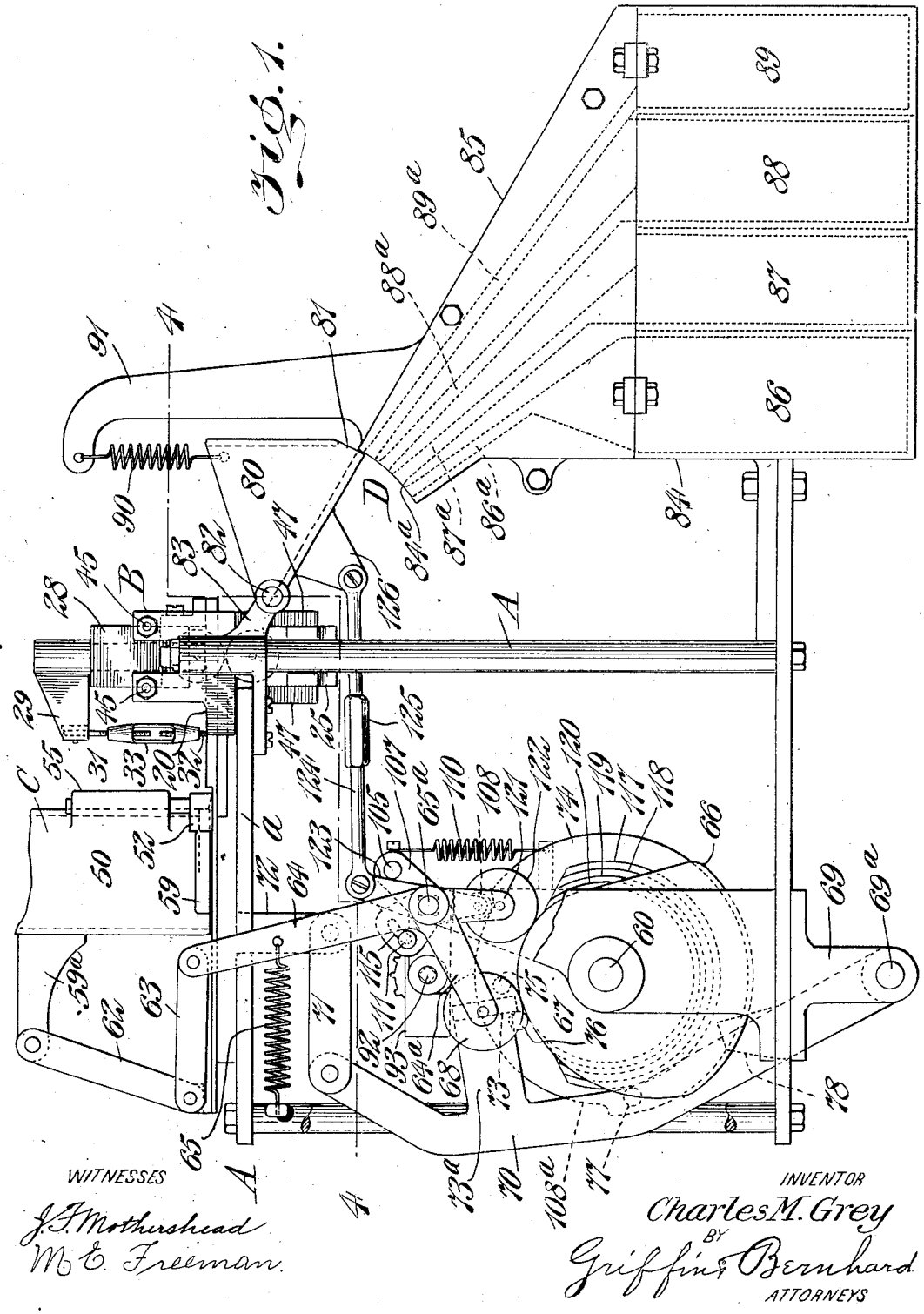
APPLICATION FILED OCT. 17, 1910.

1,081,958.

Patented Dec. 23, 1913.

9 SHEETS—SHEET 1.

Fig. 1.




WITNESSES

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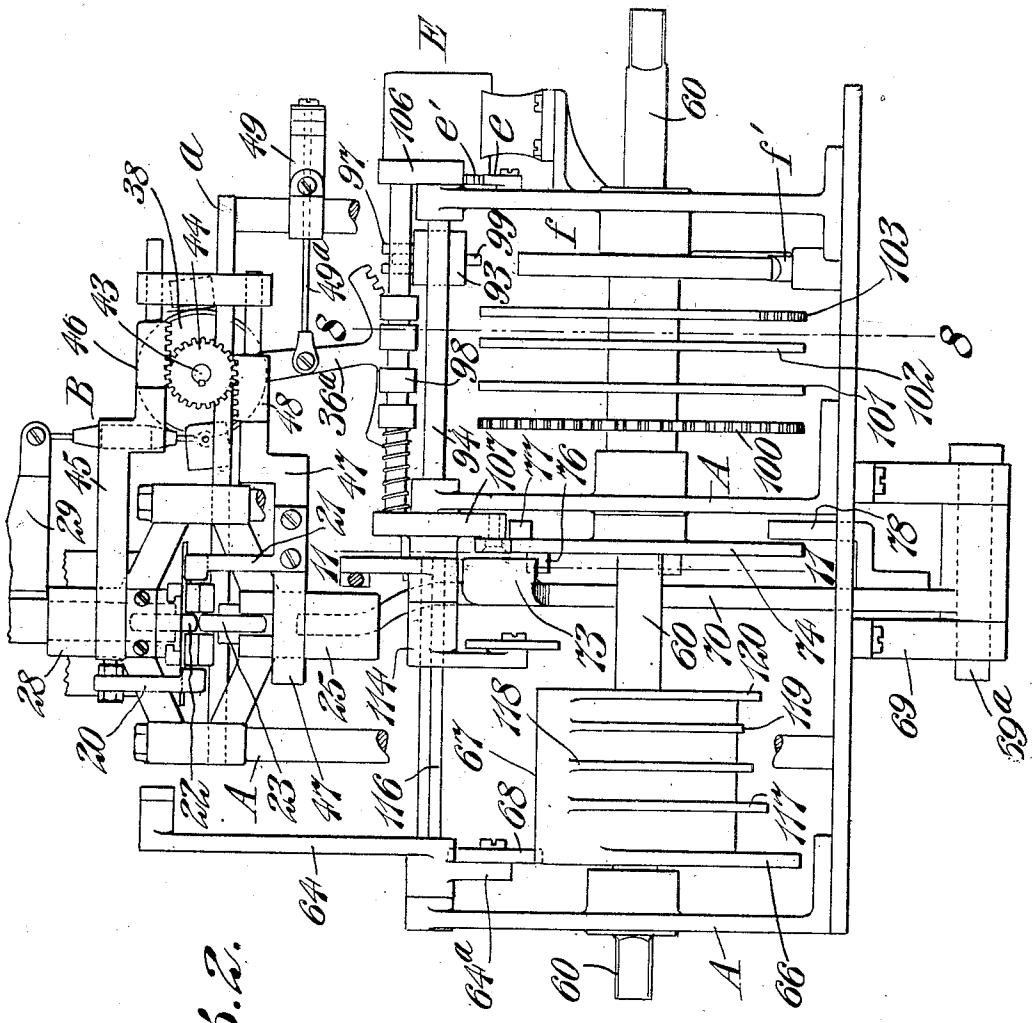


Fig. 2.

WITNESSES

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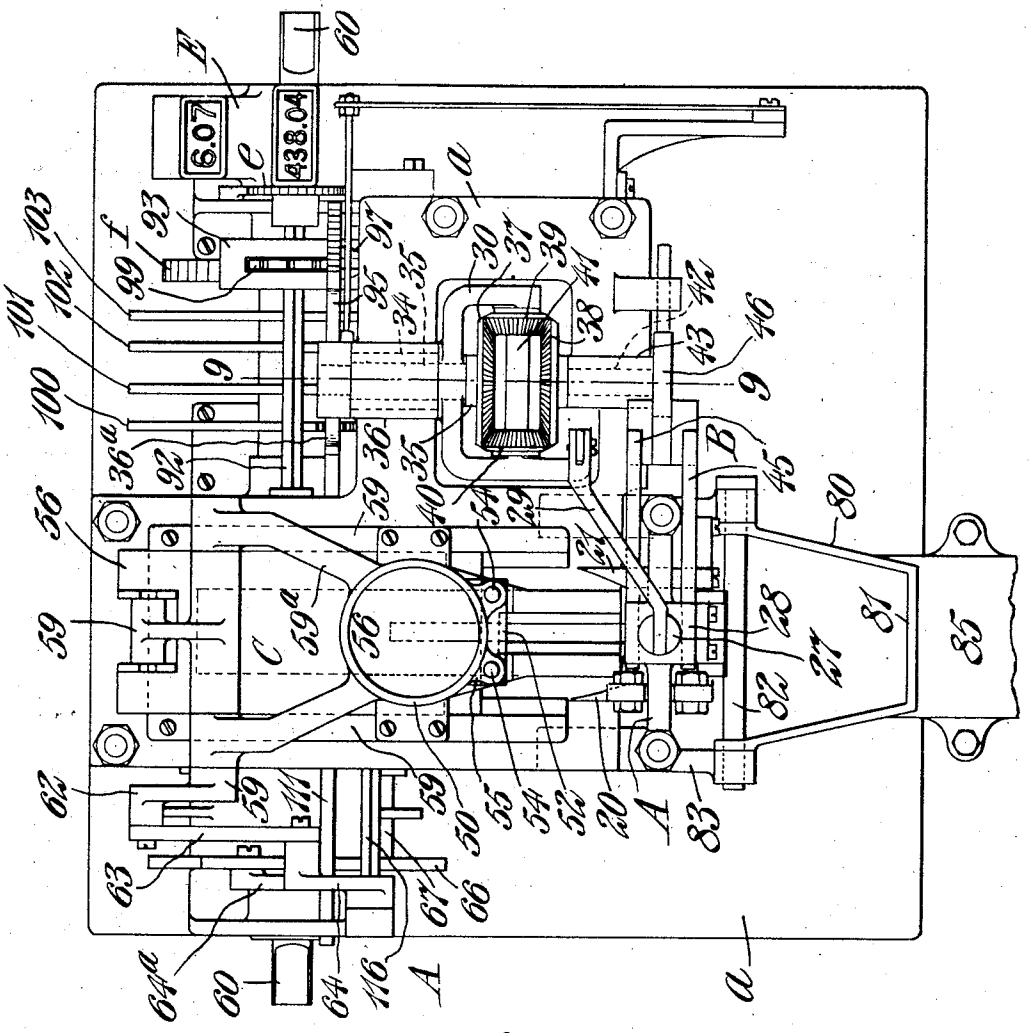



Fig. 3.

WITNESSES

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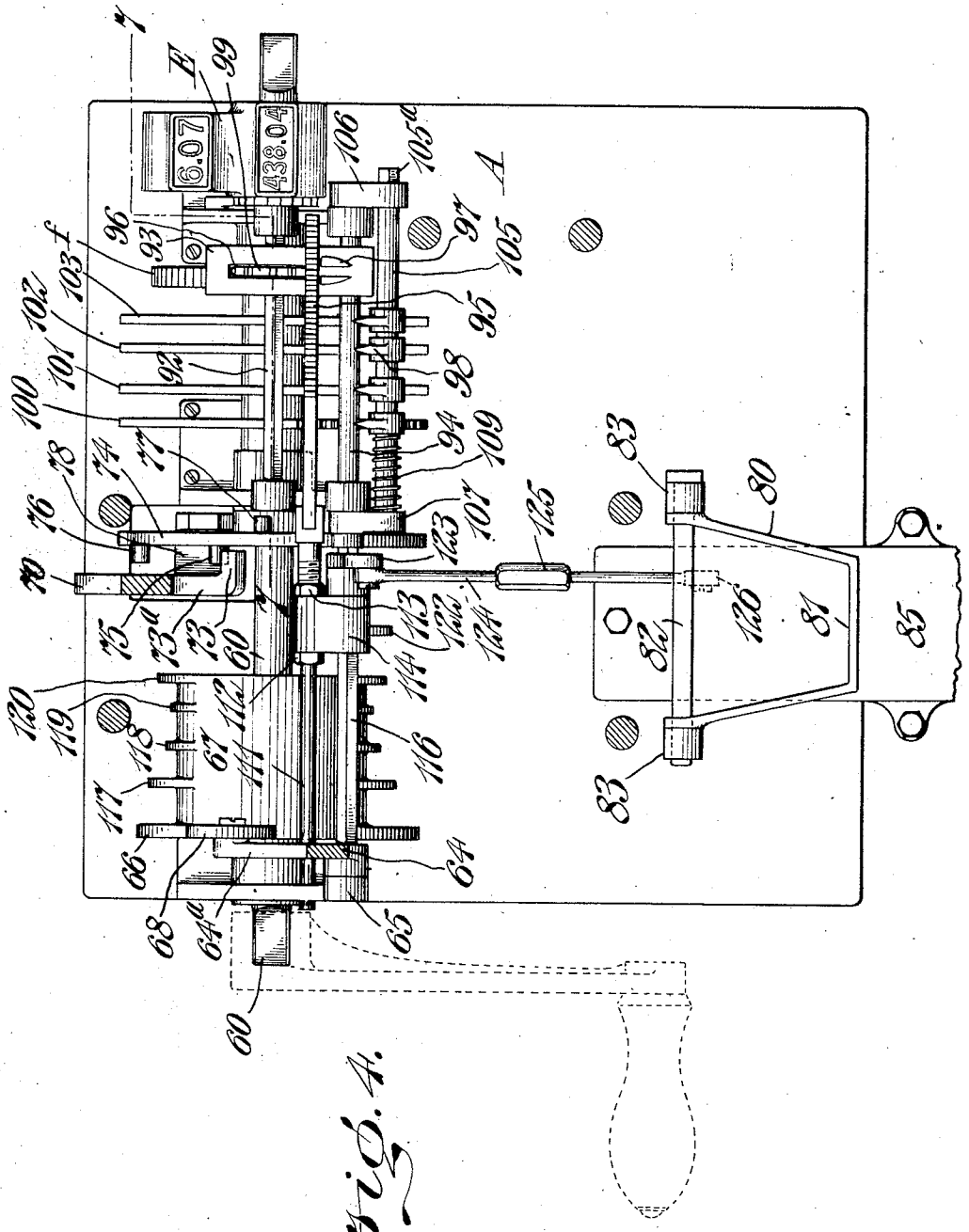



Fig. 4.

WITNESSES

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Fig. 5.

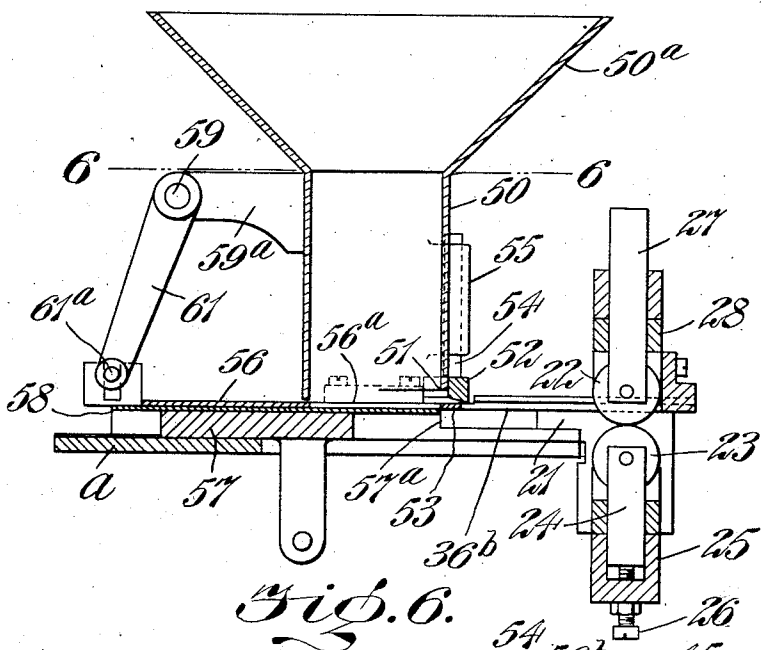
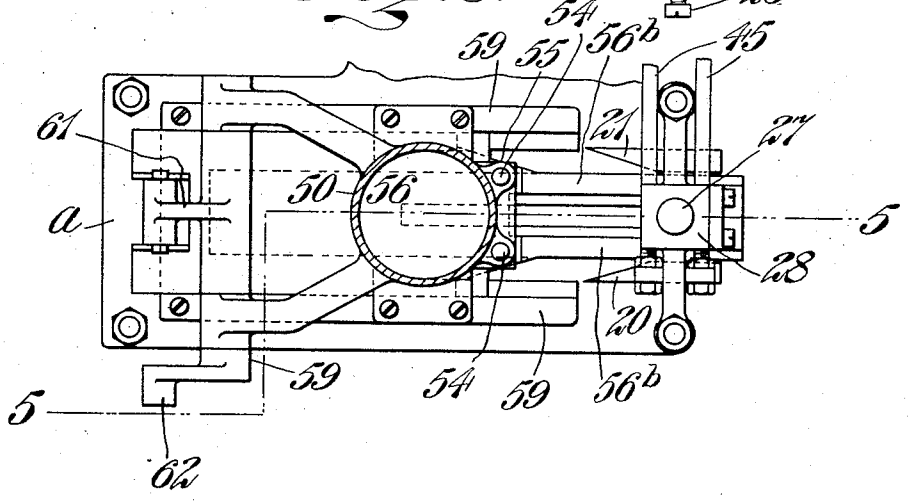



Fig. 6.




WITNESSES

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9 SHEETS—SHEET 6.

Fig. 8.

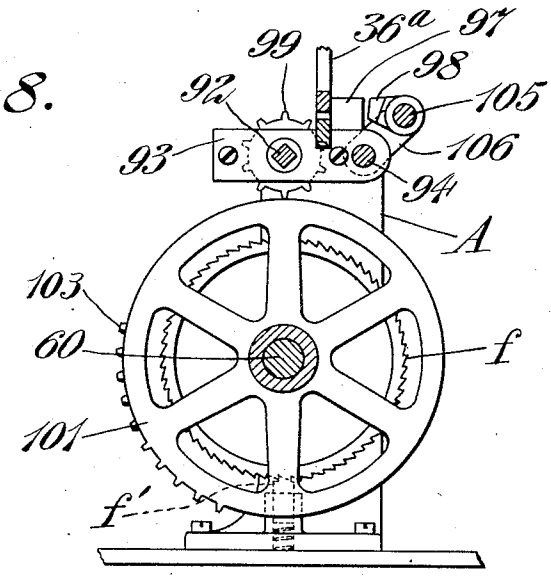
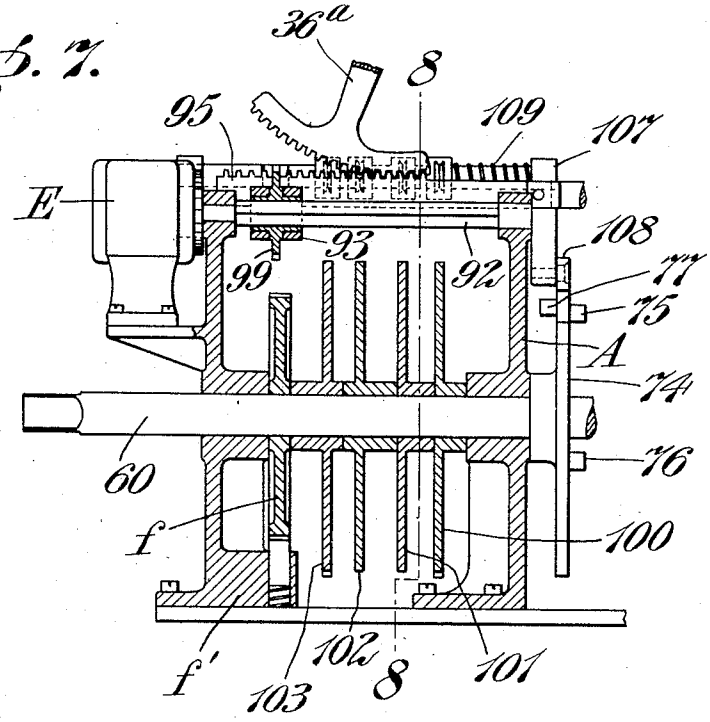



Fig. 7.




WITNESSES

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9 SHEETS—SHEET 7.

Fig. 9.

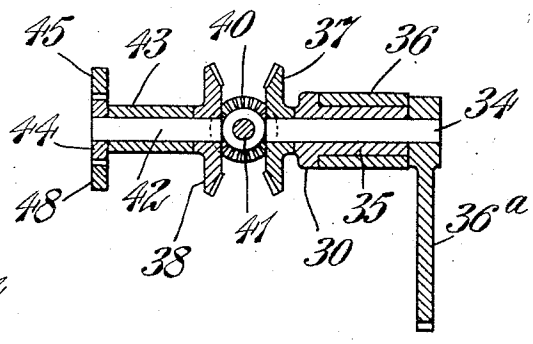



Fig. 10.

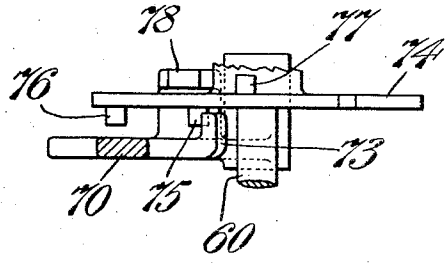



Fig. 11.

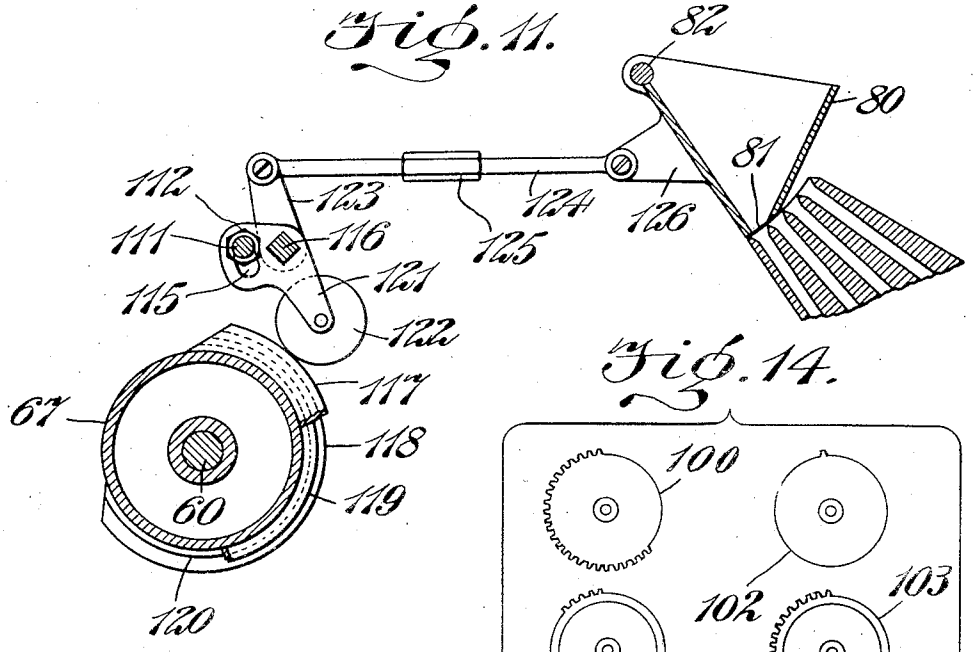



Fig. 14.




WITNESSES

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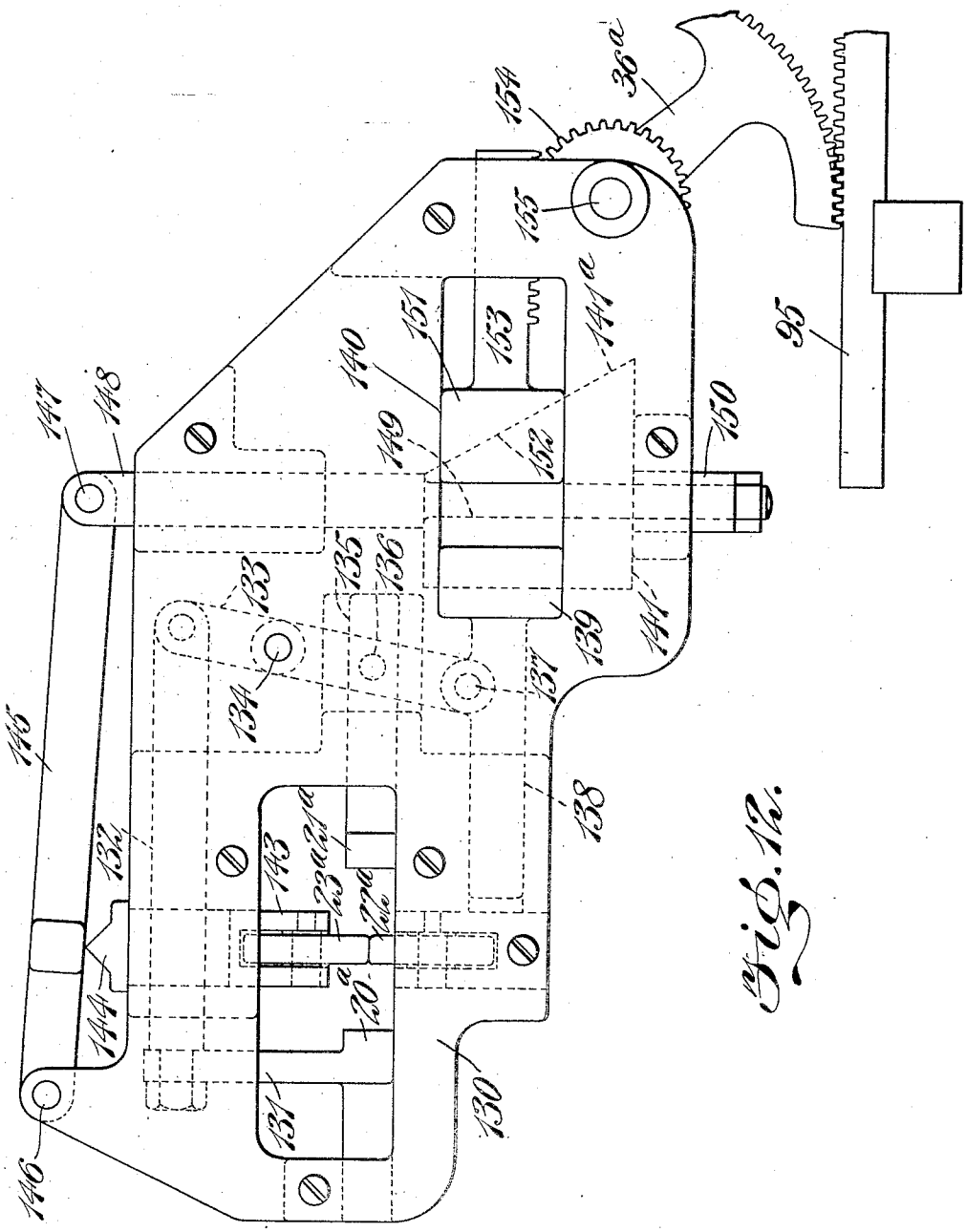



Fig. 12.

WITNESSES

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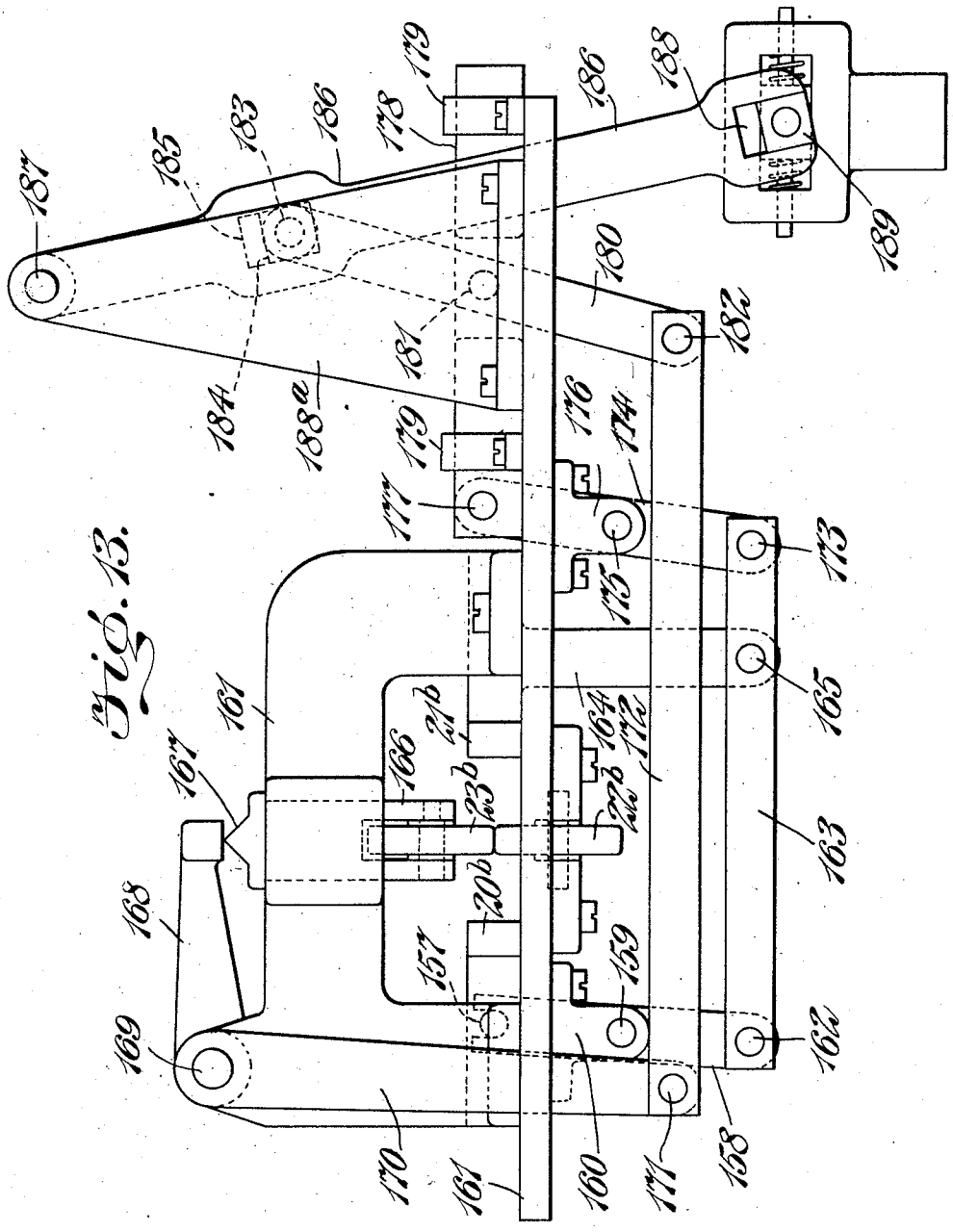



Fig. 13.

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# UNITED STATES PATENT OFFICE.

CHARLES M. GREY, OF EAST ORANGE, NEW JERSEY.

## COIN-HANDLING MACHINE.

1,081,958. Specification of Letters Patent. Patented Dec. 23, 1913.

Application filed October 17, 1910. Serial No. 587,357.

*To all whom it may concern:*

Be it known that I, CHARLES M. GREY, a citizen of the United States, residing in East Orange, county of Essex, and State of New Jersey, have invented a certain new and useful Coin-Handling Machine, of which the following is a specification.

This machine is a coin handling machine, and the objects of the invention, broadly stated, are to assort coins of different denominations, and, also, to calculate and register the total amount of money handled by the machine.

The invention, as a whole, embodies, first, coin controlled mechanism the operation of which is dependent upon one or both, preferably both, dimensions of a coin, *i. e.* on either the thickness or diameter of the coin, preferably on both of them; second, coin feed mechanism coöperating with the coin controlled mechanism; third, coin assorting mechanism; fourth, spurious coin detecting mechanism operating to discharge coins or slugs from the machine when such coins or slugs vary in one or more dimensions from those of standard coins; and, fifth, counting mechanism for calculating the amount of money passing through the machine.

The machine, in performing all its functions, receives coins of all denominations, and if there be spurious coins or slugs accompanying them, said spurious coins and slugs are separated from the genuine without operating the sorting or counting mechanism; the genuine coins are separated or assorted into their respective denominations and the total amount of money passing through the machine is automatically determined and registered.

It will be understood that the coin controlled mechanism is adapted for use in various types of machines such *e. g.* as vending machines, telephone pay stations, change-making machines, etc., and that in a coin handling machine it may be used in connection with assorting machines alone, or counting mechanism alone, though I have described its use in connection with both. Moreover, the coin controlled mechanism, the principle of operation inherent in this being dependent on one or more dimensions, in the present instance of a coin, may be utilized in any type of machine or device, such as a lock, the operation of which might be made dependent upon either the thickness or width of a key, or both.

It will be observed, therefore, that the salient feature of the invention consists in the employment of controlling mechanism in conjunction with one or more other devices or mechanisms, the operation of said controlling mechanism being dependent upon one or more dimensions of a given object adapted to be used in connection therewith, such as a coin, a key, or equivalent operating element.

In the accompanying drawings I have illustrated different practical embodiments of the invention, but the constructions shown therein are to be understood as illustrative, only, and not as defining the limits of the invention.

Figure 1 is a side elevation of a coin handling machine embodying my invention, the parts being shown in position for a coin of one denomination or another to be advanced by the coin feed mechanism to the coin actuated mechanism by which the coin is ejected if it be a spurious one and by which the assorting mechanism and the counting mechanism are both controlled so as to be placed in condition for operation should the coin be of a certain standard as regards two dimensions thereof. Fig. 2 is a front elevation, omitting the receptacle for assorted coins and certain parts of the coin assorting mechanism. Fig. 3 is a top plan view, the receptacle for assorted coins being partly broken away. Fig. 4 is a horizontal section on the line 4—4 of Fig. 1, an operating crank being shown in dotted lines and a number of working parts being shown in plan. Fig. 5 is a vertical section, on an enlarged scale, of one form of coin feed mechanism which may be employed, the plane of the section being indicated by the dotted line 5—5 of Fig. 6. Fig. 6 is a horizontal section on the line 6—6 of Fig. 5. Fig. 7 is a section on the line 7—7 of Fig. 4, the counting mechanism being in elevation. Fig. 8 is a vertical transverse section on the line 8—8 of Fig. 2. Fig. 9 is a vertical section on the line 9—9 of Fig. 3. Fig. 10 is a detail view of the coin and the actuator for one of the slides for the coin feed mechanism. Fig. 11 is a detail section on the line 11—11 of Fig. 2 illustrating the locking mechanism for the selector slide. Fig. 12 is an elevation of another embodiment of

a coin controlled mechanism adapted for setting the coin assorting mechanism and the counting mechanism into position for operation, said coin controlled mechanism embodying wedge devices by which the two dimensions of a coin are utilized for moving the elements into operative position. Fig. 13 is an elevation of another embodiment of the coin controlled mechanism wherein levers are employed for multiplying the coin dimensions and setting the assorting and counting mechanism into positions for operation. Fig. 14 is a view illustrating the several wheels of the counting mechanism, to show the different numbers of teeth on said wheels.

The various working parts of the machine are supported by a main frame, A, of any suitable construction, said frame being shown as having a table *a* for a coin controlled mechanism, B, and a coin feed mechanism, C.

As the coin controlled mechanism is the salient feature of the invention, for the reason that it controls the mechanisms by which the coins are assorted and their values calculated, in the event that a standard coin is fed to the machine, I will first proceed to describe said invention.

20, 21, are coöperating members spaced for coins of certain diameters to pass between them, said members being shown as jaws. Other members, 22, 23, are positioned in coöperative relation to each other and to the jaws 20, 21, so as to be operated by coins of given thicknesses, said members 22, 23, being shown as rollers. It is to be understood, however, that the invention is not limited to these special forms of coin engaging members. As shown, the jaws are positioned horizontally above table *a* and they are movable sidewise or laterally with respect to each other. The other members (rollers, 22, 23) occupy vertical positions intermediate the jaws, and in alinement with each other, the lower roller, 23, being shown in Fig. 5 as mounted for rotation in a yoke, 24, that is supported by a housing, 25, in a fixed position on table *a*, said yoke and roller being adjustable by a screw, 26, supported in the housing. Roller 22 is movable relative to roller 23, being free to rotate and also mounted for slidable movement upon the introduction of a coin. As shown, roller 23 is supported on an axle in the lower part of a vertical spindle, 27, the latter being slidaby mounted in a housing 28, fixed in a vertical position above table *a*. The roller carrying spindle is provided at its upper end with an arm 29, the latter extending outwardly from said spindle for a suitable distance, as shown in Figs. 1, 2 and 3, and to the outer end of this arm is attached a connection whereby arm 29 is operatively connected to a saddle or yoke 30. Said connection intermediate the arm and the saddle is, preferably, an extensible rod comprising threaded members 31, 32, and a turn buckle 33, one of the members, as 31, being pivoted to arm 29, the other member 32 being pivoted to saddle 30, and the adjacent ends of members 31, 32, being provided with right and left hand threads, respectively, whereby turn buckle 33 is adapted to be screwed upon the rod members by turning said buckle in one direction or the other for the purpose of increasing or decreasing the operative length of the rod or connection. The yoke is provided with a sleeve 34, through which passes a shaft 35, said sleeve being mounted in a bearing 36 attached rigidly to table *a* whereby the saddle sleeve, 34, and shaft 35 are both supported on the table. The saddle sleeve and the shaft are positioned in concentric relation, and they are adapted to rock or turn independently of each other. Shaft 35 is provided at one end with a bevel gear 37 and at its other end with a transmitting member $36^a$ in the form of a toothed sector (see Fig. 2) adapted for controlling the operations of a train of devices by which the assorted mechanism and the counting mechanism are actuated. Gear 37 is one member of a differential gear, other members of which are bevel gears 38, and 39, 40. The saddle carries a cross shaft 41, mounted for rotation in the arms of said saddle, and gears 39, 40 are secured rigidly to this cross shaft. Gear 38 is secured rigidly to a shaft 42, positioned in alinement with shaft 35 and mounted in a bearing 43 on table *a*. Said gear 38, on shaft 42 faces the gear 37 on shaft 35, and with the gears 37, 38 mesh the gears 39, 40 on the cross shaft. Shaft 42 extends through its bearing, and on the shaft is a spur gear 44, the latter being adapted for operation by the lateral movements of jaws 20, 21. As shown, jaw 20 is attached rigidly to a two part slide 45, guided in fixed housing 28, said slide being provided with a rack 46, the teeth of which mesh with gear 44. The other jaw 21 is attached rigidly to another two part slide 47, guided for endwise movement in the housing 25 which depends from the table, said slide 47 having a rack 48, the teeth of which mesh with said gear 44. The other jaw 21 is attached rigidly to another two part slide 47, guided for endwise movement in the housing 25 which depends from the table, said slide 47 having a rack 48, the teeth of which mesh with said gear 44. Racks 46, 48 are parallel to each other and they are positioned for engagement with teeth on the upper and lower edges, respectively, of gear 44, said gear being intermediate the racks. The jaws 20, 21, are adapted to be spread apart upon the introduction of a coin, the jaws being movable laterally

and simultaneously, and this movement is communicated to slides 45, 47, whereby the slides are adapted to be operated simultaneously and in opposite directions for transmitting the movement of the jaws to gear 44 and shaft 43.

It is to be noted that jaws 20, 21 are operated by the diameter of the coin, and rollers 22, 23, by the thickness of the coin, the operations of said members 20, 21, 22, 23, taking place simultaneously upon the introduction of any coin within certain denominations. The lateral movement of jaws 20, 21, is communicated by the slides, racks and gear 44 to shaft 43, and through gears 39, 40, to gear 37 so as to turn shaft 35, a certain angular distance for imparting, also, a certain movement to sector 36ª, said jaws being retained in their opened positions by contact with the edges of a coin positioned between them, said coin being temporarily at rest between the jaws. The presence of a coin between rollers 22, 23, operates to lift roller 22, spindle 27, arm 29, and the extensible rod, whereby saddle 30 is moved on the axis afforded by sleeve 34 and shaft 35. Now, the rocking of saddle 30 imparts a certain movement to the cross shaft 41, having gears 39, 40, and this pivotal movement of the saddle and cross shaft causes the gears 39, 40, to ride upon gear 38 on shaft 42 held at rest by jaws 20, 21, and the coin between them, whereby the cross shaft 41 is rotated in its bearings in saddle 30, said rotary motion being communicated through gears 39, 40, to gear 37 on shaft 35. The latter shaft 35 and sector 36ª are thus rotated for an additional distance, a part of said distance being due to the separation of the jaws 20, 21 by the diameter of the coin, and the remainder of the distance arising from the elevation of member 22, due to the thickness of the coin. The radius of gear 44, and the pivotal connection of the extensible rod to saddle 35, are such that the movements of the coöperating jaws 20, 21 and the rollers 22, 23 are multiplied. The differential gear operates, also, to amplify the angular movement of shaft 35 proportionately to the distance the coin engaging members are moved by the contact with the coin; and said differential gear acts, also, to combine the movements of jaws 20, 21, and rollers 22, 23, due to the diameter and thickness, respectively, of the coin, so that the varying extent of the movements due to these two factors are aggregated and communicated by the differential gear to a single element, to wit, sector 36ª.

In Figs. 3 and 5 of the drawings, the jaws for engagement with the edges of a coin are shown as having tapering or wedge like ends facing toward the coin feed mechanism. This taper of the jaws is not essential, although it is desirable, and for the reason that coins of varying diameters are adapted to impinge the inclined faces of said jaws for forcing them apart when the coin is pressed in a forward direction between said jaws.

The coin contacting members 20, 21, 22, 23, are retained normally in positions to receive the coins of smallest diameter upon which the machine is to operate, by suitable retracting means, such as a spring 49, connected by a link 49ª to sector 36ª, see Fig. 2. The sector is acted upon by the spring to influence the coin contacting members through the device heretofore described, whereby jaws 20, 21 are moved toward each other for a distance less than the diameter of the smallest coin, and rollers 22, 23 are positioned to engage at their peripheral edges with each other, see Figs. 5 and 6.

The coin feed mechanism, C, coöperates with the coin controlled mechanism for the purpose of positively forcing coins of different diameters between the jaws 20, 21, and rollers 22, 23. Said coin feed mechanism embodies, as one of its elements, a coin receiving hopper 50, having a funnel shaped mouth 50ª, whereby coins may be deposited or thrown indiscriminately into the hopper so as to be stacked or piled in said hopper 50 without regard to their order of value or denomination. The hopper is supported by suitable means and fixed in position upon table *a*, and it is open at the lower end thereof, said hopper being shown in Fig. 5 as provided with a narrow slot 51 in its front wall. With this slot coöperates a coin detaining member 52, having a beveled under face, 53, said detaining member being slidably mounted on the hopper by rods 54 fitting in guides 55.

Below the hopper operates two separate slides 56, 57, which are separated by an intervening plate 58. The slides are fitted at their edges in guides 59ª secured to table *a*, whereby the slides are limited to reciprocating movement across the bottom of the hopper, and toward or from the coin engaging jaws and rollers. Plate 58 is secured to the guides to occupy a fixed position between the slides for separating them and to form a bottom to an aperture provided in slide 56. Said separating or guard plate 58 is quite thin and it extends nearly across the bottom of the hopper, plate 58 being below the plane of the coin detaining member 52. Slide 56 operates as a valve to the hopper in regulating the feed of coins from it, and it is provided with an aperture 56ª, the diameter of which is a little greater than the diameter of the largest coins to be handled by the machine. The thickness of valve slide 56 is slightly less than the thickness of the thickest coin to be handled by the machine, and when said valve plate is drawn to a backward position, the aperture 56ª registers

with hopper 50 whereby the lowermost coin in the stack or pile within the hopper will drop into aperture 56[a] of slide 56 and rest upon separating or guard plate 58. As shown, valve slide 56 is provided with parallel arms 56[b] which lie in the plane of the body of the slide, said arms projecting forwardly beyond hopper 50 and being positioned to slide in housing 28 and between jaws 20, 21, see Figs. 5 and 6.

The valve slide is positively operated from a main shaft 60, journaled in appropriate bearings provided in frame A, below table *a*, said shaft 60 operating, also, various other mechanisms embodied in the machine. As shown, a rock shaft 59 is mounted in a housing 59[a] which supports hopper 50, and to this shaft are rigidly attached arms 61, 62, said arm 61 being connected pivotally at 61[a] to the rear part of valve slide 56, see Fig. 5. Arm 62 is pivoted at its lower end to a link 63, the latter being pivoted to one arm of a bell crank lever 64 (see Fig. 1), said lever 64 being fulcrumed at 65[a] to a member of frame A. To the lever 64 is connected a spring 65 for operating said lever in one direction and to thus impart movement to valve slide 56 in a rearward direction. The movement of the valve slide in a forward direction, in which direction said slide moves to feed coins from receptacle 50, is effected by a cam 66 acting upon lever 64. As shown in Fig. 4, said cam is a part of a cam cylinder or drum 67 secured to main shaft 60, and upon this cam is adapted to ride a roller shoe 68, the latter being journaled upon a pin on one arm 64[a] of the bell crank 64. The other slide 57 is operated by mechanism driven from the main shaft, for the purpose of forcing coins into the coin-controlled mechanism, said slide acting upon the coins with such a degree of force as to spread the jaws and the rollers of said mechanism. For the purpose of distinguishing slide 57 from the valve slide 56 of the coin feed mechanism, I will hereinafter refer to slide 57 as the coin feed slide. Said coin feed slide is positioned below the guard plate, and, as shown in Fig. 5, the rear portion of slide 57 is somewhat thicker than its forward portion, thereby producing a shoulder 57[a] intermediate the ends of said slide, whereby the shoulder is adapted for engagement with a coin deposited upon the forward thinner portion of said slide, for the purpose of pressing the coin between and beyond the coöperating members of said coin controlled mechanism.

Slide 57 is moved positively in a forward direction and with a period of rest or dwell in said forward movement, by devices actuated from shaft 60 as follows: An actuator 70 is positioned below table *a* and is pivoted at the lower end thereof by a pin 69[a] on a hanger 69. The upper part of this slide actuator is connected by a link 71 to a lug 72 pendent from the slide. At a point intermediate its ends, the slide actuator is provided with a tappet arm 73[a] having a bent end 73, the latter being in the path of two of three studs provided on a rotary cam 74, two of said studs 75, 76 projecting from one face of the rotary cam, and the third stud, 77, extending from the opposite face of the cam. The studs 75, 76 are positioned for engagement successively with the tappet arm for moving the actuator in one direction and with distinct periods of movement, but in the interval of engagement of the studs with the tappet arm, the actuator is at rest, whereby the feed slide is operated by the actuator so as to press the coin between the coin engaging members and to allow the coin to remain at rest between the periods of its introduction to said members and of its discharge from said members. The actuator and the slide are moved in a rearward direction and positively by stud 77 which is positioned on the cam 74 for engagement with a bent end of another tappet arm 78, the latter being provided on the actuator at a point intermediate pivot 69[a] and tappet arm 73[a], the tappet arm 78 extending from the actuator in a position to lie in the path of said stud 77.

In the machine illustrated herein, I have embodied a plurality of mechanisms to be controlled or adjusted by a controlling or master mechanism, preferably the coin-controlled mechanism hereinbefore described, said plurality of mechanisms performing different functions, *i. e.*, counting the values of the coins, and assorting the coins according to their values. The coin sorting mechanism is indicated generally by the reference character D, and the coin counting mechanism by E.

For the purposes of this specification, and to generically designate in the annexed claims the functions of the counting and assorting mechanisms, I will use the term translating mechanism, by which term I mean a mechanism to be rendered operative by a master or controlling mechanism (such as the described coin controlled mechanism) and adapted to subsequently perform useful work, such as counting, sorting, and other kinds of work for which said mechanism may be adapted.

The assorting mechanism D embodies a tiltable member 80, preferably a bucket or receptacle positioned adjacent to the point of coin delivery from the coin controlled mechanism, whereby a coin will be delivered into said tiltable member as it emerges from the coin controlled mechanism. This member or receptacle is provided with a single slot 81 through which coins of various denominations are free to pass, and said member or receptacle is hung for pivotal move-

ment upon a rod 82, the latter being supported in arms 83 projecting from a stationary part of the main frame or from a receptacle 84. Said receptacle is shown as having an inclined top 85 forming a coin chute which is positioned below the delivery slot 81 of said receptacle when the latter is in a normal position, whereby slugs or spurious coins deposited in the receptacle will be discharged through the slot 81 and upon the coin chute 85, the latter acting to throw such coins or slugs out of the machine. Receptacle 84 is provided, also, with a plurality of pockets or chambers 86, 87, 88, 89 and with inclined coin slots $86^a$, $87^a$, $88^a$, $89^a$, the said slots leading to the respective pockets or chambers. The receiving ends of the slots converge to an end portion $84^a$ of the receptacle, said ends of the slots being in position to be traversed by the slotted part 81 of said pivoted receptacle. A spring 90 is connected to the receptacle and a fixed arm 91, for the purpose of lifting the receptacle normally to a position wherein slot 81 will deliver a spurious coin or slug to chute 85, but this receptacle is movable to any one of a series of positions, dependent upon the dimensions of the coin passing through coin controlled mechanism B, for the purpose of bringing slot 81 of said receptacle into register with the receiving end of one of the cam slots $86^a$, $87^a$, $88^a$ or $89^a$, whereby a coin of a proper size and value will be delivered to the proper compartment should the dimensions of the coin be such as to properly actuate the coin controlled mechanism and a selector mechanism, the latter being presently described.

The counting or registering mechanism, E, may be of any suitable construction known to those skilled in the art. As shown, it is of the type employing rotating wheels adapted to register units, tens, hundredths and thousandths, said counting mechanism being actuable by a shaft 92 of the selector mechanism when said shaft is rotated. Said shaft 92 is journaled in frame A below table *a* and adjacent to the path of toothed sector $36^a$, the shaft being positioned above main shaft 60, see Fig. 4. This shaft is square or polygonal in cross section, and upon it is loosely fitted a slide 93, forming one part of the selector mechanism. This slide is supported by polygonal shaft 92 and a rock shaft 94, the latter being supported in frame, A, for free rotation in the slide, said polygonal shaft 92 rotating freely in the slide for the purpose of actuating counting mechanism, E. The slide is movable lengthwise of shafts 92, 94, for which purpose it is made fast with a rack 95, with which meshes the teeth of sector $36^a$ that is operated by the coin controlled mechanism, said rack 95 being guided for sliding movement in a member of frame, A, below the table. The slide is provided with a slot 96 and with lugs 97, the latter having beveled or curved outer faces, said lugs forming jaws adapted to cooperate with any one of a series of locking fingers 98, for the purpose of locking and retaining the slide in either of a series of predetermined positions. Within the slot 96 of said slide is positioned a gear 99 which engages with polygonal shaft 92 so as to slide thereon and to be rotatable therewith at all points of movement of said gear 99 with slide 93. On the main shaft 60 are secured a number of gear wheels 100, 101, 102, 103, having varying numbers of gear teeth. Assuming that the machine is adapted for assorting coins of the value of one cent, five cents, ten cents, and twenty-five cents, gear wheel 100 is provided with 25 teeth so as to be operated when the largest size coin twenty-five cents is assorted and counted; gear wheel 101 has five teeth for operating the register when the next sized coin (five cents) is to be distributed and counted; gear wheel 102 has a single tooth for operating the register when a penny is fed through the machine, and gear 103 has ten teeth to operate the register upon the passage of a ten cent piece. Assuming that a twenty-five-cent coin is of standard size, as determined by the separation of jaws 20, 21 and rollers 22, 23, the aggregate movement of these coin engaging members will be communicated to sector $36^a$ for the purpose of turning said sector far enough to cause the rack 95 and selector slide 93 to be moved along shafts 92, 94 to a point where gear 99 will mesh with the first tooth of gear wheel 100. Should a five-cent-coin be passed through the coin controlled mechanism, the selector slide will be shifted to a position for gear 99 to mesh with the first tooth on gear wheel 101; the introduction of a penny into the coin controlled mechanism, will shift the slide for gear 99 to mesh with the tooth of gear wheel 102, and a ten-cent-piece will result in the slide being moved for gear 99 to mesh with the teeth of gear wheel 103. The slide and the gear wheel are thus moved for variable distances dependent upon the two dimensions of the coins introduced into the coin controlled mechanism; and subsequent to the described adjustment, the particular gear wheel on shaft 60 which meshes with gear 99 acts to rotate said gear for a number of teeth corresponding to the value of the coin; thus the gear wheel 100 turns gear 99 a distance equivalent to 25 teeth, and so on. The gear 99 being fitted to the shaft 92 to rotate therewith, it follows that said gear will turn shaft 92 and thus operate counting mechanism, E, to total the values of the coins passing through the machine.

The locking fingers 98 are secured rigidly to a rod 105, supported at one end in an arm

106 and at the other end in a bell crank 107. The arm is secured rigidly to rock shaft 94, and it is provided with a square aperture to receive a square end 105ª of rod 105, thus permitting the rod to have a limited endwise movement in arm 106 and bell crank 107, the squared end of the rod retaining the fingers in position for engaging the jaw 97 of the selector slide. Bell crank 107 is secured to rock shaft 94, and the otherwise free arm of said bell crank carries a roller 108, the latter being positioned to ride upon the peripheral cam surface of the rotary wheel 74. Said wheel has a part of its periphery cut away to produce the cam surface 108ª for rocking the shaft 94 at a time subsequent to the movement of selector slide 93 and gear 99 into register with one of the series of selector gears 100, 101, 102, 103, whereby the shaft 94 operates arm 106 and bell crank 107 in a direction to move rod 105 and fingers 98 toward the selector slide, so that one of the fingers 98 will engage jaw 97 and thus lock the slide against movement while the gear 99 is actuated by one of the gear wheels for operating the counting mechanism.

A spring 109 is coiled around rod 105 in a position to engage bell crank 107 and one of the locking fingers 98, said spring acting to move the rod 105 in the direction of its length so that a shoulder at the square end 105ª of the rod is in abutting engagement with arm 106. The rod 105 and locking fingers 98 are thus retained in coöperative relation to jaw 97 on the selector slide. When coins of the proper diameter and thickness pass through the coin controlled mechanism, the sector 36ª operates slide 93 for the jaw 97 to be presented exactly in the path of one of the series of fingers 98, so that cam 108 will rock the shaft 94 and insure the proper finger engaging with the jaw, thus locking the slide. In the event of a spurious coin or slug being presented to the coin controlled mechanism, one or both dimensions of which vary from the dimensions of standard coins, the sector 36ª operates to move the selector slide to a position more or less out of alinement with the proper gear wheel, and thus the jaw 97 is not in a position for the corresponding locking finger 98 to enter it. Now when cam 108ª operates the rock shaft, the finger 98 cannot enter the jaw, but will contact with and ride upon one or the other of the beveled faces of said jaw, thus changing the path of the finger and moving the rod 105 in the direction of its length, said rod sliding to a limited distance in arm 106 and bell crank 107. This movement of the rod compresses spring 109, and when the cam 108ª allows shaft 94 to be rocked back to normal position by a spring 110, the finger 98 is withdrawn from contact with the jaw and spring 109 acts upon rod 105 to return said rod and the locking fingers to their operative positions. By this device, gear 99 is not brought into mesh with either of the gears 100, 101, 102 or 103 when a spurious coin or a slug corresponding nearly to one coin or another is presented to the coin controlled mechanism, hence the counting mechanism is not operated. Under these conditions just recited, the tiltable receptacle 80 is not operated or shifted into position to deliver a spurious coin or slug to one of the compartments, but on the contrary, said receptacle remains in a stationary position for the purpose of discharging the spurious coin or slug upon the coin chute 85 by which it is delivered from the machine.

The mechanism for actuating the tiltable coin receptacle is dependent upon the travel of the selector slide 93 which is controllable by the coin mechanism B, said mechanism being as follows: Secured rigidly to one end of rack 95 is a sliding rod 111, the latter being movable with the rack when it is operated by toothed sector 36ª, said rod being positioned above cam drum 67 and fitted in certain members of frame, A, for sliding movement therein, see Fig. 4. The rod is threaded for a part of its length, and upon it are screwed nuts 112, 113, the latter operating to connect a hanger 114 loosely to the rod 111 in such manner that the hanger will slide with rod 111 in the endwise movement thereof with rack 95 but said hanger is free to move a limited distance relative to the rod. The hanger is provided with a curved slot 115, through which rod 111 passes loosely, and said hanger is provided with a square aperture, through which passes a square shaft 116, whereby the hanger is free to slide upon the shaft when rod 111 is moved lengthwise and said hanger is adapted at any point of its travel to rock the shaft for an angular distance dependent upon the action of one of a series of lifting cams 117, 118, 119 and 120, provided upon cam drum 67, see Fig. 4. The hanger is provided with a pendent arm, 121, carrying a roller 122, positioned for engagement with one of said cams. The shaft 116 is provided with an arm 123, to which is pivoted one end of an extensible rod 124, the latter having a turn buckle 125, and the other end of said rod being pivoted to a lug 126 on the pivoted member or receptacle 80, see Figs. 1 and 4.

When there is no coin in the coin controlled mechanism B, the selector mechanism is not operated, and hence the assorting mechanism and the counting mechanism are at rest. Accordingly, rack 95 and rod 111 are in the positions shown in Fig. 4, with the selector slide 93 adjacent to the counting mechanism and hanger 114 at the right of cam drum 67, the roller 122 being free from the cams. Assuming that a standard coin of one denomination or another is supplied to the coin controlled mechanism, jaws 20

21, and rollers 22, 23, are spread apart dependent upon the diameter and thickness of the coin, and the movements of these parts are aggregated by the differential gearing and communicated to the sector 36ª. This sector imparts movement to rack 95 which operates to adjust slide 93 and rod 111, whereby the gear 99 is brought into a position to mesh with one of the selector gears and hanger 114 is shifted with rod 111 by nuts 112, 113 and along shaft 116 until the roller 122 of the hanger is in a position to ride upon the proper cam on the series of cams upon drums 67. Now as the shaft 60 is rotated, rod 105 is operated by cam 108ª to move one finger 98 into engagement with jaw 97 for locking the slide 93 in a position for gear 99 to be rotated by the selector wheel and thus operate counting mechanism, E, to total the value of the coin. At the same time, wheel 122 rides upon the proper cam for turning the hanger and rock shaft 116 a certain angular distance, and this shaft operates arm 123 and link 124 for the purpose of shifting receptacle 80 into a position so that its coin slot will register with one of the series of coin slots by which the coin is delivered into the proper compartment of device 84.

It is to be observed that cams 117, 118, 119 and 120 vary in height for the purpose of imparting different degrees of angular movement to the rock shaft 116, and thus the position of the receptacle 80 relative to the series of cam slots will be changed according to the particular cam with which the hanger is brought into coöperative relation. Further, the movement of the hanger varies with the extent of movement of rod 111 with rack 95, dependent upon the arc of movement of sector 36ª which in turn is controlled by the dimensions of the different coins; but in all cases, the selector slide and the hanger are operated in unison so that, in the event of a standard coin being introduced into the coin controlled mechanism, the register mechanism is operated to total the value of the coin and the assorting receptacle is shifted to distribute the coin to its proper receptacle.

The machine is adapted to be operated by hand or by power; in Fig. 4, there is shown in dotted lines a hand crank for operating the main shaft. As shown, shaft 60 is precluded from turning in a backward direction by a ratchet *f* engaged by a check pawl *f'*, thus preventing the shaft from being turned in a wrong direction and disorganizing the operation of the machine. Shaft 92 which primarily operates the counting mechanism is provided with a ratchet *e*, engaged by a pawl *e'*, to preclude backward turning of the counting mechanism.

While I have shown and described the machine as adapted for assorting and counting the values of coins of the specific denominations of 1, 5, 10 and 25 cents, it is to be understood that the invention is capable of use in connection with coins of any and all values. In fact, for some purposes, I contemplate the employment of a double machine, one part of which will assort and count coins of lower denominations, and the other part will similarly assort and count coins of higher denominations.

The mode of operation of the several mechanisms, briefly stated, is as follows: With the machine in the position of Fig. 1, and the receptacle 50 charged with a number of coins of different denominations, shaft 60 is rotated, thereby operating all the cams and gear wheels on said shaft. As slide 56 moves in a backward direction below hopper 50, aperture 56ª of said slide registers with the hopper for the lowermost coin in the stack or pile to drop into said aperture. Upon the forward movement of the slide 56, the coin is carried in a forward direction with said slide, so that the coin will be moved on the detaining member 52 of the hopper. In the meantime slide 57 is moved to an extreme forward position and is then moved in a backward direction for the purpose of bringing the thin forward part of the slide 57 below the coin contained in aperture 56ª of slide 56, whereby the shoulder 57ª of said slide 57 is drawn to a position beyond the back edge of the coin and the coin will thereupon drop from slide 56 upon the thin part of slide 57 and in front of shoulder 57ª thereof. Slide 56 is now moved in a backward direction to again bring its aperture into register with the hopper for another coin to drop into said aperture. During the rearward movement of slide 56, slide 57 begins to move forwardly, and the shoulder 57ª carries a coin resting upon the forward part of the slide into position between jaws 20, 21 and rollers 22, 23, whereby said members are opened by contact with the edges and faces of the coin. The described members of the coin controlled mechanism having been separated, the differential gear acts in the manner heretofore described to swing sector 36ª in a direction to impart movement to the selecting mechanism whereby receptacle 80 and indicating mechanism C are placed in position for operation. At this time slide 57ª and the coin thereon are at rest owing to the actuator 70 being operated, with the period of rest or dwell between the two periods of its forward movement, thus allowing time to elapse for the operation of the assorting mechanism and the counting mechanism before the coin is ejected from the coin controlled mechanism. As hereinbefore remarked the movement of sector 36ª operates rack 95 and rod 111 so as to position slide 97 and gear 99 in comparative

relation to a proper selector wheel and also to move hanger 114 for roller 122 into position over a proper cam of the series of cams on drum 67. The continued rotation of shaft 60 acts upon cam 108 to lift rod 105 and move one of the locking fingers 98 into the jaw 97 of slide 93 thereby locking the slide into operative position, assuming that a coin of proper dimensions is in position in the coin controlled mechanism. As the shaft continues to rotate, the selector wheel meshing with gear 99 will rotate said gear a number of teeth and hence shaft 92 will be rotated for operating counting mechanism E. At the same time cam drum 67 acts upon wheel 122 to rock the shaft 116 and operate arm 123 and link 124 so that pivoted receptacle 80 is moved to a position for its slide to register with one of the coin slots leading to one of the coin receptacles. The continued rotation of shaft 60 acts in the meanwhile to move valve slide 56 in a forward direction so as to carry another coin outside of the hopper. During said forward movement of slide 56, the actuator 70 acts upon feed slide 57 to move said slide with an additional or second period of forward movement, whereby the coin which previously rested between the movable members is carried forward beyond said members and into position over hopper 80. The valve slide 56 remains in its forward position with a coin in aperture $56^a$, feed slide 57 is moved in a backward direction, thus discharging the coin from said slide and into receptacle 80, the backward movement of slide 57 bringing shoulder $57^a$ in rear of the coin on slide 56 so that the next coin will lodge upon slide 57 in front of the shoulder thereof. Before slide 57 begins its next forward movement, registering mechanism E is operated as described to count the value of the coin and the coin dropped into receptacle 80 is delivered through the slot 81 therein into the proper coin slot and thence to the proper receptacle, after which the selector slide is unlocked and all parts are returned to their normal position ready to begin the next operation. Should it happen that a spurious coin, a slug, or a coin which has become worn to such an extent that its dimensions will not properly operate the coin controlled mechanism, be fed by the coin feed mechanism into positions between members 20, 21, 22, 23, said members will not be separated far enough to move sector $36^a$ the distance required to position selector slide 93 centrally over one of the selecting wheels, or to move hanger 114 centrally of one of the cams on drum 67. Accordingly the registering mechanism of the receptacle 80 will not be moved or affected in the subsequent operation of the machine. It follows that when a defective or spurious coin is ejected from between the jaws and rollers said coin will drop into the receptacle 80 and be delivered to the coin chute 85 which discharges the coin from the machine without operating the registering mechanism. During this cycle of operation the rod 105 and fingers 98 will be moved by cam $108^a$ so that the beveled end of one locking finger will ride upon a beveled or curved face or jaw 97, whereupon the contact of said finger with said jaw will move rod 105 against the tension of spring 109, thus securing a yielding action on rod 105 when the selector slide is not in a position to coöperate with the locking fingers whereby breakage of the several parts is precluded when cam $108^a$ actuates these devices.

Fig. 12 of the drawing illustrates another embodiment of the control mechanism adapted to be operated by two dimensions of an operating member, such as a coin, for the purpose of aggregating or combining the movement of parts due to contact with said dimensions and communicating the aggregate movement of the translating device, such as the counting mechanism and the assorting mechanism individually or collectively. In a suitable housing 130 are positioned movable jaws $20^a$, $21^a$, and rollers $22^a$, $23^a$, said members being positioned or grouped in comparative relation to each other and in the path of an operating member, such as a coin. Jaw $20^a$ is provided with an upstanding shank 131 to which is rigidly connected one end of a link 132, and to the other end of this link there is pivoted a lever 133. The lever is fulcrumed at 134 in the housing in a manner to provide a short arm and a long arm, link 132 being pivoted to the short arm. Member $21^a$ is provided with a shank 135 which is slidably fitted in housing 130, said shank being connected by a pin 136 to long arm of lever 133, said pin 136 being attached to lever 133 at the same distance from its fulcrum 134 as the pivot of link 132 is from the fulcrum 134 of lever 133. The two jaws are thus connected to a common lever, and the long arm of this lever is pivoted at 137 to a stem 138 slidable in the housing, said stem 138 being provided with a head 139 working in a slot 140 of the housing. Said head 139 of the slidable stem is provided with a vertical groove, the side walls of which are parallel to each other and the rear wall of which is perpendicular to the axis of stem 138. In this groove of head 139 is fitted a wedge block 141, the vertical rear edge of which contacts with the corresponding vertical rear wall of the groove and head 139, whereby wedge block 141 will move with slide 138 in a backward and forward direction and said wedge block 141 is free to move in a vertical direction

with respect to the grooved head 139. Roller $22^a$ is supported in a stationary position in housing 130, but the companion roller $23^a$ is mounted in a slide 143 extending upwardly through the housing, said slide having a knife bearing 144. A lever 145 is fulcrumed by a pin 146 to the housing and at a point intermediate its ends, said lever 145 contacts with knife bearing 144. The long arm of lever 145 is connected by a pin 147 to the upper part of a vertical spindle 148, the latter passing downwardly through the housing in a manner to move lengthwise therein. The spindle passes through a vertical slot 149 provided in wedge block 141, the lower end of said spindle having a nut 150 for connecting it operatively with the wedge block whereby the spindle is adapted to lift the wedge block and at the same time said spindle is connected with the wedge block so as to permit it to move in a horizontal direction with the slide 138. 151 designates another wedge block which is slidable in a horizontal direction in slot 140, said wedge block having an inclined groove 152 adapted to receive the inclined edge $141^a$ of wedge block 141, whereby the two wedge blocks 141, 151, coöperate with each other. Wedge block 151 is provided with a rack 153 which meshes with a gear 154 carried by a shaft 155, and to this shaft is secured sector $136^a$ adapted to mesh with selector rack 95. The introduction of an operating member, such as a coin, between the jaws and the rollers acts to separate said jaws and to move lever 133, slide 138 and wedge block 141, and also to lift roller $23^a$ for the purpose of elevating lever 145 and spindle 148. Wedge block 141 is thus moved in horizontal and vertical directions, and the combined movements of the jaws and of the roller are multiplied and aggregated, the aggregated movement being communicated through wedge block 141 to wedge block 151. Rack 153 is thus moved in one direction and operates upon gear 154 to lock shaft 155 and segment $36^a$ whereby the selector rack 95 will operate one or more translating devices.

Fig. 13 illustrates another embodiment of the coin controlling mechanism wherein I employ a system of levers instead of wedge mechanism of Fig. 12 and the differential gear illustrated in connection with Figs. 1 to 4 inclusive. The jaw $20^b$ is connected by a pin 157 to the upper end of a lever 158, the latter being fulcrumed at 159 in a hanger 160 of a frame 161. The lower end of lever 159 is connected by a pin 162 to a link 163. The other jaw $21^b$ is provided with a depending arm 164 the lower end of which is connected by a pin 165 to link 163 whereby the two jaws are operatively connected to a common link 163. Lower roller $22^b$ is mounted in a stationary support or arm 161, but upper roller $23^b$ is supported in a slide 166 movable in frame 161, the upper end of said slide having a knife bearing 167. With this knife bearing contacts an arm 168 secured to a rock shaft 169. A lever arm 170 is secured to said rock shaft 169, and to the lower end of arm 170 is connected another link 172 by a pin 171. Link 163 is connected by a pin 173 to a lever 174, the latter being fulcrumed at 175 in a hanger 176. The upper end of said lever 174 is connected by a pin 177 to a sliding rod 178, the latter being slidable in guides 179 which are fixed to frame 161. A lever 180 is connected by a pin 181 to sliding rod 178, said pin and rod forming a shifting fulcrum for lever 180. The lower end of lever 180 is connected by a pin 182 to one end portion of link 172, but the upper end of said lever 180 is connected by a pin 183 to a shifting block 184 which is movable in a slot 185 provided in a lever 186, whereby lever 180 is pivotally and slidably connected to lever 186. Said lever 186 is fulcrumed, at 187, to an upstanding bracket 188 fixed to frame 161, and to a lower slotted part, 188, of lever 186 is connected a pivoted block 189, the latter being operatively connected with a member of the selecting mechanism, heretofore described, whereby the assorting mechanism or the counting mechanism will be operated. When a coin passes between members $20^b$, $21^b$, they are separated for equal distances, whereby lever 158 and arm 164 operate to move link 163 toward the right in Fig. 13. Link 163 operates lever 174 and as the pivots 173, 177 are equidistant from the fulcrum 175, the sliding rod 178 will move to the left for a distance equal to the movement of either member $20^b$ or $21^b$. The pin 181 of lever 180 is thus shifted by the movement of sliding rod 178, and the fulcrum of lever 180 is on the pin 182, whereby said lever 180 thus operates to communicate to lever 186 a certain amount of movement. The roller $23^b$ being lifted by the thickness of the coin introduced between the jaws, the support 166 and knife edge 167 are raised for the purpose of lifting arm 168 and rocking shaft 169, whereby link 172 is moved to the right. The fulcrum of lever 180 being the pin 181, said lever 180 is moved an additional distance and it acts upon block 184 and pin 183 to impart an additional movement to lever 186. The movements of the jaws and the roller are thus multiplied and aggregated by the lever system, for the operation of lever 186 for a distance required to move the selecting mechanism in proper manner to operate the assorting and counting mechanisms.

Having thus fully described the inven-

tion, what I claim as new and desire to secure by Letters Patent is:

1. In a machine of the class described, a mechanism the movement of parts of which vary according to two dimensions of a coin, and a translating device operated by said mechanism, said translating device being movable to a plurality of operative positions by the action of said mechanism.

2. In a machine of the class described, means mounted for varied movement according to two dimensions of a coin and a member operatively connected with and mounted for differential movement dependent upon the varying movement of such mechanism.

3. In a machine of the class described, coin controlled mechanism dependent for its operation upon a plurality of dimensions of a coin, coin-actuating mechanism for imparting positive movement to coins and operating to position the same in operative relation to the coin controlled mechanism, and a translating device movable to a plurality of operative positions by the action of said coin controlled mechanism.

4. In a machine of the class described, coin controlled mechanism embodying movable parts dependent for their operation upon one of the dimensions of a coin, coin actuating mechanism for imparting movement to successive coins and operating to position the same in operative relation to the coin controlled mechanism, and coin sorting mechanism dependent for its operation upon said coin controlled mechanism.

5. In a machine of the class described, coin controlled mechanism adapted to receive a coin therebetween and dependent for its operation upon one of the dimensions of a coin, coin actuating mechanism for imparting movement to successive coins and operating to position the same in operative relation to the coin controlled mechanism, coin counting mechanism, and coin sorting mechanism, said coin counting mechanism and coin sorting mechanism being dependent for their operation upon said coin controlled mechanism.

6. In a machine of the class described, coin controlled mechanism dependent for its operation upon a plurality of dimensions of a coin, and coin sorting mechanism movable to a plurality of operative positions by the action of said coin controlled mechanism.

7. In a machine of the class described, coin controlled mechanism, means for feeding coins of different values thereto along a common path, and coin sorting mechanism moved differentially by and dependent for its operation on the coin controlled mechanism.

8. In a machine of the class described, coin controlled mechanism adapted to be actuated by coins of different values, said mechanism embodying two coöperating members, the distance between which is automatically varied in accordance with one dimension of coins of varying sizes, and two other coöperating members, the distance between which is automatically varied in accordance with another dimension of said coins.

9. In a machine of the class described, coin controlled mechanism, means for feeding coins thereto, coin sorting mechanism moved differentially by and dependent for its operation on the coin controlled mechanism, and coin counting mechanism actuated by said coin controlled mechanism.

10. In a machine of the class described, coin controlled mechanism embodying coöperative members between which coins of different sizes may be inserted, said mechanism being dependent for its operation upon both the thickness and diameter of said coins, and coin counting mechanism actuated by said coin controlled mechanism.

11. In a machine of the class described, coin feeding mechanism, coin controlled mechanism embodying a plurality of members adapted to receive therebetween a coin and conjointly operated by contact with the edge and a face of a coin, and a member movably mounted for differential movement controlled by the movement of said members.

12. In a machine of the class described, coin controlled mechanism embodying a plurality of members positioned in the path of a coin, said members being operable by two dimensions of each coin presented thereto, means for positively feeding coins of different values between said members for actuating the same, and a member mounted for differential movement and actuated by the variable movement imparted to said members.

13. In a machine of the class described, coin controlled mechanism embodying a plurality of jaws, a plurality of movable members positioned in the path of a coin to receive a coin therebetween and adapted to be moved by the diameter and thickness of such coin, a movable mechanism for feeding a coin between said jaws and members, and a member movably mounted for differential movement controlled by the movement of said jaws and members.

14. In a machine of the class described, coin controlled mechanism embodying a plurality of jaws adapted for engagement with the periphery of a coin, a plurality of members positioned for engagement with the respective faces of a coin, a transmitting member, and means connecting said jaws or members with said transmitting member, combined with means for supplying a coin to the jaws and members, and a power transmitting member mounted for differential

movement by said coin controlled mechanism.

15. In a machine of the class described, coin controlled mechanism embodying a plurality of jaws adapted to be actuated by the edge of a coin, a plurality of members adapted to be actuated by the faces of a coin, a transmitting member, and intermediate connecting mechanism for aggregating the relative movements of the jaws and members and transmitting the aggregated movements to said transmitting member, combined with means for feeding a coin to the jaws and the members, and a translating mechanism controllable by said coin controlled mechanism.

16. In a machine of the class described, coin controlled mechanism embodying a plurality of jaws adapted to be actuated by the edge of a coin, a plurality of members adapted to be actuated by the faces of a coin, a transmitting member, and a differential gear operatively connected with the jaws and the members for aggregating the relative movements thereof and communicating the same to the transmitting member, combined with means for feeding a coin to the jaws and members, and a translating device controllable by the coin controlled mechanism.

17. In a machine of the class described, coin controlled mechanism embodying a group of members dependent for their operation upon the dimensions of a coin, means for feeding a coin to said members, a translating device, and selective mechanism operable by the coin controlled mechanism and adapted to operate the translating device in accordance with the values of different coins supplied to the coin controlled mechanism.

18. In a machine of the class described, coin controlled mechanism embodying a group of members dependent for their operation upon the dimensions of a coin, means for feeding a coin to said members, assorting mechanism, and a selective mechanism operable by said coin controlled mechanism, said selective mechanism controlling said assorting mechanism to distribute coins according to their values or denominations.

19. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimensions of coins of different sizes, counting mechanism, and selective mechanism coöperating with the counting mechanism, said selective mechanism being operated by the coin controlled mechanism.

20. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimensions of coins of different sizes, selective mechanism controllable by the coin controlled mechanism, means for locking and releasing said selective mechanism, and a translating device operated by said selective mechanism.

21. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimensions of coins of different sizes, selective mechanism including a slide, means for locking and releasing said slide, and counting mechanism controllable by the selective mechanism.

22. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimensions of coins of different sizes, selective mechanism including a slide, assorting mechanism, and means controllable by the selective mechanism for distributing coins according to their values.

23. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, selective mechanism having a slide operable by said coin controlled mechanism, a gear and a shaft coöperating with the slide, a plurality of gear wheels positioned for coöperation with said gear, and counting mechanism operable by the selective mechanism.

24. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, a selective slide carrying a gear, means for locking the slide in either of a plurality of positions, a plurality of gear wheels adapted for cooperation with the gear, a shaft, and counting mechanism operable by said shaft.

25. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, a counting mechanism, selective mechanism intermediate the coin controlled mechanism and the counting mechanism, and automatic means for locking and releasing said selective mechanism.

26. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, a counting mechanism, selective mechanism intermediate the coin controlled mechanism and the counting mechanism, and automatic means for locking and releasing said selective mechanism, said locking and releasing mechanism being yieldable relative to a member of said selective mechanism.

27. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, a counting mechanism, selective mechanism intermediate the coin controlled mechanism and the counting mechanism, said selective mechanism including a slide provided with

a jaw, a member movable relative to the slide, locking fingers carried by the movable member, and automatic means for moving the member and the locking fingers into cooperative relation to the jaw of said slide.

28. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, a counting mechanism, selective mechanism intermediate the coin controlled mechanism and the counting mechanism, said selective mechanism including a slide provided with a jaw, a member movable relative to the slide, locking fingers carried by the movable member, means for operating the member and the fingers, and yielding means for permitting an abnormal movement of the member and fingers relative to said jaw.

29. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, an assorting mechanism and selective mechanism intermediate the coin controlled mechanism and the assorting mechanism.

30. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, an assorting mechanism including a plurality of receptacles and a member movable relative to said receptacles, and selective mechanism controlled by the coin controlled mechanism and operating to shift the movable member relative to said receptacles.

31. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, an assorting mechanism, converging chutes leading to different receptacles and a member movable relative to said coin chutes, and selective mechanism coöperating with the coin-controlled mechanism and said movable member.

32. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, an assorting mechanism, a slidable selective member, a coin mechanism coöperating with said selective member, and means intermediate the coin mechanism and the assorting mechanism for operating the latter.

33. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, assorting mechanism, a selective member controllable by the coin controlled mechanism, a plurality of cams, a hanger operable by the selective member and adapted to be positioned in coöperative relation to either of said cams, and operative connections intermediate the hanger and the assorting mechanism.

34. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, a translating device coöperating therewith, and coin feed mechanism including a hopper, a valve slide, a feed slide, and separate means for operating said slides.

35. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, a translating device coöperating therewith, and a coin feed mechanism including a hopper, a valve slide, a shouldered feed slide, means for operating the valve slide, and means for operating the feed slide with two periods of forward movement.

36. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, a translating device coöperating therewith, a coin feeding hopper, a feed slide, and means for reciprocating the feed slide, the forward movement of said slide operating to positively introduce a coin between the members of the coin controlled mechanism and said forward movement of the feed slide being separated into two periods with an interval of rest or dwell.

37. In a machine of the class described, coin controlled mechanism including a plurality of members dependent for their operation upon the dimension of a coin, a translating device controllable by said coin controlled mechanism, a feed hopper, means for regulating the discharge of coins from said hopper, a feed slide, an actuator connected with said feed slide, and a rotary member having means for imparting movement to said actuator whereby the feed slide is moved in a forward direction with an interval of rest or dwell.

38. In a machine of the class described, coin controlled mechanism embodying a plurality of members dependent for their operation upon the dimension of a coin, an assorting mechanism including a plurality of receptacles and a member movable relative to said receptacles, and selective mechanism controlled by the coin controlled mechanism and operating to shift the movable member relative to said receptacles, and means for locking a member of the selective mechanism in a predetermined position.

39. In a machine of the class described, coin actuating mechanism for moving coins of different values in a common path, coin controlled mechanism dependent for its operation on two dimensions of a coin, and translating mechanism mounted for differ-

ential movement by said coin controlled mechanism.

40. In a machine of the class described, a translating device, and coin controlling mechanism operable by coins of varying sizes for moving said translating device to a plurality of operative positions, said coin controlled mechanism being dependent for its operation upon two dimensions of the particular coin actuating the coin controlled mechanism.

41. In a machine of the class described, a coin receptacle for receiving coins of different values, two members, one of which is movable relative to the other, the movable member being adapted to be actuated by the edge of a coin, two other members, one of which is movable relative to the other, the movable member adapted to be actuated by the face of a movable coin, and coin feeding mechanism adapted to receive coins from said receptacle and positively to advance them into engagement with the said movable members.

42. In a machine of the class described, two coin edge engaging members, one of which is movable relative to the other, said movable member being adapted to be operated by the edge of a coin, two coin face engaging members, one of which is movable relative to the other, said movable member being adapted to be operated by the face of a coin, and mechanism operated by the conjoint movements of the said movable members.

43. In a machine of the class described, two coin edge engaging members, one of which is movable relative to the other, said movable member being adapted to be operated by the edge of a coin, two coin face engaging members, one of which is movable relative to the other, said movable member being adapted to be operated by the face of a coin, and mechanism operated by the conjoint movement of said movable members.

44. In a machine of the class described, coin controlled mechanism dependent for its operation upon one of the dimensions of a coin, coin feeding mechanism adapted to receive coins of different values and to position them successively into operative relation to the coin controlled mechanism, and sorting mechanism embodying a distributing member movable to a plurality of operative positions by the action of the coin controlled mechanism, for directing coins of different values into separate paths.

45. In a machine of the class described, sorting mechanism embodying a movable distributing member, and mechanism dependent for its operation upon a dimension of objects to be inserted therein, said mechanism operating to impart movement to said distributing member of the sorting mechanism, whereby said distributing member is adapted to be shifted to a plurality of operative positions for directing objects into different paths.

46. In a machine of the class described, sorting mechanism, and positively operated means for moving objects along a common path to the sorting mechanism, said sorting mechanism embodying a distributing member movable to a plurality of positions for directing the objects into different paths.

47. In a machine of the class described, sorting mechanism dependent for its operation upon a dimension of objects to be supplied thereto, and positively operated means for moving the objects along a common path and delivering them to said sorting mechanism.

48. In a machine of the class described, coin controlled mechanism embodying a movable coin-edge engaging member, a movable coin-face engaging member, and means for aggregating the movements of said coin-edge engaging member and the coin-face engaging member, combined with a translating device operated by the movement of said aggregating means.

49. In a machine of the class described, a controlling mechanism embodying a plurality of relatively movable coöperating members adapted to receive an operating device between them and dependent for such relative movement upon one dimension of an operating device, other relatively movable coöperating members adapted to receive an operating device between them and dependent for such relative movement upon another dimension of the operating device, and actuating means operated by the conjoint movement of the first and second named coöperating members, combined with translating mechanism operated by said actuating means.

50. In a machine of the class described, a controlling mechanism embodying a plurality of coöperating members having a relative movement depending upon one dimension of an operating device, other coöperating members dependent for relative movement upon another dimension of the operating device, and means for aggregating the movements of the first and second named coöperating members, combined with translating mechanism operated by a variable movement of said aggregating means.

51. In a machine of the class described, coin controlled mechanism embodying members movable to different relative positions by two dimensions of each coin presented thereto, means for feeding coins of different sizes to said members of the coin-controlled mechanism, and a member mounted for differential movement in accordance with the varying relative positions of said members.

52. In a machine of the class described, coin controlled mechanism embodying mem-

bers movable to different relative positions by two dimensions of each coin presented thereto, means for feeding coins of different sizes to said members of the coin-controlled mechanism, and coin handling mechanism actuated by said coin controlled mechanism, said coin handling mechanism having differential movement dependent upon the different relative positions of the members of the coin controlled mechanism.

53. In a machine of the class described, coin controlled mechanism embodying members movable to a predetermined relative position dependent upon both diameter and thickness of a coin of given size, said members of the coin controlled mechanism being, also, similarly movable to variable relative positions by coins of different sizes, and coin handling mechanism actuated by the coin controlled mechanism, said coin handling mechanism having differential movement dependent upon the varying relative positions of the members of the coin controlled mechanism.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES M. GREY.

Witnesses:
M. E. FREEMAN,
J. F. MOTHERSHEAD.