No. 734,705. PATENTED JULY 28, 1903.

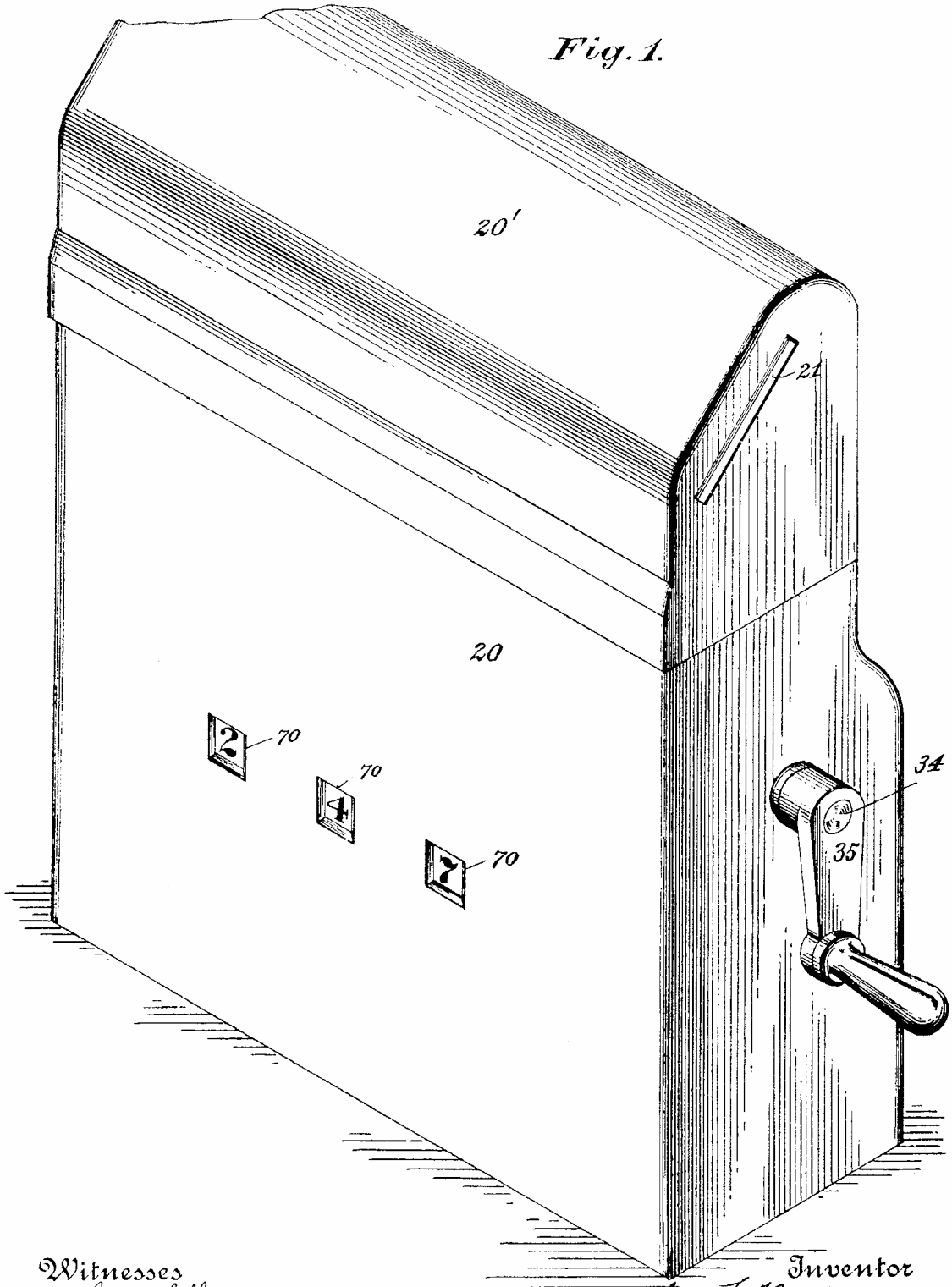
J. F. HEALY.

COIN REGISTERING BANK.

APPLICATION FILED FEB. 27, 1901.

NO MODEL. 5 SHEETS—SHEET 1.

Fig. 1.



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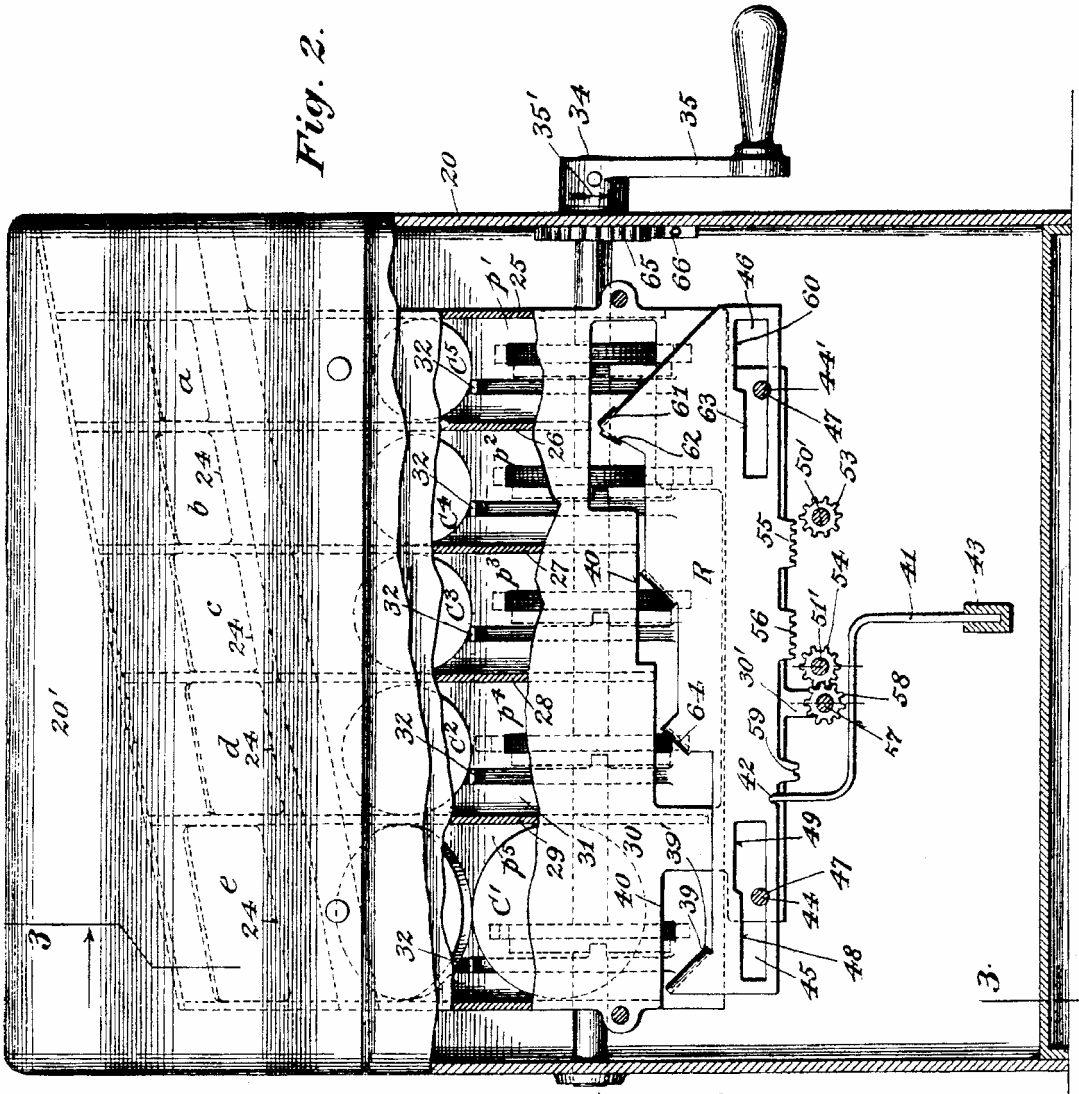
NO MODEL. 5 SHEETS—SHEET 2.

Fig. 2.



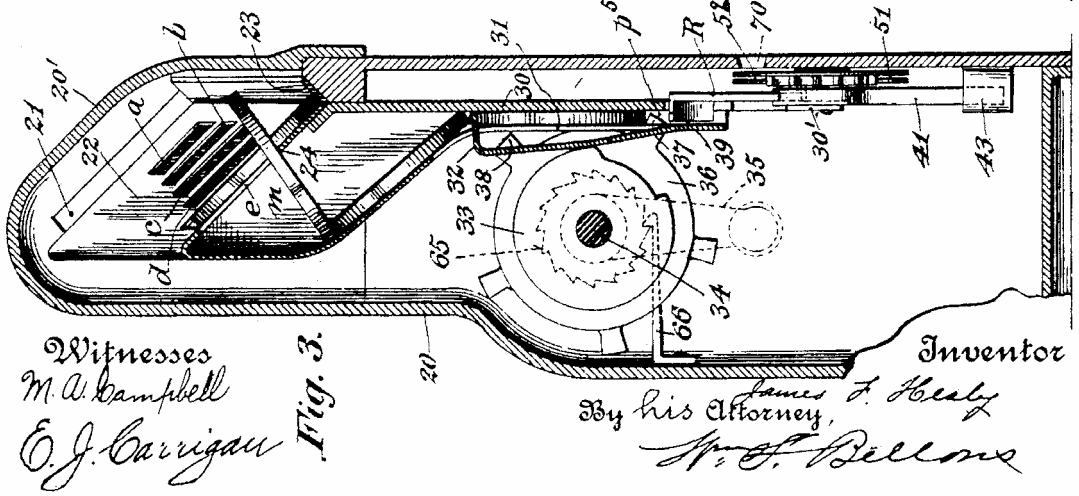


Fig. 3.

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NO MODEL. 5 SHEETS—SHEET 3.

Fig. 4.

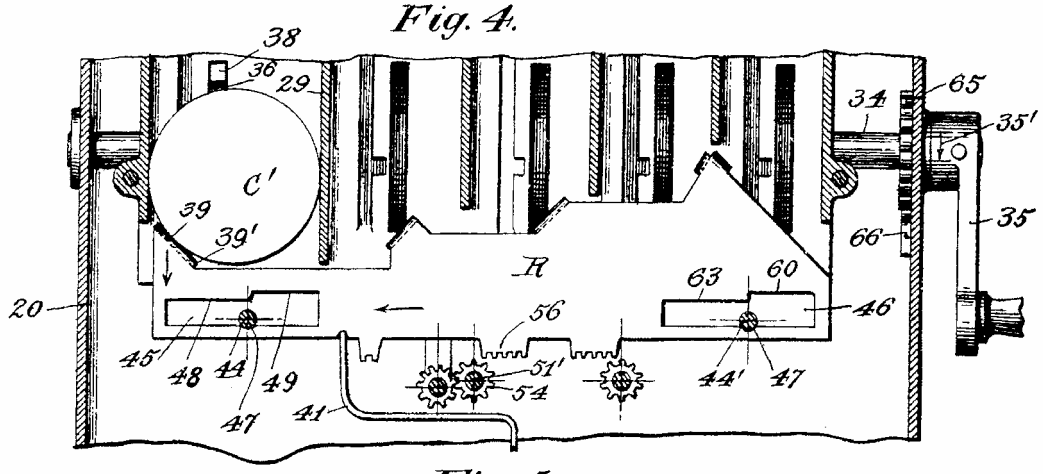


Fig. 5.

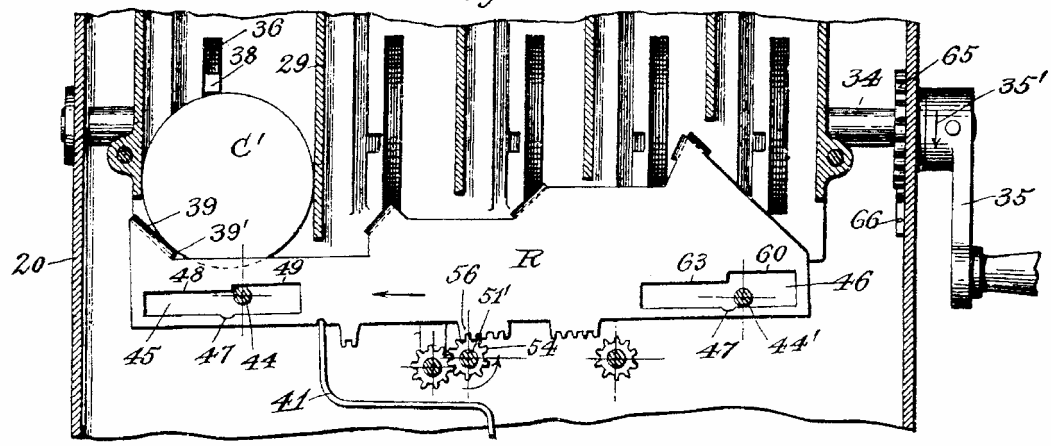
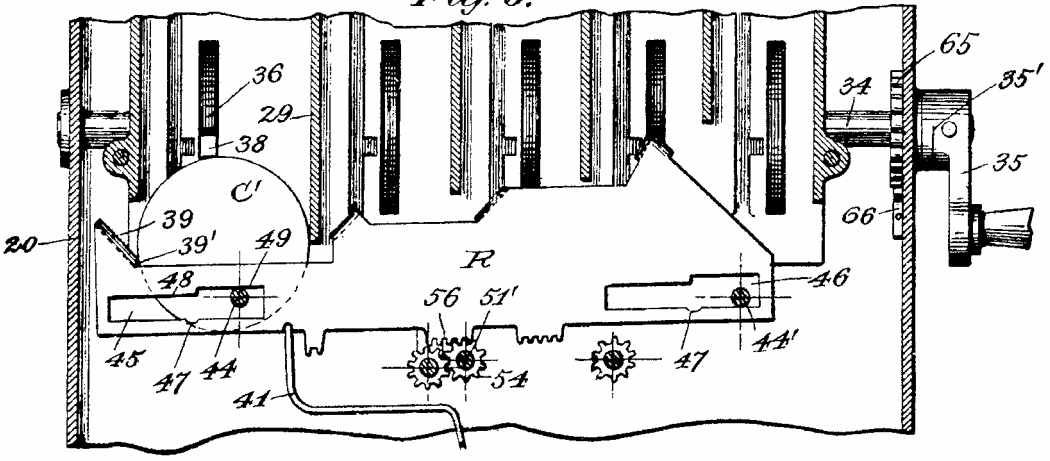


Fig. 6.



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NO MODEL. 5 SHEETS—SHEET 4

Fig. 7.

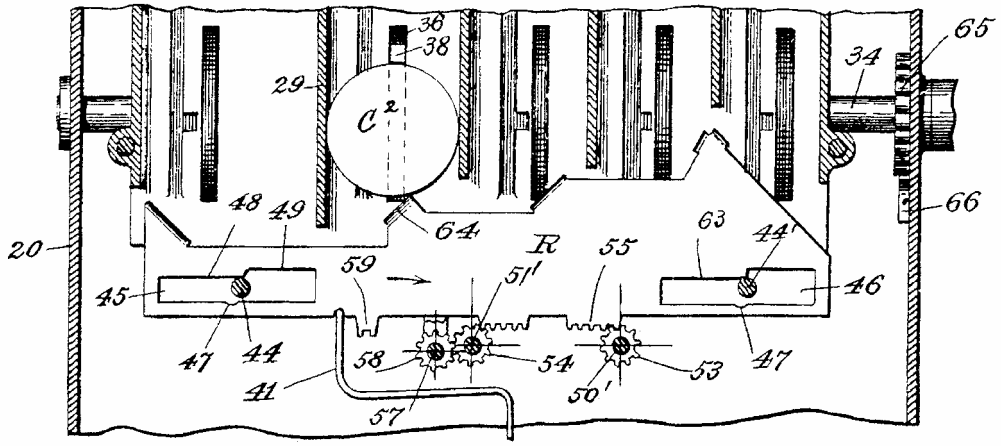


Fig. 8.

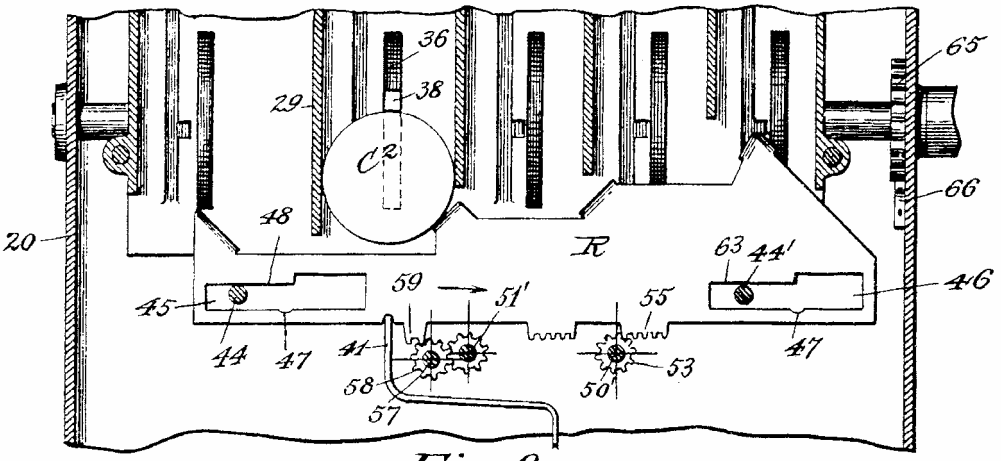
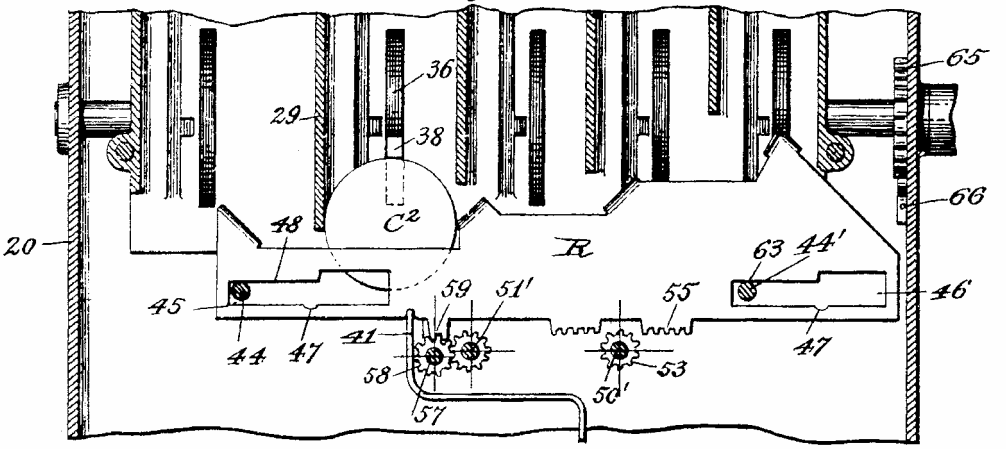


Fig. 9.



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No. 734,705. PATENTED JULY 28, 1903

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COIN REGISTERING BANK.

APPLICATION FILED FEB. 27, 1901.

NO MODEL. 5 SHEETS—SHEET 5.

Fig. 10.

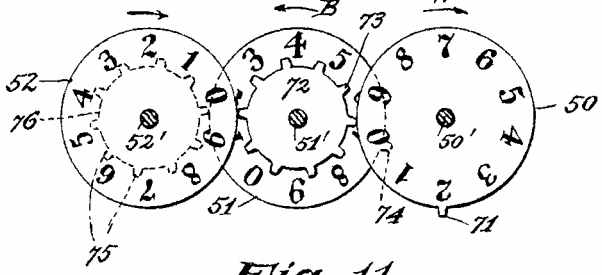


Fig. 11.

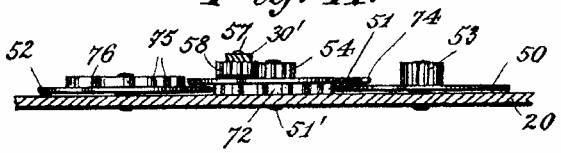


Fig. 12.

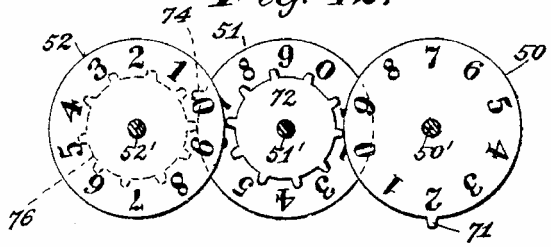


Fig. 13.

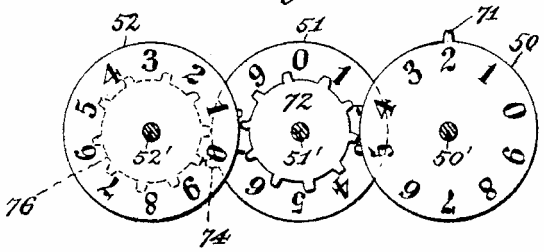
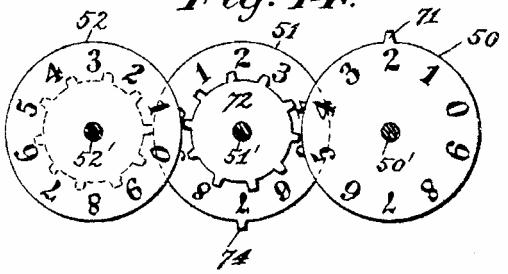


Fig. 14.



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No. 734,705. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

JAMES F. HEALY, OF FLORENCE, MASSACHUSETTS.

COIN-REGISTERING BANK.

SPECIFICATION forming part of Letters Patent No. 734,705, dated July 28, 1903.

Application filed February 27, 1901. Serial No. 49,086. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HEALY, a citizen of the United States of America, and a resident of Florence, in the county of Hampshire and State of Massachusetts, have invented certain new and useful Improvements in Coin-Registering Banks, of which the following is a full, clear, and exact description.

This invention relates to a coin-register adapted for the reception of coins of various denominations; and it has for its primary object the provision of an apparatus of this character into which the coins may be placed promiscuously and in which they are sorted according to the various sizes, thereupon to be brought into contact with a registering mechanism, whereby the several values are counted upon a suitable mechanism provided therefor.

My invention has, furthermore, for its object the provision of a plurality of magazines in connection with a coin chute or conduit, whereby the coins of the various denominations may be received and sorted preparatory to their entrance into their respective pockets, whereby they are conducted to the registering mechanism.

My invention furthermore includes, in connection with each coin-receiving pocket, a device whereby a coin is supported during its descent in said pocket, and also a device whereby said coin may after its support has been withdrawn therefrom be forced into contact with a mechanism whereby its face value will be registered.

My invention furthermore has for its object the provision of means for preventing more than one coin to enter any one of the pockets—that is to say, only one coin may be in position to be acted upon for being brought into contact with the registering mechanism at a time.

A further object of my invention resides in the combination with a counting mechanism of a device which is operable by a coin being forced into contact therewith, and it comprises, substantially, a rack movable into engagement with several of the register dials or disks and also shiftable to turn said disks in proper direction individually, while, on the other hand, said disks are coöperatively connected, so that each disk may be rotated in proper direction and for the proper amount by the preceding disk.

In the drawings accompanying this specification, and in which similar characters denote similar parts, Figure 1 is a perspective view of coin-receiver made in accordance with my invention. Fig. 2 is a front view thereof partly broken away to disclose the interior. Fig. 3 is a vertical section taken on line 3 3 of Fig. 2. Fig. 4 is a fractional front view showing one of the coins after it has been permitted to slide downward in its pocket and until it has come to a state of rest upon the device for operating the mechanism whereby its face value is to be registered. Figs. 5 and 6 illustrate the register-operating mechanism in the successive positions assumed during the period of registering the coin value, Fig. 5 illustrating the rack depressed to the limit of its movement, and Fig. 6 showing the same shifted longitudinally. Figs. 7 to 9, inclusive, show the method of operation for registering a twenty-five-cent piece, Fig. 7 illustrating the rack depressed, Fig. 8 showing it partly shifted to register five cents, and Fig. 9 showing the rack shifted to the limit of its movement to register two dimes additionally. Figs. 10 to 14, inclusive, are different views of the register-dials, Fig. 10 being a front view thereof. Fig. 11 represents a top view of the mechanism shown in Fig. 10; and the remaining views, Figs. 12, 13, and 14, illustrate the position which the dials will assume when different coins are registered, as will hereinafter appear.

In the drawings, 20 designates a suitable casing, preferably made in two sections, the upper section 20′ of which contains a chute whereby coins of various denominations may be guided into their proper places, while the lower section is adapted for the reception of a suitable counting or registering mechanism, whereby the face value of the several coins as there deposited are consecutively registered, so that the contents of the receptacle may be read at a glance.

In the preferred form thereof shown the casing 20′ is provided with an opening or slot 21, which constitutes the receiving end of a coin conduit or chute, preferably made of sheet metal and shown in Fig. 3 and comprising a pair of adjacent coin-supporting sur-

faces 22 and 23, the former of which, 22, has a plurality of perforations or apertures, (designated herein by *a*, *b*, *c*, *d*, and *e*.) These apertures are of such size as to permit the passage of coins corresponding to the sizes of a dime, a cent, a five-cent piece, a twenty-five-cent piece, and a half-dollar piece in the order named. Near the bottom of the angular chute each of said apertures is provided with a ledge 24, whereby the bottom of a coin during its passage down said chute may be retained in place and which serve as edges around and over which the several coins may drop sidewise to be received in suitable magazines *m*, which at their lower ends communicate with pockets p', p^2, p^3, p^4, and p^5, respectively. The pockets and magazines are separated from each other by a series of partitions 25, 26, 27, 28, and 29, so that the different denominations or sizes of coins may be properly retained within their respective pockets. These pockets are formed, substantially, by a plate 30, to which the partitions above referred to may be secured or with which they may be made integral, while the rear wall of said pockets is preferably formed by a plate of sheet metal 31, which, as can be seen in Fig. 3, is bent over at its upper end to form the coin-chute above mentioned, and this chute is properly distanced from the front plate 30 by being bent around and resting against the rear edges of the partitions between the pockets above referred to. Disposed below the lower open ends of the pockets is a mechanism whereby a coin after it has passed from any one of the pockets may be received and whereby subsequently a suitable counting mechanism may be actuated to register the value of such coin or coins in consecutive order, this mechanism being herein shown as a rack R, movable vertically and shiftable longitudinally, as will hereinafter appear. Means are provided whereby the passage of more than one coin into position to engage the rack R may be prevented, so that the said rack can be operated by only one coin at a time, and interference with its movement is therefore avoided. These means consist, in the present instance, of a series of detents 32, preferably formed by punched-out portions of the rear pocket-wall 31 and bent at their upper ends to project into the path of the descending coins, as is clearly shown in Fig. 3. The tendency of these detents is to be withdrawn from the pocket, and therefore means are provided whereby said detents are positioned and retained in said pockets, these means consisting, substantially, of a series of cams 33, mounted upon a shaft 34, which is journaled in the casing 20, and one end of which carries a crank-arm 35, whereby said shaft may be rotated in the direction of arrow 35'. (See Fig. 2.) Also mounted on said shaft are a series of cam-disks 36, each having a pair of fingers 37 and 38, the former of which serves as a means for supporting the coin during its descent in its pocket, thereby restraining the succeeding coin in its downward movement, so that at the proper time the particular detent 32 may be projected within its path to arrest its movement. In the present instance the detents 32 are positioned so as to enter the several pockets at one side of the center line, so that as a pair of coins are permitted to move downward in the pocket said detent may enter between said coins, as is clearly shown in Fig. 2, and thus stop the upper coin from further descent, while the lower coin may continue downward until its supporting-finger is withdrawn therefrom, and the coin will then be allowed to drop into contact with the rack R for operating the registering apparatus.

The apparatus shown in the drawings may of course be extended to suit any number or varieties of coins, and it should be noted here that the spirit of my invention will not be departed from by such increase.

The particular operation of the mechanism whereby the register is actuated is substantially the same for all the different coins, and hence I will at first describe the operation of registering a half-dollar piece, the position of which is shown in the extreme left of Fig. 2. Here the coin is shown supported on the supporting-finger 37 of the cam-disk 36, which upon a slight rotation—viz., until said finger has passed out of the pocket p^5—will be permitted to drop into contact with the rack R, which in this instance is provided with a lateral extension 39, projecting into said pocket through a slot or opening 40, provided therefor in the front plate 30. The rack R is mounted for vertical movement and is preferably forced upward by a spring 41, the upper end of which enters a notch 42 in said rack, while its lower end is stepped in a lug 43, preferably formed on the front plate of the casing 20, and the upward movement of said rack is limited by pins 44 and 44', projecting from the front plate 30 and at the same time serving as a means for securely holding said plate 30 and the front plate of the casing 20 together. The pins 44 pass through slots 45 and 46, provided therefor in the rack R, and depressions 47 are formed in said rack to be engaged by said pins 44 for retaining said rack in proper position. After the coin has come to rest upon the lateral extension 39 a further rotation of the cam-disk 36 will cause the finger 38 to enter the pocket p^5 and finally come into contact with the upper edge or periphery of the coin, so that said coin may be forced downward, and with it the left end of the rack R, until the bearing-face 48 will strike the pin 44. The rack has in this manner been swung around the pin 44' as an axis, and as the shaft 34 is now still further rotated the coin will be wedged between the extension 39 of the rack and the partition 29, and will therefore cause the rack R to move bodily to the left for a small extent, when said rack will again be depressed until it comes in contact with the bearing-face 49, at which time the rack will be in position to operate upon the registering mechanism in the following manner: The registering or counting mechanism herein shown comprises a series of dials or disks 50, 51, and 52, upon which the units, tens, and hundreds are counted in the order named. The disks are mounted for rotation on studs 50', 51', and 52', respectively, held in the front plate of the casing 20, and each dial has in the present instance a series of numerals ranging from "0" to "9," making a total of ten figures, which are adapted to pass in consecutive order an opening 70, provided in the front plate of the casing 20, and through which the condition of the register, and therefore the amount of coin contained in the apparatus, may be read at a glance. The dials 50, 51, and 52 are organized in such a manner that after the dial 50 has made one complete rotation the succeeding dial 51 will make one-tenth of a rotation, and it should be stated here that the particular means whereby this progressive movement of the dial 51 as caused by the dial 50 is immaterial as far as the spirit of my invention is concerned. The means shown in the present instance for accomplishing this result consist of a tooth 71, provided at the periphery of the dial 50 and in proper position to engage successively, and after each rotation of the dial 50 a series of teeth 73, formed on a disk 72, which is mounted for rotation with the dial 51, the location of the disk 72 relative to the dial 51 being such that when a numeral on said dial is opposite the aperture 70 in the front casing the tooth 71 during its revolution around the stud 50' will engage one of said teeth 73 and rotate said disk until the next numeral on the dial 51 has been brought opposite the aperture 70, at which time the tooth 71 will have been disengaged from the tooth 73, which had been acted upon thereby, while at the same time a succeeding tooth 73 will have been brought into proper position to be engaged during the next rotation of the dial 50 in the direction of arrow A. (See Fig. 10.) The organization thus far described and relating to the dials 50 and 51 is duplicated between the dials 51 and 52, the dial 51 having a tooth 74, which during its revolution around the stud 51' in the direction of arrow B will be caused to successively engage a series of teeth 75, formed on the disk 76, which is mounted for rotation with the dial 52 on the stud 52' in the direction of arrow *c*, Fig. 10.

From the foregoing description it will be seen that dial 51 may be rotated in the direction of arrow B without having any effect upon the preceding dial 50, but that such rotation will be effective upon the dial 52, which at the proper time will be turned one division. The dials 50 and 51 carry pinions 53 54, respectively, adapted to be engaged by teeth 55 and 56, provided therefor on the under side of the rack R. Mounted upon a stud 57, which is supported in an ear 30' of the front plate 30 and the center of which is slightly below the center of the stud 51', is another pinion 58, each of the pinions so far enumerated having ten teeth, so that in the present instance the dial 50 will make one complete rotation to register ten units, while the dial 51 will make one complete rotation for a similar number of tens. Likewise it will be understood that inasmuch as the pinions 54 and 58 are similar a certain rotation of one will result in a similar rotation on the part of the other. The rack R is also provided at its under side with a pair of teeth 59, the purposes of which will be set forth hereinafter. As has been previously stated, during the operation of registering the half-dollar coin the rack has been described as being depressed sufficiently, so that the face 49 was in contact with the pin 44, and at this time the rack-teeth 56 are in position to engage the pinion 54, so that as the rack R is shifted bodily toward the left the pinion 54 will be turned until the shifting movement of the rack is discontinued or until the teeth 56 thereof have passed beyond their working zone relatively to said pinion 54. The shifting movement of the rack toward the left is of course controlled by the diameter of the coin C', which must pass the edge 39' of the extension 39, when the rack will have been shifted sufficiently to turn the pinion 54 for a distance equal to five teeth thereof, and consequently the tens-dial will have turned one-half and will have therefore registered five dimes. (See Fig. 12.) As soon as the coin C' has passed the point 39' the spring 41 will immediately become effective in raising the rack to the limit of its upward movement, and, furthermore, will shift said rack R back to its original position, as shown in Fig. 2. All of the several pockets p', p^2, p^3, p^4, and p^5 are entered by similarly-formed cams or disks 36, the distance between their fingers being substantially equal to or less than one-fifth of the length of the disk circumference, while each disk 36 is provided with only one pair of adjacent fingers 37 and 38, as above stated. The several disks being therefore similar in shape and action are to be disposed on the shaft 34 so that as one forcing-finger 38 enters one pocket the supporting-finger 37 of one adjacent disk 36 enters its corresponding pocket at the same time, so that therefore it will be seen that when the coin contained in one pocket is forced downward and past the rack R the coin in the adjacent pocket will be just permitted to enter the same, ready to be operated upon during the succeeding fifth of the rotation on the part of the shaft 34. These same statements as just made are pertinent for all of the succeeding pockets and the disks 36 entering the same, the principal feature being a successive operation of the several disks upon the coins in the succeeding pockets.

While the operation of the rack as to its

vertical movement is substantially the same in all cases, the shifting movement thereof is, however, differential and varied according to the circumstances required by the various coins, some of which will tend to move the rack R to the left, while others will move the same toward the right.

Referring directly to Fig. 2, it will be seen that, starting from the left end of Fig. 2, the coin C′ will shift the rack R toward the left, while the coin C^2 will move the rack toward the right, as will also be accomplished by the coin C^3. The coin C^4 again will move the rack toward the right, while the coin C^5 will shift the rack toward the left.

From the description given of the operation of registering a fifty-cent piece it will therefore be evident that when a dime is to be registered, this coin being designated by C^5, the rack R will be depressed at its right end until the bearing-face 60 of the slot 46, above referred to, will come in contact with the pin 44′, whereby the downward movement of said rack is limited, at which time the rack-teeth 56 are in alinement with the teeth of the pinion 54, so that when the rack R is shifted toward the left by the passage of the coin C^5 past its extension 61 the pinion 54 will be turned for an amount equal to one tooth, thereby turning the tens-dial one notch. The adjacent coin C^4 corresponds to the size of a cent-piece, which during its downward travel will be forced into contact with the extension 62, thereby again depressing the rack R at its right end until the bearing-face 63 will strike the pin 44′ and the rack-teeth 55 are in positions to act upon the pinion 53, which is secured to the units-dial 50. The rack R will be shifted by the coin C^4 toward the right for an amount equal to one tooth of the pinion 53, therefore indicating or registering one cent, while the next adjacent coin C^3 will shift the rack to an amount equal to five teeth of the pinion 53, and therefore register five cents additionally.

While the registrations so far described will each take place only on a single dial, the registration of a twenty-five-cent piece is different, inasmuch as by the descent of the coin C^2 the rack R is tilted or depressed until the rack-teeth 55 are in alinement with the teeth of the pinion 53, while at the same time the rack-teeth 59 are brought into alinement with the teeth of the intermediate 58. In this case the operation takes place in the following manner: As the coin C^2 is forced past the extension 64 the rack R will be shifted toward the right, thereby turning the pinion 53 to an amount equal to five teeth, and therefore registering five cents, as may be seen by comparison of Figs. 12 and 13. On continuation of the movement on the part of the rack R and until the coin C^2 is forced past the extension 64 the rack-teeth 59 will come into engagement with and turn the intermediate 58, and therefore the pinion 54 as well, for an amount equal to two divisions, therefore registering two dimes, as may be seen by comparison of Figs. 13 and 14, the operation of registering the twenty-five-cent piece being more particularly shown in Figs. 7 to 9, inclusive, of the drawings. Means are provided for preventing backward rotation of the shaft 34, these means consisting substantially of a ratchet 65, secured to said shaft and engaged by a suitable pawl 66, the organization of these devices being readily understood, but their purposes being a very important factor in the mechanism above described in preventing disarrangement or breakage or interference of the several parts which comprise my improved apparatus.

It is evident that many changes may be made in the construction or in the proper organization of the various devices above described without departing from the gist of my invention, more especially in connection with the device whereby one dial is rotated one notch upon the complete rotation of the preceding dial. It should be also noted that although I have shown in the drawings a rack which is vertically movable to be brought into position so that the teeth may engage the pinions on the several dials it is obvious that the horizontal alinement need not necessarily be disturbed, in which case the pinions and their respective dials should of course be made movable one upon the other, so that when said pinions are rotated in one direction they will turn said dials, while when they are moved in the opposite direction a rotation on the part of the pinions will not be effective to produce any movement of the dial; and, again, I may so design and construct the mechanism under and without departure from the present invention by constituting the coin forcing or actuating device, here exemplified by the part 36, that one part serves both as a stop or detent to prevent the premature falling of the coin to its register-operating position and as the forcible actuator or driver for the coin to positively operate the register.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a coin-registering bank, the combination, with a coin-conduit; and a plurality of pockets in communication therewith; of a plurality of spring-retracted detents; means for projecting said detents into said pockets; a registering mechanism; and means for carrying coins consecutively into engagement therewith.

2. In a coin-registering bank, the combination, with a coin-conduit; and with pockets communicating therewith; of a plurality of spring-retracted detents; cams for projecting said detents into said pockets; a registering mechanism; and means for carrying coins consecutively into engagement therewith.

3. In a coin-registering bank, the combination, with a coin-conduit; and with pockets in communication therewith; of spring-retracted detents; a rotatable shaft; cams mounted on said shaft and for projecting said detents into said pockets; a registering mechanism; and means for carrying coins consecutively into engagement therewith.

4. In a coin-registering bank, the combination, with a registering mechanism; of a differentially-movable rack; and means for carrying coins consecutively into engagement with said rack.

5. In a coin-registering bank, the combination, with a registering mechanism; of a differentially-movable rack tiltable into engagement therewith; and means for carrying coins consecutively into engagement with said rack.

6. In a coin-registering bank, the combination, with a registering mechanism; of a differentially-shiftable rack operatively connected therewith; and means for carrying coins consecutively into engagement with said rack.

7. In a coin-registering bank, the combination, with a registering mechanism; of a differentially-movable rack shiftable in opposite directions; and means for carrying coins consecutively into engagement with the rack.

8. In a coin-registering bank, the combination, with a registering mechanism; of a differentially-movable rack shiftable in opposite directions; means for carrying coins consecutively into engagement with the rack; and means for returning said rack into its normal position.

9. In a coin-registering bank, the combination, with a registering mechanism; of a rack shiftable in opposite directions; means for carrying coins consecutively into engagement with the rack; and a double-action spring for returning said rack into its normal position.

10. In a coin-registering bank, the combination, with a plurality of independently-operable register-disks, each having a pinion; of a rack having teeth for successively engaging said pinions; and means for carrying coins consecutively into engagement with said rack.

11. In a coin-registering bank, the combination, with a plurality of independently-operable register-disks, each having a pinion; of a rack having teeth for successively engaging said pinions; means for carrying coins consecutively into engagement with said rack; and means for returning said rack into its normal position.

12. In a coin-registering bank, the combination, with a plurality of independently-operable register-disks; of a rack for engaging said disks, and having lateral projections in position to be individually engaged by coins; and means for carrying coins consecutively into engagement with said projections.

13. In a coin-registering bank, the combination, with a units register-disk having a pinion; and with a ten-units register-disk having a pinion; and a gear in engagement with said ten-units pinion; of a shiftable rack movable into engagement with the units-pinion and with said gear, alternately.

14. In a coin-registering bank, the combination, with a magazine; and with pockets in communication therewith; and of a rotatable shaft; and means for supporting a coin during its descent in its pocket, and operatively connected with said shaft; and means for checking the passage of another coin into said pocket preparatory to the discharge of the first coin therefrom.

15. In a coin-registering bank, the combination, with a magazine; and with pockets in communication therewith; of a register mechanism; a rotatable shaft; and finger-cams mounted on said shaft and for supporting a coin during its descent in its pocket and subsequently forcing the same into engagement with the registering mechanism.

16. In a coin-registering bank, the combination, with a magazine; and with pockets communicating therewith; of a rotatable shaft; finger-cams mounted on said shaft and for supporting a coin during its descent in a pocket; and means for checking the passage of another coin into said pocket preparatory to the discharging of the first coin therefrom.

17. In a coin-registering bank, the combination, with a magazine; and with pockets communicating therewith; of a rotatable shaft; finger-cams mounted on said shaft and for supporting a coin during its descent into said pocket; a spring-retracted detent for checking the passage of another coin into the pocket before the discharge of the first coin therefrom; and a cam for projecting said detent into said pocket.

18. In a coin-registering bank, the combination, with a magazine; and with pockets communicating therewith; of a rotatable shaft; means for supporting a coin during its descent in said pocket and operable from said shaft; and means for preventing backward rotation of said shaft.

19. In a coin-registering apparatus, a coin-registering mechanism, comprising a primary member for engaging said registering mechanism, and having several extensions or coin-abutments, a runway for promiscuous coins having branching passages or conduits for carrying coins of different sizes into positions against the respective abutments, and means for imparting to the assorted and properly-positioned coins positive movements to forcibly operate the register by impingement against the abutments of the said primary member.

Signed by me at Springfield, Massachusetts, this 21st day of February, 1901.

JAMES F. HEALY.

Witnesses:
WM. S. BELLOWS,
M. A. CAMPBELL.