J. E. DOLDT.

COIN SORTING AND DISTRIBUTING DEVICE.

APPLICATION FILED DEC. 31, 1918.

1,433,942. **Patented Oct. 31, 1922.**

2 SHEETS—SHEET 1.

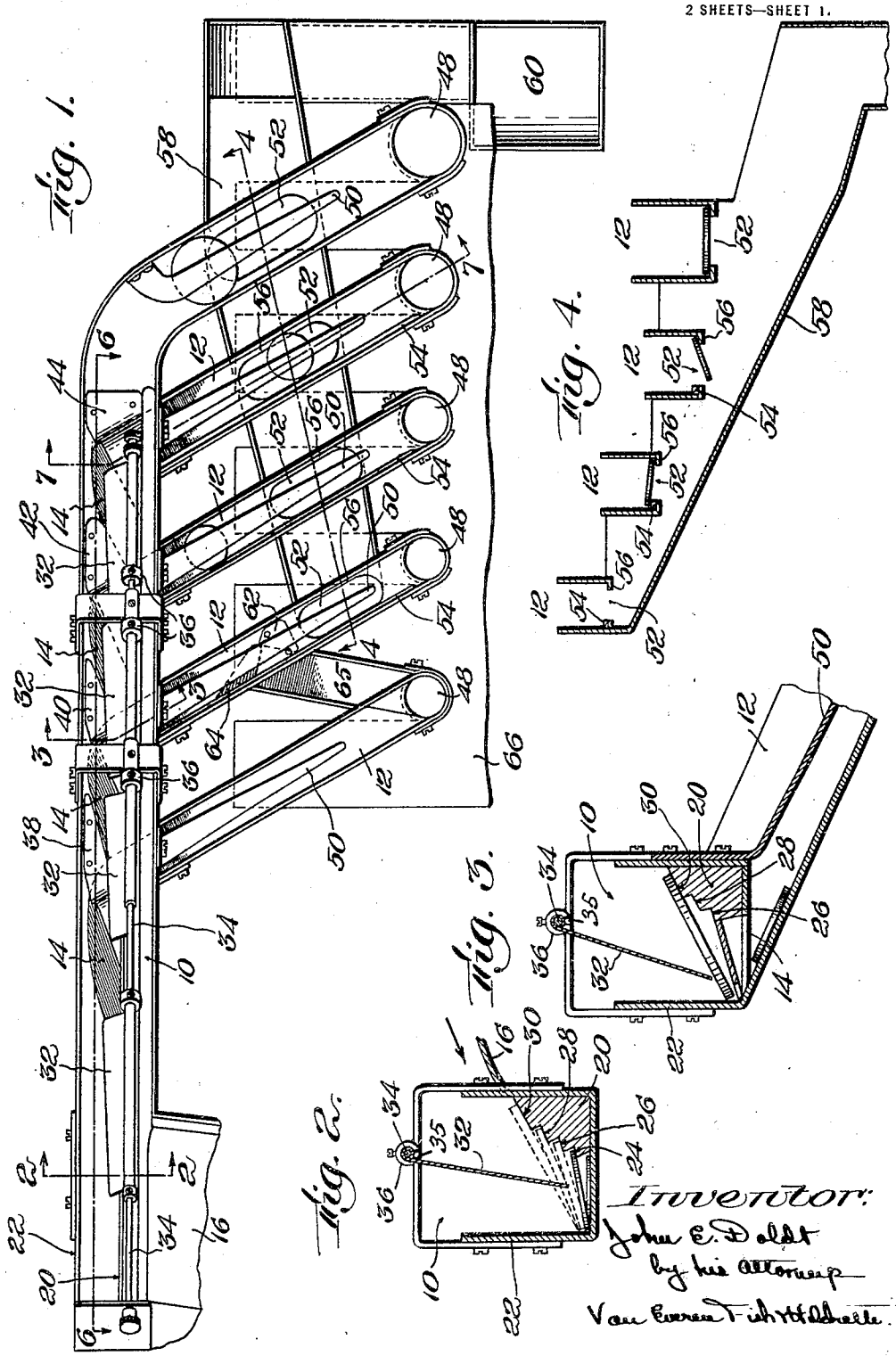


Fig. 1.

Fig. 4.

Fig. 3.

Fig. 2.

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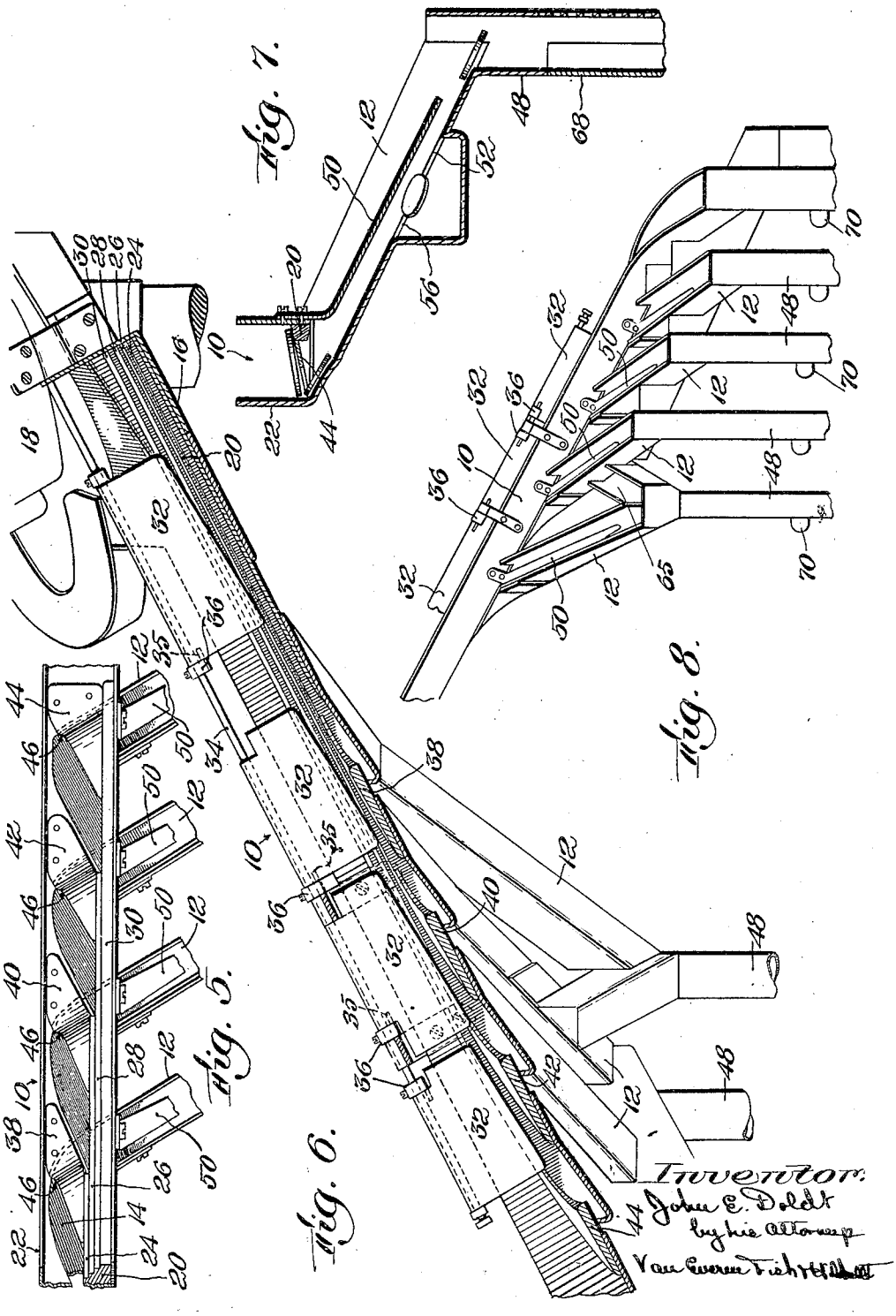


Fig. 7.

Fig. 8.

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

JOHN E. DOLDT, OF PORTLAND, MAINE, ASSIGNOR TO COIN SORTING AND COUNTING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

COIN SORTING AND DISTRIBUTING DEVICE.

Application filed December 31, 1918. Serial No. 269,144.

To all whom it may concern:

Be it known that I, JOHN E. DOLDT, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Coin Sorting and Distributing Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to devices for sorting coins of different denominations, or similar articles of disk form and various sizes, and distributing them to suitable receptacles.

The object of the invention is to provide certain new and useful improvements in devices of the above character for the purpose of efficiently controlling the movements of the coins and preventing them from becoming disorderly, and for insuring that all coins of the same size may be segregated from those of different sizes.

The present invention contemplates the provision of an inclined primary chute for receiving the coins to be sorted and supporting those of each denomination in a different plane as they slide down the chute by gravity, a series of secondary chutes, connected with the primary chute, one for each denomination of the coins, sorting devices in the primary chute for engaging the coins in each plane and positively diverting them into their respective secondary chutes, and a series of coin receptacles connected with the secondary chutes into which the sorted coins are distributed.

The invention further consists in other novel features of construction, combinations and arrangements of parts hereinafter described and claimed, the advantages of which will be apparent to those skilled in the art from the following description.

In the accompanying drawings illustrating the preferred embodiment of the invention, Figure 1 is a top plan view of the device; Fig. 2 is a detail on an enlarged scale, showing a cross-section of the primary chute on the line 2—2 Fig. 1; Fig. 3 is a detail, also on an enlarged scale, showing a section taken substantially on the line 3—3 of Fig. 1; Fig. 4 is a sectional view taken substantially on the line 4—4 of Fig. 1; Fig. 5 is a detail showing a plan view of a portion of the primary chute with the stabilizing members removed; Fig. 6 is a view showing a vertical longitudinal section through the primary chute taken substantially on the line 6—6 of Fig. 1; Fig. 7 is a sectional view taken on the line 7—7 of Fig. 1; and Fig. 8 is a view in front elevation of the device.

Referring to the drawings, the primary chute is indicated at 10 and the secondary chutes at 12, communicating with the primary chute through openings 14 in the bottom of the latter. Both the primary and the secondary chutes are inclined, the angle of inclination being somewhat greater than the angle of normal repose of the coins to insure the sliding by gravity of the coins in all of the chutes. An inclined tray 16 delivers the various coins of different denominations, laterally into the primary chute at its upper end. In order to obtain the best results these coins should be delivered in succession and as rapidly as possible. It is preferred to effect the delivery of the coins over the tray 16 to the primary chute by means of a coin separating and delivering device such as that described in an accompanying application filed of even date herewith (Ser. No. 269,145). A device of this sort is indicated at 18 in Fig. 6, and causes delivery of the coins fiat-wise, and in a substantially continuous procession to the primary chute.

The coins of the largest size or denomination among those delivered to the primary chute are guided by this chute directly to the receptacle which is provided to receive them. All the smaller coins, however, must be segregated from the largest ones, and those of each denomination must be segregated from the others. This is accomplished by means of a series of deflecting members in the primary chute which engage the coins as they slide down the chute and divert them into the secondary chutes. There is a secondary chute provided for each denomination of coins except the largest and a deflecting member for each secondary chute and in order that the coins may be diverted into their respective chutes, those of each denomination are supported in a different plane as they move down the primary chute so that they will be guided to the proper deflecting member. The means provided in the primary chute for supporting the coins of each denomination in a different plane comprises

a stepped bearing member 20 extending lengthwise at one side of the chute. This bearing member 20 is so disposed with relation to the opposite wall 22 of the chute that coins of each denomination assume different inclined positions as they are received in the chute and are caused to slide down the chute in different planes, for example as shown clearly in Fig. 2, the dimes or smallest coins lie flat upon the bottom of the chute and next in order come the pennies, nickels, quarters, and half-dollars which are supported on the ledges 24, 26, 28 and 30 of the bearing member respectively. As the coins pass from the inclined tray 16 in the direction of the arrow shown in Fig. 2 with considerable speed the coins must necessarily contact with the opposite wall 22 of the chute and are thus caused to assume the positions shown in Fig. 2. The coins thus supported in different inclined planes pass down the primary chute quite rapidly and in order to prevent any of the coins and especially the lighter ones, as the dimes, from becoming disorderly and perhaps standing on edge as they move down the chute, each of the stepped portions in the bearing member 20 is slightly undercut, as shown clearly in Fig. 2, forming a projecting ledge which tends to prevent the rising of the coins from their proper planes. It is extremely important that the coins be confined substantially in their respective planes as they pass down the primary chute so that they will not tip upon their edges and roll down the chute, for if permitted to do so they may escape all provision for their proper sorting. As an additional and positive means for insuring an orderly passage of the coins, a series of stabilizers 32 is provided which cause the coins to be retained substantially in their proper planes. These stabilizers consist of flat wiper members which are hinged upon a rod 34 that is suitably supported at the top of the chute. The stabilizing members extend lengthwise of the chute, and their free or bottom edges which engage the coins are slightly inclined, from the upper to the lower ends thereof, toward the bottom of the chute. In order to prevent any of the coins from becoming wedged between these members and the chute the members are hung slightly out of the perpendicular as shown in Fig. 2, so that they will swing to one side when engaged by the coins, as shown in Fig. 3. This deflection from a perpendicular position is accomplished by means of stop-lugs 35 projecting from collars 36 which are adjustably secured to the rod 34, the lugs engaging one side of the stabilizing members. The deflection of the members may be increased or decreased by turning the collars on the rod 32. The larger and heavier coins which will not be retarded in their movements by the action of the wiper members are engaged by each member beneath which they pass, while the smaller and lighter coins, as the dimes and pennies, are influenced by the members only when they become disorderly to the extent of rising slightly from their proper planes. In such cases the influence of the wiper members will prevent the tilting of the coins sufficiently to cause them to be improperly sorted or to interfere with coins moving in other planes.

The means provided for diverting the coins of various sizes in the primary chute at successive intervals into their respective secondary chutes comprises a series of deflecting members 38, 40, 42 and 44, as best shown in Fig. 5. Each deflecting member consists of a plate secured to the bottom of the chute and arranged to intersect the plane occupied by the coins it is intended to divert and thus form a positive stop for all coins moving in that plane, and to divert these coins through one of the openings 14 into a suitable secondary chute.

The coins are engaged by the portion of the deflecting members indicated at 46 in Fig. 5 while that portion of each member which overlies the openings 14 serves to prevent the coin from tilting to an upright position, as it enters the secondary chute, because of its sudden deflection from a straight course. It will be observed that each deflecting member intersects the plane of the coin which it is desired to divert but is positioned below the plane in which all larger coins move in order not to interfere with these coins. The dimes being the smallest coins ordinarily handled are first separated from the stream of coins and accordingly with the present construction the dimes are first diverted from the chute and the remaining coins pass on through the series of sorting devices by which they are further sorted and distributed.

As will be understood with reference to Figs. 2 and 5, the dimes which lie flat on the bottom of the chute are engaged by the deflecting member 38. The ledge 24 supports the pennies in a plane which is intersected by the deflecting member 40. The nickels and quarters are supported by the ledges 26 and 28 respectively in such planes that the nickels are intercepted by the deflecting member 42 and the quarters by the member 44. These coins are all diverted by the deflecting members into their respective secondary chutes by which they are distributed to a series of collecting tubes or receptacles 48. The half-dollars are conveyed directly to their collecting tube by the primary chute which curves forwardly just below the last deflecting device and, extending in a direction parallel to the secondary chutes, terminates at the collecting tube.

In order to prevent the coins from becom-

ing disorderly while passing through the secondary chutes, controlling devices consisting of flat fingers 50 are provided each of which is suitably secured at one end to a wall of the primary chute and extends lengthwise of the secondary chute. These fingers are flat and disposed in a plane substantially parallel to the bottom of the chute. A similar controlling finger is located near the discharge end of the primary chute to control the movements of the half-dollars. The controlling fingers are arranged to allow ample room for the passage of coins beneath them so that there will be no danger of the free delivery of the coins being interfered with, but they serve to prevent tilting of the coins to any great extent and will thereby insure an ordinary deposit of the coins in the collecting tubes 48.

If the machine is operating properly, the sorting devices insure that only coins of the proper denominations or sizes shall pass into each secondary chute, but it is possible that certain smaller foreign coins may be present in the mass of coins, or that certain of the smaller coins will not be diverted at the proper time and will become mixed with others of larger denominations, and in order to eliminate such coins, the bottom of each secondary chute is provided with an elongated opening 52 through which these coins may escape. In order that these smaller coins shall pass through the opening 52 while the coins properly belonging in the chute shall pass over the opening without falling therethrough, a rib 54 is provided which extends along the left side of the chute as shown in Fig. 1 and a narrow supporting ledge 56 is left between the opening and the right wall of the chute. As the coins are moving rapidly when they are deflected into the secondary chute they are forced into engagement with the right hand wall thereof and, by virtue of the present construction, the smaller coins which are not large enough to engage the rib also, are confined between the rib and the right wall of the chute so that they will slide along the bottom and when they reach the opening 52 they will fall through. All coins of the proper size, however, will overlap this rib and slide down the chute in a slightly tilted position so that they will pass safely over the opening, being supported by the ledge 56 at one side thereof and at the opposite side by the rib. The coins which are eliminated through the openings 52 fall into an inclined tray 58 from which they are directed to a delivery cup 60. The fingers 50 help to insure the elimination of the smaller coins by preventing them from tilting on edge in such a manner that they might possibly be carried over the ledge 56 without falling through the opening 52. As long as coins properly belonging in the secondary chutes behave in an orderly manner, they cannot escape through the eliminating openings 52, but if they should become sufficiently disorderly they might possibly do so. The fingers 50, however, prevent such a possibility and insure the delivery to the collecting tubes of all coins of the proper size in the secondary chutes. Since the difference in size and weight between the dimes and pennies is slight, it is possible for the dimes to be occasionally carried beyond the first deflecting member in the primary chute and permitted to enter the penny secondary chute. To insure against the possible delivery of stray dimes into the receptacle with the pennies a deflecting member 62 similar to those in the primary chute is provided for diverting these dimes through an opening 64 in the penny chute into a chute 65 which deposits them in the dime collecting tube.

The collecting tubes 48 are supported upon a table 66 to form a series of upright magazines each containing coins of a single denomination. In order to permit convenient access to the interior of the magazines whenever desired, for purposes of inspection or collection of the coins, each magazine is provided with a hinged door 68 as shown in Fig. 7, which forms a portion of the wall of the tube and is secured in closed position by a suitable type of spring latch 70 Fig. 8.

It will be seen that the device may be relied upon to deliver to the collecting tubes only coins of the proper denomination, since any inaccuracy in the sorting is rectified by the eliminating devices. The present invention is useful wherever it is desirable to effect the sorting of coins according to size from an indiscriminate mass, and to distribute the sorted coins to suitable receptacles. The coins thus sorted and assembled may be fed from the bottom of the collecting tubes to counting devices and thereafter delivered into bank packages, if desired, by mechanism such as that described in the application above identified, or they may be used directly from the collecting tubes for making change or other purposes.

While it is preferred to embody the invention in a device having the specific construction and arrangement of parts herein shown and described, it will be understood that such construction and arrangement is not essential except so far as specified in the claims and may be modified without departing from the spirit and scope of the invention.

The invention having been described, what is claimed is:

1. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity, means for guiding coins into the chute, and a hinged

wiping member located in the chute for controlling the movements of the coins.

2. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity, means for supporting coins of different sizes in different planes in said chute, and a hinged wiping member extending lengthwise of the chute and tending to retain the coins in their respective planes as they pass through said chute.

3. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity and having a stepped bearing formed therein for supporting the coins in different planes in said chutes, the steps of the bearing being undercut to form projecting ledges which tend to retain the coins in their respective planes as they pass through the chute.

4. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity, means for supporting coins of different sizes at different elevations as they pass through the chute, and a coin controlling member normally projecting into the path of the coins supported at the higher elevations and adapted to be displaced from normal position to permit the free passage of said coins.

5. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity, and means for yieldingly engaging the coins as they pass down the chute and preventing them from standing on edge and rolling down the chute.

6. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity, a hinged wiping member extending lengthwise of the chute with its free edge disposed obliquely to the angle of flow of the coins and arranged so that it may be engaged by the coins as they pass down the chute, and means for supporting said member out of the perpendicular so that it may swing transversely of the chute when engaged by a coin.

7. A coin sorting and distributing device having, in combination, a coin chute supported at an inclination to cause the flow of coins therethrough by gravity, means for supporting coins of different sizes in different planes in said chute, a series of hinged wiping members extending lengthwise of the chute with their free edges disposed obliquely to the angle of flow of the coins and arranged so that they may be engaged by the coins as they pass down the chute, and means for supporting said members out of the perpendicular so that they may be swung transversely of the chute when engaged by a coin.

8. A coin sorting and distributing device having, in combination, a main coin chute having an opening formed therein, means for guiding coins into the main chute, means for supporting coins of different sizes in different planes in said chute, a secondary chute connected with the main chute through said opening, and constructed and arranged to cause coins of a predetermined size to be inclined transversely to the chute as they pass therethrough and to support smaller coins without transverse inclination, a deflecting member located in the main chute adjacent said opening and arranged to engage with all coins lying in a predetermined plane to divert said coins through the opening, a third chute connected with the secondary chute, and a deflecting member located in the secondary chute arranged to engage all coins not inclined transversely of the chute and divert them into the third chute.

9. A coin sorting and distributing device having, in combination, a main coin chute, a series of secondary chutes leading from the main chute, a collecting tube connected with each of the secondary chutes, devices located in the main chute for diverting coins to the secondary chutes, and means for controlling the movements of the coins in the main chute.

10. A coin sorting and distributing device having, in combination, a main coin chute, a secondary coin chute connected with the main chute and having an opening in the bottom thereof, means for diverting coins from the main chute into the secondary chute, and a guiding finger located above the path of the coins in the secondary chute for controlling the movements of the coins.

11. A coin sorting and distributing device having, in combination, a main coin chute, a secondary coin chute connected with the main chute and having an opening in the bottom thereof, means for diverting coins from the main chute into the secondary chute, and a rib in the secondary chute, the rib and the opening so formed and arranged that coins which are greater than a predetermined size will be supported on the bottom of the secondary chute at one side of the opening and upon the rib at the opposite side of the opening, as they pass thereover, while coins of less than a predetermined size will be prevented by means of the rib from being supported at one side of the opening, so that they will fall therethrough.

JOHN E. DOLDT.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,433,942, granted October 31, 1922, upon the application of John E. Doldt, of Portland, Maine, for an improvement in "Coin Sorting and Distributing Devices," an error appears in the printed specification requiring correction as follows: Page 3, line 18, "ordinary" should be *orderly;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 26th day of December, A. D., 1922.

[SEAL.] KARL FENNING,

Acting Commissioner of Patents.