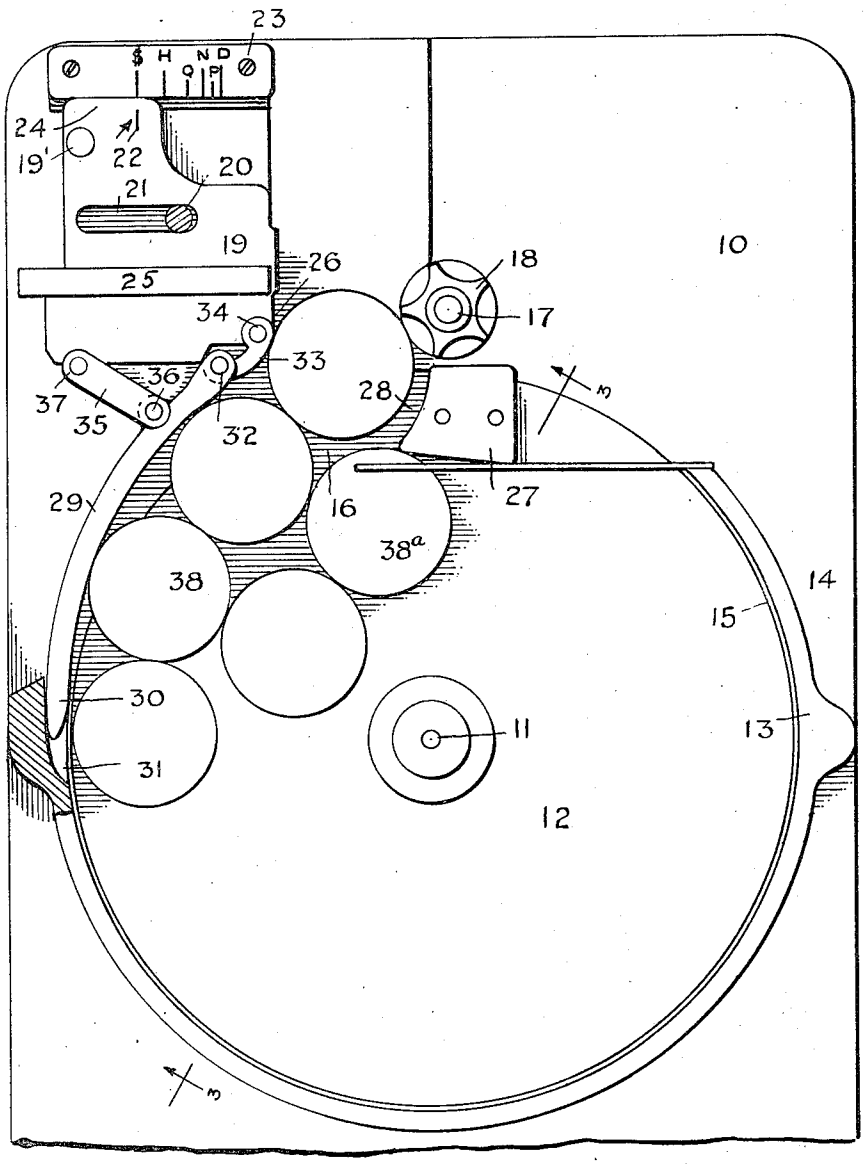
March 16, 1948. W. A. BARGANZ ET AL 2,437,721

COIN-COUNTING MACHINE

Filed Nov. 26, 1945 2 Sheets-Sheet 1

FIG. 1.



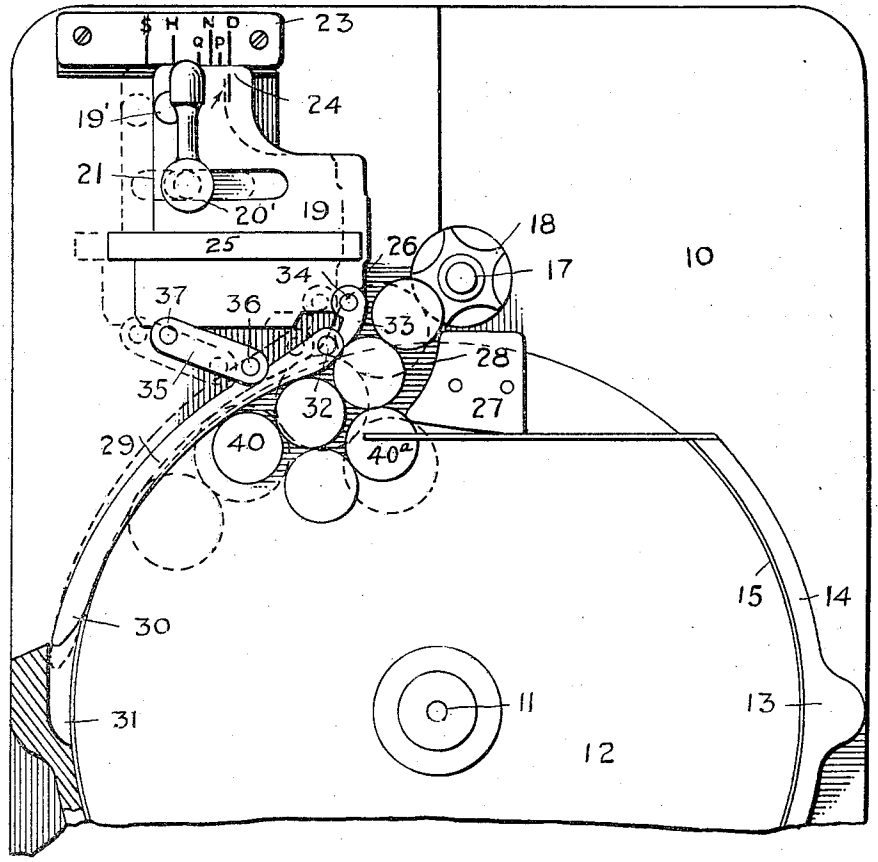
Inventors
Walter A. Barganz and Earl W. Quirk,
By Milans & Milans
Attorneys.

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COIN COUNTING MACHINE

Filed Nov. 26, 1945 2 Sheets-Sheet 2

FIG. 2.



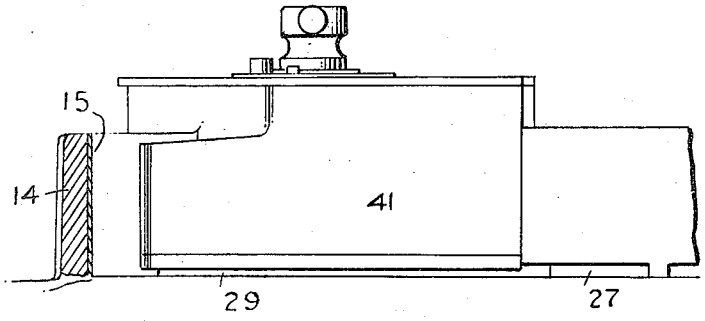


FIG. 3.

Inventors
Walter A. Barganz and Earl W. Quirk,
By Milans & Milans
Attorneys.

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UNITED STATES PATENT OFFICE

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COIN COUNTING MACHINE

Walter A. Barganz and Earl W. Quirk, Watertown, Wis., assignors to Brandt Automatic Cashier Company, Watertown, Wis., a corporation of Wisconsin

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6 Claims. (Cl. 133—8)

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This invention relates to improvements in coin counting machines.

The object of the invention is the provision of an improved mechanism having an adjustable discharge capacity whereby to enable feeding and counting batches of coins of given denominations, and coincident different diameters, such as pennies, nickles, dimes, quarters, half dollars or dollars.

The characteristic principle of the improvements resides in the movement and feed of the individual coins, from a batch of coins of a given denomination, to the counting device, without unduly crowding and jamming coins in transit to said counting device, or permitting coins to bridge the discharge outlet from the batch and having a balanced or non-traveling status thereat.

In machine-counting of coins it has been the practice to provide a rotatable plate for supporting the batch of coins of the denomination to be counted, surrounded by a stationary confining wall, and means for rotating the plate relative to said wall, the wall having a discharge opening leading to the counting mechanism, and in the operation of which the coins will lie flat upon the plate and be fed, under the rotation of the plate, outwardly towards the surrounding wall and be guided by the latter to the outlet, the coins assuming concentric series flat upon the plate and the outer series of coins being the ones initially discharged.

To make such a machine, as stated, substantially universal in character, that is, capable of satisfactorily counting different batches of coins of corresponding different denominations, in the sense that each batch comprises coins of the same denomination, and consequently coins of the same diameter, attempts have been made to adjust the discharge opening, leading to the counter, to conform, as to length, to the diameter of the coins intended to be counted. However, such attempts have not been successful because they lack the essential consideration of separating or dividing off oncoming coins from those arcuately aligned in the outer approximately circular series for immediate count.

The consequence has been that a simple length adjustment of the inlet opening to the discharge is found inadequate. Jamming or balancing of the coins on the guide point or rail at the inlet opening, and consequent interruption in the feed to the counter, is not obviated.

Fundamental difficulty has been encountered in providing a satisfactory guideway leading from the discharge from the rotating coin plate to the

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counter, that may be adjusted not only as to length, as stated, but also coincidently adjusted with reference to the locating of oncoming coins in the guideway and adjacent to the inlet thereto, so as to insure a true and constant operating function in the feeding and guiding of the coins.

Some of such difficulties have arisen from complications encountered in an effort to provide the necessary fine adjustment flowing from linkage and gearing mechanisms, interconnected with opposite guide members or sides, forming the way leading to the counter, culminating in our discovery that the oncoming or inner coins, adjoining the outer circular series being discharged, must not be permitted to be forced towards or into the discharge way peripherally against the adjacent coins of the outer series being discharged, with a binding or jamming tendency, but must be deflected inwardly of the coin plate away from the coins of the discharging series.

This led to the discovery that in addition to having a discharge way from the plate or pan leading to the counter, comformable to the diameter of coins under immediate count, and as distinguished from adjusting the opposite walls or rails of the way, with respect to each other, one of said walls or rails should be given a compound adjustment, say generally both tangentially and radially of the coin-supporting plate and towards or from a fixed separating or deflecting member, constituting the opposite cooperating wall or rail of the coin discharge way, by means of which compound adjustment of the one guide rail or wall towards and from said separating or deflecting member, no oncoming coin will have its greater width or diameter located in the way leading to the counter, but must be located inwardly, approximately radially of the plate, so that the smaller portion of the coin will have its curved edge engage the separating or deflecting member to force the coin inwardly of the plate and be thereby positively prevented from crowding or jamming those coins immediately passing to the counter through the guideway feeding thereto.

The same consideration, that is, as to location of the inner oncoming coils will obviate the difficulty previously encountered of having a coin balanced or centered on the end or point of the fixed guide member by engagement thereof in direct line with the diameter of the coin, preventing the non-feeding, crowding or jamming of the coins desired to be counted.

With all of the foregoing in mind, the preferred and practical embodiment of the instant

invention comprises a means not only to adjust the one guide member or rail of the throat towards and from the other, to accommodate different batches of coins of given denominations, but also to effect a supplemental or coincident adjustment of said member in a direction approximately radially of the coin-supporting plate, so that the coins affected by such adjustment may freely and easily enter the guideway leading to the counting device, in a manner to avoid being clogged or jammed at the inlet to said guideway, by other coins not in line for immediate counting, and which latter are deflected back or radially inwardly of the plate to clear the mouth or inlet to the guideway.

More specifically the preferred embodiment of the invention comprises an adjustable wall or rail for the coins, in combination with a fixed guide or point opposite thereto, and means for adjusting said adjustable rail or wall to the diameter of coins intended to pass therebetween, and to cause oncoming coins, not immediately in line for count, to ride inwardly around and over said point and thereby prevent jamming and non-feeding movement, or centering and spinning of coins at the inlet passage or mouth of the guideway.

The referred-to preferred embodiment of the invention is illustrated in the accompanying drawings, forming part hereof, and the details of structure and functions thereof as hereinbefore outlined, will be apparent from an inspection of said drawings, when read in connection with the following additional description.

In the drawings—

Fig. 1 is a top view, partly in section, and portions omitted, of a well-known coin counting machine, provided with the present improvements.

Fig. 2 is a like view with the improvements shown in another adjustment, the arrangement of Fig. 1 being, for example, for dollars and that in this view being for dimes; and

Fig. 3 is a transverse sectional view on the line indicated 3—3 in Fig. 1, looking in the direction of the arrow.

It being observed that like reference numerals designate the same parts in the several views, 10 represents the usual base or supporting framework of the machine, customarily of hollow character and containing operating mechanisms or connections, not necessary to herein illustrate or describe because they form no part of the present invention.

It is specifically noted, however, that a shaft 11, driven from a motor or other source of power is approximately centrally located in the casing 10 and extends upwardly into fixed connected relationship to the plate or disc 12, constituting the bottom of a coin-receiving pan or receptacle, the upstanding side wall of which is represented at 13, the plate or disc 12 being of a diameter approximately that of the space bordered by the side wall 13 but free from said side wall to permit the rotation of the disc therewithin, the wall 13 remaining stationary.

The casing 10 and wall 13 of the pan are formed of any suitable material affording sufficient strength and rigidity, in the main of metal or plastic, to provide the outside reinforcement or body 14 of the wall or side of the pan, having a smooth inner facing or lining 15 of steel or other material around which the coins may freely ride when contacted thereby under the centrifugal impelling influence of rapid rotation of the coin-supporting plate 12.

A peripheral coin outlet is indicated at 16 and it will be understood that a batch of coins introduced into the pan, upon the plate 12, will assume a flat condition on the latter and be worked towards the margin of the plate 12 to the wall 13, of the pan, under the rotation of said pan, assembling in approximately circular series concentrically related to each other, inwardly towards the axis of the plate 12. The discharge opening 16 is arranged so that the outside series of coins will be delivered thereto and pass from the plate to the zone of the counting mechanism. This counting mechanism may be of any convenient or preferred type, it being remembered that the enumerating mechanism (not shown) is customarily actuated through the medium of the shaft 17 of a star wheel or the like 18, in the path of the outgoing coin from said outer series of coins contacting and turning therewith.

An adjustable gauge 19 is slidably mounted on the base of the machine 10 to be slid back-and-forth to adjusted position and there locked in place by a clamping pin 20 projected upwardly from said base, and passing through a slot 21 in the gauge, the latter having an indicator point or demarcation 22 adapted to register with any of a series of denoting characters 23, fixed to the base or frame 10. Those illustrated are $—H—Q—N—P and D, obviously suggesting dollars, halves, quarters, nickels, pennies and dimes.

To assure a true horizontally straight movement of the gauge 19, the same has the usual upstanding guide rail or rib 25 adapted to engage and slide in a complemental groove in a cover plate or equivalent part of the machine conforming to known practice in the art, and therefore not illustrated. A handled clamping nut 20' is provided on the threaded upper end of the pin 20 and bears on the surface of the gauge 19 to lock the gauge in selected position; and when the clamping nut is loosened the gauge may be shifted by a knob or the like 19' thereon.

Considering alone the edge 26 of the gauge 19, and an oppositely disposed guide point or member 27, it is of course, obvious that the adjustment of the gauge towards and from the member 27 could give a certain degree of adjustment determinative of the diameter or size of the coin to be passed to the operating zone of the star wheel or the like, but as clearly explained in the forepart of this specification, such an adjustment would at times be radically insufficient and unsatisfactory.

If other considerations are ignored, it has been found by experience that such suggested adjustment as for counting dollars—coins of maximum or relatively large diameters—can be serviceable, but where it is desired to convert the machine into one for counting dimes or coins of substantially smaller diameter, the throat or guideway 28, for the passage of the coins to the star wheel, is necessarily of such length that the oncoming coins—the coins next adjacent to the outside arcuate or concentric series—will sometimes be crowded and jammed at the inlet 16, stopping the discharge of coins.

In other instances, where the oncoming coin of the next adjacent or inner concentric series of coins engages the guide point 27, exactly centrally thereof, or in line with its greatest width, the coin will be centered or balanced on the point 27 and spin or turn thereat, thus also retarding the feed of the adjoining coin of the

outermost series, or creating a cessation in the counting operation.

The jamming or undue crowding of the coins to clog the machine, has been found to arise particularly in those instances where the major half or part of the coin, including its greatest width, locates radially outwardly beyond the guide point 27, resulting in a wedging of the adjoining discharge coins, incident to the crowding of the oncoming coin beyond the point 27 by reason of the tendency of the smaller curved portion of the coin to continue movement beyond said point, towards the star wheel. The cure, as hereinbefore outlined, is providing an adjustment so that the inner series of smaller coins are positively prevented from crowding into the outer series of discharging coins by having the diameter or greater width of the oncoming coin always occupy a position radially inwardly of the supporting plate 12 so that simply a minor portion of its curved margin can project beyond the guide point 27 whereby the reverse tendency of movement thereof is obtained, namely, the coin will be deflected by the point 27 inwardly of the plate 12 around and away from the point 27, wedging of the coins at the outlet being thereby prevented.

Mechanism for obtaining this assured operation may be described as follows. Instead of utilizing merely the forward edge or corner 26, of the gauge 19, as a constantly and uniformly acting guide point or rail in cooperative relation to the guide point 27, we provide what is termed a toggle jointed guide rail to cooperate with the guide point 27, this toggle jointed arrangement comprising a long, arcuate rail 29, loose at one end 30, to freely engage a slot 31, formed in the wall member 14 and closed at its inner side by the facing or lining 15, of the wall 13 of the coin pan or receptacle, so that the free end of the rail 29 may slide back-and-forth in said slot, the end portion of the lining 15 (best seen in Figure 3) engaging the adjacent portion of the rail and holding the same against displacement away from sliding engagement with the back of the slot 31. This long, arcuate rail member 29 is pivoted at 32 to a short link 33, in turn pivoted at its opposite end 34 to the inner end of the gauge member or block 19, another diagonally disposed link 35 being pivoted at a point intermediate of the ends of the arcuate rail 29, at 36, and to the outer end of the gauge member or block at 37.

By the arrangement just described it will be noted, on observation of Fig. 1, wherein the dollars 38 are shown being discharged for count, the toggle jointed coin guide is in its outermost position and the oncoming coin 38a can create no crowding at the outlet passage 16, because the guide point 27 and oncoming coin are so related that the latter will simply be directed away from the passage by the point 27 engaging the minor curved edge of the coin, resulting from the major portion beyond its diameter or greatest width being located inwardly of the point 27. However, in the instance of counting dimes or coins of a smaller diameter illustrated, for example, in Fig. 2, it will be seen that in the adjustment of the toggle jointed coin guide, the knee, so to speak, thereof is not only moved inwardly generally tangentially of the coin plate, but also concomitantly radially of the plate or pan towards the point 27, whereby (in this instance) the dimes 40 are so directed that the oncoming coin 40a cannot crowd or jam the discharging coins of the outer concentric or arcuate series, because the oncoming coin 40a is compelled to ride radially inwardly of the coin plate or pan around the guide point 27, in avoidance of any tendency to crowd under said point as would be the case if the coin 40a was centered or balanced on said point, or had its major portion beyond said point instead of located radially inward of the same.

In the sectional view of Fig. 3, is shown our customary thickness gauge 41, for the coins, this feature being omitted from the showing in Figs. 1 and 2. The details of the same are unimportant, except as to show the general relationship of the same to the supplemental width gauge constituting the subject matter hereof.

Actual demonstration has proven the practicability and great improvement of this compound adjustment of the one guide member relative to the other fixed guide member as compared to any known mechanism heretofore attempted.

While we have herein disclosed a single practical embodiment of the invention it is to be understood that alterations and changes may be resorted to without departing from the spirit of the invention as the same is defined in the hereto appended claims.

We claim:

1. A coin counting machine including a hopper for said coins, a coin discharge way, means for delivering coins from said hopper to said coin discharge way and counter-actuating means at the outlet of said coin discharge way, said coin discharge way comprising oppositely disposed guide means one of which is relatively fixed and provided with a coin separating point, and the other guide means comprising pivotally connected members and means for relatively adjusting said pivotally connected members radially and tangentially of said delivery means to move the connected member nearest to the coin discharge way toward or away from the coin separating point according to the size of coins to be counted.

2. A coin counting machine including a hopper for said coins, a coin discharge way, means for delivering coins from said hopper to said coin discharge way and counter-actuating means at the outlet of said coin discharge way, said coin discharge way comprising oppositely disposed guide means one of which is relatively fixed and provided with a coin separating point projecting towards the other guide means, and means for adjusting the other guide means radially and tangentially of said delivery means to move the end of said guide means nearest to the said coin discharge way toward or away from the coin separating point according to the size of coins to be counted.

3. A coin counting machine including a hopper for said coins, a coin discharge way, means for delivering coins from said hopper to said coin discharge way and counter-actuating means at the outlet of said coin discharge way, said coin discharge way comprising oppositely disposed guide means one of which is relatively fixed and provided with a coin separating point projecting towards the other guide means, said other guide means comprising an articulated construction having a knee movable radially and tangentially of said coin delivery means and toward or away from the coin separating point according to the size of coins to be counted.

4. A coin counting machine including a hopper for said coins, a coin discharge way, means for delivering coins from said hopper to said

coin discharge way and counter-actuating means at the outlet of said coin discharge way, said coin discharge way comprising oppositely disposed guide means one of which is relatively fixed and provided with a coin separating point projecting towards the other guide means, the other guide means being formed to permit a compound adjustment thereof relative to said coin separating point, the same comprising a reciprocal member, a link pivoted thereto, an elongated inner member pivoted to said link and also intermediate of its ends to a supplemental link in turn pivoted to said reciprocal member, and means for securing the adjustable guide means in its various positions of adjustment.

5. A coin counting machine including a hopper for said coins having a surrounding wall portion, a coin discharge way, means for delivering coins from said hopper to said coin discharge way and counter-actuating means at the outlet of said coin discharge way, said coin discharge way comprising oppositely disposed guide means one of which is relatively fixed and provided with a coin separating point projecting towards the other guide means, the said other guide means being formed to permit a compound adjustment thereof relative to said coin separating point, the same comprising a reciprocal member, a link pivoted thereto, an elongated inner member pivoted to said link and also intermediate of its ends to a supplemental link in turn pivoted to said reciprocal member, the end of said elongated inner member opposite to the link connection thereof being slidably associated with the surrounding wall portion of the hopper, and means for securing the adjustable guide means in its various positions of adjustment.

6. A coin counting machine including a hopper for said coins having a surrounding wall portion, a coin discharge way, means for delivering coins from said hopper to said coin discharge way and counter-actuating means at the outlet of said coin discharge way, said coin discharge way comprising oppositely disposed guide means one of which is relatively fixed and provided with a coin separating point projecting towards the other guide means, the said other guide means being formed to permit a compound adjustment thereof relative to said coin separating point, the same comprising a reciprocal member, a link pivoted to the inner end thereof, an inner member pivoted to said link and being slidably associated with the surrounding wall portion of the hopper, a second link pivoted to the outer end of said reciprocal member and connected to the inner member spaced from the outer end thereof and positioned to operate approximately perpendicularly to said first-mentioned link, and means for securing the adjustable guide means in its various positions of adjustment.

WALTER A. BARGANZ.
EARL W. QUIRK.

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