COIN COUNTING AND PACKING DEVICE

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References Cited

UNITED STATES PATENTS
961,473 6/1910 Abbott ......................... 53/254 X
1,751,615 3/1930 Bower ......................... 53/254
3,271,923 9/1966 Fullbrook ......................... 53/254 X

ABSTRACT

A coin counting and packing apparatus is disclosed. The apparatus includes a base, a coin hopper positioned above and spaced from the base an amount slightly greater than at least one coin thickness and containing at least one vertically-disposed coin chamber extending therethrough, a coin ejector plate slidably mounted therebetween, and at least one coin envelope-holding chamber, sized and positioned so as to insure deposition of the ejected coins within a coin packing envelope contained therein, and constructed to facilitate partial closure and removal of the coin-filled envelope.

10 Claims, 6 Drawing Figures
COIN COUNTING AND PACKING DEVICE

BACKGROUND OF THE INVENTION

This invention relates in general to machines and apparatus for accurately counting and packing coins. The coin counter and packer of the present invention is applicable for use, for example, in various business enterprises, by those, who in the course of their business, accumulate coins in large numbers, and pack such coins in rolls for bank deposit, each roll representing a specific amount of money for convenience in handling and counting. Former inexpensive coin counting devices usually employ a chamber bearing graduation marks which in effect count by measuring the height of the stack of coins to be counted. Counting errors resulted with the higher stacks, caused primarily by inclusion, within the stack, of old worn-down coins as well as relatively new ones. The higher the stack the greater the possible cumulative error. The counting portion of the present invention removes only a few coins at a time from each coin chamber, entirely eliminating the error caused by variations in coin thickness.

OBJECTS OF THE INVENTION

The principle object of the invention is to provide a simple, inexpensive device which will automatically, accurately and rapidly count coins of the same denomination and which will deposit them in a coin-packing envelope.

A further object of the invention is to provide a device which will permit the use of either a tubular or a flat envelope for packaging a predetermined number of coins of the same denomination.

Another object of this invention is to design a device in which the exact, desired number of coins is always deposited for packing, regardless of variations in coin thickness.

A further object of the invention is the provision of a novel means for facilitating the loading of the coins in the hopper portion of the device.

The foregoing objects and others not specifically mentioned, as well as the arrangement, construction and operation of the various parts and elements, will be apparent from the following specification and appended drawings which disclosed a preferred embodiment of the invention.

BRIEF SUMMARY OF THE INVENTION

In an exemplification of the present invention, the device, proportioned to count and pack dimes, contains a plurality of dime chambers arranged in two rows of five chambers each. A dime envelope chamber is provided at both ends of each row of dime chambers. A coin ejecting means is provided for each row of dime chambers and guiding means are provided for guiding the ejected dimes into the dime envelopes. A single stroke of the coin ejector mechanism causes two dimes to be ejected from each dime chamber and deposits ten dimes in each of the two dime envelopes towards which the dimes are urged by the coin ejector. Five complete up-and-back cycles of the coin ejector fills the four dime envelopes with 50 dimes ($5.00) each, the customary amount for deposit. By varying the proportions of the device it can be adapted to count and package coins of different denominations.
slot 22 which communicates each envelope-holding chamber 17 with the long sides 23 of the base 1. Referring to FIGS. 1 and 3, at the open end of each envelope holding chamber 17, positioned at the chamberside, furthest away from the coin hopper 2 and in line with both the envelope chamber 17 and its row of dime chambers 10, a coin backstop 24 extends upward from the horizontal surfaces 16, to a point at least as high as the bottom surface of the coin hopper 2.

Referring now to FIG. 5, one edge of the coin plate slot 8 is serrated to form a line of ratchet teeth 25 which terminates at each end in a relief cut 26. Positioned within the coin plate slot 8 and between the two projecting bosses 7 a pawl 27 fits rotatably on a pivot pin 28 which is perpendicularly pressed into the top of the base 1. A restoring spring 29 extends between the pawl arm 30 and a spring anchor pin 31, urging the pawl 27 into a neutral position, so that the pawl finger 32 rests approximately centered in one of the two coin plate relief cuts 26 when the coin plate 6 is urged against either projecting boss 7. At any intermediate position of the coin plate, the pawl 27 partially pivots against the pull of the spring 29, enabling the pawl finger 32 to engage the coin plate ratchet teeth 25 in a manner which allows further movement of the coin plate 6 in one direction only, until the opposite stop 17 is contacted, the pawl 27 then once again returning to its neutral position under the restoring action of the spring 29. A handknob 33 is attached at one end of the coin plate 6 for convenience in moving the plate. An arm 37 perpendicular to each long side of the coin plate 6 extends nearly to one raised edge 4 at the top of the base 1.

Referring to FIGS. 3 and 4, located in the top deck 13 of the base 1 and in line with each dime chamber 10, a vertically disposed hole 34, smaller in diameter than a dime, contains a free-sliding cylindrical stop-finger 35 which is upwardly urged by a compression spring 36. The weight of a suitable number of dimes in each dime chamber 10 acts against this upward thrust to hold the top of each stop-finger 35 flush with the base top deck 13.

DESCRIPTION OF THE OPERATION

The operation of the coin counter and packer is as follows:

The coin ejector plate 6 is moved all the way to either plate stop 7. A dime envelope 18 is inserted into each envelopesholding chamber 17. The coin hopper dime chambers 10 are filled with dimes by dribbling a handful at a time against the inclined planes 11 which, in conjunction with the surrounding retaining edges 12, serve generally to guide and distribute the dimes to the various chambers 10. This is a time-saving feature of construction which obviates the need for dropping dimes directly into each dime chamber 10 individually.

The space 5 between the horizontal top deck 13 of the base 1 and the bottom of the coin hopper 2 is slightly greater than the thickness of two dimes 38 and is insufficient to accommodate three thin dimes. The thickness of the coin plate arms 37 is just sufficient to engage approximately half the thickness of the second dime from the bottom of the nearest stack of dimes represented by the reference character 39, thereby insuring that each arm 37 positively engages either two thick dimes or two thin dimes without engaging a third thin dime.

As hereinafter described, the operation of the various elements and components is given with respect to one side of the device, it being understood, however, that the identical operation applies with respect to the opposite side as well.

Accordingly, as the coin plate 6 is moved to the left as viewed in FIG. 3, the coin plate arm 37 engages and displaces the bottom two dimes 38 from the nearest stack of dimes 39. Continued leftward movement of the coin plate 6 causes the pair of dimes in contact with the coin plate arm 37 to engage and displace in a similar manner the bottom two dimes of the adjacent stack of dimes and so on, until the entire row consisting of five pairs of dimes is being urged leftward toward the dime envelope 18. As the trailing edge of the coin plate arm 37 clears each stack of dimes, the coin stack drops until it again contacts the horizontal top deck 13 of the base 1.

As the center of gravity of each pair of dimes reaches the edge 14 of the base top deck 13, their trailing edge comes clear of the left end 15 of the hopper 2, so that with further leftward movement the pair of dimes freely pivots approximately 90°, assuming thereby, the optimum entry position in the subsequent plunge toward the open dime envelope 18. The apparatus is proportioned so that the vertical distance from the base top deck 13 to the top of the dime envelope 18 is at least half the diameter of a dime, to avoid interference of the envelope with the desired 90° rotation of the coins.

Although it is a simple matter to actuate the coin plate 6 so as to insure that the dimes drop directly into the dime envelopes 18, an inexperienced user might actuate the mechanism at excessive speeds, pitching the dimes beyond the waiting dime envelope 18. In this case the dimes will hit and be turned back by the coin backstop 24.

A complete stroke of the coin plate 6 from right to left deposits ten dimes in each of the two dime envelopes 18 in position at the left end of the device. Reversing the stroke of the coin plate 6 then deposits ten dimes in each of the two dime envelopes 18 at the opposite end of the device. Five complete stroke-and-return stroke cycles of the coin plate 6 fills the four dime envelopes 18 with 50 dimes (5 dollars) each, the customary amount for deposit.

In operation the user of this apparatus simply keeps count of the few strokes needed to fill the dime envelopes 18. The proper count can also be judged by eye, since the coin level within the envelope 18 changes substantially with each stroke, rising ten dimes at a time. Another option includes the attachment of one of several standard stroke counter mechanisms.

During any individual stroke of the coin plate 6, completion of the full stroke before reversal, is insured by the action of the pawl 27 and the coin plate ratchet teeth 25 which lock the coin plate 6 against movement in the reverse direction until the initiated stroke has been completed, thereby preventing inadvertent short counts.

Referring now to FIG. 6, each dime envelope 18 with its full load of dimes is removed from the envelope-holding chamber 17 by inserting a finger of the hand through the chamber slot 22 at its bottom end, folding the bottom of the dime envelope 18 under the stack of dimes and into the concavity 21 of the coin pedestal 19, and lifting the filled envelope 18 out of its chamber 17, after which, closure of the envelope ends around the
stack of dimes is completed. New dime envelopes 18 are then installed and the process is repeated.

In filling the two dime envelopes 18 at the opposite ends of each row of five dime chambers 10, each chamber 10 must contribute a total of 20 dimes, 10 to each envelope 18. At the start of the loading cycle, if any chamber 10 contains fewer than 20 dimes, at least one envelope 18 would end up with less than 50 dimes at the end of the required five complete stroke-and-return stroke cycles of the coin plate 6.

To prevent the occurrence of a short count, when the number of dimes in any dime chamber 10 drops below approximately 15, the low weight of the short stack of dimes permits the compression spring 36 to push the top of the stop-finger 35 into the space 5 above the horizontal top deck 13 of the base 1 where it blocks the coin plate against completion of its stroke.

While the invention has been described in detail with reference to certain specific embodiments various changes and modifications which fall within the spirit of the invention will become apparent to the skilled artisan.

What is claimed is:

1. A coin-counting device having means for stacking coins of a similar size in a cylindrical stack and means for transporting said coins from said stack to a receptacle, in which the first said means comprises a hopper with a cylindrical chamber adapted for stacking coins of similar size and in which the second said means comprises a coin transporter, a base and a stationary coin-guide, said base including a stationary surface transverse to and spaced from said cylindrical chamber with said coin transporter slidably mounted therebetween guided for movement along said surface transversely through the space between said chamber and said surface by a stationary transporter guide projecting from said base surface, said transporter including coin-engagement means, whereby actuation of said transporter will move a coin through said space in the direction of transporter movement due to the guiding connection of said transporter, said surface and said coin and transporter guides.

2. A coin-counting device as in claim 1 wherein said transporter is guided for linear movement by said transporter guide and wherein said coin-engagement means comprises a surface transverse to said base surface and to said transporter linear movement.

3. A coin-counting device as in claim 2 wherein said stationary coin-guide is parallel to the transporter guide.

4. A coin-counting device as in claim 3 including a second coin-guide spaced from and parallel to said first coin guide, forming a channel closed at one end, whereby said coin is constrained to linear movement.

5. A coin-counting device as in claim 4 wherein said transporter is mounted on said base for reciprocating movement through said space between said base and said chamber, said transporter including spaced parallel similarly-oriented coin-engagement surfaces, and including means whereby upon sequential, reciprocate movement of said transporter, said coin-engagement surfaces alternately engage and displace coins in opposite directions.

6. A coin-counting device as in claim 2, further including as least another cylindrical chamber parallel to the first said chamber and axially aligned with said transporter, whereby movement of said transporter will urge a coin from one said chamber into engagement with a coin from the second said chamber, moving a plurality of co-planar axially aligned coins in mutual abutment.

7. A coin-counting device as in claim 1 wherein the said receptacle comprises a coin packer having a housing with a cylindrical bore parallel to said chamber wherein said surface extends from the chamber to the bore.

8. The combination as in claim 7 wherein said packer cylindrical bore is open and unrestricted at one end and adapted to receive therein a coin-packing envelope, said open end positioned closely adjacent to and lower than an edge of said stationary base surface, whereby movement of a coin by said transporter beyond said edge will cause said coin to tilt by gravity and drop initially edgewise into said packing envelope.

9. A coin packer comprising a housing, having:

a. a cylindrical bore within a cylindrical surface closed transversely at a bottom end and having an opposite open top end encompassed by a transverse edge adapted to receive fully in said bore a coin envelope extending from said open end to abutment with said bottom end, whereby said cylindrical surface fully and uniformly engages said envelope to force it into a circular cylindrical shape,

b. a coin support projecting longitudinally from said closed end, fully within the bore and spaced from said cylindrical surface to accept said envelope therebetween, said support adapted to support the bottom coin within said envelope above bottom end and shaped to leave a portion of said bottom coin unsupported,

c. a slot in said housing for providing access to said envelope, whereby the envelope portion adjacent to said coin support can be crimped against said unsupported coin portion and said envelope removed from the packer with the coins, wherein said slot extends from said bottom end to said transverse edge and communicates with a portion of the bore for less than half the circumference of the bore and,

d. the coin support has a longitudinal-extending indentation aligned with said slot whereby a portion of the bottom coin is unsupported for crimping and envelope removal.

10. A packer as in claim 9 in further combination with a transverse surface spaced from said edge both radially and axially, providing an external step for guiding coins from said transverse surface to said edge and into said bore.

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