

Oct. 22, 1963

F. H. GATES
COMBINATION STACKING AND DISPENSING APPARATUS
FOR COINS AND THE LIKE

3,107,467

Filed Sept. 8, 1959

2 Sheets-Sheet 1

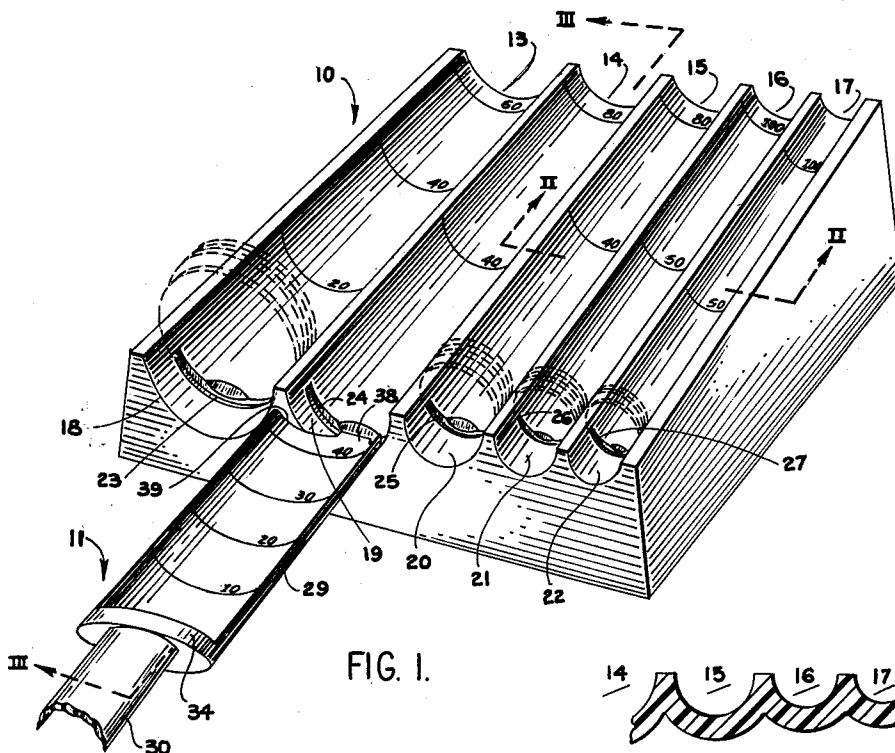


FIG. 1.



FIG. 2.

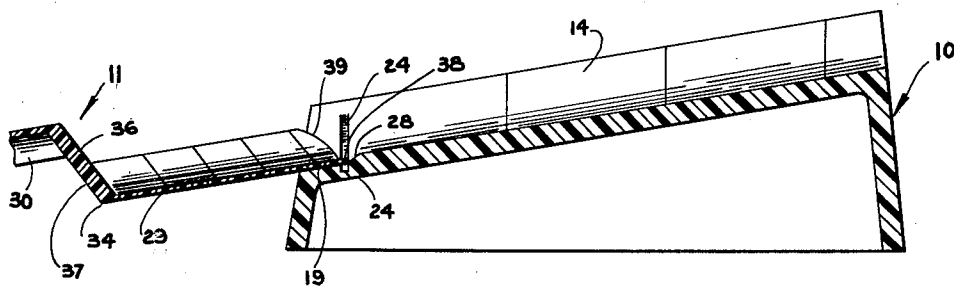


FIG. 3.

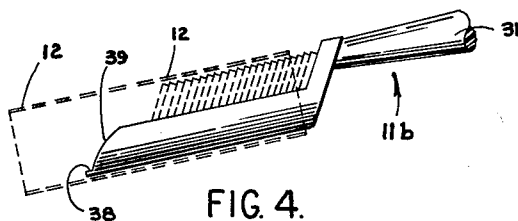


FIG. 4.

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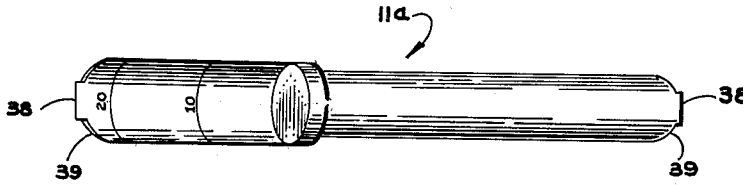


FIG. 5.

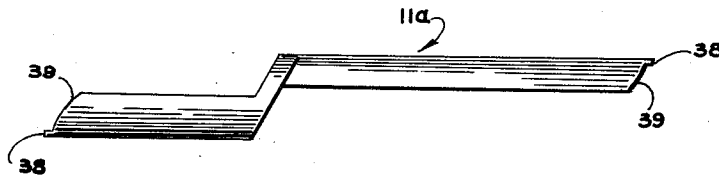


FIG. 6.

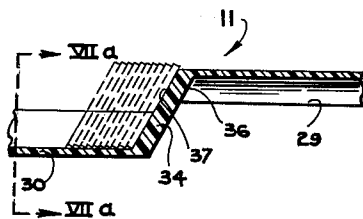


FIG. 7.



FIG. 9.

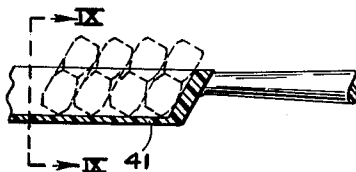


FIG. 8.

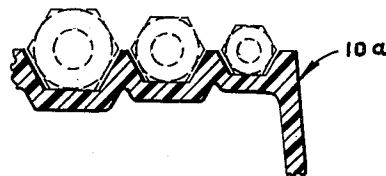


FIG. 10.

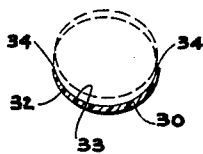


FIG. 7a.

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1

3,107,467

COMBINATION STACKING AND DISPENSING APPARATUS FOR COINS AND THE LIKE

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3 Claims. (Cl. 53—254)

This invention relates to an apparatus for stacking and counting coins and the like, and for dispensing the same into coin tubes or wrappers.

An object of the present invention is to provide novel means for effecting unloading of a predetermined number of stacked coins from a stacking device into a dispensing device, and for introducing the stacked coins from the dispensing device into a paper coin tube or wrapper.

Another object of the invention is to provide improved dispensing means for effecting insertion of a stack of coins into a coin tube without binding of the coins either with the dispenser or with the interior wall of the tube.

Another object of the present invention is to provide a coin board or stacker incorporating novel means for forming a stop at the lower end of each coin groove, and novel means for effecting unloading of coins from each coin groove.

A further object is to provide a trough-like coin dispenser having portions adapted to serve selectively as scoops and handles, and having inclined stop means adapted to determine the angularity or inclined positions of the coins in both portions of the dispenser.

These and other objects and advantages of the invention will be more fully set forth in the following specification and claims, considered in connection with the attached drawings to which they relate.

In the drawings:

FIGURE 1 is a perspective view illustrating the stacker and a dispenser in positions assumed when coins are about to be discharged from a stacker chute into the dispenser;

FIGURE 2 is a fragmentary transverse section taken on line II—II of FIGURE 1;

FIGURE 3 is a sectional view on line III—III of FIGURE 1;

FIGURE 4 is an elevational view illustrating dispensing of a stack of inclined coins from a dispenser into a paper coin tube or wrapper;

FIGURE 5 is a plan view of a coin dispenser;

FIGURE 6 is a side elevation of the coin dispenser;

FIGURE 7 is a fragmentary longitudinal sectional view of the center portion of the coin dispenser, illustrating the inclined stop or backup means;

FIGURE 7a is an enlarged transverse section of the dispenser, taken on line VIIa—VIIa of FIGURE 7.

FIGURE 8 is a fragmentary view, primarily in section, illustrating a dispenser adapted to dispense fastener nuts or the like;

FIGURE 9 is a section taken on line IX—IX of FIGURE 8; and

FIGURE 10 is a fragmentary sectional view corresponding to FIGURE 2 but illustrating the shape of the stacker where nuts are to be stacked instead of coins.

Throughout the specification and claims, coins will be referred to as the objects being stacked or dispensed. It is to be understood, however, that the term "coins" is intended to denote not only money but also similar disc-shaped objects as well as square or hexagonal objects such as nuts.

Referring to the drawings, the coin stacker or board is indicated generally at 10 in FIGURES 1-3, whereas a coin dispenser or scoop is indicated at 11 in FIGURES 1, 3 and 7. Coin stacker 10 is adapted to receive stacks of coins of various denominations, and is illustrated as being provided with suitable markings indicating the number of

2

coins in each stack. Means are provided to effect unloading of the coins in a predetermined stack into a co-operating dispenser such as number 11, which is also illustrated as being provided with indicia informing the user as to the number of coins in the dispenser. The dispenser is adapted to be employed in filling a paper coin tube or wrapper such as is indicated at 12 in FIGURE 4.

The indicia or markings relative to the number of coins in each stack are uniform for each denomination of coins excepting dimes. It has been found that dimes vary excessively in thickness, so that different markings should be employed in accordance with whether the dimes are thin, medium or standard thickness. Thus, the dime grooves of both the stacker and dispenser may be provided with three markings representing dimes of various thicknesses.

Proceeding next to a detailed description of the stacker 10, this may comprise a hollow plastic member having five generally semi-cylindrical grooves 13-17 molded in parallel relationship in its upper portion. Groove 13 may be adapted for half-dollars, groove 14 for quarters, groove 15 for nickels, groove 16 for pennies and groove 17 for dimes. The diameter of each groove is slightly larger than that of the coins to be stacked therein. The grooves are inclined at a suitable angle, such as 10 or 15 degrees from the horizontal.

Formed in stacker 10 adjacent the lower ends of the respective grooves 13-17 are dispenser-loading grooves or recesses 18-22. Such grooves or recesses 18-22 are coaxial with the respective main grooves 13-17 but have somewhat larger radiiuses. The difference between the radius or diameter of each main groove and the associated auxiliary or dispenser-loading groove is sufficient that the open end of a dispenser, when inserted in the dispenser-loading groove, will be approximately flush with the main groove in order that coins may be readily slid from the main groove into the dispenser. Thus, it will be understood that the difference in radius between each main groove and the associated dispenser-loading groove (such as grooves 14 and 19) is a function of the wall thickness at the end portion of the dispenser.

As best illustrated in FIGURES 1 and 3, each main groove is spaced from the related dispenser-loading groove by a generally semi-annular channel adapted to receive a single coin of the denomination stacked in the associated groove. The respective semi-annular channels for grooves 13-17 are numbered 23-27 and have diameters substantially larger than those of the associated main and dispenser-loading grooves. The coin disposed in each channel 23-27 is adapted to form a stop for the coins stacked in the associated main groove. Insertion of a coin into each channel 23-27 is facilitated by a bevel at the upper edge of the channel, as indicated at 28 in FIGURE 3. Each such bevel is adapted to facilitate insertion of a coin into the associated channel without interfering with sliding of a coin stack into the related coin dispenser.

Proceeding next to a detailed description of the coin dispensers, it is to be understood that a different-size dispenser portion is provided for each of the grooves 13-17 in stacker 10. Thus, the dispenser 11 shown in FIGURES 1, 3 and 7 has a first dispenser portion 29 particularly designed to receive quarters from groove 14, and has a second dispenser portion 30 particularly designed to receive dimes from grooves 17. A second dispenser 11a, shown in FIGURES 5 and 6, is adapted to receive half-dollars and nickels from slots 13 and 15. Where there are an odd number of grooves in any particular stacker, one scoop (such as number 11b illustrated in FIGURE 4) has only a single dispenser portion and is provided with a handle 31. The scoop 11b (FIGURE 4) may be employed for the penny groove 16, for example.

3

There will next be described the dispenser 11 for quarters and dimes, it being understood that the description applies equally well, except for dimensions, to the scoop 11a for half-dollars and nickels. It also applies to the dispensing portion of the dispenser 11b (FIGURE 4) for pennies.

The exterior surface of portion 29 of dispenser 11 has a radius corresponding generally to that of the auxiliary or dispenser-loading groove 19, whereas the outer radius of dispenser portion 30 is generally the same as that of loading groove 22. Except as will be noted subsequently, the inner radius of dispenser portion 29 is equal to or larger than the radius of groove 14, whereas the inner radius of dispenser portion 30 is either equal to or slightly greater than the radius of groove 17.

Referring next to FIGURE 7a, which shall be interpreted as applying equally well to dispenser portions other than 30, the outer semi-cylindrical dispenser surface (corresponding to dispenser-loading groove 22) is numbered 32. The inner and lower surface portion of dispenser 30 having a radius equal to or slightly greater than that of groove 17) is numbered 33. However, as shown in FIGURE 7a, such inner surface 33 increases in diameter, adjacent the upper longitudinal edges of the dispenser portion, until the diameter is substantially greater than that of the coin to be contained within such dispenser-portion. Stated otherwise, clearance regions 34 are provided adjacent the mid-portions of the dimes to be contained within the dispenser. Such clearance regions are sufficient to permit substantial inclinations of the coins, as will be described below, without causing the lower edges of the coins to be tilted or lifted out of engagement with the center or bottom of surface 33. FIGURE 7a shows a coin in tilted position, so that the clearance regions 34 are occupied by the mid-portions of the edge of the coin.

It is an important feature of the invention that dispenser portions 29 and 30 extend in diametrically opposite directions from an inclined connecting and stop member 34 having parallel surfaces 36 and 37 which are oblique to the axis of the dispenser. The dispenser portions 29 and 30 are inverted relative to each other and are preferably integral with the stop portion 34. With the described construction, the entire dispenser 11 may be formed integral by injection molding, and each dispenser portion may serve as a handle while the other portion is being utilized. For example, in the showing of FIGURES 1 and 3, portion 30 is employed as a handle while portion 29 is being utilized. By contrast, in the showing of FIGURE 7 the portion 29 is being employed as a handle while portion 30 is utilized.

Preferably, the open end of each dispenser portion is formed with a lip 38 adapted to abut against the bevelled region 28 (FIGURE 3). Such lip facilitates loading of the dispenser and of paper coin tube 12 (FIGURE 4). The forward edges of each dispenser portion are curved, as indicated at 39, to aid in the loading functions to be described.

Operation

In the operation of the apparatus illustrated in FIGURES 1-7a, inclusive, coins of the various denominations are disposed in the respective channels 23-27 and serve as stops for the coins stacked in the inclined groove 13-17, respectively. The inclination of the grooves causes the coins to remain upright, as indicated in FIGURE 1.

When the user desires to load a paper coin tube, for example with quarters, he selects the appropriate dispenser 11 and places portion 29 thereof adjacent the stop quarter, near the position indicated in FIGURE 1. He then lifts the stop quarter until it is barely out of channel 24, after which he moves the dispenser until lip 38 abuts bevel 28. He then slides a predetermined number of coins from the groove 14 down into the dispenser portion 29, after which (if groove 14 is not empty) he places another stop coin in channel 24. The first-mentioned stop coin,

4

after sliding into dispenser portion 29, engages the surface 36 thereof and causes the entire stack of coins to assume the inclination of surface 36.

It is then merely necessary to insert the lip 38 in one end of the coin tube, and slide the dispenser and coins into the coin tube in the manner indicated in FIGURE 4. The inclination of the coins facilitates this operation by reducing the effective diameter thereof. Furthermore, and very importantly, the inclination of the coins does not cause the same to tilt or rise out of engagement with the bottom of scoop 30 (FIGURE 7a). No binding action is produced adjacent clearance regions 34.

The operation is the same with relation to other types of coins. For example, the dispenser portion 30 may be employed with the dimes stacked in chute 17, so that the dimes then abut against surface 37 as indicated in FIGURE 7.

Embodiment of FIGURES 8-10

FIGURES 8-10 illustrate a modification in which nuts, or other angular geometric objects, are stacked instead of discs. The coin staker is the same as the one indicated in FIGURES 1 and 2, except that the grooves are shaped correspondingly to the parts being stacked. Thus, the coin staker indicated at 10a has angular grooves. Each dispenser is likewise the same as the ones described above, except that it is shaped, as indicated at 41 in FIGURE 9, correspondingly to the parts being stacked.

Various embodiments of the present invention, in addition to what has been illustrated and described in detail, may be employed without departing from the scope of the accompanying claims.

I claim:

1. A stacking device for disks and the like, comprising an inclined upwardly open trough having an upper rear portion and a lower front portion, the front portion of the trough being offset downwardly from the forwardly projected contour of the rear portion of the trough, the trough having a slot between said front and rear portions disposed transversely of the length of the trough to receive and retain at least the lowermost disk of a stack of disks in the trough with at least the lowermost disk offset downwardly from the next disk in the stack and serving as a stop to retain the remaining disks of the stack in the trough, the front portion of the trough terminating to the rear in a rear shoulder which is the forward wall of the slot and the rear portion of the trough terminating to the front in a front shoulder which is the rear wall of the slot.

2. A stacking device as claimed in claim 1, and a receptacle for disks and the like open at its front end and closed at its rear end and having its front end in removable sliding contact with the front portion of the trough, the interior of at least the front end of the receptacle being flush with at least the lower end of the rear portion of the trough so that when at least the lowermost disk of a stack of disks in the trough is raised from the slot, the front end of the receptacle can be slid up against the rear wall of the slot to form a bridge across the slot so that the stack of disks may slide smoothly down the rear portion of the trough into the receptacle without catching in the slot.

3. A stacking device for disks and the like, comprising a pair of inclined upwardly open troughs in unitary assembly, the troughs being of distinctively different size for retaining stacks of disks of distinctively different diameter, each trough having an upper rear portion and a lower front portion, the front portion of each trough being offset downwardly from the forwardly projected contour of the rear portion of the same trough, each trough having a slot between said front and rear portions disposed transversely of the length of the trough to receive and retain at least the lowermost disk of the associated stack of disks with at least the lowermost disk offset downwardly from the next disk in the stack and serving as a stop to retain the remaining disks of the stack in the associated trough, the front portion of each trough terminating to the rear in

5

a rear shoulder which is the forward wall of the associated slot and the rear portion of each trough terminating to the front in a front shoulder which is the rear wall of the associated slot, a pair of elongated receptacles for disks and the like, the receptacles being in unitary assembly with each other and extending lengthwise away from each other from adjacent their rear ends to open front ends, means common to the two receptacles closing the rear end of both receptacles, the front end of one receptacle being in removable sliding contact with the front portion of one said trough, the interior of at least the front end of said one receptacle being flush with at least the lower end of the rear portion of said one trough so that when at least the lowermost disk of a stack of disks in said one trough is raised from the associated slot, the front end of said one receptacle can be slid up against said rear wall of the associated slot to form a bridge across said associated slot so that the stack of disks may slide smoothly down the rear portion of said one trough into said one receptacle without catching in said associated slot, the other receptacle providing a handle for said one receptacle, said other

6

receptacle being of a size related to the size of said one receptacle as the size of the other trough is related to the size of said one trough so as to receive disks from said other trough in the same manner as aforesaid, said one receptacle in the latter instance providing a handle for said other receptacle.

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