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Hull et al.

[11] **3,751,871**

[45] **Aug. 14, 1973**

[54] **COIN PROCESSING METHOD**

[75] Inventors: **Gerry G. Hull; Eugene B. Morris, Jr.**, both of Atlanta, Ga.

[73] Assignee: **ATL Machine Corporation**, Atlanta, Ga.

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Related U.S. Application Data

[63] Continuation of Ser. No. 48,077, June 22, 1970.

[52] **U.S. Cl.** **53/26**, 53/28

[51] **Int. Cl.** **B65b 35/50**

[58] **Field of Search** 53/26, 28

[56] **References Cited**

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Primary Examiner—Travis S. McGehee
Assistant Examiner—John Sipos
Attorney—Jones & Thomas

[57] **ABSTRACT**

A coin processing method and apparatus in which coins of predetermined physical characteristics are lifted from a mass of coins, dropped into a plurality of coin hoppers and moved through individual conduits down to a coin shelf. A predetermined number of coins from the hoppers are allowed to accumulate and form stacks on the coin shelf and the stacks of coins are passed in sequence over a discharge opening in the coin shelf. Balls of a diameter approximately equal to the diameter of the coins are inserted between the coin stacks at the coin shelf discharge opening, and a transparent plastic material is applied to the line of coin stacks and balls to form a continuous tubular wrapper about the coins and balls. The continuous wrapper is opened at the balls and the balls are separated from the coin stacks, leaving separate packages of coins.

4 Claims, 7 Drawing Figures

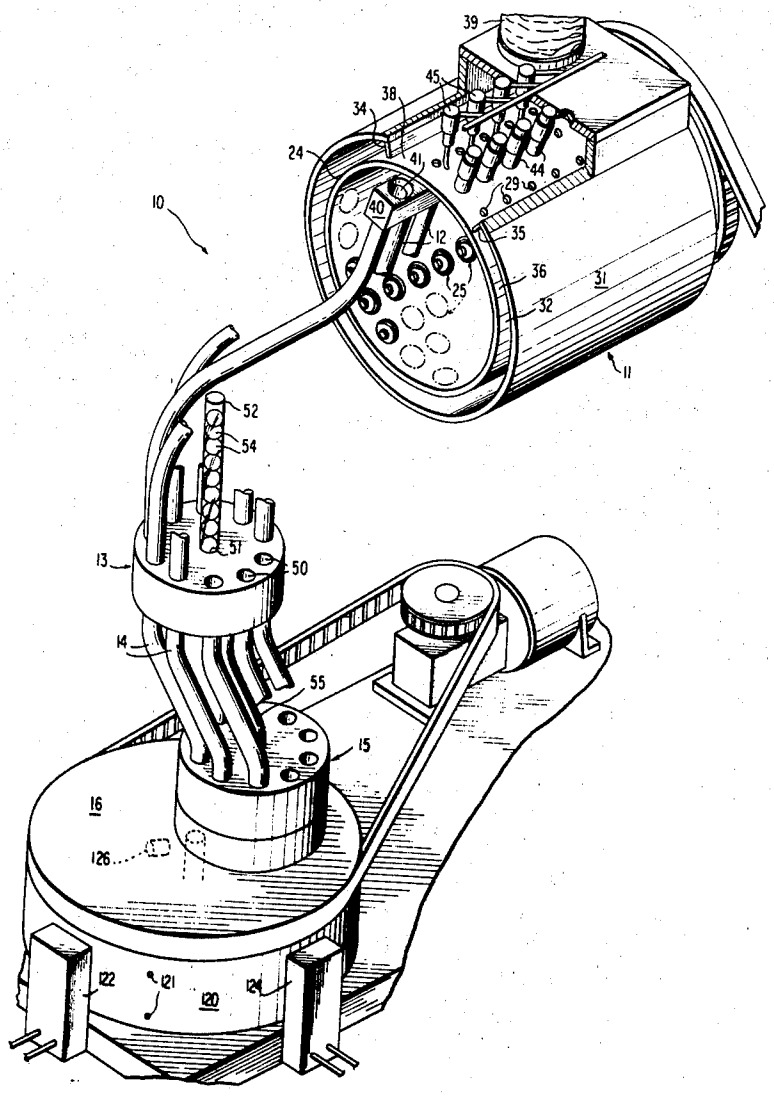
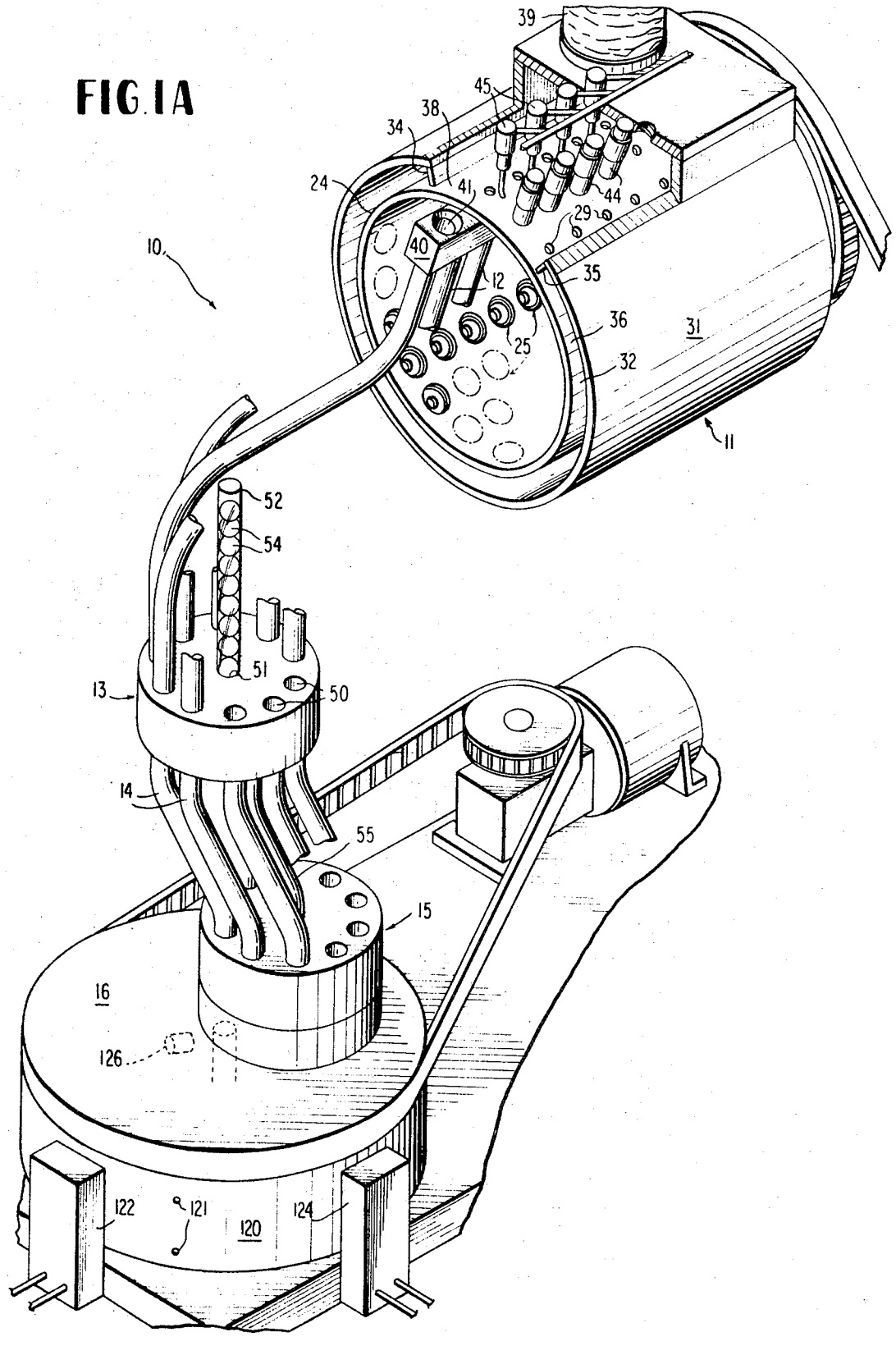


FIG. 1A


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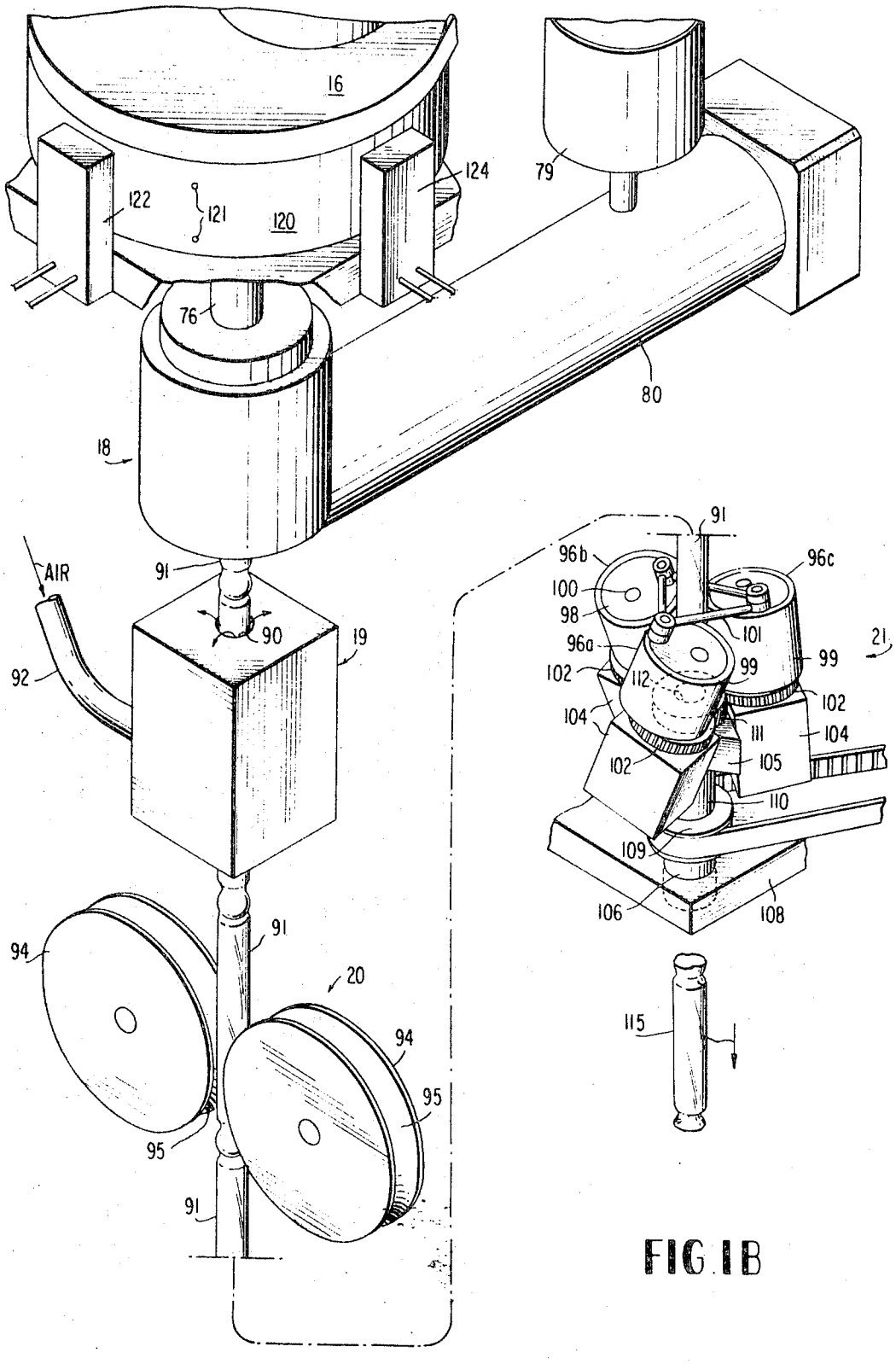

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96b
96c
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96a
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FIG. 1B

FIG. 2

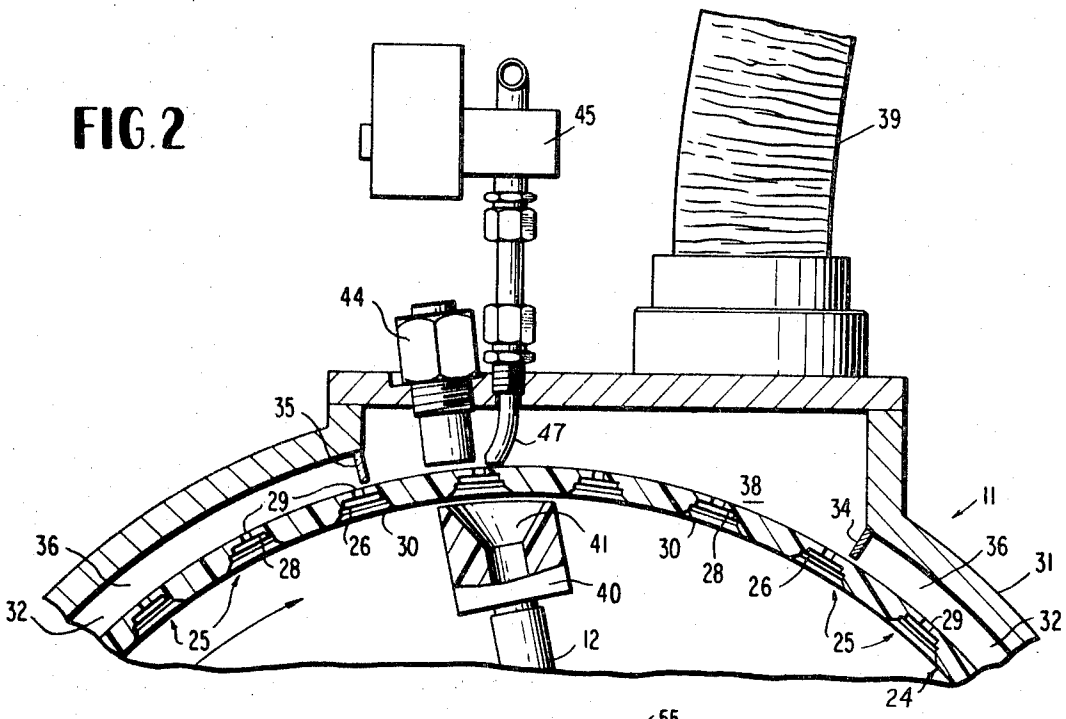

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FIG. 3

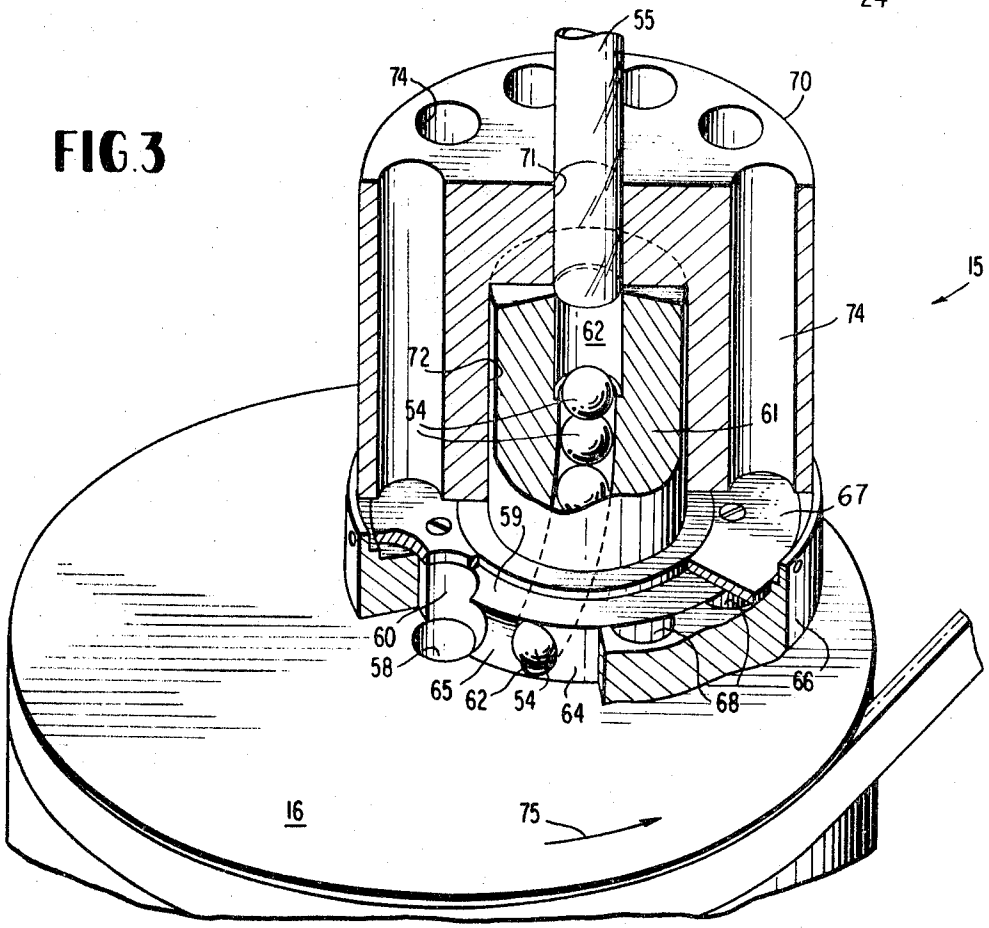

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74
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FIG. 4

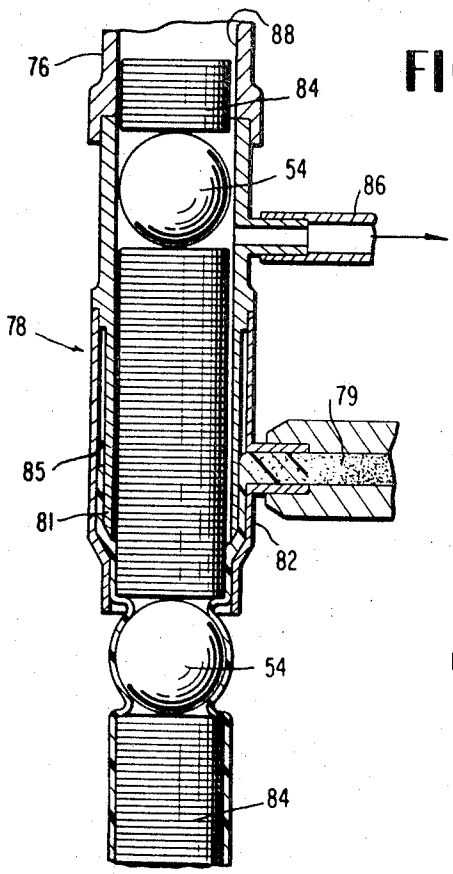


FIG. 5

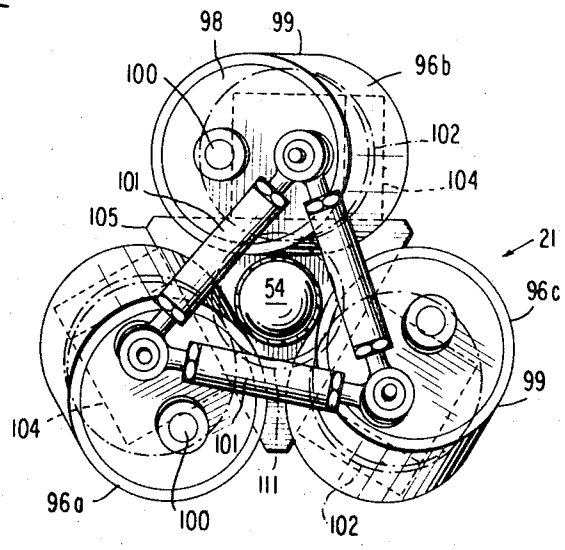
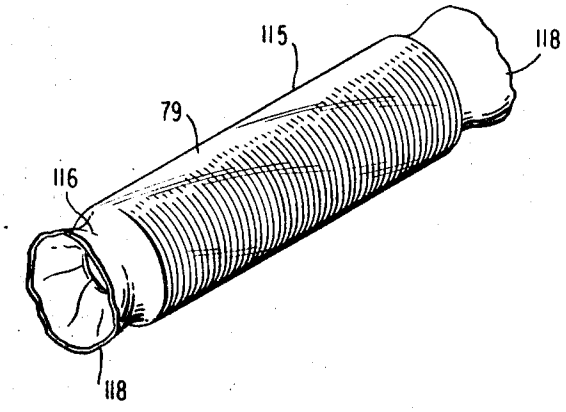


FIG. 6



COIN PROCESSING METHOD

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation of application Ser. No. 48,077 filed June 22, 1970.

BACKGROUND OF THE INVENTION

When coins are counted and packaged, the coins usually are taken from a random mass of coins and sorted in accordance with their physical characteristics which correspond to their denomination. The coins are stacked or placed in overlying abutment with one another until a predetermined number of coins has been accumulated, and the coins are then packaged in a wrapper which usually comprises a paper wrapper.

While various mechanical devices have been developed and used to some success to sort coins in accordance with their physical characteristics, the mechanical devices developed so far have been largely unsuccessful since they tend to become clogged with trash and debris and they fail to detect the difference in legitimate coins and the slugs. Moreover, damaged coins usually tend to be processed by the prior art mechinery. The remaining steps of counting and packaging in a typical coin processing system usually have been performed by hand because of the lack of reliable automatic equipment to perform these functions.

In addition to the problems encountered in the steps of coin separation, counting and packaging, the typical package of coins resulting from these steps comprises an opaque cover which hides the coins from view and prevents a person from detecting the value of the coins in the package or detecting any abnormality in the stacked coins of a package.

SUMMARY OF THE INVENTION

Briefly described, the present invention comprises a noval coin package and a novel coin processing method and apparatus. A mass of coins is placed in a coin receiving drum which is rotatable about a lateral axis. A lattice of bores is defined in the inside surface of the wall of the drum, and the bores conform in size and shape to the size and shape of the coins to be separated from the mass of coins. Coins are lifted in the bores of the drum with the movement of the bores in an upward direction, and the coins are discharged from the bores to a receptacle in the upper portion of the drum. The coins flow from the receptacle in a downward direction through a plurality of coin conduits to a coin sheft where the coins are arranged in stacks. The stacks of coins are moved in sequence over a discharge opening and spherical balls are placed between the stacks of coins as the stacks move through the discharge opening. A continuous film of transparent plastic is applied to the stacks of coins to form a continuous package of coins and balls, and the continuous package is opened at the balls to separate the stacks of coins into a plurality of individual packages of coins and to release the balls from the continuous package. The individual packages are transparent so that the nature and quality of the coins can be detected by visual inspection of the packages.

Thus, it is an object of this invention to provide a method and apparatus for processing coins which reliably separates coins of predetermined physical characteristics from a mass of coins, accumulates the coins, and applies a transparent cover about the accumulated coins.

Another object of this invention is to provide an apparatus for expediently forming coins of like characteristics in a stacked relationship with a transparent cover applied to the outside of the stack.

Another object of this invention is to provide a stack of coins having a predetermined number of coins in the stack and packaged in a transparent cover.

Other objects, features and advantages of the present invention will become apparent upon reading the following specification when taken into conjunction with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1A is a schematic illustration, with parts broken away, of the upper portion of the coin processing apparatus.

FIG. 1B is a continuation of FIG. 1A and shows the lower portion of the coin processing apparatus.

FIG. 2 is a detailed showing of the upper portion of the coin receiving drum and its housing and related apparatus.

FIG. 3 is a perspective view of the coin stacker with parts broken away for clarity.

FIG. 4 is a detailed showing of the stacked coins and the packaging device illustrating the manner in which the transparent wrapper is applied to the coins.

FIG. 5 is a top view of the ball masher.

FIG. 6 is a perspective view of a package of coins.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in more detail to the drawing, in which like numerals indicate like parts throughout the several views, FIGS. 1A and 1B show an overall schematic illustration of the coin processing apparatus **10** which includes sorting drum assembly **11**, coin conduits **12**, conduit terminal block **13**, dogleg conduits **14**, revolving feeder assembly **15**, rotatable platform **16**, packaging assembly **18**, cooler **19**, guide **20** and ball masher **21**.

Sorting drum assembly **11** includes a sorting drum or cylinder **24** fabricated of a non-conducting material, such as nylon, teflon or any of the conventional dielectric materials and is positioned with its longitudinal axis disposed in an approximately horizontal attitude, and which is rotatable about its longitudinal axis. Sorting drum **24** includes a lattice or plurality of coin receiving recesses **25** in the internal surface of its wall. Recesses **25** extend along the length of and about the circumference of sorting drum **24**, with the recesses being placed in annular alignment about the circumference of the drum. As is best illustrated in FIG. **2**, coin receiving recesses **25** are substantially identical in shape and each includes outer bore **26**, inner counter bore **28**, aperture **29** and tapered or scalloped surface **30**. Outer and inner bores **26** and **28** and apertures **29** for each recess **25** are disposed concentrically with respect to each other. Outer bores **26** are of a diameter and depth which corresponds to the diameter and thickness of the coins which are to be received in the coin receiving recesses. Inner counter bore **28** is slightly smaller than the smallest standard coin normally used in the coin currency being processed, so that the smallest coins will not enter inner counter bore **28**.

Sorting drum assembly 11 also includes housing 31 which surrounds sorting drum 24. Annular air flow chamber 32 is defined between housing 31 and sorting drum 24. Baffles 34 and 35 extend along the length of housing 31 and project inwardly toward sorting drum 24 and terminate just short of sorting drum 24. Baffles 34 and 35 divide annular air flow chamber 32 into first zone 36 below baffles 34 and 35 and second zone 38 generally above sorting drum 24. An opening is defined in the upper portion of housing 31, and air exhaust conduit 39 is connected to the opening and functions to draw air from annular air flow chamber 32. Since coin receiving recesses 25 include apertures 29, air will flow from within sorting drum 24 through the apertures 29 to the annular air flow chamber 32 and then through exhaust conduit 39. Baffles 34 and 35 tend to create a lower pressure zone within second zone 38 of annular air flow chamber 32.

Coin receptacle 40 is positioned within the confines of sorting drum 24 and includes a plurality of spaced coin receiving hoppers 41 which face in an upward direction and are spaced along the length of sorting drum 24 at distances which correspond to the spacing of the annular rows of coin receiving recesses 25. Coin conduits 12 are connected to coin receiving hoppers 41. While only a few of the coin receiving hoppers 41 and coin conduits 12 are illustrated for the purpose of clarity, it will be understood that ten coin receiving hoppers 41 and coin conduits 12 have been used in the machines developed and it is anticipated that virtually any number of hoppers and conduits can be utilized as may be desired.

A plurality of proximity sensors or metal detectors 44 are supported by housing 31 and are spaced along the length of the housing at distances corresponding to the spacing of the annular rows of coin receiving recesses 25. When a coin receiving recess 25 carries a coin with it upon the rotation of sorting drum 24, its proximity sensor 44 will detect the presence of the coin. Solenoid controlled air valves are also positioned along the length of sorting drum 24 at intervals corresponding to the spacing of the coin receiving recesses 25. An air valve 45 is located closely adjacent each proximity sensor 44 and controls the flow of air through conduit 47, and each air valve is controlled by its adjacent proximity sensor 44. Thus, when a proximity sensor 44 detects a coin in a recess 25, it actuates its air valve 45. Each air valve is connected to a source of air pressure so that when the air valve is opened by a proximity sensor, it functions to flow a stream of air through its conduit 47 toward the aperture 29 of a coin receiving recess 25.

The arrangement of sorting drum assembly 11 is such that when a mass of coins is fed to the sorting drum 24 through one of its open ends, the rotation of the sorting drum 24 will tend to tumble the coins as the coins fall from the rising portion of the drum under the influence of gravity. The coins tend to fall down the tapered surfaces 30 into the coin receiving recesses 25 of drum 24. If a coin corresponds in diameter to the diameter of outer bore 26 of a recess, it will tend to be seated in the recess. The reduced air pressure in annular air flow chamber 32 tends to hold each coin in a bore 26, if the coin fits the bore. If the coin is smaller than the bore 26, it will tend to slide to the lower portion of the bore 26 as the recess 25 moves up into an upright attitude as the sorting drum 24 rotates, so that the coin does not completely cover inner counter bore 28. The reduced air pressure in annular flow chamber 32 will then cause the stream of air to flow about the edge of the coin and through the aperture 29 behind the coin and the coin will not be held in the recess. As the recess moves beyond an upright attitude and into a generally downwardly facing attitude, the smaller coin will fall from the recess. If the coin is larger than outer bore 26, it will not become seated in the outer bore and when the coin receiving recess 25 moves beyond an upright attitude, the coin will slide out over the tapered surface 30 of the recess and fall back into the mass of coins in sorting drum 24.

Those coins that are properly sized and are received in a recess 25 will pass with its recess toward the upper portion of housing 31. First zone 36 of annular air flow chamber 32 tends to hold or lock the coins in a recess with a light force. As the recesses pass baffle 34, the locking force on the coins is increased because of the increased pressure differential across drum 24 so that the coins will not tend to fall from the recesses as the recesses approach a downward facing attitude.

When a coin passes a proximity sensor 44, it is detected by the proximity sensor and the proximity sensor actuates its solenoid controlled air valve 45, which causes a flow of air through its conduit 47 to impinge the aperture 29 of the coin receiving recess 25, thus breaking the vacuum lock applied to the coin and urging the coin from the recess. This causes the coin to fall from the recess toward coin receptacle 40. Coin receptacle 40 is positioned so that its coin receiving hoppers 41 are located in the normal path of travel of a coin being discharged by an air valve 45. Thus, the coins will fall into a coin receiving hopper 41 and will pass through one of the conduits 12 out of housing 31 and in a downward direction through the conduit.

If the coin passing with a coin receiving recess 25 is bent or has chewing gum stuck to it, or if its surfaces are otherwise malformed or improperly sized, the shape of the coin will prevent the coin from becoming held or locked in a coin receiving recess 25 and the coin will not be lifted toward coin receptacle 40. Moreover, if the coin is a slug, or is fabricated from a metal not compatible with proximity sensors 44, the proximity sensor will not be actuated by the passing of the coin with sorting drum 24 so that the solenoid controlled air valve will not be actuated and the coin will not be ejected or discharged toward receptacle 40.

Terminal block 13 defines a plurality of vertically extending openings 50 that are arranged in a circle, and the lower ends of coin conduits 12 are connected to openings 50. In addition, central opening 51 is defined in terminal block 13, and the transparent tube 52 is connected to the upper end thereof. Transparent tube 52 can terminate a short distance above terminal block 13 as shown or can be connected to a ball supply hopper (not shown). Transparent tube 52 is loaded with a plurality of stainless steel spacer balls 54, either by hand or by a supply from a hopper.

Dogleg conduits 14 extend between terminal block 13 and revolving feeder assembly 15. The upper ends of the dogleg conduits communicate with the lower ends of openings 50 in a circular arrangement, and a center dogleg 55 communicates with the lower end of central opening 51 of transparent tube 52.

Revolving feeder assembly 15 is mounted on rotatable platform 16. Discharge opening 58 (FIG. 3) is defined in rotating platform 16 at its center of rotation,

and guide block 59 is rigidly connected to rotating platform 16 so that it rotates with the platform. Guide block 59 is offset from the center of rotating platform 16 and includes a semi-cylindrical discharge groove 60 which is coextensive with the curvature of discharge opening 58. Guide block 59 is generally of flat, circular configuration and includes centrally positioned upwardly extending circular boss 61. Boss 61 defines a vertical central cylindrical opening 62 that extends from its upper end down into the center portion of guide block 69 and then turns laterally and opens through the side surface 64 of the guide block. Center dogleg 55 which communicates at its upper end with transparent tube 52 is connected to the upper end of opening 62 of guide block 59. Lateral groove 65 in the periphery of guide block 59 connects the lower end of opening 62 with discharge groove 60.

Annular revolving skirt 66 surrounds the lower portion of guide block 59 and includes a series of spaced, inwardly facing semi-cylindrical vertical grooves 68. The upper surface of revolving skirt 66 is generally coextensive with the upper surface of guide block 59 so that these surfaces together form a coin shelf. If desired, a split annular ring 67 can be rigidly fastened to the upper surface of guide block 59 to cover the upper ends of inwardly facing grooves 68 of the annular revolving skirt, with the opening of the split ring positioned above discharge 60. This tends to prevent a possible binding of the apparatus in the event a coin falls in one of the grooves 68.

Revolving coin stacker block 70 defines a central opening 71 and lower counter bore 72. Counter bore 72 fits about circular boss 61 of guide block 59, and opening 71 accommodates center doglet 55. A plurality of vertical openings 74 are positioned in a circular arrangement at spaced intervals throughout stacker block 70, and the lower ends of dogleg conduits 14 are connected to these openings. Openings 74 are coextensive with inwardly facing grooves 68 of revolving skirt 66.

The arrangement of revolving feeder assembly 15 is such that when the coins from dogleg conduits 14 fall into the vertical openings 74 of revolving coin stacker block 70, the coins form a stack of coins on the coin shelf formed by annular split ring 67 covering inwardly facing grooves 68 of revolving skirt 66. The rotation of rotatable platform 16 causes guide block 59 to rotate in unison therewith; however, the offset lower ends of dogleg conduits 14 prevent revolving coin stacker block 70 and annular revolving skirt 66 from rotating. Thus, skirt 66 and stacker block 70 will revolve but not rotate about the center discharge opening 58 of rotatable platform 16. As revolving feeder assembly 15 revolves, the spaced inwardly facing grooves 68 of skirt 66 and the vertical openings 74 of coin stacker block 70 move about guide block 59 so that they sequentially register with discharge groove 60 and discharge opening 58. As rotatable platform 16 moves in the direction as indicated by arrow 75, each inwardly facing groove 68 will sequentially pass the lower end of openings 62 of guide block 59 and then discharge opening 58. As each groove 68 passes the lower end of openings 62, a spacer ball 54 will move into the groove 68 and pass with revolving skirt 66 through lateral groove 65 of guide block 59 until the inwardly facing groove 68 registers with discharge opening 58, whereupon the ball will fall through the discharge opening. In the meantime, the vertical openings 74 of stacker block 70 will have accumulated and stacked coins, so that when an opening 74 registers with discharge groove 60, the stack of coins will follow the spacer ball 54 through the mating inwardly facing groove 68 and discharge groove 60, and then through discharge opening 58 in platform 16. Thus, a line of alternating stacks of coins and spacer balls will pass through discharge opening 58.

Packaging assembly 18 is positioned below rotatable platform 16 and includes receiving conduit 76 which communicates at its upper end with discharge opening 58. The lower end of receiving conduit communicates with packaging header 78 (FIG. 4). A supply 79 of thermoplastic polymeric material, such as polyethylene, polypropylene or polyvinylchloride, communicates with heated auger 80, and the material is heated to a plastic state and is urged in a hot condition toward header 78. Header 78 includes concentric tubes 81 and 82. Inner tube 81 receives the line of stacks of coins 84 and spacer balls 54. Heated auger 80 communicates at its discharge end with outer tube 82 and forces the hot plastic material into the annular chamber 85 defined between the tubes. The hot plastic material then flows in a downward direction to the lower end of inner tube 81 where it is urged into engagement with the series of coin stacks 84 and spacer balls 54. Air exhaust conduit 86 communicates with the passage 88 through packaging header 78 and functions to apply a low pressure to the passage. Thus, when the plastic material 79 emerges from annular chamber 85, the low pressure zone within passage 88 tends to draw the plastic material on the stacks of coins and spacer balls, so that a continuous wrapper is formed on the lines of coins and balls which conforms to the shape of their external surfaces and forms a continuous coin-ball package 91.

Air cooler 19 is located below packaging header 78 and includes central vertical opening 90 which is sized to receive the continuous package 91 from packaging assembly 18. An air conduit 92 communicates with opening 90 through the side wall of cooler 19 and functions to flow air into the cooler and into opening 90. The flowing air tends to pass both in upward and downward directions and about the continuous package 91 to cool the package, which results in hardening the plastic material of the package.

Guide wheels 94 of guide 20 are spring urged into engagement with opposite sides of the continuous package 91 and each guide wheel includes a concave periphery 95 which generally conforms to the shape of continuous package 91.

Ball masher 21 is positioned below guide 20 and receives the continuous package 91. Ball masher 21 includes three ball mashing rollers 96*a*, 96*b* and 96*c* which are spaced about the path of continuous package 91. Each ball mashing roller 96*a–c* comprises center bushing 98 and rotatable sleeve 99. Each bushing 98 is freely rotatable about offset stem 100, and each bushing 98 is movably connected to the other bushings 98 by turnbuckles 101. When the turnbuckles 101 are manipulated to become longer or shorter, the bushings 98 will tend to rotate about their offset stems 100 and move closer together or further apart. The lower ends of the rotatable sleeves 99 each define internal teeth which mesh with a small gear (not shown), and the small gear is rigidly connected to a planetary gear 102, and the bushings, sleeves and planetary gears of each set are mounted upon a support block 104 that is sup-

ported from rotatable center platform **105**. Stationary stem **106** is rigidly connected to platform **108** and extends in an upward direction through belt-driven drive sprocket **109**, concentric rotatable tube **110**, and rotatable center platform **105**. Stationary stem **106** terminates at its upper end in stationary sun gear **111**. Sun gear **111** and stationry stem **106** define an opening **112** for the passage of the coin packages. When drive sprocket **109** is rotated, it rotates concentric rotatable tube **110**, center platform **105**, and support blocks **104**. The planetary gears **102** of each rotatable sleeve **99** mesh with stationary sun gear **111** so that rotatable sleeves **99** tend to walk around the continuoue package passing down between the rotatable sleeves **99** and through the opening of stationary stem **106**. The turnbuckles **101** are adjusted so that rotatable sleeves **99** engage the spacer balls **54** with enough force to sever the continuous wrapper at the diameter of the spacer balls **54**. As is illustrated in FIG. **5**, the rotatable sleeves have a curved external surface so that they are of smaller diameter of their central portions than at their ends and as a result the spacer balls **54** will be engaged by substantially the entire vertical length of the rotatable sleeves **99** of the ball masher **21** as the ball masher **21** walks around the spacer balls.

When the individual coin packages are separated from the continuous package of coins and spacer balls, the individual packages **115** will drop from ball masher **21** to a waiting receptacle (not shown) where the spacer balls and individual packages **115** will be separated.

As is illustrated in FIG. **6**, the wrapper **79** of the individual coin package **115** is transparent, and the wrapper or plastic material **79** conforms to the external surfaces of the stacked coins along the sides of the stacked coins and is necked inwardly over the end coins to form a neck **116**, and then is flared out again at **118** where it was severed from the spacer ball. Thus, a generally bell-shaped selvage is formed at the ends of the coin packages to prevent the end coins from falling from the packages. Since the selvage at the ends of the coin packages are flexible, the coin packages can be stacked adjacent each other with virtually no interference from the selvage. Moreover, when a person desires to open a coin package, the selvage can be grasped and torn.

The transparent wrapper of the package enables a person to visually inspect the stacked coins and determined if all the coins are of the denomination desired. Of course, the color and thickness of the coins can be detected through the package, and if the coins are of the type with a corrugated edge, this can also be detected.

In order that the proper number of coins be present between each spacer ball, and in order for the rotation of the revolving feeder assembly **15** to function without binding, it is necessary to terminate the flow of coins from sorting drum assembly **11** to the vertical openings **74** of stacker block **70** just as an opening **74** is about to register with discharge opening **58** of rotatable platform **16**. To accomplish this function, rotatable platform **16** includes a downwardly extending skirt **120** that defines a series of variable spaced openings **121** therethrough at intervals about the skirt which correspond to the spacing of the openings **74** in stacker block **70**. A light source (not shown) is positioned inside the confines of skirt **120** and detectors **122** and **124** are positioned on the outside of skirt **120** to detect the light as the coded openings **121** pass between the light and the detectors. Moreover, an inner detector **126** is spaced across from a light source (not shown) on the other side of the path of the continuous line of stacked coins and spacer balls passing from discharge opening **58** in the rotatable platform **16**. When detector **124** senses light, it stops the rotation of rotatable platform **16** for a short time, long enough for the detector **126** beneath discharge opening **58** to have light blocked by a column of coins passing through the discharge opening. After this short time delay, detector **124** is reset and able to begin the rotation of rotatable platform **116**. In the meantime, if the light to detector **126** at the center of platform **16** is blocked by coins passing through discharge opening **158**, platform **16** will not be allowed to rotate. After the column of coins clears detector **126**, it allows platform **16** to be rotated.

A counter (not shown) is provided for each proximity sensor **44** of sorting drum assembly **11** and counts the number of indications received by its proximity sensor. When the count detected by the counter reaches the desired number of coins for each individual package, which for example may be 50, the counter causes its proximity sensor to be deactuated so that no more coins will be discharged or dispensed to its coin receiving hopper **41** and the corresponding conduit. With this arrangement, coins will flow through the coin conduits **12** toward revolving feeder assembly **15** until fifty coins have been accumulated in each opening **74** of the revolving coin stacker block **70**.

When a vertical opening **74** of the stacker block **70** is about to register with discharge opening **58**, the detector **122** checks the corresponding counter for the particular opening **74** of the stacker block to determine if 50 coins have been dropped to the opening. If fifty coins have been dropped, detector **122** causes no function in the system. If less than fifty coins have been dropped, detector **122** actuates an alarm (not shown), and causes the counter to total to the number 50 (or the desired number of coins for each package) which cuts off the corresponding proximity sensor **44** and terminates the flow of coins to the particular opening **74**. The termination of the flow of coins to the opening **74** about to register with the discharge opening **58** reduces the probability of a coin becoming wedged between the moving parts of the system so that the column of coins will drop in an orderly manner to discharge opening **58**. Moreover, when the alarm is actuated, the machine operator will receive an indication that the coin package will not contain a full 50 coins.

The alarm of the system can include a light, bell, dye marker or various other devices. Under normal circumstances, the machine operator will know to inspect the sorting drum **24** to see if enough coins are present in the sorting drum or to inspect the coin receiving recesses **25** to determine if some of the recesses have become blocked, or to make the various normal inspections of the apparatus to identify the cause of the short package.

While the sorting drum assembly and the various other components of the system have been illustrated so that they appear to package coins on one denomination, it should be understood that the coin receiving recesses of the sorting drum can be made of different sizes to sort different coins. For instance, one annular ring of coin recesses can be sized for pennies, the next sized for nickles, the next sized for dimes, and so on.

Since one flow channel extending between the sorting drum assembly **11** and the revolving feeder assembly **15** receives coins only from one annular line of coin receiving recesses in sorting drum **24**, only coins of like physical characteristics will be stacked together. When the coins are moved by the revolving feeder assembly into registration with the discharge opening **58**, the line of coin stacks and spacer balls will be formed with alternating stacks of coin denominations.

While an air jet has been disclosed for discharging the coins from the coin receiving recesses of the sorting drum, it will be understood that various other ejecting devices can be utilized, such as probes, levers, etc. Moreover, while proximity sensors **44** have been disclosed to determine the presence or absence and quality of the coins in the recesses of the sorting drum, various other devices can be utilized to perform the same or similar function. For instance, a light sensor or air flow sensor can be utilized for this purpose.

While spacer balls **54** have been illustrated for the purpose of separating the coin stacks from each other, various other devices might be utilized. Virtually any separating object which is not shaped like a coin can be inserted between the stacks of coins to form a spacer, and the device utilized to separate the individual coin packages from the continuous package merely has to detect the presence of a spacer object and cut the continuous package at that point. While a transparent thermo plastic polymeric material has been disclosed as being applied to the line of coins and spacer balls in a continuous manner, it will be understood that the operation of the package applicator can be made to function intermittently so as to apply the material only to the coins. With this arrangement, there will be no requirement of separating the individual packages from one another. Moreover, various other wrappers can be formed, both transparent and opaque and in various colors for quick visual recognition of coin value.

While this invention has been described in detail with particular reference to preferred embodiments thereof, it will be understood that variations and modifications can be effected within the spirit and scope of the invention as described hereinbefore and as defined in the appended claims.

We claim:

1. A method of processing coins or the like comprising:

lifting coins of predetermined characteristics from a mass of coins,

dropping the lifted coins into a receptacle having a plurality of coin receiving hoppers,

moving the coins from each hopper through individual paths in a downward direction until the coins come to rest in a plurality of stacks of coins on a shelf,

sequentially registering the stacks of coins with a discharge opening and moving the stacks of coins through the discharge opening,

inserting balls between the stacks of coins as the stacks of coins are registered with the discharge opening,

applying a continuous wrapper to the stacks of coins and balls, and opening the continuous wrapper at the balls.

2. A method of processing coins or the like comprising:

forming the coins into stacks,

placing the stacks in longitudinal alignment with each other,

placing non-coin shaped objects between the stacks,

applying a continuous wrapper to the stacks and objects, and

opening the wrapper at the objects.

3. A method of processing coins or the like comprising:

forming the coins into stacks of coins with a predetermined number of coins in each stack,

placing the stacks of coins in approximately equally spaced longitudinal alignment with one another,

applying a continuous wrapper to the stacks of coins while the stacks of coins are approximately equally spaced from one another to form a continuous package of spaced stacks of coins, and

opening the continuous package between the stacks of coins.

4. The method of claim **3** and wherein the step of applying a continuous wrapper to the stacks comprises applying a transparent wrapper to the stacks.

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