

[54] COIN WRAPPING MACHINE

[76] Inventor: **Carroll H. Walsh**, 20002 Cherry St.,
Pine Bluff, Ark. 71601

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Primary Examiner—Travis S. McGehee

Assistant Examiner—John Sipos

Attorney—Ralph R. Pittman

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[51] Int. Cl. **B65b 11/56**

[58] Field of Search 53/34, 210, 211,
53/212, 213, 215, 216, 254, 390

[56] **References Cited**

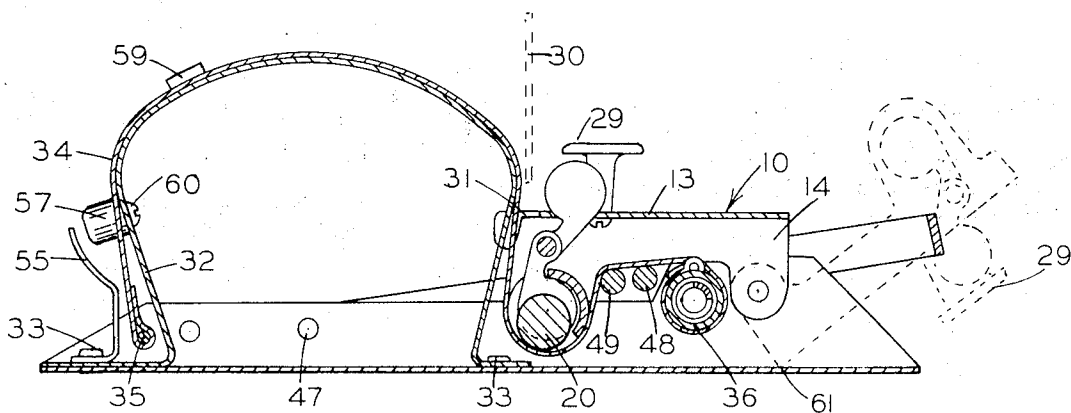
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[57] **ABSTRACT**

A machine for concurrently stacking, counting and subsequently wrapping coins has a manually movable coin carriage for delivering the coins to an apron of a manually operable rolling table, on which a flat sheet wrapper is rolled around the delivered coin stack and the ends of the rolled wrapper crimped on the rolled coins.

17 Claims, 9 Drawing Figures



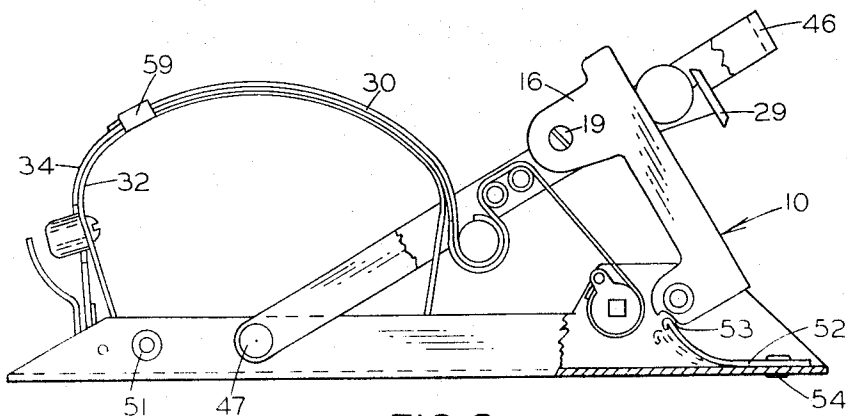


FIG. 3

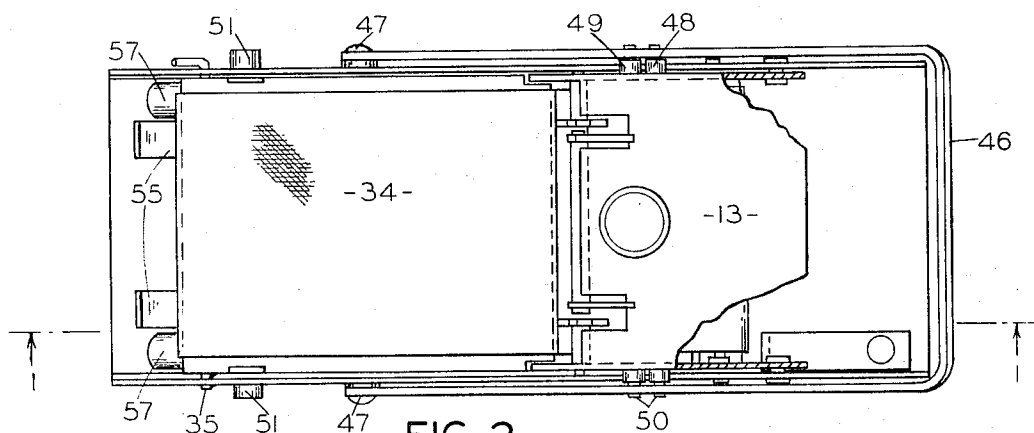


FIG. 2

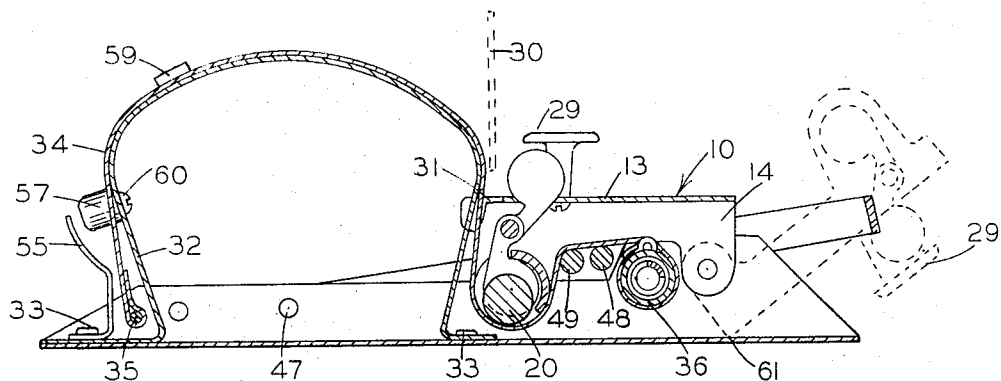


FIG. 1

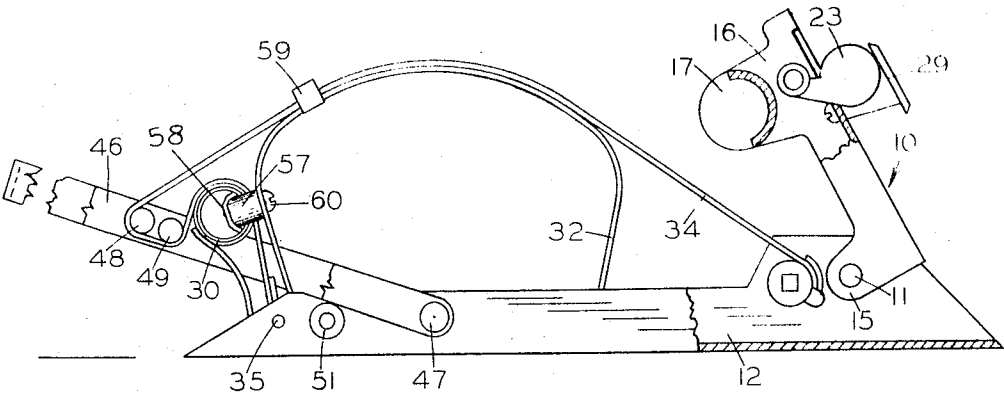


FIG. 4

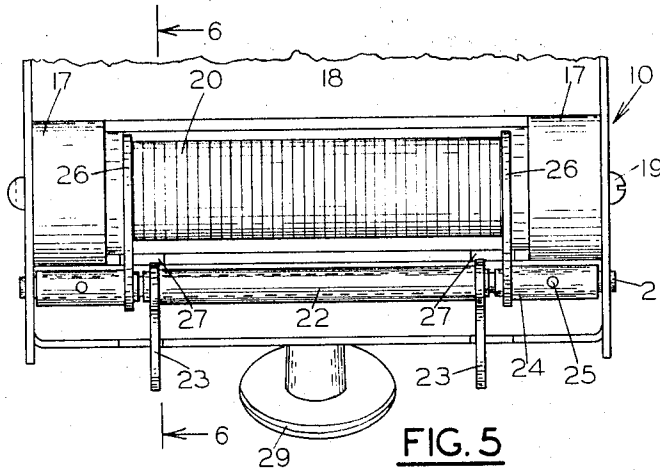


FIG. 5

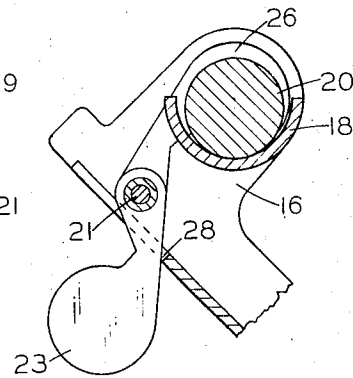


FIG. 6

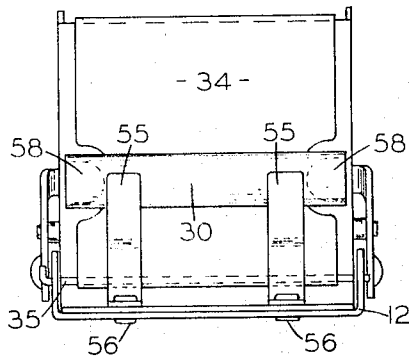


FIG. 7

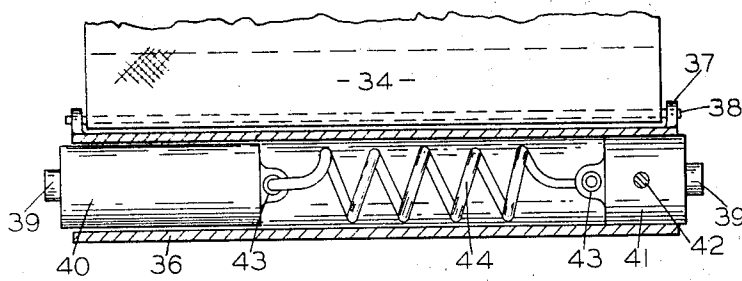


FIG. 8

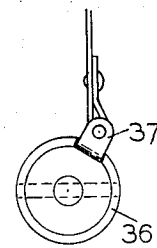


FIG. 9

COIN WRAPPING MACHINE

BACKGROUND

A large variety of coin counting, stacking and wrapping machines have been described in the prior art, ranging from small hand tools to the highly complex and expensive powerdriven machines with sorting mechanisms which are adapted for use in financial institutions handling large quantities of metal coins.

Of this equipment, the most easily used and most effective manually operated devices are constructed for use with tubular type of coin wrappers, and this requirement necessitates a specific wrapper for each coin denomination along with the payment for a higher cost wrapper than that of the common flat sheet wrapper.

The relatively low-cost manually operable machines heretofore described as adapted for use with a single inexpensive flat wrapper applied to plural coin denominations require separable and interchangeable construction members for adaptation to coins differing in size, either to adjust for change in diameter, change in stack length, or both.

SUMMARY OF THE INVENTION

The machine described herein utilizes as one component a rolling table and a rolling apron similar to equipment employed in cigar manufacturing, the rolling elements being modified and augmented to enable application of a flat coin wrapper to a stack of coins and the crimping of the wrapper at the ends of the stack.

A coin carriage, having a single diameter semicylindrical cavity and selectively available partition members to enable a single coin receptacle to accommodate plural sizes of coins, is associated with the rolling table apron and roller, the coin carriage coacting with the apron and roller to effect deposition of a coin stack on the apron and its retention thereon in stacked shape without requiring any additional end-stack restraining members while a wrapper is being rolled around the stack as a rolling-table roller moves under the apron and over the rolling table.

Crimping elements projecting from the discharge end of the rolling table and disposed in the path of movement of the coin roll engage and indent the respective unfilled end portions of the wound wrapper.

The machine requires no expensive structural materials, and may be constructed largely from inexpensive sheet metal. The economical construction cost, together with the ability of a single unit to handle, without interchange of parts, either U.S. pennies, nickels, dimes or quarters, enables the use of the machine by such small concerns as parking lots, churches, slot machine operators and concessionaires at fairs or race tracks. The coins collected by such concerns must be sorted, counted, stacked and wrapped before being acceptable as deposits by many banks.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view of the invention, along the line 1 — 1 of FIG. 2, illustrating the coin carriage, in broken lines, in the coin-loading position and, in solid lines, in the coin-dumping position;

FIG. 2 is a plan view of the invention, showing the coin carriage in the coin-dumping position, a forward portion of the carriage being broken away from the structure;

FIG. 3 is a side elevation showing a coin wrapper partially rolled over a coin stack in response to the coacting upward swingable movement of the rocking arm frame, this movement also urging the coin carriage from the coin-loading position to the reset position;

FIG. 4 is another side elevational view showing the positional relationship of the members at the completion of a coin-stack wrapping operation;

FIG. 5 is a fragmentary plan view, showing the coin carriage loaded with a counted stack of coins;

FIG. 6 is a sectional view of the coin carriage, taken along the line 6 — 6 of FIG. 5 and particularly showing the structure for selectively establishing the length of a stack containing a predetermined number of coins in accordance with the denomination of the coins;

FIG. 7 is a fragmentary elevation of the delivery end of the machine, showing a wrapped stack, the end portions of the wrapper being partially crimped to retain the coins in the wrapper as the coin roll is removed from the machine;

FIG. 8 is a sectional view of the spring-driven tension which holds the rolling apron taut during the wrapping operation; and

FIG. 9 is an end view of the apron tensioning structure.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In brief, the invention is a mechanical structure embodying an apron-type rolling table associated with a coin carriage having a coin-holding cavity accommodated when filled a horizontally disposed stack containing a predetermined number of coins of uniform diameter. The carriage is manually movable to convey and deposit the stack on the apron of the rolling table without altering the stacked relationship of the coins, from which location the manipulation of the roller of the rolling table effects application of a wrapper to the stack, the end product being a "roll" of coins in bankers parlance.

In the drawing, the broken lines of FIG. 1 indicate the initial coin-loading position of the coin carriage. The solid lines of FIG. 1 show the next sequential position of the members, at a time a coin stack is being delivered to the roller apron. FIG. 3 shows an intermediate stage in the rolling operation, and FIG. 4 shows a wrapped roll following its trip over the rolling table.

Referring more in detail to the drawing, FIG. 4, the machine is mounted on the elongate channel base 12, the flanges of the base being upwardly directed.

The rolling table 32, having an arcuate upper surface, extends along a portion of the base 12 from one end thereof, and is rigidly fixed on the base by the rivets 33. The flexible rolling apron 34 overlies the table 32, a portion of the apron extending longitudinally beyond the table, and a terminal loop at each end of the apron provides a convenient attachment for joining the apron to the respective end fasteners.

The anchor rod 35 secures the unextended end of the apron to the base 12 adjacent the discharge end of the table 32. The extended end of the apron is fastened, as shown in FIG. 8, to the tension roller 36 at the anchor rod 38, the latter passing through the ears 37 of the roller assembly, and the roller is carried by the projection of the endwise gudgeons 39 through the upstanding flanges of the base 12. The fixed end of the tension structure is in the form of a cylinder 41, projecting end-

wise into one end of the roller 36 and secured thereto by the pin 42. An internal bearing cylinder 40 is slip-fitted into the other end of the roller, being joined to the cylinder 41 by the helical spring 44 at the opposed ears 43.

A generally U-shaped manually operable rocking arm frame 46 (see FIG. 2) is pivotally mounted at the ends of its arms on the base 12 at the rocking arm pivots 47, and is reciprocally swingable over the table.

The roller 49, along with an additional roller 48, extends transversely with respect to the table, in position to swing thereover, the rollers being journaled on the bearing pivots 50 for rotation in the opposed arms of the frame 46. Two rollers are shown in the drawings; one roller having a suitably larger diameter may be satisfactorily substituted for the pair if desired. The rocking arm 46 is shown in the starting position in FIG. 1, the roller 49 being longitudinally spaced from the table and underlying the rolling apron 34, the apron spanning the space between the table and the roller.

At the end of the base not occupied by the table 32, the coin carriage 10 is pivotally mounted for selective manipulation between (1) a coin-loading position, (2) a coin-dumping position and (3) a reset position. FIG. 5 shows the carriage in the coin-loading position, this position being also indicated by the broken lines of FIG. 1 and FIG. 6 is a fragmentary section taken in this position. The coin-dumping position of the carriage is shown by the solid lines of FIG. 1, and the reset position of the carriage is shown in FIG. 4.

The coin carriage 10 includes a generally rectangular channel-shaped frame having a flat back 13 and a pair of parallel flanges 14, there being a first pair of forwardly projecting portions 15 lying along the inside surface of the respective flanges of the base 12, and a second pair of forwardly projecting portions 16 at the upper ends of the flanges 14. The carriage is pivotally mounted on the base by the pivots 11, which connect the projections 15 to the respective sides of the channel base 12.

A coin receptacle extends transversely between the projections 16 of the carriage frame and includes, as shown at FIGS. 5 and 6, a transversely extending coin-receiving cavity 18, semicircular in section and closed at its ends with the relatively short cylindrical end walls 17, the fasteners 19 rigidly securing the coin receptacle to the frame so that the coin-receiving cavity faces upwardly when the coin carriage is in the coin-loading position.

Adjoining the coin-receiving cavity 18 and extending parallel thereto, a solid shaft 21 is journaled in the flanges 14 of the coin carriage frame, and a pair of transversely spaced partitions 26, mounted on the sleeve 24, are rigidly fixed by the pins 25 to the shaft 21 for radial movement into and out of the cavity 18 from the adjacent recesses 27 in the wall of the receptacle, to thereby shorten the length of the cavity to accommodate a predetermined number of coins having a stacked length less than the overall length of the cavity. Similarly, to provides another length of cavity, the sleeve 22, to which the transversely spaced partition members 23 are fixed, is journaled to turn on the shaft 21. The slots 27 are storage for the partitions when not in use, the movement to the stored position being limited by the bottom of the slot 28.

In terms of United States coinage, the full length cavity may be used for a stack of either pennies or nickels,

the intermediate cavity length between the partitions 26 is adapted for a standard stack of quarters, this size coin being indicated in FIGS. 5 and 6, and the shortest cavity length, between the partitions 23 may be made suitable for a standard stack of dimes. Only one diameter of semi-cylindrical coin-receiving cavity is required for use with the coins mentioned, and this diameter should be slightly larger than the diameter of the largest coin to be wrapped.

A manipulating handle 29 is secured at the upper end of the carriage frame and, as indicated at the numeral 61 in FIG. 1, the lower edge of the back of the carriage is so related to the pivots 11 as to establish the coin-loading position of the carriage by the engagement of the back 13 with the top surface of the channel base 12. As may be seen in FIG. 3, the leaf spring 52 extends upwardly from its riveted attachment 54 to the base 12 to releasably engage at the notch 53 with the lower portion of one of the projecting portions 15, for the purpose of latching the coin carriage in the reset position, so that the carriage will not interfere with the movement of the rocking arm frame 46.

At the discharge end of the rolling table, a pair of resilient coin-roll catchers extend upwardly in transverse spaced relationship from the riveted attachment 33 to the base 12, the coin-roll catcher arms 55 being curved outwardly and upwardly in position to removably retain a wrapped stack of coins. Outwardly and laterally spaced from the catcher arms 55 are a pair of end-wrapper crimping cylinders 57, fixed on the end of the rolling table by the fasteners 60 and projecting longitudinally therefrom in the path of the unfilled end portions of a wrapper containing a coin stack.

The machine is structured to fold compactly when not in use, as shown in FIG. 1. In operation, the coin carriage is first swung from the compacted coin-dumping position to the coin-loading position. The length of the coin cavity is appropriately adjusted for the denomination to be counted and wrapped, and the coins loosely stacked on edge along the cavity until the length of the coin stack equals the length of the selected cavity. The loaded coin carriage is then swung back to the coin-dumping position.

The portion of the apron 34 lying between the rolling table 32 and the roller 49 is disposed in the path of movement of the coin-carriage projections 17. When the coin carriage is moved to the coin-dumping position, this portion of the apron is indented in the shape of a transversely extending trough-shaped pocket into which the coins are deposited. During the coin-dumping operation, the loose coins continue to be held as originally stacked on the carriage.

The coin carriage being in the coin-dumping position, a thin-sheet wrapper, indicated in FIG. 1 by the broken lines at the numeral 30, is inserted downwardly through the transverse slotted opening 31 until the lower end of the wrapper is disposed along the transversely extending line of contact of the coin stack 20 with the slightly larger cavity 18 of the coin receptacle. This disposition of the wrapper with respect to the coin stack is conveniently checked by smoothing the uninserted portion of the wrapper along the apron 34 and observing the position of the uninserted end of the wrapper relative to the index marker 59, the latter being any desired fixed marker located at the appropriate distance along the apron from the coin receptacle in the coin-dumping position.

After the wrapper is properly placed along the apron, the outer end of the rocking arm frame 46 is manipulated to swing about its pivotal mounting. As this movement continues, the rocking arm roller 49, during its initial and upward movement, as indicated in FIG. 3, urges the coin carriage to its reset position, where it is latched by the spring 53, and concurrently the coin wrapper 30 is picked off of the apron and moved around the coin stack.

The entire length of the coin wrapper is wound around the coin stack as the roller 49 passes the marker 59, the wrapped stack continuing its rolling movement under the apron and over the table until it rolls into the coin-roll catchers 55, as shown in FIG. 4. When this occurs, the limit stops 51, which project laterally from the base 12, are engaged by the rocking arm frame 46, thus precluding over-stretching and attendant damage to the apron as a result of excessive movement of the roller 49.

As the wrapped coin-roll enters the roll catchers 55, the unfilled ends of the wrapper impinge upon the adjacent protuberances 57, as indicated in FIGS. 4 and 7, causing the semicircular indentations 58 at the respective ends of the wrapped wrapper. The crimping thus effected prevents spillage of coins from the ends of the wrapper as the roll is lifted out of the catcher members.

Following the described coin wrapping procedure, the machine may be made ready for another operation by simply swinging the rocking arm frame 46 over the coin carriage to the initial position shown in FIG. 1.

The apron may be composed of any long-wearing flexible fabric, and if desired, may be inherently elastic, in which event the apron tension may be unnecessary. The other principal members, such as the base, rolling table and coin carriage may be conveniently formed of inexpensive thin-section sheet metal, although it is obvious the available plastic materials, particularly for the coin carriage, are entirely suitable.

What is claimed is:

1. A coin wrapping machine comprising an elongate rolling table having an arcuately curved upper surface, a flexible apron overlying said table and extending longitudinally beyond one end thereof, means fastening said apron at its opposite ends, a movable coin carriage disposed spatially adjacent to said one end of said table, said coin carriage including a transversely extending coin receptacle having cylindrical end portions and a transversely extending cavity therebetween, said cavity being adapted for loosely holding a horizontally disposed stack of coins, a transversely extending roller engaging the underside of the extended portion of said apron, said roller being mounted to swing over and beyond said table, the portion of the apron extending between said table and said roller being disposed in the path of movement of said coin carriage and in position to be indented thereby to form a transversely extending pocket in said apron adapted to receive said stack from said carriage, and manually operable means effective to move the roller longitudinally over said table, the movement of the roller guiding the apron engaged therewith to concurrently displace a wrapper from a position on said apron and roll the wrapper tightly around the stack.

2. The coin wrapping machine as set forth in claim 1, wherein the width of the apron is substantially greater than the length of the cavity of the coin receptacle.

3. The coin wrapping machine as defined in claim 1, wherein the elevation of the bottom of the pocket along the transverse length thereof is below that of the axis of the roller a distance greater than one-half the diameter of the largest coin to be wrapped.

4. The coin wrapping machine as claimed in claim 1, wherein manually operable partition means are selectively operable for swingable movement into said cavity to vary the length thereof.

5. The coin wrapping machine in accordance with claim 1, wherein a marker member mounted on said table designates the position of the wrapper on the apron.

6. The coin wrapping machine as set forth in claim 1, wherein a pair of knobs are mounted in transverse spaced relation on the rolling table and in the path of movement of the rolled wrapper, said knobs being effective to indent outwardly extending unfilled end portions of the wrapper and thereby preclude spillage of coins from the wrapper ends.

7. The coin wrapping machine claimed in claim 1, wherein the means fastening the extended end of the apron includes a tension roller.

8. A coin wrapping machine comprising an elongate base, a rolling table mounted along one end of said base, a flexible apron overlying said table and extending longitudinally beyond one end thereof, means fastening said apron at its opposite ends, said means including a tension roller attached to the extended end of said apron, a first manually operable means mounted on the other end of said base, said first means including a coin carriage movable to engage said apron and form therein a transversely directed trough and concurrently deposit in said trough a stack of coins, and a second manually operable means movable to displace a coin wrapper overlying said apron and concurrently wrap said wrapper around said stack of coins, said second means including a roller mounted to swing over said table from a position underlying said apron.

9. The coin wrapping machine according to claim 8, wherein said first manually operable means is pivotally mounted on said other end of said base and swings downward from an upstanding position to engage said apron.

10. A coin wrapping machine comprising an elongate base, a rolling table mounted on said base and extending along a portion of said base from one end thereof, a flexible apron overlying said table and means anchoring the opposite ends of said apron, a portion of said apron being extended longitudinally beyond said table, a coin carriage pivotally mounted on said base adjacent the extended portion of said apron, said coin carriage being swingable between a coin-loading position, a coin-dumping position and an intermediate reset position, said coin-loading position defining an upwardly facing transversely extending half-round cavity adapted for containing a stack of coins and said coin-dumping position defining a transversely extending cavity facing downwardly on the extended portion of said apron for depositing the stack of coins thereon, at least one roller mounted to swing over said table from a position in engagement with the underside of said apron adjacent the downwardly facing cavity, and manually operable means to move the roller longitudinally over said table, the movement of the roller actuating the coin carriage to the reset position and concurrently guiding the apron engaged therewith to displace a wrapper from a

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position on said apron and roll the coin stack into the wrapper.

11. The subject matter of claim 10, wherein the means anchoring the ends of said apron includes a tension roller at the extended end of the apron.

12. The coin wrapping machine set forth in claim 10, wherein the coin-loading position of the coin carriage is established by the engagement of a transversely extending portion of the carriage with said base.

13. The subject matter of claim 10, in which spring means projecting upwardly from said base engages and releasably latches said coin carriage in the reset position.

14. The machine as defined in claim 10, wherein the opposed end walls bounding the cavity in said coin carriage project arcuately beyond the cavity, a portion of the apron being disposed in the path of movement of said end walls and indented thereby in the form of a trough-shaped pocket extending transversely along said portion of said apron.

15. The machine according to claim 14, wherein an additional roller extends in parallel spaced relation with said one roller and is mounted for swingable movement therewith, the respective end walls of said coin carriage cavity being positioned in the path of

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movement of each of said rollers and sequentially engaged by said rollers to effect movement of said coin carriage from the coin-dumping position to the reset position.

5 16. A coin wrapping machine comprising a movable coin carriage having a coin holding cavity therein, a rolling table, a roller and a apron, said roller underlying said apron and said apron overlying said table and having a portion of the apron disposed in the path of movement of said coin carriage, a first manually operable means effective to move said coin carriage to engagement with said apron and concurrently deposit on said apron a stack of coins from said cavity and a second manually operable means effective to swing said roller over said table, and means coacting with said roller to sequentially disengage said coin carriage from said apron, displace a wrapper from a position on said apron, roll said wrapper around said stack of coins and partially crimp the end portions of the wrapper against the respective ends of the coin stack.

17. The subject matter of claim 16, in which the coin cavity is semicircular in section and the semicircular diameter is greater than the diameter of the largest coins to be wrapped.

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