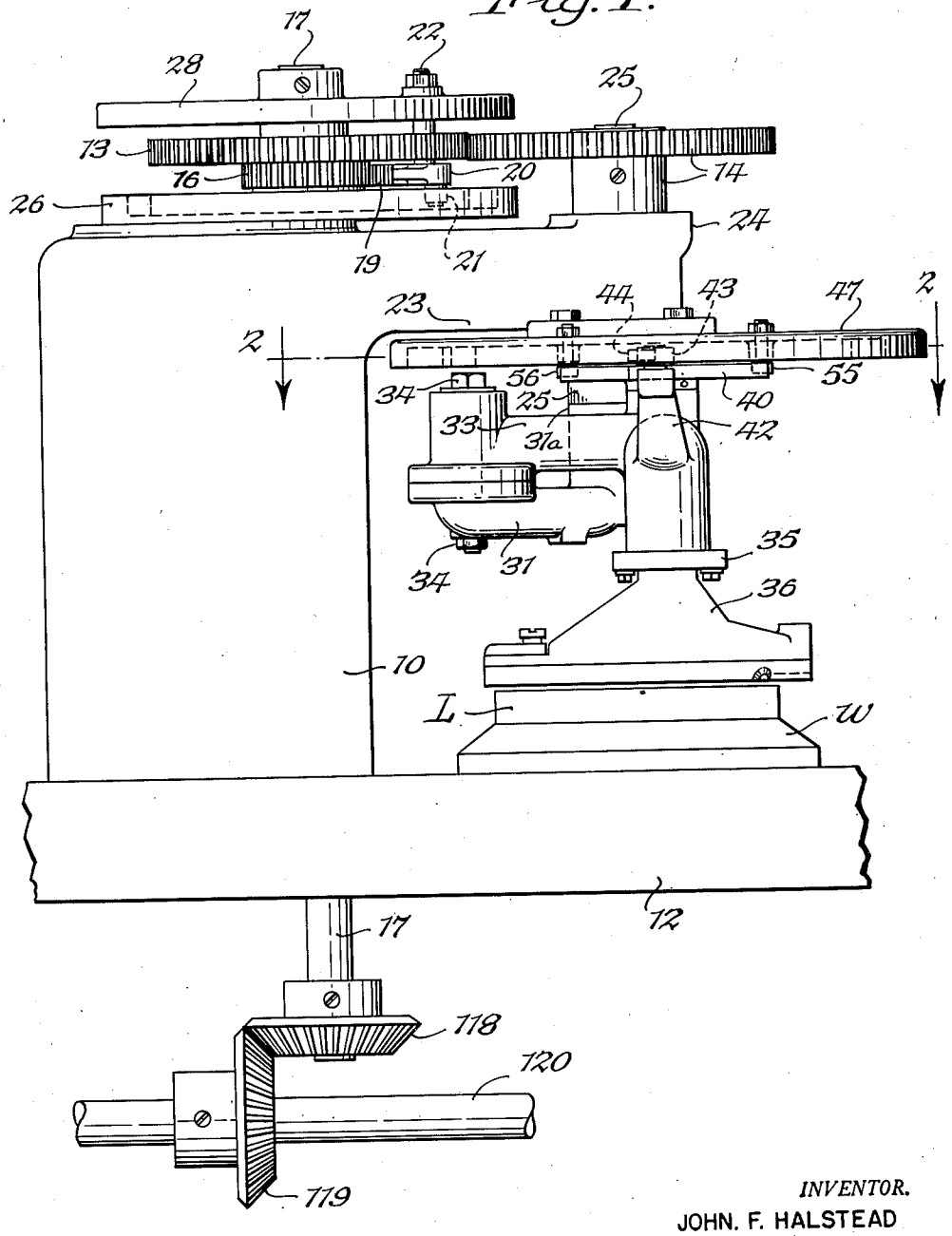
May 24, 1949. J. F. HALSTEAD 2,471,389

WRAPPER CARRIER OPERATING MECHANISM

Filed March 21, 1945 2 Sheets-Sheet 1

Fig. 1.



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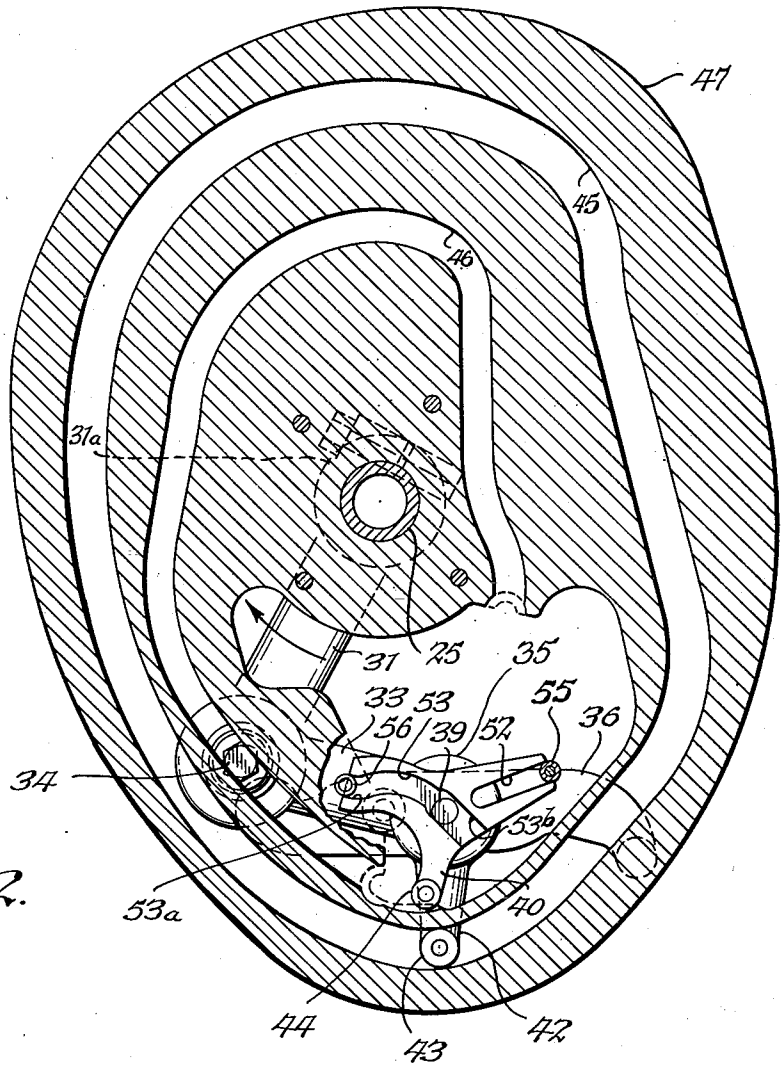


Fig. 2.

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2,471,389

WRAPPER CARRIER OPERATING MECHANISM

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Application March 21, 1945, Serial No. 583,875

4 Claims. (Cl. 131—105)

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This invention relates to cigar machines, more particularly to the mechanism for operating the carrier which transfers the wrapper from the wrapper cutting die to a cigar bunch rolling or wrapper-applying device, and during the rolling operation guides the wrapper through a certain predetermined path. In the type of wrapper carrier operating mechanism shown in the Wheeler Patent No. 2,235,857, issued March 25, 1941, the wrapper carrier is mounted on a vertical shaft carried by an operating arm which is pivotally mounted on an arm fastened to an intermittently rotating shaft and the wrapper carrier is moved by the operating arm in a closed path. The operating arm is provided with a lateral extension carrying a cam follower engaging a cam track of a stationary cam plate to guide the wrapper carrier during the transferring and rolling operations. Due to the arrangement of the operating arm in the construction shown in said Patent No. 2,235,857, the direction of the force applied by the swinging arm 31 thereof on the cam roller is nearly at right angles to the cam track. This difficulty is greater with cam tracks designed for straight shapes of cigars than for Perfecto shapes.

This difficulty is eliminated in my improved construction by arranging the mechanism so that the cam roller is pulled instead of pushed and the direction of the force applied by the swinging arm 31 thereof then becomes nearly parallel with the cam track. The cam track produced by this arrangement also eliminates abrupt corners, and therefore smooth operation of the wrapper carrier is assured. By eliminating the extremely high pressure angle and abrupt corners of the cam track any slight inaccuracy in the manufacturing of these parts will not make the wrapper carrier deviate from its true path nearly as much as in the former construction. Wear on the working parts is also greatly reduced.

Accordingly one of the main objects of the invention is to provide a wrapper carrier operating mechanism wherein the operating arm is pulled instead of being pushed through the cam track.

The wrapper carrier operating mechanism shown in the above mentioned Wheeler Patent No. 2,235,857 also includes a cam piece fastened on the upper end of the shaft which supports the

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wrapper carrier, this piece carrying a cam roller engaging a second cam track in the stationary cam plate whereby the wrapper carrier is turned to the proper angle for applying the wrapper to the cigar bunch in the rolling device or wrapper-applying mechanism. At the proper point of this cam track, the stationary cam plate is provided with a roller arranged to engage a slot in one end of the cam piece on the upper end of the wrapper carrier shaft to reverse the position of the wrapper carrier while it is returning to its initial position above the wrapper die. Due to the shape of the second cam track in the Wheeler Patent No. 2,235,857 construction and the location of the roller supported by the stationary cam plate, the flag end of the wrapper carrier is first swung outwardly around the shaft supporting the wrapper carrier by the second track and then is swung inwardly by engagement of the stationary roller with the slot in the cam piece to the reversed position required at its initial position above the wrapper die. With the shape of this cam track in my construction, the flag end of the wrapper carrier is not swung outwardly to any appreciable extent before the slot in the cam piece on the wrapper carrier shaft engages the stationary roller on the cam plate which turns the wrapper carrier to the reversed position above the wrapper die.

The cam piece on the wrapper carrier shaft of the Wheeler Patent No. 2,235,857 is provided with a hook-shaped track in its upper face, and the cam plate is provided with a second stationary roller. The hook-shaped track engaged this roller when the position of the wrapper carrier was reversed by the coaction of the first stationary roller with the slot in the cam piece while the wrapper carrier was approaching the wrapper die. When the wrapper carrier moved away from the wrapper die, and the hook of this cam track passed over the second stationary roller, a locking angle was created which I have eliminated by passing the track through the center of this cam piece and by suitable location of the stationary roller. Accordingly a further object of the invention is to eliminate this locking angle.

Another object of my invention is to provide the track in the cam piece on the wrapper

carrier shaft with the proper shape and location to avoid the unnecessary swinging of the flag end of the wrapper carrier outwardly before starting on it final path. With my construction of the track in the cam piece, the flag end of the wrapper carrier will be swung outwardly very slightly at this portion of the cycle of operations, but with the shape of the track in the cam piece shown in said Wheeler Patent 2,235,857 the flag end will be swung outwardly to a much greater extent.

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts:

Fig. 1 is a side elevation of a wrapper transfer equipped with the improved wrapper carrier operating mechanism; and

Fig. 2 is a sectional view of the wrapper carrier operating mechanism taken on the line 2—2 of Fig. 1.

Referring to Figs. 1 and 2, it will be seen that on a hollow column 10 attached to the base plate 12 of the cigar rolling machine there are provided bearings (not shown) in which is mounted a vertical shaft 17. On the lower end of shaft 17 is secured a bevel bear 118 driven by a bevel gear 119 on the drive shaft 120 of the cigar machine. Column 10 has a hollow arm 23 terminating in a bearing 24 in which is journaled a hollow shaft 25 provided with closure plugs (not shown), in its ends.

To the top of column 10 is secured a cam 26 having a cam track in its upper face corresponding to the track 27 in the Wheeler Patent 2,235,857. A bushing (not shown) and corresponding to the bushing 12 of the Wheeler Patent 2,235,857 is provided on the shaft 17, and on this bushing is loosely mounted a spur gear 13 meshing with a spur gear 14 fastened on shaft 25. Gear 16 is fastened to the hub of gear 13 and meshes with a gear segment 19 formed on a lever 20 which has a cam follower 21 engaging the cam track in the upper face of cam 26. The lever 20 is pivoted on a stud 22 carried by an index disk or driving member 28 fastened on shaft 17, the stud passing through an arcuate slot (not shown) in the gear 13 in order to permit relative motion between lever 20 and the gear 13. The function of lever 20 is to control the speed of gear 13 and thereby to drive the gear 14 and shaft 25 at different speeds at different positions of the wrapper carrier during each cycle of the machine and also cause the wrapper carrier to dwell at wrapper-receiving position and at the position at which paste is applied to the flag end of the wrapper. Since the driving mechanism just described corresponds to similarly numbered parts in the Wheeler Patent 2,235,857, further description of the construction and operation thereof is deemed unnecessary.

To the lower end of shaft 25 is clamped the split hub 31a of a hollow arm 31 which, on a bearing on its free end, pivotally supports a hollow operating arm 33 which is retained on arm 31 by a bolt 34. It will be observed that the operating arm 33 is arranged to extend rearwardly of the direction indicated by the arrow in Fig. 2 in which the arm 31 is revolved by the rotation of shaft 25. The free end of arm 33 forms a bearing for a holder 35 which has an annular hub inserted into the lower end of an opening formed in the free end of arm 33. The holder 35 is secured to a vertical shaft 39 turning in a bearing formed in the upper end of the

opening in the free end of arm 33. Since the manner in which the holder 35 is secured to the shaft 39 is fully described in the Wheeler Patent 2,215,490, further description is deemed unnecessary. The wrapper carrier 36 is attached to holder 35 in the manner shown in said Wheeler Patent 2,215,490. The wrapper carrier 36 is provided with perforations in its bottom whereby the wrapper will adhere thereto when suction is applied to the interior of the wrapper carrier. The wrapper carrier may be connected to the source of suction through the arms 33 and 31, and ports (not shown) in the shaft 25 in the manner shown in the Wheeler Patent 2,215,490 or in any other suitable manner.

From the free end of arm 33 an extension 42 projects upwardly and carries a cam roller 43. To the upper end of shaft 39, which projects upwardly from the free end of arm 33, is fastened a cam piece 40 carrying a cam roller 44. The rollers 43 and 44 respectively engage tracks 45 and 46 in the bottom face of a stationary cam plate 47 attached to bearing 24 of the column 10. The track 46, as is clearly shown in Fig. 2, is interrupted or non-continuous. Like the cam tracks 45 and 46 of the cam plate 47 shown in the Wheeler Patent 2,235,857, the cam track 45 hereof has the proper contour to guide the shaft 39 in a predetermined path and the cam track 46 hereof swings the wrapper carrier 36 to the proper angle for applying the wrapper to the particular shape of cigar for which the cam plate 47 is designed. However, it will be observed that the shape of my cam track 45 has no sharp corners such as shown in Fig. 2 of the Wheeler Patent 2,235,857, because my operating arm 33 extends rearwardly of the direction in which the arm 31 is advanced.

The cam piece 40 fastened on the upper end of shaft 39 is provided with a slot 52 in one end thereof and a track 53 in its upper face. At the proper points intermediate the ends of track 46 the cam plate 47 is provided with studs on which rollers 55 and 56 are mounted. The roller 55 engages the slot 52 in cam piece 40 while the wrapper carrier 36 is returning to its wrapper-receiving position above the wrapper-cutting bed after the carrier has delivered the wrapper to the wrapper-applying mechanism (not shown). When the roller 55 enters the slot 52 it causes the shaft 39 to make a fraction of a turn and cam piece 40 assumes the position shown in Fig. 2 wherein the wrapper carrier overlies the wrapper cutting bed W and the slot 52 is about to leave roller 55 and roller 56 enters the track 53. The wrapper carrier 36 of the Wheeler Patent 2,235,857 approaches the roller 55 thereof at a different angle than my wrapper carrier, wherefore the engagement of the slot 52 in the cam piece 40 of said Wheeler patent with roller 55 causes the wrapper carrier to swing outwardly before it is turned into wrapper-receiving position. Therefore the head end of the wrapper carrier of said Wheeler patent must be turned to a greater extent than the head end of my wrapper carrier to assume the wrapper-receiving position. Therefore the head end of my wrapper carrier will travel at a slow speed and thereby eliminate a certain amount of slamming caused by excessive speed of rotation of the wrapper carrier prior to stopping in the wrapper-receiving position. This motion is very important on a high speed machine. In order to reduce the speed of the wrapper carrier of said Wheeler patent at this point it would be necessary to

increase the speed at the rolling section of track 45 which is not desirable.

A wrapper is cut from leaf tobacco manually positioned on the wrapper cutting bed before the wrapper carrier reaches the position shown in Fig. 2. The construction of the wrapper-cutting bed W and the cutting rollers (not shown) which coact with the wrapper die of the cutting bed is fully described in the Wheeler Patent 2,215,490. When the suction head L of the wrapper cutting bed W is raised to transfer the cut wrapper to the wrapper carrier 36, while it dwells over the wrapper cutting bed, the suction on the suction head is cut off and the suction applied to the wrapper carrier at the moment the wrapper contacts the bottom of the wrapper carrier. Thus the wrapper will adhere to the wrapper carrier bottom and will be transported to the wrapper-applying mechanism.

While the wrapper carrier 36 overlies the wrapper cutting bed W, its tuck end is located at the right of Fig. 1 and its flag end at the left of Fig. 1. Then when the wrapper carrier resumes its motion, roller 56 passes through the portion 53*a* of track 53 and the cam piece 40 is turned with the shaft 39 whereby the tuck end of the wrapper carrier 36 is swung inwardly and the roller 44 enters the adjoining end of the cam track 46 when roller 56 engages the inner end of track section 53*a*. It may be noted that there will be no locking angle between the roller 56 and track section 53*a* when the roller 44 enters track 46. With the construction covered by the Wheeler Patent 2,235,857, a locking angle was created by the shape and arrangement of the track 53 on cam piece 40 thereof when the roller 56 entered the track 53. It should also be noted that there is sufficient clearance for the roller 56 while it passes through the section 53*b* of track 53 to permit the roller 44 to be guided by track 46 without interference.

The roller 44 is then guided by track 46 whose contour is such that the wrapper carrier will be turned to proper positions, while the shaft 39 is guided in a predetermined path by the engagement of roller 43 with track 45 for pasting the flag end of the wrapper and insertion of the tuck end of the wrapper into the wrapper-applying mechanism by a needle (not shown). The continued engagement of roller 44 with track 46 then causes the wrapper carrier to assume the proper angles for application of the wrapper to the particular shape of cigar for which cam plate 47 is designed.

It will be understood that in the movement of the wrapper carrier 36 between the wrapper cutting bed and wrapper-applying mechanism, the movement of the wrapper is cyclically interrupted when the wrapper is delivered to the wrapper carrier and also when the wrapper carrier is located above the wrapper-applying mechanism at which position paste is applied to the wrapper flag by conventional mechanism (not shown). A tuck needle (not shown) of any suitable construction then presses the tuck end of the wrapper against the tuck end of a cigar bunch located in the bunch rolling mechanism, whereupon the movement of the wrapper carrier is resumed and the wrapper is applied to the cigar bunch in the wrapper-applying mechanism and the wrapper carrier subsequently returns to a position above the wrapper cutting bed to receive a new wrapper.

It should be noted that when the cam roller 44 of the Wheeler Patent 2,235,857 enters the section of the cam track 46 corresponding to the

omitted section of my cam track 46, there is sufficient clearance so that the wrapper carrier may be reversed without interference. In my construction this section of cam track 46 is omitted, because the cam piece 40 will be turned to the proper position to cause roller 44 to enter one end of the track after leaving the other end thereof.

What is claimed is:

1. A wrapper transfer for cigar machines comprising in combination, a vertical driven shaft, an elongated member fastened on said shaft and extending radially therefrom, an operating arm having one of its ends pivotally mounted on the outer end of said member, a second shaft pivotally mounted in the other end of said operating arm, a wrapper carrier fastened to said second shaft, means for revolving said driven shaft in one direction to move said carrier in a closed path, a stationary cam plate provided with a continuous cam track, and a cam follower connected to the outer end of said operating arm and engaging said continuous cam track to guide said second shaft and wrapper carrier in a predetermined closed path from a wrapper-receiving position to a wrapper-applying mechanism, said operating arm extending rearwardly from its pivotal connection to said member in a direction away from the direction in which said member is moved by said driven shaft, and said cam track having a predetermined configuration whereby said cam follower will be pulled along said continuous cam track.

2. A wrapper transfer for cigar machines comprising in combination, a vertical driven shaft, a member extending radially from said shaft and fastened on said shaft and adapted to be revolved by said driven shaft, an operating arm having one of its ends pivotally mounted on the outer end of said member, said operating arm extending rearwardly of the direction in which said member is revolved by said driven shaft, a second shaft pivotally mounted in the other end of said operating arm, a wrapper carrier fastened to said second shaft, means for intermittently revolving said driven shaft in one direction to move said carrier in a closed path from a wrapper-receiving station to a wrapper-applying mechanism, a stationary cam plate provided with a continuous cam track, a cam follower connected to the outer end of said operating arm and engaging said continuous cam track to guide said second shaft and wrapper carrier in a predetermined closed path from the wrapper-receiving station to the wrapper-applying mechanism, said continuous cam track having a predetermined configuration whereby said cam follower will be pulled along said continuous cam track, a cam piece fastened on said second shaft and provided with a slot in one end thereof and a track in one face thereof, an interrupted cam track formed in said cam plate, a cam roller mounted on said cam piece and engaging said interrupted cam track, and stationary rollers arranged between the ends of said interrupted cam track, one of said rollers being arranged to engage the slot in said cam piece and thereby turn said cam piece to turn the wrapper carrier into wrapper-receiving position at the wrapper-receiving station after the cam roller on said cam piece moves out of one end of the interrupted cam track, and the other of said rollers being arranged to enter the track on said cam piece after the wrapper carrier has been turned to wrapper-receiving position while the first mentioned roller engages said slot whereby movement

of said wrapper carrier will be prevented at the wrapper-receiving position thereof, the track on said cam piece having a predetermined configuration to turn said wrapper carrier into position to cause said cam roller to enter the other end of said interrupted cam track when said wrapper carrier moves toward the wrapper-applying mechanism from wrapper-receiving position.

3. A wrapper transfer for cigar machines comprising in combination, a vertical driven shaft, an enlongated member fastened on said shaft and adapted to be revolved by said driven shaft, an operating arm having one of its ends pivotally mounted on the outer end of said member and extending rearwardly of the direction in which said member is revolved, a second shaft pivotally mounted in the other end of said operating arm, a wrapper carrier fastened to said second shaft, means for revolving said driven shaft in one direction to move said carrier in a closed path, a stationary cam plate provided with a continuous cam track, a cam follower connected to the outer end of said operating arm and engaging said continuous cam track to guide said wrapper carrier in a predetermined closed path from a wrapper-receiving position to a wrapper-applying mechanism, said continuous cam track having a predetermined configuration whereby said cam follower will be pulled along said continuous cam track, a cam piece fastened on said second shaft and provided with a slot in one end thereof and a track in one face thereof passing through the axis of rotation of said second shaft, the track in said cam piece having an operating section extending from its outer end at one end of said cam piece into the proximity of said second shaft, and the track in said cam piece also having a non-operating section extending from the second shaft to the other end of the cam piece, and a pair of stationary rollers, one of said rollers being arranged to engage the slot in said cam piece and thereby turn said cam piece to turn the wrapper carrier into wrapper-receiving position and the other of said rollers having a diameter closely fitting the operating section of the track in said cam piece and being arranged to enter the outer end of the operating section of said track after the wrapper carrier has been turned to wrapper-receiving position and thereby turn said wrapper carrier into a predetermined position when said wrapper carrier is moved toward the wrapper-applying mechanism from wrapper-receiving position, the track in said cam piece having a predetermined configuration to permit passage of the roller therethrough without encountering a locking angle.

4. In a wrapper transfer for cigar machines, in combination, a vertical driven shaft, a member fastened on said shaft, an operating arm pivotally mounted at one end on said member, a second shaft pivotally mounted in the other end of said operating arm, a wrapper carrier fastened to said second shaft, means for revolving said driven shaft in one direction to move said carrier in a closed path, a stationary cam plate provided with a continuous cam track in its lower face, a cam follower on said operating arm engaging said continuous cam track to guide said second shaft and wrapper carrier in a predetermined path from a wrapper-receiving position to a wrapper-applying mechanism, a cam piece fastened on the upper end of said second shaft, said cam piece being provided with a slot in one end thereof and a track in its upper face, a second cam track formed in the lower face of said cam plate, a cam roller mounted on said cam piece and engaging said second cam track, a primary roller supported on the lower face of said cam plate and arranged to engage the slot in said cam piece and thereby turn said second shaft with the wrapper carrier into wrapper-receiving position, and a secondary roller supported on the lower face of said cam plate and arranged to engage the track on said cam piece after the wrapper carrier has been turned to wrapper-receiving position and thereby turn said wrapper carrier into another predetermined position while it is moving toward the wrapper-applying mechanism, the track in said cam piece passing through the axis of rotation of said second shaft and having an operating section closely fitting said secondary roller and extending from one end of the cam piece into the proximity of said second shaft and a non-operating section extending from the proximity of said second shaft to the other end of said cam piece, the track in said cam piece having a predetermined configuration to permit passage of the secondary roller therethrough without encountering a locking angle.

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