March 25, 1941. H. H. WHEELER 2,235,857

WRAPPER CARRIER OPERATING MECHANISM

Filed May 20, 1938 2 Sheets-Sheet 1

Fig. 1.

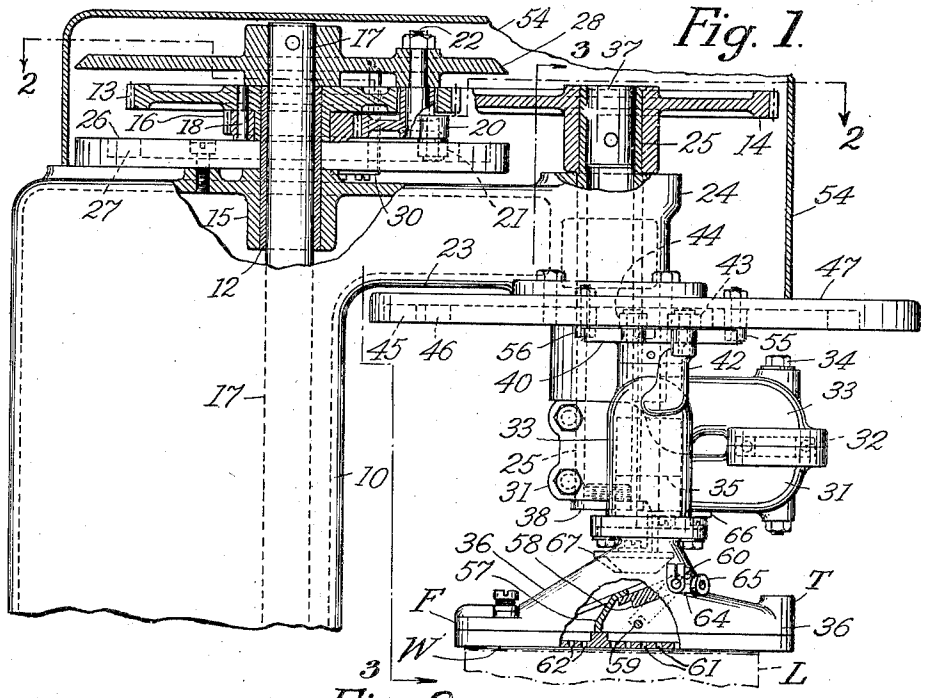
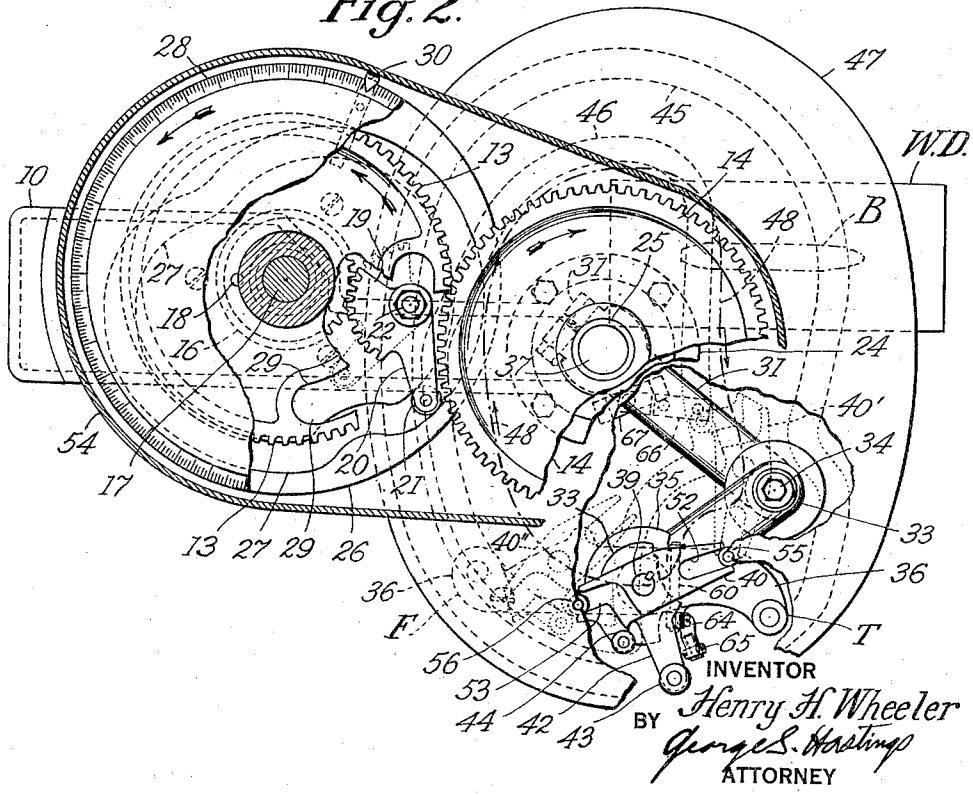


Fig. 2.



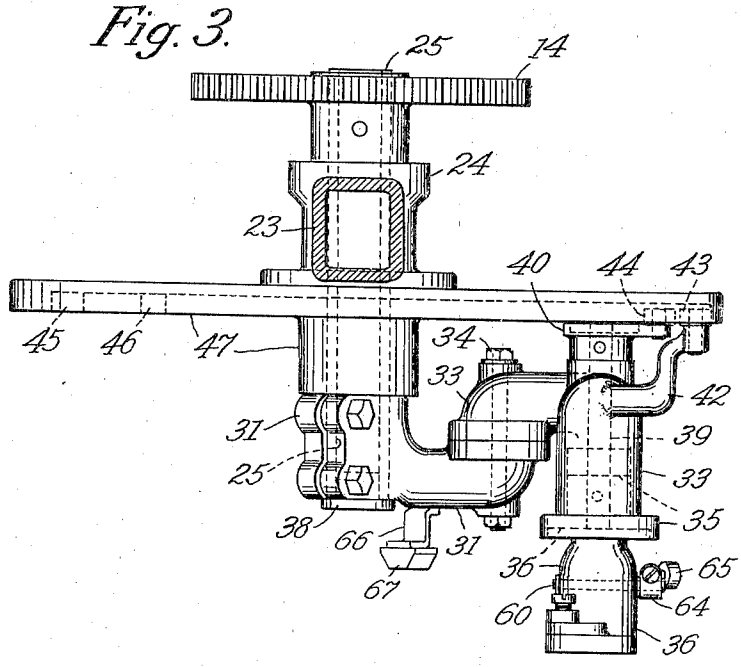
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Fig. 3.



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UNITED STATES PATENT OFFICE

2,235,857

WRAPPER CARRIER OPERATING MECHANISM

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Application May 20, 1938, Serial No. 208,972

12 Claims. (Cl. 131—105)

This invention relates to cigar machines and more particularly to improved wrapper transfer mechanism for transferring wrappers from a suitable source of supply, such for instance as a wrapper cutting device to a cigar bunch rolling mechanism.

This invention relates generally to a wrapper transfer device of the type disclosed in my copending application, serial No. 102,445, filed October 25, 1936, and consists of improvement to the structure disclosed therein in that it is considerably simpler in construction and results in an extremely efficient, quiet and smoother operating transfer mechanism.

The function of a wrapper transfer is to receive and transfer a wrapper from a source of supply to a rolling device, and to properly guide it during its application to a cigar bunch being wrapped in said device. While in the above-mentioned copending application, the transfer therein includes a continuously rotating cam which intermittently drives a roller disk turning a vertical hollow shaft supporting the wrapper transfer arm, which mounts the suction wrapper carrier head, and a stationary cam for guiding and controlling the movement of said transfer arm, according to the present invention, this structure has been simplified and the same or improved results are obtained with much simpler operating mechanism.

It is an object of the invention, therefore, to provide improvements in wrapper transfer mechanism for cigar machines wherein the driving mechanism and the controls therefor which cause a wrapper transfer carrier head to move between a wrapper supply source and a wrapper applying station are considerably simplified over existing known structures. According to the invention, during each cycle of the machine the wrapper carrier head driving means dwells when the head receives a wrapper from the source of supply and also when the head is moved adjacent the bunch rolling mechanism where paste is applied to the wrapper flag and the tuck end of the wrapper is held against the bunch by a needle of conventional design.

It is a further object of the invention to provide a wrapper carrier driving mechanism which is easy to construct, quiet in operation and has a smoother working movement in causing a wrapper carrier head to move through a closed and irregularly curved path between a source of supply of wrappers and a wrapping or rolling station.

The invention is further characterized in the provision of improved driving mechanism for moving a wrapper transfer carrier head in a closed path to and from a wrapper applying station wherein the intermittent rotary movement of the wrapper carrier head is effected through a continuously rotating intermediate member controlled by a stationary cam or other suitable mechanism which variably turns a spur gear meshing with a gear on the shaft supporting the arm mounting the wrapper carrier head, and in which the path of the head is controlled by a stationary cam.

It is a further object of the invention to provide improved means for reversing the carrier head after delivery of a wrapper in case the carrier starts from a position requiring reversal. This operation is effected by the provision of a suitable cam piece attached to the shaft of the carrier head, wherein the cam piece engages with suitable cam followers forming a part of the control mechanism at the proper time to cause the carrier head to be positioned properly with respect to a wrapper feeding station.

With these and other objects not specifically mentioned in view, the invention consists in certain combinations and constructions which will be hereinafter fully described, and then specifically set forth in the claims hereunto appended.

In the accompanying drawings which form a part of this specification and in which similar characters of reference indicate the same or like elements.

Fig. 1 is a side elevation partly in section, of the improved wrapper transfer;

Fig. 2 is a top sectional view of the same, on line 2—2 of Fig. 1 with parts being broken away to expose further details of the device; and

Fig. 3 is an end elevation on line 3—3 of Fig. 1.

Referring to Figs. 1 and 2, the improved wrapper transfer is mounted on a hollow column 10 attached to the base-plate of the cigar rolling machine and connected to its suction system, as in the former case hereinbefore referred to. In a bearing 15 of column 10 and a suitable bearing on the baseplate (not shown) is mounted a vertical shaft 17 which is continuously rotated by suitable drive means from the drive shaft of the cigar machine as shown in the above referred to application. The column 10 has a horizontal arm 23 terminating in a bearing 24 in which is journalled a hollow shaft 25 provided at each end with end closure plugs 37 and 38.

To the top of column 10, concentric with a bushing 12 in bearing 15, is affixed a cam 26 having in its upper surface a track 27. On bushing 12 is loosely mounted a spur gear 13 meshing with

a spur gear 14 fast on a hollow shaft 25. Gear 13 is driven by a gear 16 mounted on the hub of gear 13 and affixed to it by a pin 18. Gear 16 meshes with a gear segment 19 of a lever 20 which has a follower 21 in engagement with the track 27 of cam 26. If desired, gears 13 and 16 may be formed integral one with the other. The lever 20 is pivoted on a stud 22 carried by an index disk or driving member 28 fast on shaft 17, the stud passing through an arcuate slot 29 in gear 13 in order to permit relative motion between lever 20 and the gear. A stationary pointer 30 is attached to the under side of cam 26 and registering with the graduations on disk 28 serves as an aid in the assembly of parts in their proper relative positions.

The function of lever 20 (or other suitable intermediate member), is to control the speed of gear 13 and thereby to drive gear 14 and shaft 25 at different speeds at different positions of the wrapper carrier head during each cycle of the machine. When the follower 21 moves in a concentric portion of cam track 27, as shown in full lines in Fig. 2, lever 20 is stationary with respect to gear 16, and the gear system 13, 16, 19 moves as one unit with disk 28, driving the gear 14 at the same speed as gear 13. But when follower 21 engages with an eccentric portion or low or high part of track 27, the consequent turning of lever arm 20 causes the segment 19 to turn gear 16, thereby correspondingly advancing or retarding the gear 13, as the case may be, with the result that the speed of gear 14 at that moment is increased or decreased, respectively, the speed varying in accordance with the curvature of track 27 at each point of the cycle. At points where the reverse motion of segment 19 is equal in angular amplitude to the forward motion of disk 28, the gear 14 will not turn at all, and the shaft 25 will dwell.

To the lower end of shaft 25 is clamped a hollow arm 31 which on a bearing 32 pivotally supports a hollow arm 33 held on arm 31 by a bolt 34. The free end of arm 33 forms a bearing for a holder 35 which is fast on a vertical shaft 39 turning in a bearing in arm 33 and to which the wrapper carrying suction head 36 is attached, which is of the construction shown and claimed in co-pending application, Serial No. 290,422 filed by Hjalmar E. Carlson, August 16, 1939, for Cigar machine wrapper transfer mechanism. From the free end of arm 33 projects a lateral extension 42 which carries a roller 43. To the upper end of shaft 39 extending from the free end of arm 33 is fastened a cam piece 40 carrying a roller 44 and having a slot 52 and a cam track 53. The rollers 43 and 44 engage with tracks 45 and 46 in the under side of a stationary cam 47 attached to bearing 24, the roller 43 guiding the shaft 39 in a predetermined path 48, and the roller 44 in each position on this path swinging the carrier head 36 to the proper angle for applying the wrapper W to the particular cigar shape for which the cam 47 is designed. The driving mechanism is protected by a cover 54 resting on the column 10 and on the follower cam 47.

At proper points, the cam 47 has projecting studs carrying rollers 55 and 56, with which engage the slot 52 and the track 53 of cam piece 40 as shown in dotted lines, thereby turning the shaft 39 and reversing the carrier head 36 after the same has delivered the wrapper at the rolling station WD and is returning to its receiving or pick-up position. In position 40' of cam piece 40 the slot 52 enters into engagement with roller 55 around which shaft 39 makes a portion of a turn in path 48, and when, in the full line position 40, the slot 52 is about to leave roller 55, the track 53 engages with roller 56, thereby turning the cam piece into position 40''. In the pick-up position shown in Fig. 1, the carrier head 36 rests over the lifter head L of the die, the wrapper W being transferred from the latter to the former by a shift of the suction at the moment of contact.

The carrier head 36 is divided by a partition 57 into a forward and a rear chamber which communicate through an opening having a weighted trap door 58 swinging on a shaft 60. The shaft 60 projects from the carrier head, and fixed thereto is an operating arm 64 provided with a cam follower 65. The under side of carrier arm 31, by means of a bracket 66, carries a wedge-shaped cam piece 67 projecting into the path of roller 65. The weight of trap door 58 is so chosen that the suction in the carrier is not sufficient to lift the same from rest position against a stop pin 59, but is strong enough to hold it against the partition 57 after being raised into closing position. Thus, the trap door 58 in this case is normally open allowing the suction to act over the entire face of the carrier head. At a definite point in path 48, when it is desired to shift the suction from the forward holes 61 to the rear holes 62 so as to augment the suction force in the rear chamber, the door is raised by engagement of roller 65 with cam piece 67 and then is held closed by the suction until the same is cut off from the carrier head upon delivery of the wrapper, whereupon the weighted trap door drops by gravity against rest pin 59.

When the carrier head 36 starts from the reversed position to that shown in Figs. 1 and 2, that is, with the flag end F to the right and the tuck end T to the left, it will, after delivering the wrapper, be approximately in the proper relative position for pick-up, so that it does not have to be reversed, and the cam piece 40 and the rollers 55 and 56 are then omitted.

It will be seen, therefore, that in the movement of the wrapper carrier head 36 between the source of supply L and the bunch rolling station WD, the movement of the head must be interrupted cyclically, first when the head receives a wrapper from the source of supply and, secondly when the head carrying a wrapper is located above the bunch rolling station WD, at which position paste is applied to the wrapper flag by means of a conventional mechanism (not shown), after which a tuck needle, also of conventional design (not shown) fixes the tuck end of the wrapper to the tuck end of a bunch located in the rolling station WD, after which the movement of the head is re-started whereupon the wrapper is applied about the bunch and the head subsequently moves back over the wrapper cutting die L to receive a new wrapper therefrom.

The invention above described may be varied in construction within the scope of the claims for the particular device, selected to illustrate the invention, is but one of many possible concrete embodiments of the same. The invention is not, therefore, to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a cigar machine provided with a source of supply of wrappers and a bunch rolling sta-

tion, a wrapper transfer device, including a suction carrier head, a movable support for said head, means for intermittently moving said head in a closed and irregularly curved path to and from said supply and station once each cycle of said machine, including a vertical shaft journalled in said support, a driving member secured to said shaft, speed advancing and retarding means mounted on said driving member for controlling the speed of movement of said head, and stationary cams cooperating with said driving member for effecting the movement of said head along said path.

2. In a cigar machine wrapper transfer device, a vertical support for said device, a shaft journalled in said support, driving members mounted on said shaft, a substantially horizontal extension forming a part of said support, an intermittently driven hollow shaft journalled in said extension, articulated hollow arms mounted on said shaft, a suction carrier head mounted on one of said arms, a driven member fixed to said hollow shaft, and engaging with said driving members on said drive shaft, and stationary cams associated with said members for controlling the movement of said head through a closed and irregularly curved path.

3. In a cigar machine wrapper transfer, a movable support, a shaft journalled in said support, a wrapper carrier head mounted on said shaft, means for moving said head through a closed and irregularly curved path, comprising rotary driving members, cams cooperating with said members and support for effecting said movement, mechanism for rotating said head relative to said support during the movement of said head along said path including a cam mounted on said shaft, and cam followers mounted on one of said first-named cams for engagement by said cam on said shaft.

4. In a cigar machine wrapper transfer, a suction carrier head for transferring wrappers from a source of supply, means for moving said head to and from said source of supply, said means comprising, a pair of vertical shafts, one of said shafts driving the other, means on said driving shaft for driving said other shaft at varying speeds, including a driving member fixed to said driving shaft, driving mechanism associated with said driving shaft, including loose driven members on said drive shaft engaging a driven member on said driven shaft, and connections between said mechanism and driving member for governing the rate of speed of said driven shaft.

5. In a cigar machine, the combination with a wrapper carrier head and mechanism restraining said head to move in a closed and irregularly curved path, of a movable support for said head, a shaft journalled in said support and mounting said head for rotary movement relative thereto, a cam, an arm secured to said support and tracking said cam for swinging said head, cam followers fixed to said cam, a lever secured to said shaft, and cam surfaces formed on said lever for engagement with said followers during the movement of said support for rotating said head.

6. In a cigar machine, a wrapper transfer mechanism comprising a wrapper carrier head, means for moving said head in a closed path between a source of supply of wrappers and a wrapping station, including a vertical support, a shaft journalled in said support, a fixed cam, a driving and a driven gear mounted on said shaft, a driving member fixed to said shaft and provided with a vertical stud, a gear segment secured to said stud and meshing with said driven gear, a cam follower secured to said segment training in a track of said fixed cam, a horizontal arm formed on said support, a shaft journalled in said arm, a gear mounted on said last-mentioned shaft for coacting with said driven gear, and a wrapper carrier head fixed to said last-mentioned shaft for movement therewith.

7. In a cigar machine wrapper transfer, the combination with a suction wrapper carrier head, of means for moving said head to and from a source of supply, said means comprising a pair of vertical shafts, one of said shafts driving the other, means on said driving shaft for driving the other at a varying rate of speed and thereby effecting the movement of said head, including a driving member affixed to said driving shaft, a stationary cam associated with said driving shaft, a loose driven gear mounted on said driving shaft, a lever provided with a gear segment pivotally mounted on said driving member, said segment engaging with said gear, a gear fixed to said driven shaft and meshing with said loose gear for carrying the drive to said driven shaft, and a cam follower on said lever arranged to track said cam for controlling the rate of speed of said driven shaft.

8. In a cigar machine wrapper transfer, the combination with a suction wrapper carrier head, of means for moving said head at varying rates of speed to and from a source of supply of wrappers once each cycle of said machine, said means comprising a driven and a drive shaft, a driving member on said drive shaft, a speed change device mounted on said member, and a cam cooperating with said device for controlling the rate of speed of said driven shaft.

9. In a cigar machine wrapper transfer, the combination with a suction wrapper carrier head, of means for moving said head intermittently and at varying rates of speed once each cycle of said machine to and from a source of supply of wrappers, said means comprising a driven and a drive shaft, a driving member on said drive shaft, a speed change device mounted on said member, a cam cooperating with said device for controlling the rate of speed of said driven shaft, to effect said movement of said head, and means for rotating said head once during each cycle of the machine.

10. In a cigar machine, a wrapper transfer mechanism comprising a wrapper carrier head, means for moving said head in a closed path between a source of supply of wrappers and a wrapping station, including a vertical support, a shaft journalled in said support, a fixed cam coaxial with said shaft, a driving and a driven gear mounted on said shaft, a driving member fixed to said shaft and provided with a vertical stud, a gear segment secured to said stud and cooperating with said driven gear, a cam follower secured to said segment training in a track of said fixed cam, a horizontal arm formed on said support, a shaft journalled in said arm, a gear mounted on said second-named shaft coacting with said driven gear, a fixed cam coaxial with said second-named shaft, a wrapper carrier head, articulated members secured to said second-named shaft and mounting said head for movement thereabout, and a cam follower mounted on one of said members for cooperation with said second-named cam for controlling the path of movement of said head.

11. In a cigar machine, the combination with a wrapper carrier head, and means for mounting

said head for movement in a closed path, of mechanism for controlling the movement of said head, said mechanism including a vertical shaft, a stationary cam coaxial with said shaft, a driven gear loosely mounted on said shaft, a driving gear mounted on a hub of said gear and pinned thereto, said driven gear being provided with an arcuate slot, a driving member fixed to said shaft for rotation therewith, a stud mounted in said member and projecting through said slot, a lever provided with a gear segment at one end pivoted on said stud, said segment engaging said driving gear, and a cam follower on the other end of said lever, said follower engaging a track in said cam for controlling the motion of said head during the rotation of said shaft.

12. Driving mechanism for a cigar machine wrapper transfer comprising a vertical support, a shaft journalled in said support, a stationary cam, a driving member secured to said shaft, connected driving and driven gears mounted on said shaft, a stud located in said member and provided with a gear segment lever, said segment engaging one of said gears to rotate the same relative to said shaft, a horizontal arm forming a part of said support, a hollow shaft journalled in said arm, a gear fixed to said hollow shaft and meshing with said driven gear on said first-named shaft, a stationary cam located about said hollow shaft, a wrapper carrier head, an articulated support for said carrier head fixed to said hollow shaft, a cam follower mounted on said articulated support and engaging a track in said second-named stationary cam, a movable cam mounted on said articulated support and arranged to engage rollers on said second stationary cam to reset the position of said carrier head at the termination of a wrapper feeding cycle.

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