June 12, 1945. H. H. WHEELER 2,378,166

CIGAR MACHINE REROLLER MECHANISM

Original Filed Feb. 8, 1938 2 Sheets-Sheet 1

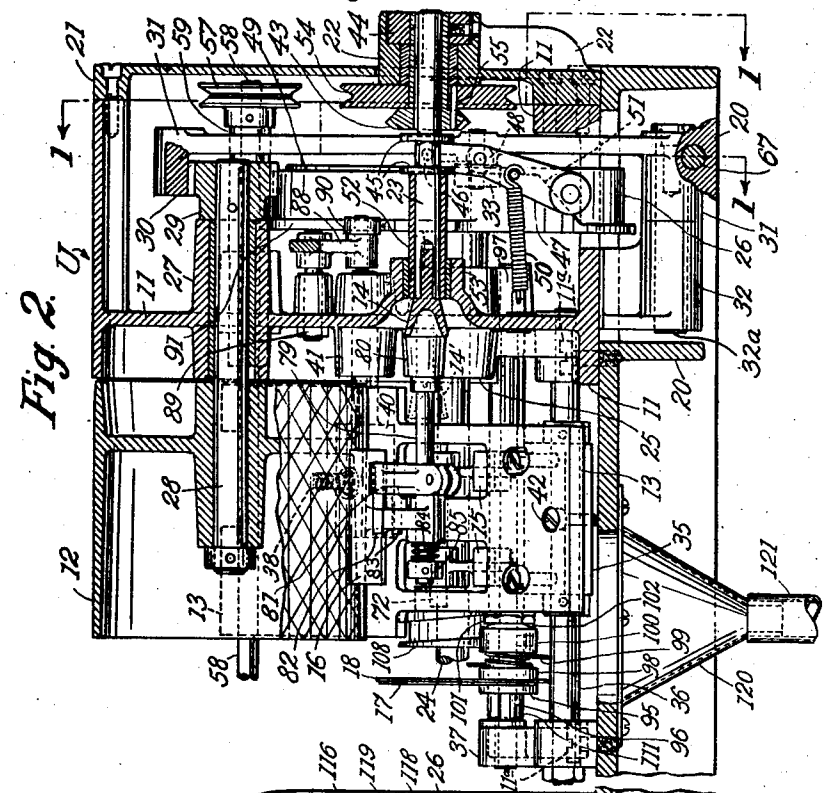


Fig. 2.

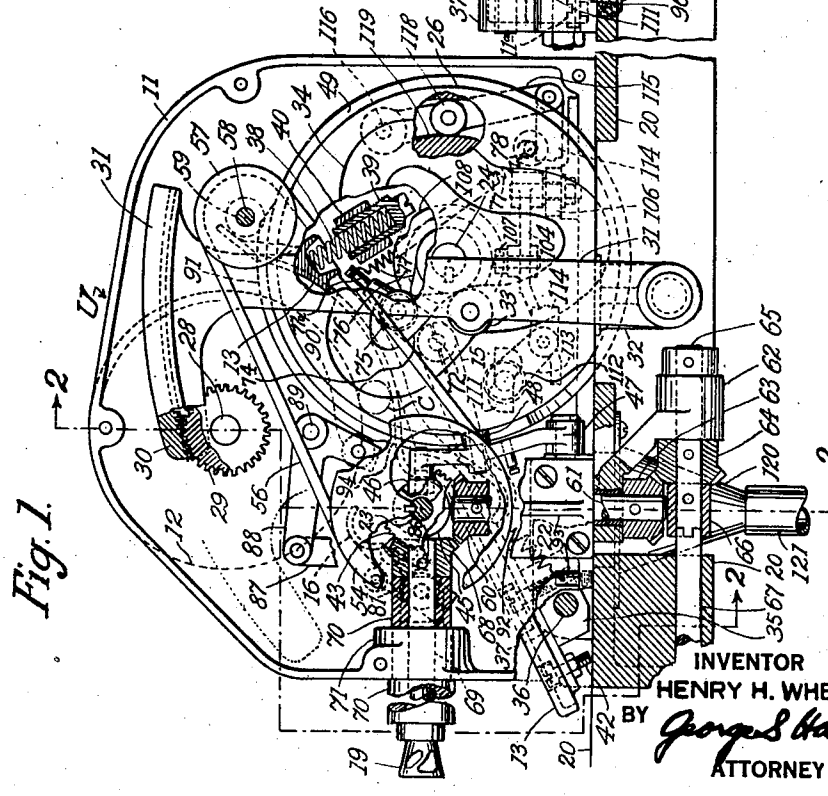


Fig. 1.

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Fig. 3

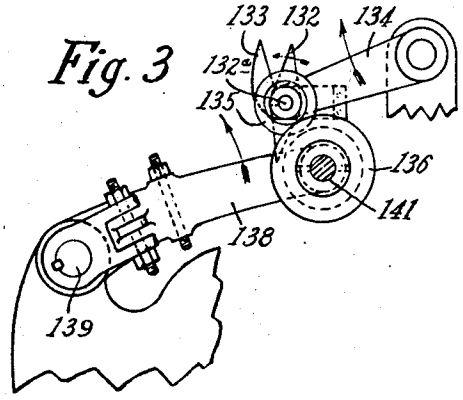
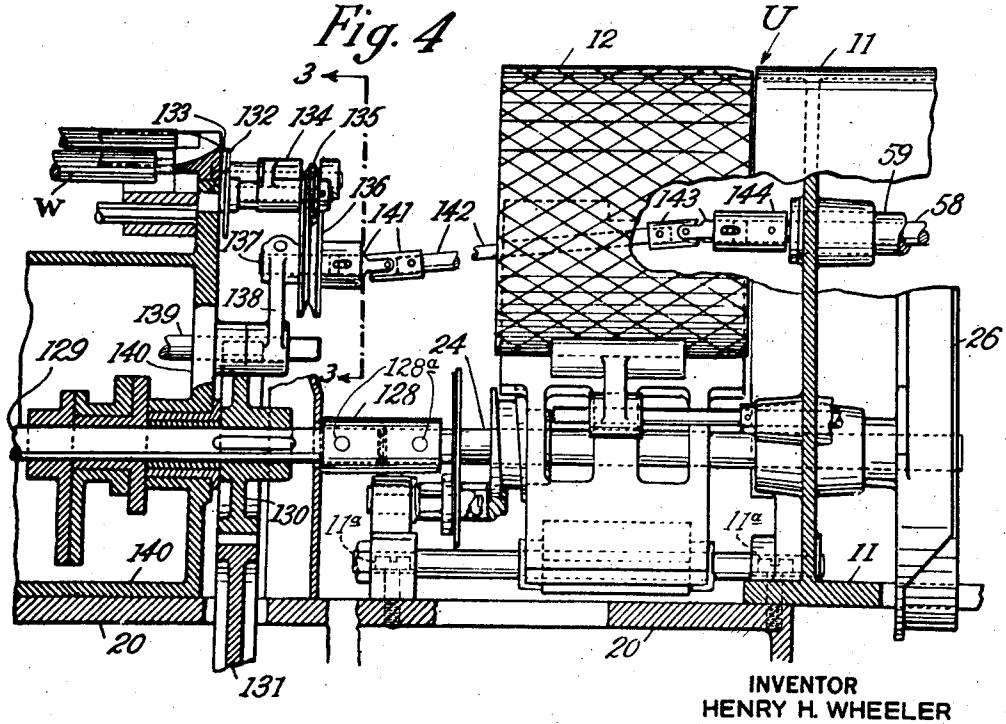


Fig. 4



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2,378,166

CIGAR MACHINE REROLLER MECHANISM

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Original application February 8, 1938, Serial No. 189,300. Divided and this application September 25, 1942, Serial No. 459,620

6 Claims. (Cl. 131—27)

This invention relates to cigar machines and more particularly to an improved rerolling and trimming unit for cigar rolling machines. Its main object is to provide a compact device with enclosed operating mechanism for high speed operation. This invention also proposes to provide a rerolling unit which is wholly independent insofar as its drive and operative parts are concerned of the remainder of the cigar rolling machine, and which can, if desired or necessary, be readily removed for repairs and interchange of parts.

Due to the fact that substantially all of the operating parts of the improved rerolling and cigar locating mechanism are enclosed, practically all dirt, tobacco dust and waste particles and abrasives, which might prove detrimental and cause excessive wear to the operative parts, are denied access thereto, and consequently the life of the entire mechanism is greatly increased.

It is a further object of the invention, therefore, to provide an improved rerolling and locating mechanism having operative parts enclosed wherein these parts are protected from excessive wear and tear by reason of the enclosing elements.

The invention also consists in the provision of a new and improved rerolling, trimming and knurling unit preferably provided with an independent cam shaft which may be driven by means of a suitable coupling from the cigar rolling device.

The invention further proposes the provision of individual cams and cam tracks mounted on the drive shafts for each one of the several operating parts in order to provide more time for knurling and making better cigar heads. This arrangement also gives more time to the wrapper layer when it is not necessary to use the hand knurler.

It is a further object of the invention to provide a self-contained rerolling unit in which the operating cams, levers and racks are substantially all positioned within enclosing elements and, therefore, are made more compact, of reduced size and provide a more efficient unit.

This invention constitutes a division of copending application, Serial No. 189,300, filed February 8, 1938, which has issued as Patent No. 2,337,076, granted December 21, 1943, for Reroller and trimmer for cigar machines.

It is an additional object of the invention to provide mechanism for continuously driving both knurling devices and also the shaft which drives the flag cutter of the rolling mechanism. This mechanism is driven from the main drive shaft of the rerolling device and thereby eliminates all necessity of using a separate exterior drive.

It is an additional object of the invention to provide an improved mechanism for controlling oscillatory movement of the cigar rerolling drum, in order that the lost motion may be kept to a minimum and that more perfect cigars may be produced because of the elimination of this undesirable feature. This is brought about by reason of the fact that the pinion which drives the rerolling drum is in turn driven from a gear segment forming a part of a single lever driven from a cam where heretofore it has been customary to operate the driving pinion of the rerolling drum from a rack having numerous connections which brought it into operation with a cam which effected the rotation of the drum. This arrangement also results in a sturdier construction in the reroller drum drive.

In order to provide a simpler and more efficient drive for the reroller the invention also consists in the provision of a drive shaft which is driven directly or through a suitable coupling from the drive shaft of the rolling mechanism. This makes possible a more unified rerolling structure than has existed heretofore.

The invention also consists in the provision of means for driving the flag cutter of a cigar rolling machine directly from the operating means of the rerolling unit wherein the flag cutter and the knurlers of the rerolling mechanism are continuously operated.

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

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

Figure 1 is an end elevation of the improved rerolling and trimming unit, partly in cross section;

Figure 2 is a sectional side elevation of the same on line 2—2 of Figure 1;

Figure 3 is a partial side elevation taken on line 3—3 of Figure 4 showing the construction of the flag cutter mechanism; and

Figure 4 is a sectional side elevation of the improved rerolling unit showing its drive relation with another unit of the cigar rolling machine.

Referring to Figures 1 and 2, the improved unit U consists of a housing 11, an oscillating rerolling

drum 12, a resiliently supported concave 13, a cigar locating knurler 14, cigar grippers 15 and 16, trimmers 17, 18, and an independently driven finishing knurler 19. As shown in Figures 1, 2 and 4 the whole rerolling unit U is detachably mounted on table 20, and may be secured thereon by means of any conventional type of screw 11a.

The cigar, after having its wrapper applied, is deposited on the concave 13 by a suitable transfer whereon it is rolled back and forth a number of times by the drum 12, thereby redistributing hard spots in the filler and softening the same. The cigar is then pressed by the grippers 15, 16 (Figures 1 and 2), first lightly so that each cigar can be moved axially without damage to its fragile wrapper until the locating knurler 14 has engaged and displaced the head of the cigar into a predetermined axial position, and then firmly to hold the cigar fixedly, while the trimmers 17, 18 are moved into cutting position and closed upon the tuck end of the cigar. This mechanism makes it substantially impossible for the knives to move the positioned cigar, with the net result that all are cut to a fixed length. The grippers then open, allowing the cigar to roll down the concave 13 onto the table 20 of the machine, to be picked up by the wrapper die attendant who stacks it in a tray provided for this purpose.

In the event that a cigar head has a wrapper improperly applied thereto and it is necessary that it be unwound and repaired manually, a finishing knurler 19 is available to the operator and the head of the repaired cigar may be finished in this knurler after which the cigar is placed on the tray referred to.

The operating mechanism for the rolling drum, locating knurler, grippers and trimmers is located in the housing 11, which is closed by a cover 21, this housing carrying a bearing bracket 22 for the shaft 23 of the locating knurler 14. The main drive shaft 24, which may be a part of the existing drive of the cigar rolling device projects through and is supported by a bearing 25 of housing 11 and carries a cam 26 at its inner end. A bearing 27 of the housing supports a shaft 28 on which the rerolling drum 12 and its operating gear 29 are fastened, the latter gear meshing with and being oscillated by a gear segment 30 on a lever 31 which is mounted on a pivot shaft 32a supported in a lug 32 of housing 11 and supports a follower 33 in engagement with a cam track 34 of plate cam 26.

At its lower end the concave 13 is fastened to a block 35 mounted on a rocker shaft 36 supported in housing 11 and a bearing block 37 resting on table 20, while its upper end bears against a compression spring 38 carried in an adjustable socket 39 threaded into a block 40 extending from a bearing 41 of housing 11. The spring 38 presses a set screw 42 in the lower end of the concave 13 in adjusted position to admit a cigar delivered by the cigar transfer from the wrapping device.

The cigar locator 14 is carried at the end of shaft 23, which is driven by a bevel gear 43 held against axial displacement by a collar 44 bearing against an internal shoulder in bracket 22, the hub of gear 43 having a long keyway connecting it to and permitting axial movement of shaft 23. Between flanges 45 on shaft 23 is fitted a roller 46 carried by a lever 47 pivoted in housing 11 and having a follower 48 held against the face of a cylindrical track 49 on barrel cam 26 by a tension spring 50. When the roller 48 engages with the axial depression 51 of cam track 49, the shaft roller 46 causes an axial movement of shaft 23, which has a bushing 52 slidable in a bearing 53 of housing 11, thereby bringing the locator 14 into the dotted position 14' where it engages and locates a cigar in its proper trimming position. On the hub of bevel gear 43 is mounted a pulley 54 attached thereto by a pin 55 and over which runs a belt 56 driving a pulley 57 on a shaft 58 supported by a sleeve 59 mounted in housing 11. The shaft 58 drives the rotating part of the nearby flag cutter unit of the rolling machine as shown in Figure 4.

The bevel gear 43 is driven by a bevel gear 60 on a vertical shaft 61 supported in a bearing bracket 62, the shaft 61 having a bevel gear 63 in mesh with a bevel gear 64 on a horizontal shaft 65 mounted in bracket 62, which shaft is attached by a conventional single tooth coupling 66 (Figure 1) to a continuously driven shaft 67 of the rolling machine. Coupling 66 assists in the ready removal of the rerolling device as a unit for repair and/or replacement, as desired. The gear 43 also drives a bevel gear 68 on a shaft 69 supported in a bushing 70 held in a bearing 71 of housing 11, the shaft 69 being connected by a universal joint to the shaft of finishing knurler 19, as shown in co-pending application, Serial No. 101,563, filed September 19, 1936, by Sigurd Clausen, now matured into Patent No. 2,151,898 granted March 28, 1939, for Knurler unit for cigar machines.

The cigar grippers are arranged to grip the cigar lightly while it is being axially located by the knurler 14, and then firmly while it is being trimmed to size by the cutters 17, 18. The lower grippers 15 are fixedly mounted on a shaft 72 supported in a bearing (not shown) of housing 11. The shaft 72 carries an arm 74 having a follower 75 held against a cam 76 on shaft 24 by a spring 77 anchored to a post 77a on arm 74 and a post 78 in housing 11. As the roller 75 rides off the lobe of cam 76, the spring 77 pulls the grippers 15 into their up position against the cigar C, openings being provided in the concave 13 for their passage thereto.

The upper gripper 16 is loosely mounted on a shaft 79 supported in a bearing 80 of housing 11. On shaft 79 is fixedly mounted an arm 81 carrying two horizontal pins 82 and 83, the former extending above and the latter below the gripper 16. A coil spring 84 on shaft 79 has one end inserted into a fixed collar 85 while its other end presses down on gripper 16 thus holding the latter against the lower pin 83 of arm 81. On the end of shaft 79 within the housing is fastened a crank arm (not shown) which is connected by a link 87 to a bell crank lever 88 fulcrumed on a stud 89 affixed to housing 11. The lever 88 carries a follower 90 held in engagement with the peripheral track 91 of cam 26 by a spring 92 attached to arm 86 and anchored to a post 93 in housing 11. As the depression 94 of track 91 engages with roller 90, the arm 81 causes the gripper 16 to move towards the cigar C and grip the same lightly by the pressure of the weak spring 84 while the arm 15 is likewise actuated toward the cigar, thereby permitting axial location of the cigar without injury to its wrapper. As the roller 90 then runs off depression 94 onto the periphery of track 49, the strong spring 92 pulls the upper pins 82 of arm 81 down upon the gripper, causing the latter to press firmly against the cigar, thus preventing axial movement during the trimming operation. It will be seen, therefore, that as the knurler 14 moves forward to locate a cigar, clamp arm 16 bears lightly

thereon as the cigar is being moved axially to located position. Upon the conclusion of this operation, arm 16 is moved to clamp the cigars so that it is rigidly held when knives 17, 18 are operating. This arrangement insures against cigars of varying lengths because of the firm grip applied during cutting operations.

The trimmers are normally held some distance away from the end of rolling drum 12, but after the cigar has been axially located, they are moved towards the drum into cutting position and then close upon and sever the tuck end of the located cigar. The trimming knives 17, 18 (Figures 1 and 2) are mounted on a flanged sleeve 95 loose on a shaft 96 supported in bearing block 37 and in a bearing 97 of housing 11. On sleeve 95 are also mounted a flanged collar 98 carrying a coil spring 99 and a collar 100, the members 17, 18, 95 and 98 being clamped together by nuts 101 screwed against a spring washer 102 on sleeve 95. In the illustrated embodiment the knives 17, 18 lie in vertical planes and sleeve 95 and collar 98 which support them are moved axially into and out of operative position. A drum cam 103 is engaged by a cam follower 107 on a cam lever 104 adjustably fulcrumed at 106 (Figure 1) to impart axial movement to the trimmers at the proper time. Since this mechanism forms no part of the present improvement, further detailed description is deemed unnecessary and is omitted in the interest of brevity.

Each of the trimming knives 17 and 18 is provided with a rear extension upon which are mounted followers (not shown) which engage the top and the bottom of an oblong cam bar 111. The bar 111 is pivoted in bearing block 37 and in a bearing 112 of housing 11 and on its housing end carries a crank arm 113 connected by a link 114 to a cam lever 115 pivoted on a stud 116 held in a bearing (not shown) of housing 11. The lever 115 has a follower 118 in engagement with a track 119 in the rear face of cam 26, whereby the bar 111 is turned into an upright position at the proper moment, causing the followers on the knife extensions to separate and thereby close the trimming knives 17 and 18 upon one another thus cutting the cigar C to the proper length.

Below the cutting position of the trimmers, an opening is provided in the table plate 20 of the machine, and a funnel-shaped chute 120 is attached to plate 20 (Figures 1 and 2), the chute 120 terminating into a pipe 121 connecting with the suction system of the machine, so that all scrap resulting from trimming the cigars is immediately removed and the adjoining parts of the machine are kept clean.

The drive shaft of the rerolling unit is attached by a conventional coupling 128 (Figure 4) to the drive shaft 129 of the wrapping device of the cigar machine designated generally W, which may be of the type shown in co-pending application, Serial No. 107,792 filed by James P. Durning, October 27, 1936, now Patent No. 2,290,171 granted July 21, 1942, which has a gear 130 driven by a gear 131 from the main shaft of the machine. As shown, by merely removing the coupling securing means, which may be screws of any known type, the whole rerolling unit may be separated and removed from the machine. This improved drive has a decided effect in simplifying the rerolling mechanism drive, makes it possible to form a more compact unit, eliminates the necessity of using large cams on the main drive shaft, cuts down to a marked extent the size of levers used and in general adds to the overall efficiency of the rerolling mechanism in the production of more uniform cigars and cheroots. The shaft 58, supported by the sleeve 59 and driven by the belt 56 from the continuously rotating knurler shaft 23, is made use of, as heretofore mentioned, to drive the flag cutter of the wrapping device. The latter consists of a rotating double-pointed knife 132 mounted on shaft 132a coacting with a ledger plate 133, which are raised into operating position once in every cycle of the machine. For this purpose, the flag cutter is supported on a cam operated swing arm 134 and driven by a friction wheel 135 engaging with a pulley 136 loosely carried on a stud 137 (as shown in Figure 4) by a cam operated arm 138 swinging on a shaft 139 supported by the frame 140 of the wrapping device. The hub of pulley 136 is connected by a universal joint 141 to a shaft 142 which in turn is attached by a universal joint 143 to a coupling 144 on shaft 58. When the rerolling unit is detached from table 20 by removing screws 11a and 128a, the pulley 136 slides off stud 137.

The mechanism 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 having a support table, the combination with a rerolling device and a concave for supporting cigars spaced therefrom, of driving mechanism for said device, and a housing mounted on said table enclosing a part of said driving mechanism, said mechanism including a shaft journalled in said housing and supporting said device for oscillatory rotation, a driven gear on said shaft, a main shaft also mounted in said housing, a cam on said main shaft, a lever provided with a cam follower engaging said cam, means on said housing providing a pivotal support for said lever, and a gear segment secured to said lever and engaging said gear to operate said rerolling device.

2. In a cigar machine having a support table, the combination with a rerolling mechanism comprising a rotating rerolling drum and a yieldingly mounted concave spaced therefrom, driving means for cyclically imparting motion to said drum to roll cigars back and forth on said concave, said driving means including a shaft, a cam located on said shaft, a lever, a cam follower on said lever tracking said cam, a housing detachably mounted on said table, means on said housing providing a pivotal support for said lever, a toothed member mounted on said lever, a shaft supporting said rerolling drum, a gear on said last-named shaft meshing with said toothed member, and means for driving said first-named shaft and rotating said cam to oscillate said rerolling drum, said driving means being located above said table and free of operative connections beneath said table, whereby to permit ready removal of said rerolling mechanism from said machine as a complete unit.

3. In a cigar machine having a supporting table, the combination with a rerolling sub-assembly mechanism including an oscillatable rerolling drum and a concave spaced therefrom, driving means for imparting motion to said drum to move said drum relative to said concave, a housing element on said supporting table constructed and arranged to enclose a part of said driving means, said driving means including a

shaft journalled in said housing, a cam located on said shaft, a lever fulcrumed on and operative within said housing of said sub-assembly mechanism, a cam follower on said lever, a gear segment mounted on said lever, a shaft supporting said drum, a pinion on said last-named shaft engaged by said gear segment, and means for cyclically rotating said cam to impart oscillating rotary movement to said drum.

4. A cigar machine rerolling mechanism sub-assembly unit for use in a cigar machine having a supporting frame and a support table for detachably supporting said unit, comprising a rotating rerolling drum, a concave spaced therefrom for guiding cigars beneath said drum, a housing forming the frame of said unit, driving mechanism mounted in said housing for imparting movement to said drum, said mechanism including a shaft journalled in said housing and supporting said drum, a pivot shaft mounted on said housing, a drum driving lever mounted on said pivot shaft, a main shaft also journalled in said housing, a cam located on said main shaft, a follower on said lever coacting with said cam for moving said lever, and means on said lever for imparting oscillating rotary movement to said drum.

5. In a cigar machine, the combination with a rerolling mechanism unit, comprising a rotating rerolling drum and a yieldingly mounted concave spaced therefrom, driving means for imparting motion to said drum, a housing element constructed and arranged to enclose a part of said driving means for rotating said drum, said means including a shaft journalled in said housing, a cam located on said shaft, a pivoted lever mounted on said housing, a cam follower on said lever tracking said cam, a rack on said lever controlled by said cam through said follower, a drum support shaft, a pinion on said drum support shaft engaged by said rack, and means for driving said first-named shaft to rotate said cam and thereby impart oscillatory and rotary movement to said drum.

6. In a cigar machine having a support table, the combination with a rerolling mechanism unit comprising a rerolling drum and a cigar supporting concave spaced therefrom, said unit being removably mounted on said table, of driving mechanism for said drum, a housing enclosing a part of said driving mechanism including a shaft journalled in said housing and supporting said drum, driving means on said shaft, a main shaft also journalled in said housing, a cam located on said main shaft, and connections between said cam and driving means for oscillatingly rotating said drum, said connections located above said table and operative wholly within said housing.

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