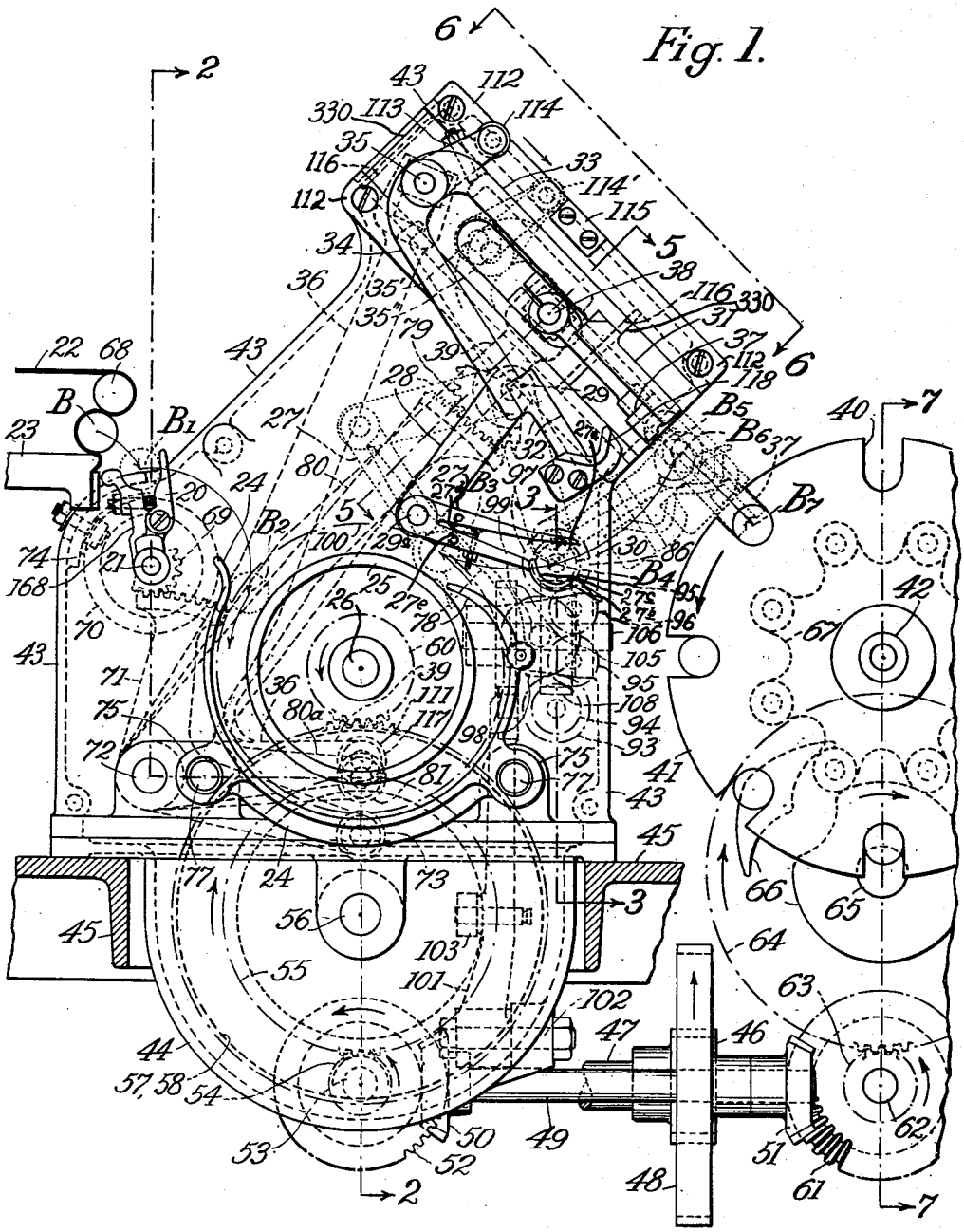
Aug. 22, 1944. H. H. WHEELER 2,356,636

BUNCH SOFTENING AND SHAPING MECHANISM FOR CIGAR MACHINES

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Fig. 1.



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Fig. 2b

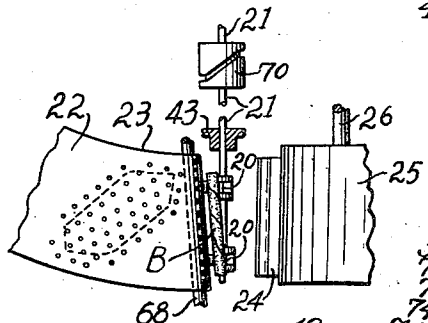


Fig. 2.

Fig. 2a

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BUNCH SOFTENING AND SHAPING MECHANISM FOR CIGAR MACHINES

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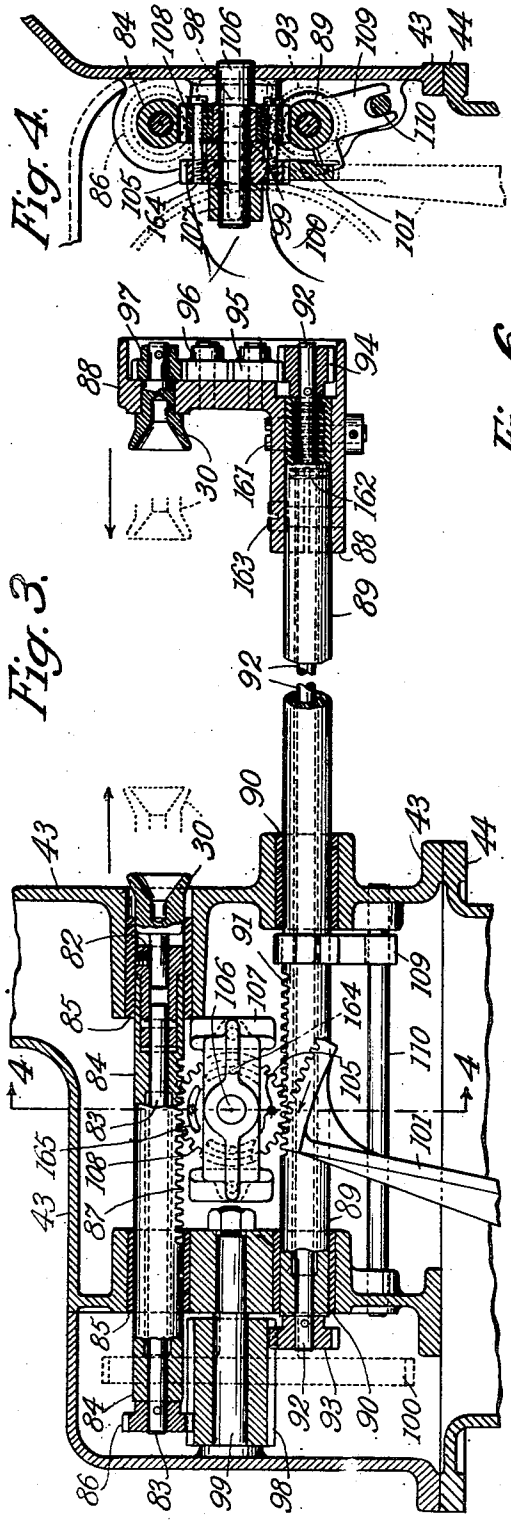


Fig. 3.

Fig. 4.

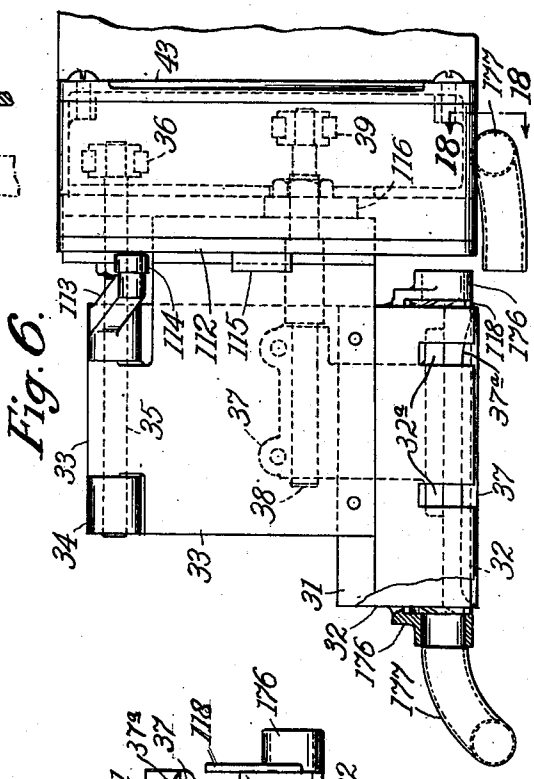


Fig. 6.

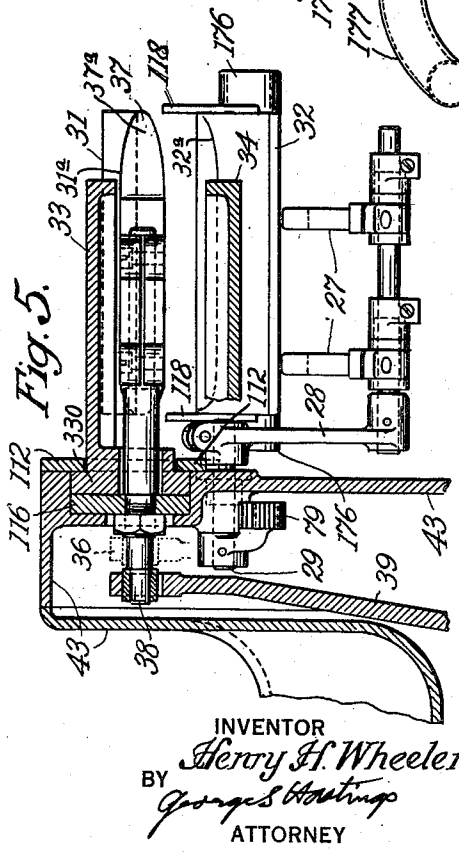


Fig. 5.

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BUNCH SOFTENING AND SHAPING MECHANISM FOR CIGAR MACHINES

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Fig. 7.

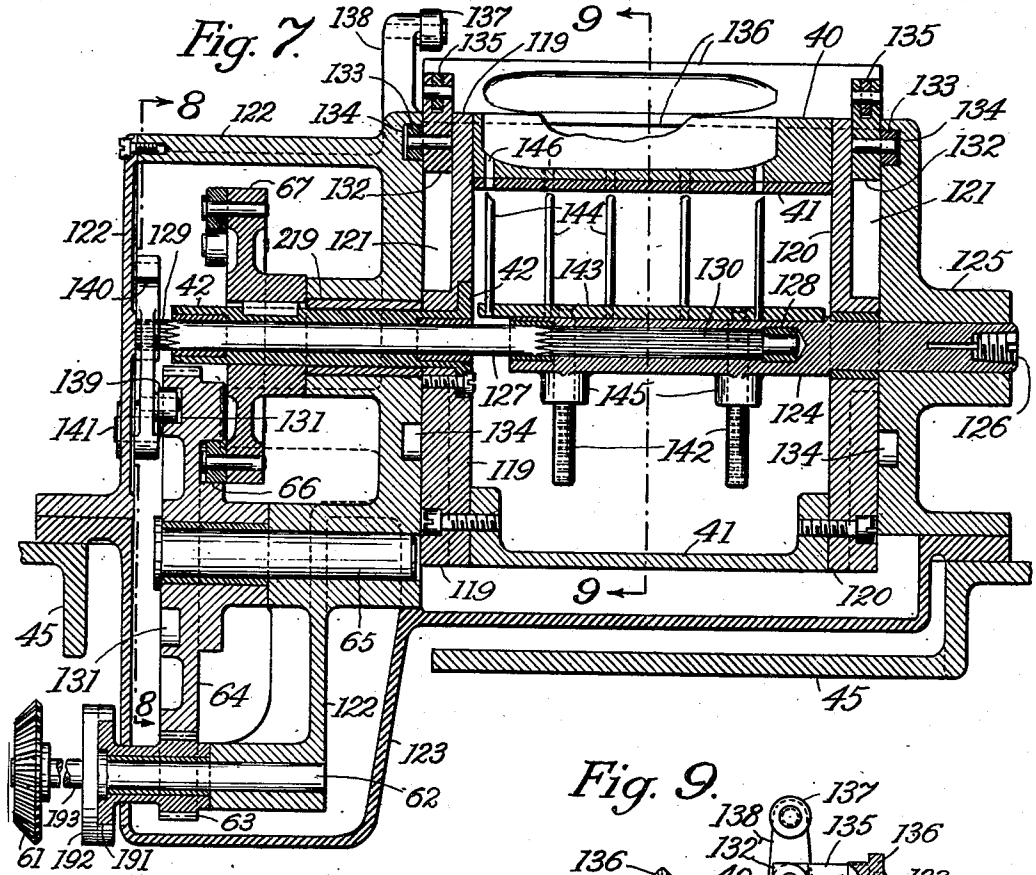


Fig. 8.

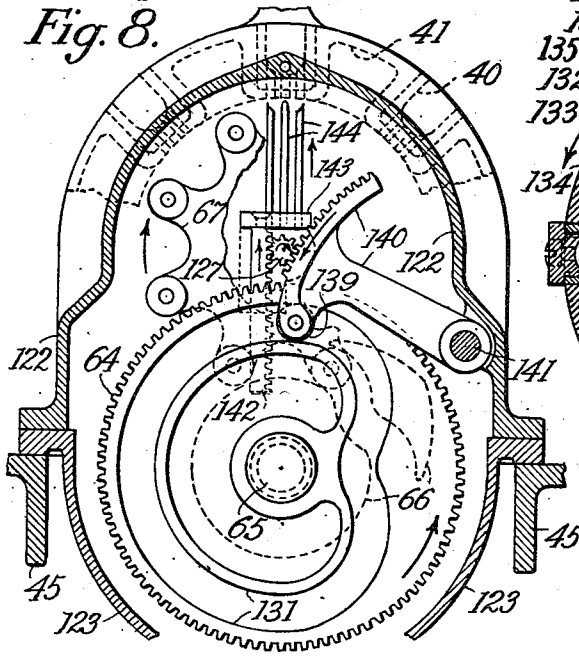
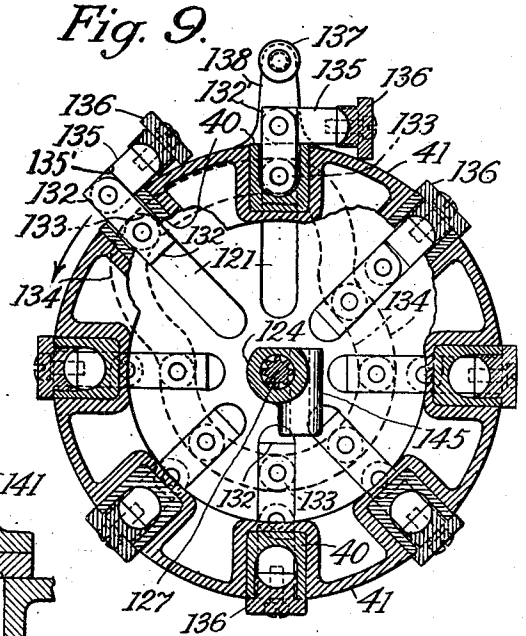


Fig. 9.



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BUNCH SOFTENING AND SHAPING MECHANISM FOR CIGAR MACHINES

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Fig. 10.

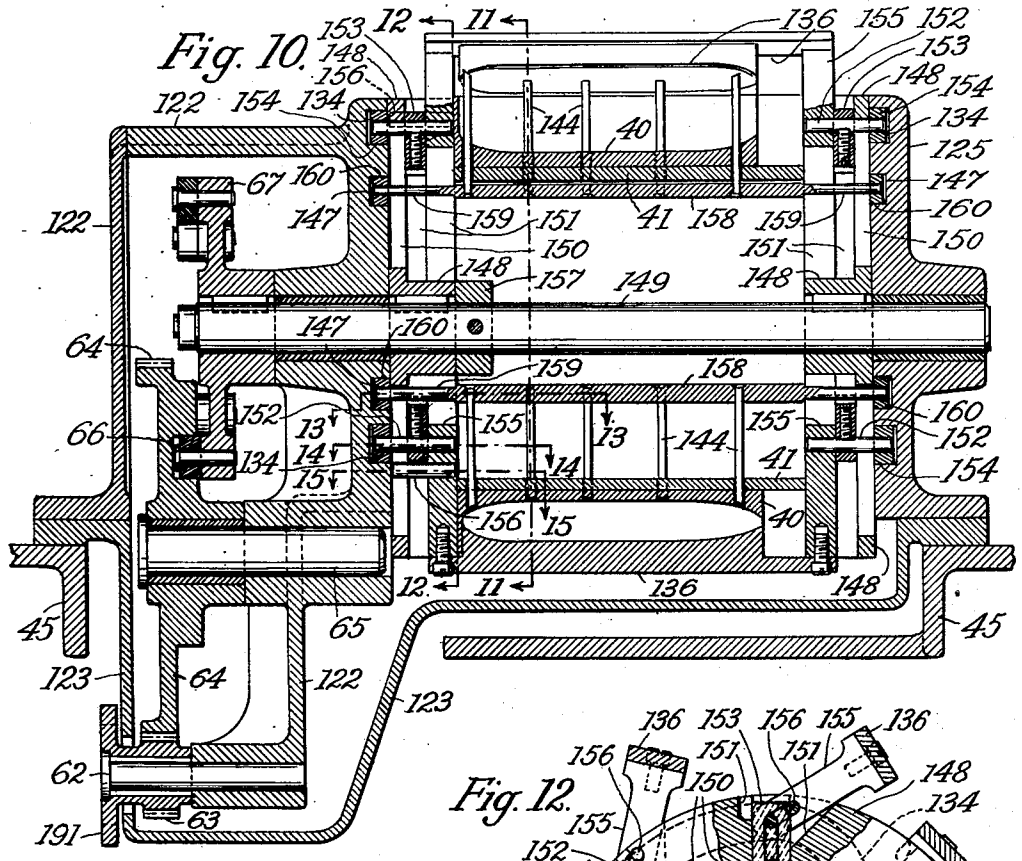


Fig. 11.

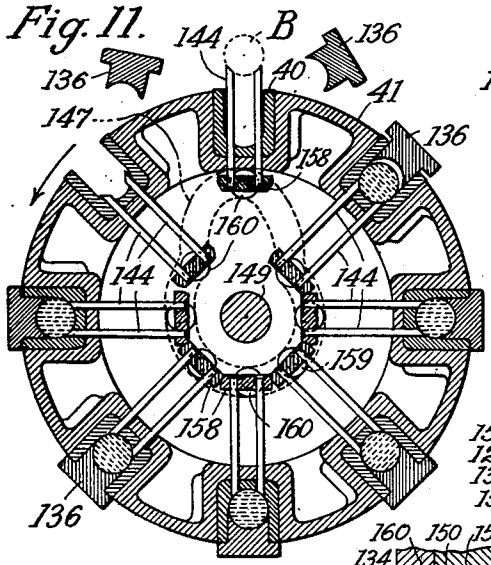


Fig. 12.

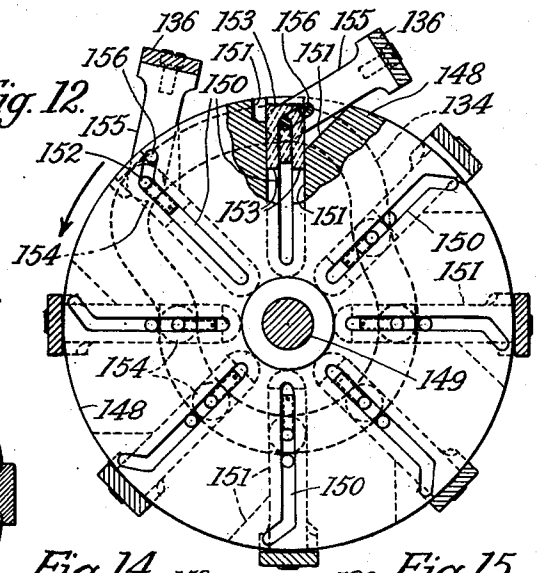


Fig. 14.

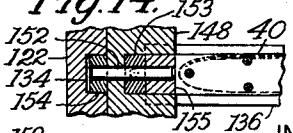


Fig. 15.

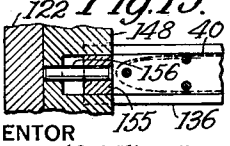
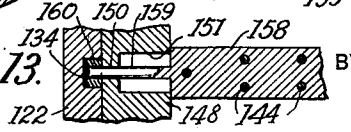


Fig. 13.

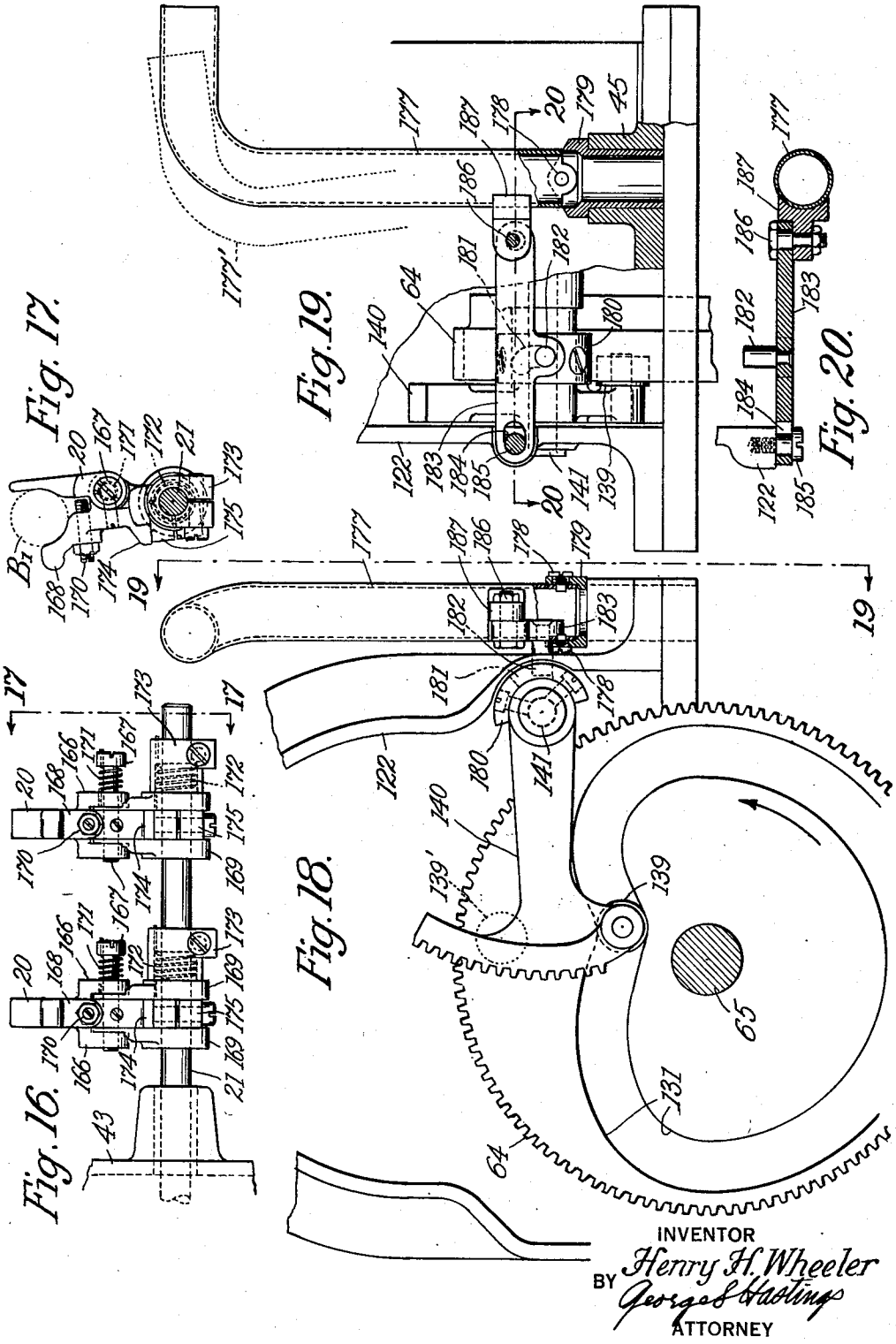


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BUNCH SOFTENING AND SHAPING MECHANISM FOR CIGAR MACHINES

Filed Oct. 8, 1938 6 Sheets-Sheet 6



Patented Aug. 22, 1944 2,356,636

UNITED STATES PATENT OFFICE

2,356,636

BUNCH SOFTENING AND SHAPING MECHANISM FOR CIGAR MACHINES

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Application October 8, 1938, Serial No. 234,001

31 Claims. (Cl. 131—80)

This invention relates to bunch softening and shaping mechanisms for cigar machines, its main object being to provide improved devices which will enable the machine to work equally well with long or short filler tobacco. A further object is to provide a novel bunch transfer which can be used either with straight or curved rolling tables to deliver the cigar bunches to the bunch softener in properly aligned position.

Another object is to improve the operation of the bunch softener so that the manipulated bunch will not be released until it has been gripped by the transfer which carries it to the bunch trimming and inserting unit.

The bunches are delivered by the rolling apron into the first bunch transfer which inserts them into a softening device in which they are rolled by a revolving drum on a resiliently supported cradle. From the latter they are discharged into the second transfer which conveys them to the bunch locator and the trimming and inserting device. This device consists of a pair of relatively movable jaws coacting to compress the bunch and support it in a position aligned with one of the pockets of the shaping turret. One of the jaws is provided with trimming members such that when a bunch is ejected therefrom by a plunger which conforms to the shape of the bunch, the ends of the cigar bunch are trimmed to a size slightly shorter than the length of the shaper pocket as the same is advanced past the trimmers into an open pocket of the shaping turret.

Still another object is to enclose the operating mechanisms of the bunch softener drum, the bunch transfers, the bunch locators, and the bunch trimming and inserting device in a housing from which protrudes a counter shaft journalled within the housing and driving the drum, transfers, locators, and trimming and inserting device. The protruding shaft end is provided with a single jaw clutch or the like whereby it may be driven in a single predetermined timed relationship with the main drive of the machine to assure operation of the transfers, the locator and the trimming and inserting device at the proper time to transmit a bunch to the open pocket of the shaper turret. Accordingly the housing and its enclosed mechanisms constitute a sub-assemblage which may be readily detached from the machine to permit repairs and reconnected in the same properly timed relationship.

A similar object is to enclose the mold turret and its indexing and cover operating and ejecting mechanisms in a housing from which protrudes a counter shaft having a single jaw clutch or the like adapted to be coupled to the main drive of the cigar machine in a single predetermined timed relationship such that its pockets will be successively advanced into position to receive bunches from the trimming and inserting device and shape them to the desired contour while advancing them to the ejecting station to be transported to the wrapping mechanism at predetermined intervals. Likewise the mold turret housing constitutes a sub-assemblage which may be readily removed for repairs and reconnected in properly timed relationship.

The bunch shaper is provided with a plurality of pockets each having a cover which is adapted to be swung away from the pocket for loading and then be drawn down into the same with a linear movement for shaping a bunch positioned therein. The linear movement of the cover permits use of a cover which fits the pocket exactly and hence shapes it perfectly. The shaper pockets are closed at the head or both ends and fully conform to the desired shape of cigar, the internal contour of the covers being complementary to that of the pockets to fully enclose and shape the head and tuck end, also if desired.

Each of the covers is provided at its ends with arms extending along the sides of the turret for oscillatory and radial movement relative thereto, and the arms are permanently connected to the turret. The operation of the pocket covers is effected by means of suitable cams, to remove the covers while the successive covers are approaching said station. At the conclusion of the shaping period, which takes up three-fourths of one revolution of the turret, the pockets are opened by movement of the covers outward and to one side of each pocket, and the shaped bunches are transferred by suitable means to the wrapping mechanism. Accordingly, a bunch may be inserted into the pocket at the next station while the bunch is being removed at the ejecting station, and a further object is to secure perfect shaping of the bunch for a maximum portion of one machine cycle.

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

Fig. 1 is an end elevation of the improved cigar bunch softening and shaping mechanism;

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

Figure 2a is a sectional end elevation showing

the roller adjusting mechanism for the bunch grippers;

Figure 2b is a diagrammatic partial plan view of my bunch grippers and their coaction with the bunch rolling apron and bunch softener;

Fig. 3 is a sectional side elevation on line 3—3 of Fig. 1;

Fig. 4 is a sectional end elevation on line 4—4 of Fig. 3;

Fig. 5 is a sectional side elevation on line 5—5 of Fig. 1;

Fig. 6 is a top view on line 6—6 of Fig. 1;

Fig. 7 is a sectional side elevation on line 7—7 of Fig. 1;

Fig. 8 is an end elevation on line 8—8 of Fig. 7;

Fig. 9 is a sectional end elevation on line 9—9 of Fig. 7;

Fig. 10 is a sectional side elevation similar to Fig. 7, showing a modification in the construction of the bunch shaping turret;

Fig. 11 is a sectional end elevation on line 11—11 of Fig. 10;

Fig. 12 is an end elevation on line 12—12 of Fig. 10;

Fig. 13 is a cross-section on line 13—13 of Fig. 10;

Fig. 14 is a cross-section on line 14—14 of Fig. 10;

Fig. 15 is a cross-section on line 15—15 of Fig. 10;

Fig. 16 is a detail side elevation on an enlarged scale of the rolling table transfer;

Fig. 17 is a detail end elevation of the same viewed from line 17—17 of Fig. 16;

Fig. 18 is an end elevation on line 18—18 of Fig. 6, showing a movable suction pipe for removing the scrap from the bunch trimmers;

Fig. 19 is a side elevation of the same seen from line 19—19 of Fig. 18; and

Fig. 20 is a cross-section on line 20—20 of Fig. 19.

Referring to Fig. 1, the particular embodiment selected to illustrate the improved mechanism consists of a transfer 20 swinging on an oscillatory shaft 21 from position B1 at which it receives the bunch B from the apron 22 of the rolling table 23 and delivers it at position B2 to the cradle 24 enclosing the bunch softener drum 25 on shaft 26. A transfer 27 mounted on a swinging arm 28 on a shaft 29 picks up the bunch rolled to position B3 by the softener 25 and carries it to position B4 in which it is axially positioned by locating knurlers 30, whereupon the transfer 27 carries it into position B5 in which a pair of hollowed jaws 31, 32 carried by arms 33, 34 hinged on a stud 35 in a cam-operated lever 36 move forward and close upon the bunch, and arm 34 swings upward to advance it into position B6 in line with a plunger 37 on a stud 38 carried by a cam-operated lever 39. The said jaws, when closed, form a slideway having the longitudinal contour of the bunch. The plunger, whose face is hollowed out to conform with the desired contour of the upper half of the bunch, advances the bunch out of the said slideway and delivers it into one of the pockets 40 of the shaping turret 41 which intermittently rotates on a shaft 42, the bunch being compressed sufficiently by the jaws 31, 32 to enter said pocket and trimmed during delivery to the pocket as hereinafter described.

The operating mechanisms of the transfer 20, bunch softener 25, cradle 24, transfer 27, bunch locator 30, jaws 31, 32, and plunger 37 are enclosed within a housing 43 (see Figure 2) whose bottom section 44 is detachably affixed to the base plate 45 of the cigar machine by suitable screws (not shown). For convenience in assembling the machine, the housing 43 is made up of a central portion and two end portions. The counter shaft 53 is journalled in and protrudes from the bottom housing section 44 and carries on its protruding end a female coupling or clutch member 188 having a radial slot on its outer face adapted to admit a driving tooth of a male clutch member 189 fastened on one end of a stub shaft 190 carrying the bevel gear 52 at its other end, which is driven from the bevel gear 50 on shaft 49, carrying gear 48 driven by pinion 46 on main shaft 47. Thus the various operating mechanisms enclosed in the housing 43 are driven in a predetermined timed relationship to locate grippers 20 in position to receive bunches from the rolling table and transmit them to successive pockets of the shaping turret, the position of the slot in the clutch member 188 being predetermined to obtain this relationship. When the bottom section 44 (see Figure 2) of the housing is detached from the base plate 45 the housing may be removed thereby withdrawing clutch member 188 from engagement with the clutch member 189. After the desired repairs have been effected, the housing may be replaced with its clutch member in coupled relation with the clutch member 189.

The bunch B is rolled within its binder by the apron 22 on table 23 during the forward motion of rolling pin 68 and delivered into the sets of jaws of transfer 20 on shaft 21, Figs. 1 and 2.

The shaft 21 is slidably mounted in bearings of frame 43 and carries a gear segment 69 and a drum cam 70. With segment 69 meshes a toothed segment 71 mounted on fulcrum shaft 72 and having a roller 73 in engagement with a cam track in one face of cam 57 on shaft 56 (Fig. 2). The motion of arm 71, due to cam 57, causes the jaws of transfer 20 to enter slots in the upper end of the cradle 24 and the circumference of the softener drum 25 (Fig. 2) and deposit the bunch between the cradle and the softener 25, during withdrawal of the transfer jaws.

In Figs. 16 and 17, the rolling table transfer is shown on an enlarged scale. The swinging jaws 20 have forked hubs 166 pivoted on a stud 167 clamped into jaws 168 which in turn have forked hubs 169 mounted on shaft 21. The jaws 20 are each normally pulled against a stop screw 170 in their respective jaws 168 by a torsion spring 171 on stud 167 when no cigar bunch is carried by the transfer. The jaws 168 are equipped with torsion springs 172 carried in the bore of a collar 173 clamped to shaft 21 at one side of each gripper unit, whereby the ears 174 thereof are yieldingly held against stop pieces 175 clamped to shaft 21 within the forked hubs 169 thereof, in position to normally support a cigar bunch in a position in parallelism with the axis of shaft 21. When used with a curved bunch rolling table the engagement of jaws 168 with the delivery end thereof causes them to rock backwardly and align themselves with the same. Each set of grippers thus assumes a position in parallelism with the cigar bunch delivered from the rolling apron 22 during the forward stroke of the rolling pin 68. As the grippers are swung towards the bunch softener they return to their normal position, thereby realigning the bunch in parallelism with the shaft. This mechanism is shown more clearly in Figures 2b, 16 and 17 wherein springs 172 swing each gripper individually back against the edge of rolling table 23 regardless of its angular arrangement relative to the softener 25.

The drum 70 engages with a roller 74 adjustably mounted in a slot extending circumferentially of the cam 70 in a portion of the housing concentric with the cam whereby the turning of the cam due to the motion of gear segment 71 causes an axial movement of shaft 21 for the purpose of bringing the bunch carried by transfer 20 into alignment with the softener 25. Customarily, to insure firm bunch heads, the latter is preferably placed slightly out of center with the delivery end of the rolling table so that the bunch will be positioned from the head end. The amount of this axial movement may be regulated by adjustment of roller 74 along its slot, to compensate for the different positions at which the bunch will be delivered in the case of straight and curved rolling tables. As shown in Figures 1, 2 and 2a, roller 74 is mounted on stud 74a extending through slot 43a and plate 43b, so that whenever nut 74b is loosened roller 74, stud 74a and plate 43b can be shifted peripherally relative to cam 70 to make the desired adjustment. Thus with a curved table the head end of the bunch delivered therefrom will be nearer to the head locator 30 than in the case of a straight rolling table. Therefore the bunch in being transferred from a curved table to the softener should be displaced axially sufficiently to bring its head into the proper position relative to the head locator, and the roll 74 should be adjusted to produce a greater axial displacement of the bunch during transference.

The cradle 24 has lugs 75 by which it is resiliently supported somewhat in the manner shown in Patent No. 1,765,831, granted to J. F. Halstead, June 24, 1930, from collar 76 mounted on bars 77 supported in housing 43 and has resilient rod (not shown) fastened in collar 76 and fixed in the lug, the latter loosely fitting the bars 77. At its delivery end it carries a spring-tensioned finger 78. The finger 78 is raised by the outgoing bunch into the dotted position in which it guides the bunch into the position B3 within the jaws of transfer 27 which have been previously passed through slots in the finger 78 and assumed positions wherein the tips of the bottom jaws lie within the circumferential slots of the drum 25. As shown in Figure 1, the transfer 27 consists of two jaws 27a, and 27b, which is provided with a bowed bunch holding portion 27c, mounted upon stud 29a carried by arm 28. Fixed to arm 27a, which is secured to stud 29a, is one end of a spring, the other end of which is attached to arm 27b loosely mounted on stud 29a to hold the two jaws in relatively movable yielding relationship. An adjusting screw 27d may be used to limit the movement of arm 27b with respect to arm 27a. The arrangement of spring 27e and adjusting screw 27d may be similar to that shown in Rundell Patent No. 1,527,608 granted February 24, 1925. The upper jaws thereof at this time are in the position shown in dotted lines with their tips adjacent the finger 78. The shaft 29 carries a gear segment 79 meshing with a segment arm 80 mounted on fulcrum shaft 72 and provided with an arm 80a carrying a roller 81 in engagement with a cam track in the other face of cam 58. The motion of cam lever 80 causes the transfer 27 to carry the bunch from position B3 to position B5 after dwelling in the intermediate position B4 to permit accurate axial positioning of the bunch by the locators 30, and then return to the dotted position to pick up the next bunch at position B3.

The head end locator cup 30 (Figs. 3 and 4) is fastened to a nipple 82 pinned to a shaft 83 journaled in a sleeve 84 slidable in bearings 85 of frame 43. The shaft 83 carries a pinion 86, and the sleeve 84 is provided with rack teeth 87. The tuck end locator cup 30 is revolubly mounted in a bracket 88 adjustably clamped on a sleeve 89 slidable in bearings 90 of frame 43, the sleeve 89 having rack teeth 91 and carrying a shaft 92 which has pinions 93 and 94 fastened to its ends. The pinion 94 through the intermediate gears 95 and 96 drives a gear 97 on the hub of the tuck end locator 30, and the pinions 86 and 93 mesh with a gear 98 on a stud 99 in frame 43. The gear 98 is driven from a gear 100 on shaft 26 whereby the locators 30 are driven continuously in opposite directions. For accurate adjustment of bracket 88, the latter carries a pinion 161 meshing with rack teeth 162 cut into one side of sleeve 89, so that the turning of the pinion, after loosening the clamp screws 163, moves the bracket to the desired position.

A toothed segment arm 101 fulcrumed on a stud 102 in frame 44 (Fig. 1) and having a cam roller 103 in engagement with a drum cam 104 integral with gear 55 (Fig. 2) engages with a gear 105 on a stud 106 (Figs. 3 and 4) carried by a bracket 107 fastened to the interior of housing 43. A gear 108 meshes with the rack teeth 87 and 91 in sleeves 84 and 89. The gear 108 is turnably mounted on the hub of gear 105 and is angularly adjustable thereon upon unfastening screws 164 passing through arcuate slots 165 in gear 108 and clamping the latter against a shoulder on gear 105, to simultaneously move the locator cups toward or away from each other to compensate for various lengths of bunches. The motion of arm 101 thus causes simultaneous approaching movement of the knurlers 30. The sleeve 89 has fastened thereon a guide arm 109 sliding on a stationary rod 110 in frame 43 and serving to prevent the sleeve from turning and thus to keep the locators 30 in alignment.

When the axially adjusted bunch has arrived in position B5, the hinge stud 35 of the jaws 31, 32 is advanced by cam lever 36 (Figs. 1, 2 and 6) which has a roller 111 in engagement with a cam track in one face of cam 58, the arm 33 of upper jaw 31 being guided in a slideway formed in frame 43 and retained therein by a cover plate 112. Lower jaw 32 is provided with slots 32a in its free end arranged to admit the grippers of transfer 27. The arm 34 of the lower jaw 32 has an extension 113 carrying a roller 114 which in position 35' of hinge stud 35 engages with a block 115 attached to cover plate 112. As stud 35 is then moved toward its extreme positions 35'', the arm 34 is raised and the lower jaw 32 is thereby closed against the upper jaw 31, the jaw 32 during this movement picking up the bunch from transfer 27 in position B5 and carrying it into position B6. From this position, the plunger 37 attached to stud 38 fastened to a bar 116 guided behind the flange of the arm 33 in the sideway of frame 43 pushes the bunch through the space enclosed by the jaws 31, 32 and inserts the same into one of the pockets 40 of turret 41. It may be noted that at the extreme position 35'' of the stud, the lower ends of the jaws 31 and 32 will be disposed in the proximity of the pocket. The plunger 37 is actuated by cam 57 whose other face is provided with a cam track wherein engages a roller 117 carried by an arm of lever 39. Knives 118 attached to the sides of the lower jaw 32 are raised into the delivery path of the bunch by the closing of the jaws and trim the ends of the bunch as the same is being delivered into the turret pocket. The jaws 31, 32 are closed and in bunch

shaping position when plunger 37 forces a bunch held therebetween past knives 118 into a pocket 40 of the mold turret 41 positioned to receive the bunch. As shown in Figures 1, 5 and 6, jaw 31 is fixed for sliding movement on slide 330. Jaw 32 is hinged to jaw 31 and as the slide 330 is moved relative to turret 41, jaw 32 is swung up into shaping position with respect to jaw 31 so that the curved shaping faces 31*a* and 32*a* of the two jaws operate upon the bunch enclosed therebetween and in conjunction with the shaped face 37*a* of plunger 37 (Figures 5 and 6). The bunch is shaped, trimmed and deposited in a molding pocket 40. Due to the proximity of the jaws to the pocket there is little likelihood of scraps of tobacco escaping from the trimmed ends of the bunch and falling into the pocket and causing misshapen head or tuck ends.

The construction of the bunch shaping turret or endless traveling bunch shaper is shown in Figs. 7 to 9. The turret body 41 which carries the pockets 40 is mounted on end disks 119 and 120 which on their outer faces are provided with radial grooves 121 corresponding to the number of the pockets. The hub of end disk 119 is fastened on a sleeve 42 revolving in a bearing 219 of a pedestal 122 constituting a part of a housing supporting the turret and enclosing its indexing, cover operating and ejector mechanism, and provided with a bottom 123 detachably fastened on the bed plate 45 of the cigar machine by suitable screws (not shown).

The end disk 120 is journaled on a bored stud 124, fixedly attached to a pedestal 125, which is fastened to the housing section 123, by a taper plug 126 inserted in its split end. Into the sleeve 42, which is fastened within the hub 119, is inserted a shaft 127 which extends into the bore of stud 124 and has a bearing 128 on the inner end thereof. The shaft 127 has two toothed sections 129 and 130. The sleeve 42 is intermittently driven from shaft 62 journaled in pedestal 122 and protruding from the housing section 123. On the protruding end of shaft 62 is fastened a female clutch member 191 provided with a radial groove on its outer face adapted to admit a driving tooth of male clutch member 192 fastened on one end of a shaft 193 carrying the bevel gear 61 at its outer end. The gear 61 is driven by bevel gear 51 on shaft 49 and the slot of clutch 191 is arranged to cause the turret to revolve in properly timed relationship to present successive pockets to the bunch trimming and inserting device for reception of bunches therefrom. Upon unfastening the bolts (not shown) securing the bottom section 123 thereof to the bed plate 45, and disconnecting the clutch members 191, 192 by sliding one out of clutching relation relative to the other, the turret and the operating mechanisms within the turret housing may be removed as a unit for repairs and then reassembled in the same timed relation through reengagement of the clutch members 191 and 192. Thus successive pockets of the turret are advanced into position to receive a bunch, by the pinion 63 meshing with the gear 64 on stud 65. One face of the gear 64 is provided with a cam groove 66 having open ends and adapted to admit in successive revolutions thereof successive rollers of the flanged wheel 67, keyed to sleeve 42, and thereby intermittently advance the turret. This indexing mechanism is similar to that described on page 70 of "Ingenious Mechanisms for Designers and Inventors," Franklin D. Jones, The Industrial Press, New York. The number of rollers 66*a* running in indexing cam groove 66, corresponds to the number of pockets on the turret, and hence successive pockets will be advanced to bunch receiving position in each revolution of gear 64. The other face of gear 64 has a cam track 131 which actuates the mechanism for ejecting the shaped bunches as will be explained hereinafter.

In the radial grooves 121 of the end disks 119 and 120 are slidably mounted blocks 132 carrying rollers 133 engaging in cam tracks 134 of housing 122 and pedestal 125. To each of the blocks 132 is hinged an arm 135, each pair of these arms carrying a cover 136 for one of the turret pockets 40. As each pocket approaches the bunch ejecting position on top of the turret, the tracks 134 force the blocks 132 of that pocket in the outward direction, thus raising its cover, which, owing to the hinged joint of arms 135, falls backwards on emergence of the arms from the grooves 121, the block 132 and arm 135 forming each hinged joint being shaped with complementary square corners 132′ and 135′, respectively, at their forward edges, as shown in Fig. 9, to assure that the cover will only fall backward. For extra precaution, a roller 137 is attached to an arm 138 of housing 122 in such a position as to engage with one of the arms 135 and fold it down upon the turret body 41 during the next forward step of the turret, in case the cover has failed to swing back completely by gravity. The pocket thus is ready to receive the bunch when arriving in loading position B7, whereupon, on the next forward step of the turret, the stationary cam tracks 134 force the blocks 132 inwardly in grooves 121, thereby drawing the cover 136 back into its pocket. It will be seen that because of the relationship between arms 135 and their respective bars 132, to which they are pivoted, that each cover 136 will be in line with its respective bar 132 whenever a cover 136 mounted on arm 135 is to be drawn into a pocket 40.

While the pocket 40 is dwelling in the top position, the cam track 131 of gear 64 engaging a roller 139 on a toothed segment arm 140 pivoted on a stud 141 in frame 122 swings the arm 140 downward. The teeth of the said segment arm, which mesh with the teeth 129 of shaft 127, thereby turn the latter. In mesh with the teeth 130 of shaft 127 are two racks 142 attached to a bar 143 which carries a series of vertical pins 144 arranged to enter perforations in the bottom of the top pocket and engage with and lift a bunch therefrom. The racks 142 are guided in sockets 145 of stud 124, the top surface of which is flattened to serve as a support for bar 143 in its down position. Upon turning of shaft 127 by the gear segment 140, the racks 142 are raised, thereby pushing the pins 144 through perforations or holes 146 provided in the turret body 41 and the bottom of the pockets 40. The pins 144, whose tops form a cradle fitting the contour of the bunch, lift the bunch above the periphery of the turret body where it is received by a suitable transfer (not shown) which carries it to the wrapper applying device. Thereupon, the track 131 raises the roller 139, thereby causing the segment 140 to turn shaft 127 back into its normal position, thus returning the ejector pins 144 into their neutral position shown in Figs. 7 and 8.

In order to remove the clippings from the bunch trimmers 118, the lower jaw 32 of the bunch compressor is provided at each side with a tubular extension 176 adjacent the trimmers to catch the clippings (Figs. 5 and 6), and a pair of suction pipes 177 are placed in such position as to register with the said extensions as the jaw moves backward after insertion of a trimmed bunch into

a pocket 40 of the shaping turret 41. The extensions 176 are arranged below the cutting edge of the trimmers 118, so that the clippings are caught therein and carried away in the suction pipes 177 as the extensions are swung into register with the same on the upper stroke of the arm 36 during the retreating movement of the jaws 31 and 32.

When the turret shown in Figs. 7 to 9 is employed, the pipe 177 nearest to the turret, in order not to interfere with the operation of the arms supporting the covers must be movably mounted so as to swing out of the way at the proper moment. For this purpose, the intake section of pipe 177, as shown in Figs. 18 to 20, is pivoted by screws 178 to a suction head 179 in the base 45 of the machine, and is actuated by the ejector operating mechanism of the turret. To the hub of segment arm 140 on shaft 141 is attached a cam piece 180 having a curved slot 181 with which engages a pin 182 projecting through an opening in the adjacent wall of the housing 122 of the turret and carried by a link 183 slidably mounted, by means of a slot 184, on a stud 185 in the housing 122. The link 183 is adjustably attached, by means of an eccentric bolt 186, to a lug 187 affixed to suction pipe 177. When the track 131 of cam 64 moves the roller 139 of segment 140 into its upper position 139', the cam piece 180 displaces the pin 182 sufficiently to cause the link 183 to slide inwardly on stud 185 and thereby swing the pipe 177 back into the dotted position 177'. Upon turning said bolt, a very fine adjustment of the movement of the pipe 177 may be obtained to assure approach thereof to the tube extension 176 as close as possible.

A modified construction of the shaping turret is shown in Figs. 10 to 15. Here the turret is indexed in the same way from a cam 66 formed on one face of gear 64, except that the cam track 131 is omitted from the other face gear 64. The turret body 41 and the end frames or pedestals 122 and 125 likewise are identical, with the exception of additional cam tracks 147 in the members 122 and 125.

The end disks 148 of the turret 41 in this case are keyed to a solid shaft 149 which is journaled in frames 122 and 125 and carries the driven member 67 whose rollers enter the indexing cam track. A collar 157 insures against axial displacement. The end disks 148 are provided with radial slots 150 leading into radial grooves 151 in the inside faces of the disks, the slots 150 turning at an angle near the periphery of the disks. The slots 150 serve as guides for pins 152 fast in blocks 153 sliding in grooves 151 and carrying rollers 154 engaging with the cam tracks 134. To the inner ends of the pins 152 are hinged arms 155 sliding in the grooves 151 and carrying at their outer ends the covers 136 of the pockets 40. The arms 155 at one end of the pockets have a second pin 156 extending into the slots 150, this second pin serving to tilt the arm and thus to fold back the respective cover when the pin 156 enters the angular portion of slot 150 near the periphery of disk 148, the grooves 151 being suitably flared out at their ends to permit the swinging motion of arms 155.

The present turret, instead of having one single set of ejector pins 144 serving all pockets as before, is provided with a separate set for each pocket. As shown in Fig. 11, each set of ejector pins 144 is attached to a separate bar 158 each of which has axial extensions 159 reaching through the slots 150 in the end disks 148 and carrying rollers 160 engaging with the tracks 147 in frames 122 and 125. As each pocket approaches the bunch ejecting position, the stationary tracks 147 compel the rollers 160 to raise the respective bar 158 with its pins 144 and thus to lift the bunch B out of the pocket 40, the bar 158 receding into its normal position by the time the pocket has reached its next step which is the loading position.

With both forms of turrets it will be observed that the head ends of the pockets are fully closed to a depth exceeding one half the thickness of the cigar bunch, and with the first described form of turret the tuck ends of the pockets are similarly closed. In each instance the bottoms of the pockets fully conform to the desired contour of the lower half of the bunches and the inner faces of the covers fully conform to the desired contour of the upper half of the bunches. With the removal of the covers radially from the pockets of the mold turret no allowance for clearance is necessary and the cavity in the pocket may fully conform to the desired shape of a cigar bunch.

Some of the structure disclosed herein is claimed in application No. 480,295, filed March 24, 1943.

What is claimed is:

1. In a cigar machine, the combination with a detachable housing, of a countershaft journaled within said housing, a clutch member on said shaft adapted to be connected in a single predetermined timed relationship with the main drive of the cigar machine, bunch manipulating and locating means supported on said housing and driven from said shaft, a primary bunch transfer for delivering cigar bunches to said means, a device supported on said housing and driven from said shaft for trimming bunches and inserting them into successive pockets of a mold turret, a detachable turret housing, a mold turret supported in said housing and provided with pockets adapted to receive bunches from said device, indexing mechanism connected to said turret and adapted to advance pockets thereof successively into position to receive bunches from said device, a pinion shaft journaled within said turret housing and driving said mechanism, a clutch member on said pinion shaft adapted to be connected with the main drive of the machine in a single predetermined timed relationship, and driving clutch members driven from the main drive of the cigar machine and constructed and arranged to be detachably connected to the clutch members on said shafts in predetermined relation to cause manipulation, location, trimming and delivering of the bunches to successive pockets of the turret in properly timed relationship.

2. A cigar machine sub-assemblage comprising a housing, a countershaft journaled within said housing and protruding therefrom, a clutch member on the protruding portion of said shaft and constructed and arranged to be connected in a single predetermined timed relationship with the main drive of the cigar machine for quick detachability of said entire sub-assemblage as a complete unit, a bunch softener drum supported on said housing and driven from said countershaft, a concave partially surrounding said drum and supported on said housing, a bunch transfer supported on said housing and driven from said countershaft when said clutch is operatively connected to drive said shaft for delivering a cigar bunch between said concave and drum, bunch locators mounted on said housing and driven from said countershaft, and a bunch transfer

supported on said housing and driven from said countershaft for transferring bunches from between said concave and drum into the range of action of said locators.

3. A cigar machine sub-assemblage comprising a housing, a countershaft journaled within said housing and protruding therefrom, a clutch member on the protruding portion of said shaft and adapted to be detachably connected to the main drive of the cigar machine in a single predetermined timed relationship, a bunch softener drum supported on said housing and driven from said countershaft, a concave partially surrounding said drum and supported on said housing, a primary bunch transfer supported on said housing and driven from said countershaft for delivering a cigar bunch between said concave and drum, bunch locators mounted on said housing and driven from said countershaft, a pocketed mold turret, a device supported on said housing and driven from said countershaft for trimming bunches and inserting them in successive pockets of a mold turret, and a secondary bunch transfer supported on said housing and driven from said countershaft for transporting bunches from between said concave and drum into the range of action of said locators and then to said device.

4. In a cigar machine, the combination with an endless traveling shaper having horizontally positioned pockets whose bottom contour fully conforms to the desired shape of cigar bunches, of hinged relatively movable members, mechanism for closing said members to compress the bunches transversely to correspond to the width of said pockets, and transport them in a direction substantially perpendicular to the longitudinal axes of said pockets to a position adjacent and overlying successive pockets of said shaper, a device for ejecting the compressed bunches from between said members into successive pockets of said shaper, and knives carried by one of said members and coacting with said member for trimming the cigar bunches to a length slightly shorter than the length of said pockets.

5. The combination with a softener drum, of a concave partially surrounding said drum, a bunch rolling mechanism including a horizontal bunch rolling table and operating to deliver cigar bunches in a position oblique to the axis of said drum, and a bunch transfer including an oscillatory shaft parallel to the axis of said drum, sets of grippers normally arranged on said shaft to support a bunch in parallelism with the shaft axis, each set of grippers being individually yieldingly mounted on the shaft to yield relatively thereto upon engaging the delivery end of the rolling table and thereby align themselves with the same to receive a cigar bunch, and mechanism for oscillating said shaft to transport the bunch received in said grippers to a position between said concave and drum and permit the grippers to realign the bunch in a position parallel with the axis of the drum while in transit.

6. The combination with a bunch manipulating device, having means for locating the manipulated bunch axially, of bunch rolling mechanism including a horizontal bunch rolling table and operating to deliver cigar bunches in a position oblique to and offset from said means, and a bunch transfer including an oscillatory axially displaceable shaft parallel to the axis of said device, sets of grippers normally arranged on said shaft to support a bunch in parallelism with the shaft axis, said sets of grippers being individually yieldingly mounted on the shaft to yield relatively thereto upon engaging the delivery end of the table and thereby align themselves with the same to receive a cigar bunch, and mechanism for oscillating and axially displacing said shaft to transport the bunch received in said grippers to said device and permit the grippers to realign the bunch in a position parallel with the axis of said device and displace it axially into predetermined relation with the locating means.

7. The combination with a bunch manipulating device, having means for locating the manipulated bunch axially, of bunch rolling mechanism including a curved horizontal bunch rolling table and operating to deliver cigar bunches in a position oblique to and offset from said means, and a bunch transfer including an oscillatory axially displaceable shaft parallel to the axis of said device, sets of grippers normally arranged on said shaft to support a bunch in parallelism with the shaft axis, said sets of grippers being yieldingly mounted on the shaft to yield relatively thereto upon engaging the delivery end of the curved table and thereby align themselves with the same to receive a cigar bunch, and mechanism for oscillating and axially displacing said shaft to transport the bunch received in said grippers to said device and permit the grippers to realign the bunch in a position parallel with the axis of said device and displace it axially into predetermined relation with the locating means, said last-named mechanism being adjustable to permit the bunches to be displaced axially into the same position relative to said locating means.

8. In a cigar machine, the combination with a revolving softener drum, of a concave surrounding the under side of said drum and having its ends terminating below the top of the drum, said concave being spaced sufficiently therefrom to admit cigar bunches between one end of the concave and the drum and press them against the drum, whereby the bunches will be rolled along the concave to the other end thereof, a yielding finger on said other end of the concave arranged to press against the drum the bunches advanced thereunder from the concave and thereby cause them to continue rolling, a bunch locating station, a bunch transfer provided with lower jaws fastened thereon and yieldable upper jaws adapted to admit the bunches therebetween, and mechanism for moving said transfer to carry said jaws into position to receive a bunch from under said finger and transport it to said bunch locating station.

9. The combination with a rotary turret having shaping pockets whose bottom contour fully conforms to the desired shape of cigar bunches and whose head end is fully closed, of a member for effecting the trimming of cigar bunches to a length slightly less than the length of said pockets and inserting the trimmed bunches in successive pockets thereof, a set of covers each having a portion adapted to enter the pockets and provided with an internal contour complementary to said pockets to fully shape the head end of bunches inserted therein, and mechanism mounting said covers on the periphery of said turret and adjacent the ends of each of said pockets for radial movement in and out of said pockets to shape bunches therein.

10. The combination with a rotary turret having a plurality of cigar bunch shaping pockets, of a set of covers each having a portion adapted to enter the pockets and provided with an in-

ternal contour complementary to said pockets to shape cigar bunches inserted therein, and members supported on said turret and moving therewith for moving said covers radially of said turret in and out of said pockets, said members including blocks mounted for movement radially of said turret, and arms fastened to the ends of said covers and hinged on said blocks.

11. The combination with a rotary turret having a plurality of cigar bunch shaping pockets, of a set of covers each having a portion adapted to enter the pockets and provided with an internal contour complementary to said pockets to shape cigar bunches inserted therein, members including blocks supported on said turret and moving therewith for moving said covers radially of said turret in and out of said pockets, arms joining said covers and blocks, and a device for moving said blocks radially outward of said turret to permit said arms to fall to one side of said pocket on their hinges and thereby expose the respective pockets.

12. The combination with a rotary turret having a plurality of cigar bunch shaping pockets, of a set of covers each having a portion adapted to enter the pockets and provided with an internal contour complementary to said pockets to shape cigar bunches inserted therein, members including blocks supported on said turret and moving therewith for moving said covers radially of said turret in and out of said pockets, arms joining said covers and blocks, a device for moving said blocks radially outward of said turret to permit said arms to fall to one side of said pocket on their hinges and thereby expose the respective pockets, and a stationary stop arranged to engage successive covers and swing them backwardly in the event that said arms should remain upright when said blocks are moved outwardly.

13. The combination with a rotary turret having a plurality of cigar bunch shaping pockets, of a set of covers each having a portion adapted to enter the pockets and provided with an internal contour complementary to said pockets to shape cigar bunches inserted therein, mechanism supported on said turret and moving therewith for moving said covers radially of said turret in and out of said pockets, said mechanism including blocks mounted for movement radially of said turret, and arms fastened to the ends of said covers and hinged on said blocks, a device for moving said blocks outward radially of said turret, said turret being provided with slots having a portion extending radially of said turret and a portion oblique from the radial portion adjacent the periphery of the turret, and pins on said arms engaging said slots to swing said covers to one side during the outward movement thereof.

14. The combination with an intermittently rotating turret having a plurality of bunch shaping pockets which are provided with perforations in their bottoms, of an ejector provided with pins adapted to enter the perforations of successive pockets and lift the cigar bunch therefrom, a shaft loosely mounted in the hub of said turret and concentric therewith, connections between said shaft and ejector for imparting outward movement to the latter radially of the turret, and mechanism for turning said shaft to actuate said ejector.

15. The combination with a rotary turret having a plurality of cigar bunch shaping pockets, of a set of covers each having a portion adapted to enter the pockets and provided with an internal contour complementary to said pockets to shape cigar bunches therein, said pockets being each provided with an ejector adapted to lift the bunch therefrom, and mechanism for simultaneously moving each cover radially outward and then laterally and moving each ejector outward of the turret to permit removal of the bunches from the pockets.

16. A cigar bunch transfer coacting with a bunch rolling table, comprising an oscillatory shaft, sets of grippers normally arranged on said shaft to support a cigar bunch in parallelism with the shaft axis, each set of grippers being yieldingly mounted on the shaft to yield relative thereto upon engaging the delivery end of a bunch rolling table and thereby align themselves with the same to receive a cigar bunch, and mechanism for oscillating said shaft to transport the bunch received in said grippers and thereby permit the grippers to realign the bunch with the shaft axis while in transit.

17. A cigar bunch transfer for use with a bunch rolling table, comprising an oscillatory axially displaceable shaft, sets of grippers normally arranged on said shaft to support a cigar bunch in parallelism with the shaft axis, each set of grippers being yieldingly mounted on the shaft to yield relatively thereto upon engaging the delivery end of a bunch rolling table and thereby align themselves with the same to receive a cigar bunch, and mechanism for oscillating the shaft to transport the bunch received in said grippers, and thereby permit the grippers to realign the bunch with the shaft axis while in transit and displace the bunch axially into a predetermined position.

18. A cigar bunch transfer for use with a bunch rolling table, comprising an oscillatory axially displaceable shaft, sets of grippers normally arranged on said shaft to support a cigar bunch in parallelism with the shaft axis, each set of grippers being yieldingly mounted on the shaft to yield relatively thereto upon engaging the delivery end of a bunch rolling table and thereby align themselves with the same to receive a cigar bunch, and mechanism for oscillating the shaft to transport the bunch received in said grippers, and thereby permit the grippers to realign the bunch with the shaft axis while in transit and displace the bunch axially into a predetermined position, said mechanism being adjustable to permit the bunches to be displaced axially into the same predetermined position from various shapes of rolling tables.

19. In a cigar machine, the combination with a trimmer, and a movable mount for said trimmer, of a suction intake member normally arranged to remove tobacco clippings from said trimmer, means for moving said mount to locate said trimmer in operative position, means operative when said trimmer has been located at said position for moving said intake into cooperative relation with said trimmer, and mechanism for retracting said member from its operative position.

20. A cigar machine sub-assemblage comprising a housing, a countershaft journaled within and protruding therefrom, the protruding end of said counter shaft being adapted to be connected in driven relation with the main drive of a cigar machine, a drum shaft journaled within said housing and driven from said countershaft and protruding from said housing, a softened drum fastened on said drum shaft, a concave mounted on the exterior of said housing and partially sur-

rounding said drum, a cam enclosed within said housing and driven from said countershaft, a transfer shaft journaled within said housing in parallelism with and oscillated from said cam and protruding from said housing, and sets of grippers yieldingly mounted on said transfer shaft and adapted to receive a cigar bunch and deposit it in a position between said drum and concave.

21. A cigar machine sub-assemblage comprising a housing, a driven shaft journaled within and protruding from said housing, a cam shaft journaled within said housing and protruding therefrom, sets of grippers mounted on the protruding end of said cam shaft, a drum cam fastened on the portion of said shaft within said housing and provided with a circumferential cam track, said housing having a portion concentric with said cam and provided with a slot extending circumferentially of the cam, and a cam follower engaging said cam track and adjustably fastened in said slot.

22. The combination with a cigar bunch transfer having relatively yielding grippers adapted to admit a cigar bunch therebetween, of a slide, a pair of substantially bunch length shaper jaws including, a fixed and a movable jaw hinged to each other and mounted on said slide for movement therewith, said movable jaw being provided with slots spaced along its free end arranged to admit said grippers, and mechanism for closing said jaws after the grippers have entered said slots to deposit a bunch therein.

23. A cigar machine sub-assemblage comprising a detachably mounted housing, a mold turret journaled in and partially enclosed by said housing, a counter shaft journaled in said housing and protruding therefrom, indexing mechanism driven from said shaft and connected to said turret for intermittently rotating the same, and a clutch member on said shaft adapted to be detachably connected to the main drive of the machine in a single predetermined timed relationship to advance the pockets successively at the proper intervals to stations wherein the bunches are received and ejected.

24. The combination with a rotatable turret provided with a plurality of equally spaced peripheral bunch shaping pockets which are provided with perforations in their bottoms, of an ejector provided with pins adapted to enter the perforations of successive pockets and lift the cigar bunch therefrom, a shaft loosely mounted in the hub of said turret and concentric therewith, connections between said shaft and ejector for imparting outward movement to the latter through the perforations of successive pockets, mechanism for turning said shaft to actuate said ejector, a wheel loosely mounted on said shaft and fastened to said turret, a number of equally spaced rollers on said wheel equal to the number of pockets in said turret, and a continuously rotating driving member provided with a groove arranged to admit said rollers successively therein during each revolution of said member and thereby intermittently advance successive pockets into the range of action of said ejector.

25. The combination with a pair of shaping jaws having flat inner faces provided with a curved longitudinal contour, a slide supporting said jaws, of mechanism moving said slide to close said jaws on a cigar bunch inserted therebetween to compress it to the desired width of a cigar bunch with the ends of the cigar bunch protruding from between the jaws, trimmer knives on one of said jaws, a second slide mounted adjacent said first-named slide for movement relative thereto, and an ejecting device mounted on said second slide for ejecting the compressed bunch from between said jaws past said knives whereby the ends of the compressed bunch will be trimmed.

26. A bunch handling mechanism for use with a bunch shaping device provided with a plurality of spaced pockets comprising a pair of members coacting to compress and partially shape a cigar bunch to a predetermined size, means mounting said members for radial movement towards one of said pockets to dispose said members with said bunch held therein adjacent said pocket, means for opening said members to release a partially shaped bunch, and means movable radially relative to said pocket for transferring said partially shaped bunch from said open members into said pocket.

27. A bunch shaping mechanism for use with a bunch molding turret having a plurality of peripherally shaped bunch shaping pockets comprising, a support frame, a pair of bunch shaping members, a slide mounting said members in said frame for substantially radial movement to and from said turret, means for locating a bunch to be shaped between said members, means for closing said members on said bunch to partially shape the same, means for moving said slide to position said members with said bunch held therebetween adjacent one of said pockets, and means movable radially relative to said pocket and between said members for transferring said partially shaped bunch into said pocket.

28. Bunch forming mechanism for use with a cigar bunch shaping device provided with a plurality of spaced bunch shaping pockets comprising, a support spaced from said device, a mount carried by said support and constructed and arranged to be moved substantially perpendicularly to and from said device, a pair of bunch shaping jaws carried by said mount, bunch end trimming knives supported adjacent the ends of one of said jaws, means for positioning a bunch to be shaped in said jaws, means for closing said jaws to partially shape said bunch, means for moving said mount towards one of said aligned pockets to dispose said jaws with said partially shaped bunch held therein adjacent said pocket, and means for ejecting said bunch from said jaws and trimming the ends of the same while it is being moved into said pocket.

29. A bunch shaping mechanism for use with a turret provided with a plurality of spaced peripheral pockets comprising, a slide movable substantially perpendicularly to and from said turret, a fixed jaw member mounted on said slide, a pivoted jaw member carried by said fixed jaw member, means adjacent the path of movement of said slide for effecting relative movement between said jaws to close them upon a bunch to be shaped, means for moving said slide towards an aligned pocket in said turret for transfer of said partially shaped bunch into said pocket, trimming knives carried by said jaws, and means for ejecting a partially shaped bunch from said jaws and trimming the ends of said bunch while it is being ejected.

30. Bunch forming mechanism for use with a bunch shaping device provided with a plurality of spaced shaping pockets comprising, a pair of preliminary shaping members, including jaws mounted on each of said members, means for effecting relative movement between said mem-

bers to close the same about a bunch to be shaped, means mounting said members in substantial alignment with a pocket to be filled, means for moving said jaws substantially perpendicularly towards said aligned pocket, means for trimming the ends of said preliminarily shaped bunch, means for positioning said trimmed bunch in said pocket, means mounted on and adjacent the ends of one of said jaws to receive the trimmings of said bunches, and suction means positioned to coact with said jaws when a bunch is to be ejected therefrom for removing said trimmings from said last-named means.

31. The combination with a pair of members coacting to compress the sides of a cigar bunch to a predetermined width, of means pivotally mounting one of said members on the other for movement into and out of bunch compressing relation, a device for ejecting the compressed bunch from between said members, knives on one of said members arranged to engage and trim the ends of the compressed bunch during the ejection thereof, extensions on said knife supporting member and adjacent each of said knives for holding the trimmings, and suction pipes having inlets constructed and arranged to coact with said knives when said members are in bunch ejecting position for suctionally removing the trimmings from said extensions.

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