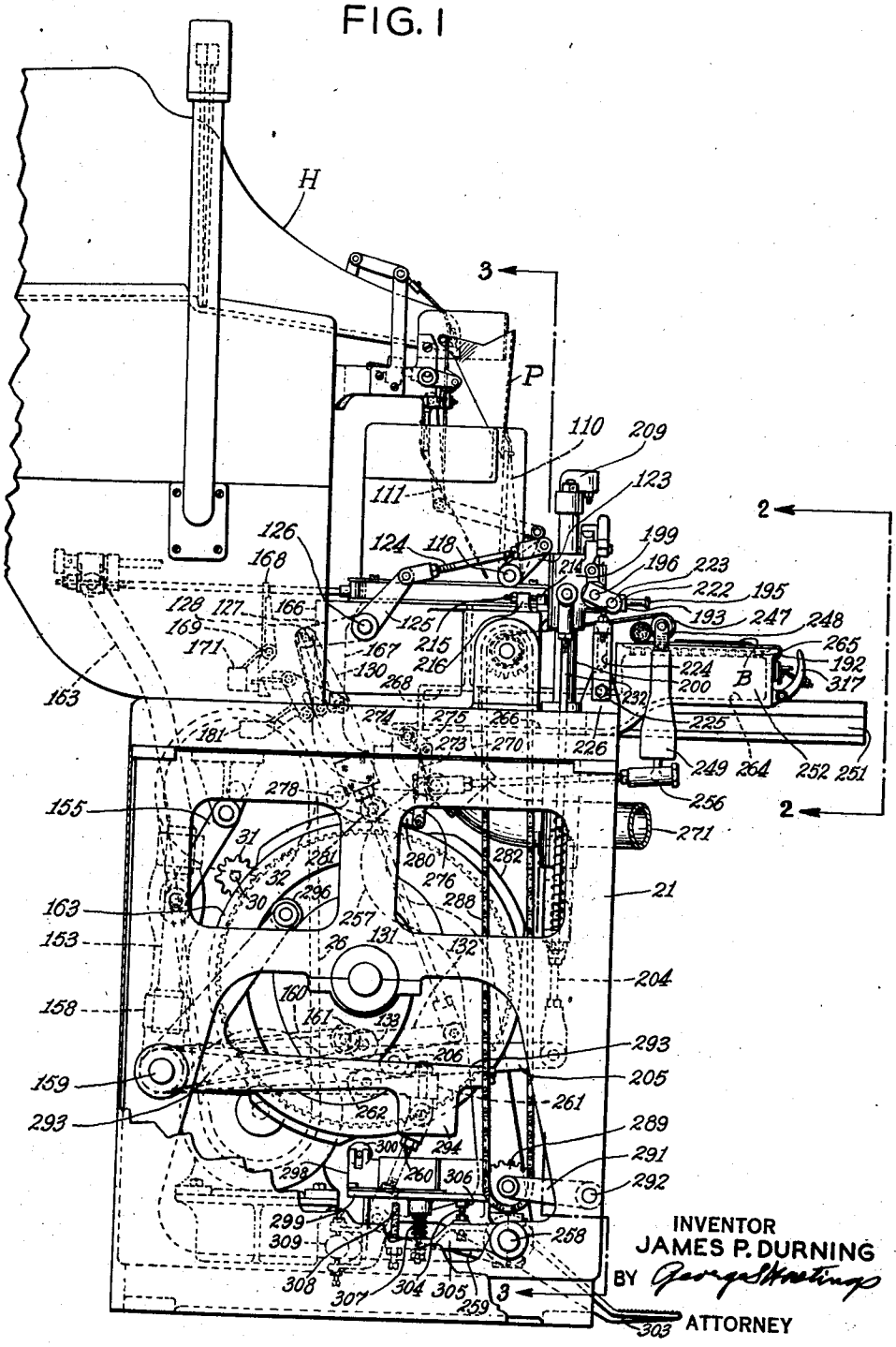
Nov. 14, 1944. J. P. DURNING 2,362,892

CIGAR BUNCH FORMING MECHANISM

Original Filed March 1, 1938 4 Sheets-Sheet 1

FIG. 1

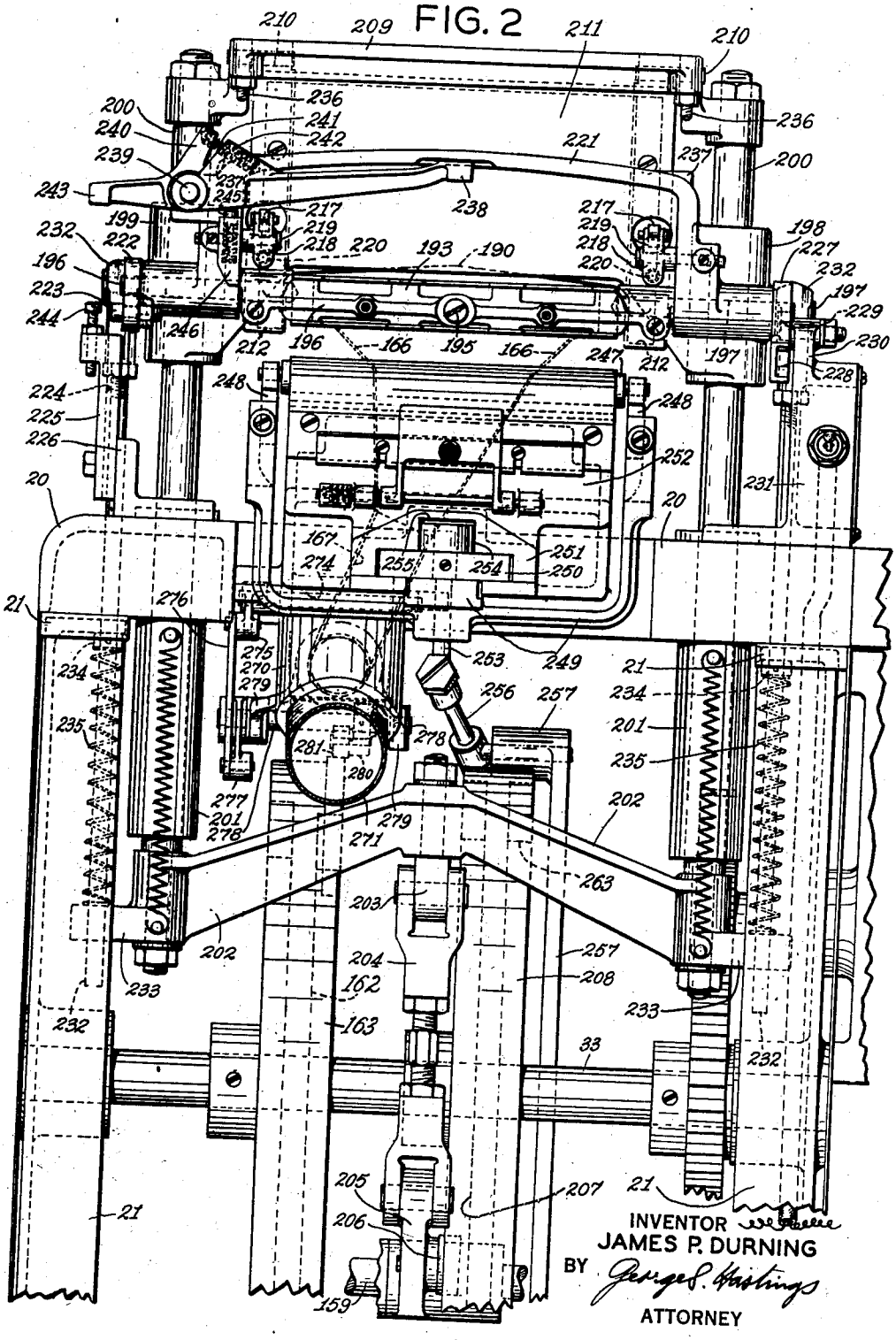


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CIGAR BUNCH FORMING MECHANISM

Original Filed March 1, 1938 4 Sheets-Sheet 2

FIG. 2



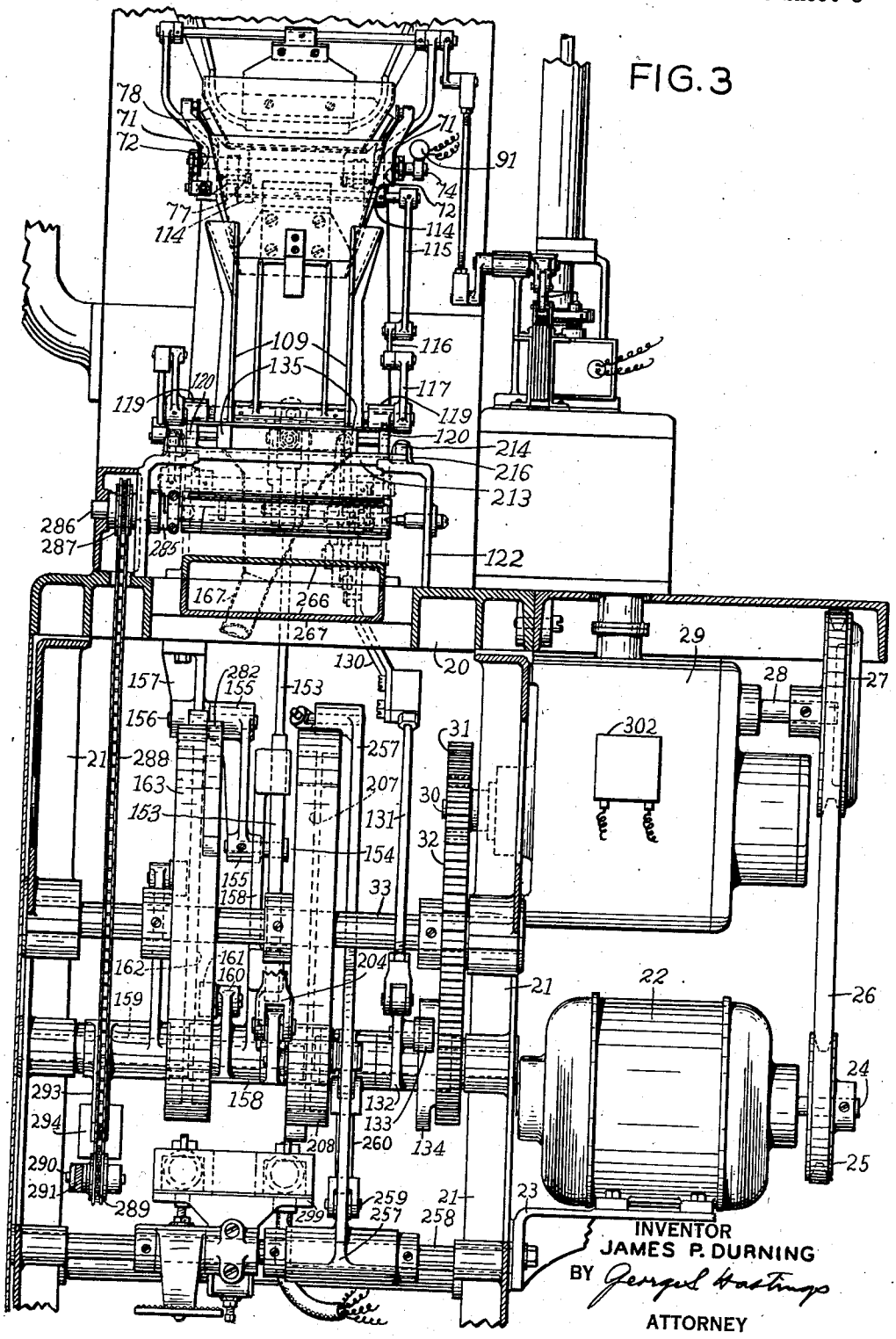
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CIGAR BUNCH FORMING MECHANISM

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FIG. 3



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CIGAR BUNCH FORMING MECHANISM

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FIG. 4

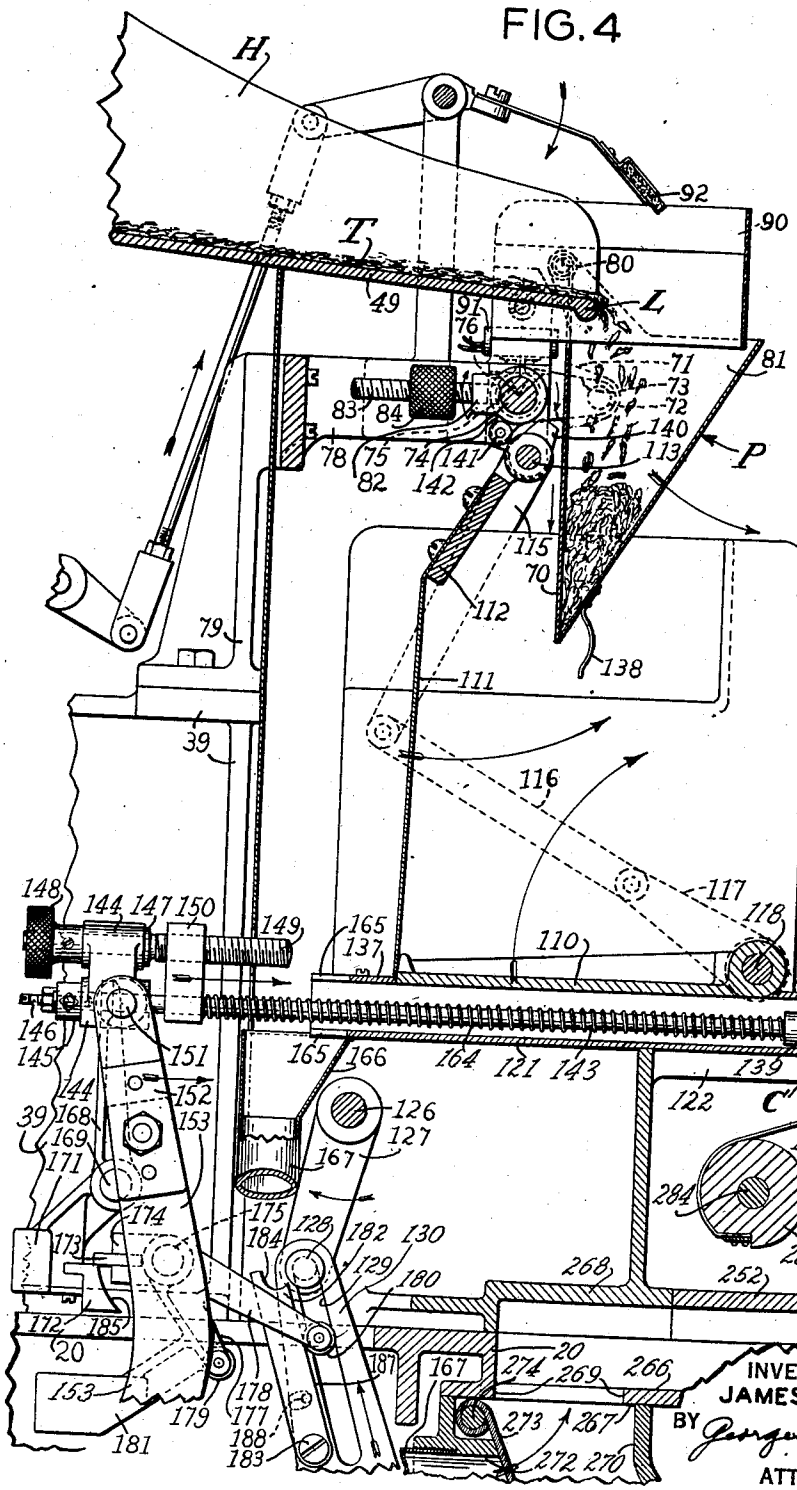
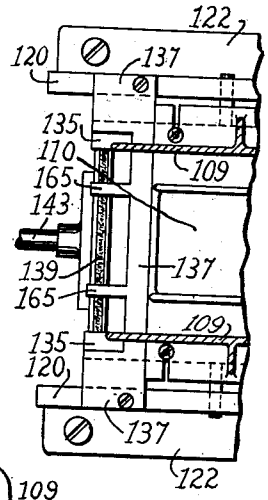
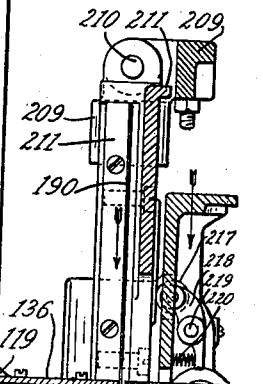


FIG. 5





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UNITED STATES PATENT OFFICE

2,362,892

CIGAR BUNCH FORMING MECHANISM

James P. Durning, St. Albans, N. Y., assignor to International Cigar Machinery Company, a corporation of New Jersey

Original application March 1, 1938, Serial No. 193,244. Divided and this application June 17, 1942, Serial No. 447,320

3 Claims. (Cl. 131—44)

This invention relates to tobacco feeding mechanism for cigar machines and more particularly to feeding mechanisms adapted chiefly for use with short filler or soft work cigar machines and constitutes a division of my co-pending application, Serial No. 193,244 filed March 1, 1938, for Feed for cigar bunch machines, now Patent No. 2,306,381, issued December 29, 1942.

The invention relates primarily to improved mechanism for handling tobacco and for forming charges of short filler tobacco suitable for formation into cigar bunches. In machines of this type it has been found when handling short filler tobacco that this kind of tobacco tends to work beneath and above the plunger of the tobacco compression chamber and severely interfere with the most efficient operation of the machine. It is an object, therefore, of the invention to provide means forming a part of the compression chamber which allows the plunger to be substantially self-cleaning so that at the end of each rearwardly reciprocating stroke any tobacco tending to cling to any part of the plunger will be removed therefrom, thereby obviating the necessity of stopping the machine to clear this particular part.

A further object of the invention is the provision of fingers at the rear of the compression chamber which act as guides for the plunger and permit the upper and lower faces of the major part of the plunger to be exposed when the plunger is retracted so that particles tending to wedge between either or both of the faces of the plunger, and the top and bottom of the chamber, can drop from the plunger and thereby eliminate jamming or clogging of the machine, or interference with proper measurement of charges. A receptacle may be provided for receiving this waste, and if desired this receptacle may take the form of a pneumatic conduit, which when provided with a conveying fluid draws off any waste particles present.

The invention also has an object in the provision of means for creating suction in the suction chamber of the bunch rolling apron mechanism and also in the pneumatic waste removal duct adjacent the rear of the compression chamber together with means for diverting the suction from said chamber to said duct and conversely.

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 a partial side elevation of the machine;

Figure 2 is a front elevation of the knife, the transfer and the bunch rolling mechanisms and their respective drives, taken on line 2—2 of Figure 1;

Figure 3 is a sectional front elevation of the machine taken on line 3—3 of Figure 1;

Figure 4 is a sectional side elevation of the scale, the guide chute, the magazine, the knife and the transfer mechanisms of the machine; and

Figure 5 is a partial plan view of the rear end of the magazine.

The machine consists of a bed plate 20 suitably mounted upon two supporting frames 21, and is driven by means of a motor 22 (Figure 3) mounted on a bracket 23 held by one of the frames 21. Motor shaft 24 carries a pulley 25 which, by means of a belt 26, drives a pulley 27 mounted on a shaft 28 driving through a clutch (not shown), a set of conventional reduction gears (not shown), supported in and enclosed by a housing 29 which is mounted on one of the frames 21. A shaft 30, connected to said gear train and projecting from housing 29, carries a gear 31 meshing with gear 32 mounted on the main cam shaft 33 supported by bearings in frames 21.

A quantity of short filler tobacco is placed in a hopper H (Figures 1 and 4) suitably supported on leaf springs (not shown) and arranged to be vibrated whenever tobacco is to be fed to scale pan P. The construction and operation of the hopper H forms no part of this divisional application and further description thereof is deemed unnecessary.

The tobacco is fed from the mass within the hopper H onto the feeding trough 49 where said tobacco will form a thin layer T (Figure 4). Due to the vibration imparted to hopper H, said layer T will move over section 49 towards and discharge into a scale pan, designated generally P, of a scale mechanism illustrated in Figures 3 and 4. The scale pan of this embodiment located below the mouth of feed trough 49, consists of a vertical scale plate 70, each side edge of which is provided with a lug 71, arranged to engage individual pivots 72, which are mounted in scale arms 73, both of which are fixed on a scale shaft 74. The latter is provided with a pair of knife edges 75 resting in knife edge blocks 76 fastened by means of studs 77 to a U-shaped supporting bracket 78 mounted on a bracket 79 attached to the hopper supporting frame 39. The upper portion of scale plate 70 carries a pair of studs 80 pivotally mounting a scale receptacle 81 forming, together with

plate 78, the scale pan P into which the tobacco T fed from the hopper H is delivered. It will be noted that the scale is substantially wedge shaped in cross section. This design is of importance in aligning the pieces of short filler tobacco entering the pan because the pieces, if not already in alignment, enter the pan, strike the walls 70 and 81, swing around into alignment and fall to the bottom of the pan. To scale shaft 74 is fastened a lug 82 carrying a threaded stud 83 which supports a movable weight block 84. The latter serves the purpose of balancing the scale pan as well as determining the amount of tobacco necessary to trip the scale pan. The ends of the U-shaped supporting bracket 78 carry a guide shield 90 (Figure 4) provided to avoid spilling of tobacco during the feeding operation of trough 49.

As the thin layer of tobacco, forwarded by the vibrating feed trough, is fed into the scale pan just described, the latter trips when the desired amount is deposited therein. As the scale pan trips, a mercury switch 91, connected in an electric circuit (not shown) and attached to one end of scale shaft 74, is swung through an arc thereby breaking the circuit and thus stopping the feed of tobacco to the scale pan P. In order to prevent additional tobacco from discharging from the hopper into the scale pan after the same is tripped, a tobacco flow control plate 92 swings downwardly and closes the mouth of feed trough 49 as soon as the vibration of hopper 34 is stopped. Since this mechanism forms no part of the present invention, further description or showing is deemed unnecessary.

Subsequent to the tripping of the scale pan, the measured quantity of tobacco is discharged therefrom and transferred into a compression magazine. The guide chute consists of a pair of adjustably mounted stationary side guide plates 109. The front and rear walls of the guide chute consist of a movable magazine gate 110 and a movable end guide plate 111, the former and the latter moving in synchronism with each other. Plate 111 is fastened to a flange 112 mounted on a shaft 113 loosely supported in bearing lugs 114 of bracket 78. To shaft 113 is also fastened a lever 115 (Figure 4) which through a link 116 is connected to a lever 117 mounted on a shaft 118 supported by means of bearing brackets 119 attached to magazine side rails 120 mounted on magazine bottom plate 121 supported by frame 122 secured to bed plate 20. To shaft 118 is fastened the magazine gate 110 which is operated by means of a lever 123 (Figure 1) also mounted on shaft 118. Lever 123, through a rod 124, is connected to a lever 125 mounted on a shaft 126 (Figures 1 and 4) supported by bearings of frame 122. Shaft 126 carries a lever 127 to which is fastened a crank pin 128 engaging with a slot 129 (Figure 4) of an arm 130 attached to one end of a connecting rod 131 (Figures 1 and 3). The other end of the connecting rod is pivoted to a cam lever 132 (Figures 1 and 3) carrying a cam follower 133 engaging during a part of each cycle of the machine with a cam lug 134 (Figure 3) fastened to the main driving gear 32.

The magazine is formed by the bottom plate 121, two adjustably mounted side plates 135 (Figures 3 and 4), a stationary front end top plate 136 (Figure 4), the magazine gate 110 which oscillates on shaft 118 and a stationary rear end top plate 137. Top plates 136 and 137 are mounted on and supported by side rails 120 fastened to bottom plate 121.

When the magazine is ready for a charge, and the scale pan holding the desired amount of tobacco is to be tripped, magazine gate 110 swings upward in the direction indicated by an arrow in Figure 4. During this movement, magazine gate 110 with its free end engages a prong 138 on the scale receptacle 81, causing the latter to move from the scale plate 70, thereby permitting the tobacco in the scale pan to discharge into a funnel formed by the magazine gate 110, the end guide plate 111 and side guides 109. The plate 111, of course, due to its connection to gate 110 has followed the same during its upward movement, (Figure 1 shows the scale pan open with the magazine gate standing in upright position and plate 111 swung towards the vertical gate 110). This funnel shaped guide chute serves chiefly for the purpose of keeping the tobacco pieces in their longitudinal position which they assumed while being fed into the scale pan, described heretofore. As gate 110 swings downward again toward the magazine, plate 111 also rocks backward and away from the gate 110. In so doing the tobacco charge is evenly distributed and guided into the magazine. The scraping action of the end of gate 110 upon plate 111 during this downward movement transfers said tobacco charge in a most desirable manner and avoids the disturbing of the position of the tobacco pieces. When gate 110 has returned to its normal position, a reciprocating plunger 139 operates to press the charge C into a waiting charge transfer (Figure 4).

In order to prevent the scale pan from swinging upward as soon as its charge is released, the shaft 113 which carries back plate 111 is equipped with a lug 140 (Figure 4) which, during the upward motion of gate 110 and plate 111, engages with a roller 141 pivoted to a lug 142 mounted on scale shaft 74, thereby holding the latter in an angular position and preventing the scale pan from swinging upward while the magazine is still open and the gate in an upright position. This arrangement has the object of preventing the hopper from starting to vibrate and from feeding a new charge before the magazine gate is closed. As gate 110 disengages from prong 138 of the scale receptable, the latter, due to its own weight, will swing back and contact scale plate 70 again, thus making the scale pan P ready to receive a new charge.

The scale is chiefly employed for the purpose of maintaining the righ amount of tobacco in the magazine and of preventing over or under loading of the same. The guide chute has the object of guiding the tobacco charge from the scale pan into the magazine without changing the longitudinal positions of the tobacco pieces during this transfer operation.

The reciprocating plunger 139, which compresses the tobacco in the magazine, is equipped with a plunger rod 143 slidably supported by an operating lug 144. To the free end of said plunger rod 143 is fastened a horizontal trip bar 145 (Figure 4) carrying on its free end an adjustable trip stud 146. The upper portion of operating lug 144 carries a turnable member 147 which on one end is equipped with a hand knob 148, while the other end is provided with a threaded extension 149 carrying a lug 150 slidably supporting in its lower portion the plunger rod 143. Operating lug 144 is equipped with a pair of studs 151 by means of which it is pivoted to a pair of brackets 152 mounted on an operating arm 153 pivoted to a crank pin 154 (Figure 3) held by a

crank 155 mounted on shaft 156 supported by bearing bracket 157 secured to the lower side of bed plate 20. Arm 153 is slidably supported by means of a guide lever 158 loosely mounted on cam lever shaft 159 supported by bearings of frames 21. Guide lever 158 is equipped with a cam lever 160 carrying a cam follower 161 engaging with a cam track 162 of cam 163 mounted on cam shaft 33.

While cam lever 160 imparts oscillating motion to guide lever 158 carrying the plunger operating arm 153, this motion of the lever is transformed into a reciprocating motion of arm 153 by the action of crank 155 connected to said arm by crank pin 154. For adjusting purposes, the crank pin is eccentrically mounted on a suitable bearing of crank 155 (Figure 3), thereby providing means for making extremely fine adjustments. Plunger 139 is actually reciprocated from arm 153 through lug 144 and member 147 by means of lug 150 which, during its forward stroke pushes against a spring 164 (Figure 4) placed between said lug 150 and plunger 139. Spring 164 is loosely wound around and supported by plunger rod 143 and serves the purpose of taking care of any lost motion thus permitting arm 153 to freely complete its stroke regardless of the amount of tobacco stored in the magazine, and avoiding jamming in the magazine and assuring a more or less even amount of pressure of plunger 139 upon the tobacco column within the magazine during each forward stroke of said plunger. The backward stroke of plunger 139 is accomplished by means of lug 144 contacting bar 145 to which the free end of plunger rod 143 is fastened. The pressure of spring 164 upon plunger 139 can be changed to any desirable degree by turning of hand knob 148 of member 147, causing lug 150 to depress or release spring 164 (Figure 4). This valuable and desirable feature permits the use of scrap tobacco of all types and sizes which may require a different pressure and density.

The rear end of top plate 137 and the rear end of bottom plate 121 of the magazine, (Figures 4 and 5) are equipped with a number of fingers 165 (Figure 4), provided for the purpose of allowing any tobacco which may be held by the plunger between the top and bottom plates to fall therefrom and be removed from the machine, thereby assuring that the plunger is kept clean at all times. This is because fingers 165 act as guides for supporting plunger 139 properly for movement in the compression chamber, and at the same time expose the major portion of the top and bottom of plunger 139 when the latter is fully retracted as shown in Figure 5. This is important because other tobacco might wedge between the plunger and top and bottom plates 137 and 121, respectively, and affect the uniformity of charges formed. Because of the self-cleaning coaction between plunger 139 and fingers 165, this condition is eliminated. In order to more positively remove such waste tobacco, a funnel 166 (Figure 4) attached to the rear end of the magazine and connected through a tube 167 to the pneumatic system of the machine conducts any tobacco pieces or dust deposited at the rear end of said magazine.

Trip stud 146 mounted on bar 145 is provided for the purpose of tripping or operating a control mechanism which is essential for checking the operation of the magazine gate 110 which in turn controls the discharge of tobacco charges from the scale pan P to the magazine.

This control mechanism, illustrated in Figure 4, consists of a vertical control lever 168 which stands upright in the path of trip stud 146. Lever 168 is pivoted to a stud 169 held by a hub (not shown) of supporting frame 39. This lever is equipped with a weight 171 and carries on its lower portion a latch lock 172 (Figure 4) engaging with a latch 173 attached to a trip lever 174 pivoted to a stud 175 held by a hub (not shown) projecting from supporting frame 39. Trip lever 174 is part of a bell crank lever consisting of arm 177 and 178, to each of which is pivoted a follower 179 and 180, respectively. Arm 177 is, furthermore, provided with a weight 181. In the space between follower 179 and 180 protrudes a lock finger 182 which, by means of stud 183 (Figure 4) is pivoted to arm 130, the free end of said lock finger also being provided with a recess 184.

When there is little or no tobacco in the magazine, the plunger 139 during its forward stroke can move substantially the entire length of the magazine and stud 146 will trip control lever 168 standing in the path of said stud since the latter is held by bar 145 which is mounted on the reciprocating plunger rod 143. The tripping of control lever 168 will cause the disengagement of latch lock 172 from latch 173 mounted on trip lever 174, thereby, due to weight 181, causing trip lever 174 to swing in such a way that follower 179 on arm 177 strikes lock finger 182 and swings it about its pivot 183 to such a position that the recess 184 of said finger is located directly beneath the crank pin 128. As arm 130, through cam lever 132 and connecting rod 131, during the next cycle of the machine moves upward again, recess 184 will engage with and seat crank pin 128 therein, and upon continued upward movement, lever 127 on shaft 126 is taken upward also, thereby rocking the magazine gate 110 to open the magazine to receive a measured charge of tobacco from the scale pan. After stud 146 trips control lever 168, which causes the disengagement of latch lock 172 from latch 173, plunger 139 returns to its extreme rear position and, due to weight 171, latch lock 172 comes to rest with its concave end surface 185 contacting the tripped latch 173. During the upward movement of arm 130, when recess 184 of finger 182 engages with crank pin 128 of lever 127, the side edge 186 of lock finger 182 comes against contact follower 179 on arm 177, thereby affecting an upward movement of trip lever 174 and causes a resetting of latch lock 172 and latch 173. After the scale pan has delivered the charge to the guide chute and magazine, the gate 110 is closed again by the downward motion of arm 130, the slot 129 of which engages with the crank pin 128. During this downward motion, the other side edge 187 of lock finger 182 will contact the follower 180 of arm 178 (Figure 4) and, since trip lever 174 is in locked position again, causes a disengagement of recess 184 of finger 182 from crank pin 128. In order to prevent lock finger 182 from swinging too far one way or the other during its contact with follower 179 or 180, arm 130 carries a stop pin 188 (Figure 4) which engages with a slot 189 in finger 182.

The control mechanism, just described, must be tripped every time before the magazine gate can be opened to admit a tobacco charge delivered from the scale pan.

When during the operation of the machine, sufficient tobacco is present in the magazine, plunger 139 can enter only a short distance into the magazine and trip stud 146 of bar 145 on

plunger rod 143 will not be able to engage and trip the control mechanism lever 168. In this case, as arm 130 moves upward, finger 182 will not be rocked into position to seat pin 128 in recess 184 and hence lever 127 will not be moved to open gate 110. Slot 129 in arm 130 allows the latter to move upward without disturbance or action upon the crank pin 128 projecting through said slot. The magazine gate 110, of course, remains closed and will not move to open position until the magazine supply of tobacco reaches a point at which need for additional tobacco is communicated and the control mechanism is tripped again.

During each forward stroke of plunger 139, the latter pushes the tobacco charge C into a charge transfer which, after the charge is cut off from the remaining tobacco column in the magazine by means of a vertically reciprocating knife 190, transfers said charge into a loop 191 of a rolling apron 192.

The tobacco charge transfer consists of a housing 193 having a slidable ejecting plunger 194 mounted on a single rod 195 slidably supported by said housing. To one end of housing 193 is fastened a stud 196 (Figures 1 and 2) while to the other end of said housing is secured a stud 197. The latter is loosely supported in a bearing lug of guide sleeve 198 and stud 196 is loosely supported in a bearing lug of guide sleeve 199. The latter as well as sleeve 198 are slidably supported by means of a pair of vertical operating shafts 200, also slidably supported by means of bearings 201 (Figure 2) of bed plate 20. Shafts 200 at their lower ends are connected by and mounted on a bridge bracket 202 which carries in its center portion a lug 203 to which is pivoted one end of a connecting rod 204, while the other end of the same is pivoted to a cam lever 205 carrying a cam follower 206 engaging with a cam track 207 of a cam 208 mounted on main cam shaft 33. Cam lever 205 is loosely mounted on shaft 159. Cam lever 205, through connecting rod 204 and bridge bracket 202, imparts vertical reciprocating motion to operating shaft 200. The upper ends of the latter are also connected by a bridge bracket 209 carrying by means of pivots 210, a knife supporting frame 211 to which is attached the knife 190. The cutting edge of the latter is slightly V-shaped and the lower portion of said knife is provided with two fingers 212 (Figures 2 and 4) which are in steady contact with a ledger plate 213 (Figures 3 and 4). The latter forms an extension of the magazine bottom plate 121 and is supported by the magazine frame 122.

In order to facilitate adjusting or setting of the ledger plate 213, each end of the latter is equipped with projections 214 (Figure 3), each of which is contacted by a set of adjusting screws 215 (Figure 1). Said screws 215 are supported by lugs 216 of magazine frame 122. In order to take care of wear and tear automatically and to assure a permanent and good contact of knife 190 with ledger plate 213, a pair of spring mounted rollers 217 may be employed. These rollers engage with knife supporting frame 211 at all times, and impart a steady tension upon knife 190. The novel knife mounting makes it possible to remove the knife for sharpening or replacement without tearing down the whole assembly. Also, because of its arrangement, any obstruction in the tobacco, such as a nail or other substance, will not break the knife, or otherwise damage the knife since it can flex out of the path of the obstruction thereby obviating cutting into this type of hard, unyielding substance. Because of the provision of a small gap between the top plate 136 and the top of housing 193, knife 190 has room to flex in the manner above described. Each one of rollers 217 is pivoted to the forked portion of a lever 218, each of which is loosely mounted on a stud 219. The lower portion of each lever 218 is provided with a spring 220 (Figure 4) supplying the tension to said rollers 217, thereby providing a better shearing action to the knife 190 upon ledger plate 213. One of the studs 219 is held by a lug of guide sleeve 198, while the other stud is held by a lug of guide sleeve 199. The latter is connected to sleeve 198 by means of a bridge frame 221.

The stud 196 of transfer housing 193 is mounted a crank 222 (Figures 1 and 2) carrying a crank pin 223 which, during operation engages with a vertical track 224 of a cam lug 225 held by a bracket 226 mounted on bed plate 20. To stud 197 a transfer housing 193 is mounted a cam lug 227 (Figure 2) provided with a track 228 with which engages a stationary guide pin 229 held by a lug 230 of a switch housing 231 mounted on bed plate 20. To each of the guide sleeves 198 and 199 is pivoted a control rod 232 slidably supported by means of bed plate 20 and frames 21. The lower end of each of the vertical control rods 232 projects through a lug 233 extending from each side of bridge bracket 202 (Figure 2). Each of the rods 232 is provided with a stop collar 234. Around each control rod 232, between collar 234 and lug 233, is wound an expansion spring 235.

After the tobacco charge C has been pushed into transfer housing 193 by means of plunger 139, knife 190, by means of cam lever 205 and bridge bracket 202, is moved downward, thereby cutting the charge in the transfer from the tobacco column in the magazine. During this period the transfer will remain in its horizontal position while being held by springs 235 which expand during the downward motion of the bridge bracket 202 and hold rods 232 by means of collars 234 in their upmost position; rods 232 support and thereby control sleeves 198 and 199 which carry the transfer. During the downward motion of knife 190, but after the same has cut the tobacco charge C, a pair of vertically mounted, adjustable studs 236, held by bridge bracket 209, contact a pair of lugs 237 (Figure 2) of the bridge frame 221, thereby forcing sleeves 198 and 199 to follow the downward motion of the knife mechanism, and naturally, causing the charge transfer to descend also.

During the downward motion of the sleeves and transfer, crank pin 223 of crank 222 enters the track 224 of cam lug 225, and cam track 228 of cam lug 227 which is mounted on stud 193 engages with stationary guide pin 229, thereby causing the transfer to move from a horizontal position to a vertical position by making an axial turn of 90°, after which the tobacco charge carried by the transfer is discharged into a loop 191 of a rolling apron 192 which may be of conventional design. In order to prevent any tobacco from sticking to or remaining in the transfer housing, a pusher arm 238 (Figure 2) contacts the ejector rod 195, causing ejecting plunger 194 to move downward until the same is even with the outer walls of the transfer housing 193. Pusher arm 238 is pivoted to a stud 239 held by a lug of sleeve 199. To stud 239 is also pivoted a bell crank lever consisting of an arm 240 and an arm

243. Arm 240 is connected with a lug 242 of pusher arm 238 by means of a coil spring 241 (Figure 2). Arm 243 extends horizontally from its support and, during the downward motion of sleeve 199, contacts an adjustable stud 244 held by the stationary cam lug 225, thereby causing arm 240, through spring 241, to press pusher arm 238 downward against ejector rod 195. A spring mounted plunger 245, slidably held by a lug 246 of sleeve 199 keeps arm 238 away from ejector rod 195, when arm 243 is not in contact with stud 244.

After the tobacco charge is deposited by the transfer into the apron loop 191, bridge bracket 202, through cam lever 205, moves upward again, which, of course, also effects an ascending of the transfer as well as of the knife 190. During this upward movement, cam lug 227, engaging with its track 228 with guide pin 229, and pin 223 trailing in track 224, swing the transfer again 90° from its vertical discharge position back to its horizontal receiving position. Either pin 223 or 229 is engaged in its respective cam track at some part of the cycle of the machine, thereby insuring that the movements of the transfer will always be positively controlled. A feature of the operating means and construction of this transfer mechanism lies in the positive guide and supporting means the transfer has in any position or during movement of the same.

After the tobacco charge is deposited in loop 191 of rolling apron 192, a horizontally reciprocating rolling pin 247 rolls said charge into a binder B (Figure 1), thus forming a cigar bunch. Rolling pin 247 is pivoted at each end to a bearing lug 248 (Figures 1 and 2), each of which is adjustably mounted on a forked supporting bracket 249 fastened to a guide bar 250 slidably supported by means of a track formed by the lower portion 251 of a rolling table 252. Supporting bracket 249 and bar 250 carry a stud 253, to the upper end of which is pivoted a cam follower 254 engaging with a cam track 255 (Figure 2) in portion 251 of rolling table 252. The lower end of stud 253, through an adjustable rod 256 is connected with an oscillating operating arm 257 (Figures 1, 2 and 3) pivoted to a shaft 258 supported by bearings of frames 21. Arm 257 is provided with a lever 259 which through an adjustable rod 260 is connected to a cam lever 261 carrying a cam roller 262 engaging with a track 263 of cam 208.

The rolling table 252 is mounted on bed plate 20 and is provided with a suction chamber 264 having a number of holes 265 (Figure 1) leading to the rolling surface of said table 252. Holes 265 correspond with the customary perforations (not shown) in the rolling apron 192 upon which the binder B is placed by the operator. The suction chamber 264 is connected to a duct 266 formed by a channel 267 of bed plate 20 (Figure 3) and a channel 268 of magazine frame 122. The bottom portion of channel 267 is provided with an opening 269 (Figure 4) to which is fastened a valve 270 (Figures 1, 2 and 4) which through a tube 271 is connected to a conventional suction fan (not shown) supplying suction for the scrap bunch machine. Valve 270 is provided with an outlet 272 (Figure 4) to which is connected the conduit 167 leading to funnel 166 attached to the rear end of the magazine (Figure 4). Valve 270 is also provided with a shutter plate 273 (Figures 1, 2 and 4) mounted on a shaft 274 supported by bearings in said valve. To shaft 274 is fastened a lever 275, which through a link 276 is connected with a lever 277 mounted on a shaft 278 supported in bearing lugs 279 (Figure 2) of valve 270. To shaft 278 is also fastened a lever 280 to which is pivoted a roller 281 hanging in the path of a cam piece 282 attached to cam 163. When roller 281 engages with cam piece 282, lever 280 is moved upward and thereby causes shutter plate 273 to move upward and to close the opening 269 of the suction channel 266 which leads to the suction chamber of the rolling table. When opening 269 is closed by shutter plate 273, the suction supply to the rolling table is shut off, but is then directed through outlet 272 and conduit 167 to the rear end of the magazine, so that at this time any waste tobacco, dust, etc., falling from the rear of the chamber or between fingers 165, or from pusher 139 into funnel 166 will be carried away by suction and deposited in a suitable receptacle (not shown). The plunger 139 is then in its rearmost position. As soon as roller 281 leaves the cam piece 282, shutter plate 273 drops, thereby clearing opening 269 and closing outlet 273, thus directing all suction through channel 266 to the rolling table, while the suction supply to the rear end of the magazine is entirely cut off.

One end of the rolling apron is fastened to the front end of the rolling table 252, while the other end of said apron is fastened to an apron drum 283. The latter is provided for the purpose of controlling the action of the apron during rolling operation and through proper adjustment a tight or loose wrapping of the bunch can be achieved. The apron drum 283 may be constructed and operated in the same manner as the apron take-up mechanism disclosed in Letters Patent No. 1,442,200, granted January 16, 1923, to V. J. Wahlstrom.

Apron drum shaft 284 engages with an adjusting head 285 (Figure 3) which is equipped with a shaft 286 carrying a sprocket 287 connected by means of a chain 288, with a sprocket 289 pivoted on a shaft 290 supported by an arm 291 adjustably mounted on a stud 292 (Figure 1) held by a hub on one of the main supporting frames 21. Chain 288 is hooked to an arm 293 (Figures 1 and 3) pivoted on shaft 159. Arm 293 is provided with a weight 294 and is equipped with a cam lever 295 which carries a cam roller 296 engaging with a track 297 of cam 163.

The machine is equipped with an automatic stop switch 298 (Figures 1 and 3) in order to stop the entire machine after the completion of each cycle of the same. This switch is mounted on a bracket 299 and is operated by means of a spring mounted roller 300, the latter by means of switch 298 causes a break of the electric circuit, which de-energizes a solenoid 203 mounted on housing 29 (Figure 3). The armature (not shown) of solenoid 302 is connected with and operates the main clutch (not shown) of the machine supported in housing 29. The clutch preferably is of the same construction and design as that disclosed in patent application, Serial No. 183,405 filed January 5, 1938, by Henry H. Wheeler, now Patent No. 2,316,828, issued April 20, 1943.

In order to start the machine again, the operator must depress a foot pedal 303, causing a stud 304 on an arm 305 to press against a switch button 306 which will actuate switch 298 and thereby close the circuit again. Foot pedal 303 and arm 305 are pivoted on shaft 258. An expansion spring 307 (Figure 1), anchored between bracket 299 and arm 305, assures the return of the arm and foot pedal, after the operator releases the latter. Arm 305 is also provided with a

stop screw **308** (Figure 1) to limit the upmost movement of arm **305**. Bracket **299** is supported by means of shaft **258** and a shaft **309** held by frames **21**.

In the operation of this machine and more particularly the mechanism described hereinabove, suction is directed cyclically into the conduit **167** for removing waste tobacco, dust, etc., which may fall into funnel **166** so that while suction is active in conduit **167** all waste materials are positively removed from the machine and delivered to a receptacle (not shown). It is also evident that any waste tobacco tending to wedge between the upper and lower plates **121**, **137**, respectively, will be removed from the top and bottom of the plunger **139** because of the construction and arrangement of fingers **165** which extend rearwardly at the rear of the top and bottom plates **137**, **121** of the compression chamber.

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 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 weighing device, and means for feeding tobacco to said device, a charge compression chamber positioned to receive tobacco from said device, plunger means movable in said chamber between inner and outer limits of movement for compressing charges of tobacco to a predetermined density, a pivoted trap door normally closing said chamber against uncontrolled introduction of tobacco from said device into said chamber, means for moving said trap door to open said chamber for introduction of tobacco thereinto and to coact with said device for discharging a weighed charge of tobacco from said device, a distributing plate operable substantially simultaneously with said trap door for distributing tobacco in said chamber, a suction waste receiving duct adjacent the rear of said chamber, and means operating when said plunger means is located at its outer limit of movement for intermittently applying suction in said duct to draw off waste particles from the rear of said chamber.

2. In a cigar machine, the combination with means for measuring charges of tobacco, of a compression chamber, means for intermittently feeding charges of tobacco to said chamber, a plunger movable in said chamber for compressing said charges to a predetermined density, means for separating measured bunch charges from tobacco in said chamber, a bunch rolling apron, spaced fingers extending rearwardly from the bottom of said chamber, and means for reciprocating said plunger to position it once each cycle in cooperative engagement with said fingers, said fingers being constructed and arranged to provide an opening adjacent the tobacco engaging face of said plunger whereby material tending to cling to said plunger may fall free thereof through said opening for removal from said machine.

3. In a cigar machine having a measuring chamber and means for intermittently feeding charges of tobacco to said chamber, a plunger movable in said chamber for compressing said tobacco to a predetermined density, spaced fingers extending rearwardly from the top and bottom of said chamber, and means for reciprocating said plunger to position it once each cycle between said fingers and without said chamber, said fingers being constructed and arranged to provide an opening adjacent the tobacco engaging face of said plunger whereby material tending to cling to the top and bottom of said plunger may fall free thereof through said opening for removal from said machine.

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