

Oct. 27, 1925.

W. H. SCHUSSLER

1,559,009

AUTOMATIC CIGAR BUNCHING MACHINE

Filed March 8, 1922

4 Sheets-Sheet 1

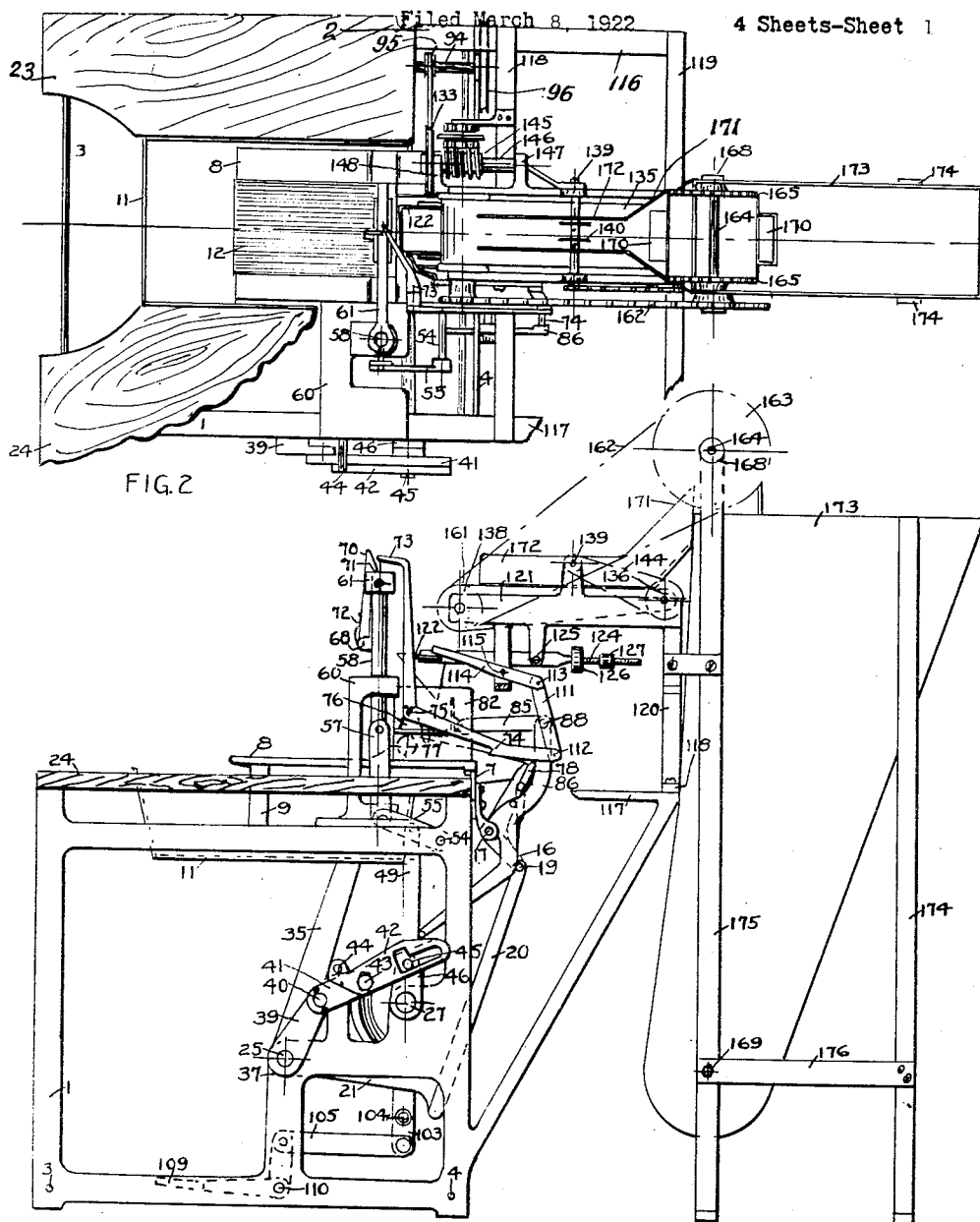


FIG. 1

Walter H. Schussler, INVENTOR
 BY Meredith H. Hanks ATTORNEY

Oct. 27, 1925.

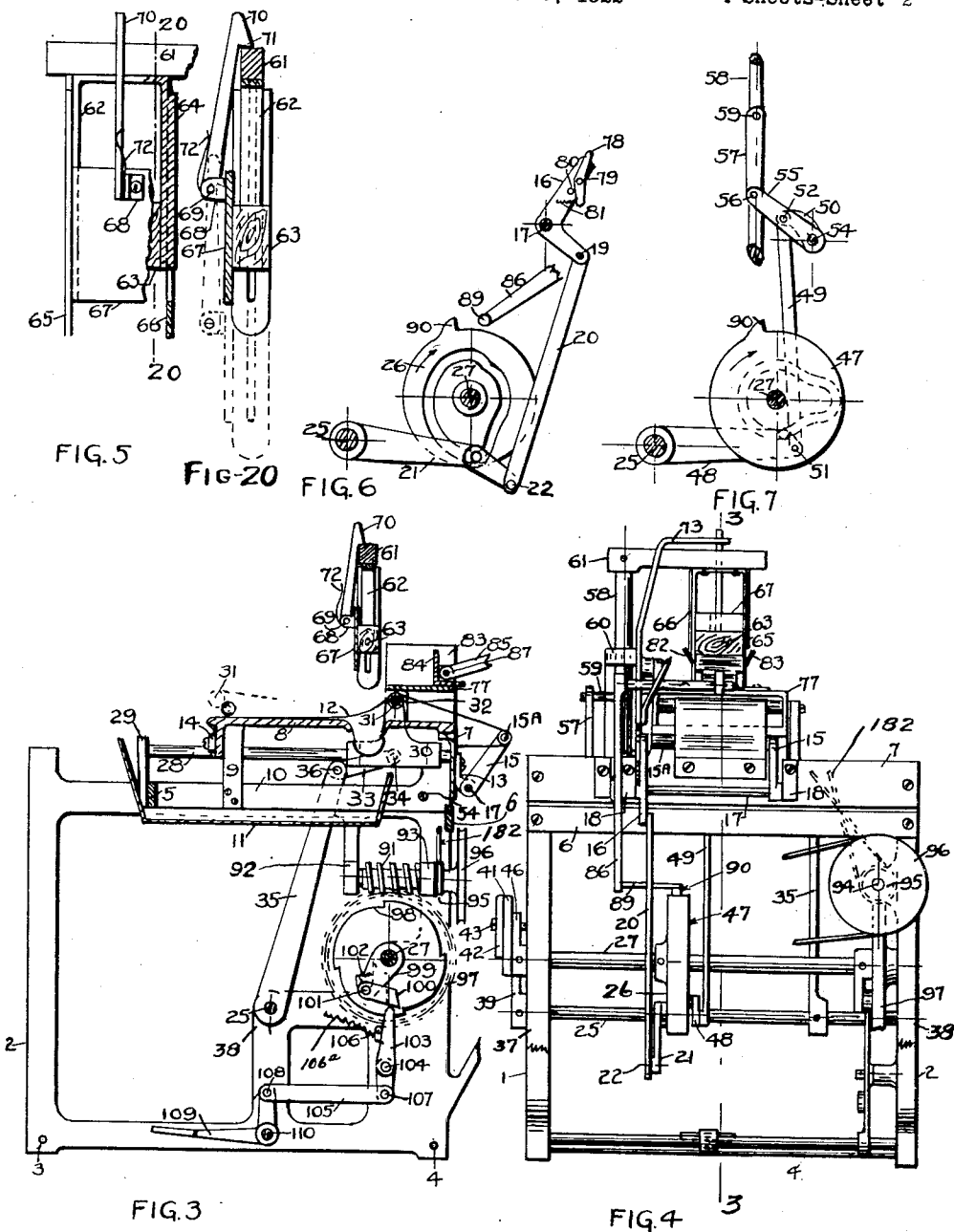
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AUTOMATIC CIGAR BUNCHING MACHINE

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4 Sheets-Sheet 2



Walter H. Schussler, INVENTOR
BY Niedersheim Garbancz

Oct. 27, 1925.

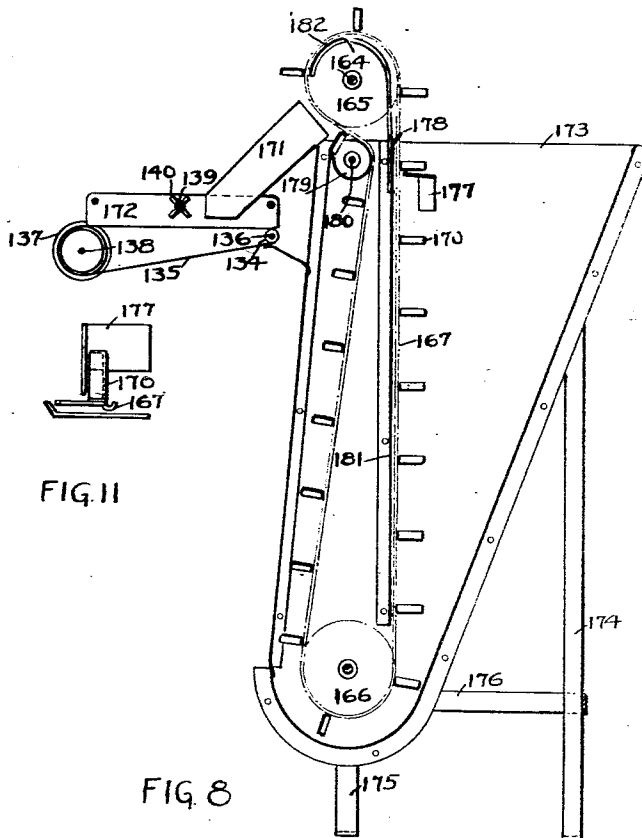
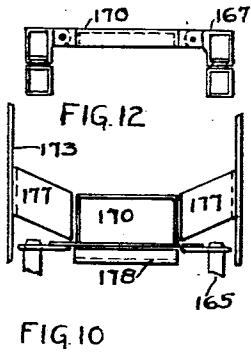
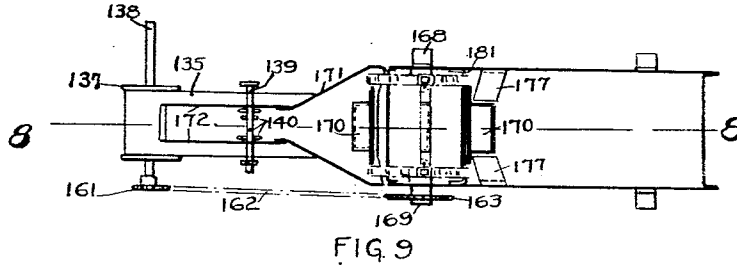
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W. H. SCHUSSLER

AUTOMATIC CIGAR BUNCHING MACHINE

Filed March 8, 1922

4 Sheets-Sheet 3



Walter H. Schussler, INVENTOR
Wiedersheim & Garbancs, ATTORNEYS

Oct. 27, 1925.

W. H. SCHUSSLER

1,559,009

AUTOMATIC CIGAR BUNCHING MACHINE

Filed March 8, 1922

4 Sheets-Sheet 4

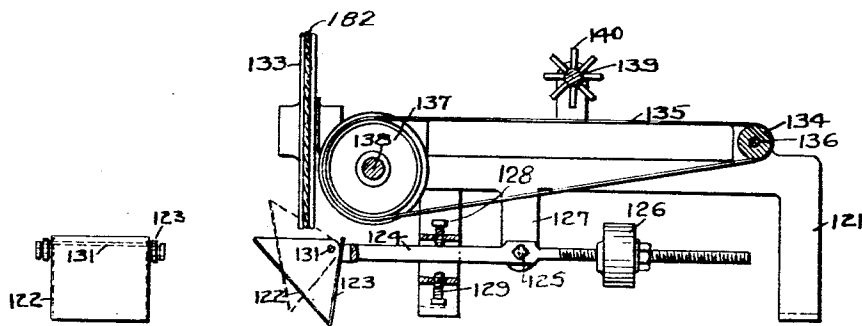
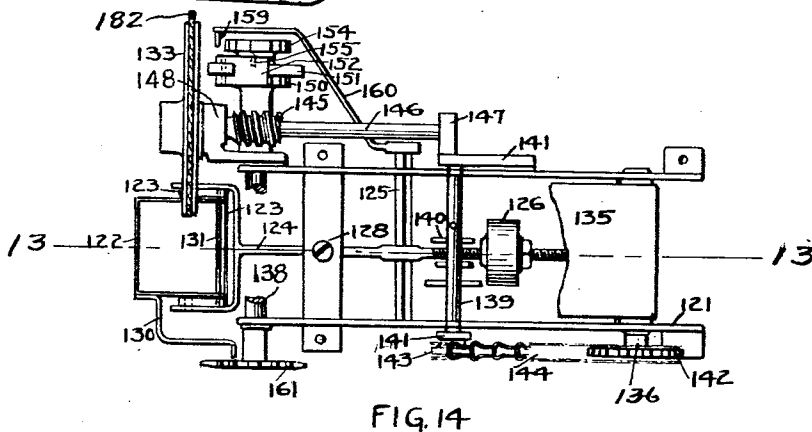
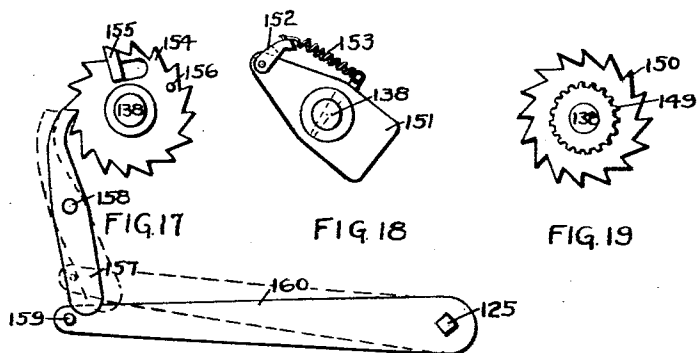


FIG. 15

FIG. 13

FIG. 16

Walter H. Schussler, INVENTOR
BY Hedersheim & Bank ATTORNEY

UNITED STATES PATENT OFFICE.

WALTER H. SCHUSSLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE SCHUSSLER TOBACCO MACHINE CO. INC., OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

AUTOMATIC CIGAR-BUNCHING MACHINE.

Application filed March 8, 1922. Serial No. 541,914.

To all whom it may concern:

Be it known that I, WALTER H. SCHUSSLER, a citizen of the United States, residing at Philadelphia, county of Philadelphia, State of Pennsylvania, have invented a new and useful Automatic Cigar-Bunching Machine, of which the following is a specification.

My invention comprehends a novel automatic cigar bunching machine wherein predetermined widths of tobacco are automatically fed to the bunching machine proper, so that the manufactured cigars will each have the same weight of tobacco therein and will be of uniform dimensions.

It further comprehends novel means mechanically controlled for feeding the tobacco which is to form the bunch from a source of supply to weighing mechanism mechanically controlled and which feeds in turn a predetermined weight of tobacco at a time to a mechanically controlled bunching machine, which latter may be of any desired or conventional type.

It further comprehends novel feeding mechanism, novel weighing mechanism and a novel construction and arrangement of the connections between them and between a bunching machine whereby the cycle of the operation of each part occurs in a definite timed relation.

Other novel features of construction and advantage will hereinafter more fully appear in the appended claims.

For the purpose of illustrating my invention, I have shown in the accompanying drawings a typical embodiment thereof which is at present preferred by me, since this embodiment will be found in practice to give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents, in side elevation, an automatic cigar bunching machine, embodying my invention.

Figure 2 represents a plan view of the organized machine.

Figure 3 represents a section on line 3—3 of Figure 4.

Figure 4 represents an end elevation of the machine, certain parts being omitted for the sake of clearness of illustration.

Figure 5 represents a fragmentary detail view showing more particularly the plunger and certain of its adjuncts.

Figure 6 represents a fragmentary detail showing more particularly the apron controlling means.

Figure 7 represents a fragmentary detail showing more particularly the means for controlling the plunger which moves the predetermined weight of tobacco into the pocket of the bunching apron proper.

Figure 8 represents a section on line 8—8 of Figure 9 showing more particularly the hopper and the tobacco feeding means.

Figure 9 represents a top plan view of the construction seen in Figure 8.

Figure 10 represents a plan view of a portion of Figure 8 showing more particularly the bucket and knock-off or levelling devices.

Figure 11 represents an end view of the construction seen in Figure 10.

Figure 12 represents, in front elevation, a portion of the conveyor and its bucket.

Figure 13 represents a section on line 13—13 of Figure 14.

Figure 14 represents a top plan view of the weighing device and certain of its adjuncts.

Figure 15 represents, in front elevation, the scale pan.

Figure 16 represents, in side elevation, the weighing pan and its operating lever.

Figure 17 represents a fragmentary view of the belt feed knock out and ratchet.

Figure 18 represents a fragmentary view of the driving pawl and arm for the belt feed.

Figure 19 represents a fragmentary view of the driving ratchet and worm wheel.

Figure 20 represents a section on line 20—20 of Figure 5.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:

The frame of the machine.

1 and 2 designate the side frame members which are connected by means of the lower tie rods 3 and 4, the upper front tie member 5 and the upper rear tie member 6. 7

designates a cross bar carried by the main frame and adapted to support the rear end of the binder rolling table 8 which is supported at its front end by means of the legs 9 which are rigidly fastened to the bars 10. 11 designates a scrap pan carried by the bar 10. 12 designates the apron which is secured to the table 8 at its rear end by a clamping device 13, the front end of the apron being secured to the table by means of a clamping device 14. 15 and 16 designate arms which control the apron and are rigidly mounted on a shaft 17 journaled in bearings 18 which are carried by the tie member 7.

15^a designates a roller carried by the arms 15 and 16 and over which the apron passes. The lever 16 is fulcrumed at 19 to one end of the connecting link 20 which is actuated by an arm 21 pivotally connected to it at 22. The arm 21 is loosely mounted on a shaft 25 and is provided with a roller which travels in the groove of a cam 26 fixed to a shaft 27 suitably journaled in the frame of the machine. 28 designates slide bars rigidly connected with the rear tie rod 7 and with brackets 29 which are secured to the front side member 5, see Figure 3.

30 designates a cross slide which slides on the slide bars 28 and has secured to it a roller 31 which revolves on a roller bearing 32 which is secured in the top of the cross slide 30, see Figure 3. 33 designates a link which bears on a pin 34 fixed to the cross slide 30. This link 33 is fastened at one end to a lever 35, as at 36, and is free to move on it. The lever 35 is rigidly secured to its rock shaft 25 which in turn is free to move in the bearings 37 and 38 of the machine frame. 39 designates a lever, see more particularly Figure 1, which is rigidly secured to the shaft 25 and carries a pin 40 in which is adapted to rock a slotted link 41.

42 designates a pawl pivoted at 43 to the link 41. 44 designates a knock-out pin and 45 designates a driving pin which is mounted on a crank arm 46 secured to the shaft 27. The cam 26, see more particularly Figure 7, has secured to it a cam 47 which is provided with a cam groove in which operates a roller carried by a cam lever 48 which is loosely mounted on the shaft 25. 49 designates a link which connects the cam lever 48 with an arm 50, the link 49 being pivotally connected at 51 to the cam lever 48, and at 52 to the arm 50. The arm 50 has one end fixed on a shaft 54 to which is also fixed one end of an arm 55, the opposite end of which is pivotally connected at 56 with a link 57 which is connected with the rod 58, as at 59.

The rod 58 slides in a bearing 60 carried by the machine frame.

Referring now more particularly to Fig-

ures 3, 4 and 5, the rod 58 carries the arm 61 to which is connected a plunger frame 62 which carries a plunger 63. 64 designates a tongue in which slides guides 65 and 66 which are connected together by a plate 67. 68 designates a bracket having rigidly mounted therein a pin 69 on which is free to rock one end of a link 70 in the form of a hook having a shoulder 71 which normally rests upon the arms 61. A spring 72 is provided which normally tends to move the shoulder 71 into position to engage the arm 61.

Referring now more particularly to Figures 1, 2 and 4, 73 designates a bell crank lever which is provided with a cam shaped end 74 and is fulcrumed at 75 in a bracket 76 carried by a plate 77 connected with the machine frame. 78 designates a rock pawl which is pivoted at 79 on the lever 16, see more particularly Figure 6, A stop 80 carried by the lever 16 is provided for the pawl 78 and a spring 81 connected with said pawl and with said lever normally maintains said pawl against the stop 80. The machine frame has rising from it the tobacco guides 82 and 83, respectively, which serve to confine the tobacco.

Referring now more particularly to Figures 1 and 3, 84 designates a tobacco pusher which is connected by means of the link 85 to a bell crank lever 86 by means of the pins 87 and 88, respectively. The bell crank lever 86 has extending laterally from it an arm or lug 89 which is in the path of a cam lug 90 extending from the periphery of the cam 26.

As the cams 26 and 47 are connected with each other as will be understood by reference to Figure 7, I have indicated the cam lug on each of them by the same reference character 90.

Referring now more particularly to Figures 3 and 4, the machine frame has mounted thereon a worm 91 mounted in the bearings 92 and 93 and having a worm shaft 94 on which is mounted a pulley 95 and also a drive pulley 96. 97 designates a worm wheel loosely mounted on the shaft 27 and meshing with the worm 91. The worm wheel is provided with the ratchet teeth 98. 99 designates a lever arm one end of which is fixed to the shaft 27 and this lever arm actuates a pawl 100 and is pivotally connected to it at 101.

102 designates a spring one end of which is connected to the pawl 100 and the other end of which is connected to the arm 99. 103 designates a knock-out for the pawl 100 which is in the form of an arm fulcrumed at 104 to the machine frame and connected at its lower end with a link 105. The lever 103 is adapted to contact with the stop 106 and a spring 106^a is employed to normally retain it against such stop. The link 105

is pivotally connected at 108 to a treadle 109 which is fulcrumed at 110 to the machine frame.

111 designates a link which is pivotally connected at 112 to the end 74 of the lever 73 and at 113 to a scale trip lever 114 which is suitably fulcrumed at 115. Referring now more particularly to Figures 1 and 2, 116 and 117 designate supports for bars 118 and 119, respectively, which contribute with the main machine frame to support the weighing mechanism. 120 designates a supporting upright. 121 designates the scale feed belt frame.

Referring now more particularly to Figures 1, 2 and 13 to 16 inclusive, 122 designates a scale pan supported in a frame 123 which is carried by a scale beam 124 fulcrumed at 125 on the frame 121 and provided with an adjustable counterweight 126. The fulcrum 125 is carried by an arm 127 depending from the frame 121. 128 and 129 designate, respectively, an upper and a lower adjustable stop for the scale beam. The scale pan has connected with it a scale opening arm 130 which is actuated by the member 114. The scale pan is fulcrumed at 131 and the scale pan support 123 is fulcrumed at 132. 133 designates a feed drive pulley. 134 designates a roller around which passes a belt 135. The feed roller 134 is carried by a shaft 136. The belt 135 also passes around the roller 137 carried by a shaft 138 suitably journaled in the frame. 139 designates a shaft mounted above the belt 135 and provided with radial blades 140 which serve as tobacco spreaders. The shaft 139 is journaled in bearings 141. 142 and 143 designate sprocket wheels around which passes a sprocket chain 144. 145 designates a worm having a shaft 146 journaled in bearings 147 and 148 and this shaft 146 also carries the pulley 133.

Referring now more particularly to Figure 19, 149 designates a worm wheel which has fixed to it a ratchet 150. 151 designates a driving arm for the feed belt as best seen in Figure 18. The arm 151 has pivoted to it a pawl 152 against which bears a spring 153.

Referring now more particularly to Figure 17, 154 designates a ratchet which carries a knock-out cam 155 and is provided with a stop 156. 157 designates a knock-out lever which is pivoted at 158 and is actuated by means of a pin 159 carried by the rock arm 160 which is fixedly mounted to one end on the shaft 125. 161 designates a sprocket wheel around which passes a sprocket chain 162 which also passes around a sprocket wheel 163 mounted on a shaft 164. 165 designates bucket chain sprocket wheels and 166 designates lower sprocket wheels around which pass the bucket chain 167. The upper shaft is mounted in bearings 168 and 169, see Figure 9.

170 designates the feed buckets which are connected with the bucket chain. 171 designates a tobacco chute having the guides 172 leading from the feed hopper 173 in which the bucket chain 167 and its buckets travel. The feed hopper is carried by the standards 174 and 175 and is braced by the tie rods 176.

Referring now to Figures 8, 9, 10 and 11, 177 designates tobacco arch breakers or levelling devices for the sides of the buckets and 178 designates a tobacco leveler for the rear of the bucket. The bucket chains pass over guide rolls 179 which are journaled at 180. The feed hopper is provided with a division space 181 and with a tobacco shield 182 which latter is positioned in proximity to the upper sprocket wheels in proximity to the path of the buckets so that the tobacco carried thereby will all fall into the chute 171.

The operation of my novel automatic cigar bunching machine will now be readily apparent to those skilled in this art and is as follows:—

The tobacco is placed in the supply hopper or source of supply 173, see more particularly Figures 1, 2, 8 and 9. The main driving shaft 27 of the organized machine is driven by means of any suitable source of power. The main driving shaft 27 is driven by the worm 91, as illustrated, the shaft of said worm having the pulley 96 thereon which is driven by means of any desired source of power. The worm shaft also has mounted thereon a pulley 95 around which passes a belt 182 which also passes around the pulley 133 on the shaft 146 to thereby drive it. The worm 145 on the shaft 146 drives the shaft 138 carrying the sprocket wheel 161, see more particularly Figure 14, thereby driving the sprocket chain 162, see Figure 9, which passes around the sprocket wheel 163 on the shaft 164. In this manner the bucket chains 167 are driven thereby causing the buckets 170 to travel within the hopper or source of tobacco supply 173 and carry the tobacco in measured quantities therefrom. The surplus tobacco carried by the buckets is removed by the knock-off or levelling members 177 and 178, see Figures 8 and 10. As the buckets pass up and over the sprocket wheels the excess tobacco carried thereby drops by gravity into the hopper 173. On the continued movement of the buckets the tobacco therein is delivered into the chutes 171 which discharges the tobacco onto the travelling belt 135 in a thin layer which is spread out by the spreading blades 140 of the spreader 139 so that a uniform layer of tobacco is carried by the conveyor, apron or belt 135.

The shaft 139 of the spreader is driven by means of sprocket chain 144 which is driven from the shaft 136, see Figure 14. It will

be understood from Figures 13 and 14 that the shaft 136 is driven by means of the conveyor apron 135 which passes around a pulley 137 on the shaft 138 which latter is driven in the manner already described. The tobacco on the conveyor apron 135 is discharged into the scale pan 122, the counterweight being adjusted so that when a determined quantity has been received in the scale pan 122 the lever 124 will rock on its journal 125 and the scale lever will come to rest against the lower adjustable stop 129. As soon as the scale pan comes to rest, the rotation of the shaft 138 is automatically arrested thereby stopping all the feeding mechanism which contributes to feed the tobacco from the hopper 173 to the scale pan 122. The arm 160 is fixed to the shaft 125 to rock with it when the lever 124 rocks so that when the scale pan 122 moves downwardly the lever 160 will rock downwardly thereby moving the pin 159 from the position seen in dotted lines in Figure 17 into that seen in full lines so that the pin 159 moves out of engagement with the shoulder on the pawl 157 thereby permitting the pawl 157 which is weighted at its lower end to rock on its fulcrum 158 and moves into engagement with the teeth of the ratchet 154 on the shaft 138 and thereby stop any movement of the ratchet 154 which is loosely mounted on the shaft 138.

The shaft 138 has fixed to it the arm 151 which carries the pawl 152 which co-operates with the ratchet 150 which is revolved by the worm wheel 149 and the worm 145, it being seen that the revolution of the ratchet 150 co-operating with the pawl 152 is the means for effecting the revolution of the shaft 138, see Figures 14, 18 and 19. As soon now as the ratchet 154 is stopped and since the shaft 138 continues to rotate the cam 155 will raise the pawl 152 out of engagement with the teeth of the ratchet 150 so that the rotation of the shaft 138 will be arrested, thereby stopping the feed of the tobacco towards the scale pan as before explained.

It will now be understood that the scale pan 122 has received a predetermined weight of tobacco and the next step is to discharge it from the scale pan.

Referring now more particularly to Figures 1 and 6, the shaft 27 is at this time revolving thereby revolving the cam 26 thereby actuating the rock arm 21 which in Figure 6 is in its normal or neutral position. The revolution of the cam 26 in the direction of the arrow seen in Figure 6 causes the link 20 to move upwardly thereby rocking the lever 16 on its fulcrum and causing the pawl 78 to engage the cam end of the lever 74 thereby moving said lever upwardly moving upwardly with it the link

111 and rocking the lever 114 on its fulcrum so that its forward end, see Figure 16, will press downwardly on the arm 130 and rock the scale pan 132 on its fulcrum 131. Since the scale pan 122 is open at its back the tobacco will drop from the scale pan in front of the pusher 84, see Figure 3.

As the lever 74 has been rocked on its fulcrum in the manner described its upper end 73 will press against the pawl 70 and move it away from the bar 61 so that the guides 65 and 66 will drop downwardly by gravity and form a pocket in the apron 12, as shown in dotted lines in Figure 3, thereby forming a confined space to receive the tobacco which is now to be moved thereto by the pusher 84. The projections 90 on the cams 26 and 47, see Figures 6 and 7, now engage the pin 89 thereby rocking the lever 86 and causing the lever 85 to move forwardly, see Figure 1, thereby advancing the pusher 84, see Figure 3, to cause the predetermined weight of tobacco to pass into the pocket of the apron 12. The shaft 27 in the usual manner rocks the lever 42 thereby rocking the links 35 and 33 thereby advancing the cross slides 30 and causing the tobacco which is in the pocket of the apron to be rolled into a bunch and have the binder automatically applied to it in the usual manner.

In the initial start of the machine the operator presses down on the pedal 109, see Figure 3, thereby effecting the lowering of the pawl 100 into engagement with the teeth of the ratchet 98 so that the shaft 27 will have imparted to it one revolution and then automatically stops in the usual manner of standard types of bunching machines. The tobacco is pushed into the pocket of the apron after being fed thereto by the pusher 84 by means of the plunger 62 which is positively raised and lowered in the manner which will now be described. The plunger 62 is fixed to the rod 58, see Figure 1 and Figure 2. As the cam 47 on the shaft 27 revolves, see more particularly Figure 7, the link 49 will be moved downwardly and thereby actuating the rock arm 50 to rock the lever 55 on its fulcrum and draw downwardly the link 57 and thereby the rod 58, it being understood that the continued revolution of the cam 47 returns the plunger 62 to its raised position, and retains it in such position until the plunger is to be again moved downwardly.

The parts are so constructed that the weight of the lever 86 causes the pusher 84 to be returned to its initial position seen in Figure 3 ready for the next operation. As soon as the pawl 78, see Figures 1 and 6, rides under the shoulder on the lever 74, the lower end of the lever is dropped thereby causing the free end of the lever 114 to move upwardly and the scale pan 122 returns to

its normal or neutral position seen in full lines in Figure 13. As soon as the tobacco is discharged from the scale pan the counterweight 136, see Figure 13, causes the lever 124 to return to its horizontal position thereby rocking the shaft 125 to raise the lever 160, see Figure 17, in an upward direction and thereby move the pawl 157 out of engagement with the ratchet 154 and retain it out of engagement with such ratchet.

The spring 153 bearing downwardly on the pawl 152, see Figure 18, causes the cam surface 155 to partially revolve the ratchet 154 thereby permitting the pawl 152 to engage the teeth of the ratchet 150 and the feed of the bucket chain 157 and the conveyor aprons 135 and their adjuncts will take place in the manner already hereinbefore described.

In so far as I am aware, I am the first in the art to employ mechanically controlled means to automatically deliver to the paron from the source of supply a predetermined and definite weight of tobacco so that the cigars as manufactured will be of standard weight and size. This has heretofore been deemed impracticable.

My present invention while particularly adapted for a short filler is not limited to such use but can be employed for a long filler. The filler is raised from the bottom of the storage hopper so that the tobacco is retained at all times in a loose condition and the conveyor buckets will be uniformly filled in such a manner that they will always carry a definite quantity of tobacco as they carry a surplus which is levelled off prior to the discharge of the tobacco from the bucket. The parts are so timed and the buckets are of such dimension that the amount carried by a bucket is preferably less than the amount of filler required for a single cigar so that there can be no crowding or contacting of the tobacco which would have a tendency to clog or obstruct the machine.

In accordance with my present invention scrapped tobacco of any nature may be employed and damped tobacco can be employed if desired.

It will be apparent that I have devised a novel and useful automatic cigar bunching machine which embodies the features of advantage enumerated as desirable in the

statement of the invention and the above description, and while I have, in the present instance, shown and described a preferred embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that this embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In an automatic cigar bunching machine, a container for the tobacco, a conveyor, a feed belt to which the tobacco is discharged from said conveyor, weighing mechanism to receive the discharge from said feed belt, a retainer to receive the tobacco from said weighing mechanism, means to discharge the tobacco from said retainer, and a bunching machine to receive the discharge from said discharging means.

2. In an automatic cigar bunching machine, a tobacco retainer, means to feed a determined weight of tobacco thereto, a reciprocatory pusher to eject tobacco from said retainer, an apron having a pocket to receive the tobacco from said retainer, means operated prior to the operative stroke of said pusher to limit the length of said pocket, and actuating means for said apron.

3. In an automatic cigar bunching machine, a tobacco retainer, means to feed a determined weight of tobacco thereto, a reciprocatory pusher to eject tobacco from said retainer, an apron having a pocket to receive the tobacco from said retainer, means operated prior to the operative stroke of said pusher to limit the length of said pocket, a plunger to pack the tobacco in said pocket and actuating means for said apron.

4. In an automatic cigar bunching machine, an apron having a pocket, means to feed tobacco to said pocket, members to determine the length of said pocket, a plunger, a lock for said plunger and members, means to release said lock to permit said members to move into said pocket, and means to thereafter effect the operative stroke of said plunger.

WALTER H. SCHUSSLER.