

May 26, 1942.

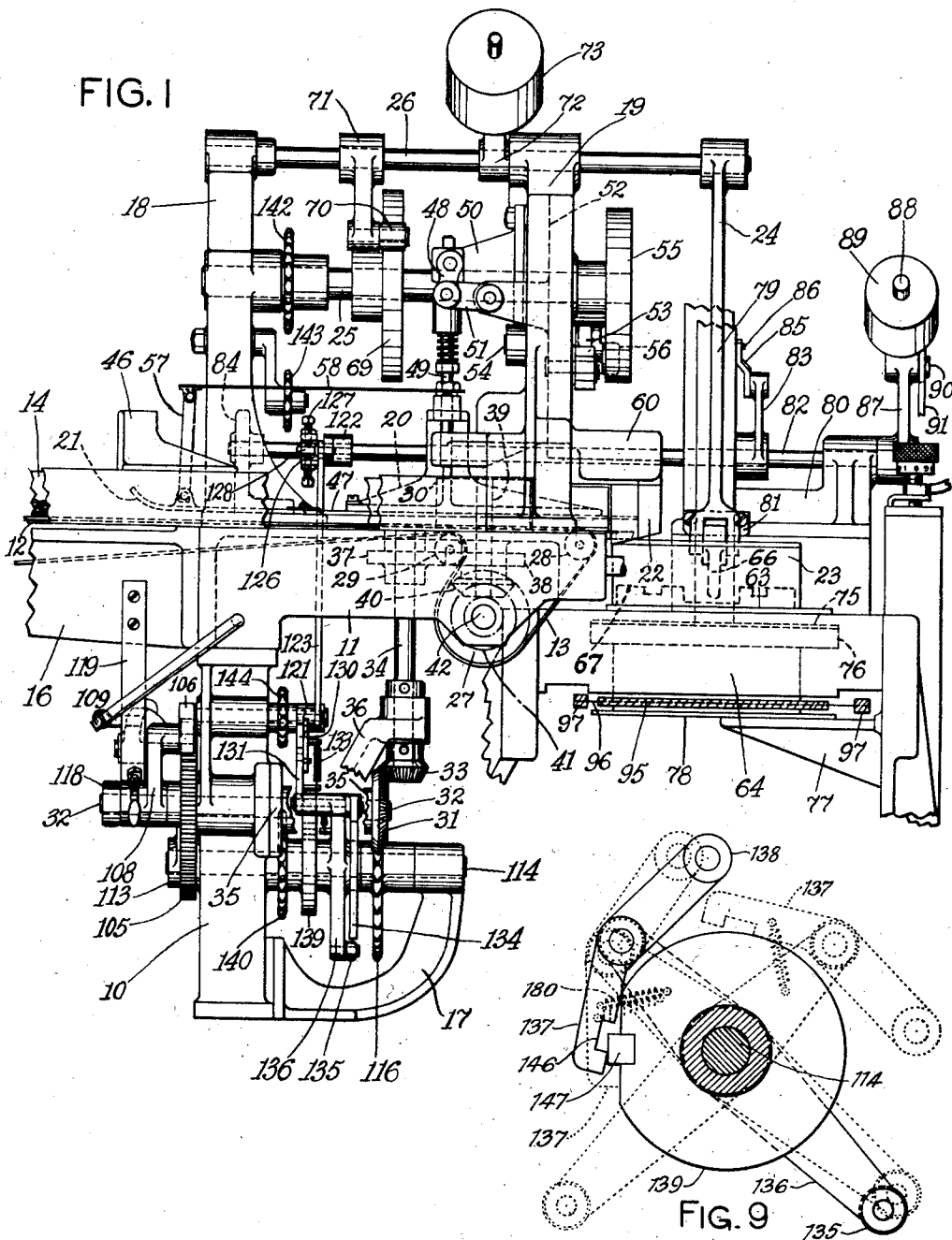
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2,284,472

CIGAR MACHINE CROSS FEED

Filed July 22, 1939

3 Sheets-Sheet 1



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FIG. 2

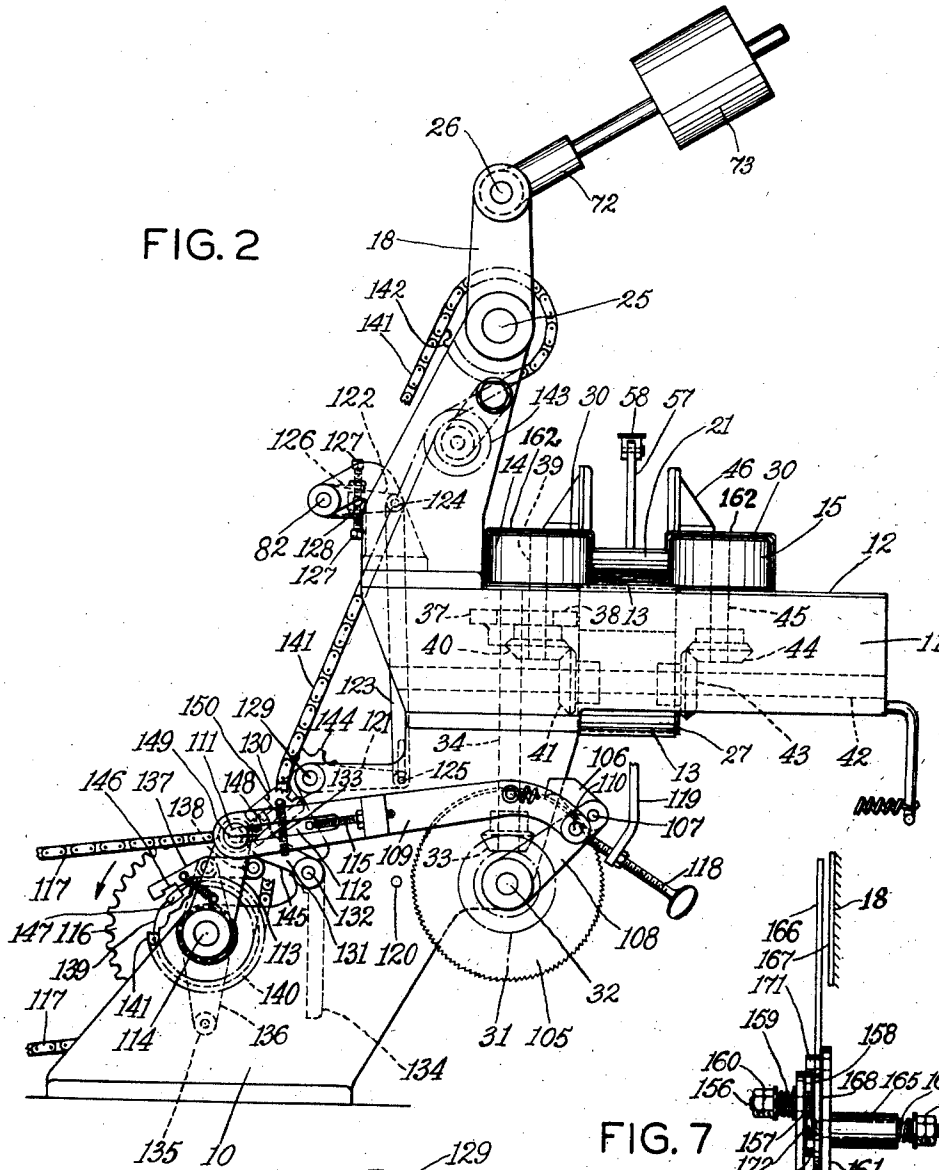


FIG. 8

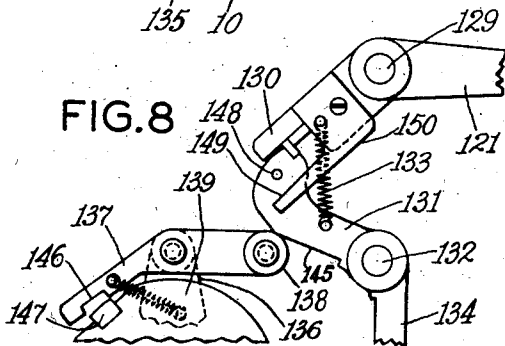
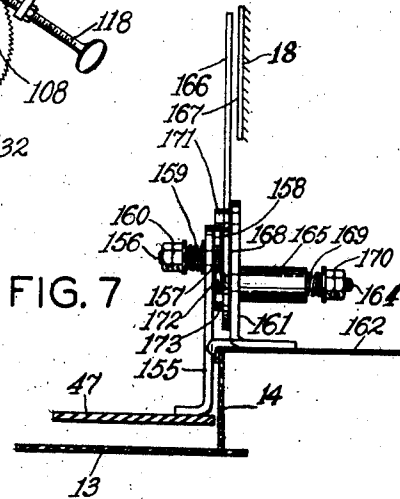


FIG. 7



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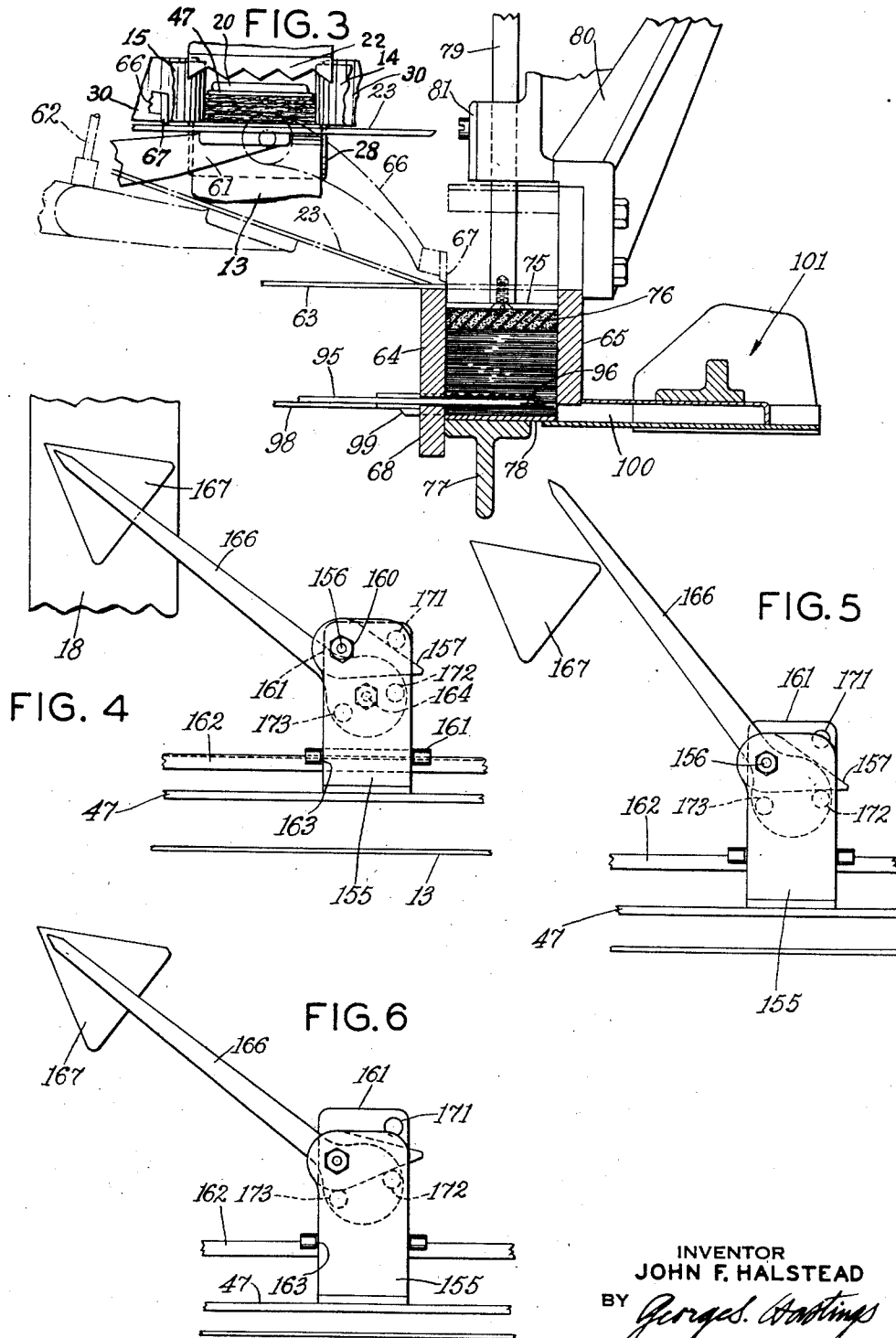
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3 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,284,472

CIGAR MACHINE CROSS FEED

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Application July 22, 1939, Serial No. 285,887

7 Claims. (Cl. 131—21)

This invention relates to improvements in cigar filler feeds and more particularly to the cross feed controlling means.

To produce cigars of uniform weight and density it is important that the stream of tobacco from which the bunch lengths are severed be uniformly compressed, so that the column of tobacco formed by assembling the bunch lengths, and the bunch charges separated therefrom, will be uniform. Heretofore the filler feeds have been constructed so that when the feed control mechanism occasionally stops the feeding of the tobacco stream for a certain cycle, when an oversupply of tobacco has been delivered to the column, only the feed belts remain inoperative and the balance of the mechanism, namely the compressor and the corrugated cutter continue operating. Therefore, when the feed belts do not advance the stream of tobacco for any given cycle, the compressor, which is of a length sufficient to compact a section of the stream corresponding to approximately two bunch lengths, each half of said section will have been pressed a third time before it is severed. Thus there is separated from the tobacco stream a portion of tobacco of considerably greater density than other portions of the tobacco stream which have received but two compressions during the intermittent advancement of the tobacco stream by the feed belts. A bunch charge cut from this thrice compressed portion will produce a heavier cigar than will a charge cut from a twice compressed portion, resulting in making cigars of uneven weights.

It is the main object of this invention to overcome this difficulty by providing a feed control which stops the operation of its entire mechanism, namely the feed-in belts, compressor and corrugated cutter, at a time when the compressor is clear of the tobacco stream. In this manner, all portions of the tobacco stream will be uniformly compressed, assuring a stream of tobacco of practically uniform density, whereby cigars will be produced of a more uniform weight.

Another object achieved by stopping the entire cross feed is that the corrugated cutter which severs the bunch lengths will not move up and down and cause small sections of tobacco to be shaved from the stream as heretofore. These shavings tend to collect at the head end of the bunch lengths assembled to form said column and lodge in the head ends of the bunch charges separated therefrom. Thus these loose particles are enclosed within the head end of the finished cigar where they are highly objectionable.

Another object is the provision of an indicator for continuously indicating to the operator whether the feeding of tobacco in the feed channel is at the correct height. Previously, on cross feeds having a compressor roll resting on the portion of the tobacco stream in front of the compactor plate, there have been provided indicators which are actuated by the up-and-down motion of the roll due to the varying height of the tobacco stream there-under. In operation they have given constantly fluctuating readings and proved unsatisfactory, because of the widely differing thicknesses of various adjoining sections of the stream and the tendency of the roll to drop into hollows in the stream and give a highly inaccurate reading. By actuating the indicator from the vertically reciprocating compressor foot in the present construction, a reading of the compacted or average thickness of the tobacco stream along the entire length of the compressor will be given.

My indicator is so connected to the intermittently operated compressor foot that an indication of the thickness of the tobacco in the channel will be given even while the presser foot is lifted and not operated, a difficulty which has hitherto deterred use of an indicator of this type on the cross feed. The indicator resets at the last part of each downward stroke of the compressor thereby using only a small fraction of each cycle for the resetting operation. The pointer is therefore stationary almost during the entire cycle, and permits plenty of time for the operator to glance at the pointer, to determine whether more or less tobacco be fed to maintain the proper height of tobacco in the channel. By this arrangement the operator, who is kept busy feeding tobacco into the channel, will at one moment or another be able to glance at the indicator for a reading. With the objects indicated, and others not specifically mentioned in view, the invention consists in certain methods, combinations and constructions which will be hereinafter fully described and then specifically set forth in the claims hereunto appended.

In the accompanying drawings, in which like characters of reference indicate the same or like parts:

Fig. 1 is a partial side elevation of a cigar filler feed construction in accordance with the invention;

Fig. 2 is a partial end elevation of Fig. 1 showing the feed control mechanism;

Fig. 3 is a detail view of the filler magazine

partly in section, illustrating the thin charge being separated from the filler supply;

Figs. 4, 5 and 6 are detail views showing the indicator in different working positions;

Fig. 7 is an end view of the indicator unit;

Fig. 8 is a detail view of the clutch control mechanism while the filler feed is incapacitated; and

Fig. 9 is a similar view thereof while the operation of the filler feed is being reinstated.

Referring to Figs. 1 and 2, the filler feed consists of a pedestal 10 mounted on the bed of the cigar machine, a bracket 11 being attached to pedestal 10 and supporting the feed table 12 and the driving pulleys of the feed belts 13, 14 and 15. A bracket 16 secured to the side of member 11 supports idler pulleys over which these feed belts are trained. The pedestal 10 and the bracket 17 fastened thereon each support one end of the drive shaft of the feed control mechanism as will be hereinafter described. Uprights 18 and 19 are mounted on top of bracket 11 and support the compressor foot 20 and its compactor 21, the corrugated cutter 22, the transfer platform 23, the transfer arm 24, the cam shaft 25 and the fulcrum 26 of the transfer arm.

The filler tobacco is laid lengthwise in the channel formed by the horizontal feed belt 13 and the two vertical feed belts 14 and 15. The horizontal belt 13 is driven by pulley 27 and guided by pulleys 28 and 29 and by pulleys, not shown, supported by the brackets 16. The belts 14 and 15 are driven by pulleys 30 mounted on member 11, and by pulleys, not shown, on an adjustable slide carried by brackets 16. The belt 14 is driven from a bevel gear 31, mounted on a shaft 32, in mesh with a bevel gear 33 on the vertical shaft 34. Shaft 32 is supported by pedestal 10 and a bracket 35 secured to said pedestal, an arm 36 extending from bracket 35 having a hub supporting the lower end of shaft 34 whose other end of the shaft is supported in a suitable bearing provided in bracket 11. The shaft 34 is provided with a gear 37 meshing with a gear 38 on shaft 39 of one of the pulleys 30, this latter shaft being also equipped with a bevel gear 40 in mesh with a bevel gear 41 mounted on a shaft 42 supported in bracket 11. A bevel gear 43 mounted on shaft 42 meshes with a gear 44 on vertical shaft 45 and imparts motion to the other pulley 30.

In each cycle the stream of filler tobacco advances between a pair of guides 46 and is directed beneath the hinged compactor 21. While the motion of the stream of filler tobacco is halted it is subjected to the action of compactor 21 and a plate 47 attached to compressor foot 20 which compress it sufficiently to give it sufficient body to sustain the subsequent operations. The compressor is suspended from links 48 supporting a rod and pivoted on a bracket 50 secured to upright 19, said links being operated to raise and lower the compressor by an arm 51 connecting to a slide 52. Said slide is mounted in ways provided in upright 19 and is actuated up and down by a cam lever 53 fulcrumed on a stud 54 and controlled by a cam 55 on shaft 25, through a cam roller 56 on said lever. The hinged compactor is suspended from a link 57 connected to a horizontal bar 58 having its other end supported by the rod 49. The cam 55 in this manner also actuates the compactor 21. The arm 53 and slide 52 also operate the corrugated cutter 22 which is mounted on a frame 60 attached to slide 52. This construction is similar to that shown

in the patent to P. Peterson, granted February 27, 1934, 1,948,594.

The platform 23, upon which the leading end of the filler stream rests, is in its horizontal position at the time the cutter 22 descends to sever a bunch length from the tobacco column. The platform 23 mounted on an arm 61 is lowered by a link connection 62, Fig. 3, operated by a cam (not shown) into an inclined position as indicated by dot and dash lines. The platform 23 in its inclined position rests on a horizontal gate 63 which projects over the space between plates 64 and 65 and a swinging rake 66 having a plate 67 draws off the severed bunch length. The plates 64 and 65 together with a plate 68 constitute a filler supply magazine of the type disclosed in my Patent No. 2,255,054, dated September 9, 1941, in association with a cross feed of the type described above. The plate 67 of rake 66, suitably beveled for effective operation on both the platform 23 and gate 63, forces the filler section or bunch length into position directly over the space between the magazine side walls 64 and 65. In doing so, the rake advances plate 67 to a position of alignment with the magazine wall 64 which it occupies when the filler supply is compacted and then returns to its original position.

The rake 66 is actuated by an arm 24, Fig. 1, which is pivotally connected thereto and mounted on fulcrum 26 and derives motion from a cam 69 on shaft 25 which engages a cam roller 70 carried by an arm 71 secured to fulcrum 26. Member 26 is provided with an arm 72 supporting a counterweight 73 which tends to hold roller 70 in engagement with its cam whereby swinging motion is imparted to rake 66 to advance the bunch length on to the gate 63. Further description of the construction of the platform 23 and the rake 66 is deemed unnecessary as reference may be had to my prior Patent 2,156,284 for a complete disclosure of the details thereof.

With the filler section or severed bunch length in position on the gate 63 in the filler magazine, the pressure plate 75 and its integral resilient pad 76 descend and bear against the filler section resting on the gate. Simultaneously, a cam operated link (not shown) is raised, allowing an elevator 77, Figs. 1 and 3, to travel upward and the compressed filler section now held by gate 63 which lies above any surplus filler that has been brought up by a bottom plate 78 of the elevator, is released and the entire filler supply is lowered into position for the separation of a thin charge after the retraction of gate 63.

Inasmuch as the movement of the elevator is controlled in the same manner as described in my co-pending application heretofore mentioned, a more detailed description of the same is deemed unnecessary.

The pressure plate 75 is secured to a slide 79, Figs. 1 and 3, mounted in a groove provided in a bracket 80 and retained therein at its lower end by a plate 81. The bracket 80 bolted to the side of plate 65 provides a bearing for a shaft 82 which is fixed a lever 83, the other end of shaft 82 being supported in a bracket 84 fastened to the upright 19. A link 85 operating the slide 79 is pivoted to the lever 83 and to the slide 79 at 86. An arm 87, fixed to one end of the shaft 82 and to which a rod 88 is suitably mounted to carry an adjustable weight 89, is actuated by a pin and slot connection 90 to a cam operated link 91. The shaft 82 at its other end is connected to the feed control mechanism which pre-

vents feeding of additional filler when a certain surplus exists in the magazine, said control operating in a manner to be presently described.

With the filler supply in position and the gate 63 retracted as heretofore mentioned, a separator plate 95 and a vibrating knife blade 96 which is supported by arms 97 moves into engagement and separates a thin charge from the filler supply. Since the remainder of the charge separating mechanism consists of the same parts as in my co-pending application, showing of the same is omitted in the present disclosure.

When the thin charge has been separated, a plunger plate 98 with its plunger 99 travels between the separating plate 95 and the magazine bottom plate 78 to force the separated thin charge into a pocket 100 of a charge transfer generally indicated at 101 of Fig. 3. After loading of the charge transfer, the plunger plate 98 and plunger 99 are retracted and the magazine bottom plate 78 is elevated to a suitable distance from the separating plate 95 so that the remaining filler supply will be supported after the separating mechanism has retracted. The above mentioned transfer 101 delivers the filler charge on to a rolling apron, not shown, of well known construction which rolls the filler about a binder leaf to form a cigar bunch.

The cross feed mechanism (Figs. 1 and 2) is intermittently driven by a ratchet 105 mounted on the shaft 32 through the engagement therewith of a pawl 106 pivoted on a stud 107 at one end of a lever 108. Lever 108 on the shaft 32 is oscillated by an arm 109 connected thereto by pin 110 and actuated by a pin 111 slidably mounted in a slot 112 and carried by a crank 113 on the shaft 114. A stop screw 115 mounted on the arm 109 limits the lost motion of the pin 111 and permits adjustment of the feeding stroke. A sprocket 116 loose on the shaft 114 is driven by a chain 117 from a sprocket (not shown) on the main shaft of the machine. An adjustable screw 118 is secured in a bracket 119 attached to the cross feed bracket 16 to limit the travel of arm 109 and the pawl 106, the arm 109 being held against screw 118 by a tension spring. A stop pin 120 is provided on the pedestal 10 for limiting the travel of the arm 109 with pawl 106 in the opposite direction.

A lever 121 is operated by an arm 122 on the shaft 82 through a link 123 pivoted to the crank arm 122 at 124 and secured to lever 121 by a pin and slot connection 125. A forked adjusting lever 126 is mounted on the shaft 82 and is provided with adjusting screws 127 which bear against a pin 128 on arm 122, and by adjusting the relative position of screws 127 the stroke of link 123 may be varied. Lever 121 is mounted on a stud 129 supported by pedestal 10 and operates an arm 130 in engagement with a latch arm 131 pivoted on a stud 132 of member 10. The engagement of members 130 and 131 is normally maintained by a spring 133. A resetting arm 134 which may be integral with 131 is provided to be engaged by a roller 135 carried on one end of a rotating arm 136 fixed to sprocket 116. The opposite end of arm 136 supports a driving arm or pawl 137 carrying a roller 138 at one end and constructed at its other end to engage and drive a disk 139 integral with a sprocket 140 fastened on shaft 114. When the sprocket 140 rotates it drives a chain 141 running over a sprocket 142 fixed on cam shaft 25 and over a take-up sprocket 143 and an idler sprocket 144 on stud 129.

With a sufficient supply of filler tobacco stored

in the magazine formed by the walls 64 and 65, the arms 130 and 131 will remain engaged as seen in Figs. 2 and 8, permitting the roller 138 of arm 137 to be depressed by the surface 145 of arm 131 whereby the recess 146 of arm 137 will be disengaged from a tooth 147 inserted in disk 139 and thus the disk will remain stationary and no motion will be imparted to sprocket 140 and shaft 114, ratchet 105 or their co-acting members, thereby rendering the feed-in belts, compressor members and corrugated cutter inoperative. As the filler supply in the magazine dwindles, the pressure plate 75 is caused to descend deeper and deeper into the magazine causing the weighted arm 87 to turn shaft 82 whereby the link 123 is depressed bringing the upper end of its elongated slot into engagement with pin 125, thus forcing arm 121 downward whereby arm 130 will ascend and permit the spring 133 to disengage arm 131 therefrom and pull the free end of lever 131 against a shoulder on lever 130 and thus move the reset arm 134 into the path of the roller 135. The relative movement of said arm is limited by a stop pin 148 in arm 131 which abuts an extension 149 of a plate 150 secured to arm 130. With the arm 131 released, it is in a position out of the path of the oncoming roller 138 whereby the recess 146 of pawl 137 will engage tooth 147 and impart motion to its disk 139 and sprocket 140 and thereby driving ratchet 105, thus setting the feed-in belts, compressor and corrugated cutter in action. The rotation of arm 136 will bring its roller 135 into engagement with reset arm 134 and move arm 131 sufficiently to re-engage its co-acting arm 130, and if sufficient tobacco has been delivered to the magazine this engagement of the arms will interrupt the drive of disk 139. If more tobacco is needed the arm 131 will again be pulled by spring 133 against the shoulder of arm 130 and the disk 139 will continue to turn until link 123 has descended enough to reset arm 130 to its original position.

Referring to Figs. 4 to 7, an indicator mechanism which forms the subject matter of my divisional application, Serial Number 418,755, filed November 12, 1941, and is operated by the compressor foot is disclosed. This unit consists of a bracket 155 which is secured to the compressor plate 47, the upper portion of the bracket being provided with a stud 156 to which is fastened a trigger 157. Between the bracket and trigger is placed a fibre washer 158 which together with a spring 159 and lock nuts 160 tend to frictionally hold the trigger in position. A bracket 161 is secured to a guard 162 which partly encloses the feed belt 14, this bracket at its base being provided with a cut-out 163 wherein the bracket 155 is free to move up and down. A stud 164 supported in a hub 165 of bracket 161 carries a pointer 166 adapted to register with an indicator plate 167 attached to upright 18. A fibre washer 168 placed between bracket 161 and pointer 166 together with a spring 169 and lock nuts 170 is provided to frictionally hold the pointer stationary. Bracket 161 is equipped with a stop pin 171 which resets trigger 157 as the compressor plate 47 moves to its up-position. The butt of the pointer carries two studs 172 and 173 adapted to be engaged by the trigger 157.

Referring to Fig. 4, the compressor 47 is shown in its up-position with the trigger 157 abutting stop pin 171, and as the compressor descends the base of the trigger engages the stud 172 and

swings pointer 166 to its starting position seen in Fig. 5. It is well to mention at this time that the frictional contact of the pointer is adjusted to give more freely than the trigger, so that said pointer will be moved by the latter and indicate to the operator whether or not the tobacco is being fed into the feed channel at the correct height. As the compressor continues to descend and press the tobacco in the channel, the base of the trigger is caused to engage stud 173 and gradually swing the pointer 166 towards the indicator plate 167. When the correct amount of tobacco is fed into the feed channel, the compressor in pressing it to the desired density will move pointer 166 into registration with the apex of plate 167 as seen in Fig. 6. If too much tobacco is fed into the feed channel, the density of the tobacco will render the compressor inoperative before reaching its proper level and stop the indicator to the right of the apex of plate 167. If too little tobacco is fed into the channel the compressor will descend below its proper level and the pointer 166 will stop to the left of the apex of plate 167. Regardless of where the pointer may be stopped, it will remain in that position while the compressor ascends to reset the trigger by means of stud 171. In this manner, the operator may still glance at the indicator to ascertain if the proper height of filler tobacco is being fed.

It may be noted that the operation of the filler feed is incapacitated prior to the interval during which the tobacco stream is advanced and while the compactor is in a raised position clear of the tobacco stream, and reinstated at the same portion of the machine cycle. The clutch for this purpose has a further advantage due to the illustrated construction in that there will be no running ahead of the driven member of the clutch relative to its driving member under the influence of the momentum of the weighty corrugated cutter or other parts of the filler feed. Since the front and rear faces of the insert 147 of the driven member 139 are engaged by the side walls of the recess 146 in the driving arm 137, the running ahead of the driven member will be prevented. To facilitate the engagement of the recess 146 with the insert 147 the portion of arm 137 immediately behind the recess rides on the circular portion of the periphery of the disk 139, and, unless it is swung upwardly by the engagement of roller 138 with the arm 131, will ride on to the flattened portion of disk periphery wherein the insert 147 is set. Then the portion of the inner face of the arm 137 ahead of the recess 146 which clears the exposed rear corner of insert 147 while the portion of arm 137 behind the recess is riding off the circular part of the periphery of disk 139 as shown in Fig. 9, is pulled into engagement with the outer face of insert 147 by a tension spring 180 connecting the arm 137 to arm 136 and rides thereover until the forward wall of recess 146 reaches the forward side of insert 147. Then the recess snaps into engagement with the insert and operation of the filler feed is resumed.

What is claimed is:

1. In a cigar machine filler feed, the combination with a member for intermittently advancing a stream of tobacco, of a cutter for separating bunch lengths from said stream of tobacco while said member is at rest, a continuously driven member, mechanism for driving said tobacco advancing member for a predetermined interval in each machine cycle and actuating said cutter, a clutch

normally operative to connect said mechanism to said continuously driven member to cause feeding of the filler stream and severance of bunch lengths therefrom, and means for disengaging said clutch from said mechanism prior to the beginning of said predetermined interval to stop said tobacco advancing member and the operation of said cutter for one machine cycle.

2. In a cigar machine, the combination with a measuring chamber, of a filler feed intermittently operating to advance a stream of tobacco into said chamber in successive cycles of the machine, mechanism normally operating to compact the tobacco in said filler feed in each cycle of the machine, means for compacting the tobacco in said chamber, said mechanism including a rigid compactor movable vertically into position to engage and compact said stream, and a device actuated by said means and controlling said filler feed and mechanism and operating to incapacitate them for one cycle in the event of an oversupply of tobacco in said chamber, whereby the tobacco in said filler feed will not be compacted again by said compactor during the cycle that the filler feed is incapacitated following the presence of an oversupply of tobacco in said chamber during the operation of said compacting means.

3. In a cigar machine, the combination with a measuring chamber, of a filler feed intermittently operating to advance tobacco into said chamber in successive cycles of the machine, mechanism normally operating to perform a separating operation upon the tobacco in said filler feed in each cycle of the machine, means to compact the tobacco in said filler feed, means for compacting the tobacco in said chamber, and means operating said filler feed and mechanism and controlled by said last-named compacting means to incapacitate said filler feed and mechanism for one cycle in the event of an oversupply of tobacco in said chamber, whereby the tobacco in said filler feed will not be again subjected to the operation of said mechanism during the cycle that the filler feed is incapacitated following the presence of an oversupply of tobacco in said chamber during the operation of said compacting means.

4. In a cigar machine filler feed, the combination with a member for intermittently advancing a stream of tobacco, of a compactor operating to intermittently descend while said member is at rest and compact the tobacco stream thereon, a continuously driven sprocket, mechanism for driving said member for a predetermined interval in each cycle and actuating said compactor, a clutch normally operative to connect said mechanism to said sprocket to cause feeding of the tobacco stream and compaction thereof, and means for disengaging said clutch prior to said predetermined interval and while said compactor is in a raised position.

5. In a cigar machine, the combination with a filler feed for periodically advancing a continuous stream of tobacco; of means for separating sections from said stream; mechanism for assembling the separated sections to form a column of tobacco and compacting said column; a device for compacting said stream while it is at rest; and means controlled by said mechanism for simultaneously interrupting the operation of said filler feed, said device and said means for separating sections when the amount of tobacco in said column exceeds a predetermined volume.

6. In a cigar machine, the combination with a filler feed for periodically advancing a continuous stream of tobacco, of means for separating

sections from said stream while it is at rest, mechanism for assembling the separated sections to form a column of tobacco and compacting the same, and means controlled by said mechanism for simultaneously interrupting the operation of said means for separating sections and said filler feed when the amount of tobacco in said column exceeds a predetermined volume.

7. In a cigar machine, the combination with a filler feed for periodically advancing a continuous stream of tobacco, of a device reciprocable

5 vertically into position to engage and compact said stream while the same is at rest, mechanism for separating sections from said stream, mechanism for assembling the separated sections to form a column of tobacco and compacting the column, and means controlled by said assembling and compacting mechanism for simultaneously interrupting the operation of said filler feed and said device when the amount of tobacco in said column exceeds a predetermined volume.

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