

Dec. 29, 1942.

J. P. DURNING

2,306,380

FEED FOR CIGAR BUNCH MACHINES

Filed Aug. 27, 1936

3 Sheets-Sheet 1

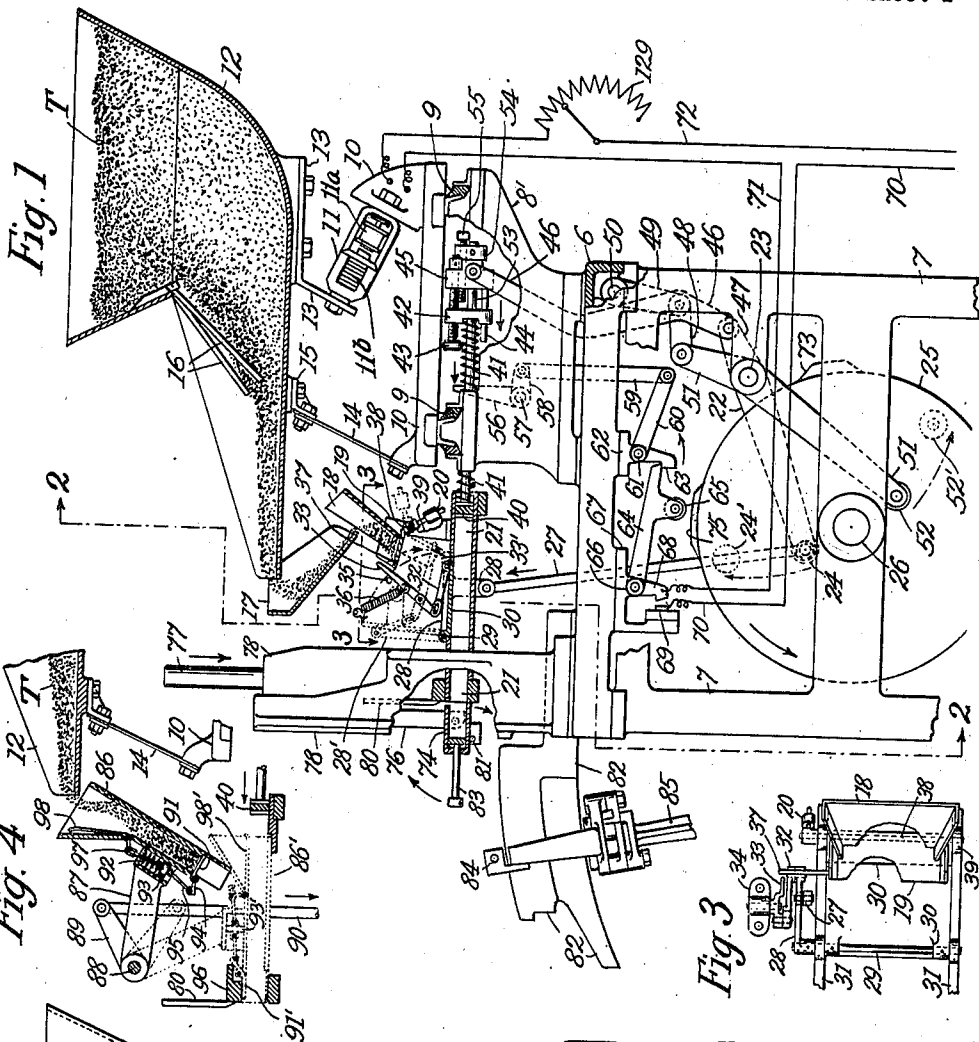


Fig. 4

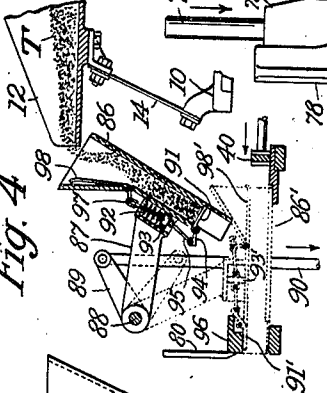


Fig. 3

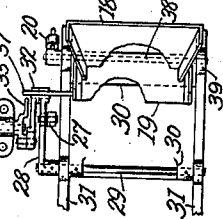
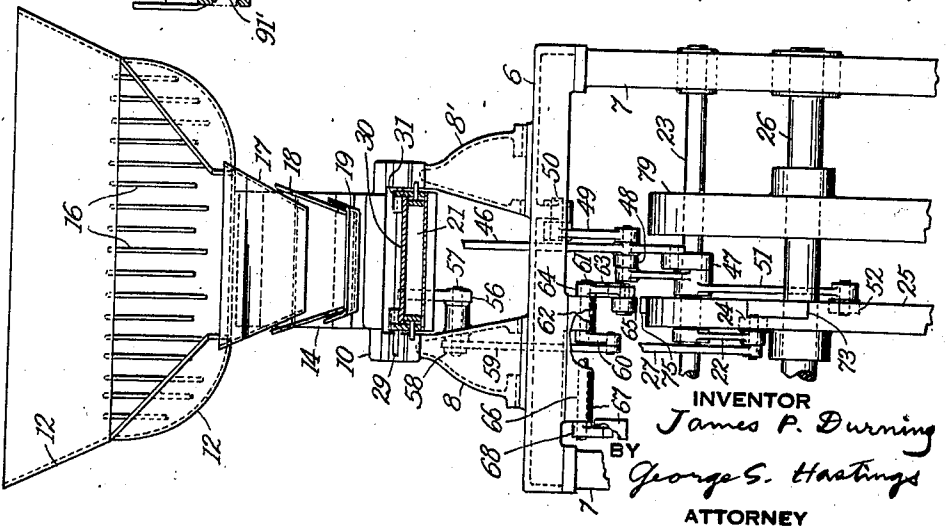


Fig. 2



INVENTOR
James P. Durning
BY
George S. Hastings
ATTORNEY

Dec. 29, 1942.

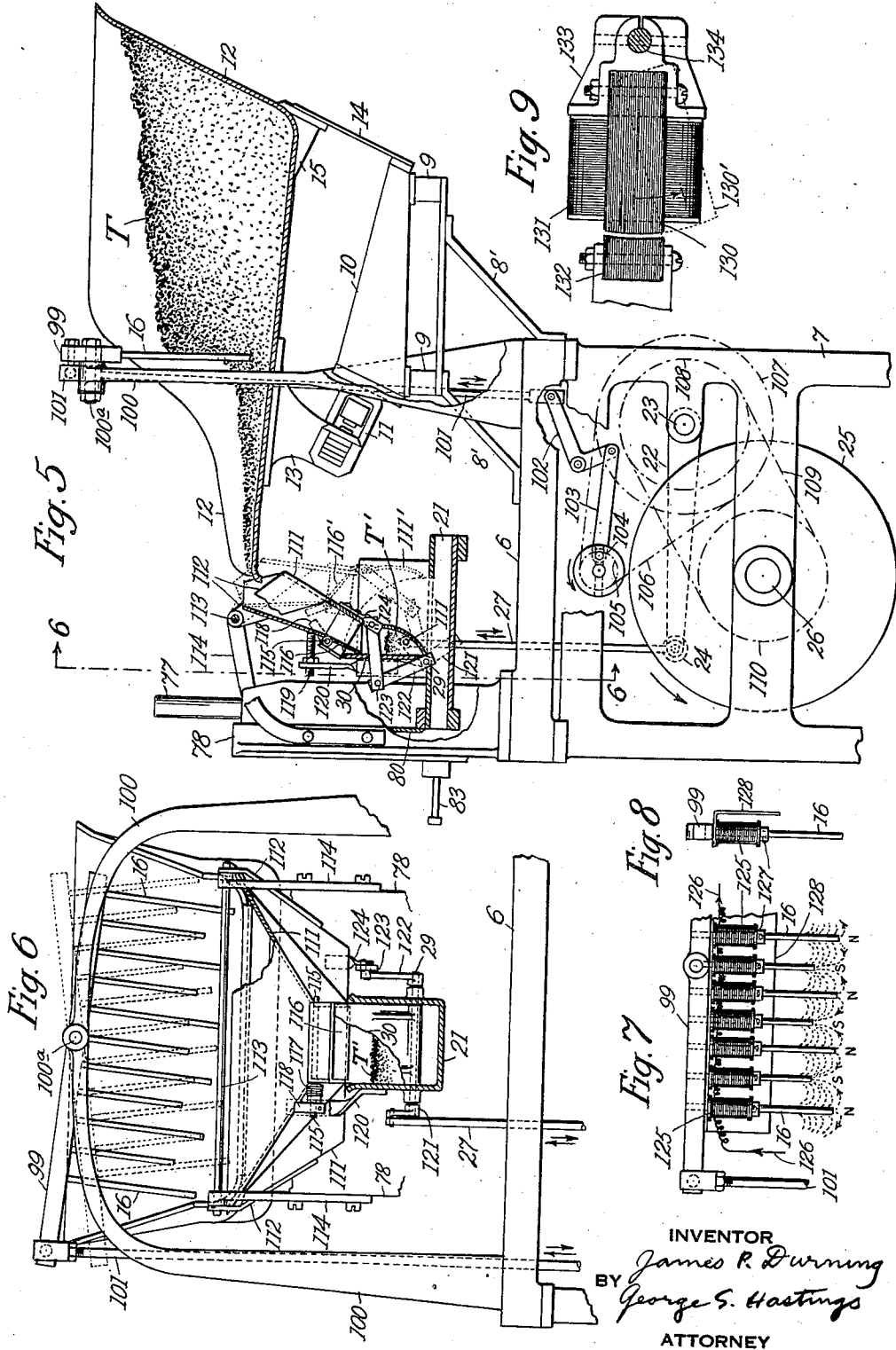
J. P. DURNING

2,306,380

FEED FOR CIGAR BUNCH MACHINES

Filed Aug. 27, 1936

3 Sheets-Sheet 2



INVENTOR
James P. Durning
BY George S. Hastings
ATTORNEY

Dec. 29, 1942.

J. P. DURNING

2,306,380

FEED FOR CIGAR BUNCH MACHINES

Filed Aug. 27, 1936

3 Sheets-Sheet 3

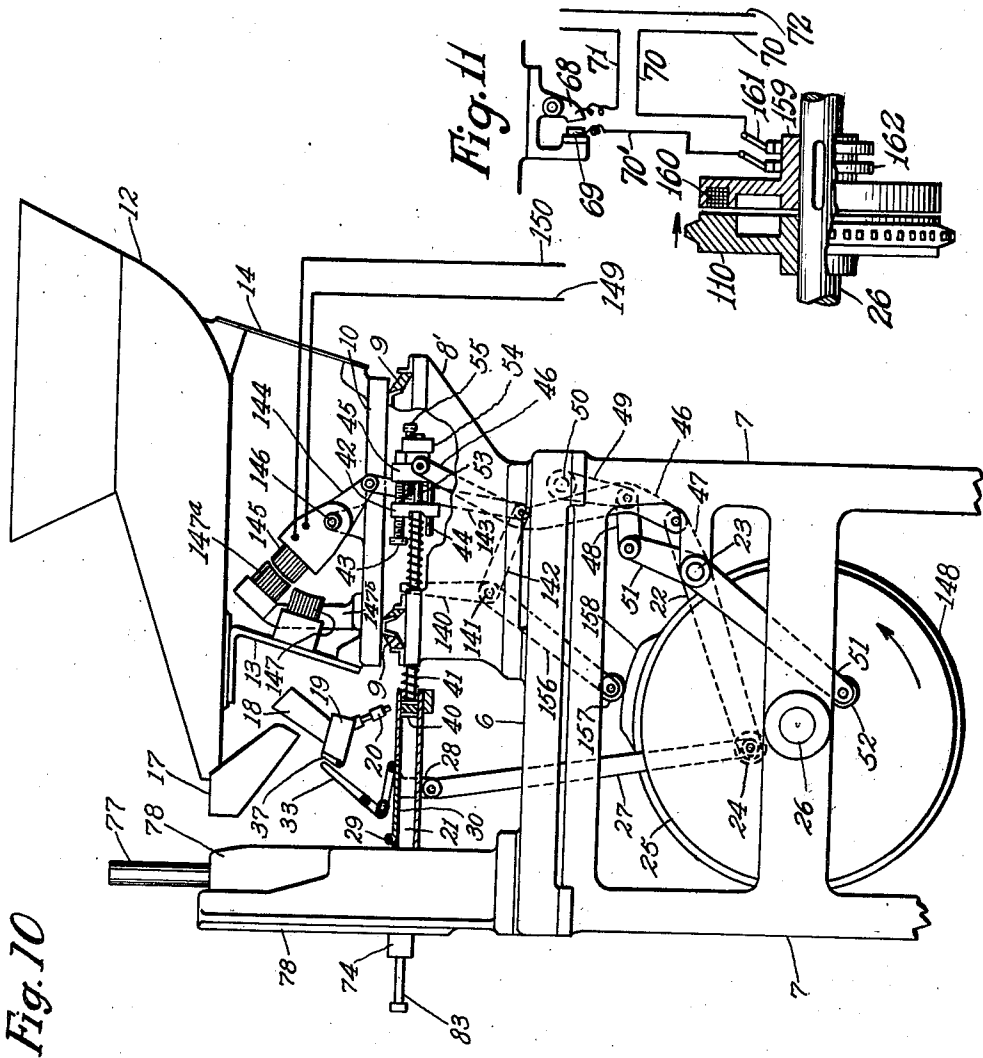


Fig. 10

Fig. 11

INVENTOR
James P. Durning
BY
George S. Hastings
ATTORNEY

UNITED STATES PATENT OFFICE

2,306,380

FEED FOR CIGAR BUNCH MACHINES

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

Application August 27, 1936, Serial No. 98,188

25 Claims. (Cl. 131—21)

This invention relates to cigar machines, and more particularly to feeding devices for cigar bunch machines wherein tobacco is fed into mechanism which delivers it into bunch forming machines.

While this device is adapted to feed any kind of tobacco, it finds particular adaptability in the feed of so-called scrap tobacco or short filler tobacco which contains varying proportions of long and short leaves. In feeding this type of tobacco to a bunch forming machine it has always been a problem to prevent the separation of short leaves from the long; otherwise cigars of varying uniformity will be produced.

It is therefore the chief object of this invention to provide a machine which will feed tobacco of any type to a bunch forming machine and during such feed substantially prevent the separation of leaves because of differences in size.

It is a further object of the invention to provide mechanism for feeding scrap tobacco in a stream into a bunch forming machine in which the long and short portions constituting the material fed do not separate but maintain a uniform distribution as the scrap is fed to said machine.

In order to accomplish this object there has been provided a hopper containing a supply of tobacco, and means for vibrating said hopper to cause tobacco to flow in a uniform stream from the hopper into a device which routes the tobacco being fed into the bunch machine. By reason of this construction a feed having great compactness, and simplicity is furnished. Because of the arrangement of parts it can be placed low on the machine and be easily accessible for refilling with a minimum of effort on the part of the operator.

It is a further object of the invention to provide a tobacco feeding device having a hopper and an electric vibratory device connected thereto whereby the hopper may be vibrated to feed tobacco to a bunch machine whenever the latter requires additional tobacco.

It is a further object of the invention to provide mechanism controlled by the charge measuring mechanism of the bunch machine for activating a vibratory device for feeding tobacco from a hopper connected thereto whenever tobacco is needed for the operation of the machine.

It is a further object of the invention to furnish a tobacco feeding surface over which distributed tobacco may be fed into a bunch machine by means of a vibrating mechanism attached to said surface.

Another object is to provide a system whereby foreign objects of a magnetizable nature may be removed from tobacco prior to its introduction into a cigar machine.

5 Another object is to provide a series of members which limit the quantity of tobacco fed into the bunch making machine, and also to render said members capable of removing foreign materials from said tobacco. Under some conditions of operation it may be desired to cut down the amplitude of vibration during the feeding of tobacco to vary the amount fed, hence it is an additional object to provide mechanism, either mechanical or electrical for performing that
10 function.

15 It may also be desired to maintain a substantially constant quantity of tobacco in the compression chamber of the bunch machine at all times during its operation in order that cigars of greater uniformity may be produced. Hence, it is a further object of the invention to provide mechanism for accomplishing that purpose.

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

25 In the accompanying drawings which show the improved filler feed as applied to a modern scrap bunch cigar machine, such for instance, as disclosed in U. S. Patent No. 1,915,525 to F. C. Gladeck and J. P. Durning, June 27, 1933,

Fig. 1 is a side elevation of the improved filler feed mechanism;

30 Fig. 2 is an end elevation of the same, on line 2—2 of Fig. 1;

Fig. 3 is a top view from line 3—3 of Fig. 1;

Fig. 4 is a partial side elevation showing a modification of the feed delivery;

40 Fig. 5 is a partial side elevation similar to Fig. 1, showing another modification of the feed delivery and also a vibratory arrangement of the hopper outlet screen;

Fig. 6 is an end elevation of the mechanism shown in Fig. 5;

45 Fig. 7 is a front elevation of the hopper outlet screen showing an arrangement for magnetizing the screen rods for the purpose of picking up nails and other iron objects accidentally present in the tobacco;

Fig. 8 is a side elevation of the arrangement shown in Fig. 7;

Fig. 9 is a detail side view of an adjustable vibrator unit;

55 Fig. 10 is a partial side elevation similar to

Fig. 1, showing means for controlling the vibrating mechanism of the hopper; and

Fig. 11 is an end view partly in section of a modified drive for operating the screen of Figures 5 and 6.

Referring to Figs. 1, 2 and 3, the bed plate 6 of the cigar machine, which is carried by end frames 7, supports stands 9, and a plate 10 whereon is mounted a vibrating device, which may be of a mechanical or electric type. In the structure illustrated this device comprises an electric vibrator 11 of known construction, which, however may be of the type shown in U. S. Patent to Flint 1,846,326, issued February 23, 1932. To the armature of this vibrator is mounted a hopper 12 preferably formed as shown in Figs. 1 and 6, and provided with an elongated feeding surface over which tobacco is fed in a uniform stream to the bunch making machine. It is to be noted that hopper 12 may be rigidly connected to the vibrator by means of a bracket 13, and resiliently supported, as by a leaf spring 14, secured thereto by a bracket 15. The mountings of hopper 12 may be interchanged, if desired, as shown in Fig. 5, in which case vibrator 11 is affixed to the discharge end of the hopper. Hopper 12 is also preferably equipped with screening rods 16 which limit the flow of tobacco T to the proper amount.

Due to the action of the vibrator, which is provided with a coil 11a and an armature 11b, and its effect upon materials fed from hopper 12, it is not necessary to mount said hopper so that its feeding surface is limited to a horizontal plane only. The feeding action of the device imparts a series of uniform hopping movements to the material while the vibrating surface maintains a uniform oblique rectilinear movement in the particular plane in which it is mounted. However, for best results, it has been found that the vibrator should be mounted at an angle, preferably an acute angle, to the plane of the feeding surface; see Figs. 1 and 5. By means of this mechanism a positive forward feed of tobacco is effected even if the surface over which the tobacco moves is tilted somewhat below or above the horizontal. It will be seen that the vibratory action of the hopper tends to move the mass of tobacco confined therein up against the rakes 16 so that when the hopper is vibrated the tobacco moves beneath the rakes and along the elongated portion of the hopper for discharge to the charge compression chamber. In the modification shown in Figure 6 in which rakes 16 are mounted for transverse movement back and forth across the hopper, it will be seen that when this action takes place the rakes in moving across the face of the tobacco confined thereby will separate tobacco from the face of the mass which is released by this action and joins the stream of tobacco flowing to the chute 17. In this manner the entire face of the tobacco bearing against the rakes will be subjected to a separating action or effect which results in greater uniformity of feeding with a minimum of separation of long from short particles and vice versa.

When the vibrator is operating, the tobacco from the hopper is discharged into a stationary chute 17 which delivers it into a second chute 18 closed by a pivoted chute 19 which is held against the bottom of chute 18 by means of a weight 20. The tobacco charge in chute 18 is controlled by the quantity of tobacco already present in the horizontal compression chamber

21 of the machine in that no tobacco is fed into the delivery chute until the quantity of tobacco in said chamber reaches a point where trip mechanism hereinafter described functions to set the vibratory feed into motion again. The tobacco fed to chute 18 is delivered to the said chamber at the proper moment by the action of a cam lever 22 fulcrumed on a shaft 23 and provided with a roller 24 tracking a cam 25 on cam-shaft 26. The lever 22 is connected by a rod 27 to an arm 28 fast on a shaft 29 to which is pinned the cover plate 30 of chamber 21, the shaft 29 being supported by the side walls 31 of the said chamber, Fig. 3.

To the arm 28 is pivoted a slotted lever 32 which engages a pin in an arm 33 swingably supported in a bearing 34 and held against a stop 35 by a spring 36. From the forward end of chute 19 a pin 37 extends laterally into the path of the end of arm 33. When roller 24 is moved by cam 25 into its outmost position 24', rod 27 raises the arm 28 into position 28', thereby opening the cover 30 of chamber 21 and at the same time by means of lever 32 turns arm 33 into the dotted position 33', causing the same to engage pin 37 and thereby to depress chute 19 which deposits its tobacco charge into the then open chamber 21. Upon the return of rod 27, spring 35 pulls arm 33 back into its starting position against stop 35, thus permitting weight 20 to restore chute 19 to its closing position by rotation on the shaft 38, which is supported by bearings 30 on the side walls 31.

After the cover 30 has then again been closed by the downward movement of rod 27, the charge-forwarding plunger 40 which is tensioned, to produce the desired tobacco density in chamber 21, by a spring 41 adjustable by a socket 42 slidable by means of a screw 43 on a rod 44 in a block 45, is advanced by a lever 46 controlled, through links 47 and 48 and an arm 49 mounted on a stud 50 in bed plate 6 to produce parallel motion, by a two-arm cam lever 51 having a roller 52 in engagement with a track of cam 25. The rod 53 of plunger 40 at its end has a laterally projecting bracket 54 carrying a screw 55 parallel to plunger rod 53, the screw 55 being engageable with an arm 56 fast on a stud 57 carried in a bearing of stand 8.

When the screw 55 engages the arm 56 as the cam roller 52 moves towards its outer position 52', the stud 57 turns an arm 58 thereby raising a link 59 which rocks a lever 60 swinging a stud 61 in a bracket 62 on bed plate 6. To the stud 61 is fastened an arm 63 provided with a nose upon which rests a lever 64 carrying a roller 65. Lever 64 is fast on a stud 66 mounted in a bracket 67, the latter stud carrying a contact arm 68 engageable with a stationary contact 69 on bracket 67. Thus, as soon as the plunger 40 has advanced to the point at which screw 55 engages arm 56, the arm 63 is tripped by the link 59, permitting the lever 64 to drop, thereby closing the contact 68, 69 and energizing the electric vibrator through the wires 70, 71 and 72.

The hopper 12 will then discharge tobacco into the chute 17 until a cam piece 73 attached to the circumference of cam 25 engages the roller 65, thereby raising the lever 64 into engagement with arm 63 and thus breaking the contact 68, 69. In case there is a sufficient quantity of tobacco left over in chamber 21 to completely fill the measuring chamber 74 before the plunger 40

has advanced to the point of engagement between screw 55 and arm 56, the remainder of the motion of lever 46 is absorbed by the spring 41, and the lever 64 will remain in engaged position, thus no additional tobacco will be fed during that cycle of the machine.

At the end of each cycle, a cam piece 75, somewhat lower than cam piece 73, is in registration with roller 65 thereby preventing contact of arm 68 during the stoppage of the machine in case the lever 64 is accidentally tripped while the machine is not operating.

When the chamber 74, which is pivoted to an arm 76, has been filled, the descent of a vertical shaft 77 supported in a frame 78 and operated by a cam 79 on shaft 26 causes the knife 80 to cut the charge, whereupon the further descent of arm 76 causes the chamber 74 to swing on a stop pin 81 and to be depressed onto the rolling table 82. There, the charge is delivered onto a rolling apron by the depression of a plunger 83 in chamber 74, which at that time is vertically positioned, whereupon a rolling pin 84 carried by a cam-operated arm 85 rolls the tobacco-charge into a binder, thus forming a cigar bunch. Since the action of the vibrating hopper produces a uniform delivery of the scrap mixture T, and since the tobacco density is continuously regulated by the automatic action of plunger 40, all bunches delivered by the rolling pin 84 are of uniform, homogeneous quality.

In Fig. 4, a modification of the feed delivery is shown. The vibrating hopper 12 discharges into a swinging chamber 86 carried by an arm 87 mounted on a shaft 88 oscillated by a crank 89 operated through a rod 90 from cam lever 22. In its delivery position 86' shown in dotted lines, the chamber 86 takes the place of chamber 21 in Fig. 1, the plunger 40 entering the same to eject the charge directly into the measuring chamber 74. In order to control the operation of the vibrator 11 when used in conjunction with chamber 86, cam 75 will be of such a length that when arm 56 is engaged by plunger 43 and lever 64 is freed from engagement with latch 63, contacts 68 and 69 will be held open until chamber 86 has been moved from the dotted line to the full line position of Fig. 4, whereupon cam follower 65 runs off cam 75, and the hopper 12 is set into vibration until cam follower 65 engages cam 73, and lever 64 is lifted into latching engagement with latch 63. In its receiving position, the bottom of chamber 86 is closed by a cover 91 hinged to its top wall and held in closed position by a spring 92 pressing against a plunger 93 in a chamber of arm 87, the lower face of the said plunger being connected to an arm 94 extending from cover 91, by a link 95. On descending by the action of rod 90, the arm 94 engages with an edge of ledger bar 96 of knife 89, thereby opening the cover 91 into position 91' in alignment with the top wall of chamber 86.

The upper face of plunger 93 is connected by a slotted link 97 with a swingable wall 98 mounted within chamber 86, the spring 92 holding the wall 98 in its open position shown in full lines when the arm 94 is free. But when the arm 94 is pushed back by its engagement with bar 96, the link 97 turns the wall 98 into the dotted position 98' in alignment with the top wall of chamber 86, thus forming a continuous rectangular chamber 86' for the travel of plunger 40.

In the modification shown in Figs. 5 and 6, the screen rods 16 are mounted in a bar 99 pivoted

on a stud 100a in a U-shaped frame 100, suitably mounted on plate 6, one end of bar 99 being joined to a connecting rod 101 to which reciprocating motion is imparted through a bell crank lever 102 and link 103 by an eccentric 104, thereby rocking the bar 99 and rods 16 to and from the dotted position shown in Fig. 6. This action of the rods, tends to level off the tobacco being fed and effects a more uniform feed by their limiting and spring action because the vibratory movement of the hopper tends to move the tobacco in the hopper against the rods, which thereby govern the flow of the tobacco mass in the hopper and allow it to be released and pass into the stream of tobacco moving over the feeding surface portion of the hopper. The eccentric 104 is rotated by a sprocket 105 driven by a chain 106 from a sprocket 107 on shaft 23 which has a sprocket 108 driven by a chain 109 from a sprocket 110 on cam shaft 26. If it is desired to rock the bar 99 continuously while the tobacco-feed is in operation, the sprocket 110 is fixedly mounted on shaft 26, as shown, but if it is desired to agitate the rods 16 only during the actual feeding period of the hopper, that is, while the vibrator is in action, then the sprocket 110 can be connected to shaft 26 through a suitable clutch 159, which may be of the type shown in Fig. 11. According to the arrangement shown in Fig. 11, sprocket 110 will be loosely mounted on shaft 26. Whenever switch members 68, 69 are closed, by means of contacts 161 engaging rings 162 on the driven portion of the clutch 159 keyed to shaft 26, magnets 160 will be energized to cause the drive to be transferred to the shaft 26 for the duration of the vibratory period of the vibrator. If desired, any other suitable type of clutch can be used, such for instance, as a mechanical clutch.

The tobacco T in Fig. 5 is discharged into a chute 111 suspended by side arms 112 from a horizontal shaft 113 supported by brackets 114 attached to frame 78. Within the chute 111 is mounted, on a shaft 115, a trap plate 116 held by a torsion spring 117 against the rear wall of the chute. To one end of shaft 115 is affixed a lever 118 adapted to engage with a stop screw 119 supported by a bracket 120 attached to one of the side walls of compression chamber 21. The chute 111 is swung back and forth in synchronism with the cover 30 of chamber 21 by a lever 121 on shaft 29, the latter shaft having an arm 122 connected by a link 123 with a lug 124 on the rear wall of chute 111. When the cover 30 is open for the reception of a tobacco charge, the chute is in the position shown in full lines in Fig. 5, in which position the lever 118 rests against stop 119, thereby opening the trap 116 so that the tobacco charge T' will drop into the space between the rear wall of chute 111 and the open cover 30. When, however, the cover closes by the downward pull of rod 27 due to the action of cam lever 22, the chute 111 is swung by arm 122 into the dotted position 111' in which the trap 116' is closed by the spring 117, the charge T' having dropped into chamber 21 as soon as the chute cleared the cover 30 at the commencement of the closing motion.

The hopper outlet screens as shown in either Figs. 1 and 2 or 5 and 6, may be made use of to pick up nails, small pieces of iron and other magnetic objects which have found their way into the tobacco in curing or during transportation or subsequent handling. For this purpose, each of the rods 16 is provided with a solenoid

coil 125 fed by wires 126 from a lighting or power circuit, these coils being connected in series or in series-parallel and so arranged as to magnetize the rods 16 alternately to opposite polarities. In the apparatus disclosed in Figs. 5 and 6, coils 125 are secured in place against the bar 99 which preferably is made of iron to provide a good magnetic system by collars 127 of brass or other non-magnetic material, and are protected from contact with the more or less moist tobacco by a guard plate 128 of non-magnetic material held on the rods 16 by the coils. The opposite polarities of adjacent rods set up magnetic fields NS between their free ends, so that nails and other magnetizable objects present in the tobacco T will be attracted to the nearest rod and will be held thereon by magnetic attraction until removed by the operator.

In order to adjust the machine for feeding different quantities of tobacco and also prevent short particles from separating from the advancing stream, means are provided for adjusting the vibrations of the vibrator. The tobacco in the hopper is placed therein with the long and short particles mixed together. If the hopper is vibrated excessively, there will be a tendency of the smaller particles or short portions to work down to the bottom of the hopper and move out beneath the long particles which are positioned above them and are held back by the rods 16. Therefore, by inspecting the stream of tobacco flowing from the hopper during its feeding operation and adjusting the hopper's vibration to a point where the distribution of particles is substantially that required, the separation of the short from the long pieces can be held to a minimum, and the uniformity of flow of tobacco to the bunch rolling machine will be more satisfactory. In Fig. 9 there is shown one form of adjusting mechanism for a vibrator unit having an armature 132 of laminated construction, a core 130 of similar material and construction, and coils 131. The last two elements are affixed to a bracket 133 which is adjustably mounted upon a shaft 135. When a change in amount of material to be fed is required, bracket 133 is shifted on shaft 135 with the result that the lines of force are lengthened and the strength of the field is diminished accordingly thereby resulting in a change in stroke of the vibrator. If the vibrations are to be varied electrically, electrical control means, such as rheostat 129 (Fig. 1) can be placed in the control circuit.

In the embodiment shown in Fig. 10, the inward movement of the charge-forwarding plunger 40 brings the screw 55 into engagement with an arm 140 mounted on a stud 141, the stud 141 turning an arm 142 thereby raising a link 143 which actuates arm 144 integral with the adjustable magnet 145. The magnet 145 is mounted on a stud 146 supported in a lug extending from the plate 10. In the above described manner the magnet 145 is swung into registration with a movable armature 147, which constitutes the electric vibrator 145-147.

When the vibrator 145-147 is operating, the tobacco from the hopper is discharged into chute 17 which delivers the same into a second chute 18, which as previously described, directs the tobacco into a horizontal compression chamber 21. After the cover 30 of chamber 21 has closed, the charge-forwarding plunger 40 advances to the point at which screw 55 engages arm 140, which through its linkage swings the magnet 75

145 into a position predetermined by arm 40 in part or full registration with the movable armature 147. In this position the magnetic field passes either partly or entirely through the movable armature 147 and a varying or maximum vibrating motion of the unit is attained. The flow of current from line wires 149-150 energizing the vibrator 145-147 thereby imparts motion to hopper 12 which will continue feeding tobacco until a cam piece 158, attached to the periphery of a cam 148, encounters a roller 157 carried by an arm 156 secured to a stud 141. The tripping of arm 156, which occurs at the completion of each cycle of the machine, turns stud 141, whereby through the linkage, swings magnet 145 to its "out" position away from movable armature 147, thereby stopping the vibrating motion of hopper 12 and discontinuing the feeding of tobacco to chute 19. When the magnet 145 is in its non-vibrating or "out" position, as shown in Fig. 10, the magnet registers with the stationary armature 147a, attached to a bracket 147b carried by plate 10, and therefore the magnetic field passes entirely through the said stationary armature whereby no vibration will be imparted to the hopper 12.

By means of the arrangement above described, it is possible to control the quantity of tobacco fed to the compression chamber to such an extent that a substantially uniform amount is always present therein. This is a most desirable factor in the manufacture of cigars inasmuch as it tends to insure that the mass of tobacco confined in the chamber is approximately non-varying in quantity, and therefore the cigars produced will vary little in uniformity.

Assuming that there is a certain predetermined quantity of tobacco in the chamber 21 and that plunger 40 is moving to feed tobacco into the measuring chamber 74, screw 55 will set the vibratory feed control member 140 so that the required amount will be fed to keep the quantity in the chamber constant. Thus on each movement of the plunger the magnet 145 is positioned to cause sufficient vibration of hopper 12 to insure that the chamber 21 contains its predetermined constant amount of tobacco.

While the preferred embodiments of the invention have been shown and described, it is to be understood that various changes may be made in the structural details thereof without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. In a device for feeding tobacco into a cigar bunch making machine, the combination with a hopper having a substantially horizontal rigid bottom adapted to contain a supply of tobacco, of supports for said hopper, oscillatable rake means mounted directly above said bottom for holding and retarding movement of said supply of tobacco from said hopper, a vibrator connected to said hopper, and adapted to impart rapid pulsations to said hopper and the supply of tobacco contained therein for feeding tobacco therefrom into said machine, control mechanism for activating said vibrator and moving said rake means whenever tobacco is needed in said machine, and independently operated means for moving said rake means to and fro transversely of the direction of movement of tobacco from said hopper while said vibrator is operating.

2. In a cigar machine, the combination with a hopper for holding a supply of filler tobacco, and provided with a rigid bottom surface over

which said tobacco is fed, of a row of spaced movable elements directly over said bottom surface for retarding movement of said tobacco from said hopper and limiting the removal therefrom, means for moving said elements over said surface, members supporting said hopper for vibratory movement of the entire hopper, a vibrator secured to said hopper, and means for intermittently setting said vibrator and elements in motion to feed tobacco in a stream over said rigid bottom surface from said hopper for discharge into said machine, said elements moving to and fro in paths transversely of the path of movement of the hopper bottom surface.

3. In a cigar bunch making machine, mechanism for feeding tobacco comprising a source of supply of short filler tobacco provided with a tobacco receiving and feeding table, a device for simultaneously vibrating said source of supply and said table in unison, means above said table movable to and fro independently of the table to retard movement of tobacco from said supply, means for intermittently operating said vibratory device to feed tobacco from said source along said table intermittently into a bunch making machine, said operating means including a member for incapacitating said device when sufficient tobacco has been fed to said machine, and means for rehabilitating said device to cause the feed of additional tobacco.

4. In a cigar bunch making machine, the combination with a source of supply of tobacco provided with a tobacco receiving and feeding table, a device for vibrating said supply and table, means for intermittently operating said device to feed tobacco on said table intermittently into a bunch making machine, said means comprising a trip adapted to be moved when tobacco is to be fed into said machine, a limit switch, means for closing said switch upon forward movement of said trip to institute the feed of said tobacco, and cam means for opening said switch and stopping the vibration of said device whereby the feed of tobacco over said table ceases.

5. In a cigar machine, a chamber, a member movable within said chamber to compress tobacco therein, a hopper containing a supply of tobacco, means for feeding tobacco from said hopper into said chamber, said means comprising a vibrator connected to said hopper for vibrating said hopper and entire supply of tobacco, and means for preventing movement of said vibrator and said hopper when sufficient tobacco has been fed into said chamber.

6. A cigar bunch making machine, comprising a compression chamber, a member movable within said chamber for compressing tobacco therein, means for feeding tobacco into said chamber, said means including a hopper adapted to contain a diminishable bulk supply of tobacco sufficient to form a plurality of cigars, mechanism for vibrating said hopper and the entire supply of tobacco to feed tobacco into said chamber, means for varying the vibrations of said mechanism for controlling the amount of tobacco fed into said chamber, and means for preventing movement of said vibrator and said hopper when sufficient tobacco has been fed into said chamber.

7. In a cigar bunch machine, the combination with a source of supply of tobacco comprising an open hopper constructed and arranged to hold a bulk supply of tobacco sufficient to form a large number of cigar bunches, said hopper being

provided with an elongated rigid tobacco feeding surface, of a charge transfer mechanism, a tobacco compression chamber adjacent said mechanism, a member movable in said chamber for compressing tobacco therein, a gate adjacent said chamber, a chute adapted to discharge tobacco into said chamber when said gate is open, said elongated surface receiving tobacco from said source of supply and arranged to feed said tobacco into said chute, a device for vibrating said hopper and entire supply of tobacco therein to feed tobacco in a uniform stream into said chute, a control for said device, means on said member cooperating with said control when the tobacco in said chamber reaches a predetermined minimum to set said device in operation, means for closing said gate and opening said gate to admit tobacco to said chamber from said chute, and means for stopping the vibration of said hopper.

8. Means for feeding tobacco into a cigar bunch forming machine, comprising a chamber, a chute discharging into said chamber, a plunger operable in said chamber, an elongated feeding surface, means for intermittently feeding tobacco over said surface into said chute, said means comprising an electric vibrating member affixed to said surface, and means cooperating with said plunger and carried thereby for intermittently setting said vibrating member into operation.

9. In a cigar bunch making machine, mechanism for feeding tobacco comprising a hopper adapted to contain a diminishable bulk supply of tobacco sufficient to form a large number of cigar bunches, said hopper being provided with a rigid bottom surface over which said tobacco is fed into said bunch machine, a vibrator for vibrating said hopper with substantially rectilinear pulsations to cause tobacco to be fed directly from said supply along said surface into said machine in a stream, movable means positioned directly above and depending towards said surface and extending transversely thereof for retarding movement of said supply over said surface and thereby limiting the quantity of tobacco available for feeding, means for operating said vibrator to vibrate said hopper, and mechanism for imparting independent to and fro movement to said movable means in a direction transverse to the direction of movement of said rigid bottom surface during the operation of said last-named means.

10. In a cigar bunch machine tobacco feeding mechanism, a hopper containing a diminishable bulk supply of tobacco, and provided with a surface over which said tobacco is fed into a bunch machine, an electric vibrator for vibrating said hopper with substantially rectilinear pulsations to cause tobacco on said surface to be fed into said machine in a substantially thin uniform stream, and axially aligned means positioned adjacent said surface against which said tobacco is moved by said pulsations for limiting the quantity of tobacco available for feeding, and for removing foreign objects of a magnetizable nature from said tobacco stream.

11. In a cigar bunch machine tobacco feeding mechanism, a hopper adapted to contain a supply of tobacco, and provided with a rigid tobacco feeding and supporting surface over which said tobacco is fed to a bunch machine, a vibrator for vibrating said hopper to cause tobacco on said surface to be fed into said machine in a uniform stream, means located adjacent said surface for limiting the quantity of tobacco fed from said supply in said hopper onto said surface, said

means comprising a plurality of depending fingers mounted directly over said rigid surface in a spaced row and retarding the movement of said supply of tobacco from said hopper, means for operating said vibrator, and means for imparting independent oscillating movement to said fingers in a substantially vertical plane back and forth above said rigid surface in a direction transverse to the vibratory movement of said surface.

12. In a cigar bunch machine tobacco feeding mechanism, a hopper adapted to contain a diminishable supply of tobacco sufficient to form a plurality of bunches, and provided with a surface over which said tobacco is fed to a bunch machine, a vibrator for vibrating said hopper and supply of tobacco with substantially rectilinear pulsations to cause tobacco on said surface to be fed into said machine in a uniform stream, and depending fingers against which the supply of tobacco in said hopper is moved by said pulsations located adjacent said surface for retarding the movement of said supply of tobacco from said hopper and limiting the quantity of tobacco fed onto said surface, means for oscillating said fingers transversely of the direction of movement of said surface across the front portion of the tobacco held back thereby in said hopper transversely of the direction of movement of said tobacco from said hopper, and means for removing foreign materials of a magnetizable nature therefrom, said means comprising a plurality of axially aligned magnets secured to said fingers and constructed and arranged to magnetize said fingers.

13. In a tobacco feeding mechanism, a hopper containing a bulk supply of tobacco sufficient to form a plurality of cigar bunches without addition thereto, and provided with a rigid surface over which said tobacco is fed to a bunch machine, a vibrator for vibrating said hopper to cause tobacco on said surface to be fed into said machine in an approximately horizontal stream, a stationary supporting member positioned adjacent said hopper, a pivoted element mounted on said member, a plurality of separated rods depending from said element directly above said surface and obstructing the free flow of said bulk supply of tobacco from said hopper, and means for rocking said element to and fro independent of the vibratory movement of said hopper in a direction transversely of the direction of movement of said rigid surface to limit the quantity of tobacco available for feeding over said surface to said machine.

14. In a tobacco feeding mechanism, a hopper containing a supply of tobacco, and provided with a surface over which said tobacco is fed to a bunch machine, a vibrator for vibrating said hopper to cause tobacco on said surface to be fed into said machine in a stream, a stationary supporting member positioned adjacent said hopper, a pivoted element mounted on said member, a plurality of separated rods depending from said element, means for rocking said element across the face of said supply of tobacco to limit the quantity of tobacco available for feeding over said surface to said machine, magnetizing elements mounted on each of said rods for magnetizing the same, whereby foreign materials of a magnetizable nature may be removed from said tobacco stream.

15. A cigar bunch making machine comprising a chamber provided with a feeding opening and a cover, a feed chute located over said opening, and adapted to convey tobacco into said chamber

when said cover is removed from the opening, a member movable within said chamber to compress tobacco confined therein, a hopper containing tobacco located adjacent said chute, an electric vibrator secured to said hopper, means for moving said cover to open and closed positions, and means carried by said member for operating said vibrator to feed tobacco from said hopper whenever the supply in said chamber needs replenishing.

16. In a cigar machine, a chamber, a member reciprocable therein for compressing tobacco, a gate on said chamber, means for opening and closing said gate, a chute positioned above said gate and adapted to discharge tobacco into said chamber, said chute comprising a pivoted wall and a trap plate, means for moving said wall and trap plate to open position to discharge tobacco into said chamber, a tobacco feeding surface adapted to discharge tobacco intermittently into said chute, a vibrating device secured to said surface, trip mechanism associated with said device, a control element mounted on said member and adapted to cooperate with said trip mechanism for operating said device when tobacco is to be fed, and means for stopping the operation of said device.

17. In tobacco handling mechanism for a cigar machine, a pivoted measuring chamber, a retractable, reciprocable member adapted to reciprocate within said chamber when in a discharge position, a transfer element into which a measured charge of tobacco is ejected by said member, means for feeding tobacco into said chamber, said means comprising a hopper mounted for substantially rectilinear feeding motion, a vibrator device secured to said hopper, and means for activating said vibrator to feed tobacco from said hopper into said chamber whenever the supply therein reaches a predetermined minimum.

18. In a short filler cigar bunch making machine, the combination with a tobacco receiving chamber, of a member reciprocable therein to compress tobacco in said chamber, a vibrating feeding device including a feeding surface for feeding tobacco in a substantially uniform stream over said surface to said chamber, connections between said member and device controlled by movement of said member for maintaining a predetermined quantity of substantially uniformly distributed long and short filler tobacco in said chamber, said connections comprising trip mechanism, and means on said member for setting said trip for feeding to said chamber sufficient tobacco to maintain said quantity therein.

19. A feed device for a scrap bunch cigar making machine, comprising a tobacco receiving chamber, a vibrating device for feeding tobacco to said chamber, means for tamping tobacco in said chamber, means for controlling said vibrating device to institute the feed of tobacco in a substantially uniform stream to said chamber whereby a predetermined quantity of tobacco is maintained in said chamber, said means comprising a trip, and connections between said tamping means and trip for controlling said device.

20. In a cigar machine, the combination with a bunch forming device, of mechanism for feeding tobacco to said device, said mechanism including a hopper having a bottom feeding surface, a plurality of spaced depending substantially vertical fingers located near the discharge end of and above said surface of said hopper con-

structed and arranged to retard movement of tobacco from said hopper, means for intermittently vibrating said hopper to advance said tobacco supply against said fingers, and means for rocking said fingers transversely back and forth across the path of movement of said tobacco while said hopper is vibrating to effect thereby a substantial separation from the face of the tobacco confined thereby of the pieces of tobacco being fed through said fingers to said device.

21. In a cigar machine, the combination with a tobacco receiving chamber and means operable in said chamber to compress tobacco located therein to a predetermined density, of means for feeding tobacco to said chamber, including a hopper constructed and arranged to hold a bulk supply of tobacco, means for imparting rapid vibratory movement to said hopper to feed a stream of tobacco from said hopper, a plurality of substantially vertical fingers for holding back said tobacco in said hopper located above and arranged to move transversely of the path of movement of tobacco from said hopper, and means for moving said fingers to and fro across the stream during the movement of said hopper to separate tobacco from the face of the bulk supply held back by said fingers.

22. In a cigar machine, the combination with a source of supply of tobacco comprising an open hopper constructed and arranged to hold a diminishable bulk supply of tobacco, said hopper having a substantially horizontal feeding surface with a discharge outlet, and a bunch forming device, of a compression chamber, mechanism for vibrating said hopper to feed a stream of tobacco from said supply along said surface to said chamber, devices located at said outlet and substantially at right angles to said surface for cooperation with said feeding means for limiting the quantity of tobacco fed to said chamber, means for moving said devices to and fro at right angles to the path of movement of said stream, and control means for setting said mechanism and devices in operation when the tobacco in said chamber is decreased below a predetermined quantity.

23. In a cigar machine, the combination with a hopper provided with a substantially horizontal bottom tobacco supporting surface and a discharge opening adapted to contain a supply of tobacco, of a plurality of spaced substantially vertical movable members positioned across said hopper above said surface, means for vibrating said hopper with its entire supply of tobacco to feed said tobacco against said members, and independently operated means operative during the vibration of said hopper for moving said members back and forth above said surface in a direction transversely of the path of movement of said

surface to separate tobacco from the face of the tobacco bearing against said members for delivery from said hopper.

24. In a tobacco feeding mechanism for a cigar machine, a source of supply of tobacco comprising an open hopper constructed and arranged to hold a quantity of tobacco sufficient to form a large number of cigars, said hopper having side and back walls and a substantially horizontal receiving and feeding surface positioned to receive tobacco from said source, and feed it to a point of discharge, means for supporting said hopper for substantially rectilinear feeding movement along said surface, a rake bar provided with a plurality of depending fingers located above and extending transversely across said hopper surface and tending to confine said quantity of tobacco therein, a vibrating device arranged to vibrate said hopper and entire supply of tobacco contained therein, means for setting said device into rapid vibration so that tobacco is fed from said supply against said fingers for movement therepast along said surface in a stream to said point, means for moving said fingers transversely of the path of movement while said hopper is vibrating, and means for stopping the vibration of said hopper and movement of said fingers when a desired amount of tobacco has been fed from said hopper.

25. In a tobacco feeding mechanism for a cigar machine, a hopper containing a diminishable bulk supply of tobacco sufficient to form a plurality of cigars, a charge forming mechanism including a reciprocable compressing member, said hopper having an elongated bottom surface, a rake device provided with a plurality of spaced depending fingers located above said surface and transversely thereof for separating said hopper into a first part arranged to hold said entire bulk supply, and a second part constructed and arranged to feed a stream of tobacco from said supply to a point of discharge, means for supporting said hopper for feeding movement, a vibrating device connected to said hopper, means for moving said rake device transversely of said hopper and transversely of the direction of movement of tobacco therefrom, means for intermittently operating said device to vibrate said hopper and said entire supply of tobacco contained therein rapidly at such a frequency that tobacco held back by said rake fingers on said first part of said surface moves past said moving rake fingers along said second part of said surface in a stream to said discharge point, and means under control of said compressing member for controlling the vibration of said hopper and movement of said rake device.

JAMES P. DURNING.