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BUNCH LOADER FOR CIGAR MACHINES

Filed March 24, 1933

3 Sheets-Sheet 1

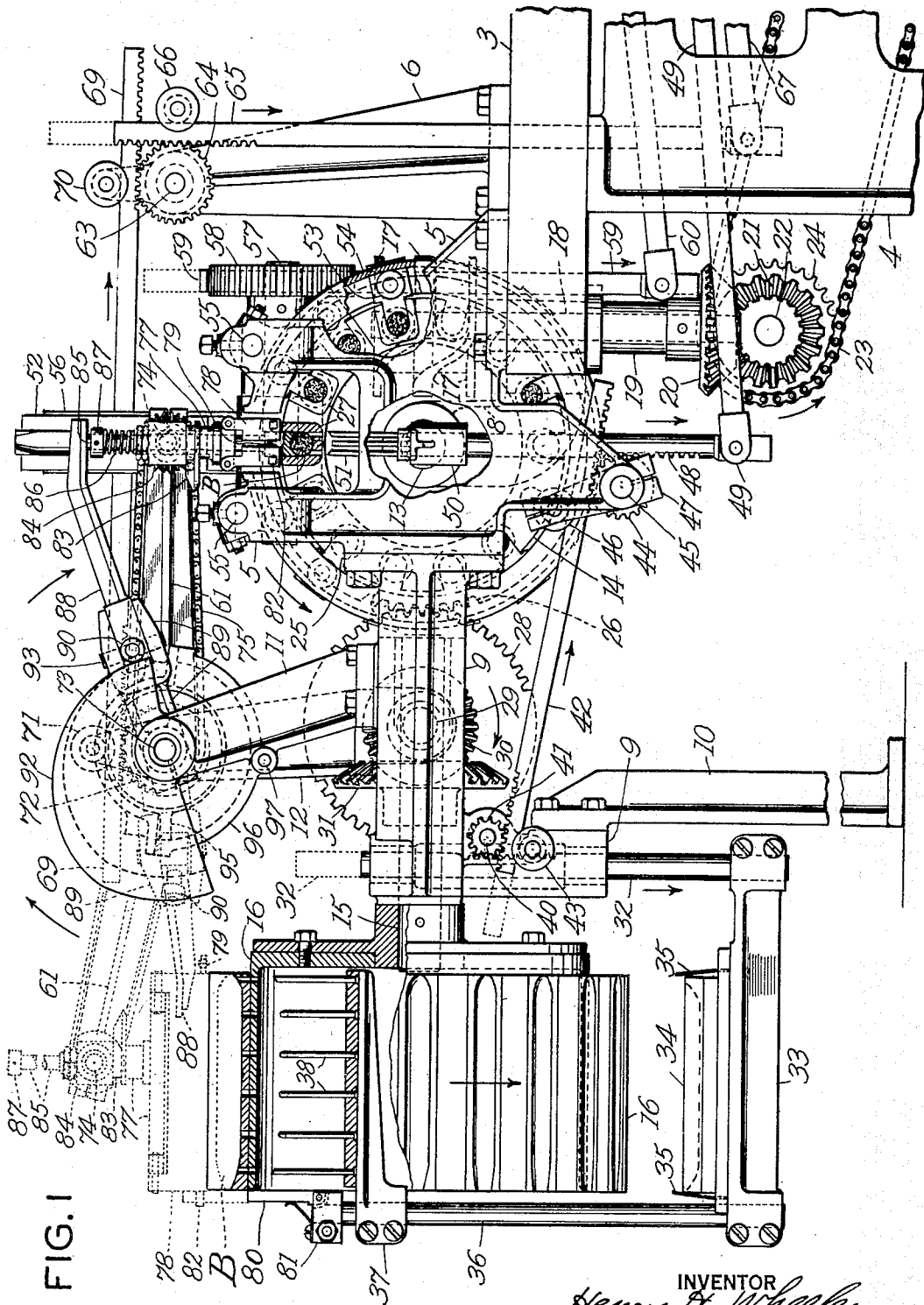


FIG. 1

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3 Sheets-Sheet 2

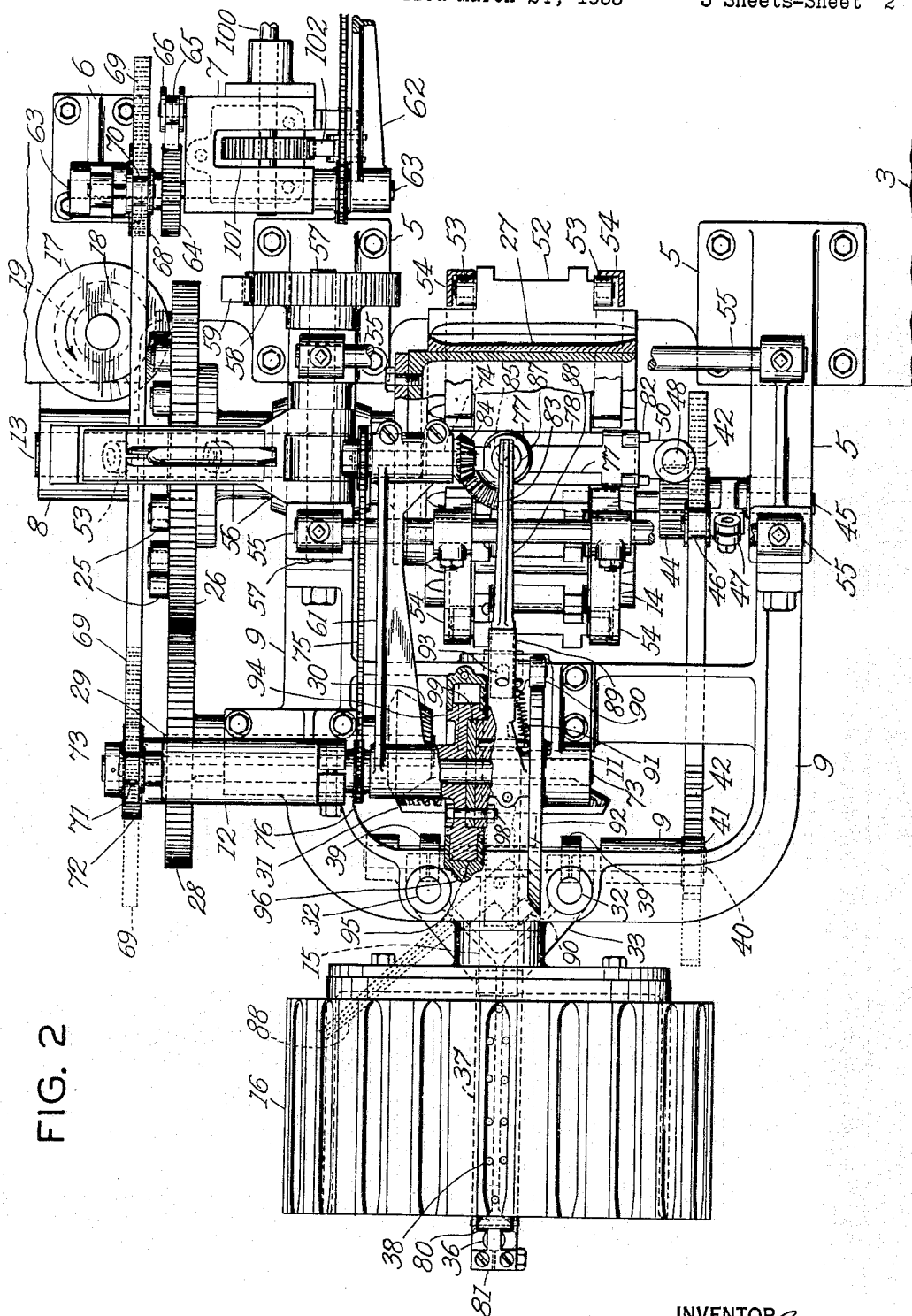


FIG. 2

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3 Sheets-Sheet 3

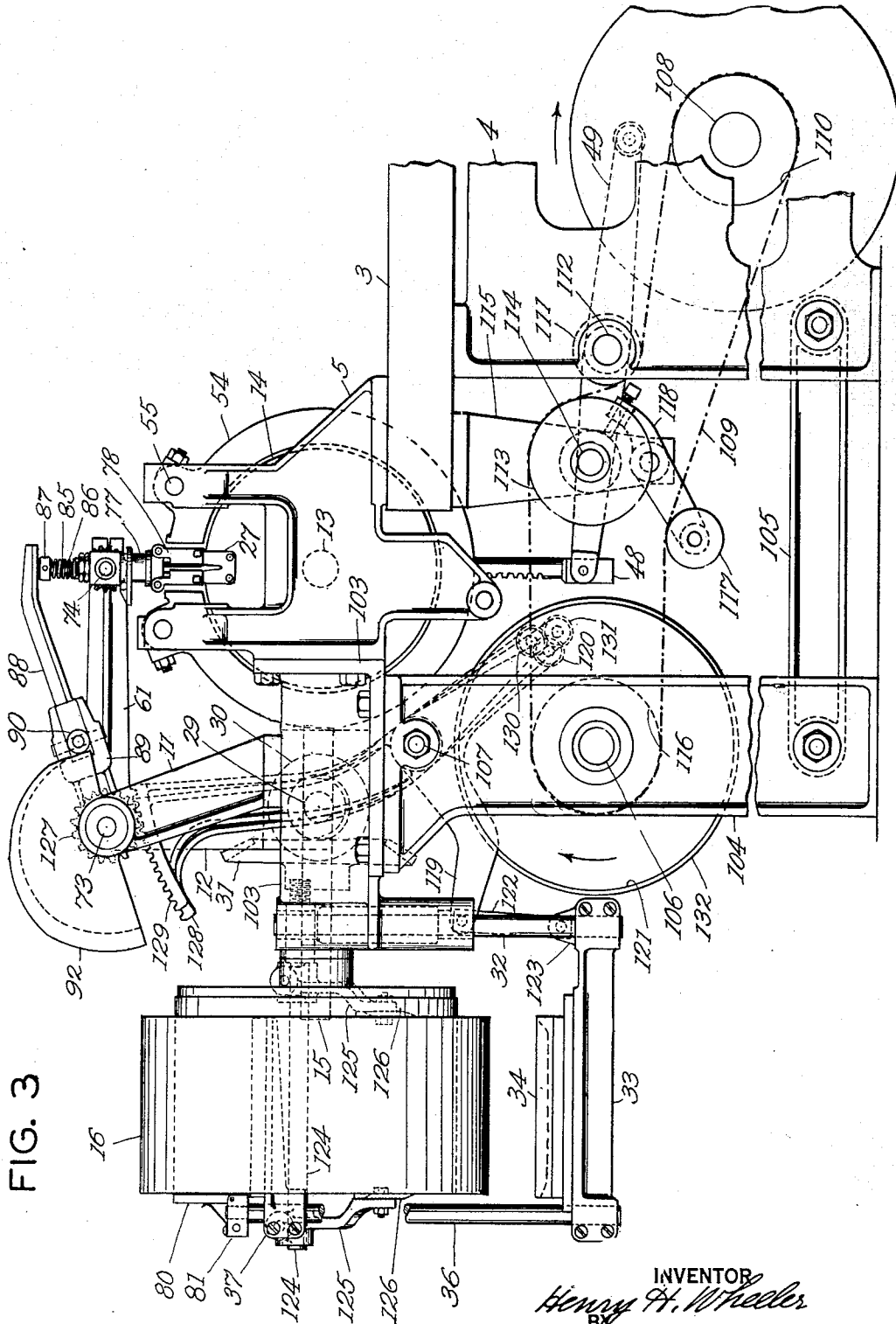


FIG. 3

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BUNCH LOADER FOR CIGAR MACHINES

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Application March 24, 1933, Serial No. 662,585

12 Claims. (Cl. 131—9)

This invention relates to bunch loaders for cigar machines, its main object being to provide a novel automatic loading device which may be attached to scrap bunch machines for the purpose of increasing their speed of production.

In making scrap bunch cigars, it is the present practice to take the rough bunch as rolled in a scrap bunch forming mechanism and insert the same by hand in a carrier which delivers it to the concentrators of a cigar concentrator when at rest in open position. While the rough bunch is so inserted by the operator, another operator serves a wrapper for a shaped bunch just being transferred from the bunch concentrator to a wrapper-applying device. Both of these operators must have completed their respective operations before the turret carrying the concentrators is allowed to resume its rotation. As one operator frequently has to wait for the other, a considerable amount of time is lost in manipulating the machine in this manner.

In order to avoid these delays and thus speed up production, the present invention provides an auxiliary or loading turret, into suitably arranged pockets of which the rough bunches taken from the bunch forming mechanism are continuously inserted by the operator independent of the work of the other operator who in turn now does not have to wait until the operator attending the bunch forming mechanism is ready, but controls the machine to suit her own speed alone. When she permits motion to continue, a mechanical transfer receives a bunch from one of the pockets of the loading turret, turns it one-quarter of a revolution around a vertical axis and deposits it into an opened concentrator of the bunch shaping turret. Furthermore, since a reserve supply of bunches is provided in the loading turret, the operator attending the bunch forming mechanism does not have to stop the machine whenever she discards a defective bunch.

The loading turret is equipped with an ejector which lifts each bunch as it arrives in ejecting position into the open jaws of a holder which close upon the bunch on the descent of the ejector. The bunch-receiving holder, which constitutes the active part of the bunch-loading transfer, carries a plunger held in inoperative position by a spring, this plunger being actuated by an arm of the transfer when the holder is in delivery position above the opened concentrator of the bunch shaping turret. When so actuated, the plunger expels the bunch from the holder and inserts it into the concentrator.

The loading transfer does not receive bunches

until the operator attending the bunch forming mechanism has filled at least one-half of the pockets of the loading turret. As the loading turret ejector then ascends, a form carried by the ejector-operating frame enters the pocket diametrically opposite to that in delivery position, thereby seating the bunch in this pocket without appreciably compressing it therein, and a pair of knives attached to the form cut off the ends of the bunch projecting from the ends of the pocket. In a modified form of the invention the bunch ends are trimmed by stationary knives engaging the end faces of the turret.

To deaden the impact of the loading and shaping turrets when the swinging arm of the bunch transfer arrives in its receiving and delivery positions, and thus to avoid possible damage to the bunch carried by the transfer holder, a dash-pot is incorporated with the structure of the bunch transfer. With these and other objects not specifically mentioned in view, the invention consists in certain constructions and combinations hereinafter fully described and then specifically set forth in the claims hereunto appended.

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

Fig. 1 is an elevation of a portion of a scrap-bunch cigar machine equipped with the improved bunch-loading device;

Fig. 2 is a top view of the mechanism shown in Fig. 1; and

Fig. 3 is an elevation of a modified arrangement of the improved bunch loader.

In carrying the invention into effect there is provided a loading turret provided with open pockets adapted to be manually filled with cigar bunches, means for intermittently rotating said turret, and devices at one station of said turret for seating the manually inserted bunches in said pockets and simultaneously trimming both overhanging ends of the bunches while they are being seated. In the best forms of construction contemplated there is also provided an ejector connected to said devices and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and said devices include a reciprocable form having an internal contour fitting the contour of the bunches in said pockets, knives fixed to the ends of said form, and means for reciprocating said form to seat the bunches in said pockets and simultaneously trim the overhanging ends of the bunch. In the best forms of construction, also, there is provided a bunch transfer for carrying away the bunches ejected from said

turret, including a pivoted transfer arm, means on said arm for yieldingly gripping a bunch, mechanism for intermittently oscillating said arm about its pivot, mechanism for turning said
 5 means to turn the gripped bunch in transit, and mechanism for pushing the gripped bunch from said gripping means after it is turned. The above mentioned means and parts may be widely varied in construction within the scope of the
 10 claims for the particular device selected to illustrate the invention is but one of many possible concrete embodiments of the same. The invention, therefore, is not to be restricted to the specific details of the structure shown and described.
 15 In a modified form of the invention the bunch ends may be trimmed by stationary knives co-operating with the end faces of the turret.

Referring to Figs. 1 and 2 of the drawings, the table 3 which is carried by the main frame 4,
 20 supports side frames 5, standards 6 and 7, and a bearing bracket 8. To frames 5 are attached the ends of a bracket 9, supported also by a pedestal 10 and carrying bearing stands 11 and 12. One of the frames 5 and bracket 8 support a shaft 13
 25 on one end of which the bunch concentrator turret 14 is mounted, and bracket 9 carries a shaft 15 on the outer end of which the auxiliary loading turret 16 is mounted.

The bunch concentrating turret 14 is intermittently driven by an indexing device consisting of a rotary cam 17 on a shaft 18 journaled in a bearing 19 carried by table 3 and driven through bevel gears 20 and 21 on shafts 18 and 22, respectively,
 30 by a chain 23 running over a sprocket 24 on shaft 22, the chain 23 receiving its motion from the main drive of the cigar machine. The cam track on the upper edge of the indexing cam 17 at each revolution engages between each two adjacent rollers of a number of rollers 25 carried on the
 35 face of a gear 26 on turret shaft 13, thereby advancing the concentrator turret 14 by one concentrator, the number of rollers 25 corresponding with the number of concentrator sections 27 on the turret. The gear 26 meshes with a gear
 40 28 on a shaft 29 supported in frame 9 and carrying a bevel gear 30 meshing with a bevel gear 31 on shaft 15, thereby driving the loading turret 16 in synchronism with the molding turret 14. While the auxiliary turret is shown in connection with a bunch concentrator, it will be understood that it may be used with other bunch shaping devices such as bunch molding machines and the like.

Slidably mounted in bearings of frame 9 are
 45 vertical rods 32 which on their lower ends carry a Y-shaped bracket 33 on which is mounted a form 34 fitting into the bunch-receiving pockets of loading turret 16 and provided with a recess fitting the contour of the cigar bunches, and
 50 knives 35 adapted to engage with the end-faces of turret 16. To bracket 33 is fastened a vertical rod 36 which on its upper end carries an arm 37 extending into the bore of the loading turret and carrying vertical ejector pins 38 arranged to collectively form a cradle for a cigar bunch at
 55 their points. These pins register with holes provided in the pockets of the turret so that they will lift the bunch from the top pocket of the turret when the bracket 33 is raised during a dwell of the turret. While the pins 38 eject the bunch
 60 from the top pocket, the form 34 enters the bottom pocket, thereby seating the bunch therein, whereupon the knives 35 trim off the overhanging ends of the same.

To effect the raising of the bracket 33, the rods

32 are for a portion of their length provided with teeth meshing with gears 39 mounted on a shaft 40 supported by bracket 9. The shaft 40 has a gear 41 engaging with one end of a rack 42 held
 55 in mesh therewith by a roller 43. The other end of rack 42 meshes with a gear 44 on a shaft 45 supported by the other frame 5, the rack at this end being guided by a roller 46 carried by an arm 47 clamped to shaft 45. The gear 44 receives intermittent motion from a vertical toothed
 60 rod 48 operated by a lever 49 actuated in properly timed relation from a cam on the main drive of the machine. The rod 48 on its upper end supports a bracket 50 extending into the bore of turret 14, the bracket 50 carrying ejector pins 51
 65 similar to the pins 38 of the loading turret, previously described.

The cigar bunch concentrator 14 is of a construction described in Patent No. 1,833,157 to R. E. Rundell, to which reference is made for a
 70 complete disclosure of the same. The female concentrator sections 27, which are fixed on the turret, are covered by male concentrator sections 52 held in place by rollers 53 running in pathways 54 supported on horizontal rods 55 held by
 75 frames 5 and 5a. The pathways 54 surround the turret except for a small space at the top through which the covers 52 are removed for discharging the concentrated bunch from the molds 27 and recharging the same with a new bunch, the removal of the covers 52 being automatically effected by a swinging arm 56 provided with a
 80 locking device, not shown, which engages the rollers 53 of each male mold section when in the top-position on the turret to lock said section on the arm. The arm 56 is fixedly mounted on a shaft 57 journaled in frame 5 and carrying a fixed spur gear 58, the latter receiving intermittent motion from a rack 59 actuated by a cam-lever
 85 60 operated in timed relation by a cam on the main shaft.

The charging of the concentrator sections 27 is accomplished by an automatic transfer arm 61 which receives a bunch from the top-pocket of the loading turret 16, turns it at right angles and
 90 inserts it into the top concentrator section of turret 14, while another transfer arm 62 swinging in synchronism with arm 61 carries the discharged concentrated bunch to the wrapper-applying device of the machine. The transfer arm 62 is mounted on a shaft 63 supported in standards 6 and 7 and carrying a spur gear 64 engaging with a rack 65 held in mesh with it by a guide
 95 roller 66, the rack 65 receiving intermittent reciprocating motion from a cam-lever 67 actuated by the main drive of the machine. The shaft 63 has a second fixed gear 68 which meshes with one end of a rack 69 held against it by a roller 70. The other end of rack 69 is held by a roller 71 in mesh with a gear 72 mounted on a shaft 73
 100 supported in bearing stands 11 and 12, the last-named shaft carrying the transfer arm 61.

The arm 61 carries a shaft 74 which is connected with shaft 73 by a chain 75 running over a fixed sprocket 76 clamped in bearing stand 12, and a sprocket on shaft 74, thereby turning
 105 shaft 74 and causing a holder 77 which is carried by the outer end of the shaft and rotatable about its own axis therein to retain its vertical position during the entire swing of arm 61. The holder 77 has hinged jaws 78 held in closed position by a tension spring 79. When in the receiving position shown in dotted lines in Fig. 1, a spring-tensioned finger 80 pivoted on a collar 81 attached to rod 36 enters between projections 82

provided on the jaws 78, thereby opening or spreading the same to admit the bunch then being lifted into them by the ejector pins 38. To the holder 77 is attached a gear segment 83 meshing with a bevel gear 84 on shaft 74, the motion of the latter due to the chain 75 causing the holder 77 to turn through 90 degrees while arm 61 swings into delivery position on turret 14.

The bunch holder 77 carries a plunger 85, slidably mounted therein and normally held in inoperative position by a coil spring 86 seated on the top of holder 77 and bearing against a collar 87 affixed to the top of plunger 85. In the delivery position, a finger 88 swiveled in an arm 89 clamped to shaft 73 engages with and depresses plunger 85 against the pressure of spring 86, thereby pushing the transferred bunch B from the jaws 78 and inserting the same into the top concentrator section 27 of turret 14. The finger 88 carries a roller 90 held by a spring 91 in engagement with a stationary cam 92 forming a part of bearing stand 11. The contact surface of this cam is so designed that the finger 88 turns on the swivel pin 93 as the arm 89 swings it from bunch ejecting to inoperative position, until in the latter, as shown in dotted lines in Fig. 2, it is well out of the way of holder 77 with which it would otherwise interfere. The specific details of the transfer arm 62 form no part of this invention, as it is of a well known type, shown in the patent to J. F. Halstead, No. 1,786,608, granted December 30, 1930.

To prevent the cigar bunches from becoming damaged by shocks when the transfer jaws 78 arrive in contacting positions on turrets 14 and 16, the hub of arm 61 is extended into a flange 94 having a radially projecting vane 95 fitting into the air chamber of an annular dash-pot 96 mounted on a stud 97 supported in bearing stand 11. The flange 94 is attached to the flanged hub of arm 89 by means of bolts 98 passing through a cushion disk 99 inserted between the two flanges.

The bolt holes in the flange of arm 89 are elongated circumferentially thereof so that the arm 89 which is clamped to shaft 73 can move relative to the arm 61 which is loose on shaft 73. The two arms are driven together by the friction of the disk 99, controlled by spring washers placed under the nuts of bolts 98, until the jaws 78 carried by arm 61 come to rest on the top concentrator section 27 of turret 14. Thereafter, the continued motion of shaft 73 turns the arm 89 alone, thereby causing the finger 88 to depress the plunger 85 while the arm 61 is held stationary against the friction of disk 99.

The shaped bunch taken from turret 14 by the transfer 62, after being wrapped is carried from the wrapper-applying device to the re-rolling and finishing mechanism by a cross-wise transfer, not shown, swinging on a shaft 100 supported in bearing stand 7 and driven by a gear 101 actuated from a rack 102 controlled by a cam, not shown, on the main drive shaft of the machine. This cross-wise transfer, also does not form a part of the present invention, as it is of the conventional construction shown in the patent to J. F. Halstead referred to above.

A modification in the arrangement of the improved bunch loading device is shown in Fig. 3. A bracket 103 similar to bracket 9 is attached to side frames 5 and rests on pedestals 104 strapped to main frame 4 by tie-bars 105. The pedestals 104

support a cam shaft 106 and a fulcrum shaft 107. The cam shaft 106 is driven from the main cam shaft 108 by a chain 109 running over sprocket 110 on shaft 108, sprocket 111 on a shaft 112 in main frame 4, sprocket 113 on a shaft 114 supported by brackets 115 attached to table 3, sprocket 116 on shaft 106, and over an idler sprocket 117 carried by an adjustable arm 118 pivoted on bracket 115.

A cam lever 119, fulcrumed on shaft 107 and having a roller 120 in engagement with a cam 121 on shaft 106, is connected by a link 122 to a lug 123 provided on bracket 33, thereby raising and lowering the turret form 34 and the ejector arm 37 in synchronism during a dwell in the movement of the turret.

To bracket 103 is fastened a horizontal rod 124 extending past the auxiliary loading turret 16 and carrying arms 125 on which stationary knives 126 engaging with the end faces of turret 16 are mounted. These stationary knives take the place of the movable knives 35 in Fig. 1, and perform the similar function of trimming the ends of the bunches.

The transfer arm 61 and the arm 89 of plunger-operating finger 88 are each attached to one of the pair of gears 127 loosely mounted on shaft 73 supported in stands 11 and 12. Each of the gears 127 meshes with gear segments 128, 129, respectively, pivoted on fulcrum shaft 107 and carrying rollers 130, 131 controlled by cam tracks on either side of a cam 132 mounted on shaft 106. The tracks of cam 132 are so timed that roller 130 of segment 128 reaches its outermost position when the jaws 78 of arm 61 come to rest on the top concentrator section of turret 14, the further motion of cam 132 affecting only the roller 131 of segment 129 which causes the finger 88 to depress the plunger 85, thereby inserting the transferred bunch into the concentrator 27 of turret 14. To maintain the holder 77 carrying the jaws 78 in vertical position while in transit, which is rotated about its own axis in the free end of shaft 74 by gearing similar to that disclosed in Figs. 1 and 2, the shaft 74 is turned during each swing of arm 61 by a chain connecting a sprocket on shaft 74 and a fixed sprocket as shown in Figs. 1 and 2.

What is claimed is:

1. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, and devices at one station of said turret for seating the manually inserted bunches in said pockets and simultaneously trimming both overhanging ends of the bunches while they are being seated.

2. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, and devices at one station of said turret for seating the manually inserted bunches in said pockets and simultaneously trimming both overhanging ends of the bunches while they are being seated, said devices including a reciprocable form having an internal contour fitting the contour of the bunches in said pockets, knives fixed to the ends of said form, and means for reciprocating said form to seat the bunch in the pocket at said station and cause the knives to simultaneously trim both overhanging ends of the bunch.

3. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, devices for seat-

ing the manually inserted bunch in each pocket successively at one station of the turret and trimming both overhanging ends of the bunch while it is being seated, and an ejector connected to said devices and operated therefrom to simultaneously eject a seated bunch from another of said pockets:

4. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, devices for seating a bunch in one of said pockets at one station of the turret and simultaneously trimming both overhanging ends of the bunch while it is being seated, an ejector connected to said devices and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches.

5. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, devices for seating a bunch in one of said pockets at one station of the turret and simultaneously trimming both overhanging ends of the bunch while it is being seated, an ejector connected to said devices and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including relatively yieldable bunch gripping jaws, said transfer operating to carry said jaws into a position to receive an ejected bunch directly from the turret, and said devices also including means for spreading said jaws to freely admit the ejected bunch.

6. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, devices for seating a bunch in one of said pockets at one station of the turret and simultaneously trimming both overhanging ends of the bunch while it is being seated, an ejector connected to said devices and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including relatively yieldable bunch gripping jaws adapted to receive the ejected bunch therebetween, and a positively actuated plunger for ejecting the gripped bunch from between said jaws.

7. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, devices for seating a bunch in one of said pockets at one station of the turret and simultaneously trimming both overhanging ends of the bunch while it is being seated, an ejector connected to said devices and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including a pivoted transfer arm, means on said arm for yieldingly gripping a bunch, mechanism for intermittently oscillating said arm about its pivot, mechanism for turning said means to turn the gripped bunch in transit, and mechanism for pushing the gripped cigar bunch from said means after it is turned.

8. A cigar bunch transfer comprising a pivoted transfer arm, means on said arm for yieldingly gripping a cigar bunch, mechanism for intermittently oscillating said arm about its pivot, mechanism for turning said means to turn the gripped

bunch in transit, and mechanism for pushing the gripped cigar bunch from said means after it is turned.

9. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, a device for seating a bunch in one of said pockets at one station of the turret, an ejector connected to said device and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including relatively yieldable bunch gripping jaws, and operating to carry said jaws into a position to receive an ejected bunch directly from the turret, and said devices also including means for spreading said jaws to freely admit the ejected bunch.

10. The combination with a loading turret provided with open pockets adapted to be manually filled, of means for intermittently rotating said turret, a device for seating a bunch in one of said pockets at one station of the turret, an ejector connected to said device and operated therefrom to simultaneously eject a seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including a pivoted arm, means on said arm for yieldingly gripping a bunch, mechanism for intermittently oscillating said arm about its pivot, mechanism for turning said means to turn the gripped bunch in transit, and mechanism for pushing the gripped bunch from said means after it is turned.

11. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, a device for seating a bunch in one of said pockets at one station of said turret, stationary knives cooperating with the end faces of said turret for trimming the overhanging ends of the bunches, an ejector connected to said device and operated therefrom to eject a trimmed and seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including relatively yieldable bunch gripping jaws, and operating to carry said jaws into a position to receive an ejected bunch directly from the turret, and said devices also including means for spreading said jaws to freely admit the ejected bunch.

12. The combination with a loading turret provided with open pockets adapted to be manually filled with cigar bunches, of means for intermittently rotating said turret, a device for seating a bunch in one of said pockets at one station of said turret, stationary knives cooperating with the end faces of said turret for trimming the overhanging ends of the bunches, an ejector connected to said device and operated therefrom to eject a trimmed and seated bunch from another of said pockets, and a bunch transfer for carrying away the ejected bunches, said bunch transfer including a pivoted arm, means on said arm for yieldingly gripping a bunch, mechanism for intermittently oscillating said arm about its pivot, mechanism for turning said means to turn the gripped bunch in transit, and mechanism for pushing the gripped bunch from said means after it is turned.

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