

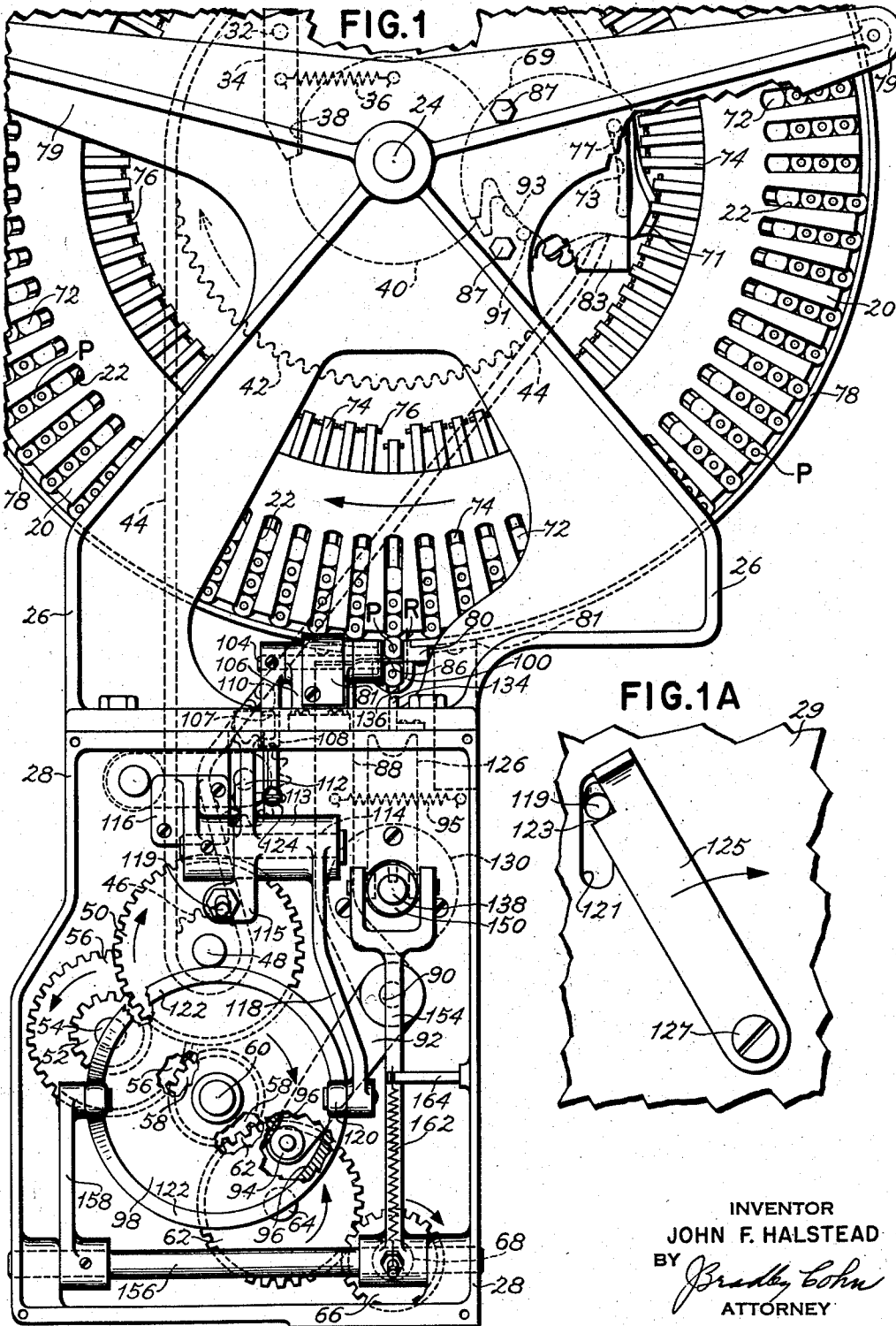
March 25, 1958

J. F. HALSTEAD
CIGAR MOUTHPIECE FEED

2,827,904

Filed Oct. 8, 1953

7 Sheets-Sheet 1



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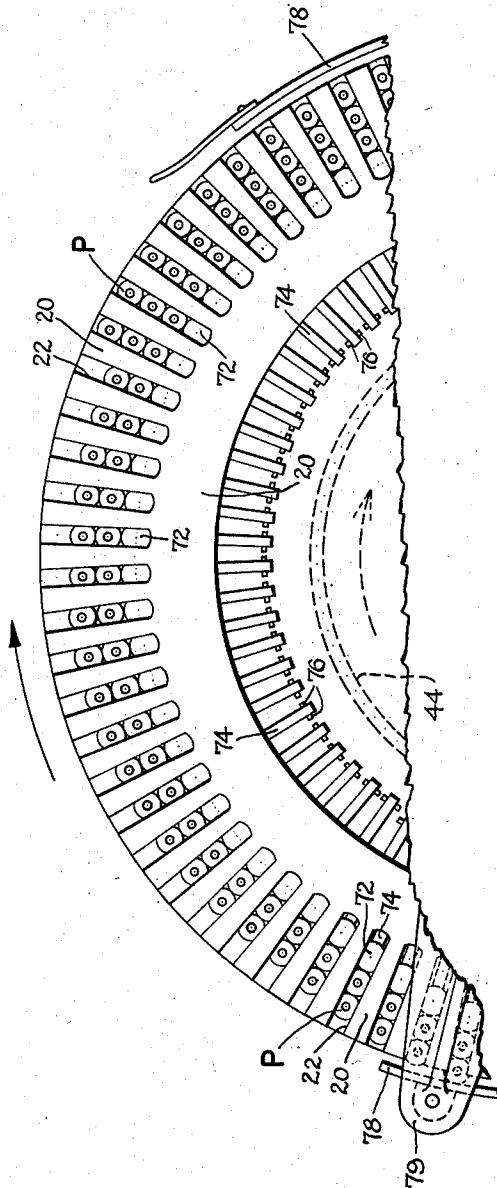
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FIG. 1B



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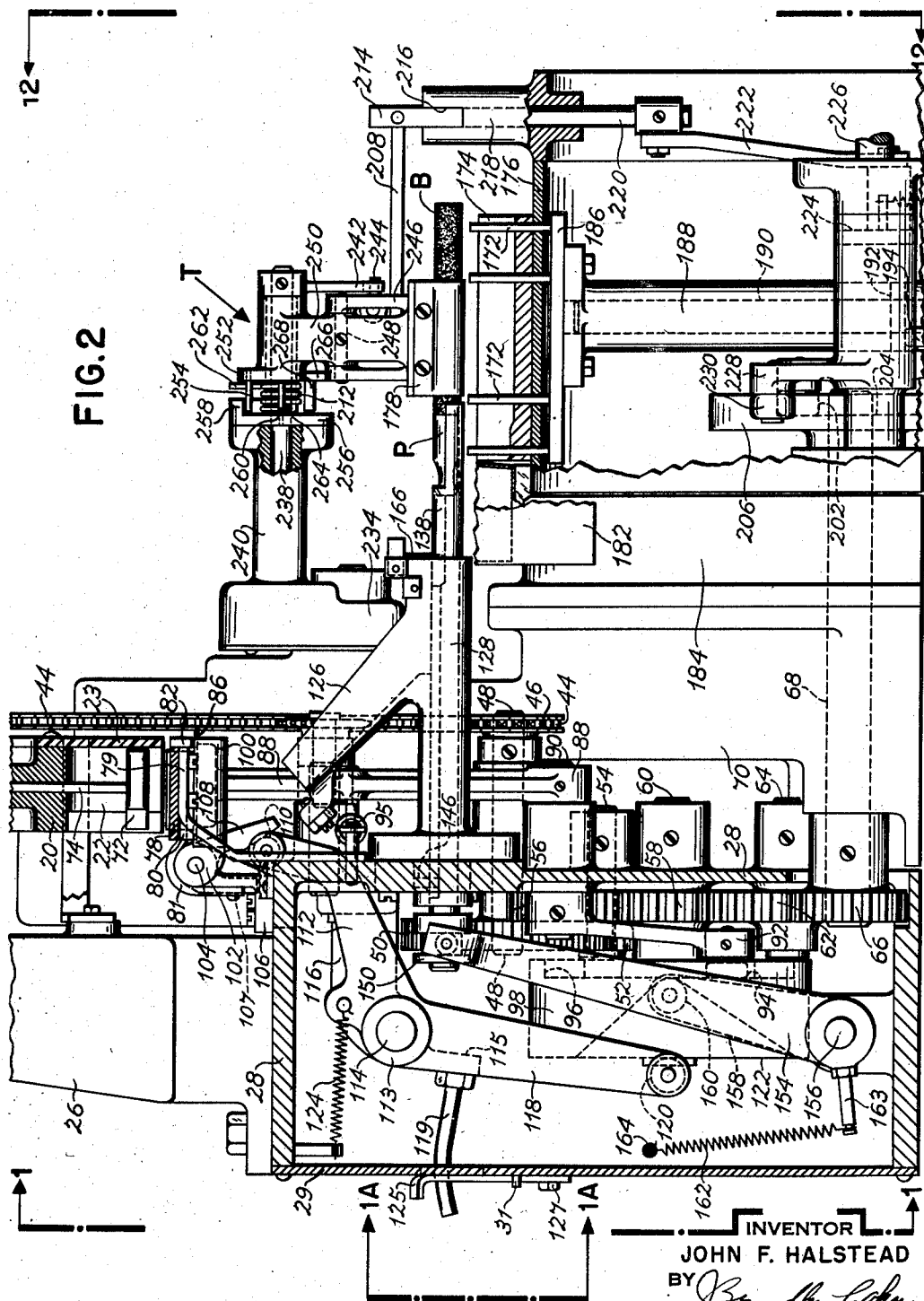
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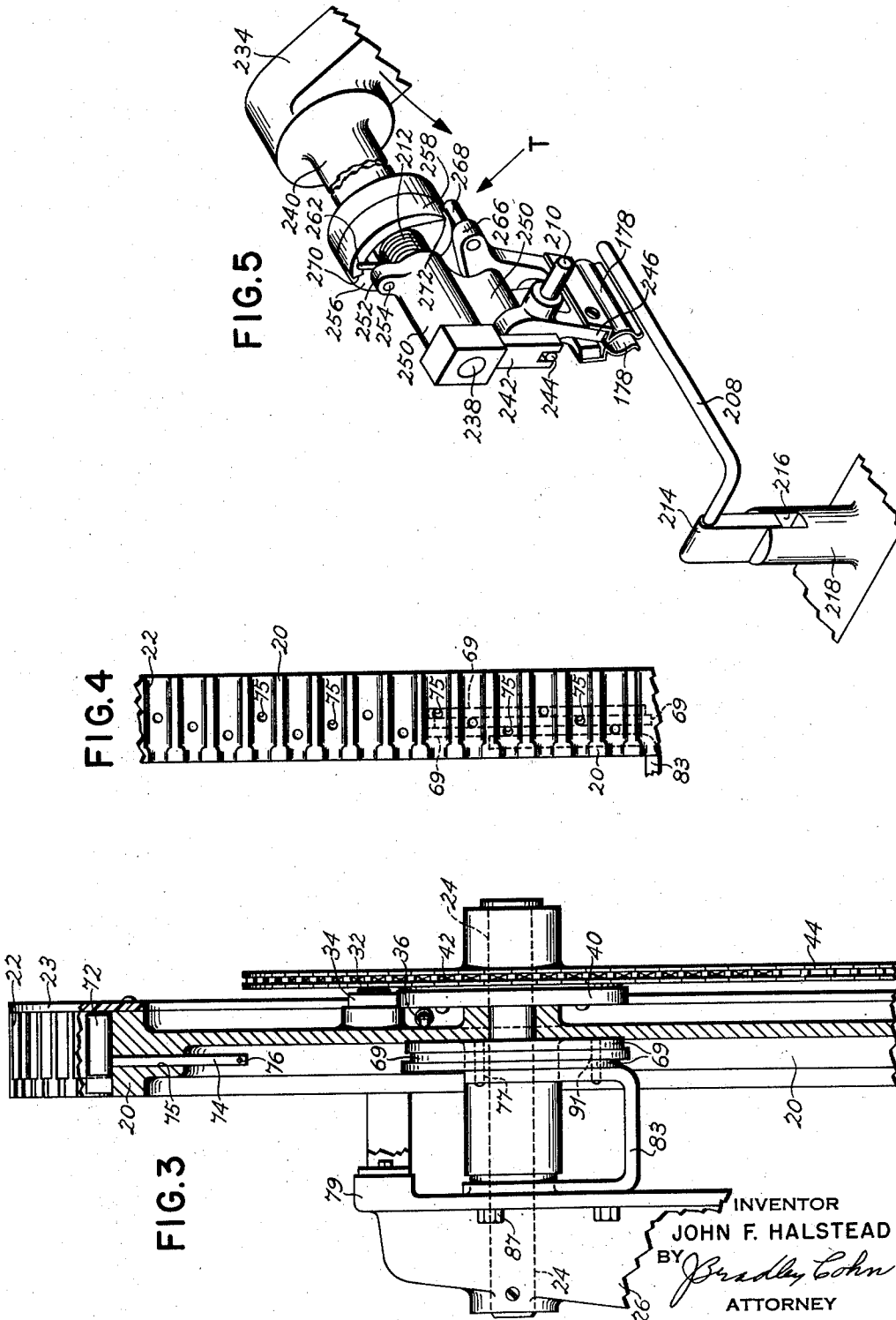
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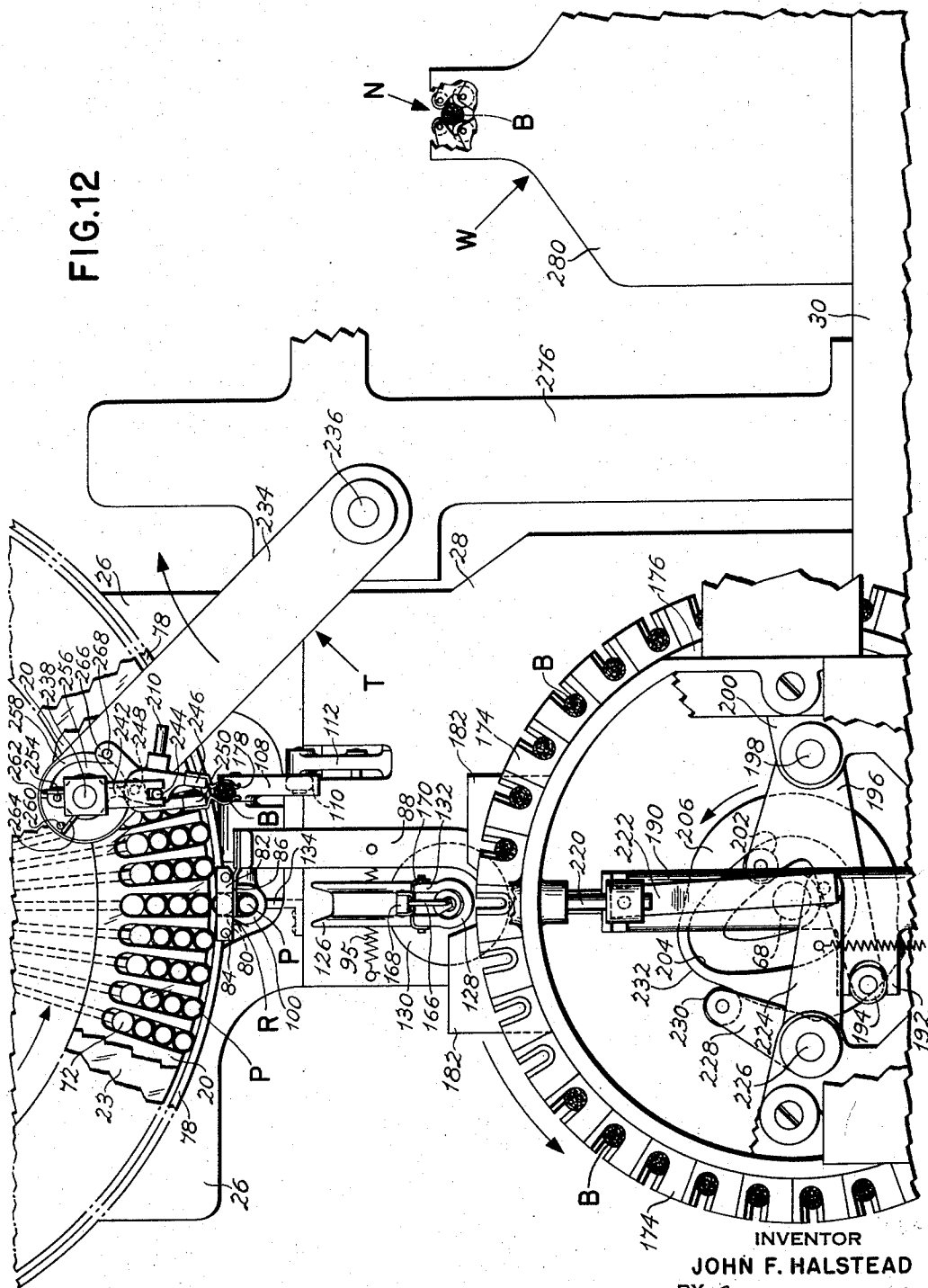
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FIG. 12



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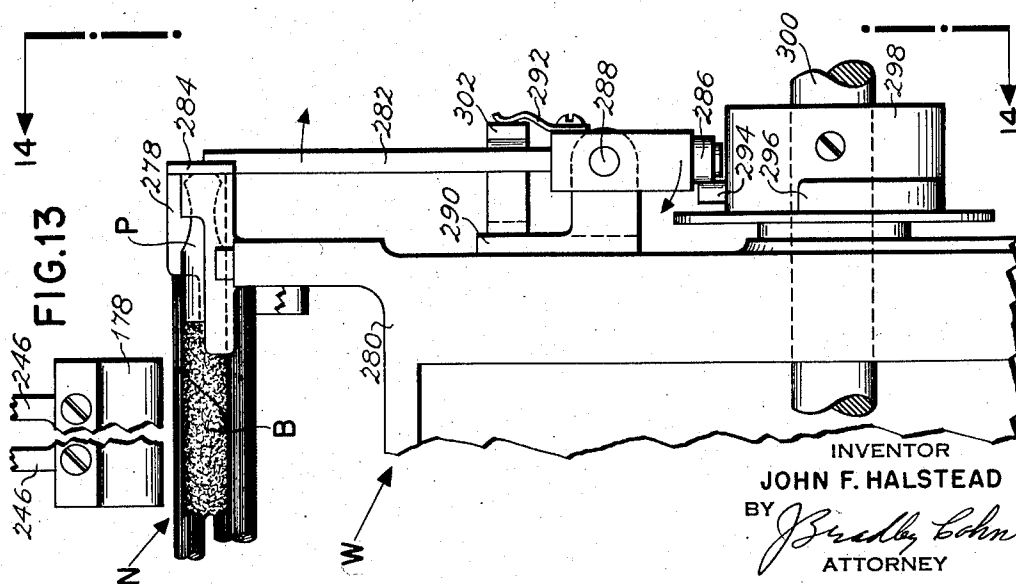
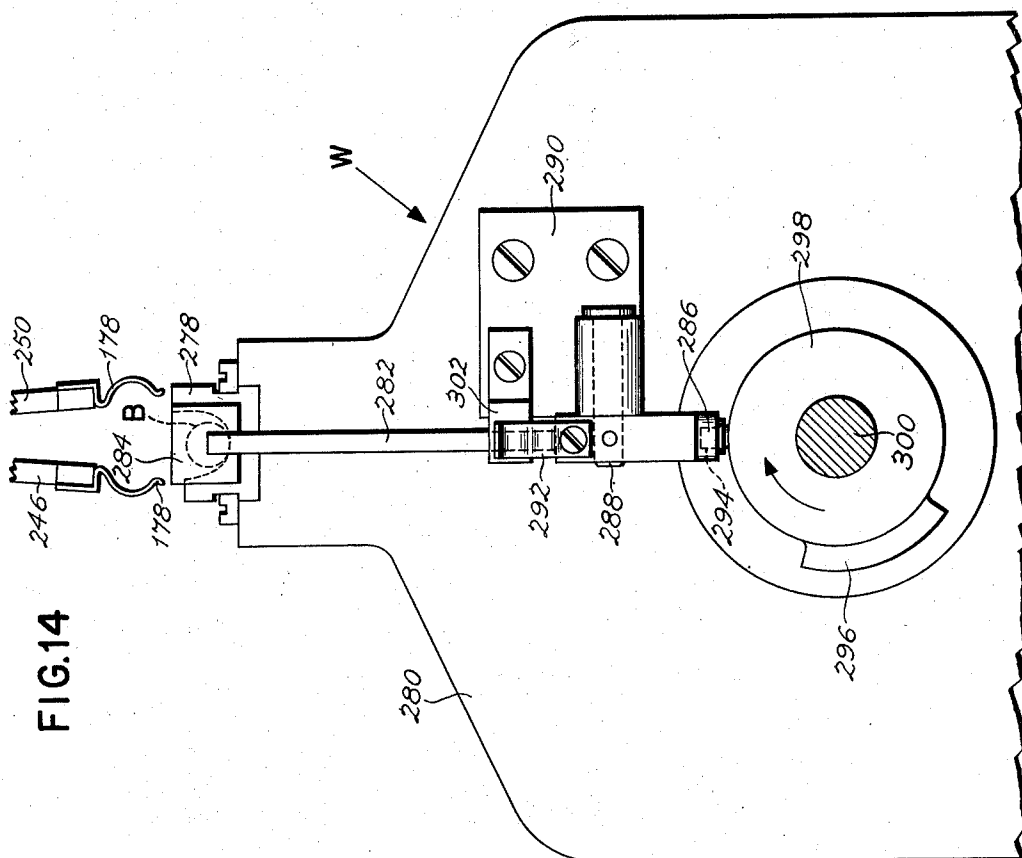
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CIGAR MOUTHPIECE FEED

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Application October 8, 1953, Serial No. 384,883

22 Claims. (Cl. 131—88)

This invention relates to mechanical application of mouthpiece tips to smoking articles.

There has been increasing popularity in cigars having a mouthpiece tip formed of wood, plastic or other substance. This tip is somewhat similar to the mouthpiece of a pipe stem and is permanently secured to the cigar as an integral part thereof. When manufactured by hand, these mouthpieces are inserted over the head end of the cigar bunch prior to the application of the cigar wrapper. The cigar wrapper is then wound around the mouthpiece tip as well as the bunch to form a unitary structure.

Cigars of this type have also been manufactured on conventional cigar machines by the simple expedient of stopping the cigar machine, removing the formed bunch prior to its introduction to the wrapping station, manually applying the mouthpiece tip and then replacing it in the wrapping station and re-starting the machine. Quite obviously, this greatly reduces the production of the machine. Also, the wrapper is frequently unevenly applied in the unmodified machine.

It is a prime object of my invention to devise a mechanism to automatically apply mouthpiece tips to the cigar bunch in timed cycle with existing machines without affecting the speed thereof.

It is a further object of my invention to devise a feed means to automatically feed mouthpiece tips to the mechanical applying means.

It is still another object of my invention to modify the header block of the wrapping device of a cigar machine to uniformly apply wrappers to a cigar bunch having such a mouthpiece at the head end thereof.

It is still another object of my invention to construct a feeding and applying device taking its motion from a source of motion already present on conventional cigar machines.

It is further my invention to combine the applier and feeder in a single device.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, both as to its organization and method of operation may best be understood by reference to the following description taken in connection with the accompanying drawings, in which:

Fig. 1 is a partial end elevation of the mouthpiece turret feed taken on line 1—1 of Fig. 2;

Fig. 1A is a partial end elevation of the machine taken on line 1A—1A of Fig. 2; illustrating the mouthpiece feed control lever;

Fig. 1B is an end elevation of the upper portion of the turret shown in Fig. 1.

Fig. 2 is a partial side elevation of the mouthpiece turret feed mechanism shown in conjunction with a cigar bunch mold turret and a bunch transfer device and illustrating the attachment of a mouthpiece to a cigar bunch;

Fig. 3 is a partial sectional side elevation of the mouthpiece storing and feeding turret;

Fig. 4 is a partial side elevation of the feeding turret illustrating the radial mouthpiece carrying slots in the periphery of the same;

Fig. 5 is an isometric view illustrating the bunch transfer jaw controlling mechanism at the bunch loading and mouthpiece applying station;

Figs. 6 and 7 are detailed side elevations of the mouthpiece receiving and applying mechanisms illustrating the mouthpiece receiving cradle during delivery action of a mouthpiece to the plunger type applying mechanism;

Fig. 8 is a sectional plan view of the plunger type mouthpiece applying mechanism taken on line 8—8 of Fig. 6;

Fig. 9 is an enlarged end elevation of the mouthpiece applying plunger taken on line 9—9 of Fig. 6 showing the plunger in normal or receiving position;

Figs. 10 and 11 are also end elevations of the mouthpiece applying plunger illustrating the axial motion when applying a mouthpiece to the top of a cigar bunch;

Fig. 12 is an end elevation of a portion of the mouthpiece turret feed in conjunction with a cigar bunch mold turret, a cigar bunch transfer device and a cigar wrapper applying mechanism;

Fig. 13 is a partial side elevation of the cigar wrapper applying mechanism illustrating the cigar bunch and mouthpiece positioning and controlling mechanism, and

Fig. 14 is an end elevation of the same taken on line 14—14 of Fig. 13.

With reference to the drawings, the mouthpiece turret feed consists of a wheel or turret 20 having peripheral equally spaced radial slots 22 to accommodate the mouthpieces P placed there by the operator. One side of the turret 20 is provided with a clear plastic disc 23 which forms a rear end wall for the slots 22. Wheel or turret 20 is loosely mounted on a horizontal shaft 24 held by means of a stand or bracket 26 secured to a gear housing 28 which in turn is suitably fastened to the top of the bed 30 of the cigar machine.

A pawl 34, pivoted on stud 32 of wheel 20, engages notch 38 of a disc 40 through the action of tension spring 36 (Fig. 1). Disc 40 is secured to the hub of a sprocket 42 (Figs. 1 and 3) loosely mounted on horizontal shaft 24. Sprocket 42 is driven through a chain 44 by a sprocket 46 (Figs. 1 and 2) mounted on a shaft 48 rotatably supported by a suitable bearing lug of gear housing 28.

A gear 50 secured to shaft 48 meshes with a gear 52 rotatably supported on a stud shaft 54 (Fig. 1). Integral with gear 52 is another gear 56 which meshes with a gear 58 mounted on a shaft 60 supported by a suitable bearing lug of gear housing 28. The gear 58 through an intermediate gear 62 on a stud 64 is driven by a gear 66 secured to a continuously driven shaft 68 protruding from the mold turret gear housing 70. Gear housing 70 contains the driving mechanism for shaft 68 which is described and illustrated in the patent to Neumair No. 2,633,135 dated March 31, 1953. Thus, the wheel 20 is continuously driven at the proper rate of speed through the aforementioned gears, sprockets and chain from the main drive of the cigar machine.

The slots 22 of the turret wheel 20 are shaped in conformity with the outlines of the mouthpieces P so as to provide proper orienting means with regard to their flattened sides at the mouth gripping end of said mouthpieces. Inspection of the mouthpieces can be made during the insertion into slots 22. Each slot 22 is provided with a suitably shaped plunger or pusher 72 (Figs. 1, 2 and 3), each of which is attached to a rod 74 slidably engaged with a hole 75 at the bottom of each slot 22. Each rod 74 at its free end is pro-

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vided with a stop pin 76 to prevent the plungers 74 from dropping out of the slots 22 when passing through the lower arc of travel during rotation of wheel 20.

Mouthpiece guide and retainer plates 78 surround the wheel except for a 50 to 60 degree section at the top (Fig. 1B). The turret 20 is loaded at this exposed top section. Plates 78 are held at the top by arms 79 of bracket 26 and at the bottom by lugs 81 (Fig. 1). The plungers 72 urge the mouthpieces P against plates 78 to prevent their cocking from their position transverse a radius of turret 20 in radial slots 22 and also to assure proper feed from slots 22. This movement of the plungers is initiated at the three o'clock position by floating cams 69 which contact a rod 74 as it rides onto the high portion 71 of a cam 69. Because the plunger rods 74 are spaced fairly close to each other, it is necessary for the smooth operation to stagger the rods and the holes 75. As illustrated in Fig. 4, the holes 75 (and of course the rods 74) are staggered in sets of three. Accordingly, three floating cams are provided so that each cam 69 actuates all plunger rods 74 of one row.

To successively empty all mouthpieces, turret 20 is provided with seventy-seven slots 22 and is rotated continuously at a speed rate of three slots 22 for each cycle of the cigar machine. Bridge plate 86 opens once for each cycle of the cigar machine for a time period equal to the passage of slightly more than one of every third slot 22. Since seventy-seven is not divisible by three, the entire wheel may be emptied.

The number seventy-seven also requires that the staggering of the plungers in rows of three be slightly altered at one point as illustrated in Fig. 4.

Floating cams 69 (Figs. 1 and 3) are provided with a slot 73 by which they movably hang on pin 77 held by a U-shaped bracket 83 secured to the bracket 26 by means of screws 87. Another pin 91 protruding from bracket 83 engages a curved cut-out portion 93 on each cam. The high spot 71, therefore, pushes against the ends of rods 74. In the event that the turret 20 is rotated counterclockwise (Fig. 1) by hand, rods 74 will simply lift the cams out of their path, pin 91 acting as the pivot for the cam and slot 73 permitting the motion past pin 77. The turret 20, of course, may be so reversed because pawl 34 becomes disengaged from notch 38.

The upper portion of the periphery of turret 20 between the upper ends of retainer plates 78 permits the operator to insert the mouthpieces P by hand into slots 22.

The lower ends of retainer plates 78 are spaced apart the width of a slot 22 to permit mouthpieces P to drop from the rotating magazine wheel turret 22 into a mouthpiece receiving trough R having sides formed of two spaced side wall members 80 each of which is mounted to the lower end of one retainer plate 78. The front end of trough R is formed of a plate or bar 82 (Figs. 2 and 12) secured to the ends of side walls 80 by means of screws or pins 84 (Fig. 12). The bottom of trough R is formed by a retractable bridge plate 86 secured to the free end of an arm 88 mounted on a shaft 90 supported in a suitable bearing lug of gear housing 28. Also fastened to shaft 90 is a cam lever 92 carrying on its free end a cam roller 94 engaging with a track 96 of a cam 98 mounted on the rotating shaft 60. Cam track 96, lever 92, shaft 90 and arm 88 positively move bridge plate 86 from its position at the bottom of mouthpiece receiving trough R against the yielding action of a tension spring 95 hooked to arm 88 and anchored to the rear wall of gear housing 28. Since plate 86 is returned by the action of spring 95, no damage or breakage can occur in the event of an obstruction or jam.

Cam lever 92 engaging with cam track 96 opens and closes bridge plate 86 to drop in proper time a mouthpiece P from the trough R into a cradle 100.

The cradle 100 is positioned below trough R by means of an integral lug 102 mounted on a horizontal shaft 104 supported by a suitable bearing bracket 106 secured to

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the top of gear housing 28. A control lug 108 is also secured to shaft 104. Lug 108 rests on a roller 110 to support cradle 100 in the horizontal position against the pull of gravity. Roller 110 is pivoted in the free end of cradle actuating arm 112 pivotally supported by means of a stud shaft 114 held by a bracket 116 to the inner wall of gear housing 28.

The arm 112 is operated by a cam lever 118 secured to its hub 113. The free end of lever 118 carries a cam follower 120 engaging an open cam track 122 formed by the rim of the drum or cup-shaped cam 98. A tension spring 124 (Fig. 2) attached to arm 112 and anchored to housing 28 maintains cam follower 120 in engagement with cam track 122.

When the cam follower 120 rides on the high portion of the track 122 the cradle actuating arm 112 through roller 110 and lug 108 holds the cradle 100 in horizontal or tip receiving position (Figs. 2 and 6). As follower 120 rides over the low portion of track 122, the roller 110 moves against part 107 of lug 108 to swing the cradle downward into alignment with an angularly arranged chute 126 (Figs. 2, 6 and 7).

Chute 126 is integral with and extends upwardly from a mouthpiece guiding member 128 secured by means of a flange 130 to the vertical wall of gear housing 28. This dipping motion of the cradle 100 is timed with the closed position of bridge plate 86 to permit delivery of only one mouthpiece P into the trough-shaped forward portion 132 of the mouthpiece guiding member 128. The sliding of the mouthpieces P from cradle 100 into member 128 is assisted by a shaped vertical cam plate 134 which enters slot 136 of cradle 100 during the dipping motion. Cam 134 is suitably secured to the top of gear housing 28 and projects into the path of the vertically oscillating cradle 100.

The following means are provided to inactivate cradle 100 when it is desired to stop the feed of mouthpieces P. Hub 113 of cradle actuating arm 112 is provided with another arm 115 which carries a suitably shaped stud 119 that protrudes through a slot 121 (Fig. 1A) in the cover plate 29 of gear housing 28. By engaging stud 119 with a step 123 in a manual latch lever 125, the cam lever 118 which is integral with hub 113 is held in its raised position supporting the cradle and its roller 120 cannot follow the dip or contour of cam track 122. Latch lever 125 is pivotally mounted on a stud 127 held by cover plate 29. During normal operation latch lever 125 is kept out of the path of stud 119 and rests against a stop pin 31 (Fig. 2) projecting from the cover plate 29.

Mouthpiece guiding member 128 slidably supports an applying plunger 138 the forward end of which is scooped out and shaped to form a mouthpiece receiving trough 140. The latter is open on its forward end while the rear wall is formed by a countersunk vertical step 142. Plunger rod 138 is also provided with a suitably shaped guide track 144 engaged by a vertical pin 146 (Figs. 6, 7 and 8) projecting from a sleeve portion 148 integral with flange 130 of guiding member 128. To the extreme rear end of plunger rod 138 is secured a clutch collar 150 the annular groove of which engages with a pair of rollers 152 pivotally attached to the forked end of an arm 154 mounted on a horizontal shaft 156 supported in suitable bearing lugs of the gear housing 28.

Shaft 156 is rocked by a cam lever 158 which is secured to the shaft and carries on its free end a cam roller 160 engaging track 122 of cam 98. Roller 160 is held in engagement with track 122 by a tension spring 162 anchored to post 164 of gear housing 28 and exerting its pull on pin 163 of arm 154.

When roller 160 rides over the high portion of track 122, the plunger 138 is moved to its backmost or mouthpiece receiving position. As roller 160 descends towards the low spot of cam track 122 the plunger is

urged by spring 162 through its mouthpiece applying operation as follows:

The mouthpiece P deposited by the cradle 100 into chute 126 of member 123 drops into trough portion 140 of plunger 138 which shortly thereafter starts to advance in the direction of the arrow shown in Fig. 7. During this forward movement of plunger 138, the forward edge of the mouthpiece P contacts a vertical pin 166 suspended from a weighted lug 168 pivotally attached to a bridge bracket 170 secured to the top edges of the trough-like end portion 132 of member 123 (Figs. 2, 6, 7 and 12). The weight of lug 168 is sufficient to hold the mouthpiece P back until the plunger advances to the point where the tip end of mouthpiece P engages with countersunk step 142 of plunger 138. Pin 166 is then simply swung upward to ride over the mouthpiece as it advances firmly engaged by plunger 138.

In the meantime, a cigar bunch B has been ejected from one of the molds 174 of a cigar mold turret 176 and placed between a pair of jaws 178 of a bunch transfer device T (Fig. 7). Transfer device T holds the cigar bunch B with its head end H towards and in line with the approaching open end of the mouthpiece P held by the advancing plunger 138.

The head end H of the cigar bunch B has substantially the same outside diameter as the inside diameter of the open end of the mouthpiece P. The outside diameter of a mouthpiece P is usually the same as the outside diameter of the remainder of bunch B. This permits a wrapper leaf to be wound about both the mouthpiece and bunch to form the final mouthpiece cigar.

Because track 144 engages stationary pin 146, the plunger 138 is rocked about its axis during the forward motion to duplicate the twisting motion of manual application of a mouthpiece to a cigar. This twisting or screwing motion assures proper seating of the mouthpiece about the head end of the cigar and prevents buckling of the bunch binder leaf. In order to obtain maximum turning action of plunger 138 the curve of the track is such that the plunger—looking towards the cigar bunch—first turns counter-clockwise before contact permitting a full throw clockwise upon contact with the head end of the cigar bunch (Figs. 2 and 8).

The countersunk step 142 engages the top end of the mouthpiece to provide sufficient gripping action to assure rotation of the mouthpiece with the plunger.

Plunger 138 has an angular slot 180 cut in it to accommodate pin 166. This prevents damage to pin 166 when it drops behind the mouthpiece P during the forward twisting motion of plunger 138.

Where there is a defective bunch or no bunch at all, the mouthpiece P would return with the plunger. Pin 166 prevents this, however, by dropping behind mouthpiece P and stripping it off the plunger during the return stroke into a receptacle 182 secured to housing 184.

In either event the empty plunger 138 immediately returns to its backmost or starting position as shown in Fig. 6 and is ready to receive another mouthpiece forwarded from cradle 100.

The mouthpiece feed works in conjunction with the cigar machine mold turret 176 and its associated mechanism as illustrated in Figs. 2, 5, 7 and 12. The mold turret is substantially the same as shown and described in the Neumair Patent 2,633,135. Turret 176 carries on its periphery a plurality of molds 174 and is rotated intermittently by means of an indexing mechanism (not shown). The cigar bunches B are inserted in molds 174 either manually, or mechanically, by mechanism such as shown in the Halstead Patent No. 2,633,134 dated March 31, 1953. The bunches are advanced successively past shaping and trimming stations to be finally ejected at the ejecting station by ejecting rods 172.

Rods 172 are mounted vertically on a cross bar 186 (Fig. 2) detachably secured to the top of a sleeve 188 slidably mounted on a post 190 fastened to and supported

by a suitable turret frame member (not shown) protruding into turret 176. The sleeve 188 is provided with an integral arm 192 (Fig. 12), the forked end of which engages a roller 194 pivotally attached to a cam lever 196 secured to a shaft 198 supported by a bearing lug 200 of a turret frame member.

Cam lever 196 also carries a cam roller 202 which engages a track 204 of a cam 206 mounted on continuously driven shaft 68. The cam track 204 in conjunction with cam lever 196 and sleeve 190 in properly timed relationship with the rest of the machine control the vertical movements of ejector rods 172 which in turn eject the bunches B from the molds 174 at the bunch ejecting station.

During the rotation of the turret 176 ejector rods 172 are in their lowermost position. During the dwell of mold turret 176 the rods 172 ascend through holes in turret 176 and mold 174 to lift the formed bunch into the open jaws 178 of bunch transfer T (Fig. 7).

Jaws 178 at that moment are held open by means of a jaw control rod 208 (Figs. 2 and 5) which is now in elevated position and in contact with a stud 210 projecting from one of the jaws 178. As the bunch B enters the open jaws, jaw control rod 208 descends disengaging stud 210 whereupon torsion spring 212 closes the jaws.

The cigar bunch B is now held stationary (during a dwell of transfer mechanism T) while the approaching mouthpiece applying plunger 138 moves towards the head end H of the bunch to place a mouthpiece thereon in the manner described above. Since the mouthpieces may vary slightly in length and the stroke of plunger 138 remains constant, the gripping action of jaws 178 is sensitive enough to permit a slight lengthwise movement of the bunch after the mouthpiece P is fully seated on the head end H. This not only compensates for variations that occur in the mouthpieces P, but further aligns the cigar bunches with respect to the tip end of the mouthpiece after it is applied.

Jaw control rod 208 extends horizontally from a guide head 214 sliding in a slot 216 (Fig. 5) of a boss 218. Guide head 214 is secured to a vertical rod 220 (Fig. 2) also slidably supported in boss 218. The lower end of rod 220 is pivotally connected to one end of a link 222, pivoted to an arm 224 (Figs. 2 and 12) loosely mounted on shaft 226 supported in suitable bearing lugs of the turret housing.

A cam lever 228, projecting from the hub of arm 224, carries on its free end a roller 230 engaging a cam track 232 formed by the periphery of cam 206. This cam track 232 through arm 224 raises and lowers jaw control rod 208.

The cigar bunch transfer device T which carries jaws 178 is of conventional design. It consists of a hollow arm 234 secured to an oscillating shaft 236 (Fig. 12). A sprocket (not shown) is mounted in arm 234 about shaft 236 but secured against rotation therewith. This sprocket is chain connected to another sprocket (not shown) mounted on a shaft 238 supported in a suitable hub 240 projecting horizontally from the free end of arm 234. Mounted on the end of shaft 238 is a jaw stabilizer arm 242 which due to the sprockets and chain arrangement remains always in vertical position regardless of the angular position of arm 234 during its movement.

The free forked end of arm 242 engages a pin 244 projecting from a jaw member 246 pivotally connected by means of shaft 248 (Fig. 2) to another jaw member 250 loosely mounted on and supported by shaft 238. The top hub portion of jaw member 250 is provided with a vertically extending lug 252 carrying a horizontally extending pin 254. There is secured to the end face of hub 240 of arm 234 a disc 256 which is provided with a suitably shaped cam lug 258 and a horizontally extending pin 260 (Figs. 2 and 12). A torsion spring 212 is provided in the space between the disc 256 and the hub of

jaw member 250. Torsion spring 212 surrounds shaft 238 and is formed with extending ends 262 and 264. The other jaw member 246 is also provided with a lug 266 which carries a horizontally extending pin 268.

The bunch transfer device T is employed for the purpose of receiving a bunch from the cigar mold turret 176 and holding the bunch during application of a mouthpiece. It then transfers the bunch to a nest of rollers N of a cigar wrapper applying device W.

The opening and closing of the gripper jaws 178 held by the jaw members 246 and 250 carried by the transfer arm 234 is accomplished as follows:

For a proper understanding of the operation of the transfer T it is necessary to bear in mind that the sprocket and chain arrangement in the hollow transfer arm 234 establishes the position of the jaw stabilizer arm 242 and the transfer jaws in the perpendicular regardless of the angular position of the arm 234. It should also be borne in mind that the disc 256 carrying the cam lug 258 and the pin 260 is secured to the arm 234 and therefore is functionally an integral part thereof.

Now, as the transfer arm 234 approaches the bunch receiving station (bunch ejecting station of the mold turret 176) pin 260 exerts pressure against extending end 264 of torsion spring 212 causing the other extending end 262 to exert pressure against pin 254 of jaw member 250. This urges jaw member 250 to swing about its pivot shaft 238 toward the other jaw member 246. Although the jaw member 246 is carried on shaft 248 by jaw member 250, it pivotally engages jaw stabilizer arm 242 by means of pin 244. Therefore the lower portion of jaw member 246 swings toward jaw member 250 during the descent of arm 234 and upon the application of pressure by a spring against pin 254 of jaw member 250. Therefore as the gripper jaws approach the bunch receiving station they are in closed position. However, control rod 208 activated by cam track 232 is moved upward and into the path of stud 210 projecting from jaw member 246. Continued downward movement of the transfer T causes an opening of the jaws 246 because of the arrest of its lug 210.

Ejector rods 172 now raise a bunch into the open jaws and the jaw control rod 208 descends allowing the jaws 178 to close gently upon the bunch. This gentle closing is important since a snap action exerted on the center portion of the delicate cigar bunch would cause an expansion of the head end H which would prevent or at least make troublesome the application of a mouthpiece P.

After the mouthpiece P has been applied to the head end H, transfer T moves upward through its semi-circular orbit to deposit the tipped bunch in a nest of rollers N of cigar wrapping device W.

During this upward movement, the pin 260 carried by disc 256 gradually disengages from extending end 264 of spring 212, thus decreasing and finally releasing pressure at the other extending end 262 against the pin 254 of jaw member 250. Before this spring tension is finally released, however, the transfer arm 234 has ascended high enough for pin 268 of jaw member 246 to engage and ride on the outer periphery of cam lug 258 to prevent voluntary opening of jaws 178 (Fig. 12).

Now as the arm moves downward toward wrapping device W the pin 260 loses contact with the extending end 264 of torsion spring 212 and moves toward extending end 262. Continued downward movement causes pin 260 to exert reverse pressure on torsion spring 212 through its extending end 262. This in turn urges spring end 264 against pin 254 protruding from jaw member 250 to create an opening pressure upon the jaws 178. However, the still continuing engagement of pin 268 with jaw member 246 at the outer periphery of cam lug 258 prevents the jaws opening until they are above the nest of rollers N. As the pin 268 drops off cam lug 258, spring pressure against pins 254 of jaw member 250 has built up sufficiently to snap the jaws open. This

sudden snapping release is necessary in order to discharge the cigar bunch and overcome the adherence of moist tobacco to the jaws 178.

The structure and action of the transfer device T is therefore designed to close slowly when gripping a bunch but open with a snap when releasing a bunch. This action is important and necessary in a transfer device combined with the mouthpiece applying mechanism of the invention. It is ordinary custom to have transfer devices with toggle arrangement causing a snap action at both receiving and discharging positions. But where as here the mouthpiece is to be applied to an end of reduced diameter, a snap closing action is undesirable.

After the bunch is deposited in the wrapping device W transfer arm 234 starts its return stroke toward the bunch receiving station with its jaws open. During this return motion the pin 260 will again disengage extending end 262 and move against extending end 264 producing a pressure tending to close jaws 178. However, when this change in spring action takes place arm 234 has moved far enough to confine pin 268 on lug 266 of member 246 to the inner wall of cam lug 258 preventing the jaws from closing. During continued return motion of arm 234, pin 268 rides along the inner wall of cam lug 258 until it reaches the end 272 of cam lug 258 whereupon it disengages to permit jaws 178 to close. The now closed jaws approach the bunch receiving station to begin the cycle anew when stud 210 strikes the raised jaw of control rod 208.

As mentioned heretofore, transfer arm 234 is mounted on shaft 236 supported in suitable bearings of a frame or stand 276 secured to bed plate 30 of the cigar machine. Shaft 236 may be oscillated by a rack and gear (not shown) driven from and in proper time relation to the cigar machine.

The wrapper applying device W shown in Figs. 12, 13 and 14 is a conventional type of cigar wrapping device with a conventional nest of rollers N such as disclosed in Randolph Patent 2,445,308 dated July 13, 1948. The nest of rollers N is automatically opened during bunch depositing and discharging and remains closed during the wrapper applying process.

The header block 278 and bunch locating and guiding mechanism is modified in Figs. 13 and 14 as illustrated.

The header block 278 is an open-end trough-shaped member secured to the top portion of one end of the frame housing 280 of wrapping device W. The bunch locating and guiding mechanism consist of an arm 282 whose upper end carries a paddle or plate 284 while the lower end carries a roller 286. Arm 282 is mounted on a stud shaft 288 rotatably supported by a bearing lug 290 secured to one of the end walls of frame housing 280. Attached to arm 282 is a tension spring 292 employed for the purpose of keeping the paddle plate 284 away from the end of header block 278 except when forced into contact by means of a pin 294 or a cam lug 296 both of which are carried by a rotating cam disc 298. Pin 294 and lug 296 when engaging roller 286 carried by arm 282 cause paddle plate 284 to engage the open end of header block 278 to position the tip of the cigar bunch mouthpiece. Cam disc 298 is mounted on the wrapping device cam shaft 300 which is driven through a suitable connection from the main drive of the cigar machine.

During the wrapping operation the bunch locating and guiding mechanism operates as follows:

Cigar bunch B with applied mouthpiece P is deposited by transfer device T into the open nest of rollers N so that the top end of the mouthpiece slightly projects over the open end of header block 278. Paddle plate 284 on arm 282 is held a short distance away by spring 292. While the nest of rollers N is still open, pin 294 on cam disc 298 engages roller 286 to swing paddle plate 284 onto contact with the open end of header block 298. This positions the tip end of mouthpiece P flush with the open end of header block 278.

This locating action by the plate 284 of arm 282 is only momentary during the time pin 294 contacts the roller 286. Plate 284 due to the action of spring 292, moves away from the end of the header block and the nest of rollers N close to begin wrapper applying operation. There is a possibility that the cigar bunch B during the mouthpiece applying operation might have developed a small bump or bulge adjacent to the mouthpiece rim which might cause a forward creeping of the mouthpiece. Accordingly, paddle plate 284 due to the engagement of roller 286 with cam lug 296 is again brought in contact with the open end of header block 278 to prevent any possible creeping movement during the wrapper applying operation. As parts of the wrapper are also rolled over the mouthpiece, this bunch locating and guiding mechanism assures a uniform distance from the top end of the mouthpiece to the end of the wrapper on all cigars. In order to check the movement of the arm 282 caused by spring 292 a stop lug 302 attached to bearing lug 290 is provided.

It is, of course, understood that while I have described my invention in a cigar machine embodiment, it might well be used in the manufacture of other smoking articles or articles requiring a similar tipping device or applicator.

The novel features are set forth in the appended claims:

I claim:

1. The combination with a cigar machine having a bunch forming station and a wrapper applying station, and a transfer device to transfer said bunch from said bunch forming station to said wrapper applying station, a plunger formed to support on its leading end a mouthpiece tip, means operating in timed relation with said transfer device to move said plunger toward a cigar bunch held stationary in said transfer device to apply said mouthpiece tip thereto prior to wrapping said bunch at said wrapper applying station, and a device to locate said bunch with said applied mouthpiece tip at said wrapper applying station so a wrapper may be applied around said bunch and a predetermined portion of said mouthpiece tip.

2. In a cigar machine having a mold turret, ejecting means to eject a molded cigar bunch from said mold turret at a specific station, a transfer device to transfer said cigar bunch from said ejection station, said transfer device having jaws to grip said cigar bunch, a plunger mounted to reciprocate in co-axial alignment toward and away from said cigar bunch held by said transfer jaws, said plunger having means on its end to support a mouthpiece tip suitable for application to the head end of said cigar bunch, and means to rotate said plunger with said tip about an axis defined by the line of reciprocation of said plunger during tip applying motion of said plunger toward said cigar bunch.

3. A device for applying a mouthpiece tip to the head end of a cigar bunch held in a transfer claw of a cigar machine, said device comprising, a slide secured to a supporting structure of said cigar machine, a rotating cam, said cam having a shaft, a positive drive linkage connecting said shaft to a constantly driven shaft of said cigar machine to rotate said cam once for each cycle of said cigar machine and in timed relation thereto, a plunger having its head end shaped into a trough to receive a mouthpiece tip fed from said slide, a member movable to feed one mouthpiece down said slide, a cam track in said cam, a cam lever engaging said track, said cam lever operable to move said movable member once during each rotation of said cam, and a second cam lever movable to and fro by said cam track and engaging said plunger to move it horizontally to and fro, a curved keyway cut in said plunger to traverse some of the circumference of said plunger during the longitudinal passage of the length of said plunger, a stationary support mounted on said cigar machine to support said plunger, and a pin in said stationary support engaging the curved keyway in said plunger to rock said plunger on its axis during its reciprocating

motion, said cam being shaped to move once during its rotation, said second cam lever and said plunger toward a cigar bunch held in said transfer claw to apply a mouthpiece tip supported by said trough shaped head end of said plunger to the head end of said cigar bunch.

4. In a device securable to a cigar machine for feeding and applying one by one mouthpiece tips to the head end of cigar bunches at a point prior to the wrapper applying station of a cigar machine comprising, a storage magazine for storing cigar mouthpiece tips in correct end-for-end orientation, a trough to receive sidewise at least one of said tips, said trough having a bottom gate, a cradle support capable of holding no more than one of said tips supported beneath said bottom gate, means to open said bottom gate whereby one of said tips may be deposited in said cradle, means to discharge said one tip from said cradle, a plunger mounted for reciprocatory movement toward and away from a cigar bunch in said cigar machine, said plunger being in coaxial alignment with said one cigar bunch, means to convey said tip from said cradle to said plunger, and other means controlled from the main drive of said cigar machine to move said one plunger to apply said tip on said cigar bunch.

5. In a device securable to a cigar machine having a bunch transfer mechanism, said device comprising a chute, a magazine operable to feed cigar mouthpieces one by one into said chute, a horizontal plunger mounted to reciprocate along a path in coaxial alignment with a cigar bunch supported in the bunch transfer mechanism of a cigar machine, said plunger having at its forward end a semi-circular trough open at the forward end and shaped in a counter-sunk like step at the rearward end to support a mouthpiece with its open end toward the open end of said trough, and composite means operated from said cigar machine to move said plunger to a position beneath said chute to receive one of said mouthpieces and to move forward to apply said mouthpiece to the reduced head end of a cigar bunch, said plunger having a simultaneous rotary twisting motion on its own axis.

6. In a cigar machine the combination with means to apply a mouthpiece tip to the head end of a cigar bunch, of a magazine to feed tips one by one, said tip applying means comprising, a rotatable turret having a plurality of peripheral radial slots formed therein to support a plurality of mouthpiece tips in side by side orientation, and guides engaging the periphery of said turret to retain said mouthpiece tips in said formed radial slots against the action of gravity, said guides being discontinuous at the top of said turret to permit the insertion of tips into said radial slots, said guides being discontinuous at the bottom of said turret a distance substantially corresponding to the width of one of said radial slots to permit a one by one discharge of said tips.

7. In a cigar machine the combination with means to apply a mouthpiece tip to the head end of a cigar bunch, of a magazine to feed said tip applying mechanism comprising, a rotatable turret having a plurality of peripheral radial slots formed to support therein a plurality of tips in side by side orientation, guides engaging the periphery of said turret to retain said tips in said radial slots against the action of gravity, said guides being discontinuous at the top of said turret to permit the insertion of tips into said radial slots, said guides being discontinuous at the bottom of said turret a distance substantially corresponding to the width of one of said radial slots to permit a one by one discharge of said tips, piston-like members in the bottom of each of said radial slots, connecting rods on said piston-like members, a floating cam to urge said rods and piston-like members outwardly at substantially the three o'clock position of said turret to positively move said tips against said retaining guides to prevent their cocking by gravity in said slots.

8. In a cigar machine the combination with means to apply a mouthpiece tip to the head end of a cigar bunch, of a magazine to a feed tips to said tip applying means

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comprising a rotatable turret having a plurality of outwardly open radial slots formed therein and adapted to support a plurality of tips in side by side orientation, guides engaging the periphery of said turret to retain said tips in said radial slots of said turret against the action of gravity, said guides being discontinuous at the top of said turret to permit the insertion of tips into said radial slots, said guides being discontinuous at the bottom of said turret a distance substantially corresponding to the width of one of said radial slots to permit a one by one discharge of said tips, piston-like members in the bottom of each of said radial slots, connecting rods on said piston-like members, and a plurality of floating cams to urge said rods and piston-like members outwardly at substantially the three o'clock position of said turret to positively move said tips against said retaining guides to prevent their cocking by gravity in said slots, adjacent connecting rods being staggered to contact different ones of said plurality of floating cams.

9. In a device securable to a cigar machine having a bunch molding turret with a discharge station to discharge shaped cigar bunches from said turret into a transfer device, a single drive shaft securable to the drive means of said cigar machine, a rotary turret driven from said drive shaft and having radial magazine slots in said rotary turret shaped to support in proper orientation a plurality of shaped cigar mouthpieces, a horizontal plunger mounted for reciprocation to and from said discharge station of said cigar machine, a vertical magazine supported beneath said turret to receive and horizontally dispose at least one of said mouthpieces, said magazine having a movable bridge plate bottom, a cradle pivotally supported beneath said bridge plate, said cradle being capable of holding one mouthpiece and swingable from the horizontal to a discharge position, a single rotating cam driven from said drive shaft in timed relation to said cigar machine, a lever operated from said cam to move said magazine bottom bridge plate to open position, another lever operated from said cam to support said cradle in the horizontal when the bridge plate is open and to lower said cradle to delivery position when said bridge plate is closed, and a third lever operated from said cam to move said plunger into mouthpiece receiving position beneath said cradle and to mouthpiece applying position at the discharge station of said mold turret.

10. A device as set forth in claim 9, further characterized in that said reciprocating plunger has an operative end shaped to form an open ended trough for supporting a mouthpiece, said trough having at its other end a counter-sunk portion to receive a portion of a mouthpiece to support it against rotation relative to said plunger, a longitudinally curved keyway on said plunger, a stationary pin engaging said keyway to rotate said plunger about its horizontal axis during the forward feed whereby said plunger will have a twisting motion as it applies a mouthpiece to the reduced head end of a cigar bunch.

11. A device as set forth in claim 9 further characterized in that the cradle supporting lever supports the cradle in the horizontal position by positive cam action and is spring-loaded to lower the cradle by negative cam action, a pin secured to said cradle operating lever and a latch movable under said pin to hold said lever against said spring loading and from said cam whereby the cradle may be selectively held in the horizontal position and the entire mechanism rendered inoperative.

12. Means on a cigar machine to apply a mouthpiece tip to a cigar bunch, said means including a transfer claw adapted to grip a cigar bunch, a mouthpiece tip applying plunger longitudinally movable in coaxial alignment with a cigar bunch held in said transfer claw, resilient means to urge said transfer claw to a closed position, a member movable to engage and open said claw against the force of said resilient means and common prime drive means to slowly move said last named

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member to permit said claw to close gradually about a cigar bunch to grip it firmly without jarring said drive means and then controlling the movement of said plunger to mouthpiece tip applying position whereby said cigar bunch may be held firmly in said transfer claw during the application of the mouthpiece tip thereto.

13. In a cigar machine having a mold turret, and an ejecting station at said turret, the combination of a transfer gripper having resilient means to hold the gripper in closed position, a member mounted adjacent said ejecting station to engage said transfer gripper to open it against said resilient means, said member being movable out of engagement to close said gripper gradually upon a moist cigar bunch ejected at said ejecting station, means to apply a mouthpiece tip to said cigar bunch gripped by said gripper at said ejecting station, said transfer gripper being movable to a second position for discharge, means to reverse the effective pressure of said resilient means to open said gripper, and a member to positively hold said gripper against opening until the moment of arrival at said second discharge position, whereupon said gripper will open with a rapid snapping motion to discharge said moist cigar bunch.

14. A device securable to a cigar machine to feed and apply formed mouthpiece tips to the head ends of cigar bunches, said device having a relatively large rotatably mounted wheel having radial slots communicating with the periphery of said wheel and shaped to receive formed mouthpiece tips in proper end for end orientation and positioned substantially parallel to the axis of said wheel, stationary guide members extending substantially around the entire periphery of said wheel to retain said mouthpiece members within said slots, said guide members being interrupted at the top to expose said slots for loading and being further interrupted at the bottom to form an orifice having substantially the dimensions of a cross section of one of said slots so that said tips may be discharged therethrough one by one, a gate beneath said orifice movable to open, and closed position across said orifice to control the discharge of said mouthpiece tips therethrough, a plunger mounted for horizontal axial reciprocation beneath said gate, said plunger having its one end adapted to engage a mouthpiece tip to apply it during its reciprocation to a cigar bunch, and a unitary drive means to rotate said magazine wheel, open and close said gate and reciprocate said plunger so that said device may be secured to the drive means of a cigar machine and operate in timed relation therewith.

15. A device such as claimed in claim 14 further characterized in that said plunger has a curved keyway and a stationary key engaging said keyway to rock said plunger on its axis during horizontal reciprocation whereby said plunger will give a twisting motion to said mouthpiece tip as the plunger applies the mouthpiece tip to a cigar bunch.

16. A device such as claimed in claim 14 further characterized in that said drive means includes a single shaft securable to the drive means of a cigar machine, a power take-off from said shaft to rotate said wheel, and a cam on said shaft to reciprocate said plunger and move said gate.

17. A mouthpiece applying device securable to a cigar machine, said device having a magazine for storing a plurality of mouthpieces, means to discharge mouthpieces from said magazine one by one, a plunger having a shaped end to receive and support one mouthpiece, said plunger being movably mounted to reciprocate said shaped end from a point beneath the discharge means of said magazine to a mouthpiece applying position, said plunger further having a curved keyway, a stationary stud engaging said keyway, a cam, a cam lever engaging the other end of said plunger and operable from said cam to reciprocate said plunger backward and forward, said keyway giving a rotary, twisting movement to said

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plunger during said reciprocation, and means securable to the drive means of a cigar machine to rotate said cam in timed relation thereto.

18. In a device adaptable to be secured to a cigar machine having a bunch transfer gripper, a magazine having a discharge orifice and adaptable to store a plurality of cigar mouthpiece tips having flat mouth ends, a chute mounted beneath said discharge orifice to receive one by one the mouthpiece tips, a plunger slidably mounted for horizontal longitudinal reciprocation along an imaginary line drawn as an extension of the axis of a cigar bunch supported in said transfer gripper, said plunger being loosely engaged at its one end by a cam lever, the other end of said plunger being formed in a trough suitably shaped to support a mouthpiece tip, said trough being formed with an open end at the end of said plunger and a closed end formed as a step to engage the flat mouth portion of a mouthpiece tip to prevent rotation of said mouthpiece tip relative to said plunger and said trough in said plunger, a curved longitudinal keyway cut along said plunger, a stationary pin engaging said keyway to give a rotational movement to said plunger about its axis as it is reciprocated longitudinally, a cam operatively engaging said cam lever to reciprocate said plunger throughout the horizontal distance from the bottom of said chute to the head end of a cigar bunch held in said transfer gripper, and a power take-off operatively driving said cam and adapted to be secured to the main drive of a cigar machine to operate said device in timed relation thereto.

19. A device securable to a cigar machine comprising a bracket, a cradle pivoted to the top of said bracket and movable from a horizontal receiving position to an inclined discharging position, a horizontal channel secured to said bracket beneath the discharge position of said cradle, a plunger engaged in said channel and longitudinally movable therealong, said plunger having a portion of its forward end formed to engage and support a mouthpiece tip fed into said channel from said cradle, means operable from a cigar machine to reciprocate said plunger to pass its forward end out of said channel to apply a mouthpiece tip held thereby to a cigar bunch, and a gate member pivotally supported over the forward end of said channel to swing outwardly only to permit the passage of the mouthpiece tip supported in said plunger and to positively prevent the return of a mouthpiece tip with said plunger.

20. In a cigar machine the combination with means to apply a preformed mouthpiece tip to the head end of a cigar bunch, of a wrapper applying roller nest to rotate said cigar bunch while a wrapper is applied thereto, a header block, a transfer device operative to transfer a tipped cigar bunch into said nest of rollers, said mouthpiece tip extending slightly beyond said header block a pivoted lever having a flat portion at its one end to engage the outer end of said header block to move said cigar bunch to relocate the extending tip of said mouthpiece tip flush with the outer end of said header block,

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a resilient means to hold said pivoted lever away from said header block, a cam roller on the other free end of said pivoted lever, and a rotating cam engaging said cam roller to move said lever and its flat section against said header block at the moment a tipped cigar bunch is deposited in said nest of rollers and again when said wrapper is being applied to that portion of the cigar bunch adjacent the mouthpiece tip, whereby a tipped cigar bunch is primarily located for wrapping and relocated during wrapping to provide a constant distance between the tip of the mouthpiece and the head end of the wrapper.

21. The combination with a cigar machine having a bunch forming station, a wrapper applying station, and a transfer device to transfer a formed bunch from said bunch forming station to said wrapper applying station, means to apply a pre-formed mouthpiece tip to the head end of a cigar bunch held in said transfer device, a pivoted lever positioned adjacent said wrapper applying station operative to engage the outer end of said mouthpiece tip on said bunch, and means to move said pivoted lever to bear against said mouthpiece tip to re-locate said mouthpiece tip and said bunch in a predetermined position so said wrapper applying station will apply a wrapper about said bunch and a predetermined portion of said mouthpiece tip.

22. A device securable to a cigar machine having a mold turret and a transfer mechanism to transfer cigar bunches from said mold turret to a bunch wrapping station, said device having a magazine to store mouthpieces in endwise orientation, members forming a channel through which said oriented mouthpieces may pass one by one from said magazine, a cradle located at the end of said channel to receive said mouthpieces one by one and rockable to discharge a mouthpiece, a plunger having a mouthpiece supporting end movable from a position beneath the discharge position of said cradle to a position in alignment to and adjacent a cigar bunch held by said transfer mechanism, and means driven by said cigar machine to rock said cradle and move said plunger to apply a mouthpiece to a cigar bunch held by said transfer mechanism.

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