

Aug. 8, 1939.

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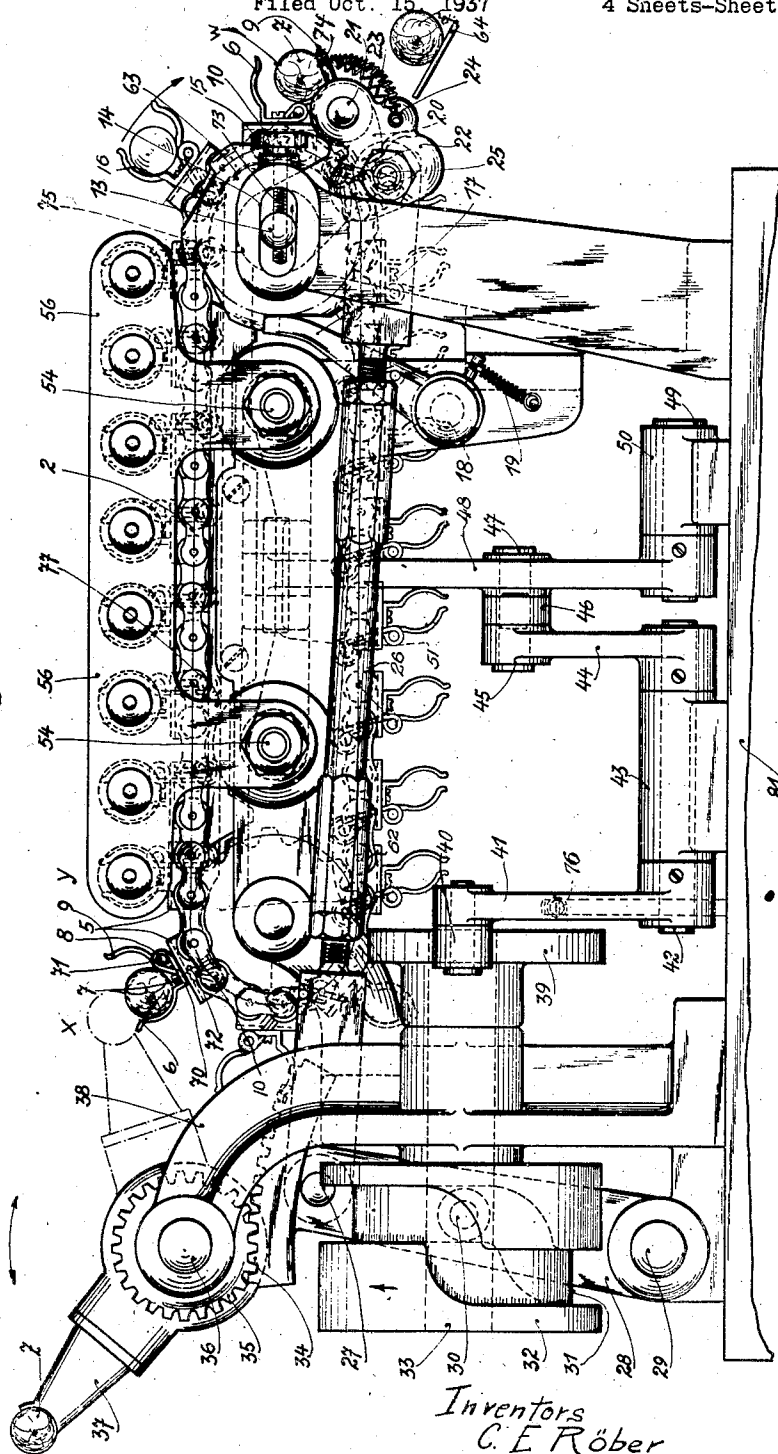
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APPARATUS FOR FORMING CIGAR TIPS

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4 Sheets-Sheet 1

Fig. 1



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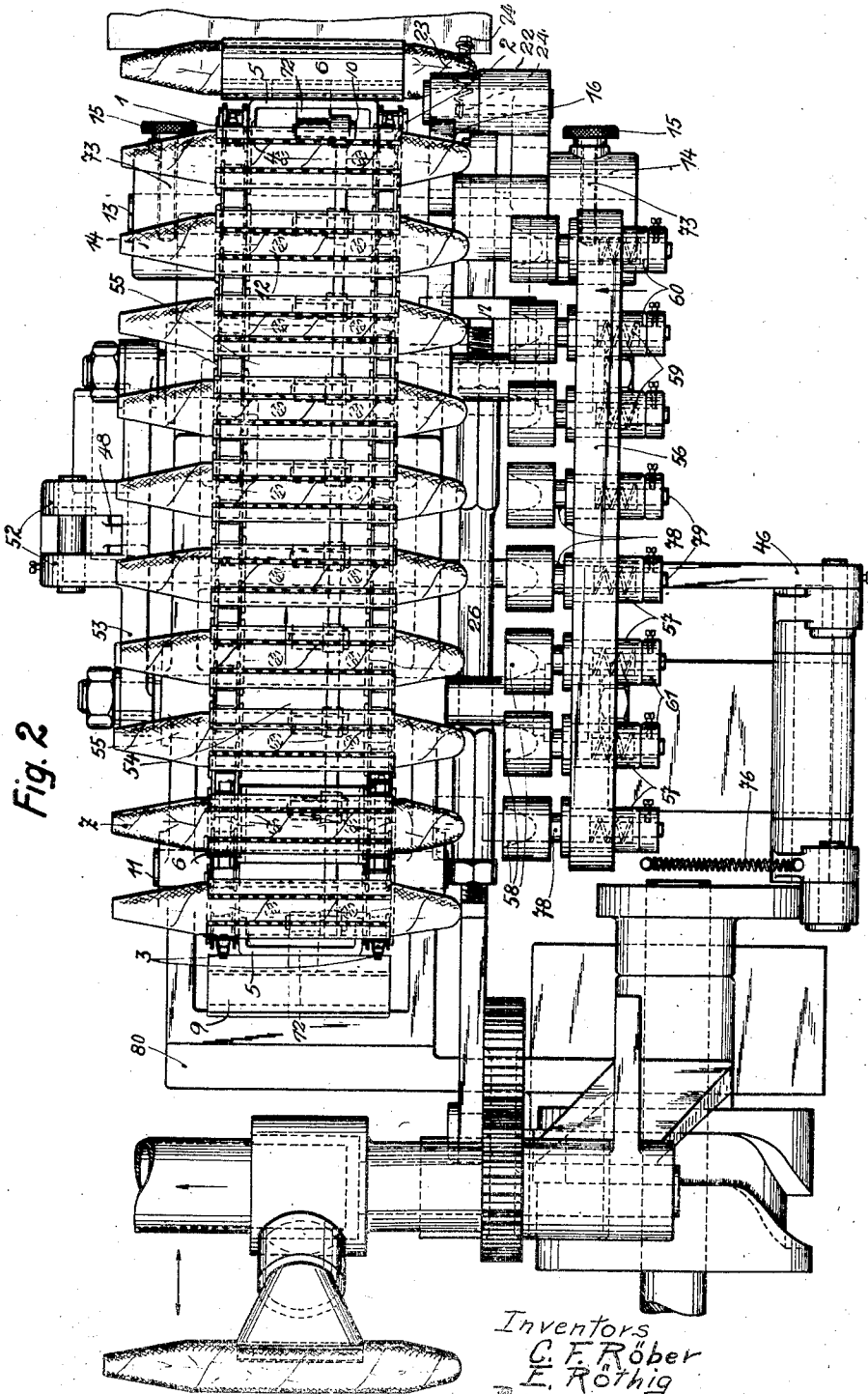
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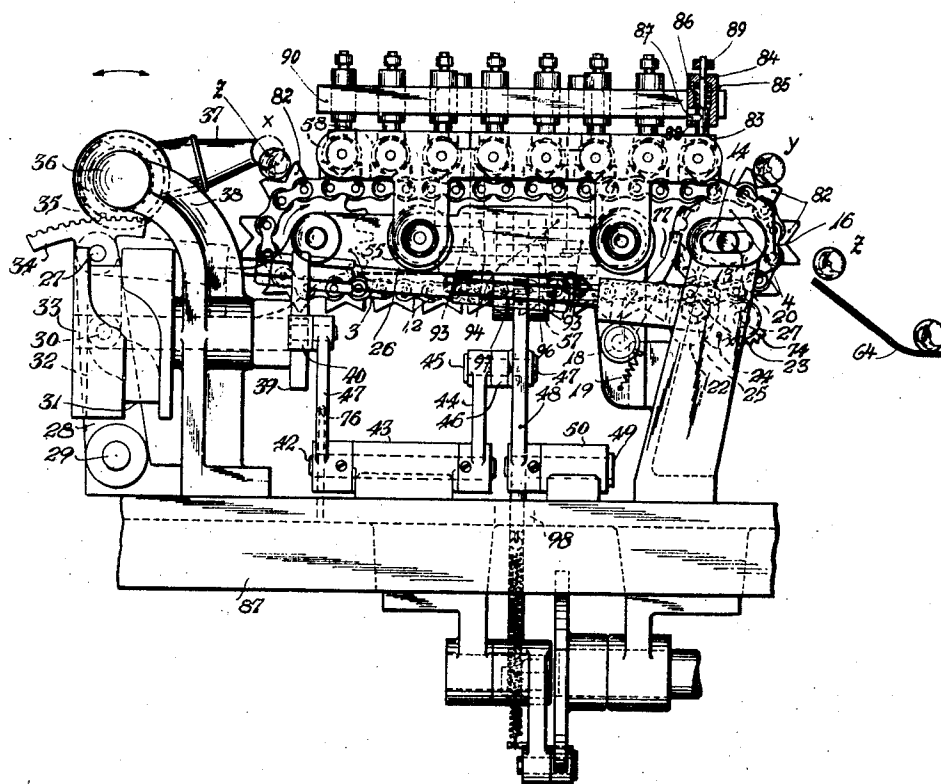
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Fig. 3



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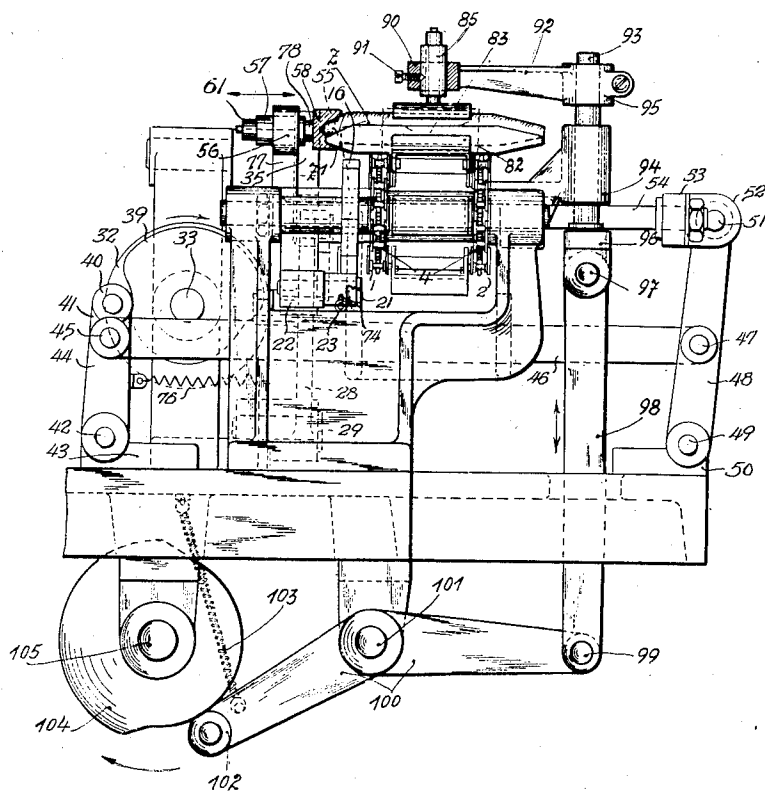
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APPARATUS FOR FORMING CIGAR TIPS

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Fig. 4



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UNITED STATES PATENT OFFICE

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APPARATUS FOR FORMING CIGAR TIPS

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13 Claims. (Cl. 131—39)

This invention relates to a new and improved apparatus for forming cigar tips on cigars.

In forming cigars provided with a wrapper it is old to maintain the mold slid on the tip of the cigar in contact with the latter for a somewhat long time, in order to obtain a good and uniformly shaped tip.

An extended action of the mold on the cigar tip is not satisfactory if the cigar remains stationary therein for a long time. It has now been found that, for a satisfactory formation of the cigar tips, repeated removal with consequent air access to the mold is necessary during its relatively long engagement with the cigar tip.

The invention relates to an apparatus which corresponds to these requirements and in which the cigars coming from the wrapping apparatus, intermittently and constantly move along on a conveyor band during the molding of the tip. In the new apparatus the tip molds do not have to travel therewith in order to secure a relatively long engagement with the cigars, and thus special control members are not necessary for this purpose. Nevertheless, with the present apparatus a plurality of cigars can be tipped simultaneously, so that each cigar remains engaged with the tip mold for a long period of time interrupted only by the temporary removal of the molds.

The invention consists in that a series of tip molds are disposed on a common support consecutively and corresponding to the spacing of the grippers.

It is preferable to have the arrangement such that the grippers for the cigars are attached to a chain running over two sprocket wheels, whereby the rail-like support is co-ordinated with the upper drum of the conveyor chain so that all the tip molds carried thereby come into engagement with the cigars while the chain is at a standstill. In this manner the cigars, at the same time, are held at the same level, which is of advantage in the supervision of the apparatus.

In one form of the invention the grippers may each consist of V-shaped clamping jaws, one of which, for example the lower, is carried by a correspondingly, intermittently actuated conveyor means, while a number of counter-jaws, corresponding to the number of tip molds, is provided on a common support.

An apparatus is thus provided in which the cigars are prevented from any movement during the formation of the tip. A further advantage of the arrangement consists in that the gripper width can be adjusted easily to accommodate different cigar diameters or shapes.

The present invention relates particularly to subjecting the cigars to a tip-forming pressure for a total long period of time, as they are engaged by a plurality of successively arranged tip molds.

It is advisable to provide the counter-jaws with shanks which are disposed, against the pressure of a spring or the like, parallel with the movement of the support and movable thereon.

With these and other objects in view which will become apparent as the description proceeds the invention resides in the combination and arrangement of elements hereinafter described in detail, claimed in the claims and shown in the drawings in which,

Fig. 1 is a front elevation of one embodiment.

Fig. 2 is a plan view thereof.

Fig. 3 is a front elevation of another embodiment.

Fig. 4 is a lateral elevation thereof, viewed from the right of Fig. 3.

In the construction according to Figs. 1 and 2 the carriers 5 for the cigar grippers are disposed on the two, endless, parallel running chains 1 and 2, which run over the pairs of sprocket wheels 3, 3 and 4, 4. These grippers consist each of a sheet metal member 6, formed trough-like corresponding to the shape of the cigar. The member 6 is attached by its base 70 to the support 5. The base 70, by means of a hinge roller 71, carries a spindle axis 8. Mounted oscillatably on the latter is another jaw 9 also of trough shape corresponding to the cigar and the jaw 9 has a lever arm 12 extending in opposite direction. A roller 10 is journaled at the end of lever arm 12. The sprocket wheels 3, 3 are attached to the shaft 11 journaled in the machine frame 80. The sprocket wheels 4, 4, interconnected by a housing 12, are freely rotatable on the spindle 13 which rests in slot-like bearing eyelets 14. Coordinated with each eyelet is a set screw 15, the threaded portions 13 of which engage in corresponding threads of the spindle 13. By turning the set screws 15 the spindle 13 can be shifted to tighten the chain 1, 2 in the direction of the arrow on Fig. 1.

Connected with sprocket wheels 4 is a shift wheel 16, with which the pawl 17 is engaged. Pawl 17 is oscillatably journaled by means of pin 18 on the machine frame and is subject to the action of a traction spring 19 which tends to hold pawl 17 and shift wheel 16 engaged. On the other hand the shift wheel 16 cooperates with a shift pawl 20 which is oscillatably journaled at 21 on a support 22. Engaged with a

projection 74 of pawl 20 is a traction spring 23, attached at the other end to support 22 by means of a pin 24. Through this spring 23 the pawl 20 always tends to remain engaged with shift wheel 16. The support 22 engages the spindle 13 oscillatably by means of an eyelet 15. In addition, there is engaged with support 22, by means of the pivot pin 25, a rod 26 adjustable in length and which at the other end is oscillatably journaled by means of a pin 27 on a lever 28. The latter is mounted rotatably on the pin 29 attached to the machine frame. A roller 30 journaled on lever 28 engages in a curved cam groove 31 located on the periphery of a drum 32. The latter is mounted on the shaft 33 journaled in the machine frame and is set in rotation by means not shown. Provided at the end of lever 28 is an arc shaped rack 34 engaging with a spur gear 35. The latter is mounted on a shaft 36 which is journaled on the frame arm 38 and carries a suction head 37.

In the full line position shown on Fig. 1 the cigars coming from the wrapper roll nest are transferred to the suction head 37. When lever 28 swings to the left in Fig. 1, the suction head 37 is swung to the right. As soon as the suction head passes to the dotted position of Fig. 1 the suction air is cut off by means not shown on the drawing and the cigars can drop in the grippers 6, 9, which are held open at the time.

Also mounted on shaft 33 is the cam wheel 39, with which a roller 40 cooperates. Roller 40 is journaled at the end of a lever 41 which is attached to the shaft 42. Engaged with the end of lever 41 is a traction spring 76 which tends to hold roller 40 in constant engagement with the cam 39. The shaft 42 rests in a bearing 43 attached on the frame plate 81 and at the other end carries a lever 44, at the end of which, by means of a pin 45, the control rod 46 engages. The other end of said rod 46 is connected by means of a pivot pin 47 with a lever 48. The latter is attached to the pin 49 which is seated in a bearing 50. The end of lever 48 engages with a pivot pin 51 which is journaled in fork 52 of a transverse member 53. Attached to the member 53 are the guide rods 54, 54 which are guided by eyelets 55 formed as slide guides and provided on the machine frame. Attached to the free ends of guide rods 54 is a bar or rail 56 with its downwardly extending members 77.

Attached to this bar 56 is a series of housings 57 which are inserted through corresponding bores. These housings serve as guides for the pins 78 of cigar tip molds 58. Mounted on the reduced ends 79 of the pins 78 are pressure springs 59, which are supported against the shoulders 60 of housings 57. By means of the setting collars or rings 61 attached to the spindles 79 of the pins 78 the tip molds 58 are retained in the inoperative position with respect to their housings 57, as shown on Fig. 1. When bar 56 is moved in the direction of the arrow shown on Fig. 2 the tip molds, overcoming the pressure of springs 59, are somewhat forced back, if the tip molds encounter a resistance.

The operation is as follows: As soon as a carrier 6, 9 comes to the point designated x a cigar coming from the wrapper roll device is placed by the suction head 37 in the opened carrier. After lever 28 has swung from its left end position into the right end position shown on Fig. 1 the suction head 37 is then again back to its first position. At the same time the carrier 22 is also carried back to the right end position shown

on Fig. 1, whereby pawl 20 passes idly over the tooth of shift wheel 16 lying in front of said shift wheel.

In the following oscillation of lever 28 to the left the carrier 22 is swung to the left, with respect to Fig. 1. The shift wheel 16 is therefore carried along clockwise for a subdivision or tooth. On rotation of the shift wheel 16 the conveyor chains 1, 2 are also advanced for the space of a gripper. Thereby, the corresponding grippers, which have just taken up a cigar at x, pass into the position designated by y. While the grippers are moved from the position x to the position y the stationary cam 62 releases the corresponding roller 10 of the movable clamping jaw 9 so that the latter can pass, by means of a spiral spring provided on the spindle 8, into the closed position, in which it engages and retains the cigar.

During the resultant idle stroke of the shift pawl carrier 22 (movement into the right end position) the cam 39 enters into operation, and causes the levers 41, 44 and 48 to swing out so that the bar 56 is moved in the direction of the arrow on Fig. 2.

The tip molds 58 mounted on the bar 56 are thereby slid onto the tips of the cigars Z. The yieldable, slidable mounting of the individual tip molds thereby assures a soft pressure of the tip molds on the cigar ends. Before the carrier 22 reaches the end position shown on Fig. 1 the levers, 41, 44 and 48 are again swung back by the cam 39 so that the bars carrying the tip molds are moved into their initial position of Fig. 2. This operation is repeated, and during each standstill of the conveyor chains the tip molds come into engagement with the cigars.

As the cigars advance progressively they come into engagement successively once for each of the tip molds provided. As soon as the gripper 6, 9 passes into the position designated w the roller 10 connected with the movable gripper jaw 9 passes on to a stationary cam 63, which causes the movable jaw of the corresponding gripper to be carried into the open position (see Fig. 1).

In the further movement of the corresponding gripper the liberated cigar Z is thrown off on an inclined surface 64, which passes it to a collecting point. After this gripper has left the action of the cam 63 the movable jaw 9 returns to the closed position, in which it remains until it passes within range of the cam 62, where it is moved to the open position.

In the construction of Figs. 3 and 4, instead of the grippers 6, 9 on the chains 1, 2, which run over the pairs of sprocket wheels 3, 3 and 4, 4, the V-shaped jaws 82 of a set of grippers are attached thereto. The corresponding counter-jaws 83 are carried by a shank 84 which is mounted slidably in a housing 85 opposed to a pressure spring 86 mounted thereon. In order that the shank 84 can not rotate in the housing 85 pins 87 are provided on the shanks 84 which extend into axial grooves 88 of housings 85. The setting rings 89, which are attached to the ends of shanks 84 serve as downward stops for the movement of the shanks.

The housings 85 are carried by a common bar 90 in which they are axially slidable, and adjustable by means of screws 91. The bar 90 is connected by arms 92 with two guide rods 93 which slide in guides 94 provided on the frame. The arms 92 are attached to the guide rods 93 by the clamp-shaped heads 95 of arms 92. The sliding rods 93 are connected with each other by a sup-

port 96, the link 98 being engaged with the pivot pin 97 on said support 96.

The member 98 is connected on the other hand, through the pivot pin 99 with an angle lever 100 which is journaled at 101 in the machine frame. Journalled at the free end of lever 100 is a roller 102 which is drawn by a traction spring 103 engaged with lever 100 toward a cam roller 104 which is mounted on the drive shaft 105. A tip mold 58 is coordinated with each counter-jaw 83. As in the embodiment of Fig. 1, these tip molds are mounted on the common support 56. The control means for the common tip mold support 56 are so arranged that when the counter-jaws 83 are depressed by the cam member 104 the tip molds 58 are carried to the right, shown in Fig. 4, but less rapidly, and slid on the cigar ends Z'. Shortly before the counter-jaws are advanced upwardly the support 56 moves to the left, so that the tip molds are removed from the cigar ends.

For the remainder the operation is like that of the construction shown in Figs. 1 and 2. While the cigars Z are laid off in the corresponding gripper jaws 82, then in the position x, the bar 90 has been carried downwardly by the cam 104 so that the counter-jaws 83 engage the cigars in the opposite jaws 82 and come into position thereon and retain them against the axial pressure exerted by the tip molds 58 on the cigars. The springs 86 permits a slight deviation of the counter-jaws 83 upwardly, with cigars of greatly increased thickness.

After the tip molds have been drawn back to their initial position the support bar 90 is again carried upwardly, so that the counter-jaws 83 release the cigars. A shift operation then follows, whereby the newly introduced cigars pass into the range of the first counter-jaw while the cigar under the last counter-jaw 83 is passed to the position y. The operation is then repeated. It is to be noted that when the jaw 82 passes to the position z the cigar therein is thrown off on a sliding surface 64.

The above modifications are merely illustrative of the invention and all modifications are claimed which will fall within the spirit of the following claims.

We claim:

1. An apparatus for forming cigar tips comprising means for advancing cigars intermittently, a series of cigar tip molds and means for applying said molds to the tops of said cigars on each advance of said cigars.

2. An apparatus for forming cigar tips comprising means for advancing cigars step by step through a plurality of stations, a series of cigar tip molds movable transversely of the path of said cigars and means for applying said molds to the tips of said cigars.

3. An apparatus for forming cigar tips comprising means for advancing cigars step by step through a plurality of stations, a series of cigar tip molds movable transversely of the path of said cigars and means for applying said molds to the tips of said cigars at each station as said cigars stop there during their step by step advance.

4. An apparatus for forming cigar tips comprising an endless conveyor, grippers upon said conveyor, for holding cigars, means for intermittently advancing said conveyor, a series of cigar tip molds operable transversely to the path of said conveyor and means for applying said molds to the tips of the cigars in said grippers on the movement of said cigars with said conveyor.

5. An apparatus for forming cigar tips comprising spaced sprocket wheels, an endless conveyor passing over said sprocket wheels, grippers for cigars attached to said conveyor in spaced relation, a support located adjacent the upper run of said conveyor and a plurality of cigar tip molds located upon said support.

6. An apparatus for forming cigar tips comprising spaced sprocket wheels, an endless conveyor passing over said sprocket wheels, grippers for cigars attached to said conveyor in spaced relation, a support located adjacent the upper run of said conveyor and a plurality of cigar tip molds located upon said support, and means for moving said molds into contact with the cigar tips on the cigars held by said grippers when said conveyor is stationary in its movement.

7. An apparatus for forming cigar tips comprising means for advancing cigars intermittently, a support, a series of cigar tip molds mounted resiliently on said support and means for applying said molds to the tips of said cigars at each stop of said advancing cigars.

8. An apparatus for forming cigar tips comprising a conveyor chain, a pawl and ratchet mechanism for advancing said conveyor chain intermittently, a series of cigar grippers mounted upon said conveyor chain, a support, a series of cigar tip molds mounted upon said support, means for moving said support and said molds transversely of the movement of said conveyor chain and means for actuating said pawl and ratchet mechanism, said last named means also actuating said support.

9. An apparatus for forming cigar tips comprising an endless chain, a series of gripper portions for holding cigars mounted upon said endless chain, a series of complementary gripper portions mounted reciprocatingly so as to cooperate with said portions on said endless chain, a series of cigar tip molds and means for applying said molds to the tips of cigars held within said cooperating gripper portions.

10. An apparatus for forming cigar tips comprising an endless chain, a series of gripper portions for holding cigars mounted upon said endless chain, a series of complementary gripper portions mounted reciprocatingly so as to cooperate with said portions on said endless chain, a series of cigar tip molds and means for applying said molds to the tips of cigars held within said cooperating gripper portions, and means limiting the movement of said complementary gripper portions.

11. An apparatus for forming cigar tips comprising an endless chain having spaced gripper portions thereon, a support, complementary gripper portions mounted upon said support, a series of cigar tip molds, means for moving said molds into contact with cigar tips of cigars held between said gripper portions on said chain and said complementary gripper portions on said support and means for coordinating the action of said support with said complementary grippers and said cigar tip molds.

12. An apparatus for forming cigar tips comprising an endless chain having spaced gripper portions thereon, a support, complementary gripper portions mounted upon said support, a series of cigar tip molds, means for moving said molds into contact with cigar tips of cigars held between said gripper portions on said chain and said complementary gripper portions on said support, means for operating said chain intermittently, means for moving said complementary grippers

so as to confine cigars therebetween and the gripper portions on said chain, means for thereafter moving said cigar tip molds against the cigar tips of the cigars thus held, means for then removing
5 said molds from the tips and means then moving the complementary grippers from the cigars to release the same.

13. An apparatus for forming cigar tips comprising an endless chain having spaced gripper
10 portions thereon, a support, complementary gripper portions mounted upon said support, means

for adjustably securing said complementary gripper portions to said support, means upon said support for guiding said complementary gripper portions, a series of cigar tip molds and means for applying said molds to the tips of cigars held between said gripper portions and complementary
5 gripper portions.

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