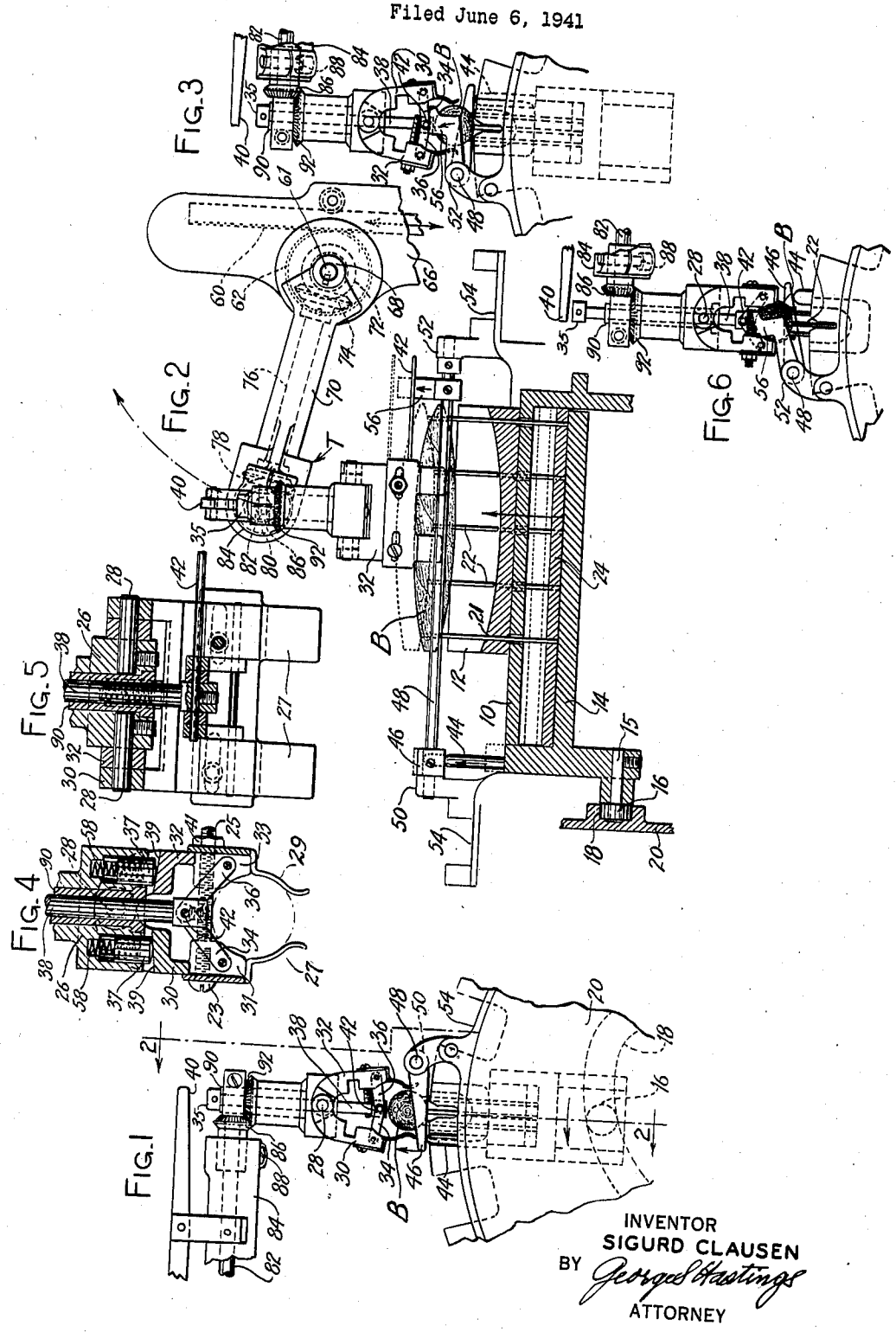
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TRANSFER MECHANISM FOR CIGAR MACHINES

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TRANSFER MECHANISM FOR CIGAR MACHINES

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This invention relates to cigar machines and more particularly to improvements in transfers and devices associated therewith for handling bunches and delivering them to a bunch wrapping unit in proper position for wrapping with a minimum of breakage.

This invention also relates to improvements in mechanism for handling cigar bunches in such a way that even the very smallest and softest bunches will not be damaged when removed from a bunch shaping device and placed in a bunch transfer for transportation to another part of the machine.

In some types of cigar machines now in use it has been possible to use bunches as the means for effecting the closure of the transfer gripper jaws upon a bunch when ejected from the bunch shaping mechanism. However, if bunches are quite small in diameter or soft, it is relatively impossible for the bunch to act as the medium for operating the transfer gripper jaws and hence under such conditions the bunch either will not be gripped and held by the transfer or it will be badly distorted and even broken if it is moved with sufficient force against the transfer gripper operating means to cause the gripper jaws to close and hold the cigar bunch. Accordingly it is an object of my invention to provide improved mechanism for effecting removal of shaped bunches of any size from bunch shaping mechanism, and their positive transfer therefrom to another part of the machine without employing the bunch as the transfer jaws closing medium.

In the manufacture of short filler cigar bunches and more especially small bunches in which a relatively small quantity of tobacco is used in making a bunch, it has been found that the articles formed when this quantity of tobacco is rolled within a binder and shaped to proper size are likely to be relatively hard to handle with the net result that it is difficult to remove this type of shaped bunch from the forming mechanism. According to my invention, however, I have provided improved mechanism which operates in such a way that shaped bunches are delivered satisfactorily from the shaping molds into a bunch transfer for delivery to wrapping mechanism without unnecessarily distorting the bunch or forming soft spots therein or causing its binder to be split or broken during the process of removing it from the shaping molds. Therefore, it is a further object of my invention to provide improved mechanism for effecting the transfer of small and limp cigar or cheroot bunches without damage thereto.

It is an added object of my invention to provide improved mechanism for positively ejecting small and easily distortable cigar and/or cheroot bunches from bunch shaping molds or the like, and depositing them in a bunch transfer for delivery to a wrapping station where wrappers are applied to the bunches to form cigars or cheroots.

My invention also eliminates the danger of breakage or the possibility of the bunch transfer failing to operate because of the natural flexibility in cigar bunches of quite small size and cross section due primarily to the use of small quantities of tobacco in forming elongated articles of this type.

My invention is further characterized by the provision of means coacting with bunch ejecting mechanism for operating a bunch transfer gripper system to effect positive transfer of bunches positioned in the grippers regardless of their size, diameter or density.

My invention also consists in the provision of mechanism coacting with an endless conveyor, preferably a turret, provided with a plurality of bunch shaping molds, for ejecting bunches therefrom and effecting positive mechanical operation of a transfer device which conveys them to further bunch handling devices.

It is an added object of my invention to provide a transfer having a toggle operated gripper jaw with a trigger which is active by cooperation with a trip device to upset the toggle and effect the closure of the jaws upon bunches regardless of their size, diameter or density.

It is an added object of my invention to provide a mold turret bunch shaping machine with an ejector for ejecting shaped bunches from the pockets thereof and means mounted on the ejector for operating a bunch transfer in order to insure that bunches of any size, diameter and density will be delivered from the shaping mechanism of the cigar machine to other bunch handling instrumentalities.

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

In the accompanying drawing which forms a part of this specification, and wherein the several reference characters designate the same or like elements:

Figure 1 is an end view from the left of Figure 2 showing a cigar bunch about to be gripped by the transfer fingers after having been ejected from the mold of a bunch shaping turret;

Figure 2 is a side elevation partly in section taken on line 2—2 of Figure 1;

Figure 3 is an end view taken from the right of Figure 2;

Figure 4 is a cross-sectional elevation showing the construction of the transfer fingers;

Figure 5 is a longitudinal elevation partially in cross-section of the transfer finger construction shown in Figure 4; and

Figure 6 is an end view similar to Figure 3 showing the bunch fully ejected from the shaping mold with the transfer fingers closed thereupon.

Referring to the drawing, it will be seen that I have shown a preferred form of my invention as it may be applied to a cigar machine of the general type disclosed in Wheeler patent, No. 2,157,537, granted May 9, 1939 in which short filler bunches after being rolled and enveloped in a binder are placed manually by the operator in mold pockets 12 of an endless conveyor, such as turret 10 for molding and shaping. Mold covers (not shown) are placed over each loaded pocket and after each pocket has traveled through one complete revolution of the turret, during which time each bunch has been properly seated in its respective pocket, trimmed and shaped, the mold cover is removed by mechanism (not shown) and the shaped bunch B is ready for ejection from its pocket 12 and delivery into a transfer device for delivery to other cigar making instrumentalities of the machine, such as the bunch wrapping station where a wrapper is applied about the bunch. In the illustration the axial position of the bunch B in the bunch shaping mold 12 is assumed to be located at right angles to the position it will take when deposited in the wrapping machine. It is, therefore, necessary while transferring the bunch to rotate it 90 degrees before it reaches the wrapping mechanism.

An ejector bracket 14, slidably mounted relative to turret 10, has a cam follower 16 engaging a cam track 18 of a rotating cam disk 20. As cam disk 20 rotates, cam follower 16 rides in cam track 18 and at the proper time during the stepwise movement of turret 10 causes ejector bracket 14 to rise, and ejector pins 22 mounted on plate 24, engage the under surface of the bunch B in the pocket then positioned for coaction with the ejector, move radially outward through holes 21 in the pocket 12 and eject the bunch therefrom. This mechanism may be of the same general construction as that shown in the above referred to Wheeler Patent No. 2,157,537.

In Figure 2 the transfer mechanism is shown in position to pick up the bunch but the ejector pins have not yet completed their motion to lift the bunch high enough to locate the bunch in the gripper fingers 27, 29 of the transfer and cause them to close about a bunch.

The construction of the gripper fingers is shown in Figures 4 and 5. To a sleeve 26 are attached two hinge pins 28 on which are pivoted two arms 30 and 32 having lugs 31 and 33, respectively, mounting gripper jaws 27 and 29, respectively, interconnected by toggle links 34 and 36, which serve to keep the grippers fully open when the gripper operating stem 38 is pushed down by the engagement of arm 40 with head 35 (see Figure 1). A screw 23 secures jaw 27 to lug 31. A set screw 25 and nut 41 secure jaw 29 to lug 33. Screw 25, however, extends through lug 33 and abuts against a face of lug 31 to limit the movement of jaws 27 and 29 towards each other and thereby prevents the jaws from crushing the bunch held therein. Suitable adjustments of the jaws can be made by adjusting screw 25 (see Figure 4). This arrangement makes it possible for the jaws to hold a bunch lightly without application of excess pressure which might cause damage to the bunches. The hinge pin 42 of the toggle links extends a distance beyond the grippers (Figure 5) and constitutes a trigger for effecting closure of jaws 27, 29. A pin 44 in the top of the ejector bracket 14 contacts a lever 46 attached to a shaft 48 which is pivoted in bearings 50 and 52 on the frame 54 of the machine adjacent the ends of drum 10. As the ejector bracket 14 completes its upward motion, pin 44 moves upwardly against lever 46 causing shaft 48 to rotate. An arm 56 also attached to shaft 48 will swing, press against hinge pin or trigger 42, and cause toggle links 34 and 36 to break the toggle so that after passing a distance beyond the dead center, the springs 58 in sleeve 26 acting on the gripper arms 30 and 32 by means of pins 37 bearing against faces 39 of arms 30, 32 which will cause the fingers 27, 29 to close about the bunch B (as shown in Figures 4 and 6). In this way cigar bunches which are soft, or of small diameter, can be successfully removed from bunch shaping mechanism, located in a transfer and held firmly therein for delivery to other cigar forming mechanism without damage to the bunches, or subjecting them to unusual strains and distortions in effecting their transport. The transfer mechanism is now ready to operate by transferring the bunch B to the wrapping unit (not shown).

The mechanism which moves the transfer from bunch receiving to discharge position may be similar to that shown in co-pending Wheeler application, Serial No. 183,405 filed January 5, 1938 for High-speed cigar machines. A gear rack 60, which meshes with a gear 62, is connected to the drive of the machine (not shown) and given a reciprocating motion in order to rotate gear 62 first in one direction and then in the reverse. Gear 62 is secured to one end of a shaft 61 which is journalled in bearings in a bracket 66 which is fastened to the bed of the machine (not shown). The other end of shaft 61 is attached to the hub 68 of an arm 70. Shaft 61 passes freely through the hub of a miter gear 72 which is held stationary in bracket 66. A miter gear 74, secured to a shaft 76, meshes with miter gear 72. A miter gear 78 attached to the other end of shaft 76 meshes with a miter gear 80 secured to a shaft 82, which is journalled in an angular extension 84 of transfer arm 70.

Shaft 82 passes through the hub of a bevel gear 86 which is held from rotating by a clamp screw 88, bevel gear 86 thus acting as an outer bearing for shaft 82. Beyond bevel gear 86, shaft 82 is formed into a clamp to which is secured a pendant sleeve 90 provided with a flange at its lower end to support the sleeve 26 of the gripper unit. To the upper end of sleeve 26 is attached a bevel gear 92 which meshes with bevel gear 86, the ratio between the two bevel gears 86 and 92 being so proportioned that as the transfer arm 70 performs its stroke, gear 92 will roll on clamped gear 86 and thus rotate the gripper unit 90 degrees.

The operation of the transfer mechanism is as follows:

The gear rack 60 on its downward stroke, rotates gear 62 and shaft 61 and with it transfer arm 70. As arm 70 swings, gear 74 rolls on sta-

tionary gear 72 and through shaft 76 turns miter gear 78, which meshes with miter gear 80 on shaft 82. Shaft 82 will thus be rotated an equal angular amount, though in the opposite direction, to the rotation of shaft 74. The gripper unit will, therefore, maintain its axis perpendicular during the entire swing of the transfer arm 70. As a result of this arrangement, the bevel gear 92 is compelled to roll on stationary bevel gear 86 and their ratio being properly proportioned. The gripper unit will be rotated 90 degrees in the horizontal plane during the transfer period.

As before mentioned, at the arrival of the transfer at the wrapping station (not shown), arm 40 will contact a stop pin (not shown) and gripper operating stem 38 will be forced down causing the toggle links 34 and 36 to spread the fingers 30 and 32 apart, thus releasing the bunch B in the wrapping rollers of the wrapper unit (not shown). The transfer unit then returns with gripper fingers open, ready to receive the next bunch.

The invention above described may be varied in construction within the scope of the claims, for the particular device, selected to illustrate the invention, is but one of many possible concrete embodiments of the same. It is not, therefore, to be restricted to the precise details of the structure shown and described.

What is claimed is:

1. In a cigar machine having a mold turret provided with a plurality of mold pockets for shaping cigar bunches, and an ejector for ejecting shaped bunches from said pockets, a bunch transfer, means for positioning said transfer adjacent said turret for receiving bunches from said pockets, oppositely disposed grippers on said transfer, means normally holding said grippers open for reception of bunches, a gripper closing element associated with said grippers, and means on said ejector coacting with said element for closing said grippers upon a bunch positioned therein by said ejector while maintaining said bunch free of engagement with said means normally holding said grippers open.

2. In a cigar machine having a bunch manipulating device and a bunch transfer comprising a pair of opposed gripping jaws, means for moving said transfer to and from said device for receiving a bunch after manipulation and delivering it therefrom, means normally holding said jaws open to receive a bunch therebetween, a jaw closing trigger carried by said transfer, a trip mounted on said device and constructed and arranged to engage said trigger, and mechanism for moving said trip into operative engagement with said trigger to effect the closure of said jaws upon a bunch positioned therebetween.

3. In a cigar machine having a bunch transfer comprising a pair of opposed gripping jaws and a bunch manipulating device, means for moving said transfer to and from said device for receiving a bunch after manipulation and delivering it therefrom, means normally holding said jaws open to receive a bunch therebetween, a jaw closing trigger carried by said transfer, a trip engaging said trigger as a bunch becomes positioned in said jaws for closing said jaws on said bunch, mechanism for moving said trip into operative engagement with said trigger, said mechanism including a pin adjacent one end of said device, a trip shaft extending longitudinally of said device, and a lever mounted on said shaft for engagement by said pin to move said trip, and means for moving said pin to operate said lever and trip.

4. In a cigar machine having a bunch transfer provided with bunch holding grippers, a conveyor and bunch shaping mold pockets mounted on said conveyor, an ejector for ejecting shaped bunches from said pockets and locating them in said bunch transfer, means mounted on said machine and operated by said ejector for operating said grippers to close about and hold said ejected bunches, said ejector comprising a movable support, a plurality of bunch engaging ejecting pins carried by said support, a gripper operating rod also carried by said ejector, a shaft mounted above said conveyor, a lever carried by said shaft, and engageable by said rod, and a gripper operating trip mounted on said shaft.

5. Bunch transfer mechanism for a cigar machine having an endless conveyor provided with a plurality of shaping molds comprising, an ejector for removing shaped bunches from said molds, a bunch transfer provided with oppositely disposed grippers positioned to receive said ejected bunches, a gripper closing rod projecting outwardly from said grippers, and means carried by said ejector for moving said rod to close said grippers on a bunch positioned therein.

6. A bunch transfer for a cigar machine having a bunch shaping device, a shaft located adjacent said device and extending lengthwise thereof, a trip member carried by said shaft, a bunch ejector, a trip lever also carried by said shaft, and a rod carried by said ejector coacting with said lever for moving said lever to cause said transfer to retain bunches removed from said device and delivered thereto by said ejector.

7. Cigar bunch handling means for a cigar machine provided with a turret having a plurality of mold pockets comprising a bunch transfer having oppositely disposed grippers located above said molds, means normally holding said grippers open for reception of bunches, a gripper closing trigger connected to said means, a bunch ejector for removing bunches from said molds and positioning them in said grippers, and a trip carried by said ejector for operating said trigger to close said grippers on a bunch.

8. In a cigar bunch transfer having a transfer arm, oppositely disposed bunch grippers on said arm, means for swinging said arm into position to grip and hold a bunch between said grippers, a toggle connecting said grippers, a trip for opening said grippers to receive a bunch, a trigger secured to said toggle, a device for positioning a bunch between said grippers, and means operated by said device and cooperating with said trigger to effect the closing of said grippers on said bunch solely through the coaction of said last named means and said trigger.

9. In a cigar bunch transfer having a transfer arm, oppositely disposed bunch grippers on said arm, means for swinging said arm into position to grip and hold a bunch between said grippers, a toggle connecting said grippers, a trip for opening said grippers to receive a bunch, a trigger extending longitudinally between said jaws secured to said toggle, a device for positioning a bunch between said grippers, and means operated by said device and cooperating with said trigger to effect the closing of said grippers on said bunch solely through the coaction of said last-named means and said trigger.

10. In a cigar bunch transfer having a transfer arm, oppositely disposed bunch grippers on said arm, means for swinging said arm into position

to grip and hold a bunch between said grippers, a toggle connecting said grippers, a trip for opening said grippers to receive a bunch, a trigger secured to said toggle, a bunch shaping device, an ejector for removing shaped bunches from said device, and transfer gripper closing mechanism operative by movement of said ejector for operating said trigger to close said grippers on a bunch.

11. In a cigar bunch transfer having a transfer arm, oppositely disposed bunch grippers on said arm, means for swinging said arm into position to grip and hold a bunch between said grippers, a toggle connecting said grippers, a trip for opening said grippers to receive a bunch, a trigger secured to said toggle, a bunch shaping device, an ejector for removing shaped bunches from said device, and transfer gripper closing mechanism operative by movement of said ejector for moving said trigger to close said grippers on a bunch, including a second trip arranged to engage said trigger when a bunch is to be conveyed from said device for closing said grippers on said bunch.

12. A bunch transfer for cigar machines having bunch shaping devices, an ejector operative to remove shaped bunches from said devices, means for positioning said transfer for receiving bunches discharged from said devices, oppositely disposed gripping jaws carried by said transfer, a toggle for holding said jaws open to receive bunches positioned therein, a jaw closing trigger carried by said toggle, trip means mounted on said ejector, and connections between said trip means and trigger for closing said jaws upon a bunch located therebetween upon ejecting movement of said ejector.

13. A bunch transfer for a cigar machine having a bunch shaping device, an ejector operative to remove shaped bunches from said device, means for positioning said transfer above said device, oppositely disposed gripping jaws carried by said transfer, a toggle for holding said jaws open to receive bunches delivered thereinto by said ejector, a toggle upsetting member fixed to said toggle, supports positioned adjacent the ends of said device, a shaft mounted in said supports, an arm mounted on said shaft for engagement with said member, a lever also mounted on said shaft, and means mounted on said ejector and engageable with said lever for moving said arm to operate said member and effect the closure on a bunch positioned therebetween by said ejector.

14. In a cigar machine having a bunch transfer and a device for shaping cigar bunches, an ejector for ejecting shaped bunches from said device and depositing them in said bunch transfer, said ejector comprising a support, a transfer operating trip carried by said support, a shaft extending lengthwise of said device, a lever mounted on said shaft and arranged to be engaged by said trip, a transfer operating element also mounted on said shaft, and means engaged by said element during ejection movement of said ejector for operating said transfer to hold a bunch positioned therein by said ejector.

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