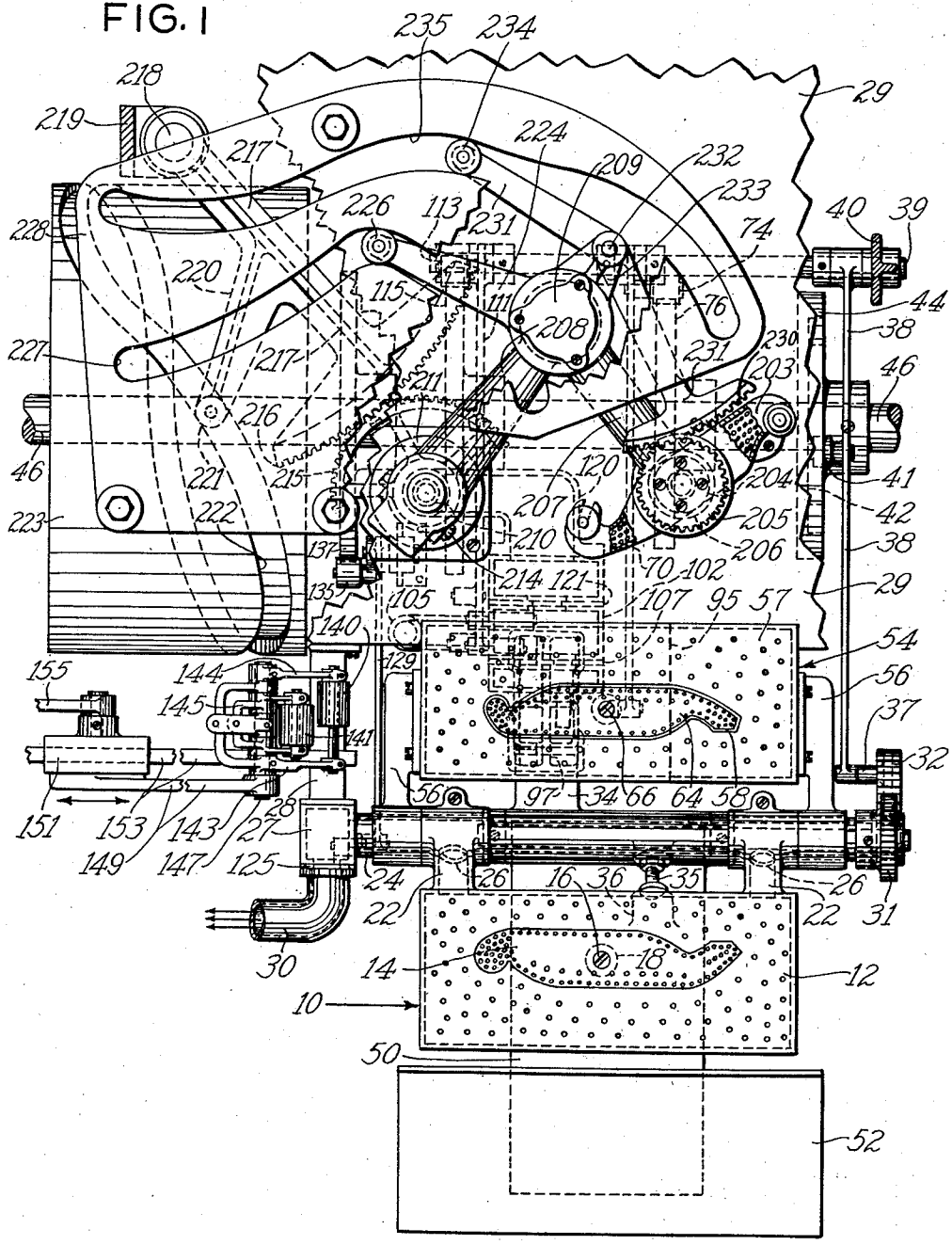
Oct. 19, 1948. S. CLAUSEN 2,451,920

CIGAR WRAPPER CUTTING AND TRANSFER MECHANISM

Filed Nov. 12, 1943 4 Sheets-Sheet 1

FIG. 1



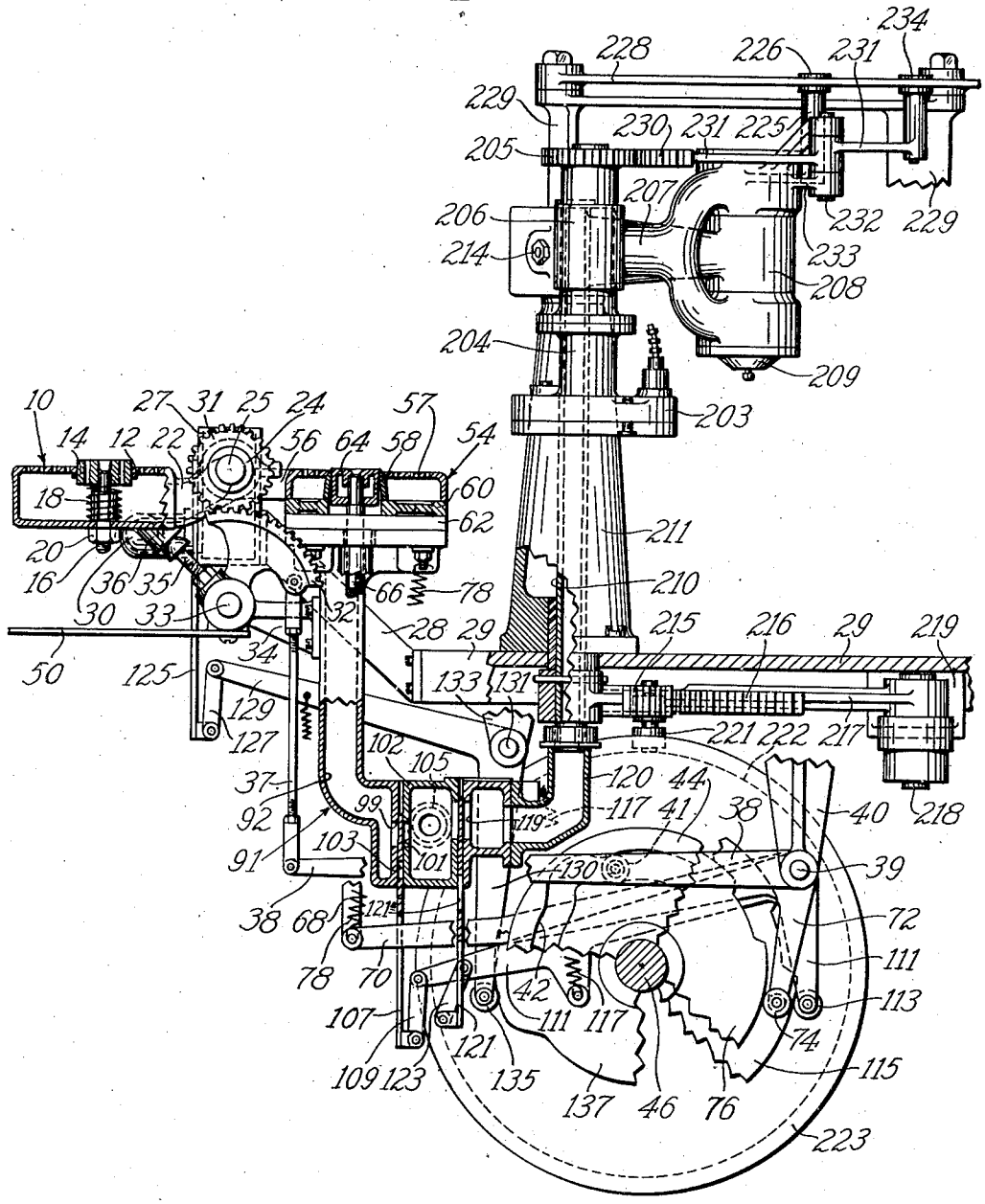
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Oct. 19, 1948. S. CLAUSEN 2,451,920

CIGAR WRAPPER CUTTING AND TRANSFER MECHANISM

Filed Nov. 12, 1943 4 Sheets-Sheet 2

FIG. 2



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Oct. 19, 1948. S. CLAUSEN 2,451,920

CIGAR WRAPPER CUTTING AND TRANSFER MECHANISM

Filed Nov. 12, 1943 4 Sheets-Sheet 3

FIG. 3

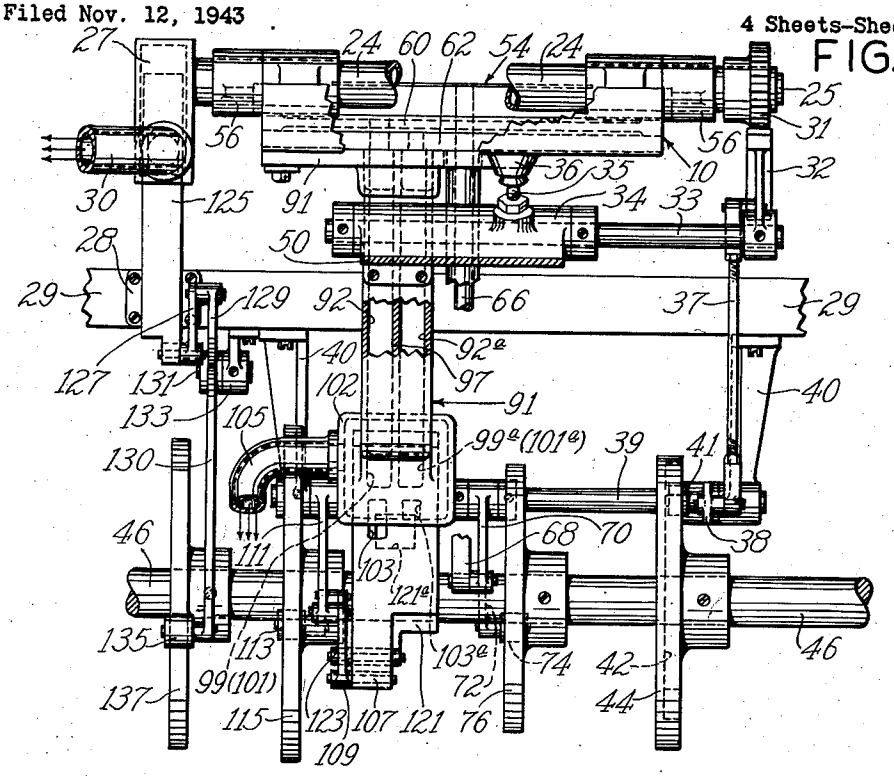
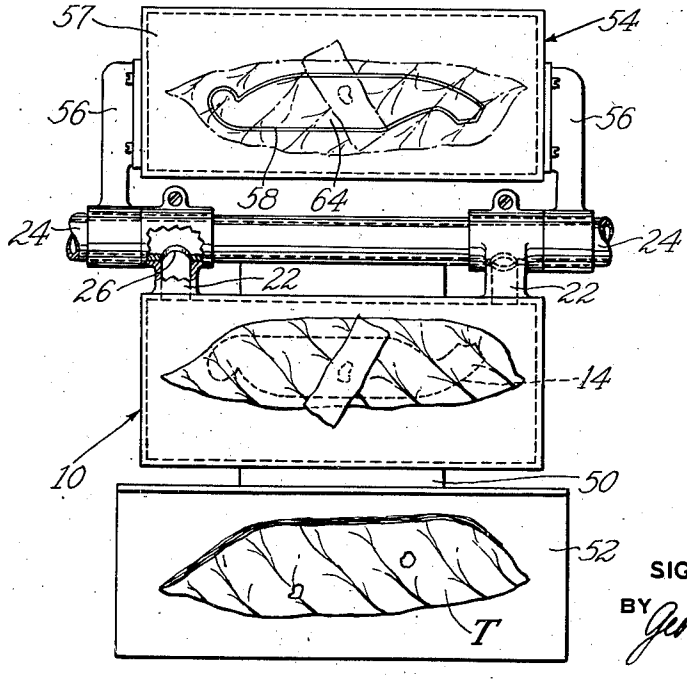


FIG. 4



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Oct. 19, 1948. S. CLAUSEN 2,451,920

CIGAR WRAPPER CUTTING AND TRANSFER MECHANISM

Filed Nov. 12, 1943 4 Sheets-Sheet 4

FIG. 5

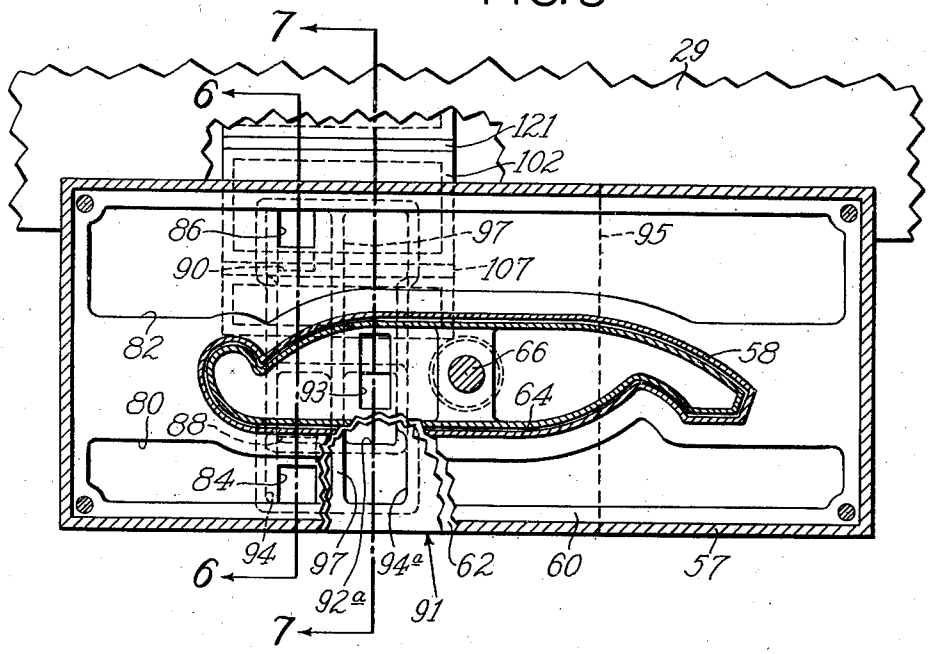


FIG. 6

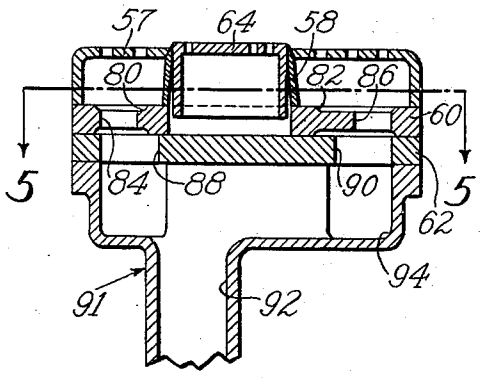
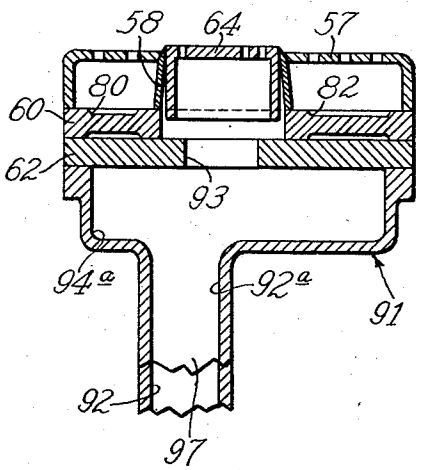


FIG. 7



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Patented Oct. 19, 1948

2,451,920

UNITED STATES PATENT OFFICE

2,451,920

CIGAR WRAPPER CUTTING AND TRANSFER MECHANISM

Sigurd Clausen, New York, N. Y., assignor to International Cigar Machinery Company, a corporation of New Jersey

Application November 12, 1943, Serial No. 509,992

8 Claims. (Cl. 131—99)

This invention relates to cigar machines, more particularly to a device for feeding leaf tobacco to the leaf cutting die of the machine whereon a leaf section is cut and transferred to the wrapper applying mechanism or other unit of the machine. Heretofore the leaf tobacco was positioned on the die immediately prior to the passage of the cutting rolls thereover wherefore the time during which the attendant could lay the leaf tobacco on the die without obstructing the cutting rolls was curtailed. Accordingly one of the main objects of the present invention is to obtain a longer interval in which the leaf tobacco may be positioned by the attendant. To this end, there is provided, in the particular embodiment of the invention selected for exemplification, a swinging transfer whereon the leaf tobacco is positioned and suctionally retained. The transfer carries the leaf tobacco to a position upon the die whereon the leaf tobacco is deposited for severance of a leaf section therefrom by the cutting rolls.

Another object of the invention is to facilitate the patching of torn wrappers cut from the leaf tobacco. For this purpose the patch may be superimposed on the hole in the leaf tobacco after the latter has been spread out with the veins uppermost on the swinging transfer. Then when the transfer is inverted and the leaf tobacco deposited on the die, the patch will be underneath the wrapper cut on the wrapper die. Thus the patch will be positioned within the wrapper when the latter is transferred from the die to the wrapper applying mechanism wherein it is wound spirally about the cigar bunch.

Referring to the accompanying drawings which form a part of this disclosure:

Fig. 1 is a plan view of my novel leaf tobacco transfer associated with the wrapper cutting and wrapper applying mechanism of a cigar machine;

Fig. 2 is an end elevation of the same;

Fig. 3 is a side elevation thereof;

Fig. 4 is a detail view showing the manner in which a hole is patched in leaf tobacco on the leaf tobacco transfer and the arrangement of the patched leaf tobacco on the wrapper cutting bed;

Fig. 5 is a sectional plan view of the wrapper cutting bed taken on the line 5–5 of Fig. 6;

Fig. 6 is a cross-section of the same taken on the line 6–6 of Fig. 5; and

Fig. 7 is a similar cross-section taken on the line 7–7 of Fig. 5.

Referring to the drawings, wherein the invention is exemplified in conjunction with wrapper

cutting and transfer mechanism, a hollow leaf tobacco transfer 10 is provided with a perforated face 12 wherein is yieldingly mounted a perforated suction head 14 whose outline conforms to the desired shape of wrapper but is slightly larger than the wrapper cutting die 58. On a bolt 16 passing through the suction head 14 and the bottom of the leaf tobacco transfer is mounted a compression spring 18 which urges the suction head upwardly, the position of the head being regulated by the adjustment of the nut 20 threaded on the lower end of bolt 16 so it will be slightly above the face 12.

The leaf tobacco transfer is provided with hollow arms 22 clamped on a hollow shaft 24 and providing communication through ports 26 in the shaft (shown in dotted lines in Figs. 1 and 4), from the interior of the leaf tobacco transfer to the interior of the shaft. One end of shaft 24 is mounted in a suction box 27 which is supported by a bracket 28 fastened to the table 29 and connected by a pipe 30 to a suitable source of suction, such as a suction fan. Thus suction is maintained within the interior of the leaf transfer, and leaf tobacco spread on suction head 14 by the attendant will be suctionally retained thereon.

The other end of hollow shaft 24 is closed by a suitable plug 25, and to this end of the shaft is secured a pinion 31 meshing with a gear segment 32 mounted on a shaft 33 supported in a bracket 34 which is secured to the hollow bracket 91 and provided with a stop screw 35 normally engaging with a boss 36 on the bottom of the transfer 10. The segment 32 is connected by a rod 37 to a cam lever 38 fulcrumed on a shaft 39 carried by a bracket 40. A cam roller 41 on lever 38 engages a cam track 42 of a plate cam 44 mounted on the cam shaft 46, whereby the leaf transfer 10 is swung forwardly to deliver the leaf tobacco to the wrapper cutting bed.

To the bracket 34 is also secured a plate 50 which projects forwardly under the transfer 10. On the free end of plate 50 is secured a table 52 whereon a stack of wrapper leaf tobacco T is supported. The attendant removes individual wrapper leaves from the stack and spreads them upon the suction head 14 of the transfer, as required for delivery to the wrapper cutting bed.

To the wrapper cutting bed 54 are fastened arms 56 wherein the shaft 24 is supported. The bed 54 has a perforated die shell 57 which surrounds the wrapper die 58, the shell and die being supported by a plate 60 mounted on a base plate 62. Within the die 58 is mounted a hollow

suction head 64 which has a perforated top and is supported on a rod 66 slidably mounted in a hub of base plate 62 and connected by a link 68 to a cam lever 70 fulcrumed on shaft 39. The lever 70 has an arm 72 which carries a cam roller 74 engaging a disk cam 76, the cam roller being maintained against the periphery of cam 76 by a tension spring 78 connected to lever 70.

The cam 76 operates to maintain the suction head 64 at a position wherein its top face is aligned with the cutting edge of the die 58 except to lower the suction head slightly during the passage of the cutting rolls over the die, and then elevate the suction head to deliver the cut wrapper to the wrapper transfer mechanism as will be presently described. Since the connection of the suction head to the cam lever 70 and the noted operation thereof are conventional, further description thereof is deemed unnecessary.

The plate 60 is indented at its top and bottom at the areas 80 and 82 thereof at either side of the die, as shown in Figs. 5 and 6. Apertures 84 and 86 in the areas 80 and 82 communicate through underlying holes 88 and 90 of base plate 62 with a suction conduit 92 formed in a hollow bracket 91, whereby suction is created in the interior of the die shell 57. The hollow bracket 91 has another conduit 92*a* which is separated from conduit 92 by a central partition 97 which extends upwardly through the entire length of the hollow bracket 91 into engagement with the bottom of plate 62. Conduit 92*a* communicates through an elongated slot 93 in plate 62 with the interior of suction head 64. Each conduit 92 and 92*a* has an intake 94 and 94*a* respectively, at either side of the partition 97, and the longitudinal edges of the intakes are aligned with the longitudinal edges of plate 62, as shown in Figs. 6 and 7. One lateral edge of the intake 94 is aligned with the left hand edge of the base plate 62 as shown in Fig. 3, and the lateral edge of the intake 94*a* is indicated by the dotted line 95 in Figs. 1 and 5. Each of the conduits 92 and 92*a* communicates at its lower end through port 99 and 99*a*, respectively formed in the lower end of bracket 91 with ports 101 and 101*a*, respectively, of a suction box 102. The latter is connected by a pipe 105 to a suitable source of suction such as a suction fan (not shown). A valve 107 slidably mounted in suction box 102 has a pair of ports 103 and 103*a* adapted to place the conduits 92 and 92*a*, respectively, in communication with the suction box when it is displaced upwardly from the position shown in Fig. 2. For this purpose the valve 107 is connected by a link 109 to a cam lever 111 fulcrumed on shaft 39 and provided with a cam roller 113 which is held against a cam 115 secured on shaft 46, the roller 113 being held against cam 115 by a tension spring 117.

Suction box 102 is provided with an extension which communicates with the main portion of the box through an opening 119 and is connected by a conduit 120 to a wrapper transfer mechanism hereinafter described. A valve 121 slidably mounted in the suction box is provided with a port 121*a* adapted to place the port 119 in communication with the main portion of the suction box, and thereby create suction in the wrapper transfer, when valve 121 is moved upwardly from the position shown in Fig. 2. For this purpose the valve 121 is connected by link 123 to cam lever 111. It may be noted that the port 121*a* in valve 121 is brought into registry with opening 119 slightly before the valve 107 has been sufficiently moved upward to close port 101*a* in the suction box, wherefore during the transfer of the wrapper from the suction head 64 to the wrapper carrier 203 suction is continued for a short period of time in suction head 64 until suction is applied fully to wrapper carrier 203. From the relative size and location of the ports 103 and 103*a* shown in Fig. 3, it is obvious that the suction in the die shell 57 will be maintained for a longer period of time than in the suction head 64. This is done for the purpose of retaining the waste portion of the tobacco leaf after the wrapper is cut until the operator is able to remove the same.

The suction box 27 is also provided with a slide valve 125 connected by a link 127 to a cam lever 129 fulcrumed on shaft 131 supported by a bracket 133 mounted on the lower side of table 29. Cam lever 129 is equipped with an arm 130 carrying a roller 135 engaging with cam 137 secured on shaft 46. The valve 125 is thus operated to cut off the suction in the leaf transfer 10 when the latter has deposited the leaf tobacco upon the wrapper cutting bed. Thereupon the valve 107 places the conduits 92 and 92*a* in communication with suction box 102 and the leaf tobacco is then suctionally held on the die shell 57 and the suction head 64 while the cutting rollers 140 and 141 (Fig. 1) are moved to and fro over die 58 to sever a wrapper. The roller 140 is supported by arms 143 and 144 and the roller 141 is supported by a U-shaped arm 145. These arms are carried by a shaft 147 on a member 149 projecting forwardly from a slide 151 mounted on a slide bar 153 and reciprocated by a cam lever 155. Since the manner in which the arms 143, 144 and 145 are mounted on the shaft 147 and the operation of the cam lever 155 are old and well known, further description thereof is deemed unnecessary.

The wrapper transfer mechanism, which is similar to that shown in the patent to R. E. Rundell, No. 1,539,274, consists of a wrapper carrier 203 having a considerable number of perforations in its bottom, as illustrated in Fig. 1. Wrapper carrier 203 has a hollow stem 204 pivotally mounted in the free end of the carrier supporting means and provided at its upper end with a gear 205 by which it is rocked in a boss 206 formed on the free end of the carrier supporting means. The carrier supporting means consists of two hollow interconnected sections 207 and 208 which are articulated at 209 approximately at the center of said means. The end of the carrier supporting means opposite the boss 206 is secured to the upper end of a hollow vertical shaft 210 journaled in a standard 211 rising from the table 29 of the machine. The lower end of the hollow shaft 210 is connected by the conduit 120 to the suction box 102. The upper end of the hollow shaft 210 is closed and the interior of the same is in open communication with the interior of the section 208 of the carrier supporting means whereby suction is applied to the wrapper carrier 203 to cause adhesion of the wrapper to its perforated bottom. The section 208 is secured to the upper end of the shaft 210 by means of a clamping bolt 214. The shaft 210 not only serves as a part of the suction apparatus for holding a wrapper on the carrier 203, but it also serves as means by which the carrier supporting means is moved about the anchorage. With this end in view, a segmental gear 215 is secured upon a portion of the shaft 210 below table 29. The segmental gear 215 is in mesh with a segmental gear 216 formed on an

arm 217 fulcrumed at 218 to a bracket 219 underlying table 29. The arm 217 carries a branch arm 220 which in turn carries a cam bowl 221 tracking in a cam groove 222 formed on the periphery of a cam drum 223 which is mounted upon the cam shaft 46. The mechanism just described oscillates the section 208 about its anchorage on shaft 210.

Means are provided for controlling the relative movement of the sections 207 and 208, which controls the movement of the axis of the wrapper carrier, and, as shown, this means has a direct connection with the movement controlling device for the carrier. With this end in view, the section 207 of the carrier supporting means is provided with a horn 224, upon the free end of which is an integral upright 225 carrying a cam bowl 226 tracking in a cam slot 227 formed in a cam plate 228 supported by a bracket 229 rising from the standard 211 before referred to. As the section 208 is swung about the anchorage, the engagement of the cam bowl 226 with the cam slot 227 alters the relative positions of the sections 207 and 208 and controls the path of movement of the axis of the wrapper carrier.

The wrapper carrier is also given a rocking movement on its axis. This is accomplished in the following manner: The gear 205 on the upper end of the stem 204 of the wrapper carrier meshes with a gear segment 230 on a lever 231, fulcrumed at 232 to a horn 233 projecting from the section 207 beyond its point of articulation with the section 208. The lever 231 carries a cam bowl 234 tracking in a cam groove 235 formed in the cam plate 228 before referred to. By means of the mechanism just described, as the section 208 is moved about the anchorage, the engagement of the cam bowl 234 with the cam slot 235 changes the relative angular positions of the section 207 and the wrapper carrier.

The wrapper carrier head 203 is thus moved to a position above the wrapper cutting bed to receive the cut wrapper when the suction head 64 is elevated, following the return of the cutting rolls to their initial position. When the wrapper initially engages the perforated bottom of the wrapper carrier 203, suction is maintained momentarily in the suction head 64 until suction is created in the wrapper carrier. This is done for the purpose of preventing wrinkling or shifting of the wrapper during the transfer. The suction is then cut off from the conduit 92a by the movement of valve 107 and valve 121 keeps applying suction to conduit 120 thus retaining the wrapper suctionally on the perforated bottom of the wrapper carrier. The wrapper is then transported by the wrapper carrier to a position where its flag end is pasted, and the wrapper is removed from the wrapper carrier and applied to a cigar bunch by mechanism (not shown).

Reference may now be had to Fig. 4 of the drawings wherein a novel method of patching wrappers is illustrated in conjunction with my novel leaf tobacco transfer. After the leaf tobacco is spread out on the transfer 10 with the hole or torn portion thereof shown in dotted lines disposed within the outline of the suction head 14, a patch of leaf tobacco may be superimposed on the hole. The patch may be secured to the leaf tobacco, if desired, by applying adhesive to its lower face or the underlying portion of the leaf tobacco. However, the patch will be retained in position, even though adhesive is not used, by the suction applied to the head 14. Then, when the transfer 10 deposits the leaf tobacco on the wrapper cutting bed, the patch will be underneath the wrapper cut therefrom on the die and will be retained against the wrapper while the latter is transferred by the wrapper carrier to the wrapper-applying mechanism. Thus the patch will be enclosed within the wrapper when the latter is wound spirally about the bunch.

Although the suction head 14 of the leaf tobacco transfer is disclosed as conforming in outline to the shape of the wrapper cutting die, it will be understood that it may be of a different shape provided it is larger than the wrapper cutting die. Thus, if the suction head is larger than the wrapper cutting die, upon engaging the cutting edge of the wrapper cutting die it will be pressed into the leaf tobacco transfer against the resistance of spring 18 while the portion of transfer 10 surrounding the suction head 14 presses the portion of the leaf tobacco extending outside of the latter against the die shell 57. In this manner suctional adhesion of the leaf tobacco to the die shell is assured, for if the leaf tobacco were not pressed against the die shell and should be wrinkled, the vacuum therebetween would be quickly destroyed.

What is claimed is:

1. In a cigar machine, the combination with a suction cutting bed including a die adapted to cut a section from leaf tobacco spread on the die, said bed having a portion outside of and surrounding said die, of a hollow carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread on its perforated face, to an inverted position at which the leaf tobacco is deposited on said die and held by the perforated face of said carrier against the portion of said bed outside of said die, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the perforated face thereof while it is transporting the same to the die, and devices for terminating the suction in said carrier when the leaf tobacco is positioned on said die and applying suction to said bed while the leaf tobacco is held thereagainst by the perforated face of said carrier to cause adhesion of the leaf tobacco to said bed.

2. In a cigar machine, the combination with a cutting bed including a die adapted to cut a section from leaf tobacco spread on the die, of a hollow carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread on its perforated face, to another position at which the leaf tobacco is deposited on said die, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the perforated face thereof while it is transporting the same to the die, and a device for terminating the suction in said carrier when the leaf tobacco is positioned on said die, said carrier including a perforated suction head whose outline conforms to the shape of the die, said head being mounted in the leaf tobacco supporting face of the carrier, and a device for yieldingly supporting said suction head in a position slightly above the leaf supporting face of the carrier, said head being arranged to engage the die when said carrier is at leaf depositing position, and thereby be displaced inwardly on the carrier to permit the carrier to press the tobacco against the cutting bed.

3. In a cigar machine, the combination with a

stationary cutting bed including a die adapted to cut a section from leaf tobacco spread on the die, said cutting bed being provided with a perforated die shell surrounding the die and a perforated suction head within the die, of a hollow carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread on its perforated face, to another position at which the leaf tobacco is deposited on said die and held by said carrier against said suction head and die shell, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the perforated face thereof while it is transporting the same to the die, a device for terminating the suction in said carrier when the leaf tobacco is positioned on said die, and means for applying suction to said die shell and suction head after said carrier has deposited the leaf tobacco on the die, while the leaf tobacco is held against said suction head and die shell by said carrier, and the suction has been terminated in said carrier, to cause the leaf tobacco to be suctionally retained on the cutting bed, cutting rolls adapted to traverse the die to sever a section from the leaf tobacco suctionally retained on said suction head and die shell, and means for moving said cutting rolls to and fro over the die.

4. In a cigar machine, the combination with a stationary cutting bed including a die adapted to cut a section from leaf tobacco spread on the die, of a hollow carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread on its perforated face, to another position at which the leaf tobacco is deposited on said die, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the perforated face thereof while it is transporting the same to the die, a device for terminating the suction in said carrier when the leaf tobacco is positioned on said die, said cutting bed being provided with a perforated die shell surrounding the die and a perforated suction head within the die, and means for applying suction to said die shell and suction head after said carrier has deposited the leaf tobacco on the die and the suction has been terminated in said carrier, to cause the leaf tobacco to be suctionally retained on the cutting bed, said carrier having a perforated section which is larger than the die, said section being movably mounted in the leaf supporting face of the carrier, and a device for yieldingly supporting said section in position to engage the die at the leaf depositing position of said carrier whereby said section will be displaced inwardly on the carrier and the latter will press the leaf tobacco against the die shell.

5. In a cigar machine, the combination with a stationary cutting bed including a die adapted to cut a section from leaf tobacco spread on the die, said cutting bed being provided with a perforated die shell surrounding the die and a perforated suction head within the die, of a hollow carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread on its perforated face, to another position at which the leaf tobacco is deposited on said die and held against said suction head and die shell by said carrier, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the

perforated face thereof while it is transporting the same to the die, a device for terminating the suction in said carrier when the leaf tobacco is positioned on said die, and means for applying suction to said die shell and suction head after said carrier has deposited the leaf tobacco on the die and the suction has been terminated in said carrier and while the leaf tobacco is held against said suction head and die shell by said carrier, to cause the leaf tobacco to be suctionally retained on the cutting bed.

6. In a cigar machine, the combination with a stationary cutting bed including a die adapted to cut a section from leaf tobacco spread on the die, of a hollow carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread on its perforated face, to another position at which the leaf tobacco is deposited on said die, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the perforated face thereof while it is transporting the same to the die, a device for terminating the suction in said carrier when the leaf tobacco is positioned on said die, said cutting bed being provided with a perforated die shell surrounding the die and a perforated suction head within the die, and means for applying suction to said die shell and suction head after said carrier has deposited the leaf tobacco on the die and the suction has been terminated in said carrier, to cause the leaf tobacco to be suctionally retained on the cutting bed, said carrier including a perforated member mounted in the leaf supporting face thereof and corresponding in outline to the die but of slightly larger size, and a device for yieldingly supporting said member in a position slightly above the leaf supporting face of the carrier, said member being arranged to engage the die and suction head of the cutting bed at the leaf depositing position of the carrier, and thereby be displaced inwardly on the carrier to permit the carrier to press the leaf tobacco against the die shell.

7. In a cigar machine, the combination with a suction wrapper cutting bed including a wrapper cutting die adapted to cut a wrapper from leaf tobacco spread on the die, said bed having a portion outside of and surrounding said die, of a carrier having a perforated face adapted to support leaf tobacco spread thereon, mechanism for moving said carrier from one position at which the leaf tobacco is spread thereon to another position at which the leaf tobacco is positioned on the die and held by said carrier against the portion of said bed outside said die, means for creating suction in said carrier and thereby causing suctional adhesion of the leaf tobacco to the perforated face of the carrier while the leaf tobacco is being transported to the die, a device for terminating the suction in said carrier when the leaf tobacco is positioned on said die and applying suction to said bed while the leaf tobacco is held against said bed by said carrier to cause adhesion of the leaf tobacco to said bed, mechanism for cutting a wrapper from the leaf deposited on the die, and means for transporting the cut wrapper to wrapper applying position.

8. In a cigar machine, the combination with a cutting bed including a die adapted to cut a wrapper from leaf tobacco spread on the die and a vertically movable member within said die, of a carrier provided with perforations on its upper face, a device for applying suction to the perfo-

rations in the upper face of said carrier to cause adhesion thereto of leaf tobacco and a leaf tobacco patch superimposed on and covering a hole in said leaf tobacco, said carrier being movable to an inverted position above said die to deposit the adhering leaf tobacco and patch on said die and member with the tobacco patch underneath the leaf tobacco and within the die, and said device operating to maintain suction on the perforated face of said carrier and thereby retain the leaf tobacco and patch thereon until the leaf tobacco and patch are deposited on said die and member, mechanism for cutting a wrapper from leaf tobacco so deposited on the die, a wrapper transfer adapted to transport the cut wrapper to wrapper-applying position, said wrapper transfer having a perforated face adapted to engage the cut wrapper, said movable member being adapted to raise the cut wrapper and patch into contact with the perforated face of said wrapper

transfer, and means for creating suction within said wrapper transfer to cause suctional adhesion of the cut wrapper and the tobacco patch to the perforated face of the wrapper transfer.

SIGURD CLAUSEN.

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