

Dec. 28, 1965

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3,225,633

TOBACCO WEB FEED WITH UNIVERSAL BINDER SHAPER

Filed Oct. 18, 1961

6 Sheets-Sheet 1

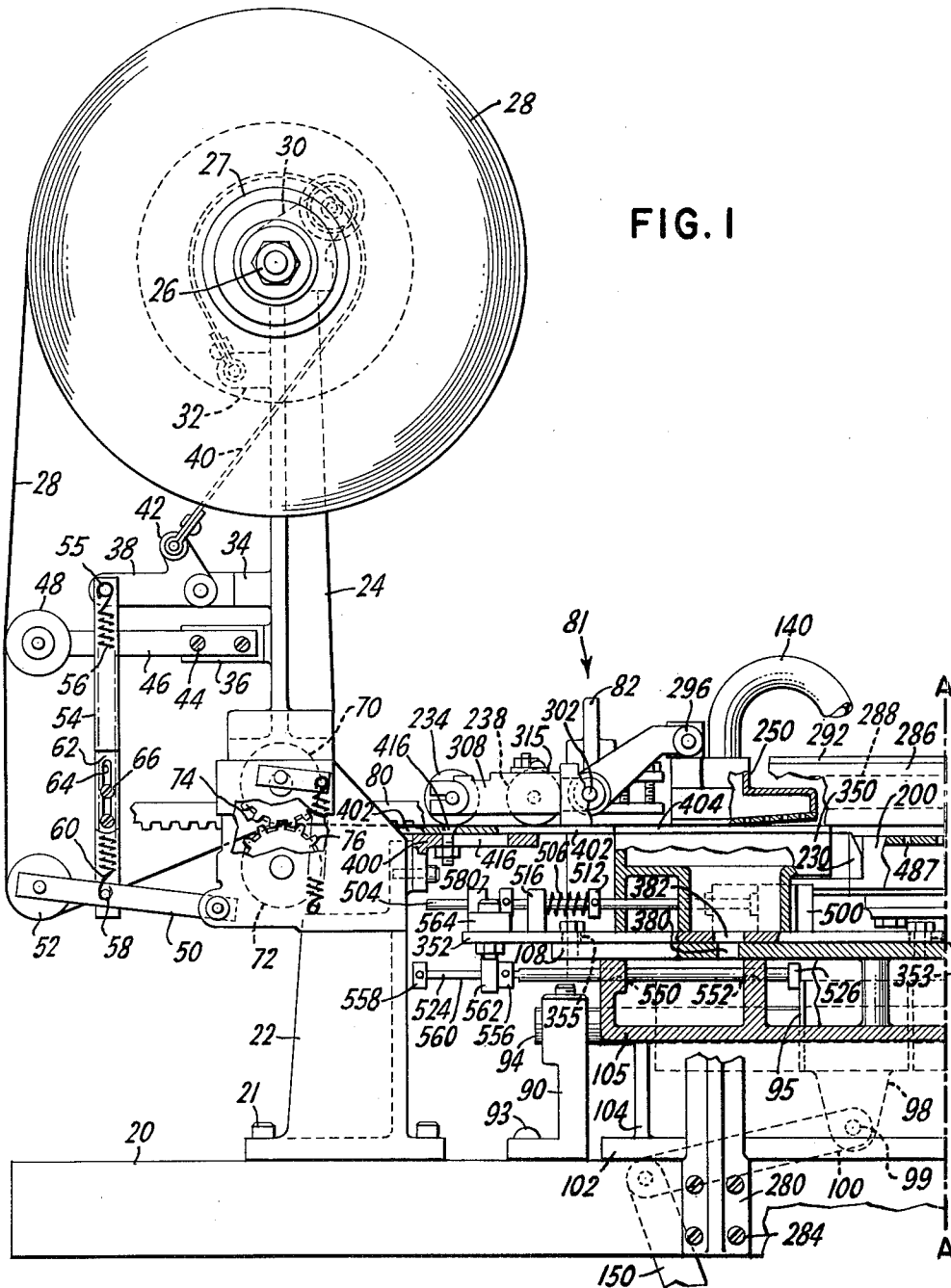


FIG. 1

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FIG. 2

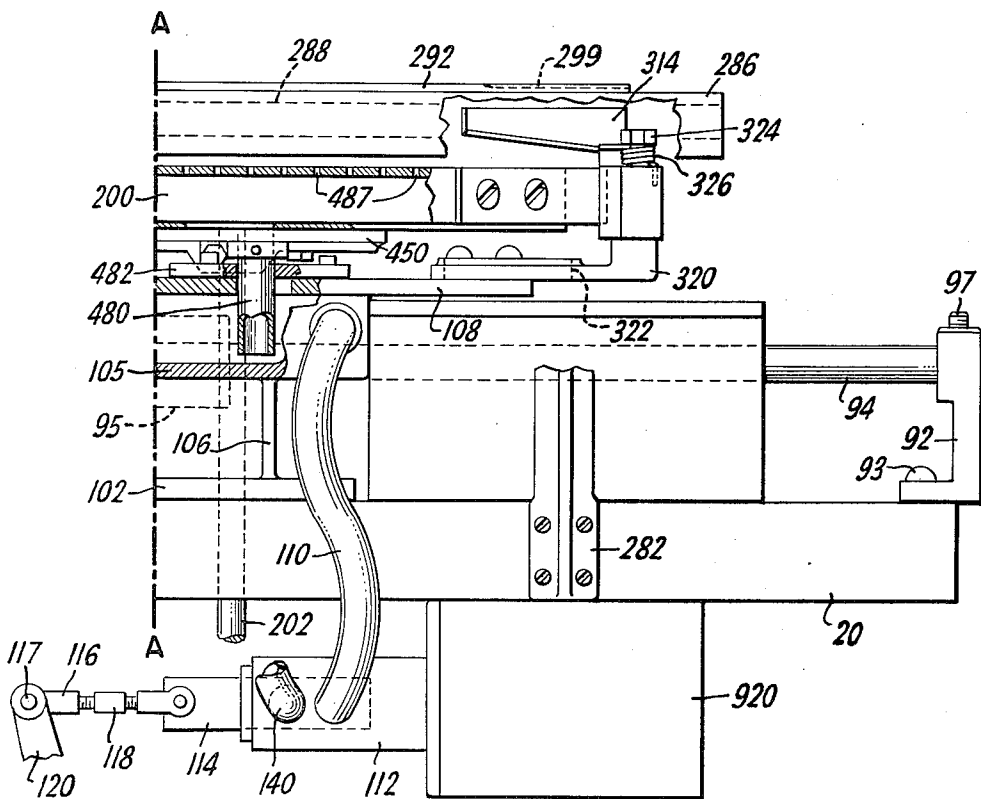
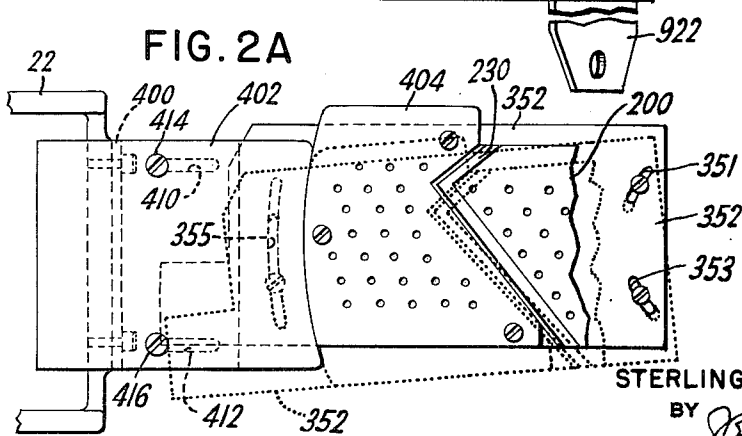


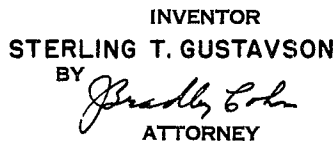
FIG. 2A



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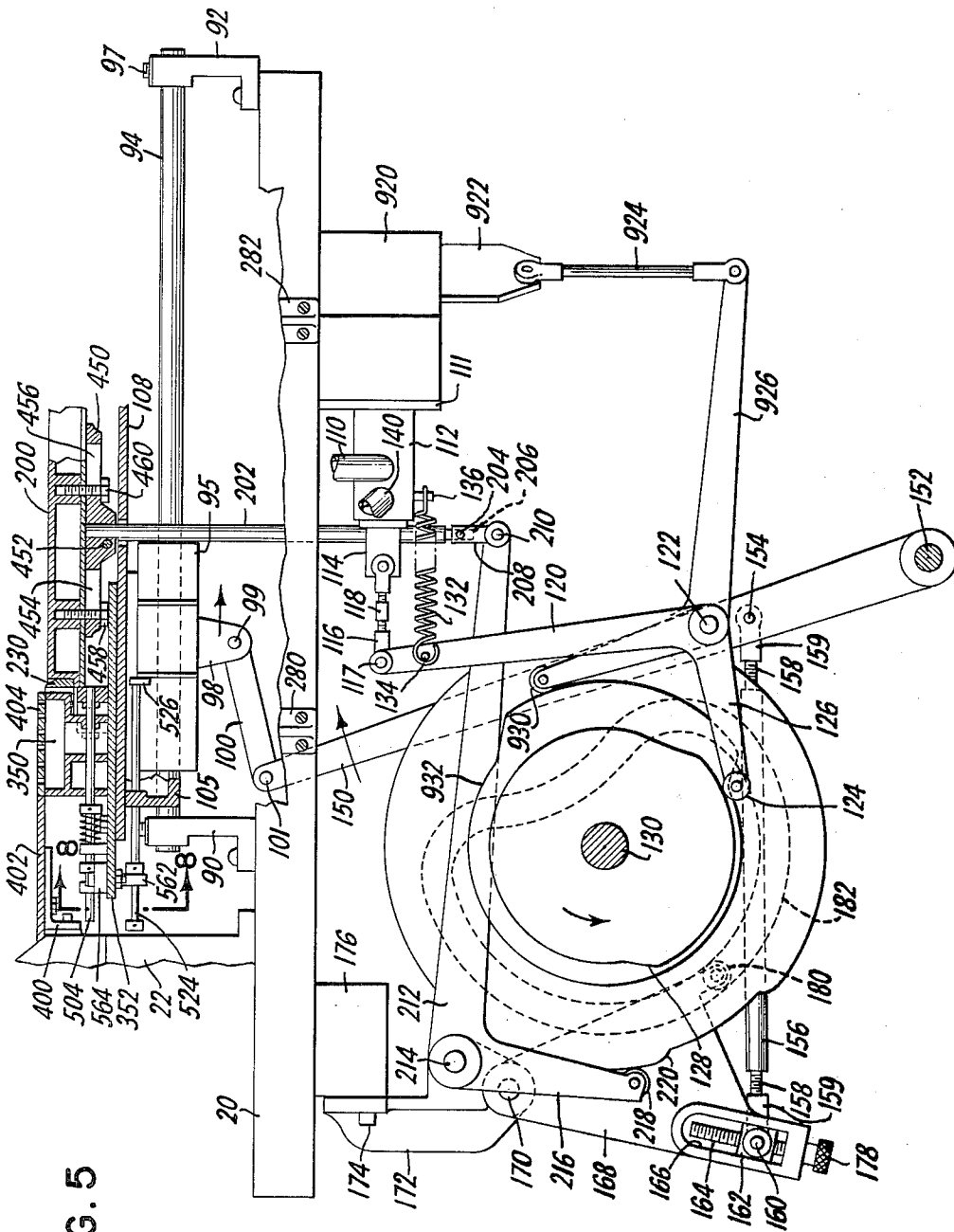
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TOBACCO WEB FEED WITH UNIVERSAL BINDER SHAPER

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FIG. 5



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TOBACCO WEB FEED WITH UNIVERSAL BINDER SHAPER

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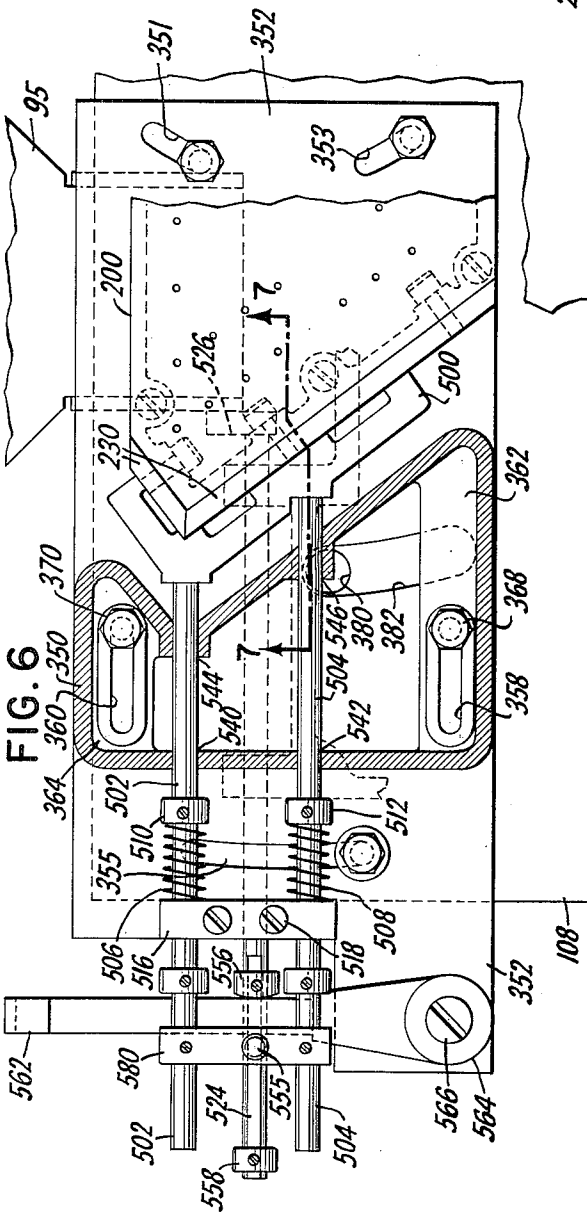


FIG. 6

FIG. 8

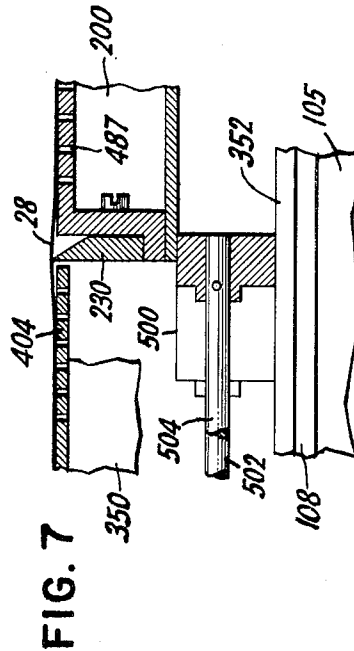
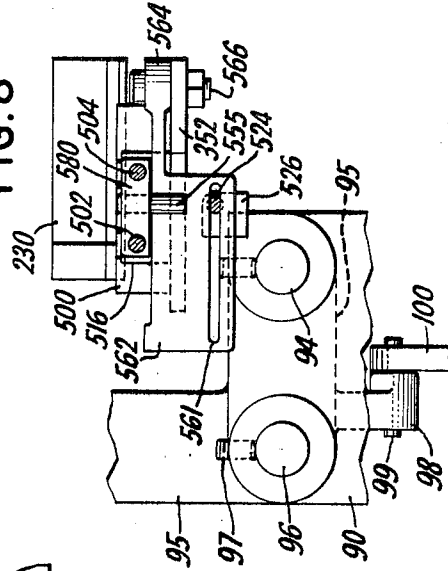


FIG. 7

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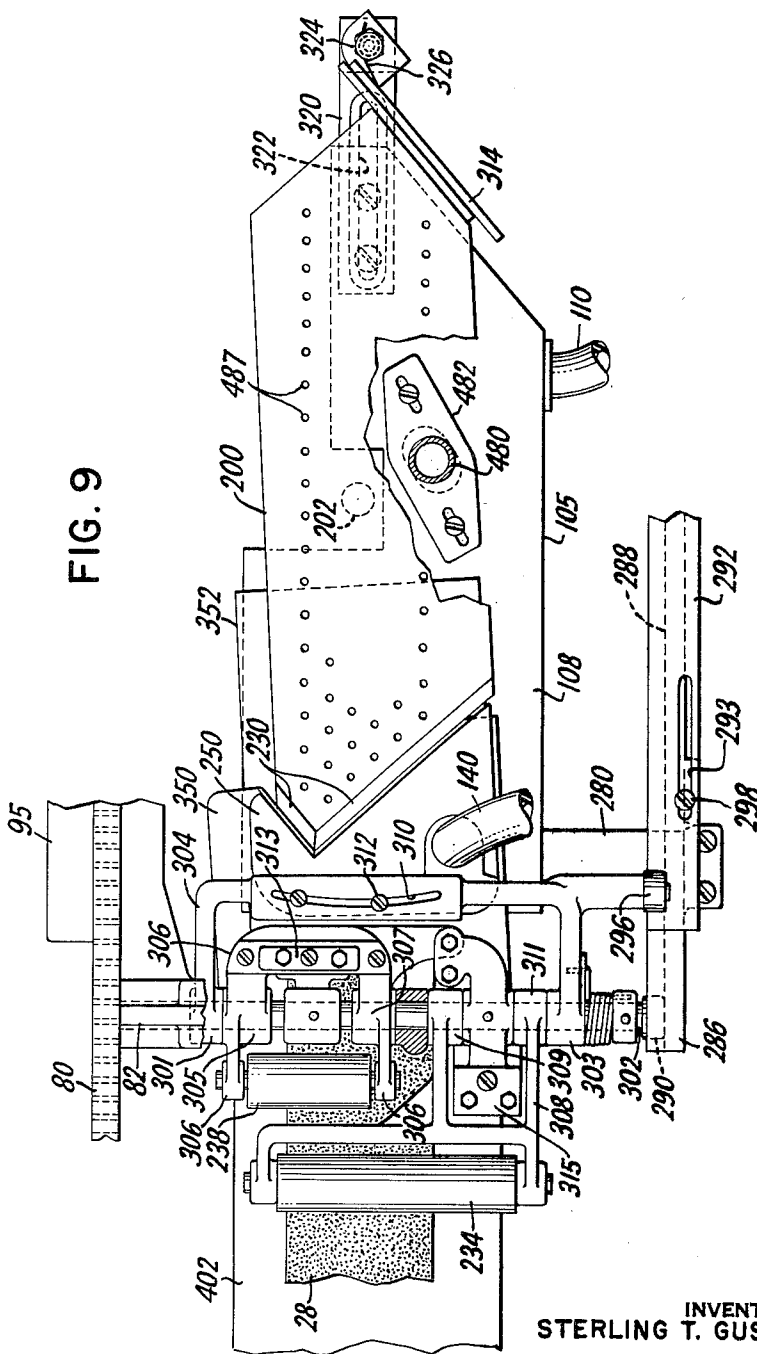
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TOBACCO WEB FEED WITH UNIVERSAL BINDER SHAPER

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6 Sheets-Sheet 6



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TOBACCO WEB FEED WITH UNIVERSAL BINDER SHAPER

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7 Claims. (Cl. 83-152)

This invention is an improved machine for cutting cigar binders or cigar wrappers from a continuous web of tobacco material. In essence, it is a tobacco web feed with a universal binder shaper which eliminates the need for many individually modeled suction heads and transfer heads. The invention may be applied also to the same purpose in the continuous machine manufacture of wrappers for cigars of a particular type.

An object of the invention is the improvement of machines for cutting tobacco cigar binders or tobacco cigar wrappers from continuous web tobacco material.

As is generally well understood, most cigars are made by first rolling a charge of tobacco, called a filler, in a binder of natural tobacco leaf, or of reconstituted tobacco, to form a bunch. Thereafter, the bunch is enveloped in a wrapper which may also be of natural cigar leaf or of reconstituted tobacco material, formed into a continuous web, to form the cigar. A large percentage of cigars manufactured today are made by machines. In the machine to which the present invention has been applied, binders or wrappers are cut from continuous web tobacco material by means of knives in response to the vertical reciprocation of a suction head, after the tobacco web material has been drawn across the suction head by a traveling suction head which picks up the leading end of the web and carries it across the knives which are positioned at the opposed ends of the vertically reciprocable table. A machine which performs this function is well known in the art.

Cigars come in a wide variety of shapes and sizes. There are, as is well known, cigars of many different lengths, different diameters, and different shapes. In one method of making the binders, or wrappers, by machine, an individual die is required for each different binder and wrapper. The investment required in manufacturing and maintaining this wide diversity of dies is large. In the machine manufacture of cigars, in one well known method, after the binder or wrapper has been cut by the die it is picked up by a transfer mechanism and moved to another station where the succeeding operation is to be performed. The transfer mechanism is essentially another displaceable suction head. To be effective in performing the transfer operation, the suction head must be so shaped that it conforms fairly closely with the contour of the binder or wrapper. This requires a large number of different suction heads for the transfer mechanism, representing an additional large expense.

Recently there has been introduced binder and wrapper cutting devices which eliminate the individual die required for each binder and each wrapper contour. Instead of employing a die, the binders and wrappers in certain machines are now cut from the web of tobacco material by irregularly shaped knives which are positioned transverse the web. The knives are secured to the vertically reciprocable table. The knives completely sever an end of the web from one edge to the other. In performing this operation, rollers traverse the knives when the knives

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are elevated into position to sever the head end of the tobacco web. Usually two knives are secured to the rear end of the table, each knife disposed at a different angle with respect to the oncoming web. The knives cut the rear end of the binder or wrapper completely to a suitable contour and in performing this operation also partially shape the head end of the binder or wrapper to the proper contour for the next succeeding binder or wrapper. The leading end of the web is then drawn across the vertically reciprocable table and a small tab is cut from the leading end to adapt it to be rolled onto the reduced section at the tuck end of the cigar. While this operation is being performed, the rear knives completely form the rear end of one and the head end of the following contour. The two longitudinal sides of the continuous web material remain unchanged from their original rectilinear form in the web.

This method of using knives represents a considerable saving over the method of employing individual dies. The suction head and knife method afforded some flexibility, in that the webs or wrappers cut thereby can be employed for a limited number, such as two or three, different cigar shapes and sizes. This tends to reduce the cost of manufacture and maintenance very materially. However, notwithstanding this reduction, large numbers of suction heads are still required to produce binders and wrappers to cover the full range of sizes and shapes of cigars. Although the number of suction heads required to transfer this binder or wrapper to the station where the next operation is performed are also materially reduced, there are nevertheless still a large number required.

The present invention eliminates the need for a large number of different vertically reciprocable suction heads and cooperating transfer suction heads. By means of this invention, the total number of suction heads required is but one to three and the total number of transfer heads is also but one to three, at most.

In the knife method of forming binders, or wrapper, the continuous web of tobacco material is always fed off the reel in a straight line parallel to the sides of the table and in the line of motion of the intermittently operated feed rollers. In the present invention, the vertically reciprocable table which heretofore was disposed in the same line of motion as the oncoming web is now rotatable, so that it may be fixed in position at any selected angle, within a range, relative to this line of motion. This is accomplished by pivoting the vertically reciprocable suction head about the center of the shaft on which it is mounted for vertical reciprocation. To adjust the mechanism for various lengths of cigars, it is required that the vertically reciprocable table, in addition to being rotatable, must be adjustable longitudinally of the table.

The plate on which the vertically reciprocable suction head is mounted is also arranged so that it is rotatable. The machine is provided with another suction box, which underlies the web adjacent the cutting knives. This and the plate on which it is mounted are arranged so that they are both rotatable and adjustable longitudinally so that the web feed suction box closely abuts the knife on the vertically reciprocable table in each position into which the table may be moved.

As the table and the adjacent web feed suction box are adjusted into the various angular positions, it is necessary that the traveling suction head, which transports the web of tobacco material across the table, for the cutting of the binder or wrapper, be correspondingly ad-

justable. Means are, therefore, provided so that all of these coating elements may be rotated with respect to the vertical shaft on which the table is mounted as a center, and so that they may be adjusted longitudinally of the machine. The angular displacement and longitudinal adjustment of the vertically reciprocable table make it possible to cut binders or wrappers of varying lengths and of varying angular transverse dimensions from a web of uniform width. For instance, in the present invention by means of a single table and coating mechanism, it is possible to cut binders or wrappers for cigars varying in length and diameter throughout practically the entire normal range. A second table will cut binders or wrappers for cigars ranging from seven inches through nine and three-eighths inches and of the usual range of diameters. Means are provided to vary the length of travel of the horizontally reciprocable binder transfer box which picks up the leading end of the web tobacco material and carries it across the cutting knife and the vertically reciprocable table. This motion is under control of a cam and a system of levers. The length of the stroke may be adjusted by changing the position of a connecting rod in this lever system as will be explained in detail hereinafter. The carrier suction head which transports the binder or wrapper to the rolling table or the wrapping mechanism after it has been cut to the proper contour has means for angular and longitudinal adjustment so that the single transfer suction head may serve for many binders or wrappers with their many differing contours produced in the present machine.

A feature of the invention is a suction head for a vertically reciprocable table which is also rotatable within a range.

Another feature of the invention is a suction head for which suction head is angularly and rectilinearly adjustable rectilinearly in the machine.

Another feature of the invention is a suction head for a transfer mechanism which transports a cigar binder or wrapper to a rolling table or a wrapping mechanism, which suction head is angularly and rectilinearly adjustable in a cigar machine.

Other features coadunate with the adjusting features of the table are coating mechanism in the machine adjustable incident to the adjustment of the table.

The invention may be understood from the following detailed description when read with reference to the associated drawings which taken together disclose a preferred embodiment in which the present invention is presently incorporated. It is to be understood, however, that the invention is not limited to incorporation in the present embodiment but may be incorporated in other embodiments which may be suggested to those skilled in the art from a consideration of the following.

In the drawings:

FIGS. 1 and 2, combined, with FIG. 2 disposed to the right of FIG. 1, is a vertical elevation, partly in section of the upper portion of the present web feed binder or wrapper cutting mechanism;

FIG. 2A is a partial plan view of the left-hand rear portion shown in FIG. 1 with the traveling suction box removed;

FIG. 3 is a plan view of the machine partly in section;

FIG. 4 is an elevation of the transfer mechanism taken on line 4—4 of FIG. 3, partly broken away, to show the hollow arm of the suction carrier;

FIG. 5 is a vertical elevation showing the cam mechanism, in the lower portion of the figure, and the vertically reciprocable table and other mechanism partly in section;

FIG. 6 is an enlarged partial plan view of a portion of a machine showing particularly the suction box underlying the web adjacent the vertical table in section and mechanism for supporting the rear knives during the cutting operation;

FIG. 7 is a vertical section through line 7—7 of FIG.

6 showing the knife supporting mechanism in position under the knife; and

FIG. 8 is a partial right-hand view of the machine.

FIGURE 9 is a partial plan view, partly broken away to show the seamless mechanical tubing which is attached to the suction box through an apertured plate.

In the drawings, base plate 20, FIGS. 1 and 2, is secured to the main portion of the cigar machine, not shown. Mounted on base 20 and secured to it by bolts such as 21 is bracket 22 and mounted on the upper portion of bracket 22 and secured to it by bolts, not shown, is the binder feed roll bracket 24. The upper portion of bracket 24 has a boring therein to accommodate a shaft 26 on which a drum 27, carrying a reel of continuous web tobacco material 28, is mounted. Bracket 24 has four projecting arms, 30, 32, 34 and 36 which are integral with the bracket. Rotatably mounted on the end of arm 34 is a bell crank lever. A brake band 40 is connected at one end to arm 32, passes over a roller secured in arm 30 and is connected at its other end to arm 42 of the bell crank. The brake band engages a channel in the drum on which web 28 is mounted and applies a force counter to the rotating force applied to the roller to prevent over-running of the reel as the tobacco web material is drawn off intermittently in a manner to be explained hereinafter.

Projecting from the left end of arm 36 and rigidly secured thereto by screws 44 is a bar 46 which carries a tension roller 48 which is adapted to apply tension to the web 28. Another bar 50 is rotatably secured to the left-hand side of bracket 22 and carries at its free end another tensioning roller 52. A bar is connected at one end to the left-hand end of bell crank 38 by means of stud 55 from which bar 54 depends. Secured to the stud also is the upper end of a tensioning spring 56. A stud 58 is located intermediate the ends of bar 50 and connected thereto is the lower end of spring 56. Secured to bar 54 by screws such as 66 is a short stop plate 62 which is provided with an elongated vertical slot 64 through which screws 66 project into bar 54. The web 28 when drawn off the roller passes over rollers 48 and 52 and between intermittently operated coating feed rollers 70 and 72. Roller 72 is equipped with a gear 76 which engages with a gear 74 on roller 70. As feeding of the web starts roller 52 and bar 50 are drawn upwardly relieving tension on spring 56 and permitting clockwise rotation of bell crank 38 to release brake 40. Spring 56 counterbalances the weight of roller 52 and of bar 50 to make the brake release mechanism more sensitive. Plate 62 serves as a stop for the rotation of bar 50. The slot in plate 62 permits adjustment of the stop. A rack 80, FIG. 3, is secured to reciprocating carriage assembly 81 and engages with a gear 84 secured to the bottom roller 72. The bottom roller is provided with a clutch 86. The clutch is arranged so that as carriage 81 moves forwardly, rack 80 will drive gear 84 and feed roller 72 with its gear 76. Gear 76 drives gear 74 and its roller 70. As the reciprocating carriage 81 moves rearwardly or to the left, as shown in FIGS. 1 and 3, the clutch will operate to prevent rotation of the rollers.

Secured to base plate 20, FIGS. 1 and 2, are brackets 90 and 92 by means of bolts such as 93. Projecting through borings in brackets 90 and 92, FIGS. 2, 3, 5 and 8, are cylindrical bars 94 and 96. The bars are secured in position by set screws such as 97. The reciprocating carriage 81 is mounted for sliding action on these bars by means of a bracket 95. Reference to FIGS. 5 and 8 shows cylindrical bars 94 and 96 passing through apertures in bracket 95 so that the carriage may be reciprocated on the bars by means of lug 98 which is affixed to the lower portion of the bracket 95 on which reciprocating carriage 82 is mounted. Lug 98 is connected by means of stud 99, FIG. 5, to bar 100. Bar 100 is connected by means of stud 101 to lever 150. Lever 150 is mounted on shaft 152 which is secured in

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the machine by means not shown. Intermediate the ends of lever 150 is a stud 154 which is connected to bar assembly 156. The length of the bar may be adjusted by means of threaded portions such as 158 near its ends which coact with internally threaded short arms 159. At its left-hand end, arm 159 connects to a stud 160 which is secured in a nut 162 mounted on screw 164. Nut 162 is mounted in a slot 166 in rockable arm 168 which is mounted on stud 170 on bracket 172. Bracket 172 is secured through nuts such as 174 to bracket 176 which is secured to the bed plate 20. Screw 164 is provided with knurled head 178 by means of which nut 162 may be displaced along slot 166. Rockable arm 168 at its right-hand lower portion, as seen in FIG. 5, is provided with a cam follower 180 which engages in cam track 182. As the cam is rotated, follower 180 and rockable arm 168 are rotated limitedly about stud 170. The motion is imparted through bar assembly 156 to level 150 which imparts the motion through stud 101, bar 100, stud 99 and lug 98 to bracket 95 carrying the horizontally reciprocable suction head. The elements 160, 162 and 164 permit adjustment of the travel of the reciprocable carriage as required for binders or wrappers of different sizes. The adjustable rod assembly 156 provides means for adjusting the position of the carriage 81 to the knife 230, FIGS 5 and 6, to be described hereinafter.

A binder, or wrapper, die base plate holder, FIGS. 1 and 2, comprising a base 102 is secured to means by bolts not shown to base plate 20. The base plate holder comprises also vertical uprights 104 and 106 which support a hollow compartmented suction box 105. Surmounting the box is the binder die base plate cover 108. The hollow compartment of box 105 is connected by means of a flexible air hose 110 to suction box 112, FIGS. 2 and 5, which is connected to base plate 20 by a flange 111 of suction box 920. Suction box 112 is connected to a source of suction by means not shown. A slide valve 114 is reciprocated in suction box 112 by means of bar 116, the length of which may be adjusted by a central nut element 118 joining the threaded ends of two sections of the bar 116. Bar 116 is connected for reciprocating motion through stud 117 to one arm 120 of a bell crank lever. The bell crank lever is mounted for limited rotation about shaft 122 which is fixedly mounted by means not shown in the cigar machine. Cam follower 124 is secured to the other arm 126 of the bell crank. Follower 124 engages a cam track on cam 128 which is mounted on cam shaft 130. As cam 128 rotates, follower 124 is actuated upwardly and downwardly under the influence of the cam and tension spring 132 which is, at one end, connected to a stud 134 intermediate the ends of bar 120 and at its opposite end to a fixed stud 136 secured to the bottom of suction box 112. As follower 124 moves upwardly and downwardly, the upper end of bar 120 moves to the right and to the left actuating stud 117, bar 116 and slide valve 114. The slide valve is arranged so that it alternately applies suction and removes suction simultaneously from air hose 110 and air hose 140. Air hose 140 is connected to a hollow chamber carried by reciprocating carriage 81. This will be explained more fully hereinafter.

As best shown in FIG. 5, a vertically reciprocable hollow suction table 200 is secured to the top end of shaft 202, the lower end of which is connected by means of stud 204 which is displaceable in a slot 206 in a short arm 208, the lower end of which is connected through stud 210 to an arm 212 of a bell crank, which is rotatable limitedly about stud 214 secured in bracket 172. The lower arm 216 of the bell crank carries a follower 218 which engages a cam surface 220 of a cam mounted on shaft 130. As the cam is rotated, cam surface 220 actuates follower 218 rocking the bell crank limitedly about stud 214. Arm 212 of the bell crank imparts motion through stud 210 and vertical shaft 202 to the vertically reciprocable table 200. Secured to the left-hand end of

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table 200 is an irregularly shaped knife 230, as seen in FIGS. 3 and 9. The motion imparted to the table 200 raises the table into the cutting position at the proper time in the cycle and withdraws it at other times. It also raises the binder after it has been cut to the proper contour and presents it to the binder transfer suction head, FIGS. 3 and 4. Knife 230, when in the cutting position, engages with the cutting rollers 234 and 238 which are attached to and reciprocated with the traveling suction head.

One of the features of the present invention is an arrangement which accommodates vertically reciprocable table 200, as necessary, for the different cutting angles of the tobacco web material. This will be described in detail hereinafter.

Two brackets 280 and 282, FIGS. 1, 2, 3 and 9, are secured to base plate 20 by screws such as 284. The brackets rise vertically as seen in FIGS. 1 and 2 and project forwardly as shown in FIGS. 3 and 9. Affixed to the upper ends of these brackets by screws is a horizontal bar 286, FIGS. 3 and 9. Formed in the inner side of bar 286 is a track 288 in which roller 290 runs, to provide support for the binder transfer mechanism 81. Also secured to the brackets 280 and 282 above bar 286 is a horizontal plate 292. Formed along the right-hand inner upper edge of the plate 292 is a camming way 299 which serves as a guide and support for roller 296 and which lowers the binder transfer mechanism 81 during transfer of the binder from the binder carrier 81 to the vertical table 200. The upper plate 292 is provided with elongated slots 293. Screws such as 298 project through the slots into bar 286. The position of the plate 292 may be adjusted longitudinally as seen in FIGS. 3 and 9 by slackening screws 298, sliding plate 292 to the desired position and retightening the screws.

As mentioned in the foregoing, the binder transfer mechanism 81 is actuated by a cam mechanism to slide along cylindrical bars 94 and 96 which pass through apertures in bracket 95 which forms the support for the binder transfer mechanism. A binder transfer box support arm 82, FIGS. 1 and 9, is secured to the upper portion of bracket 95. Secured in the support arm 82 is a shaft 302. Rotatably secured to the shaft 302 are two hubs of each of three arms. One arm is the suction box arm 304 which supports the traveling suction box 250. The second arm is the short binder cutter arm 306 and the third is the long binder cutter arm 308. The suction box arm 304 is a generally U-shaped element having hubs 301 and 303 in its respective legs through which the shaft 302 passes. The central portion of the suction box arm has an elongated arcuate slot 310 therein. Bolts 312 project through the slot and engage in threaded holes in the upper plate of the transfer suction head 250 to secure the suction head to the transfer mechanism. The slot and the bolts provide means whereby the suction head may be adjusted in position by rotation in a limited arc, so that the irregular front portion of suction head 250 may maintain registry with cutting knife 230, as vertically reciprocable suction head 200 is rotated about its supporting shaft 202 into selected positions, as required, in a manner to be described hereinafter. This is one of the important features of the present invention. The short cutter arm 306 is essentially U-shaped and is provided with hubs 305 and 307 on its respective legs which engage shaft 302. It is provided also with hubs which mount a rotatable shaft carrying the short cutting roller 238. The long binder cutter arm 308 has two hubs 309 and 311 secured to shaft 302 and two other hubs in which is mounted a rotatable shaft on which the long cutter roller 234 is mounted. Each of the cutting roller assemblies comprises also spring tensioning mechanisms 313 and 315, respectively, well known in the art. They may be adjusted to maintain proper coaction between each cutting roller and its respective section of the irregular cutting knife 230 as the traveling

suction carrier 81 is reciprocated back and forth and as cutting rollers 234 and 238 engage their respective knife sections. The transfer box 250 is hollow and the plate on its lower surface is perforated so that suction may be applied through the holes to pick up the tobacco web at a proper time in the cycle and carry the head end of the web from a position adjacent knife 230, FIG. 9 to the right, across the vertical reciprocable cutting table 200 and into a position which permits the severing of the binder or wrapper from the continuous web. Simultaneously a short tab, which projects beyond the right-hand lower edge of the table is severed from the binder or wrapper by the action of the tab cutting knife 314. The tab is removed to reduce the tobacco material at the tuck end of the cigar binder or wrapper, so to permit it to be properly rolled onto the reduced conical shaped section at this end of the cigar. The tuck end knife assembly comprises a bracket 320, FIGS. 3 and 9. The bracket has an elongated slot 322 therein by means of which it may be adjustably secured by screws to the binder die base plate cover 108, FIG. 2. Secured in the bracket 320 is a stud 324. The knife 314 is secured to a hub element which mounts on the stud 324. The knife 314 is rotated clockwise as seen in FIGS. 3 and 9, by means of a spring 326, into a position in which a projection on the hub abuts the forward lower face of reciprocable table 200, FIG. 9, below the severable tobacco material. When the table is in its lower position, the operating edge of the knife is above the forward lower face of the table and in alignment with a ledger carried thereon. As the table moves upwardly, the knife removes the tab from the tuck end of the binder or wrapper.

The binder die base plate cover 108 is fixedly secured to the binder die base plate holder 105 by screws not shown. Surmounting the cover 108 and affixed to it for limited horizontal rotation is the web suction box support plate 352, FIGS. 1 and 6. Suction box 350 is secured to support plate 352 in such manner that box 350 may be moved rectilinearly on the plate. In order to permit this, the box 350 is provided with two elongated slots 358 and 360 formed in its two opposed bottom side sections 362 and 364 respectively. Bolts 368 and 370 project through the slots and into threaded holes in support plate 352. The bottom of box 350 is cored out between the side sections. Means are provided to communicate suction from the box 105 through the cover 108 and plate 352 to box 350, FIGS. 1 and 6 and through apertures in the cover of the box to hold the forward end of the web in position adjacent table 200. Cover 108 has a circular aperture 380 and plate 352 has an elongated arcuate aperture 382 which maintains registry with aperture 380 as plate 352 is rotated to adjust box 350 to the desired angle.

Secured to bracket 22, FIGS. 1 and 2A, is a bracket 400 and adjustably mounted for limited rectilinear movement, to the right and to the left, on bracket 400 is a plate 402. Two elongated slots 410 and 412 are provided and bolts 414 and 416 project through the slots and engage with the plate 402. The bolts may be eased off to permit adjustment of the position of plate 402. The forward end of plate 402 abuts the rear end of the cover 404 of suction box 350. Since plate 352 on which suction box 350 is mounted is rotatable horizontally, the right-hand end of plate 402 and the left-hand end of cover 404 are arcuate, the right-hand end of plate 400 being concave and the left-hand end of cover 404 being convex, on substantially the same radius, to permit their close engagement as box 350 is rotated. The cover 404 is perforated so as to permit suction to be applied to the tobacco web material.

Refer to FIGS. 3 and 5. A suction head support bracket 450 is secured to the top of vertical shaft 202 by means of screws 452. The bracket has elongated apertures 454 and 456. Bolts 458 and 460 project upwardly through the apertures 454 and 456, respectively,

and engage with interiorly threaded bosses in the bottom of suction head 200. The elongated apertures in the support bracket afford means whereby the suction head 200 may be adjusted in position longitudinally on the bracket 450.

Refer to FIGS. 2 and 3. Suction is communicated from box 105 to box 200 by means of a duct of seamless mechanical tubing, for instance 480, which projects from the bottom of suction box 200 to which the tubing is rigidly secured, at the upper end of the tubing, through apertures in plates 482 and 108 into box 105. When table 200 is in its upper position, tubing 480, secured to box 200, is also elevated and the suction channel between box 105 and box 200 is open. When box 200 is in its lowermost position, the lower end of tubing 480 engages upon the surface of the bottom of box 105, or with a compressible suction sealing material affixed thereto, and the suction communication channel between box 105 and box 200 is closed. Plate 482 is provided with elongated slots and cap screws project through these slots into plate 108. The aperture in plate 108, to accommodate tube 480, is enlarged to permit displacement of the tube when table 200 is rotated into any selected position about shaft 202. The elongated slots in plate 482 permit movement of plate 482 to cover that portion of the aperture in plate 108 in excess of the cross sectional area of tube 480. Apertures such as 487 in the top cover of box 200 communicate suction to the binder on the table under control of valve 114.

Refer to FIGS. 1, 6 and 7. Means are provided to support the knife 230, affixed to suction head 200, when the knife is in its elevated cutting position. When it is in this position, the knife support 500 which is secured to the forward end of shafts 502 and 504 and which normally abuts the left-hand end of suction head 200 is slid under the knife by the action of springs 506 and 508 which are compressed between stops 510 and 512 affixed to shafts 502 and 504, respectively, and the block 516. Block 516 has two apertures therein to permit shafts 502 and 504 to project therethrough. The right-hand portions of shafts 502 and 504, project through apertures 540 and 542, respectively, in the rear of box 350 as seen in FIG. 6 and through apertures 544 and 546, respectively, in the front of box 350. Block 516 is secured to plate 352 by means of screws such as screw 518. The knife support 500 is withdrawn from under the knife by means of a third shaft 524 shown in FIGS. 1 and 6. The shaft 524 carries at its forward end an element 526 which engages with the bracket 95. Shaft 524 projects through apertures 550 and 552 in box 105 and carries near its left-hand end a block 556 and at its extreme left-hand end a block 558. Shaft 524 has a reduced cross section 560 near its left-hand end which projects through an elongated horizontal aperture 561 in adjustment lever 562. Lever 562 has a hub 564 with a boring therein and is secured by means of a screw 566 which projects through plate 352. As the bracket 95, carrying the traveling suction head, moves rearwardly, block 556 engages adjustment lever 562 and rotates it counterclockwise limitedly about element 566. Lever 562, FIG. 8 engages depending pin 555 in block 580. Block 580 has two apertures therein through which shafts 502 and 504 project and the block is secured to each of these shafts. The engagement of lever 562 with pin 555 impels shafts 502 and 504 toward the left withdrawing knife support 500 and compressing springs 506 and 508. During the forward movement, lever 562 is rotated in a clockwise direction, as seen in FIG. 6, by means of the engagement of downwardly projecting pin 555 secured to block 580.

In order to carry out the invention, it is necessary that the binder carrier 900 be adjustable in position so that it may be properly oriented with the various positions which may be assumed by the cut binder, or wrapper, on adjustable table 200. Reference to FIGS. 3 and 4 shows how this is achieved. The carrier 900 is well known in

the art and it is considered it need not be otherwise described than the detail the means by which it may be adjusted.

The binder suction head 902 is actuated between a position overlying suction head 200 and a position overlying the perforated apron 904 on rolling table 906. In accordance with this invention, the flanged collar 908 by means of which the binder carrier suction head 902 is secured to the vertical hollow core 910 of the carrier has a saw cut 912 therein and a cap screw 914 protruding through the collar transverse the saw cut in a manner to permit the collar to be readily tightened or loosened so that the suction head may be rotated about hollow core 910. The flange of the collar is provided with slots 916 and 918. Screws such as 919 project through the slots and engage in threaded holes in suction head 902. The slots permit the suction head to be adjusted longitudinally of the table. In operation, the suction head 200 is first adjusted as necessary, then the binder carrier 900 is swung into position over suction head 200 and the suction head 902 is adjusted by the means described, as necessary, incident with the adjustment of the suction head 200. As is generally understood, the lower surface of suction head 902 is perforated and suction is applied and cut off from the binder carrier 900 by means of a flexible connection not shown between the binder carrier and suction box 920 which is under control of valve 922, rod 924 and lever 926 which is rotatable about shaft 122 under control of cam follower 930 and cam 932. Valves 922 and 114 are so timed that suction is cut off from suction head 200 at the same time it is applied to suction head 902. Suction is cut off from suction head 902 when suction head 902 is in proper position over the rolling table.

The operation of the components of the web feed mechanism is coordinated so that the tobacco material is drawn off the reel 28 by the binder transfer box 81 and moved across the binder or wrapper suction head 200 while the suction head 200 is in its lower position. The binder transfer box 250 is lowered to the binder suction head 200 by cam action of the binder transfer box roller guide and the tobacco material is transferred from the transfer box 250 to the suction head 200 by operation of the suction system. The camming action is obtained by cutting a short length of the right-hand inner edge of plate 292, FIGS. 2 and 3 with a cylindrical cutter for instance as shown at 299. The binder transfer box 250 is shaped to pivot about the cam roller 296 that rides on the roller guide plate 292. On the return stroke, the binder suction head 200 is actuated upwardly so that the knives 230 project above the top surface of box 350 as seen in FIG. 7. In this position, the knives come in contact with the cutting rollers 234 and 238 to cut the tobacco material in this position to the desired contour. As the suction head 200 moves upwardly, the suction head knife support 500 slips under the suction head to support the knife during the cutting operation. After the rollers have passed over the knife, the support 500 is pushed out from under the suction head 200 in the manner described heretofore. The suction head then is raised higher to a position underlying the bottom of carrier 902. Suction is transferred from suction head 200 to suction head 902 and the transfer is actuated to deposit the binder on an optimum area of the apron 904 of rolling table 906. As the suction head moves up, the tab on the top end of the binder is removed by the cutting edge of the knife 314.

It has been explained that the suction head 200 is rotatable about shaft 202. The rotation of plate 352 is, therefore, centered on the axis of shaft 202. To permit rotation of plate 352, the plate is provided with three elongated slots, 351, 353 and 355. Cap screws project through these slots into threaded holes in fixed plate 108. This permits rotation of plate 352 about the center of shaft 202 as an axis to conform to the rotation of suction head 200.

What is claimed is:

1. A subcombination of a machine for cutting a cigar binder or wrapper from a continuous web of tobacco material, said subcombination comprising a shaft rotatable through a limited angular range, a suction table having a V-shaped end secured to the top of said shaft, a V-shaped binder or wrapper cutting knife secured to said end of said table, said knife rotatable by said shaft through said range, means for securing said knife in any desired angular position within said range, means coacting with said knife for severing said binder or wrapper from said web and means for also displacing said knife rectilinearly in a plane normal to the longitudinal axis of said shaft.

2. A subcombination of a machine for cutting a binder or a wrapper from a continuous web of tobacco material, said subcombination comprising a vertically reciprocable shaft, a suction head secured to the upper end of said shaft rotatable through a limited angular range with said shaft, an irregular knife secured to an end of said suction head transverse said suction head, means coacting with said knife to sever a leading end from said web to form said binder or wrapper and means for displacing said suction head, with said knife secured thereto, rectilinearly across said upper end of said shaft.

3. A machine for cutting a cigar binder or wrapper from a continuous web of tobacco material, said machine having a horizontally reciprocable web feed suction carriage, said carriage actuable rectilinearly in a fixed path, a vertically reciprocable suction head, means for rotating said suction head through a limited angle, means for displacing said suction head rectilinearly, a V-shaped knife, secured to an end of said suction head, and means coacting with said knife for severing said binder or wrapper from said web.

4. A machine in accordance with claim 3 having another web feed suction box underlying said web abutting said knife and means for displacing said web feed suction box angularly and rectilinearly incident to the displacement of said suction head so that said web feed suction box abuts said suction head in all angular and rectilinear positions.

5. A machine in accordance with claim 3 including displaceable knife support means, means for disengaging said support means from said vertically reciprocable suction head at a first time, means for actuating said support means to a position underlying said knife secured to said vertically reciprocable suction head, to provide support for said knife, at a second time and other means for adjusting the position of said support means incident to the angular displacement of said vertically reciprocable suction head.

6. A machine for cutting a cigar binder or wrapper from a continuous web of tobacco material, said machine having a vertically reciprocable suction table with an irregularly shaped first knife secured to an end thereof, first means, coacting with said first knife, for cutting said web completely, transverse said web, at said end of said table, and a second knife at the opposite end of said table from said first knife, second means, coacting with said second knife, for cutting a tab from a binder or wrapper contour on said table, means for rotating said table through a limited arc, means for displacing said table rectilinearly in said machine and means for adjusting said second knife incident to the rotation and displacement of said table.

7. A machine in accordance with claim 6, a bottom on said table, said machine having a tube secured to said bottom for communicating suction to said table, a fixed suction box, a cover on said fixed suction box, an enlarged aperture in said cover, to permit displacement of said tube incident to the rotation of said table, and adjustable means for sealing the space between said enlarged aperture and said tube to prevent loss of suction through said enlarged aperture.

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