Nov. 22, 1932. S. CLAUSEN 1,888,788

CIGAR WRAPPER CUTTING MECHANISM

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FIG. 1

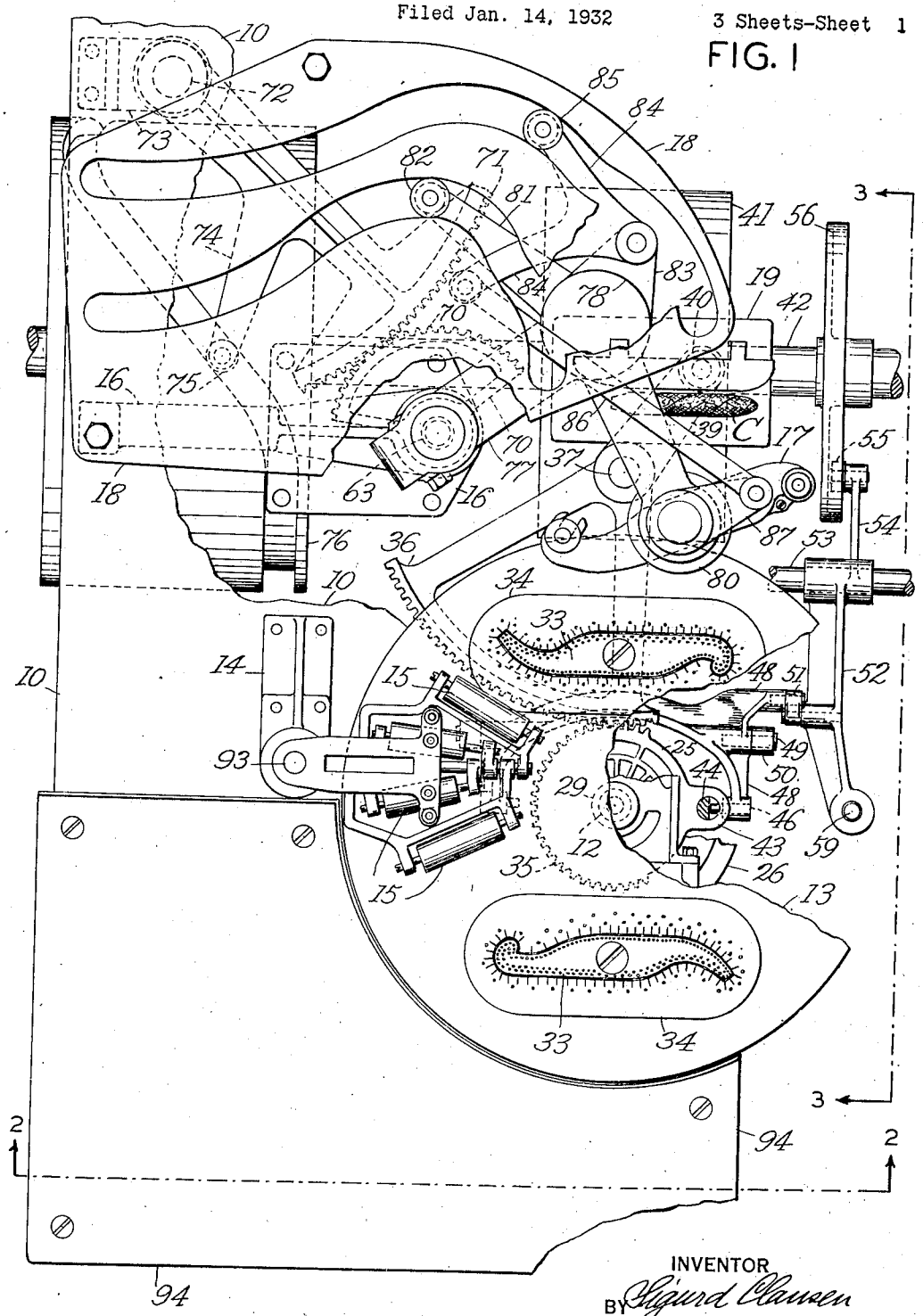


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FIG. 2

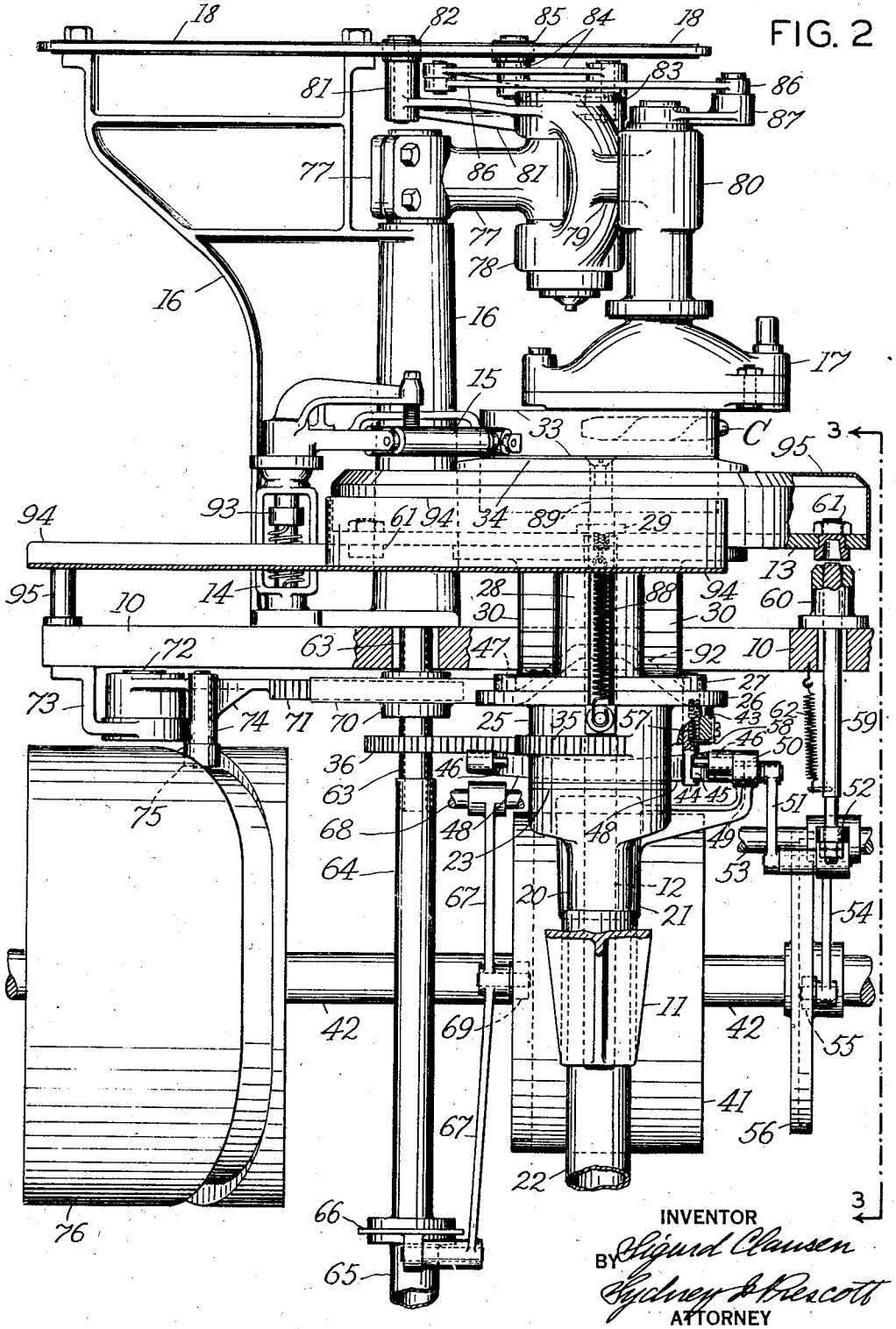


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FIG. 3

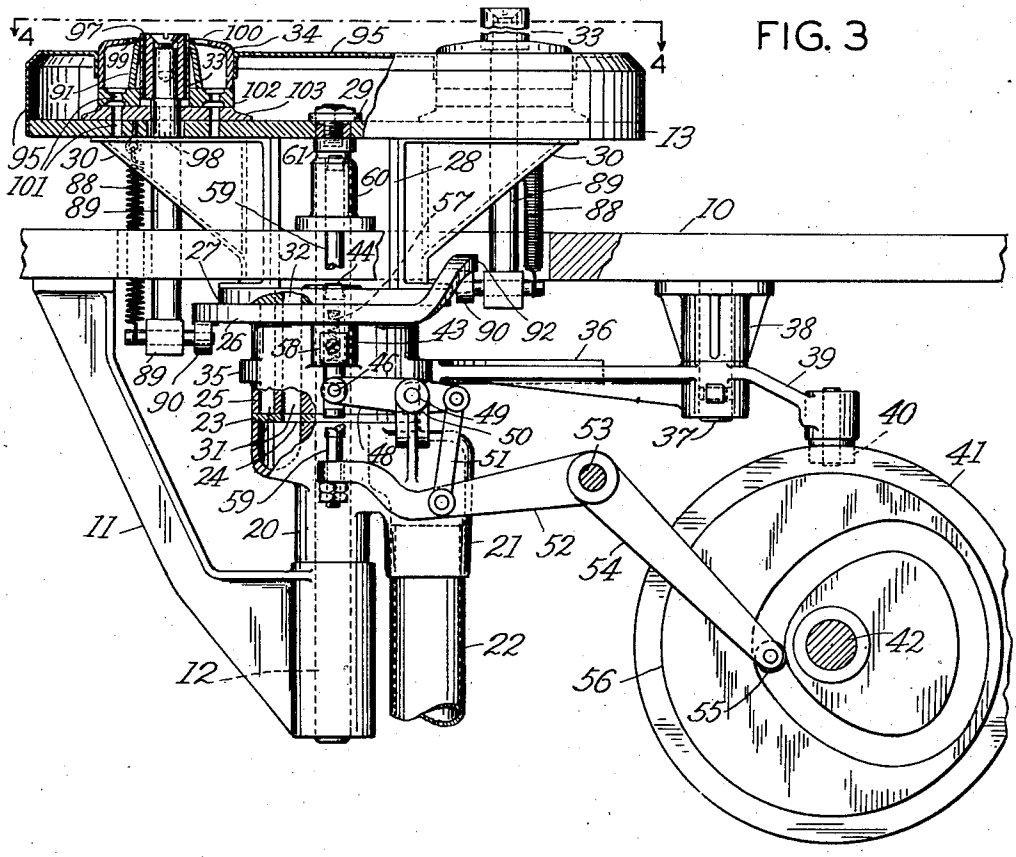
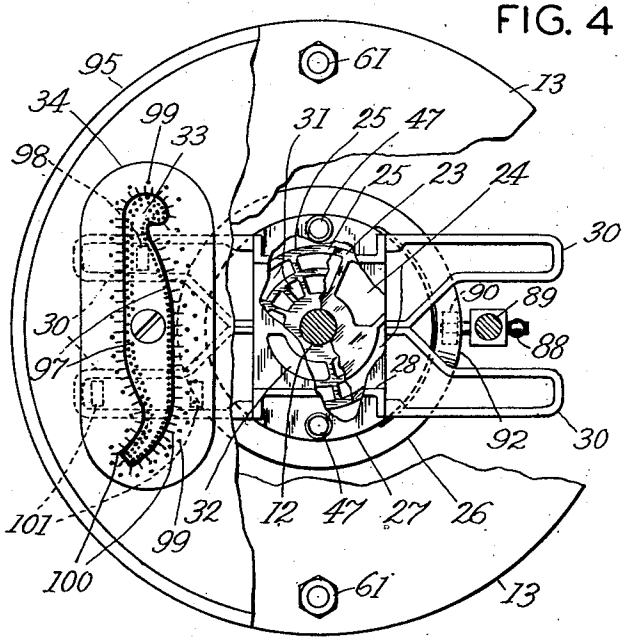



FIG. 4

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# UNITED STATES PATENT OFFICE

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## CIGAR WRAPPER CUTTING MECHANISM

Application filed January 14, 1932. Serial No. 586,645.

This invention relates to cigar wrapper cutting and handling mechanism for cigar machines, its main object being to provide mechanism which will cut and transfer wrappers at higher speed than prior devices and which will do this without materially decreasing the time available for the leaf laying and wrapper applying operations.

In machines of this type each wrapper leaf has to be carefully stretched by hand on a cutter die and in prior machines a set of rollers are passed over the dies to cut out the leaf and this cutting has been done while the die is in front of the operator or by the operator's moving by hand rollers over the die. Thus the cutting time has been added to the wrapper laying time in the operation of the machine through one cycle. Accordingly it is an object of the invention to provide for cutting the wrapper on one die while another die is coming to laying position and to thereby avoid any interference of the cutting means with the laying operation. Thus this makes it possible to speed up the machine and still leave the same time as before available for the operation which normally occupies a certain fixed amount of time depending upon the skill of the operator. Another object of the invention is to simplify the machine and obtain greater speed by cutting the wrapper through passing the dies under stationary rollers during the necessary movement of the dies from laying to transferring position. Still another object is to simplify the construction of the machine by utilizing the movement of the die turret to valve the suction necessary to hold in the wrapper on the dies and thereafter release the wrapper for transfer. Another object is to simplify the machine by utilizing the die movement to lift and lower the die blocks originally movable, to different vertical positions for convenience in laying and transferring. Another object of the invention is to produce a construction which because no positively driven rollers pass over the wrapper dies immediately after the operator has finished laying a wrapper leaf relieves the operator of any anxiety as to getting her hands out of the way in time which despite safety devices has a tendency to slow up work by causing the operator to hold the machine stopped a little longer than necessary.

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

In the accompanying drawings, which form a part of this specification and in which like characters of reference indicate the same or like parts, Fig. 1 is a plan view partly broken away illustrating a machine constructed in accordance with the invention; Fig. 2 is a front elevation of the machine shown in Fig. 1, partly in section, as viewed from the line 2—2 of Fig. 1; Fig. 3 is a side elevation partly broken away and partly in section of some of the mechanism shown in Fig. 1, as seen from the line 3—3 of said figure; and Fig. 4 is a detail plan view partly broken away of the valve structure as seen from the line 4—4 of Fig. 3.

In carrying the invention into effect there is provided in a cigar machine a plurality of leaf supporting suction beds having wrapper cutting dies thereon together with mechanism for receiving and transporting wrappers away from said beds to carry them to the devices for applying the wrappers to the cigar bunch, means for successively moving said beds in and out of the range of action of said mechanism, rollers adjacent the path of said beds and coacting with the dies to cut wrappers out of the leaves thereon during the movement of the beds. In the best constructions said means include a rotatable turret carrying the beds and having suction parts leading to the beds and valve means coaxial with said turret and operating through relative movement of said turret and valve means to control the suction on the beds. Preferably said means includes a rotatable turret carrying the beds including vertically moving die blocks within the dies on the beds, and cam means coaxial with said turret and operating through relative rotary motion of said turret and said cam means to lift and lower said blocks in timed relation to

the movement of the turret. The various means referred to may be varied widely 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. The invention therefore is not to be restricted to the precise details of the structure shown and described.

Since each wrapper leaf has to be carefully adjusted on the die to avoid the inclusion of holes or blemishes in the blank, the speed of an ordinary cigar wrapping device is limited by the speed of the operator. To overcome this limitation, the present wrapping device is provided with two dies mounted in diametrically opposite positions on an intermittently rotating turret so that use can be made of the time occupied for the cutting of the blank and for the pick up of the same by the wrapper carrier, the operator being able to commence serving the second die immediately after the turret has been set in motion for the delivery of the first. Advantage is taken of the movement of the dies by making the cutting rollers stationary and by similarly simplifying the suction transfer arrangement and the vertical movement of the dies.

Referring to the drawings, the table 10 of the cigar machine carries a bearing bracket 11 for the support of a shaft 12 of the turret 13, a pedestal 14 for the support of the cutting rollers 15, a pedestal 16 for the support of the wrapper carrier 17 and its cam plate 18, and also supports the frame 19 of the wrapper applying device.

On the bearing portion of bracket 11, is a hub 20 fitting loosely the shaft 12 and carrying the suction inlet 21 into which is inserted the stationary suction supply pipe 22. This inlet has on its upper side a stationary cover plate 23 provided with suitable suction ports 24, Fig. 4. Upon the plate 23 rests the index block 25 loosely mounted on shaft 12, and on the top flange 26 of block 25 rests the bottom flange 27 of the hub 28 of turret table 13 which is fixedly held to shaft 12 by means of a screw 29. To opposite sides of hub 28 are attached semi-funnel shaped chambers 30 which carry the suction communicated to them by ports 31 in index block 25 and ports 32 in hub flange 27 to the die blocks 33 and to the die housings 34 when in respective registration.

The index block 25 has the semi-circular gear segment 35 meshing with the gear segment 36 pivoted on stud 37 in socket 38 attached to table 10, the segment 36 being swung to and fro by means of an arm 39 carrying a roller 40 engaging with a track in cam 41 mounted on the cam shaft 42 of the machine, thereby imparting to the index block 25 an oscillating motion of one-half revolution in either direction.

The mechanism for locking the turret during leaf laying and wrapper transferring operations and interconnected mechanism for locking the index block for movement with the turret at one period releasing it for movement while the turret is stationary to control the suction on the beds when the turret is stationary, are provided, as set forth below.

For locking the index block 25 to the turret hub the block carries in a lug 43, a vertical pin 44 having in its downward projection a horizontal slot 45 adapted to engage with either of two diametrically opposite horizontal pins 46 in the two extreme positions of the index block in which the pin 44 registers with one or the other of two diametrically opposite holes 47 in the flange 27 of the turret hub. The pins 46 are carried by a yoke 48 pivoted on a stud 49 in bearing 50 supported on a bracket of the suction inlet 21. These pins are swung up and down by means of a link 51 attached to one arm of a double lever 52 fulcrumed on a shaft 53 and carrying on its other arm 54 a roller 55 engaging with a track in a cam 56 on cam shaft 42. In an axial slot, the pin 44 carries a compression spring 57, Fig. 2, resting on a cleat 58 attached to lug 43, the spring 57 holding the pin 44 in locked position in one of the holes 47 upon its engagement with flange 27 produced by the upward motion of the pins 46, and in unlocked position against the bottom of flange 27 after it has been disengaged by the downward movement of the pins 46.

On its end, the lever 52 carries a long vertical pin 59 guided in a bearing 60 on table 10 and adapted to engage with either of two diametrically opposite sockets 61 carried by the turret table 13. The pin 59 is held in upward tension by a spring 62 anchored to pin 59 at one end and to base 10 at the other. The link 51 actuating the yoke 48 being attached beyond the pivot 49 of the latter, the pins 46 will move in the direction opposite to that of the lever 52 actuating link 51, so that the upward movement of lever 52 raises the pin 59 and simultaneously lowers the pin 44, while the downward movement of lever 52 lowers the pin 59 and raises the pin 44.

The upward movement of lever 52 thereby unlocks the turret from the index block 25 and locks it to the base 10 of the cigar machine, while the downward movement of lever 52 unlocks the turret from the base 10 and locks it to the index block 25. The turret table thus turns one-half revolution, then rests while the indexing block turns back, turns another one-half revolution with the next forward motion of the indexing block, stops, and so on.

The timing of the cam track 56 is such that the lever is operated a little before the turret. Thus the pin 59 is disengaged from the turret and the pins 44 are engaged with the

hub prior to the indexing forward of the turret, the turret remaining locked through the engagement of the index block with the then stationary arm 39. Lost motion of lever 52 from nut 59b to shoulder 59a is provided so that the pin 59 is not lowered until the pin 44 is fully engaged with the turret hub. Thus when the machine is started up after laying a wrapper on the die there is no delay while the turret is unlocked from the frame and locked to the index block.

The part of pedestal 16 supporting the wrapper carrier is supplied with suction by the hollow shaft 63, connected through pipe 64 with the suction pipe 65, the suction being controlled by a valve 66 which is attached to a lever 67 fulcrumed on shaft 68 and engaging by means of a roller 69 in a face-track of cam 41. The hollow shaft 63 is set into oscillating motion by a gear segment 70 clamped to it and meshing with a segment 71 pivoted on a stud 72 carried by a bracket 73 attached to the under side of base 10, the segment 71 having an arm 74 carrying a roller 75 engaging with a cam 76 on shaft 42. To the top of shaft 63, in suction communicating with it to carry the suction is clamped a horizontal arm 77 to which is pivoted the fork 78 of another turnable arm 79 in the head 80 of which turns the wrapper carrier 17. The fork 78 has an arm 81 carrying a roller 82 engaging with a track of cam plate 18, and a lug 83 on which is pivoted a bell crank lever 84, one arm of which carries a roller 85 engaging with a second track of cam plate 18 and the other arm of which is connected by a bar 86 with a crank lever 87 mounted on the shank of wrapper carrier 17.

The motion of segment 70 causes the arm 77 to swing and this, in turn, through the cam control of arms 81 and 84, produces the desired motion of the wrapper carrier which first moves into receiving position over and in alignment with the die 33, then into delivery position to the tuck end of the wrapper winder 19, at the proper angle with the axis of the cigar bunch C, and finally into the different winding positions along the bunch, depending upon the shape of the latter.

When the wrapper carrier 17 is in receiving position over the rear die, the die block 33 of the latter is raised to meet the carrier by a spring 88 stretched from base 10 to the bottom of the die carrying rod 89, the latter carrying a roller 90 engaging with a cam track formed by flange 26 of the index block 25. The flange 26 is so shaped that each die block 33, when in the leaf serving position in front of the operator, is raised a small distance above the knives 91 so as to protect the operator's hands and to permit the wrapper leaf to be adjusted without injuring the same. While the turret moves and the served die passes under the cutting rollers 15, the block 33 is lowered slightly below the knives 91 so as to secure a sharp and clean cut, and when arriving at the wrapper delivery position, the upward bend 92 of flange 26 permits the block 33 to rise into engagement with the wrapper carrier, as shown to the right in Fig. 3.

The roller unit 15 is mounted in pedestal 14 on a spring tensioned pivot 93 so that the roller head can be temporarily swung out of place if desired.

For convenience in serving the dies, a table 94, partly surrounding the housing 95 of turret 13, is attached to the base 10 by means of posts 96.

For holding the surplus leaf material on the beds while permitting transfer of the cut wrapper and for subsequently releasing the surplus material to permit removal at the leaf laying or receiving position, the die blocks 33 are provided with suction holes 97, Figs. 3 and 4, communicating through ports 98 in turret table 13 with one wing of suction chambers 30, and the die shells 34 have holes 99 and slits 100 communicating through ports 101, in die support plate 102, guide plate 103 and turret table 13, with the other wing of suction chambers 30. The suction ports 24, 31 and 32 are so arranged that they register with the openings 97, 99 and 100 for full suction hold on the entire wrapper leaf for one half revolution of the turret, from the time the die leaves the wrapper laying position in front of the operator until, after passing the cutting rollers 15, it arrives in delivery position under the wrapper carrier 17. When in the latter position, the suction in the die wing of chamber 30, communicating with the holes 97 of the die 33, is cut off so that the suction in the carrier 17 can lift the wrapper from the die, but the suction in the housing wing of chamber 30 communicating with the openings 99 and 100 of housing shell 34 remains, to hold the wrapper scrap on the shell until shortly before the die returns to the serving position, so that the operator can remove this scrap as the die enters into the latter position, in which suction is again turned on for serving the next leaf.

While the leaf is being served to the die, part of the suction in die and shell 34 still remains cut off, so as to enable the operator to readily shift the leaf for proper adjustment, but as soon as the turret commences to turn, full suction registration takes place so that the adjusted leaf is firmly held in place while passing under the cutting rollers. In view of the foregoing further description of the operation of the mechanism is omitted in the interest of brevity.

In using the term "wrapper" in the annexed claims, I do not wish to be understood as confining myself to the outer wrapper of the cigar commonly termed the wrapper, in

this art. As employed in the claims, the term wrapper is used in its generic sense as meaning any filler, bunch, or cigar wrapper including the filler wrapper commonly termed the "binder" in this art.

What is claimed is:

1. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, and rollers adjacent the path of said beds for coacting with said dies to cut wrappers out of the leaves thereon in transit.

2. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, rollers adjacent the path of said beds for coacting with said dies to cut wrappers out of the leaves thereon in transit, said mechanism including a swinging wrapper carrier and means for moving said wrapper carrier to a position overlying one of said cutting dies.

3. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, rollers adjacent the path of said beds for coacting with said dies to cut wrappers out of the leaves thereon in transit, said mechanism including a wrapper carrier, devices for moving said wrapper carrier to a position overlying one of said cutting dies and suction means connected to said carrier for holding a leaf thereon controlled in timed relation to the operation of the means for moving the beds.

4. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, rollers adjacent the path of said beds for coacting with said dies to cut wrappers out of the leaves thereon in transit, said means including a rotatable turret carrying the beds and having suction ports leading to said bed, valve means co-axial with said turret rotatable relative to said turret, and means for intermittently locking said valve means to the turret for movement therewith and then releasing said valve means from the turret for relative movement to control the suction on the beds while the turret is stationary.

5. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, rollers adjacent the path of said beds for coacting with said dies to cut wrappers out of the leaves thereon in transit, said means including a rotatable turret carrying the beds and having suction ports leading to said beds, and valve means co-axial with said turret and operating through relative motion of said turret and valve means to control the suction on the beds.

6. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, rollers adjacent the path of said beds for coacting with said dies to cut wrappers out of the leaves thereon in transit, said means including a rotatable turret carrying the beds including vertically movable die blocks within the dies and cam means co-axial with said turret and operating through relative rotary motion of said turret and said cam means to lift and lower said blocks in timed relation to the operation of the turret.

7. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of range of action of said mechanism, said means including a rotatable turret carrying the beds and having suction inlet ports leading to said suction beds and relatively movable valve means co-axial with said turret and having ports arranged to register with the ports of the turret operating through the relative motion of said turret and valve means to control the suction on the beds.

8. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of range of action of said mechanism, said means including a rotatable turret carrying the beds and having suction inlet ports leading to said suction beds and relatively movable valve means co-axial with said turret and having ports arranged to register with the ports of the turret operating through the relative motion of said turret, valve means to control the suction on the beds, and cam operated means for rotating said valve.

9. In a cigar machine, the combination

with a turret, of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, said means including a rotatable turret carrying the beds, the beds having vertically movable die blocks within the dies and cam means coaxial with said turret and operating through relative rotary motion of said turret and said cam means to lift and lower said blocks in timed relation with the operation of the turret.

10. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, devices operating said means to intermittently move the suction beds from a wrapper laying station to a station at which said mechanism operates and relatively stationary means acting on the dies between stations to cut the wrappers automatically without interfering with laying or removing the wrappers at either station.

11. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds in and out of the range of action of said mechanism, said suction beds including suction shells surrounding the dies and operating to hold the surplus wrapping material, and means for independently controlling the suction on the shells and the portion of the suction beds acting on the cut wrapper to permit the transporting away of the wrappers while retaining the surplus material.

12. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of cigar wrapping mechanism, a swinging wrapper carrier for receiving wrappers from said beds and applying them to a cigar at said wrapping mechanism, and means for successively moving said beds into and out of the range of action of said carrier.

13. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, of mechanism receiving and transporting wrappers away from said beds, means for successively moving said beds into and out of the range of action of said mechanism, and stationary rollers adjacent the paths of said beds for cutting wrappers while the beds are in motion.

14. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon, vertically movable die blocks within said dies, mechanism receiving and transporting wrappers from said beds, means for successively moving said beds to a wrapper laying station and thence in and out of the range of action of said mechanism, and rollers for coacting with said dies to cut wrappers out of the leaves thereon, and means for raising said die blocks at the wrapper laying station and for lowering said die blocks prior to cutting by said rollers.

15. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon and apertured suction shells surrounding said dies, of apparatus coacting with said beds to cut wrappers out of the leaves thereon, mechanism receiving and transporting said wrappers away from said bed, means for moving said beds in and out of the range of action of said mechanism and to a leaf receiving station, and devices for cutting off the suction on said shells to permit removal of surplus leaf material at said receiving station.

16. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon and apertured suction shells surrounding said dies, of apparatus coacting with said beds to cut wrappers out of the leaves thereon, mechanism receiving and transporting said wrappers away from said bed, means for moving said beds in and out of the range of action of said mechanism and to a leaf receiving station, devices for cutting off the suction on said shells to permit removal of surplus leaf material at said receiving station, said devices including a port connected to and traveling with the die heads and a coacting port with respect to which said beds are relatively movable connected to a suction inlet.

17. In a cigar machine, the combination with a plurality of leaf supporting suction beds having wrapper cutting dies thereon and apertured suction shells surrounding said dies, of apparatus coacting with said beds to cut wrappers out of the leaves thereon, mechanism receiving and transporting said wrappers away from said bed, means for movin said beds in and out of the range of action of said mechanism and to a leaf receiving station, said beds having passages connecting said die and said shell with a suction inlet, and valve means for cutting off the suction on the die during the receiving of wrappers by said mechanism while retaining suction on the surrounding shell.

In testimony whereof, I have signed my name to this specification.

SIGURD CLAUSEN.