Nov. 15, 1949 S. B. LINDSEY 2,487,816

TAPE APPLYING

Filed Feb. 27, 1947 6 Sheets-Sheet 1

Fig. 1

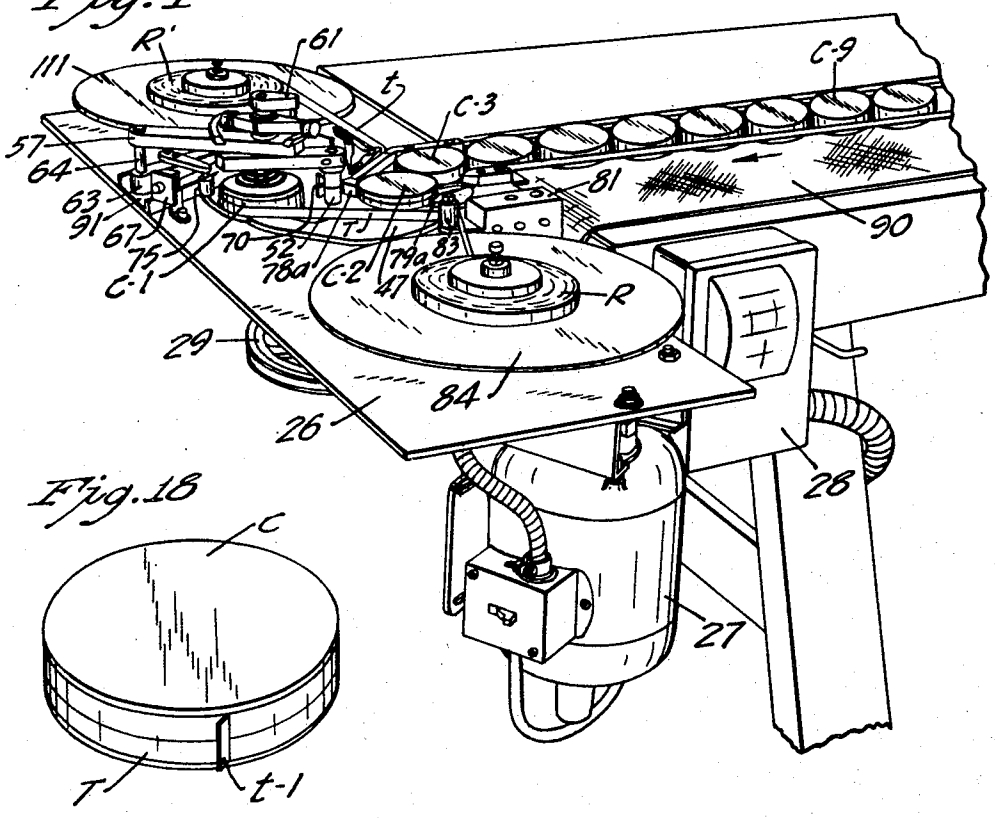
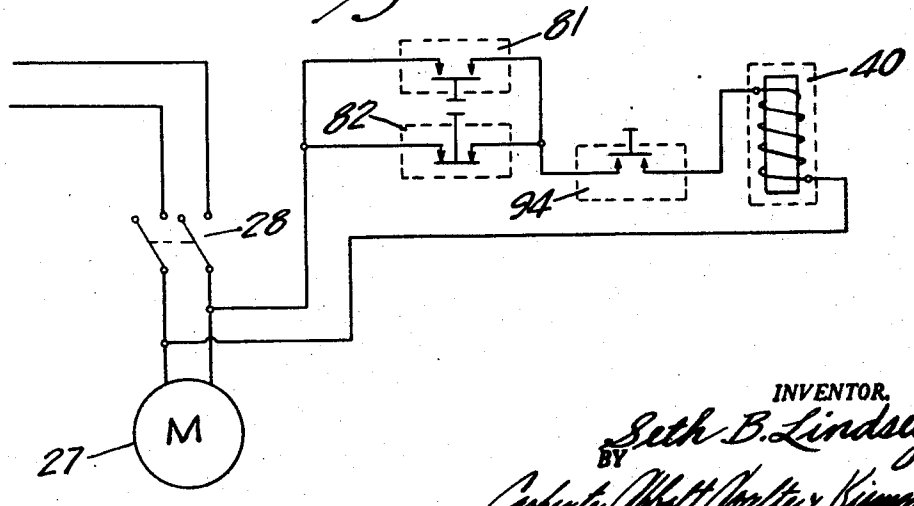


Fig. 1B

Fig. 1R



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Nov. 15, 1949 S. B. LINDSEY 2,487,816

TAPE APPLYING

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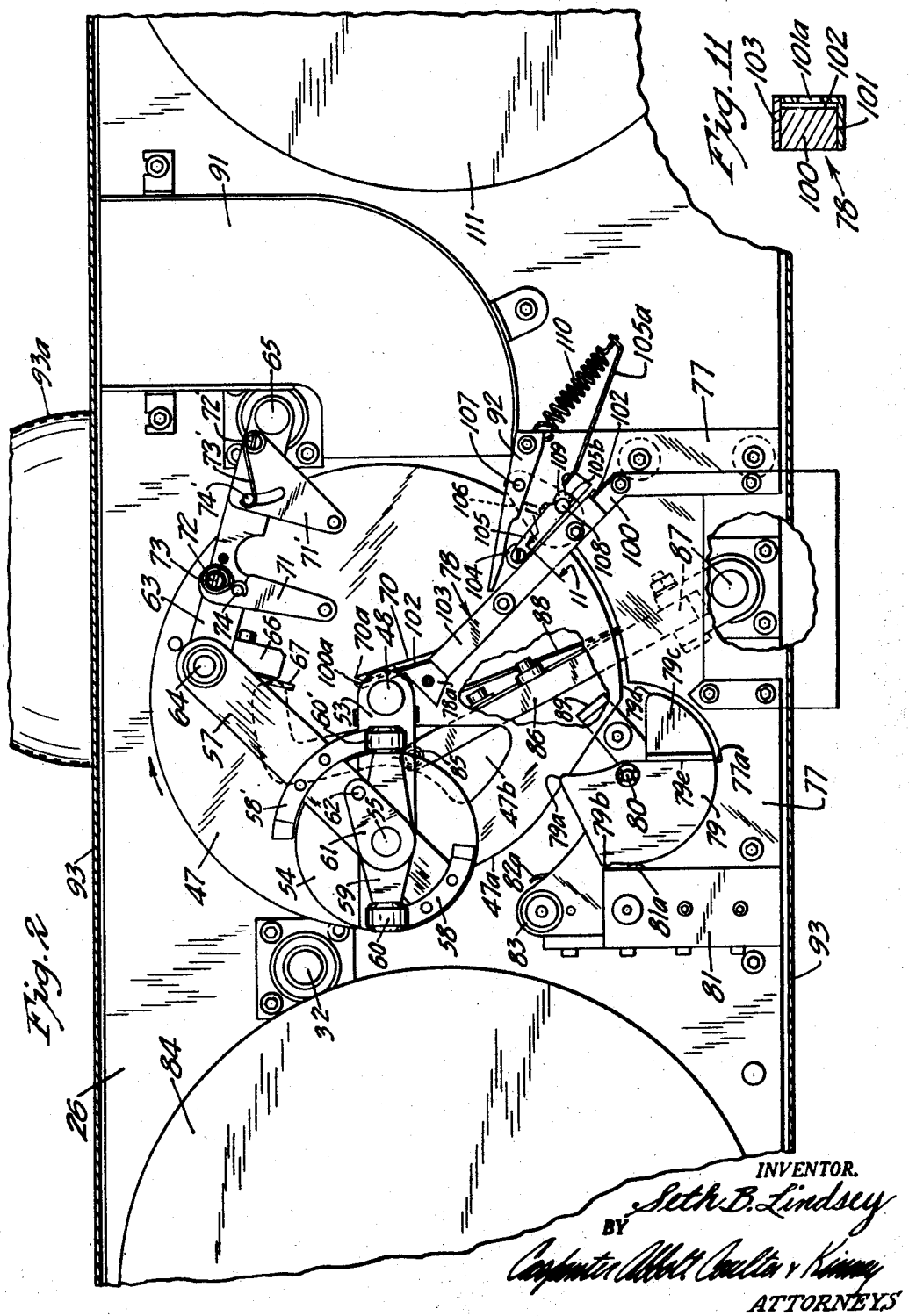


Fig. 2

Fig. 11

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Nov. 15, 1949 S. B. LINDSEY 2,487,816

TAPE APPLYING

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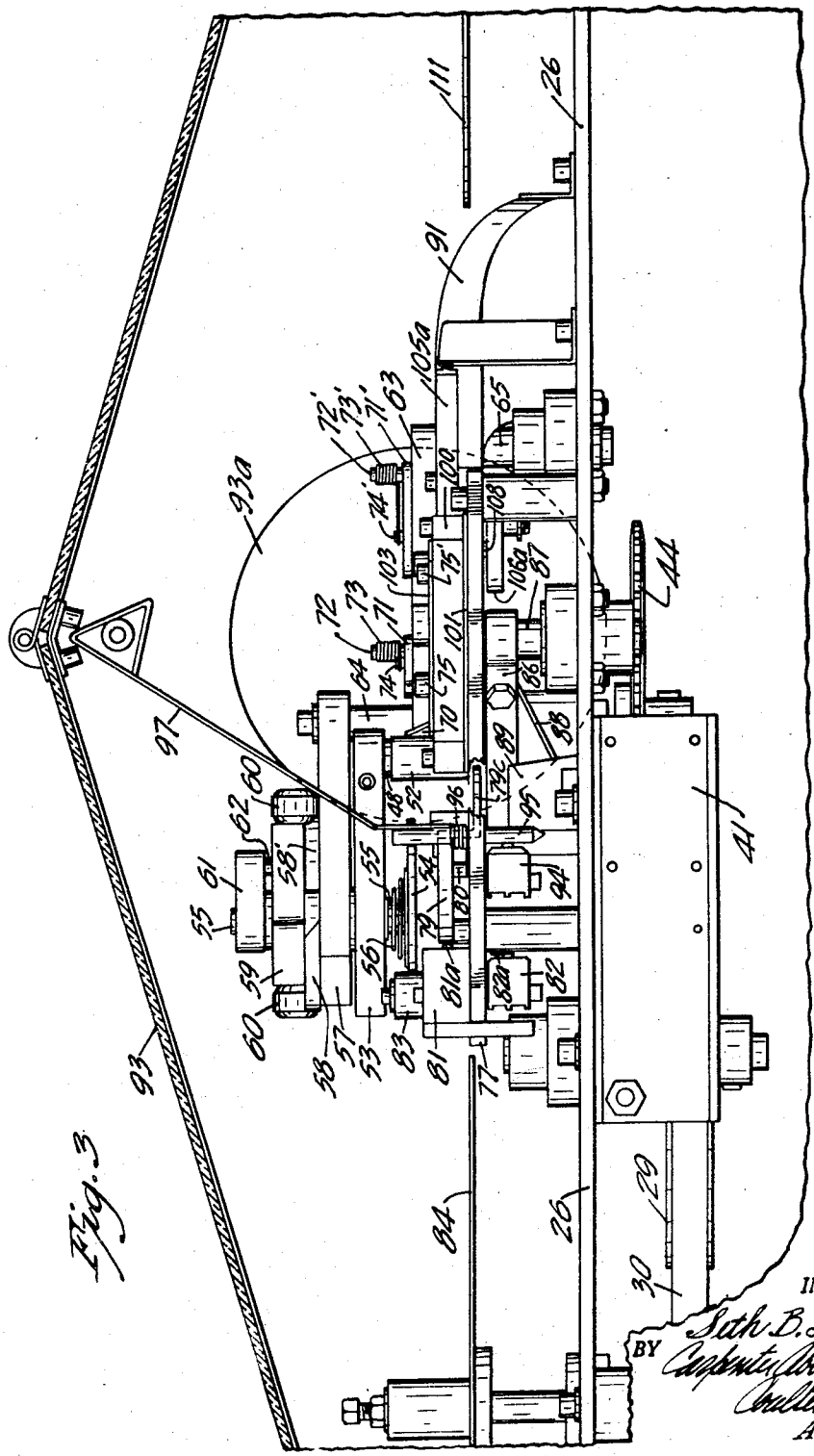


Fig. 3.

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Nov. 15, 1949 S. B. LINDSEY 2,487,816

TAPE APPLYING

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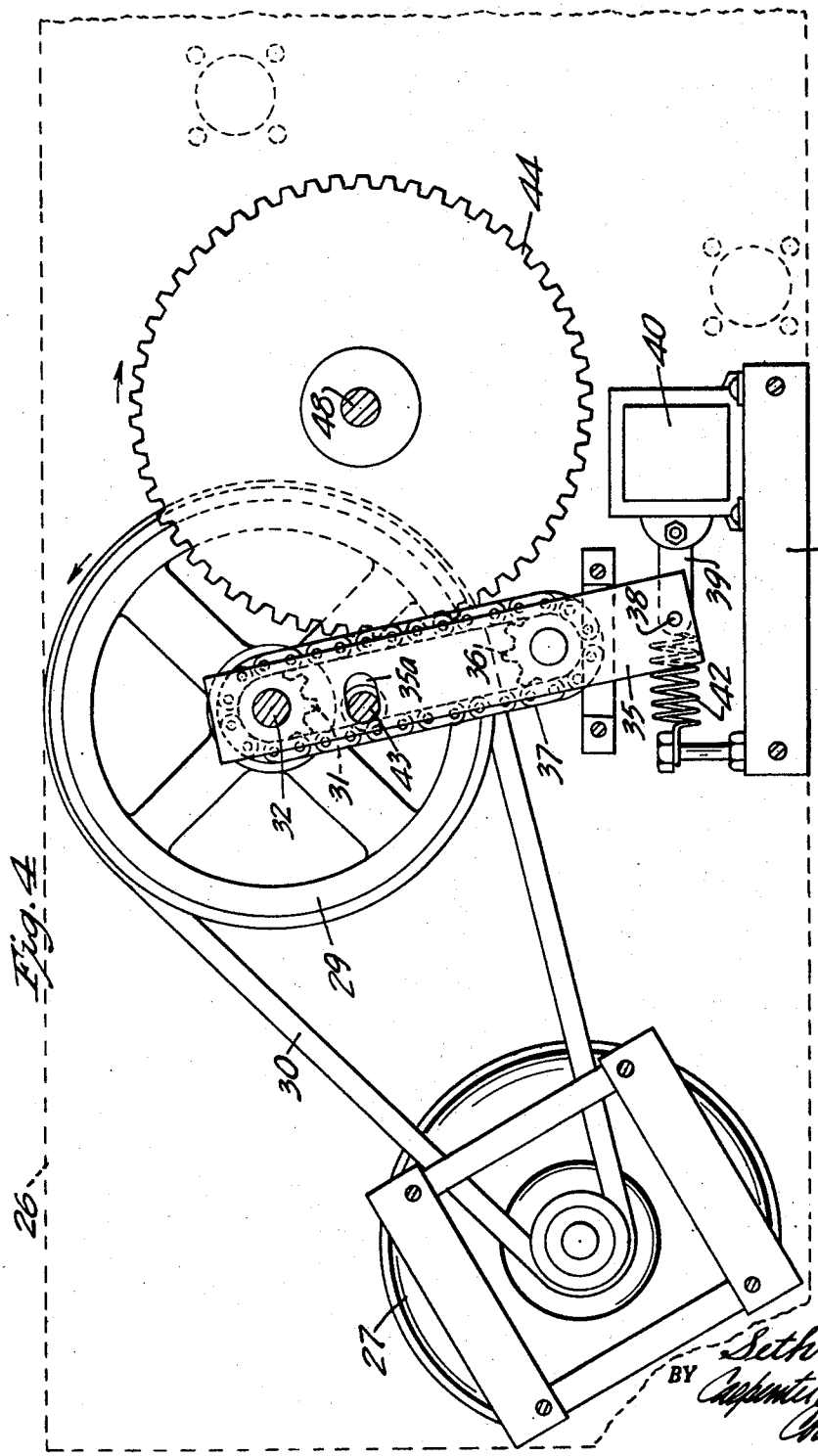


Fig. 4

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Nov. 15, 1949 S. B. LINDSEY 2,487,816

TAPE APPLYING

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Fig. 8

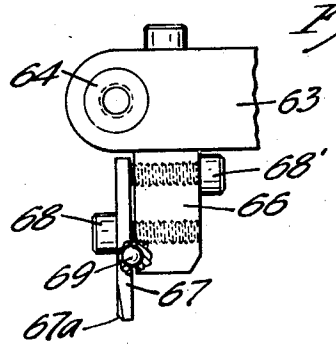


Fig. 10

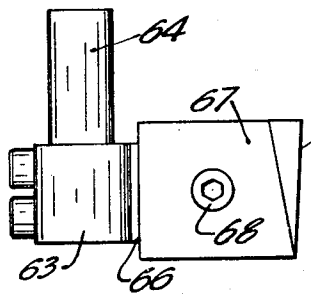


Fig. 9

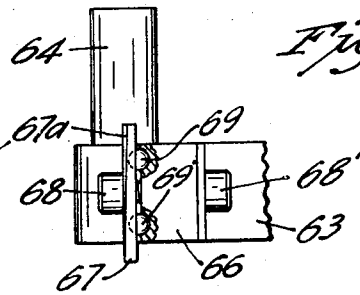


Fig. 5

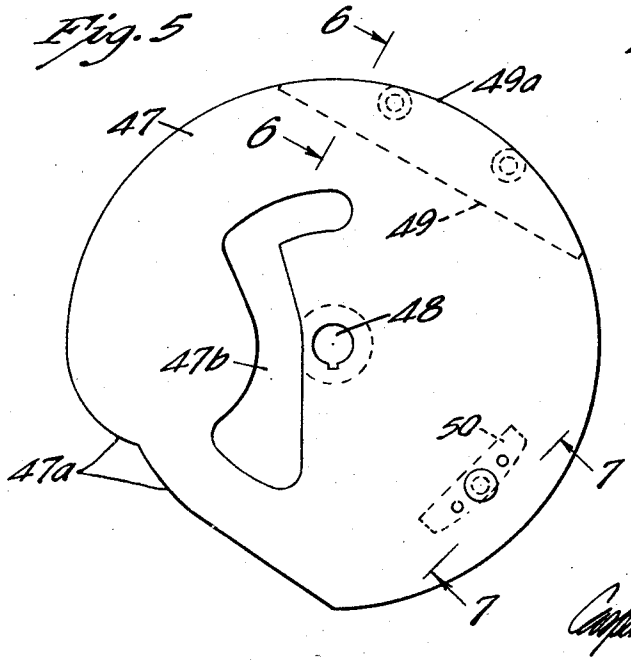


Fig. 7

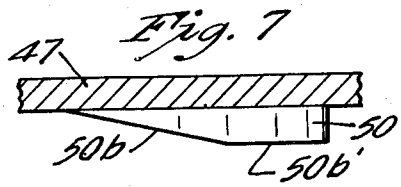
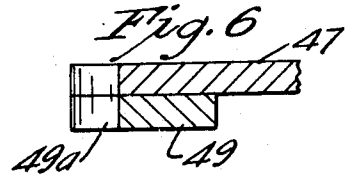


Fig. 6

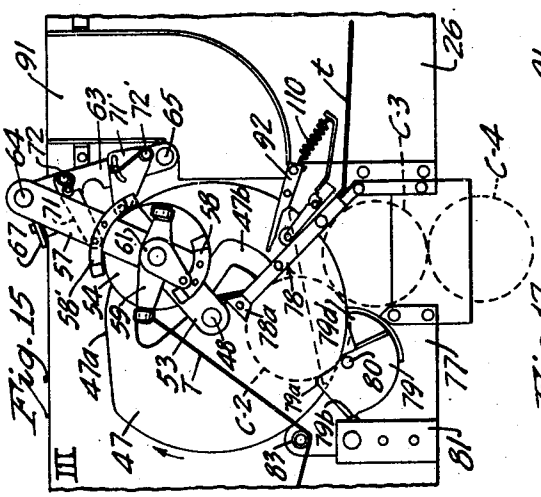


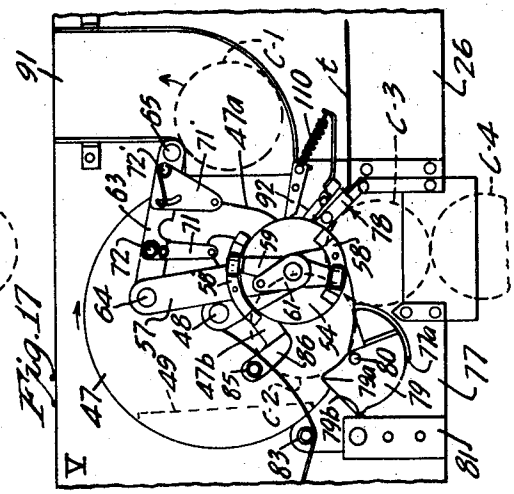
INVENTOR.
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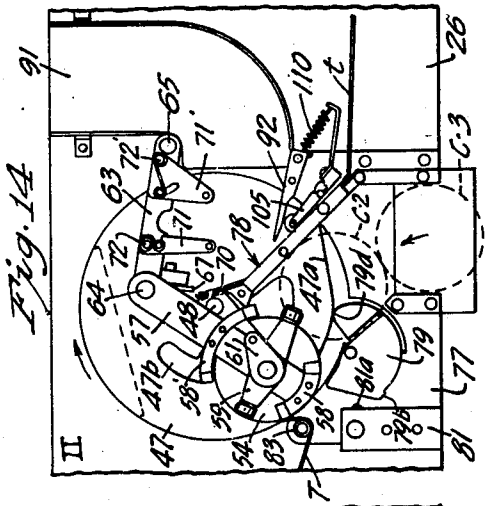
Nov. 15, 1949 S. B. LINDSEY 2,487,816

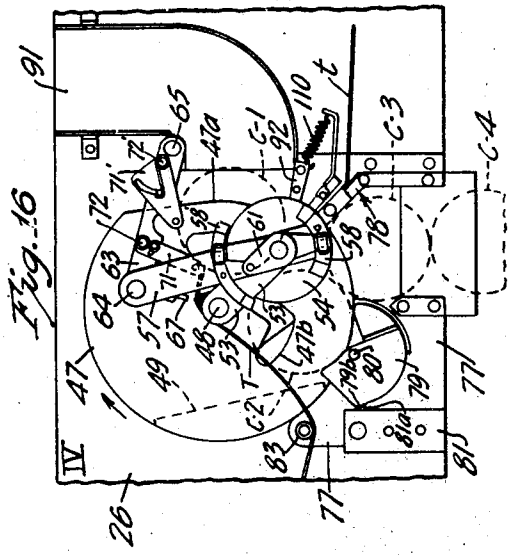
TAPE APPLYING

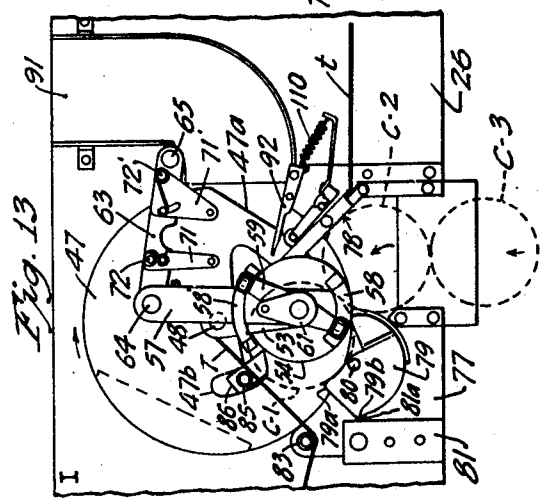
Filed Feb. 27, 1947 6 Sheets-Sheet 6











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Patented Nov. 15, 1949 2,487,816

UNITED STATES PATENT OFFICE

2,487,816

TAPE APPLYING

Seth B. Lindsey, Minneapolis, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn., a corporation of Delaware

Application February 27, 1947, Serial No. 731,296

11 Claims. (Cl. 216—29)

1

This invention relates to applying lengths of tape around the sides of objects.

It finds utility in the sealing of containers, such as cans or boxes having a cover that extends down a distance from the top, by applying a length of adhesive tape to the seam formed between the lower cover edge and the side of the container. It also finds utility in the labeling, marking and decorating of containers and other objects by applying around the sides of the objects lengths of tape bearing a desired imprint, trade-mark, design, insignia, number, color, etc.

It relates particularly to the use of pressure-sensitive adhesive tape (such as that sold under the trade-mark "Scotch"). In view of the strength of pull required to withdraw such tape from the commercial supply rolls thereof in which it ordinarily comes, previous methods and devices have not been entirely satisfactory due to the tape frequently pulling loose from the object before the operation is well started. The usual method has been to adhere the leading end of the tape to the object and then by moving and at the same time turning the object, withdraw the tape from the roll.

Among other faults of prior methods and devices is their complexity.

Objects of the present invention therefore include the provision of a relatively simple and inexpensive method and means for the efficient taping of objects rapidly and continuously in packaging assembly lines with reduced breaks and interruptions.

Broadly the invention provides stretching a length of tape across the path of an object, advancing the object into contact with the tape, not at the end but at a point somewhat removed from the end of the tape, then advancing and at the same time turning the object, whereby tape is pulled from the supply and wrapped or wound around the object.

Adherence between the tape and the object thus extends over a relatively extensive area of surface by the time any substantial pull is exerted on the tape. The amount of tape contacting the object before the "pull-off" commences is very large in comparison with prior practices.

The invention provides a carrier for projecting or moving an object in a path and at the same time turning the object around its own axis, means for holding a length of tape across the path of the object so that the object will contact it at a point behind the tape's leading end, and means for severing the tape after it has been wound around the object. In the present embodiment, the said carrier is in the form of a turntable on which the object is temporarily held fixed in relation thereto. In such an arrangement, even though the object is fixed in relation to the table, turning the table has the effect of turning the object about the object's own axis in relation to a fixed point outside the table, and at the same time changing the distance between the object and the point. For example, if the turntable is turned 180°, the object that is fixed thereon will be thereby turned 180° about its own axis in relation to a supply roll of tape located beside the turntable at the starting point, and at the same time it will be moved or projected away from the roll.

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The invention also provides means for forming a removal tab at the trailing end of the tape.

The invention further provides a power driven mechanism for operating the machine automatically when an object is fed to it and for stopping it automatically as soon as the object has been taped.

The invention is exemplified by a machine for sealing round relatively flat cans, described hereinafter and illustrated in the accompanying drawings in which:

Figure 1 is a perspective view of the illustrative machine;

Figure 2 is a plan view;

Figure 3 is a front elevation;

Figure 4 is a plan view of the power drive below the base plate;

Figure 5 is a plan view of the turntable;

Figure 6 is a fragmentary section of the turntable and the combined tabbing and switch cam taken on the line 6—6 of Figure 5;

Figure 7 is a fragmentary section of the turntable taken on the line 7—7 in Figure 5, showing the roller arm cam in elevation;

Figures 8, 9 and 10 are plan, front elevational and side elevational views, respectively, of the movable knife;

Figure 11 is a cross section of the tabbing tape feed chute taken on the line 11—11 in Figure 2;

Figure 12 is a wiring diagram;

Figures 13 to 17 are positions I to V, respectively, of the feeding, sealing and tabbing mechanism in operation; and

Figure 18 is a perspective view of a can that has been sealed by the illustrated machine.

A supporting means or frame for the machine is provided in the form of an oblong horizontally positioned base plate 26. At the center of its upper side is positioned the mechanism that performs the actual feeding, sealing and tabbing

operations. At either end of the base and adjacent the said mechanism are means for holding supply rolls of adhesive sealing tape and of tabbing tape, respectively. Beneath the plate is a driving mechanism.

A motor 27, fastened to the under side of the base plate 26 and powered through a line switch 28, drives continuously a pulley 29 by means of a belt 30. A driving sprocket 31 moves in unison with the pulley 29, both being fixed to a common vertical shaft 32. A clutch lever 35 is journaled at one end onto the said shaft 32, carrying towards its movable end an idler sprocket 36. An endless chain 37 extends around the sprockets 31 and 36. At its said movable end the clutch lever 35 is pivotally attached at 38 to the plunger or connecting link 39 of a solenoid 40, the latter being mounted to a channel bar 41 that is fixed to the under side of the base plate 26.

The clutch lever 35 is impelled toward the left (Figure 5) by a spiral spring 42 until it is stopped by a stop 43, in which position the chain 37 that is carried on the lever 35 is disengaged from the large sprocket 44. The lever 35 is impelled toward the right with sufficient force to overcome the spring 42 by the solenoid 40 when the latter is energized, until it is stopped by the stop 43, in which position the chain 37 engages the sprocket 44 so as to rotate it clockwise (Figure 5). The stop 43 is a shoulder bolt fixed to the under side of the base plate 26 and projecting through a slot 35*a* in the clutch lever 35.

Above the plate 26 a turntable 47 turns clockwise (Figure 2) in unison with the sprocket 44, the two being fixed to a common vertical shaft 48 which is journaled into the base plate 26. Referring to Figures 5, 6 and 7, the turntable's periphery is flattened at one point in an irregular curvilinear configuration to form a gate cam 47*a*. Near its center the turntable is pierced with an irregular elongated aperture 47*b* to permit a sealing roller to extend upwardly through the turntable. To the underside of the turntable is fixed a combined switch and tabbing cam 49 whose operating face registers with the circular periphery of the turntable 47. A roller arm cam 50 is also fixed to the underside of the turntable. The cam 50 has a succession of two operating faces 50*b*—50*b*′ for depressing the roller arm.

Above the turntable 47 a tape anchoring collar 52 having a relatively hard smooth surface is journaled onto the shaft 48.

Above the collar, a horizontal clamp carrying arm 53 is fixed to the uppermost end of the turntable shaft 48 and extends out over the surface of the turntable. To the outer end of the arm 53 is attached the horizontally disposed cam clamping disc 54. The disc 54 is fixed to the lower end of a vertical clamp shaft 55 which is slidably keyed in the clamp arm 53. A conical clamp spring 56 around the shaft 55 between the clamp 54 and the arm 53, is loaded to press the clamp downwardly.

Next above the clamp arm 53 on the shaft 55 is a traveling arm 57 that is journaled onto the shaft.

Two clamp lifting cams 58—58′ in the form of arcs are fixed opposite each other on the top of the traveling arm 57. Above these a horizontal clamp lifting arm 59 is journaled to the vertical clamp shaft 55. The arm 59 carries cam riding rollers 60—60′ rotatably mounted at its two ends, respectively. Above the arm 59 a horizontal crank arm 61 is fixed to the upper end of the clamp shaft 55. A vertical pin 62 extends

downwardly from the outer end of the crank arm 61 so as to bear against the side of the clamp lifting arm 59 when the crank and the arm 57 rotate in relation to each other. When arm 59 is thereby rotated so that the rollers 60—60′ ride up onto the cams 58—58′, respectively, the lifting arm 59 which carries the rollers pushes up against the underside of the crank arm 61 and lifts the vertical clamp shaft 55, thereby raising the cam clamp 54. The spring 56 pushes the clamp back down again when the rollers 60—60′ ride down off from the cams 58—58′. The clamp 54 is raised and lowered once in each revolution of the turntable.

The said traveling arm 57 which is journaled at its one end to the clamp shaft 55, is connected at its other end to tape cutting, wiping and can ejecting members, which latter are carried on a horizontal oscillating arm 63. The arms 57 and 63 are connected to each other by a vertical shaft 64. The shaft 64 is journaled in the traveling arm 57 but fixed in the oscillating arm 63. At its other end, the arm 63 is fixed to a vertical shaft 65 that is journaled into the base 26.

A knife assembly is attached to the moving end of the oscillating arm 63. It comprises a knife block 66 that is fixed to the arm and a knife 67 that is held against one side of the block (Figures 8, 9 and 10). Two screws 68 and 68′ enter the block in opposite directions. They are both threaded into the block. Screw 68′ extends beyond the block but it does not enter the knife; its end simply bears against the inside side of the knife. Screw 68 passes through the knife but not in threaded engagement therewith. Its head bears against the outside side of the knife. Two ball bearings 69 and 69′ are placed between the knife and the block, there being sockets in the block and in the knife to hold the balls in position.

The knife 67 is pressed toward the block by the head of the screw 68, but it is held spaced away from the block by the end of the screw 68′ and by the ball bearings 69—69′. This allows the knife to pivot slightly around the ball bearings when the screws are loosened, so that the knife edge 67*a* may be positioned to the left or right by adjustment of the screws 68—68′. The blade is ground so that its cutting edge 67*a* slants rearwardly and to the left (from top to bottom of the blade, Figures 8, 9 and 10). This provides a progressive point by point contact between the knife 67 and the vertical stationary shear 70 with which it coacts, at a substantial pressure that remains in full force throughout the cut.

Can ejecting and wiping arms 71 and 71′ are pivoted at 72 and 72′, respectively, to the oscillating arm 63. Torsion springs 73 and 73′ impel them counterclockwise (Figure 2) about their pivots 72 and 72′ against the stops 74 and 74′ that are fixed on the arm 63. The movable ends of the arms 71 and 71′ carry free-turning wiping and ejecting rollers 75 and 75′ that extend downwardly with their axes vertical.

A feed plate 77 is fixed at the front of the machine in a raised position above the base plate 26. It is flush with the turntable 47, and its rear edge is curved to complement the circular portion of the turntable's periphery so that cans to be sealed can be pushed forward from the feed plate onto the turntable. The forward movement of such a can would be diverted to the left by a guide 78 which is fixed to the feed plate at the right of the path of the can, and extends leftwardly across to the center of the turntable. The

guide has a can stop or projection 78a at its far or left end.

At the left of the path of the can a gate 79 is pivotally mounted to the feed plate by a vertical pin 80. The gate is generally flat, and horizontally disposed, its plan view resembling in general configuration, a fragment of a disc, pivoted at what would be the center of the whole disc. The major portion of the disc or gate 79 is above the feed plate 77, having a can engaging point 79a that may be swung out over the turntable, and a switch engaging point 79b. A minor portion of the disc is bent to form a foot 79c which is at the same level as the feed plate 77 and the turntable 47 so that its point 79d will engage and follow the periphery of the turntable 47, including the gate cam 47a. Movement or turning of the gate counter-clockwise is stopped by the said engagement of the point 79d with the turntable. Its turn or swing back in the other direction (clockwise) is stopped by the engagement of the heel 79e of the foot with the edge of a notch 77a which is cut in the rear curved edge of the feed plate to accommodate the gate foot 79c. When the switch engaging point 79b of the gate 79 rests upon the contact wheel 81a of the normally open starting switch 81, the switch will be closed. The switch 81 is fastened to the upper side of the feed plate 77. Directly below it, the normally closed running switch 82 is fixed to the under side of the plate 77. A switch arm 82a extends out from the switch into the path of the switch cam 49 that is on the underside of the turntable 47 (Figures 5 and 6), so that when it is pressed to the left (Figure 2) thereby, the switch will be held open. After the cam 49 has turned past the arm 82a, the arm is released and the switch 82 resumes its normal closed position.

A vertical guide roller 83 is rotatably mounted at the left rear corner of the feed plate 77, around which the adhesive sealing tape T is led from a supply roll R thereof that is carried on the free-turning horizontal roll holding wheel 84, the leading end of the tape being anchored by adhesion to the vertical tape anchoring collar 52 at the center of the turntable.

In back of the portion of the tape that is thus stretched across the turntable, is a vertical wiping or sealing roller 85 that is rotatably mounted on the end of a horizontal sealing arm 86. The arm is below the turntable and is pivotally mounted to the base plate 26 by means of a universal joint 87 for turning in any direction. The sealing roller 85 extends upwardly through the turntable aperture 47b behind the tape.

The arm is impelled upwardly and to the left by a spring 88 which is fixed to the arm and which bears against the base plate 26 and against the left side of the shaft 48. It is impelled to the right by the pressure against the roller 85 of an advancing can. Movement of the arm 86 to the left is limited by the stop 89, to the right by the shaft 48. It is impelled downwardly so as to withdraw the sealing roller 85 from in front of an advancing can after the roller has pressed the tape against the can, by the surfaces 50b'—50b' of the cam 50 that is on the underside of the turntable 47 (Figures 5 and 7). The surface 50b' of the cam lowers the arm sufficiently so that the upper end of the roller 85 clears the turntable, after which the arm is held down by engagement of the upper end of the roller 85 with the under surface of the turntable until the aperture 47b has moved around again to a point above the roller whereupon the arm 86 and the roller 85, impelled by the spring 88, raise up with the roller projecting above the turntable.

The cans are fed to the machine by pushing them successively in a line across the feed plate toward the guide 78 by hand or by a carrier belt 90. After being sealed they are removed by a chute 91, at the entrance to which is a can guide 92.

The mechanism is here shown as encased in a housing 93 equipped with a safety switch 94 which is normally open. A vertical pin 95 which is slidably mounted in the feed plate 77, holds the switch closed when it is held down against the force of the spring 96 so as to extend through the plate 77 until it presses the switch point. The pin 95 is actuated by the roof doors of the housing through a rod 97. When the doors are both closed, the pin 95 is pressed down by the rod so as to close the switch but when either door is raised to open it, the spring 96 will raise the pin and open the switch.

A bay 93a in the rear wall of the housing 93 accommodates the "elbow" formed by the arms 57 and 63 when they swing back in position III (Figure 15).

The above described mechanism is adequate automatically to seal and eject cans that are fed to it.

The following described mechanism is for providing a removal tab in the form of a short length or tab *t*—1 of of non-adhesive tape affixed to the adhesive side of the exposed or trailing end of the length of sealing tape that is applied to the can, thereby to mask the adhesive over that area and render the tabbed end incapable of adhering to anything so that it will be free for grasping by the fingers and thus facilitate ready removal of the tape when the sealed can is to be opened.

The can guide assembly 78 is constructed so as to serve also as a conducting channel or chute for the non-adhesive tabbing tape *t*. An elongate shaft 100 which is of rectangular cross section throughout most of its length (Figure 11) is shaped at its left end to form on its front side the previously described can stop 78a, and on its rear side the arm 100a (Figure 2). An elongate angle iron 101 extends around the bottom and rear sides of the shaft 100 for nearly the full length of the shaft. It is close against the bottom of the shaft but its upright portion is spaced from the rear so as to provide a tape channel 102 between the shaft 100 and the angle iron 101. The said upright portion or wall of the angle iron 101 is pierced by an elongate aperture 101a. The left end of the said upright portion extends forwardly to form the stationary shear blade 70 beside the guide arm 100a, the space between them forming an extension of the channel 102 through which the tabbing tape is pushed to emerge at the opening between the said arm 100a and the shear 70. The shaft 100, the channel 102 and the upper edge of the angle iron 101 are covered for the greater part of their length by a plate 103.

A tab feeding wheel 104 projects into the channel 102 from the rear side of the guide and chute assembly 78 through the slot 101a. It is rotatably mounted on a feeding arm 105 which extends along the rear of the chute. The periphery of the feed wheel 104 is knurled or ratcheted, and a pawl (not shown) is positioned within the feed arm 105 so that the wheel may turn only in a clockwise (Figure 2) direction. Thus when the

wheel extends through the slot 101*a* and its periphery bears against the tabbing tape in the channel 102, movement of the feed arm 105 along the chute 78 to the right (in a direction away from the center of the turntable) will produce no movement of the tape because the wheel is free to turn in that direction and it will roll along on the tape; but movement of the feed arm 105 to the left (toward the center of the turntable and toward the shear 70) will move the tape in that direction because the wheel 104 will be stopped from turning by its pawl, and its knurled or ratcheted periphery will engage the tape sufficiently to propel it to the left through the channel 102.

The tabbing tape feed arm 105 is moved to the right by the force of the face 49*a* of the cam 49 on the under side of the turntable (Figures 5 and 6) striking the lobe 106*a* of the tabbing tape feed lever 106 which is pivoted on the vertical shaft 107 below the feed plate. An upright peg or pin 108 fixed to the top of the feed lever 106 extends upwardly through an aperture 109 in the feed plate and fits in a socket 105*b* that is in the feed arm 105, thereby transmitting the movement of the cam actuated feed lever 106 to the arm 105. The socket 105*b* is shaped in a manner known to the art to permit ready removal of the arm 105 from its connection with the headed pin 108.

The arm 105 is moved to the left by a spring 110 attached to the can ejector guide 92 and to an arm 105*a* that extends to the right from the feed arm 105. The spring impels the arm 105 against the guide or chute 78 and to the left until it is stopped by contact of the pin 108 against the side of the aperture 109 in the feed plate through which the pin extends.

A free turning horizontal disc 111 holds a supply roll R' of the tabbing tape *t*, from whence it is led to the entrance to the channel 102 in the guide or chute 78.

Mode of operation

A roll R of pressure-sensitive adhesive tape T is mounted on the supply roll holding wheel 84. The tape (sometimes referred to herein as the "sealing tape") is threaded into the machine by leading it from the roll around the front side of the guide roller 83 with its non-adhesive side against the roller, and thence across the turntable 47 to the tape anchoring collar 52 where its leading end is releasably held or anchored by adhering it to the rear side of the roller. As is well known, this type of tape may be removed from any relatively hard smooth surface to which it is adhered simply by pulling on the tape whereupon it will release its grip without leaving any of its adhesive on the surface and without substantially disturbing its own structure.

The turntable is then rotated by hand until the switch cam 49 which is on the underside of the turntable, is in such a position (e. g., such as shown in positions IV or V in Figures 16 and 17) that it will press the switch arm 82*a* and open the running switch 82. The gate 79 is turned clockwise until it is stopped by engagement of the heel 79*e* of its foot 79*c* with the notch 77*a* of the feed plate 77. The gate will then occupy the position shown in Figure 2, in which the switch point 81*a* is disengaged so that the starting switch 81 is open. The covers which form the roof of the housing are then closed whereupon the pin 95 will be pushed down by the rod 97 so as to engage the point of the safety switch 94 and close it.

The line switch 28 is next closed whereupon the motor 27 starts and continuously drives the endless chain 37 of the clutch assembly; but both the switches 81 and 82 are open so that the solenoid 40 will not be energized and the spring 42 will hold the clutch lever 35 to the left in disengaged position.

A can C—1 is then fed to the machine by pushing it across the feed plate 77 at the front of the machine against the can guide 78 whereby it will be guided leftwardly until it strikes the can stop 78*a* on its right side and the can engaging point 79*a* of the gate on its left side. Pressure of the can against the point 79*a* will impel the gate 79 counterclockwise a few degrees until the point 79*d* of the gate foot 79*c* engages the periphery of the turntable 47, whereupon the gate will stop and the can C—1 will be stopped and held by the can stop 78*a* and the gate point 79*a* in position I (Figure 13).

In this position the point 79*b* on the gate will engage the point 81*a* of the switch 81 so that the solenoid 40 will be energized, whereupon the clutch chain 37 will engage the sprocket 44 and the turntable will commence to turn clockwise together with the can clamp assembly which includes the can clamp 54. The can, however, will continue to be held by the can stop 78*a* and the gate point 79*a*, and the turntable will slide past underneath it; but by the time the clamp 54 has turned to where it is directly above the can C—1 that is being held at the gate in position I, the rollers 60—60' will have ridden down off their respective cams 58—58', permitting the spring 56 to press the clamp 54 down onto the can so as to render the can C—1 fixed in relation to the turntable. At the same time the gate cam 47*a* on the turntable 47 has by then turned to where the foot point 79*d* of the gate 79 which is being impelled counterclockwise by the pressure of the can against the gate point 79*a*, commences to follow the said cam 47*a* thereby permitting the gate to open and release the can (position II; Figure 13). The can will then commence to move in a circular path in unison with the turntable.

The can C—1 is thus advanced into contact with the tape T, soon after which it contacts the wiping roller 85 with the tape between the roller and the can, the roller is impelled to the right around the curving side of the can as the can continues to advance, the pull on the tape tears its leading end loose from its point of anchorage at the collar 52 and the roller 85 wipes it down smoothly around the can.

Shortly thereafter the cam 50 on the underside of the turntable turns to where it contacts the roller arm 86 which carries the roller 85. The arm rides down the slope 50*b* of the cam until it bears on the surface 50*b*' during which time the aperture 47*b* in the turntable turns past the wiping roller 85 so that when the cam 50 leaves off contact with the arm 86, the upper end of the roller 85 will bear upwardly against the undersurface of the turntable until the aperture 47*b* turns around to where it will again register with the roller whereupon the spring 88 will cause the roller 85 to thrust upwardly through the aperture 47*b* behind the extended length of tape T ready for the next sealing cycle, as shown in position V (Figure 17).

Meanwhile the can C—1 continues to be advanced from position II in a circular path, thereby withdrawing the tape from the roll R and

winding it around itself. In position III the arm 63 carrying the knife 67 and the wiping and ejecting arms 71—71' has been extended to its outermost point, where the knife and the wiping and ejecting rollers 75—75' carried by the arms 71—71' on the arm 63 will clear the can as it turns past them. As the can begins to move forward from position III to position IV, the arm 63 is moved toward the can so as to press the rollers 75—75' against it. This pressure causes the wiping and ejecting arms 71—71' to swing around their pivots 72—72' against their springs 73—73' as the arm 63 continues to draw closer to the can, until the arms 71—71' are "cocked" in position IV in readiness to wipe and eject the can C—1.

Also in position IV the clamp 54 has been lifted by the cams 58—58' and has released the can which latter is now bearing against the can guide 92 under pressure from the friction of the turntable sliding past underneath it and from the arms 71—71'. It is also held by the uncut tape which then extends from the supply roll R, around the guide roller 83, to and in adhesive contact with the rotatable anchoring collar 52, thence across the exit of the tabbing tape channel 102, past the edge 70a of the fixed shear blade 70, to the wiping and ejecting roller 75 which is pressing it against the can around which the tape has now been wound.

The movable knife 67 is about to close upon the coacting fixed shear 70 and sever the tape. As the mechanism turns onward towards position V, the severing occurs whereupon the can C—1, impelled largely by the roller 75' on the arm 71' but to a small extent by the roller 75 on the arm 71 also, is ejected from the machine into the can chute 91. The following or succeeding portion of the uncut tape is left extending from the roll R around the guide 83 to the tape anchoring collar 52 at the center of the turntable 47, to which it is temporarily adhered near its leading end in readiness for the next cycle (Figure 17).

Thereafter the turntable comes to rest, the cam 49 having been now in contact with the switch point 82a so as to open the running switch 82 and de-energize the solenoid 40, since shortly prior to position IV. The gate will then have resumed the position shown in Figure 2.

If, however, a second can C—2 has been in the meantime fed to the machine, as by pressing it close behind the can C—1, the machine will not stop at all but will begin a second cycle upon completion of the first because as soon as the can C—1 has been removed from the gateway 78a—79a the can C—2 will (as shown in Figure 15) take its place and function to close the starting switch 81 and continue the operation of the machine like the can C—1 did.

Thus when fed by a succession of cans (as by the carrier belt 90 in Figure 1) the machine will operate continuously and automatically, but will stop automatically when no further cans are fed to it.

When the trailing end of the tape is to be provided with a removal tab *t*—1 (Figure 18), a roll R' of non-adhesive paper tape *t* is mounted on the supply roll holding wheel 111. The tape (sometimes referred to herein as the "tabbing tape") is threaded into the machine by leading it from the roll into the right end of the channel 102, which is in the guide assembly 78, and thence through the channel to its exit between the fixed shear blade 70 and the guide arm 100a adjacent

the anchoring collar 52 which surrounds the turntable shaft 48.

Shortly prior to the severing of the sealing tape, namely, at or shortly prior to position IV, the surface 49a of the cam 49 on the under side of the turntable contacts the lobe 106a of the pear-shaped tabbing tape feed lever 106 so that the latter is moved to the right (Figure 2) around its pivot 107 and with it the tabbing tape feed arm 105. After the cam 49 has passed, the lever 106 and arm 105 move back to the left (by the spring 110) whereupon a section of the tabbing tape *t* equal in length to the stroke of the tab feed arm 105 is thrust outwardly beyond the exit of the tab channel 102 between the guide arm 100a and the blade 70 into contact with the adhesive side of the sealing tape T which, at this time, as shown in Figure 16, is moving to the right across the said exit. The tabbing tape is drawn along with it and adhered thereto, thereby forming a double web for a short distance. The movement of the parts is timed so that the two tapes stop feeding simultaneously. The cut is made through the double web a short distance back from the point where the leading edge of the tabbing tape first touched and became adhered to the sealing tape, thereby forming a removal tab on the trailing end of the length of tape T that is adhered to the can, made up of a short length of non-adhesive tape *t* adhered to the adhesive side of the sealing tape T.

The turntable of the illustrated machine measures 8¼" in diameter. It is equipped and adjusted to seal round cans measuring $3\frac{1}{16}$" in diameter and ⅞" in height with ⅜" tape. Cans of somewhat higher or lower heights can be accommodated by the illustrated machine. The supply roll holding discs 84 and 111 are adjustable as to elevation to accommodate varying widths of tape and cans of varying height. Cans of smaller diameters can be accommodated by designing the gate 79 so that the point 79a projects farther out towards the center of the turntable; or the point 79a may be made adjustable by equipping it with an extension.

A model of the illustrated machine has been made which seals sixty cans per minute in daily factory use.

Without departing from the claimed invention, machines may be constructed and operations pursued in which all the above named dimensions and proportions may vary widely; the size, shape, proportions and kind of containers or objects being taped may vary widely; the width and kind of tape may vary widely; the parts, arrangements, proportions and materials used in the machine, and the mechanical expedients may also vary. The machine that is illustrated and described is simply an illustrative embodiment.

I claim:

1. A method for withdrawing pressure-sensitive adhesive tape from a supply roll thereof and applying it around the sides of an object, comprising withdrawing a length of the tape from the roll and holding it in an outwardly extended position by temporarily anchoring the leading end at a point removed from the roll, moving the object into contact with the adhesive side of the extended length between the point of anchorage and the roll, moving the object away from the roll in an orbit around the point of anchorage, removing the leading end from its anchorage and pressing it against the object, temporarily anchoring the following portion of the tape after the leading portion has been wound around the object, severing the tape between the object and the point of

anchorage, and pressing the trailing end against the object.

2. In a machine for applying tape around the sides of an object, means for supporting a supply of tape, means for holding a withdrawn unsevered length of the tape outwardly away from the supply, carrier means for advancing the object into contact with the tape at a point removed from its leading end and for rotating the object about the object's own axis, and means for severing the tape after it has been wound around the object.

3. A machine for applying tape around the sides of an object comprising carrier means for moving an object that is placed thereon in an orbit, means for rendering an object fixed in relation to the carrier as the carrier moves, means for supporting a supply of tape adjacent the carrier, means for holding a withdrawn unsevered length of the tape extended across the path of an object that is being advanced by the carrier, means for moving the carrier in an orbit to advance the object into contact with the adhesive side of the extended length of tape at a point between the end of the tape and the supply and thence onwardly in its orbit until tape has been thereby withdrawn from the supply and wound around the object, and means for severing the tape thereafter at a point behind the portion that adheres to the object.

4. A can sealer comprising a turntable for moving a can that is placed thereon in an orbit, means for rendering a can fixed in relation to the table as the table rotates, means for rotatably supporting a supply roll of tape adjacent the table, means for holding a withdrawn unsevered length of the tape extended across the path of a can that is being carried by the turntable, means for rotating the table to advance the can into contact with the adhesive side of the extended length of tape at a point between the end of the tape and the supply roll and thence onwardly in its orbit until tape has been thereby withdrawn from the supply roll and wound around the can, and means for severing the tape thereafter at a point behind the portion that adheres to the can.

5. The device of claim 4 with wiping means for pressing the leading end of the held length of tape against the can as the can is advanced.

6. A machine for applying tape around the sides of an object comprising a turntable, means for rendering an object that is placed thereon fixed in relation thereto as the table rotates, means for supporting a supply of tape adjacent the table, anchoring means near the center of the table for releasably holding the leading end of a withdrawn unsevered length of tape extending from the supply across the path of the object to the anchoring means, wiping means for pressing the leading end of the held length of tape against the object as the object is advanced, means for rotating the table to advance the object until the object has come into contact with the adhesive side of the extended length of tape at a point between the anchored end and the supply and thence onwardly into contact with the wiping means until the end has broken loose from its anchorage and been pressed against the object and thence onwardly around the anchoring means until tape has been thereby withdrawn from the supply, wound around the object and come into engagement at a fresh point along its length with the anchoring means, and means for severing the tape thereafter between the object and the anchoring means.

7. The device of claim 6 with wiping means for pressing the trailing end of the tape against the object.

8. The device of claim 6 with means for forming a removal tab at the trailing end of the tape.

9. The device of claim 6 with means for forming a removal tab at the trailing end of the tape comprising means for holding a supply of nonadhesive tabbing tape, guide means for conducting a leading end of the tabbing tape into contact with the adhesive side of the sealing tape at a point adjacent the severing means, and means operative in timed relation with movement of the object to propel a short length of the tabbing tape into adhesive contact with the sealing tape shortly prior to the time at which the full length of sealing tape has been withdrawn.

10. The device of claim 6 in which the means for rotating the turntable is a power driving means with control means for initiating rotation of the turntable in response to an object being fed to the machine, and control means for continuing the rotation until the object has been taped.

11. The device of claim 6 in which the means for rotating the turntable is an automatic power driving means comprising a motor, a normally disengaged clutch for connecting the motor to the turntable, a solenoid for engaging the clutch, a gate for admitting objects to the machine, a normally open solenoid switch positioned to be closed by the gate to initiate rotation of the turntable in response to pressure of an object against the gate, a gate cam on the turntable to open the gate and release the object after the rotation has commenced, a normally closed solenoid switch to continue rotation of the turntable, and a switch cam on the turntable to open the normally closed switch after the object has been taped.

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The following references are of record in the file of this patent:

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