Aug. 17, 1954 N. A. ZANDER 2,686,607

ADHESIVE APPLICATOR FOR LABEL APPLYING MACHINES

Filed Aug. 11, 1951

2 Sheets-Sheet 1

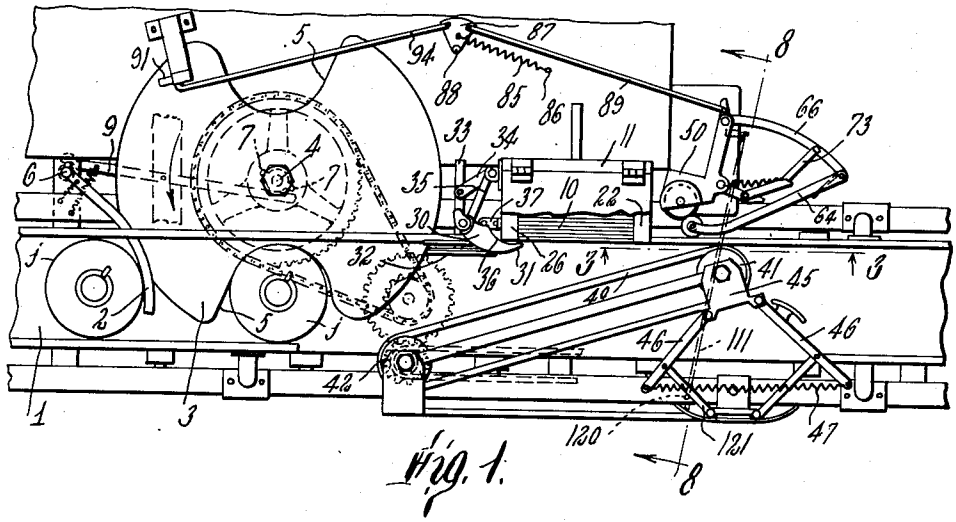


Fig. 1.

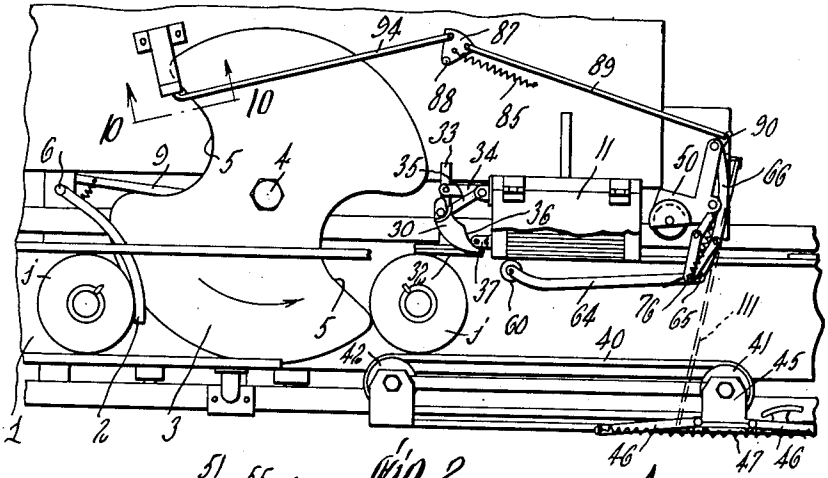


Fig. 2.

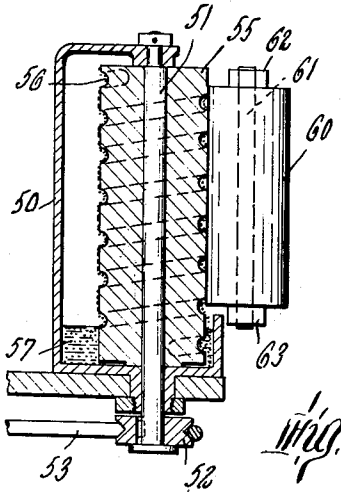


Fig. 4.

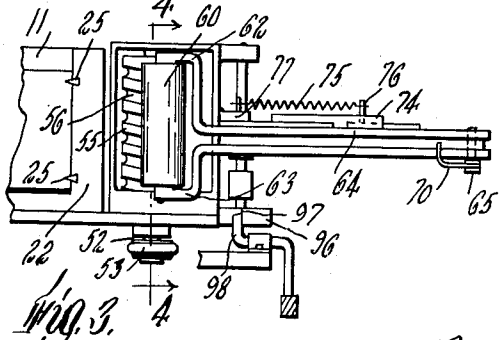


Fig. 3.

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ADHESIVE APPLICATOR FOR LABEL APPLYING MACHINES

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2 Sheets-Sheet 2

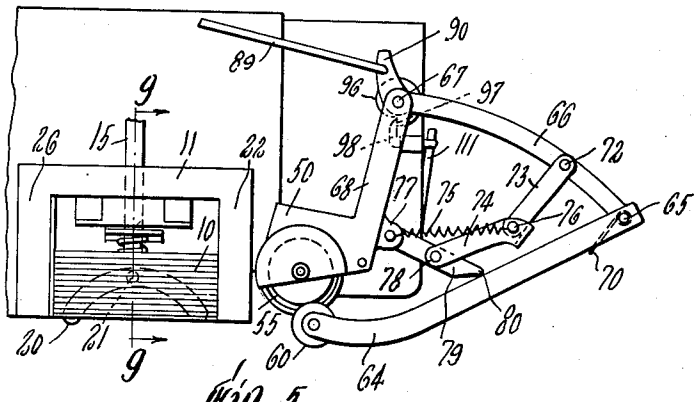


Fig. 5.

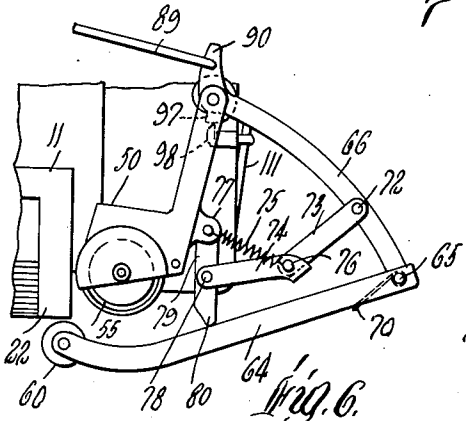


Fig. 6.

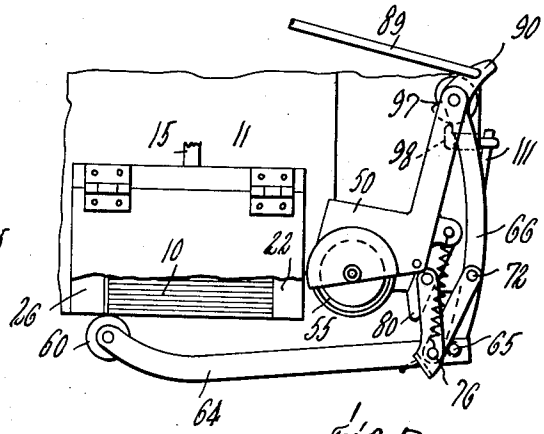


Fig. 7.

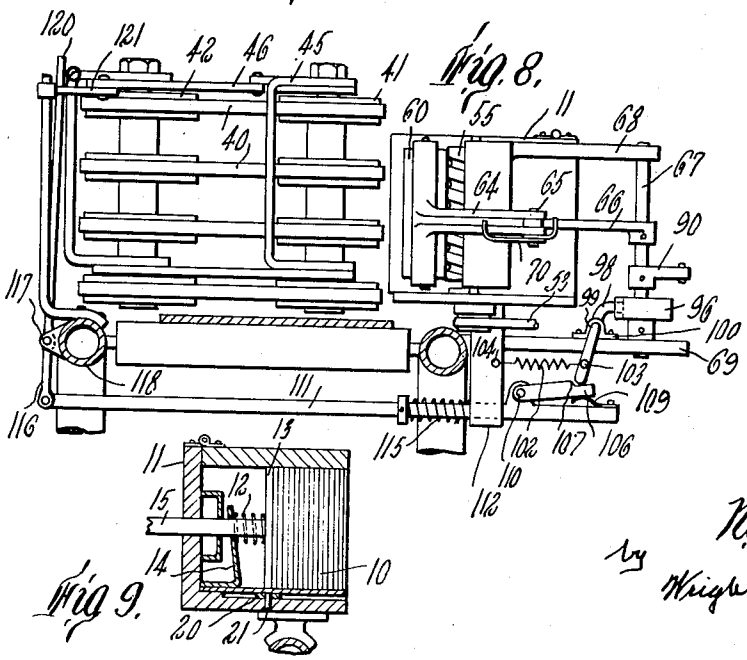


Fig. 8.

Fig. 9.

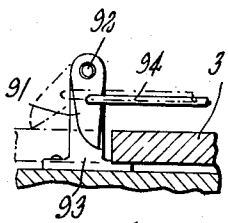


Fig. 10.

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UNITED STATES PATENT OFFICE

2,686,607

ADHESIVE APPLICATOR FOR LABEL APPLYING MACHINES

Nils A. Zander, Stow, Mass.

Application August 11, 1951, Serial No. 241,480

9 Claims. (Cl. 216—45)

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This invention relates to machine for applying labels, and has for one object to apply adhesive to the end label of a stack of labels and to then present a container to the coated label for attachment to the label thereto.

A further object of the invention to is apply the adhesive to the label and the label to a cylindrical container while the axis of the container is upright.

Still another object is to provide improved means for applying a coating of adhesive to a member from which an applicator removes it as required and applies it to the face of the label.

A further object is to apply the adhesive coated label with the container while the container is being moved by power past the label.

Further objects and advantages will appear from a description of the machine embodying the invention shown in the accompanying drawings in which

Figure 1 is a top plan view of the mechanism.

Figure 2 is a view similar to a portion of Figure 1, but showing the container further advanced in the cycle of operations.

Figure 3 is a detail sectional view on line 3—3 of Figure 1.

Figure 4 is a detail sectional view to a larger scale on line 4—4 of Figure 3.

Figure 5 is a view similar to a portion of Figure 1, but to a larger scale.

Figures 6 and 7 are views somewhat similar to Figure 5, but showing the adhesive applicator in different positions.

Figure 8 is a detail sectional view on line 8—8 of Figure 1.

Figure 9 is a detail sectional view on line 9—9 of Figure 5.

Figure 10 is a detail sectional view on line 10—10 of Figure 2.

This invention is shown as applied to a label applying machine of the type illustrated in my Patent No. 2,641,377 granted June 9, 1953, for Label Applying Machine, this invention relating particularly to an improved means for applying adhesive by which the labels are secured to the containers.

As shown in the said application, the articles to which the labels are to be applied may be containers such as jugs, or the like, and which it is desired to retain in upright position during the application of the labels thereto. As shown in that application, the articles to which the labels are to be attached, which, for convenience, will hereafter be referred to as jugs, though any generally cylindrical container can be employed, are supported on a traveling belt 1 and are moved

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thereby into contact with a pivoted barrier 2 which holds back the articles sufficiently to space them properly for suitable coaction with the label-applying mechanism. This barrier 2 may hold the leading jug temporarily out of contact with an escapement mechanism which comprises a horizontal disk 3 mounted for rotation about a vertical shaft 4. This disk 3 is provided with one or more marginal recesses 5 of sufficient size to receive the jugs which are to be labeled. This disk is mounted for rotation in counterclockwise direction at a constant speed. The barrier 2 is pivoted as at 6 and is normally held in the position shown in Figures 1 and 2 by a suitable pivoted latch member 9 as shown more in detail in my prior application, and this latch member is released at suitable times as by cam projections 7 on the shaft 4 to which the disk 3 is secured and which rock the latch member 9 out of latching position in the rotation of the escapement disk 3 in time with the recesses 5 so as to permit one of the jugs *j*, to pass into one of the recesses 5 and be transferred by the rotation of the disk 3 and the movement of the conveyor belt 1 toward the label-applying mechanism.

A stack of labels as at 10 is carried within a box 11 and as shown best in Figure 9, this stack is pushed toward an open face of this box as by a light spring 12 which engages a presser plate 13 contacting with the back face of a stack of labels. A stiffer leaf spring 14 through which passes a stem 15 secured to the back face of the presser plate 13 and on which the stem 15 may bind when pressure is applied to the front face of the stack, tends to prevent retraction of the stack into the box when pressure is exerted thereon. By pulling backwardly on the stem 15, however, the presser plate 13 may be retracted when it is desired to place a new stack of labels in the box after those previously therein have been used and removed from the stack.

As shown also in my application to which reference has been made, the stack is supported at its forward end on a rocking element 20 fulcrumed at 21 on the box and having ends which may be struck by the jugs to be labeled as they are passed thereby, such striking at one end of the member 20 causing the opposite end to be projected somewhat outwardly of the stack.

The side wall 22 of the box may be provided with small ears 25 which extend over the front face of the stack of labels and prevent the escape of these labels from the box, except one at a time as they are removed by the mechanism which will later be more fully described.

The opposite side wall 26 has positioned ad-

jacent thereto one or more pivoted latch members 30 having inner edges 31 which normally engage over the opposite vertical edge of the stack of labels, thus to hold the stack against escape at this end from the box. Also as fully disclosed in my prior application hereinbefore identified, these latch members may be retracted by a pressure of the jugs against a plate 32 having a shank portion 33 connected to suitable links 34 and 35. When the plate 32 is pushed rearwardly, the latch members 30 are removed from obstructing position as shown in Figure 2 and their back cam faces riding over pins 37 cause them to return to obstructing position when pressure on the plate 32 is released.

As the jugs pass the escapement disk, they are engaged by one or more traveling belts 40 which pass over end pulleys 41 and 42. The pulleys 42 are driven as from the shaft 8 so that the inner faces of the belts 40 are driven in the same general direction as the conveyor belt 1 but at double its velocity. These belts engage one side face of the jugs as shown in Figure 2 and cause these jugs to be rotated about their axes as they are carried forward by the travel of the conveyor belt 1.

The belt pulleys 41 are journaled in a frame 45 which is carried by a linkage 46 normally held in the position shown in Figure 2, as by a spring 47, but movable away from this position so that the belts 40 lie substantially parallel with the motion of the conveyor belt 1 as shown in Figure 2. The belts 40 are in this position of Figure 2 whenever a jug to be labeled leaves the escapement disks 3 and approaches the box 11 containing the stack of labels. All this mechanism may be as illustrated in my application Serial No. 192,395.

Closely adjacent to the side 22 of the label supply box is positioned a tank 50, in accordance with the present invention. This tank 50 is arranged in substantially upright position and has journaled therein a vertical shaft 51. The lower end of this shaft 51 may be provided with a belt pulley 52 keyed thereto and which is driven by a belt 53 which may be connected to any suitable source of power by which the shaft 51 may be rotated. Carried by the shaft 51 for rotation therewith is an upright cylinder 55 having its periphery provided with a spiral groove 56. The lower end of this cylinder 55 extends beneath the level of a liquid adhesive 57 carried in the container, and the direction and speed of rotation of the cylinder 55 with respect to the viscous nature of the adhesive employed is such that as the cylinder 55 is rotated this adhesive is caused to move upwardly over the periphery of the cylinder for its whole length and over its upper end from where it may find its way down by gravity into the lower portion of the tank 50.

This provides a member which is continuously surface-coated for substantially its entire length with the adhesive by which the labels are to be attached and furnishes a supply which can be removed and transferred by an applicator to the exposed face of the outer label within the box 11. Such an applicator comprises a freely rotatable cylinder 60 of a length at least equal to the vertical dimension of the label to be applied. As shown this applicator 60 is journaled as on a shaft 61 between spaced end portions 62 and 63 of a double arm 64. This arm 64, as best shown in Figures 5 to 8, is pivoted at 65 to one end of a link 69, the upper end of which is secured to an upright rock shaft 67 journaled in end bearing elements 68 and 69. A spring 70 engages the arms 64 and 66 as shown best in Figure 8, and normally tends to swing the roll 60 rearwardly toward contact either with the cylinder 55, as shown in Figures 3 and 4, from which it receives a supply of adhesive, or against the inner face of labels in the position shown in Figure 7. At an intermediate point the arm 66 has pivoted thereto at 72 a link 73, which, in turn, is pivoted adjacent one end to a link 74. A spring 75 connects the pivot 76 between these two links to a fixed bracket 77 which tends to hold the pivot pin 76 pulled toward the bracket 77. The opposite end of the link 74 is pivoted at 78 to a link 79 which is also pivoted to the bracket 77, and it has an extension 80 which may bear against the arm 64 at suitable times, as shown in Figure 6, which time is when the applicator roll 60 is opposite to the forward edge of the box side wall 2. This prevents the applicator roll from rolling across this edge and applying adhesive thereto, but it allows the roll 60 to approach and contact with the outer face of the outer label in the box closely adjacent to the box edge 22, and to traverse the forward face of the stack of labels with which it remains in contact.

The traverse of the applicator roll 60 across the adhesively coated member 55 and then across the exposed face of the outer label of the pack is accomplished by the action of a spring 85 (see Figures 1 and 2) which is anchored at one end to a fixed point as at 86, the other end being secured to a rocker 87 pivotally mounted at 88. A link 89 connects this rocker with an arm 90 secured to the shaft 67. When this link 89 is moved to the right from its position shown in Figure 1 to the position shown in Figure 2, the arm 90 is rocked in a clockwise direction as viewed in Figures 5 to 7, which causes the roll 60 to move across the cylinder 55 and then over to the box which contains the stack of labels while it is held away from contact with the edge of the box by the member 80 as previously described and then continues its motion across and in contact with the outer face of the outermost label into the position shown in Figure 7 across substantially the full width of the inside of the box and thus substantially entirely across the label.

The return motion of the applicator roll 60 is produced by the rotation of the disk 3 when the trailing edge at one of the recesses 5 contacts a finger 91 (see particularly Figure 10), which is pivoted at 92 on a stationary bracket 93 and swings this finger into the dotted line position shown in Figure 10. This finger is connected through a link 94 with the rocker 87 which therefore pulls this rocker counterclockwise in opposition to the spring 85 and returns the applicator to its starting position.

Means are provided for preventing the operation of the applicator 60 unless a jug to which a label is to be applied is in position to take the freshly adhesively coated label from the stack. This means comprises a latch cam 96 (see Figure 8) which is secured to the shaft 67, and which is provided with a shoulder 97 (see Figures 5, 6 and 7) which may be engaged by a latch hook 98. This latch hook 98, as shown best in Figure 8, is pivotally mounted at 99 on a bracket 100 carried by the member 69 and it is normally in such angular position (see Figures 5 and 9) that its hook is in the path of motion of the shoulder 97 and thus prevents operation of the applicator. A spring 102 (see Figure 8) tends to retain the latch hook in latching position, this

spring as shown extending between a pin **103** on the latch member and a fixed pin **104**. This latch is normally held in latching position by a dog **106** provided with a notch **107** in engagement with which the end of the latch **98** is held as by a leaf spring **109**. This dog **106** is pivoted at **110** to a bar **111** which supports the spring **109**, this bar being slidably guided through a stationary member **112** and normally held in the axial position shown in Figure 8 by a spring **115**. The forward end of the bar **111** has pivoted thereto a lever **116** fulcrumed at **117** on a bar **118** which forms a portion of the supporting frame for the machine. The upper end of the lever **116** at **120** extends up adjacent to a link **121** (see Figure 1) forming part of the support for the jug-turning belts **40** in such a position that when the forward end of the belt support at the pulleys **41** is moved forwardly by the presence of a jug into the position shown in Figure 2, this arm presses upon the upper end of the lever **120**, rocking this lever and sliding the bar **111** to the right as viewed in Figure 8. This causes the block **107** to turn the latch hook **98** in counterclockwise direction as viewed in this figure and to remove the latch hook **98** from obstructing operation of the applicator **60**. When this has been done and the disk **3** reaches an angular position where the spring **85** can pull the finger **91** into the full line position of Figure 10, the applicator is actuated to apply the adhesive to the exposed face of the outermost label in the stack and the applicator is returned to starting position before the jug to be labeled reaches the label-applying position. When the adhesive has been so applied and the applicator retracted, the jug *j* is moved forwardly past the stack of labels while it is being rotated in counterclockwise direction by the belt or belts **40** and is pressed against the adhesively coated label which adheres to the jug and is pulled out from the stack of labels. It will be noted that when the jug *j* first contacts with the adhesively coated label, the fingers **32** are retracted, so freeing the adjacent edge of the coated label, and as the article continues to wind the label thereon it is easily pulled out from the retainers **25** which lightly secure the opposite edge of the label in the box. The jug with the label applied thereto continues to be fed by the conveyor **1** until it passes clear of the belts **40**, whereupon the spring **47** returns these belts to the inclined position shown in Figure 1 ready for a succeeding label-applying cycle.

From the foregoing description of an embodiment of this invention it should be evident to those skilled in the art that various changes and modifications may be made without departing from the spirit or scope of the invention.

I claim:

1. A mechanism of the class described comprising a tank for holding adhesive, an upright cylinder mounted for rotation about its axis and with its lower end within said tank and having a spiral peripheral groove, means for rotating said cylinder in a direction relative to the spiral direction of said groove to lift adhesive from said tank along the periphery of said cylinder, and an applicator roller arranged substantially parallel to said cylinder mounted for motion to take adhesive from said periphery and apply such adhesive to a desired surface.

2. In combination, a box having an upright open side face for containing a stack of labels presenting a side face of the outer label of said stack at said open face, a tank for containing adhesive, an upright cylinder mounted for rotation about its axis adjacent to one side of said box and of a height substantially equal to the length of said box and with its lower end within said tank and having a spiral peripheral groove, means for rotating said cylinder in a direction relative to the spiral direction of said groove to lift adhesive from said tank along the periphery of said cylinder, an applicator of substantially said height, means for moving said applicator across said cylinder to receive a coating of adhesive therefrom and then substantially entirely across the side face of said outer label to thereby apply adhesive to said label, and means for rolling a container about an upright axis against said adhesively coated label.

3. In combination, a box having an upright open side face for containing a stack of labels presenting a side face of the outer label of said stack at said open face, a tank for containing adhesive, an upright cylinder mounted for rotation about its axis adjacent to one side of said box and of a height substantially equal to the length of said box and with its lower end within said tank and having a spiral peripheral groove, means for rotating said cylinder in a direction relative to the spiral direction of said groove to lift adhesive from said tank along the periphery of said cylinder, an applicator of substantially said height, means for moving said applicator across said cylinder to receive a coating of adhesive therefrom and then substantially entirely across the side face of said outer label to thereby apply adhesive to said label, and means for rolling a container about an upright axis against said adhesively coated label, said moving means including means guiding said applicator away from the edge of said box as it passes from said cylinder to contact with said label.

4. In combination, a box having an upright open side face for containing a stack of labels presenting a side face of the outer label of said stack at said open face, a tank for containing adhesive, an upright cylinder mounted for rotation about its axis adjacent to one side of said box and of a height substantially equal to the length of said box and with its lower end within said tank and having a spiral peripheral groove, means for rotating said cylinder in a direction relative to the spiral direction of said groove to lift adhesive from said tank along the periphery of said cylinder, an applicator of substantially said height, means for moving said applicator across said cylinder to receive a coating of adhesive therefrom and then substantially entirely across the side face of said outer label to thereby apply adhesive to said label, and means for rolling a container about an upright axis against said adhesively coated label, said moving means including linkage supporting said applicator.

5. In combination, a box having an upright open side face for containing a stack of labels presenting a side face of the outer label of said stack at said open face, a tank for containing adhesive, an upright cylinder mounted for rotation about its axis adjacent to one side of said box and of a height substantially equal to the length of said box and with its lower end within said tank and having a spiral peripheral groove, means for rotating said cylinder in a direction relative to the spiral direction of said groove to lift adhesive from said tank along the periphery of said cylinder, an applicator of substantially said height, means for moving said applicator

across said cylinder to receive a coating of adhesive therefrom and then substantially entirely across the side face of said outer label to thereby apply adhesive to said label, and means for rolling a container about an upright axis against said adhesively coated label, said moving means including linkage supporting said applicator and including a member positioned to guide said applicator outwardly from the edge of said box as it passes said edge in moving from said cylinder to said label.

6. In combination, a box having an open side face for containing a stack of labels presenting a side face of the outer label of said stack at said open face, an adhesively coated member positioned at one side of said box and of a height substantially equal to the length of the inside of said box, an applicator of substantially said height, linkage supporting said applicator for guided motion from said adhesive coated member to and across said side face of said label for substantially the full width of the inside of said box, and means for so moving said applicator, said linkage including a member positioned to guide said applicator outwardly from the edge of said box as it passes said edge while moving between said member and said label.

7. Mechanism of the class described comprising a holder for a stack of labels, a member surface-coated with adhesive adjacent to said holder, an applicator mounted for motion from a position contacting with said member across the face of a label carried by said holder, yielding means operatively connected to said applicator and tending to so move said applicator, means for periodically presenting articles one by one to said label holder, means actuatable by said presenting means for returning said applicator to said member, a latch for so holding said applicator, and means actuable by an article in operative relation to said presenting means for releasing said latch to thereby cause said applicator to apply adhesive to a label but only when an article to which said label is to be applied in being moved toward said label holder by said presenting means.

8. Mechanism comprising a holder for a stack of labels, an adhesive supplying member adjacent to said holder, an applicator mounted for motion from said member across a label carried by said holder to apply adhesive from said member to said label, a spring connected to said applicator and tending to hold said applicator at a limit of motion across said label, a rotary disk having a peripheral recess for receiving an article to which the labels are to be attached and for moving said article toward said holder, means for feeding the article past said holder as it leaves said disk, means for rotating said article and pressing it against said holder as it is so fed, means actuated by said disk at one angular portion of its rotation to return said applicator to said member, a latch for so holding said applicator, and means actuated by an article while it is being so fed to release said latch and permit said spring to move said applicator to apply adhesive to a label shortly before said article is fed into contact with said label.

9. Mechanism comprising a holder for a stack of labels, an adhesive supplying member adjacent to said holder, an applicator mounted for motion from said member across a label carried by said holder to apply adhesive from said member to said label, a spring connected to said applicator and tending to hold said applicator at a limit of motion across said label, a rotary disk having a peripheral recess for receiving an article to which the labels are to be attached and for moving said article toward said holder, means for feeding the article past said holder as it leaves said disk, means for rotating said article and pressing it against said holder as it is so fed, means actuated by said disk at one angular portion of its rotation to return said applicator to said member, a latch for so holding said applicator, and means actuated by an article while it is being so fed to release said latch and permit said spring to move said applicator to apply adhesive to a label and thereafter to return said applicator shortly before said article is fed into contact with said label.

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