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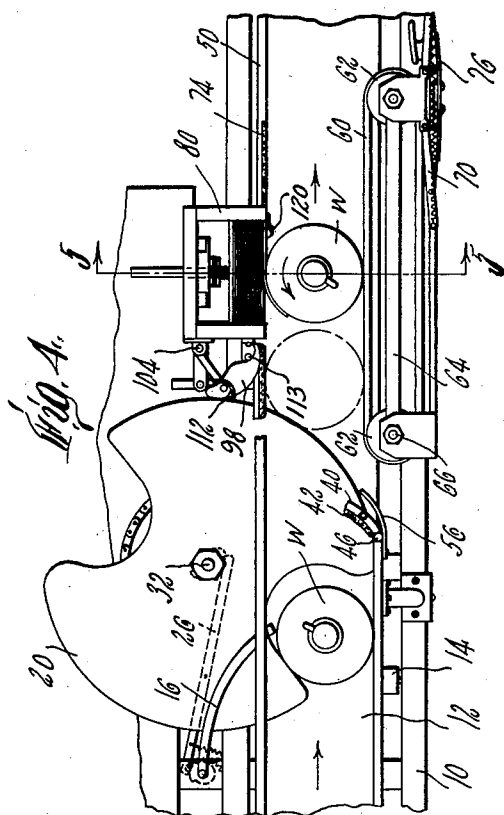
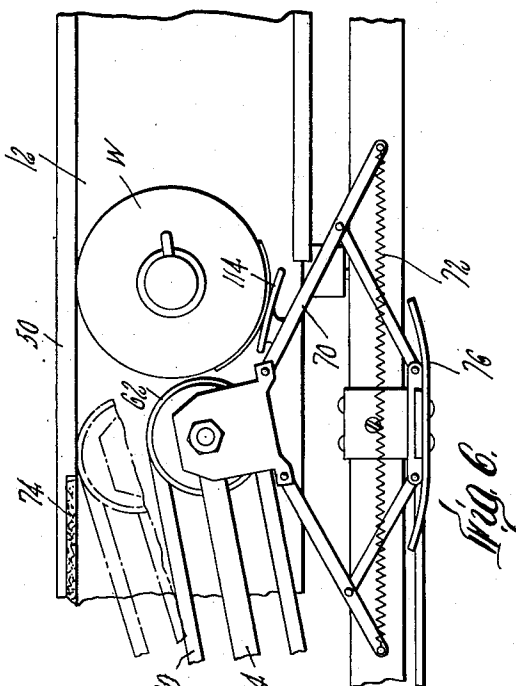
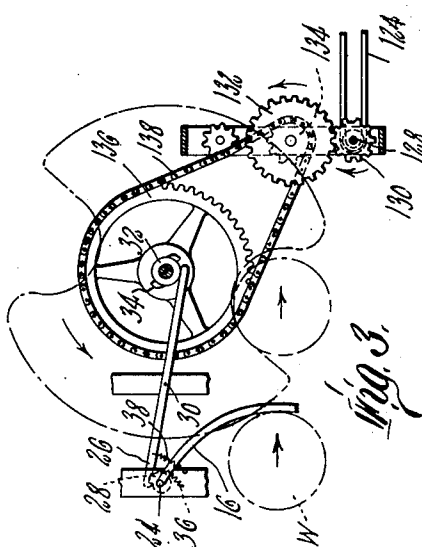
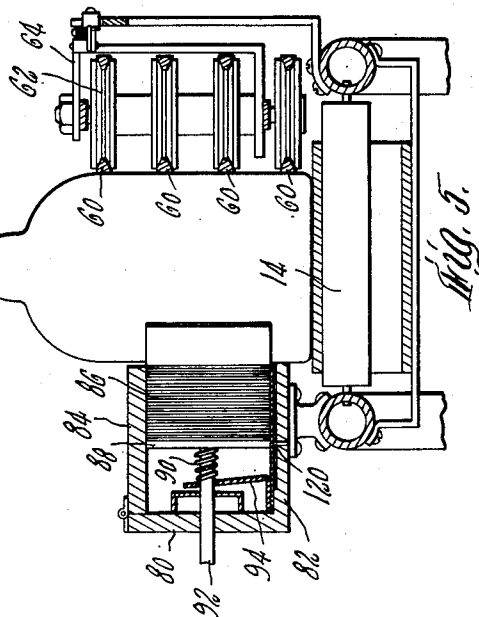
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LABEL APPLYING MACHINE

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LABEL APPLYING MACHINE

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4 Claims. (Cl. 216-42)

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This invention relates to mechanism for applying labels automatically to a succession of articles or packages such as, for example, jugs and bottles. It is an object of the invention to provide a mechanism which is simple but effective and which can be constructed at a comparatively low cost. As hereinafter described, the invention is embodied in a mechanism which includes a horizontal conveyor by which the articles to be labeled are carried along toward the label applying mechanism. A barrier is provided over the conveyor which operates in conjunction with an escapement device to pass the jugs along to the label applying mechanism in a predetermined spaced relation so that there will not be interference with the operation of the label applying mechanism by jugs which arrive too closely together. Other advantageous features will be apparent from the detailed description of an embodiment of the invention which is illustrated on the drawings of which—

Figure 1 is a side elevation of apparatus embodying the invention;

Figure 2 is a plan view of the same;

Figure 2a is a fragmentary perspective view showing the shaft 128 and related parts;

Figure 3 is a section on the line 3-3 of Figure 1;

Figure 4 is a plan view similar to Figure 2 but showing parts in a different position of operation;

Figure 5 is a section on the line 5-5 of Figure 4; and

Figure 6 is a fragmentary plan view, on a larger scale, showing a portion of the mechanism.

The machine illustrated on the drawings includes a main frame 10 which carries a horizontal belt conveyor 12, the upper stretch of which is supported by a series of rollers 14 so that it advances in a horizontal plane, the direction of movement of the upper stretch being from left to right as illustrated in Figures 1 and 2. In the following description of the mechanism, jugs will be referred to as the articles to be labeled, but it is to be understood that other articles can be labeled by the mechanism hereinafter described.

Jugs which are placed on the left-hand end of the conveyor 12 are advanced toward the label applying mechanism until they encounter a barrier 16 which is an arm extending across the conveyor. This barrier holds the leading jug temporarily out of contact with an escapement mechanism which comprises a horizontal disk 20 having one or more recesses 22 in its margin, these recesses being of sufficient size to receive a jug W as shown. The disk 20 is driven by suit-

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able means hereinafter described so as to revolve in a counterclockwise direction at a constant speed. The barrier 16 is pivoted at one end as at 24 and is normally held in the position shown in Figures 2 and 3 by a latch member 26 which hooks over a shoulder 28 on a hub to which the barrier 16 is secured. The latch 26 is pivoted as at 30, the opposite end of the latch member being pressed against a hub 32 which carries the disk 20. Mounted on the hub 32 are cam lugs 34 which strike the latch member 26 when the disk 20 reaches predetermined angular positions in its rotation. Each time a lug 34 strikes the latch 26, the barrier 16 is released so that it can be pushed toward the right by the pressure of the jug W then engaging it. This jug then engages against the edge of the disk 20 until the next recess 22 comes around whereupon the jug enters such recess and is permitted to advance along the conveyor. A spring 36 is attached to the barrier 16 to return it to its normal position as soon as the jug has moved past and released it. A spring 38 is provided to pull the latch 26 toward the hub of the barrier so that the latch can re-engage with the shoulder 28.

When a jug in one of the recesses 22 of the disk 20 reaches the position shown in Figure 2, it engages a moistening device which applies liquid to a portion of its side surface. As shown, this moistening device may comprise a thin vertical container 40, one side wall 42 of which consists of porous material such as sponge rubber, felt, or an equivalent through which liquid may seep. The liquid, which may be water or an adhesive composition, is supplied to the container through a suitable hose connection 44. The container 40 is pivoted at one of its vertical edges as at 46 to a guide rail 48 which extends along one side of the conveyor, a corresponding guide rail 50 being mounted at the opposite side of the conveyor. The container 40 normally projects out over the conveyor 12 as indicated in Figures 2 and 4 and is resiliently maintained in such position by a suitable spring 52 so that it is encountered by each jug W which is advanced by the disk 20. A reinforcing leaf spring 50 is provided to offer additional yielding resistance to the swing of the container 40 as it is pushed aside by an advancing jug.

After the jug W has passed the liquid applying device 40, it encounters a driving belt 60. This driving belt may be a single belt or a multiple belt, the latter being illustrated on the drawing. In Figure 5, four belts 60 are shown, these being spaced one above the other and being carried by

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pulleys 62 which are mounted on a frame 64, this frame being pivotally mounted on a shaft at 128 to rock about a vertical axis. The pivot shaft 128 is supported by the main frame 10 so that the driving belt 60 can swing between a position alongside the conveyor 12, as shown in Figure 4, and a position diagonally across from the conveyor as shown in Figure 2. The driving belt 60 and its supporting frame are normally in the latter position and are yieldingly held in such position, a toggle frame 70 which carries a spring 72 tending to press the free end of the auxiliary frame 64 toward the opposite side of the conveyor. When a jug W passes beyond the liquid applying device 40, it engages the driving belt 60, this belt being driven at twice the linear speed of the conveyor 12. The belt presses the jug against the guide rail 50 which at this point is provided with a friction surface 74. The driving movement of the belt 60, together with the retarding effect of the friction surface 74 causes the jug to rotate at a predetermined angular speed as it travels past the driving belt so that it rolls along the face of the label without substantial tendency for slippage. The belt and its frame are swung back to the position shown in Figure 4 as the jug passes it, whereupon the spring 72 returns the driving belt and its supporting frame to their normal position extending diagonally across the conveyor as illustrated in Figure 2. Since the toggle joints of the frame 70 may pass beyond centers when they reach the position shown in Figure 4, in which case the spring 72 would not be able to function to return the toggle frame to the position shown in Figure 2, an auxiliary leaf spring 76 is mounted in position to be engaged by the toggle links, as indicated in Figure 4, so that when the driving belt and its frame are released by the passing of a jug, the spring 76 gives the frame an initial kick toward its normal position.

On the side of the conveyor opposite to the driving belt 60 is mounted a label magazine 80 which, as shown in Figures 2, 4 and 5, may consist of a rectangular box having a bottom 82, walls on three sides with an open side facing the conveyor, and a hinged top cover 84. A supply of labels 86 are inserted in the box and are pressed toward the open side by a plate 88 backed by a spring 90 which surrounds a guide rod 92 attached to the plate and projecting through an aperture in a leaf spring 94 which is secured within the box and is inclined with respect to the axis of the rod 92. The spring 90 is a relatively weak spring and is compressed between the plate 88 and the leaf spring 94 so that the labels are constantly pushed forward by a weak force. If, however, the labels are pushed by the jug in the opposite direction, such retrograde movement is more stiffly opposed by the rod 92 binding in the opening through the spring 94. The labels are retained in the box by a pair of fixed lugs 96 attached to an edge of the open side of the box so as to jut out a short distance into the opening of the open side. At the opposite edge of the opening a pair of vertically spaced, movable fingers 98 extend out to engage the adjacent margin of the outermost label, the lower finger being shown in Figure 1. The fingers 98 are automatically retracted just before a jug reaches the magazine to engage the outermost label therein and are automatically returned to their label engaging position when the jug has started to remove the outermost label as indicated in Figure 4. For operation of the fingers 98, they are pivotally mounted at 100 on arms 102 which are pivoted at

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104. The same pivot carries a link 106 which extends to a rod 108. The rod is slidable in a direction at right angles to the conveyor 12 and carries a friction pad 110 at one end thereof, this pad being held over the conveyor near the edge thereof. When the pad 110 is engaged by a jug W, the rod 108 is pushed back thus rocking the link 106 and the arms 102 so as to retract the fingers 98 from the opening in the side of the label magazine 80, the retracted position of the fingers 98 being illustrated in Figure 4. When the jug has moved along far enough to start the removal of the outermost label from the magazine, the release of the pad 110 permits the fingers 98 to be moved back to their normal position by a spring which is mounted on the pivot 104 like the spring 52 on the pivot 46 but does not appear on the drawings. A spring 112 on each finger 98 is arranged to press a side of each finger against a corresponding pin 113 which is mounted on a bracket fastened to the side of the box. As the fingers 98 move from one position to the other, an edge of each finger slides along the corresponding pin 113 so as to cause the tip of each finger to move clear of the edge of the box as it returns to its holding position.

When a jug arrives at the label magazine, it has been sufficiently rotated to present the moistened area on its side to the outermost label in the magazine. If the labels in the magazine are gummed, water may be the liquid applied to the sides of the jugs. For ungummed labels, a suitable liquid adhesive must be applied to the jugs. As the jug is pressed against the label magazine and rotated in passing, it progressively engages and sticks to the outermost label and removes it from the magazine. When the jug rolls past the free end of the frame which carries the driving belt the frame is then released from the position shown in Figure 4 and is moved by the springs 76 and 72 back to its normal position across the conveyor. A wiper plate 114 is mounted on one of the links of the toggle frame 70 in such a position as to engage the departing jug as the frame 64 is swung back to its normal position as shown in Figure 6. This tends to press the label more securely against the side wall of the jug and to wipe out any wrinkles which may have been formed when the label was picked up from the magazine.

In order to support the outermost labels in the supply in the magazine so as to prevent their slipping down on the conveyor, a thin supporting element 120 is pivotally mounted in a shallow recess in the bottom 82 of the box 80. This supporting member may have an arcuate shape or an angular shape which permits alternate projection of the respective ends of the member slightly beyond the opening of the box 80 as indicated in Figure 4. When the jug which is picking up a label, as shown in Figure 4, advances to engage the projecting end of the supporting element 120, this projecting end is pushed in by the jug with the result that the other end is pushed out and thus acts as a support to prevent the outermost labels from slipping down onto the conveyor. When the next jug comes along, it engages this projecting end and pushes it in, this having the effect of pushing the other end out so that one end or the other of the supporting element 120 is always effective in holding up the outermost labels in the supply.

The various moving parts of the apparatus are driven in timed relation by any suitable driving means. As shown, a pulley 122 is mounted on

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the same shaft with the roller 14 at the delivery end of the conveyor 12. On the pulley 122 is a belt 124 which passes around a pulley 126 mounted on a vertical shaft 128 to which are fixed one set of pulleys 62 (Figure 3). This vertical shaft carries a pinion 130 which meshes with a gear wheel 132, the latter being on a common shaft with a sprocket wheel 134 which drives a larger sprocket wheel 136 by means of a chain 138. The wheel 136 is mounted on the shaft 32 and drives the escapement disk 20.

I claim:

1. In a labeling machine, a horizontal conveyor, a frame pivoted at one end beside said conveyor to swing from a position alongside the conveyor to a position diagonally across the conveyor, pulleys carried by said frame at the pivoted and free ends thereof, an endless driving belt passing about said pulleys, means for driving said conveyor and for driving said belt at twice the linear speed of the conveyor, means resiliently pressing said frame toward its diagonal position, and a label magazine mounted at the side of the conveyor across from said driving belt, said magazine including means for supporting labels in position to be successively engaged by objects carried by the conveyor and pressed toward the magazine by said driving belt.

2. In a labeling machine, a horizontal conveyor, a label magazine mounted at one side of the conveyor, a driving belt mounted at the other side of the conveyor and opposite the label magazine, a frame carrying said belt and swingable about a vertical axis, means pivotally supporting one end of said frame, means resiliently tending to swing said frame and driving belt from a position alongside the conveyor to a position diagonally across said conveyor, means for driving said conveyor and for driving said belt at twice the linear speed of the conveyor, and means engageable by each article before it reaches the magazine to apply liquid to a portion of the surface of the article.

3. In a labeling machine, a horizontal conveyor, a label magazine mounted at one side of the conveyor to present a supply of labels to cylindrical

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articles carried past by the conveyor, frictional surfaces along the same side of the conveyor engageable by said articles immediately before and after passing the magazine, a driving belt supported on the opposite side of the conveyor and having a stretch moving in the same general direction as the conveyor and at twice the linear speed, means resiliently actuating said driving belt to press passing articles against said frictional surfaces and magazine whereby said articles are caused to rotate as they pass, and means mounted adjacent to the conveyor in advance of the magazine for applying liquid to a surface area of each article as it approaches the magazine.

4. In a labeling machine, a base, a horizontal conveyor movable along said base, a frame pivoted to said base at one end beside said conveyor to swing between a position along said conveyor to a position diagonally across the conveyor, a label magazine mounted at one side of said conveyor, an endless belt carried by said frame and presenting a stretch opposite to said magazine, toggle links connected to said frame spaced from the pivot of said frame and to said base, a spring secured to said toggle links and tending to hold said links in position with said frame in diagonal position, means for driving said belt and moving said stretch at twice the speed of said conveyor, and means for presenting articles to be labeled on said conveyor to be passed between said magazine and belt and to roll along said magazine by the contact with said belt thereagainst.

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