MACHINE FOR APPLYING EDGING STRIPS TO CARTONS AND THE LIKE

Fig. 2
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As is known, carton packages, especially for cigarettes, are composed of an upper and a lower portion, and when assembled, a strip of paper is applied round and gummed on to the narrow sides of the carton, which is usually flat. These strips of paper are known as edging strips. The next step is to cut open the carton, round the joint, on three of the narrow sides, so that the edging strip on the fourth side forms a hinge connecting the two portions of the carton.

Devices for automatically attaching the edging strips to the body of the carton are known. In such devices, as a rule, the edging strips are taken singly from a pile and fed in front of a trough or space into which the work is forced by a ram, so that the edging strip is applied to three of the narrow sides of the carton, its application to the fourth side being effected by means of folding fingers or the like.

The present invention deals with the problem of simultaneously providing each of two cartons with an edging strip.

According to the invention the cartons are introduced into two horizontal troughs, the mouths of which are face to face, the cartons being disposed in upright position (on edge). The cartons are then transferred, by two jointly controlled plungers, into two vertical passages, in front of each of which a marginal strip has been placed by means of controlled grippers. These grippers take the edging strips from piles which are arranged in a manner similar to that of the upright cartons and parallel to the plane thereof, that is to say, also on edge. In this manner a simple relative arrangement of all the parts is obtained, and, in addition, said parts occupy an extremely small narrow space.

To enable the invention to be fully understood it will now be described by reference to the accompanying drawings in which:

Fig. 1 is a vertical longitudinal section of a machine constructed according to the invention:

Fig. 2 is a vertical cross section on the line 2—2 of Fig. 1, and

Fig. 3 is a plan view.

As shown the cartons W are pushed out of the two oppositely arranged troughs 1 and 1' (Fig. 2), so as to come in front of vertical passages 2 and 2' into which plungers 3 and 3' are adapted to be reciprocated respectively by means of a two-armed lever 4, pivoted at 5, and operated by a cam 7 on a shaft 8, through the thrust rod 6. The thrust rod 6 has a forked end 6' engaging the shaft 8 and a roller 9, which engages the cam 7. As shown in Figs. 1 and 3 there are two parallel piles 10, 10' of edging strips R and suction heads 11, (one only being shown) are provided for drawing the bottom strip for the time being, down out of each of the piles 10 and 10'. Two grippers 12 (one only being shown) mounted in lateral guides, grip the ends of the edging strips R and lead them into U-shaped channels 14, 14' to the mouths of the shaft like spaces 2 and 2'.

The grippers 12 each consist of a fixed member 13 provided on a sliding carrier 13', which is displaced by a cam (not shown), and a two armed lever 16, pivoted on the pin 15, which passes through longitudinal slots in the wall of the frame, the left hand or leading portion of the lever being designed as a gripper mouth (Fig. 1). The other end of the lever 16 is provided with a roller 17 which coacts with a control bar 18 in such a manner that, when the gripper approaches the pile, the mouth is opened and, after the roller has passed beyond the highest point of the bar 18 the mouth is closed by the action of a spring and grips the end of the edging strip. On the return stroke, that is, in drawing the edging strip out of the pile, the roller 17 lifts the bar 18, which turns on the pivot 19, and passes by the roller, so that, during the passage by the control bar 18, the mouth of the gripper 12 remains closed.

The edging strip R then passes in front of a gumming roller 20, carried on a gum trough 21, which is lowered by means of a two-armed lever 22 having a roller 23 coacting with a cam 24 so that adhesive is applied to the edging strip.

When the edging strips have been brought in front of the mouths of the passages 2, 2', the cartons W are pushed down by the plungers 3, 3' and come into contact with the edg-
ing strips, the counter-rams 25 and 25' being provided for enabling uniform pressure to be applied to the strips on the under sides of the cartons. As the plungers 3 and 3' continue their descent, the cartons pass through the passages, 26, 26', so that the lateral portions of the edging strips are bent upwards, like a U, and are applied to the sides of the cartons. At the same time, fingers 27, disposed on both sides of the passages, 26, 26', prevent the ends of the edging strips from tipping up out of the U-shaped channels 14, 14'. These fingers are adapted to turn on the pivots 28 and are controlled by thrust rods 29 and 30. When the cartons in the passages 26, 26' have arrived opposite the passages 31, 31' at right angles to the former, a finger 32 controlled by the thrust rod 33 projects, in the first place, and presses the short ends of the edging strips against the fourth side of the cartons. The plungers 24, controlled by the two armed lever 35, now advance and push the cartons into the passages 31, 31' in which planes 36, or the like are disposed, which assure the firm contact of the edging strips with the cartons.

In order that the machine may not be disarranged through the absence of cartons, feelers 37 are arranged in the troughs 1 and 1', in the path of the plungers 3, 3'. These feelers 37 are mounted on a two-armed lever 38, turning on the pivot 39. A roller 40 mounted on one arm of the lever 38, coacts with a cam 41 on the shaft 42 in such a way that the feelers are depressed after the cartons have been pushed forward in troughs 1, 1'. If either of the feelers 37 does not find a carton in front of it, the corresponding lever 38 is turned by the action of a weight or a spring, so that the drawbar 43 linked to the other end of the lever at 44 is pushed upwards, thus shutting off the suction pipe 45 from the suction head 11 by way of the valve 46.

Consequently, the feeler 37 only interrupts the action of the suction air on the suction-head 11, when necessary. Hence the machine is not stopped through the absence of a carton, but the suction head, not being operative, cannot draw out the end of the edging strip, and the gripper 12 does not encounter an end on approaching the pile 10, or 10'.

What I claim is:

1. In a machine for edging cartons and in combination a machine frame, a trough for holding cartons arranged on end, a second trough for holding cartons arranged on end, the open mouths of the two troughs being opposite one another, two passages, one in front of each trough mouth, two magazines for holding edging strips wherein the strips are held at their edges, means for transferring a strip from each magazine, means positioning said strip over one of the said passages and reciprocating plungers for transferring a carton from each trough into the adjacent passage in contact with the strip simultaneously.

2. In a machine for edging cartons and in combination a machine frame, a trough for holding cartons arranged on end, a second trough for holding cartons arranged on end, the open mouths of the two troughs being opposite one another, two passages, one in front of each trough mouth, two magazines for holding edging strips wherein the strips are held at their edges, suction heads for drawing the bottom strip from each magazine, a slidable carrier, gripping means on said carrier for receiving the strips from the suction heads, and positioning them over the respective passages and reciprocating plungers for transferring a carton from each trough into the adjacent passage in contact with the strip simultaneously.

3. In a machine for edging cartons and in combination a machine frame, a trough for holding cartons arranged on end, a second trough for holding cartons arranged on end, the open mouths of the two troughs being opposite one another, two passages, one in front of each trough mouth, two magazines for holding edging strips wherein the strips are held at their edges, suction heads for drawing the bottom strip from each magazine, a slidable carrier, a fixed gripping member on the carrier, a pivoted gripping member on the carrier, a spring movably holding the two gripping members closed, an extension on the pivoted member, a pivoted control bar adapted to cooperate with said extension on the forward movement of the carrier to open the gripping member to receive a strip from the suction heads but to allow the return of the carrier without opening the gripping members, said gripping means placing the strips over the respective passages and reciprocating plungers for transferring a carton from each trough into the adjacent passage in contact with the strip simultaneously.

4. A machine as claimed in claim 3 comprising plungers for transferring cartons, grippers for seizing and preventing edging strips, adhesive applying rollers for the said strips, presser fingers for applying the strips to the cartons, delivery channels for the edged cartons, having plungers operating therein, a single cam shaft and operative connections between the cams on said shaft and all the above mechanisms whereby all are operated from said single shaft.

5. A machine according to claim 2, wherein means extending into the path of travel of the cartons in the troughs and operatively connected to the suction heads are provided whereby if a carton fails to be in correct position or the supply ceases the suction heads are rendered inoperative without interfering with the other operations of the machine.

6. In a machine for edging cartons and in
combination a machine frame, a trough for holding cartons arranged on end, a second trough for holding cartons arranged on end, the open mouths of the two troughs being opposite one another, two passages, one in front of each trough mouth, two magazines for holding edging strips wherein the strips are held at their edges, means for transferring a strip from each magazine, means for positioning it over one of the said passages, reciprocating plungers for transferring a carton from each trough into the adjacent passage in contact with the strip simultaneously, and means for rendering the means for transferring the strip from the magazine to the positioning means inoperative if a carton fails to be in correct position at the correct instant.

7. A machine for edging cartons comprising a trough provided with an open mouth for holding cartons arranged on end, a passageway in front of said mouth, a magazine for holding edging strip, said strip being held therein at its edges, means for partially disengaging a strip from its magazine; means for transferring said strip from said magazine and positioning it over said passageway, reciprocating means for transferring a carton from said trough into the adjacent passageway in contact with the strip, and means extending into the path of travel of the cartons and controlling said strip disengaging means, so as to render the latter inoperative without interfering with the operation of the machine, when the supply of cartons ceases, or the carton is not correctly positioned in the trough.

8. A machine for edging cartons comprising separate means for holding sets of cartons on end, separate passageways in front of said means, separate means for holding sets of edging strips wherein the latter are arranged on end, means for transferring and positioning said edging strips over said passageways and means for transferring said cartons from the holding means therefor to the said passageways in contact with said strips and common means for operating said strip and carton transferring means simultaneously.

In testimony whereof I affix my signature.

JOHANNES SCHMIEDEL.