SECONDARY PACKAGING OF SMOKING ARTICLES

Inventors: Kerry Quinn, Palatine, IL (US); Cameron Mikos, Wheaton, IL (US)

Correspondence Address: CARDINAL LAW GROUP Suite 2000 1603 Orrington Avenue Evanston, IL 60201 (US)

Appl. No.: 11/685,563  Filed: Mar. 13, 2007

Related U.S. Application Data

Provisional application No. 60/782,009, filed on Mar. 14, 2006.

Publication Classification

Int. Cl. B65B 17/00 (2006.01)

U.S. Cl. 53/167

ABSTRACT

A system for applying a stamp to packs includes a carton opening system, a pack stamping system, and a carton sealing system, including at least one strip dispenser to selectively unwind at least one roll of tacky polymer strips, a strip separator to remove the tacky polymer strips from a backing roll and place the removed tacky polymer strips on the carton, and a flap closer. A method of applying at least one stamp to at least one pack within a carton includes opening at least one carton, stamping at least one stamp onto at least one pack within the carton, and applying at least one tacky polymer strip to a lower flap of the carton. The method further includes folding an upper flap of the carton to adhere to the applied tacky polymer strip.

300

310- open at least one carton

320- stamp at least one stamp on packs in opened carton

330- apply tacky polymer strip to lower flap

340- fold upper flap to adhere to tacky polymer
SECONDARY PACKAGING OF SMOKING ARTICLES

RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application 60/782,009 filed Mar. 14, 2006, the entirety of which is incorporated herein by reference.

TECHNICAL FIELD OF THE INVENTION

[0002] The present invention relates generally to smoking articles and in particular to a secondary packaging of the smoking articles.

BACKGROUND OF THE INVENTION

[0003] Many jurisdictions tax the sale of cigarettes. Cigarettes are generally distributed in boxes, each box including 30 cartons of cigarettes, and each carton typically containing 10 packs of cigarettes, and each pack typically includes 20 cigarettes. There is no industry standard for the size of cigarettes or cartons. Therefore, cartons of cigarettes are distributed in a variety of heights and widths, depending on the brand and the dimensions of cigarettes for that brand. The packs are disposed inside each one of the cartons within an array comprising two rows of packs with each row of packs comprising five packs. In other words, the cigarette packs are disposed within an array comprising two rows and five columns.

[0004] Generally, payment of the tax is evidenced by application of a stamp to each pack of cigarettes prior to distribution to a retailer. However, cigarette manufacturers often do not know the retail destination of each carton, and therefore distribute un-stamped cartons to distributors, and the distributors apply the tax stamps. Typically, tax stamps are applied to a bottom surface of the pack. Generally speaking, then, the bottom surface of the pack, i.e. opposite the intended distribution hole for the cigarette, is the upper surface of the pack when discussing stamping operations.

[0005] Distributors must, thus, open each carton of cigarettes, apply the correct tax stamp to each pack, and close the carton after application of the tax stamp. While these tasks can be performed manually, mechanical assistance is generally used in order to increase throughput.

[0006] Historically, distributors have used hot or cold adhesives, such as hot melt adhesive or slow-curing cold glue to reseal the opened cartons. However, such adhesives can be messy and expensive. Hot melt adhesive results in permanent closure of the carton at the site of adhesion, such that any attempts to open the carton will cause carton damage. Slow curing cold glue is messy, as the glue tends to squeeze out from between carton flaps and onto the packaging, or onto the machinery or personnel. Hot melt or cold glue closers are commercially available from various entities, including the M120, SSM, and LSM available from Meyercord Revenue, Inc.

[0007] Furthermore, many jurisdictions have enacted expensive fines for failure to properly attach stamps, or for attaching only a portion of a stamp to packs. Therefore, many distributors desire to inspect stamped packages to ensure that the stamps have been fully and properly applied. Such inspection requires re-opening a package that has been sealed, potentially damaging the carton and/or the carton contents, as well as requiring another sealing step.

[0008] Therefore, it would be desirable to provide a system for applying a stamp to packs that would overcome the aforementioned and other disadvantages.

SUMMARY OF THE INVENTION

[0009] One aspect of the present invention provides a system for applying a stamp to packs within a carton including a carton opening system, a pack stamping system, and a carton sealing system. The carton sealing system includes at least one strip dispenser configured to selectively unwind at least one roll of tacky polymer strips disposed upon a backing roll, a strip separator to remove the tacky polymer strips from the backing roll and place the removed tacky polymer strips on a lower flap of the carton, and a flap closer to place a lower flap on top of the lower flap after placing the tacky polymer strip.

[0010] A method of applying at least one stamp to at least one pack within a carton includes opening at least one carton, stamping at least one stamp onto at least one pack within the carton, and applying at least one tacky polymer strip to a lower flap of the carton. The method further includes folding an upper flap of the carton to adhere to the applied tacky polymer strip.

[0011] A system for applying at least one stamp to at least one pack within a carton includes means for opening at least one carton, means for stamping at least one stamp onto at least one pack within the carton, and means for applying at least one tacky polymer strip to a lower flap of the carton. The system further includes means for folding an upper flap of the carton to adhere to the applied tacky polymer strip.

[0012] The foregoing and other features and advantages of the invention will become further apparent from the following detailed description of the presently preferred embodiments, read in conjunction with the accompanying drawings. The detailed description and drawings are merely illustrative of the invention, rather than limiting the scope of the invention being defined by the appended claims and equivalents thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1A illustrates one embodiment of a system for applying a stamp to a pack within a carton in accordance with one embodiment of the invention;

[0014] FIG. 1B illustrates one embodiment of a system for applying a stamp to a pack within a carton, in accordance with one embodiment of the invention;

[0015] FIG. 2 illustrates one embodiment of a strip dispenser, in accordance with one embodiment of the invention;

[0016] FIG. 3 is a flowchart illustrating a method for applying a stamp to packs within a carton, in accordance with another aspect of the invention and

[0017] FIG. 4 is a flowchart illustrating a method for applying a stamp to packs within a carton, in accordance with another aspect of the invention.
DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

[0018] FIGS. 1A and 1B illustrate embodiments of a system 100 for applying a stamp to a pack within a carton in accordance with one aspect of the invention. System 100 includes a carton opening system 110, pack stamping system 120 and a carton sealing system 130. FIG. 1A illustrates the system 100 implemented with a conveyor drum 105, such as the system disclosed in U.S. patent application Ser. No. ______ (20108 1231/8), the entirety of which is incorporated herein by reference. FIG. 1B illustrates system 100 implemented in a linear conveyor system 106, such as the system disclosed in United States Patent Application 2004/0084130, the entirety of which is incorporated herein by reference.

[0019] Carton opening system 110 includes an auxiliary plow in one embodiment. One example of an auxiliary plow is disclosed in United States Patent Application 2004/0084130. In another embodiment, carton opening system includes at least one suction device, such as the devices disclosed in U.S. Patent Application 60/782,0005 (20108 1231/8).

[0020] Pack stamping system 120 includes a removable roll of stamps, such as tax stamps. In one embodiment, the stamps are included in a stamp cartridge, such as the cartridge disclosed in U.S. Patent Application 60/782,006 (20109 1231/9), the entirety of which is disclosed herein. Alternatively, pack stamping system 120 includes a stamping device such as the device disclosed in United States Patent Application 2004/0084130. Other stamping devices such as fixed hot wax stamping devices, adhesive application devices and the like can also be used in accordance with the teachings of this disclosure.

[0021] Carton sealing system 130 includes a strip dispenser 240 (see FIG. 2) to selectively unwind at least one roll of tacky polymer strips disposed upon a backing roll, a strip separator to remove the tacky polymer strips from the backing roll and place the removed tacky polymer strips on a lower flap of the carton, and a flap closer to place an upper flap on top of the lower flap after placing the tacky polymer strip.

[0022] FIG. 2 illustrates one embodiment of a strip dispenser 240 for use within carton sealing system 130, in accordance with one aspect of the invention. Strip dispenser 240 includes strip separator 250, payout roll 260 and take up roll 270. Payout roll 260 includes a roll of tacky polymer strips disposed upon a backing paper. Take up roll 270 receives the backing paper after the tacky polymer strip has been removed from the backing paper. Strip dispenser is powered by a power source (not shown) and controlled by a controller, such as a PLC (not shown). Driving rolls 280 provide the force to rotate payout roll 260 and take up roll 270 as well as to properly position the backing paper with tacky polymer strips for placement onto a flap of the carton. Strip separators are known in the art, and any appropriate device can be used to separate the tacky polymer strip from the backing paper.

[0023] The carton sealing system can include an auxiliary mechanical flap closer, such as the flap closer disclosed in United States Patent Application 2004/0084130. Alternatively, the flap closer can be a device that reverses the motion of suction devices, as disclosed in U.S. Patent Application 60/782,0005 (20108 1231/8).

[0024] FIG. 3 illustrates one embodiment of a method 300 for applying at least one stamp to at least one pack within a carton, in accordance with one aspect of the invention. Method 300 begins by opening at least one carton at step 310.

[0025] Opening the carton at step 310 can be a mechanical operation, such as with a plow, or can be driven by suction devices. After opening the carton, at least one stamp is stamped onto at least one pack within the carton at step 320.

[0026] After applying the stamp/s, method 300 applies at least one tacky polymer strip to a lower flap of the carton at step 330. The tacky polymer strip is dispensed in one strip in one embodiment, and in multiple strips in another embodiment. The tacky polymer can be any substance with adhesive properties. For example, the tacky polymer strip can be GlueDots™ distributed by Ellsworth Adhesives, Inc.

[0027] The amount of tacky polymer applied is a design decision, affected by cost of the tacky polymer, and desired performance. For example, less tacky polymer can be applied for applications desiring a lower degree of adhesion, while additional tacky polymer can be applied for applications desiring higher adhesion. Additionally, the tacky polymer can be applied in fewer but longer strips, in more but shorter strips, or in a single strip.

[0028] After applying the tacky polymer strip to the lower flap, the upper flap of the carton is folded to adhere to the applied tacky polymer strip at step 340. The upper flap can be folded using a mechanical device, plow, or by reversing a linkage connected to suction devices.

[0029] FIG. 4 illustrates one embodiment of a method 400 for applying at least one stamp to at least one pack within a carton, in accordance with one aspect of the invention. Method 400 begins after step 340, and starts at step 410 by lifting the folded upper flap to separate the upper flap from the lower flap. The folded upper flap can be lifted manually, or with mechanical assistance similar to step 310. After lifting the upper flap, the lower flap is lifted at step 420. The lower flap can be lifted manually, or with mechanical assistance similar to step 310.

[0030] Having opened the carton by lifting the upper and lower flaps in steps 410-420, the stamped stamps are inspected at step 430. The inspection can be manual, or via at least one sensor. For example, the sensors can be electric eyes, camera lenses or the like. The inspection verifies that the appropriate stamps have been applied, that the appropriate stamps have been correctly applied, and that each pack has been stamped, for example.

[0031] After inspecting the stamps, the lower flap is lowered at step 440 prior to folding the upper flap of the carton to re-adhere to the applied tacky polymer strip at step 450. The motions of steps 440-450 can be manual or mechanical.

[0032] It will be appreciated that the steps of method 400 would result in undesired reconfiguration of the carton, were the carton sealed with hot melt or cold glue.

[0033] It is important to note that the figures and description illustrate specific applications and embodiments of the present invention, and is not intended to limit the scope of the present disclosure or claims to that which is presented herein. Upon reading the specification and reviewing the drawings hereof, it will become immediately obvious to
those skilled in the art that myriad other embodiments of the present invention are possible, and that such embodiments are contemplated and fall within the scope of the presently claimed invention.

While the embodiments of the invention disclosed herein are presently considered to be preferred, various changes and modifications can be made without departing from the spirit and scope of the invention. The scope of the invention is indicated in the appended claims, and all changes that come within the meaning and range of equivalents are intended to be embraced therein.

1. A system for applying a stamp to a pack within a carton, the system comprising:
   a carton opening system;
   a pack stamping system; and
   a carton sealing system including at least one strip dispenser to selectively unwind at least one roll of tacky polymer strips disposed upon a backing roll, a strip separator to remove the tacky polymer strips from the backing roll and place the removed tacky polymer strips on a lower flap of the carton, and a flap closer to place a lower flap on top of the lower flap after placing the tacky polymer strip.

2. The system of claim 1 wherein the carton opening system comprises an auxiliary plow.

3. The system of claim 1 wherein the carton opening system comprises a first suction device and a second suction device.

4. The system of claim 1 wherein the pack stamping system includes a stamp cartridge.

5. The system of claim 1 further comprising a payout roll supporting the roll of tacky polymer strips disposed on the backing roll and a takeup roll receiving the backing paper after removing the tacky polymer strips.

6. A method of applying at least one stamp to at least one pack within a carton, the method comprising:
   opening at least one carton;
   stamping at least one stamp onto at least one pack within the carton;
   applying at least one tacky polymer strip to a lower flap of the carton; and
   folding an upper flap of the carton to adhere to the applied tacky polymer strip.

7. The method of claim 6 further comprising:
   lifting the folded upper flap to separate the upper flap from the lower flap;
   lifting the lower flap;
   inspecting the stamped stamps;
   lowering the lower flap; and
   folding an upper flap of the carton to re-adhere to the applied tacky polymer strip.

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