

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
12 March 2009 (12.03.2009)

PCT

(10) International Publication Number
WO 2009/031854 A2

(51) International Patent Classification:
B41M 1/40 (2006.01) *B65D 51/28* (2006.01)

(21) International Application Number:
PCT/KR2008/005258

(22) International Filing Date:
5 September 2008 (05.09.2008)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2007-0091282 5 September 2007 (05.09.2007) KR
10-2007-0103309 9 October 2007 (09.10.2007) KR

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

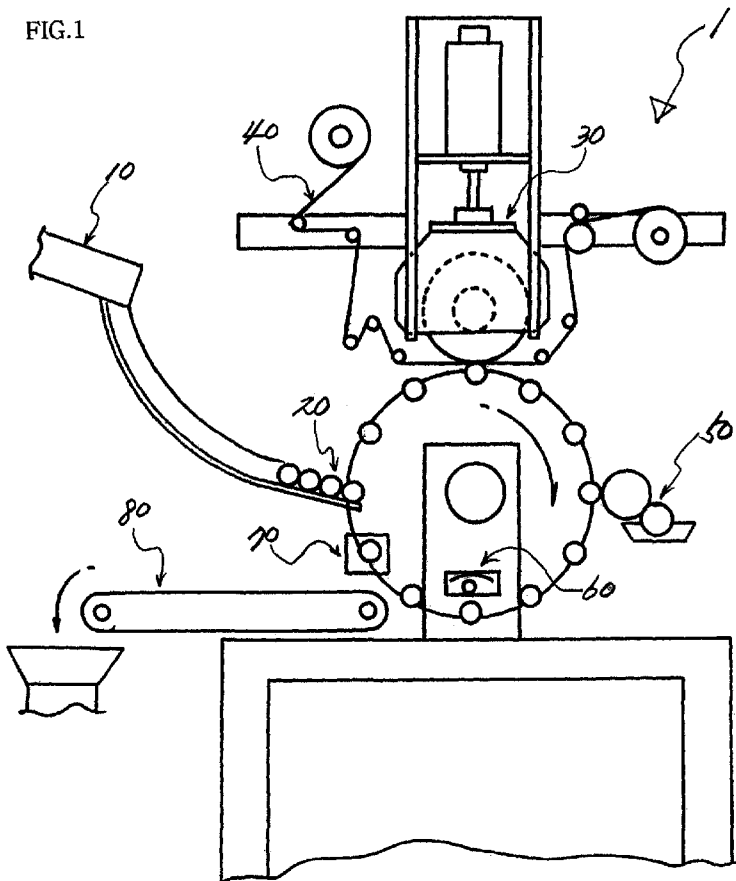
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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Published:
— without international search report and to be republished upon receipt of that report

(54) Title: THERMAL TRANSFER PRINTING METHOD

FIG.1



(57) Abstract: The bottle cap consists of components of more than one. The bottle cap consists of system designed to be operated when touched or opened. The side of above bottle cap is printed through the thermal transfer printing method and coating process. This thermal transfer printing method is designed to get the printed side damaged either when the bottle cap is touched or opened.

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TITLE

THERMAL TRANSFER PRINTING METHOD

TECHNICAL FIELD

5 [1] This invention, thermal transfer printing method, is used for printing the bottle cap. For the existing printing technologies, top or side of bottle cap is printed using the offset or screen printing method.

Background Technologies

10 [2] Either the heat transfer printing or thermal transfer printing method, existing printing method, is commonly used when printing the side of bottle cap. Also, the film type printing sheet or paper is attached to the side or top of bottle cap using the adhesive.

15 Detailed Descriptions of Invention

Technical Problems

[3] The problem "Additional adhesive must be coated on the printing sheet or paper" is found in the existing printing technologies. These existing printing technologies show the excellent feature of remaining
20 the opening sign after the bottle cap is opened if the side of bottle cap

is adhered, so these technologies prevent the fabrication and falsification. However, the problem "Adhesive is required" is found in the existing printing technologies. Also, these existing printing technologies show the defect in terms of design.

5 [4] Also, the existing heat transfer printing or thermal transfer printing process is conducted focused on the part excluding the skirt, so only the printed side looks good, but the effect of preventing the fabrication and falsification may not be expected.

10 How to Technically Solve the Problems

[5] This invention, intended to solve the problems found in the existing thermal transfer printing technologies, is applied when printing the skirt, intended to prevent the fabrication and falsification of bottle cap, and side of bottle cap.

15 [6] Also, above existing heat transfer printing or thermal transfer printing technologies are applied when printing the side or curved surface. The coating process is required for protecting the surface printed using the existing heat transfer printing or thermal transfer printing technologies.

20 [7] The UV Coating is recommended for above coating.

Expected Effects

[8] This invention is designed to get the printed surface damaged when the bottle cap is opened, so this invention enables its user to check whether the bottle cap is opened immediately after opening the bottle cap.

BRIEF DESCRIPTION OF THE DRAWINGS

[9] The figure 1 shows how the bottle cap is printed using the thermal transfer printing method.

[10] The figure 2 shows the side of bottle cap printed using the thermal transfer printing method.

[11] The figure 3 shows that the bottle cap printed using the thermal transfer method is combined into the container.

BEST MODE FOR CARRYING OUT THE INVENTION

[12] The operation examples of this invention recommended according to enclosed drawings or figures are as follows:

[13] The thermal transfer printing method, this invention, is used when printing the side of bottle cap including the side forming a part of

skirt of bottle cap (100). This invention enables its user to check whether the bottle cap is already opened because the skirt and side, printed using the thermal transfer printing method, are damaged when the bottle cap (100) is opened.

5 [14] The coating process is required after above thermal transfer printing. However, UV Coating is recommended as the coating method.

[15] Also, above bottle cap (100) forms a part of skirt. It is recommended that the top cap (101) forms a part of skirt or bottle
10 caps (100) of more than one are assembled in the cap body (102) for the complete set of bottle cap. If above bottle cap is opened after the side of bottle cap (100) assembled through above assembling process is printed using the thermal transfer printing method, surface printed using the thermal transfer printing method is damaged, so its user may
15 check and see whether the bottle cap is opened.

[16] The figure 1 shows whole assembling and printing process of this invention. The bottle caps (100) are supplied to the wheel type assembling line along the chute hole through the bottle cap supply section (20) after being sorted by the sorting machine (10). The
20 bottle caps (100) move to the direction of thermal transfer printing

section (30) according to a series of process after being supplied to the assembling line and then the role type thermal transfer printing film (40) passes between bottle caps (100) and thermal transfer printing section (30).

5 [17] The printed surface is formed after the surface printed on above thermal transfer printing film (40) is compressed on the designated surface of bottle cap (100) through the thermal treatment process. The top of printed surface is coated at asked thickness in the coating section (50) after the bottle caps (100) pass above process.

10 [18] Also, the bottle caps (100) coated in above coating section (50) drop to the conveyor (80) by the operation of bottle cap discharging section (70) after being dried in the drying section (60).

[19] As shown in the figure 2, it is recommended that the printing surface is formed focused on the area where the top cap (101) and cap
15 body (102) are jointed. Also, it is recommended that the printing surface is formed focused on the cap bodies (102) get together or surface of cap body (103) is printed.

[20] If the top cap (101) is opened after the bottle cap (100) is completely printed by the thermal transfer printing machine, surface
20 (103) printed using the thermal transfer printing method will be

partially damaged and opened.

[21] The figure 3 shows how the bottle cap (100) is assembled in the container (200). If you open the top cap (101) under above condition, top cap (101) will be separated from the cap body (102) when the
5 perforated section (104) is damaged.

[22] Above figure 3 shows that the bottle cap is assembled in the container in detail. This figure shows that the secondary material is contained in the storage space (105) of bottle cap (100). The surface (103), printed using the thermal transfer printing method, prevents the
10 fabrication and falsification. Above figure 3 shows that the perforated side (104) is damaged and opened when the top cap (101) is opened and then the secondary material contained in the storage space (105) is dropped and mixed in a space (201) of container (200).

15 INDUSTRIAL APPLICABILITY

[23] This invention is used when finishing the container of beverage or liquor. If the bottle cap is printed using the thermal transfer printing method, marketability will be improved and fabrication and falsification may be prevented.

CLAIMS

[1] The bottle cap consisting of components of more than one is designed to be opened either when touched or opened. This invention, thermal transfer printing method, is characterized by its excellent feature enabling the side, printed using the thermal transfer printing method, is damaged in a part when above bottle cap is touched or opened.

[2] The bottle cap consisting of top cap and cap body is designed to be opened either when touched or opened. This thermal transfer printing method is characterized by its wide printing range covering the skirt, where the top cap and cap body are jointed, and cap body.

[3] The bottle cap consists of components of more than one. The system is designed to let the secondary material, contained in the bottle cap, drop and mix in the container when the bottle cap is touched or opened. This thermal transfer printing method is characterized by its excellent feature to get the surface printed using the thermal transfer printing method damaged when above bottle cap is touched or opened.

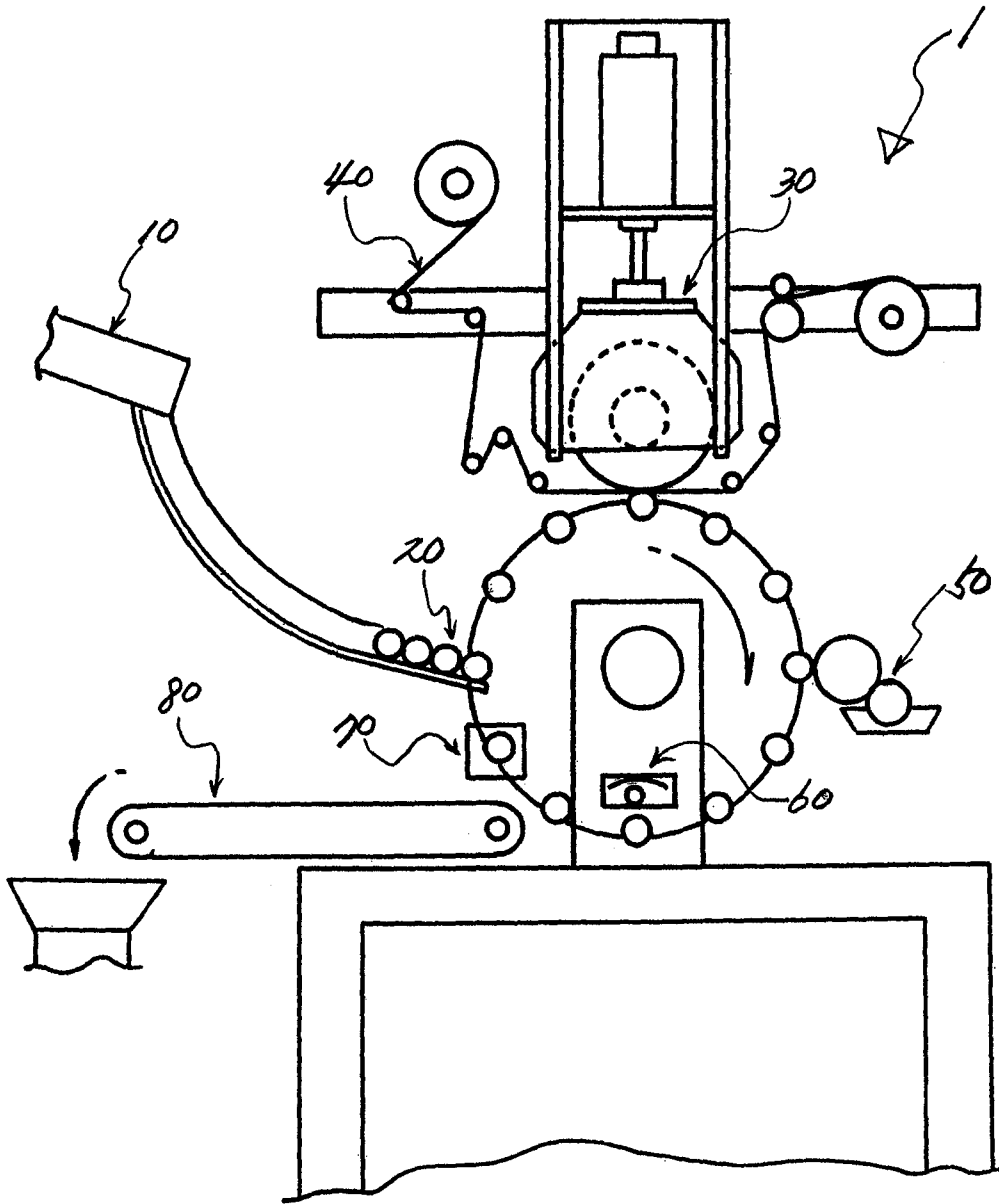
[4] The bottle cap consists of components of more than one. The bottle cap consists of system designed to be opened either when

touched or opened. The side of bottle cap is printed through the thermal transfer printing method and coating process. This thermal transfer printing method is characterized by its excellent feature designed to get the surface, printed using the thermal transfer printing

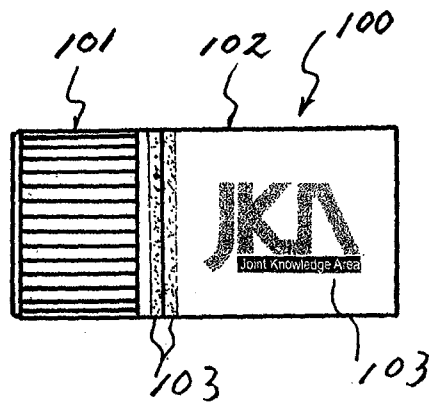
5 method, damaged when the bottle cap is touched or opened.

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[FIG.1]



[FIG.2]



[FIG.3]

