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54. TÍTULO TAPA TIPO CORONA HECHA CON LÁMINA
DE BAJO CALIBRE

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DOMICILIO LIMA, PERÚ

74. APODERADO JUAN CARLOS ACIBE RESTEPO

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PCT

ENTRADA EN FASE NACIONAL

①

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☒ Patente de Invención

☐ Patente de Modelo de Utilidad

☒ Capítulo I

☐ Capítulo II

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SOLICITANTE
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Nombre: PACHAGUAS PRODUCTS DEL
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Dirección: AVENIDA MINERALES 349, LIMA, 1, PERU

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Lugar de Constitución: PERU

Teléfono:

Fax:

E-mail:

IDENTIFICACIÓN

C.C.

☐

NT

☐

C.E.

☐

Otro

☐

Cual

Número

③

REPRESENTANTE
O APODERADO

Nombre: JUAN CARLOS URIBE RESTREPO

Dirección: CALLE 93B No. 12 - 49, Piso 4o.

Teléfono: 601 9660

Fax: 611 4209

E-mail: tum@tumnet.com

IDENTIFICACIÓN

C.C.

☒

NT

☐

C.E.

☐

Otro

☐

Cual

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INVENTOR (ES)
(72)

Nombre: ALFREDO MESPINO CABALLERO

Dirección: CALLE BUEN RETIRO 111, DPTO. 102, URB. CHACAPILLA, LIMA 41, PERU

Nacionalidad o Domicilio: PERU

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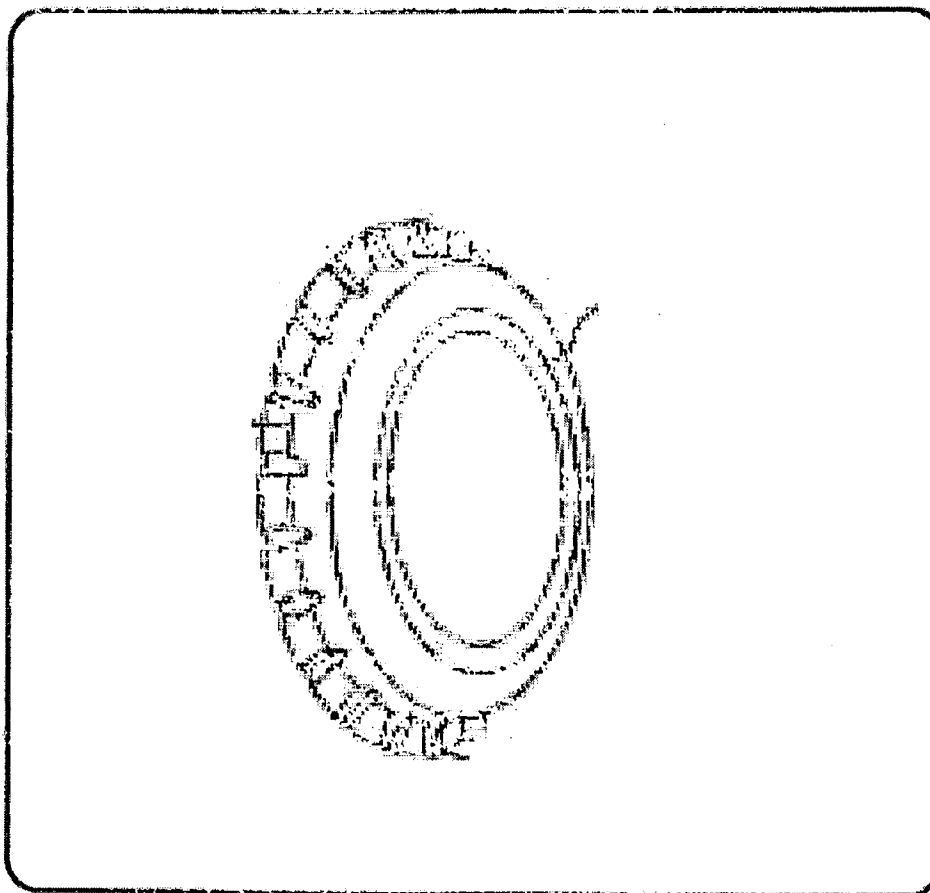
10

ANEXOS

- ☒ Comprobante de pago de la tasa de presentación de la solicitud.
- ☐ Documento que acredite la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☐ Poderes, si fuere el caso.
- ☐ Documento de cesión del inventor al solicitante o a su sucesor.
- ☐ Declaraciones
- ☒ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☐ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA).
- ☐ Traducción del examen preliminar internacional efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de cesión.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ De ser el caso, certificado de depósito del material biológico.
- ☒ Arie final 12x12.
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su sucesor, relativa a la parte o totalidad de la invención de esta solicitud.
- ☒ De ser el caso, modificaciones efectuadas a la solicitud internacional.
- ☐ Otros

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FIGURA CARACTERÍSTICA:



12

Solicitud la concesión de la patente

NOMBRE: JUAN CARLOS URIBE RESTREPO

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***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
TRIANA URIBE & MICHELSEN CONSIGNACION		BANCO DE BOGOTA	062754387	175149144	02/02/2010	2,162,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	554,000.00
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RESPONSABLE :

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4

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***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
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- (71) Applicant (for CA, MX only): **CROWN PACKAGING TECHNOLOGY, INC. [US/US]; 11535 S. Central Avenue, Alsip, IL 60803-2593 (US).**
- (71) Applicant (for all designated States except CA, MX, US): **PACKAGING PRODUCTOS DEL PERU S.A. [PE/PE]; Av. Minerales 249, Lima, 1 (PE).**
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **MERINO CA-BALLERO, Alfredo [PE/PE]; Calle Juan Pizaro 111, Dpto. 102, Urb. Chacarilla, Lima, 41 (PE).**
- (74) Agents: **FULLMER, Harold, H. et al.; Woodcock Washburn LLP, One Centre, 12th Floor, 2929 Arch Street, Philadelphia, PA 19104-2351 (US).**

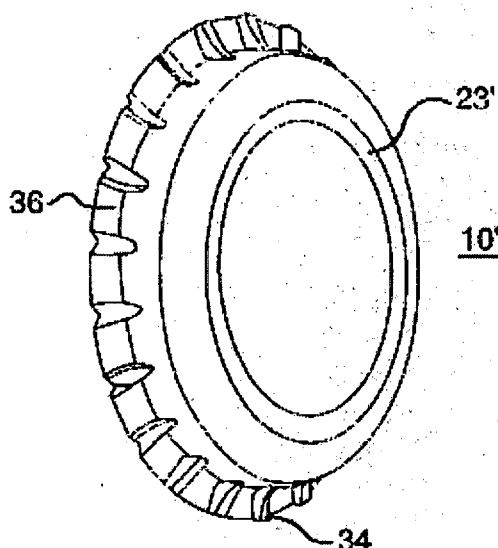
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(54) Title: **LOW GAUGE CROWN CAP**

FIG. 3C



(57) Abstract: A crown cap that may use less steel than a conventional crown cap is disclosed. A crown cap comprises a shell formed of an increased hardness, including a peripheral skirt, a round panel integrally formed with the skirt, the panel including one to three radially symmetric grooves formed therein, each groove spaced apart from a contact portion of the panel that is adapted for contacting the rim of a bottle upon application of the crown cap onto the bottle, and a liner located on the underside of the panel. The radially symmetric grooves may be circular.

LOW GAUGE CROWN CAP

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims priority to Peru Patent Application No. 000728-2007/OIN, filed on July 5, 2007.

TECHNICAL FIELD

[0002] The technology relates to closures for containers, and more particularly to a fluted crown cap for sealing a bottle or container opening.

BACKGROUND

[0003] The bottle cap was first patented and produced in the 1890's. The basic metal crown cap has not conceptually changed from that time. Conventional crown caps include a circular top, a circular skirt depending downwardly from a periphery of the top, and a downwardly and radially outwardly extending flange extending from a periphery of the skirt. The flange is fluted or serrated, and may be configured for either pry-off or twist off removal. Upon application of the cap to a bottle, the flutes are deformed to affix the cap to a bead or threads on the bottle's finish, and a thermoformed liner on the underside of the cap is pressed against the bottle's rim to enhance sealing.

[0004] The majority of crown caps used in the U.S. are twist off types that operate on new bottles that are not recycled. The majority of crown caps in many countries, however, are pry-off types that often operate on recycled bottles.

[0005] There is a general need for improved and lower weight crown caps.

RESÚMEN EN INGLÉS

SUMMARY

[0006] A lightweight, crimp-type crown cap for application to a glass beverage bottle, comprises a shell and a liner. The shell is formed of a material comprising steel having an average hardness of greater than 62 on the 30T scale. The shell includes a panel and a peripheral skirt having flutes downwardly depending therefrom, such that the flutes are capable of being crimped to affix the crown cap to a bottle. The panel is integrally formed with the skirt and includes structural features formed as recesses therein. The liner is located on the underside of the panel, and includes at least one groove.

[0007] Preferably, the structural features are one to three circular grooves, and may also be a single groove, at least one of a star, a cross, one or more circular grooves, and dimples. The grooves may be spaced apart from a contact portion of the panel such that the contact portion adapted for contacting the rim of a bottle upon application of the crown cap onto the bottle. The outermost groove may be aligned to the rim of a conventional bottle upon application of the crown cap to the bottle. Preferably the structure is recessed relative to the panel.

[0008] Preferably, the shell has a hardness of greater than about 65, more preferably greater than about 68, more preferably, greater than about 71, and most preferably approximately 73, and may be formed of double reduced plate.

[0009] A combination bottle and crown cap is also provided.

[0010] A method of crimping a crown cap onto a glass bottle, comprising the steps of providing a crown cap as described above, positioning the crown cap onto a rim of a bottle, and moving a crimping tool downwardly relative to the crown cap such that the crimping tool initially contacts the crown cap only at the flutes approximately at the outer edge thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Figure 1 is a partial cutaway side view depicting a crown cap embodying aspects of the present invention;

[0012] Figure 2A is a top plan view of the crown cap depicted in Figure 1;

[0013] Figure 2B is a top plan view of another embodiment of a crown cap having reinforcement in the shape of a 5 sided star;

[0014] Figure 2C is a top plan view of another embodiment of a crown cap having reinforcement in the shape of a 6 sided star;

DESCRIPCIÓN EN INGLÉS

[0015] Figure 2D is a top plan view of another embodiment of a crown cap having reinforcement in the shape of a two-line cross;

[0016] Figure 2E is a top plan view of another embodiment of a crown cap having reinforcement in the shape of a four-line cross;

[0017] Figure 2F is a top plan view of another embodiment of a crown cap having reinforcement in the shape of plural dimples;

[0018] Figure 3A is a partial cutaway side view depicting an embodiment of a crown cap embodying aspects of the present invention;

[0019] Figure 3B is a top plan view of the crown cap depicted in Figure 3A;

[0020] Figure 3C is a perspective view of the embodiment of Figure 3A;

[0021] Figure 4 is a cross sectional view of the crown cap depicted in Figure 1B crimped onto a bottle.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0022] Referring to Figures 1 and 2A to illustrate the structure and function of an embodiment of the present invention, a crown cap 10a includes a shell 12a and a liner 14. Shell 12a includes a circular panel 20a, a skirt 30, and a flange 32. Skirt 30 downwardly extends from a periphery of panel 20a. Flange 32 obliquely extends from skirt 30. Alternating flutes 34 and lands 36 are formed on a circumferential portion of skirt 30. Shell 12a, and other shells shown in the figures, is shown as a pry-off type that is opened with a lever. The present invention also encompasses a twist-off type (not shown in the figures) that is opened by twisting, as will be understood by persons familiar with crown cap technology.

[0023] Panel 20a has two circular grooves 22 and 23 that are concentric about a vertical center of cap 10a. Outside of the outermost groove 23, panel 20a includes a contact portion 24a that is adapted for contacting the rim of a bottle upon application of the crown cap 10a onto the bottle. Preferably, in its as-manufactured state as shown in Figures 1 and 2A, contact portion 24a is relatively flat or has approximately the same curvature as most of the remainder of the panel 20a.

[0024] Each of grooves 22 and 23 preferably has an inwardly curved profile in cross section, as best shown in Figure 1, such that they function as ribs or structural reinforcements that, the inventors surmise, help to stiffen panel 20a against deflection or deformation.

[0025] The present invention also encompasses other structural features in the panel, such as stars, crosses, dimples, and the like. For example, Figures 2B through 2F illustrate crowns 10b through 10f for examples of other structural features that may be employed. Figures 2B and 2C illustrate a five sided star 40a and a six sided star 40b, and Figures 2D and 2E illustrate a cross 42a formed by two lines and a cross 42b formed by four lines. Figure 2F illustrates reinforcements formed by dimples 44. Preferably, the reinforcements, such as stars 40a and 40b and crosses 42a and 42b, are radially symmetrical. The present invention encompasses structure that is not symmetrical, such as interlocking grooves (now shown in the figures). Preferably, the structure (such as grooves, stars, crosses, dimples, and the like) formed in the panels is recessed (that is, protrude downwardly) relative to the remainder of the panel. The quantity, shape, and disposition of the grooves, stars, crosses, dimples and other structure may be determined by the specific performance requirements of the crown cap, as well as its thickness, strength, ductility, intended use, and the like, which will be apparent to persons familiar with crown cap technology in light of the present disclosure.

[0026] Preferably, the outermost rib 23 of first embodiment 10a and the structures 40a, 40b, 42a, 42b, and 44 are configured to provide corresponding contact portions 24a through 24f, each of which preferably is relatively flat or has approximately the same curvature as most of the remainder of the panel 20a through 20f. In each of the figures, the contact portions 24 are located outboard of the structure 23, 40a, 40b, 42a, 42b, or 44 to provide a uniform surface (that is substantially unbeaded) on which liner 14 and the bottle rim is aligned with such that liner 14 is located between contact portion 24a (or 24b through 24f) and preferably deformed or squeezed in a gap therebetween. Accordingly, the shape of the contact portions 24a through 24f preferably does not significantly change during the application process (including crimping) such that its shape before crimping is substantially the same as after crimping. The present invention is not limited to this configuration of any of the contact portions 24, but rather the scope of the invention is defined in the claims.

[0027] Skirt 30 smoothly merges into downwardly and radially outwardly extending flange 32. The skirt 30 and flange 32 are preferably adapted to be crimped onto the neck of a bottle for sealing. The flange 32 is divided into undulating, repeating portions that define the flutes 34 and lands 36. Preferably, the repeating portions are circumferentially evenly spaced apart such that each flute 34 is identical to all other flutes 34 around the circumference of the crown cap 10, and each land 36 is identical to all other lands 36 around the circumference of the

crown cap 10. While the crown cap 10 is shown as having twenty-one flutes 34 and lands 36, it should be understood that the crown cap 10 may include any number of flutes 34 and lands 36.

[0028] Referring to Figures 3A, 3B, and 3C to illustrate a second embodiment of the present invention, a crown cap 10' includes a shell 12' and a liner 14. Shell 12' includes a circular panel 20', a skirt 30, and a flange 32. Skirt 30 and flange 32 are as described above with respect to first cap embodiment 10a.

[0029] Panel 20' has a single circular groove 23' that has a center on the vertical center of cap 10'. Groove 23' has a greater diameter than does groove 23 of the first embodiment (for a given crown diameter) such that groove 23' is located over the bottle rim when applied, as explained more fully below. The embodiments of crown cap 10a is illustrated with two grooves 22 and 23 and crown cap 10' is illustrated with one groove 23'. The present invention also encompasses any number of grooves, especially between one and three.

[0030] Liner 14 will be described with respect to first embodiment crown cap 10a, and the present description of liner 14 applies equally to liner 14 shown with respect to embodiment crown cap 10'. Liner 14 is disposed on the underside of panel 20a. After crimping, liner 14 contacts and seals against the rim of a bottle. Liner 14 as illustrated in Figure 1 is a conventional, thermoformed, dual lip or bead liner that is available from SACMI IMOLA, as will be understood by persons familiar with crown cap technology. The present invention is not limited to the choice or presence of a liner, and encompasses other liner configurations, such as a conventional, single bead liner (not shown in the figures), as well as other materials, such as PVC and conventional PVC substitutes. Liner 14 includes an inboard and outboard lip for contact with an inboard and outboard portion of the bottle. The bead of a single bead liner preferably engages the inboard portion or corner region of the bottle rim.

[0031] After any one of shells 12a through 12f (which are generally referred to by reference numeral 12) is formed and liner 14 is pressed into its underside, shell 12 is placed on a bottle finish such that the contact portion 24 is aligned with at least a portion of the rim of the bottle. Flutes 34 are crimped or deformed about features of the bottle finish to affix crown cap 10 to the bottle. Accordingly, upon crimping, liner 14 contacts bottle rim and seals in a conventional manner.

[0032] Referring to Figure 4 to describe the application of second embodiment shell 12' to a bottle 50 having a rim 52 and a bead 54, after liner 14 is pressed into its underside, shell 12' is placed on a bottle finish such that groove 23' is located directly over the bottle rim 52. Upon

crimping of flutes 34 relative to head 54, liner 14 is squeezed between and deformed by the underside of groove 23' and rim 52. The crimping process for applying any of the shells described herein to a bottle (for either pry-off or twist-off types of shells) preferably is performed by a ring-like crimping tool that contacts the outer edge or edge region of the flange 32, thereby avoiding or diminished scuffing or marring of flange 32 and diminishing force applied to head 54.

[0033] The present invention also encompasses structure, such as single or multiple grooves, that is located near or aligned with the inboard rim or edge of a bottle, such as bottle 50. In such a configuration, the underside of the structure may aid in compressing or deforming the liner against the inboard edge or rim of the bottle (not shown in the Figures).

[0034] The crown caps 10a through 10f and 10' (referred to generally by reference numeral 10) preferably are formed with steel of increased hardness compared with conventional crown caps presently in commercial production. For example, conventional crown caps are often formed of single reduced, T4, tinplate having a thickness of from 0.21mm to 0.23mm. Such tinplate has an average hardness (that is, the reported hardness value regardless of +/- variations) of approximately 61 on a 30T hardness scale, in accordance with ASTM 623. Crown caps 10 described herein may be made thinner and lighter weight compared with the prior art, for example, crown caps 10 may be formed of a material having a thickness of about 0.16mm to 0.18mm that have the same or roughly equal performance as conventional, thicker caps. These decreases in metal usage are more easily achieved when the structure of crown caps 10 are made with steel having increased hardness. For example, the inventor has demonstrated the effectiveness of low gauge crowns having grooves using DR8 (according to ASTM 623) or DR550 (according to EN 10203). Optionally, the inventor surmises that other materials may be used, such as single reduced tinplate or like material having enhance tempering, tin-free steel having similar properties as those described herein, and the like.

[0035] The crown caps 10 preferably have an average hardness of greater than 62 on the 30T scale (conforming to ASTM 623), more preferably greater than about 65, more preferably greater than about 68, more preferably greater than about 71. The embodiments shown in Figure 1 and Figure 3A were demonstrated to be effective using steel having a hardness of 73. The upper limit of hardness is set by the maximum stress acceptable to the glass bottle during the crimping process or the spring back (which may tend to urge the crimped flanges toward an uncrimped state) associated with harder plate.

[0036] The crown caps 10 may be formed with conventional press equipment, with only minor changes to parts of the tooling to form the structure (such as the grooves, crosses, stars, and dimples). And crown caps 10 may be crimped with conventional equipment, only modified to have a smaller throat compared with existing, conventional crimpers.

[0037] Because hardness has a relationship to strength as reflected in the yield point, the aspect of the hardness of the crown may be expressed in yield point on a corresponding scale. For example, DR8 or DR550 tinplate may has a yield point (in a tensile test) of 550MPa. The inventor believes that the most advantageous crown cap has a combination of one or more of the structured described herein and harder plate as described herein. The present invention, however, is stated in the claims and the present invention encompasses crown caps that do not have all of the structure, materials, and/or advantages in this specification.

[0038] According to this description, commercially acceptable crown caps formed according to the present disclosure can be commercially made with up to 25 percent less steel compared with many conventional crown caps, which has corresponding advantages in carbon emissions. The savings in steel weight are approximately proportionate to the reduction in metal thickness. Further, even though energy required to cool an individual crown is tiny, the energy required to cool the total number of crowns produced each year (approximately 45 billion in North America and approximately 300 billion throughout the world), and the corresponding reduction in that energy, is significant.

[0039] The foregoing description is provided for the purpose of explanation and is not to be construed as limiting the invention. While the invention has been described with reference to preferred embodiments or preferred methods, it is understood that the words which have been used herein are words of description and illustration, rather than words of limitation. Furthermore, although the invention has been described herein with reference to particular structure, methods, and embodiments, the invention is not intended to be limited to the particulars disclosed herein, as the invention extends to all structures, methods and uses that are within the scope of the appended claims. Those skilled in the relevant art, having the benefit of the teachings of this specification, may effect numerous modifications to the invention as described herein, and changes may be made without departing from the scope and spirit of the invention as defined by the appended claims. Furthermore, any features of one described embodiment can be applicable to the other embodiments described herein.

REIVINDICACIONES EN INGLÉS

What is Claimed:

1. A lightweight, crimp-type crown cap for application to a glass beverage bottle, comprising:
a shell formed of a material comprising steel having an average hardness of greater than 62 on the 30T scale, including:
a peripheral skirt having flutes downwardly depending therefrom, the flutes are capable of being crimped to affix the crown cap to a bottle;
a round panel integrally formed with the skirt, the panel including structural features formed as recesses therein; and
a liner located on the underside of the panel.
2. The crown cap of claim 1, wherein the structural features are one to three circular grooves.
3. The crown cap of claim 2, wherein each groove is spaced apart from a contact portion of the panel that is adapted for contacting the rim of a bottle upon application of the crown cap onto the bottle.
4. The crown cap of claim 2, wherein the structural features includes a circular groove that has its center approximately at the longitudinal center of the panel.
5. The crown cap of claim 4, wherein the groove has a diameter to align it to the rim of a conventional bottle upon application of the crown cap to the bottle.
6. The crown cap of claim 2, wherein the grooves are recessed relative to the panel.
7. The crown cap of claim 2, wherein the shell has a hardness of greater than about 65.
8. The crown cap of claim 2, wherein the shell has a hardness of greater than about 68.
9. The crown cap of claim 1, wherein the shell has a hardness of greater than about 71.
10. The crown cap of claim 1, wherein the shell has a hardness of approximately 73.

11. The crown cap of claim 1 wherein the shell is formed of double reduced plate.
12. The crown cap of claim 1, wherein the structural features include at least one of a star, a cross, one or more circular grooves, and dimples.
13. The crown cap of claim 1, wherein the liner includes one or more beads that are compressible to enhance sealing.
14. A bottle and crown cap combination, comprising:
 - a bottle having a body and a neck extending up from the body, the top portion of the neck having a finish;
 - a crown shell formed of material comprising steel having an average hardness of greater than 62 on the 30T scale, including:
 - a peripheral skirt having flutes downwardly depending therefrom, the flutes are crimped on the bottle finish to affix the crown cap to the bottle;
 - a round panel integrally formed with the skirt, the panel including one to three circular grooves formed therein; and
 - a liner located on the underside of the panel.
15. The crown cap of claim 14, wherein the grooves are radially symmetrical and concentric about a center of the panel.
16. The crown cap of claim 14, wherein the grooves consist solely of a single circular groove that is has its center approximately at the longitudinal center of the panel.
17. The crown cap of claim 14, wherein the grooves are recessed relative to the panel.
18. The crown cap of claim 14, wherein the liner includes a pair of concentric beads that engage the bottle.
19. The crown cap of claim 14, wherein the liner includes a single, plug-like lip that engages the innermost rim of the bottle.
20. The crown cap of claim 14, wherein bottle finish is a pry-off type.

21. The crown cap of claim 14, wherein bottle finish is a twist-off type.
22. A method of crimping a crown cap onto a glass bottle, comprising the steps of:
providing a crown cap that includes:
a shell formed of a metal having an average hardness of greater than 62 on the
30T scale, the shell including:
a peripheral skirt having flutes downwardly depending therefrom, the
flutes capable of being crimped to affix the crown cap to a bottle;
a round panel integrally formed with the skirt, the panel including
structural features formed as recesses therein; and
the liner located on the underside of the panel; and
positioning the crown cap onto a rim of a bottle; and
moving a crimping tool downwardly relative to the crown cap, the crimping tool initially
contacting the crown cap only on the flutes approximately at the outer edge
thereof.

DIBUJOS

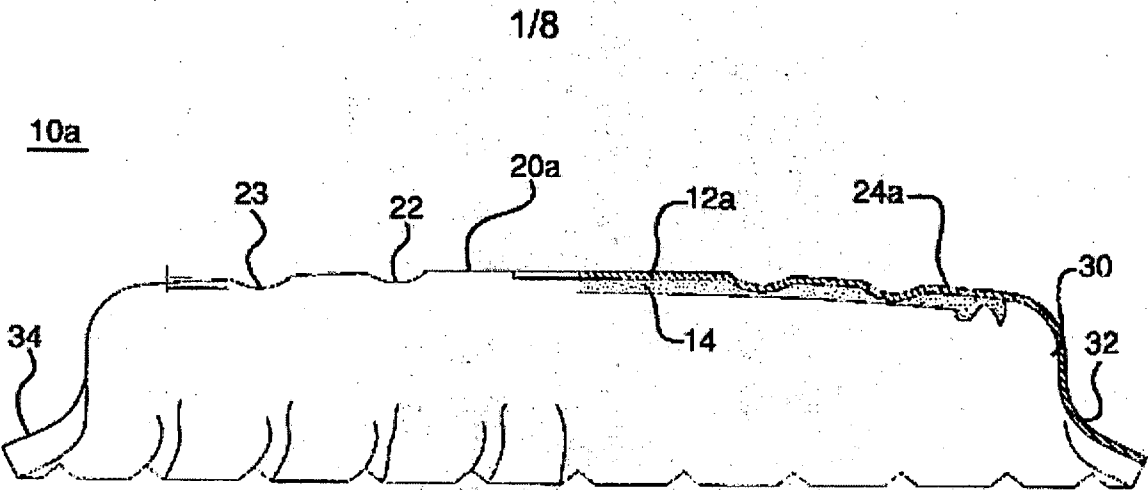


FIG. 1

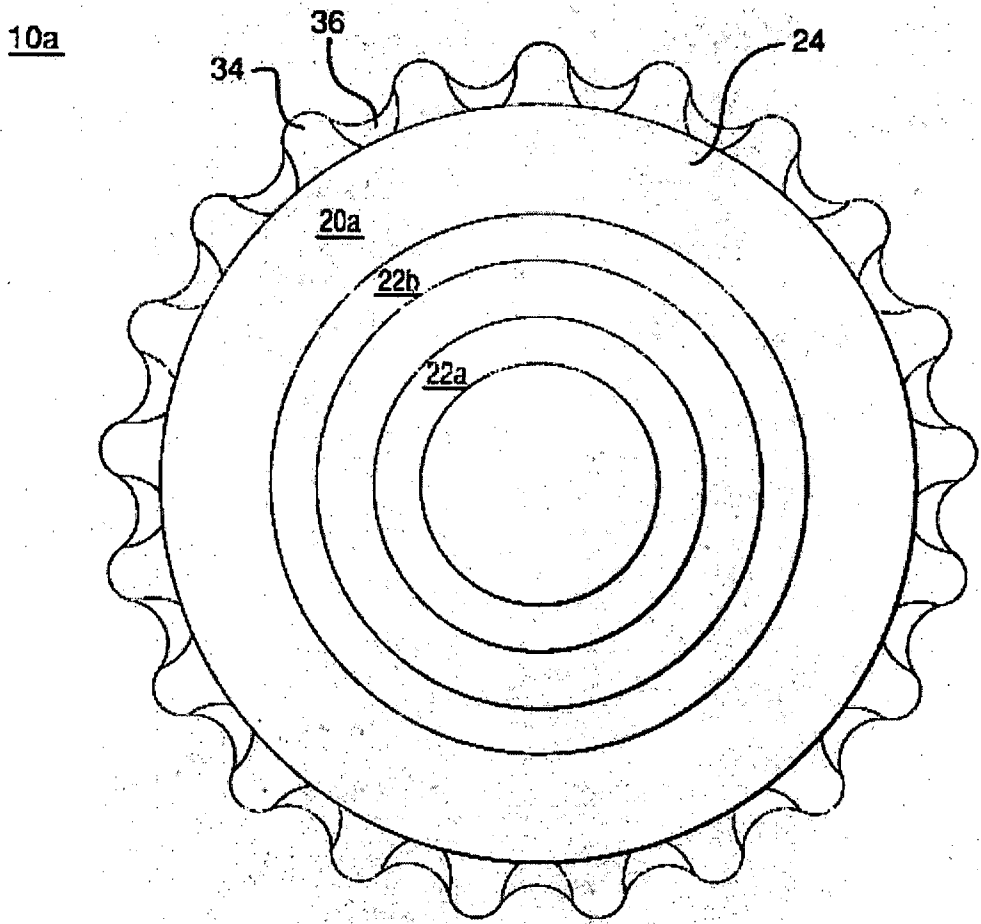


FIG. 2A

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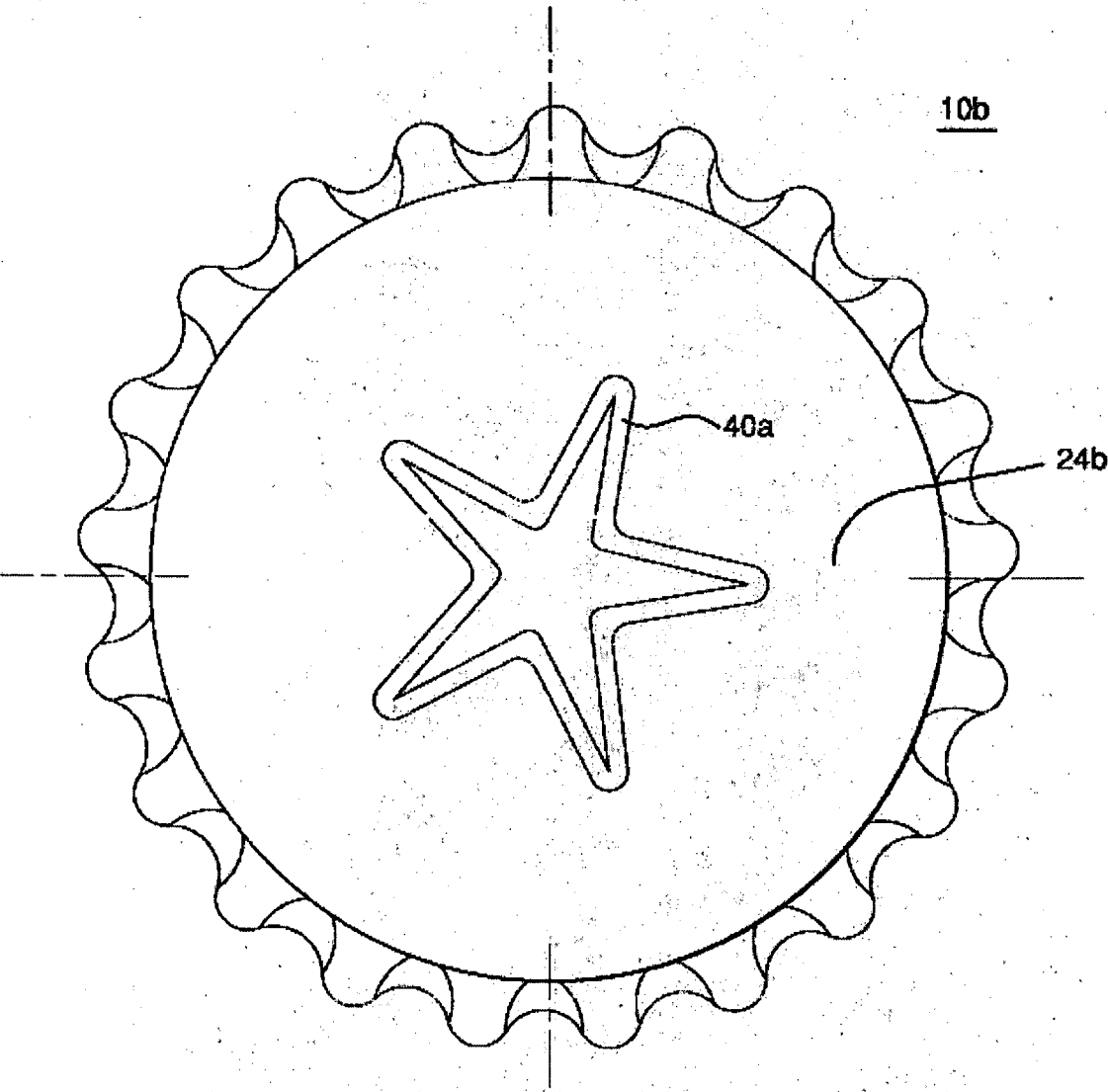


FIG. 2B

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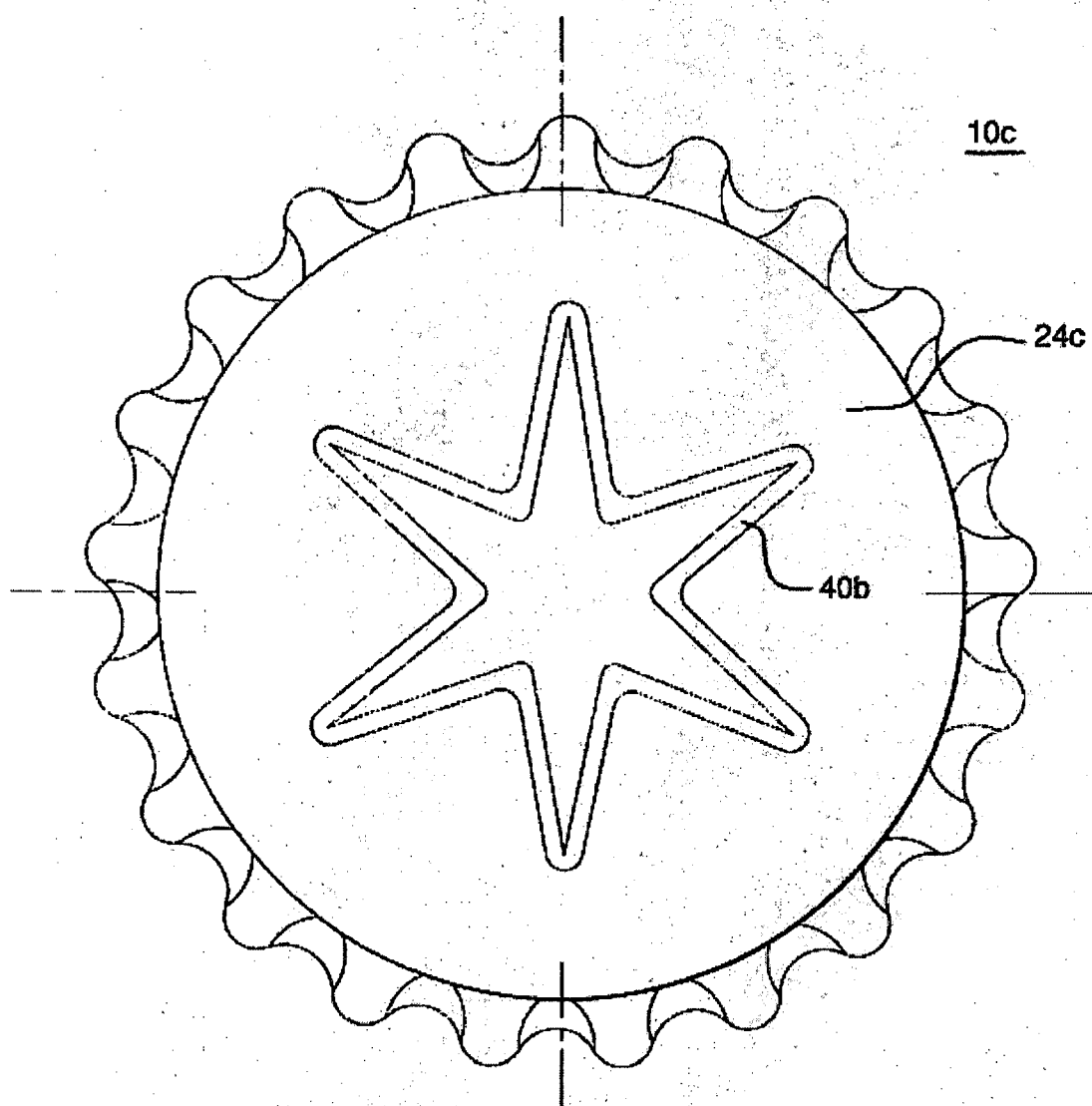


FIG. 2C

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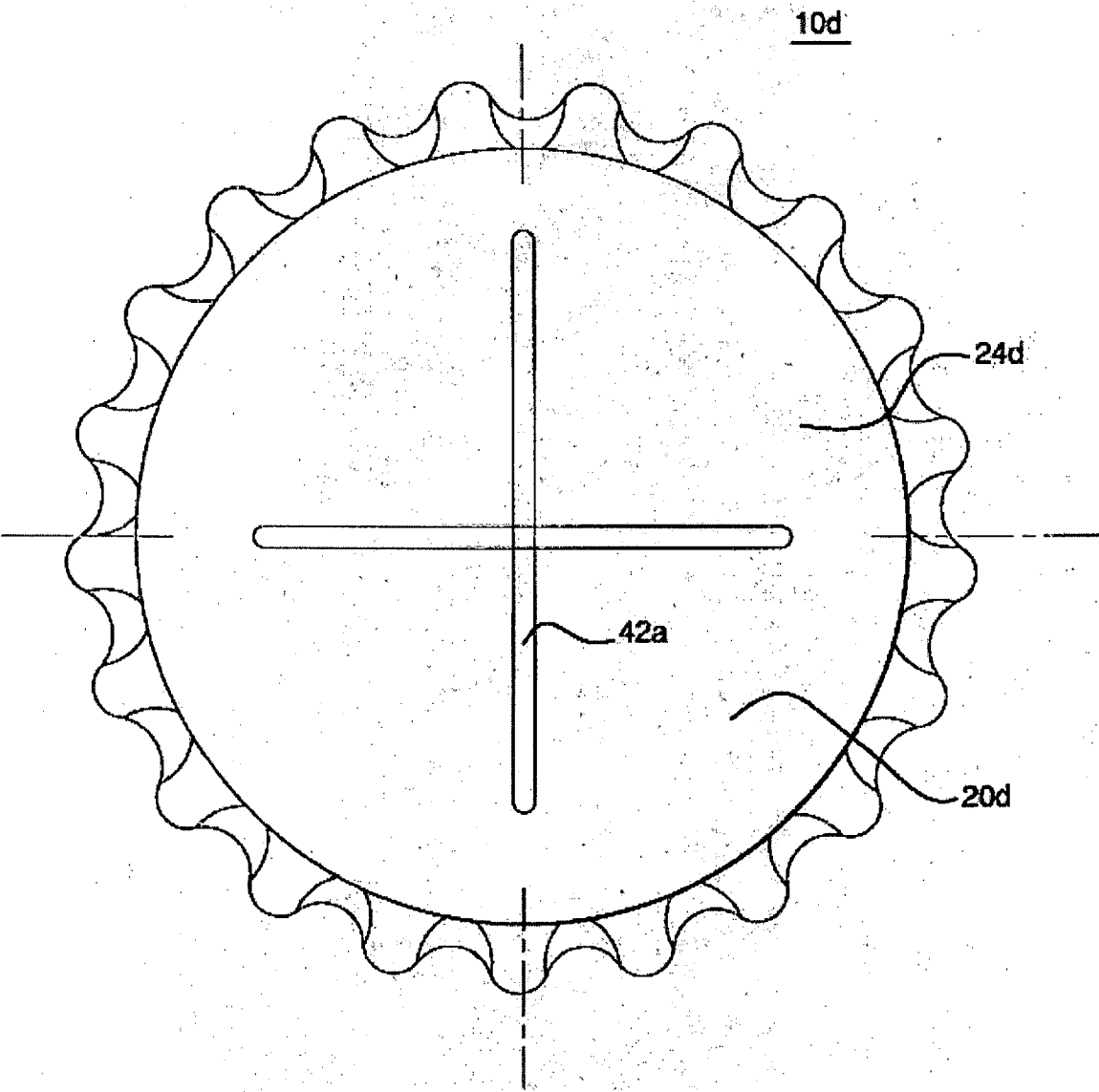


FIG. 2D

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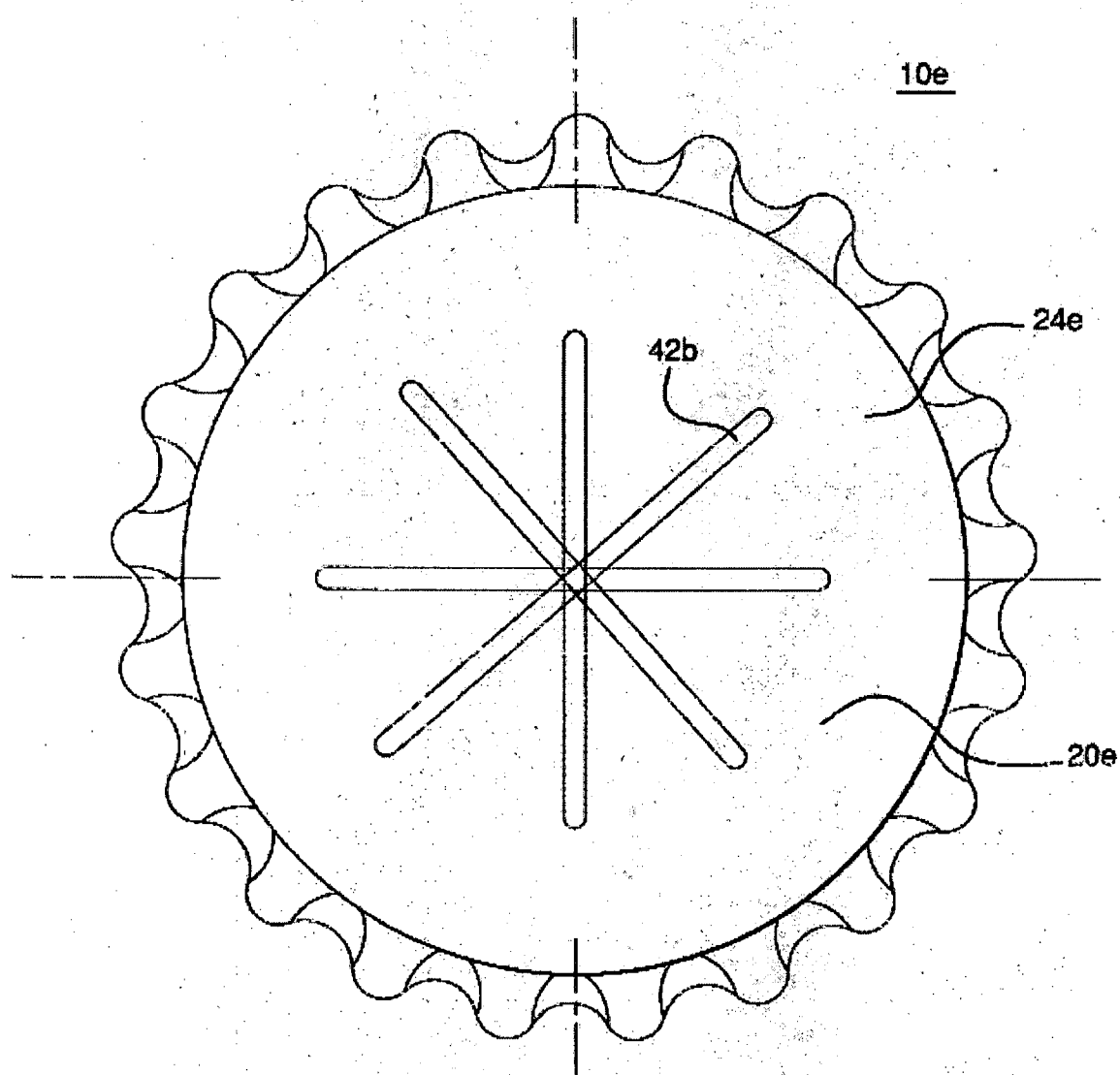


FIG. 2E

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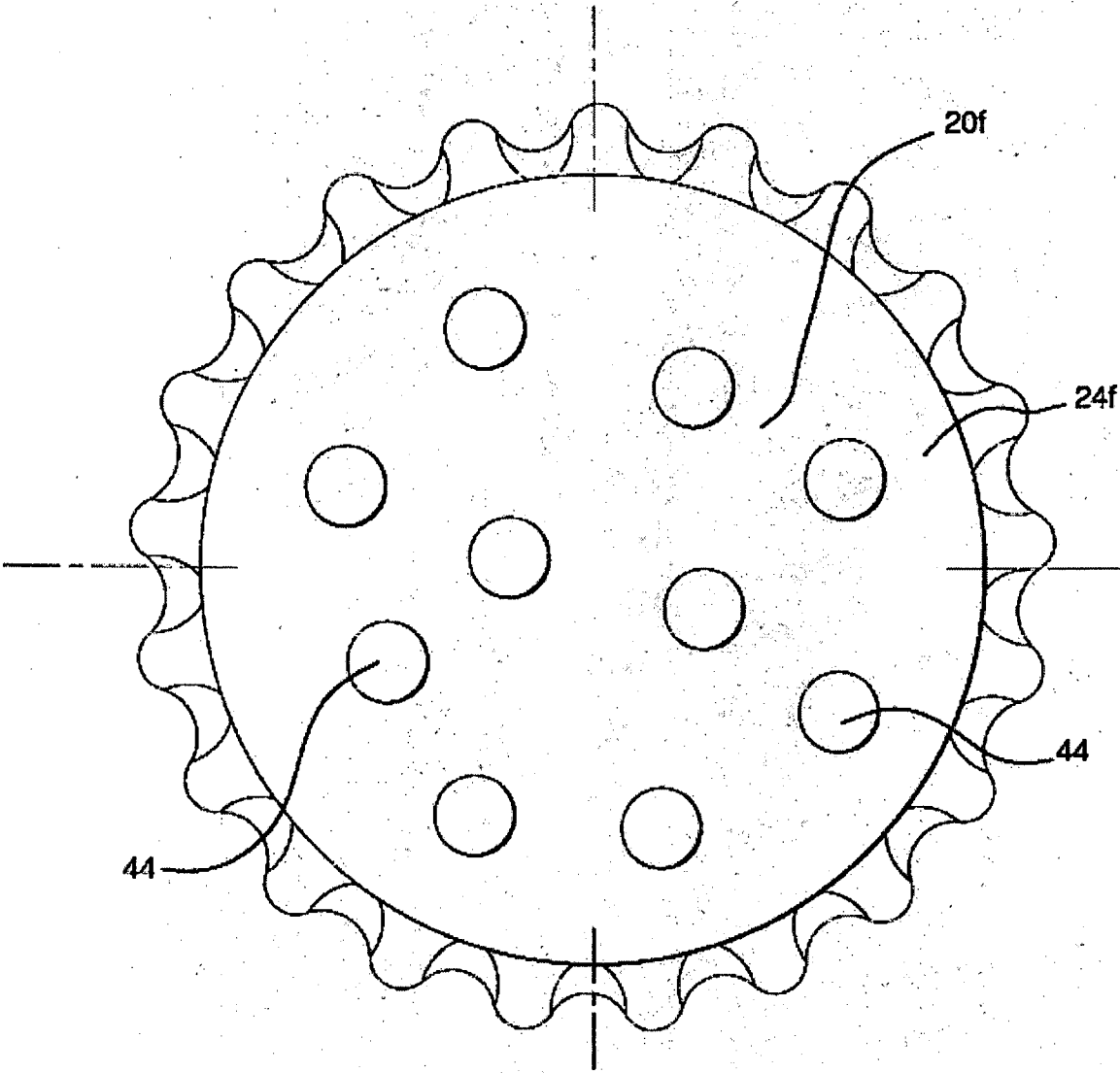


FIG. 2F

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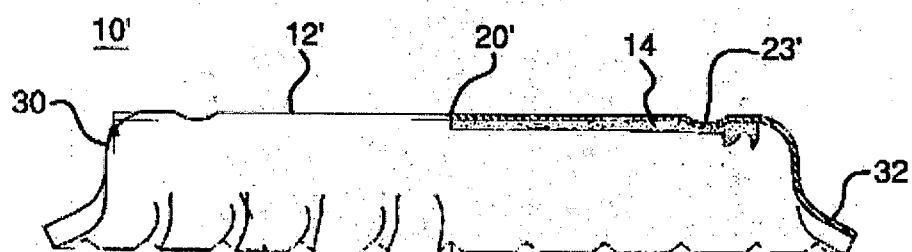


FIG. 3A

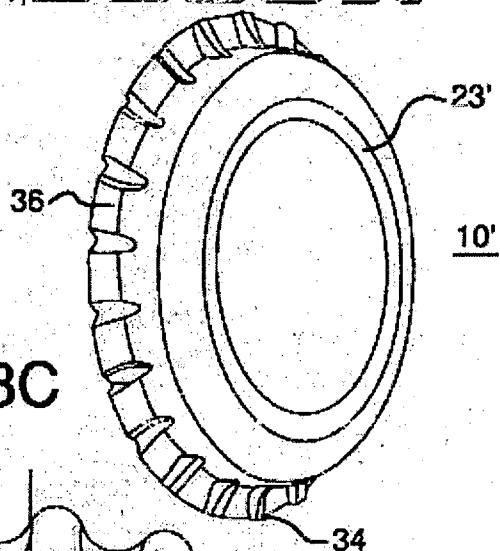


FIG. 3C

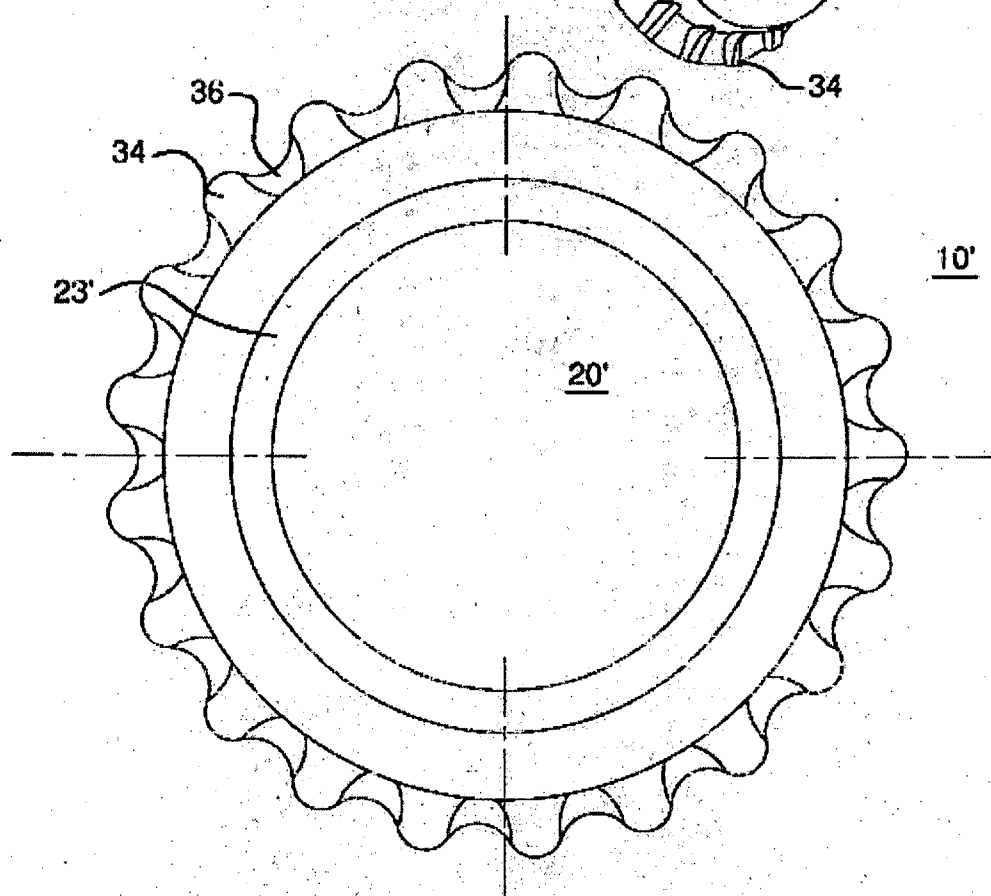


FIG. 3B

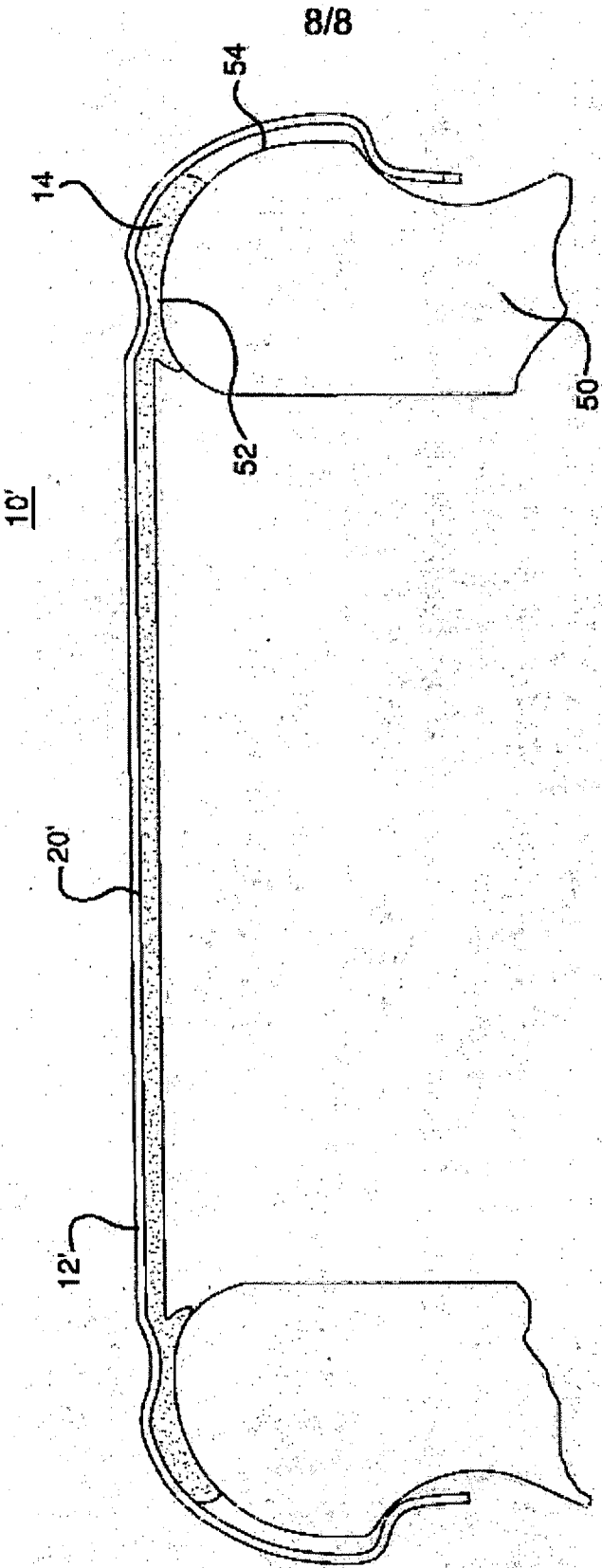


FIG. 4

SOLICITUD PCT

PCT
REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only	
International Application No.	
International Filing Date	
Name of receiving Office and "PCT International Application"	
Applicant's or agent's file reference (if desired) (12 characters maximum)	CC-5225/PPP

Box No. I TITLE OF INVENTION	
LOW GAUGE CROWN CAP	
Box No. II APPLICANT ☐ This person is also inventor	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	
CROWN CORK & SEAL USA, INC. One Crown Way Philadelphia, Pennsylvania 19154-4599 US	
Telephone No.	
Facsimile No.	
Applicant's registration No. with the Office	
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☒ the States indicated in the Supplemental Box	
Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.	
Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)	
FULLMER, Harold H.; KARLIN, Joseph H. WOODCOCK WASHBURN LLP Cira Centre, 12th Floor 2929 Arch Street Philadelphia, Pennsylvania 19104-2891 US	
Telephone No.	215-568-3100
Facsimile No.	215-568-3439
Agent's registration No. with the Office	42,560
☐ Address for correspondence: Mark this check-box where no agent or common representative has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

Sheet No. ... 2 ...

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
<i>If none of the following sub-boxes is used, this sheet should not be included in the request.</i>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) PACKAGING PRODUCTS DEL PERU S.A. Av. Minerales 349 Lima 1, Peru	This person is: ☒ applicant only ☐ applicant and inventor ☐ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of nationality: Peru	State (that is, country) of residence: Peru
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☒ the States indicated in the Supplemental Box	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) MERINO CABALLERO, Alfredo Calle Buen Retiro 111, Dpto. 102 Urb. Chacarilla, Lima 41 Peru	This person is: ☐ applicant only ☒ applicant and inventor ☐ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of nationality: Peru	State (that is, country) of residence: Peru
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	This person is: ☐ applicant only ☐ applicant and inventor ☐ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)	This person is: ☐ applicant only ☐ applicant and inventor ☐ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.	

Box No. V

DESIGNATIONS

The filing of this request constitutes under Rule 4 9(a), the designation of all Contracting States bound by the PCT on the international filing date for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents. However,

☐

DE Germany is not designated for any kind of national protection

☐

JP Japan is not designated for any kind of national protection

☐

KR Republic of Korea is not designated for any kind of national protection

☐

RU Russian Federation is not designated for any kind of national protection

(The check-boxes above may only be used to exclude (irrevocably) the designations concerned if, at the time of filing or subsequently under Rule 26bis.1, the international application contains in Box No. VI a priority claim to an earlier national application filed in the particular State concerned, in order to avoid the ceasing of the effect, under the national law, of this earlier national application.)

Box No. VI

PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application: regional Office	international application: receiving Office
item (1) 06 July 2007 (06.07.2007)	000728-2007/CIN	Peru		
item (2)				
item (3)				

☐

Further priority claims are indicated in the Supplemental Box.

Transmit certified copy: the receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☐

all items

☐

item (1)

☐

item (2)

☐

item (3)

☐

other, see Supplemental Box

Restore the right of priority: the receiving Office is requested to restore the right of priority for the earlier application(s) identified above or in the Supplemental Box as item(s) (). (See also the Notes to Box No. VI; further information must be provided to support a request to restore the right of priority.)

Incorporation by reference: where an element of the international application referred to in Article 11(1)(iii)(d) or (e) or a part of the description, claims or drawings referred to in Rule 20.5(a) is not otherwise contained in this international application but is completely contained in an earlier application whose priority is claimed on the date on which one or more elements referred to in Article 11(1)(iii) were first received by the receiving Office, that element or part is, subject to confirmation under Rule 20.6, incorporated by reference in this international application for the purposes of Rule 20.6.

Box No. VII

INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / US

Request to use results of earlier search; referent to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)

Number

Country (or regional Office)

Box No. VIII

DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):

☐

Box No. VIII (i)

Declaration as to the identity of the inventor

:

☐

Box No. VIII (ii)

Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent

:

☐

Box No. VIII (iii)

Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application

:

☐

Box No. VIII (iv)

Declaration of inventorship (only for the purposes of the designation of the United States of America)

:

☐

Box No. VIII (v)

Declaration as to non-prejudicial disclosures or exceptions to lack of novelty

:

Number of declarations

Form PCT/EO/101 (second sheet) (April 2007)

See Notes to the request form

Supplemental Box

If the Supplemental Box is not used, this sheet should not be included in the request.

1. *If, in any of the Boxes, except Boxes Nos. VIII(i) to (iv) for which a special continuation box is provided, the space is insufficient to furnish all the information, in such case, write "Continuation of Box No. ..." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:*
 - (i) *if more than one person is to be indicated as applicant and/or inventor and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;*
 - (ii) *if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIP, Euranion, European or OAPI patent) for the purposes of which the named person is applicant;*
 - (iii) *if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor-applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIP, Euranion, European or OAPI patent) for the purposes of which the named person is inventor;*
 - (iv) *if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;*
 - (v) *if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.*
2. *If the applicant intends to make an indication of the wish that the international application be treated, in certain designated States, as an application for a patent of addition, certificate of addition, inventor's certificate of addition or utility certificate of addition: in such a case, write the name or two-letter code of each designated State concerned and the indication "patent of addition," "certificate of addition," "inventor's certificate of addition" or "utility certificate of addition," the number of the parent application or parent patent or other parent grant and the date of grant of the parent patent or other parent grant or the date of filing of the parent application (Rule 4.11(a)(iii) and 49bis.1(a) or (b)).*
3. *If the applicant intends to make an indication of the wish that the international application be treated, in the United States of America, as a continuation or continuation-in-part of an earlier application: in such a case, write "United States of America" or "US" and the indication "continuation" or "continuation-in-part" and the number and the filing date of the parent application (Rule 4.11(a)(iv) and 49bis.1(d)).*

Continuation of Boxes No. II and No. III

CROWN CORK & SEAL USA, INC.

Applicant for Canada (CA) and Mexico (MX) only.

PACKAGING PRODUCTS DEL PERU S.A.

Applicant for all countries except Canada (CA), Mexico (MX), and the United States of America (US).

Box No. IX CHECK LIST; LANGUAGE OF FILING			
This international application contains:		This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):	Number of items
(a) on paper, the following number of sheets:			
request (including declaration and supplemental sheets)	5	1. ☒ fee calculation sheet	1
description (excluding sequence listing and/or tables related thereto)	7	2. ☐ original separate power of attorney	
claims	3	3. ☐ original general power of attorney	
abstract	1	4. ☐ copy of general power of attorney; reference number, if any:	
drawings	8	5. ☐ statement explaining lack of signature	
Sub-total number of sheets	24	6. ☐ priority document(s) identified in Box No. VI as item(s):	
sequence listing		7. ☐ translation of international application into (language):	
tables related thereto		8. ☐ separate indications concerning deposited microorganism or other biological material	
(for both, actual number of sheets if filed on paper, whether or not also filed in electronic form; see (c) below)		9. ☐ sequence listing in electronic form (indicate type and number of carriers):	
Total number of sheets	24	(i) ☐ copy submitted for the purpose of international search under Rule 13ter only (and not as part of the international application):	
(b) ☐ only in electronic form (Section 801(a)(i))		(ii) ☐ (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purpose of international search under Rule 13ter	
(i) ☐ sequence listing		(iii) ☐ together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column	
(ii) ☐ tables related thereto		10. ☐ tables in electronic form related to sequence listing (indicate type and number of carriers)	
(c) ☐ also in electronic form (Section 801(a)(ii))		(i) ☐ copy submitted for the purpose of international search under Section 802(b-quater) only (and not as part of the international application)	
(i) ☐ sequence listing		(ii) ☐ (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purpose of international search under Section 802(b-quater)	
(ii) ☐ tables related thereto		(iii) ☐ together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column	
Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the		11. ☒ other (specify): Transmitted	1
☐ sequence listing			
☐ tables related thereto			
(Additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)			
Figure of the drawings which should accompany the abstract:	3C	Language of filing of the international application:	English
Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE			
Mark in each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).			
/Harold H. Fullmer/ Harold H. Fullmer Reg. No. 42,560			

For receiving Office use only		For International Bureau use only	
1. Date of actual receipt of the purported international application:		2. Drawings:	
3. Corrected date of actual receipt due to later but timely received paper or drawings completing the purported international application:		☐ received:	
4. Date of timely receipt of the required corrections under PCT Article 11(3):		☐ not received:	
5. International Searching Authority (if two or more are competent): ISA /		6. ☐ Transmittal of search copy delayed until search fee is paid	
Date of receipt of the record copy by the International Bureau:			

REPORTE DE BÚSQUEDA INTERNACIONAL

INTERNATIONAL SEARCH REPORT		International application No. PCT/US2008/090193		
A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - B65D 51/00 (2006.04) USPC - 215/250 According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC(8) - B65D 51/00 (2006.04) USPC - 215/250, 275, 343, 0131 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) USPTO WEST System (US, USPC-PUB, EPC, DERWENT), MicroPatent, Google Patents, IP.com				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X - Y Y	US 2,825,790 A (BELE-APPELGER) 03 April 1950 (04.04.1950) entire document US 2,048,062 A (BLOER) 21 July 1936 (21.07.1936) entire document	1-21 22 22		
☐ Further documents are listed in the continuation of Box C.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top; border: none;"> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier application or patent not published on or after the international filing date "C" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another document or other special reason (as specified) "D" document referring to an oral disclosure, use, exhibition or other means "E" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; vertical-align: top; border: none;"> "F" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principles or theory underlying the invention "G" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "H" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "I" document analogous of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier application or patent not published on or after the international filing date "C" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another document or other special reason (as specified) "D" document referring to an oral disclosure, use, exhibition or other means "E" document published prior to the international filing date but later than the priority date claimed	"F" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principles or theory underlying the invention "G" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "H" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "I" document analogous of the same patent family
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier application or patent not published on or after the international filing date "C" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another document or other special reason (as specified) "D" document referring to an oral disclosure, use, exhibition or other means "E" document published prior to the international filing date but later than the priority date claimed	"F" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principles or theory underlying the invention "G" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "H" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "I" document analogous of the same patent family			
Date of the actual completion of the international search 02 October 2008		Date of mailing of the international search report 07 NOV 2008		
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22312-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Coppenhaver PCT Refusals: 571-273-4000 PCT Exam: 571-273-7777		

REPORTE INTERNACIONAL PRELIMINAR DE PATENTABILIDAD

PCT/US2008/069193 10.08.2009

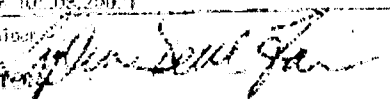
PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CC-5524		FOR FURTHER ACTION		See Form PCT/IPC/4016
International application No. PCT/US2008/069193		International filing date (day/month/year) 02 July 2008 (02.07.2008)	Priority date (day/month/year) 06 July 2007 (06.07.2007)	
International Patent Classification (IPC) of national classification and IPC IPC: B65G 31/00 (2006.01) USPC: 215/250, 215/243 B1G 1				
Applicant CROWN CORP & SEAL				
1. This report is the International preliminary examination report established by this International Preliminary Examining Authority under Article 36 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet. 3. This report is also accompanied by ATTACHES, comprising: a. ☐ (sent to the applicant and to the International Bureau) a total of <u> </u> sheets, as follows: ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions) ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in Item 4 of Box No. I and the Supplemental Box. b. ☐ (sent to the International Bureau only) a total of <u> </u> electronic page and number of electronic character(s) <u> </u>, concerning a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 602 of the Administrative Instructions).				
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned statement under Article 34(2) with regard to novelty, inventive step or industrial applicability; reasons and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application				
Date of publication of the demand 06 May 2009 (06.05.2009)		Date of completion of this report 05 August 2009 (05.08.2009)		
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: RECEIVS Communication for Patent P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (773) 375-2221		Authorized official  ROBERT HYATT Telephone No. 703-69-1173		

PCT/US2008/069193 10.08.2009

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
HAROLD H. FULLMER
WOODCOCK WASHBURN LLP
CIRA CENTER, 12TH FLOOR
2929 ARCH STREET
PHILADELPHIA, PA 19104-2891

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year)

10 AUG 2009

Applicant's or agent's file reference

IMPORTANT NOTIFICATION

CC-3235

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US2008/069193

02 July 2008 (03.07.2008)

05 July 2007 (05.07.2007)

Applicant

CROWN CORN & SEAL

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the International preliminary report on patentability and its annexes, if any, established on the International application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any elected Office, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date for later in some Offices (Article 39(1)(a) and the reminder sent by the International Bureau with Form PCT/AB/301).

Where a translation of the international application must be furnished to an elected Office, this translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5) which provides that the criteria of novelty, inventive step and industrial applicability described in Article 23(2) or (4) may be given the purposes of international preliminary examination and that any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not (see also Article 27(5)). Such additional criteria may relate, for example, to use options from prior art, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPB of US

Mail Stop 8211, Room 1025A-2
Commissioner for Patents
P.O. Box 1356
Alexandria, Virginia 22301-1356
Facsimile No. (571) 273-3201

Authorized signature

Signature of the Commissioner for Patents
Telephone No. (571) 273-3201

Form PCT/PEA/1 (July 2004)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/US2008/069193

Box No. 1 Back of the report

1. With regard to the language, this report is based on:
- ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into English, which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.2(a) and 35.1(b))
 - ☐ publication of the international application (under Rule 12.4(c))
 - ☐ international preliminary examination (under Rules 35.2(c) and/or 35.3(a))
2. With regard to the elements of the international application, this report is based on *(specimens of sheets which have been furnished to the receiving Office in response to an invitation under Article 12 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☒ the international application as originally filed/furnished
 - ☒ the description:
 - pages 1-2 as originally filed/furnished
 - pages* None received by this Authority on _____
 - pages* None received by this Authority on _____
 - ☒ the claims:
 - pages 3-10 as originally filed/furnished
 - pages* None as amended (together with any statement) under Article 19
 - pages* None received by this Authority on _____
 - pages* None received by this Authority on _____
 - ☒ the drawings:
 - pages 1-3 as originally filed/furnished
 - pages* None received by this Authority on _____
 - pages* None received by this Authority on _____
 - ☐ a sequence listing under any related table(s) - see Supplemental Page Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☒ the description, pages None
 - ☒ the claims, Nos. None
 - ☒ the drawings, sheets/figs None
 - ☐ the sequence listing (specify): _____
 - ☐ any table(s) related to the sequence listing (specify): _____
4. ☐ This report has been established as if (i) one of the amendments or annexes to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
 - ☐ the claims, Nos. _____
 - ☐ the drawings, sheets/figs _____
 - ☐ the sequence listing (specify): _____
 - ☐ any table(s) related to the sequence listing (specify): _____
5. ☐ This report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 28 (Rule 70.2(e)).
- * If item 4 applies, none or all of these elements may be needed "as amended."

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Box No. V Reasoned statement on the Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement.

1. Statement

Novelty (N)

Claims 1-22

YES

Claims NONE

NO

Inventive Step (IS)

Claims NONE

YES

Claims 1-22

NO

Industrial Applicability (IA)

Claims 1-22

YES

Claims NONE

NO

2. Citations and Explanations (Rule 70.7)
Please See Continuation Sheet

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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Supplemental Box

Referring to claim 3, Arzger discloses wherein each groove is spaced apart from a contact portion of the panel that is adapted for contacting the rim of a bottle upon application of the crown cap onto the bottle (see Fig. 10 and 11, recesses 29 and 30, as well as recess 42 and spaced apart from the portion contacting the rim of a bottle 3).

Referring to claim 4, Arzger discloses wherein the structural features include a circular groove that has its center approximately at the longitudinal center of the panel (see Fig. 10 and col. 7, lines 29-33, recites in essence that the recesses share the same center, known to be at the center of the cap).

Referring to claim 5, Arzger discloses wherein the groove has a diameter to allow it to fit the rim of a conventional bottle upon application of the crown cap as the beads (see Fig. 4, col. 4, lines 50-53 and col. 6, lines 54-56, the annular depression 19 is positioned to apply increased pressure to the top rim 5 of the bottle).

Referring to claim 6, Arzger discloses wherein the grooves are recessed relative to the panel (see Fig. 4 and 10, the annular depression is recessed relative to the top of panel of the cap).

Referring to claim 7-10, Arzger teaches [Cl. 7] wherein the shell has a hardness of greater than about 65; [Cl. 8] wherein the shell has a hardness of greater than about 65; [Cl. 9] wherein the shell has a hardness of greater than about 71; and [Cl. 10] wherein the shell has a hardness of approximately 73. As discussed above in claim 1, casting has been a change the chemical nature of a polymer is well known and involves only routine skill in the art for the purpose of making a mold for stiffness and design choices that reduce deformation.

Referring to claim 11, Arzger teaches wherein the shell is formed of double reduced plate (see col. 4, lines 34-39, it was Arzger's desire to manufacture "razor-thin caps from metal of thicker section than is normally required"). The process of double reduction involves roll forming the sheet twice to further reduce the sheet to the desired gauge. It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a material well known in industry to form a set of sheets of the desired thickness, since it was known in the art that double reduction can be used to achieve the correct thickness for ease of manufacture and would be merely a design choice.

Referring to claim 12, Arzger discloses wherein the structural features include at least one of a flat cross, one or more circular grooves, and dimples (see Fig. 10, col. 7, lines 39-43 and col. 8, lines 33-36, "the metallic cap 34 is provided with a pair of concentric circular recesses or indentations 39 and 40" and "the grooves may be of any desired cross section").

Referring to claim 13, Arzger discloses wherein the liner includes one or more beads that are compressible to enhance sealing (see Fig. 3 and col. 6, lines 10-12, "sealing disc 15 is provided with a sealing collar 16" which discloses three variations of a sealing bead formed on the liner or seal).

Referring to claim 14, Arzger teaches a bottle and crown cap combination, comprising a bottle (3) having a body and a neck (as seen in all Figs. 1-20) extending up from the body, the top portion of the neck having a finish (a design well known in industry) a crown sheet formed of a material compressible and having an average hardness of greater than 62 on the 30T scale (see discussion of claim 1, different hardness is a primary design in Arzger's device, including a variable skin film 11, Fig. 3) having flutes downwardly depending therefrom, the flutes are engaged on the bottle neck to allow the crown cap to fit the bottle (see discussion of claim 1); a round panel integrally formed with the shell, the panel including one or more circular grooves formed thereon (see Fig. 10 and col. 7, lines 29-33, "the metallic cap 34 is provided with a pair of concentric circular recesses or indentations 39 and 40" and a liner (sealing disc 15) located on the underside of the panel).

Referring to claim 15, Arzger discloses wherein the grooves are radially symmetrical and concentric about a center of the panel (see discussion of claim 4).

Referring to claim 16, Arzger discloses wherein the grooves consist solely of a single circular groove that is has its center approximately at the longitudinal center of the panel (see Fig. 2 and discussion of claim 4, a single annular depression 19 is shown).

Referring to claim 17, Arzger discloses wherein the grooves are recessed relative to the panel (see discussion of claim 6).

Referring to claim 18, Arzger discloses wherein the liner includes a pair of annular beads that engage the bottle (see Fig. 8 and col. 7, lines 26-28, "two spaced annularly sealing ribs 32 and 33" are provided).

Referring to claim 19, Arzger discloses wherein the liner includes a single, plug-like fit that engages the innermost rim of the bottle (see Fig. 12 and col. 8, lines 7-15, sealing collar 53 is shown engaging the inside rim of the bottle).

Referring to claim 20-21, Arzger teaches [Cl. 20] wherein the bottle finish is a pry-off type and [Cl. 21] wherein the bottle finish is a twist-off type. It would have been obvious to one of ordinary skill in the art at the time the invention was made to create a crown cap that is either pry-off or twist-off, since it was known in the art that these are the two primary non-invasive finishes in the bottling industry, and very few other options exist. This would be done to provide ease of use to the consumer.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient,

Continuation of:

V. 2. Objections and Explanations:

Claims 1-21 lack an inventive step under PCT Article 35(3) as being obvious over Kutz (Aregger (hereinafter Aregger)).

Referring to Claim 1, Aregger discloses a lightweight, crown-type crown cap for application on a glass beverage bottle (see col. 5 lines 55-60, a crown cap with a corrugated rim for plastic bottles, comprising a shell (metallic cap 12) formed of a material comprising steel (see col. 5, lines 54-55 and Fig. 3-4), including a peripheral skirt (rim 17, Fig. 3) having flares downwardly depending therefrom (flares are the same five corrugations formed in the rim, and are well known in the cap industry); the flares are capable of being crimped to attach the crown cap to a bottle (see col. 7, lines 10-14), comprising a cap to a bottle is well known and described; a round panel integrally formed with the skirt (see Fig. 3, the round panel can be seen in cross-sectional profile, as is common for crown caps) the panel including structural features formed as recessed beads (see Figs. 9-4, col. 4, lines 32-39 and col. 5, lines 59-61, an annular depression 14 is formed in the cap, acting as a stiffener or a structural feature; and a line located cooling disc 15 on the underside of the panel (see Fig. 3), but fails to disclose a steel with an average hardness of greater than 62 on the 50T HRC ball with scale. However, looking at the Dictionary.com definition of "hardness," it can be applied to crown caps, "hardness is the characteristic of a solid material signifying its resistance to permanent deformation". And it is a primary desire of the applicant to prevent deformation or deformation of the cap through the use of ribbing and hard steel (see Applicant's specification of paragraph 0024). Rigidity and stiffness is also a desire for Aregger who explains that the stiffening rib is to prevent deformation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose a material with a particular hardness according to the application, since it was known in the art that increased hardness improves stiffness, and Aregger explains a desire for stiffness and the choices that reduce deformation. Additionally, it is well known in industry that corrugation and metal properties can be chosen to increase or decrease rigidity.

Referring to claim 2, Aregger discloses wherein the structural features are one to three circular grooves (see Fig. 10 and col. 7, lines 29-45, "the metallic cap 22 is provided with a pair of concentric circular grooves 23 and 24").

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Supplemental Box

Claim 22 lacks an inventive step under PCT Article 35(1) as being obvious over *Wagner* in view of *Elder*.

Referring to claim 22, *Wagner* discloses providing a crown cap that includes a shell formed of a metal having an average hardness of greater than 62 on the HRT scale, the shell including a peripheral skirt having, in at least one direction of separation, the flutes capable of being crimped to affix the crown cap to a bottle, and a raised portion integrally formed with the skirt, the portion including structural features formed as recesses therein, and the lower flange on the underside of the portion. *Elder* teaches a method of crimping a crown cap onto a glass bottle, comprising the steps of positioning the crown cap onto a rim of a bottle, as rec. 1, lines 29-36, a crown cap is applied to a beveled bottle opening and inserting a crimping tool downwardly to move to the crown cap (see col. 1, lines 29-32 "a spring pressed stripper tool" forces against the top of a cap"), the crimping tool initially contacting the crown cap only on the flutes approximately at the outer edge thereof (see col. 1, lines 33-36, a sealing flange engages the lower edge of the skirt and radially compresses the skirt to seal the cap against the head of the bottle). It would have been obvious to one having ordinary skill in the art at the time of the invention to add the steps of placing and crimping a crown cap to a bottle, as recited by *Elder* to the invention of *Wagner* to create a process for manufacturing a bottle crown cap assembly, since it is well known in the bottling industry that a crown cap, by its nature, must be positioned and crimped to the top of a bottle in order to maintain the desired seal.

Claims 1-22 meet the criteria set out in PCT Article 31(1), and thus have individual applicability because the subject matter claimed can be made or used in industry.

NEW CITATIONS

RESÚMEN EN ESPAÑOL

TAPA TIPO CORONA HECHA CON LÁMINA DE BAJO CALIBRE

REFERENCIA CRUZADA CON SOLICITUDES RELACIONADAS

La presente solicitud reclama la prioridad de la solicitud de patente peruana No 000728-2007/OIN, presentada el 6 de julio de 2007.

CAMPO TECNICO

La tecnología relacionada con cierres para contenedores, y más particularmente con tapas acanaladas tipo corona para sellar una abertura de una botella o de un contenedor.

ANTECEDENTES

La tapa para botella fue patentada primero y producida en los años 1990. La tapa tipo corona básica de metal no ha cambiado conceptualmente desde entonces. Las tapas tipo corona convencionales incluyen una parte superior circular, una falda circular que se desprende hacia abajo desde una periferia de la parte superior, y un reborde que se extiende hacia fuera hacia abajo y radialmente desde una periferia de la falda. El reborde es estriado ó dentado, y puede estar configurado para remoción con destapador o mediante desenroscar. Luego de la aplicación de la tapa a la botella, las estrías son deformadas para fijar la tapa a un saliente o rosca en el terminado de la botella, y un empaque termoformado sobre el lado inferior de la tapa queda presionado contra el borde de la botellas para mejorar el sellado.

La mayoría de las tapas tipo corona usadas en los Estados Unidos son del tipo para desenroscar que operan en

botellas no reciclables. La mayoría de las tapas tipo corona en muchos países, sin embargo, son del tipo para remover usando un destapador que frecuentemente operan en botellas reciclables.

Existe una necesidad de mejorar y de disminuir el peso de estas tapas tipo corona.

Una tapa tipo corona del tipo para enganchar y de peso liviano para aplicarlo a una botella de vidrio para bebidas, comprende un casquillo y un empaque. El casquillo está formado de un material que comprende acero que tiene una dureza promedio mayor a 62 en la escala 30T. El casquillo incluye un panel y una falda periférica que tiene acanaladuras o estrías que salen de esta hacia abajo, de modo que las estrías son capaces de ser enganchadas para fijar la tapa tipo corona a la botella. El panel está formado integralmente con la falda e incluye rasgos estructurales formados como rebajos en este. El empaque se localiza por debajo del panel, e incluye por lo menos una ranura.

Preferiblemente, los rasgos estructurales son de uno a tres ranuras circulares, y también puede ser una sola ranura, por lo menos una en estrella, en cruz, una ó más ranuras circulares, y hoyuelos. Las ranuras pueden estar separadas de una porción de contacto del panel tal que la porción de contacto está adaptada para hacer contacto con el aro de una botella luego de la aplicación de la tapa tipo corona sobre la botella. La ranura localizada más exterior puede ser alineada con el aro de una botella convencional luego de la

aplicación de la tapa tipo corona. Preferiblemente la estructura es hundida con relación al panel.

Preferiblemente, el casquillo tiene una dureza mayor a 65, más preferiblemente mayor a 68, más preferiblemente mayor a 71, y mucho más preferiblemente 73, y puede estar formado por una placa doblemente reducida.

Se suministra también una combinación de botella y tapa tipo corona.

Un método para enganchar una tapa tipo corona sobre una botella de vidrio, comprende las etapas de suministrar una tapa tipo corona como se describió arriba, posicionar la tapa tipo corona sobre el aro de una botella, y mover una herramienta de doblado hacia abajo en relación con la tapa tipo corona de modo que la herramienta de doblado inicialmente haga contacto con la tapa tipo corona solamente en las estrías aproximadamente en el borde exterior de estas.

BREVE DESCRIPCION DE LOS DIBUJOS

La figura 1 es una vista lateral en corte parcial que ilustra una tapa tipo corona que abarca los aspectos de la presente invención;

La figura 2A es una vista superior en planta de la tapa tipo corona ilustrada en la figura 1;

La figura 2B es una vista superior en planta de otra modalidad de una tapa tipo corona que tiene un refuerzo en la forma de una estrella de cinco puntas;

La figura 2C es una vista superior en planta de otra modalidad de una tapa tipo corona que tiene un refuerzo en la forma de una estrella de seis puntas;

La figura 2D es una vista superior en planta de otra modalidad de una tapa tipo corona que tiene un refuerzo en la forma de una cruz de dos líneas;

La figura 2E es una vista superior en planta de otra modalidad de una tapa tipo corona que tiene un refuerzo en la forma de una cruz de cuatro líneas;

La figura 2F es una vista superior en planta de otra modalidad de una tapa tipo corona que tiene un refuerzo en la forma de varios hoyuelos;

La figura 3A es una vista lateral en corte parcial que ilustra una modalidad de una tapa tipo corona que abarca aspectos de la presente invención;

La figura 3B es una vista superior en planta de la tapa tipo corona ilustrada en la figura 3A;

La figura 3C es una vista en perspectiva de la modalidad de la figura 3A;

La figura 4 es una vista en corte de sección transversal de la tapa tipo corona ilustrada en la figura 1B enganchada sobre una botella.

DESCRIPCIÓN EN ESPAÑOL

DESCRIPCION DETALLADA DE LAS MODALIDADES ILUSTRATIVAS

Haciendo referencia a las figuras 1 y 2A para ilustrar la estructura y función de una modalidad de la presente invención, una tapa tipo corona 10a incluye un casquillo 12a y un empaque 14. El casquillo 12a incluye un panel circular 20a, una falda 30, y un reborde 32. La falda 30 se extiende hacia abajo desde una periferia del panel 20a. El reborde 32 se extiende de manera oblicua desde la falda 30. Estrías 34 y valles 36 alternantes se forman sobre una porción circunferencial de la falda 30. El casquillo 12a, y otros casquillos mostrados en las figuras, se ilustra del tipo para destapar con destapador. La presente invención también abarca el tipo para desenroscar (no mostrado en las figuras) que se abre mediante hacerlo girar, como lo podrán entender las personas familiarizadas con la tecnología de las tapas tipo corona.

El panel 20a tiene dos ranuras circulares 22 y 23 que son concéntricas alrededor de un centro vertical de la tapa 10a. Por fuera de la ranura más exterior 22, el panel 20a incluye una porción de contacto 24a la cual está adaptada para hacer contacto con el aro de una botella luego de aplicar la tapa tipo corona 10a a la botella. Preferiblemente, en su estado tal como se fabricó como se muestra en las figuras 1 y 2A, la porción de contacto 24a es relativamente plana ó tiene aproximadamente la misma curvatura de la mayor parte del panel 20a.

Cada una de las ranuras 22 y 23 tienen preferiblemente un perfil curvado hacia adentro en sección transversal, como mejor se muestra en la figura 1, de modo que estas funcionan

como costillas o refuerzos estructurales que, según suponen los inventores, ayudan a la rigidez del panel 20a contra la deflexión ó deformación.

La presente invención abarca también otros rasgos estructurales en el panel, tal como estrellas, cruces, hoyuelos, y similares. Por ejemplo, las figuras 2B a 2F ilustran las coronas 10b a 10f como ejemplos de otros rasgos estructurales que pueden ser empleados. Las figuras 2B y 2C ilustran una estrella 40a de cinco puntas y una estrella 40b de seis puntas, y las figuras 2D y 2E ilustran una cruz 42a formada por dos líneas y una cruz 42b formada por cuatro líneas. La figura 2F ilustra refuerzos formados por hoyuelos 44. Preferiblemente, los refuerzos, tales como las estrellas 40a y 40b y las cruces 42a y 42b, son radialmente simétricos. La presente invención abarca estructura que no es simétrica, tal como ranuras trabadas (ahora mostradas en las figuras). Preferiblemente, la estructura (tal como ranuras, estrellas, cruces, hoyuelos, y similares) formada en los paneles es rebajada (es decir, protruye hacia abajo) con relación al resto del panel. La cantidad, forma, y disposición de las ranuras, estrellas, cruces, hoyuelos y cualquier otra estructura pueden ser determinadas por los requerimientos de desempeño específicos de la tapa tipo corona, lo mismo que su grosor, resistencia, ductilidad, uso propuesto, y similares, las cuales serán evidentes para las personas que están familiarizadas con la tecnología de las tapas tipo corona a la luz de la presente divulgación.

Preferiblemente, la costilla 23 más exterior de la primera modalidad 10a y las estructuras 40a, 40b, 42a, 42b y

44 están configuradas para suministrar las porciones de contacto 24a a 24f, cada una de las cuales preferiblemente es plana ó tiene aproximadamente la misma curvatura que la mayor parte del resto del panel 20a a 20f. En cada una de las figuras, las porciones de contacto 24 están localizadas por fuera de la estructura 22, 40a, 40b, 42a, 42b, ó 44 para suministrar una superficie uniforme (que sustancialmente no contenga salientes o lomos) sobre la cual el empaque 14 y el arco de la botella queden alineados tal que el empaque esté localizado entre la porción de contacto 24a (ó 24b a 24f) y preferiblemente deformada ó oprimida en un espacio en medio de esta. De acuerdo a lo anterior, la forma de las porciones de contacto 24a a 24f preferiblemente no cambian significativamente durante el proceso de aplicación (incluyendo el doblado) de modo que su forma antes del doblado es sustancialmente igual después del doblado. La presente invención no está limitada a esta configuración de cualquiera de las porciones de contacto 24, sino que el alcance de la invención está definido por las reivindicaciones.

La falda 30 se funde suavemente con el reborde 32 que se extiende hacia abajo y radialmente hacia fuera. La falda 30 y el reborde 32 están preferiblemente adaptados para ser doblados sobre el cuello de una botellas para el sellado de esta. El reborde 32 está dividido en porciones repetidas y onduladas que definen las estrías 34 y los valles 36. Preferiblemente, las porciones repetidas están espaciadas circunferencialmente y uniformemente de modo que cada estría 34 es idéntica a todas las otras estrías 34 alrededor de la circunferencia de la tapa tipo corona 10, y cada valle 36 es

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idéntico a todos los otros valles 36 alrededor de la circunferencia de la tapa tipo corona 10. Aunque la tapa tipo corona 10 se muestra con veintiuna estrías 34 y valles 36, debe entenderse que la tapa tipo corona 10 puede incluir cualquier número de estrías 34 y valles 36.

Haciendo referencia a las figuras 3A, 3B, y 3C para ilustrar una segunda modalidad de la presente invención, una tapa tipo corona 10' incluye un casquillo 12' y un empaque 14. El casquillo 12' incluye un panel circular 20', una falda 30m y un reborde 32. La falda 30 y el reborde 32 son tal como se describieron arriba con respecto a la primera modalidad de tapa 10a.

El panel 20' tiene una sola ranura circular 23' que tiene un centro sobre el centro vertical de la tapa 10'. La ranura 23' tiene un diámetro mayor al de la ranura 23 de la primera modalidad (para un diámetro dado de la corona) tal que la ranura 23' queda localizada sobre el arco de la botella cuando es aplicada, como se explica en más detalle adelante. Las modalidades de la tapa tipo corona 10a se ilustran con dos ranuras 22 y 23 y la tapa tipo corona 10' se ilustra con una ranura 23'. La presente invención también abarca cualquier número de ranuras, especialmente entre una y tres.

El empaque 13 será descrito con respecto a la primera modalidad de tapa tipo corona 10a, y la presente descripción del empaque 14 aplica igualmente al empaque 14 con respecto a la modalidad de tapa tipo corona 10'. El empaque 14 está dispuesto sobre la parte inferior del panel 20a. Luego del doblado, el empaque 14 hace contacto y sella contra el arco de

una botella. El empaque 14 como se ilustró en la figura 1 es un empaque convencional, termoformado, de doble labio o saliente disponible en el comercio de SACMI IMOLA, como podrá ser entendido por aquellos versados en la materia de la tecnología de la tapa tipo corona. La presente invención no está limitada a la escogencia ó presencia de un empaque, y abarca otras configuraciones de empaque, tal como un empaque convencional, de una sola saliente (no mostrado en las figuras), al igual que otros materiales, tales como PVC y sustitutos convencionales del PVC. El empaque 14 incluye un labio dentro y un labio por fuera para hacer contacto con una porción interna y una externa de la botella. El saliente de un empaque con un solo saliente compromete preferiblemente la porción interna o región de esquina del aro de la botella.

Luego de que cualquiera de los casquillos 12a a 12f (llamados en general por la referencia 12) es formado y el empaque 14 es presionado sobre su lado inferior, el casquillo 12 es colocado sobre un terminado de botella tal que la porción de contacto 24 quede alineada con por lo menos una porción del aro de la botella. Las estrías 34 son dobladas o deformadas alrededor de los rasgos del terminado de la botella para fijar la tapa tipo corona 10 a la botella. De acuerdo a lo anterior, luego del doblado, el empaque 14 hace contacto con el aro de la botella y hace el sello de una manera convencional.

Haciendo ahora referencia a la figura 4 para describir la aplicación de la segunda modalidad de casquillo 12' a una botella 50 que tiene un aro 52 y una saliente 54, luego de que el empaque 14 es presionado sobre el lado inferior del

casquillo 12', dicho casquillo 12' es colocado sobre el terminado de la botella tal que la ranura 23' quede localizada directamente sobre el aro 52 de la botella. Luego del doblado de las estrías 34 con relación al saliente 54, el empaque 14 es presionado entre y deformado entre el lado inferior de la ranura 23' y el aro 52. El proceso de doblado para aplicar cualquiera de los casquillos descritos aquí sobre la botella (para cualquier tipo de casquillo, para destapar con destapador o por desenroscado) se lleva a cabo preferiblemente mediante una herramienta de doblado similar a un anillo que hace contacto con el borde exterior o región de borde del reborde 32, evitando así o disminuyendo el raspado ó estropeado del reborde 3 y disminuyendo la fuerza aplicada sobre la saliente 54.

La presente invención también abarca estructuras, tales como una sola ó múltiples ranuras, localizadas cerca de o alineadas con la parte interna del aro o borde de una botella, tal como la botella 50. En tal configuración, la parte inferior de la estructura puede ayudar a comprimir o deformar el empaque contra el borde interior o aro de la botella (no mostrado en las figuras).

Las tapas tipo corona 10a a 10f y 10' (llamadas en general por la referencia 10) están formadas preferiblemente con acero de dureza incrementada en comparación con las tapas tipo corona convencionales actualmente en producción comercial. Por ejemplo, las tapas tipo corona convencionales están formadas frecuentemente de una sola placa de latón reducida T4 la cual tiene un espesor de entre 0,21 mm a 0,23 mm. Tal placa de latón tiene una dureza promedio (es decir,

el valor reportado de dureza sin importar las variaciones +/-) de aproximadamente 61 medida en una escala de dureza 30T, de acuerdo con la norma ASTM 623. Las tapas tipo corona 10 descritas en la presente pueden estar hechas más delgadas y más livianas en comparación con el estado de la técnica, por ejemplo, las tapas tipo corona 10 pueden ser hechas de un material que tiene un espesor de cerca de 0,16 mm a 0,18 mm y que poseen aproximadamente el mismo desempeño de las tapas convencionales más gruesas. Estas disminuciones en la utilización del metal son logradas más fácilmente cuando la estructura de las tapas tipo corona 10 se hace con acero que tiene una dureza incrementada. Por ejemplo, el inventor ha demostrado la efectividad de las coronas hechas de lámina de más bajo calibre que tienen ranuras usando DR3 (de acuerdo a la ASTM 623) ó DR550 (de acuerdo a la EN 10203). Opcionalmente, el inventor supone que otros materiales pueden ser usados, tal como solo latón reducido o material similar que tenga un acero con temple mejorado y libre de estaño que tenga propiedades similares a las aquí descritas, y similares.

Las tapas tipo corona 10 tienen preferiblemente una dureza mayor a 62 en la escala 30T (de acuerdo con la ASTM 623), más preferiblemente mayor a cerca de 65, más preferiblemente mayor a cerca de 68, más preferiblemente mayor a cerca de 71. Las modalidades mostradas en la figura 1 y la figura 3A demostraron ser efectivas usando acero con una dureza de 73. El límite superior de la dureza queda establecido por el esfuerzo máximo aceptable por la botella de vidrio durante el proceso de doblado ó el efecto de

resorte (el cual puede tender a retornar los bordes doblados a un estado no doblado) asociados con la dureza de la placa.

Las tapas tipo corona 10 pueden ser formadas usando equipos de prensado convencionales, con solo cambios menores en las partes de la herramienta para formar la estructura (tal como las ranuras, cruces, estrellas y hoyuelos). Y las tapas tipo corona 10 pueden ser dobladas con equipo convencional, solo modificado para que tenga una garganta más pequeña en comparación con los dobladores existentes, convencionales.

Debido a que la dureza tiene relación con la resistencia según se refleja por el punto de deformación, el aspecto de la dureza de la corona puede expresarse en punto de deformación en la escala correspondiente. Por ejemplo, el latón DE8 ó DE 550 pueden tener un punto de deformación (en el ensayo de tensión) de 550 MPa. El inventor cree que la tapa tipo corona más ventajosa tiene una combinación de uno ó más de los estructurados descritos aquí y las placas más duras descritas aquí. La presente invención, sin embargo, se define en las reivindicaciones y la presente invención abarca tapas tipo corona que no tienen todas las estructuras, materiales, y/ó ventajas dadas en esta descripción.

De acuerdo con esta descripción, las tapas tipo corona comercialmente aceptables formadas de acuerdo con la presente divulgación pueden ser comercialmente fabricadas con hasta un 25% menos de acero en comparación con muchas tapas tipo corona, las cuales tienen ventajas correspondientes en emisiones de carbón. Los ahorros en peso del acero son

aproximadamente proporcionados a la reducción en el grosor del metal. Además, aun cuando la energía requerida para enfriar una corona individual es pequeña, la energía requerida para enfriar el número total de coronas producidas cada año (aproximadamente 45 billones en Norteamérica y aproximadamente 300 billones en el mundo), y la correspondiente reducción en esa energía es significativa.

La anterior descripción se suministra con el propósito de explicación y no debe ser leída como limitación de la invención. Aunque la invención ha sido descrita con referencia a modalidades preferidas o métodos preferidos, se entiende que las palabras que han sido usadas aquí son palabras de descripción e ilustración. En vez de palabras de limitación. Más aún, aunque la invención ha sido descrita aquí con referencia a estructura, métodos, y modalidades particulares, la invención no tiene el propósito de ser limitada a las particularidades descritas aquí, ya que la invención se extiende a todas las estructuras, métodos y usos que están dentro del alcance de las reivindicaciones adjuntas. Aquellas personas versadas en la técnica, que tengan el beneficio de las enseñanzas de esta especificación, pueden efectuar numerosas modificaciones a la invención descrita aquí, y esos cambios pueden hacerse sin salirse del alcance y espíritu de la invención según se definió en las reivindicaciones adjuntas. Más aún, cualesquier rasgos de una modalidad descrita pueden ser aplicados a otras modalidades descritas aquí.

REIVINDICACIONES EN ESPAÑOL



REIVINDICACIONES

1. Una tapa tipo corona del tipo doblable y de peso liviano para usarse en una botella de vidrio para bebidas, comprende: un casquillo formado de un material que comprende acero que tiene una dureza promedio mayor a 62 en la escala 30T, incluye:

una falda periférica que tiene estrías que se desprenden hacia abajo desde esta, las estrías son capaces de ser dobladas para fijar la tapa tipo corona a una botella;

un panel redondo formado integralmente con la falda, el panel incluye rasgos estructurales formados como rebajos allí; y

un empaque localizado sobre el lado inferior del panel.

2. La tapa tipo corona de la reivindicación 1, en donde los rasgos estructurales son una a tres ranuras.

3. La tapa tipo corona de la reivindicación 2, en donde cada ranura está separada de una porción de contacto del panel que está adaptada para hacer contacto con el aro de una botella luego de la aplicación de la tapa tipo corona sobre la botella.

4. La tapa tipo corona de la reivindicación 2, en donde los rasgos estructurales incluyen una ranura circular que tiene su centro aproximadamente en el centro longitudinal del panel.

5. La tapa tipo corona de la reivindicación 4, en donde la ranura tiene un diámetro que se alinea con el aro de una botella convencional luego de la aplicación de la tapa tipo corona sobre la botella.

6. La tapa tipo corona de la reivindicación 2, en donde las ranuras están en receso con relación al panel.

7. La tapa tipo corona de la reivindicación 2, en donde el casquillo tiene una dureza mayor a 65.

8. La tapa tipo corona de la reivindicación 2, en donde el casquillo tiene una dureza mayor a 68.

9. La tapa tipo corona de la reivindicación 2, en donde el casquillo tiene una dureza mayor a 71.

10. La tapa tipo corona de la reivindicación 2, en donde el casquillo tiene una dureza mayor a 73.

11. La tapa tipo corona de la reivindicación 1, en donde el casquillo está formado a partir de una placa doble reducida.

12. La tapa tipo corona de la reivindicación 1, en donde los rasgos estructurales incluyen por lo menos uno entre una estrella, una cruz, una o más ranuras circulares y hoyuelos.

13. La tapa tipo corona de la reivindicación 1, en donde el empaque incluye una o más salientes compresibles para mejorar el sello.

14. Una combinación de botella y tapa tipo corona, comprende:

una botella que tiene un cuerpo y un cuello que se extiende por encima del cuerpo, la porción superior del cuello tiene un acabado;

Un casquillo de corona formado de un material que comprende acero que tiene una dureza promedio mayor a 62 en la escala 30T, incluye:

una falda periférica que tiene estrías que se desprenden hacia abajo desde esta, las estrías son dobladas sobre el acabado de la botella para fijar la tapa tipo corona a la botella;

un panel redondo formado integralmente con la falda, el panel incluye una a tres ranuras circulares formadas allí; y un empaque localizado sobre el lado inferior del panel.

15. La tapa tipo corona de la reivindicación 14, en donde las ranuras son radialmente simétricas y concéntricas alrededor de un centro del panel.

16. La tapa tipo corona de la reivindicación 14, en donde las ranuras consisten solamente de una sola ranura circular que tiene su centro aproximadamente en el centro longitudinal del panel.

17. La tapa tipo corona de la reivindicación 14 en donde las ranuras están en receso con relación al panel.

18. La tapa tipo corona de la reivindicación 14, en donde el empaque incluye un par de salientes concéntricos que se acoplan con la botella.

19. La tapa tipo corona de la reivindicación 14, en donde el empaque incluye un solo labio tipo tapón que se acopla al aro más interior de la botella.

20. La tapa tipo corona de la reivindicación 14, en donde el acabado de la botella es del tipo para destapar usando un destapador.

21. La tapa tipo corona de la reivindicación 14, en donde el acabado de la botella es del tipo para desenroscar.

22. Un método para doblar una tapa tipo corona sobre una botella de vidrio, comprende las etapas de:

suministrar una tapa tipo corona que incluye:

- un casquillo formado de un material que comprende acero que tiene una dureza promedio mayor a 62 en la escala 30T, el casquillo incluye:

- una falda periférica que tiene estrías que se desprenden hacia abajo desde esta, las estrías son capaces de ser dobladas para fijar la tapa tipo corona a una botella;

- un panel redondo formado integralmente con la falda, el panel incluye rasgos estructurales formados como rebajos allí; y

- un empaque localizado sobre el lado inferior del panel;

y

posicionar la tapa tipo corona sobre un aro de una botella; y mover una herramienta de doblado hacia abajo con relación a la tapa tipo corona, la herramienta de doblado inicialmente hace contacto con la tapa tipo corona solamente sobre las estrías aproximadamente en el borde externo de la misma.



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Folios: 64

PATENTE DE INVENCION ☐

MODELO DE UTILIDAD ☐

☐

Indicación que se solicita una patente.

☐

Datos de identificación del solicitante o de la persona que presenta la solicitud

☐

Descripción de la invención

☐

Dibujos de ser estos pertinentes

☐

Comprobante de pago de las tasas establecidas (De ser el caso formato de descuento)

Completa ☐

Incompleta ☐

PATENTE DE INVENCION PCT ☒

MODELO DE UTILIDAD PCT ☐

Art.33 Decisión 486/00, Circular Única

☒

Indicación que se solicita una PCT

☒

Copia de la solicitud en español, tal como fue presentada inicialmente (capítulo descriptivo, reivindicatorio, resumen)

☒

Dibujos de ser estos pertinentes

☒

Comprobante de pago de las tasas establecidas (de ser el caso formato de descuento)

Completa ☒

Incompleta ☐

DISEÑO INDUSTRIAL ☐

(Art. 119 Decisión 486/00)

☐

Indicación que se solicita Diseño industrial

☐

Datos de identificación del solicitante o de la persona que presenta la solicitud

☐

Representación gráfica y fotográfica del Diseño industrial o muestra del material que incorpora el diseño

☐

Comprobante de pago de las tasas establecidas

Completa ☐

Incompleta ☐

ESQUEMA DE TRAZADO ☐

(Art. 92 Decisión 486/00)

☐

Indicación que se solicita un esquema de trazado

☐

Datos de identificación del solicitante o de la persona que presenta la solicitud

☐

Representación gráfica de un esquema de trazado

☐

Comprobante de pago de las tasas establecidas

Completa ☐

Incompleta ☐



Bogotá,
2020

Doctor(a)
URIBE RESTREPO JUAN CARLOS

REFERENCIA	Radicación No.	10 10737
	Solicitud internacional	PCT/US2008/069193
	Fecha inicio fase nacional	06/02/2010
	Trámite	11
	Evento	378
	Actuación	430
	Oficio No.	<u>Nº 04775</u>

Como resultado del examen de forma, realizado con fundamento en el artículo 28 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. La traducción de la solicitud fase nacional, deberá estar acompañada de los respectivos dibujos.
2. La solicitud no contiene el poder debidamente otorgado, con el lleno de los requisitos exigidos por los artículos 63 y subsiguientes del Código de Procedimiento Civil. Adicionalmente, deberá presentar el documento que acredita la existencia y representación legal de la sociedad solicitante, cuando ésta fuere persona jurídica.
3. La solicitud no contiene la copia del documento en que consta la cesión del derecho a la patente del inventor al solicitante o a su causante, conforme a lo establecido por el artículo 26 literal E) de la Decisión 486 de la Comisión de la Comunidad Andina. Cuando se trate de documentos otorgados en el extranjero, estos deberán legalizarse de conformidad con lo dispuesto por los artículos 259 y 260 del Código de Procedimiento Civil. Cuando se trate de las declaraciones a que hace referencia la Regla 4.17 ii) del Tratado de Cooperación en Materia de Patentes PCT., el alcance de las tales declaraciones se determinará según indiquen claramente una cesión de derechos del inventor al solicitante o su causante, de conformidad con lo dispuesto en el numeral 5.2.15 del Capítulo Quinto, Título X de la Circular Única de Superintendencia de Industria y Comercio.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No.10 de 2001.

Continúa en la página siguiente...



Radicación No.: 10 10737


ALIX CARMENZA CESPEDES DE VERGEL
Directora de Nuevas Creaciones (c)

El anterior requerimiento fue notificado por fijación en lista de
fecha 09 ABR. 2010
adpall