

Description

This invention relates to a closure according to the precharacterising part of claim 1. Such a closure is previously known from US-A-3 933 271.

It has heretofore been proposed that closures be provided for containers wherein the closures include a cap that is hinged to the part of the closure on the container by an integral hinge. Conventionally, such closures rely on tension on the hinge to produce a snap action. Typical constructions are shown in United States patents 3,628,215, 3,629,901, 4,047,495, 4,386,714. US 3933271 discloses a cap assembly for attachment to a container having a pair of spring members disposed between cap and base, capable of biasing the cap toward the open and closed positions, and a hinge.

Among the objectives of the present invention are to provide a dispensing closure which has a cap that operates with a snap action in moving to and from a closed position; which has minimum hinge protrusion so that it is compatible with high speed filling lines thus allowing greater line speeds; which provides a low profile; which is relatively easier to manufacture; which can be operated by one hand; which has an easy opening pour spout.

In accordance with the invention, the closure with a snap type hinge cap comprises a first part adapted to interengage with the open neck of a container, a second part forming a cap and an integral hinge interconnecting the first and second parts. Each of the first and second parts comprises a base wall and a peripheral skirt. A pair of hinge straps extends from the skirts and are positioned on opposite sides of the integral hinge. The ends of the straps are positioned in recesses in the skirts and the straps are substantially straight when the first part and the second part are in open position and the straps are curved when the first and second parts are in closed position. The length of the pair of hinge straps is less than the length of the arc through which the second cap part moves to and from the closed position relative to the first part such that the pair of straps stretch to function as springs. The ends of the pair of straps are attached to the skirts radially inwardly of the periphery of the skirts.

Description of the Drawings

FIG. 1 is a plan view of a closure embodying the invention.

FIG. 2 is a sectional view taken along the line 2-2 in FIG.1.

FIG. 3 is a view similar to FIG. 2 showing the cap portion of the closure in closed position.

FIG. 4 is a fragmentary plan view on an enlarged scale of the hinge portion of the closure.

FIG. 5 is a fragmentary part sectional view on an enlarged scale of the hinge portion of the closure.

FIG. 6 is a fragmentary perspective view of the closure in closed position on a container.

FIG. 7 is a fragmentary perspective view of the closure in open position.

Referring to the drawings, the closure 10 embodying the invention is made of plastic such as polypropylene and comprises a first part 11 which is adapted to be threaded on the neck of a container, a second part 12 which forms a cap and an integral hinge 13 connecting the first part 11 and second part 12.

The first part includes a base wall 14 and a peripheral skirt 15 with a shoulder 16 at the juncture of the base wall 14 and skirt 15. A tubular spout 17 extends from the exterior surface of base wall 14 and terminates in a chamfer rim 17a. An annular bead 18 is formed on the inner surface of the spout 17. The skirt 15 is formed with a thread on the inner surface thereof for engagement with the threads on the neck of a container. The spout 17 provides a dispensing outlet for the contents of a container on which the closure is applied.

The second or cap part 12 is formed with a base wall 20 and a peripheral skirt 21. Shoulder 16 is adapted to be engaged by the free edge of the skirt 21. Spaced concentric walls 22, 23 are provided on the inner surface of the base wall 20 and are adapted to telescope over the spout 17 and receive the rim 17a in the annular space formed between walls 22, 23 when the cap is moved to closed position. The wall 22 is axially shorter than the wall 23 to permit the swinging movement of the cap 12 into position for engagement of the wall 22 with the spout 17. Chamfer rim 17a guides the inner wall 22 into the opening of the spout 17. The inner diameter of the outer wall 23 is slightly less than the outer diameter of the spout 17 near the rim 17a such that the wall 23 engages and seals against the outer surface of the spout 17. Rib 18 provides a friction fit for innermost wall 22 to both insure a tight seal for the contents of the container and clean the spout of contents in the region adjacent rim 17a. The friction fit also secures the second part in closed position.

Peripheral skirt 15 of the first part 11 is formed with a flattened external surface 24 that underlies an enlarged radial portion 25 on the skirt 21 of the second part 12 so that the portion 25 can be engaged by the thumb of the user to open the closure. The enlarged portion 25 extends circumferentially and blends into the skirt 15 so that the cap part 12 is less likely to pop out and interfere with capping or case packing of the closed container.

Integral hinge 13 has a length several times its

width to provide stability. The hinge 13 has its upper surface in the plane of the shoulder 16 and the free edge of the skirt 21. Hinge 13 extends from flat portions 21a and 15a of the skirts 21 and 15, respectively, so that the hinging action is about a straight line. The under side of the hinge 13 is in the form of an inverted V in radial cross section to define the hinge line at the apex of the V. A pair of hinge straps 27 is provided, one on each side of hinge 13. The length of the integral hinge 13 is several times the width of each of the straps 27.

Each strap extends between a recess 28 on part 11 and a recess 29 on part 12. The end of each strap 27 is connected to the base of the recesses 28, 29 by angular portions 28a, 29a which extend upwardly as viewed in FIG. 4 to lessen the profile of the straps 27 when the cap is in closed position.

By positioning the ends of the straps 27 in recesses, the protrusion of the straps beyond the periphery of the skirts of parts 11, 12 is minimized to facilitate capping and case packing.

The configuration of each strap 27 is such that the straps stretch in operation; i.e., in opening and closing part 12 on part 11.

Claims

1. A closure (10) with a snap type hinge cap (12) comprising a first part (11) adapted to interengage with the open neck of a container,
 - a second part (12) forming the cap and
 - an integral hinge (13) interconnecting the first and second parts,
 - each of the first and second parts comprising a base wall (14, 20) and a peripheral skirt (15, 21),
 - a pair of hinge members (27) extending from the skirts (15, 21) on opposite sides of the integral hinge (13),
 - the ends of the members (27) being positioned in recesses (28) in said skirts (15, 21), characterised by
 - said members being straps (27),
 - said straps (27) being substantially straight when said first part (11) and second part (12) are in open position and by
 - said straps (27) being curved when said first part (11) and second part (12) are in closed position, and
 - by said hinge straps (27) having a length less than the length of the arc through which the second cap part (12) moves to and from the closed position relative to the first part (11) such that the pair of straps (27) stretch to function as springs.

2. A closure as claimed in claim 1 in which the

portions (15a, 21a) of the skirt (15) of the first part (11) and of the second part (12) to which the integral hinge (13) is attached are flat in a circumferential direction.

3. A closure as claimed in either of claims 1 and 2 wherein said integral hinge (13) has a flat top surface and an inverted V-shaped bottom surface when the closure is in the open position.

Revendications

1. Dispositif de fermeture (10) muni d'un capuchon (12) à charnière du type à effet de ressort comprenant :
 - une première partie (11) adaptée pour être assemblée avec le goulot ouvert d'un récipient,
 - une seconde partie (12) formant le capuchon, et
 - une charnière intégrée (13) reliant entre elles les première et seconde parties,
 - chacune des première et seconde parties comprenant une paroi de base (14, 20) et une jupe périphérique (15, 21),
 - une paire d'éléments (27) de charnière s'étendant depuis les jupes (15, 21) sur les côtés opposés de la charnière intégrée (13),
 - les extrémités des éléments (27) étant disposées dans des évidements (28) desdites jupes (15, 21), caractérisé en ce que :
 - lesdits éléments sont des bandes (27), lesdites bandes (27) étant sensiblement rectilignes lorsque ladite première partie (11) et la seconde partie (12) sont dans une position ouverte,
 - lesdites bandes (27) étant courbées lorsque ladite première partie (11) et la seconde partie (12) se trouvent en position fermée, et
 - lesdites bandes (27) de charnière ont une longueur inférieure à la longueur de l'arc parcourue par la seconde partie (12) formant le capuchon vers et depuis la position fermée par rapport à la première partie (11) de telle sorte que les bandes de la paire de bandes (27) sont étirées de manière à fonctionner comme des ressorts.
2. Dispositif de fermeture selon la revendication 1, dans lequel les parties (15a, 21a) de la jupe (15) de la première partie (11) et de la seconde partie (12) auxquelles est fixée la charnière intégrée (13) sont plates dans la direction circéférentielle.
3. Dispositif de fermeture selon l'une ou l'autre des revendications 1 et 2, dans lequel ladite charnière intégrée (13) comporte une surface supérieure plate et une surface inférieure en



width to provide stability. The hinge 13 has its upper surface in the plane of the shoulder 16 and the free edge of the skirt 21. Hinge 13 extends from flat portions 21a and 15a of the skirts 21 and 15, respectively, so that the hinging action is about a straight line. The under side of the hinge 13 is in the form of an inverted V in radial cross section to define the hinge line at the apex of the V. A pair of hinge straps 27 is provided, one on each side of hinge 13. The length of the integral hinge 13 is several times the width of each of the straps 27.

Each strap extends between a recess 28 on part 11 and a recess 29 on part 12. The end of each strap 27 is connected to the base of the recesses 28, 29 by angular portions 28a, 29a which extend upwardly as viewed in FIG. 4 to lessen the profile of the straps 27 when the cap is in closed position.

By positioning the ends of the straps 27 in recesses, the protrusion of the straps beyond the periphery of the skirts of parts 11, 12 is minimized to facilitate capping and case packing.

The configuration of each strap 27 is such that the straps stretch in operation; i.e., in opening and closing part 12 on part 11.

Claims

1. A closure (10) with a snap type hinge cap (12) comprising a first part (11) adapted to interengage with the open neck of a container,
 - a second part (12) forming the cap and
 - an integral hinge (13) interconnecting the first and second parts,
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2. A closure as claimed in claim 1 in which the

portions (15a, 21a) of the skirt (15) of the first part (11) and of the second part (12) to which the integral hinge (13) is attached are flat in a circumferential direction.

3. A closure as claimed in either of claims 1 and 2 wherein said integral hinge (13) has a flat top surface and an inverted V-shaped bottom surface when the closure is in the open position.

Revendications

1. Dispositif de fermeture (10) muni d'un capuchon (12) à charnière du type à effet de ressort comprenant :
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 - les extrémités des éléments (27) étant disposées dans des évidements (28) desdites jupes (15, 21), caractérisé en ce que :
 - lesdits éléments sont des bandes (27), lesdites bandes (27) étant sensiblement rectilignes lorsque ladite première partie (11) et la seconde partie (12) sont dans une position ouverte,
 - lesdites bandes (27) étant courbées lorsque ladite première partie (11) et la seconde partie (12) se trouvent en position fermée, et
 - lesdites bandes (27) de charnière ont une longueur inférieure à la longueur de l'arc parcourue par la seconde partie (12) formant le capuchon vers et depuis la position fermée par rapport à la première partie (11) de telle sorte que les bandes de la paire de bandes (27) sont étirées de manière à fonctionner comme des ressorts.
2. Dispositif de fermeture selon la revendication 1, dans lequel les parties (15a, 21a) de la jupe (15) de la première partie (11) et de la seconde partie (12) auxquelles est fixée la charnière intégrée (13) sont plates dans la direction circumférentielle.
3. Dispositif de fermeture selon l'une ou l'autre des revendications 1 et 2, dans lequel ladite charnière intégrée (13) comporte une surface supérieure plate et une surface inférieure en



forme de V inversé lorsque le dispositif de fermeture se trouve dans la position ouverte.

Patentansprüche

1. Mit einer Schnappscharnierkappe (12) versehene Verschließvorrichtung (10) mit folgenden Merkmalen:
 ein erstes Teil (11) ist zum Eingriff am offenen Hals eines Behälters ausgebildet;
 ein zweites Teil (12) bildet die Kappe;
 ein einstückiges Scharnier (13) verbindet die ersten und zweiten Teile miteinander;
 jedes der ersten und zweiten Teile weist eine Basiswand (14, 20) und eine periphere Schürze (15, 21) auf;
 zwei scharnierglieder (27) erstrecken sich von den Schürzen (15, 21) an entgegengesetzten Seiten des einstückigen Scharniers (13);
 die Enden der Glieder (27) sind in Aussparungen (28) der Schürzen (15, 21) angeordnet, gekennzeichnet durch folgende Merkmale:
 die Glieder werden durch Bänder (27) gebildet;
 die Bänder (27) sind im wesentlichen gerade, wenn das erste Teil (11) und das zweite Teil (12) sich in ihrer offenen Lage befinden;
 die Bänder (27) sind gekrümmt, wenn das erste Teil (11) und das zweite Teil (12) sich in ihrer geschlossenen Lage befinden, und die Scharnierbänder (27) weisen eine geringere Länge als die Bogenlänge auf, entlang welcher sich das zweite Kappenteil (12) in und aus der geschlossenen Lage relativ zu dem ersten Teil (11) bewegt, so daß die beiden Bänder (27) sich strecken, um als Federn zu wirken.
2. Verschuß nach Anspruch 1, dadurch gekennzeichnet, daß die Teile (15a, 21a) der Schürze (15) des ersten Teils (11) und des zweiten Teils (12), an denen das einstückige Scharnier (13) befestigt ist, in Umfangsrichtung eben ausgebildet sind.
3. Verschuß nach einem der Ansprüche 1 oder 2, dadurch gekennzeichnet, daß das integrale Scharnier (13) eine ebene Oberseitenfläche und eine umgekehrt V-förmige Unterseitenoberfläche aufweist, wenn der Verschuß sich in seiner geöffneten Stellung befindet.

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