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(54) **Discoidal gasket for threaded closing elements**

Scheibenförmige Dichtung für Schließelemente mit Gewinde

Joint en forme de disque pour éléments de fermeture filetés

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Description

[0001] This invention relates to the technology of the production of closing elements, in particular threaded caps for forced screwing in a recipient unit, and in particular relates to a gasket equipped with means for allowing it to stably hold itself in the closing element.

[0002] The prior art already refers to caps intended for industrial use, having a dome-shaped geometry and equipped with a head and an internally threaded tubular body, which are intended to cover and block with forced tightening the externally threaded ends of a pipe, found on recipient units for the cap, having the most diverse shapes.

[0003] Such caps are used for the most diverse purposes, including, for example, blocking pieces of pipe, protecting them from any damage, covering them for functional or aesthetic reasons, for marking them, etc.

[0004] When such caps are intended to hermetically seal an end of a pipe, or in any case to securely make it impervious, the cap is usually equipped with an inner gasket which, being functionally interposed between the closing element and the end of the pipe, prevents the contents from leaking, or vice versa prevents unwanted substances from entering the pipe.

[0005] Usually, such gaskets are made of elastically yielding material and substantially have the shape of a disk, being circular.

[0006] As indicated in patents DE B697 01876 , EP 697 345 , FR 850957 and US 6425492 , there are prior art gaskets with tabs, in which the tabs project from the entire thickness of the gasket, or at least from one end of the edge of the gasket. However, it is clear that gaskets which are not symmetrical relative to the thickness will not be reversible relative to insertion in the cap.

Document DE B697 01876 discloses a cap for beverage containers provided with a sealing means comprising a flexible concave disk portion and a circular flange with a conical portion and a fixation portion for joining the sealing means to a closure frame, wherein the fixation portion ends in a number of tongues.

[0007] Document EP 697 345 relates to a gasket for bottles, wherein the gasket must be attached to the bottle neck, the gasket having a circular shape and being provided with tabs which have the same thickness as the circular portion.

[0008] Document FR 850957 relates to cork circular pieces to be inserted into a cap to close bottles, wherein the cork pieces may be provided with peripheral tabs or may be reinforced by means of metallic pieces provided with tabs, the tabs having the same thickness of the circular piece.

[0009] Document US 6425492 relates to a sealing liner for a container wherein the liner must be attached to the bottle neck and has a disk shaped body provided with tabs having the same thickness as the disk shaped body.

[0010] To allow easy insertion of the gasket in the cap, a coupling with play is provided between the tubular body and the disk shape. Said play is obtained by giving the disk shape a diameter which is less than the diameter of the tubular body of the cap.

[0011] The presence of the above-mentioned assembly play causes problems during the mechanised assembly of caps to the related pieces of pipe.

[0012] In fact, in industrial automated plants, as is well known widespread use is made of continuous transport feeders, for conveying the caps into the station where they will be assembled with the recipient pipes.

[0013] During transportation, the caps bump against each other and, when they are transported using mechanical vibrations, for example to position the caps in an orderly fashion and place them in sequence and/or convey them one after another along the feed lines, the gaskets, due to the play existing relative to the tubular body of the cap, tend to very easily become detached from the caps and come out of them, compromising the operation of the line and the quality of the final assembly.

[0014] Moreover, the variability of the pitch of the thread in the cap means that gaskets whose tabs cover the entire thickness of the gasket are difficult to adapt to threads with different pitches.

[0015] Finally, the thermal stresses to which gaskets may be subjected can cause size changes which are uniform on the entire edge, consequently also involving the tabs which coincide with the edge.

[0016] The aim of this invention is to overcome that problem by proposing a solutions which, according to the invention, comprises a gasket structured in such a way that it holds itself stably on the cap, irrespective of the mechanical and thermal actions to which the cap may be subjected.

Accordingly, this invention achieves said aim with a gasket according to claim 1, in which the tabs are located in the central zone of the thickness.

The main advantage of the invention is the fact that gaskets obtained in this way are reversible relative to insertion in the threaded caps and are flexible relative to thread ridges with different pitches.

Moreover, the fact that the tab circumscribes the central zone of the thickness makes it less sensitive to the size variations caused by thermal stresses to which the gasket may be subjected.

The advantages of this invention are more apparent in the detailed description which follows, with reference to the accompanying drawings which illustrate an example, non-limiting embodiment of the invention, in which:

- Figure 1 is an exploded schematic assembly view of a condition of use of the invention;
- Figure 2 is a perspective view of the invention;
- Figure 3 is an elevation view of the invention;
- Figure 4 is a side view of the invention;
- Figure 5 is a greatly enlarged view of a cross-section of the invention.

[0017] With reference to the accompanying drawings,

in Figure 1 the numeral 11 denotes in its entirety a generic unit with a stretch 12 of externally threaded pipe which is the intended recipient of a substantially dome-shaped closing element 2, which can be associated with the stretch 12 of threaded pipe by interposing a gasket 1 between them.

[0018] More particularly, the closing element 2 comprises a head 13 and a tubular body 14 provided with an inner thread 9 projecting inwards and jutting transversally relative to it.

[0019] The gasket 1 is disk-shaped and is made of flexible material. As Figures 2, 3 and 4 clearly show, the gasket 1 is provided with a plurality of tabs 4, which are contained in the thickness 5 of the disk shape and project from the lateral edge 6 of the gasket 1 at a central portion 61 of the edge 6.

[0020] The tabs 4 which, in plan view, substantially have the shape of a circular segment, are distributed in a reasonable number and evenly along the outline 6 of the disk shape. Such a method of distribution is preferable to guarantee correct centring of the gasket 1 relative to the closing element 2.

When the gasket 1 is associated with the closing element 2, thanks to the elasticity of the material used to make the gasket 1 and the cantilever-style projection of the tabs 4 from the disk shape, when the gasket 1 is pushed into the closing element 2, the tabs 4 tend to bend in contact with the projections of the inner thread 9 of the closing element 2, and move over and past the projections 3 with an elastic snap-fit action, connecting the gasket 1 to the closing element 2.

It should be noticed that due to the way in which the gasket 1 is associated with the closing element 2, a high level of gasket 1 stability in its position in the closing element 2 is achieved. Although the gasket can still be removed if necessary, said stability guarantees the gasket 1 the ability to react elastically and to dampen the vibrating actions which may shake the closing element 2.

Figure 5 shows that each tab 4 has a thickness 51 which decreases from the outline 6 of the disk shape to a free end 8 of the tab 4.

Claims

1. A discoidal gasket made of flexible material for threaded closing elements (2), comprising tabs (4) projecting from a lateral edge (6) of the gasket (1), wherein the tabs (4) are contained in the thickness (5) of the disk shape and are located in the central zone of the thickness, the tabs projecting from the lateral edge (6) of the disk shape at a central portion (61) of the thickness (5) of the edge (6), in such a way that they are adapted to engage with a snap-fit action in the closing element, **characterised in that** each tab (4) has a thickness (51) decreasing from the edge (6) of the disk shape to a free end (8) of the tab (4).

2. The gasket according to claim 1, **characterised in that**, in plan view, each tab (4) substantially has the shape of a circular segment.

3. The gasket according to claim 1 or 2, **characterised in that** the tabs are distributed along the edge (6) of the disk shape.

4. The gasket according to claim 3, **characterised in that** the tabs (4) are evenly distributed along said edge (6).

Patentansprüche

1. Eine scheibenförmige Dichtung, aus biegsamem Material hergestellt, für Schließelemente mit Gewinde (2), welche Laschen (4) enthält, die von einem Seitenrand (6) der Dichtung (1) herausragen, wobei die Laschen (4) in der Dicke (5) der Scheibenform enthalten sind und sich im mittleren Bereich der Dicke befinden; die Laschen ragen vom Seitenrand (6) der Scheibenform in einem zentralen Abschnitt (61) der Dicke (5) des Rands (6) solcherart hervor, dass sie sich dazu eignen, in das Schließelement einzurasten, **gekennzeichnet dadurch, dass** jede Lasche (4) eine Dicke (51) hat, die vom Rand (6) der Scheibenform bis hin zu einem freien Ende (8) der Lasche (4) abnimmt.

2. Die Dichtung nach Patentanspruch 1, **gekennzeichnet dadurch, dass** jede Lasche (4) in der Draufsicht im Wesentlichen die Form eines kreisförmigen Segments hat.

3. Die Dichtung nach den Patentansprüchen 1 oder 2, **gekennzeichnet dadurch, dass** die Laschen auf dem Rand (6) der Scheibenform verteilt sind.

4. Die Dichtung nach Patentanspruch 3, **gekennzeichnet dadurch, dass** die Laschen (4) gleichmäßig über besagten Rand (6) verteilt sind.

Revendications

1. Un joint en forme de disque réalisé dans un matériau flexible pour des éléments de fermeture filetés (2), comprenant des languettes (4) saillant d'un bord latéral (6) du joint (1), dans lequel les languettes (4) sont contenues dans l'épaisseur (5) de la forme discoïdale et sont situées dans la zone centrale de ladite épaisseur, les languettes saillant du bord latéral (6) de la forme discoïdale au niveau d'une portion centrale (61) de l'épaisseur (5) du bord (6), de telle sorte qu'elles sont adaptées à venir s'assujettir, par emboîtement par pression, dans l'élément de fermeture, **caractérisé en ce que** chaque languette (4) a

une épaisseur (51) qui décroît du bord (6) de la forme discoïdale jusqu'à une extrémité libre (8) de la languette (4) elle-même.

2. Le joint selon la revendication 1, **caractérisé en ce que**, dans une vue en plan, chaque languette (4) a essentiellement la forme d'un segment circulaire.

3. Le joint selon la revendication 1 ou 2, **caractérisé en ce que** les languettes sont réparties le long du bord (6) de la forme discoïdale.

4. Le joint selon la revendication 3, **caractérisé en ce que** les languettes (4) sont réparties uniformément le long dudit bord (6).

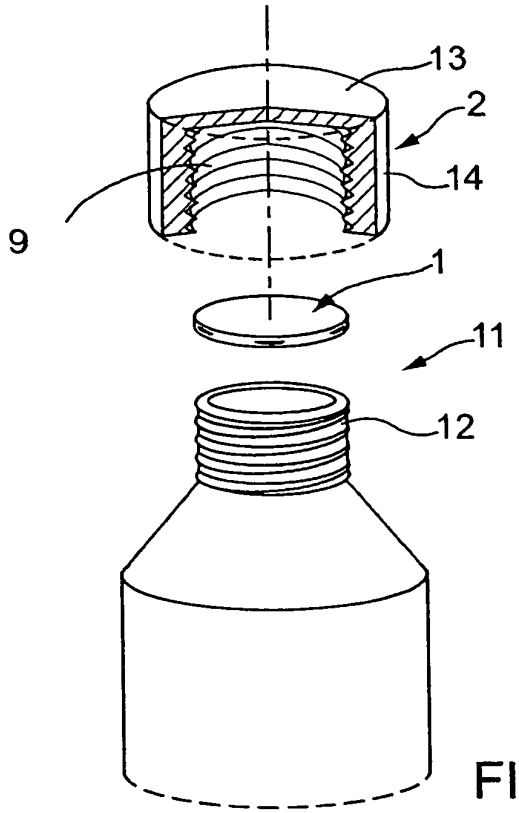

FIG.1

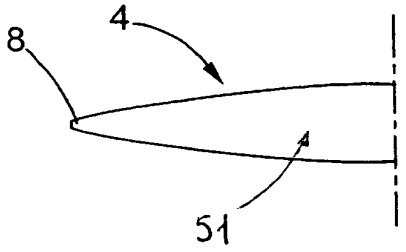

FIG.5

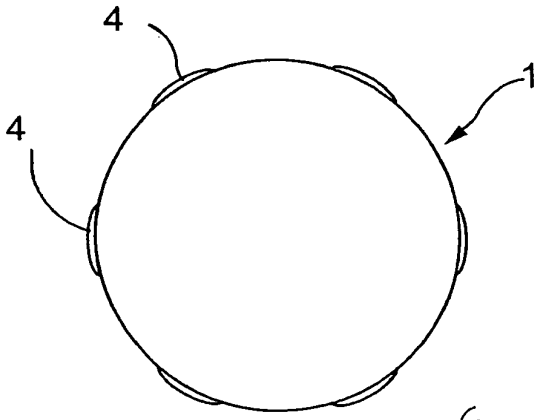

FIG.3

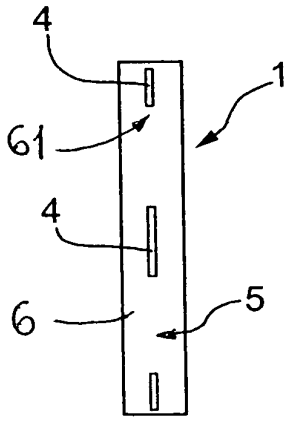

FIG.4

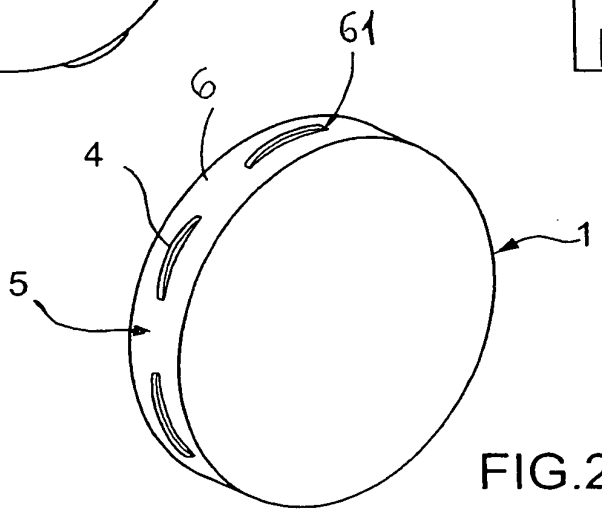

FIG.2

REFERENCES CITED IN THE DESCRIPTION

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