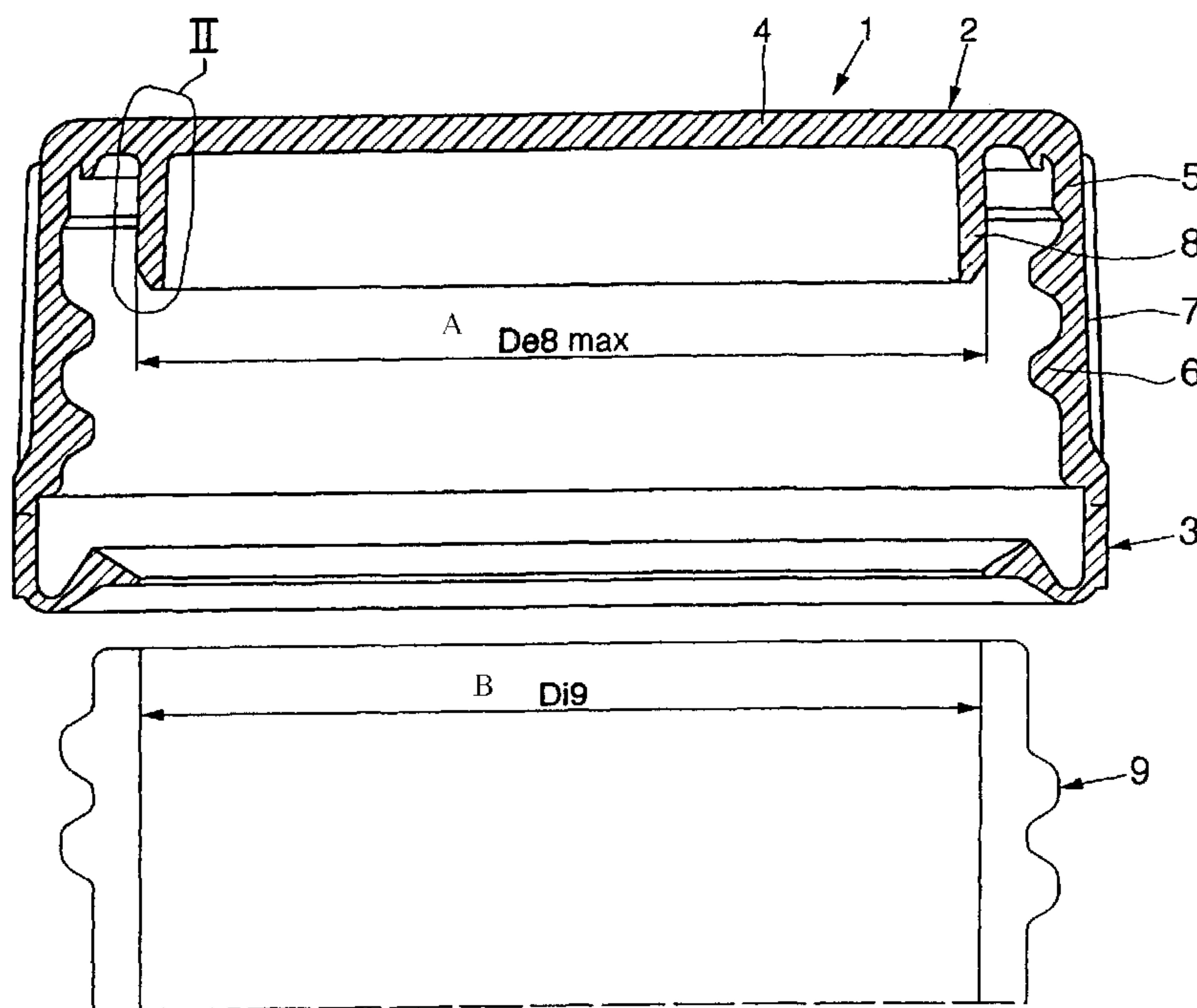




(86) Date de dépôt PCT/PCT Filing Date: 2000/10/13
 (87) Date publication PCT/PCT Publication Date: 2002/04/18
 (85) Entrée phase nationale/National Entry: 2002/12/03
 (86) N° demande PCT/PCT Application No.: FR 2000/002871
 (87) N° publication PCT/PCT Publication No.: 2002/030776

(51) Cl.Int.⁷/Int.Cl.⁷ B65D 41/04
 (71) Demandeur/Applicant:
BERICAP, FR
 (72) Inventeurs/Inventors:
NUSBAUM, PHILIPPE, FR;
SKOKO, ZELJKO, FR
 (74) Agent: BERESKIN & PARR

(54) Titre : CAPSULE DE BOUCHAGE EN MATIERE PLASTIQUE, A JUPE D'ETANCHEITE
 (54) Title: PLASTIC CLOSURE CAP, WITH SEALING SKIRT



A... MAXIMUM EXTERNAL DIAMETER
 B... NOMINAL INTERNAL DIAMETER

(57) Abrégé/Abstract:

The invention concerns a plastic closure cap for a container neck, comprising an end wall (4) whereon project in the same direction an outer skirt (5) comprising internally means (6) for fixing the cap on the container neck (9) and a sealing skirt (8) cooperating by tightening with the inner surface of the neck to seal the latter. The inner skirt (8) diverge at least externally in the form of a truncated cone from its base towards its free end, its external diameter (De8 max) proximate to its free end being larger than the nominal internal diameter (Di9) of the container neck (9), the conicity being such that it does not obstruct the axial stripping of the skirt. The invention is for example useful for closing bottles containing carbonated beverages.

(12) DEMANDE INTERNATIONALE PUBLIÉE EN VERTU DU TRAITÉ DE COOPÉRATION
EN MATIÈRE DE BREVETS (PCT)(19) Organisation Mondiale de la Propriété
Intellectuelle
Bureau international(43) Date de la publication internationale
18 avril 2002 (18.04.2002)

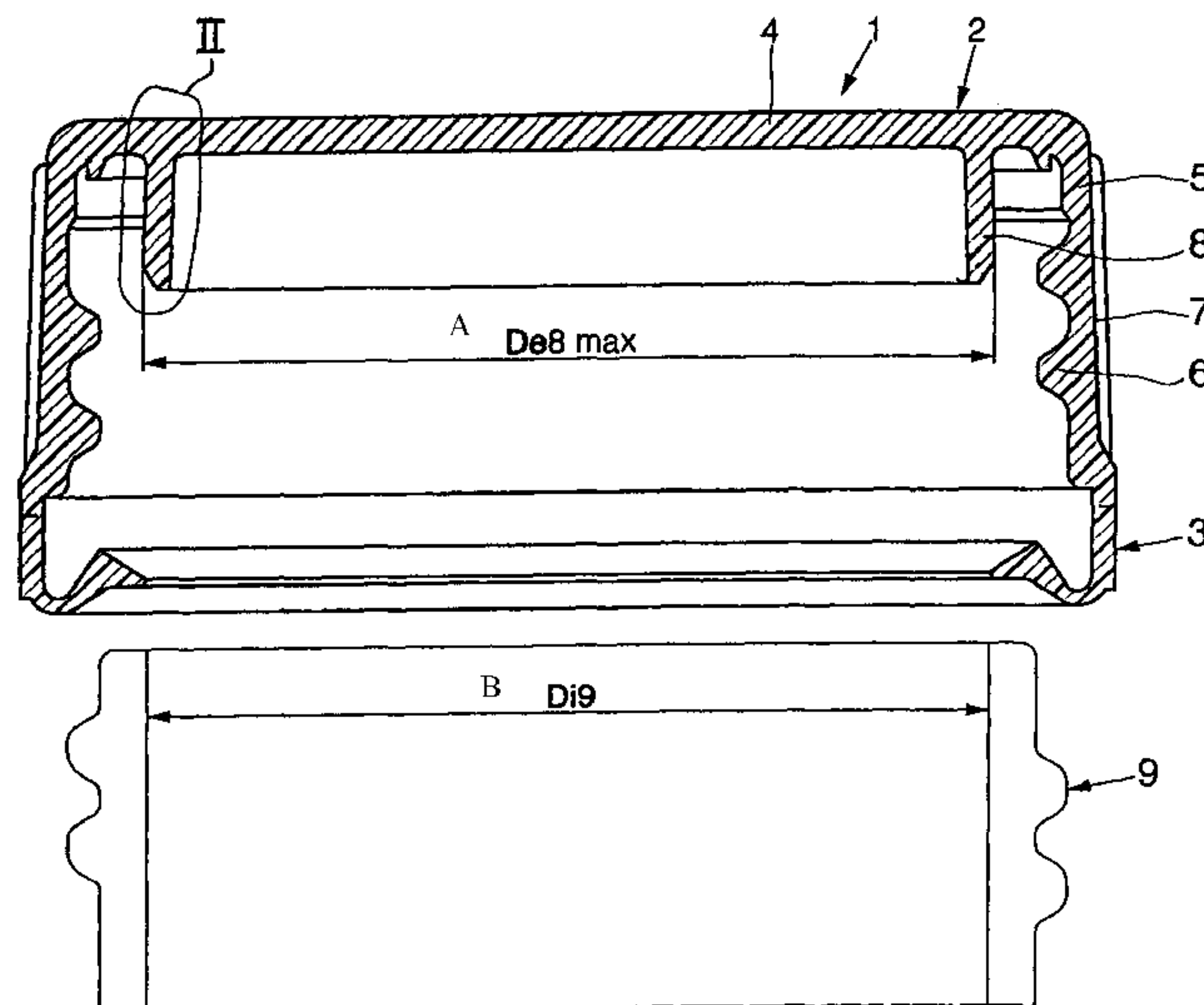
PCT

(10) Numéro de publication internationale
WO 02/30776 A1

- (51) Classification internationale des brevets⁷ : **B65D 41/04** F-21000 Dijon (FR). **SKOKO, Zeljko** [FR/FR]; 36, rue Maryse Bastié, F-21600 Longvic (FR).
- (21) Numéro de la demande internationale : PCT/FR00/02871 (74) Mandataire : **BOJU DERAMBURE BUGNION**; 52, rue de Monceau, F-75008 Paris (FR).
- (22) Date de dépôt international : 13 octobre 2000 (13.10.2000) (81) États désignés (*national*) : AU, BR, CA, CN, HU, ID, IL, IN, JP, KR, MX, PL, RU, TR, US, ZA.
- (25) Langue de dépôt : français (84) États désignés (*regional*) : brevet européen (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).
- (26) Langue de publication : français
- (71) Déposant (*pour tous les États désignés sauf US*) : **BER-ICAP** [FR/FR]; ZI, 1, boulevard Eiffel, F-21600 Longvic (FR). Publiée :
— avec rapport de recherche internationale
- (72) Inventeurs; et
(75) Inventeurs/Déposants (*pour US seulement*) : **NUS-BAUM, Philippe** [FR/FR]; 2, allée Pablo Picasso, En ce qui concerne les codes à deux lettres et autres abréviations, se référer aux "Notes explicatives relatives aux codes et abréviations" figurant au début de chaque numéro ordinaire de la Gazette du PCT.

(54) Title: PLASTIC CLOSURE CAP, WITH SEALING SKIRT

(54) Titre : CAPSULE DE BOUCHAGE EN MATIÈRE PLASTIQUE, A JUPE D'ÉTANCHEITE

A... MAXIMUM EXTERNAL DIAMETER
B... NOMINAL INTERNAL DIAMETER

(57) Abstract: The invention concerns a plastic closure cap for a container neck, comprising an end wall (4) whereon project in the same direction an outer skirt (5) comprising internally means (6) for fixing the cap on the container neck (9) and a sealing skirt (8) co-operating by tightening with the inner surface of the neck to seal the latter. The inner skirt (8) diverge at least externally in the form of a truncated cone from its base towards its free end, its external diameter (De8 max) proximate to its free end being larger than the nominal internal diameter (Di9) of the container neck (9), the conicity being such that it does not obstruct the axial stripping of the skirt. The invention is for example useful for closing bottles containing carbonated beverages.

[Suite sur la page suivante]

WO 02/30776 A1

WO 02/30776 A1

(57) Abrégé : Capsule de bouchage en matière plastique pour un col de récipient, comprenant une paroi d'extrémité (4) sur laquelle font saillie dans le même sens une jupe extérieure (5) comportant intérieurement des moyens (6) pour la fixation de la capsule sur le col de récipient (9) et une jupe intérieure d'étanchéité (8) coopérant par serrage avec la surface intérieure du col pour obturer ce dernier. La jupe intérieure (8) diverge au moins extérieurement en tronc de cône de sa base en direction de son extrémité libre, son diamètre extérieur (De_8) max au voisinage de son extrémité libre étant supérieur au diamètre intérieur nominal (Di_9) du col de récipient (9), la conicité étant telle qu'elle ne gêne pas le démoulage axial de la jupe.

A plastic closure cap with a sealing skirt

The present invention relates to a plastic closure cap for a container neck, comprising an end wall on which there project in the same direction an outer skirt having internally means for fixing the cap to the container neck and an inner sealing skirt cooperating by tightening with the inner surface of the neck in order to close the latter.

Caps of this type have sealing skirts, either cylindrical, or with more complex shapes (for example with a first divergent frustoconical section followed by a second convergent frustoconical section, with a cylindrical section followed by an external rim which can be folded in the direction of the end wall of the cap, with cylindrical skirts having an outer rim or flange at their free end, with

an olive-shaped profile or the like, etc). These skirts with more complex shapes complicate the moulding of the caps.

5 All these complex shapes of sealing skirts are aimed at improving the seal, in particular for pressurised liquids such as carbonated drinks, a seal preferably established close to the free end of the skirt, and therefore in a position recessed with respect to the free edge of the neck. On screw caps having such skirts, it is also desirable to
10 reduce the torque which has to be exerted by the user in order to unscrew the cap.

However, the known sealing skirts only imperfectly meet all the requirements concerning ease of moulding, a good seal and reduced unscrewing torque.

15 The present invention relates to a closure cap having a sealing skirt formed so as to meet these different requirements in an optimum fashion.

On the plastic cap which is the object of the invention, for closing a container neck, comprising an end wall on which
20 there project in the same direction an outer skirt having internally means for fixing the cap to the neck of the container and an inner sealing skirt cooperating by tightening with the inner surface of the neck in order to close the latter, the inner skirt diverges at least
25 externally in a truncated cone from its base in the direction of its free end, at least the external diameter of the skirt in the vicinity of its free end being greater than the nominal internal diameter of the container neck, the conicity of the skirt being such that it does not obstruct
30 the axial mould stripping of the skirt.

This conformation of the sealing skirt makes it possible to

concentrate the tightening effect of the said skirt against the inner surface of the neck of the container essentially in the vicinity of the free end of the skirt, which ensures at the same time a good seal, reduced unscrewing torque and optimum positioning of the skirt-neck contact in so far as any gas pressure inside the container reinforces the contact of the skirt with the neck of the container. In spite of this, the conicity of the skirt is sufficiently small to allow a simple axial mould stripping of the skirt.

Preferably, the frustoconical external surface of the skirt can have a slope of between approximately 1° and 5° , preferably a slope of approximately 2° .

To improve the engagement of the skirt in the container neck, the skirt can advantageously have, at its free end, an external bevel whose internal diameter is less than the nominal internal diameter of the container neck.

The inner surface of the skirt may be cylindrical or may also diverge in a truncated cone, in which case the conicity of the inner surface is equal or preferably less than that of the outer surface of the skirt.

According to the conformation of the edge of the container neck, the skirt can advantageously have a length of between approximately 3 and 6 mm, preferably a length of approximately 4 mm.

The cap according to the invention can be produced by moulding from all plastics materials used commonly for caps with a sealing skirt, for example polyethylene, polypropylene or similar materials.

Referring to the accompanying schematic drawings, a description will be given below in more detail of an illustrative and non-limiting embodiment of a closure cap

according to the invention; in the drawings:

- Figure 1 is an axial section of a cap according to the invention;

5 - Figure 2 shows, to a larger scale, the detail II in Figure 1 showing the profile of the sealing skirt.

The closure cap 1 as illustrated by Figure 1 comprises a cap body 2 and a tamper-evident strip 3 moulded in a single piece with the body 2. Since the tamper-evident strip 3 does not come within the scope of the present invention, it is not necessary to describe it in any further detail.

10 The cap body 2 comprises essentially an end wall 4, an inner skirt 5 which projects on the wall 4, on the external edge of the latter, and has on the inside a thread 6 and on the outside a knurling 7, and an inner sealing skirt 8 which projects on the wall 4 in the same direction as the skirt 5, in a position concentric with the latter. The sealing skirt 8 is intended to cooperate, when the cap 1 is screwed on a bottle neck 9 shown schematically at the bottom of the cap 1 in Figure 1, by tightening with the inner surface of the neck 9, this surface having a nominal internal diameter D_{i9} .

15 As shown more clearly in Figure 2, the sealing skirt 8 diverges in a truncated cone, both internally and externally, from its base (end wall 4) in the direction of its free end. The outer surface of the skirt 8 has a slope α and the inner surface a slope β . The maximum external diameter $D_{e8 \max}$ in the vicinity of the free end of the skirt 8 is greater than the internal diameter D_{i9} of the bottle neck 9. The skirt 8 has, at its free end, an external bevel 10 whose internal diameter D_{i10} is less than the nominal internal diameter D_{i9} of the bottle neck 9.

30 By way of example, on a cap as shown, intended to close a

bottle neck 9 having a nominal internal diameter $Di9$ of around 25 mm, the minimum external diameter $De8$ min of the skirt 8 having a length $L8$ of around 4 mm can be around 25.48 mm and the maximum external diameter $De8$ max of the skirt 8 around 25.72 mm, the radial thickness of the skirt 8 around 0.8 mm and the internal diameter $Di10$ of the bevel 10 around 24.50 mm, the angles α and β being respectively 2° .

It goes without saying that the embodiment illustrated and described above has been given only as an indication and non-limitingly, and many modifications and variants are possible in the context of the invention.

Thus the two slope angles α and β of the outer surface and of the inner surface of the skirt 8, instead of being equal, could be different, the angle β then being less than the angle α and even being able to be 0° , according for example to the material making up the cap, the length of the skirt 8, the thickness of the skirt 8, the diameter of the bottle neck, etc.

CLAIMS

1. A plastic closure cap for a container neck, comprising an end wall on which there project in the same direction an outer skirt having on the inside means for fixing the cap to the container neck and an inner sealing skirt (8) cooperating by tightening with the internal surface of the neck in order to close the latter, the inner skirt (8) diverging at least externally in a truncated cone from its base in the direction of its free end, its external diameter (De8 max) in the vicinity of its free end being greater than the nominal internal diameter (Di9) of the container neck (9), the conicity being such that it does not obstruct the axial mould stripping of the skirt, characterised in that the frustoconical outer surface of the skirt (8) has a slope (α) of between approximately 1° and 5° .
2. A cap according to Claim 1, characterised in that the frustoconical outer surface of the skirt (8) has a slope (α) of approximately 2° .
3. A cap according to Claim 1 or Claim 2, characterised in that the sealing skirt (8) has, at its free end, an internal bevel (10) whose internal diameter (Di10) is less than the nominal internal diameter (Di9) of the container neck (9).
4. A cap according to one of Claims 1 to 3, characterised in that the sealing skirt (8) also diverges on the inside in a truncated cone, the conicity of the inner surface being equal to or less than that of the outer surface.
5. A cap according to one of Claims 1 to 4, characterised in that the sealing skirt (8) has a length (L8) of between approximately 2 and 5 mm, preferably a length of approximately 4 mm.
6. A cap according to one of Claims 1 to 5, characterised

in that it is moulded from polyethylene, polypropylene or a similar plastics material.

1/1

FIG.1

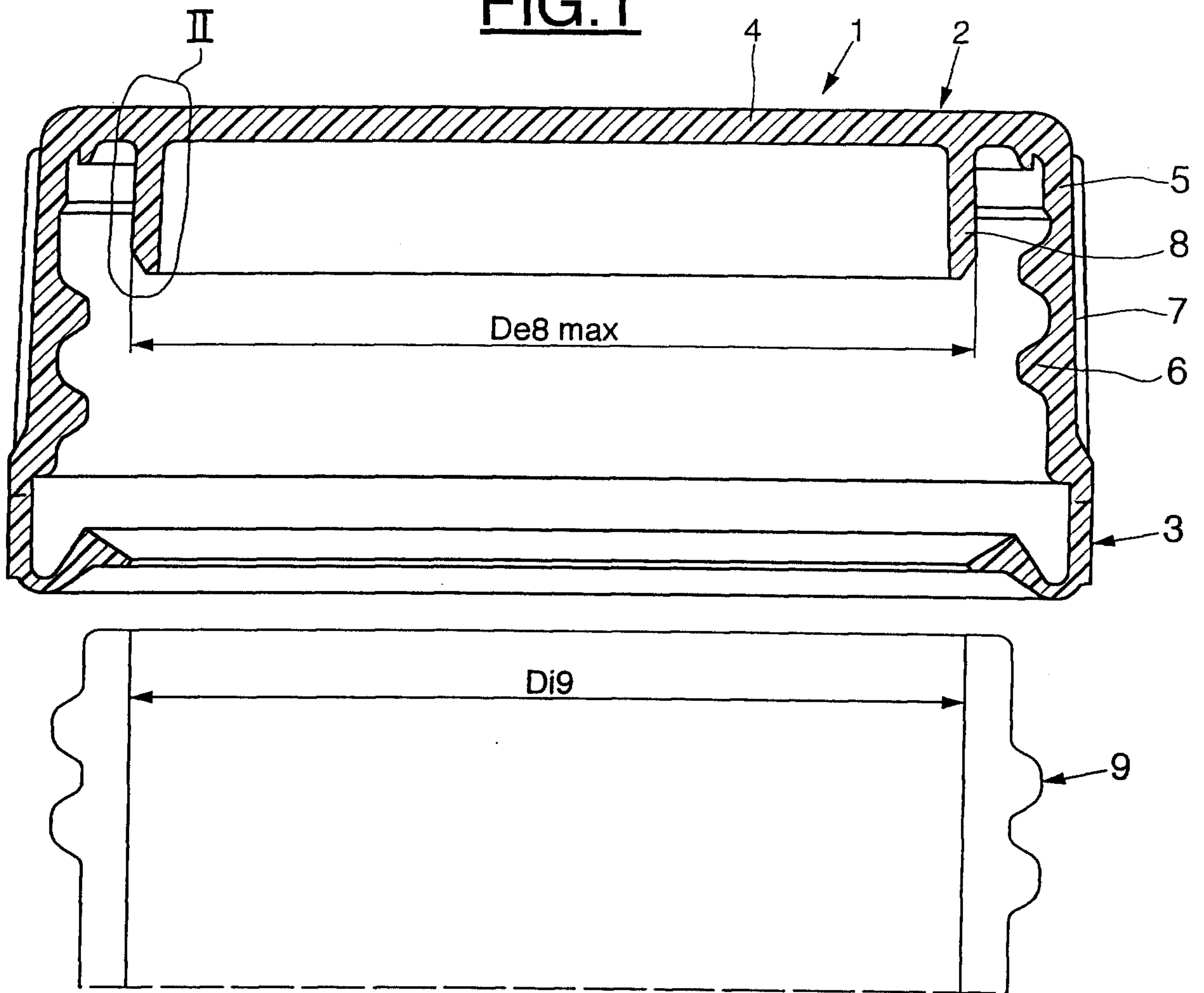
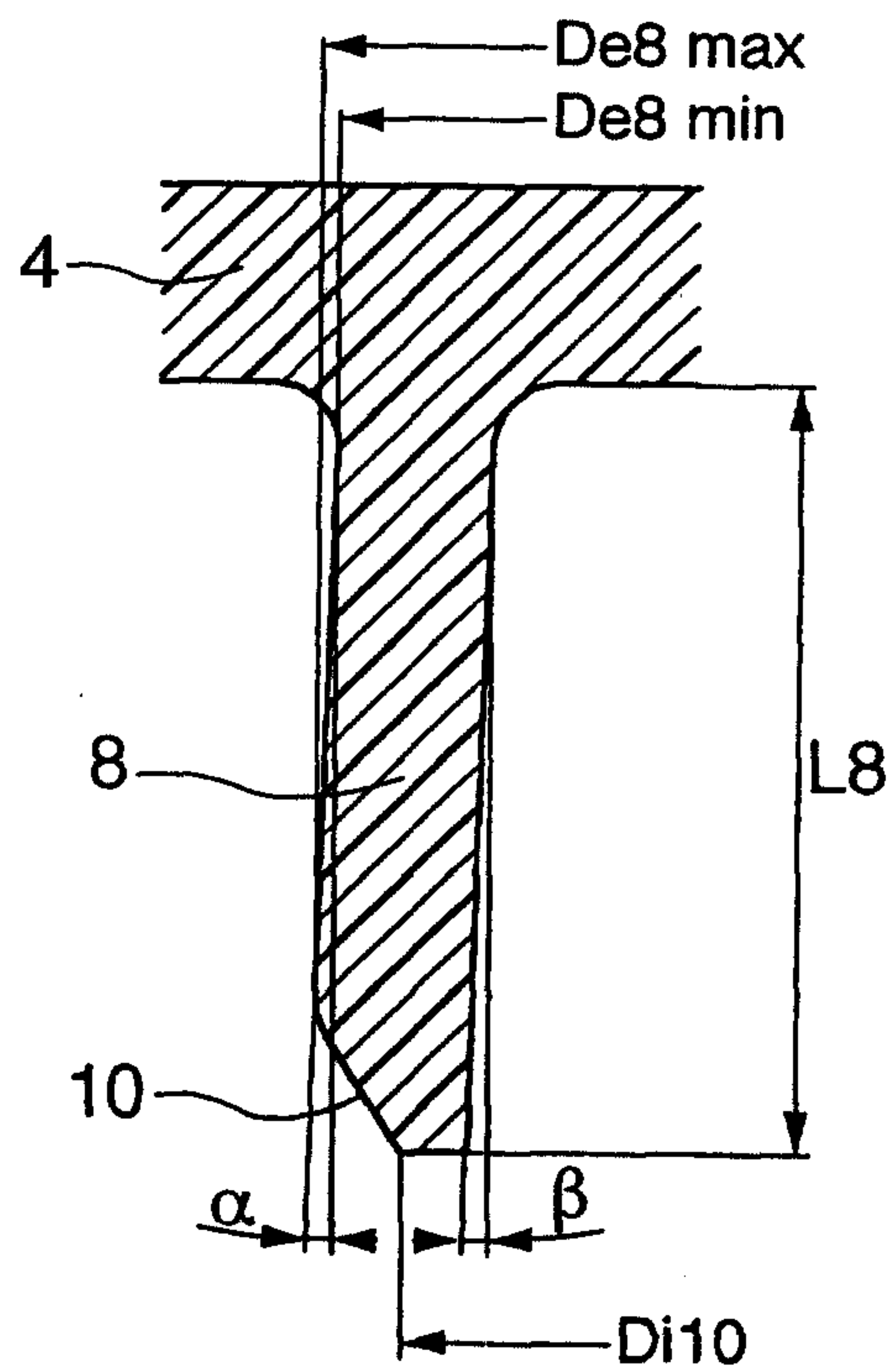
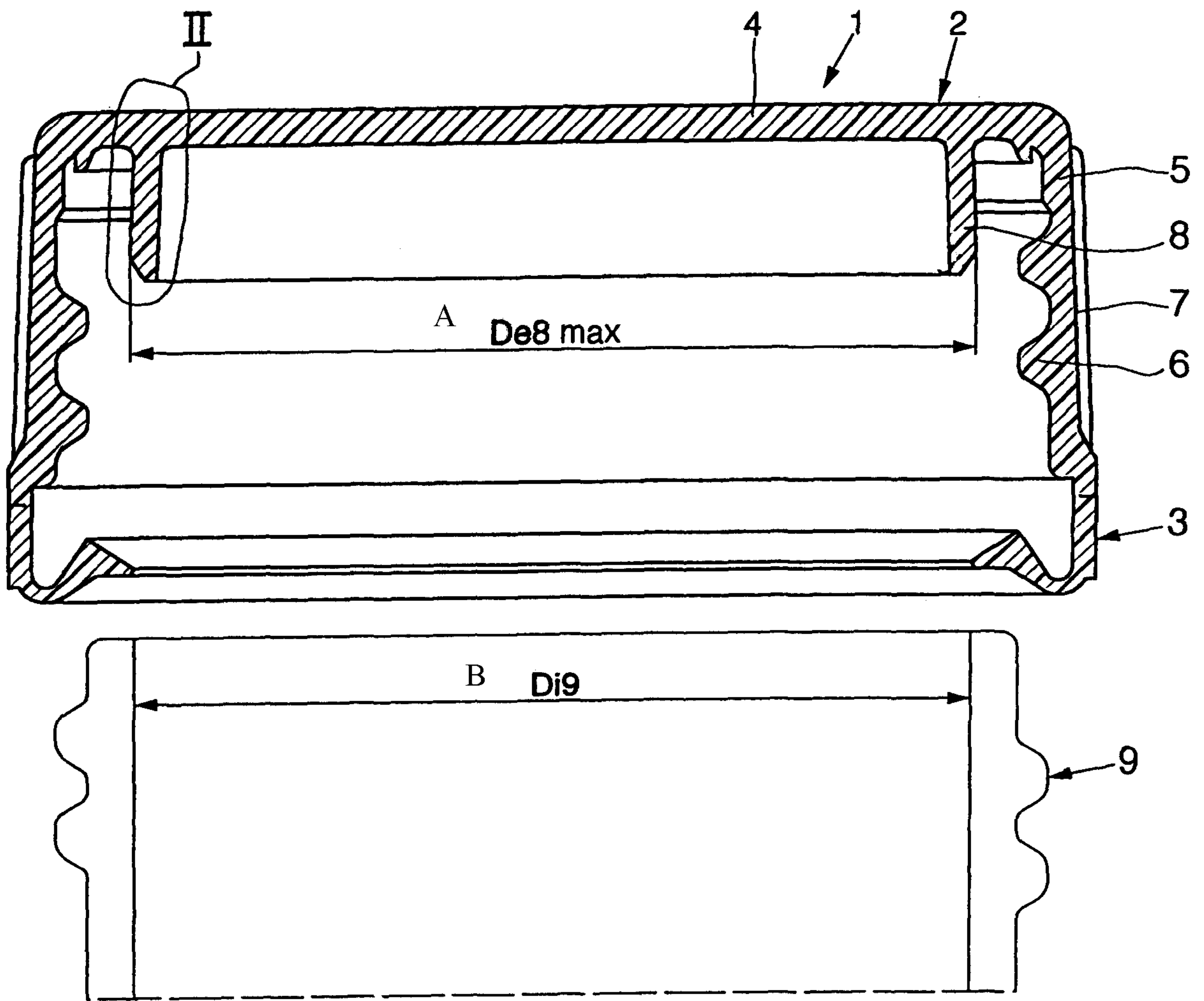


FIG.2





A... MAXIMUM EXTERNAL DIAMETER

B... NOMINAL INTERNAL DIAMETER