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(54) **CYLINDER FOR AEROSOLS (ALTERNATIVES)**

ZYLINDER FÜR AEROSOLE (ALTERNATIVEN)

BOUTEILLE POUR AÉROSOLS (ET VARIANTES)

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Description

[0001] The invention relates to the field of packaging, in particular, to a container, and constitutes a vessel mostly made of polyethylene terephthalate (PET), which is intended for filling with aerosols.

[0002] Widely known is use of industrial containers in the form of metal cylinders for storage of aerosols (see, e.g., the "Raw Materials and Packaging" journal, No. 10 (29), 2006). Metal cylinders are strong, do not change their shape as a result of increased pressure therein and properly protect the product from adverse effects of the environment. However, operation of metal cylinders has a number of disadvantages associated with extra costs, namely:

- high cost of the cylinder material and sophisticated technology of its manufacture;
- exposure to most of aggressive environments and mechanical damage;
- considerable net weight of the cylinder, which reduces the volume of one-time delivery of the product;
- it is impossible to produce transparent cylinders;
- complex recycling.

[0003] Also known is industrial packaging container in the form of a cylinder for aerosol of such a polymer material as PET described in the utility model patent RU 22125, cl. B65D 1/00, published on Nov 20, 2001. This device is the closest analog to the proposed technical solution.

[0004] PET cylinders have numerous advantages. They are related to elimination of all of the above drawbacks, with PET of the cylinders fully recyclable at disposal.

[0005] A shortcoming of the known PET cylinder design lies in its low strength characteristics at operation. The liquid inside the cylinder is pressurized. It is therefore necessary for the cylinder structure to retain its shape, i.e., not to be deformed and not to release pressure through a lid with a valve loosely press-fit onto the neck.

[0006] A PET cylinder for aerosols according to the preamble of claim 1 is known from EP 1 656 968 A1.

[0007] The technical problem solved by the invention is to increase the operational strength of aerosol cylinders through modification of the design of its structural elements: the bottom and the neck.

[0008] The stated technical problem is solved by the fact that in an PET aerosol cylinder, comprising a neck and a body with a bottom, the bottom is formed with radial grooves, the neck is provided with an outwardly projecting annular collar located on the lateral surface indented from the upper edge having a longitudinal section of a shape close to a semicircle, where the upper half of the collar is tapered inwardly towards the edge of the neck, and an annular concave groove is formed within the neck at the collar level.

[0009] In a preferred embodiment of the cylinder, the

radial grooves in the bottom may be made widened and deepened from the center to the periphery to form a pentaloid bottom, and the housing wall may have a thickness of 0.3 mm to 1.2 mm.

[0010] The finished product has improved performance due to the lack of deformation in the bottom part and a reliable coupling of the neck with the lid having a valve. The cylinder according to the invention apart from the bottom with grooves, has a massive neck with a collar and an annular groove within the neck.

[0011] The invention is illustrated with graphic materials, where

Fig. 1 is the front view of the cylinder

Fig. 2 is the section along A-A of Figure 1 (longitudinal section)

Fig. 3 is view B of Fig. 2 (neck)

Fig. 4 is the bottom view of the cylinder

[0012] According to the invention the aerosol cylinder comprises body 7 of a cylindrical shape, bottom 8 and neck 9. Bottom 8 is formed with radial grooves 10 forming stiffeners. Neck 9 is provided with an outwardly projecting annular collar 11 on the lateral surface indented from the upper edge 12 having a longitudinal section of a shape close to a semicircle. The upper half 13 of the collar is tapered inwardly towards the edge of the neck, and annular concave groove 14 is formed within the neck at the collar level. In one of the embodiments of the cylinder according to this utility model, the radial grooves in the bottom may be made widened and deepened from the center to the periphery to form pentaloid bottom. The housing walls have a thickness of 0.3 mm to 1.2 mm.

[0013] First, a preform with a non-expandable neck is produced, along the edge of which there is rectangular annular collar 11 outside the neck with annular groove 14 therein. Then, the preform is heated to a state of elastic rubber, placed in a die mold and, while in the rubber-like state, is inflated with compressed air. At that, non-expandable neck 9 is clamped in a clamping assembly of the device, and body 7 is inflated. The shape of the housing and the bottom is set by the die mold. Further on, the finished product cools down on the cold walls of the die mold. Radial grooves 10 form stiffening ribs in the bottom, which make the bottom stiff thereby increase its operational strength. Then a valve is roll-formed onto the neck. The valve is inserted into the neck, and the valve enters with its annular projection into annular groove 14 inside neck 9 thereby increasing the area of cohesion between the neck and the valve. As a result, this increases the operational strength of the entire product as a whole. The diameter of the neck is generally 20 to 25 mm.

Claims

1. A PET cylinder for aerosols comprising a neck (9) and a housing with a bottom (8), the bottom (8) being

formed with radial grooves (10) and the neck (9) being provided with an outwardly projecting annular collar (11) located on the lateral surface, indented from the upper edge (12),

characterized in that

the neck (9) has a longitudinal section of a shape close to a semicircle, where the upper half (13) of the collar is tapered inwardly towards the edge of the neck (9), and an annular concave groove (14) is formed within the neck (9) at the collar level.

2. The cylinder according to claim 1, **characterized in that** the radial grooves (10) in the bottom (8) are made widened and deepened from the center to the periphery and form a pentaloïd bottom.
3. The cylinder according to claim 1 or 2, **characterized in that** the housing wall has a thickness of 0.3 mm to 1.2 mm.

caractérisée en ce que :

le goulot (9) présente en section longitudinale une forme proche d'un demi-cercle où la moitié supérieure (13) de la collerette est à section décroissante vers l'intérieur, en direction du bord du goulot (9), et une rainure annulaire concave (14) est formée à l'intérieur du goulot (9) au niveau de la collerette.

2. Bouteille selon la revendication 1, **caractérisée en ce que** les rainures radiales (10) du fond (8) sont élargies et approfondies du centre vers la périphérie et forment un fond pentaloïde.
3. Bouteille selon la revendication 1 ou 2, **caractérisée en ce que** la paroi de l'enveloppe a une épaisseur de 0,3 mm à 1,2 mm.

Patentansprüche

1. PET-Zylinder für Aerosole, aufweisend einen Hals (9) und ein Gehäuse mit einem Boden (8), wobei der Boden (8) mit radialen Nuten (10) gebildet ist und der Hals (9) mit einem nach außen vorstehenden ringförmigen Kragen (11) gebildet ist, der sich auf der seitlichen Oberfläche befindet, die vom oberen Rand (12) eingekerbt ist, **dadurch gekennzeichnet, dass** der Hals (9) einen Längsabschnitt von einer in etwa halbkreisförmigen Form aufweist, wobei sich die obere Hälfte (13) des Kragens nach innen zum Rand des Halses (9) verjüngt und eine ringförmige konkave Nut (14) innerhalb des Halses (9) auf Höhe des Kragens gebildet ist.
2. Zylinder nach Anspruch 1, **dadurch gekennzeichnet, dass** die radialen Nuten (10) im Boden (8) so ausgebildet sind, dass sie sich von der Mitte zum Umfang verbreitern und vertiefen und einen pentaloïden Boden bilden.
3. Zylinder nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Gehäusewand eine Dicke von 0,3 mm bis 1,2 mm aufweist.

Revendications

1. Bouteille en PET pour aérosols, comprenant un goulot (9) et une enveloppe pourvue d'un fond (8), le fond (8) étant formé avec des rainures radiales (10) et le goulot (9) étant pourvu d'une collerette annulaire faisant saillie vers l'extérieur (11), située sur la surface latérale, en retrait par rapport au bord supérieur (12),

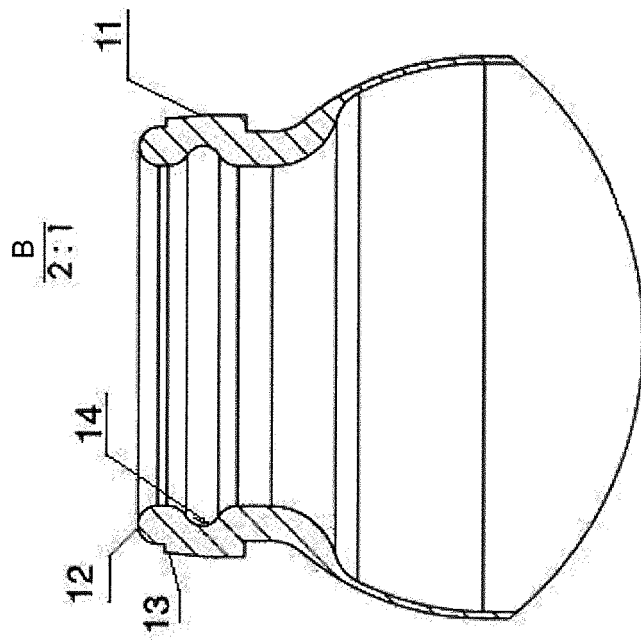


Fig. 3

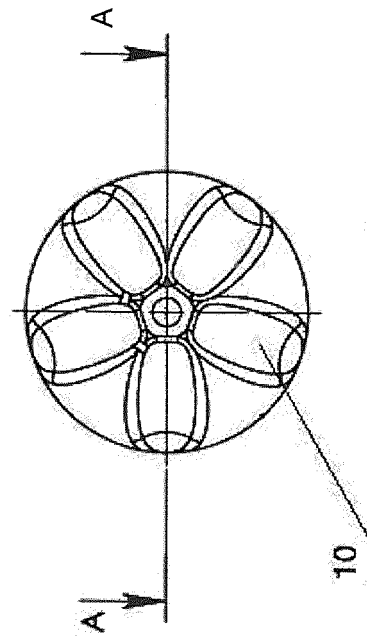


Fig. 4

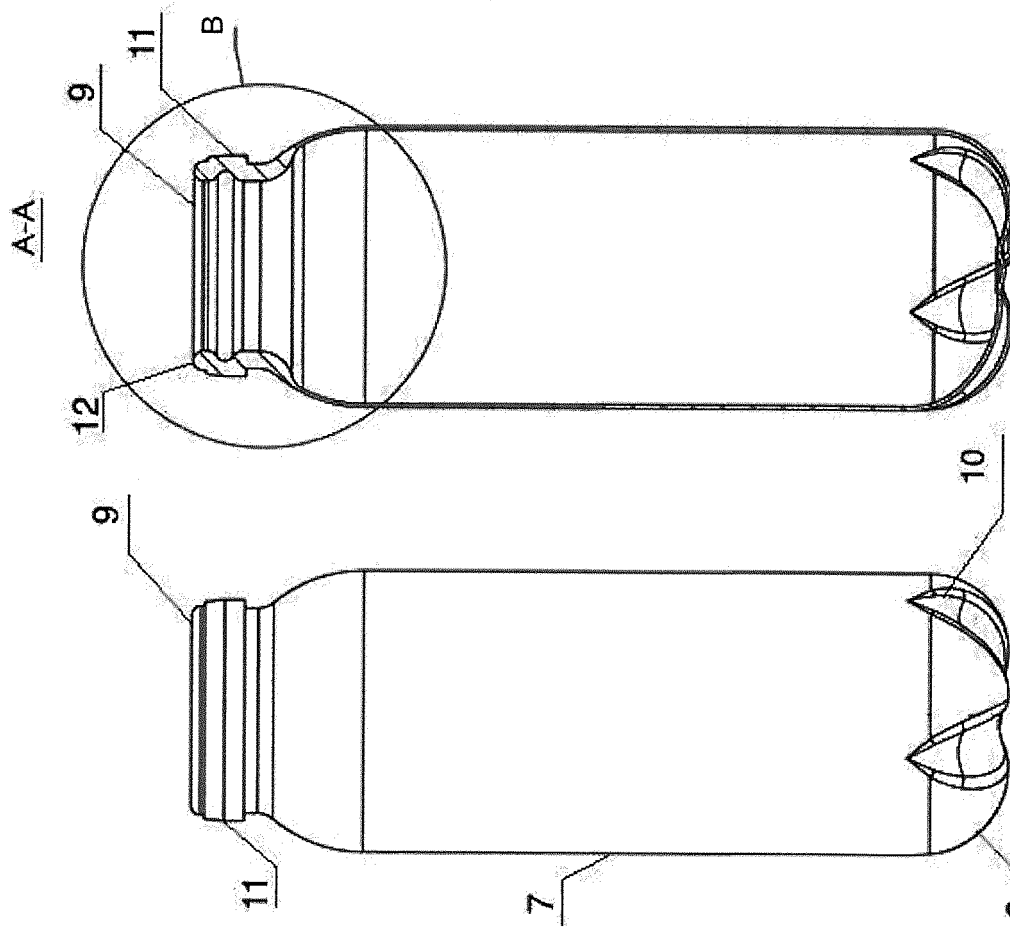


Fig. 1

Fig. 2

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- RU 22125 [0003]
- EP 1656968 A1 [0006]

Non-patent literature cited in the description

- *Raw Materials and Packaging*, 2006, 29 [0002]