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(71) Applicant: **F.LLI Sacla' S.p.A.**
14100 Asti (IT)

(72) Inventor: **VASSURA, Sante**
I-48033 COTIGNOLA (Ravenna) (IT)

(74) Representative: **Rambelli, Paolo et al**
Jacobacci & Partners S.p.A.
Corso Emilia 8
10152 Torino (IT)

(54) HERMETICALLY SEALED CONTAINER FOR FOOD PRODUCTS

(57) A hermetically sealed container, particularly a mechanical closure jar for food products or the like, comprising a containing part (2) and a lid (4) insertable into the mouth of the containing part with the interposition of sealing means, characterized in that said sealing means comprise a closing member (10) applicable, in a removable way, to the mouth of the containing part (2), having a diaphragm wall (12) which limits the volume inside the containing part (2) and an annular wall (14) adapted to exert a sealing action for the hermetic closure of the container, in a position interposed between the side wall of the containing part and the lid when inserted into the mouth of the containing part.

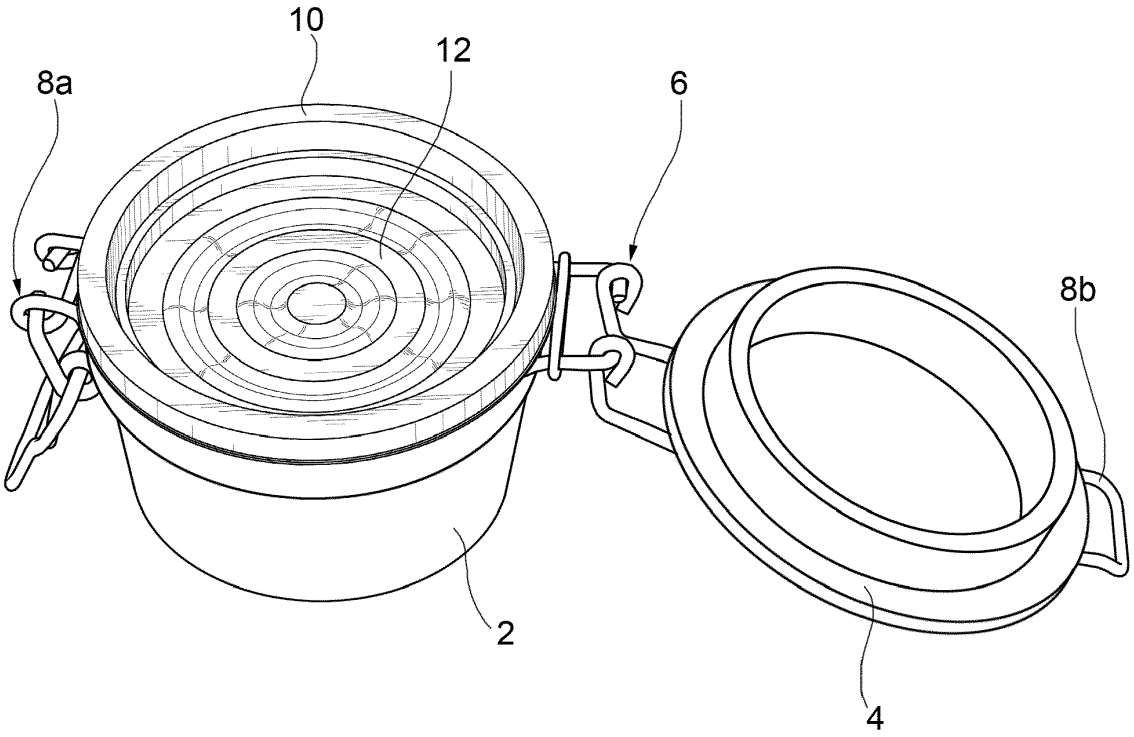

FIG.1

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Description

[0001] The present invention relates to a hermetically sealed container for packaging and/or preserving food products, in particular a jar with a mechanical hermetically sealed closure comprising a containing part, generally of glass, and a lid, hinged to the containing part and insertable into the mouth of the containing part and sealing means interposed between the lid and the side wall of the containing part.

[0002] Glass jars with mechanical closure have been used historically for the production of homemade preserves with a maximum durability of about one year and are usually stored in cellars or places with a temperature not exceeding 18°C.

[0003] In the food industry, these glass jars are usually used only for less perishable products (e.g. spices), as products such as sauces, appetizers and jams stored in such packaging are subject to oxidation and rancidity of the oil used, due to the high head space, i.e., the empty space between the product and the upper part of the jar, and therefore a high presence of oxygen.

[0004] Furthermore, the high head space makes the jars difficult to open, especially those of greater capacity.

[0005] The aforementioned sealing means is typically achieved with a rubber annular gasket whose migration parameters, referring to the components and/or monomeric and low molecular additives, are declared by the producers themselves as very high.

[0006] An object of the present invention is to provide a container of the aforementioned type sufficient to solve the problems noted above, in particular adapted to allow the use of such containers for the packaging and preservation of perishable food products also in the foodstuffs industry, in particular for foods which require heat treatments.

[0007] Another object of the invention is to provide a new container that allows for an increase of the durability or storage time of the foodstuffs stored in them, an improvement and/or simplification of the opening system and a reduction of the migration phenomena of low molecular compounds or additives present in the sealing means.

[0008] In view of such objects, the subject of the invention is a container having the features defined in the following claims, which form an integral and essential part of the present description.

[0009] Further features and advantages of the container according to the invention will become apparent from the detailed description that follows, made with reference to the accompanying drawings which illustrate one embodiment of the invention, that is, however, non-limiting.

[0010] In the accompanying drawings:

- Figure 1 is a perspective view in the open configuration of a mechanical closure jar according to the invention;
- Figure 2 is a perspective view of the diaphragm closure member associated with the container of Figure 1;
- Figure 3 is a top view of the diaphragm closure member of Figure 2;
- Figure 4 is a section view along the line IV-IV of Figure 3, and
- Figure 5 is a front view of the closure member of Figure 3.

[0011] With reference to the drawings, in Figure 1 a hermetically sealed container according to the invention is represented, in this case a hermetically sealed jar, typically of glass, with mechanical closure. Although glass is the most commonly used and preferred material, it is intended for the invention to be equally applicable to containers made of other materials, for example plastic material, preferably rigid and not susceptible to deformation as a result of an internal sub-atmospheric pressure inside the container or due to manual pressure exerted on its walls, and suitable for contact with food products.

[0012] The mechanical closure jar comprises a containing part 2 and a lid 4; in a manner known per se, lid 4 is articulated to the containing part via an articulation means, known per se, indicated collectively at 6. Generally, the lid is made of the same aforementioned materials constituting the containing part.

[0013] The jar comprises a mechanical clamping means, which is also known per se and, therefore, not described in detail below, typically of a toggle-type indicated by 8a and 8b, associated respectively to the containing part 2 and the lid 4 to allow the locking of the lid in the jar's closed position, wherein pressure is exerted on the sealing means, illustrated below, to achieve the hermetic closure of the jar.

[0014] According to the invention, the sealing means comprises a closing member 10 applicable, in a removable way (i.e. without fixing by welding, gluing or the like), to the mouth of the containing part 2. Such a closing member 10 comprises a diaphragm wall 12, connected to an annular side wall 14 which, in the preferred embodiment, comprises an end portion 16 with inverted U shape defining thereby an annular groove 18 intended to engage the mouth profile of the containing part.

[0015] In the position in which said closing member is applied in a removable manner to the mouth of the container, the diaphragm wall 12 extends horizontally inside the containing part 2, thereby limiting the internal volume of the containing part, i.e. the head space between the food product intended to be introduced into the jar and said diaphragm wall 12.

[0016] The annular wall 14 exerts a sealing function for the hermetic closure of the container, and, in the position of use, it is interposed between the side wall of the containing part 2 (adjacent to its mouth) and the lid 4, when the latter is inserted in the mouth of the containing part. In particular, the closing member preferably exerts a hermetic sealing action when subjected to the pressure exerted by the lid under the action of the mechanical

clamping means (described below), whereas it is not able to exert a tight seal in the absence of such pressure.

[0017] The profile of the annular wall 14 is, in its ascending part extending from the diaphragm wall, shaped to be substantially complementary to the profile of the inner surface of the side wall of the containing part, adjacent to the mouth. The portion of the annular wall 16 folded back in a U-shaped manner, so as to define a groove 18, is able to engage the top portion of the side wall of the containing part.

[0018] In a preferred embodiment, the diaphragm wall 12 has a particular creasing, i.e. a plurality of grooves or corrugations which in the example are illustrated in a concentric annular shape 20 and 22, the function of which is to allow the diaphragm to absorb the expansion of the food product during a heat treatment which may be applied in industrial production.

[0019] It is intended that the height of the annular wall 14, such as to ensure that the diaphragm wall 12 is in a lower position relative to the edge of the mouth of the containing part, may be varied according to the need to reduce in a more or less relevant way the head space in the container.

[0020] The said diaphragm closing member 12 is preferably made from a material that is inert to migration and suitable for contact with food, which also has an established resistance to the heat treatments applied in the industrial field. For example, the said closing member 12 may be made of polypropylene; however, the preferred embodiment provides for the adoption of a laminate diaphragm comprising two outer layers of polyolefin, such as polypropylene or polyethylene, preferably polypropylene, and an intermediate layer of polyethylene vinyl alcohol (EVOH).

[0021] The intermediate layer of EVOH allows gas barrier properties to be improved, in particular regarding oxygen, thus avoiding oxidation phenomena.

[0022] Typically, the closing member has a thickness of 600-1000 μm, preferably 650-750 μm.

[0023] When the lid is inserted into the mouth of the containing part and locked in the closed position by means of the aforesaid mechanical clamping means, it exerts a pressure on the closing member 10, causing the hermetic closure of the container. It is intended that the profile of the annular wall 14 may have one or more shoulders, for example the shoulders 24a and 24b that also act as surfaces of contact with the lid seal.

[0024] The traditional rubber seal is therefore no longer necessary but optionally may be associated with the container of the invention as an accessory, inserted in the space between the diaphragm wall 12 and the lid for any subsequent home use.

[0025] Due to the aforementioned features, the hermetically sealed container of the invention solves the previously mentioned problems.

[0026] The diaphragm closing member is suitable for allowing pasteurization, sterilization and hot-filling of the container.

[0027] It is also understood that the embodiments and details of construction may vary widely with respect to what is illustrated by way of non-limiting example. Thus, for example, the clamping means is not necessarily of the previously mentioned toggle-type, and any mechanical clamping means that allows one to exert the appropriate closing pressure on the closing member 10 may also be used.

Claims

1. A hermetically sealed container, particularly a mechanical closure jar for food products or the like, comprising a containing part (2) and a lid (4) insertable into the mouth of the containing part with the interposition of a sealing means, **characterized in that** said sealing means comprises a closing member (10) applicable, in a removable way, to the mouth of the containing part (2), having a diaphragm wall (12) which limits the volume inside the containing part (2) and an annular wall (14) adapted to exert a sealing action for the hermetic closure of the container, in a position interposed between the side wall of the containing part and the lid when inserted into the mouth of the containing part.

2. A hermetically sealed container according to claim 1, **characterized in that** said closing member (10) has an annular wall, the end portion (16) of which is folded back in a U-shaped manner, so as to define a groove (18) wherein the end portion of the mouth of the side wall of the containing part is adapted to engage.

3. A hermetically sealed container according to claims 1 or 2, **characterized in that** said annular wall (14) of said closing member has a profile substantially complementary to the profile of the inner surface of the side wall of the containing part, adjacent to its mouth.

4. A container according to any one of the preceding claims, **characterized in that** said diaphragm wall (12) of the closing member (10) extends in a lower position relative to the mouth edge of the containing part.

5. A hermetically sealed container according to any one of the preceding claims, **characterized in that** said diaphragm wall has one or more grooves or corrugations (20, 22) of annular shape which allow said diaphragm wall to absorb the dilation of the food product in any subsequent thermal treatments.

6. A hermetically sealed container according to any one of the preceding claims, **characterized in that** said closing member has a layered structure comprising

a first and a second outer layer of polyolefin material, particularly polypropylene and an intermediate layer of polyethylene vinyl alcohol.

7. A hermetically sealed container according to any one of the preceding claims, consisting of a glass jar wherein said cover (4) is articulated to the containing part by means of a hinge (6) and comprising toggle-type mechanical means (8a, 8b) for clamping the lid in the closed sealing position.

8. Container according to any one of the preceding claims, comprising a sealing annular gasket, acting as an accessory, positioned in the space between the closing member (10) and the cover (4) of the container.

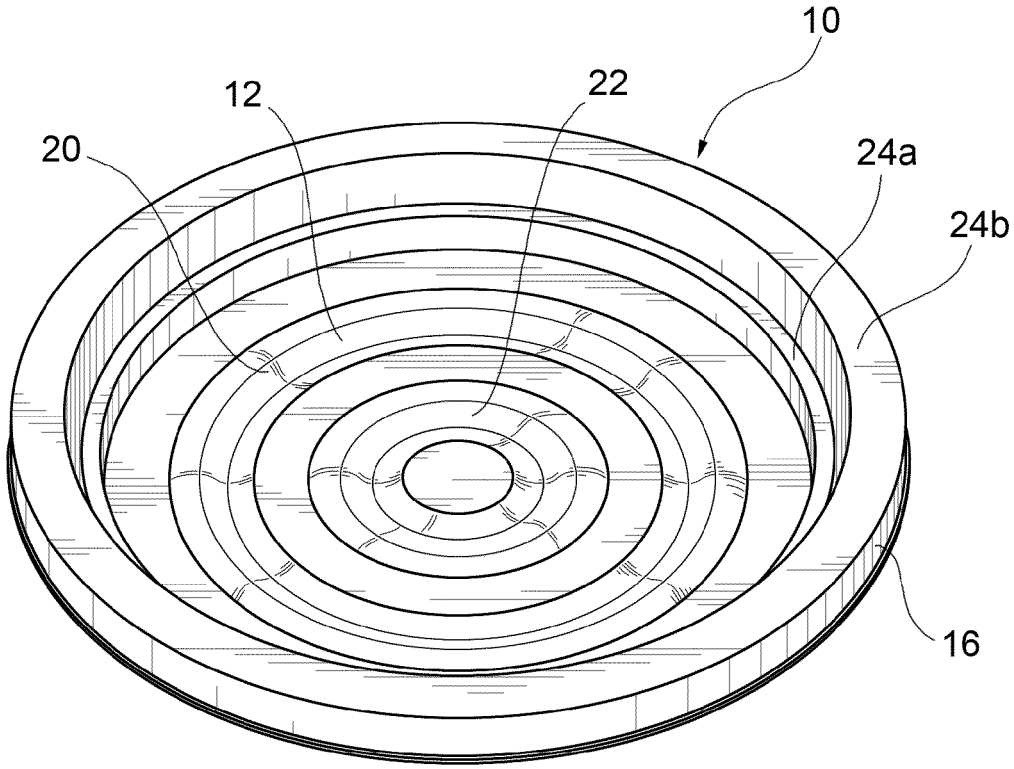

FIG.2

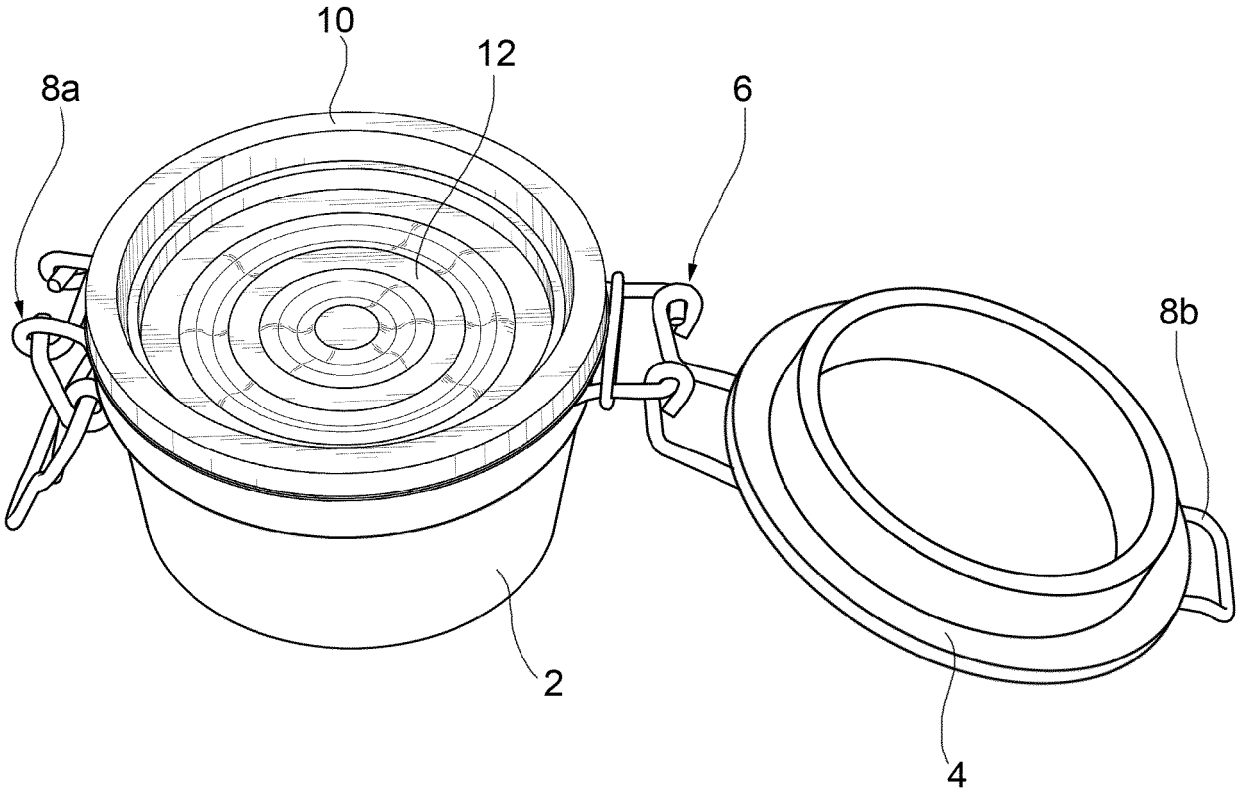

FIG.1

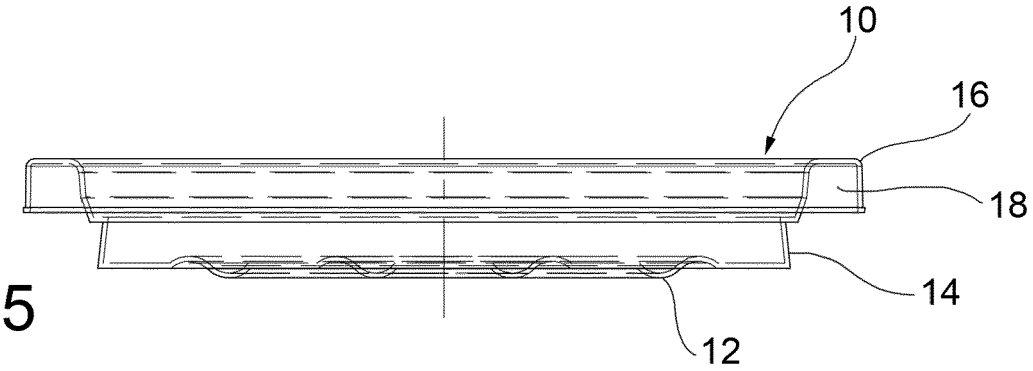

FIG.5

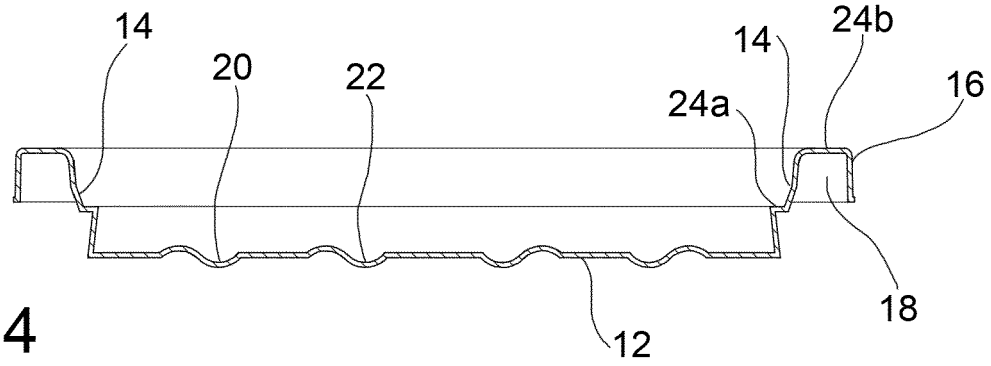

FIG.4

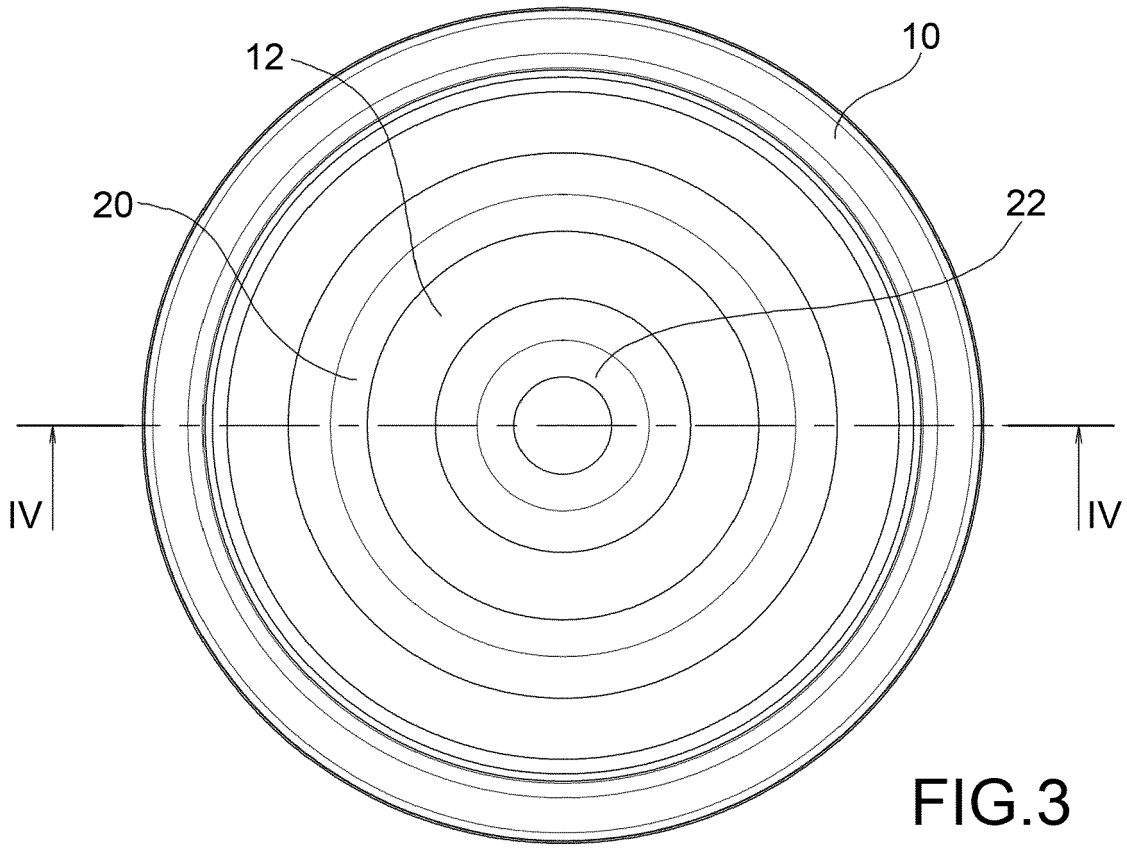

FIG.3

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EUROPEAN SEARCH REPORT

Application Number
EP 16 20 3589

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 998 638 A (KAWAMATA SEIZI [JP]) 12 March 1991 (1991-03-12) * column 2, line 52 - column 5, line 5; figures *	1-8	INV. B65D79/00
X	WO 2010/104574 A1 (NESTEC SA [CH]; URUSHIDANI YUKIHIRO [US]; HOLTEN STEPHEN RAY [US]) 16 September 2010 (2010-09-16) * paragraphs [0018] - [0028]; figures *	1,3,4	
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A	US 2007/228051 A1 (MERONI BRUNO [IT]) 4 October 2007 (2007-10-04) * figures *	1	
A	US 2 027 430 A (HILMER HANSEN CARL) 14 January 1936 (1936-01-14) * figures *	1	TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	4 April 2017	Fournier, Jacques

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 20 3589

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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