(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 400 441 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
17.07.2024 Bulletin 2024/29

(21) Application number: **23188508.8**

(22) Date of filing: **28.07.2023**

(51) International Patent Classification (IPC):
B65D 39/00 *(2006.01)* ***B65D 39/16*** *(2006.01)*
B65D 65/46 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 39/0058; B65D 39/16; B65D 65/466

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **12.01.2023 PT 2023118467**

(71) Applicant: **Sedacor - Sociedade Exportadora De Artigos de Cortica, Lda.**
4535-489 S. Paio de Oleiros (PT)

(72) Inventors:
- **MENDES PINTO DE SÁ, Carlos Alberto**
  4535-489 São Paio de Oleiros (PT)
- **REGADAS PINTO DE SÁ, Vera Lúcia**
  4535-489 São Paio de Oleiros (PT)

(74) Representative: **Patentree**
Edificio Net
Rua de Salazares, 842
4149-002 Porto (PT)

(54) **CAP FOR A CAPPED STOPPER AND METHOD THEREOF**

(57) The present disclosure relates to a cap for a capped stopper and a method to obtain said cap, wherein the cap comprises: 75 - 96 % (w/w_{total}) of a plurality of particles selected from cork or polymer or wood or coconut fibres, or mixtures thereof; 3 - 35 % (w/w_{total}) of a binder; wherein the binder is selected from a list consisting of: latex, polyurethane resins, phenolic resins, melamine resins, or mixtures thereof; wherein each particle size of the plurality of particles ranges from 0.01 μm to 2 mm.

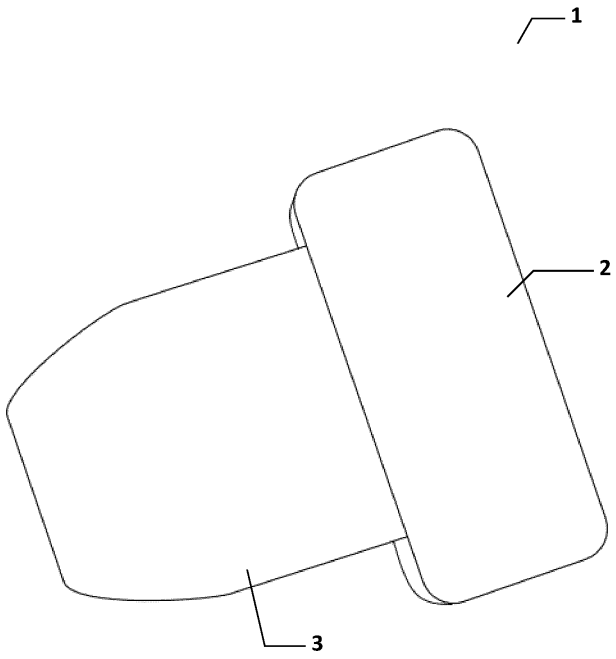

Fig. 1

EP 4 400 441 A1

Description

TECHNICAL FIELD

[0001] The present disclosure relates to a cap for a capped stopper. In particular, relates to a cap for a stopper where the cap comprises a plurality of particles selected from cork, polymer, wood, coconut fibres, or mixtures thereof. The present disclosure also relates to the capped stopped and the method to obtain the cap.

BACKGROUND

[0002] The present disclosure relates to capped a stopper for bottles, jars and the like. A capped stopper is a cork stopper where in the end is placed a cap of wood, Polyvinyl chloride (PVC), porcelain, metal, ALC (aluminum complex), Polyethylene terephthalate (PET), glass or other materials. The capped stopper is generally used with liqueur/fortified wines or spirits which are ready to drink when made available for sale in the market. The major examples are port, Madeira sherry, Calvados, muscatel from Setubal, and also whisky, vodka, cognac, armagnac, brandy, liqueurs, and clear spirits. The capped stoppers are also used in cosmetic industry, namely in the perfume bottles.

[0003] The cap is larger in width or diameter than the cork and provides a means for the grasp of the fingers for removal of the stopper or its insertion in the neck of the bottle, jar or the like to serve as a closure therefor.

[0004] These facts are disclosed in order to illustrate the technical problem addressed by the present disclosure.

GENERAL DESCRIPTION

[0005] The present disclosure relates to a capped stopper for a bottle, jar or the like. It also relates to a cap for a capped stopper, the method to obtain said cap and the capped stopper.

[0006] The present disclosure relates to a cap for a capped stopper that is light, robust, reusable, recyclable, environmentally sustainable, easy to produce and surprisingly can be obtained obtainable by machinery, preferably by profiling and milling.

[0007] The capped stopper of the present disclosure is very practical for bartenders and consumers, as it allows for easy reuse, an important factor for bottles whose content is not consumed in one sitting.

[0008] The most common formats on the market have the dimensions for the most commonly used sizes of bottles. Note that with the stopper of the present disclosure, it is not necessary that for it to have a diameter of 6 mm more than the internal diameter of the bottle neck. In fact, 2 mm is sufficient without compromising good sealing to allow for easy reuse in the bottle.

[0009] Most common measurements of the caps are: 27×20 mm; 27×19,5 mm; 27×18,5 mm and 24×17 mm for 20 cl bottles and 18×13,5 mm for miniature bottles.

[0010] Preferably, the cap is a circular disc having a downwardly directed flange, that might be knurled, and the lower edge is returned inwardly to engage in the body of the stopper, normally a cork stopper, when the stopper is assembled.

[0011] The present disclosure relates to a cap for a capped stopper, obtained by machinery, wherein the cap comprises:

75 - 96 % (w/w_{total}) of a plurality of particles selected from cork or polymer or wood or coconut fibres, or mixtures thereof;
3 - 35 % (w/w_{total}) of a binder;

wherein the binder is selected from a list consisting of: latex, polyurethane resins, phenolic resins, melamine resins, or mixtures thereof;
wherein each particle size of the plurality of particles ranges from 0.01 μm to 2 mm.

[0012] The present machinery cap for a capped stopper of the present disclosure, may be use in sealing bottles and containers to prevent leakage and preserve the freshness of the contents.

[0013] The advantage of the machinery cap of the present disclosure is to being environmentally sustainable, produced through the combination of different materials - by-products of the wood, cork industry or others, which until now only achieved a small increase in value. In an embodiment, the differentiating factor of a cork cap results from the fact that it is the only one that allows achieving a density higher than that of wood caps. With the scarcity of cork, combined with the scarcity of wood for cap or capsules and, more recently, the growing international demand for bartop stoppers and capped stopers, this excellent circular economy and by-product recovery solution could place the cork Industry on a very different level of sustainability. In addition to being environmentally sustainable, the capsule or cap is highly robust.

[0014] In an embodiment, preferably the plurality of particles are residues of the material machining.

[0015] In an embodiment, the cap comprises 5 - 25 % (w/w_{total}) of binder; preferably 10 -15 % (w/w_{total}) of binder. For better results, the cap comprises 10% (w/w_{total}) of binder.

[0016] In an embodiment the particle size of the plurality of particles, ranges from 0.01 μm to 0.8 mm; preferably ranges from 0.1 - 0.5 mm.

[0017] The measurement of the granulometry/particle size/cork granule may be carried out in various ways, in this disclosure the measurement granulometry/particle size was carried out on the basis of the standard the granulometry analysis by mechanical sieving, namely the one described by NP ISO 2030 of November, 2020. In particular concerning the sizes of the particles obtained by the sieves specified in item 5.1.2 whose openings are

in accordance with series ISO/R 40/3 (see ISO 565 of 1990).

[0018] In an embodiment, the cap has a density range from 700-1800 Kg/m^3; preferably 900-1500 Kg/m^3; more preferably 1000-1200 Kg/m^3.

[0019] In an embodiment, the plurality of particles is of natural cork or artificial cork, preferably natural cork.

[0020] In an embodiment, the cork comprises medium density fibreboard or high density fibreboard.

[0021] In an embodiment, the binder is polyurethane.

[0022] In an embodiment, the cap is a monolayer or a multilayer.

[0023] In an embodiment, the cap comprises a coating selected from varnish; polyvinyl chloride; wood, paint or mixtures thereof.

[0024] In an embodiment, the cap is a body comprising a closed top, an open bottom and a chamber for receiving the stopper, being the chamber between the closed top and the open bottom.

[0025] In an embodiment, the chamber has an external surface smooth or with a plurality of protrusions.

[0026] In an embodiment, the open bottom of the body comprises an inwardly rim.

[0027] In an embodiment, the cap is obtainable by machining, preferably by profiling and/or milling, more preferably by computer numerical control (CNC) machining profiling or lathe profiling or milling.

[0028] The present disclosure also relates to a method to obtain the cap comprising the following steps:

mixing 75 - 96 % (w/w$_{total}$) of a plurality of particles with 3 - 35 % (w/w$_{total}$) of a binder to obtain a mixture;
pouring the mixture to obtain a granulated film;
hot pressing the film until obtaining a plate;
cold pressing until the pressed plate is obtained;
cutting the plate for obtaining a plurality of plates in a pre-determined size;
profiling for obtaining a cap.

[0029] In an embodiment, the profiling step is by CNC or lathe profiling or milling profile.

[0030] In an embodiment, the method further comprises the steps of, cutting the plate for obtaining a plurality of plates in a pre-determined size and bonding the plurality of plates and cutting said plates to form a beam.

[0031] In an embodiment, the method further comprises the step of lathing the beam into a rod.

[0032] In an embodiment, the hot pressing is at 100°C to 200 °C, preferably at 120 to 150°C. Preferably at a pressure from 1 to 10 kg/cm^2 , preferably at 5 kg/cm^2.

[0033] In an embodiment, the cold pressing is at 10 to 50°C, preferably 15 to 30 °C. Preferably at a pressure from 1 to 10 kg/cm^2, preferably at 8 kg/cm^2.

[0034] In an embodiment, the method further comprises the step of coating the profiling with a varnish; polyvinyl chloride; wood, paint or mixtures thereof.

[0035] In an embodiment, the method further comprises the step of bonding the cap in the stopper. Preferably the bonding of the cap to the stopper is made with a material selected from polyurethane, acrylic or mixtures thereof.

[0036] The present disclosure also relates to a capped stopper comprising the cap disclosed previously.

[0037] In an embodiment, the stopper is bonded to an internal surface of the closing top of the body of the cap.

[0038] In an embodiment, the stopper is bonded to the internal surface of the closing top of the body of the cap by means of adhesive, water based adhesive, glue or a thermoplastic adhesive such as hot melt.

[0039] In an embodiment, the stopper is made of natural cork, agglomerated cork, synthetic cork, colmated cork, wood, polymer or mixtures thereof.

[0040] The present disclosure also relates to a bottle comprising the capped stopper disclosed previously.

BRIEF DESCRIPTION OF THE DRAWINGS

[0041] The following figures provide preferred embodiments for illustrating the disclosure and should not be seen as limiting the scope of invention.

Figure 1: Representation of an embodiment of a capped stopped with an embodiment of the cap.

Figure 2: Representation of an embodiment of the cap.

Figure 3: Representation of the view of the bottom of an embodiment of the cap.

Figure 4: Schematic of a diagram of an embodiment of the method to obtain a cap stopped.

DETAILED DESCRIPTION

[0042] The present disclosure relates to a cap for a capped stopper obtained by machinery wherein the cap comprises:

75 - 96 % (w/w$_{total}$) of a plurality of particles selected from cork or polymer or wood or coconut fibres, or mixtures thereof;
3 - 35 % (w/w$_{total}$) of a binder;

wherein the binder is selected from a list consisting of: latex, polyurethane resins, phenolic resins, melamine resins, or mixtures thereof;
wherein each particle size of the plurality of particles ranges from 0.01 μm to 2 mm.

[0043] In an embodiment, figure 1 represents the capped stopper 1 comprising the cap 2 and the stopper 3. Preferably the stopper 3 is made of natural cork or granulated cork or colmated cork. A colmated cork is a type of natural cork that has been treated and processed to improve its sealing properties and reduce the risk of

cork taint in wine.

[0044] In an embodiment, the external surface of the cap is smooth. In another embodiment, the external surface of the cap is rough or comprising a plurality of protrusions.

[0045] In an embodiment, the stopper 3 is bonded to the cap 2 by means of an adhesive selected from water based adhesive, glue or thermoplastic adhesive such as hot melt. Preferably, the stopper 3 is bonded to the cap 2 by glue.

[0046] In an embodiment, the cap 2 comprises 75 - 96 % (w/w_{total}) of a plurality of particles selected from cork or polymer or wood or coconut fibres, or mixtures thereof and 3 - 35 % (w/w_{total}) of a binder. Preferably the cap (2) comprises 85 to 90 % of a plurality of particles and 10 - 15 % (w/w_{total}) of binder. More preferably the cap 2 comprises 10% (w/w_{total}) of binder.

[0047] In an embodiment, the cap 2 comprises 85 to 90 (w/w_{total}) of a plurality of particles of cork and 10 - 15 % (w/w_{total}) of polyurethane as a binder. Preferably the particles of cork have a particle size of 0.1 - 0.5 mm.

[0048] In an embodiment, the binder is selected from polyurethane; melamine; latex; phenolic resin or mixture thereof. Preferably, the binder is polyurethane.

[0049] In an embodiment, latex is a mixture of 1,3-Butadiene and Styrene.

[0050] In an embodiment, figure 2 represents an embodiment of the cap and Figure 3 represents the view from the bottom of the cap, where can be seen the chamber 4 for receiving the stopper and the rim 5 of the open bottom.

[0051] In an embodiment, the cap can be obtained through two methods as showed in Figure 4.

[0052] In an embodiment, the method comprises the following steps:

mixing 75 - 96 % (w/w_{total}) of a plurality of particles of cork with 3 - 35 % (w/w_{total}) of a binder to obtain a mixture;
pouring the mixture in a conveyor belt or treadmill to obtain a granulated film;
hot pressing the film until obtaining a plate, at a temperature from 100°C to 200 °C, at a pressure from 1 to 10 kg/cm^2, for at least 120 seconds;
cold pressing until the pressed plate is obtained, at a temperature from 10°C to 50°C, at a pressure from 1 to 10 kg/cm^2, for at least 120 seconds;
cutting the plate for obtaining a plurality of plates in a pre-determined size;
profiling the plates by CNC, obtaining a cap.

[0053] After the profiling with CNC, the cap is coated with a varnish or an ink and the stopper in bonded into the internal surface of the cap with glue, resulting in a capped stopper. Preferably the capped stopper comprises a cork stopper.

[0054] Alternatively, after cutting the film in plates, the plates are bounded with glue and are cut into beams.

[0055] After, the beam is lathed turned into a rod, following the step of lathe profiling or CNC profiling or milling to obtain the cap.

[0056] The cap can be coated with a varnish or an ink. After, the cap is bonded to a cork stopper by means of gluing machine, to obtain a capped stopper.

[0057] In an embodiment, the cap made is obtained by CNC profiling machining or lathe profiling machining and/or milling. In an embodiment, the cap is obtained by lathe profiling or milling profiling.

[0058] In an embodiment, a bottle comprises the capped stopper with the described cap. In an embodiment, the bottle has liqueur wine or fortified wine or spirits wine or cosmetic or perfume.

[0059] The term "comprising" whenever used in this document is intended to indicate the presence of stated features, integers, steps, components, but not to preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

[0060] The disclosure should not be seen in any way restricted to the embodiments described and a person with ordinary skill in the art will foresee many possibilities to modifications thereof. The above described embodiments are combinable.

[0061] The following claims further set out particular embodiments of the disclosure.

Claims

1. Cap for a capped stopper wherein the cap comprises:

   75 - 96 % (w/w_{total}) of a plurality of particles selected from cork or polymer or wood or coconut fibres, or mixtures thereof;
   3 - 35 % (w/w_{total}) of a binder;

   wherein the binder is selected from a list consisting of: latex, polyurethane resins, phenolic resins, melamine resins, or mixtures thereof;
   wherein each particle size of the plurality of particles ranges from 0.01 μm to 2 mm
   wherein the cap has a density range from 700-1800 Kg/m^3;
   wherein the cap is obtainable by machining.

2. Cap according to the preceding claim wherein the cap comprises 5 - 25 % (w/w_{total}) of binder; preferably 10-15 % (w/w_{total}) of binder.

3. Cap according to any of the preceding claims wherein the particle size of the plurality of particles ranges from 0.01 μm to 0.8 mm; preferably ranges from 0.1 - 0.5 mm.

4. Cap according to any of the preceding claims where-

in the cap has a density range from 900-1500 Kg/m^3; preferably 1000-1200 Kg/m^3.

5. Cap according to the preceding claim 5 wherein the cork comprises medium density fibreboard or high-density fibreboard.

6. Cap according to any of the preceding claims wherein the binder is polyurethane.

7. Cap according to any of the preceding claims further comprising a coating selected from varnish; polyvinyl chloride; wood, paint or mixtures thereof.

8. Cap according to any of the preceding claims wherein the cap is a body comprising a closed top, an open bottom and a chamber for receiving the stopper, being the chamber between the closed top and the open bottom.

9. Cap according to the preceding claim wherein the chamber has an external surface smooth or with a plurality of protrusions and/or wherein the open bottom of the body comprises an inwardly rim.

10. Cap according to any of the preceding claims, wherein the cap is obtainable by profiling and/or milling, preferably by CNC profiling or lathe profiling.

11. Method to obtain the cap according to any of the preceding claims 1 to 13 comprising the following steps:

mixing 75 - 96 % (w/w_{total}) of a plurality of particles with 3 - 35 % (w/w_{total}) of a binder to obtain a mixture;
pouring the mixture to obtain a granulated film;
hot pressing the film until obtaining a plate;
cold pressing until the pressed plate is obtained;
cutting the plate for obtaining a plurality of plates in a pre-determined size;
machining for obtaining a cap, preferably by profiling and/or milling, more preferably by CNC profiling or lathe profiling;
optionally further comprising the steps of, after cutting the plate for obtaining a plurality of plates in a pre-determined size, bonding the plurality of plates and
cutting said plates to form a beam.

12. Method according to the preceding claim 16 further comprising the step of lathing the beam into a rod.

13. Method according to any of the preceding claims 14 to 18 further comprising the step of bonding the cap in the stopper.

14. Method according to the preceding claim wherein the bonding of the cap to the stopper is made with a material selected from polyurethane, acrylic or mixtures thereof.

15. Capped stopper comprising a cap according to any of the preceding claims 1-13; preferably the stopper is bonded to an internal surface of the closing top of the body of the cap.

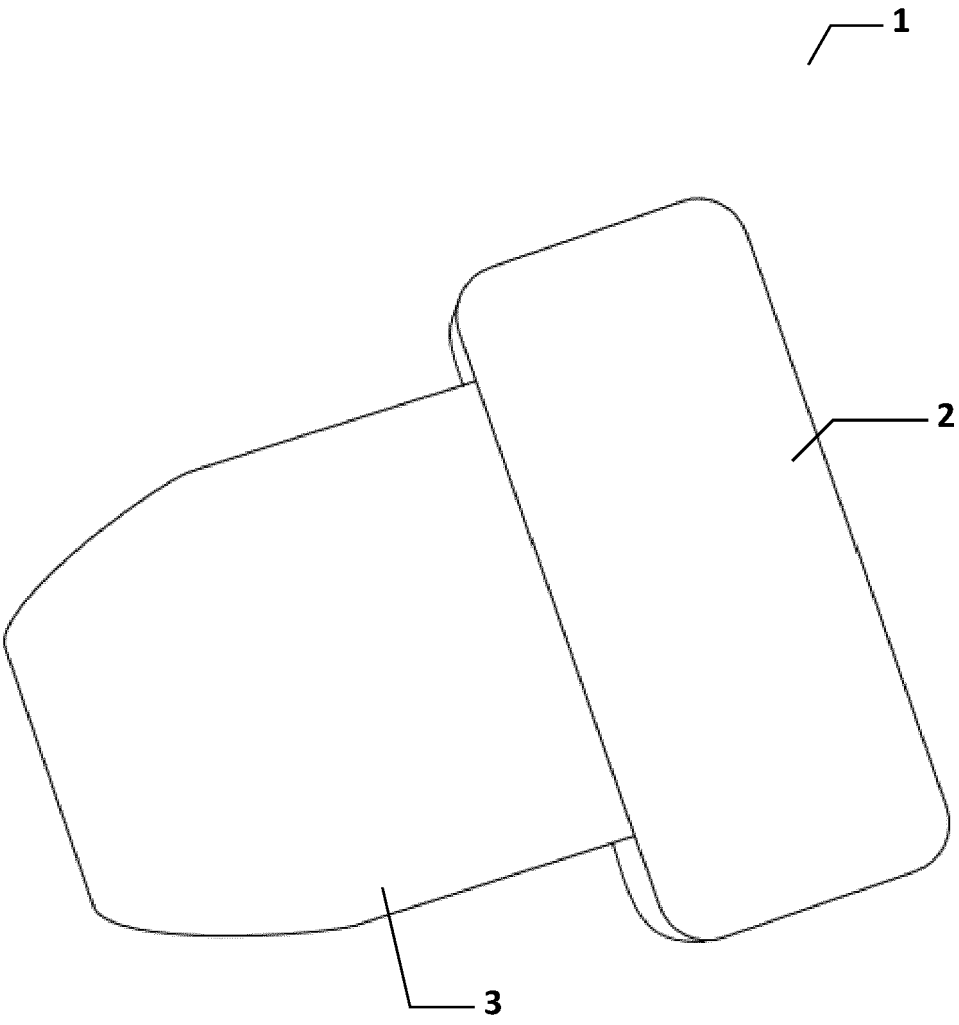

Fig. 1

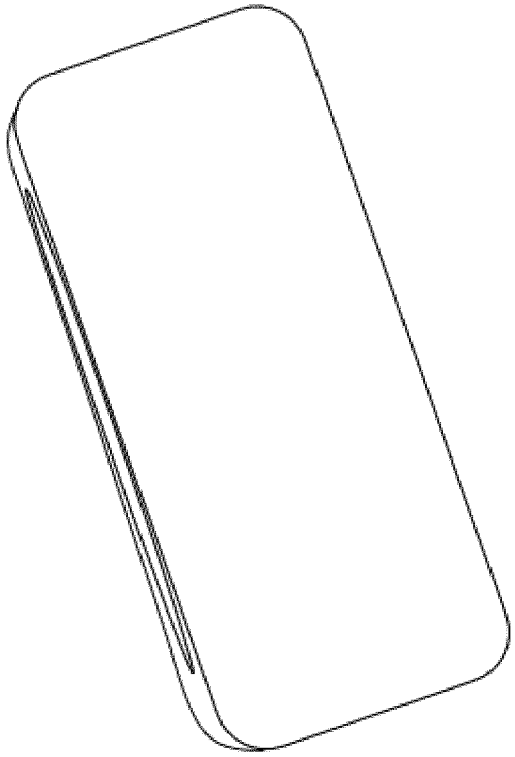

Fig. 2

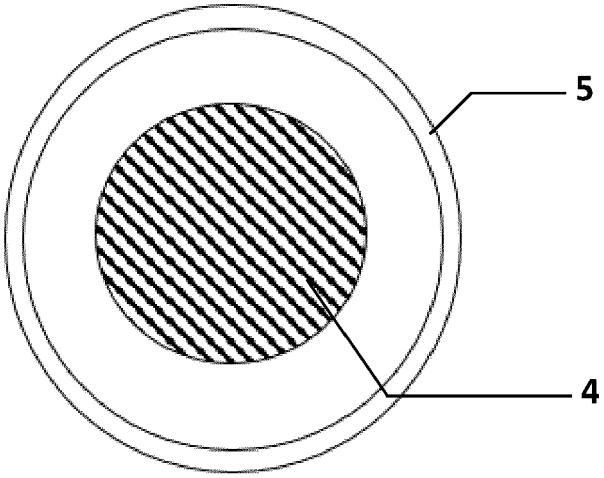

Fig. 3

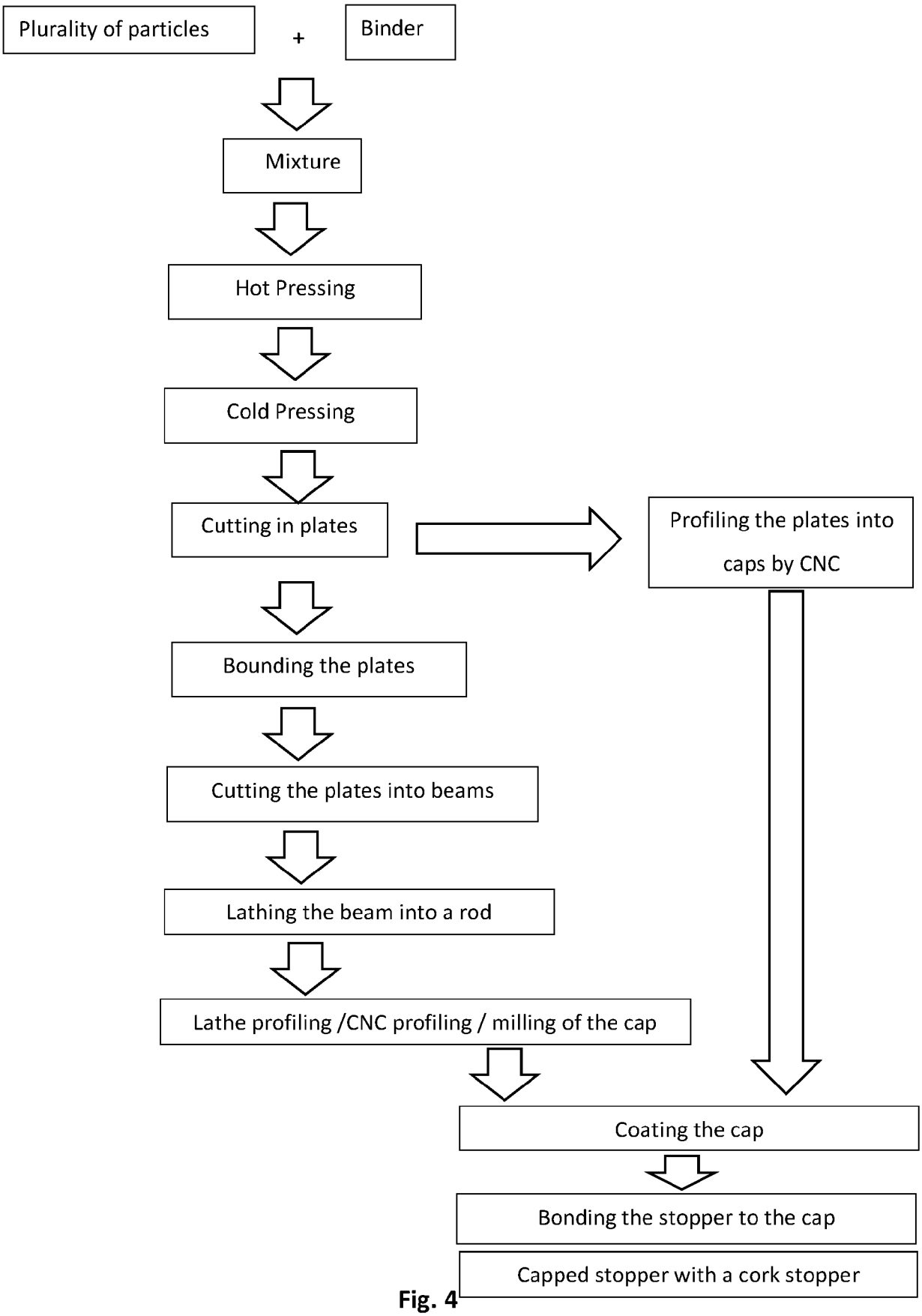
Plurality of particles
+
Binder
Mixture
Hot Pressing
Cold Pressing
Cutting in plates
Profiling the plates into caps by CNC
Bounding the plates
Cutting the plates into beams
Lathing the beam into a rod
Lathe profiling /CNC profiling / milling of the cap
Coating the cap
Bonding the stopper to the cap
Capped stopper with a cork stopper

Fig. 4

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 23 18 8508

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2022/117241 A1 (DSIGNTANK SL [ES]) 9 June 2022 (2022-06-09) * page 6, lines 21-25; claims 1-3 * * page 7, lines 10-16 *	1-15	INV. B65D39/00 B65D39/16 B65D65/46
A	US 2011/108512 A1 (CABRAL MIGUEL FREIRE DE ALBUQUERQUE FERREIRA [PT] ET AL) 12 May 2011 (2011-05-12) * claims 4,5; figures *	1-15	
A	GB 266 641 A (MANUFACTURAS DE CORCHO S A; ENRIQUE VINCKE) 3 March 1927 (1927-03-03) * claim 2; figures *	1-15	

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	8 January 2024	Serrano Galarraga, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 18 8508

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-01-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2022117241 A1	09-06-2022	EP 4255978 A1	11-10-2023
		ES 1261429 U	02-03-2021
		WO 2022117241 A1	09-06-2022
US 2011108512 A1	12-05-2011	AU 2009251945 A1	03-12-2009
		CN 102112376 A	29-06-2011
		EP 2291314 A1	09-03-2011
		PT 104082 A	30-11-2009
		US 2011108512 A1	12-05-2011
		WO 2009145652 A1	03-12-2009
		ZA 201009266 B	28-03-2012
GB 266641 A	03-03-1927	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82