



EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:
12.01.2022 Bulletin 2022/02

(51) Int Cl.:
B65D 5/22 (2006.01) B65D 6/04 (2006.01)

(21) Application number: **20913774.4**

(86) International application number:
PCT/RU2020/000676

(22) Date of filing: **10.12.2020**

(87) International publication number:
WO 2021/145788 (22.07.2021 Gazette 2021/29)

(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 MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **Limited Liability Company "Dzidipro"**
Moscow 111024 (RU)

(72) Inventor: **SAVELEV, Dmitrii Viktorovich**
Moscow 119454 (RU)

(74) Representative: **Smirnov, Alexander**
A. Smirnov & Co
Patent and Trademark Agency
Alises 10-69
1046 Riga (LV)

(30) Priority: **16.01.2020 RU 2020101623**

(54) **CARDBOARD PACKAGING AND METHOD OF ASSEMBLING SAME**

(57) The invention relates to the field of manufacturing packaging for primarily liquid, fatty food products or products containing or releasing fat and moisture. The result is a wider range of technical means and methods. A method for assembling packaging for food products consists in that a blank forms a flat bottom having fold lines, which separate the side walls of the packaging; double walls are formed, wherein the outer parts of the double walls, after folding, are a support for the entire packaging and for the insertion into said walls of shaped elements in the form of tabs, arranged at both ends of adjacent side walls, and angled elements situated between the side walls, closer to the bottom of the packaging, so as to form a hermetic membrane during assembly of the packaging. The packaging is manufactured from a cellulose paper base material and a laminated layer on the inner side of the packaging, which is in contact with the food products.

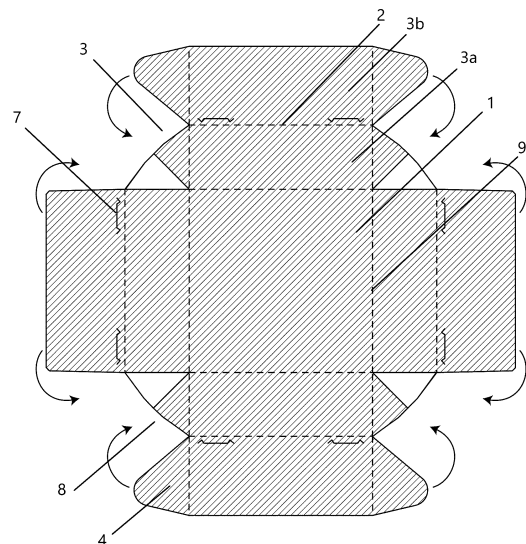


Fig. 1

Description

Field of Invention

[0001] The essential field of this invention is manufacturing of cardboard packages predominantly for food products or products containing or extracting fats and moisture.

[0002] More specifically, the field of this invention is packaging structures, namely packaging structures in a form of containers manufactured by die-cutting a form out of a laminated pulp-and-paper material, formed along the crease lines and glued so that double walls and corner elements with a membrane installed between them for maintaining and enhancing hermetic nature of the entire product are formed. With that, the outer walls are the support of the entire package and are in contact with the surface the package is placed upon.

[0003] The presented state-of-art products manufactured of pulp-and-paper materials are not hermetic and do not allow to keep food products warm for a long time, which causes problems when using cardboard packages.

[0004] Nowadays catering facilities, different restaurants, cafes, food shops need to use cardboard packages for their products instead of plastic containers. For instance, different boxes, containers in which food products and dishes are offered to end users are used as cardboard package. This being said, end users may use such package as they wish, namely either to consume food products directly from packages or to place purchased products into domestic glassware after long-time transporting. Capability of long-term storage of food products both by a manufacturer and end users is of significant importance. Therefore, there is demand for package which: (i) is manufactured with use of additional elements and by means of a specific method allowing to maintain the package hermetic for a long time, (ii) allows to maintain and to increase the temperature of food, (iii) has agreeable appearance and (iv) is manufactured in different sizes and types.

[0005] Unique elements of the entire package design are also introduced by food product manufacturers to attract customers. As a rule, the cost of package of food products offered by manufacturers also increases the final cost of the entire offered product. Therefore, food product manufacturers are interested in purchasing high-quality package preventing leaks of fat and moisture.

[0006] This being said, in order to make package competitive and to reduce the product cost, it is necessary to produce package which differs from the other marketed items, both considering different additional elements and manufactured using a method accelerating the process of package assembling for increase of efficiency without loss of quality.

[0007] For instance, significant distinctions and advantages of package include increased product hermeticity, prolonged hermeticity period, lightweight and durability,

capability of heat conservation and use of different additional covers, less feedstock used during manufacturing, convenience of transporting.

5 State of the art

[0008] Various state-of-art cardboard products manufactured by assembling cutout blanks are known.

10 **[0009]** There is patent No. WO/2006/045212 for a cardboard package assembled by folding and used for storing, transporting and/or presenting items. The package form has a bottom, side walls, a double cover and corners folded inward each of which comprises four elements. Excessive use of non-laminated cardboard material is a disadvantage of this package. The package has a double cover which is integrated in the structure, thus making it impossible to use different types of covers with the package bottom. The package has no double walls required for increase of structural stability.

20 **[0010]** Patent No. FR2821826 is a square cardboard package manufactured almost entirely of one solid sheet. This package is manufactured by means of folding and has a cover which is a part of the solid package sheet. Disadvantages of this package also include lack of a laminated layer, presence of a cover being an integral part of the entire package and one-layer walls that do not allow conserving heat.

25 **[0011]** There is also a state-of-the-art package patented under No. EP0846070 which has a form of a cardboard container designed for packaging of items. It has a flat shape with walls adjacent to the bottom and the cover being also a part of the entire structure. The disadvantages of this package also include lack of a laminated layer, excessive cardboard due to a large number of additional elements, one-layer walls not providing rigidity and heat conservation.

30 **[0012]** There is patent No. US20130112741 describing a package box and a method of assembling of such box which is a single integral unit with side walls, corners of a specific shape, covers and additional elements strengthening the entire structure. The disadvantages of this package are its integral design, one-layer walls, and additional holes not allowing storing food products hermetically. There is patent claim No. KR160084612 for a package assembled in a form of a cardboard crate. This package has double walls and entirely cardboard corner elements. However, there is no laminated layer in the package and there are additional elements placed along the edges of two walls of the package so that they form a kind of small flange.

40 **[0013]** There is patent claim No. JP3199310 for a cardboard package for fruits and vegetables. This package has corner elements and double walls. However, disadvantages of this package are lack of laminated layer, and slits which do not allow storing food products with increased moisture and fat content hermetically.

50 **[0014]** There is patent claim No. CN207001037 for a square cardboard package with a cover and double

clamping elements on top of the cover. This package contains no laminated cardboard, has slits, one-layer walls and a cover being an integral part of the structure, which again does not allow to transport products hermetically and to keep the package in original shape.

[0015] There is patent No. WO/1993/015962 for a tray serving as package bottom and consisting of bottom, four walls and corner elements. However, the disadvantages of this package include lack of double walls, very low walls and too wide bottom, lack of locks that would allow fixing the cover to the bottom and lack of laminated layer on the cardboard.

[0016] There is patent No. FR2564427 which is also a cardboard package assembled by folding a solid form. The disadvantage of this package is three-layer walls which implies high cardboard consumption. Moreover, the bottom of the package is not laminated, so the package does not provide for a long-time contact with wet or greasy food.

[0017] There is invention No. 2589674 which is a package comprising a bottom and a sleeve. However, in this case, the sleeve does not form an integral structure with the bottom but is fixed to the latter by means of heat sealing, which ultimately does not imply a single unit and increases time required for assembling.

[0018] The disadvantages of the known package designs are manufacturing complexity due to a large number of additional elements, increased amount of material packages are manufactured of, non-hermeticity of cardboard packages and impossibility to use them for long-term storage of wet and greasy food products.

[0019] Many packages are manufactured of different cardboard types using different blanking dies with further forming both by means of additional fastening elements provided in the package itself or by gluing different parts of the structure together.

[0020] The design types available on the market have significant disadvantages, namely: (i) they do not allow to reduce the amount of materials used, (ii) have complex structures increasing manufacturing time, (iii) do not allow to increase hermeticity of cardboard package if used for greasy or wet food products, (iv) do not allow to increase the period of preservation of hot food temperature and do not allow to keep the structure light-weight and durable simultaneously.

[0021] Due to particular disadvantages and lack of opportunity to use the structure in an optimal way, all available state-of-the-art designs do not allow to satisfy the needs of both manufacturers using package for the products they manufacture and end users of ready food. In most package designs, slits appear during assembling and cardboard is not laminated, which, as a result, does not provide hermeticity to the structure and does not allow to store food products with increased moisture and fat content in such package. Even if wet and greasy food is put into such package for a short time, due to its structure, cardboard will soak and cannot be used for a long time without damage to package exterior and surrounding

items, and moisture and fats extracted by the product may drip out through the holes in the package. Package with its cover being an integral part of the structure may also not be appropriate for storage of food products because, due to the structural features, the cover may fit the side walls loosely, due to which gaps appear allowing foreign objects to get inside.

[0022] Correspondingly, the available state-of-the-art package variants where the cover does not form an integral part of the structure, are not sufficiently hermetic because:

- cardboard of such package is not laminated;
- there are holes in the corners where the side walls and the bottom adjoin each other;
- there are no additional locks for tight clamping of the cover;
- there are no double walls with the outer walls being elongated and forming an additional cavity allowing to increase the structural strength keeping the structure light-weight, to reduce heat exchange between a food product and the environment by means of the "thermos effect" and, thanks to the elongated outer walls, to place the structure stably both on a surface and in a stack.

[0023] In laminated cardboard packages without covers, double walls and corner elements are not formed simultaneously.

[0024] Some state-of-the-art designs provide for corners of different sizes and shapes which make a part of a blanking die and consist only of cardboard the package itself is made of. However, such corners are usually folded either inward or towards the outer part and are further glued to one of the walls. Moreover, such corners are used in packages with one-layer walls, therefore, they will always be visible. With that, the corners will be either contacting food or, in case they are located outside, may be exposed to the environment, which leads to deformation of package and loss of its integrity.

[0025] There is a number of designs equipped with additional elements located between one-layer walls and folded to form double corner segments. This being said, all corner segments consist completely of cardboard, have relatively large sizes and therefore form rather dense corner elements of packages.

[0026] There are no package designs which would have both double walls and corners elements as additional elements.

[0027] Neither are there solutions containing corner elements located between package walls and made of materials other than cardboard.

[0028] Availability of fully cardboard corner segments will not allow to accelerate the assembling process using double walls. Therefore, availability of fully-cardboard

corner elements will not allow to avoid cardboard creasing by means of the claimed method namely by placing an additional petal-shaped profile element in the side part of one of the walls and the corner element into the gap between the layers of the double wall.

[0029] The entire package manufacturing process from die-cutting to assembling and further transportation shall reduce duration of all stages maintaining the same level of package quality including its hermeticity and appearance.

Advantages of invention

[0030] This invention is designed to remove the above mentioned disadvantages and solves several problems:

- allows to create cardboard package with such properties as durability by using double walls, hermeticity by using membrane corner elements and low weight by using laminated cardboard at the same time;
- allows to reduce duration of package assembling maintaining the same level of hermeticity by forming double walls and membrane corner elements;
- allows to create completely hermetic moist- and grease-resistant bottoms for different shapes of package which may be used both as self-sufficient products and with covers of different shapes and with addition of locking holes if necessary;
- keeps food products warm for a long time both by means of double walls and by preventing the contact between the package bottom and the surface it is placed upon;
- has an agreeable design manufactured by means of a simplified folding method with use of additional petal-shaped profile elements and corner membrane elements aiming at maintaining hermeticity;
- allows to use minimum amount of cardboard maintaining hermeticity of the entire structure.

[0031] The technical result of the invention is increase of hermeticity, prolonged conservation of heat of food products placed into a package, durability and light weight of a laminated-cardboard product when using a package as intended and stacking, reduction of assembling time and maintaining hermeticity and agreeable appearance of a package.

[0032] The technical result is reached by manufacturing a three-dimensional structure by means of a blanking die during assembling of which double side walls are formed which adjoin each other tightly by means of additional elements, namely the petal-shaped profile elements and corner elements which form hermetic membranes in the corners of the structure and the external

wall becomes the support of the entire structure and prevents the contact between the package bottom and the surface it is placed upon.

[0033] The technical result is also reached by the fact that the package design allows to use it both as a self-sufficient product and in combination with different covers which additionally increase its hermeticity.

[0034] One of the important problems solved by this invention is to propose an optimal and accelerated method of assembling packages with embedded additional elements designed for increase of hermeticity of the entire structure maintaining the eye-pleasant exterior of the package.

15 Disclosure of invention

[0035] This invention relates both to design of package and method of its manufacturing.

[0036] The package proposed by this invention is manufactured of cardboard. The package consists of double-wall cardboard with the side contacting food products being coated with a laminated layer. The cardboard structure, availability of double walls and all necessary components allow to obtain a rigid and at the same time lightweight package, which does not allow cardboard to crease and deform during operation.

[0037] The package bottoms are manufactured of pulp-and-paper material and the side of the package contacting food products is coated with lamination based on such polymer materials as polyethylene or polypropylene or laminated by a ready polymer film (polyethylene, polypropylene, polyethylene terephthalate or multi-layer film) with use of a gluing substance, or with cellulose film.

[0038] The package is manufactured of a pre-cut blank (form) of necessary size which comprises a bottom, double walls on each side, corner segments between the walls as well as additional petal-shaped profile elements on the sides in the upper parts of the package walls.

[0039] Moreover, additional locking holes may be located on the outer walls of the package for clamping a cover if necessary.

[0040] The package is assembled by folding the flat blank along the crease lines.

[0041] For instance, the double walls are formed by folding along the horizontal lines in the central parts of the walls and then along the crease lines between the side walls and the bottom, as a result of which the package is formed as a three-dimensional structure.

[0042] The side walls on which additional profile elements are located are folded along the crease lines. Then the side walls without additional elements are folded; given the dimensions of the package, small parts of such side walls overlap the additional elements of the adjacent walls.

[0043] The side walls located opposite to each other have additional petal-shaped profile elements. With that, the said additional elements are designed for improving the technical result both for the purpose of increasing

general hermeticity of the structure and improving fixation of the corner elements since the latter are actively involved in the package assembling process. In case there had not been such elements on the side walls, the corner segments of small area would have not provided reliable clamping of the package after assembling. The shape of the additional element is calculated based on the final size of the package since the area of the element shall (i) have appropriate size in order to optimise cardboard consumption, (ii) be a little bit larger than the corner elements in order to overlap them, (iii) contact the inner part of the side wall to make it possible to glue them together and therefore to clamp the structure reliably.

[0044] Moreover, availability of additional profile elements allows to prevent occurrence of holes when folding the package sides.

[0045] The additional elements allow both to increase durability and to prolong its application both by placing separately on a surface and by stacking (placing packages on top of each other).

[0046] A three-dimensional structure is formed by pressing the package bottom from the inner side which initiates the process of connecting the side walls to each other. Due to the fact that the additional profile elements turned out to be located between the corner segment and the adjacent side wall after the previous folding of the side walls one after another, the additional profile element and the corner segments are smoothly installed in between the double walls in the course of pressing.

[0047] A key distinction of the package is availability of the corner segment which is a membrane (diaphragm) consisting of two V-shaped elements. One of the segments has no cardboard layer.

[0048] The corner element consisting of 2 V-shaped segments one of which consists of a cardboard layer and a laminated layer and another consists only of a laminated layer forms a membrane designed for maintenance and significant extension of the hermeticity period of the package.

[0049] One V-shaped corner segment consisting only of film allows to reach the technical result aiming at increase of hermeticity and acceleration of the assembling process. The diaphragm (membrane) is a part of the entire laminated layer applied to the surface of the package to prevent soaking of the pulp-and-paper base after contacting food products. And availability of one V-shaped segment, namely the diaphragm (membrane) without a cardboard base in this part allows to perform assembling using the proposed method.

[0050] A completely cardboard V-shaped corner element would have led to compression of this segment and deformation of the package if used by means of the claimed method and, therefore, would have not allowed to reduce the bottom assembling duration and would have added an additional product assembling stage.

[0051] Moreover, a completely cardboard corner segment would have not allowed to reach the claimed technical result since the package would have not remained

flexible and light-weight, more cardboard would have been used and a thick cardboard layer would have not allowed to keep the agreeable appearance of the design due to spreading of the double wall caused by excessive thickness of the folded material of the corner segments.

[0052] If the entire corner segment consisted only of film (laminated layer), it would not allow to optimise assembling and provide hermeticity since the contact between the film and hot glue might cause destruction of the former, therefore, hermeticity would not be reached.

[0053] Also, due to the fact that small gaps are formed between the side walls during assembling of the package, if there had not been a membrane, food might have contacted the glue layer after getting into these holes, which prevents complete hermeticity and does not promote human safety and health.

[0054] Since the cardboard V-shaped corner segment pulls the film V-shaped corner segment when using the claimed assembling method, it correspondingly allows to get the required final design of the package, as a result the additional profile element and the corner segment are smoothly and simply inserted and clamped between the side double wall.

[0055] Therefore, availability of one part of the V-shaped corner segment made of film and another V-shaped corner segment made of cardboard provides hermeticity, accelerates assembling, promotes human safety and health, increases rigidity in this part, reduces thickness of additional material and keeps an agreeable appearance.

[0056] The corner element described herein may be used in different formats of cardboard package to form a hermetic bottom.

[0057] This invention is claimed in relation to a package to which a cover of different types and sizes having locks may be fixed. The double walls allow to maintain hermeticity since the cover locks are fixed to the mating locks in the package bottom which have a form of holes of corresponding sizes and shapes. With one-layer bottom of the package, the slits would have not allowed to maintain hermeticity of the entire structure.

[0058] Moreover, depending on the sizes of the package bottom and the cover, the slits may have optimal and appropriate sizes providing reliable clamping.

[0059] The claimed solution is also designed to keep food warm for a longer time. The outer side walls are increased in length and, due to it, the formed protrusion prevents the contact between the bottom and the surface a package is placed upon. Moreover, the air gap formed between the surface and the package bottom and surrounded by the side walls allows to keep the food warm for a long time.

[0060] If food has been heated and is hot, it will remain warm since the bottom and the surface the package stands upon are not direct contact, which correspondingly reduces heat exchange.

[0061] The space formed between the bottom and the surface and the double walls form the air layers similar

to the ones in thermoses which allow to keep food or liquids warm. The air layer allows to keep food warm for a longer time as compared to the currently proposed solutions.

[0062] It is worth noting that this invention does not limit the basic structural material to pulp-and-paper materials. Given that the inner surface of the package is completely laminated, which protects the basic structural material from moisture and fats extracted by food products, other materials containing processed pulp-and-paper materials or scrap paper may be used as the structural material.

[0063] Optimal number of all components of the package also allows to create packages with different number of side walls and with different dimensions. If the walls are extended in length or width, only dimensions of the additional and corner elements may be modified for the purposes of assembling without loss of hermeticity and assembly time.

[0064] The invention is explained in the drawings:

Fig. 1 demonstrates the completely unfolded variant of the package. The figure demonstrates the inner side of the package the laminated layer is applied to.

Fig. 2 demonstrates the variant of the package in the flat state with the side walls having additional petal-shaped profile elements being folded as the first stage of folding the package for forming the double walls. The figure is shown as seen from the inner side of the package.

Fig. 3 demonstrates the variant of the package in the flat state with the remaining side walls without the petal-shaped profile elements being folded as the second stage of double wall forming. The figure is shown as seen from the inner side of the package.

Fig. 4 shows the variant of the package in the flat state with the double walls being folded and a part of the adjacent double walls and the petal-shaped profile elements overlapping each other. The figure is shown as seen from the outer (reverse) side of the package.

Fig. 5, 6 show the part of the package which demonstrates that the V-shaped corner element consisting only of film is folded and overlapped by the V-shaped element made of cardboard and film which remains unchanged. When forming the three-dimensional structure of the package, the corner element with the petal-shaped profile element is inserted into the formed double wall of the package.

Fig. 7 demonstrates the variant of the assembled package with a corner element slightly opened to show formation of the corner element.

Fig. 8 shows the variant of the assembled package demonstrating the bottom of the package.

[0065] It is worth noting that the package exterior is shown for illustrative purposes. In actual practice, there may be any types, materials, dimensions and shapes of packages.

[0066] The package form variant (fig. 1) is manufactured of a sheet cardboard blank with laminated layer applied to one side of cardboard contacting food products which may be assembled as a three-dimensional container.

[0067] This being said, Fig. 1, 2, 3 demonstrate the inner side of a flat blank with the applied laminated layer which contacts food products. Fig. 4 demonstrates the outer (reverse) side of the package blank as seen from the bottom side.

[0068] Fig. 1 shows the flat blank with the package bottom (1) presented as a square. The bottom may have any dimensions and formats. To form the double walls, the side walls (3) (3a, 3b) having the petal-shaped profile elements (4) are folded along the crease lines (2) one after another. With that, the wall (3a) is glued to the wall (3b) by means of glue previously applied to the inner side of the wall when being folded along the crease line (2).

[0069] Fig. 2 shows the flat blank with already formed double walls (3) on which the double walls (6) (6a and 6b) without additional elements are being formed along the crease lines (5) to overlap a part of the side wall (3b) and the petal-shaped profile elements (4).

[0070] Fig. 3 demonstrates the flat blank with already formed double walls (3, 6) as seen from the inner side of the package.

[0071] Fig. 4 shows the flat blank with already formed double walls (3, 6) as seen from the reverse side and it demonstrates that the side wall (3b) and the petal-shaped profile elements are overlapped by the wall (6b).

[0072] Fig. 1, 2, 4 also show the locks (7) on the walls (3b, 6b) having a form of profile holes and located on the outer sides of the package after folding to make it possible to install a cover on the package. This being said, such locks (7) may have different sizes, shapes and number to fit different types of covers.

[0073] Moreover, if the package does not require any cover, there may be no such holes (7) on the package at all.

[0074] Fig. 5, 6 demonstrate the corner element (8), the petal-shaped profile elements (4) and the side walls (3, 6) close up and the process of formation of hermeticity of the entire package when folding.

[0075] Fig. 6 shows how the element (4) located on the side wall (3b) is inserted between the side walls (6a) and (6b) after formation of the double walls (3, 6) with petal-shaped profile elements (4) when folding the package along the lines (9) and forming a three-dimensional product. At the same time, the corner element (8) consisting of two V-shaped segments (8a, 8b) is also inserted completely between the double walls (6a) and (6b). The

V-shaped corner segment (8a) consisting of cardboard and a laminated layer pulls the V-shaped segment (8b) consisting only of laminated layer and having a form of a membrane (diaphragm) to form the hermetic corners of the product. As a result, when assembling a flat blank into a three-dimensional product, the corner element (8) consisting of the cardboard part (8a) and the membrane (8b) and the petal-shaped profile element (4) are installed in between the double walls (6a) and (6b).

[0076] Fig. 7, 8 demonstrate the assembled package with the side walls (3a, 3b, 6a, 6b) formed so that the petal-shaped profile element (4) is installed between the walls (6a) and (6b).

[0077] Also, fig. 8 shows the package with the side walls (3b) and (6b) increased relative to the bottom. The petal-shaped profile elements (4) are overlapped by the side wall (6b).

[0078] Therefore, the assembly process described above allows to form a hermetic package and it is worth noting that the package exterior is shown for illustrative purposes only. In actual practice, there may be any types of packages with double walls and hermetic corner elements with the described technology and materials applied.

[0079] The double walls (6a, 6b) and hermetic membrane corner elements (8) are obtained when forming a flat blank into a three-dimensional product.

[0080] The advantages of the proposed package are its simplicity and reduced assembly time, demand for only those additional elements that are necessary to form both durable and light-weight structure with increased package hermeticity period.

Claims

1. A hermetic package for food products including those containing or extracting fats and moisture made of a shape-forming material consisting of a structural material and a protective laminated layer applied only to the inner side of the structural material contacting food products, **characterized in that** corner elements located near the bottom between the side walls of the package, each of which consists of two symmetrical V-shaped segments, at that one segment of which contains only the protective laminated layer, and that for formation of the hermetic package at the place of connection of double side walls with each other, the corner elements and petal-shaped profile elements located in the upper parts of both sides of the opposite side walls, and when forming the side walls that appear in the lower part, they are inserted between the adjacent double wall distinctive with the fact that the outer part of the double wall is increased in size relative to the inner wall and forms the support of the entire package preventing contacts between the bottom and the surface, on which the package is placed.

2. The hermetic package according to the Claim 1 **characterised in that** the protective layer is made of a bio-degradable polymer or bio-degradable film material.
3. The hermetic package according to the Claim 1 **characterised in that** the side walls are provided with locking holes for clamping a cover.
4. A method for manufacturing of a hermetic package for food products involving prior manufacturing of a blanking die with a laminated layer with further formation of the package along the crease line separating the side walls from the bottom **characterized in that**, when pressing the package bottom, the double sides walls are formed simultaneously, between which the corner elements forming a membrane and the petal-shaped profile elements located between the side walls are inserted, and the outer walls are increased in size relative to the bottom after the formation.

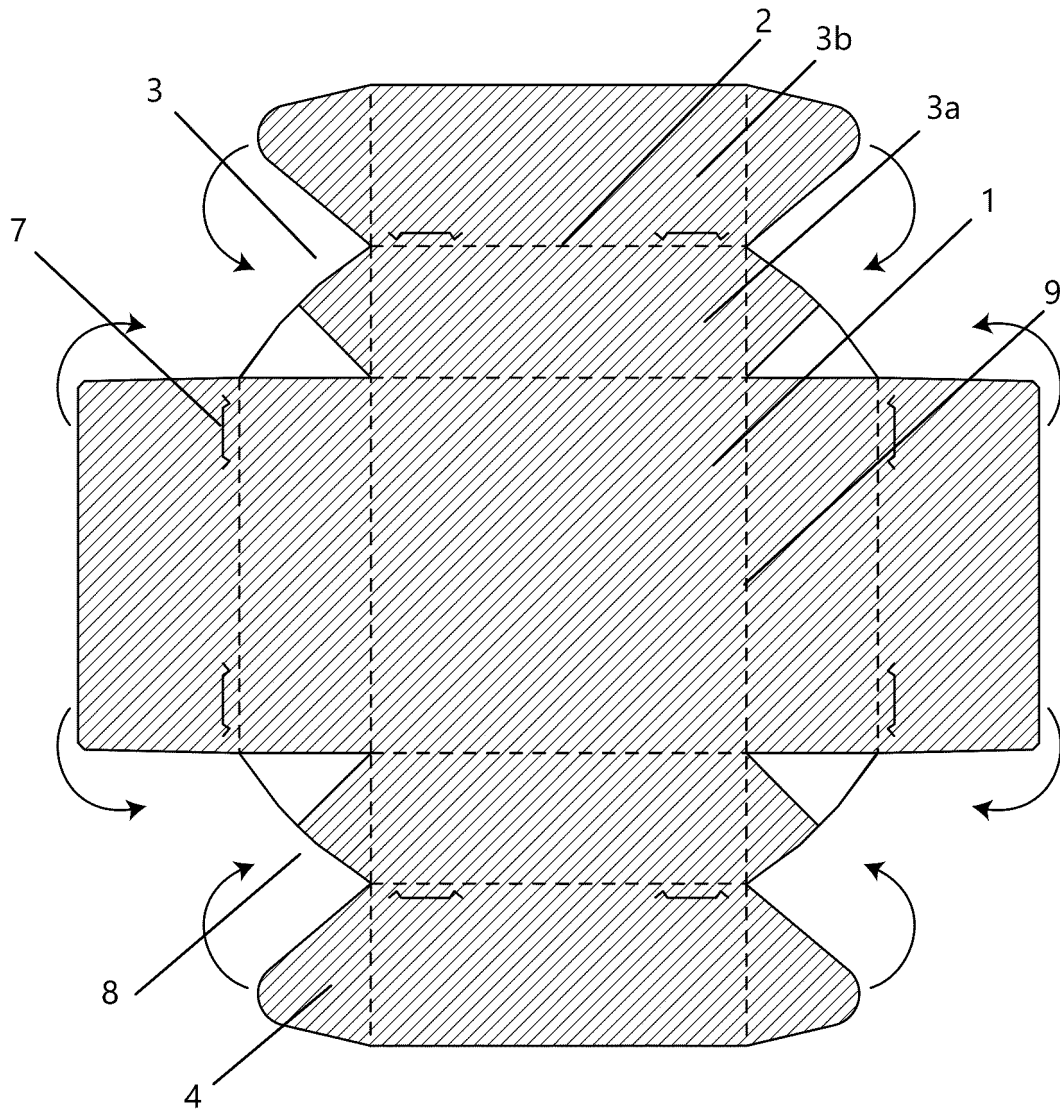


Fig. 1

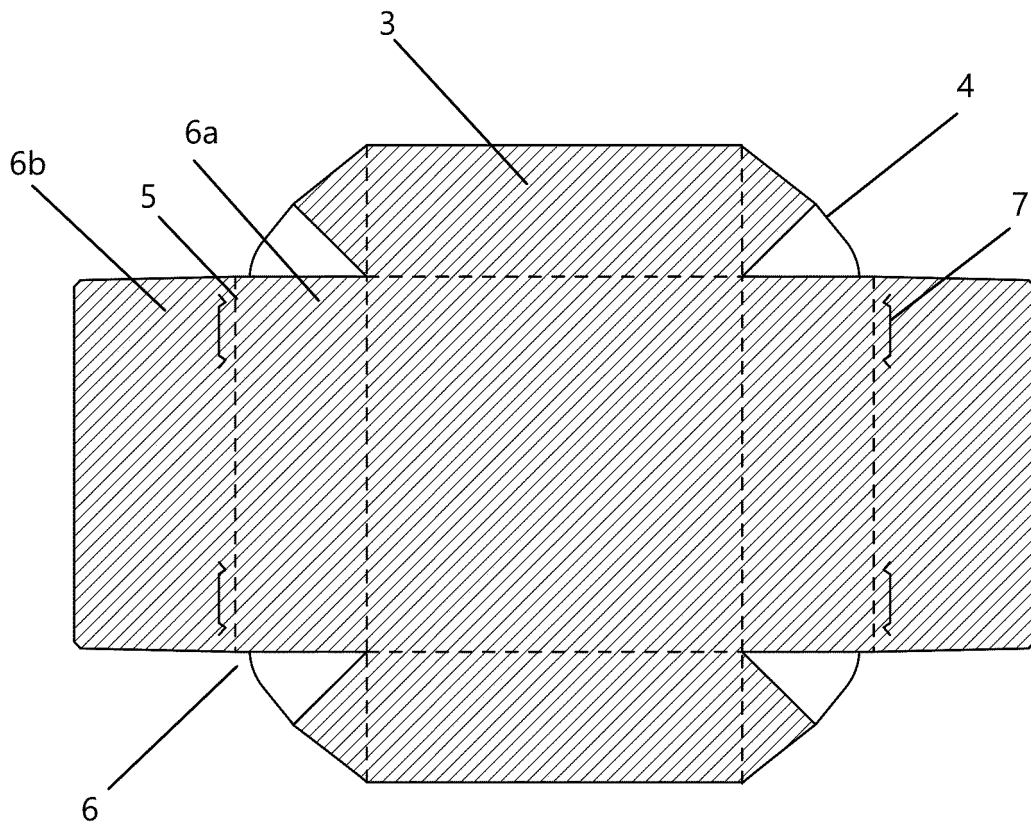


Fig. 2

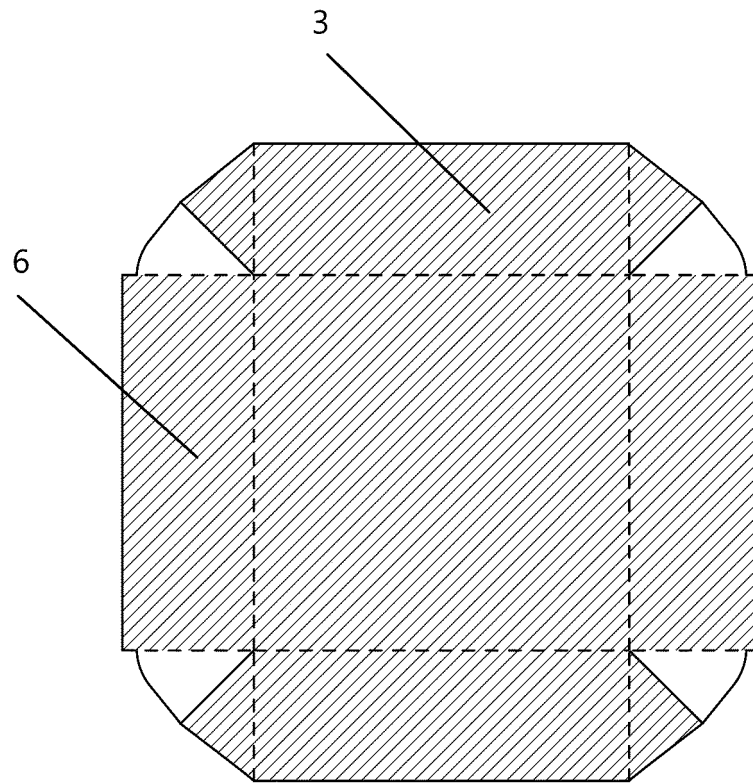


Fig. 3

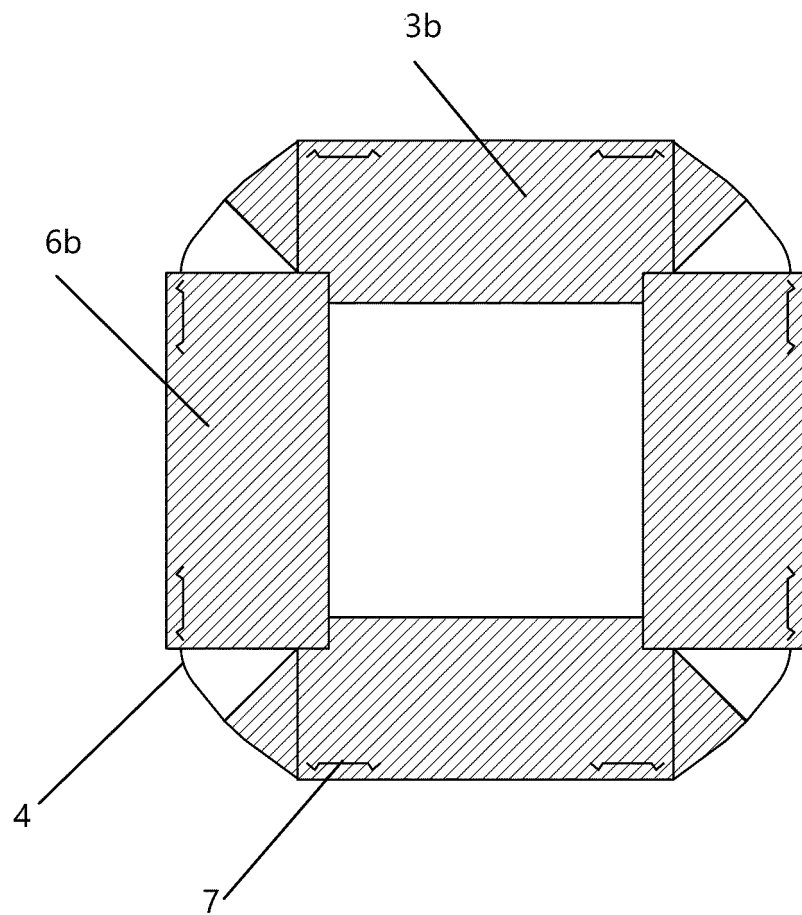


Fig. 4

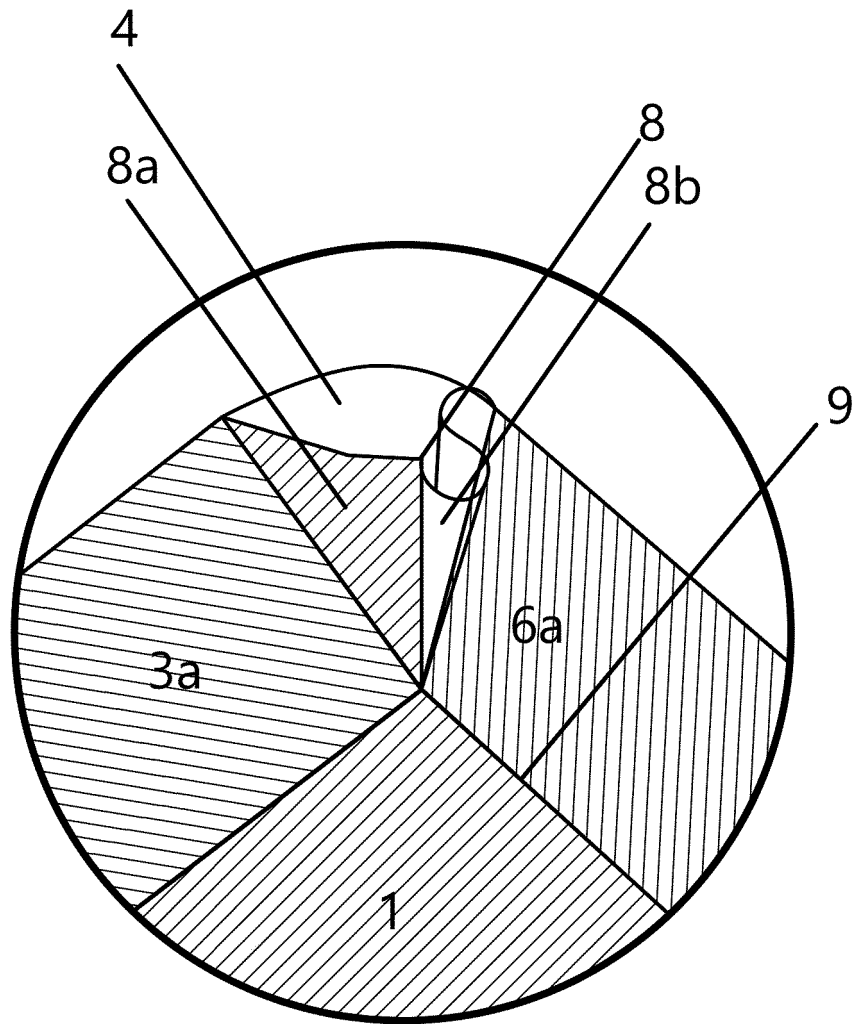


Fig. 5

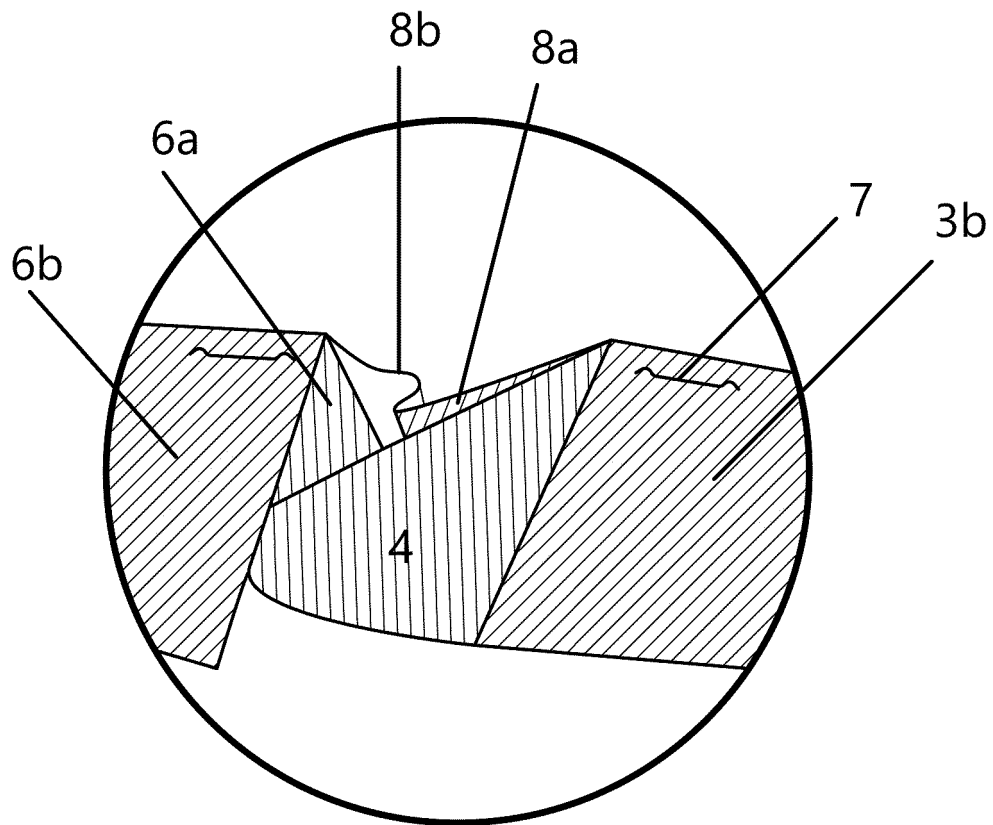


Fig. 6

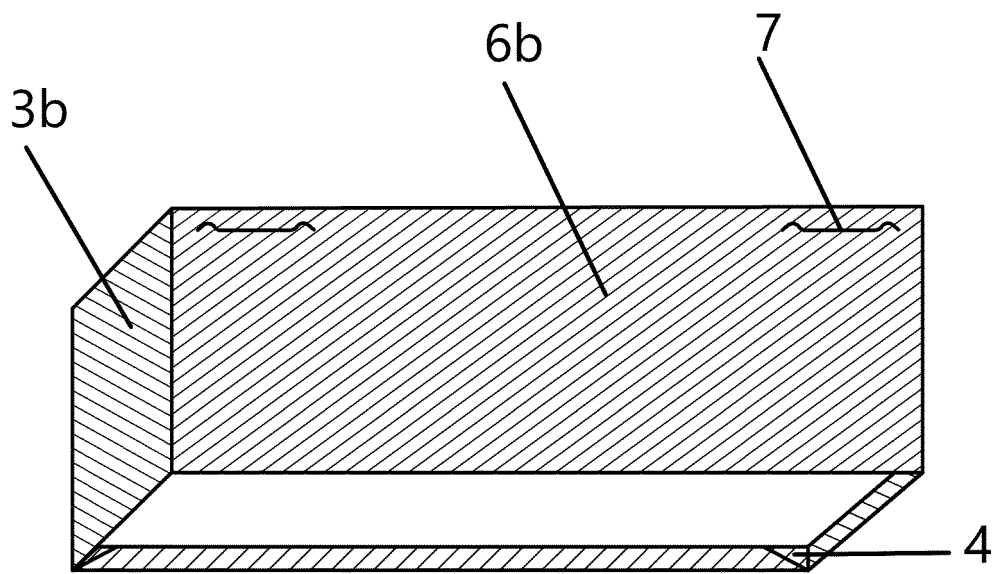


Fig. 7

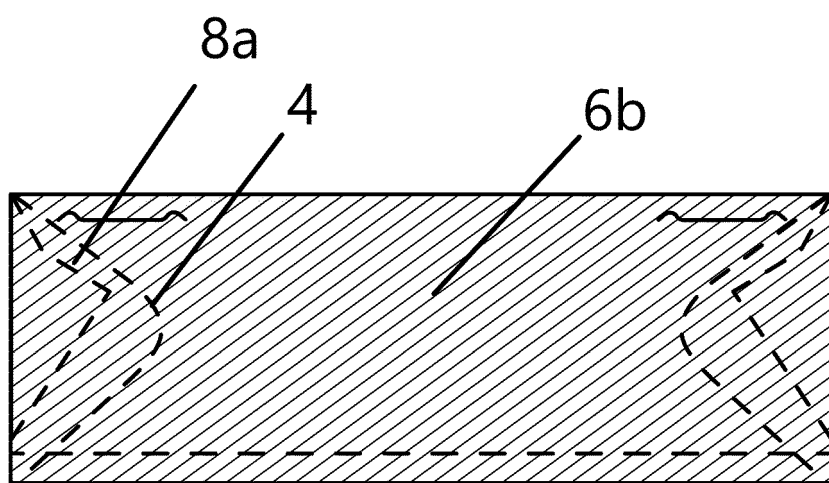


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/RU 2020/000676

A. CLASSIFICATION OF SUBJECT MATTER B65D 5/22 (2006.01) B65D 6/04 (2006.01) According to International Patent Classification (IPC) or to both national classification and IPC															
B. FIELDS SEARCHED															
Minimum documentation searched (classification system followed by classification symbols) B65D 5/02-5/04, 5/18-5/22, 5/30, 6/00-6/04															
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched															
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatSearch (RUPTO Internal), USPTO, PAJ, Espacenet, Information Retrieval System of FIPS															
C. DOCUMENTS CONSIDERED TO BE RELEVANT															
<table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>D, A</td> <td>FR 2564427 A1 (PAPETERIES LEON CLERGEAU) 22.11.1985, figures 1, 2, p. 1, lines 1-8, p. 2, 3</td> <td>1-4</td> </tr> <tr> <td>A</td> <td>US 4871111 A (WALDORF CORPORATION) 03.10.1989</td> <td>1-4</td> </tr> <tr> <td>A</td> <td>US 2009/0173772 A1 (TIMOTHY A. CANNING) 09.07.2009, figures 1-3, column 2, line 53-column 4, line 8</td> <td>1-4</td> </tr> <tr> <td>A</td> <td>RU 2654191 C1 (AO "UPRAVLIAIUSHCHAIA KOMPANIYA GRUPPY PREDPRIYATY "GOTEK" (AO "UK GP "GOTEK")) 16.05.2018</td> <td>1-4</td> </tr> </tbody> </table>	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	D, A	FR 2564427 A1 (PAPETERIES LEON CLERGEAU) 22.11.1985, figures 1, 2, p. 1, lines 1-8, p. 2, 3	1-4	A	US 4871111 A (WALDORF CORPORATION) 03.10.1989	1-4	A	US 2009/0173772 A1 (TIMOTHY A. CANNING) 09.07.2009, figures 1-3, column 2, line 53-column 4, line 8	1-4	A	RU 2654191 C1 (AO "UPRAVLIAIUSHCHAIA KOMPANIYA GRUPPY PREDPRIYATY "GOTEK" (AO "UK GP "GOTEK")) 16.05.2018	1-4
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.													
D, A	FR 2564427 A1 (PAPETERIES LEON CLERGEAU) 22.11.1985, figures 1, 2, p. 1, lines 1-8, p. 2, 3	1-4													
A	US 4871111 A (WALDORF CORPORATION) 03.10.1989	1-4													
A	US 2009/0173772 A1 (TIMOTHY A. CANNING) 09.07.2009, figures 1-3, column 2, line 53-column 4, line 8	1-4													
A	RU 2654191 C1 (AO "UPRAVLIAIUSHCHAIA KOMPANIYA GRUPPY PREDPRIYATY "GOTEK" (AO "UK GP "GOTEK")) 16.05.2018	1-4													
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.															
<table border="1"> <tr> <td>* Special categories of cited documents:</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td></td> </tr> <tr> <td>"E" earlier application or patent but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td></td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td>"&" document member of the same patent family</td> </tr> </table>	* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"A" document defining the general state of the art which is not considered to be of particular relevance		"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means		"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family			
* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention														
"A" document defining the general state of the art which is not considered to be of particular relevance															
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone														
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art														
"O" document referring to an oral disclosure, use, exhibition or other means															
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family														
<table border="1"> <tr> <td>Date of the actual completion of the international search</td> <td>Date of mailing of the international search report</td> </tr> <tr> <td>08 April 2021 (08.04.2021)</td> <td>29 April 2021 (29.04.2021)</td> </tr> </table>	Date of the actual completion of the international search	Date of mailing of the international search report	08 April 2021 (08.04.2021)	29 April 2021 (29.04.2021)											
Date of the actual completion of the international search	Date of mailing of the international search report														
08 April 2021 (08.04.2021)	29 April 2021 (29.04.2021)														
<table border="1"> <tr> <td>Name and mailing address of the ISA/ RU</td> <td>Authorized officer</td> </tr> <tr> <td>Facsimile No.</td> <td>Telephone No.</td> </tr> </table>	Name and mailing address of the ISA/ RU	Authorized officer	Facsimile No.	Telephone No.											
Name and mailing address of the ISA/ RU	Authorized officer														
Facsimile No.	Telephone No.														

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 2006045212 A [0009]
- FR 2821826 [0010]
- EP 0846070 A [0011]
- US 20130112741 A [0012]
- KR 160084612 [0012]
- JP 3199310 B [0013]
- CN 207001037 [0014]
- WO 1993015962 A [0015]
- FR 2564427 [0016]