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(54) BLANK FOR FORMING A PACKAGING COMPONENT, PACKAGING COMPONENT, PACKAGING UNIT, AND PACKED PRODUCT

(57) The present disclosure relates to a blank for forming a packaging component, said blank comprising: at least four blank portions; at least two fold lines; a first opening extending through a first blank portion and a second blank portion of the at least four blank portions, wherein the first opening is substantially symmetrical or self-similar with respect to a first fold line of the at least two fold lines, said first fold line being provided between the first blank portion and the second blank portion; and a second opening extending through a third blank portion and a fourth blank portion of the at least four blank portions, wherein the second opening is substantially symmetrical or self-similar with respect to a second fold line of the at least two fold lines, said second fold line being provided between the third blank portion and the fourth blank portion. The present disclosure further relates to a packaging component, a packaging unit and packed product.

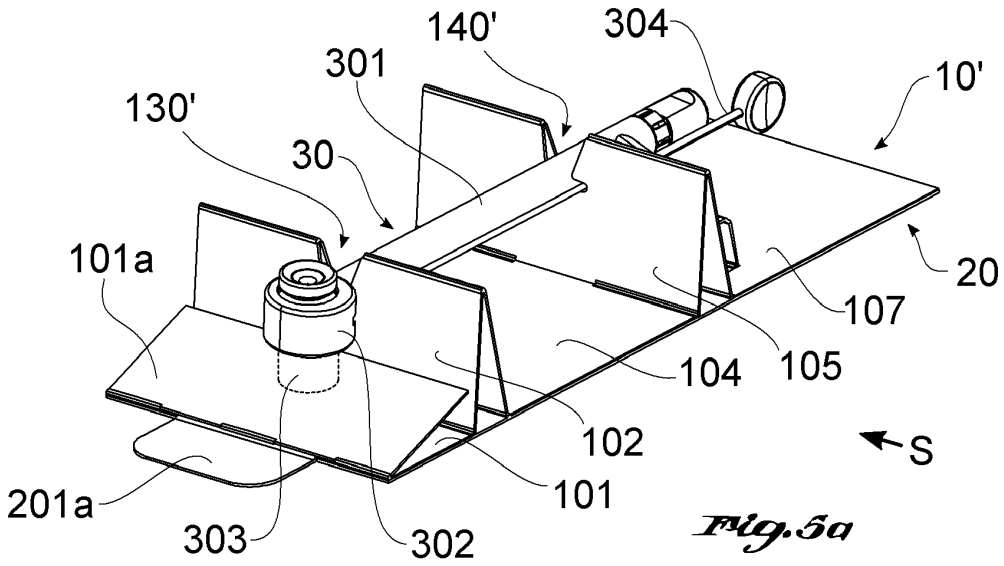

Fig.5a

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a blank, a packaging component, and a packaging unit. A product to be accommodated by one of the latter items may, in particular, be an elongated object, such as a torque wrench for dental treatment. The present disclosure further relates to a packed product.

BACKGROUND ART

[0002] Known packaging components are commonly used to facilitate storage and transport of a product while protecting the product from damage and/or other external influences. Examples of external influences to be prevented include shock, impact, radiation, moisture, or particles such as dust.

[0003] Besides protecting a product, packaging components may be intended to be visually and haptically appealing to a (potential) customer so as to facilitate sale of products accommodated therein.

[0004] A packaging unit may, e.g., be a disposable packaging unit. In the present context, the term disposable packaging unit relates to a packaging unit which is intended to be present during a distribution of a packed product (e.g., until a packed product is delivered to a customer, or until a packed product is initially used by a practitioner). A disposable packaging unit may be intended (and designed) so as to be discarded after a product disposed therein has been unpacked. Disposable packaging units may, in other words, only serve the purpose of accommodating a product until its first use. In some cases, it may even be desired to impede repacking of a used product into a respective packaging component in order to prevent misuse or deception.

[0005] In some cases, the lifespan of a product (i.e., the period of time in which a product is available for use) considerably exceeds the lifespan of a packaging unit accommodating the respective product. It may, hence, be desirable that costs associated with packaging of a product only represent an equally small share of the total product-related costs. Yet, it may in this case be challenging to provide a visually and haptically appealing packaging component. In other words, the strive for low costs and the desire to provide an attractive packaging component (e.g., as regards sensory impression to a potential customer) may be considered to contradict each other.

[0006] Known disposable packaging units include, e.g., blister types utilizing several polymer layers and layers of other materials. However, even though blister packages may in some cases be associated with low cost and at least partially also with prevention of radiation, moisture or particles, these types are commonly considered neither visually nor haptically appealing to a (potential) customer. On top of that, a blister-packed product may be associated with certain degree of instability (e.g., as regards movement of a respective inside the blister packaging). A product accommodated in a blister-type package may, thus, not be sufficiently protected against shock or impact.

[0007] Other types of packaging components rely upon plastic boxes comprising polymer-based foam structures. The foam structures may, e.g., map a shape of a product to be accommodated in order to reduce a risk of displacement. Regarding other types of prior art packaging components, reference is made, e.g., to US 81414160 B2, US 9550615 B2, or US 9475187 B2.

[0008] It is to be noted that prior art packaging components may be associated with several disadvantages. For example, some of the known packaging components utilize a large number of (sub-)components and/or lots of material in order to meet (some of) the above-described requirements. Moreover, large dimensions (i.e., dimensions significantly exceeding the dimensions of the product to be packed) are often provided (e.g., in order to ensure shock or impact resistance). Yet, large dimensions, a high amount of raw material and/or a high number of subcomponents may be associated with excessively high manufacturing cost of the packaging component and/or excessively high transportation cost as regards the packed product. On top of that, the previously-mentioned large dimensions, high amount of raw material, and/or high number of subcomponents may be considered to negatively affect environmental sustainability of a respective packaging component.

[0009] Prior art packaging components may as well be considered disadvantageous in the sense that known ways of securing a product to a packaging component may counteract ease of unpacking. Specifically, products provided in a packaging component are in some cases firmly attached to (subcomponents of) a packaging component in order to reduce a risk of displacement (e.g., due to external impacts or shocks). Such firm attachment may, however, necessitate utilizing tools such as scissors, pliers or even screw drivers in order to fully release a product from a respective packaging component.

[0010] Further, it is to be noted that prior art packaging devices are commonly tailored to accommodate one specific product. For example, such tailored packaging devices may have a shape that is adapted so as to follow the shape of the respective product (e.g., in order to prevent displacement during transport). However, the latter packaging component will most likely be unsuitable as soon as a minor design aspect of the product to be packed is modified. Known packaging components may, hence, be associated with disadvantages in case that a packed product is to be redesigned. Examples of such disadvantages involve the necessity of also redesigning a respective packaging component, and costs associated therewith.

[0011] Additional disadvantages of prior art packaging components may become apparent as soon as multiple interconnectable components are to be packed. For ex-

ample, if a first product is to be releasably joined to a second product, it may not be recommendable to pack both the first and the second components in a joined state, as this would involve the risk of both components accidentally disengaging. Instead, in the latter case, it is common practice to provide several (sub-) packaging components for separately accommodating the first and the second product component, respectively. Multiple (sub-) packaging components may, however, increase cost as well as the amount of raw-material needed to manufacture the respective packaging components.

SUMMARY

[0012] It is an object of the present disclosure to address at least one of the above-described shortcomings.

[0013] A blank for forming a packaging component in accordance with the present disclosure is defined in claim 1. A packaging component in accordance with the present disclosure is defined in claim 9. A packaging unit in accordance with the present disclosure is defined in claim 14. A packed product in accordance with the present disclosure is defined in claim 15. Dependent claims relate to particular embodiments.

[0014] A blank in accordance with the present disclosure is a blank for forming a packaging component. The blank comprises: at least four blank portions; at least two fold lines; a first opening extending through a first blank portion and a second blank portion of the at least four blank portions; and a second opening extending through a third blank portion and a fourth blank portion of the at least four blank portions. The first opening is substantially symmetrical or self-similar with respect to a first fold line of the at least two fold lines, the first fold line being provided between the first blank portion and the second blank portion. The second opening is substantially symmetrical or self-similar with respect to a second fold line of the at least two fold lines, said second fold line being provided between the third blank portion and the fourth blank portion.

[0015] The above-described blank may provide a simple but nevertheless efficient precursor for manufacturing a cheap, slender and environmentally sustainable packaging unit. Firstly, since all of the above-defined portions, fold lines and openings are provided in only one component (i.e., the blank), a packaging unit utilizing the blank may have a rather small number of components and/or a rather small number of different raw-materials (e.g., only one type of raw material). A small number of components and/or raw-materials may, again, promote low cost of the blank itself (e.g., as regards the material-related cost). Also, providing a small number of components and/or raw-materials in a packaging unit may promote efficiency of a potential (post-use) recycling process of a respective packaging unit.

[0016] Moreover, providing all of the above-defined portions, fold lines, and openings in only one blank, a rather cheap method of manufacturing the blank may be provided. One reason may lie in a rather small number of steps necessary for manufacturing a respective blank. Examples of such steps involve unwinding a roll of raw material, and punching one blank or a plurality of blanks out of the unwound raw material in only one, or in only a few punching steps.

[0017] Despite the above-described lean layout of the blank, a plurality of features thereof may be utilized in order to address requirements to a packaging unit. In particular, the above-described fold lines in conjunction with the respective blank portions may promote establishing a three-dimensional structure tailored to resist or absorb shocks (e.g., during transport). Furthermore, the above-defined openings may allow accommodating a product therein in order to reduce a risk of displacement.

[0018] In the present context, blank portions may be portions of the blank which are clearly distinguishable or delimitable from each other. For example, some of, or all of the fold lines may separate respectively adjacent blank portions from each other. According to some aspects, different blank portions do not overlap. Moreover, according to some aspects, some of, or all of the blank portions do not comprise any fold line.

[0019] In the present context, the term "fold line" relates to a line, along which the blank is foldable. According to some aspects, the presence and/or the position of one fold line or each of the fold lines is recognisable in the blank (e.g., recognisable by a human eye). The term "fold line" may include: perforations; weakened portions (e.g., portions of the blank having a reduced thickness, portions of the blank having a reduced density, and/or portions of the blank having an increased porosity in an interior thereof); portions comprising a different material than other portions of the blank (e.g., a material that has particular mechanical properties as regards plastic flexural deformation; examples of such materials involve cardboard-material); as well as any combination of the latter types. According to some aspects, the term fold lines also includes (exclusively) printed and/or (exclusively) otherwise indicated fold lines. Yet, according to some aspects, (exclusively) printed fold lines and/or (exclusively) otherwise indicated fold lines are excluded from the definition of the term "fold lines".

[0020] According to some aspects, one of the fold lines, more than one of the fold lines, or all of the fold lines are substantially straight.

[0021] According to some aspects, one of the fold lines, more than one of the fold lines, or all of the fold lines extend from one lateral end portion of the blank to another lateral end portion of the blank, the one end portion and the another end portion preferably being opposite end portions.

[0022] According to some aspects, at least two of the fold lines or all of the fold lines are parallel.

[0023] According to some aspects, some of the above-mentioned blank portions or all of the above-mentioned blank are arranged in a row and/or in numerical order.

[0024] The definition of an opening (or a shape) being

self-similar with respect to an axis (or a plane) refers to a state in which the respective axis (or plane) virtually divides an opening (or a shape) into a first and a second sub-opening (or sub-shape), the first sub-opening (or sub-shape) of which may theoretically be transformed into the second sub-opening (or sub-shape) by elongating, mirroring, and/or rotating the first sub-opening (or sub-shape).

[0025] According to some aspects, the blank further comprises: an intermediate blank portion provided between the second blank portion and the third blank portion; a first intermediate fold line provided between the second blank portion and the intermediate blank portion; and a second intermediate fold line provided between the intermediate blank portion and the third blank portion.

[0026] Providing an intermediate blank portion as well as the respective intermediate fold lines may be associated with the technical effect of ensuring stability of a packaging component to be manufactured of the blank while allowing an elongated object to be sufficiently supported. A reason may be that the intermediate blank portion may allow increasing the distance of the first opening and the second opening, which may be openings configured to accommodate a product.

[0027] According to some aspects, the blank further comprises: a first side blank portion provided adjacent to the first blank portion; and a first side fold line provided between the first side blank portion and the first blank portion, preferably on a side opposing the first fold line.

[0028] According to some aspects, the blank comprises: a second side blank portion provided adjacent to the fourth blank portion; and a second side fold line provided between the fourth blank portion and the second side blank portion, preferably at a side opposing the second fold line.

[0029] The first side blank portion, and/or the second side blank portion may be considered to facilitate mechanical robustness of a packaging component and/or a packaging unit to be manufactured from a respective blank. Specifically, the first and/or second side blank portions may be capable of receiving an adhesive, thereby promoting attachment of the blank (or a packaging component utilizing the blank) to another component, e.g., in order to increase mechanical robustness of the packaging component and/or packaging unit. For completeness, it is to be noted that analogous effects may apply to the intermediate blank portion.

[0030] Preferably, the first side blank portion, the first side fold line the first blank portion, the first fold line, the second blank portion, the first intermediate fold line, the intermediate blank portion, the second intermediate fold line, the third blank portion, the second fold line, the fourth blank portion, the second side fold line, and the second side blank portion are arranged in a row and/or in the stated order.

[0031] According to some aspects, a cut is provided in the blank, the cut extending from one of the blank portions to another one of blank portions. Preferably, the cut extends from the first side blank portion to the first blank portion, from the second blank portion to the intermediate blank portion, from the intermediate blank portion to the third blank portion and/or from the fourth blank portion to the second side blank portion, thereby crossing at least one, preferably exactly one of the fold lines of the blank.

[0032] According to some aspects, the blank, further comprises a first additional fold line and a second additional fold line provided such that the first additional fold line meets a first end portion of the cut, and such that the second additional fold line meets a second end portion of the cut. Preferably, the second end portion is provided opposite of the first end portion

[0033] Providing the cut, or, providing the cut and the respective additional fold lines, may be associated with the technical effect of promoting another functional element to be folded inside or in-between at least two blank portions. Due to the cut, such another functional element may have a different orientation (in a packaging component utilizing the blank) and may, hence, fulfil an additional purpose. An example of such an additional purpose may reside in providing a side rest portion, which will be described later in more detail.

[0034] According to some aspects, both the first additional fold line and the second additional fold line are parallel to the fold line or the fold lines crossed by the cut.

[0035] The latter features may be considered to promote ease of folding and, hence, to facilitate a cheap and efficient manufacturing process of a packaging component utilizing the blank.

[0036] According to some aspects, the cut is substantially straight and includes an acute or right angle with the fold line or the fold lines crossed by the cut. Preferably, said angle is greater or equal to 60° and smaller or equal to 90°. More preferably, said angle greater or equal to 85° and smaller or equal to 90°.

[0037] According to some aspects, the blank further comprises a second cut. The second cut may have the same length as the first cut. Preferably, the second cut is arranged parallel to the first cut.

[0038] Providing a second cut as described above may promote freedom of design. Specifically, providing a second cut may allow positioning and limiting the previously mentioned functional element very precisely, i.e., in exactly the way it is needed in a particular application. Therefore, providing a second cut as described above may also be considered to promote flexibility as regards a use of a packaging component or a packaging unit utilizing the blank.

[0039] According to some aspects, at least two of, preferably all of: the first fold line; the second fold line; the first intermediate fold line; the second intermediate fold line; the first side fold line; and the second side fold line are substantially parallel to each other.

[0040] The above-described orientation of the fold lines may be associated with the technical effect of promoting efficiency of a manufacturing process of the blank. Specifically, as soon as at least two of the above-men-

tioned fold lines are parallel, the number of tools utilized for generating the fold lines, and/or the number of reorientation steps (of the blank) which are necessary for manufacturing the blank may be reduced. In some cases, a single tool (such as a punching stamp) and/or no reorientation step may be utilized in generating the fold lines. Therefore, a speed of manufacturing a blank may be increased and/or costs for manufacturing a blank may be reduced.

[0041] According to some aspects, the blank further comprises a flap portion provided adjacent to the first side blank portion, and a flap fold line which is provided between the flap portion and the first side blank portion. The flap fold line may be parallel to the first side fold line. Preferably, the flap portion is provided at side of the first side blank portion opposing the first blank portion.

[0042] According to some aspects, the blank is further configured such that the flap portion is foldable by virtue of the flap fold line by at least 90°, preferably by at least 150° and more preferably by at least 159° with respect to the first side blank portion, and such that, after folding, the flap portion is biased towards a direction opposite to the folding direction.

[0043] A flap portion as described above may promote applying a force to a product to be packed. Applying such a force may, again, be advantageous as soon as a (sub-) component of a product to be packed is to be secured against disengaging from a product to be packed. A flap portion as described above may, thus, allow providing a single packaging component or a single packaging unit for a plurality of (interconnected/releasably joined) items while simultaneously preventing the plurality of items to disengage.

[0044] According to some aspects, the first side blank portion, the first blank portion, the second blank portion, the intermediate blank portion, the third blank portion, the fourth blank portion, and the second side blank portion lie in one hypothetical substantially flat plane. Preferably, the blank is quadrangle-shaped, and, even more preferably, rectangle-shaped.

[0045] Providing a blank in which at least the above-mentioned portions lie in one hypothetical plane may promote utilizing cost-efficient feedstocks, such as rolled goods. Moreover, a blank being quadrangle-shaped or even rectangle shaped may promote having only a small amount of offcuts in the manufacturing process of a respective blank. A rather small amount of offcuts may, again, be considered to reduce (at least material-related) costs when manufacturing a respective blank. On top of that, the above-mentioned small amount of off-cuts may be considered to promote a sustainable and environmentally-friendly manufacturing process.

[0046] According to some aspects, the blank comprises or consists of one of the following material types: cellulose-based material such as cardboard, paper or the like; plastic material, in particular, biodegradable plastic material such as polylactic acid (PLA) or polyglycolide (PGA). Examples of other types of plastic material include polyethylene (PE), polypropylene (PP), Polyethyleneterephtalat (PET), polycarbonate (PC) or polystyrene (PS).

[0047] At least some of the above-mentioned material types may be associated with low cost, mechanical robustness and/or widespread availability. Moreover, each of the above-mentioned material types may allow plastic deformation, which may be advantageous in view of the fold lines. At least the cellulose-based material and/or the biodegradable plastic material types may further be accompanied by a low risk of environmental pollution associated therewith.

[0048] According to some aspects, a thickness of the blank is at least 0,1 mm and not more than 2 mm. Preferably, a thickness of the blank is at least 0.2 mm and not more than 1 mm. More preferably, the thickness of the blank is at least 0,3 mm and not more than 0,5 mm. The blank may have a substantially constant thickness.

[0049] The previously mentioned thicknesses may be considered to be a compromise between necessitating as little material as possible (in order to reduce cost and an environmental footprint) on one hand, and promoting mechanical stability (of the blank and/or a packaging component or packaging unit utilizing the blank) on the other hand.

[0050] A packaging component in accordance with the present disclosure is a packaging component obtainable by folding one of the previously-described blanks such that the first blank portion and the second blank portion define an angle with the first fold line as a vertex, and such that the third blank portion and the fourth blank portion define an angle with the second fold line as a vertex.

[0051] It is to be noted that a packaging component as described above may be associated with the same, similar or analogous effects and/or advantages as it has previously been described with respect to the blank.

[0052] The above-described angle having the first fold line as a vertex may be at least 10° and not more than 170°, preferably at least 15° and not more than 100° and more preferably at least 20° and not more than 40°. Preferably, the angle having the first fold line as a vertex is an acute angle. Likewise, the angle having the second fold line as a vertex may be at least 10° and not more than 170°, preferably at least 15° and not more than 100° and more preferably at least 20° and not more than 40°. Preferably, the angle having the second fold line as a vertex is an acute angle. The angle having the first fold line as a vertex and the angle having the second fold line as a vertex may be equivalent or may be different angles.

[0053] A technical effect to be associated with the above-mentioned angles may reside in promoting stability of the packaging component, in particular, as soon as a product is accommodated in recesses defined by the first and second opening, respectively, of the packaging component.

[0054] According to some aspects, the packaging component is configured such that at least two of, preferably all of the first side blank portion, the intermediate

blank portion, and the second side blank portion lie in one hypothetical substantially flat plane.

[0055] The previously-mentioned configuration may advantageously allow taking measures to further increase mechanical stability of the packaging component, e.g., by adhering a second packaging component to at least two of, preferably all of, of the first side blank portion, the intermediate blank portion, and the second side blank portion.

[0056] According to some aspects, the packaging component further comprises a side rest obtainable by folding a first side rest portion of the blank such that the first side rest portion is substantially parallel to at least one of the first side blank portion, the intermediate blank portion and/or the second side blank portion while being provided offset from the respective one of the first side blank portion, the intermediate blank portion and/or the second side blank portion. The first side rest portion is supported by and/or connected to a second side rest portion. The first side rest portion is provided adjacent to the first additional fold line, and the second side rest portion is provided adjacent to the second additional fold line.

[0057] A side portion as previously described may be associated with the technical effect of promoting support of a particular structure of a product to be accommodated by the packaging component or by a packaging unit comprising the packaging component. Moreover, an orientation of a product to be accommodated may be manipulated in a very cost-effective way, and/or particular characteristics of the product to be accommodated may be brought into the focus of a potential customer.

[0058] According to some aspects, the packaging component may further comprise a flap obtainable by folding the flap portion by the flap fold line such that the flap and the first side blank portion form an acute angle included in a portion of the flap fold line. The flap may be biased towards a direction opposite to its folding direction.

[0059] Another packaging component in accordance with the present disclosure comprises: at least four blank portions; at least two fold lines; and a first opening extending through a first blank portion and a second blank portion of the at least four blank portions. The first opening is substantially symmetrical or self-similar with respect to a plane comprising a first fold line of the at least two fold lines. The first fold line is provided between the first blank portion and the second blank portion; the packaging component further comprises a second opening extending through a third blank portion and a fourth blank portion of the at least four blank portions. The second opening is substantially symmetrical with respect a plane comprising a second fold line of the at least two fold lines. The second fold line is provided between the third blank portion and the fourth blank portion. the first blank portion and the second blank portion define an angle, preferably an acute angle with the first fold line as a vertex. The third blank portion and the fourth blank portion define an angle, preferably an acute angle with the second fold line as a vertex.

[0060] According to some aspects, the another packaging component further comprises: an intermediate blank portion provided between the second blank portion and the third blank portion; a first intermediate fold line provided between the second blank portion and the intermediate blank portion; and a second intermediate fold line provided between the intermediate blank portion and the third blank portion.

[0061] According to some aspects, the another packaging component further comprises: a first side blank portion provided adjacent to the first blank portion; and a first side fold line provided between the first side blank portion and the first blank portion, preferably at a side opposing the first fold line.

[0062] According to some aspects, the another packaging component further comprises: a second side blank portion provided adjacent to the fourth blank portion; and a second side fold line provided between the fourth blank portion and the second side blank portion, preferably on a side opposing the second fold line.

[0063] According to some aspects, the another packaging component further comprises a side rest, said side rest having a first side rest portion and a second side rest portion. A first additional fold line may be provided adjacent to the first side rest portion. A second additional fold line may be provided adjacent to the second additional side rest portion. The first side rest portion may be substantially parallel to at least one of, preferably all of the first side blank portion, the intermediate blank portion or the second side blank portion while being provided offset from the respective one or all of the first side blank portion, the intermediate blank portion or the second side blank portion.

[0064] According to some aspects, the another packaging component further comprises a flap provided adjacent to the first side blank portion, preferably on a side opposing the first blank portion. A flap fold line may be provided between the flap and the first side blank portion. The flap and the first side blank portion may define an acute angle with the flap fold line as a vertex. Preferably, the flap is biased towards a direction opposite to its folding direction.

[0065] It is to be noted that the another packaging component may be considered to comprise identical, similar and/or analogous features as the packaging component and/or the blank. The another packaging component may, hence, be associated with the same, similar or analogous effects and/or advantages as it has previously been described with respect to the packaging component and/or the blank.

[0066] According to some aspects, the blank, the packaging component, or the another packaging component may further be configured such that the first opening comprises a first half-opening being symmetrical or self-similar to a second half-opening relative to a plane comprising the first fold line. The first half-opening may comprise a first opening portion and a second opening portion. A

width of the first opening portion (which may be a dimension of the first opening portion in a direction parallel to the first fold line) may taper with increasing distance to the first fold line. The second opening portion may be formed adjacent to an end portion of the first opening portion. The end portion of the first opening portion may be an end portion opposing the first fold line. The second opening portion may comprise a width (which may be a dimension in a direction parallel to the first fold line), which is larger than the width of the end portion of the first opening portion. The second opening and the first opening are preferably equally shaped. Alternatively or additionally, the first opening may (hypothetically) be transformed into the second opening by being elongated, rotated and/or mirrored. The second opening portion may, e.g., be substantially round (such as circular) or oval or at least comprise a substantially round or oval portion.

[0067] As regards a definition of self-similarity, reference is made to paragraph [0024] which may apply also in the above-described case.

[0068] A first and/or second opening having the above-described configuration may be associated with the technical effect of promoting a simple and cheap but nevertheless efficient way of securing a product to a packaging component. That is, due to the above-defined shape of the opening(s), a product to be packed may easily be incorporated into a first recess defined by an edge of the first opening and/or a second recess defined by an edge of the second opening. As a width of the first opening portion tapers, elastic deformation (instead of plastic deformation) may be promoted as soon as a product is being introduced into a respective one of the recesses. Moreover, the configuration of the second opening portion (in particular: the second opening portion having a width which is larger than the width of the end portion of the first opening portion) may promote secure holding of a product to be packed, and/or prevent a displacement thereof (e.g., due to a shock, or impact that may occur during transport). Yet, despite preventing displacement, the above-described configuration of the opening(s) may promote ease of unpacking a respective product.

[0069] In the previously described packaging component, the first half-opening may further comprise a third opening portion being arranged adjacent to the second opening portion, and extending either in a direction parallel to the first fold line, perpendicular to the first fold line, or defining an acute angle with respect to the first fold line.

[0070] A packaging component having the third opening portion may be associated with the technical effect of further providing an anti-rotation-feature as regards a product to be packed. That is, as soon as a product to be packed is not substantially rotationally symmetrical, the third opening portion may accommodate a particular element of the product to be packed, thereby preventing a rotation of the product to be packed. The particular element may, e.g., be a contour protruding radially outwards a product

[0071] A packaging unit in accordance with the present disclosure comprises the packaging component or the another packaging component, and a substantially flat second packaging component. The second packaging component is adhered to, preferably glued to, the packaging component or the another packaging component.

[0072] A technical effect to be associated with the above-described configuration (i.e., with the presence of a second packaging component) may reside in further increasing mechanical stability of the packaging component.

[0073] According to some aspects, the second packaging component may be adhered to edges of the first blank portion, the second blank portion, the third blank portion and/or the fourth blank portion. Alternatively or additionally, the second packaging component may be adhered to surfaces of at least one of, preferably all of, the first side blank portion, the second side blank portion, and the intermediate blank portion.

[0074] The above-described configuration of the packaging unit may promote that an angle formed by the first blank portion and the second blank portion with the first fold line as a vertex does not significantly change (e.g., due to residual stress of the utilized material and/or due to external stress applied to the packaging component). Likewise, the above-described configuration of the packaging unit may promote that an angle formed by the third blank portion and the fourth blank portion with the second fold line as a vertex does not significantly change (e.g., due to residual stress of the utilized material and/or due to external stress applied to the packaging component).

[0075] According to some aspects, the second packaging component further comprises a strap configured to facilitate grabbing of the packaging unit.

[0076] A semi-packed product in accordance with the present disclosure comprises the packaging unit and an elongated object received in a first recess and in a second recess. The first recess is defined by an edge of the first opening, and the second recess is defined by an edge of the second opening. Preferably, the elongated object is received exclusively in the first recess and in the second recess.

[0077] A semi-packed product as described above may be associated with high flexibility as regards the contour of the elongated object. Specifically, since the elongated object is received in the recesses, design-related modifications of the elongated object in portions that do not correspond to the positions of the recesses may not necessitate a redesign of the packaging unit.

[0078] According to some aspects, the elongated object is a torque wrench configured to tighten a dental implant. The torque wrench may comprise a handle and an indication means. The indication means may extend away from the handle, and may be configured to indicate a torque of the torque wrench. The handle of the torque wrench may be received in the first recess and in the second recess. The indication means may be supported by the side rest of the packaging component.

[0079] According to an aspect, the torque wrench of the semi-packed product further comprises a head portion and a tool detachably connected to the head portion. The tool may be supported by the flap of the packaging component.

[0080] A torque wrench as described above may be considered a product in which the previously-described effects and/or advantages of the blank, the packaging component, the another packaging component and/or the packaging unit are particularly evident.

[0081] A packed product in accordance with the present disclosure comprises the semi-packed product and an outer packaging component. The outer packaging component spatially encloses the semi-packed product. According to an aspect, the outer packaging component may have the shape of a parallelepiped, in particular, of a cuboid.

[0082] Spatially enclosing the semi-packed product in an outer packaging component may be associated with the technical effect of promoting protection of the packed product from external influences such as radiation, moisture, or particles such as dust.

BRIEF DESCRIPTION OF ACCOMPANYING DRAWING

[0083] Additional advantages and features of the present disclosure, that can be realized on their own or in combination with one or several features discussed above, insofar as the features do not contradict each other, will become apparent from the following description of working examples and/or optional or aspects and/or embodiments. The description is given with reference to the accompanying drawings, in which:

Fig. 1a depicts a top view of an embodiment of a blank in accordance with the present disclosure;

Fig. 1b depicts an enlarged view of a detail of the blank depicted in Fig. 1a;

Fig. 1c depicts a perspective view of an embodiment of a packaging component in accordance with the present disclosure;

Fig. 2a depicts a top view of another embodiment of a blank in accordance with the present disclosure;

Fig. 2b depicts a perspective view of another embodiment of a packaging component in accordance with the present disclosure;

Fig. 3a depicts a top view of another embodiment of a blank in accordance with the present disclosure;

Fig. 3b depicts a perspective view of another embodiment of a packaging component in accordance with the present disclosure;

Fig. 4a depicts an exploded perspective view of an embodiment of a packaging unit in accordance with the present disclosure;

Fig. 4b depicts a perspective view of the embodiment of a packaging unit depicted in Fig. 4a;

Fig. 5a depicts a first perspective view of an embodiment of a semi-packed product in accordance with the present disclosure

Fig. 5b depicts a second perspective view of an embodiment of a semi-packed product in accordance with the present disclosure;

Fig. 5c depicts a side view of an embodiment of a semi-packed product in accordance with the present disclosure;

Fig. 6a depicts a side view of components of an embodiment of a packed product in accordance with the present disclosure;

Fig. 6a depicts a side view of components of an embodiment of a packed product in accordance with the present disclosure;

Fig. 6b depicts a top view of components of an embodiment of a packed product in accordance with the present disclosure;

DESCRIPTION OF EMBODIMENTS

[0084] Embodiments of devices in accordance with the present disclosure will hereinafter be explained in detail, by way of non-limiting example only, and with reference to the accompanying drawings. Like reference signs appearing in different figures denote identical, corresponding or functionally similar elements, unless indicated otherwise.

[0085] Fig. 1a depicts a top view of an embodiment of a blank **10** in accordance with the present disclosure. The blank **10** comprises a first blank portion **102,** a second blank portion **103,** a third blank portion **105** and a fourth blank portion **106.** The blank **10** further comprises an intermediate blank portion **104,** a first side blank portion **101,** and a second side blank portion **107.** The blank comprises a first side fold line **121,** a first fold line **122,** a first intermediate fold line **123,** a second intermediate fold line **124,** a second fold line **125** and a second side fold line **126.** The first side blank portion **101,** the first side fold line **121,** the first blank portion **102,** the first fold line **122,** the second blank portion **103,** the first intermediate fold line **123,** the intermediate blank portion **104,** the second intermediate fold line **124,** the third blank portion **105,**

the second fold line **125,** the fourth blank portion **106,** the second side fold line **126,** and the second side blank portion **107** are arranged in a row and in the stated order. The first side blank portion **101,** the first side fold line **121,** the first blank portion **102,** the first fold line **122,** the second blank portion **103,** the first intermediate fold line **123,** the intermediate blank portion **104,** the second intermediate fold line **124,** the third blank portion **105,** the second fold line **125,** the fourth blank portion **106,** the second side fold line **126,** and the second side blank portion **107** lie in one hypothetical substantially flat plane. The blank **10** of Fig. 1a is rectangle-shaped.

[0086] a first opening **130** extends through the first blank portion **102** and the second blank portion **103.** The first opening **130** is substantially symmetrical with respect to the first fold line **122.** A second opening **140** extends through the third blank portion **105** and the fourth blank portion **106.** The second opening **140** is substantially symmetrical with respect to the second fold line **125.**

[0087] All of the fold lines **121, 122, 123, 124, 125, 126** are substantially straight. All of the fold lines **121, 122, 123, 124, 125, 126** extend from one lateral end portion of the blank to another lateral end portion of the blank **10.** The one lateral end portion and the another lateral end portion preferably are opposite lateral end portions.

[0088] Fig. 1b depicts an enlarged view of a detail of the blank **10** depicted in Fig. 1a. In particular, Fig. 1b depicts an enlarged view of the first opening **130** of the blank **10** of Fig. 1a. The first opening **130** comprises a first half-opening being symmetrical to a second half-opening relative to a plane comprising the first fold line **122.** The first half-opening comprises a first opening portion **131** and a second opening portion **132.** A width of the first opening portion **131** is formed so as to taper towards a direction opposite of the first fold line **122.** In other words, a width of the first opening portion **131** becomes smaller with increasing distance from the first fold line **122.** The first half opening further comprises a second opening portion **132,** which is formed adjacent to an end portion of the first opening portion **131** opposing the first fold line **122.** The second opening portion **132** comprises a width, which is larger than a width of the end portion of the first opening portion **131.** The first half-opening further comprises a third opening portion **133** being arranged adjacent to the second opening portion **122,** and extending in a direction parallel to the first fold line **122.** The second opening **140** and the first opening **130** of the depicted embodiment are equally shaped.

[0089] Fig. 1c depicts a perspective view of an embodiment of a packaging component **10'** in accordance with the present disclosure. The depicted packaging component **10'** is obtainable by folding the blank **10** of Fig. 1a such that the first blank portion **102** and the second blank portion **103** define an acute angle with the first fold line **122** as a vertex, and such that the third blank portion **105** and the fourth blank portion **106** define an acute angle with the second fold line **125** as a vertex. Further, in order to obtain the depicted packaging component **10',** the blank of Fig. 1a is folded such that the first side blank portion **101,** the intermediate blank portion **104** and the second side blank portion **107** lie in one hypothetical flat plane. Moreover, it is to be noted that, by folding the respective blank portions **102, 103, 105, 106,** an edge of the first opening **130** defines a first recess **130',** and an edge the second opening **140** defines a second recess **140'.**

[0090] Fig. 2a depicts a top view of another embodiment of a blank **10** in accordance with the present disclosure. The depicted blank **10** substantially corresponds to the blank **10** of Fig. 1a, however, a flap portion **101a** is provided adjacent to the first side blank portion **101.** Moreover, a flap fold line **121a** is provided between the flap portion **101a** and the first side blank portion **101.** The flap fold line **101a** is substantially straight and extends parallel to the other fold lines **121, 122, 123, 124, 125, 126** of the blank **10.** The flap fold line **121a** extends from the one lateral end portion of the blank **10** to the another lateral end portion of the blank **10.**

[0091] Fig. 2b. depicts a perspective view of another embodiment of a packaging component **10'** in accordance with the present disclosure. The packaging component **10'** of Fig. 2b is obtainable by folding the blank **10** of Fig. 2a analogously as described in paragraph [0089] with respect to the blank of Fig. 1a, and by further folding the flap portion **101a** by the flap fold line **121a** by about 160° with respect to the first side blank portion **101,** and such that, after folding, the flap portion **101a** is biased towards a direction opposite to the folding direction.

[0092] Fig. 3a depicts a top view of another embodiment of a blank in accordance with the present disclosure. The depicted blank **10** substantially corresponds to the blank **10** of Fig. 2a, but further comprises a first cut **151,** a second cut **152,** a first additional fold line **126a,** and a second additional fold line **126b.** Both the first cut **151** and the second cut **152** extend from the fourth blank portion **106** to the second side blank portion 107. The first cut **151** and the second cut **152** are substantially parallel to each other, and respectively adjacent to the second side fold line **126.**

[0093] Fig. 3b depicts a perspective view of another embodiment of a packaging component **10'** in accordance with the present disclosure. The packaging component **10'** of Fig. 3b is obtainable by folding the blank **10** of Fig. 3a analogously as described in paragraph [0091] with respect to the blank of Fig. 2a, and by further folding a first side rest portion **106a** and a second side rest portion **107a** such that the first side rest portion **106a** is substantially parallel to all of the first side blank portion **101,** the intermediate blank portion **104** and the second side blank portion **107** while being provided offset from all of the first side blank portion **101,** the intermediate blank portion **104** and the second side blank portion **107.** The first additional fold line **126a** is provided adjacent to the first side rest portion **106a.** The second additional fold line **126b** is provided adjacent to the second additional side rest portion **107b.**

[0094] Fig. 4a depicts an exploded perspective view of an embodiment of a packaging unit in accordance with the present disclosure. Fig. 4b depicts a perspective view of the embodiment of a packaging unit depicted in Fig. 4a. The depicted packaging unit comprises the packaging component **10'** of Fig. 3b and a second packaging component **20.** The second packaging component comprises a first adhering portion **201,** a first free portion **202,** a second adhering portion **203,** a second free portion **204** and a third adhering portion **205.** The first adhering portion **201** is attached to the first side blank portion **101,** the second adhering portion **203** is attached to the intermediate blank portion **104** and the third adhering portion **205** is attached to the second side blank portion **107.** The first side rest portion **106a,** the second side rest portion **106b,** the first blank portion **102,** the second blank portion **103,** the third blank portion **105** and the fourth blank portion **106** are not in contact with (any face of) the second packaging component **20.**

[0095] Fig. 5a depicts a first perspective view of an embodiment of a semi-packed product in accordance with the present disclosure. Fig. 5b depicts a second perspective view of an embodiment of a semi-packed product in accordance with the present disclosure; Fig. 5c depicts a side view of an embodiment of a semi-packed product in accordance with the present disclosure; The perspective of the side view of Fig. 5c is indicated with the letter **S** in Figs. 5a and 5b.

[0096] The semi-packed product of Figs. 5a, 5b and 5c comprises the packaging unit of Figs. 4a and 4b as well as a torque wrench **30** configured to tighten or loose a dental implant. The a torque wrench **30** comprises a handle **301** and an indication means **305.** The indication means **301** extends away from the handle **301** and is configured to indicate a torque of the torque wrench **30.** The handle **301** is received received in the first recess **130'** and in the second recess **140'** The indication means **305** is supported by the side rest **150** of the packaging component **10'.** The torque wrench **30** further comprises a head portion **302** and a tool **303** detachably connected to the head portion **302.** The tool **303** is supported by the flap **101a** of the packaging component **10'** in order to prevent (accidental) detachment of the tool **303** from the torque wrench **30.** In other words, the flap **101a** applies a force to the tool **303,** the force being directed towards the head portion **302** of the torque wrench **30.**

[0097] Fig. 6a depicts a side view of components of an embodiment of a packed product in accordance with the present disclosure. Fig. 6b depicts a top view of components of an embodiment of a packed product in accordance with the present disclosure; The perspective of Fig. 6b is indicated in Fig. 6a by the letter **V.** The packed product comprises the semi-packed product of Figs. 5a and 5b, and an outer packaging component **40.** The outer packaging component **40** is configured to spatially enclose the semi-packed product of Figs. 5a and 5b. Yet, in the state depicted in Figs. 6a and 6b, the semi-packed product is partially shifted out of the outer packaging component **40** for the sake of visibility. The outer packaging component **40** of Figs. 6a and 6b is cuboid-shaped and comprises an upper face **406,** a lower face **409,** a back face **408,** a first side face **405** and a second side face **407.** The outer packaging component **40** further comprises a first side opening flap **402,** a second side opening flap **404,** a top side opening flap **401** and a bottom side opening flap **403.** The first side opening flap **402,** the second side opening flap **404,** the top side opening flap **401** and the bottom side opening flap **403** are arranged so as to surround an opening of the outer packaging component **40.** The opening of the outer packaging component **40** is configured such that the semi-packed product may be introduced there-through into an interior of the outer packaging component **40.** A side of the outer packaging component, preferably a top side **406** thereof optionally comprises an indication opening **410** configured to indicate whether a semi-packed product or a product is provided inside the outer packaging component **40.**

[0098] While various example embodiments of devices in accordance with the present disclosure have been described above, it should be understood that they have been presented by way of example, and not limitation. It will be apparent to persons skilled in the relevant art(s) that various changes in form and detail can be made therein. Thus, the present disclosure should not be limited by any of the above described example embodiments but should be defined only in accordance with the following claims and their equivalents.

[0099] Further, it is to be understood that certain features described in this specification in the context of separate embodiments can also be implemented in combination in a single embodiment. Conversely, various features that are described in the context of a single embodiment can also be implemented in multiple embodiments separately or in any suitable sub-combination. Moreover, although features may be described above as acting in certain combinations and even initially claimed as such, one or more features from a claimed combination can in some cases be excised from the combination, and the claimed combination may be directed to a sub-combination or variation of a sub-combination.

Claims

1. A blank (10) for forming a packaging component (10'), said blank (10) comprising:

at least four blank portions (102,103,105,106);
at least two fold lines (122, 125);
a first opening (130) extending through a first blank portion (102) and a second blank portion (103) of the at least four blank portions, wherein the first opening (130) is substantially symmetrical or self-similar with respect to a first fold line (122) of the at least two fold lines, said first fold line being provided between the first blank por-

tion (102) and the second blank portion (103); and
a second opening (140) extending through a third blank portion (105) and a fourth blank portion (106) of the at least four blank portions, wherein the second opening (140) is substantially symmetrical or self-similar with respect to a second fold line (125) of the at least two fold lines, said second fold line being provided between the third blank portion (105) and the fourth blank portion (106).

2. The blank (10) of claim 1, further comprising:

an intermediate blank portion (104) provided between the second blank portion (103) and the third blank portion (105);
a first intermediate fold line (123) provided between the second blank portion (103) and the intermediate blank portion (104); and
a second intermediate fold line (124) provided between the intermediate blank portion (104) and the third blank portion (105).

3. The blank (10) of any one of the previous claims, further comprising: a first side blank portion (101) provided adjacent to the first blank portion; and a first side fold line (121) provided between the first side blank portion (101) and the first blank portion (102), preferably on a side opposing the first fold line (122);
wherein the blank (10) preferably further comprises: a second side blank portion (107) provided adjacent to the fourth blank portion (106); and a second side fold line (126) provided between the fourth blank portion (106) and the second side blank portion (107), preferably at a side opposing the second fold line (125).

4. The blank (10) of any one of the previous claims, wherein a cut (151) is provided, said cut (151) extending from one of the blank portions (101,102,103,104,105,106,107) to another one of blank portions (101,102,103,104,105,106,107), preferably from the first side blank portion (101) to the first blank portion (102), from the second blank portion (103) to the intermediate blank portion (104), from the intermediate blank portion (104) to the third blank portion (105) and/or from the fourth blank portion (106) to the second side blank portion (107), thereby crossing at least one, preferably exactly one of the fold lines (121,122,123,124,125,126) of the blank (10).

5. The blank (10) of claim 4, further comprising a first additional fold line (126a) and a second additional fold line (126b) provided such that the first additional fold line (126a) meets a first end portion of the cut (151), and such that the second additional fold line (126b) meets a second end portion of the cut (151), said second end portion being provided opposite of said first end portion,
wherein, preferably, both the first additional fold line (126a) and the second additional fold line (126b) are parallel to the fold line or the fold lines crossed by the cut (151).

6. The blank (10) of claim 4 or 5, further comprising a second cut (152) having the same length as the first cut (151) and preferably being arranged parallel to the first cut (151) .

7. The blank (10) of any one of claims 3 to 6, further comprising a flap portion (101a) provided adjacent to the first side blank portion (101), preferably at side of the first side blank portion (101) opposing the first blank portion (102), wherein a flap fold line (121a) is provided between the flap portion (101a) and the first side blank portion (101), said flap fold line (121a) preferably being parallel to the first side fold line (121).

8. The blank (10) of claim 7, further being configured such that the flap portion (101a) is foldable by virtue of the flap fold line (121) by at least 90°, preferably by at least 150° and more preferably by at least 179° with respect to the first side blank portion (101), and such that, after folding, the flap portion (101a) is biased towards a direction opposite to the folding direction.

9. A packaging component (10'), comprising:

at least four blank portions (102,103,105,106);
at least two fold lines (122,125);
a first opening (130) extending through a first blank portion (102) and a second blank portion (103) of the at least four blank portions (102,103,105,106), wherein the first opening (130) is substantially symmetrical with respect to a plane comprising a first fold line (122)of the at least two fold lines (122,125), said first fold line (122) being provided between the first blank portion (102) and the second blank portion (103); and
a second opening (140) extending through a third blank portion (105) and a fourth blank portion (106) of the at least four blank portions (102,103,105,106), wherein the second opening (140) is substantially symmetrical with respect a plane comprising a second fold line (125) of the at least two fold lines (122,125), said second fold line being provided between the third blank portion (105) and the fourth blank portion (106),
wherein the first blank portion (102) and the sec-

ond blank portion (103) define an acute angle with the first fold line (122) as a vertex, and
wherein the third blank portion (105) and the fourth blank portion (106) define an acute angle with the second fold line (125) as a vertex.

10. The packaging component (10) of claim 9, further comprising:

an intermediate blank portion (104) provided between the second blank portion (103) and the third blank portion (105);
a first intermediate fold line (123) provided between the second blank portion (103) and the intermediate blank portion (104); and
a second intermediate fold line (124) provided between the intermediate blank portion (104) and the third blank portion (105),
wherein the packaging component (10) preferably further comprises:

a first side blank portion (101) provided adjacent to the first blank portion; and
a first side fold line (121) provided between the first side blank portion (101) and the first blank portion (102), and
wherein the packaging component (10) more preferably further comprises:

a second side blank portion (107) provided adjacent to the fourth blank portion (106); and
a second side fold line (126) provided between the fourth blank portion (106) and the second side blank portion (107).

11. The packaging component (10') of claim 10 to 22, further comprising a side rest (150), said side rest having a first side rest portion (106a) and a second side rest portion (107a), wherein a first additional fold line (126a) is provided adjacent to the first side rest portion (106a), wherein a second additional fold line (126b) is provided adjacent to the second additional side rest portion (107b), and wherein the first side rest portion (106a) is substantially parallel to at least one of, preferably all of the first side blank portion (101), the intermediate blank portion (104) or the second side blank portion (107) while being provided offset from the respective one or all of the first side blank portion (101), the intermediate blank portion (104) or the second side blank portion (107).

12. The packaging component of claim 10 or 11, further comprising a flap provided adjacent to the first side blank portion (101), preferably on a side opposing the first blank portion (102), wherein a flap fold line is provided between the flap and the first side blank portion, wherein the flap and the first side blank portion (101) define an acute angle with the flap fold line (101) as a vertex, wherein the flap is preferably biased towards a direction opposite to its folding direction.

13. The blank (10) of any one of claims 1 to 8 or the packaging component of any one of claims 9 to 12, wherein the first opening (130) comprises a first half-opening being symmetrical or self-similar to a second half-opening relative to a plane comprising the first fold line (122), said first half-opening comprising a first opening portion (131) and a second opening portion (132), wherein a width of the first opening portion (131) is formed so as to taper,
wherein the second opening portion (132) is formed adjacent to an end portion of the first opening portion (131) opposing the first fold line (122), and wherein the second opening portion (132) comprises a width, which is larger than a width of the end portion of the first opening portion (131), and
wherein the second opening (140) and the first opening (130) are preferably equally shaped.

14. A packaging unit comprising the packaging component (10') of any one of claims 9 to 13 and a substantially flat second packaging component (20), connected to, preferably glued to, the packaging component (10').

15. A packed product comprising:
a packaging component (10'), comprising:

at least four blank portions (102,103,105,106);
at least two fold lines (122,125);
a first opening (130) extending through a first blank portion (102) and a second blank portion (103) of the at least four blank portions (102,103,105,106), wherein the first opening (130) is substantially symmetrical with respect to a plane comprising a first fold line (122)of the at least two fold lines (122,125), said first fold line (122) being provided between the first blank portion (102) and the second blank portion (103); and
a second opening (140) extending through a third blank portion (105) and a fourth blank portion (106) of the at least four blank portions (102,103,105,106), wherein the second opening (140) is substantially symmetrical with respect a plane comprising a second fold line (125) of the at least two fold lines (122,125), said second fold line being provided between the third blank portion (105) and the fourth blank portion (106),
wherein the first blank portion (102) and the second blank portion (103) define an acute angle with the first fold line (122) as a vertex, and

wherein the third blank portion (105) and the fourth blank portion (106) define an acute angle with the second fold line (125) as a vertex,

the packed product further comprising:

a substantially flat second packaging component (20), connected to, preferably glued to, the packaging component (10');
an elongated product (30) received in a first recess (130') formed by the first opening (130) and in a second recess (140') formed by the second opening (140); and
an outer packaging component (40), spatially enclosing the packaging component, the second packaging component and the elongated product.

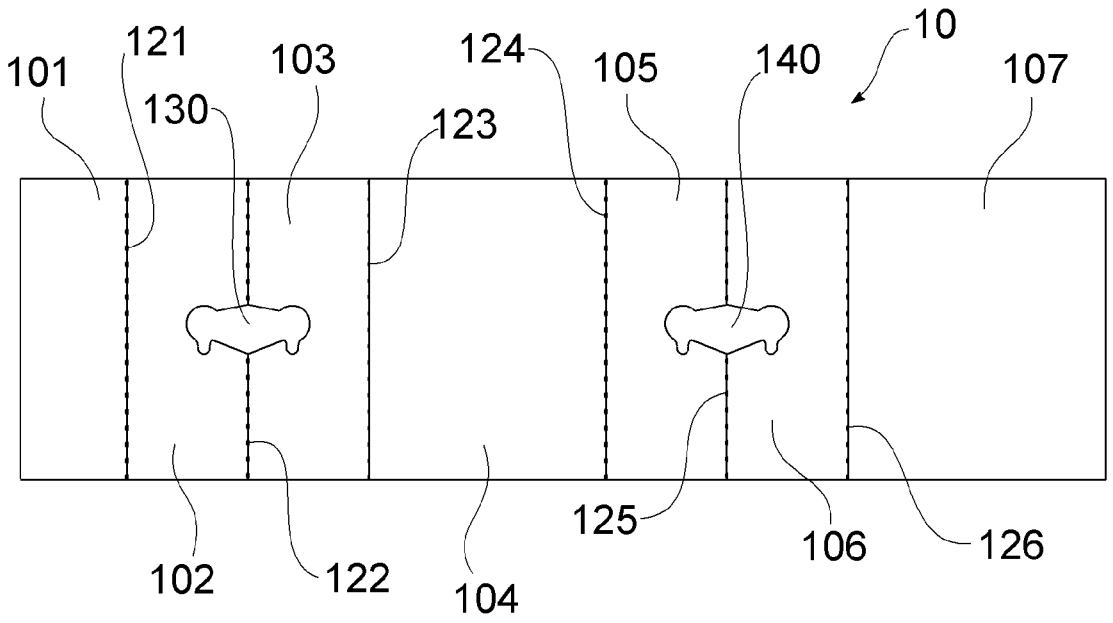


Fig.1a

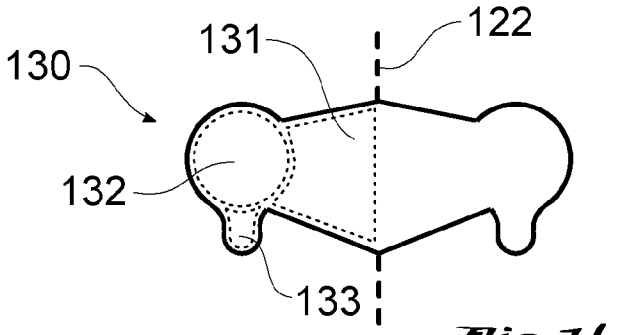


Fig.1b

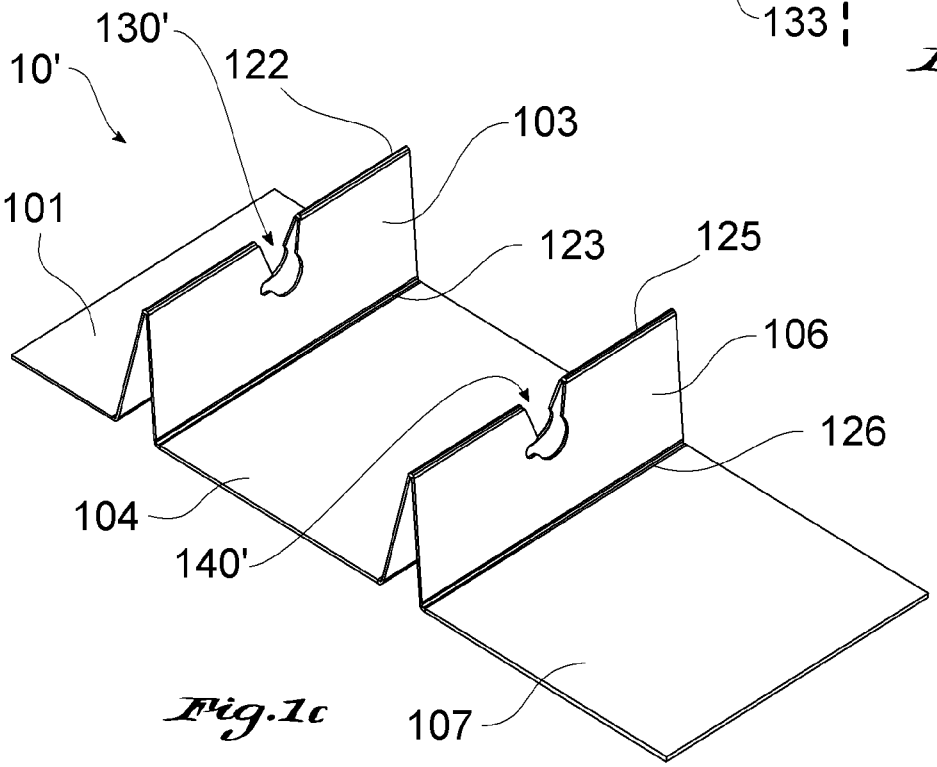


Fig.1c

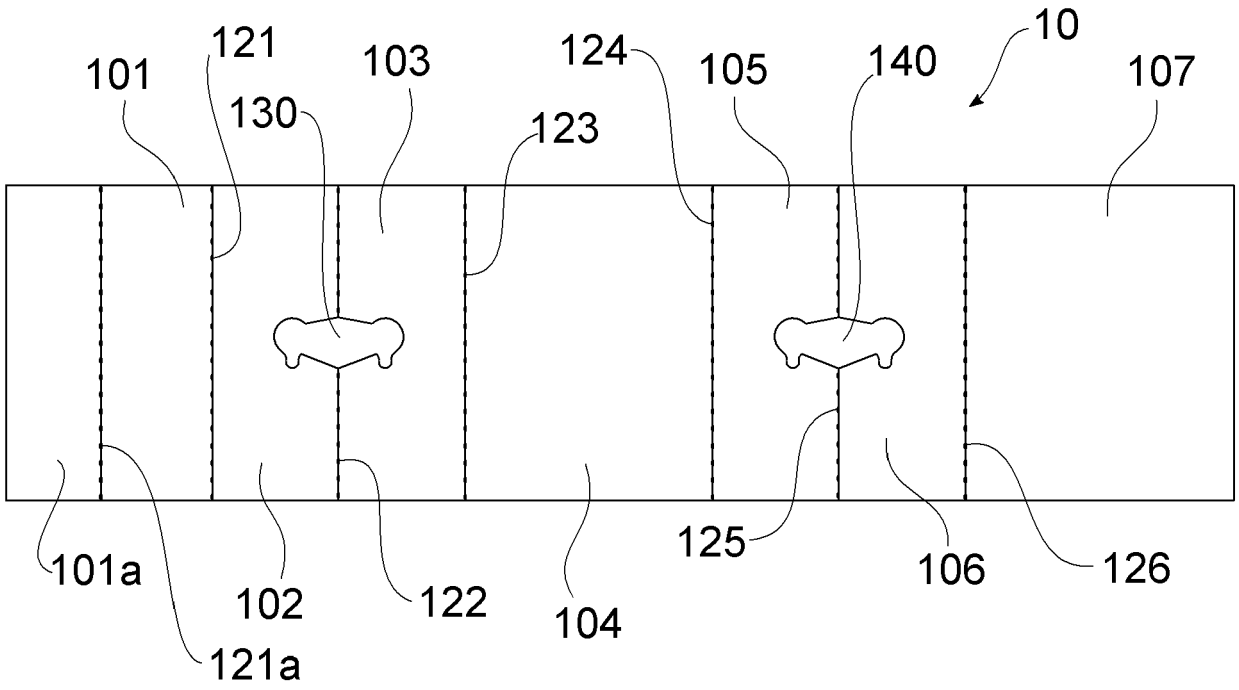

101
121
130
103
123
124
105
140
10
107
101a
102
121a
122
104
125
106
126

Fig.2a

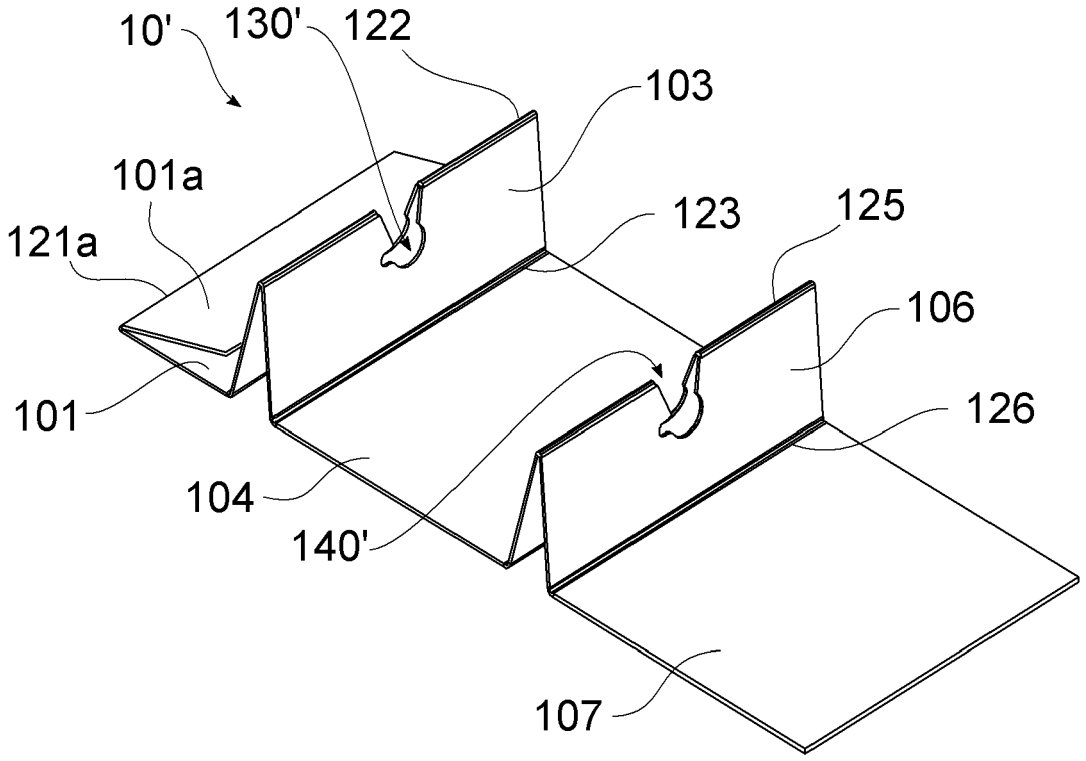
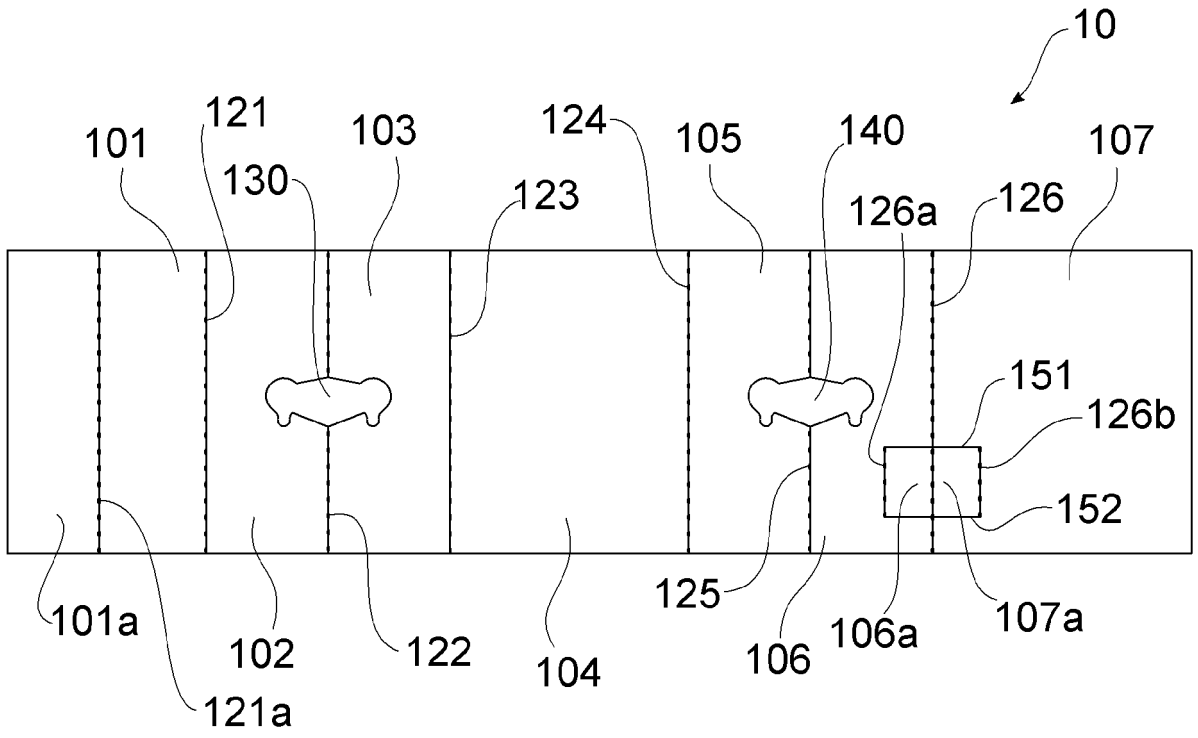

10'
130'
122
103
101a
121a
123
125
106
101
126
104
140'
107

Fig.2b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101
121
130
103
123
124
105
140
126a
126
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126b
152
101a
102
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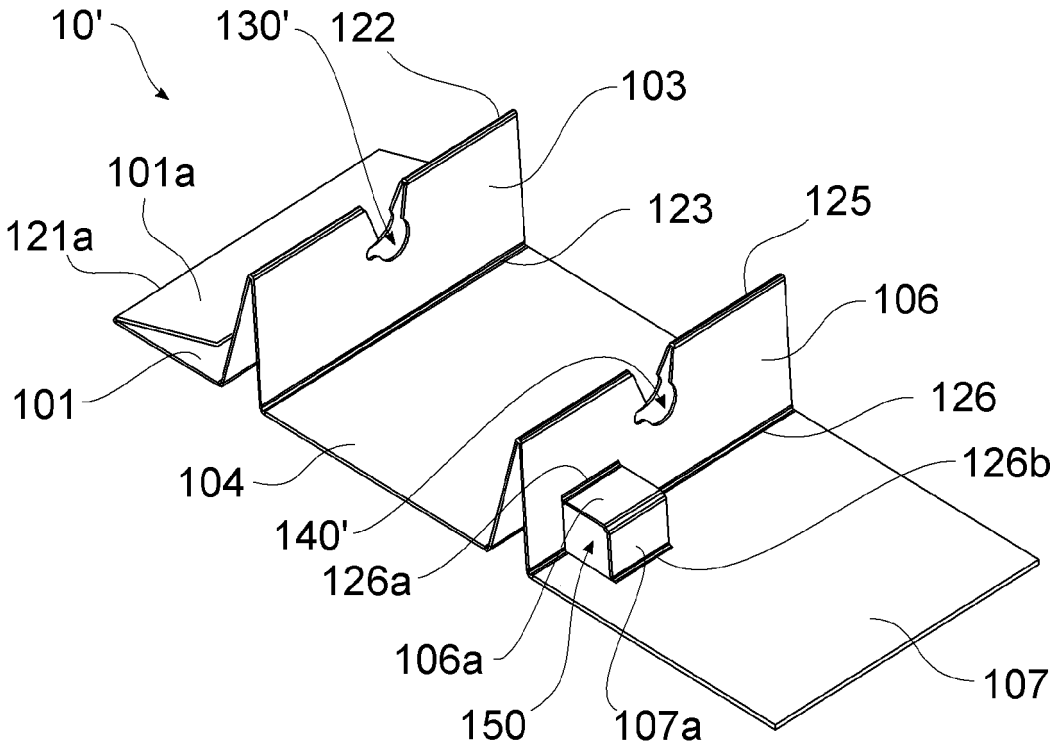
104
125
106
106a
107a
121a

Fig.3a


10'
130'
122
103
101a
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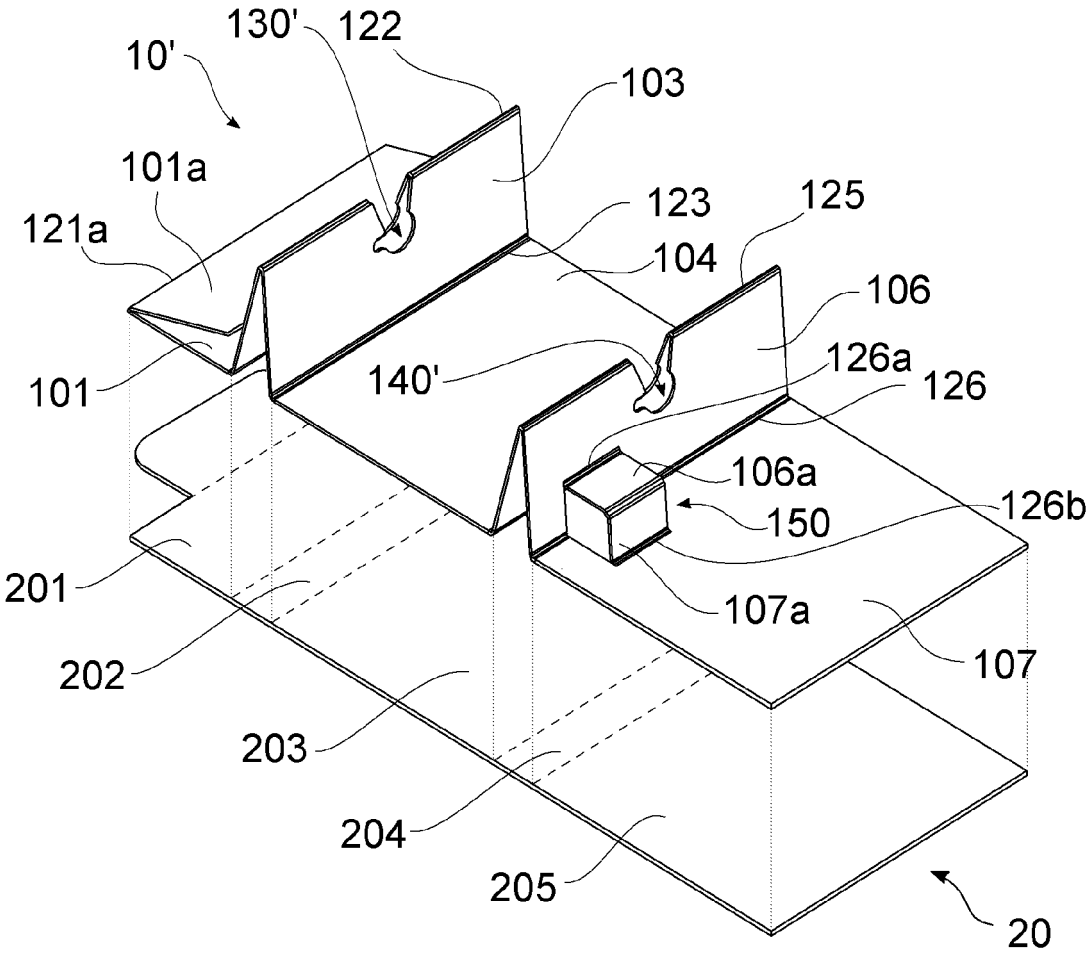
123
125
106
101
126
104
126b
140'
126a
106a
107
150
107a

Fig.3b


130'
122
10'
103
101a
123
125
121a
104
106
140'
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126
106a
126b
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107a
107
202
203
204
205
20

Fig.4a

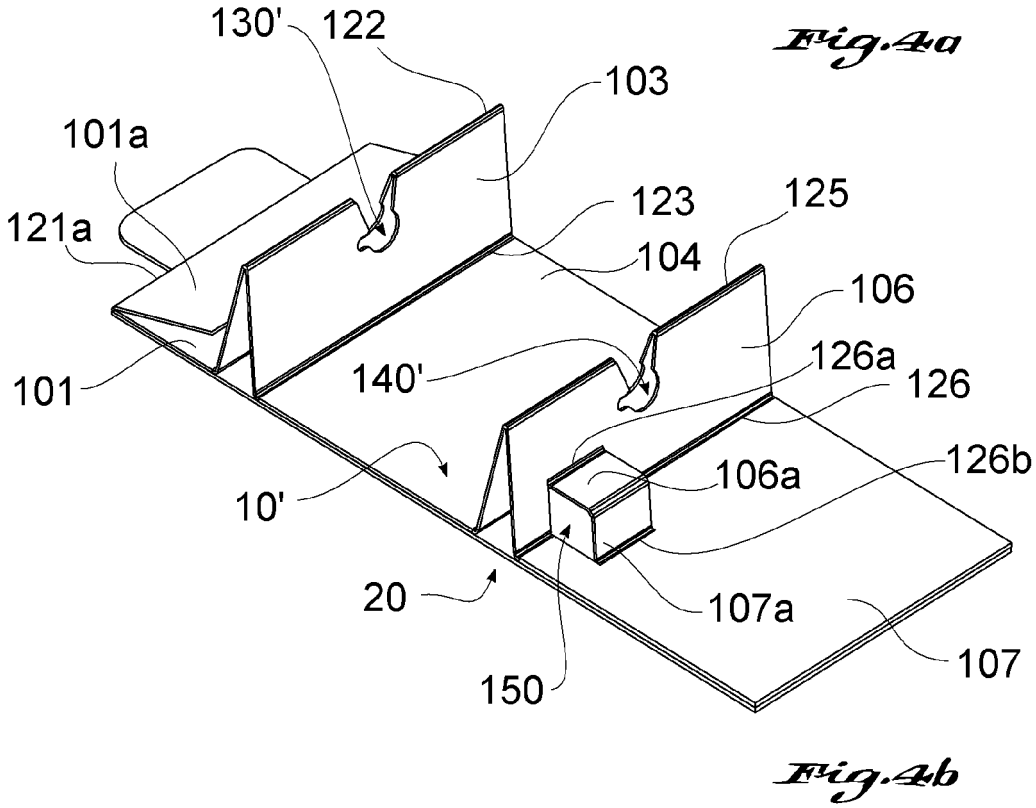
130'
122
103
101a
123
125
121a
104
106
140'
126a
101
126
106a
126b
10'
20
107a
107
150

Fig.4b

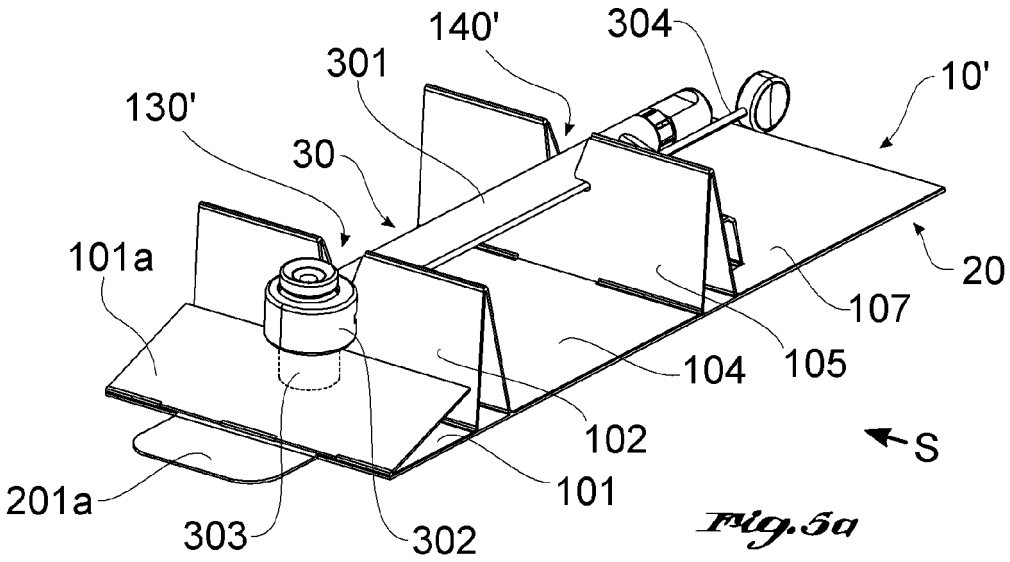

Fig.5a

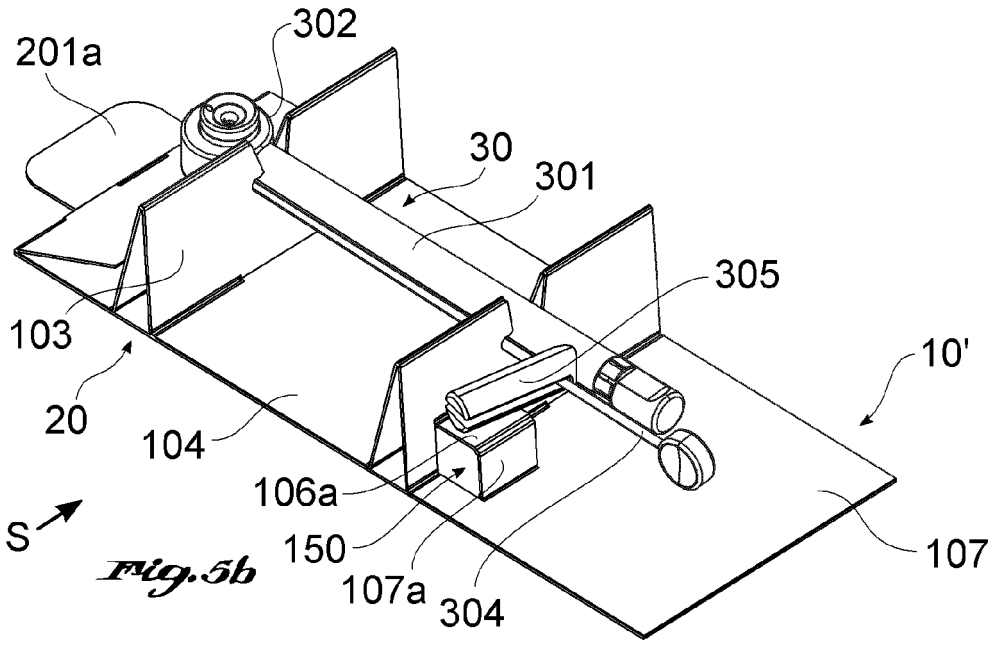

Fig.5b

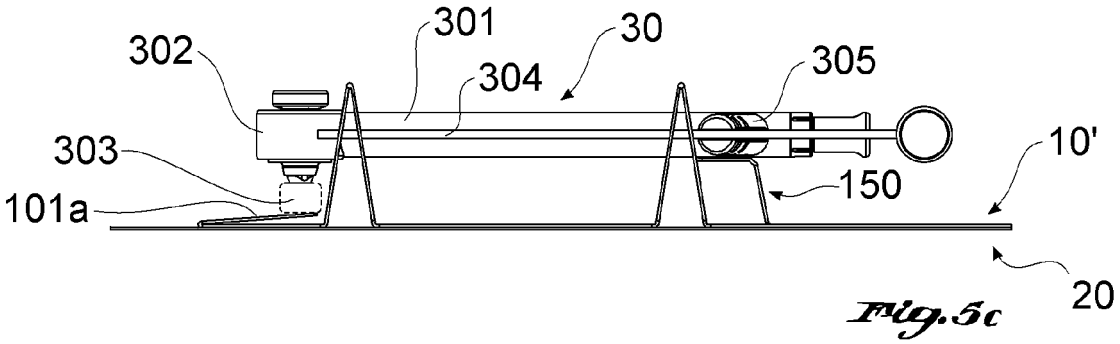

Fig.5c

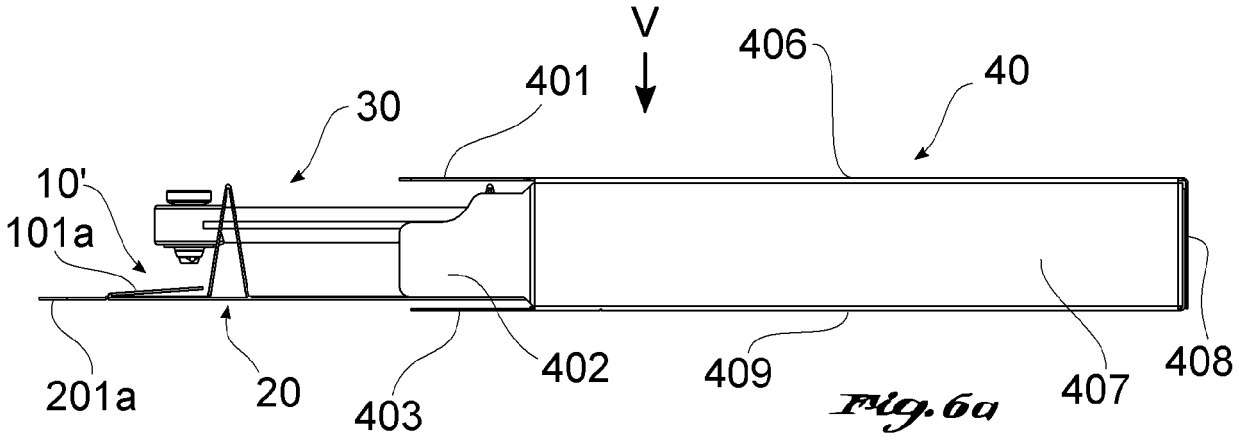
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Fig. 6a

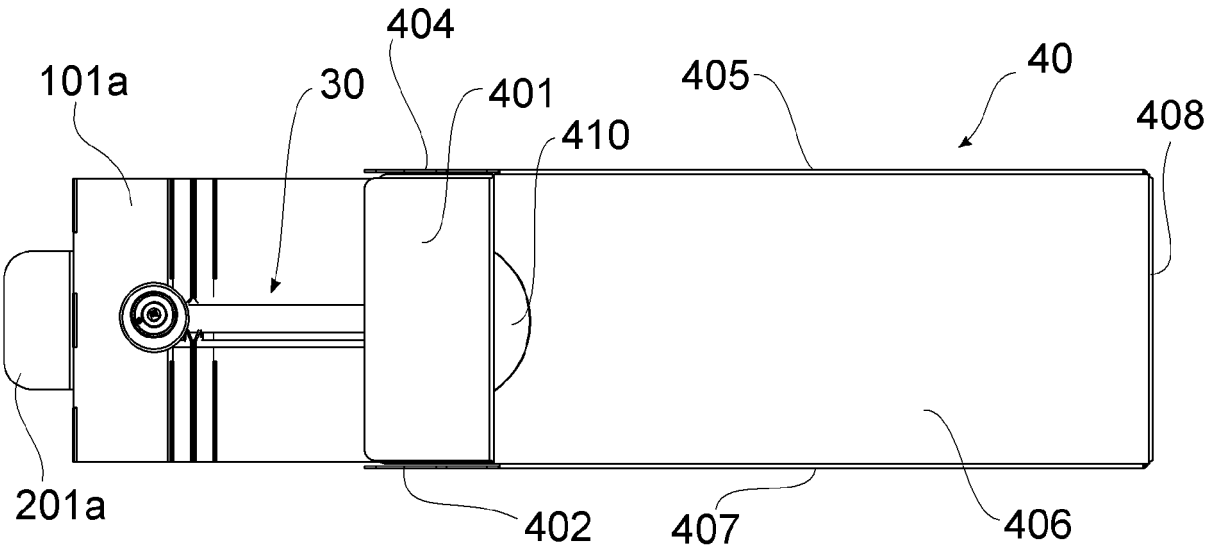
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Fig. 6b

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EUROPEAN SEARCH REPORT

Application Number
EP 19 21 1882

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 2 314 491 A (ABBOT GREENBERG) 23 March 1943 (1943-03-23) * page 1, column 2, line 34 - page 3, column 1, line 20 * * figures 1-4 * -----	1-3, 7-10,12, 14,15	INV. B65D5/50
X	CH 711 693 A1 (DIVIDELLA AG [CH]) 28 April 2017 (2017-04-28) * page 5, paragraph 43 - page 6, paragraph 56 * * page 6, paragraph 64 - page 7, paragraph 68 * * figures 1-10, 21-25 * -----	1-3, 7-10,12, 14,15	
X	WO 2006/112319 A1 (OKAMOTO EISHI [JP]) 26 October 2006 (2006-10-26) * abstract; figures 1, 2 * -----	1,2,9, 10,14,15	
			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
Munich	27 March 2020	Piolat, Olivier

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

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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)

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Application Number
EP 19 21 1882

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-3, 7-10, 12, 14, 15

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 19 21 1882

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-3, 7-10, 12, 14, 15

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2. claims: 4-6, 11

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3. claim: 13

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 21 1882

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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27-03-2020

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2314491 A	23-03-1943	NONE	
CH 711693 A1	28-04-2017	NONE	
WO 2006112319 A1	26-10-2006	NONE	

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

REFERENCES CITED IN THE DESCRIPTION

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- US 81414160 B2 **[0007]**
- US 9550615 B2 **[0007]**
- US 9475187 B2 **[0007]**