

(19) **DANMARK**



Patent- og  
Varemærkestyrelsen

(12)

## Oversættelse af europæisk patentskrift

(10) **DK/EP 3140115 T3**

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- (51) Int.Cl.: *B 32 B 15/08 (2006.01)* *B 29 C 45/14 (2006.01)* *B 29 K 711/12 (2006.01)*  
*B 29 L 31/00 (2006.01)* *B 32 B 3/08 (2006.01)* *B 32 B 3/26 (2006.01)*  
*B 32 B 15/085 (2006.01)* *B 32 B 15/20 (2006.01)* *B 32 B 27/10 (2006.01)*  
*B 32 B 27/32 (2006.01)* *B 65 D 5/70 (2006.01)* *B 65 D 5/74 (2006.01)*
- (45) Oversættelsen bekendtgjort den: **2019-03-11**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2018-11-14**
- (86) Europæisk ansøgning nr.: **15722951.9**
- (86) Europæisk indleveringsdag: **2015-04-29**
- (87) Den europæiske ansøgnings publiceringsdag: **2017-03-15**
- (86) International ansøgning nr.: **EP2015059281**
- (87) Internationalt publikationsnr.: **WO2015169656**
- (30) Prioritet: **2014-05-07 SE 1450541**
- (84) Designerede stater: **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**
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- (54) Benævnelse: **EMBALLERINGSMATERIALELAMINATSTRUKTUR**
- (56) Fremdragne publikationer:  
**EP-A1- 0 444 862**  
**DE-A1- 3 832 412**  
**DE-A1-102008 002 853**  
**US-A- 4 828 138**  
**US-A- 5 029 752**



# DESCRIPTION

**[0001]** The present invention relates to a packaging material laminate structure and to a container thereof.

## BACKGROUND OF THE INVENTION

**[0002]** Packaging containers of the single use disposable type for liquid foods are often produced from a packaging material based on paperboard or carton. Such container is for example be employed for aseptic packaging of liquid foods such as milk, fruit juices etc, marketed and sold for long term ambient storage. The packaging material in this known packaging container is typically a laminate comprising a bulk layer of paper or paperboard, outer, liquid-tight layers of thermoplastics, a gas barrier layer, most commonly an aluminium foil and finally one or more inside layers composed of one or several part layers, comprising heat-sealable adhesive polymers and/or heat-sealable polyolefins.

Commonly, the packaging container have an opening device in order to facilitate consumer opening, many different types of opening devices including pull-tabs or moulded opening devices, as for example discussed in WO03/095199 and WO/2009/000927.

**[0003]** DE102008002853 discloses an opening and pouring element for packages. The opening and pouring element has a base member and an opening member, which are integrally connected by means of a thin line. Opening is made by means of an opening handle, wherein the thin line between the base element and opening element ruptures.

**[0004]** The packaging containers are generally produced by means of modern, high-speed packaging machines of the type that continuously form, fill and seal packages from a web or from prefabricated blanks of packaging material. Typically many thousands of packages may be prepared per hour.

Despite the efforts and achievements, there's still a need for reliable and cheap openings for such containers.

## SUMMARY OF THE INVENTION

**[0005]** The present invention proposes a package material laminate structure with a subject matter according to independent claim 1 and a packaging container thereof according to independent claim 11.

**[0006]** In the present invention, the packaging material laminate structure comprises a first side, a second side opposite the first side and an attenuated area. The first side refers to the outer or decor layer side, the side being visible to the consumer. The second side refers to the

inner side, which is normally in contact with the beverage or liquid. A plastic opening device is arranged with a first portion on the first side and with a second portion on the second side, wherein the first and second portion of the plastic opening device are connected via a first material bridge through the attenuated area. Such bridge as well as the first and second portion can be formed by moulding and particular by injection moulding, wherein the molten material forming the first and second portion penetrates through the attenuated area thereby forming the bridge.

A consumer opening area is defined on the packaging material laminate by one or more weakened areas or lines such that the packaging material laminate is ruptured on using the plastic opening device to open the consumer opening area. Finally, a pouring support device is provided and adjacent to the consumer opening area. The pouring support is having a pouring portion arranged on the first side and a support portion on the second side. The pouring portion and the support portion are connected via a second material bridge through the attenuated area. The pouring portion comprises a pouring lip spaced apart from the first side of the package material laminate.

**[0007]** The present invention provides a cheap and easy opening, while maintaining good pouring particular in package container made from said material and filled with a liquid completely or to a very high level.

In an embodiment, the pouring support is separated from the opening device on the first side. More particular the first portion of the opening device and the pouring portion of the pouring support are separated on the first side. The respective second portions of the opening device and the support portion of pouring support may form a common portion on the second side.

The packaging material laminate structure may comprise a bulk layer, a barrier layer and at least one laminate layer, wherein the attenuated area lacks at least the bulk layer. Packaging material layers suitable for the purpose of the present invention are described in detail in WO2004/089628 or WO03/095199, whose the content related to the packaging material structure is incorporated herein by reference.

**[0008]** In another embodiment, the packaging material laminate comprises one or more weakened areas or lines. Those lines are defining the consumer opening area. Further during opening of the consumer opening area, the package material laminate is ruptured along those weakened lines. In other words the weakened lines facilitate rupturing of the package material laminate along those lines. In a further embodiment, one or more weakened areas or lines are arranged adjacent to the attenuated area as to support rupture of the packaging material laminate to open the consumer opening area.

**[0009]** Another aspect of the invention is related to the inner side of the packaging material laminate structure. In one embodiment the second portion of the opening device on the second, inner side comprises a weakened line at least partly following the one or more weakened areas or lines on the first side. In other words, the material deposited on the second side of the packaging material laminate during the manufacturing process comprises also one or more weakened lines as to facilitate rupturing of the packaging material laminate in a defined way.

**[0010]** In addition, the second portion may comprise a weakened line that is at least partly overlapping the attenuated area. As the attenuated area is ruptured first when opening the consumer opening area, the weakened line on the second portion supports further rupturing in a pre-defined manner. The second portion and the support portion of the pouring support can form an integral common portion on the second side. This may increase robustness when opening the package.

**[0011]** In another aspect, the pouring portion comprises a lateral dimension, which is greater than a lateral dimension of one of the attenuated area and the consumer opening area. The parts of the pouring portion exceeding the attenuated area may be slightly connected to the uppermost material layer of the packaging material layer, but otherwise not directly linked to the material bridge. In other words, the material bridge of the pouring support only penetrates through the attenuated area in this embodiment but not through the bulk layer or the whole packaging material laminate structure including the bulk layer.

**[0012]** In an embodiment, a lateral dimension of the second material bridge is smaller than a lateral dimension of one of the first material bridge and/or the pouring portion.

**[0013]** The pouring portion comprises a pouring lip distanced from the first side. Said pouring lip comprises a laterally rounded shape with its outermost lateral edges of the lip having a greater distance to the packaging material than a central part of the lip.  
The packaging material laminate can be used to produce containers having an opening and pouring support according to the present invention.

## **DESCRIPTION OF THE DRAWING**

**[0014]** In the following, the present invention will be explained in greater details using the accompanying drawings, in which

Figure 1 shows a perspective view of a package in accordance with an embodiment of the present invention;

Figure 1A illustrates a front view of a pouring support according to the present invention;

Figure 1B illustrates a side view of the pouring support;

Figure 2 shows an embodiment of a packaging material laminate for a package container according to the present invention;

Figure 3 shows another example of an opening in accordance with the present invention;

Figure 4 shows a further embodiment of an opening of the present invention;

Figure 5 illustrates a bottom view of an embodiment according to the present invention.

**[0015]** Similar references refer to the same or similar features.

#### **DETAILED DESCRIPTION**

**[0016]** In the following the term "lateral" or "lateral direction L" refers to a direction perpendicular to a normal pouring direction of the package. The term "longitudinal" or "longitudinal direction D" refers to the normal pouring direction. Consequently, the term "T" refers to the remaining transversal direction. Consequently, the terms "lateral", longitudinal or transversal dimension refer to the dimension of the feature in the respective direction.

**[0017]** Fig. 1 shows an example of a packaging container 60 in accordance with the present invention and made from material described later. The packaging container is particularly suitable for liquid or semi-liquid food products such as beverages, sauces, soups or the like. Typically, such a package has a volume of about 100 to 2000 ml.

**[0018]** The package container is of brick-type and comprises a top side, on which an opening device 63 is moulded to, transversal and longitudinal seals 56 and 57, respectively. The opening device is on form of a tab and injection moulded through attenuation 62. The term "injection moulded" means that during the manufacturing process, plastic material is injected through the attenuation as to from the tab 63 and a corresponding part, (not shown) on the inside of the package. During the injection moulding process, the plastics penetrate the attenuation 62 forming a material bridge through the attenuation 62. When opening the container by pulling the tap, the bridge and inside portion provide rigidity and stability to overcome the force necessary to rupture the perforation line 61.

**[0019]** Attenuation 62 is a pre-laminated hole, meaning the cardboard of container 60 is removed in this area and only one or more plastic layers and/or aluminium foils layers are provided.

**[0020]** Starting from the attenuation 62, two weakened lines 61 are provided and extend from attenuation 62 substantially in the same direction as tab 63 is arranged. The weakened lines 61, made of a perforation define a consumer area 64. When opening the packaging container 60, this area is ruptured by pulling the tab 63, creating an opening for pouring the liquid.

**[0021]** The packaging container also comprises a pouring support 65 in form of a rounded lid protruding the flap 67 attached to the side of the package container. The pouring support's 65 lateral dimension (dimension in lateral direction L) exceeds the dimension of the attenuation or hole 62. A middle portion of support 65 is however arranged over attenuation 62 and also injection moulded. Due to the injection moulding, a portion of pouring support penetrates through the attenuation 62, forming a bridge and connects to a corresponding part on the inside of the package. That inside portion is also connected to the inside portion connected to

tab 63 forming a common inside portion (not shown). The lateral dimension of pouring support 65 can be similar to the maximal lateral dimension of the consumer area 64 to facilitate proper pouring. Area 69 of the pouring support exceeding the attenuation 62 is only slightly connected with the uppermost layer of packaging material laminate 60. They are not directly extending into the material laminate forming a bridge like in the attenuation 62. Pouring support 65 has a rounded shape in longitudinal direction, spacing it apart from the package container surface. The outermost edge 66 is arranged substantially parallel the package edge 68, but it is slightly rounded from the front view.

Figure 1A illustrates a front view of the pouring support 65. Front edge 66 is shaped in form of a circle segment, similar to a "smile". Parts of the upper surface 65a can be seen due to specific shape which resembles the form of a lip. The "smile" shape of the lip results that the central part of the lip has a smaller distance from the packaging material than the outermost edges. This enables the liquid to flow along the central part when pouring resulting in less spoilage. Figure 1B illustrates a side view of the pouring support 65. References "L", "D", "T" indicate the respective directions.

Figure 2 is a schematic view on the first side of a part of a web of packaging material 20. For illustration purposes, Figure 2 contains packaging material layout for a single packaging container. The packaging material can either be formed of individual blanks (like illustrated in the embodiment of Figure 2, where exactly one container layout is shown), or in form of a continuous web, where a multiple of webs area arranged on each other.

**[0022]** Each layout or blank is having a weakened line or area 21, which in the embodiment illustrated, is in direct contact with an attenuation or hole 22. Hole 22 in this step is already pre-laminated, meaning that some or more layers of aluminium foil and/or plastic layers like LDPE or PP are laminated on the cardboard layer, effectively closing holes 22. Those layers act as oxygen and light barrier in the final stage of the container.

**[0023]** The weakened line 21 at least partly defines a consumer opening area 24, which for example may be bigger or smaller than the area defined by the weakened lines or area 21. In the embodiment the weakened line is made of a perforation and comprises a slight s-shape with its bulge adjacent to the hole 22. The maximal dimension y (lateral) of such bulge is higher than the dimension x in the distant area of the area framed by the two weakened lines 21

**[0024]** The web of packaging material of Figure 2 also comprises several crease lines 25 which are intended to assist in forming and folding of the packaging container. During the manufacturing process of the package container, the web will be folded along those crease lines to provide an appealing appearance. The area, on which the hole 22 is arranged, will be placed on top of the resulting packaging container.

**[0025]** Each type of packaging container has its specific crease pattern to form different shapes of packaging containers.

**[0026]** The packaging material according to the embodiment of Figure 2 comprises on top a decor layer of a polyolefin such as a suitable LDPE or PP attached to a paper or paperboard

layer. The decor layer can be used for example to provide a cover a printed pattern, the hole 22 and the weakened lines 21 on a paper or paperboard layer. The paperboard layer, on the side opposite the decor layer, has a laminate layer selected from suitable polyolefins such as LDPE or PP. The laminate layer provides adhesion to an oxygen barrier layer, which is also arranged on side of the paper or paperboard layer opposite the decor layer. The barrier layer provides the desired barrier such as oxygen, light, water and vapour barrier depending on the specific need determined by the product to be packed. The barrier layer can for example be an aluminium foil or a vapour deposited film, such as a metalized or vapour deposition coated, such as PECVD coated film. On the side opposite the laminate layer the adhesive polymer is arranged on the barrier layer. The adhesive may for example be applied by extrusion coating, when the barrier layer is aluminium foil the adhesive could be a suitable adhesive marketed under the trade name Nucrel®. On the side opposite the barrier layer, the adhesive is provided with a heat-sealable layer such as a suitable polyolefin such as PE or PP or blends thereof. The heat-sealable layer is the layer facing the product in the finished packed packaging container. The heat-sealable material can be arranged by extrusion coating, or by a pre-made film through film lamination.

**[0027]** Figure 3 is a schematic illustration of an outer part of a packaging container made of a packaging material 60, for example as described in Figure 1 or Figure 2. The embodiment comprises a handle 63 for opening a consumer area 64 by pulling the handle to rupture the perforation line 61. Handle 63 comprises a plastic tab by moulding, e.g. injection moulding. For this purpose plastic is injected through circle shaped attenuation 62 to form on the upper side the visible tab and on the lower side a support section covering the attenuated area and parts of the adjacent packaging material structure. Support section and tab is connected via a plastic material bridge. The embodiment also comprises a pouring support lid 65 which has a slightly rounded shape 65c. Outermost end portion 66 of the pouring support is slightly rounded and protrudes the edge 60a of the packaging material laminate and package container. The pouring support is also moulded, e.g. injection moulded onto the surface of the attenuated area 62. More particular, the pouring support is rigidly connected to a material bridge, produced by injection moulding, through the attenuated area 62 to a support portion on the lower surface of the packaging material (not shown). The support portion of both, the tap 63 and the pouring support 65 form a common support on the lower side of the packaging material laminate in the attenuated area and adjacent areas of packaging material laminate 60. Thereby a strong support is achieved if a consumer rips the consumer area open.

**[0028]** Figure 5 shows a view of the packaging material laminate from the lower side illustrating the support portions. The support portion 67 is a common support portion made of plastic and rigidly attached to the packaging material laminate 60 on the lower side. A first support portion 67a is connected via a material bridge (not shown) to the pouring support on the upper side. A second support portion 63a in the area of the attenuated area 62a is connected to the tab 63. Weakened lines 61a in the plastic support portion follow the perforation or weakened lines 61 in the package material laminate. Lines 61a shall support or facilitate a rupture of the consumer area along the pre-defined weakened lines 61.



**[0029]** Fig 4 is a schematic illustration of an outer part of a packaging container made of a packaging material 60, for example as described in Fig 1, and the illustration includes a handle for consumer opening, i.e. a tab section 63 which is a plastic tab made by moulding, e.g. injection moulding. The illustration additionally includes attenuation or hole 62, two weakened lines 61 extending from attenuation 62 thereby defining a consumer opening area 64. Compared to the embodiments illustrated by Figure 3 the illustration in Figure 4 illustrates another design of the attenuation or hole 62. The length of pouring support 65 exceeds the lateral dimension of attenuation 62 and consumer opening area 64. Pouring support is attached to the attenuated area by injection moulding. The portion arranged over the packaging material laminate is however not rigidly connected, i.e. there's no material bridge through the material laminate. The pouring support may only be connected with the uppermost laminate layer of packaging material layer in those areas 69.

## REFERENCE LIST

### [0030]

56	seal
57	seal
60	packaging material laminate, package
61	weakened lines, perforation
61a	attenuation edge
62	attenuation, hole
63	tab
64	consumer area
65	pouring support
65a	top side
66	outer edge of pouring support
67	support portion
69	protruding areas

## 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

- [WO03095199A \[0002\] \[0007\]](#)
- [WO2009000927A \[0002\]](#)
- [DE102008002853 \[0003\]](#)
- [WO2004089628A \[0007\]](#)

## Patentkrav

1. Emballeringsmaterialelaminatstruktur (60), der omfatter:  
- en første side, en anden side modsat den første side og et  
5 svækket område (62);  
- en plastikåbningsanordning (63), der er anbragt med en  
første del (63) på den første side og med en anden del (63a)  
på den anden side, hvor den første og anden del (63, 63a) af  
plastikåbningsanordningen er forbundet via en første  
10 materialebro gennem det svækkede område (62);  
- et forbrugeråbningsområde (64) på  
emballeringsmaterialelaminatstrukturen (60), hvor  
emballeringsmaterialelaminatet brydes på en defineret måde ved  
anvendelse af plastikåbningsanordningen (63) til åbning af  
15 forbrugeråbningsområdet (64);  
- en hældeunderstøtningsanordning (65), der støder op til  
forbrugeråbningsområdet (64) og har en hældedel, der er  
anbragt på den første side, og en understøtningsdel (67a) på  
den anden side, hvor hældedelen og understøtningsdelen (67a)  
20 er forbundet via en anden materialebro gennem det svækkede  
område (62), hvor hældedelen omfatter en hældetud (65a), der  
er adskilt fra den første side af  
emballeringsmaterialelaminatet.
- 25 2. Emballeringsmateriale ifølge krav 1, hvor den anden del  
(63a) af plastikåbningsanordningen og understøtningsdelen  
(67a) af hældeunderstøtningen udgør en integreret del (67) på  
den anden side.
- 30 3. Emballeringsmaterialelaminat ifølge et hvilket som helst  
af ovennævnte krav, der omfatter et grundstrukturlag, et  
barrierelag og mindst ét laminatlag, hvor det svækkede område  
mindst mangler grundstrukturlaget.
- 35 4. Emballeringsmaterialelaminat ifølge et hvilket som helst  
af ovennævnte krav, der yderligere omfatter et eller flere  
svage områder eller en eller flere svage linjer (61), hvilke  
områder eller linjer (61) definerer forbrugeråbningsområdet

(64), således at emballeringsmaterialelaminatet brydes mindst delvist langs disse områder eller linjer (61) under åbning.

5. Emballeringsmateriale ifølge krav 4, hvor det ene eller de flere svage områder eller den ene eller de flere svage linjer (61) er anbragt, så de støder op til det svækkede område (62) og understøtter brydning af emballeringsmaterialelaminatet til åbning af forbrugeråbningsområdet (64).

6. Emballeringsmateriale ifølge et hvilket som helst af kravene 4 til 5, hvor den anden del (63a) på den anden side omfatter en svag linje, der mindst delvist følger det ene eller de flere svage områder eller den ene eller de flere svage linjer (61) på den første side.

7. Emballeringsmateriale ifølge et hvilket som helst af ovennævnte krav, hvor den anden del (63a) omfatter en svag linje, der mindst delvist overlapper det svækkede område (62).

8. Emballeringsmateriale ifølge et hvilket som helst af ovennævnte krav, hvor hældedelen (65) har en lateral dimension, der er større end en lateral dimension af det ene af det svækkede område (62) og forbrugeråbningsområdet (64).

9. Emballeringsmateriale ifølge krav 1, hvor hældetuden har en lateralt rundet form, idet de yderste kanter af tuden har en større afstand til emballeringsmaterialelaminatet end en central del af tuden.

10. Emballeringsmateriale ifølge et hvilket som helst af ovennævnte krav, hvor en lateral dimension af den anden materialebro er mindre end en lateral dimension af den ene af den første materialebro og hældedelen.

11. Beholder til en væske, der omfatter emballeringsmaterialet ifølge et hvilket som helst af ovennævnte krav.

12. Beholder ifølge krav 11, hvor den yderste kant af hældeunderstøtningen er en udstående kam (68) på beholderen.

# DRAWINGS

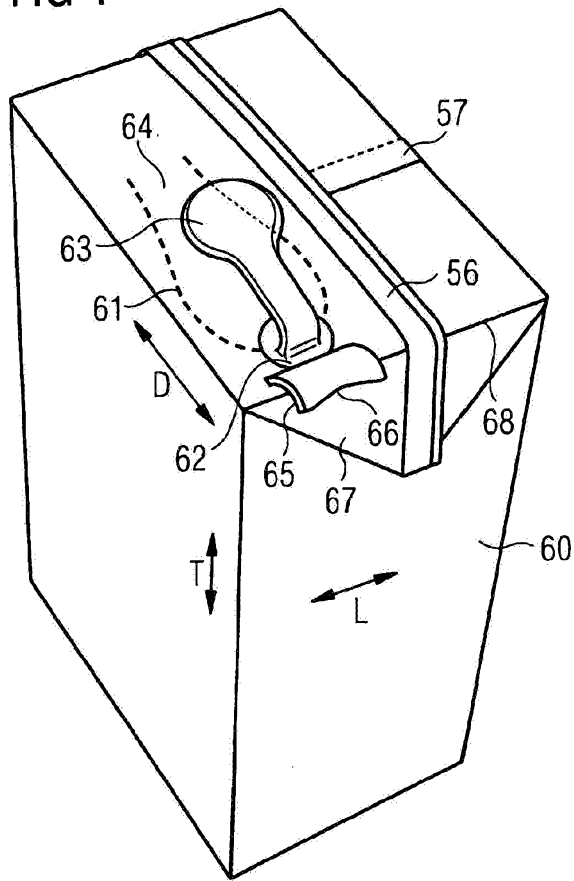
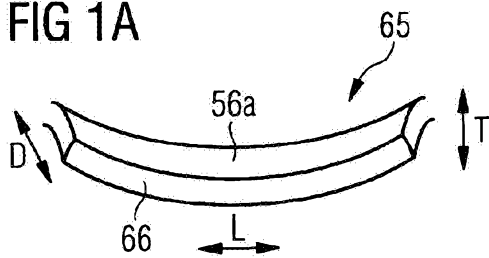
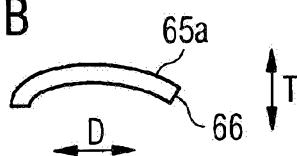
**FIG 1****FIG 1A****FIG 1B**

FIG 2

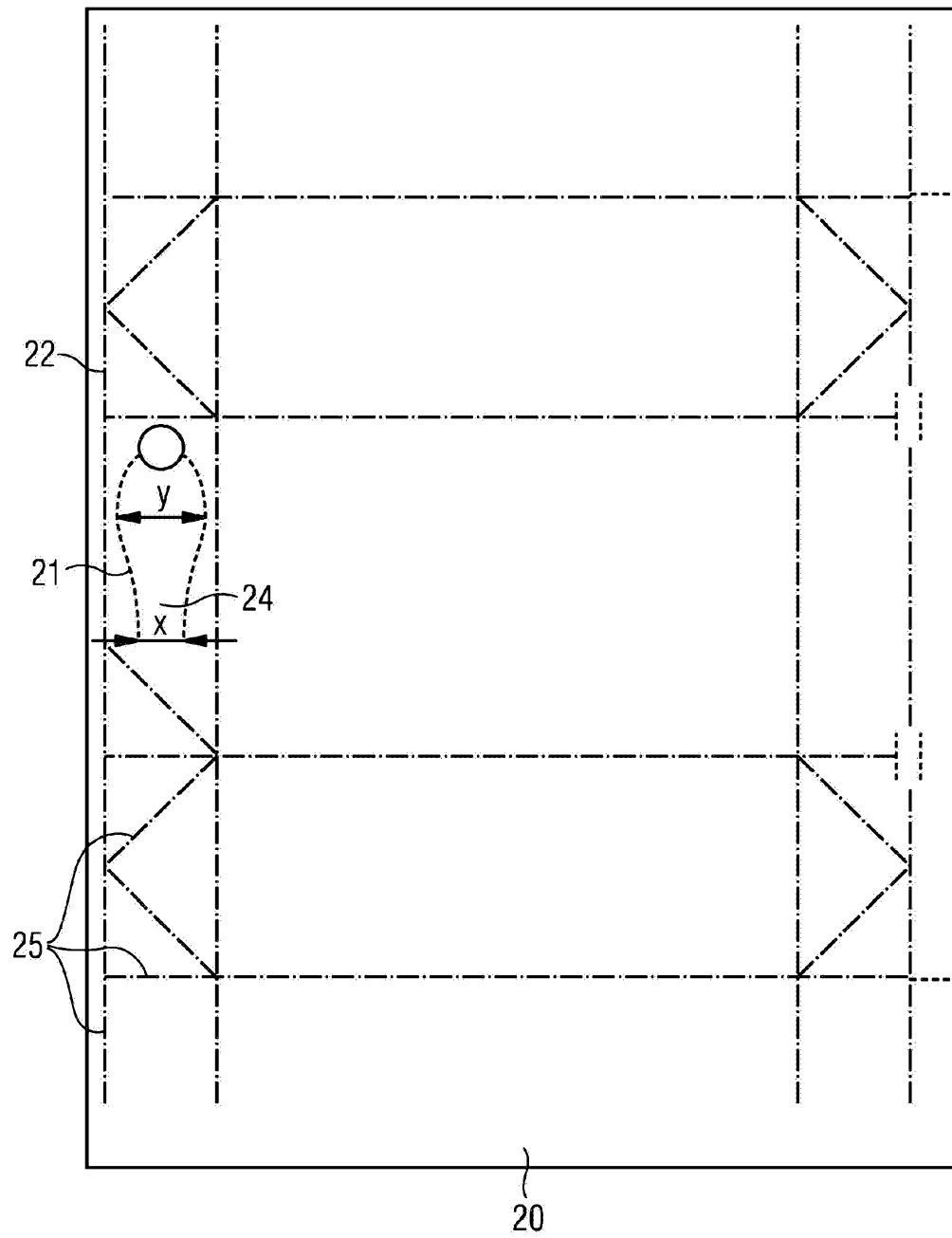


FIG 3

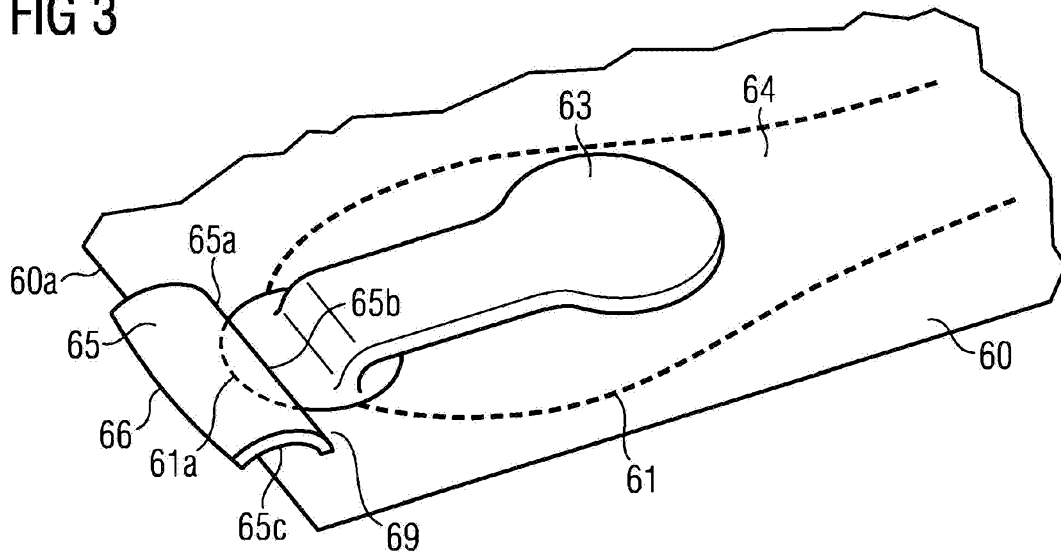


FIG 4

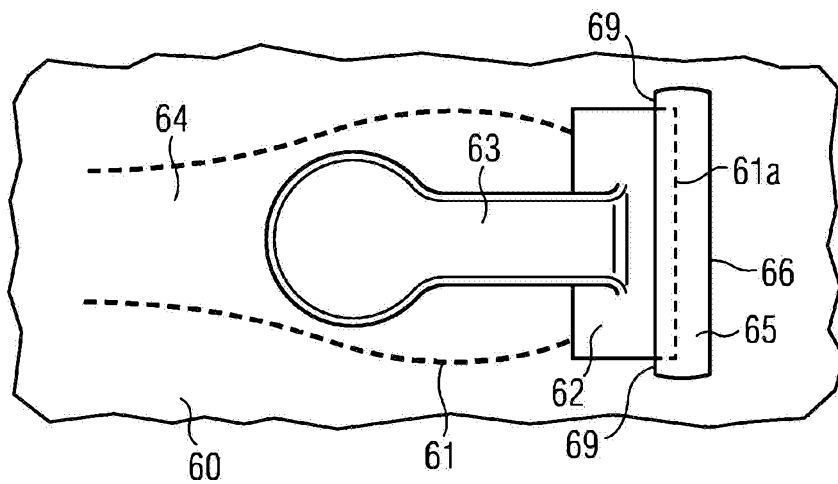




FIG 5

