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(54) **MANUFACTURING OF A FLEXIBLE PACKAGING WEB WITH PREPARED ACCESS OPENINGS COVERED BY RESEALABLE ADHESIVE LABELS**

(57) The present invention relates to a method for manufacturing a flexible packaging web (100) with areas for providing prepared access openings (104) or areas having prepared access openings (104) each covered by a resealable adhesive label (106), wherein the method comprises the step of feeding the flexible packaging web (100) in a feeding direction (FD) to an oscillating guiding device (200). Furthermore, the method comprises the steps of labelling a resealable adhesive label (106) to each area for providing a prepared access opening (104)

or to each area having a prepared access opening (104), and guiding the flexible packaging web (100) over the oscillating guiding device (200) in the feeding direction (FD), wherein the flexible packaging web (100) is oscillated at least substantially transverse to the feeding direction (FD). The flexible packaging web is further wound up onto a supply roll (190) in such a way that layered resealable adhesive labels (106) are slightly offset to each other transverse to the feeding direction (FD).

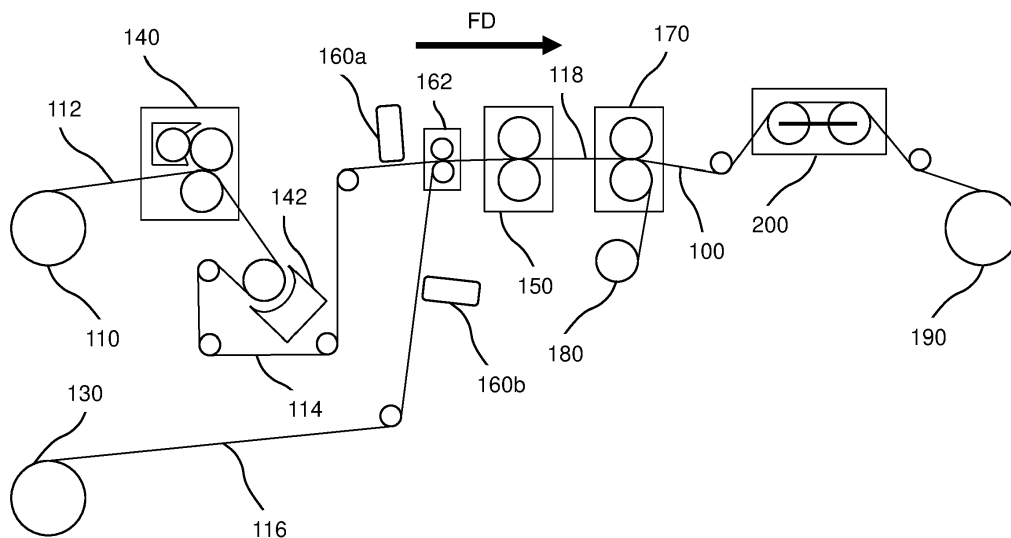


Fig. 2

Description

Technical field

[0001] The present invention relates to a method for manufacturing a flexible packaging web having areas with prepared access openings or areas intended for the provision of prepared access openings. The present invention also relates to an apparatus for manufacturing such a flexible packaging as well as to an oscillating device used.

Background

[0002] In practice, it is known that consumer goods are distributed to customers in prefabricated containers or packages. Often, the consumer goods are wrapped into a packaging casing made of relatively flexible film web material and are accommodated within this packaging casing inside the container which is made of relatively rigid material compared with the material of the packaging casing. Alternatively, the packaging casing itself forms an outer package or outer housing for the consumer goods. In order to individually remove consumer goods from the packaging casing, the packaging casing is provided with an access opening which may be covered by a resealable adhesive label in order to preserve the quality of the consumer goods after the first opening of the container or the packaging casing.

[0003] A container comprising a flexible inner packaging casing which encloses the consumer goods and is known from EP patent application 3 299 314. The container therein comprises an outer housing, wherein the outer housing comprises a relatively rigid box and a lid hinged to the box. The inner packaging casing has an access opening through which consumer goods can be removed when the lid has been opened. An adhesive label made of flexible film web material is provided to cover the access opening. For this purpose, the adhesive label extends beyond the periphery of the access opening of the inner packaging casing. The adhesive label is at least partially releasably affixed to the inner packaging casing by a resealable adhesive provided on a first area of the inner surface of the adhesive label facing to the access opening of the inner packaging casing and extending about at least the periphery of the access opening of the inner packaging casing. A second area of the inner surface of the adhesive label is permanently affixed to the inner surface of the front wall of the lid of the outer housing facing to the packaging casing. A further, third area of the inner surface of the adhesive label, located between the first and second area, is substantially free of adhesive.

[0004] For producing inner packaging casings according to EP patent application 3 299 314, a flexible film web material is provided with equidistantly spaced access openings wherein the access openings are die-cut into the film web material. The generated access openings

within the film web material are each covered by a resealable adhesive label. Thereafter, the inner packaging casing for one container is formed from a section of the film web material having a label-covered access opening.

Thus, two individual process steps are necessary before accommodating the consumer goods. Not only does this require extra tools in the form of a die-cutter and a labeller, but the packaging process takes longer and additionally generates waste.

[0005] This can be overcome by separating the process of die-cutting and labelling from the packaging process. Consequently, supply rolls with already prepared and resealably covered access openings are provided to the packaging process. Such a prefabricated flexible film web material having access openings covered by resealable labels is already known from PCT patent application WO 2014/179457. This application discloses recloseable, stand-up flexible packages for containing a product therein. The packages generally include gusseted top and bottom walls disposed between front and back panels. A line of weakness may define an opening panel extending across at least a portion of the gusseted top wall onto a portion of one or both of the front panel and back panel. A resealable flexible sealing label may be disposed over and extend beyond the opening panel over a portion of one or both of the front panel and back panel in an overlapping area. It is also possible that a transverse peelable seam may extend from and may be positioned along an edge of the gusseted top wall and one of the front or back panel, the transverse peelable seam being formed from a peelable and resealable adhesive.

[0006] However, when a flexible film web material having prepared access openings, which are covered by resealable labels, is wound up onto a supply roll, significant stresses occur inside the wound up film web resulting from the local, label-related thickenings which inevitably result from the layering of the labels.

Object

[0007] Therefore, it is an object of the invention to provide a method for reducing the stresses of a flexible packaging web having prepared access openings covered by adhesive labels when the flexible packaging web is wound up onto a supply roll.

Summary

[0008] The aforesaid object with respect to the method is achieved by the features of claim 1. Advantageous configurations of the invention regarding the method are described in dependent claims 2 to 6 and also below.

[0009] According to the present invention, a method for manufacturing a flexible packaging web having areas with prepared access openings or areas intended for the provision of prepared access openings, wherein the method comprises the steps of:

- labelling a resealable adhesive label to each area with a prepared access opening or to each area intended for the provision of a prepared access opening;
- feeding the flexible packaging web in a feeding direction to an oscillating guiding device; and
- guiding the flexible packaging web over the oscillating guiding device in the feeding direction, wherein the flexible packaging web is oscillated at least substantially transverse to the feeding direction.

[0010] The term "prepared access opening" means that in the flexible packaging web along the outer contour of the access opening, or at least a section of the outer contour of this opening, the packaging web is weakened to such an extent that when a package is first opened for which a section of the flexible packaging web has been used as packaging, the access opening is released such that the wall section of the packaging web corresponding to the access opening is detached from the packaging formed by the packaging web and adheres to the resealable adhesive label. This creates or releases access to the inside of the packaging which can be reclosed by the resealable adhesive label.

[0011] When manufacturing a flexible packaging web according to the present invention, it is possible to apply the resealable adhesive label covering the prepared access opening before the manufacturing step for creating the prepared access opening or afterwards in or on the packaging web. In the former case, the prepared access opening is introduced into the flexible packaging web by a die-cutting process, a punching process or a perforation process along the outer contour of the access opening to such an extent that while a connection to the rest of the flexible packaging web remains, an access opening can be released in the manner described above. In the latter case, the resealable adhesive label is applied to the section of the packaging web in or on which the access opening is to be inserted in a further manufacturing step in the manner as described above.

[0012] In general, when winding up a flexible packaging web having prepared access openings covered by resealable adhesive labels onto a supply roll, a circumferential thickening is normally formed at the position of the layered, resealable adhesive labels. This circumferential thickening can cause undesired, irreversible deformations inside the wound up flexible packaging web. The deformations may be visible. A supply roll wound up this way may have substantially even sides, since on each side of the supply roll the edges of the flexible packaging web may approximately be located in the same plane, wherein these planes are orientated substantially perpendicular to the longitudinal axis of the supply roll and are approximately parallel to each other. Nevertheless, a supply roll having label-induced deformations may tend to pulsate undesirably during unwinding which may affect the following process step.

[0013] Preferably, the oscillating guiding device may

be located just before the supply roll on which the finished flexible packaging web is wound up, but other positions in the manufacturing process line can also be possible.

[0014] Depending on the sequence of the processing steps of the manufacturing line, either resealable adhesive labels are first applied in predefined and preferably equidistantly spaced areas onto the flexible packaging web and then the access openings are prepared in each predefined area from the opposite side of the flexible packaging web or the access openings are prepared in the predefined areas first and then covered each by a resealable adhesive labels.

[0015] The areas with prepared access openings or the areas intended for the provision of prepared access openings of the flexible packaging web are preferably equidistantly spaced in feeding direction and are preferably of the same shape, wherein the shape can be rectangular, oval, round or any other possible shape suitable for unobstructedly removing consumer goods through the respective access opening.

[0016] The feeding direction may be the direction in which the manufacturing line convey the flexible packaging web.

[0017] It is furthermore conceivable that a plurality of flexible packaging webs can be manufactured parallel to each other in the same manufacturing line.

[0018] The flexible packaging web can be a single layer web. Preferably, the flexible packaging web is a laminate of at least two material layers. The at least two material layers forming the laminate may be of the same or different materials. The material layers may be made of propylene (PP), polyethylene (PE), a polyester such as polyethylene terephthalate (PET), metallised papers, metallised films, metallised and/or printed PP films, or metallised and/or printed PET films. The laminate for the flexible packaging web may also be a laminate of a film and paper, like a metallised and/or printed PP film, or a metallised and/or printed PET film in combination with a super-calendered paper. Preferably, the laminate comprises a first and a second material layer of the group as listed above and a third material layer of a thin aluminium film arranged between the first and the second material layer.

[0019] When guided over the oscillating guiding device in feeding direction, the flexible packaging web is oscillated preferably transverse to the feeding direction so that each resealable adhesive label is at least slightly displaced transverse to the feeding direction with reference to its following resealable adhesive label. Thus, when wound up onto a supply roll, the local cumulated increase of thickness of the flexible packaging web caused by the resealable adhesive labels is spread over a larger area, wherein the oscillating of the flexible packaging web generates a decreasing gradient of thickness in direction of the edges of the flexible packaging web dependent on the degree of overlapping of the layered resealable adhesive labels.

[0020] The resealable adhesive labels may preferably

be applied to the flexible packaging web by a linear labeller or a rotary/carousel-type labeller.

[0021] Preferably, the oscillating or oscillating movement is carried out in the plane of the flexible packaging web. In a preferred embodiment, the flexible packaging web is guided over the oscillating guiding device in a plane which is at least substantially parallel to a horizontal plane.

[0022] In another preferred embodiment, the method according to the present invention further comprises the steps of:

- providing a supply of a feedstock web for the flexible packaging web and feeding the feedstock web to a joining station being arranged upstream, with respect to the feeding direction, of a die-cutting or perforating station for generating the prepared access openings of the flexible packaging web;
- providing a supply of a support liner;
- feeding the support liner to the joining station; and
- at least temporarily adhering the support liner and the feedstock web to each other in the joining station before die-cutting the access openings or perforating the contour of the access openings.

[0023] The supply of a feedstock web and a support liner may each be provided by a supply roller onto which they are wound up. The feedstock web and/or the support liner may be printed on at least one of its sides before being processed in a die-cutting or perforating station.

[0024] In this regard, prepared access openings mean that the flexible packaging web is weakened along the periphery of each respective access opening such that, when a resealable adhesive label covering an access opening is peeled off for the first time, the blanked part inside the access opening, which was prepared by die-cutting, perforating or the like, is removed from the flexible packaging web and adheres to the resealable adhesive label.

[0025] The access opening is formed by die-cutting, perforating, laser cutting or any other weakening or cutting method known in the manufacturing industry allowing for a precise cutting of only one layer of a multi-layer web. This ensures that only the flexible packaging web is cut and not the support liner.

[0026] After die-cutting the access openings into the flexible packaging web and applying the resealable adhesive labels onto the flexible packaging web to resealably cover the access openings, the support liner may be separated from the flexible packaging web and wound up on a supply roll.

[0027] The support liner can be any filmic material which can preferably be electrostatically charged. The support liner can be a single layer web or a multi-layer web made of PP, polyester such as PET, polyethylene (PE), paper, or aluminium.

[0028] The adhesion between the flexible packaging web and the support liner is temporary and can be

achieved by different chemical or physical means like vacuum, a thin layer of water, electrostatic charge, a removable adhesive or the like.

[0029] In a joining station, the flexible packaging web and the support liner are joined together, e.g. by two rollers pressing against each other or the like, wherein they thereby come into contact, whether directly or indirectly via an intermediate layer.

[0030] In a preferred embodiment, the support liner and the feedstock web are temporarily adhered to each other by charging both electrostatically before reaching the joining station.

[0031] The respective charging electrodes may have different charging surfaces to obtain the best possible adhesion between the feedstock web and the support liner.

[0032] Thus, between the feedstock web and the support liner a specific bond is formed stabilizing the web and avoiding any elongation and/or stretching of the web.

[0033] In yet another preferred embodiment of the present invention, the access openings of the flexible packaging web are made in a die-cutting or perforating station comprising at least one die-cutting or perforating tool and a rotatable counter cylinder, and wherein the flexible packaging web is guided over the counter cylinder to which the flexible packaging web is temporarily adhered.

[0034] The counter cylinder as well as the feedstock web fed to the die-cutting or perforating station may preferably be electrostatically charged to create a temporary adhesion or bond between the web and the counter cylinder. Consequently, the counter cylinder also serves to stabilize the web, wherein the stabilization is particularly necessary if the access openings have been die-cut, since then the areas of the flexible packaging web surrounding the die-cut access openings is locally weakened. Preferably, the flexible packaging web adheres to the counter cylinder at least when the contours of the access openings are being die-cut or perforated, and the resealable adhesive labels are applied to flexible packaging web to resealably cover the access openings.

[0035] The counter cylinder may serve as support surface for the die-cutting or perforating process.

[0036] The use of a support liner and the use of a counter cylinder for supporting the feedstock web during the manufacturing steps of the flexible packaging web are independent from each other.

[0037] In a preferred embodiment of the method according to the present invention, the resealable adhesive labels are aligned to control marks when applied to the flexible packaging web.

[0038] Such control marks are printed on the flexible packaging web to precisely position the access openings and the resealable adhesive labels. The printing techniques of the control marks can be one of the typical printing techniques such as flexographic printing, offset printing, silkscreen printing, rotogravure printing, digital printing or any other known printing technique. The print-

ing inks can be UV-inks, water-based inks or solvent-based inks.

[0039] The permissible position deviation between a control mark and its corresponding access opening as well as between the respective control mark and the corresponding resealable adhesive label is preferably less than 0.2 mm if a support liner is used. In case of a manufacturing by means of a counter cylinder the permissible position deviation is preferably less than 0.1 mm.

[0040] Between the processing steps of labelling and oscillating according to the present invention further processing steps may be possible.

[0041] The two different ways of supporting the feedstock described above involve first die-cutting or perforating the access openings to be prepared in defined, preferably equidistantly spaced areas and then covering the prepared access openings with a resealable adhesive label.

[0042] However, as mentioned above, in another preferred embodiment, the predefined areas intended for the provision of prepared access openings are labelled first with resealable adhesive labels and then the access openings are made by die-cutting or perforating, thus eliminating the need for a support liner or counter-cylinder to locally support the feedstock web while being die-cut, perforated or the like to prepare the access openings. Accordingly, an access opening in the flexible packaging web can also be made after applying a resealable adhesive label to the area intended for the provision of a prepared access opening by die-cutting or perforating.

[0043] The object according to the present invention can further be solved by an apparatus for manufacturing a flexible packaging web having areas with prepared access openings or areas intended for the provision of prepared access openings, comprising at least:

- a labelling station for applying a resealable adhesive label to each area with the prepared access openings or each area intended for the provision of prepared access openings; and
- an oscillating guiding device located downstream, with respect to the feeding direction, of the labelling station for oscillating the flexible packaging web at least substantially transverse to the feeding direction.

[0044] Advantageously, the apparatus may further comprise at least a die-cutting or perforating station for generating the prepared access openings of the flexible packaging web to which a feedstock web is fed in a feeding direction from a feedstock web supply station. A feedstock web supply station may comprise a supply roll onto which a feedstock web for a flexible packaging web is wound up.

[0045] In a die-cutting station, access openings may be formed by die-cutting, perforating, laser cutting or any other weakening or cutting method known in the manufacturing industry allowing for a precise cutting of only

one layer of a multi-layer web.

[0046] A labelling station may comprise a linear labeller or a rotary/carousel-type labeller.

[0047] The oscillating guiding device may preferably comprise at least receiving means at a receiving side of the oscillating guiding device to receive the flexible packaging web, and releasing means at a releasing side of the oscillating guiding device to release the flexible packaging web. The receiving means and the releasing means may extend at least substantially across the flexible packaging web and may be arranged at least approximately parallel to each other and remote from each other, wherein a guide plane is defined at least approximately between the receiving means and the release means. Further, the oscillating guiding device may comprise means for oscillating the flexible packaging web in the guide plane, wherein the flexible packaging web is preferably oscillated transverse to the feeding direction.

[0048] The receiving means and the releasing means may each be a rotating cylinder, wherein the extension of the cylinder in its longitudinal direction corresponds at least to the width of the flexible packaging web. The width of the flexible packaging web may be defined as the extension of the web transverse to the feeding direction. Each rotating cylinder may be rotatably mounted on an inner shaft or the ends of the cylinders may be pivotably borne.

[0049] The receiving and releasing means may preferably be aligned parallel to each other and remote from each other, i.e. they do preferably not touch each other but are spaced apart.

[0050] The guide plane essentially corresponds to the plane in which the flexible packaging web is conveyed and which tangentially touches the receiving means and the releasing means.

[0051] The means for oscillating allow for an oscillating of the flexible packaging web in the guide plane, wherein the oscillating is carried out transverse to the feeding direction.

[0052] The means for oscillating the flexible packaging web in the guide plane may further preferably comprise at least first and second frame means for supporting the receiving means and the releasing means, and wherein the first and second frame means are configured to be reciprocally shifted in opposite directions being at least approximately parallel to the guide plane.

[0053] The first and second frame means may be rod-shaped elements which are at least approximately aligned parallel to each other and parallel to the guide plane. Each rod-shaped element may be mounted to the ends of the rotating cylinders on one side.

[0054] The first and second frame means may be reciprocally shiftable in opposite directions to oscillate the flexible packaging guided over the receiving and release means transvers to the feeding direction.

[0055] In another preferred embodiment, the means for oscillating the flexible packaging web in the guide plane may comprise a tilting unit for reciprocally rotating

the oscillating guiding device in the guide plane.

[0056] The tilting unit can be realized by an oscillating rotary movement of the parallel rotating cylinders, which are forming the receiving and releasing means, around a common centre point. Therefore, the whole oscillating guiding device must be rotatably borne.

[0057] In a further preferred embodiment, the apparatus according to the present invention may comprise at least one sensor to detect one of the edges of the conveyed flexible packaging web guided over the oscillating guiding device. The sensor may be a light barrier or a laser beam.

[0058] Other sensors can be used in the manufacturing process as well. One of these sensors can detect the respective control mark to activate or initiate the die-cut process and/or to activate the labeller in order to label a resealable adhesive label over each prepared access opening.

[0059] The apparatus may further preferably comprise a joining station for at least temporarily adhering a support liner provided by a support liner supply station and the feedstock web to each other. The joining station may be arranged upstream, with respect to the feeding direction, of the die-cutting or perforating station. Moreover, charging devices may be arranged upstream, with respect to the feeding direction, of the joining station, each at the travel path of the feedstock web and the support liner, for electrically charging the feedstock web and the support liner to adhere the feedstock web and the support liner at least temporarily to each other in the joining station.

[0060] The support liner station may comprise a supply roll onto which the support liner is wound up.

[0061] In another preferred embodiment, the die-cutting or perforating station of the apparatus may comprise at least one die-cutting or perforating tool, a rotatable counter cylinder and a first charging device for electrostatically charging the counter cylinder. Additionally, a second charging device may be arranged upstream, with respect to the feeding direction, of the die-cutting or perforating station at the travel path of the feedstock web for electrically charging the feedstock web to adhere the feedstock web and the counter cylinder at least temporarily to each other in the die-cutting or perforating station.

[0062] Furthermore, a labelling station may be arranged either downstream or upstream, with respect to the feeding direction, of the die-cutting or perforating tools of the die-cutting or perforating station and at the counter cylinder for applying a resealable adhesive label to each access opening generated by the die-cutting or perforating station.

[0063] The object according to the present invention can further be solved by an oscillating guiding device according to the specifications mentioned above.

[0064] In the following, further advantages and embodiments of the present invention are described in conjunction with the attached drawings. Thereby, the expression "left", "right", "below", and "above" are referred to the

drawings in an orientation of the drawings which allows the normal reading of the reference signs. The drawings should not necessarily represent the forms of execution to scale. Rather, the drawings, where useful for explanation, are executed in schematic and/or slightly distorted form. The invention's features revealed in the description, in the drawings, and in the claims may be essential for any continuation of the invention, either individually or in any combination. The general idea of the invention is not limited to the exact form or detail of the preferred embodiments shown and described below or to a subject-matter which would be limited in comparison to the subject-matter of the claims. For the sake of simplicity, identical or similar parts or parts with identical or similar functions are hereinafter referred to by the same reference signs.

[0065] In the drawings:

- Fig. 1 shows a top view of a section of a flexible packaging web according to the present invention;
- Fig. 2 shows a manufacturing line apparatus using a support liner according to a method of the present invention;
- Fig. 3 shows a manufacturing line apparatus using counter cylinder according to another method of the present invention;
- Fig. 4 shows a side view of an oscillating guiding device according to the present invention;
- Fig. 5 shows a top view of the oscillating guiding device of the rotating cylinders;
- Fig. 6 shows a top view of the oscillating guiding device with a deflection of the rotating cylinders;
- Fig. 7 shows a top view of another embodiment of the oscillating guiding device with a deflection;
- Fig. 8 shows a top view of a flexible package for consumer goods;
- Fig. 9 shows a cross-sectional view of the flexible package along line A-A; and
- Fig. 10 shows a perspective view of a container for consumer goods comprising a resealable label and an inner packaging having an access opening.

Detailed description

[0066] In Fig. 1, a section of flexible packaging web 100 according to the present invention - having access openings each covered by a resealable adhesive label - is shown, wherein flexible packaging web 100 comprises,

viewed in feeding direction FD, a left edge 102a and a right edge 102b. Furthermore, the section of the flexible packaging web 100 shows three equidistantly spaced access openings 104 each covered by a resealable adhesive label 106. All access openings 104 and resealable adhesive labels 106 are aligned with control marks 108.

[0067] Manufacturing such flexible packaging web 100 comprises several steps carried out by a manufacturing line apparatus as presented in Fig. 2. In the following, a first embodiment of a manufacturing method according to the present invention will be described stepwise starting from a feedstock supply station 110 providing a feedstock web 112.

[0068] Feedstock web 112 is conveyed into printing station 140 where control marks 108 are printed on feedstock web 112. Printing station 140 is followed by UV-dryer or thermal dryer 142 drying the printed ink of printing station 140. The printed feedstock web 114 is further conveyed to die-cutting or perforating station 150 to die-cut or perforate equidistantly spaced access openings 104, wherein, before entering die-cutting station 150, printed feedstock web 114 is joined together in a joining station 162 with a support liner 116 which is provided by a support liner supply station 130. Support liner 116 stabilizes printed feedstock web 114 in the following process steps. In order to obtain a sufficient adhesion between printed feedstock web 114 and support liner 116, both are electrostatically charged by a charging device 160a, 160b, wherein charging devices 160a, 160b can be similar ones or different ones. After die-cutting or perforating station 150, the printed and die-cut flexible packaging web 118 is further conveyed to labelling station 170. In labelling station 170 resealable adhesive labels 106 are applied on printed and die-cut flexible packaging web 118 to cover the prepared access openings 104 either by means of a linear labeller or a rotary labeller. Directly following the labelling step, support liner 116 is separated from labelled flexible packaging web 100 and wound up onto third supply roll 180. Thus, only labelled flexible packaging web 100 is conveyed to oscillating guiding device 200. Oscillating guiding device 200 oscillates at least one of edges 102a, 102b of flexible packaging web 100 such that, when flexible packaging web 100 is wound up onto fourth supply roll 190, layered resealable adhesive labels 106 are slightly offset to each other transverse to feeding direction FD. Hence, a circumferential thickening at the circulating position of resealable adhesive labels 106 is avoided or at least reduced.

[0069] Fig. 3 shows a second embodiment of a manufacturing method according to the present invention, wherein the second embodiment differs from the first embodiment in that no support liner 116 is used, but a counter cylinder 132. Counter cylinder 132 is also electrostatically charged by a charging device 160b and does also support printed feedstock web 114 and printed and die-cut flexible packaging web 118, respectively. Counter cylinder 132 further serves as a support for die-cutting station 150 and labelling station 170. Due to the electrostatic

charge of printed feedstock web 114 and counter cylinder 132 an adhesion between both is generated, whereby printed feedstock web 114 adheres to the surface of counter cylinder 132.

[0070] Both Figs. 2 and 3 show a manufacturing method supporting feedstock web 112 or printed feedstock web 114 by either support liner 116 or counter cylinder 132 in particular during die-cutting or perforating access openings 104 in die-cutting station 150. However, it is also possible to first label resealable adhesive labels 106 in predefined, equidistantly areas without supporting feedstock web 112 and then die-cutting or perforating access openings 104 from the opposite side of feedstock web 112 within these predefined areas by what an additional support of feedstock web 112, like support liner 116 or counter cylinder 132, is expendable or not required. Accordingly, labelling station 170 can be arranged either downstream or upstream, with respect to feeding direction FD, of die-cutting station 150.

[0071] Fig. 4 shows a side view of an oscillating guiding device 200 according to the present invention and Fig. 5 shows the corresponding top view of oscillating guiding device 200. Oscillating guiding device 200 comprises as receiving means a receiving rotating cylinder 202 and as releasing means a releasing rotating cylinder 204. Both receiving rotating cylinder 202 and releasing rotating cylinder 204 are aligned at least approximately parallel to each other and are spaced apart. The receiving side of oscillating guiding device 200 is downstream in relation to machine direction FD and the releasing side of oscillating guiding device 200 is upstream in relation to machine direction FD.

[0072] Flexible packaging web is at least substantially guided over receiving rotating cylinder 202 and releasing rotating cylinder 204 in a guide plane being parallel to a horizontal plane, wherein the guide plane substantially tangentially touches receiving rotating cylinder 202 and releasing rotating cylinder 204 at their top uppermost segment.

[0073] Receiving rotating cylinder 202 has a first end 206a and a second end 206b. Releasing rotating cylinder 204 has also a first end 208a and a second end 208b. The first ends 206a, 208a are mounted to first frame means 210 which may be a rod-shaped element, while the second ends 206b, 208b are mounted to second frame means 212 which may also be a rod-shaped element. A sensor 220 is detecting the position and orientation of right edge 102b of flexible packaging web 100.

[0074] In Fig. 6, first rod-shaped element 210 is deflected in feeding direction FD by a certain distance without affecting the parallel alignment of both rod-shaped elements 210, 212, whereby the rotating cylinders 202, 204 are tilted out of the position in which their longitudinal axis is approximately perpendicular to feeding direction FD. The rotating cylinders 202, 204 are still aligned parallel to each other in the tilted position. Due to the deflection of first rod-shaped element 210 flexible packaging web 100 is slightly pivoted. The pivoting of flexible pack-

aging web 100 is detected by sensor 220 which determines the change of position of right edge 102b. If a predetermined amount of pivoting of flexible packaging web 100 is reached, first rod-shaped element 210 will be deflected against feeding direction FD, preferably by the same distance as in feeding direction FD. The alternating deflection of one of the rod-shaped elements 210, 212 in feeding direction FD and against feeding direction FD causes the oscillation of the edges of flexible packaging web 100.

[0075] Fig. 7 shows a further embodiment of oscillating guiding device 200 which is tilted as a complete unit, i.e. the longitudinal axes of the rotating cylinders 202, 204 remain aligned perpendicular to the longitudinal axes of the rod-shaped elements 210, 212. In this embodiment, oscillating guiding device 200 is rotated around a central centre which also causes flexible packaging web 100 to pivot slightly.

[0076] Fig. 8 shows a top view of a flexible package 300 for consumer goods comprising an outer housing 302. Outer housing 302 is formed from a section of the flexible packaging web 100 according to the present invention having a prepared access opening 104 covered by a resealable adhesive label 106. Resealable adhesive label 106 extends beyond the contours of the prepared access opening 104. After accommodating the consumer goods inside outer housing 302, both ends 304, 306 of outer housing 302 are sealed.

[0077] Fig. 9 is a cross-sectional view of flexible package 300 along line A-A of Fig. 8. In this view one can see that the lower surface of resealable adhesive label 106 is covered with a removable adhesive 107. Furthermore, inside prepared access opening 104 there is a blanked part 105 which is removed from the surrounding portion of the flexible package 300 due to the adhesive effect of removable adhesive 107 when the resealable adhesive label 106 covering access opening 104 is peeled off for the first time.

[0078] In Fig. 10, a container 400 for consumer goods is shown. Container 400 comprises an outer housing 402 which comprises a box 404 and a lid 406 hinged to box 404. Inside outer housing 402 an inner packaging 408 is accommodated which is formed from a section of flexible packaging web 100 having resealable adhesive label 106 covering a prepared access opening 104. Container 400 is shown in an opened state, an automatic type of uncovering access opening 104 is presented, since resealable adhesive label 106 is permanently adhered to the inner surface of lid 406. The access opening 104 can also be opened manually, wherein the resealable adhesive label 106 is not adhered to the inner surface of lid 406, but has to be grabbed, for example, at a handling portion of the resealable adhesive label 106 to be peeled off from inner packaging 408. Inner packaging 408 is wrapped around consumer goods which are accommodated inside inner packaging 408.

Claims

1. A method for manufacturing a flexible packaging web (100) having areas with prepared access openings (104) or areas intended for the provision of prepared access openings (104), wherein the method comprises the steps of:
 - labelling a resealable adhesive label (106) to each area with a prepared access opening (104) or to each area intended for the provision of a prepared access opening (104);
 - feeding the flexible packaging web (100) in a feeding direction (FD) to an oscillating guiding device (200); and
 - guiding the flexible packaging web (100) over the oscillating guiding device (200) in the feeding direction (FD), wherein the flexible packaging web (100) is oscillated at least substantially transverse to the feeding direction (FD).
2. The method according to claim 1, wherein the oscillating movement of the flexible packaging web (100) imposed by the oscillating guiding device (200) is carried out in the plane of the flexible packaging web (100) and wherein the flexible packaging web (100) is preferably guided over the oscillating guiding device (200) in a plane being at least substantially parallel to a horizontal plane.
3. The method according to claim 1 or 2, wherein the method further comprises the steps of:
 - providing a supply of a feedstock web (112, 114) for the flexible packaging web (100) and feeding the feedstock web (112, 114) to a joining station (162) being arranged upstream, with respect to the feeding direction (FD), of a die-cutting or perforating station (150) for generating the prepared access openings (104) of the flexible packaging web (100);
 - providing a supply of a support liner (116);
 - feeding the support liner (116) to the joining station (162); and
 - at least temporarily adhering the support liner (116) and the feedstock web (112, 114) to each other in the joining station (162) before die-cutting the access openings (104) or perforating the contour of the access openings (104).
4. The method according to claim 3, wherein the support liner (116) and the feedstock web (112, 114) are temporarily adhered to each other by charging both electrostatically before reaching the joining station (162).
5. The method according to claim 1 or 2, wherein the access openings (104) of the flexible packaging web

- (100) are made in a die-cutting or perforating station (150) comprising at least one die-cutting or perforating tool and a rotatable counter cylinder (132), and wherein the feedstock web (112, 114) is guided over the counter cylinder (132) to which the feedstock web (112, 114) is temporarily adhered, preferably by electrostatically charging both the counter cylinder (132) and the feedstock web (112, 114).
6. The method according to any of claims 1 to 5, wherein an access opening (104) in the flexible packaging web (100) is made after applying a resealable adhesive label (106) to the area intended for the provision of a prepared access opening (104) by die-cutting or perforating.
7. An apparatus for manufacturing a flexible packaging web (100) having areas with prepared access openings (104) or areas intended for the provision of prepared access openings (104), comprising at least:
- a labelling station (170) for applying a resealable adhesive label (106) to each area with the prepared access openings (104) or each area intended for the provision of prepared access openings (104); and
 - an oscillating guiding device (200) located downstream, with respect to the feeding direction (FD), of the labelling station (170) for oscillating the flexible packaging web (100) at least substantially transverse to the feeding direction (FD).
8. The apparatus according to claim 7, wherein the oscillating guiding device (200) comprises at least receiving means (202) at a receiving side of the oscillating guiding device (200) to receive the flexible packaging web (100), and releasing means (204) at a releasing side of the oscillating guiding device (200) to release the flexible packaging web (100), wherein the receiving means (202) and the releasing means (204) extend at least substantially across the flexible packaging web (100) and are arranged at least approximately parallel to each other and remote from each other, wherein a guide plane is defined at least approximately between the receiving means (202) and the releasing means (204), and wherein the oscillating guiding device (200) further comprises means for oscillating the flexible packaging web (100) in the guide plane.
9. The apparatus according to claim 8, wherein the means for oscillating the flexible packaging web (100) in the guide plane comprises at least first and second frame means (210, 212) for supporting the receiving means (202) and the releasing means (204), and wherein the first and second frame means (210, 212) are configured to be reciprocally shifted in opposite directions being at least approximately parallel to the guide plane.
10. The apparatus according to claim 8, wherein the means for oscillating the flexible packaging web (100) in the guide plane comprise a tilting unit for reciprocally rotating the oscillating guiding device (200) in the guide plane.
11. The apparatus according to any of claims 7 to 10, further comprising at least one sensor (220) to detect one of the edges (102a, 102b) of the conveyed flexible packaging web (100) guided over the oscillating guiding device (200).
12. The apparatus according to any of claims 7 to 11, wherein a support liner supply station (130) is provided for feeding a support liner (116) to a joining station (162) for at least temporarily adhering the support liner (116) and the feedstock web (112) to each other, wherein the joining station (162) is arranged upstream, with respect to the feeding direction (FD), of a die-cutting or perforating station (150), and wherein charging devices (160a, 160b) are arranged upstream, with respect to the feeding direction (FD), of the joining station (162), each at the travel path of the feedstock web (112) and the support liner (116), for electrically charging the feedstock web (112) and the support liner (116) to adhere the feedstock web (112) and the support liner (116) at least temporarily to each other in the joining station (162).
13. The apparatus according to any of claims 7 to 11, wherein a die-cutting or perforating station (150) comprises at least one die-cutting or perforating tool, a rotatable counter cylinder (132) and a first charging device (160b) for electrostatically charging the counter cylinder (132) and wherein a second charging device (160a) is arranged upstream, with respect to the feeding direction (FD), of the die-cutting or perforating station (150) at the travel path of the feedstock web (112) for electrically charging the feedstock web (112) to adhere the feedstock web (112) and the counter cylinder (132) at least temporarily to each other in the die-cutting or perforating station (150).
14. The apparatus according to claim 13, wherein a labelling station is arranged either downstream or upstream, with respect to the feeding direction (FD), of the die-cutting or perforating tools of the die-cutting or perforating station (150) and at the counter cylinder (132) for applying a resealable adhesive label (106) to each access opening (104) generated by the die-cutting or perforating station (150).
15. An oscillating guiding device (200) according to any

of claims 7 to 11.

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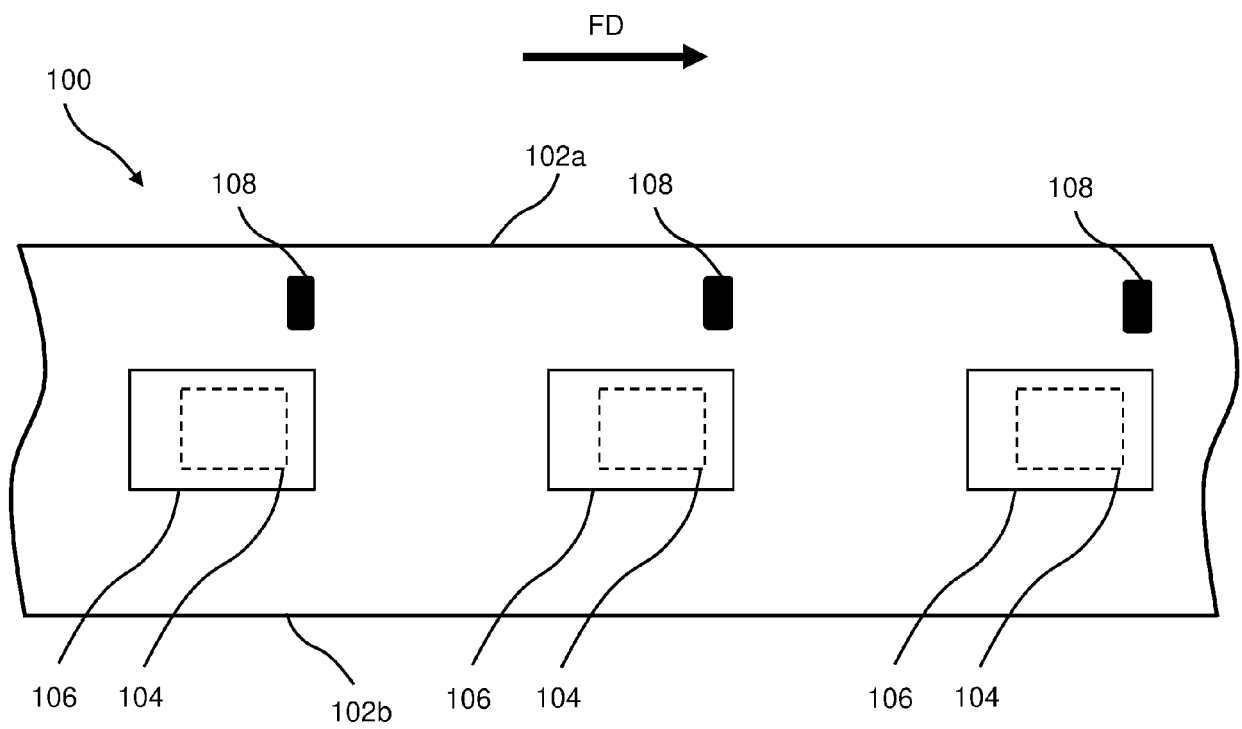


Fig. 1

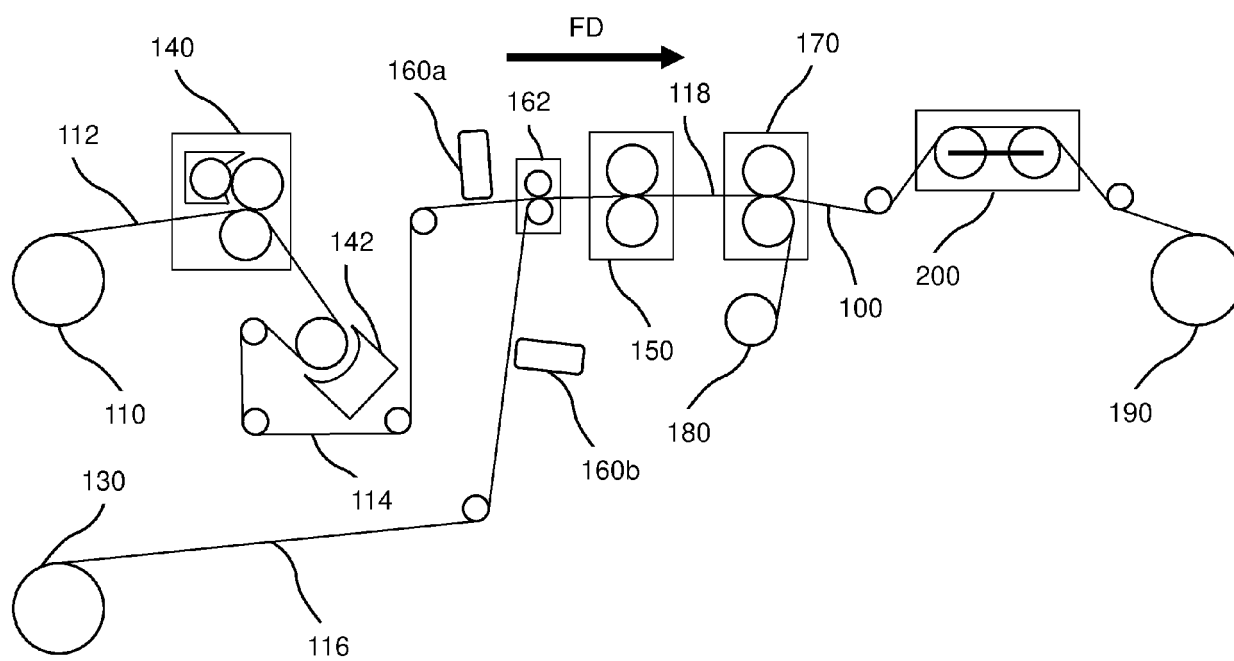


Fig. 2

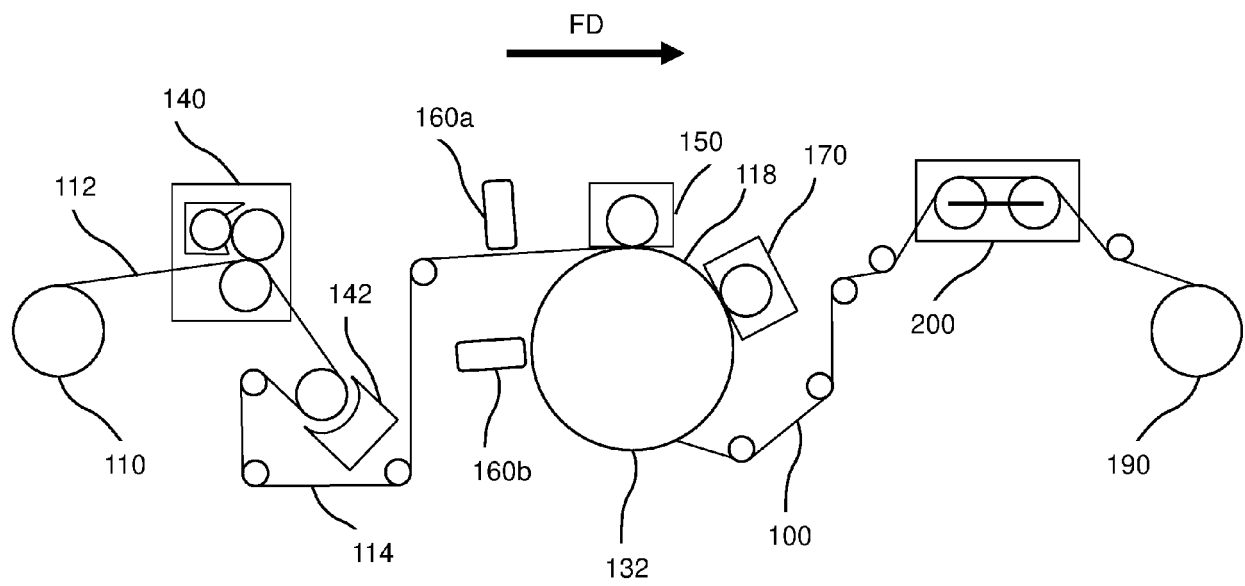


Fig. 3

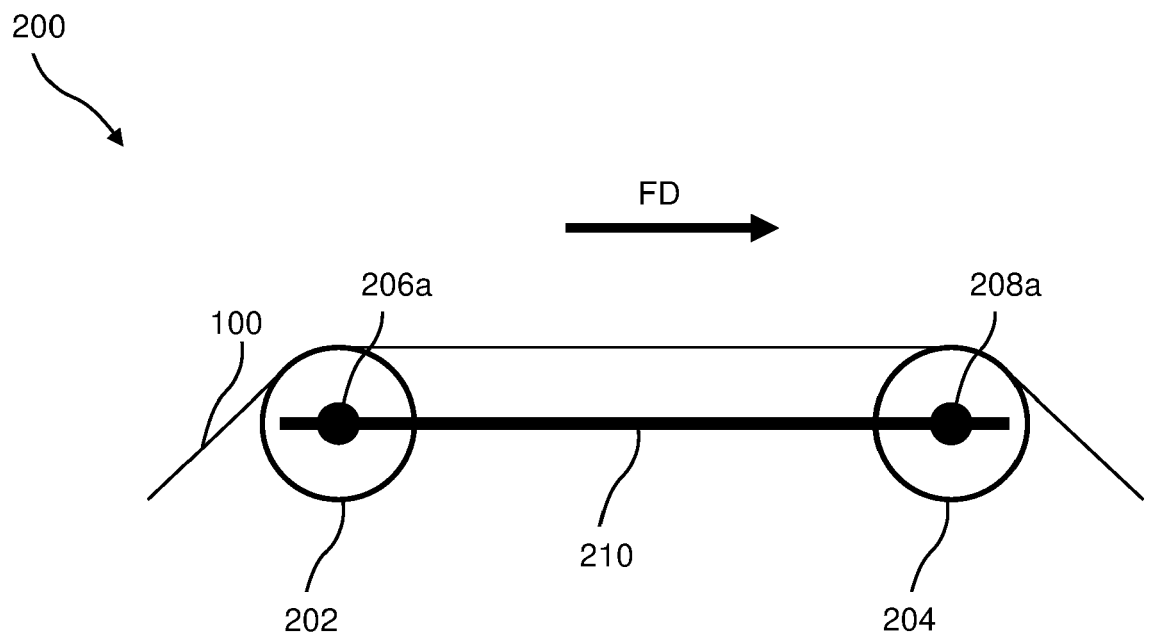


Fig. 4

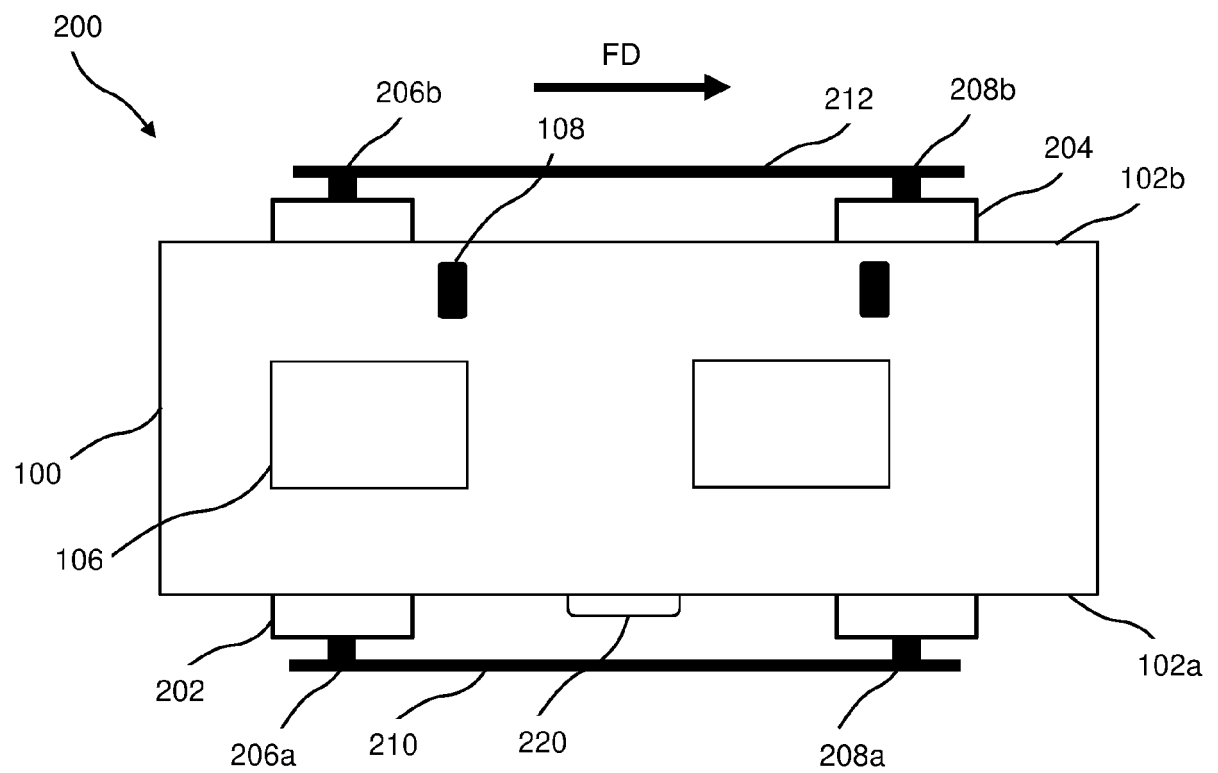


Fig. 5

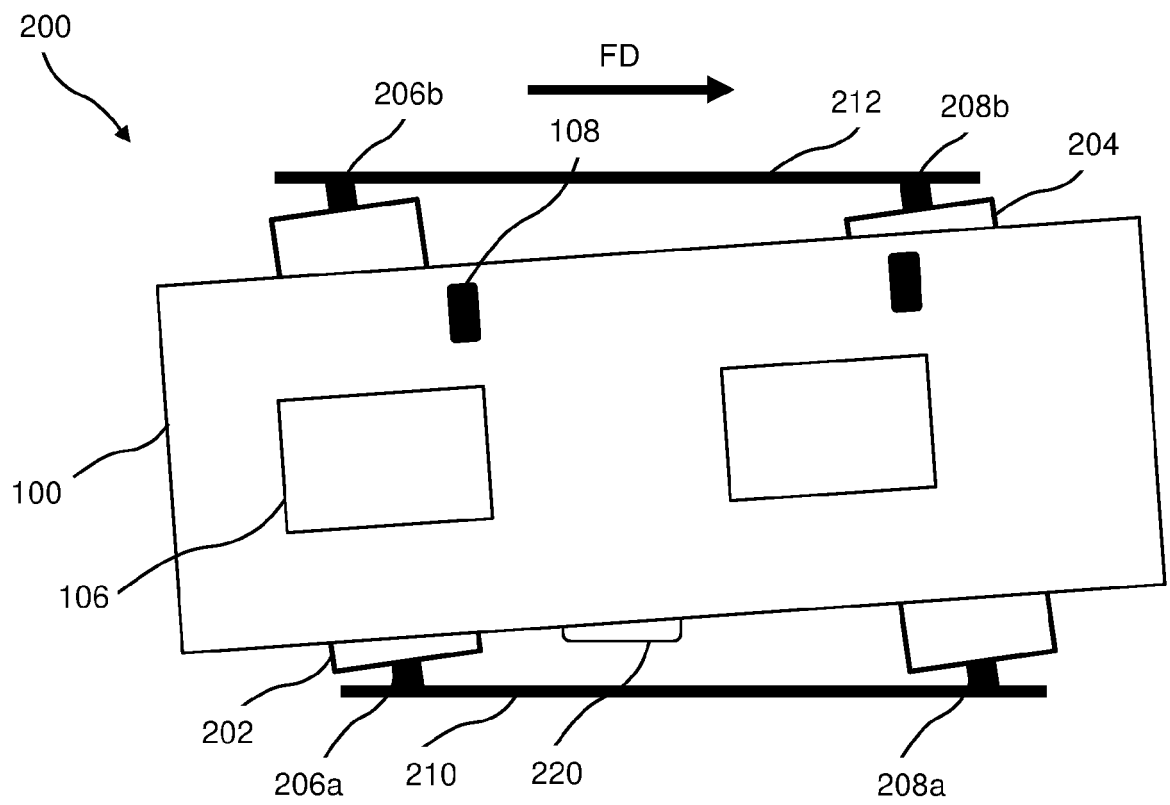


Fig. 6

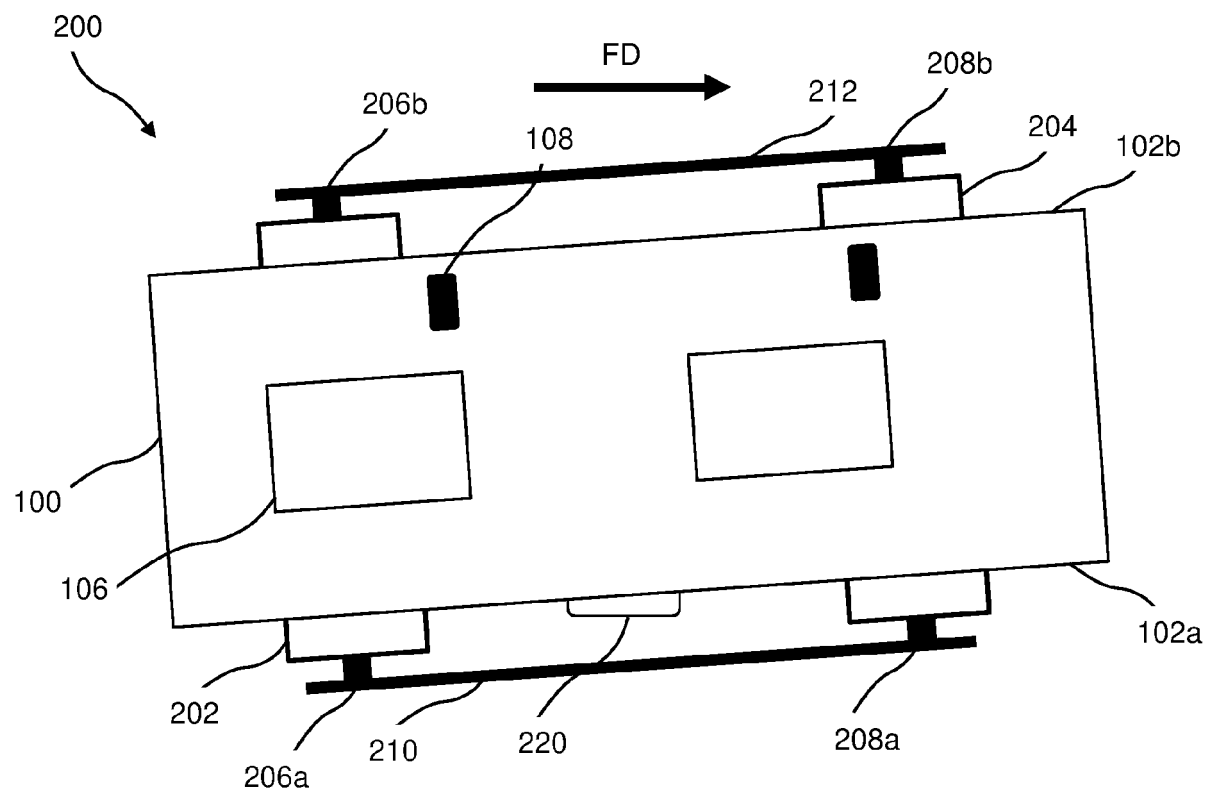


Fig. 7

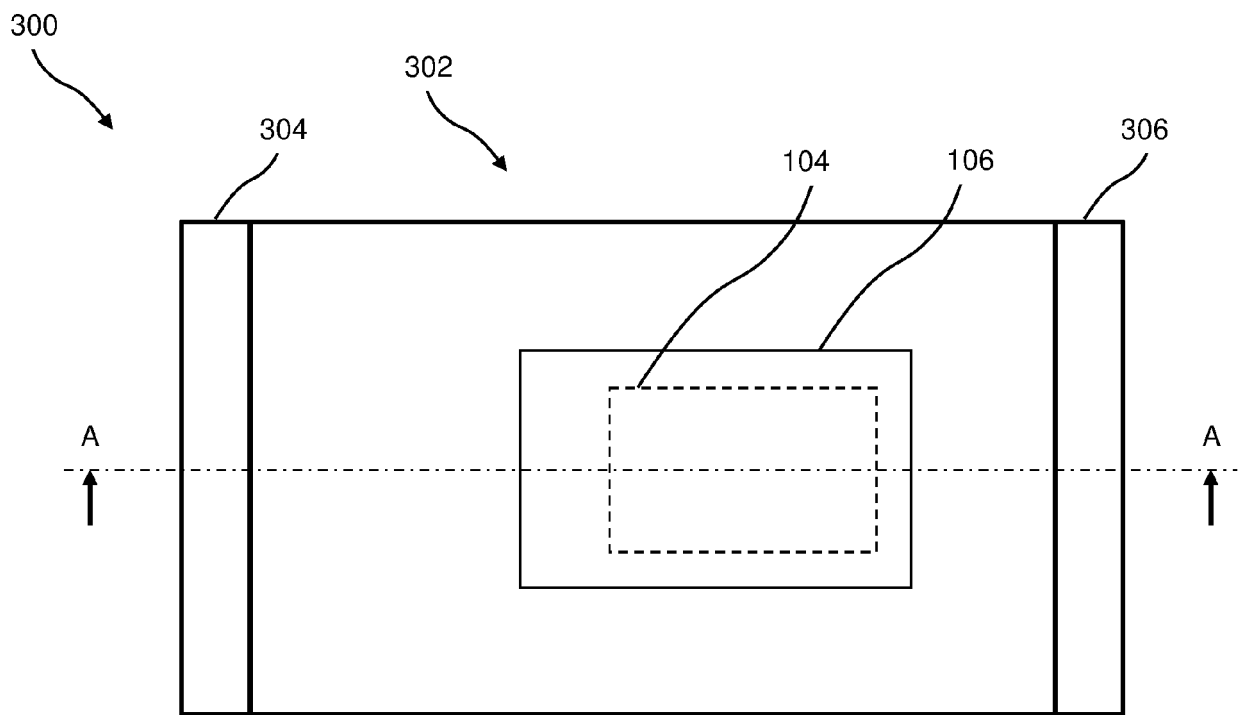


Fig. 8

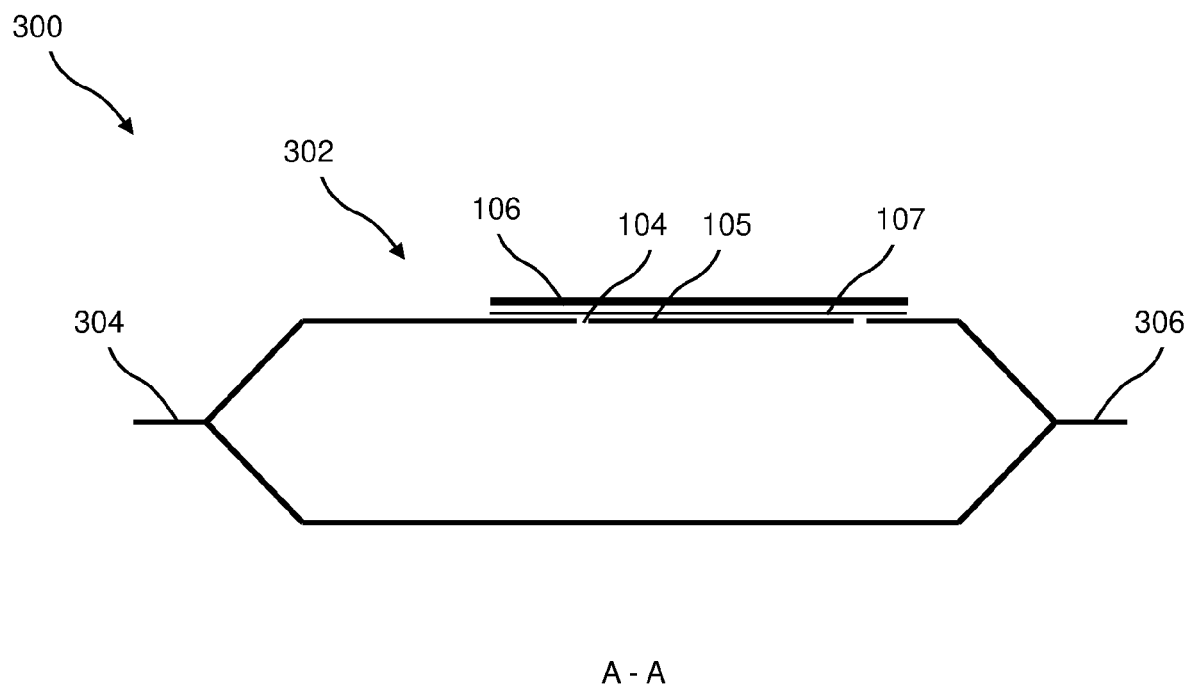


Fig. 9

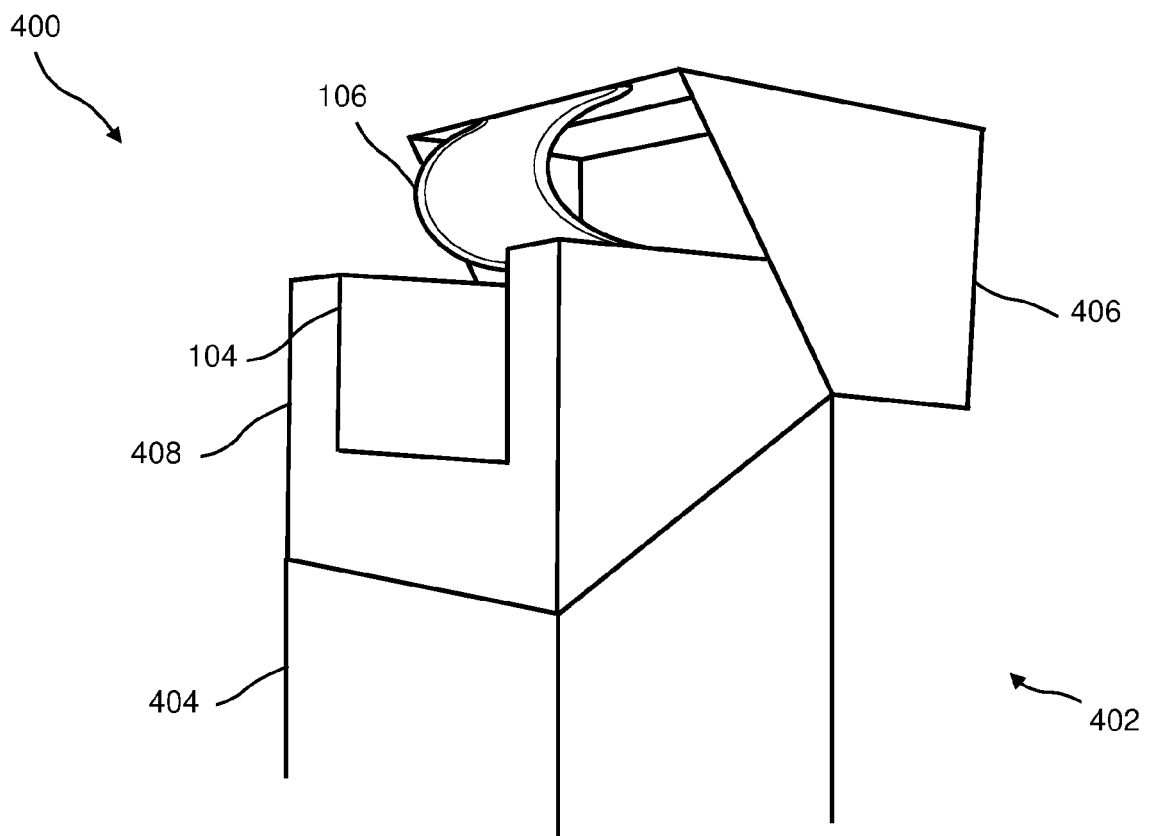


Fig. 10



EUROPEAN SEARCH REPORT

Application Number
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A	* page 9, line 35 - page 10, line 18; figure 2 *	1-14	
X	EP 0 855 354 A2 (FUJI PHOTO FILM CO LTD [JP]) 29 July 1998 (1998-07-29)	15	
A	* column 3, line 5 - line 26; figures 1, 2 *	1-14	
X	CN 208 471 143 U (DONGGUAN BOSHENG MAT CO LTD) 5 February 2019 (2019-02-05)	15	TECHNICAL FIELDS SEARCHED (IPC) B31B B65D B31D B65H
A	* paragraph [0044]; figures 1-5 *	1-14	
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 30 July 2020	Examiner Sundqvist, Stefan
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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