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(54) LABEL PROVIDED WITH INDENTATIONS

(57) A linerless label web provided with adhesive and markings as well as optional perforations (5) and/or pre-printed décor (7a, 7b) is provided. The web (1) is configured to be separated into individual labels (8a, 8b, 8c) and optionally printed. The markings are detectable by a sensor (21) in order to determine when the web (1) is in a correct longitudinal position (5) for transverse cutting for obtaining said separation. The markings comprise recesses (3a, 3b, 3c, 3d).

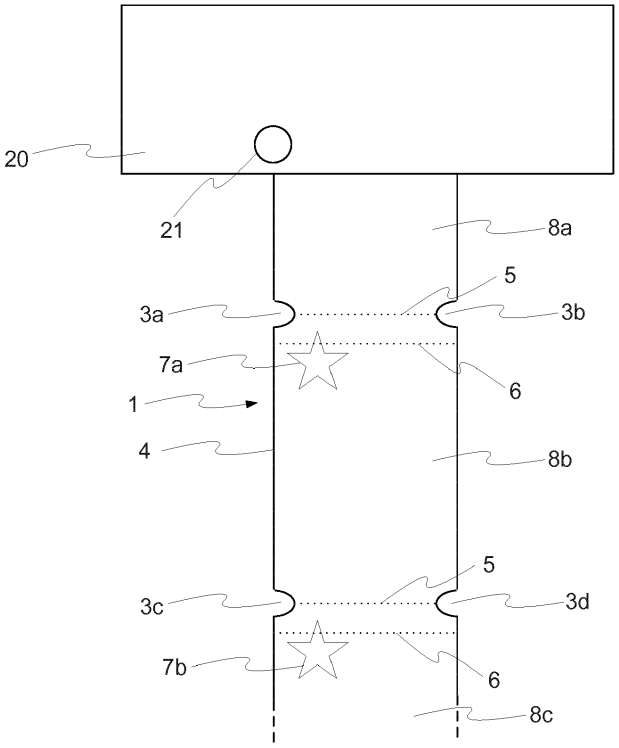

Fig. 1

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Description

TECHNICAL FIELD

[0001] The present invention relates to linerless labels, more specifically the design or shape of these labels and a method for cutting the labels.

BACKGROUND

[0002] Linerless labels, as any labels, are used in many different areas of industry e.g. logistics, food and air travel. The labels are often printed in connection to the application of the label. A part of the label may be pre-printed, e.g. decorated with a company brand or colours, and then only e.g. a date is printed in close relation to the application of the label. The label is e.g. cut by a printer, pre-perforated and separated by hand, or separated by hand on a cutting edge.

[0003] A linerless label comprises a paper web which is coated with silicon on the front, and adhesive on the backside. The linerless label does thus not comprise a backing material or release liner, from which it is punched, as a traditional label. Instead, the silicon surface on the front side serves as the backing, and prevents the layers of labels to become attached to each other when the label web is wound to a roll.

[0004] In the case of a linerless label web which is not pre-decorated or perforated, the printer may cut and/or print the web anywhere along the longitudinal extension of the web. In the case of a pre-decorated or perforated web the printer requires an indication on where to cut the label, i.e. the location in which one label ends and the next one begins in order not to destroy the decor, or to print over a perforation. The top of the decor of a previous label should not end up on the lower part of the current label. Therefore, it is important to have a reliable method to distinguish where to separate one label from another, i.e. inform the printer of the longitudinal position of the web, to get a label where the print is correctly located. Traditionally, the longitudinal position of the label web is determined e.g. by sending light through the label web which is detected on the other side of the web and analyzed. But, regarding linerless labels, this method of detecting the space between two labels on a web is not applicable, since there is no space between the labels. Therefore, another way of determining the longitudinal position is required when working with linerless labels.

[0005] Currently, a black-mark or a black-line is used to solve the problem of longitudinally locating the position of the linerless web. A photocell in the printer reads the black mark or line and - can hence deduce the longitudinal position of the web and perform printing and/or cutting of the web accordingly. However, a problem with this method is that the black mark or line is visible on the finished label if it is put on the front side of the label. It may be mistaken for information and may confuse e.g. customers buying a product equipped with the label. If, on the other hand, the black mark is put on the backside of the label, the production gets very expensive. This is due to the additional step of printing the black mark which requires a printing press and a separate process, if it is put on a label web which is otherwise not pre-printed.

[0006] From the above it is understood that there is room for improvements and the invention aims to solve or at least mitigate the above and other problems.

SUMMARY

[0007] An object of the present invention is to provide a new type of linerless label which is improved over prior art and which eliminates or at least mitigates the drawbacks discussed above. More specifically, an object of the invention is to provide a linerless label longitudinal position of which can be determined by a printer in a visually pleasing and cost effective way. These objects are achieved by the technique set forth in the appended independent claims with preferred embodiments defined in the dependent claims related thereto.

[0008] According to the invention, the above problems are solved by a linerless label having markings formed as recesses. In the rest of this application a label is understood to be a linerless label, if nothing else is expressively stated.

[0009] In a first aspect a linerless label web provided with adhesive and markings as well as optional perforations and/or pre-printed decor is provided. The web is configured to be separated into individual labels and optionally printed. The markings are detectable by a sensor to determine when the web is in a correct longitudinal position for transverse cutting for obtaining the separation. The markings comprise recesses. This web is advantageous since the markings are made without printing. They are obtained at the same time as the web is produced, i.e. no extra manufacturing steps are necessary.

[0010] In one embodiment the recesses are provided along an edge of the web. An advantage of this positioning is that it is easy to adjust the photocell in order to be aligned with the marking. Another advantage of providing the recess along the edge of the web is that holes are avoided. By making holes so called "confetti" is created. A large amount of holes create large amounts of confetti, which is cumbersome to clean out of the machinery.

[0011] In another embodiment, the recesses, or markings, are provided in the inner of the web, separate from the longitudinal edge. That position would make the web less exposed to rupture.

[0012] The web may comprise a linerless label web produced without a release liner, or label backing. Using a linerless web has many advantages, e.g. more label on a roll, no liner waste, and no transportation of unnecessary material.

[0013] In one embodiment the adhesive is hot melt adhesive or emulsion adhesive. These are both favourable adhesives for a label.

[0014] In a second aspect a method of producing a linerless label web as described above is provided. The method comprises the step of providing recesses in the web. The recesses are detectable by a sensor. An advantage of this method to put markings into the web is that it may be done in the same production line in which the rest of the web is produced. No extra production steps are needed and it is not necessary to send the web away for printing in order to produce conventional black-marks.

[0015] Preferably, the provision of the recesses is performed in the same process step as a single web is cut out from a roll of material. That has the advantage that no extra production steps are required.

[0016] The provision of recesses may be done by punching. This means the advantage of no extra production steps, since the separation is necessary anyway.

[0017] In one embodiment the recesses are provided along the edge of the web. An advantage of this positioning is that it is easy to adjust the photocell in order to be aligned with the marking. Another advantage is that no holes, and thereby no "confetti", is produced during manufacturing.

[0018] In another embodiment, the recesses, or markings, are provided in the inner of the web, separate from the edge. That would bring the advantage of making the web less exposed to rupture.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] Embodiments of the invention will be described in the following; references being made to the appended diagrammatical drawings which illustrate non-limiting examples of how the inventive concept can be reduced into practice.

Fig. 1 is a top view of a linerless label web and a printer,

Figs 2-5 are top views of alternative recess shapes,

Fig. 6 is a top view of a cropped roll of linerless labels being cut out from a roll of material, and

Fig. 7 is a flow chart describing the manufacturing steps of a linerless label web.

DETAILED DESCRIPTION

[0020] Hereinafter, certain embodiments will be described more fully with reference to the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided by way of example so that this disclosure will be thorough and complete, and will fully convey the scope of the invention, such as it is defined in the appended claims, to those skilled in the art.

[0021] In Fig. 1 a piece of a label web 1 according to one embodiment of the invention is shown. The shown piece of label web 1 is a linerless label web provided with adhesive on the entire back side of the web. Alternatively the web 1 is provided with adhesive only on certain predefined parts. The web 1 may in one embodiment be predominantly covered by adhesive. In one embodiment the web 1 is provided with a gripping edge, free from adhesive. In another embodiment the web is provided with one or more areas free from adhesive, e.g. around a perforation. The adhesive used is preferably hot melt adhesive or emulsion adhesive.

[0022] The web 1 is provided with four recesses or indentations 3a, 3b, 3c, 3d. The recesses 3a, 3b, 3c, 3d are provided at regular intervals throughout the entire length of the label web 1. The area between two lengthwise adjacent recesses 3a, 3b, 3c, 3d forms a label 8a, 8b, 8c. The recesses 3a, 3b, 3c, 3d may be provided along both, or, alternatively along only one edge of the label web 1

[0023] The labels 8b, 8c in the figure are pre-decorated with prints 7a, 7b, in this case with a star. This is of course an example; it could be a company brand or colours, or anything else. The pre-decoration is provided during the manufacturing process of the label web 1. The web 1 is then supplied to a user who will put it in a printer 20. The printer 20 will finish the label 8a, 8b, 8c by, optionally, print further information on the label, e.g. a date, a serial number, or the like. Finally, the printer 20 cuts the label 8a, 8b, 8c. For both the printing and the cutting, it is crucial that the printer 20 knows the longitudinal location of the label 8a, 8b, 8c, since the printer 20 otherwise may print or cut the web 1 in the wrong longitudinal position, which may result in part of the decor ending up on an adjacent label 8a, 8b, 8c, or the print being misplaced vis-à-vis the pre-decoration. This is symbolized in the figure by the dotted lines 6, which, as can be seen, runs right across the pre-decorations 7a, 7b. This does not only give a poor visual impression, it may also result in important information provided in the pre-decoration being lost. The correct cutting line is symbolized by the dotted line 5.

[0024] In order to inform the printer 20 of the longitudinal position of the label web 1, the printer 20 needs some kind of information regarding the longitudinal positioning. According to the invention, this information is provided by the indentations, or recesses 3a, 3b, 3c, 3d, in the label web 1. Two longitudinally separated pair of recesses 3a, 3c; 3b, 3d are shown in the figure, but corresponding pairs of recesses are provided with regular intervals over the entire length of the web 1. The printer 20 is equipped with a reader or sensor 21, e.g. a photocell, which detects the position of the indentations, e.g. by sensing when the edge line 4 of the web is broken by any of the indentations 3a, 3b, 3c, 3d. Based on the information, the printer 20 is enabled to provide printing and/or cutting at the correct longitudinal position of the web 1.

[0025] In one embodiment of the invention, the web may be pre-perforated. In such a case, the printer 20 may use the information of the longitudinal position of the web to print the label on the correct position and thereafter stop the label such that the label may be conveniently

torn by hand at the perforation.

[0026] Alternatively, when the printer 20 identifies the line 5, it perforates the label web 1 and the individual label 8a, 8b, 8c may be torn off by hand.

[0027] Another alternative is that the label 8a, 8b, 8c is pre-perforated and the task of the printer 20 is to stop the web 1 in the right longitudinal position 5 in order for the operator to tear of the label by hand.

[0028] A further possibility is that the web 1 is pre-perforated and the printer 20 uses the recesses in order to print where it is supposed to. Thus, the print is provided in a predefined area.

[0029] Yet another possibility could be to have the indentation 3a, 3b, 3c, 3d at one position, and the cut/perforation in another position, i.e. the cutting/perforation line 5 and the indication mark 3a, 3b, 3c, 3d do not necessarily have to be located on the same longitudinal level.

[0030] With reference to Figs 2-5, further possible shapes of the edge indentations/ recesses are shown. The indentations may e.g. be square 10, rounded 11, triangular 12 or shaped with a tip 13.

[0031] In Fig. 6 three partial webs 1a, 1b, 1c of labels are shown as they look during production. The manufacturing steps are further described in the flow chart in Fig. 7. The first step I of the production process is to provide a roll of material 15 with an optional pre-printed decor. Thereafter, in step II, the roll 15 is provided with a silicon layer, on top of any prints, i.e. on the front side of the finished label. Next step, III, is to provide the roll 15 with adhesive, on the rear side of the finished label.

[0032] Then, in step IV, the webs 1a, 1b, 1c are punched out from the roll 15 of material, which has a significantly larger width than the individual label webs 1a, 1b, 1c. A number of label webs 1a, 1b, 1c are thus produced at the same time, next to each other. In the punching process a slip 14 of material, dashed in the figure, between two label webs 1a, 1b, 1c are cut out and removed. This slip 14 is provided with protrusions 3 protruding into the label web 1a, 1b, 1c which are mirror images of the indentations 3a, 3b, 3c, shown in Fig. 1. In Fig. 6, the protrusions 3 and indentations 3a, 3b, 3c, 3d have rounded shapes and are located in pairs, one on each side and at the same height of the label web 1a, 1b, 1c. The markings 3a, 3b, 3c, 3d are not necessarily provided along both edges of the web 1. The use of indentations is an advantage over the use of holes as markings, since the punching of a hole in the label web "confetti" is created. Large amounts of confetti are thus produced when manufacturing labels. This is hard to remove from the machinery and causes a need for extra equipment in the form of suction or blowing, which means additional costs.

[0033] In this last manufacturing step the webs 1a, 1b and 1c may be prepared to be separated into individual labels 8, by e.g. a perforation. The dotted lines 5 in Fig. 6 show where the separations are supposed to end up. The labels 8 may either be partly separated during the manufacturing process, e.g. by a perforation, or when in use, e.g. cut by a printer 20 or by stopping the web 1a, 1b, 1c at a certain location, whereupon the label 8 may be torn off by hand. After step IV the label web 1 is finished.

[0034] Even though the number of webs 1a, 1b, 1c in Fig. 6 is three, there is no limitation regarding the number of webs 1a, 1b, 1c that may be produced from a single roll 15; that depends e.g. on the width of each label web 1a, 1b, 1c and the width of the roll 15.

[0035] In one embodiment a web of self-adhesive material to be printed is provided. The material is provided with perforations and/or pre-printed decor and markings. The web is designed to be separated into individual labels and/or being printed by a printer, said printer comprises a sensor which detects said markings to determine when the web is in the correct longitudinal position for printing and/or cutting. The markings are recesses detectable by the sensor.

[0036] It is appreciated that the inventive concept is not limited to the embodiments described above; many modifications are feasible within the scope of the invention as defined in the appended claims. For instance the are unlimited possibilities regarding the shape of the indentations and the location of the mark read by the photocell is not limited to the edge, but could be positioned somewhere along a transverse line of the label. The material of the label may be paper, plastic, metal, fibres or any other suitable material. It is also possible to combine said materials, i.e. laminates.

Claims

1. A linerless label web provided with adhesive and markings as well as optional perforations (5) and/or pre-printed decor (7a, 7b), said web (1, 1a, 1b, 1c) being configured to be separated into individual labels (8, 8a, 8b, 8c) and optionally printed, said markings being detectable by a sensor (21) to determine when the web is in a correct longitudinal position (5) for transverse cutting for obtaining said separation, **characterized in that** the markings comprise recesses (3a, 3b, 3c, 3d).

2. The web according to claim 1, wherein the recesses (3a, 3b, 3c, 3d) are provided along an edge (4) of the web (1, 1a, 1b, 1c).

3. The web according claim 1, wherein the recesses (3a, 3b, 3c, 3d) are provided in the inner of the web (1, 1a, 1b, 1c), separate from the longitudinal edge (4).

4. The web according to any of the preceding claims, wherein the web comprises a linerless label web (1, 1a, 1b, 1c), produced without a release liner.

5. The web according to any of the preceding claims,

wherein the adhesive is hot melt adhesive or emulsion adhesive.

6. A method of producing a linerless label web as claimed in claim 1, the method comprising the step of providing recesses (3a, 3b, 3c, 3d) in the web (1, 1a, 1b, 1c), wherein said recesses are detectable by a sensor (21).

7. The method according to claim 6, wherein the provision of the recesses is performed in the same process step as a single web (1, 1a, 1b, 1c) is cut out from a roll of material (15).

8. The method according to claim 6 or 7, wherein the recesses (3a, 3b, 3c, 3d) are provided along the edge of the web (1, 1a, 1b, 1c).

9. The method according to claim 6 or 7, wherein the recesses (3a, 3b, 3c) are provided in the inner of the web (1, 1a, 1b, 1c), separate from the edge (4).

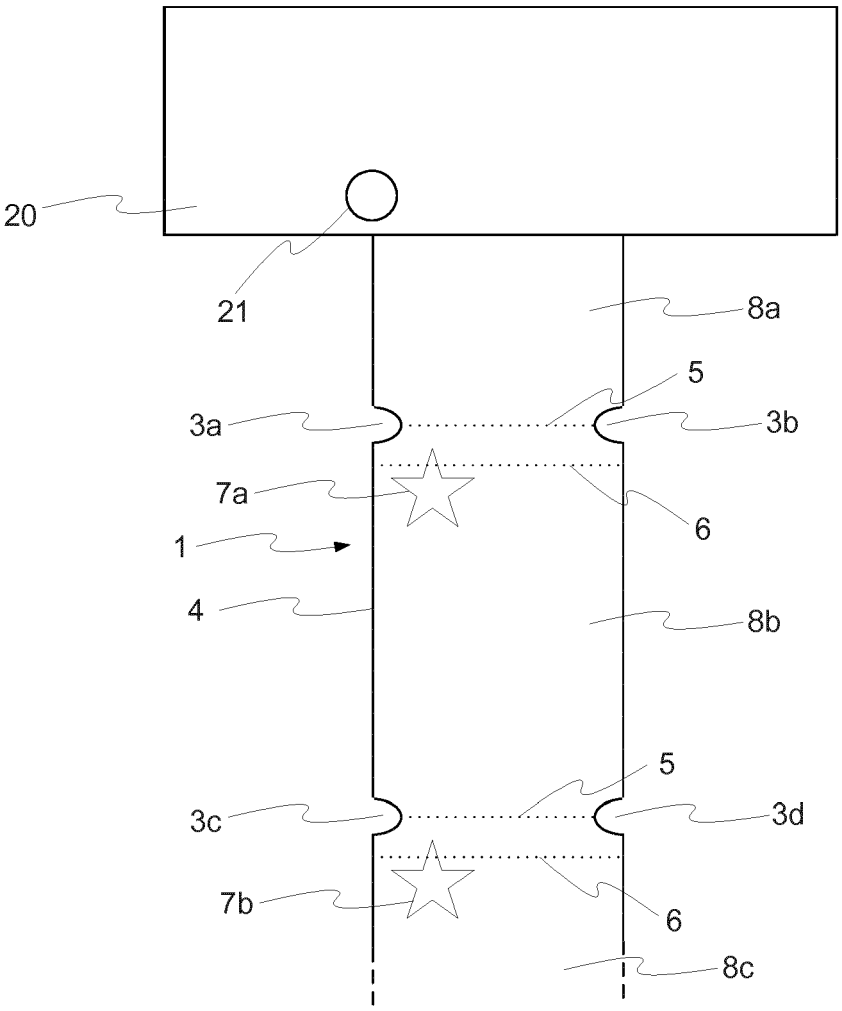

Fig. 1

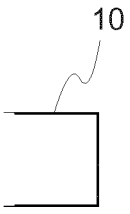

Fig. 2

Fig. 3

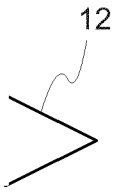

Fig. 4

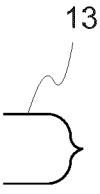

Fig. 5

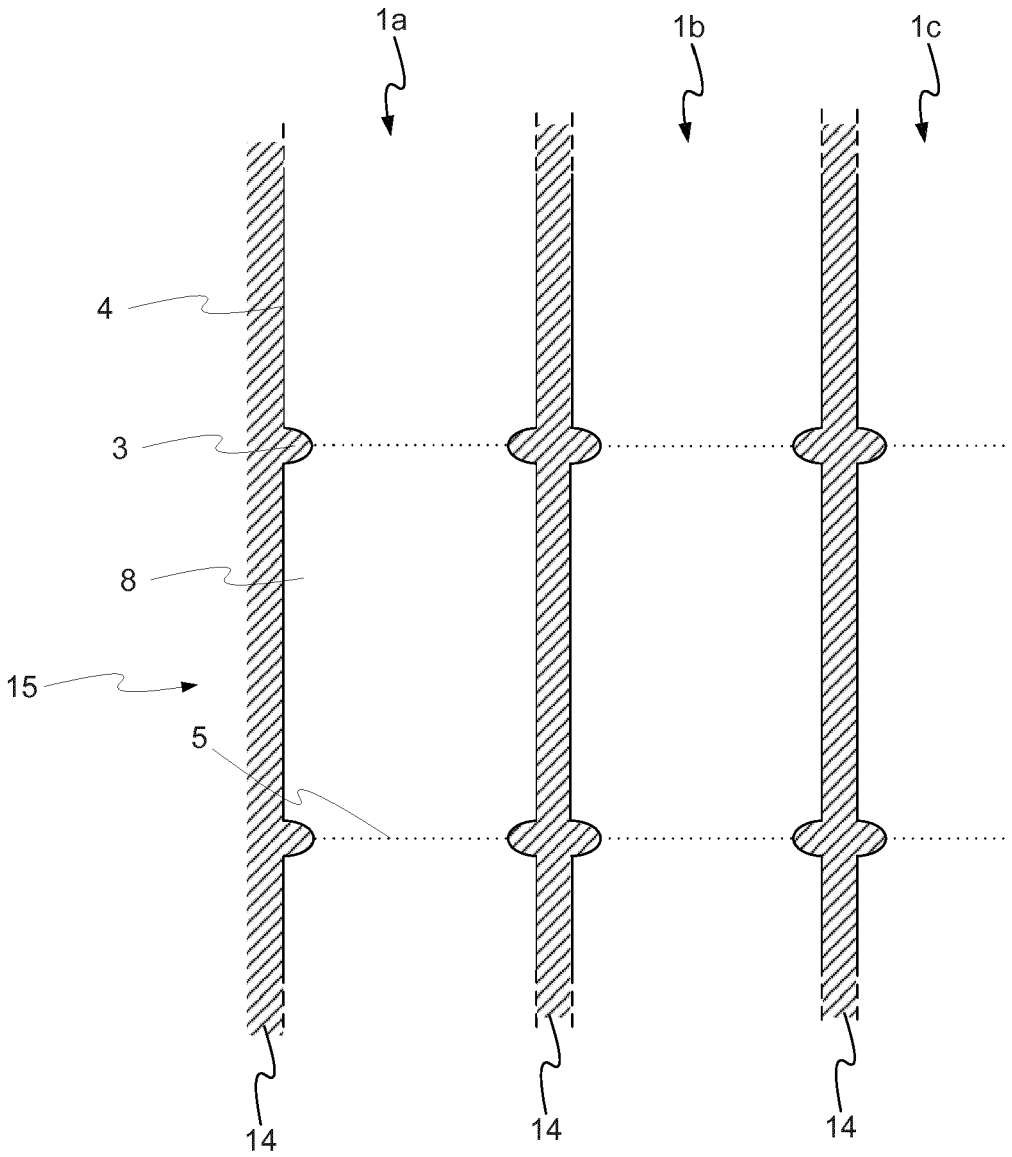

Fig. 6

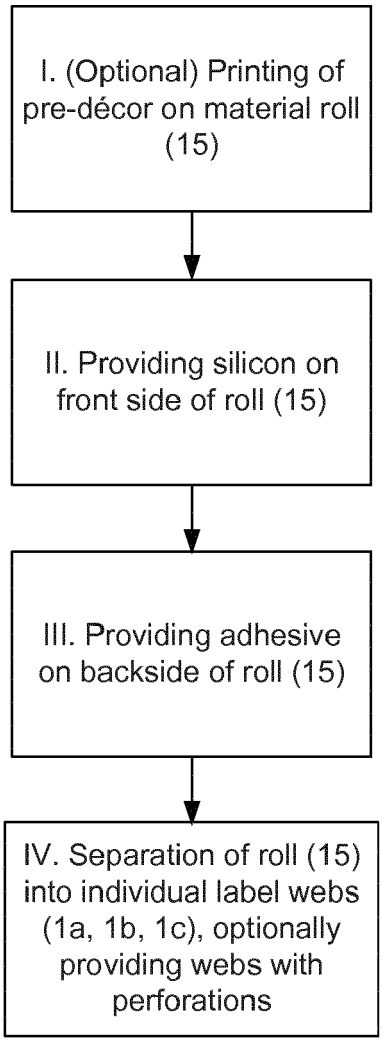
I. (Optional) Printing of pre-décor on material roll (15)
II. Providing silicon on front side of roll (15)
III. Providing adhesive on backside of roll (15)
IV. Separation of roll (15) into individual label webs (1a, 1b, 1c), optionally providing webs with perforations

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 15 19 4587

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 4 985 096 A (BEKKER-MADSEN PER [DK]) 15 January 1991 (1991-01-15) * column 3, line 32 - line 34; figures 5-11 * * column 4, line 40 - line 60 * * column 3, line 63 - line 68 * -----	1-9	INV. G09F3/02 G09F3/00 G09F3/10
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TECHNICAL FIELDS SEARCHED (IPC)

G09F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 March 2016	Demoor, Kristoffel

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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