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(54) Printable foil

(57) The invention relates to a printable foil for a flexible basis such as a cash desk conveyor belt, which foil comprises:

- a flexible layer, which is printable on a first side; and
- a glue layer arranged on the second side of the flexible layer, which glue layer is of the removable type.

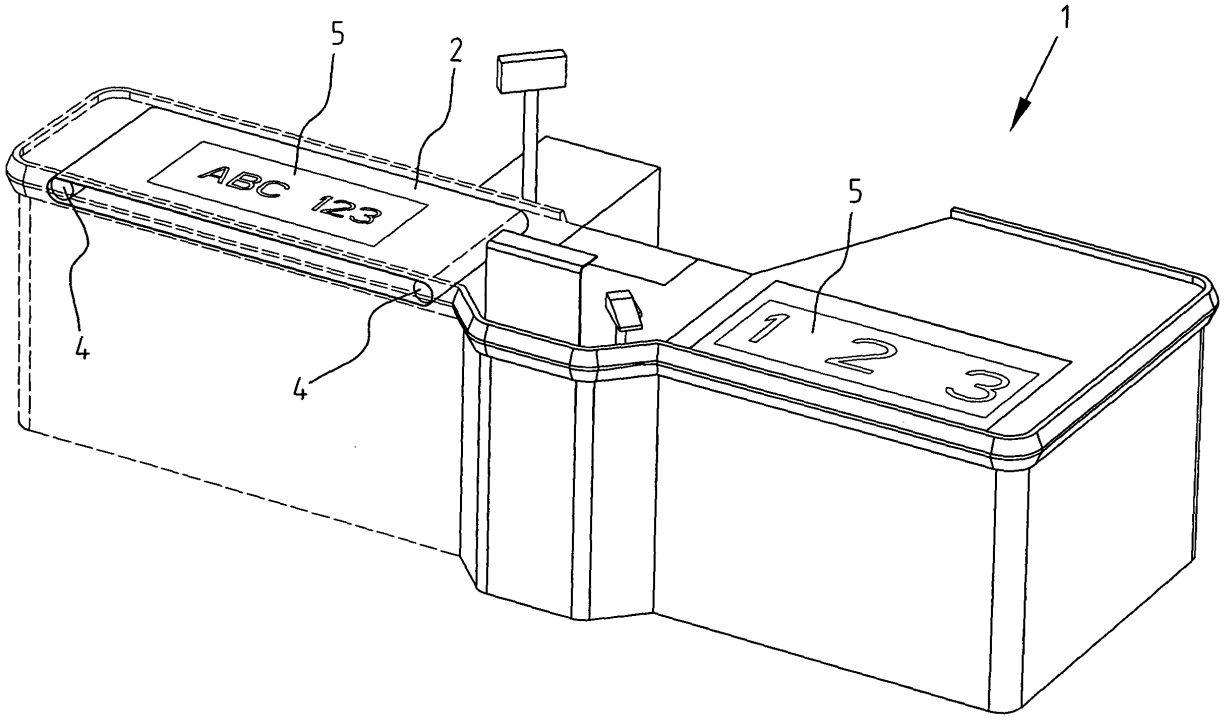

FIG. 1

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Description

[0001] The invention relates to a printable foil for a flexible basis such as a cash desk conveyor belt.

[0002] It is desired to have a means for arranging printed messages to flexible surfaces, in particular a conveyor belt of a cash desk. This enables one to arrange advertisements onto the cash desk and to exchange them for new ones. It is necessary that such a means is easily removable and does not leave behind any residue on the conveyor belt.

[0003] EP-A-1 147 057 describes a foil for arranging a printed message to a conveyor belt. This foil is provided with a number of slits, which enable the foil to bend more easily around the two pulleys of the conveyor belt. When turning around a pulley the outer side of the foil is stretched more than the inner side and the resulting tension is alleviated by providing slits into the foil. The slits however do decrease the appearance of the foil.

[0004] It is now an object of the invention to provide a printable foil which can be arranged onto a flexible basis, such as a conveyor belt of a cash desk and which printable foil is also easily removable without leaving behind any residue.

[0005] This object of the invention is reached by a printable foil, which comprises:

- a flexible layer, which is printable on a first side; and
- a glue layer arranged on the second side of the flexible layer, which glue layer is of the removable type.

[0006] Removable glues are glues, which are designed to enable an object to be glued to a surface and also to remove the object without leaving any residue behind. The flexible layer absorbs the differences in length on the outside and on the inside of the layer when the layer goes around a pulley.

[0007] Preferably the removable type glue layer has a glass temperature above -30°C, more preferably above -20°C. In a very preferred embodiment of the foil according to the invention, the glue is with a base of styrene acrylate. Although glues with a base of styrene acrylate are commonly used as a coating in the textile industry, it has proven to be a very good removable type glue suitable for the invention.

[0008] Preferably the glue with a base of styrene acrylate has a glass temperature of about -16°C.

[0009] In yet another embodiment of the foil according to the invention, the flexible layer has a tensile elongation of 400% or higher. With such a flexibility the length difference, when going around a pulley can be absorbed in an efficient way without providing too much stress on the glue layer and the attachment to the flexible basis.

[0010] Preferably the flexible layer is a polyurethane foil having preferably a tensile elongation of 500% or higher. A polyurethane foil has the advantage polyurethane foil can be printed, possibly after a special treatment to increase the printability a high flexibility.

[0011] The invention also relates to a method for producing a printable foil according to the invention, which method comprises the steps:

- providing a flexible layer arranged on a non-stretchable carrier layer;
- arranging a glue layer by a dispersion method;
- covering the glue layer with a cover foil;
- removing the carrier layer.

[0012] Removable type glue layers are generally arranged in a solid state to a surface of an object to be adhered to another object. The attachment of the glue layer to the object is provided by the adherence of the glue itself and providing sufficient pressure. However there is still a risk that the glue will detach from the object. This will especially occur with glue types having a high glass temperature.

[0013] Now by using a dispersion method the glue is able to penetrate the flexible layer providing a high degree of attachment of the glue layer to the flexible layer. This reduces the risk of detachment of the glue layer from the flexible layer when the printable foil is removed from a surface.

[0014] Preferably the cover foil comprises a silicone layer in contact with the glue layer. A silicon layer provides protection for the glue layer and is easily removable from any glue layer.

[0015] Finally, the invention relates to a method for arranging a printable foil manufactured according to the method for producing according to the invention. This method for arranging a printable foil comprises the steps:

- arranging a transfer foil on the printable foil, opposite of the glue layer;
- removing the cover foil;
- arranging the printable foil with the transfer foil onto a flexible basis such as a cash desk conveyor belt; and
- removing the transfer foil.

[0016] By using a transfer foil it is assured that the flexible layer with the glue layer will not stretch in any direction when the printable foil is arranged onto a surface. Only after the foil is arranged to a surface the transfer foil can be removed and the printable foil will be arranged without any distortion.

[0017] Printing of the surface of the printable foil is performed before arranging the transfer foil.

[0018] These and other advantages of the invention will be elucidated in conjunction with the accompanying drawings.

[0019] Figure 1 shows a cash desk with conveyor belts on which a printable foil according to the invention is arranged.

[0020] Figures 2-14 show a method for producing a printable foil according to the invention and arranging the printable foil onto a conveyor belt of a cash desk as shown

in figure 1.

[0021] Figure 1 shows a cash desk 1 having a first conveyor belt 2 and a second conveyor belt 5. On the first conveyor belt 2 a printable foil 3 is arranged. The conveyor belt is an endless belt which is guided along the pulleys 4.

[0022] In figure 2 the first step of a method for producing and arranging a printable foil according to the invention is shown. First of all a flexible foil 5 is provided, which is supported on a non-stretchable carrier layer 6. The flexible layer 5 is preferably a polyurethane layer.

[0023] Then, as shown in figure 4 a dispersion of removable type glue 7 is provided on the flexible layer 5. After drying the dispersion 7 a glue layer 8 is formed on the flexible layer 5.

[0024] Then a silicone foil 9 is put on top of the glue layer 8 to protect the glue layer 8 from being damaged. In figure 6 the complete build up of layers is shown. On a carrier layer 6 the polyurethane flexible layer 5 is arranged which is covered by a glue layer 8 which is in turn protected by a silicone cover layer 9. Now only the carrier layer 6 has to be removed (figure 8) to have a printable foil ready to be printed and to be arranged onto a conveyor belt 3 of a cash desk 1.

[0025] In figure 9 a symbolic way of printing of the foil 5 is shown by way of a stamp 10. Of course any suitable method of printing of the flexible polyurethane layer 5 can be used. As shown in detail in figure 10 the glue layer 8 and the cover layer 9 are still present on the flexible layer 5 when it is being printed.

[0026] After printing, the printed side of the flexible layer 5 is covered by a transfer foil 11. With this transfer foil 11 the flexible layer 5 can be transported to the conveyor belt 3 and be arranged thereon. After the removal of the silicone cover layer 9 the flexible layer 5 is adhered to the conveyor belt 3 and the transfer foil 11 is removed (see figure 13). This results in a conveyor belt 3, as shown in figure 14 and in figure 1 having a printed flexible foil 5 arranged thereto.

[0027] Due to the removable type glue the printed foil can also easily be removed without leaving behind any residue.

Claims

1. Printable foil for a flexible basis such as a cash desk conveyor belt, which foil comprises:

   - a flexible layer, which is printable on a first side; and
   - a glue layer arranged on the second side of the flexible layer, which glue layer is of the removable type.

2. Foil according to claim 1, wherein the removable type glue layer has a glass temperature above -30°C, more preferably above -20°C.

3. Foil according to claim 1 or 2, wherein the glue is with a base of styrene acrylate.

4. Foil according to claim 3, wherein the glue has a glass temperature of about -16°C.

5. Foil according to any of the preceding claims, wherein the flexible layer has a tensile elongation of 400% or higher.

6. Foil according to any of the preceding claims, wherein the flexible layer is a polyurethane foil.

7. Foil according to claim 5, wherein the polyurethane foil has a tensile elongation of 500% or higher.

8. Method for producing a printable foil according any of the preceding claims, which method comprises the steps:

   - providing a flexible layer arranged on a non-stretchable carrier layer;
   - arranging a glue layer by a dispersion method;
   - covering the glue layer with a cover foil;
   - removing the carrier layer.

9. Method according to claim 8, wherein the cover foil comprises a silicone layer in contact with the glue layer.

10. Method for arranging a printable foil manufactured according to claim 8 or 9, comprising the steps:

    - arranging a transfer foil on the printable foil, opposite of the glue layer;
    - removing the cover foil;
    - arranging the printable foil with the transfer foil onto a flexible basis such as a cash desk conveyor belt; and
    - removing the transfer foil.

11. Method according to claim 10, comprising the step of printing the surface of the printable foil before arranging the transfer foil.

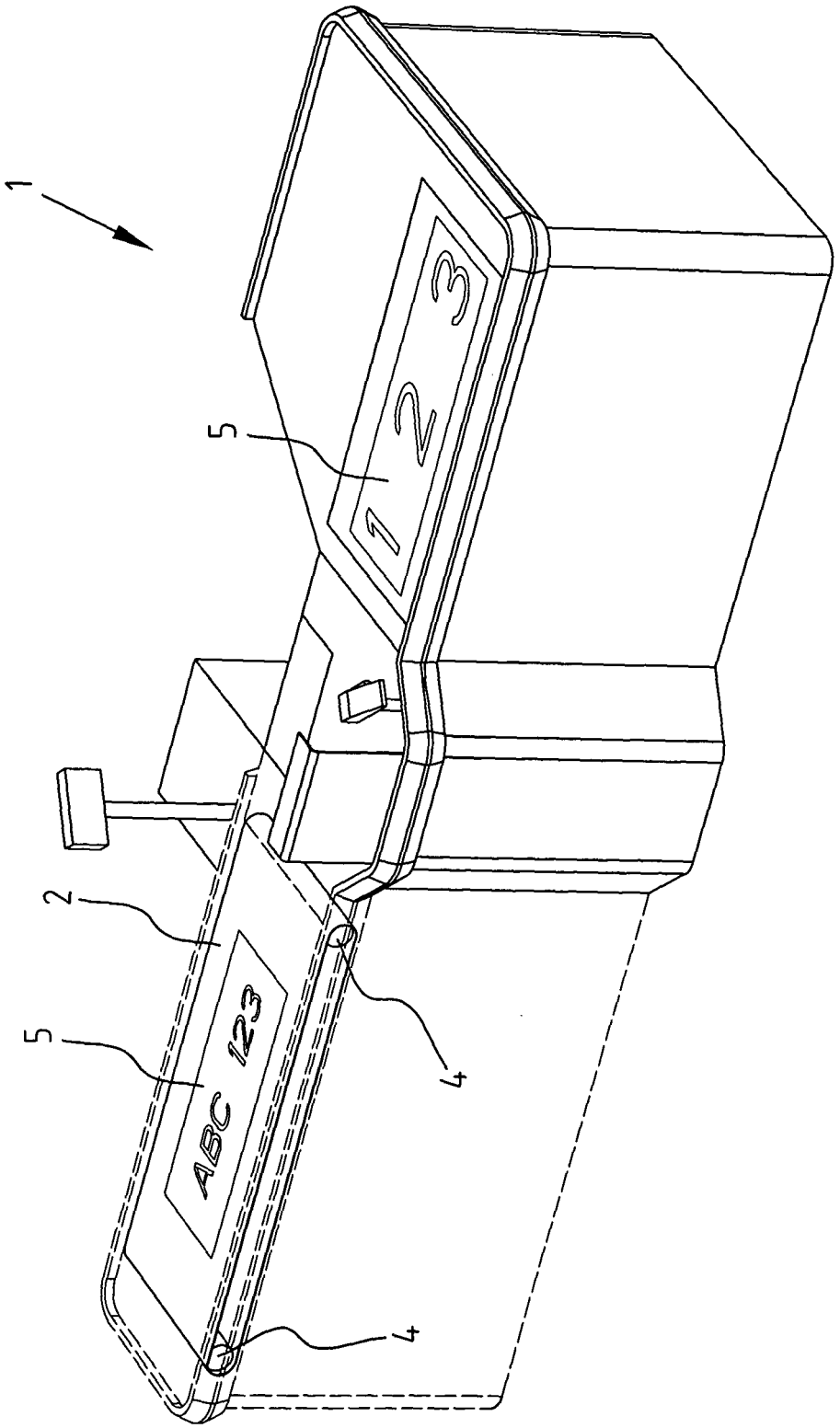

FIG. 1

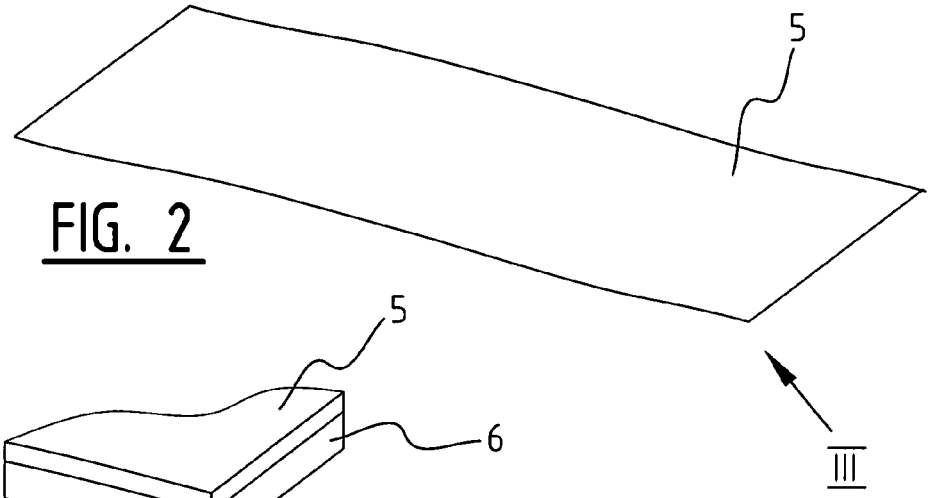

FIG. 2

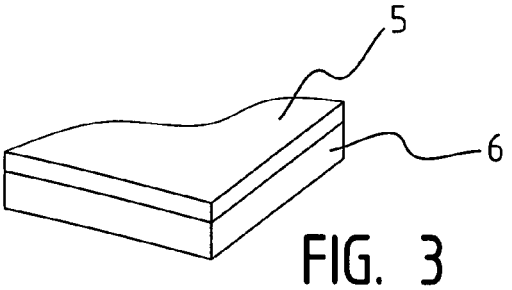

FIG. 3

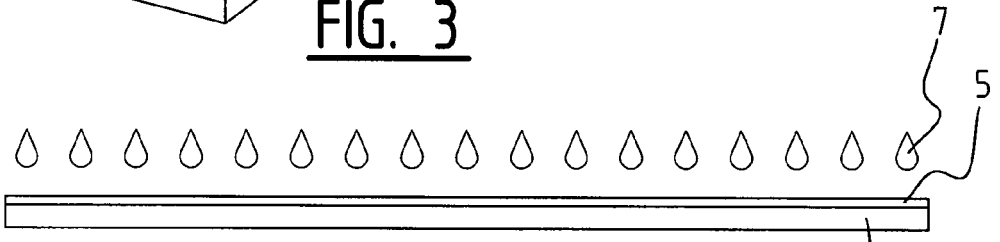

FIG. 4

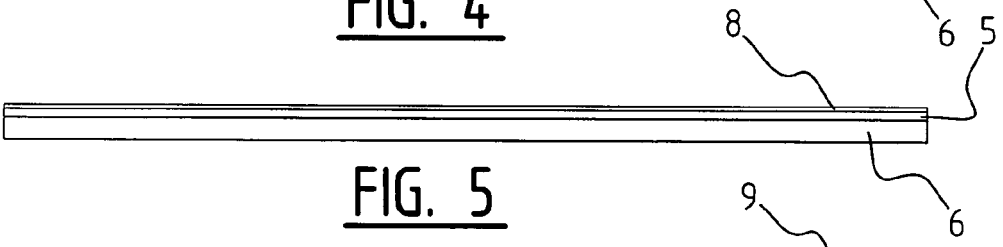

FIG. 5

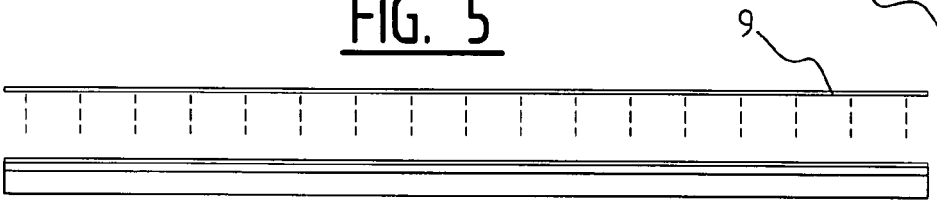

FIG. 6

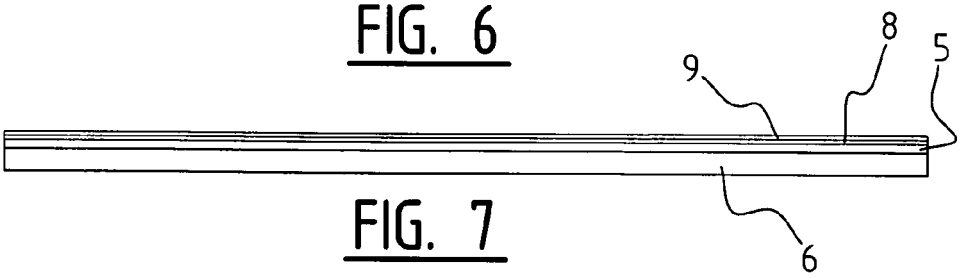

FIG. 7

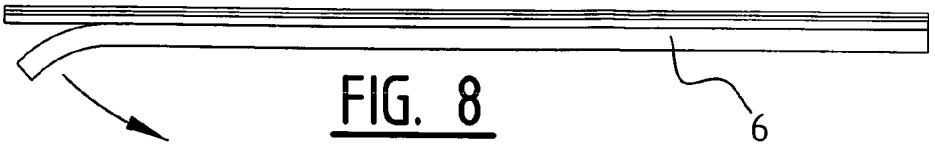

FIG. 8

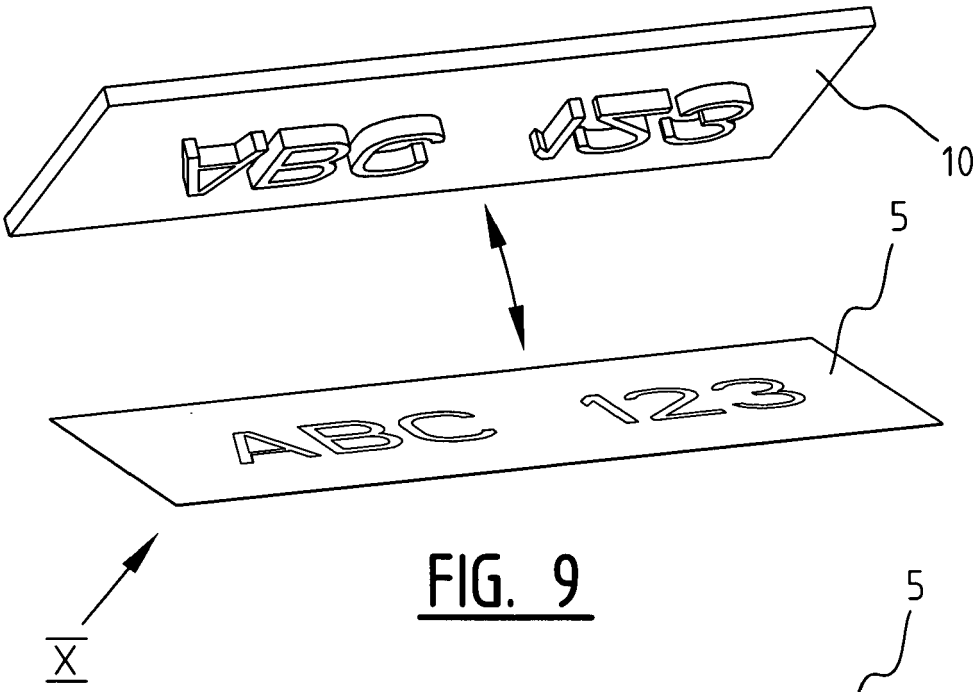

FIG. 9

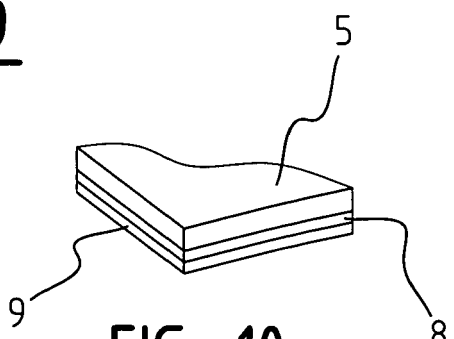

FIG. 10

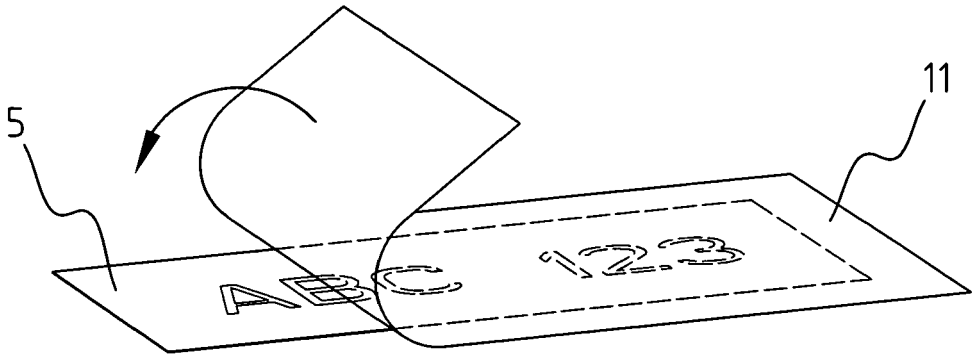

FIG. 11

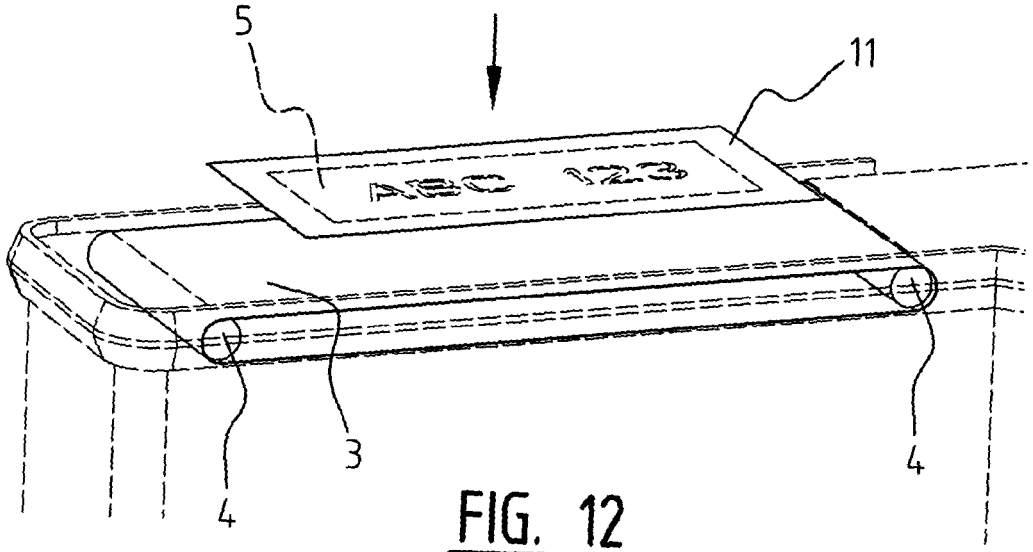

FIG. 12

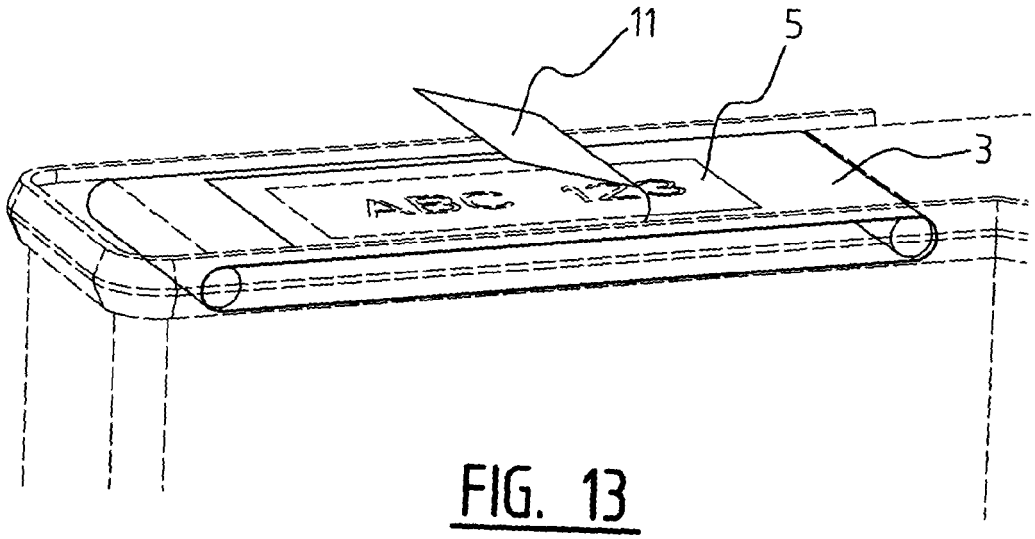

FIG. 13

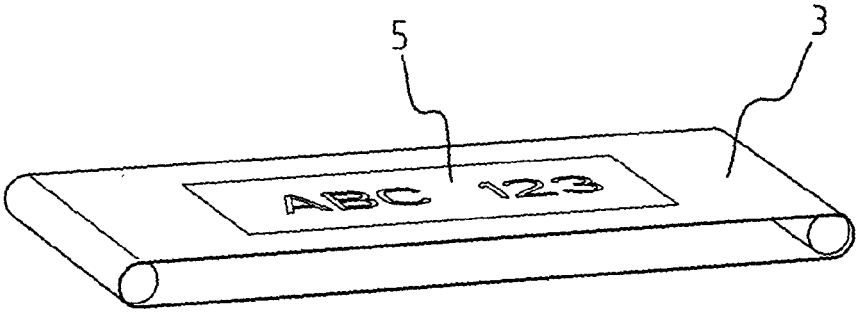

FIG. 14

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	5 June 2007	Schambeck, Werner

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