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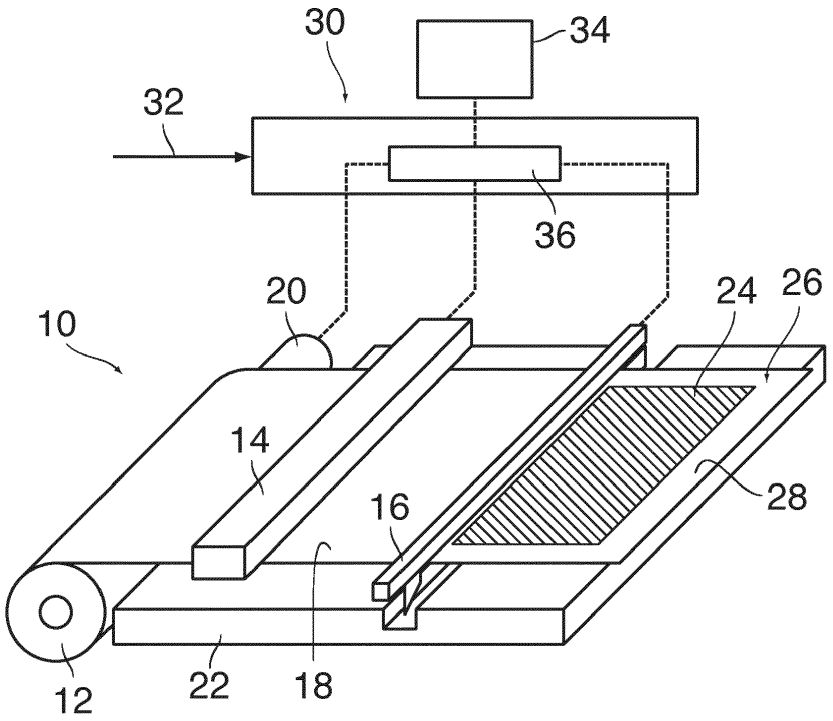
(54) **PRINT CONTROLLER**

(57) A print controller (30) for a printer (10) having a supply roll (12) for a web (18) of a recording medium, a print engine (14) arranged to print onto the web (18) and a cutter (16) for cutting the web, the print controller being characterized by comprising a cut command attribute processor (36) arranged to translate attributes contained in a cut command into actions to be performed by the print engine (14) and the cutter (16).

Fig. 1



EP 3 450 187 A1

Description

[0001] The invention relates to a print controller for a printer having a supply roll for a web of a recording medium, a print engine arranged to print a number of images onto the web, and a cutter for cutting the web.

[0002] A printer to which the invention is applicable may be a roll-to-roll printer or a roll-to-sheet printer wherein the recording medium is withdrawn from the supply roll in the form of an endless web and is moved past the print engine where one or more images are formed on the web. Thereafter, a cut command is issued for causing the cutter to cut the web so as to separate the recording medium that carries the printed images from the blank web on the supply roll.

[0003] It is an object of the invention to provide more flexibility in a print processing workflow.

[0004] In order to achieve this object, the print controller according to the invention is characterized by comprising a cut command attribute processor arranged to translate attributes contained in a cut command into actions to be performed by the print engine and the cutter, wherein the actions to be performed by the print engine comprise printing of printable objects to be printed on the recording medium that will be cut off from the web by means of the cutter, the printable objects being located outside of the images.

[0005] Thus, the print controller according to the invention is capable of handling cut commands that are accompanied by certain attributes that specify certain actions that shall be taken by the print engine and/or the cutter at the time when the web is to be cut or immediately before that time. Such attributes may specify not only the position of the cut line relative to the printed images but may also specify certain printable objects that do not form part of the printed images as specified in the print job but are to be printed, in addition to these images, onto the recording medium that will then be separated from the blank web by means of the cutter.

[0006] This has the advantage that the trailing edge of the sheet or web that is separated from the blank web on the supply roll may be used for conveying useful information to any entity that will be in charge of the further processing of the printed products. For example, the information specified by the cut command attributes may comprise finishing instructions specifying a finishing method or finishing parameters to be applied to the print product or metadata of the print job or images to be printed. In this way, the invention offers the possibility to separate the print process from the finishing process, i.e. to allocate the tasks of printing and finishing to independent entities which may even be remote from one another, and nevertheless assure that the entity in charge of the finishing process receives the required information. Since the information is printed directly on the web or sheet to be processed, the risk that the information gets lost or is assigned to the wrong print product is minimized. If the printer is a roll-to-roll printer wherein the web carrying the printed images is wound onto another roll, the information specified by the cut command attributes will be printed on the outermost layer of the roll so that it is readily visible.

[0007] This is particularly advantageous if for example a print job being printed is to be interrupted, for example to print a rush job. The already printed part of the job will necessarily be separated from the still to be printed part of the job with the additional risk of also becoming separated from any metadata of the job such as order information and instructions on further processing operations such as finishing operations. The effects of the latter separation is mitigated by the present invention by printing the necessary metadata as soon as the printer operator issues an interrupt or cut command in order to be able to start processing the rush job.

[0008] The cut command and its attributes may form part of a job specification that is sent to the print controller. However, it is also possible that the job command attributes are created or edited locally, e.g. by an operator of the printer.

[0009] More specific optional features of the invention are indicated in the dependent claims.

[0010] An embodiment example will now be described in conjunction with the drawings, wherein:

Fig. 1 is a schematic view of a printer and a print controller according to the invention;

Fig. 2 is a view of a roll-to-roll printer having just executed a cut command that was accompanied by cut command attributes in accordance with the invention; and

Fig. 3 is an example of a dialog for editing a cut command for a print controller according to the invention.

[0011] As is shown in Fig. 1, a printer 10 has a media supply roll 12, a print engine 14, and a cutter 16. The supply roll 12 stores a web 18 of a recording medium and is associated with a feed system 20 having a motor for rotating the supply roll 12, thereby to pay out the web 18 onto a print surface 22 of the printer. As the web moves past the print engine 14, the print engine may be activated to print an image 24 onto the web of recording medium. In this specific example, the print engine 14 is an ink jet print head having a web-wide print head. When the image 24 has been formed and the web 18 has been advanced so far that the trailing edge of the image reaches the position of the cutter 16, the cutter is activated so as to separate a print product 26, which in this case takes the form of a media sheet 28 carrying the image 24, from the rest of the web 18.

[0012] It is noted that the cutter 16 may not necessarily be operated after each printed image 24, but may -in some cases- be operated after a number of images 24 have been printed that together form a batch of images,

for example because all images in the batch belong to the same order, or are to be further processed by the same operator, or are to be subjected to similar finishing operations, etc.

[0013] A print controller 30, constituted by an electronic data processing system, is arranged to control the feed system 20, the print engine 14 and the cutter 16 on the basis of print job specifications that are received in the form of electronic job files via an input 32. The print controller 30 has a user interface 34, e.g. in the form of a touch screen or a monitor screen, a keyboard and a mouse, permitting a user or operator to edit the print jobs as long as they are stored in the print controller 30 and have not yet been processed.

[0014] A print job may comprise a plurality of images 24 which may be printed onto a common sheet 28 or on separate sheets, depending upon the job specifications. In any case, when a job has been completed, a cut command will cause the cutter 16 to cut the web in order to separate the last one of the completed print products 26 from the web 18. The cut command may be included in the job file, may be generated automatically in the print controller 30, or may be generated by a manual command by the printer operator.

[0015] According to the invention, the print controller 30 is capable of handling, and possibly creating, cut commands that include certain attributes relating to the position where the web 18 is to be cut and to printable objects that do not form part of the printed images 24 but are associated with the cut command. To this end, the print controller 30 includes a cut command attribute processor 36 that may be constituted by a software module in the control software of the print processor and is capable of translating the cut command attributes into actions to be performed by the cutter 16, the print engine 14 and, as the case may be, by the feed system 20. These actions may comprise for example:

- adding some pre-defined notes such as a timestamp, an image name, a media type, a finishing type and the like, on the print product 26;
- adding some free (i.e. not pre-defined) notes as specified by the user or operator;
- adding a blank margin between the trailing edge of the last-printed image 24 and the cut line where the web 18 is cut by the cutter 16;
- printing a pre-defined header on the margin at the trailing end of the print product 26;
- printing separation lines or grids on the recording medium constituting the print product 26 in order to assist further processing or finishing of the print products;
- printing thumbnails on the margin in order to give an overview over the contents of the print product.

[0016] The cut commands including the above-mentioned attributes may be included in the job files and/or may be created or edited by an operator or user by means of the user interface 34. In the latter case, the cut command attributes may be changed up to the very moment when the cutter 16 is activated. In order to enable the print engine 14 to print onto the part of the recording medium that will be separated from the web 18, it may be necessary to activate the feed system 20 for withdrawing the web in the reverse direction (the direction opposite to the regular advance direction) until the part of the recording medium where the printable objects are to be printed is located underneath the print engine 14. Thereafter, the web will be advanced in forward direction again until the intended cut line reaches the position of the cutter 16.

[0017] It will be understood that, if a print job specifies that the print product 26 shall comprise a plurality of separate sheets 28, so that several cut commands have to be issued within one and the same print job, these cut commands may also have attributes of the type indicated above.

[0018] Fig. 2 shows an example of a printer 10' which is configured as a roll-to-roll printer and comprises a take-up roll 38 on which a print product 26', which takes the form of an endless web carrying the printed images 24, may be wound-up. The printer 10' is controlled by a print controller which has basically the same functions as the print controller 30 described above. In the example shown, the print product 26' has a plurality of printed images 24, 24a of different sizes, and the cut command attributes have specified that some printable objects are printed on a margin 40 between a trailing edge of the last-printed images 24a and a cut line where, in the situation shown in Fig. 2, the cutter 16 is just about to cut the web 18. In the example shown, the printable objects comprise thumbnails 42 of the printed images 24, 24a, some related text notes 44, and a header 46. Another cut command attribute has specified that a separation line 48 shall be printed in order to visually separate the larger image 24 from the smaller images 24a. For example, such a separation line may specify the position of a cut line or a fold line for a later finishing process. Furthermore, a separator line may optionally be printed (not shown) to visually separate the printed images 24, 24a from the printable objects 42, 44, 46.

[0019] Fig. 3 shows an example of a dialog 50 that may be displayed on the screen of the user interface 34 of the print controller and permits the user or operator to create or edit attributes of a cut command ("Configurable cut").

[0020] Some of the attributes are represented by check boxes 52 which, when checked, are translated by the attribute processor 36 into commands for printing pre-defined notes on the margin 40. In the example shown the notes comprise a timestamp, an image name, a media type, and a finishing type.

[0021] Another attribute is represented by a text field 54 permitting the user to enter free text that will then be printed on the margin 40. Optionally, the position where this text will be printed on the margin may also be specified.

[0022] Another attribute is represented by a check box 56 causing the attribute processor to activate the feed system 20 for forming the margin 40 between the images 24a and the cut line. The desired width of the margin may be entered in a field 58. If no other attributes are checked, the margin 40 will be left blank. Otherwise it will carry the printable objects specified by the other attributes. Furthermore, the blank margin 40 may be an additional margin, being added in addition to the space needed for the printable objects.

[0023] Yet another set of attributes are represented by check boxes 60 causing the attribute processor 36 to print the thumbnails 42 and/or the header 46 on the margin 40 and/or to print the separation line 48 or a grid (of transverse and longitudinal separation lines) on the recording medium constituting the print product 26'.

[0024] A preview area in the bottom part of the dialogue 50 shows how the printable objects, as specified by the checked attributes, will appear on the margin 40. In the example shown, these objects comprise a timestamp 62, a note 64, and the thumbnails 42.

[0025] A dialog 50 may be presented in advance and the results stored with the print job in order to be able to automatically perform cutting after a print job has completed. Alternatively or additionally, the dialog 50 is shown as soon as the printer operator issues an interrupt command to interrupt processing the current job, or when he issues a manual cut command.

[0026] The editing operation is completed by clicking on an "OK" button 68.

Claims

1. A print controller (30) for a printer (10; 10') having a supply roll (12) for a web (18) of a recording medium, a print engine (14) arranged to print a number of images (24, 24a) onto the web (18) and a cutter (16) for cutting the web, the print controller being **characterized by** comprising a cut command attribute processor (36) arranged to translate attributes contained in a cut command into actions to be performed by the print engine (14) and the cutter (16), wherein the actions to be performed by the print engine comprise printing of printable objects (42, 44, 46, 48) to be printed on the recording medium that will be cut off from the web (18) by means of the cutter (16), the printable objects being located outside of the images (24, 24a).

2. The print controller according to claim 1, wherein the cut command attribute processor (36) is arranged to control a feed system (20) for moving the web (18) in a forward direction, preferably in both, a forward direction and a reverse direction, relative to the print engine (14) and the cutter (16).

3. The print controller according to claim 1 or 2, comprising a user interface (34) configured to create and/or edit cut command attributes.

4. A printing system comprising a printer (10; 10') having a supply roll (12) for a web (18) of a recording medium, a print engine (14) arranged to print onto the web (18), and a cutter (16) for cutting the web, **characterized by** a print controller (30) according to any of the claims 1 to 3.

5. A method of cutting a web (18) of a recording medium on which a number of images (24, 24a) have been printed by a printer (10; 10') comprising a feed system (20) for feeding the web (18), a print engine (14) and a cutter (16), the method comprising the steps of:

   - providing a cut command which has attributes specifying at least one of a margin (40) between a trailing edge of the images (24, 24a) and a cut line where the cutter (16) cuts the web, and printable objects (42, 44, 46, 48) to be printed onto a recording medium that will be cut off from the web (18) by means of the cutter (16), the printable objects being located outside of the images (24, 24a); and
   - translating the cut command attributes into actions to be performed by the printer (10; 10'), and controlling the printer to perform these actions.

6. The method according to claim 5, wherein the cut command attributes comprise an attribute specifying a width of the margin (40) between the trailing edge of the images (24, 24a) and the cut line.

7. The method according to claim 5 or 6, wherein the printable objects comprise at least one of the text object to be printed on the margin (40); an image object to be printed on the margin (40), and a separation line (48) or grid separating the images (24, 24a) on the recording medium.

8. A software product comprising program code on a computer-readable non-transitory medium, said program code, when loaded into a print controller (30) according to claim 1, causes the print controller to perform the method according to any of the claims 5 to 7.

Fig. 1

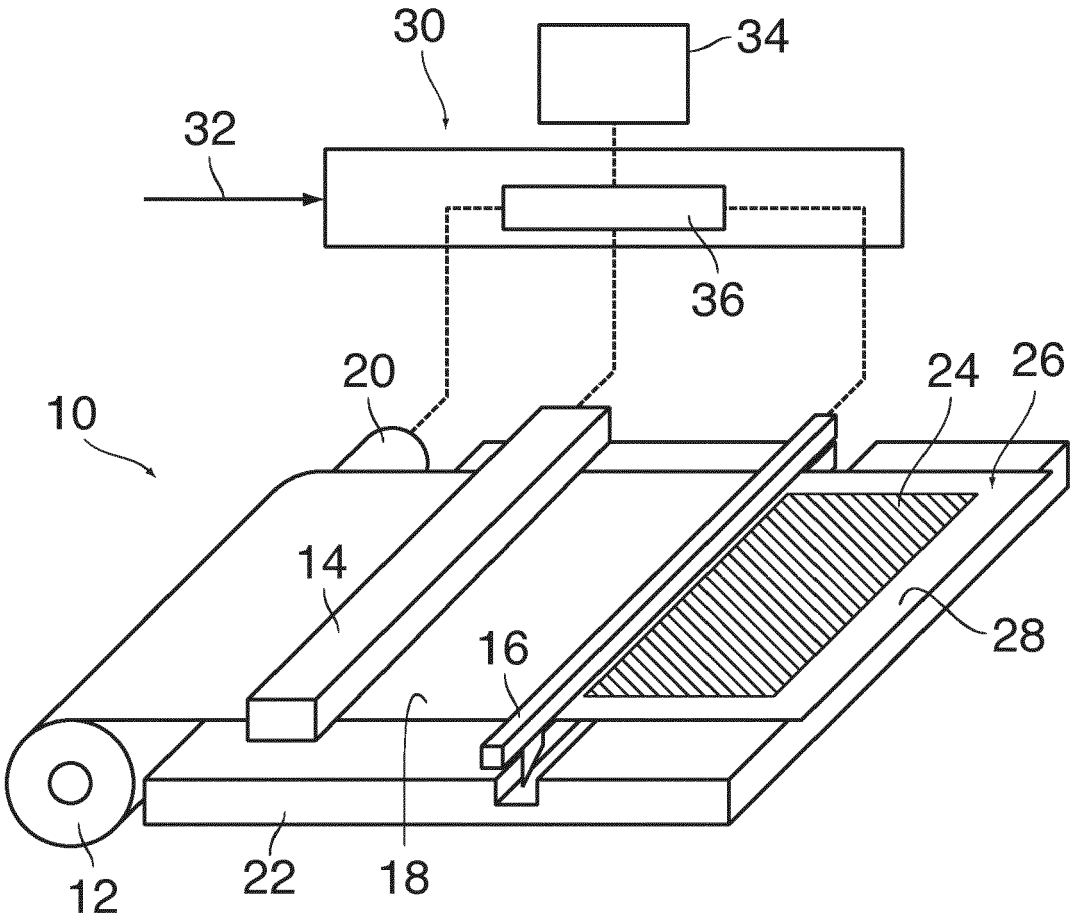

30
34
32
36
20
24
26
10
14
28
16
12
22
18

Fig. 2

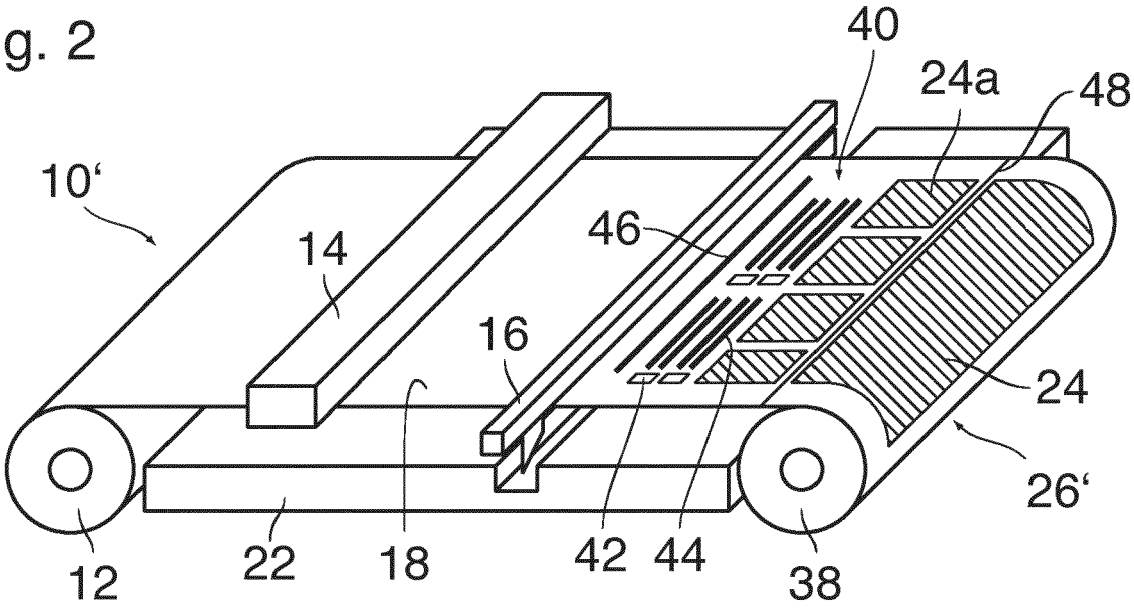
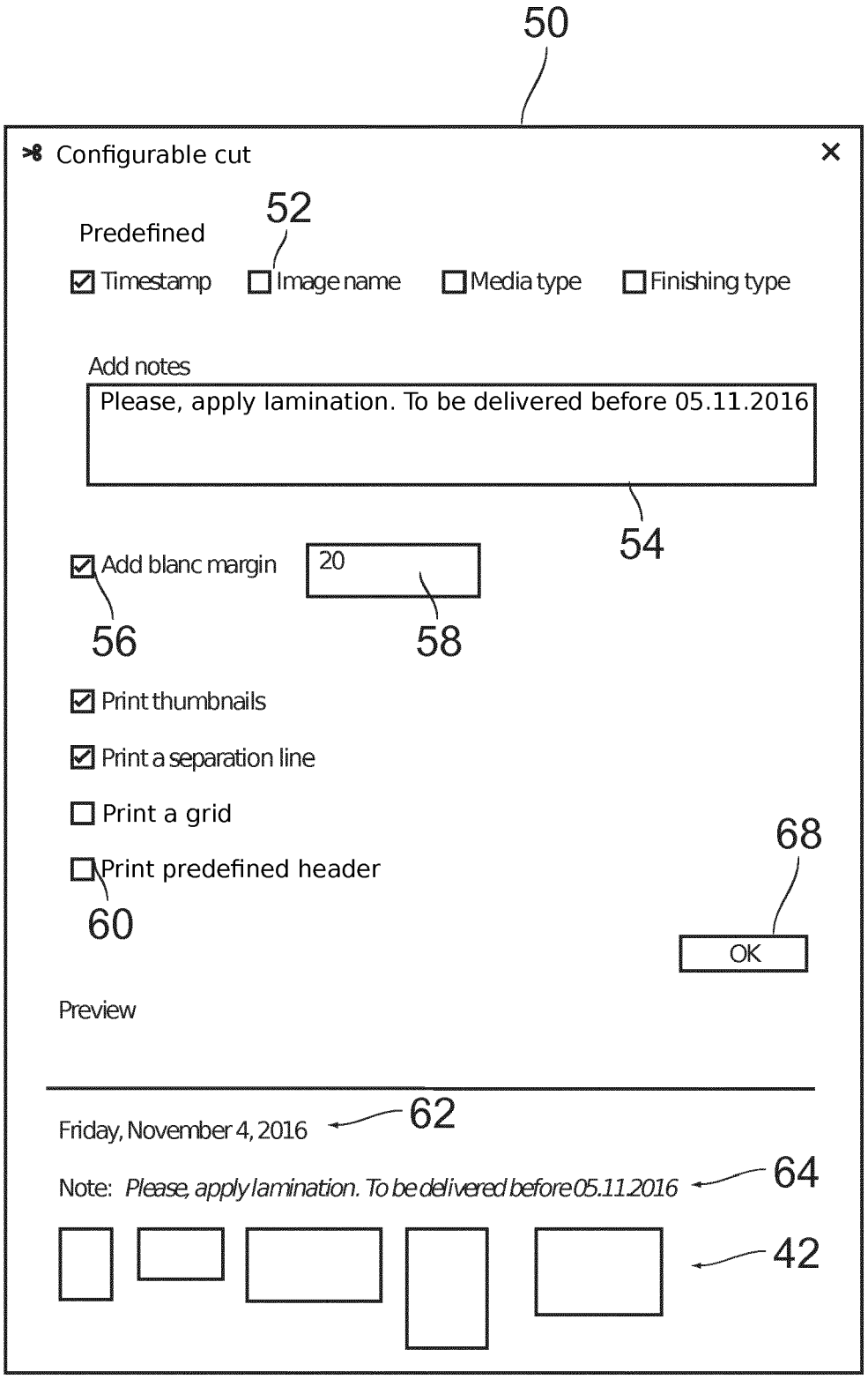

40
24a
48
10‘
46
14
16
24
26‘
12
22
18
42
44
38

Fig. 3


50
Configurable cut
52
Predefined
Timestamp
Image name
Media type
Finishing type
Add notes
Please, apply lamination. To be delivered before 05.11.2016
54
Add blanc margin
20
56
58
Print thumbnails
Print a separation line
Print a grid
Print predefined header
60
68
OK
Preview
Friday, November 4, 2016
62
Note: Please, apply lamination. To be delivered before 05.11.2016
64
42

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EUROPEAN SEARCH REPORT

Application Number
EP 18 19 0362

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X	US 9 120 330 B1 (NAKAMURA KENICHI [JP]) 1 September 2015 (2015-09-01)	5-7	
A	* column 3, line 16 - column 4, line 7; claims 1-7; figure 2 * * column 5, line 25 - line 62 * * column 9, line 1 - line 40 *	1-4,8	
A	US 5 823 692 A (TOLRUD MICHAEL R [US] ET AL) 20 October 1998 (1998-10-20) * column 2, line 52 - column 4, line 56; figure 2 *	1-8	
			TECHNICAL FIELDS SEARCHED (IPC) B41J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 January 2019	Gaubinger, Bernhard

CATEGORY OF CITED DOCUMENTS

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15-01-2019

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