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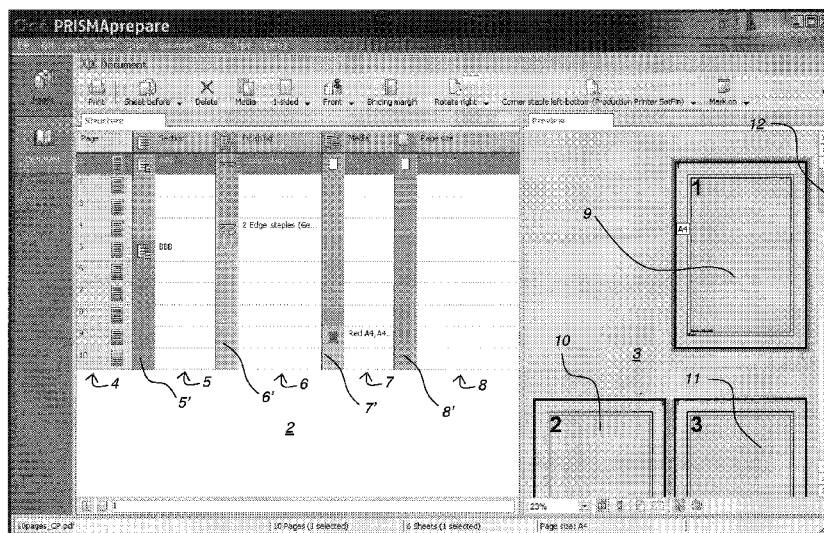


Fig. 2

(57) Abstract: The present invention relates to a method of inserting a page or a group of pages in a digital document, wherein at least one of the properties or attributes of the inserted page or pages are automatically redefined to be identical to those of the currently adjacent document pages. If the selected page or pages is/are moved to a location between two pages having different properties or attributes, the user operating the inserting operation is given a choice between either one of the currently adjacent pages for redefining the properties or attributes. The respective choice is indicated by an automatically displayed drop location indicator that specifies the page that will be used for redefining the properties or attributes. The drop location indicator is displayed in accordance with the current cursor position with respect to one of the adjacent pages.

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### Inserting a page into a digital document

5 The present invention relates to a method of handling pages of a digital document in a document preparation application program, and more in particular to a method of inserting a selected page or pages at an insert location in a digital document.

The invention further relates to a document preparation application program, configured to perform the method and to a data carrier comprising program code of the document  
10 preparation application program.

Inserting a page in a document is known as such. The page can be copied or moved from another location, in the same or another document. It can for example be dragged with a mouse or a similar tool.

15

Various technologies are known to indicate an insertion location for a page while being dragged; in Adobe Acrobat ® the insertion position for a dragged page or dragged pages is for example visualized by a line in between the 2 pages that would become the precedent and the subsequent page if the dragged page would be dropped at the  
20 current location of a pointing tool, like a mouse-controlled cursor, thus visualizing the location where the page or pages will be inserted. In Microsoft PowerPoint ®, the insertion location for a sheet to be inserted is visualized in more or less the same way.

A document is normally composed of a plurality of document pages, that have  
25 properties or attributes defining what the page will look like.

Examples of page properties or attributes are:

- the type of media it should be printed on;
- the page numbering method, text and style that should be added to the page;
- the logical section the page belongs to (a user can create his own logical grouping of a  
30 consecutive sequence of one or more pages, to indicate that pages have some logical commonalities e.g. chapters.);
- set of finishing attributes.

In many cases, groups of pages may share a specific property and/or attribute. Such page groups are consecutive sequences of pages that have the same value for a  
35 specific page property, typically representing a logical entity (e.g. chapter) or physical

entity of a document, e.g., relating to the finishing applied to the sequence of pages as a whole: e.g. stapling, folding, jogging, etc.

Multiple independent page groups can exist in a document.

An example of page group properties or attributes is

- 5 - finishing (e.g. none, 1 corner staple, 2 edge staples, 3 saddle stitches).

A page group is characterized by properties or attributes of the pages within the group and those of the group as a whole.

- 10 When a page is inserted in a document, it may take its own properties or attributes along, which may make the inserted page(s) different from the adjacent pages.

This may not be according to the wishes of the user operating the program.

- 15 Although known technologies provide an indication of the position where the dragged page will be inserted, they do normally not provide means to indicate what properties will be applied to the page.

It is therefore an object of the present invention to provide a method for determining unambiguously the properties of inserted pages.

- 20 To this end, the present invention provides a method of handling pages of a digital document in a document preparation application program, a document having an ordered set of document pages, the document pages being characterizable according to a plurality of different properties or attributes, in a system having a user interface including a display and a user-operable selection device such as a mouse, the method  
25 comprising the steps of: displaying a one-dimensional, ordered object list containing representations of the document pages of the set; enabling a user to select a page or a group of pages; enabling a user to indicate an insert location in the object list for inserting the selected page or pages; inserting the selected page or pages at the insert location; and automatically redefining at least one of the properties or attributes of the  
30 inserted page or pages to be identical to those of the currently adjacent document pages.

- 35 An additional object of the present invention is to provide a method that enables a user to determine to what properties the properties of at least one page to be inserted at an insertion position in a document will be set when the selected page or pages is/are

moved to a location between two pages having different properties or attributes.

In that case, in the present invention, the user operating the inserting operation is given a choice between either one of the currently adjacent pages for redefining the properties or attributes.

5

More in particular, the choice between either the preceding adjacent pages or the succeeding ones is indicated by an automatically displayed drop location indicator specifying the page that will be used for redefining the properties or attributes, said drop location indicator being displayed in accordance with a current cursor position.

10

By defining whether the page that will be used for redefining the properties or attributes is the page precedent or the page subsequent to the insertion location, the user can during insertion, or during a drag (and drop) action with a pointing device like a mouse, decide whether the at least one page should be assigned the properties of a precedent

15 pages or a subsequent pages. When the user moves the cursor with his pointing device (partly) over the page preceding the drop location, a drop location indicator associated to that page will automatically appear, and when the user moves the cursor with his pointing device (partly) over the page succeeding the drop location, a drop location indicator associated to that page will be shown.

20

In this way, the user is allowed to determine the location and the pages determining the properties in one single mouse action.

Besides indicating from what pages the at least one property will be copied, in an

25 embodiment, the method according to the present invention may also indicate the value of said property. For example it may be shown, e.g. in a "balloon", that the at least one page will obtain a roman page numbering style. The properties may therefore be presented in logical groupings, as will be explained with reference to the figures in the following.

30

The at least one page for insertion can be copied from, or moved within the document, or another document. It can comprise a document page, or a plurality of document pages. These can be selected at a first position of an ordered list of document pages, or at a number of positions from an ordered list of document pages, which can be, but

35 need not be adjacent positions.

The said at least one property of the inserted page or pages may comprise at least one of a layout, a paper setting, a finishing setting or a setting for printing, or a plurality of these settings.

5

In order to provide a better insight to a user at the moment of inserting the at least one page, a preview of the inserted piece with the at least one property set may be displayed, for example in a preview plane on a display device.

10 The invention further relates to a software program for performing the method according to the invention. The invention also relates to a data carrier comprising program code of said software program. Examples of such (mobile) physical data carriers are: a hard drive, a floppy disk, a DVD, a CD, a Flash Medium, a USB stick, Compact Flash, SmartMedia, etc.

15

General aspects of the page programming process are described in Applicant's US Patent Application No. US 2007/0300168 A1, which is incorporated herein by reference.

The invention will now be explained more into detail with reference to the following non  
20 limiting figures. Herein,

Figure 1 schematically shows a network system in which the present invention can be practised.

Figures 2- 10 show screen shots of a computer running a software program for performing the method according to the present invention.

25

Fig.1 shows a general network system including user workstations 101A, 101B, 101C (e.g., PCs) and a centralized printing facility 2 such as is often called a "central repro department" (CRD), all connected by a network 1010 such as a Local Area Network, or even the internet. The CRD includes a plurality of printing devices 104A, 104B, 104C  
30 and a server 105, which will normally be a PC. The CRD may also include a document database 106 or be connected to a central database facility acting as a document database. The devices in the CRD are interconnected by a local network 1011, which may be part of the general network 1010.

In operation, users prepare documents on their workstations and submit the resulting  
35 document data files to the CRD for printing and possibly storage in the database 106.

The files for printing are received by the server 105 and are, under the control of a CRD operator, transferred to a printer device 104A, 104B or 104C.

5 The server 105 runs document preparation application program software and so forms a system for editing and specifying the print processing of the print job that produces the prints according to the document file submitted by the users. This software includes (1) page-level specification, including page editing functionality, such as page layout specification and image processing, (2) document-level specification for composing documents from page images and (3) production-level specification, directed to the  
10 physical production control.

The present invention relates to the document-level specification of the above-mentioned document preparation application program. The invention provides a user interface for the system, and is embodied in software running in the server 105.

15 In operation, the document preparation software offers all functionality that is needed to transform pages into a fully programmed job. In this workspace the user defines the layout, the media and the finishing options. It is also possible to add elements such as page numbers and tab captions.

20 Figure 2 shows a display screen 1 of a computer (e.g., server 105 of figure 2) running the document preparation application program according to the present invention. A currently visible content on the screen is referred to as the "document view". The document view includes a "structure pane" 2, at the left and a "preview pane" 3 at the right, each indicated by a caption. The structure pane comprises a matrix, having a first  
25 column 4 representing the pages of a document being worked on. In the example shown, the document has 10 pages, each forming a row in the matrix. The second column 5 indicates the page groups for the property "section". A section is a consecutive range of pages that belong to each other according a user-defined 'logical' criterion (for example a chapter in the document, or pages inserted from another document).

30 In the exemplary 10 page document, pages 1-4 belong to a first section named 'AAA' and pages 5-10 belong to a second section named 'BBB'.

The third column 6 defines page groups having the same finishing setting properties, such as a folding option and/or a stapling option. The fourth column 7 indicates media properties, i.e. the type of paper, on which the indicated pages need to be printed on.

35 The fifth column indicates the page sizes and orientation (i.e. landscape or portrait)

properties, for each page, grouping together consecutive pages with same page size. Each of the columns 5, 6, 7, 8 has a so-called Summary Bar 5', 6', 7', 8' indicating the groups of pages sharing a property.

- 5 In the preview pane 3, a first preview 9 of page 1 is shown, a second preview 10 of page 2 is shown and a third preview 11 of page 3 is shown, as well as a scrollbar 12 for scrolling the preview pane 3 to pages 4-10.

Now, an example will be described wherein one page is inserted at a position between  
10 two other pages. The aim in this example is to move a single page, present page 7, to a location between the present pages 4 and 5.

In figure 3, the preview pane is scrolled downwards by dragging the scrollbar 12 downwards with respect to the situation in figure 2. First, the user needs to select one or  
15 more (consecutive or non-consecutive) pages (in the present example page 7) of the document by one of the following methods:

- through a menu item in the upper function bar (e.g. 'Select Pages with same size' or 'Select Front Pages') (menu not shown),
- by entering the page numbers in a selection textbox (not shown), e.g. "1-4,7" or  
20 - by clicking the select (left) button of his mouse (optionally in combination with the Control or Shift keyboard key) in either the Structure Pane and/or the Preview Pane.

In the Structure Pane 2 selection may be performed by clicking on a row, in order to select that row, or by clicking on a Summary Bar to select all pages belonging to that group. In the structure pane, selected pages are indicated by a distinct coloring 18 of  
25 the rows.

In the Preview Pane 3, clicking on a page preview will select this page. In the preview pane, selected pages are indicated by a distinct colouring 19 around each selected page (13).

- 30 Upon selection, page 7 is now marked with a distinctly colored frame 19 in the preview pane, as well as a distinctly colored bar 18 in the structure pane.

It may now be moved from its original location to a new location between pages 4 and 5.

To change the location of one or more selected pages inside a document in a  
35 convenient way, the application according to the present invention supports drag-and-

drop using the mouse.

The user clicks and holds down the selection button on the mouse while the pointer is located over a selected page in either Structure Pane or Preview Pane. With the mouse button down, when the mouse is moved, the drag operation starts, and the application is  
5 in drag mode.

On the screen 1 (figure 3) the drag mode is indicated by a change of a mouse pointer (cursor) as well as an insertion location indicator 14 in the Structure Pane 2, when the mouse pointer (cursor) is in the screen area of the Structure Pane 2, or in the Preview  
10 Pane 3 when the user is in the screen area of the Preview Pane (shown by insertion location indicator 16 in figures 7 and 8, as will be explained below).

When the user releases the select button on the mouse the selected pages will be inserted to the indicated insertion location. This is called the 'drop' operation. If the  
15 mouse is in a screen area outside the Structure Pane 2 or Preview Pane 3, the 'drop' operation is not possible, and the mouse pointer changes state to indicate this. However, the list of pages will scroll in the direction of the mouse position as long as it is positioned within the application's main window 1. If one or more consecutive selected pages are to be inserted before or after the selected area, the drop operation is not  
20 possible and an indicator is not shown. E.g. when page 3 is selected it doesn't make sense to drop before page 3, or after page 3, as it wouldn't change the document.

When the dragged page would be dropped between two pages having the same properties (e.g. pages 2 and 3 in the example), the properties of the dropped page  
25 would, according to the present invention, automatically be given the page attributes or properties of its new neighbor pages.

However, when page 7 is dragged to a new location between page 4 and 5, that have different properties (i.c. belong to different sections, viz. page 4 belonging to section  
30 'AAA' and page 5 belonging to section 'BBB'), it makes a difference whether page 7 is dropped 'after' page 4 or 'before' page 5: in the first case, i.e. dropping *after* page 4, page 7 will get the page attributes of page 4 as well as become member of the page group page 4 belongs to.

In the second case, i.e. dropping *before* page 5, page 7 will get the page attributes of  
35 page 5 as well as become member of the page group page 5 belongs to.



The drop location indicator 14 in figure 3 has the form of an arrow pointing to the drop location and stemming from page 4. It therewith shows that page 7 will be inserted *after* page 4.

5

Figure 4 shows the situation when page 7 has been dropped *after* page 4 and page 7 has been given the relevant page attributes of page 4. Preview pane 3 shows that page 7 (item 13) has been inserted between present pages 4 and 5. In the structure pane it is shown how page 7 (now numbered "5") has become member of the first section 'AAA' 10 15 to which page 4 already belonged.

Figure 5 shows the case wherein page 7 is being dropped *before* page 5 as indicated by the drop location indicator 14, and page 7 will get the relevant page attributes of page 5 as well as become member of the page group page 5 belongs to.

15

Figure 6 shows the situation when page 7 has been dropped before page 5 and page 7 has been given the relevant page attributes of page 5. Preview pane 3 shows that page 7 (item 13) has been inserted between present pages 4 and 5. In the structure pane it shows how page 7 (now numbered "5") has become member of the second section 20 'BBB' to which page 5 already belonged.

20

As shown above, there is a difference whether pages are inserted *before* or inserted *after* a page, i.e. insert *after* page 4 does not give the same behaviour as insert *before* page 5, because of the properties copied from the referenced page or section to which it 25 belongs, finishing, page numbering or format.

25

In the present example, a page is moved using a "drag-and-drop" method. Of course, other relating methods, known per se, such as cut-and-paste, or even copy-and-paste could be used in the same way, and according to the present invention, a drop location 30 indicator 14 would be shown accordingly to indicate which page attributes would be applied to the (re)located page(s).

30

In order to visualize the insertion position, as well as indicate from which page the attributes will be copied, an indicator 14, such as an arrow, is shown on the insertion 35 position, to indicate where the page will be dropped/located, see, e.g. figure 3 and figure

35

5.

The arrow *head* indicates the new location of the dragged pages in the document, while the arrow *line* indicates the reference page, from which the above mentioned properties are copied.

- 5 It should be noted that the circle around the arrow is not meant to be part of the drop location indicator, but is merely intended for the reader's convenience.

Other forms of the drop location indicator would be readily contemplated by the skilled person. Any form or presentation/coloring would do, as long as it clearly indicates the insert position as well as the page giving its properties to the inserted page or pages.

The insertion location indicator is shown in either the structure pane 2 or in the preview pane 3, in accordance with a mouse pointer location, or it may also be shown in both panes 2, 3 at the same time.

15

In figures 3 and 5, the arrow is shown in the structure pane 2.

Figures 7 and 8 show an arrow 16 in the preview pane 3. Here, the insertion location indicator 16 takes an (exemplary) form of an arrow starting in the page that determines the page properties of the inserted page and pointing to the insert location.

20

Figure 9 shows a situation where the pages in the Preview Pane have been zoomed in, such that the paper border at the insertion location is not visible. Nevertheless, the insertion location indicator 16 makes quite clear where a page will be inserted.

- 25 Figure 10 shows how the insertion location indicator 16 is drawn (and scaled if necessary) to the visible part of a page if that page is only partly visible in the Preview Pane, so that the user can always see the arrow.

The invention having been described in the above exemplary way, the skilled person will immediately understand that the same can be embodied in different ways.

30 Nevertheless, it should be understood that the scope of the invention is not limited to the described embodiment, but solely to that defined in the appended claims.

**CLAIMS**

1. A method of handling pages of a digital document in a document preparation application program, the document having an ordered set of document pages, the document pages being characterizable according to a plurality of different properties or attributes, said method comprising the steps of:  
5 using a system having a user interface including a display and a user-operable selection device to perform the following steps:  
displaying a one-dimensional, ordered object list containing representations of the document pages of the set;  
10 enabling a user to select a page or a group of pages;  
enabling a user to indicate an insert location in the object list for inserting the selected page or pages;  
inserting the selected page or pages at the insert location; and  
15 automatically redefining at least one of the properties or attributes of the inserted page or pages to be identical to those of the currently adjacent document pages.
2. The method according to claim 1, wherein, if the selected page or pages is/are moved to a location between two pages having different properties or attributes, the method further comprises the step of giving the user operating the inserting operation a  
20 choice between either one of the currently adjacent pages for redefining the properties or attributes.
3. The method according to claim 2, wherein said step of giving the user a choice further  
25 comprises the steps of indicating said choice by an automatically displayed drop location indicator specifying the page that will be used for redefining the properties or attributes, and displaying said drop location indicator in accordance with a current cursor position.
- 30 4. The method according to claim 3, wherein said step of indicating the choice further comprises the step of forming the drop location indicator as an arrow indicating the drop position and stemming from the page that will be used for redefining the properties or attributes.

5. The method according to claim 2, further comprising the step of visually indicating the value of the at least one property or attribute of a said currently adjacent page.
6. The method according to claim 1, wherein the step of selecting a page or a group of pages further comprises the step of copying or cutting the page or group of pages from the document.
7. The method according to claim 1, wherein the step of selecting a page or a group of pages further comprises copying or cutting the page or group of pages from another document.
8. The method according to claim 1, wherein the at least one property or attribute comprises one or more of:
- a type of media the page should be printed on;
  - a page numbering method;
  - a text and/or style that should be added to the page;
  - a logical section the page belongs to; and
  - a set of finishing attributes.
9. The method according to claim 1, further comprising the step of displaying a preview of the inserted at least one page with the at least one property or attribute applied.
10. A document preparation system for handling pages of a digital document, the system comprising a computer having a user interface including a display and a user-operable selection device, and the document having an ordered set of document pages, the document pages being characterizable according to a plurality of different properties or attributes,
- a document viewing module for displaying a one-dimensional, ordered object list containing representations of the document pages of the set;
  - a selection module for enabling a user to select a page or a group of pages;
  - an indication module for enabling a user to indicate an insert location in the object list for inserting the selected page or pages;
  - an insert module for inserting the selected page or pages at the insert location; and

a property redefining module for automatically redefining at least one of the properties or attributes of the inserted page or pages to be identical to those of the currently adjacent document pages.

5 11. The document preparation system according to claim 10, wherein the property redefining module is adapted to enable the user operating the system to choose between either one of the currently adjacent pages for redefining the properties or attributes by automatically displaying, in accordance with a current cursor position, a drop location indicator specifying the page that will be used for redefining the properties  
10 or attributes.

12. A document preparation application program embodied on a computer readable medium and configured to perform a method of handling pages of a digital document in a document preparation application program when run on a computer, the document  
15 having an ordered set of document pages, the document pages being characterizable according to a plurality of different properties or attributes, said method comprising the steps of:  
using a system having a user interface including a display and a user-operable selection device to perform the following steps:  
20 displaying a one-dimensional, ordered object list containing representations of the document pages of the set;  
enabling a user to select a page or a group of pages;  
enabling a user to indicate an insert location in the object list for inserting the selected page or pages;  
25 inserting the selected page or pages at the insert location; and  
automatically redefining at least one of the properties or attributes of the inserted page or pages to be identical to those of the currently adjacent document pages.

30 13. The document preparation application program according to claim 12, wherein the method performed by the program further includes  
enabling the user operating the system to choose between either one of the currently adjacent pages for redefining the properties or attributes, and  
automatically displaying, in accordance with a current cursor position, a drop location indicator specifying the page that will be used for redefining the properties or attributes.

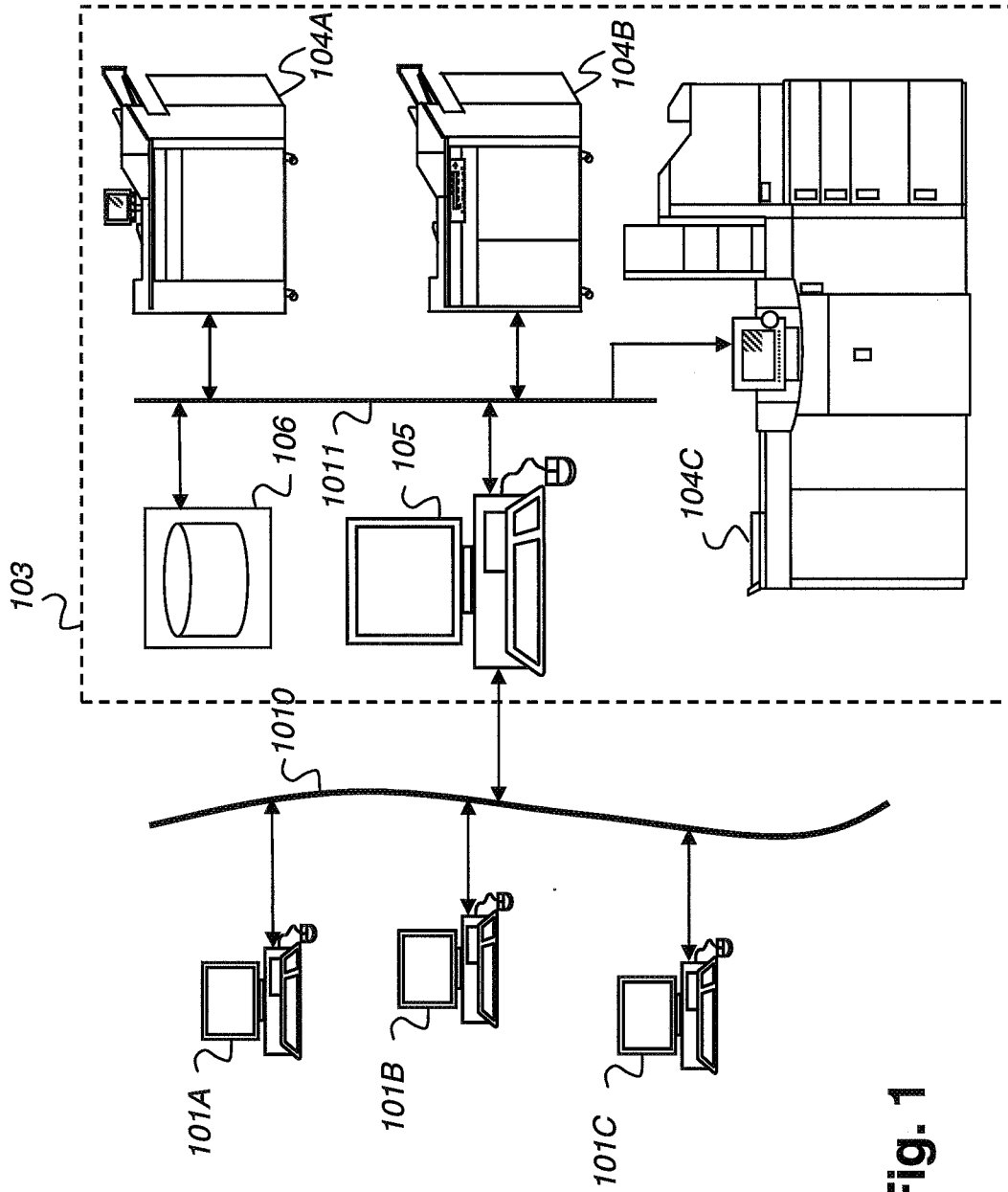
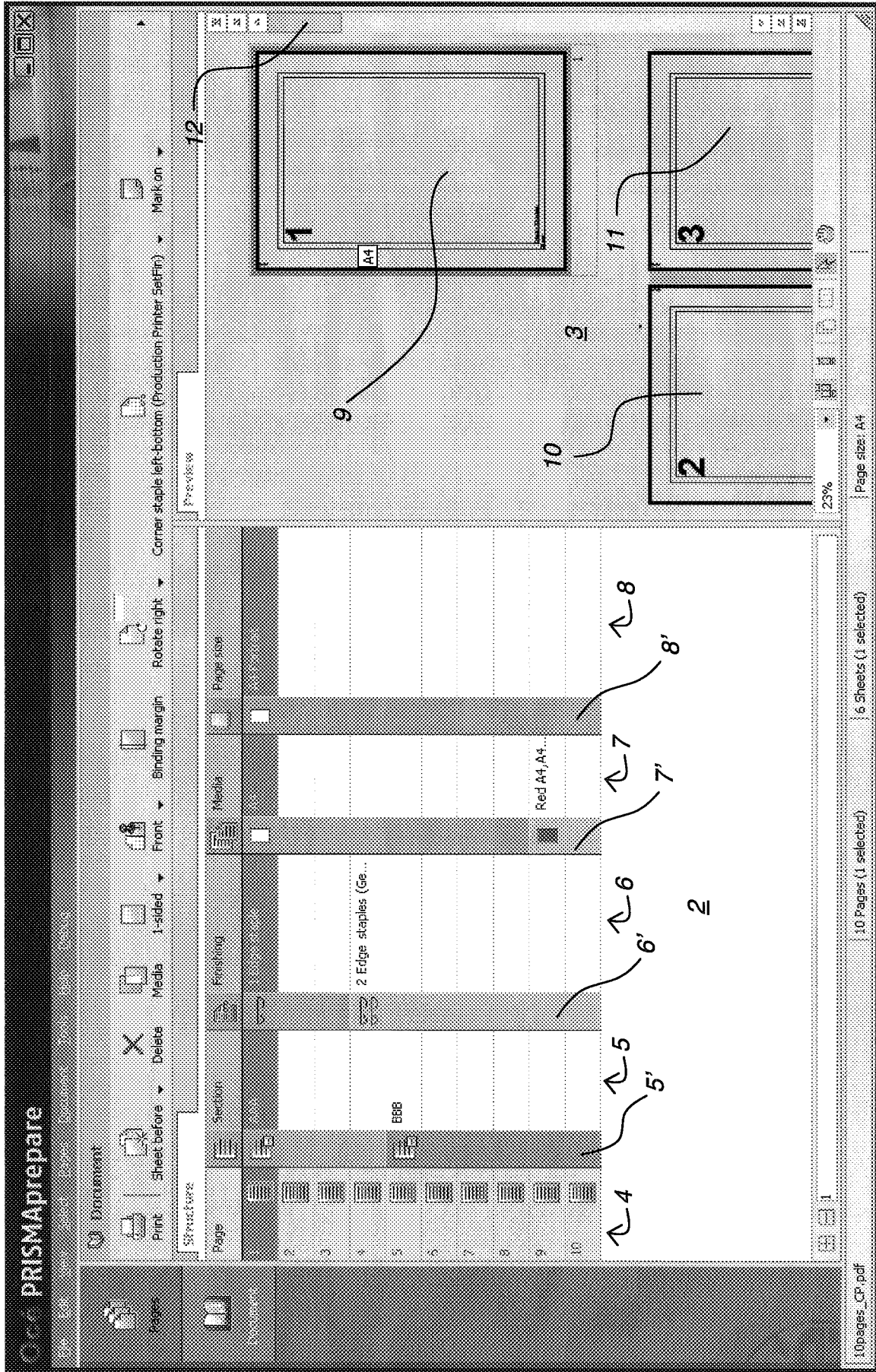


Fig. 1



~1

Fig. 2

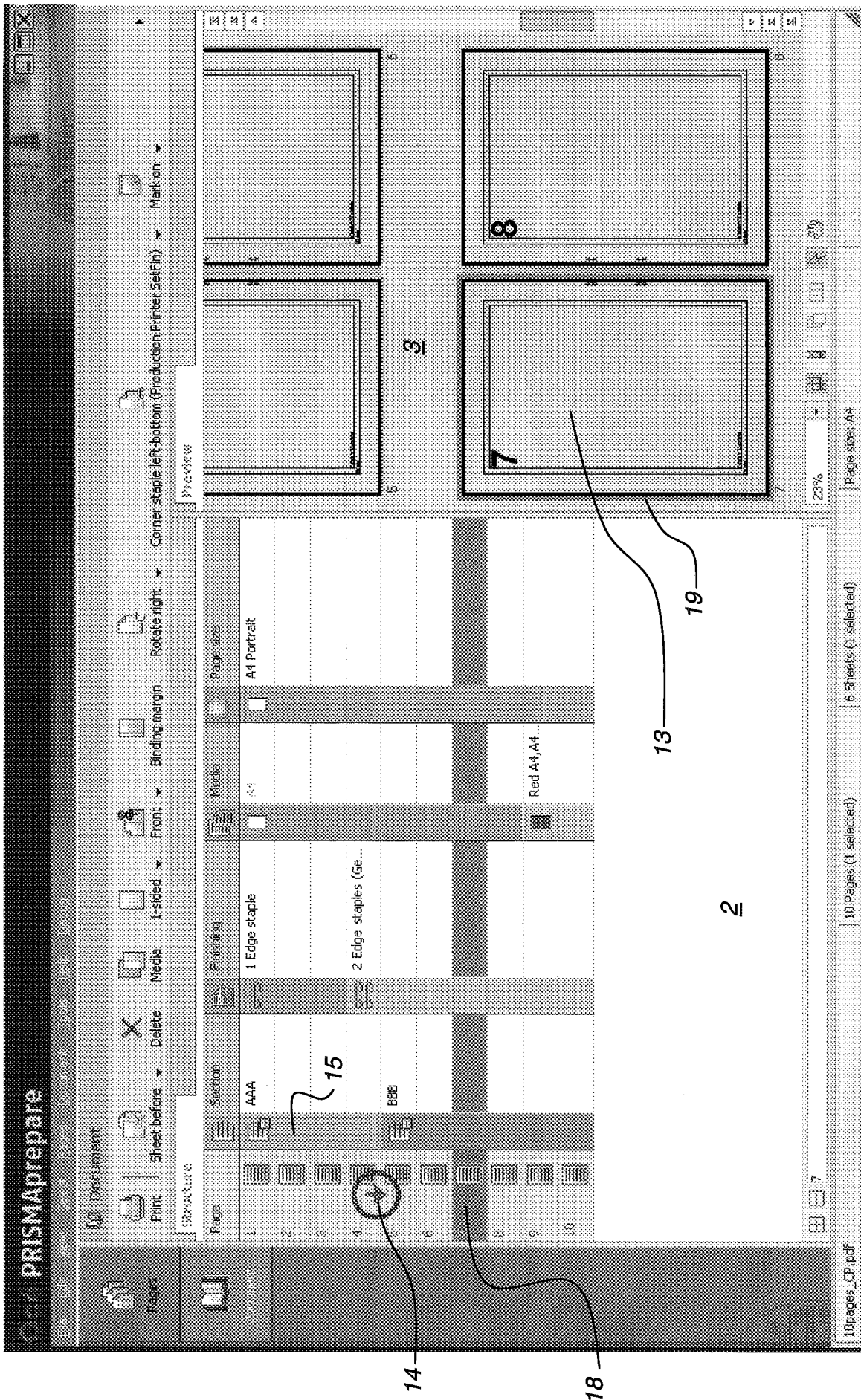


Fig. 3

↶



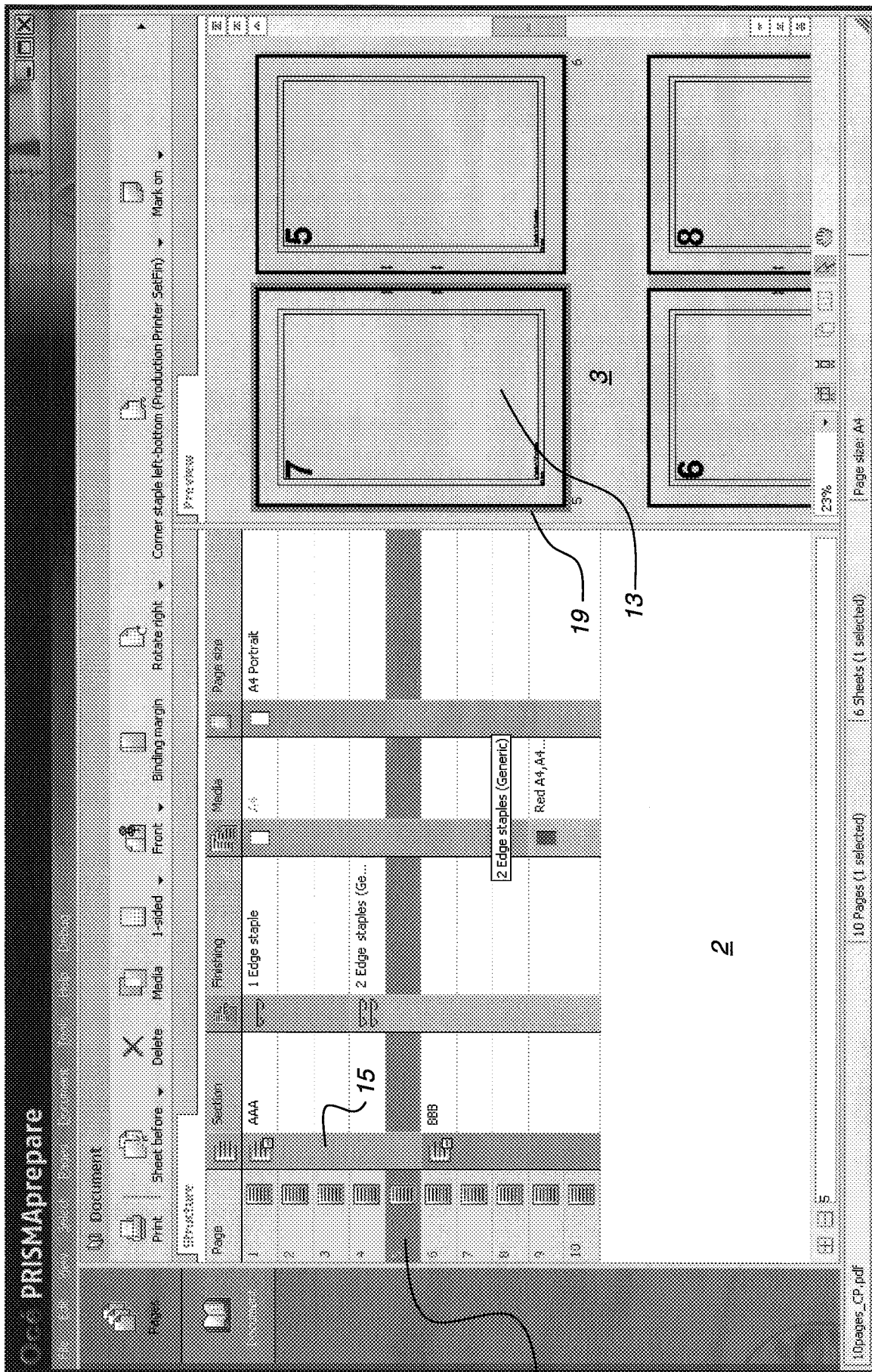


Fig. 4

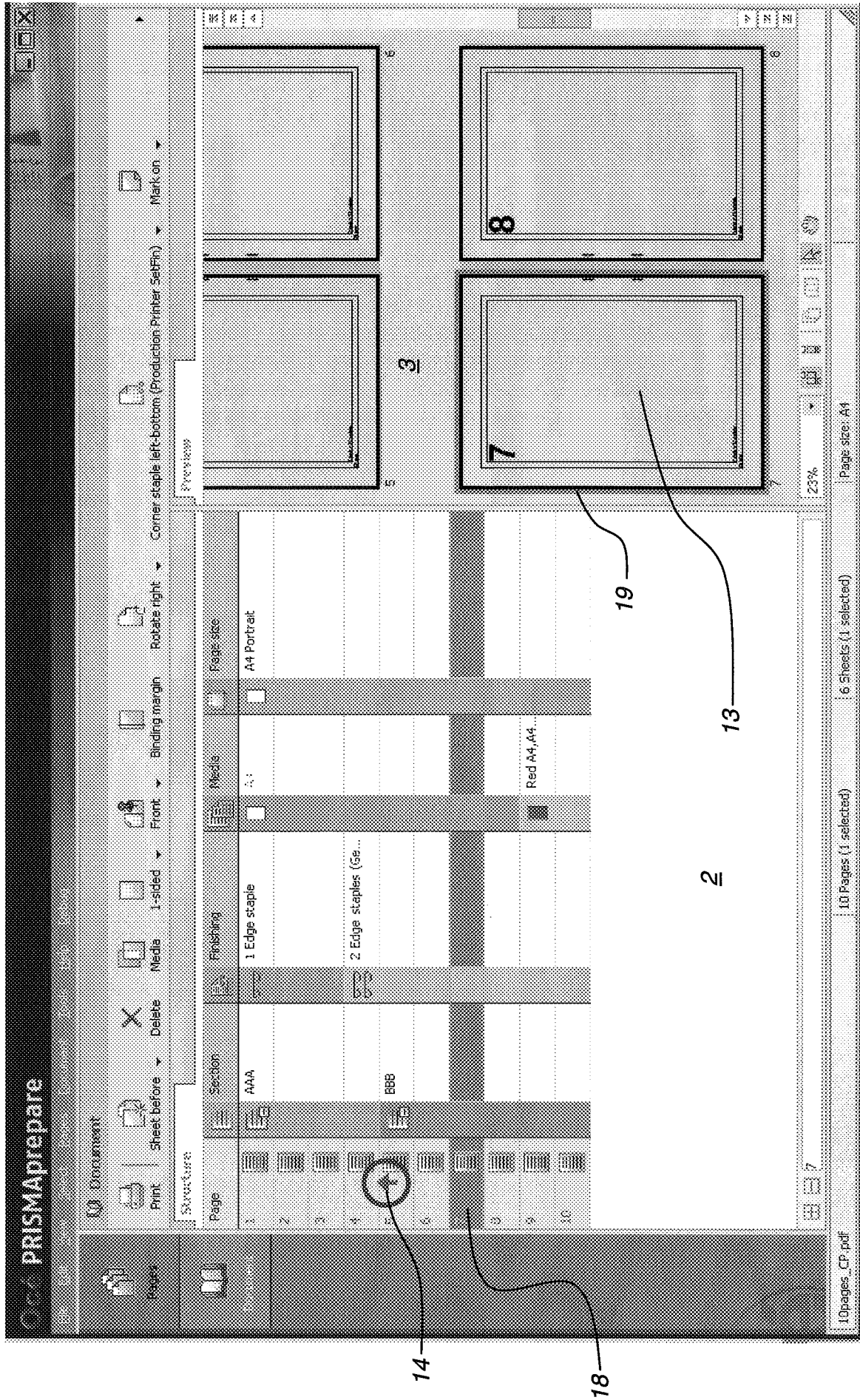


Fig. 5

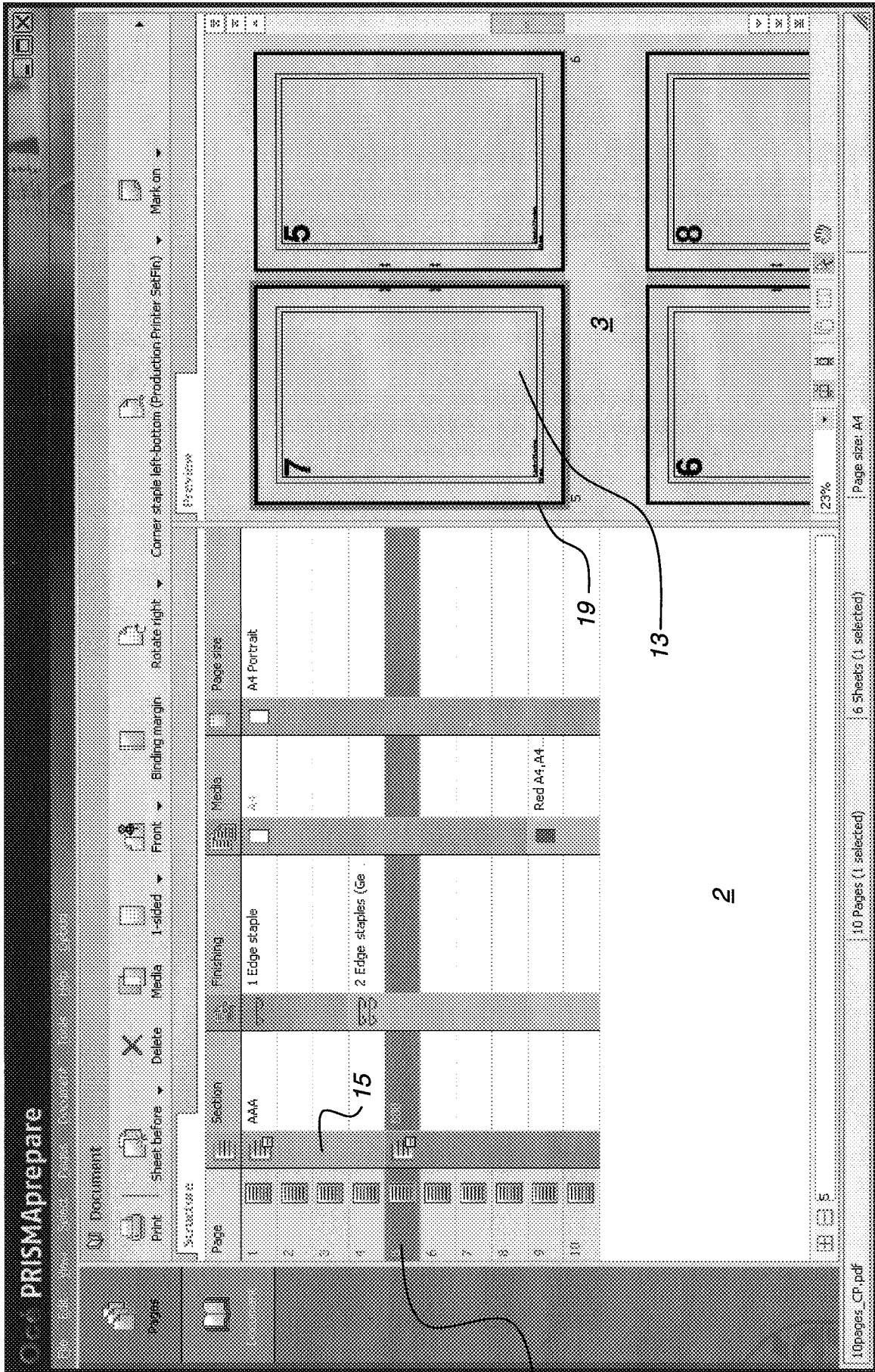


Fig. 6





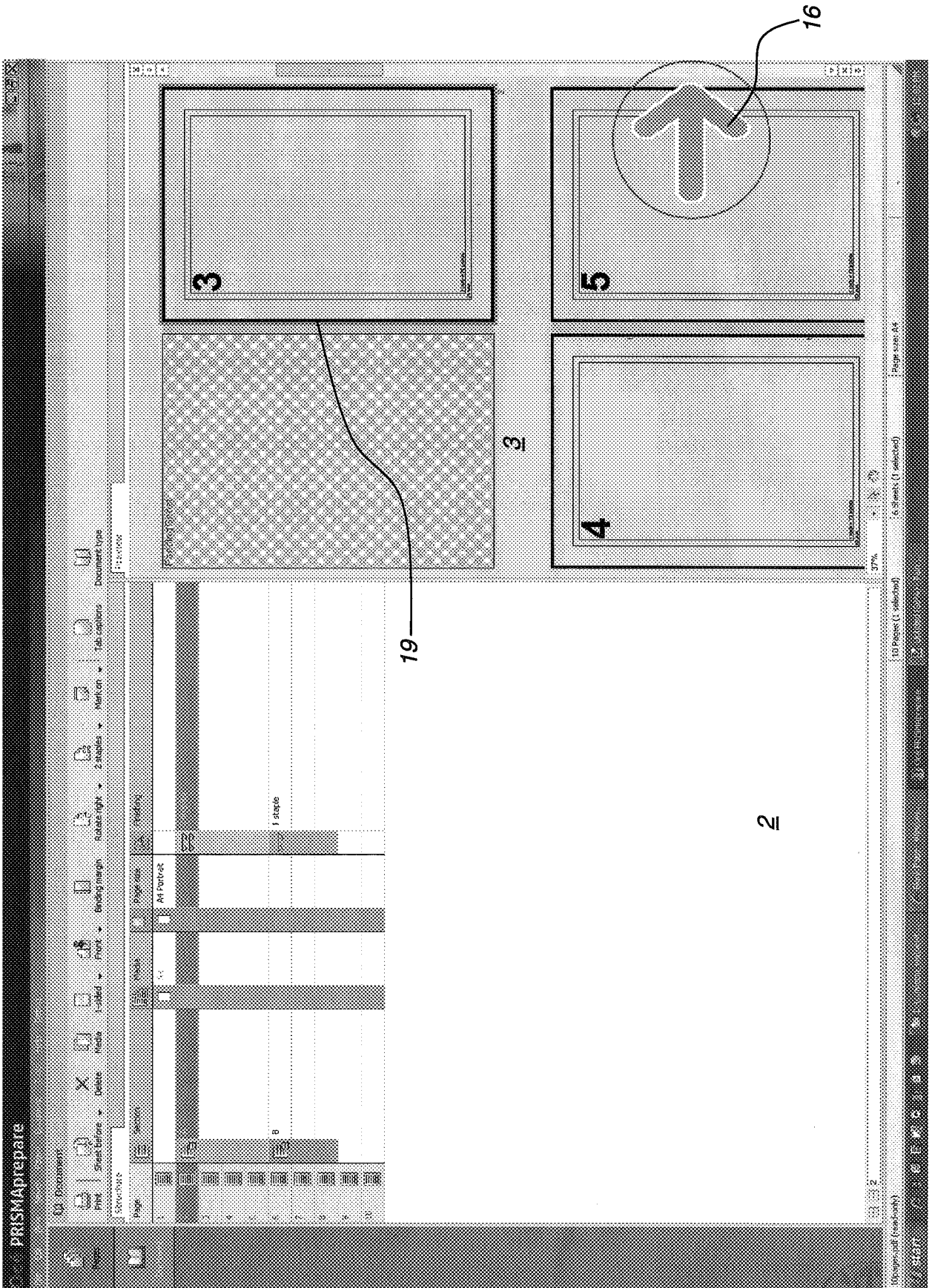


Fig. 8 ↶

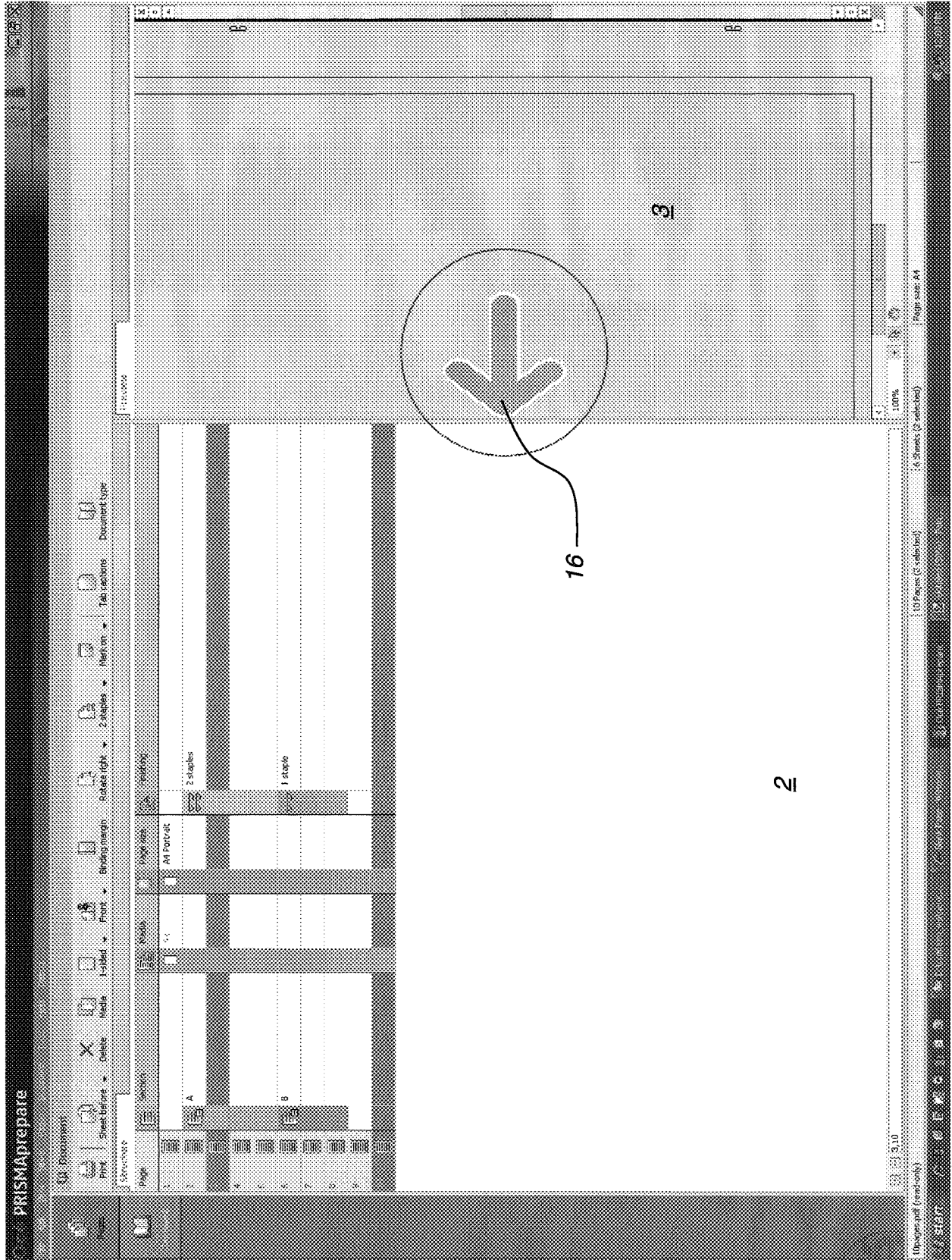


Fig. 9

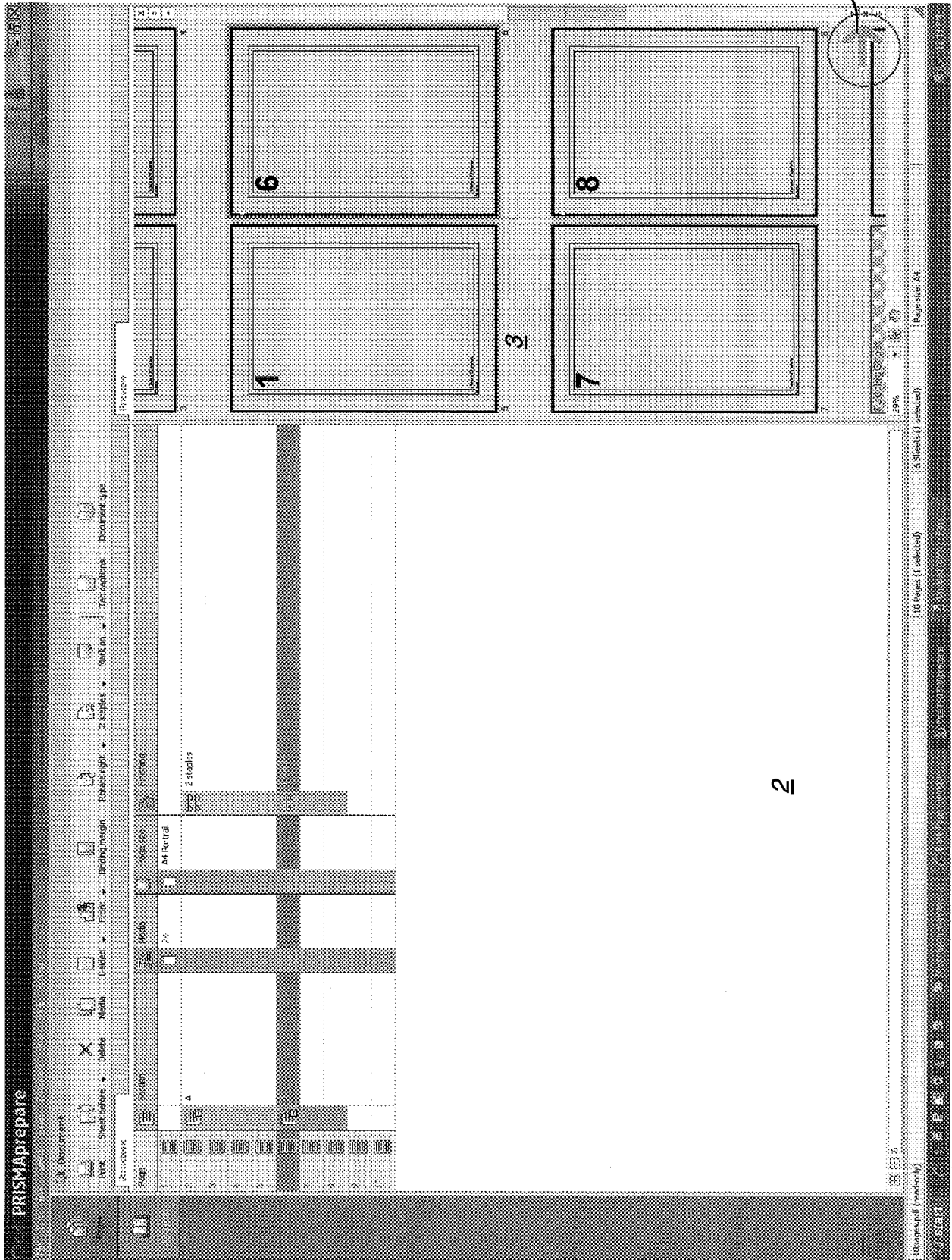


Fig. 10