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(71) Applicant: **Océ-Technologies B.V.**
5914 CC Venlo (NL)

(72) Inventor: **Peeters, Roger J.M.**
5612 HG Eindhoven (NL)

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(54) **Sheet processing system and method for controlling such system**

(57) A sheet processing system is disclosed comprising a cyclable buffering member and a method for controlling such system. When a time-consuming finishing treatment is to be performed on a sheet or a set of sheets, in order to gain the time required to enable the

execution of the time-consuming finishing treatment, the sheet processing system is controlled such that sheets arriving at the endless surface of the buffering member during the execution of the finishing treatment are temporarily assembled in superimposed relationship on the continuously cycling buffering member.

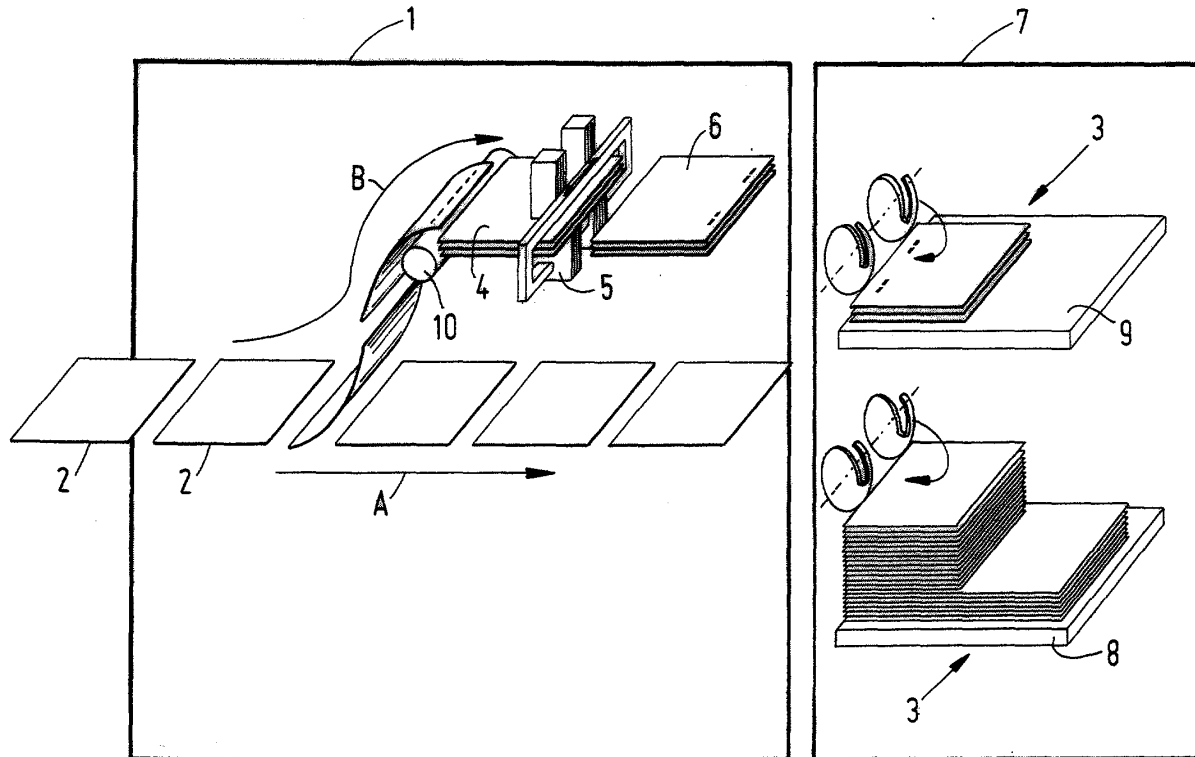


FIG. 1

Description

FIELD OF THE INVENTION

[0001] The present invention is related to a system for processing printed sheets. The system may be a stand-alone system such as a finisher or may be part of an image reproduction system such as a printing or copying system. The invention further relates to a method for controlling such a sheet processing system.

BACKGROUND OF THE INVENTION

[0002] In order to reproduce images, it is generally known to feed a medium in sheet or web form through the image forming part of an image reproduction system such as a printing and/or copying system to form images of a marking substance thereon. In case the print medium is in web form, the print medium may be subsequently cut in to sheets. The printed sheets may be conveyed to a sheet processing system. The sheet processing system may be an integral part of the image reproduction system or may be a stand-alone system operating in-line with the image reproduction system. The printed sheets are typically conveyed separately and in consecutive order to an input of such sheet processing system at the processing speed of the image reproduction system. Subsequently, the printed sheets are conveyed consecutively at the processing speed of the sheet processing system along a predetermined path through the sheet processing system where they may be subjected to all kinds of finishing treatments. Alternatively, the sheet processing system may be a stand-alone system operating offline. In the latter case a stack of printed sheets is usually offered to the sheet processing system for further processing. In operation, such sheet processing system retrieves sheets from the stack and conveys them consecutively at the processing speed of the system along a predetermined path through the sheet processing system where they may be subjected to all kinds of finishing treatments. Examples of finishing treatments include but are not limited to cutting, punching, inverting, sorting, trimming, rotating, stapling and folding such as to obtain finished sheets, sets of finished sheets or booklets, which may be subsequently deposited at a sheet deposition station on a selected tray.

[0003] As regardless of the configuration, sheets are conveyed through the sheet processing system at the processing speed, a problem may arise with some of the finishing treatments as they require more time than the interval period between two consecutive sheets. Examples of such time-consuming finishing treatments are e.g. stapling and folding. A potential solution to such problem would be to decrease the processing speed such as to enable to execute such a time-consuming finishing treatment within the interval period between two consecutive sheets. Such a solution has several disadvantages. Firstly, degrading the processing speed

degrades the sheet processing capability and efficiency of the sheet processing system. Secondly, when the sheet processing system is an integral part of or is placed in-line with an image reproduction system, lowering the processing speed of the sheet processing system may also effect the processing capability of the entire image reproduction system as the processing speed of the sheet processing system should be at least as high as the processing speed of the image reproduction system. Therefore, gaining time to execute a finishing treatment by degrading the processing speed of the sheet processing system is not a desirable solution.

[0004] In US 6,219,503 a sheet processing system is disclosed which, in case a time-consuming finishing treatment has to be effectuated on a sheet or a set of sheets, temporarily stops conveyance of a succeeding sheet and places it in a waiting state on a buffer roller at least till the time-consuming finishing treatment is completed. Thereafter, the sheet which has been temporarily put in a waiting state is further conveyed in super-imposed relationship with the consecutive non-stopped sheet. In order to put a sheet in and out of the waiting state, the buffer roller each time needs to be stopped and afterwards accelerated within the interval period between two succeeding sheets. The repetitive stopping and acceleration of the buffer roller is a disturbing noise source and negatively affects the system's reliability. Moreover, due to the fact that the stopping and acceleration of the buffer roller needs to be executed within the limited interval period between two succeeding sheets, the disclosed approach is not scaleable to high processing speeds as the interval period between two succeeding sheets becomes too small to enable timely and reliable stopping and acceleration of the buffer roller

OBJECTS OF THE INVENTION

[0005] It is an object of the invention to provide a sheet processing system capable of executing a finishing treatment on a sheet or a set of sheets without degrading the processing speed of the sheet processing system.

It is a further object of the invention to provide a sheet processing system capable of temporarily buffering sheets when executing a finishing treatment on a preceding sheet or a set of preceding sheets while limiting noise generation and without negatively affecting the reliability of the system.

SUMMARY OF THE INVENTION

[0006] In a first aspect of the invention, a sheet processing system is disclosed for feeding sheets successively along a supply path to a sheet deposition station where the sheets are collected, the sheet processing system having means for temporarily interrupting the supply of successive sheets to the sheet deposition sta-

tion to enable processing of the sheets collected at the sheet deposition station, the means for temporarily interrupting the supply of successive sheets comprising:

a sheet buffering member having an endless outer surface,
supply means for supplying sheets successively to the endless surface of the sheet buffering member, and
means for conveying sheets assembled on the endless surface of the sheet buffering member to the sheet deposition station,

characterised in that,

the sheet buffering member, when sheets are supplied thereto, is continuously cycled with a cycling period for assembling successively supplied sheets on its endless outer surface in a superimposed relationship, the superimposed relationship being such that each second or any following sheet of the conveyed sheets at least partially overlaps with the preceding sheet assembled on the endless surface of the sheet buffering member while avoiding completely covering the endless outer surface of the sheet buffering member. A time-consuming finishing treatment is a finishing treatment which can not be performed within the interval period between two succeeding sheets. When a time-consuming finishing treatment is to be performed on a sheet or a set of sheets, in order to gain the time required to enable the execution of the time-consuming finishing treatment the supply of successive sheets to the sheet deposition station needs to be temporarily interrupted. According to the present invention, a sheet buffering member, being continuously cycled when sheets are supplied thereto, is provided to enable the temporary buffering of sheets. Particularly, sheets supplied to the endless surface of the continuously cycling buffering member are assembled thereon in superimposed relationship. To enable the further conveyance of the superimposed sheets to the sheet deposition station, the superimposition of the sheets is such that it is avoided that the superimposed sheets completely cover the endless outer surface of the buffering member. Temporarily buffering the sheets by assembling them on a continuously cycling sheet buffering member obviates the need to degrade the processing speed of the sheet processing system. The sheet deposition station may be an intermediate sheet deposition station. The cycling period of the sheet buffering member may be greater than the interval between the arrival of the leading edge of a first sheet and the arrival of the leading edge of a second successive sheet at the endless outer surface of the sheet buffering member.

[0007] In an embodiment of the invention, according to the present invention, the cycling period of the sheet buffering member is smaller than or equal to the interval between the arrival of the leading edge of a first sheet and the arrival of the leading edge of a second successive sheet at the endless outer surface of the sheet buff-

ering member. By doing so, it is obviated that, when buffering sheets on the continuously cycling buffering member, successive sheets are assembled offset from each other in such way that the trailing edge of the superimposed sheets is the trailing edge of the first assembled sheet on the buffering member. In the latter case, the alignment of the set of superimposed sheets would be cumbersome.

[0008] In another embodiment of the invention, according to the present invention, the cycling period of the sheet buffering member is smaller than the interval between the arrival of the leading edge of a first sheet and the arrival of the leading edge of a second successive sheet at the endless outer surface of the sheet buffering member. By doing so, a slight offset is created between the successive sheets assembled in superimposed relationship on the endless surface of the sheet buffering member. By consequence, each sheet has a portion at its trailing edge in contact with the endless surface. An advantage hereof is that a more reliable transport of the sheets can be realised compared to the transport of superimposed sheets being in perfect alignment, i.e. zero offset between the respective sheets. The reliability of the transport can even be further improved when at least a portion of the endless outer surface of the sheet buffering member is composed of an adhesive material, said portion covering the entire circumference of the sheet buffering member. For instance, in case the buffering member is a buffering roller, such portion is typically an annular portion.

[0009] In another embodiment of the invention, the sheet processing system according to the present invention further comprises at least a first pressure member and a second pressure member, wherein the or each pressure member can be resiliently urged against the endless outer surface of the buffering member while any sheet assembled on the cycling buffering member is guided there-between. Preferably, the first, the second pressure member and any further pressure member are positioned such that in operation at any time at least one of the first, the second, or any further pressure member contacts the superimposed sheets assembled on the outer surface. Doing so is advantageous to provide a reliable paper transport on the buffering member. More preferably, the first, the second, and any further pressure member are rotatable.

[0010] In a preferred embodiment of the invention, a sheet processing system is disclosed comprising:

a sheet buffering member operable in one of at least a first mode and a second mode, the sheet buffering member having an endless outer surface;
supply means for supplying sheets successively to the endless outer surface of the sheet buffering member; and
control means for controlling the sheet buffering member to operate in the first mode, wherein sheets successively supplied to the endless outer surface

of the sheet buffering member are successively transported on and released from the endless outer surface of the sheet buffering member, or in the second mode. Particularly, the sheet processing system is adapted such that, when the sheet buffering member is controlled to operate in the second mode, the sheet buffering member is continuously cycled with a cycling period for assembling successively supplied sheets on its endless outer surface in a superimposed relationship, the superimposed relationship being such that each second or any following sheet of the conveyed sheets at least partially overlaps with the preceding sheet assembled on the endless surface of the sheet buffering member while avoiding completely covering the endless outer surface of the sheet buffering member.

Further according to the present invention, the control means may comprise a switch for acting on the buffering member such that the buffering member is controlled to operate in the first or in the second mode.

When a time-consuming finishing treatment is to be performed on a sheet or a set of sheets, in order to gain the time required to enable the execution of the time-consuming finishing treatment, sheets arriving at the endless surface of the buffering member during the execution of the finishing treatment need to be temporarily buffered. According to the present invention, in such case the control means control the sheet processing system to operate in the second mode. In this mode sheets arriving at the endless surface of the continuously cycling buffering member are assembled thereon in superimposed relationship till the control means control the sheet processing system to operate again in a mode different from the second mode, e.g. the first mode. This is done such that the sheet(s) which are temporarily assembled on the continuously cycling buffering member are conveyed in superimposed relationship further towards a sheet deposition station. The sheet deposition station may be an intermediate sheet deposition station. This means that the assembled sheets include both the sheets which have been completely cycled and the first succeeding sheet. For example, if one sheet is buffered, in other words is subjected to a complete cycle on the buffering member, two sheets are assembled on the buffering member. To enable the further conveyance of the superimposed sheets, the superimposition of the sheets is such that it is avoided that the superimposed sheets completely cover the endless outer surface of the buffering member.

[0011] In another aspect of the invention, a method for controlling a sheet processing system is disclosed, the sheet processing system comprising:

a sheet buffering member operable in one of at least a first mode and a second mode, the sheet buffering member having an endless outer surface; and supply means for supplying sheets successively to

the endless outer surface of the sheet buffering member;

the method comprising the step of controlling the sheet buffering member to operate in the first mode, wherein sheets successively supplied to the endless outer surface of the sheet buffering member are successively transported on and released from the endless outer surface of the sheet buffering member, or in the second mode,

characterised in that,

when the sheet buffering member is controlled to operate in the second mode, the sheet buffering member is continuously cycled with a cycling period for assembling successively supplied sheets on its endless outer surface in a superimposed relationship, the superimposed relationship being such that each second or any following sheet of the conveyed sheets at least partially overlaps with the preceding sheet assembled on the endless surface of the sheet buffering member while avoiding completely covering the endless outer surface of the sheet buffering member.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

Fig.1 depicts a schematic representation of a sheet processing system according to an embodiment of the present invention.

Fig.2 depicts enhanced views of a portion of the sheet processing system as depicted in fig.1. In particular, several operational stages (a) to (e) are disclosed clarifying the operation of the sheet processing system when operating in the buffering mode.

Fig.3 depicts enhanced perspective views of the buffering portion of the sheet processing system as depicted in fig.1. In particular, several operational stages are disclosed clarifying the operation of the sheet processing system when operating in the buffering mode.

Fig.4 depicts a schematic representation of a sheet buffering member and a switch acting thereon, according to an embodiment of the present invention. In Fig. 4(a) the switch is controlled such that any sheet assembled on the buffering member is released therefrom. In Fig. 4(b) the switch is controlled such that any sheet assembled on the buffering member is cycled.

Fig.5 depicts a schematic representation of a sheet processing system according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0013] In relation to the appended drawings, the present invention is described in detail in the sequel. Several embodiments are disclosed. It is apparent how-

ever that a person skilled in the art can imagine several other equivalent embodiments or other ways of executing the present invention, the scope of the present invention being limited only by the terms of the appended claims.

[0014] In fig.1 a sheet processing system (1) according to an embodiment of the present invention is schematically depicted. The sheet processing system may be a stand-alone system or may be an integral part of an image reproduction system such as e.g. a printing or copying system. Sheet or sets of sheets (2) can be inputted and are fed consecutively along a predetermined path to a sheet deposition station (3), where they are deposited. In fig.1 two predetermined paths are disclosed. When the sheets or set of sheets are controlled to follow predetermined path A, then they are fed without being subjected to a further finishing treatment at the processing speed of the sheet processing system to a sheet deposition station where they are flipped and deposited on a selected tray (8). When the sheets or set of sheets are controlled to follow predetermined path B, then control means are provided enabling the sheet processing system to operate in the normal mode. In this mode sheets are successively guided and fed using guiding and drive means including a continuously cycling buffering member (10) to an intermediate sheet deposition station (4) where a predetermined number of sheets is assembled in correspondence with the job definition. Subsequently the set of assembled sheets is aligned and stapled by a stapler (5). As the stapling action requires more time than the interval period between two sheets successively fed along predetermined path B towards the stapling position, such action is considered to be a time-consuming action and therefore the sheet(s) immediately following the set of sheets to be stapled are buffered in order not to degrade the processing speed of the sheet processing system. As will be described in more detail in the sequel, in order to enable the temporary buffering of sheets, the sheet processing system is controlled to operate in a buffering mode wherein those sheets are temporarily buffered before forwarding them to the intermediate sheet deposition station. When the stapling action is completed the buffered sheet(s) together with the first consecutive sheet are fed to the intermediate sheet deposition station. Simultaneously the stapled set of sheets (6) is fed further along predetermined path B to a sheet deposition station, where the set is flipped and deposited on a selected tray (9). The trays (8)(9) are part of a flexible sheet deposition unit (7) for depositing sheets on a selected one of multiple trays facing a selected one of multiple outputs of the sheet processing system. Preferably, drive means and guide members (not shown) should be provided such that each tray can be moved up and down such as to face an output of the sheet processing system and such that the distance between adjacent trays can be adjusted. For instance, in case of two sheet deposition stations as in fig.1, sheets produced in a "booklet mode"

may be directed to a first sheet deposition station where stapled sets of sheets are deposited on a selected tray (9) while sheets produced in a "sheet mode" are directed to the other sheet deposition station where they are deposited on a selected tray (8). Alternatively, the respective sheet deposition station may also be selected, instead of dependent on the finishing steps applied, e.g. single sheets versus booklets, dependent on format, e.g. A3 vs. A4, or on the sorting mode, e.g. sorting versus non-sorting.

Before arriving at the sheet deposition unit, the print medium may be subjected to all kind of finishing treatments including but not limited to cutting, punching, inverting, sorting, stapling and folding such as to obtain finished sheets, sets of finished sheets or booklets. The print medium is typically composed of paper, film, cardboard, label stock, plastic or textile. The sheet deposition unit may form an integral part of the sheet processing system or may be a separate unit which can be put in-line with the sheet processing system.

[0015] The sheet processing system disclosed in fig. 1 can be controlled to operate in a buffering mode. In the buffering mode, sheets are temporarily buffered on a continuously cycling buffering member (10) before forwarding them to the intermediate sheet deposition station (4) in order to provide the time required to execute proper alignment and stapling of a previous set of sheets assembled on the intermediate tray (4) in correspondence with the job definition. This buffering is executed without degrading the processing speed of the sheet processing system. In this mode sheets arriving at the endless surface of the continuously cycling buffering member are assembled thereon in superimposed relationship till the control means control the sheet processing system to operate again in a mode different from buffering mode, e.g. the normal mode. Suppose for instance that two consecutive sheets need to be buffered. Referring to fig.1, fig.2 and fig. 3, this may be done as follows. As depicted in fig.2(a), a first sheet (21) is fed along predetermined path B to the endless surface (14) of the continuously cycling buffering member. As the sheet processing system is controlled by control means to operate in the buffering mode, the sheet (21) is guided along path B' instead of further following path B as can be seen in fig.2(b). To enable this, the control means comprise a switch (12) acting on the buffering member. The switch is discussed in more detail with reference to fig.4. The switch is in a position such that the first sheet assembled on the buffering member is continuously cycled with a cycling period. While the first sheet (21) is cycled, a second consecutive sheet (22) is fed along predetermined path B towards the endless outer surface of the buffering member. Two rotatable pressure members (11) are provided, each of them being resiliently urged against the endless outer surface (14) of the buffering member such that any sheet assembled on the cycling buffering member is guided there-between. The rotatable pressure members are positioned such that in

operation at any time at least one of the rotatable pressure members contacts the sheets assembled on the buffering member. The interval time between the arrival of the leading edge of the first sheet (21) at the endless outer surface and the arrival of leading edge of the second consecutive sheet (22) at the same position is known as the processing speed of the sheet processing system is known as well as the distance between the two consecutive sheets. Use can be made of known position detection means to accurately determine the arrival of the sheets at the endless outer surface of the buffering member to determine the interval time between two consecutive sheets. The data registered by the detection means may be used by the control means to slightly adapt the cycling period of the buffering member and/or the processing speed of the sheet processing system to compensate for possible synchronisation errors, being errors resulting in slight variations in the interval time between respective sheets guided along predetermined path B and/or B'. Additional position detection means may be positioned along predetermined path B and B' to allow for a more accurate monitoring and compensation when required. The cycling period of the buffering member is chosen dependent on the interval time between the two consecutive sheets. As can be seen in fig.2(c), the buffering member is driven such that when the leading edge of the consecutive sheet (22) arrives at the endless surface (14) of the sheet buffering member (10), simultaneously the leading edge of the buffered sheet (21) arrives at the same position. The respective sheets are further subjected in superimposed relationship to the cycling motion of the buffering member. Alternatively, as depicted in figure 3, the cycling period is chosen such that the leading edge of the second sheet (22) arrives at the endless surface of the buffering after the arrival of the leading edge of the first sheet. In the latter case, the respective sheets only partially overlap each other. Care should be taken that the overlap is sufficiently large to ensure that the complete covering of the endless outer surface of the sheet buffering member is avoided. The configuration as depicted in fig.2 and 3 is such that the interval time between two consecutive sheets is smaller than or equal to the cycling period, assuming that the preceding sheet is cycled only once. Alternatively, the cycling period is chosen such that the interval time is about an integer multiple of the cycling period.

Two sheets are now buffered on the endless surface of the buffering member. By doing so enough time is provided for executing the alignment and stapling of a preceding set of sheet. Thus, the two buffered sheets may now be guided along predetermined path B towards the intermediate deposition location (4). To enable this, again the buffering member is cycled such that the leading edge of the consecutive sheet (23) arrives simultaneously (fig 2(d)) or shortly after (fig.3) the leading edge of the preceding sheet (2). The three sheets now assembled in superimposed relationship on the endless

surface of the sheet buffering member are transported further in superimposed relationship. Again care is taken to avoid the complete coverage of the endless surface. A can be seen in fig.2(e), by switching the switch (12) the control means now control the sheet processing system to operate again in the normal mode and the cycling buffering member conveys the sheets (21, 22, 23) assembled on its surface in superimposed relationship further along predetermined path B towards the intermediate sheet deposition station (4).

[0016] In fig.4 an example of a sheet buffering member (10) having an endless outer surface (14) and a switch (12) acting thereon is schematically depicted. The rotatable buffering member comprises 5 discs, positioned equidistant one with respect to another. A silicone rubber belt is mounted on the second and the fourth disc. By doing so the endless surface of the buffering member comprises two adhesive endless surface portions which ensure a reliable transport of the sheets on the buffering member.

[0017] In fig.5 a sheet processing system (1) according to an embodiment of the present invention is schematically depicted. The sheet processing system may be a stand-alone system or may be an integral part of an image reproduction system such as e.g. a printing or copying system. Sheets (2) are inputted consecutively at an input and are fed along a predetermined supply path C to an intermediate sheet deposition station (4) where a predetermined number of sheets is collected in correspondence with the job definition. Subsequently the set of assembled sheets is aligned and stapled by a stapler (5). The stapled set of sheets (6) is fed further to a sheet deposition station, where the set is flipped and deposited on a selected tray (9). The tray (9) may be part of a flexible sheet deposition unit (7) for depositing sheets on a selected one of multiple trays facing the output of the sheet processing system. Before arriving at the sheet deposition unit, the print medium may be subjected to all kind of finishing treatments including but not limited to cutting, punching, inverting, sorting, stapling and folding such as to obtain finished sheets, sets of finished sheets or booklets. The sheet deposition unit may form an integral part of the sheet processing system or may be a separate unit which can be put inline with the sheet processing system. When the stapling action requires more time than the interval period between two sheets successively fed along supply path C towards the stapling position, such action is considered to be a time-consuming action. In such case the sheet processing system is controlled such that the sheet(s) immediately following the set of sheets to be stapled are temporarily buffered in order not to degrade the processing speed of the sheet processing system. To accomplish that, at least the sheets which need to be buffered are directed along supply path D. These sheets are temporarily buffered on a continuously cycling buffering member (10) before being forwarded to the intermediate sheet deposition station (4). This buffering is

executed without degrading the processing speed of the sheet processing system. Sheets arriving at the endless surface of the continuously cycling buffering member are assembled thereon in superimposed relationship till the sheet processing system is controlled to release the assembled sheets from the surface of the sheet buffering member. The released sheets are directed to the intermediate sheet deposition station (4) for further handling. It is clear to a person skilled in the art that sheets succeeding the buffered sheets could already have been controlled to follow supply path C by adequately programming the control means such that they arrive timely at the intermediate sheet deposition station. When the stapling action on a preceding set of sheets is completed, the buffered sheet(s) are fed further along path D to the intermediate sheet deposition station, while the sheets succeeding the buffered sheets are conveyed further along supply path C to the intermediate sheet deposition station. Alternatively, one could also opt to control the sheet buffering member such that it can be operated also in a non-buffering mode as disclosed in any of the previous embodiments. In the latter case, sheets can be controlled to follow supply path D without being buffered on the sheet buffering member. When the stapling action on a preceding set of sheets is completed the buffered sheet(s) together with the first consecutive sheet are fed further along supply path D to the intermediate sheet deposition station.

Claims

1. A sheet processing system for feeding sheets successively along a supply path to a sheet deposition station where the sheets are collected, the sheet processing system having means for temporarily interrupting the supply of successive sheets to the sheet deposition station to enable processing of the sheets collected at the sheet deposition station, the means for temporarily interrupting the supply of successive sheets comprising:

a sheet buffering member having an endless outer surface,
 supply means for supplying sheets successively to the endless surface of the sheet buffering member, and
 means for conveying sheets assembled on the endless surface of the sheet buffering member to the sheet deposition station,

characterised in that,

the sheet buffering member, when sheets are supplied thereto, is continuously cycled with a cycling period for assembling successively supplied sheets on its endless outer surface in a superimposed relationship, the superimposed relationship being such that each second or any following sheet of the

conveyed sheets at least partially overlaps with the preceding sheet assembled on the endless surface of the sheet buffering member while avoiding completely covering the endless outer surface of the sheet buffering member.

2. The sheet processing system as recited in claim 1, wherein the cycling period of the sheet buffering member is smaller than or equal to the interval between the arrival of the leading edge of a first sheet and the arrival of the leading edge of a second successive sheet at the endless outer surface of the sheet buffering member.

3. The sheet processing system as recited in claim 1, wherein the cycling period of the sheet buffering member is smaller than the interval between the arrival of the leading edge of a first sheet and the arrival of the leading edge of a second successive sheet at the endless outer surface of the sheet buffering member.

4. The sheet processing system as recited in any preceding claim, wherein the endless outer surface of the sheet buffering member has at least a portion composed of an adhesive material, said portion covering the entire circumference of the sheet buffering member.

5. The sheet processing system as recited in any preceding claim, further comprising at least a first rotatable pressure member and a second rotatable pressure member, wherein the or each rotatable pressure member can be resiliently urged against the endless outer surface of the buffering member while any sheet assembled on the cycling buffering member is guided there-between.

6. The sheet processing system as recited in claim 5, wherein the first and the second rotatable pressure member are positioned such that when sheets are assembled on the endless outer surface of the sheet buffering member at any time at least one of the first and the second rotatable pressure member contacts the superimposed sheets assembled on the endless outer surface.

7. The sheet processing system as recited in any preceding claim, further comprising control means for controlling the sheet buffering member to operate in a first mode or in a second mode, the sheet processing system being adapted such that, when the sheet buffering member is controlled by the control means to operate in the first mode, sheets are fed successively along the supply path to the endless outer surface of the sheet buffering member and successively conveyed therefrom to the sheet deposition station where the sheets are collected,

while, when the sheet buffering member is controlled by the control means to operate in the second mode, the sheet buffering member is continuously cycled with a cycling period for assembling successively supplied sheets on its endless outer surface in a superimposed relationship, the superimposed relationship being such that each second or any following sheet of the conveyed sheets at least partially overlaps with the preceding sheet assembled on the endless surface of the sheet buffering member while avoiding completely covering the endless outer surface of the sheet buffering member.

8. The sheet processing system as recited in claim 7, wherein the control means comprise a switch for acting on the buffering member such that the buffering member is controlled to operate in the first or in the second mode.

9. The sheet processing system as recited in any preceding claim, wherein the sheet deposition station is an intermediate sheet deposition station.

10. A method for controlling a sheet processing system, the sheet processing system comprising:

a sheet buffering member operable in one of at least a first mode and a second mode, the sheet buffering member having an endless outer surface; and
supply means for supplying sheets successively to the endless outer surface of the sheet buffering member;

the method comprising the step of controlling the sheet buffering member to operate in the first mode, wherein sheets successively supplied to the endless outer surface of the sheet buffering member are successively transported on and released from the endless outer surface of the sheet buffering member, or in the second mode,

characterised in that,

when the sheet buffering member is controlled to operate in the second mode, the sheet buffering member is continuously cycled with a cycling period for assembling successively supplied sheets on its endless outer surface in a superimposed relationship, the superimposed relationship being such that each second or any following sheet of the conveyed sheets at least partially overlaps with the preceding sheet assembled on the endless surface of the sheet buffering member while avoiding completely covering the endless outer surface of the sheet buffering member.

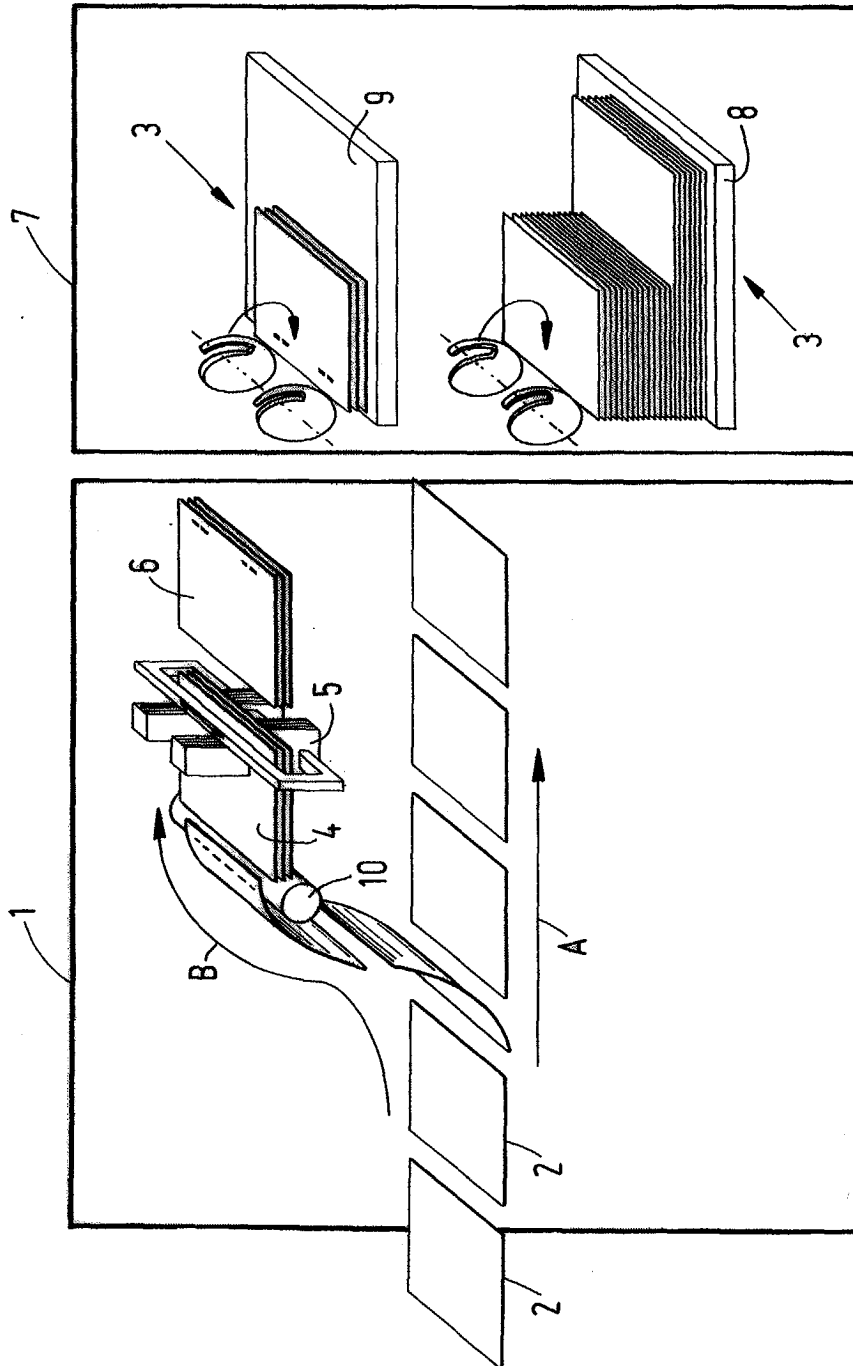


FIG.1

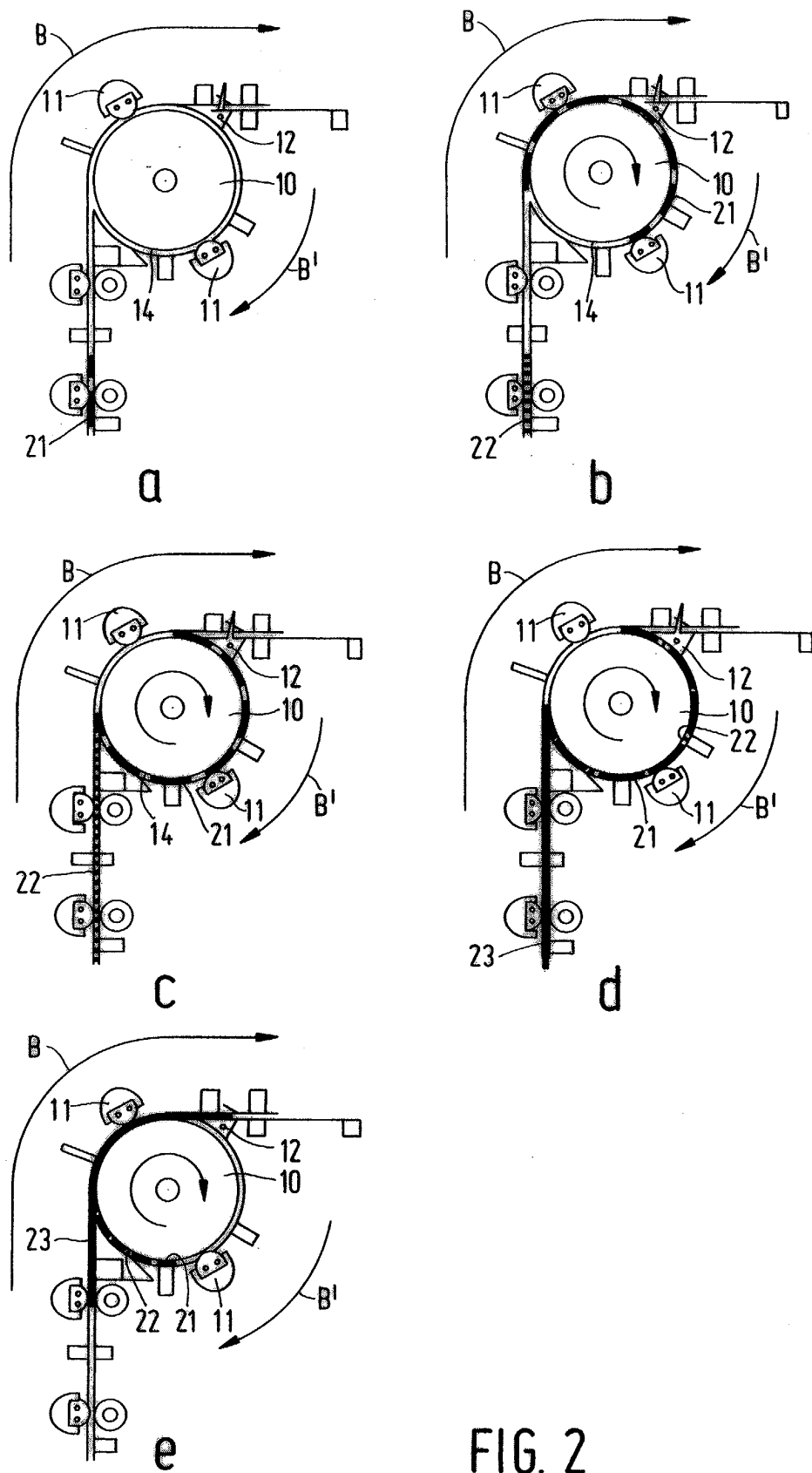


FIG. 2

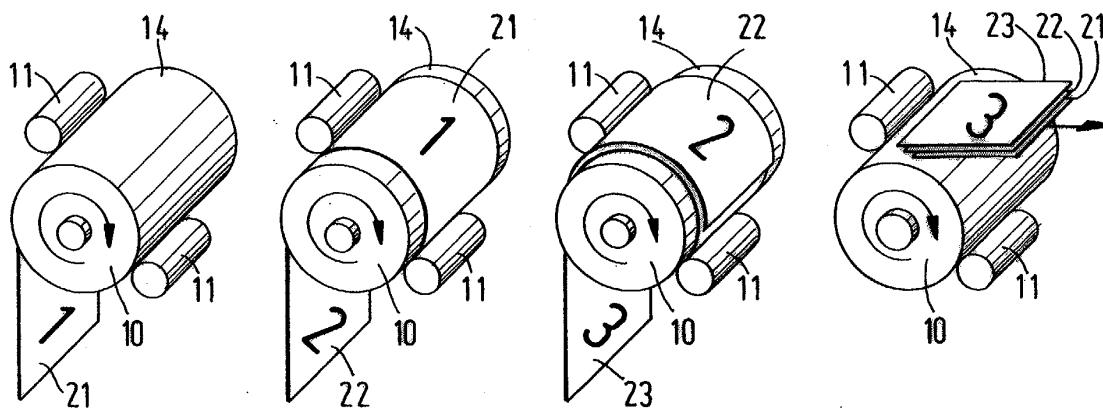


FIG. 3

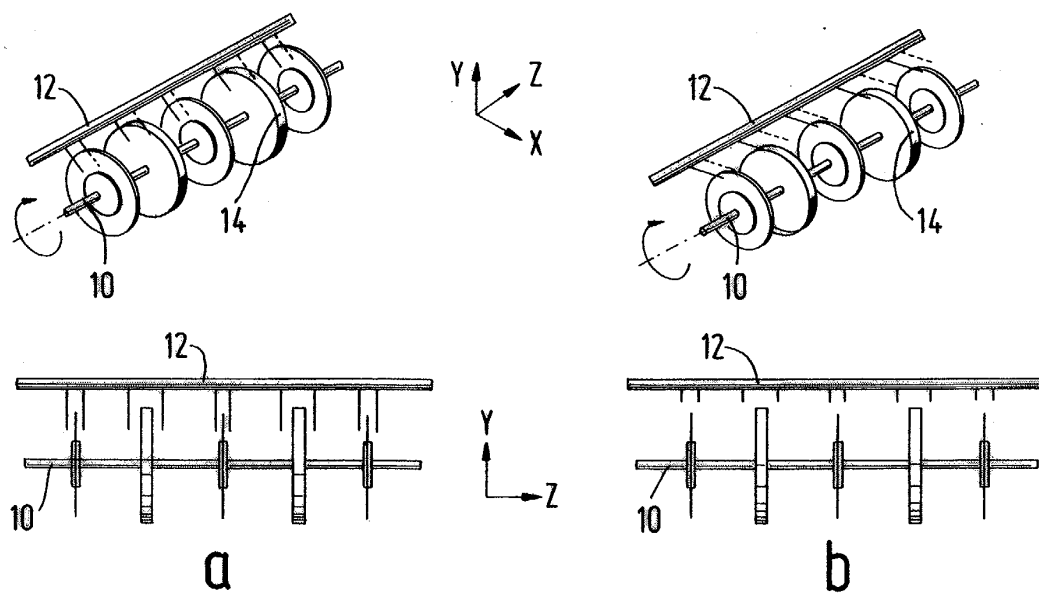


FIG. 4

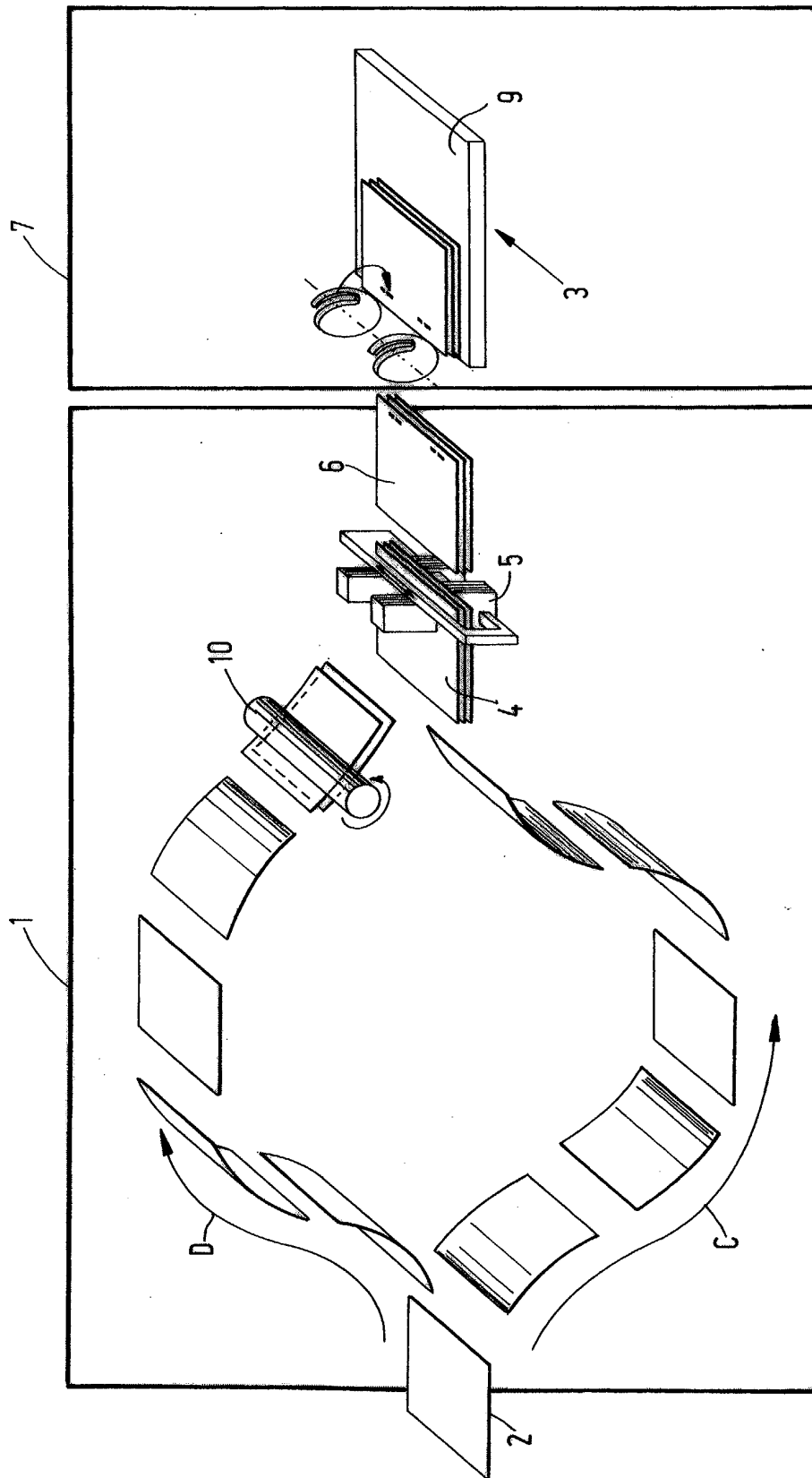


FIG. 5



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 07 5978

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 05, 12 May 2003 (2003-05-12) & JP 2003 002501 A (CANON INC), 8 January 2003 (2003-01-08) * abstract * * paragraph '0008! - paragraph '0012!; figures * * paragraph '0044! - paragraph '0048!; figures 4-7 *	1,2,5-10	B65H29/51 B65H31/32
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