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(72) Inventors:
• **BORCHERT, Christopher J.**
Venlo (NL)
• **VAN DONGEN, Peter J.W.**
Venlo (NL)
• **KUYPERS, Hermanus M.**
Venlo (NL)

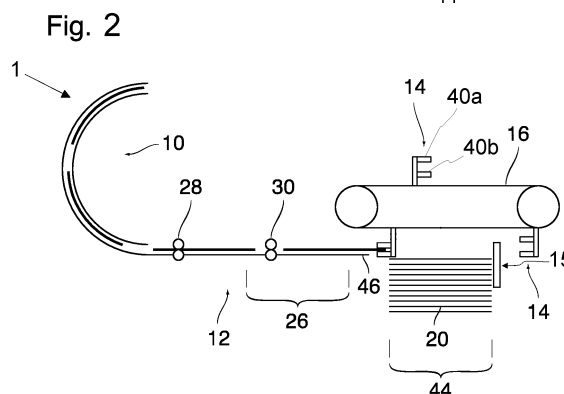
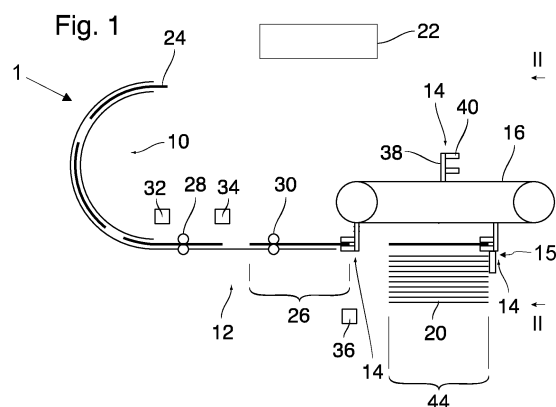
(71) Applicant: **Canon Production Printing Holding B.V.**
5914 HH Venlo (NL)

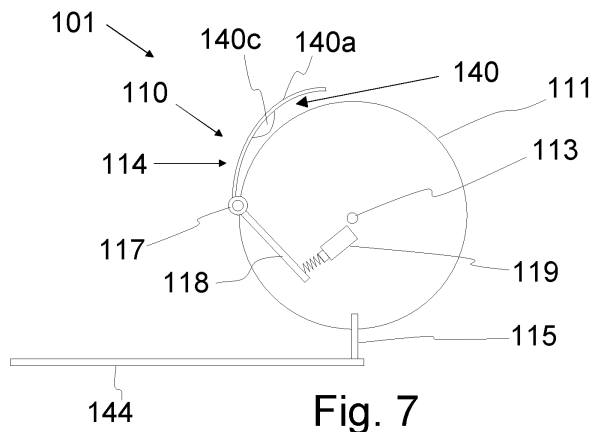
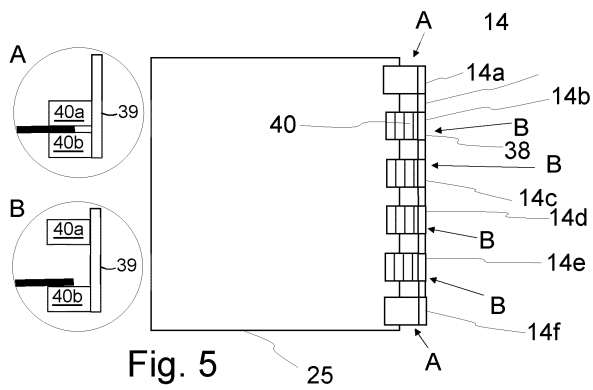
(74) Representative: **Canon Production Printing IP Department**
Canon Production Printing Netherlands B.V.
Van der Grintenstraat 10
5914 HH Venlo (NL)

(54) **SHEET STACKER COMPRISING A GRIPPER WITH ADJUSTABLE SHEET HOLDING FORCE**

(57) Sheet deformation and misalignment of sheets in a stack when stacking sheets can be reduced or even prevented by the steps of:

- a gripper arrangement (14, 114, 214) receiving a first sheet (25) of a first stiffness, the gripper arrangement holding the first sheet by a predetermined, first holding force, and releasing the first sheet from the gripper arrangement by the gripper arrangement moving the first sheet against a stop element (15, 115);
- the gripper arrangement receiving a second sheet (24) of a second stiffness, the gripper arrangement holding the second sheet by a predetermined, second holding force, and releasing the second sheet from the gripper arrangement by the gripper arrangement moving the second sheet against a stop element, wherein the second stiffness of the second sheet is greater than that of the first sheet and that the second holding force is greater than the first holding force.





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Description

BACKGROUND OF THE INVENTION

1. Field of the invention

[0001] The invention relates to a method of stacking sheets and to sheet stacker.

2. Description of Background Art

[0002] Sheet stackers are commonly applied in printers to form stacks of printed sheets. A gripper arrangement receives a sheet coming from a print station. The gripper arrangement holds the sheet by a predetermined holding force, moves the sheet to a stack support, and releases the first sheet from the gripper arrangement by moving the sheet against a stop element. The stop element contacts the sheet a several points along its leading edge. Thereby, the leading edge of the sheet is aligned with respect to the stop element, resulting in a relative alignment of all sheets in the stack. For mid to high volume range printers, the sheet stackers operator at considerable speed, for example between 100 to 600 sheets per minute. It was found that when applying a variety of different media types at higher stacking speeds, deformation and/or damage to sheets could occur, as well as misalignment of individual sheets in the stack.

SUMMARY OF THE INVENTION

[0003] It is an object of the invention to provide an improved method of sheet stacking, which reduces or prevents sheet deformation and/or misalignment.

[0004] In accordance with the present invention, a method according to claim 1 and a sheet stacker according to claim 7 are provided.

[0005] This method for stacking sheets comprises the steps of:

- a gripper arrangement receiving a first sheet of a first stiffness, the gripper arrangement holding the first sheet by a predetermined, first holding force, and releasing the first sheet from the gripper arrangement by the gripper arrangement moving the first sheet against a stop element, and
- the gripper arrangement receiving a second sheet of a second stiffness, the gripper arrangement holding the second sheet by a predetermined, second holding force, and releasing the second sheet from the gripper arrangement by the gripper arrangement moving the second sheet against the stop element.

[0006] The method is characterized in that the second stiffness of the second sheet is greater than that of the first sheet and that the second holding force is greater than the first holding force.

[0007] It is the insight of the inventors that reliable sheet

stacking can be achieved by setting a suitable holding force of the gripper arrangement on a sheet in accordance with each individual sheet media type. It is the further insight of the inventors that the holding force should be proportional to a sheet's stiffness to avoid on one hand deformation of relatively weaker sheets and on the other hand to prevent relatively stiffer sheets from becoming misaligned due to these stiffer sheets bouncing back from the stop element upon impact. Weaker sheets are held by the gripper arrangement with a relatively low holding force, such that the weaker sheets are more easily released from the gripper arrangement when these contact the stop element. The impact of the stop element on the weaker sheets is thus low, preventing or reducing curling, folding, tearing, and/or other forms of deformation in these weaker sheets. Stiffer sheets are held by the gripper arrangement by a relatively greater holding force. This increased holding force keeps the stiffer sheets initially secured in the gripper arrangement, as the stiffer sheets first contact the stop element. The stiffer sheets are prevented from bouncing back from the stop element by the greater holding force. Misalignment is thereby reduced or prevented. Due to their greater stiffness, these stiffer sheets are more resistant against the impact from the stop element and do not deform. In consequence, sheets of a wide variety of different media types, specifically with different stiffnesses, can be stacked in an aligned manner without deformation and/or damage. Thereby the object of the present invention has been achieved.

[0008] More specific optional features of the invention are indicated in the dependent claims.

[0009] In an embodiment, the method further comprises the steps of:

- selecting a first media type for the first sheet and deriving the first holding force from the first media type; and
- selecting a second media type for the second sheet and deriving the second holding force from the second media type,

wherein the second media type is different from the first media type. Different media types are applied for the first and second sheets respectively. The media types may differ in stiffness, grammage, material type (printing paper, cardboard, paperboard, plastics, etc.), dimensions, or other physical properties. Each media type is indicated to the controller. The controller upon selection of this media type executes the stacking such that each sheet is gripped with a suitable holding force.

[0010] In an embodiment, the step of holding the sheet comprises the gripper arrangement clamping the sheet. The gripper arrangements clamps the sheet during its transport towards the stop element. Preferably, the sheet is not clamped tightly, but lightly such that the sheet is released by contact with the stop element, without actuating the gripper arrangement.

[0011] In an embodiment, the gripper arrangement engages a larger area of the second sheet as compared to an area by which the gripper arrangement engages the first sheet. The holding force is preferably proportional to the area of the sheet by which it engages the sheet. For the stiffer, second sheet a greater area of the sheet is gripped as compared to the weaker, first sheet. This allows for relatively simple control of the holding force.

[0012] In an embodiment, the gripper arrangement comprises a plurality of grippers to grip the sheet at at least three spaced-apart points of the sheet, and wherein a second number of grippers engaging the second sheet is higher than a first number of grippers engaging the first sheet. The holding force is determined by the number of grippers actively gripping the sheet. Stiffer sheets are held by more grippers than weaker sheets. Preferably, each gripper arrangement has the same number of grippers. Different holding forces are achieved by varying the number of grippers actively engaging a sheet. For weaker sheets a part of the grippers does not grip the sheet. Preferably, all sheets are engaged by at least the outer grippers for stability reasons.

[0013] In an embodiment, the gripper arrangement moves unidirectionally along a closed path. The gripper arrangement is transported along a cyclic path in the form of an endless loop. After releasing the sheet, each gripper arrangement is returned to the reference position for receiving a new sheet without obstructing the trajectory of other gripper arrangements. As such a compact and simple device is formed.

[0014] The present invention further relates to a sheet stacker for a printer comprising a gripper arrangement for releasably holding a leading edge of a sheet, which gripper arrangement is movable towards a stop element against which sheets are aligned, such that the sheet is released from the gripper arrangement as the leading edge contacts the stop element.

[0015] The sheet stacker is characterized in that the gripper arrangement is configured to vary its holding force on sheets dependent on a sheet media type of a sheet. Different holding forces can be purposely applied to sheets of different media types. Preferably, the controller is configured to apply a lower holding force for relatively weaker sheets than for relatively stiffer sheets. This allows reliable sheet alignment during stacking without damage or deformation to the sheets.

[0016] In an embodiment, the gripper arrangement is adapted to be moved unidirectionally along a closed path. The one or more gripper arrangements are provided on a cyclic conveyor, which is configured to move a gripper arrangement in an endless loop.

[0017] In an embodiment, the sheet stacker comprises a controller storing a media catalogue for determining the holding force for each sheet media type defined in said media catalogue, wherein the controller is configured to control the gripper arrangement to apply the determined holding force when a sheet media type is selected. Selection of the media type of the sheet to be

stacked determines the holding force to be applied by the gripper arrangement. The media catalogue stores for each media type a stacking mode indicator, from which the controller determines how a sheet is to be stacked, specifically how to control the gripper arrangement to exert the intended holding force. The stacking mode indicator may be expressed in any suitable form, such a holding force, a number of grippers to engage the sheet, a stiffness parameter, etc. The controller determines the sheet stacking mode from the stacking mode indicator for example by means of an algorithm or look-up table which links media types to sheet stacking modes resulting in a predetermined holding force. No operator interference is required.

[0018] In an embodiment, the gripper arrangement comprises at least three grippers which comprises at least two opposing pinch arms moveable with respect to one another for clamping the sheet between them. The grippers are preferably spaced apart from one another in the lateral direction of the sheet, such that the sheet is gripped at at least three different lateral positions. Preferably, at least two grippers engage every sheet, while the third or more grippers are controlled to grip only when sheets of above a certain stiffness threshold are applied. The pinch arms form a simple yet reliable receiving means for the leading edge of the sheet. Sufficient insertion of the sheet between the pinch arm results in a holding force due to the sheet becoming clamped between the pinch arms.

[0019] In an embodiment, the gripper arrangement comprises a plurality of grippers for gripping the sheet at at least three spaced-apart points of the sheet, wherein a second number of grippers engaging a relatively stiffer sheet is smaller than a first number of grippers engaging a relatively flexible sheet. In another embodiment, the controller derives from the selected media type the number of grippers gripping a sheet of each media type.

[0020] The present invention further relates to a sheet printer comprising a sheet stacker. The sheet stacker may be configured according to any of the above and below described embodiments.

[0021] Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the present invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the present invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The present invention will become more fully understood from the detailed description given herein below and the accompanying drawings which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

Fig. 1 is a schematic side view of an embodiment of a sheet stacker receiving a sheet;

Fig. 2 is a schematic side view the sheet stacker in Fig. 1 releasing a sheet;

Fig. 3 is a block diagram illustrating the steps of a stacking method;

Fig. 4 schematically illustrates an embodiment of a media catalogue for use in the method in Fig. 3;

Fig. 5 is a schematic top view of a gripper arrangement of the sheet stacker in Fig. 1 gripping a weaker sheet;

Fig. 6 is a schematic top view of a gripper arrangement of the sheet stacker in Fig. 1 gripping a stiffer sheet;

Fig. 7 is a schematic side view of another embodiment of a sheet stacker; and

Fig. 8 is a schematic top view of a further embodiment of a sheet stacker.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0023] The present invention will now be described with reference to the accompanying drawings, wherein the same reference numerals have been used to identify the same or similar elements throughout the several views.

[0024] The sheet stacker 1 shown in Fig. 1 comprises a sheet flipping mechanism 10, a sheet alignment mechanism 12, a number of gripper arrangements 14 mounted on an endless conveyor 16, and a controller 22 controlling the operations of the various components of the apparatus.

[0025] The sheet flipping mechanism 10 takes the form of a semi-circular guide that receives media sheets 24 that exit from a discharge port of a printer (not shown) in close succession. For conveying the sheets 24 through their semi-circular path in the flipping mechanism 10, a number of pairs of drive rollers (not shown) may be provided along the transport path, or the transport path may be delimited on the radially inner side by a rotating drum. By way of example, it may be assumed that the sheets 24 have received an image on the top side in the (simplex) printer, and the flipping mechanism 10 reverses the orientations of the sheets so that they can be deposited on the stack 20 with the images facing downwards. The radius of the semi-circular transport path may be relatively large so that even relatively stiff sheets 24 can smoothly be handled.

[0026] The sheet alignment mechanism 12 is provided for aligning the sheets in a predetermined reference position 26 that has been symbolized here by two vertical lines that mark the positions of the leading edge and the trailing edge of the sheet in the reference position. In the example described here, the alignment mechanism 12 is also capable of aligning the sheets in the lateral direction (normal to the plane of the drawing in Fig. 1). To that end, the alignment mechanism comprises two sets 28,

30 of drive rollers each of which comprises two pairs of rollers that are separated in the lateral direction, as can be seen (for the set 30) in Fig. 2 and which form nips for feeding the sheet at differential speeds. The drive roller set 28 conveys the sheets from the flipping mechanism 10 to the drive roller set 30 which will then take-over the sheets and convey them into the reference position 26. An optical sensor 32, 34 detect a possible lateral offset and/or skew angle of the sheet, which information is applied for controlling further movement of the sheet and if required correcting its lateral position and/or orientation. Yet another optical sensor 36 detects the leading edge of the sheet at the time when the sheet reaches the reference position 26.

[0027] As is shown in Fig. 1, one of the gripper arrangements 14 on the conveyor 16 is in a position in which it can grip the leading edge of the sheet that has just arrived in the reference position 26.

[0028] In the example shown, the conveyor 16 has a total of three gripper arrangements 14 one of which is returning to the reference position on the upper run of the conveyor. As is shown in Figs. 5 and 6, each gripper arrangement 14 comprises a plurality of grippers (14a-14f in Figs. 5 and 6) are spaced apart from one another in the lateral direction. Each gripper 14a-14f has a post 38 that projects at right angles from the surface of the conveyor 16 and carries two pinch arms 40, which are positioned, so that the leading edge of a sheet can be pinched between the two pinch arms. Optionally, the at least one of the pinch arms 40 may be movable along the post 38.

[0029] It will be observed that the pinch arms 40 have a certain length in the conveying direction of the sheets, so that the relative position of the leading edge of the sheet and the pinch arms 40 may vary within a certain range and the sheet can nevertheless be gripped safely. The conveyor 16 and the grippers 14a-d are controlled such that each sheet is gripped at multiple points of its leading edge when the sheet is in the reference position 26. For example, the conveyor 16 may be driven at a constant speed such that the velocity of the gripper arrangements 14 is slightly smaller than the conveying speed of the sheets 24 in the alignment mechanism 12. Consequently, when moving towards the reference position, the leading edge of the sheet will slowly approach the grippers 14a-14f that are moving in the same direction with a slightly smaller speed. The upper pinch arm 40a may be lifted so that the sheet may smoothly enter into the space between the two pinch arms 40a, 40b. As soon as the sensor 36 detects that the leading edge of the sheet is exactly in the reference position, the gripper arrangement 14 may be accelerated to match the speed by which the sheet was supplied by the pinches 28, 30. The sensor 36 may further control the grippers 14a-14f to be closed, so that the sheet is securely held in position relative to the gripper arrangement 14.

[0030] Although not shown in Fig. 1, the posts 38 of the two grippers 14a-14f may be interconnected by a

cross-bar 39 so that this cross-bar, the two posts and the conveyor 16 form a rigid frame. When the conveyor 16 moves on, this rigid frame is moved along a straight trajectory that is defined by the transport direction of the conveyor, so that the sheet held in the grippers 14a-14f is subject to a parallel transport along this trajectory. The sheet is moved towards a stacking position 44 which has been symbolized here by two vertical lines marking the front and rear sides of the stack 20.

[0031] As is well known in the art, the stack 20 is formed on a lift table (not shown) that is height-controlled such that the top of the stack will always be at the same level, closely below the bottom ends of the gripper arrangements 14, so that the grippers 14a-14f do not collide with the stack when they draw a sheet onto the stack.

[0032] At the stacking position the sheet is brought into contact with the stop element 15. The stop element 15 in Figs. 1 and 2 is formed as an end plate with recesses that allow the gripper arrangements 14 to pass through unhindered. The sheet however is prevented from further progress in the transport direction by contact with the stop element 15. In consequence, the sheet is released from its gripper arrangement 14 at the stacking position. Thereby, the sheet lands on top of the sheet stack present on the stack support. In this way, the new sheet is placed onto the top of the stack 20 in a precisely aligned position, as shown in Fig. 2.

[0033] Fig. 3 illustrates the steps of stacking a sheet dependent on the sheet's stiffness. In step i, the media type of the to be stacked sheet is determined. The media type is preferably selected from a pre-stored media catalogue, as the one illustrated in Fig. 4. The media catalogue stores a plurality of relevant parameters for each media type, such as grammage G , a sheet stiffness parameter σ , dimensions, and/or a stacking mode indicator X . The media type may be selected by input through a user interface and/or automated media type detection using one or more suitable sensors. Generally, the media type is supplied in or with the print job information submitted to the controller 22.

[0034] Based on the selected media type, the controller 22 in step ii determines the sheet stacking mode. Different sheet stacking modes are configured to result in different holding forces on the sheet by the gripper arrangements 14. In the example shown in Fig. 4, the controllers derives the sheet stacking mode X from the respective column X . In Fig. 4, the media catalogue defines the sheet stacking mode X for each media type. In Fig. 4, the sheet stiffness parameter σ is indicated relatively with terms as low (L), medium (M), and high (H). The sheet stacking mode X is defined with the number of grippers 14 designated for simultaneously gripping the sheet. A greater number of engaging grippers 14a-14f results in a greater holding force on the sheet. The holding force is proportional to the number of engaging grippers 14a-d, which is in Fig. 4 proportional to the sheet stiffness parameter σ . For stiffer sheets, a higher number of engaging grippers 14a-14f is applied to produce the desired greater

holding force. In Fig. 4, the holding force is determined by the number of active grippers 14a-14f, which increased with the stiffness σ of the sheets. Alternatively, algorithms or lookup tables may be applied to derive the sheet stacking mode from one or more sheet properties, such as grammage, G , stiffness parameters σ , etc.

[0035] In step iii, a sheet of relatively lower stiffness has been selected. The stacker 1 is then controlled to operate in a first sheet stacking mode, indicated in Fig. 5. In step iv, the flexible sheet 25 is gripped with only a portion of the total number of available grippers 14a-14f. In Fig. 5, less than half of the total number of grippers 14a-14f grip the leading edge of the flexible sheet 25. The central grippers 14b, 14c are in a non-engaging position B with respect to the sheet 25 and do not exert a holding force on the sheet 25. In the non-engaging position B, the pinch arms 40 are opened sufficiently wide that the sheet 25 is not clamped or gripped between them. The outer grippers 14a, 14f are in an engaging position A and actively hold the sheet 25. Each gripper 14a-14f is configured to apply a predetermined holding force on a respective portion of the sheet when in the engaging position A. Preferably, each gripper 14a-14f then exerts a similar or comparable amount of holding force on the sheet 25. In consequence, the total holding force of the gripper arrangement 14 in Fig. 5 is roughly one third of the maximum holding force that can be achieved by all grippers 14a-14f combined (as shown in Fig. 6). While engaging the sheet 25, the gripper arrangement 14 is transported towards the stop element 15. In step v, contact with the stop element 15 causes the sheet 25 to be released from the gripper arrangement 14 holding the sheet 25. Since the holding force is present on the sheet 25 when contacting the stop element 15, the leading edge of the sheet is aligned to the stop element 15 during release. The gripper arrangement 14 passes by the stop element 15. After aligning the sheet 25 to the stop element 15, the pinch arms 40 may be actuated to open. Thereby, the sheets 25 are stacked in an aligned manner. Subsequently, further sheets of the same material may be stacked by repeating steps iv and v. In case a new media type or print job is selected, the method may be repeated from step i. The flexible sheets 25 are not deformed by contact with the stop element due to the relatively low holding force. Thus, deformation is avoided.

[0036] In step vi, a sheet of relatively higher stiffness is selected. The step iv to vii are similar to steps iii to v with the exception that a greater number of grippers 14a-14f grips the leading edge of the stiffer sheet 24, as shown in Fig. 6. In step vii, all grippers 14a-14f engage the stiffer sheet 25. In Fig. 6, all grippers 14a-14f are in the engaging position A. The stiff sheet 25 is thus held by a holding force that is greater than that of the flexible sheet 25 in Fig. 5. When the stiffer sheet 24 is moved against the stop element 15 by the grippers 14a-14f in step viii, the sheet 24 is prevented from bouncing back from the stop element 15 by the high holding force. In consequence, the stiffer sheet 24 is aligned properly with respect to the

stop element 15. Thus, an accurately aligned sheet stack is formed. Due to its greater stiffness, the stiffer sheet 24 is not deformed by the increased holding force. Thereby, the method in Fig. 3 allows for the aligned stacking of a wide variety of media types without deformation of the sheets, specifically with regard to sheet stiffness. It will be appreciated that sheets with a medium stiffness M in Fig. 4 may be stacked using four of the grippers 14a-f, preferably using the outer and central pairs of grippers 14a-14f.

[0037] Fig. 7 illustrates another embodiment of a sheet stacker 101. The sheet flipping device 110 in Fig. 7 is configured as a rotatable flipping element. The sheet flipping device 110 comprises a flipping wheel 111 rotatable around its axis 113. One or more insertion slots are provided at the circumference of the flipping wheel 111. The insertion slot is defined between the pinch arm 140a and the circumference of the flipping wheel 111. The pinch arm 140a is pivotable with respect to the flipping wheel 111 by means of the pivot point 117. A contact portion or pad 140c is provided on the pinch arm 140a to improve its grip on the sheet. The pinch arm 140a is connected to a force applicator 119 via the force arm 118. The force applicator 119, for example in the form of an actuator, drive, and/or spring is configured to exert a predetermined, adjustable force on the force arm 118. In Fig. 7, the force applicator 119 controls the length of a spring element, which in turn determines the holding force. An opposing leaf spring may be provided at the axis 117 to ensure a constant pretension. Thereby, the holding force of the gripper arrangement 140 can be adjusted. For stiffer sheets, the force applicator 119 applies a greater holding force as compared a sheet with a relatively low stiffness. While held by the gripper arrangement 140, the leading edge of the sheet is rotated towards the stop element 115. This causes the sheet to be flipped. Contact with the stop element 115 releases the sheet from the insertion slot, such that it is positioned on the stack support 144 aligned with respect to the stop element 115.

[0038] Fig. 8 is a further embodiment of a sheet stacker 101. Like in Fig. 7, this sheet stacker 201 comprises a flipping wheel 211 rotatable around its axis 213. The flipping device in Fig. 8 operates in a similar as the one in Fig. 7 with the exception of the gripper arrangements 240. Each gripper 240a-240c comprises a pinch arm 240A pivotable around its axis 217. Like in Figs. 5 and 6, each gripper 240a-240c has two positions, an engaging position wherein a sheet is gripped and a non-engaging position wherein the respective gripper 240a-240c does not exert a holding force on the sheet. The holding force can be controlled by adjusting the number of the gripper 240a-1240c to be applied for actively gripping the sheet. The number of active grippers 240a-240c increases with the stiffness of the sheet.

[0039] It will be appreciate that stiffness herein can be measured by any available or known stiffness measurement procedure known to the skilled person, for example the standardized Taber test.

[0040] Although specific embodiments of the invention are illustrated and described herein, it will be appreciated by those of ordinary skill in the art that a variety of alternate and/or equivalent implementations exist. It should be appreciated that the exemplary embodiment or exemplary embodiments are examples only and are not intended to limit the scope, applicability, or configuration in any way. Rather, the foregoing summary and detailed description will provide those skilled in the art with a convenient road map for implementing at least one exemplary embodiment, it being understood that various changes may be made in the function and arrangement of elements described in an exemplary embodiment without departing from the scope as set forth in the appended claims and their legal equivalents. Generally, this application is intended to cover any adaptations or variations of the specific embodiments discussed herein.

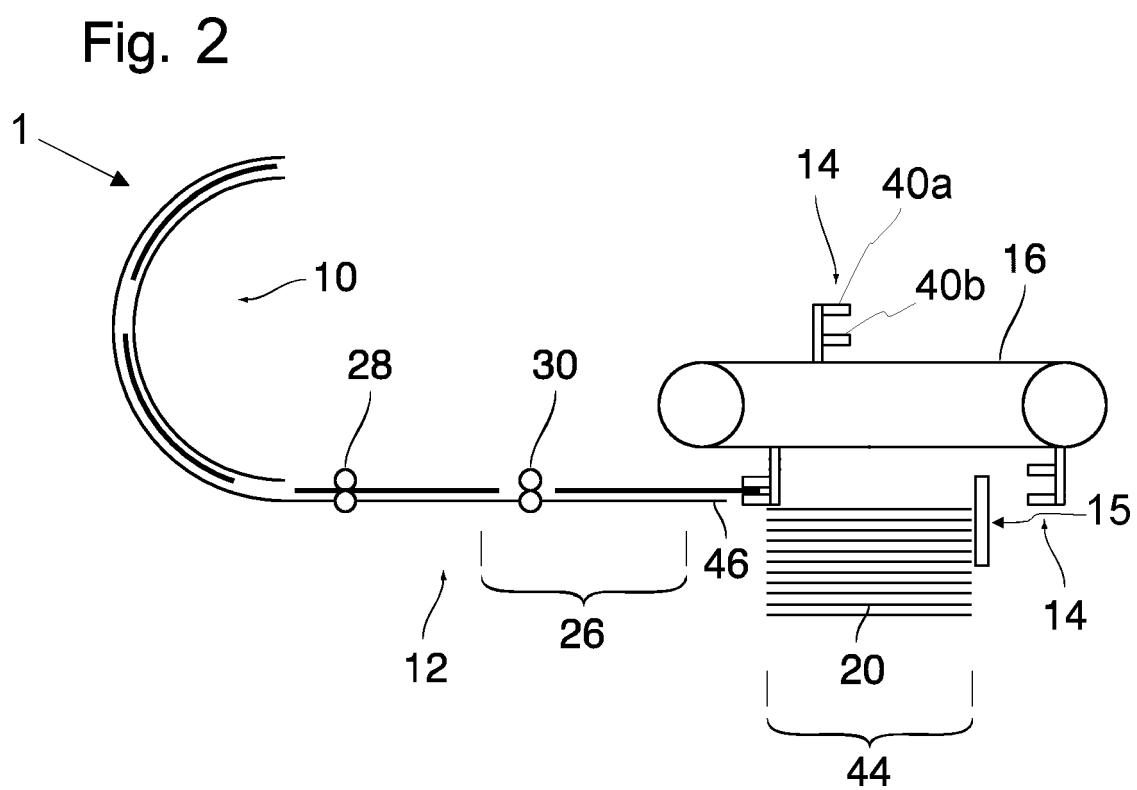
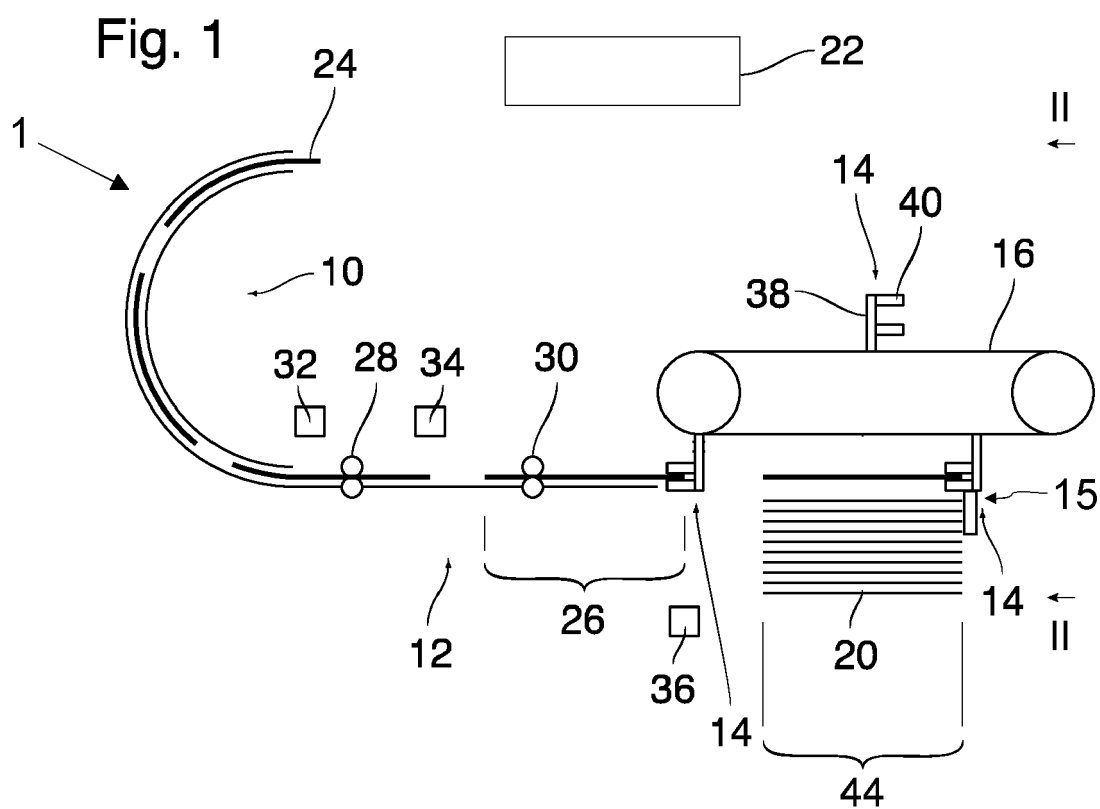
[0041] It will also be appreciated that in this document the terms "comprise", "comprising", "include", "including", "contain", "containing", "have", "having", and any variations thereof, are intended to be understood in an inclusive (i.e. non-exclusive) sense, such that the process, method, device, apparatus or system described herein is not limited to those features or parts or elements or steps recited but may include other elements, features, parts or steps not expressly listed or inherent to such process, method, article, or apparatus. Furthermore, the terms "a" and "an" used herein are intended to be understood as meaning one or more unless explicitly stated otherwise. Moreover, the terms "first", "second", "third", etc. are used merely as labels, and are not intended to impose numerical requirements on or to establish a certain ranking of importance of their objects.

[0042] The present invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

Claims

1. A method for stacking sheets (24, 25) comprising the steps of:
 - a gripper arrangement (14, 114, 214) receiving a first sheet (25) of a first stiffness, the gripper arrangement (14, 114, 214) holding the first sheet (25) by a predetermined, first holding force, and releasing the first sheet (25) from the gripper arrangement (14, 114, 214) by the gripper arrangement (14, 114, 214) moving the first sheet (25) against a stop element (15, 115);
 - the gripper arrangement (14, 114, 214) receiving a second sheet (24) of a second stiffness, the gripper arrangement (14, 114, 214) holding

- the second sheet (24) by a predetermined, second holding force, and releasing the second sheet (24) from the gripper arrangement (14, 114, 214) by the gripper arrangement (14, 114, 214) moving the second sheet (24) against the stop element (15, 115),
characterized in that the second stiffness of the second sheet (24) is greater than that of the first sheet (25) and that the second holding force is greater than the first holding force.
2. The method according to claim 1, further comprising the steps of:
- selecting a first media type for the first sheet (25) and deriving the first holding force from the first media type; and
 - selecting a second media type for the second sheet (24) and deriving the second holding force from the second media type,
- wherein the second media type is different from the first media type.
3. The method according to any of the previous claims, wherein the steps of holding the sheets (24, 25) comprise the gripper arrangement (14, 114, 214) clamping the sheet (24, 25).
4. The method according to claim 3, wherein the gripper arrangement (14, 114, 214) engages a larger area of the second sheet (24) as compared to an area by which the gripper arrangement (14, 114, 214) engages the first sheet (25).
5. The method according to claim 4, wherein the gripper arrangement (14, 114, 214) comprises a plurality of grippers (40, 140, 240) to grip each sheet (24, 25) at at least three spaced-apart points of the sheet (24, 25), and wherein a second number of grippers (14a-14f, 114, 214a-214c) engaging the second sheet (24) is higher than a first number of grippers (14a-14f, 114, 214a-214c) engaging the first sheet (25).
6. The method according to any of the previous claims, wherein the gripper arrangement (14, 114, 214) moves unidirectionally along a closed path.
7. A sheet stacker (1, 101, 201) for a printer comprising a gripper arrangement (14, 114, 214) for releasably holding a leading edge of a sheet (24, 25), which gripper arrangement (14, 114, 214) is movable towards a stop element (15, 115) against which sheets (24, 25) are aligned, such that the sheet (24, 25) is released from the gripper arrangement (14, 114, 214) as a leading edge contacts of the sheet (24, 25) the stop element (15, 115),
characterized in that the gripper arrangement (14, 114, 214) is configured to vary its holding force on sheets (24, 25) dependent on a sheet media type of a sheet (24, 25).
8. The sheet stacker (1, 101, 201) according to claim 7, wherein the gripper arrangement (14, 114, 214) is adapted to be moved unidirectionally along a closed path.
9. The sheet stacker (1, 101, 201) according to claim 7 or 8, comprising a controller (22) storing a media catalogue for determining the holding force for each sheet media type defined in said media catalogue, wherein the controller (22) is configured to control the gripper arrangement (14, 114, 214) to apply the determined holding force to a sheet (24, 25) of the selected sheet media type.
10. The sheet stacker (1, 101, 201) according to any of claims 7 to 9, wherein the gripper arrangement (14, 114, 214) comprises at least three grippers (14a-14f, 114, 214a-214c) which each comprise at least two opposing pinch arms (40a, 40b, 140, 240a) moveable with respect to one another for clamping the sheet (24, 25) between them.
11. The sheet stacker (1, 101, 201) according to claim 10, wherein the gripper arrangement (14, 114, 214) comprises a plurality of grippers (14a-14f, 114, 214a-214c) for gripping the sheet (24, 25) at at least three spaced-apart points of the sheet (24, 25), wherein a second number of grippers (14a-14f, 114, 214a-214c) engaging a relatively stiffer sheet (24) is smaller than a first number of grippers (14a-14f, 114, 214a-214c) engaging a relatively flexible sheet (25).
12. The sheet stacker (1, 101, 201) according to claim 10, wherein the controller (22) derives from the selected media type the number of grippers (14a-14f, 114, 214a-214c) to grip a sheet (24, 25) of each media type.
13. The sheet stacker (1, 101, 201) according to claim 10, 11, or 12, wherein each gripper (14a-14f) is movable between an engaging position (A) wherein the respective gripper (14a-14f) exerts a gripping force on the sheet (24, 25), and a non-engaging position (B) where the respective gripper (14a-14f) does not grip the sheet (24, 25).
14. A sheet printer comprising a sheet stacker according to any of the claims 7 to 13.



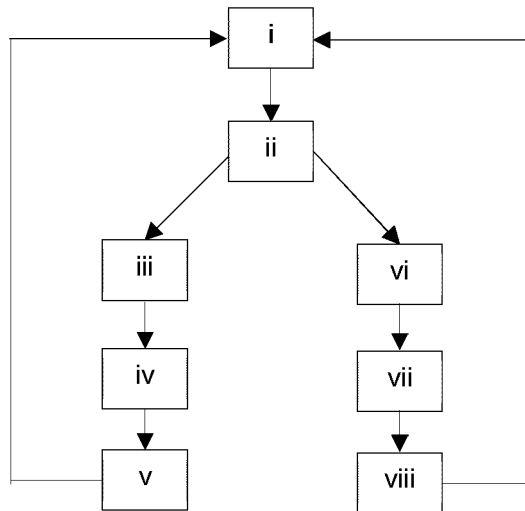
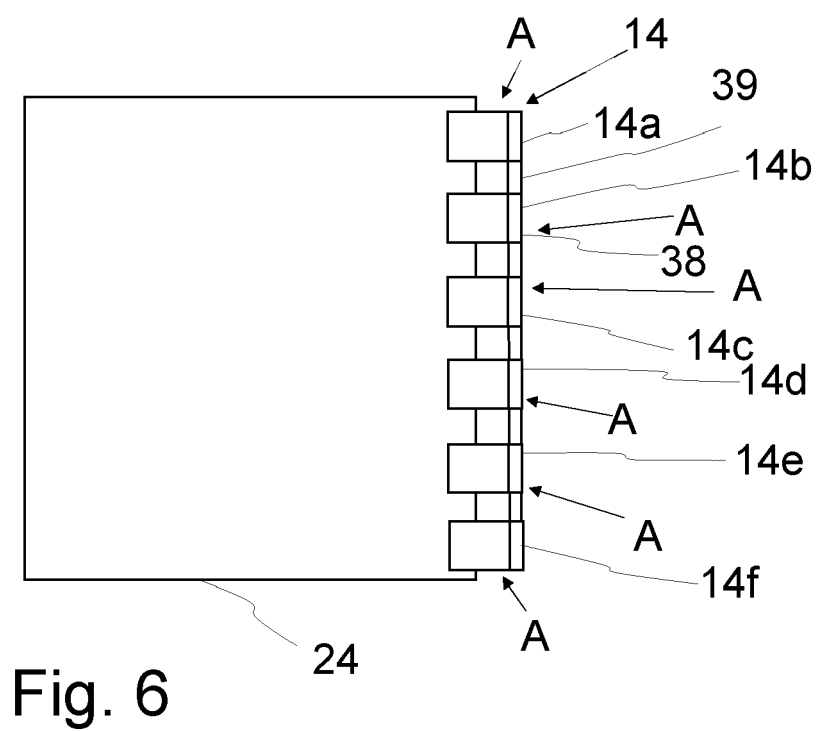
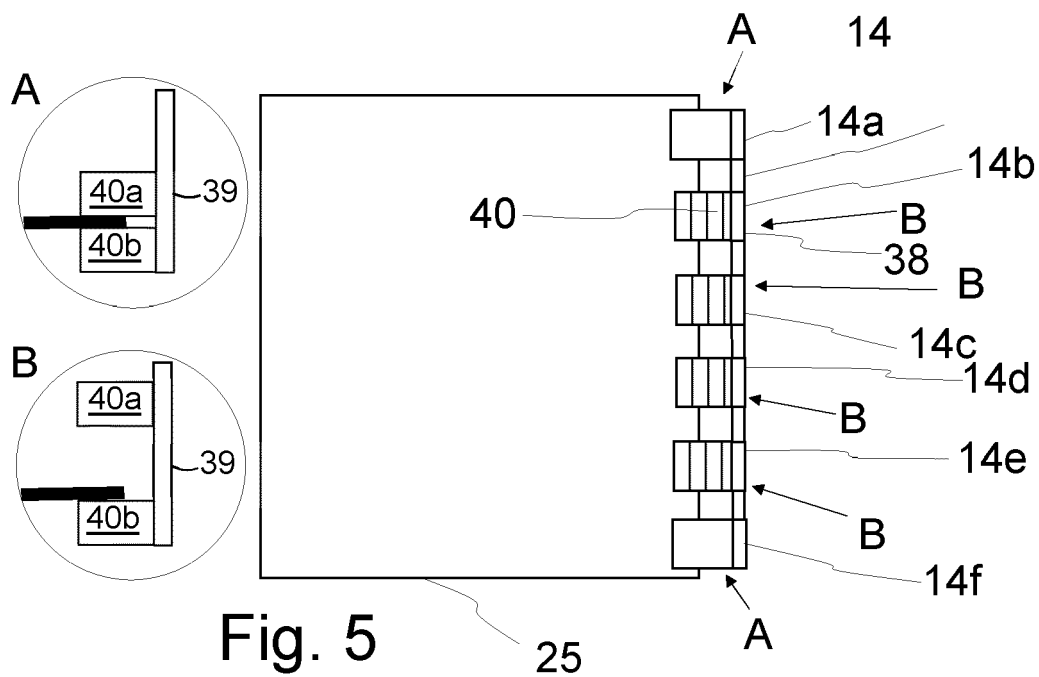
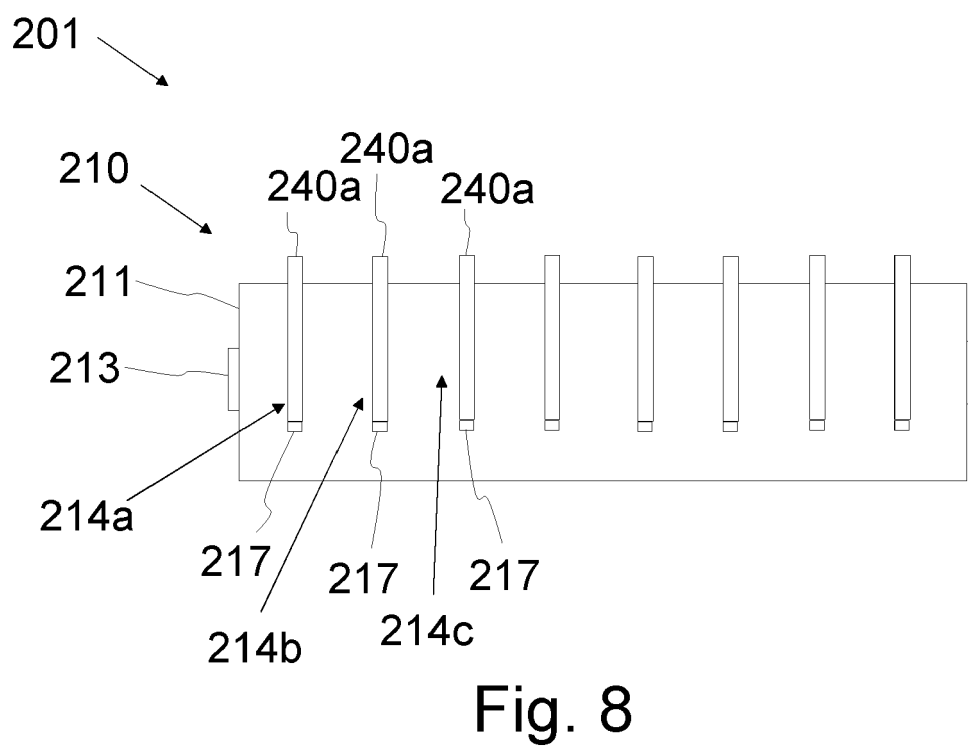
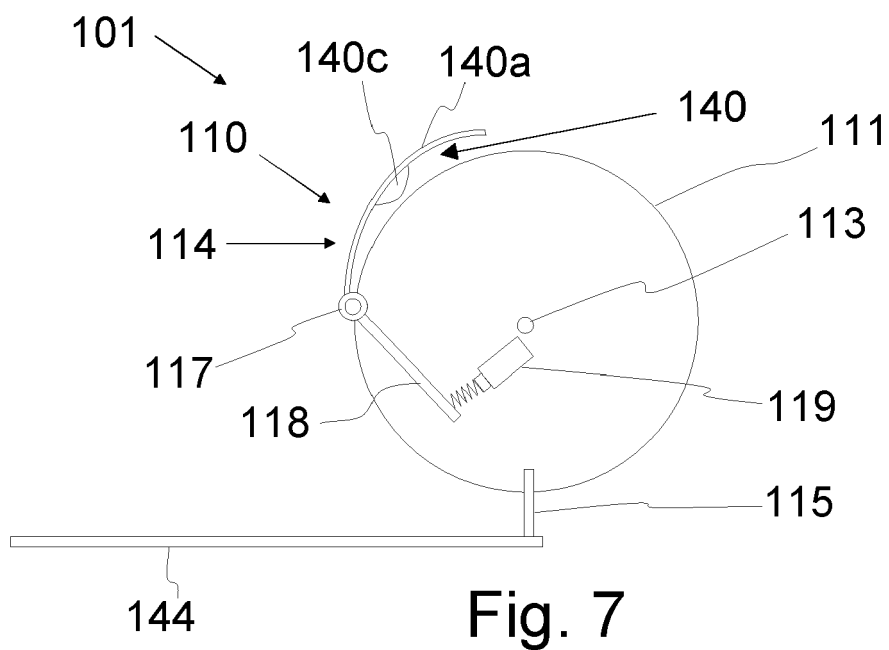


Fig. 3

	G	σ	X
I	30	L	2
II	50	L	2
III	80	M	4
IV	100	M	4
V	250	H	6

Fig. 4







EUROPEAN SEARCH REPORT

Application Number

EP 22 18 2109

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