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(54) **IMAGE TRANSFER MECHANISM**

BILDÜBERTRAGUNGSSYSTEM

MECANISME DE TRANSFERT D'IMAGE

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Description

FIELD OF THE INVENTION

[0001] The field of the invention is printers and copiers, and more particularly image transfer mechanisms including an impression surface on which a printing medium is mounted.

BACKGROUND OF THE INVENTION

[0002] Some existing liquid toner systems utilize an intermediate transfer member to transfer a liquid toner image from a photosensitive member on which the image is developed to a final substrate. In order to reduce problems that may be caused when printing media is misfed, an impression media (generally of paper) is placed between the printing media and an impression roller which holds the printing media during transfer of the liquid toner image thereto from the intermediate transfer member.

[0003] The present application is directed to novel impression media and mechanisms utilizing it.

[0004] Document US-A-4796529 discloses an impression media according to the preamble of claim 1, a use of such an impression media according to the preamble of claim 6 and a method of producing such an impression media according to the preamble of claim 7.

SUMMARY OF INVENTION

[0005] An aspect of some embodiments concerns an impression paper clamp on the impression member that is used to hold the impression paper to the surface of the impression member. The impression media (paper) is according to claim 1.

[0006] Holding the impression paper down with a clamp, rather than glue, avoids the problem of the impression paper sliding. In some embodiments, the clamp is located beyond the leading edge of the printing media, and in this case using a clamp rather than glue avoids the problem of the glue band affecting the printed image. In some embodiments of the invention, the impression paper is made of a heavy paper stock, which prevents it from wrinkling, and/or it has a smooth finish, to avoid any small bumps or texture which could affect the printing quality of the printing media resting on it. The clamp can be released, in order to change the impression paper, avoiding the difficulty of removing the impression paper when it is permanently glued to the impression member. However, the clamp is normally kept closed, since the impression paper is changed only occasionally.

[0007] If the clamp holding the end of the impression paper is located beyond the edge of the printing media (i.e., upstream of the edge of the printing media), so that it doesn't produce a bump under the printing media, and if the impression paper were one solid piece, then the grippers, which are attached to the inside of the impression member, can not be opened and closed to hold down the leading edge of printing media, which sits on the outside of the impression paper. To solve this problem, in some embodiments of the invention the impression paper is provided with apertures, over the locations of the grippers. Thus, the grippers can open through the apertures in the impression paper and close over the leading edge of the printing media.

[0008] In an embodiment of the invention, the impression media is held on the impression roller by at least one holding mechanism. Optionally, the holding mechanism comprises one or more of at least one clamp, at least one impression media gripper and an adhesive. Optionally, the holding mechanism is generally upstream of the printing media grippers.

[0009] Optionally, an end of the impression media is held on the impression surface by a clamping mechanism.

[0010] Optionally, an end of the impression media is held on the impression surface by a set of grippers.

[0011] Optionally, an end of the impression media is held on the impression surface by an adhesive.

[0012] The impression media is formed with apertures corresponding to the grippers that grip the printing media, such that the grippers can open and close through the apertures.

[0013] Optionally, the impression media is formed of paper.

[0014] Optionally, the mechanism also includes a removal mechanism for removing the printing media after release thereof by the grippers. Optionally, the removal mechanism comprises vacuum elements that remove the printing media from the impression media. Optionally, the impression media is formed with at least one aperture situated beneath a position at which the vacuum elements come into proximity or contact with the printing media on the impression media, to at least reduce a partial vacuum between the impression media and the printing media thereat.

[0015] There is provided, in accordance with an embodiment of the invention, impression media for use in a mechanism for transferring an image from a first surface to printing media, the mechanism having at least one printing media gripper adapted for holding the printing media against the impression media in a predetermined relative position during said transfer, wherein the impression media comprises at least one aperture, located so that said at least one aperture is substantially aligned with said at least one printing media gripper when the impression media and printing media are in said predetermined relative position, and said at least one aperture allows the at least one printing media gripper to grip the printing media thorough said at least one aperture in the impression media.

[0016] There is further provided, in accordance with an embodiment of the invention, a method of producing an impression media for a mechanism for transferring an image from a first surface to printing media held on an impression member, the mechanism having at least one

printing media gripper adapted for holding the printing media against an impression media on said impression member, in a predetermined relative position during said transfer, comprising:

forming an impression media having a size suitable for mounting on said impression member; and
forming at least one aperture in said impression media, located so that said at least one aperture is substantially aligned with said at least one printing media gripper when the impression media and printing media are in said predetermined relative position, and said at least one aperture allows the at least one printing media gripper to grip the printing media thorough said at least one aperture in the impression media.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a schematic cross-sectional view of the photo-sensitive, intermediate, and impression members as they are arranged in a printer or copier, according to the prior art;
Fig. 2 is a perspective view of an impression member, according to the prior art;
Fig. 3A is a close-up perspective view of part of an impression member, according to the prior art, showing printing paper clamps in a raised position;
Fig. 3B is a similar view to Fig. 3A, but with the printing paper clamps in a lowered position;
Fig. 4 is a perspective view of an impression paper clamp, seen from below, used with an impression paper (not shown) according to an exemplary embodiment of the invention;
Fig. 5A is a perspective view of part of an impression member with the impression paper clamp installed, but without impression paper according to an exemplary embodiment of the invention, showing the printing paper clamps in a raised position;
Fig. 5B is the same view as Fig. 5A, showing the printing paper clamps in a lowered position;
Fig. 6 is the same view as Fig. 5A, but also showing one end of the impression paper according to an exemplary embodiment of the invention held by the impression paper clamp;
Fig. 7 is the same view as Fig. 6, but also showing printing paper held by the printing paper clamp;
Fig. 8A is a perspective view of the impression paper clamp seen from the bottom, showing one end of the impression paper according to an exemplary embodiment of the invention properly aligned with the impression paper clamp, but not inserted into the impression paper clamp;
Fig. 8B is the same view as Fig. 8A, showing the end of the impression paper according to an exemplary embodiment of the invention inserted into the impression paper clamp;
Fig. 9 is a schematic cross-sectional view of the impression paper according to an exemplary embodiment of the invention, impression member, and suction cup; and
Fig. 10 shows the layout of part of the impression paper, according to an exemplary embodiment of the invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0018] Since a relevant prior art is devices produced by the assignee of the present invention, the following description is presented of the system used today, in order to better understand the improvements presented later.

[0019] It should be understood that while the invention is presented in the form of improvements in an existing system, this is only for ease and clarity of description. The present invention, as claimed, has applicability to a wide range of systems, including some systems which may be designed to avoid some of the problems that exist with the present system.

[0020] An exemplary configuration of existing laser printers is illustrated in a very simplified form in Fig. 1. A charged photosensitive member 2 is exposed to a light image from a scanning laser 4 controlled by a computer. A similar configuration is used in some copiers, with the scanning laser replaced by a lens focused on a document that is being copied. The areas of the photo-sensitive surface that are exposed to light acquire a different voltage than the parts that are not exposed to light, due to selective discharge of those areas. This voltage difference is used to selectively attract toner particles to parts of the surface, using a developer 3, producing a toner image that corresponds to the exposure. The toner image is then transferred to an intermediate transfer member 6, and from there to a printing medium 8 on an impression member 10 in the exemplary form of a roller. Although the image could be transferred directly from the photosensitive member to the impression member, in some systems better results are achieved by using an intermediate transfer member, which can be heated, resulting in better transfer of the toner (especially liquid toner) to the printing media. Of course, this drawing is very simplified.

[0021] The printing media is held to the impression member by printing media grippers 12. Fig. 2 shows the impression member (removed from the printer), seen from one side, and Figs. 3A and 3B are close-up views of the impression member showing the grippers more clearly. During operation, the opening along the side of the impression member normally has a cover over it, with small openings for the grippers. This cover has been removed in Figs. 2, 3A, and 3B, to show a rod 304 (or rods, optionally connected by a coupler 202) which controls the raising and lowering of the grippers. In Fig. 3A, grippers 12 are in a raised position, while in Fig. 3B grippers

12 are in a lowered position for holding the printing media. Grippers 12 are optionally spring-loaded, and springs 302 are visible in Fig. 3A. Once the media has been printed, grippers 12 are raised, and the printing media is removed from the impression member by a lifting mechanism, for example including suction elements such as suction cups 14 (shown in Fig. 1), and conveyed to an output tray. Suction elements 14 may be active, i.e., they are connected to a vacuum source, or they are passive, i.e., a vacuum is formed when they are pressed against printing media 8. Generally, active suction elements are preferred.

[0022] If there is a paper jam, or some other malfunction, and the grippers do not pick up the printing media, then toner will be transferred from the intermediate transfer member directly to the surface of the impression member. Because the impression member, which has a metal surface, does not absorb toner as well as the printing media, some toner will remain on the intermediate transfer member. If the intermediate transfer member is not immediately cleaned off, then the toner may dry if it is liquid, or possibly melt if it is solid, which may cause permanent damage to the intermediate transfer member. To prevent this from happening, a piece of media, described herein as impression media or impression paper (since it is generally of paper) 9, is sometimes permanently glued to the surface of the impression member at a point designated as 11. The forward edge of the impression media is positioned underneath the printing media, i.e., the forward edge does not extend past the edge 13 of the printing media that is held by the grippers.

[0023] Even if the impression member picks up no printing media, the impression paper surface will absorb all the toner from the intermediate transfer member, and the intermediate transfer member will not be damaged by dried toner.

[0024] However, the impression paper can create its own problems. First there are the problems connected with gluing. *Inter alia,* since there may be a slight difference in velocity between the impression roller and the intermediate transfer member (in order to avoid buckling of the paper), there is significant stress on the glue. Therefore, the glue has to be strong. Unfortunately, since paper misfeeds do occur, the impression paper must be removable. This mandates a weaker bond for the glue. Furthermore, the area available for gluing is limited, in order not to interfere with the printable area of the print media and may sometimes intrude on this area slightly. Additionally with time, the impression paper may slide along the impression roller in a direction opposite the direction of motion of the impression roller surface.

[0025] The differences of height caused by the presence of glue under the impression paper cause poor or sometimes even an absence of transfer from the intermediate transfer member to the print media. If the impression media needs to be replaced, for example because it is worn or torn or because it has been printed on due to a paper misfeed, it can be difficult to remove the old impression paper completely. Finally, the smooth surface of the impression paper creates a partial vacuum between the impression paper and the printing media, when the latter is picked up by suction elements to remove it from the impression member. This may cause the printing media to be picked up in an uncontrolled manner, especially if it is thin paper.

[0026] Fig. 4 shows an impression paper clamp 400, as seen from below. Here, "above" means in a direction away from the impression member when the impression paper clamp is installed, and "below" means toward the interior of the impression member when the impression paper clamp is installed. In describing the impression paper clamp, we use terms such as "above", "below", "upper", "lower", "raised", "lowered", "top" and "bottom" to refer to directions relative to the center of the impression member when the impression paper clamp is installed, even though these terms are only literally true when the impression member is oriented so that the impression paper clamp is uppermost.

[0027] Many of the features of the impression paper clamp shown in Fig. 4 are designed to allow the impression paper clamp to be retrofitted to an existing impression member used in printers manufactured by Hewlett-Packard. Some of these features optionally look quite different, or are absent entirely, in embodiments designed for use on different impression members, without departing from the teachings of the invention as disclosed in the appended claims.

[0028] Impression paper clamp 400 comprises an upper portion 402, in the form of a straight bar, and a lower portion. Optionally, upper portion 402 clamps the impression paper directly against an integral part of the impression member, instead of against the lower portion, and in that case there is no need for a lower portion. The lower portion optionally includes a back section 406, which fits into a slot in the impression member, and a number of teeth 408, which press against upper portion 402 to hold the impression paper. The spaces between the teeth optionally allow the grippers to open through corresponding apertures in the impression paper of the invention, as shown in Figs. 6 and 7, to hold the printing media. The number of teeth and grippers is different for some embodiments than the number of teeth and grippers shown in the drawings, but generally there is still one space between the teeth for each gripper. The middle tooth optionally has a clearance hole 410, for coupler 202. Similarly, back section 406 optionally has a clearance slot 412 for coupler 202.

[0029] Two captive nut and bolt assemblies 414 can be tightened, through openings 416 (not visible in Fig. 4 since they are on the hidden top surface of upper portion 402, but visible in Figs. 5A and 5B), to bring upper portion 402 tightly against the lower portion, to hold the impression paper in place. The nuts and bolts need not be captive, but making them captive prevents them from being lost if they come loose, and prevents them from falling into the interior of the impression member and possibly

causing damage or malfunction. Optionally, the upper and lower portions of impression paper clamp 400 are held against each other by another mechanism, such as a spring or clip, and in some embodiments there is no mechanism for tightening impression paper clamp 400. Two attachment tabs 418, with holes in them, optionally allow impression paper clamp 400 to be bolted down when it is installed in the impression member.

[0030] Figs. 5A and 5B show impression paper clamp 400 installed in impression member 10. Fig. 5A shows the grippers in a raised position, and Fig. 5B shows the grippers in a lowered position. Upper portion 402, one of the openings 416, one attachment tab 418, and four of the teeth 408 are visible, as well as printing paper clamps 12. Note that grippers 12 optionally fit into the spaces between teeth 408.

[0031] Fig. 6 shows impression paper 600 of the invention held at one end by impression paper clamp 400. Trapezoidal apertures 602 in impression paper 600 optionally allow grippers 12 to go through impression paper 600, and to hold the printing media in place. Apertures 602 need not be trapezoidal, but are trapezoidal in this embodiment of the invention to match the shape of grippers in this design of the impression member. Circular hole 604, near the top margin of Fig. 6, optionally allows clearance for coupler 202 to move when the grippers are raised and lowered. Hole 604 is optionally absent in some embodiments of the invention, for example if a mechanism other than coupler 202 is used to connect rods 304 or if no coupler is used or if coupler 202 does not need the clearance.

[0032] In Fig. 7, a sheet of printing media 8 is shown held in place by grippers 12, on top of impression paper 600.

[0033] Fig. 8A shows a bottom view of impression paper clamp 400, not installed in the impression member, with impression paper 600 adjacent to it. Impression paper 600 is shown aligned with impression paper clamp 400, as it would be before being inserted. Note that each of the holes 602 corresponds to one of the spaces between teeth 408. Two slots 802 are formed in impression paper 600, which are lined up with nut and bolt assemblies 414. Optionally, a different number of nut and bolt assemblies are used in the impression clamp, and optionally one slot 802 is formed in the impression paper, for each nut and bolt assembly.

[0034] When impression paper 600 is inserted into impression paper clamp 400, the bolts in the two assemblies 414 each go through its associated slot 802. Optionally, impression paper 600 lacks slots 802, and is inserted into impression paper clamp 400 only far enough so that its leading edge touches the bolts. However, allowing the bolts to go through slots 802 makes it possible to push impression paper 600 further into impression paper clamp 400, so that it can be held more firmly.

[0035] Optionally, slots 802 are replaced by bolt holes for the bolts to go through, and the bolts are disengaged from the nuts and raised above the impression paper until the impression paper is fully inserted, at which time the bolts are lowered through the bolt holes and engaged in the nuts. By using slots 802 instead of holes, the bolts can be kept engaged in the nuts while impression paper 600 is being inserted into impression paper clamp 400. Optionally, in embodiments where a mechanism other than the nut and bolt assemblies is used to tighten the impression paper clamp, or where there is no mechanism to tighten the impression paper clamp, impression paper 600 does not have slots 802, or bolt holes.

[0036] Fig. 8B shows impression paper 600 of the invention fully inserted into impression paper clamp 400, which is seen from below as in Fig. 8A. Note that trapezoidal apertures 602 are now aligned with the spaces between teeth 408, and circular hole 604 is aligned with hole 410 in the middle tooth. Slots 802 are no longer visible, as they are hidden by the lower portion of the impression paper clamp.

[0037] Although Figs. 8A and 8B show the paper brought adjacent to the impression paper clamp, and then inserted into the impression paper clamp, when the impression paper clamp is not mounted on the impression member, in actual operation, the impression paper is inserted into the impression paper clamp when the impression paper clamp is already mounted on the impression member. The two views of the dismounted mechanism are used to better illustrate the method of mounting the impression paper.

[0038] Fig. 9 shows a schematic cross-sectional view of impression member 10, impression paper 600, printing media 8, and suction cup 14. Gripper 12 is in a raised position, so that suction cup 14 can pull printing media 8 off impression member 10. Impression paper 600 is held in place by impression paper clamp 400. Dashed lines show trapezoidal hole 602 in impression paper 600. Suction cup may pull the printing media from the impression roller at a distance, as shown or may come into contact with the printing media while it is still flat on the impression media.

[0039] Impression paper 600 is formed with apertures, such as narrow slits 900 or a pattern of small holes, beneath suction cup 14. When suction cup 14 pulls printing media 8 away from impression paper 600, a partial vacuum would be created between the smooth surfaces of printing media 8 and impression paper 600. Slits 900 allow air from the space between impression paper 600 and impression member 10 to flow into the space between impression paper 600 and printing media 8, preventing a significant vacuum from forming, and allowing suction cup 14 to pull printing media 8 away from impression paper 600 and impression member 10 in a controlled, predictable manner. It should be noted that because grippers 12 are no longer holding printing media 8 and impression paper 600 down against impression member 10, and because the other end of impression paper 600 (opposite the end held by impression paper clamp 400) is free, and because impression paper 600 is somewhat stiff, impression paper 600 may not lie flat against im-

pression member 10, so there may be a space filled with air between impression member 600 and impression member 10, which can flow through slits 900. In other embodiments of the invention, not all these conditions are met, however, even if only some of the conditions are met, there may still be enough air flowing through slits 900 so that suction cups 14 pull media 8 off impression member 10 in a controlled manner. However, as indicated above, while single slits or single or multiple apertures can be used for releasing the vacuum formed, they have a tendency to become clogged with debris, such as paper fibers. Thus, for this embodiment, the size of the apertures must be increased, for example greater than 0.1 mm and preferably larger, up to a size which interferes with the printing quality, which may be some larger fraction of a mm.

[0040] In a preferred embodiment of this aspect of the invention, the apertures are slits that are formed in pairs. Under these circumstances, the effect of lifting of the printing media is to lift the region between the slits. This allows air to enter the region between the printing media and the impression paper, releasing the vacuum. For this embodiment, the width of the slits is not a factor in the operational life of the impression paper and the slits are preferably made as thin as possible, for example 0.1 mm or less (e.g., 0.05 or 0.02 mm). However, the invention is not limited to such thin slits, which may be difficult to manufacture.

[0041] In general, it is desirable that the distance between slits be smaller than the size of suction cup 14. At present a distance of about 7 mm is used. However, smaller distances can be used and more than two slits may be provided beneath each suction cup. Furthermore, the length of the slits should be at least as long as the diameter of the suction cups, to aid in the lifting of the portion between the slits. However, this is not absolutely necessary.

[0042] The one suction cup 14 shown in Fig. 9 optionally represents two or more suction cups arranged in a direction perpendicular to the plane of Fig. 9. Optionally, there are one or more slits 900 in the impression paper beneath each suction cup. In the system where the impression paper slits have been tested by the inventors, for example, there are four suction cups, and there are two slits beneath each suction cup, or a total of eight slits in the impression paper.

[0043] Slits 900 need not be used in conjunction with impression paper clamp 400, but optionally could be used in impression paper that is attached to the impression member in a different way, for example by gluing.

[0044] Fig. 10 shows an outline of one end of a piece of impression paper 600 according to an embodiment of the invention that is being tested; the end that is held by the impression paper clamp. Six trapezoidal apertures 602, circular hole 604, two slots 802, and eight slits 900 are visible. The width of slits 900 is exaggerated so that they are visible. In fact, the slits are only 0.1 mm wide, in this embodiment of the invention. As noted previously, the number, size and shape of any of these features may be different, and any of these features may not exist, in some embodiments of the invention, depending, among other factors, on the design of the impression member and the impression paper clamp.

[0045] Impression paper preferably has a number of desired characteristics. First, the impression paper should be strong enough so that it can stand the sliding forces induced on it, considering that it contains a series of cut-outs. Second, it is desirable that the impression paper be smooth and of uniform thickness. This avoids texturing of the images printed on the printing media. Third, it should absorb the ink from the intermediate transfer member, in case of a paper miss-feed. However, since the same impression roller may also be used for printing a second side of duplex, it should not offset ink from the first side, when an image is transferred to the second side from the (hot) intermediate transfer member. Fourth, while it is desirable that the impression paper be stiff, it is also desirable that the paper conform to the curvature of the impression member. Of course, in order to work, impression paper need not be optimized for all or even any of these parameters.

[0046] It has been found that Gardamatt Art paper (Garda Cartiere, Italy) provides a suitable impression paper, for various thicknesses from nominally 101 micrometers thickness (Gardamatt 115) to nominally 313 micrometers thickness (Gardamatt 300), although thicker paper (>200 micrometers) are sturdier. The smoothness of this paper varies between 20 ± 5 to 30 or 40 ± 10 or 20 for the thinner papers. However, the smoothness is not critical, so long as there is no texturing of the image. This paper is short fiber paper and is cut so that the stiffer direction is parallel to the axis of the impression roller. This allows the impression paper to conform to the impression roller.

The invention has been described in the context of the best mode for carrying it out. It should be understood that not all features shown in the drawings or described in the associated text may be present in an actual device, in accordance with some embodiments of the invention. Furthermore, variations on the method and apparatus shown are included within the scope of the invention, which is limited only by the claims. Also, features of one embodiment may be provided in conjunction with features of a different embodiment of the invention. Furthermore, it should be understood that not all of the embodiments of the invention solve all of the problems that are associated with the prior art. It is contemplated that some problems of the prior art will be solved by other means or will not be solved at all. As used herein, the terms "have", "include" and "comprise" or their conjugates mean "including but not limited to."

Claims

1. Impression media (600) for use in a mechanism for

transferring an image from a first surface to printing media (8), the mechanism having at least one printing media gripper (12) adapted for holding the printing media (8) against the impression media (600) in a predetermined relative position during said transfer, **characterized in that** the impression media (600) comprises at least one aperture (602), located so that said at least one aperture (602) is substantially aligned with said at least one printing media gripper (12) when the impression media (600) and printing media (8) are in said predetermined relative position, and said at least one aperture (602) allows the at least one printing media gripper (12) to grip the printing media (8) thorough said at least one aperture (602) in the impression media (600).

2. Impression media according to claim 1 wherein the impression media (600) is formed of paper.

3. Impression media according to claim 1 wherein an end of the impression media (600) is to be held on the impression surface by an adhesive.

4. Impression media according to any of the preceding claims wherein the impression media (600) is formed with a plurality of apertures (602) for use in a mechanism with corresponding grippers (12) that grip the printing media (8), such that the grippers (12) can open and close through the apertures (602).

5. Impression media according to any of the preceding claims for use in an image transferring mechanism that includes a removal mechanism that comprises vacuum elements (14) to remove the printing media (8) from the impression media (600), wherein the impression media (600) is formed with at least one aperture (900) suitable for at least reducing a partial vacuum between the impression media (600) and the printing media (8).

6. Use of an impression media (600) in a mechanism for transferring an image from a first surface to printing media (8), the mechanism having at least one printing media gripper (12) adapted for holding the printing media (8) against the impression media (600) in a predetermined relative position during said transfer, **characterized in that** the used impression media (600) comprises at least one aperture (602), located so that said at least one aperture (602) is substantially aligned with said at least one printing media gripper (12) when the impression media (600) and printing media (8) are in said predetermined relative position, and said at least one aperture (602) allows the at least one printing media gripper (12) to grip the printing media (8) thorough said at least one aperture (602) in the impression media (600).

7. A method of producing an impression media (600) for a mechanism for transferring an image from a first surface to printing media (8) held on an impression member (10), the mechanism having at least one printing media gripper (12) adapted for holding the printing media (8) against the impression media (600) on said impression member (10), in a predetermined relative position during said transfer, comprising:

forming the impression media (600) having a size suitable for mounting on said impression member (10); **characterized by**
forming at least one aperture (602) in said impression media (600), located so that said at least one aperture (602) is substantially aligned with said at least one printing media gripper (12) when the impression media (600) and printing media (8) are in said predetermined relative position, and said at least one aperture (602) allows the at least one printing media gripper (12) to grip the printing media (8) thorough said at least one aperture (602) in the impression media (600).

Patentansprüche

1. Gegendruckmedium (600) zur Verwendung in einer Vorrichtung zum Übertragen eines Bildes von einer ersten Fläche auf ein Druckmedium (8), wobei die Vorrichtung wenigstens einen Druckmediumgreifer (12) aufweist, der dazu ausgebildet ist, das Druckmedium (8) auf dem Gegendruckmedium (600) in einer vorbestimmten Relativstellung während des Übertragens zu halten,
dadurch gekennzeichnet, dass
das Gegendruckmedium (600) wenigstens eine Öffnung (602) umfasst, die so angeordnet ist, dass die wenigstens eine Öffnung (602) im Wesentlichen mit dem wenigstens einen Druckmediumgreifer (12) fluchtet, wenn das Gegendruckmedium (600) und das Druckmedium (8) in der vorbestimmten Relativstellung sind, und die wenigstens eine Öffnung (602) es dem wenigstens einen Druckmediumgreifer (12) erlaubt, das Druckmedium (8) durch die wenigstens eine Öffnung (602) im Gegendruckmedium (600) zu greifen.

2. Gegendruckmedium nach Anspruch 1, wobei das Gegendruckmedium (600) aus Papier gebildet ist.

3. Gegendruckmedium nach Anspruch 1, wobei ein Ende des Gegendruckmediums (600) durch einen Klebstoff auf der Gegendruckfläche gehalten sein wird.

4. Gegendruckmedium nach einem der vorhergehenden Ansprüche, wobei das Gegendruckmedium

(600) mit mehreren Öffnungen (602) zur Verwendung in einer Vorrichtung mit entsprechenden Greifern (12) ausgebildet ist, die das Druckmedium (8) greifen, derart dass die Greifer (12) durch die Öffnungen (602) öffnen und schließen können.

5. Gegendruckmedium nach einem der vorigen Ansprüche zur Verwendung in einer Bildübertragervorrichtung, die eine Abnahmevorrichtung aufweist, die Vakuumelemente (14) umfasst, um das Druckmedium (8) von dem Gegendruckmedium (600) abzunehmen, wobei das Gegendruckmedium (600) mit wenigstens einer Öffnung (900) ausgebildet ist, die wenigstens dazu geeignet ist, ein partielles Vakuum zwischen dem Gegendruckmedium (600) und dem Druckmedium (8) zu verringern.

6. Verwendung eines Gegendruckmediums (600) in einer Vorrichtung zum Übertragen eines Bildes von einer ersten Fläche auf ein Druckmedium (8), wobei die Vorrichtung wenigstens einen Druckmediumgreifer (12) aufweist, der dazu eingerichtet ist, das Druckmedium (8) auf dem Gegendruckmedium (600) während des Übertragens in einer vorbestimmten Relativstellung zu halten,
dadurch gekennzeichnet, dass
das verwendete Gegendruckmedium (600) wenigstens eine Öffnung (602) umfasst, die so angeordnet ist, dass die wenigstens eine Öffnung (602) im Wesentlichen mit dem wenigstens einen Druckmediumgreifer (12) fluchtet, wenn das Gegendruckmedium (600) und das Druckmedium (8) in der vorbestimmten Relativstellung sind, und die wenigstens eine Öffnung (602) es dem wenigstens einen Druckmediumgreifer (12) erlaubt, das Druckmedium (8) durch die wenigstens eine Öffnung (602) im Gegendruckmedium (600) zu greifen.

7. Verfahren zur Herstellung eines Gegendruckmediums (600) für eine Vorrichtung zum Übertragen eines Bildes von einer ersten Fläche auf ein Druckmedium (8), das auf einem Gegendruckelement (10) gehalten wird, wobei die Vorrichtung wenigstens einen Druckmediumgreifer (12) aufweist, der dazu ausgebildet ist, das Druckmedium (8) auf dem Gegendruckmedium (600) auf dem Gegendruckelement (10) in einer vorbestimmten Relativstellung während des Übertragens zu halten, umfassend:

Bilden des Gegendruckmediums (600) mit einer Größe, die für dessen Befestigung auf dem Gegendruckelement (10) geeignet ist, **gekennzeichnet durch**
Bilden wenigstens einer Öffnung (602) im Gegendruckmedium (600), die so angeordnet ist, dass die wenigstens eine Öffnung (602) im Wesentlichen mit dem wenigstens einen Druckmediumgreifer (12) fluchtet, wenn das Gegendruckmedium (600) und das Druckmedium (8) in der vorbestimmten Relativstellung sind, und die wenigstens eine Öffnung (602) es dem wenigstens einen Druckmediumgreifer (12) erlaubt, das Druckmedium (8) **durch** die wenigstens eine Öffnung (602) im Gegendruckmedium (600) zu greifen.

Revendications

1. Empreinte d'impression (600) destinée à être utilisée dans un mécanisme destiné à transférer une image à partir d'une première surface vers un support d'impression (8), le mécanisme présentant au moins un dispositif de préhension (12) de support d'impression adapté pour tenir le support d'impression (8) contre l'empreinte d'impression (600) dans une position relative prédéterminée au cours dudit transfert, **caractérisé en ce que** l'empreinte d'impression (600) comprend au moins une ouverture (602), située de telle sorte que ladite au moins une ouverture (602) soit sensiblement alignée avec ledit au moins un dispositif de préhension (12) de support d'impression lorsque l'empreinte d'impression (600) et le support d'impression (8) se trouvent dans ladite position relative prédéterminée, et ladite au moins une ouverture (602) permet à l'au moins un dispositif de préhension (12) de support d'impression de saisir le support d'impression (8) à travers ladite au moins une ouverture (602) dans l'empreinte d'impression (600).

2. Empreinte d'impression selon la revendication 1, dans laquelle l'empreinte d'impression (600) est constituée de papier.

3. Empreinte d'impression selon la revendication 1, dans laquelle une extrémité de l'empreinte d'impression (600) doit être tenue sur la surface d'impression par un adhésif.

4. Empreinte d'impression selon l'une quelconque des revendications précédentes, dans laquelle l'empreinte d'impression (600) est formée avec une pluralité d'ouvertures (602) destinées à être utilisées dans un mécanisme avec des dispositifs de préhension (12) correspondants qui saisissent le support d'impression (8), de telle sorte que les dispositifs de préhension (12) puissent s'ouvrir et se fermer à travers les ouvertures (602).

5. Empreinte d'impression selon l'une quelconque des revendications précédentes destinée à être utilisée dans un mécanisme de transfert d'image qui inclut un mécanisme de retrait qui comprend des éléments à dépression (14) de manière à retirer le support d'impression (8) de l'empreinte d'impression (600),

dans laquelle l'empreinte d'impression (600) est formée avec au moins une ouverture (900) appropriée de façon à réduire au moins le vide partiel entre l'empreinte d'impression (600) et le support d'impression (8).

6. Utilisation d'une empreinte d'impression (600) dans un mécanisme destiné à transférer une image à partir d'une première surface vers un support d'impression (8), le mécanisme présentant au moins un dispositif de préhension (12) de support d'impression adapté pour tenir le support d'impression (8) contre l'empreinte d'impression (600) dans une position relative prédéterminée au cours dudit transfert, **caractérisé en ce que** l'empreinte d'impression utilisée (600) comprend au moins une ouverture (602), située de telle sorte que ladite au moins une ouverture (602) soit sensiblement alignée avec ledit au moins un dispositif de préhension (12) de support d'impression lorsque l'empreinte d'impression (600) et le support d'impression (8) se trouvent dans ladite position relative prédéterminée, et ladite au moins une ouverture (602)permet àl'au moins un dispositif de préhension (12) de support d'impression de saisir le support d'impression (8) à travers ladite au moins une ouverture (602)dans l'empreinte d'impression (600).

7. Procédé de fabrication d'une empreinte d'impression (600) pour un mécanisme destiné à transférer une image à partir d'une première surface vers un support d'impression (8) tenu sur un élément d'impression (10), le mécanisme présentant au moins un dispositif de préhension (12) de support d'impression adapté pour tenir le support d'impression (8) contre l'empreinte d'impression (600) sur ledit élément d'impression (10), dans une position relative prédéterminée au cours dudit transfert, comprenant l'étape consistant à :

→ former l'empreinte d'impression (600) qui présente une taille appropriée pour un montage sur ledit élément d'impression (10) ; **caractérisé par** l'étape consistant à :

→ former au moins une ouverture (602) dans l'empreinte d'impression (600), située de telle sorte que ladite au moins une ouverture (602) soit sensiblement alignée avec ledit au moins un dispositif de préhension (12) de support d'impression lorsque l'empreinte d'impression (600) et le support d'impression (8) se trouvent dans ladite position relative prédéterminée, et ladite au moins une ouverture (602) permet à l'au moins un dispositif de préhension (12) de support d'impression de saisir le support d'impression (8) à travers l'au moins une ouverture (602) dans l'empreinte d'impression (600).

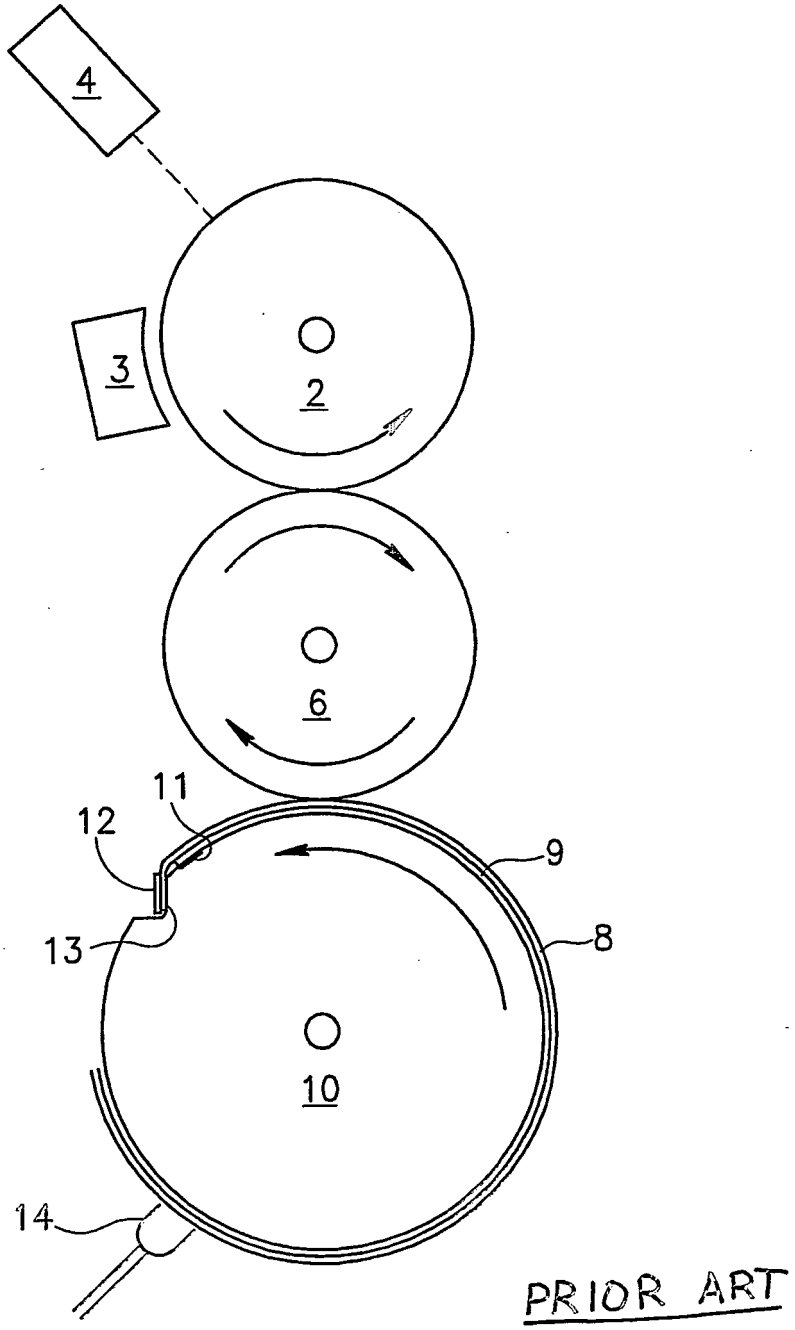
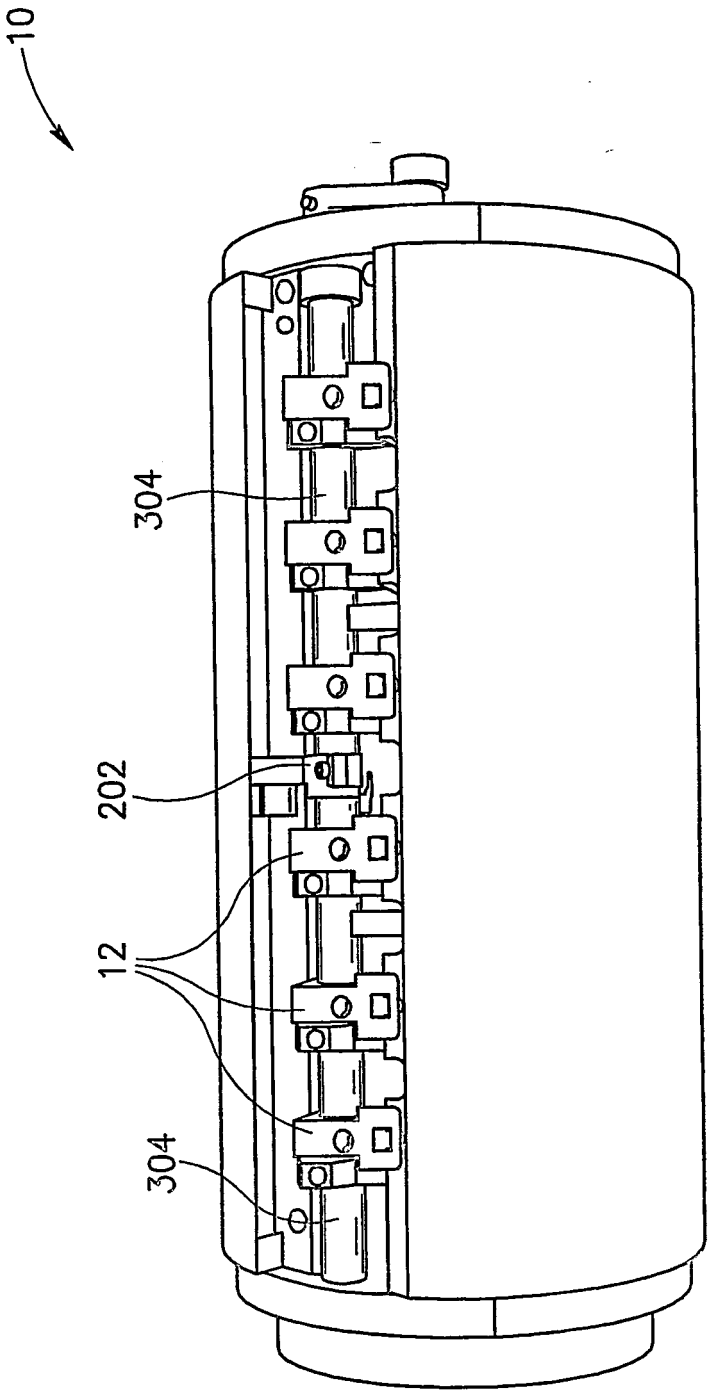
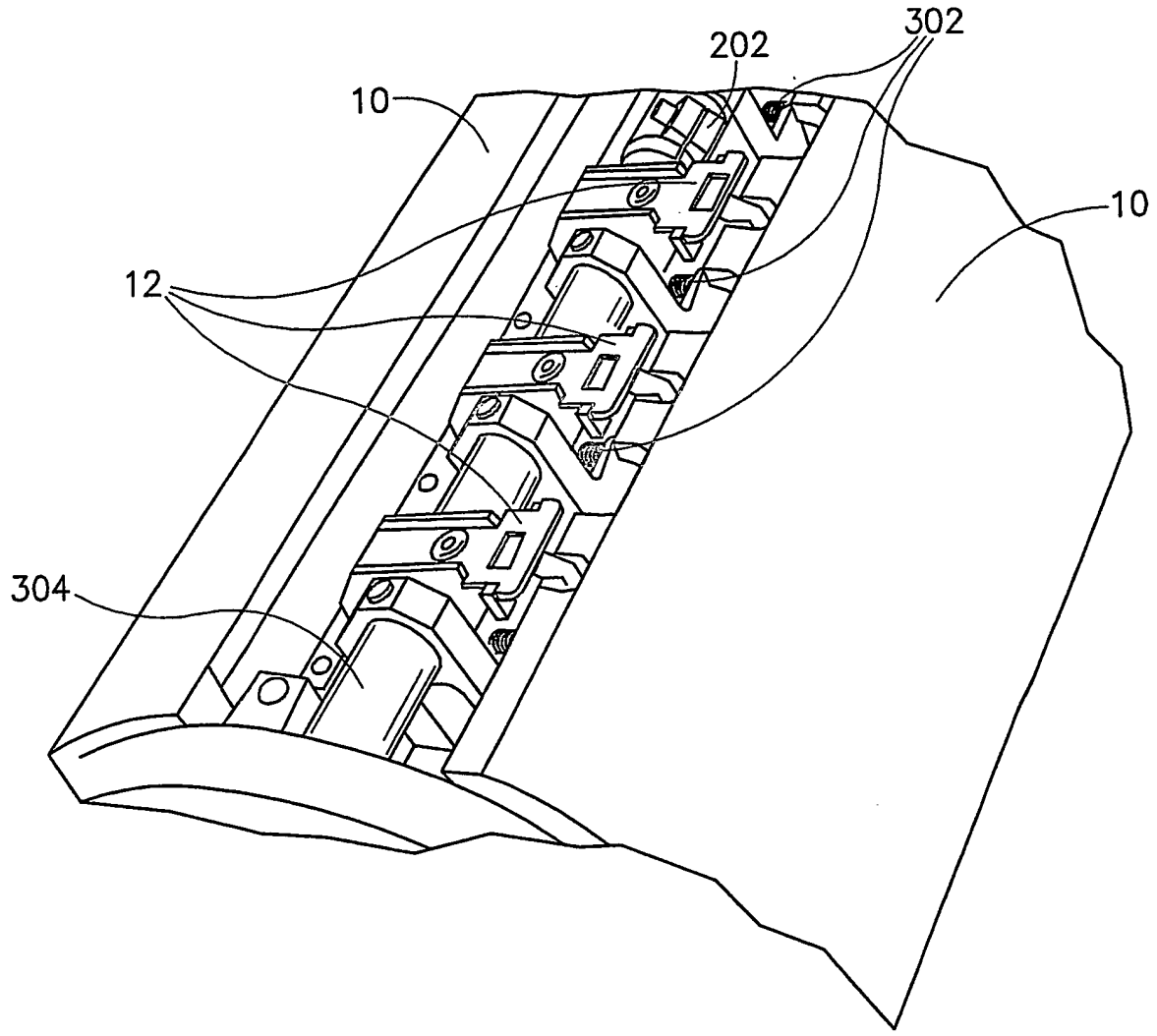


FIG.1



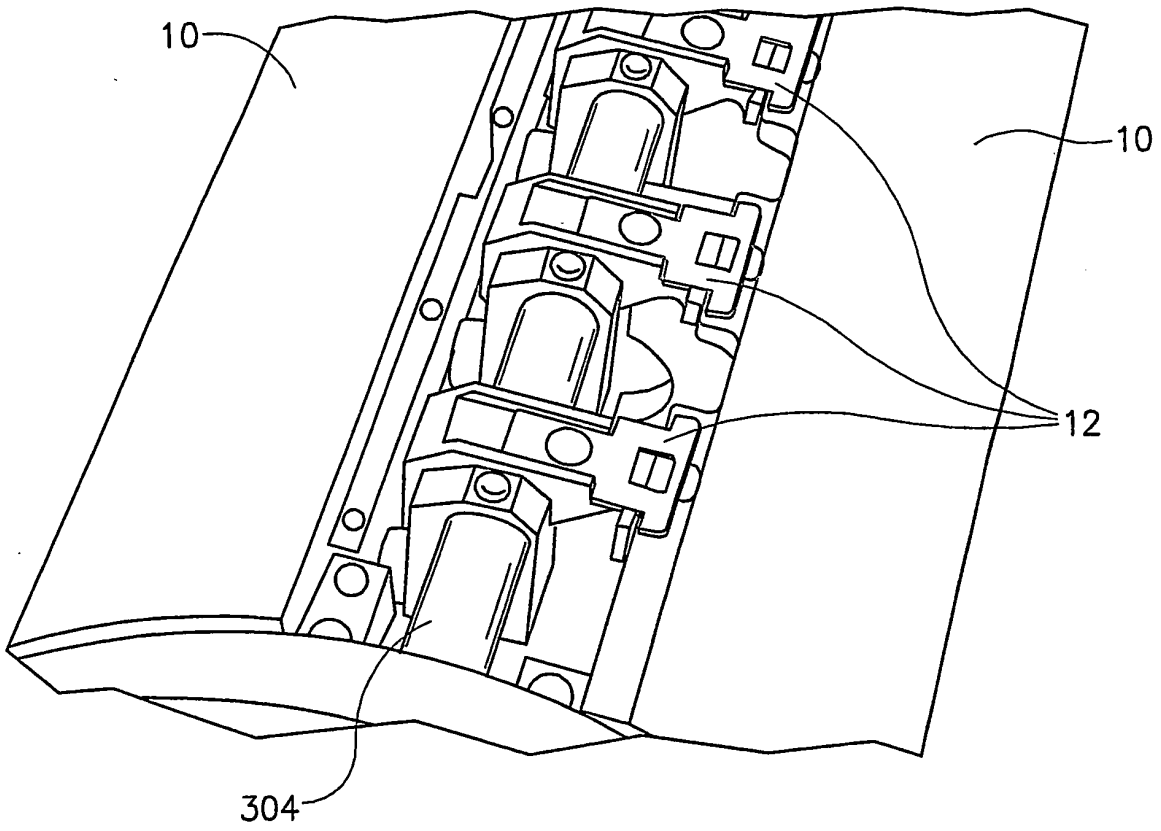
PRIOR ART

FIG.2



PRIOR ART

FIG.3A



PRIOR ART

FIG.3B

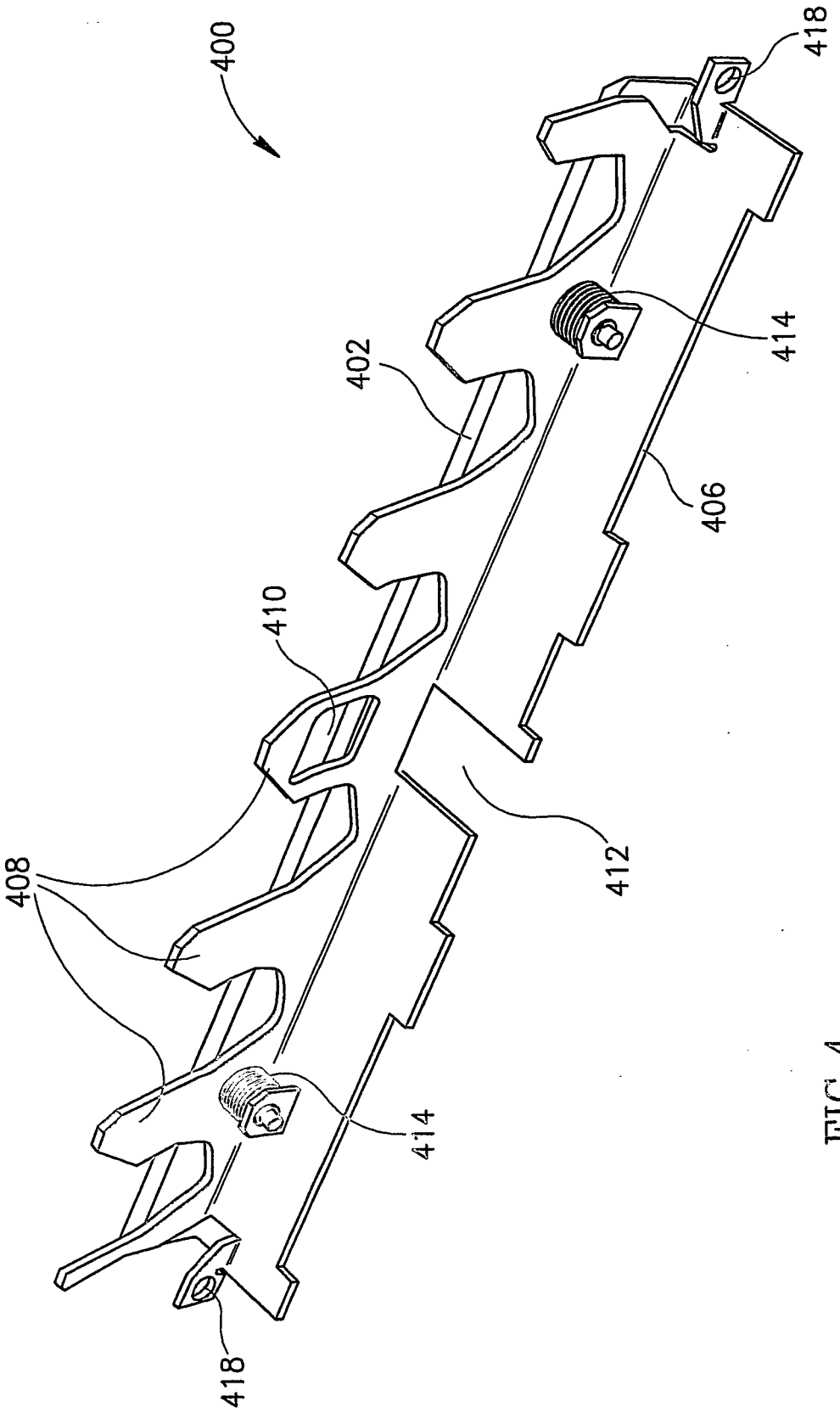


FIG.4

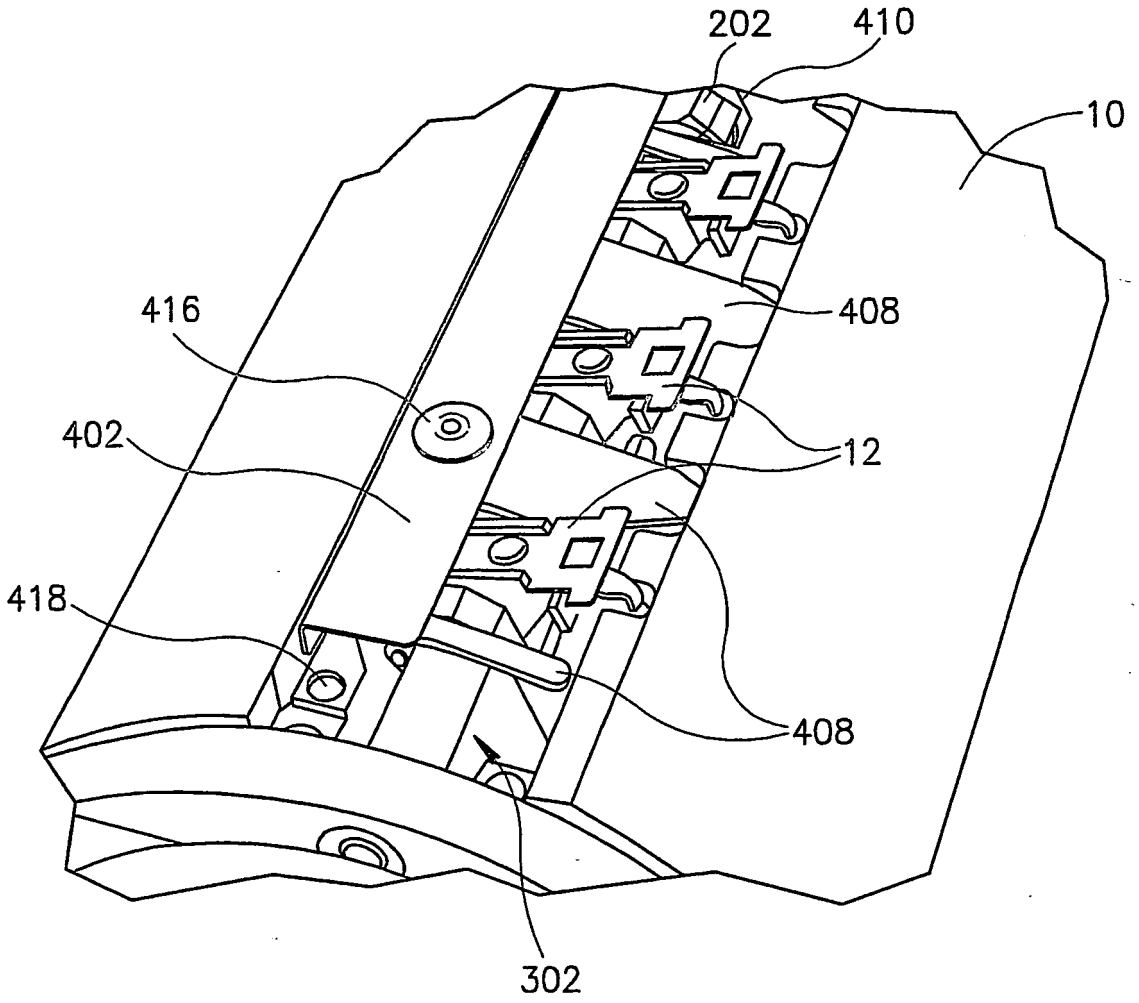


FIG.5A

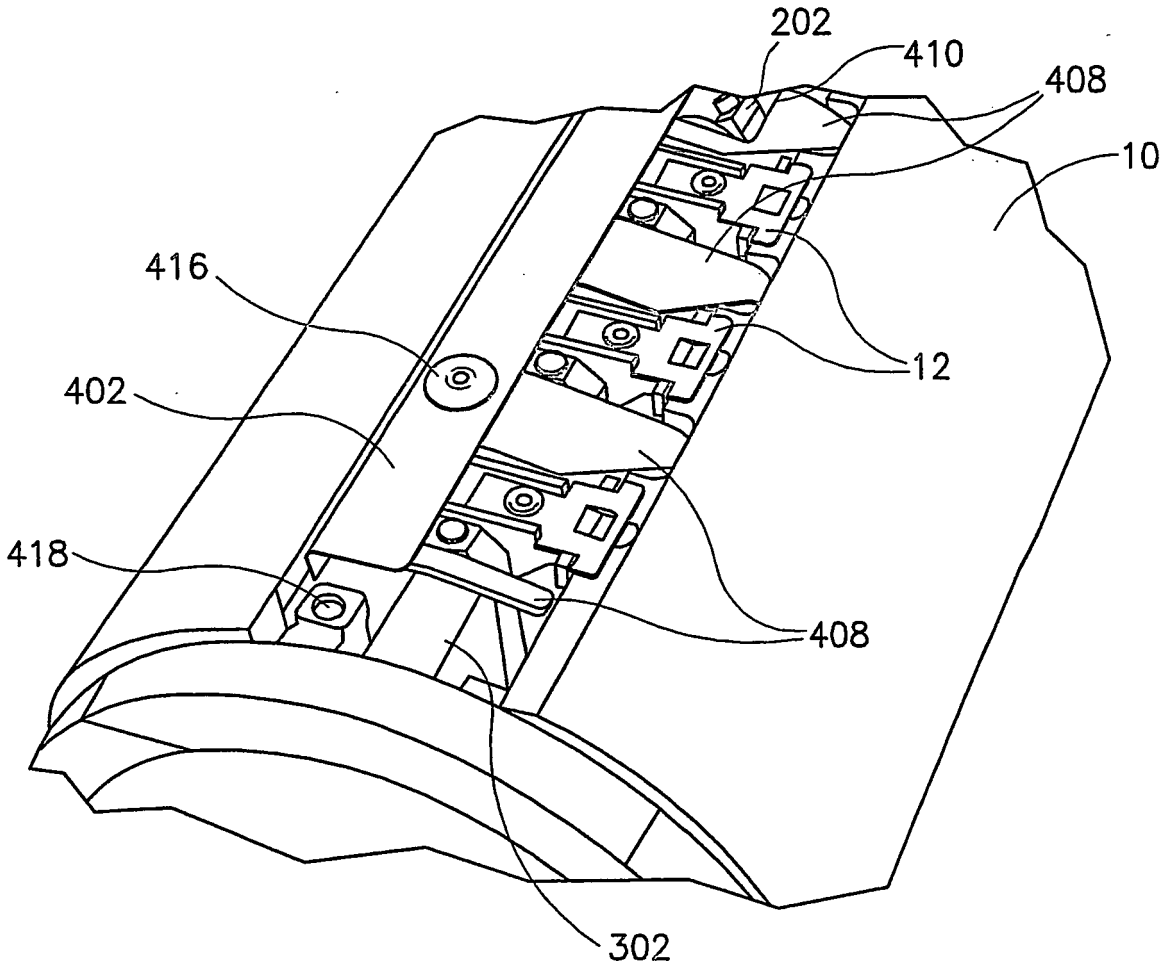


FIG.5B

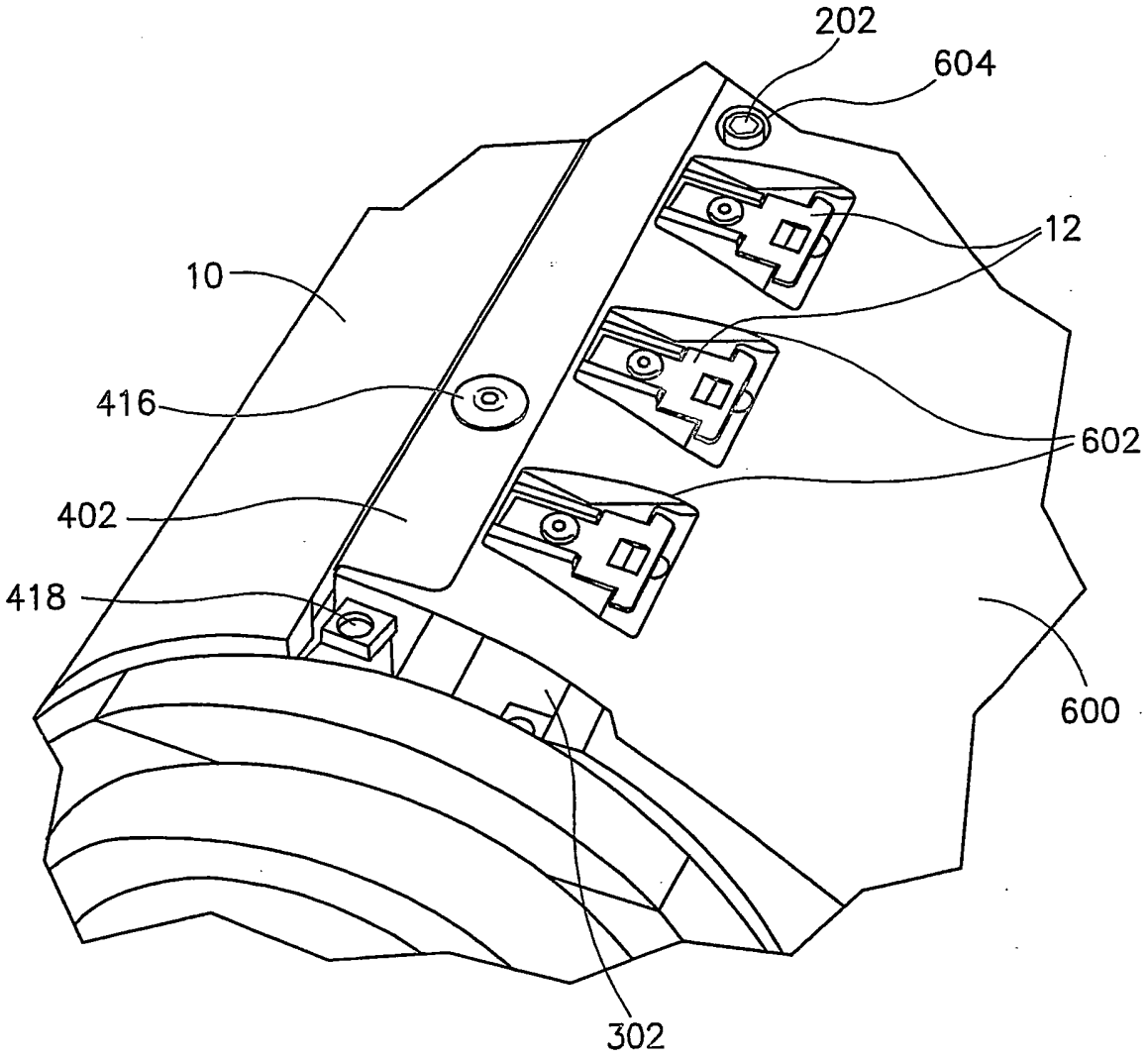


FIG.6

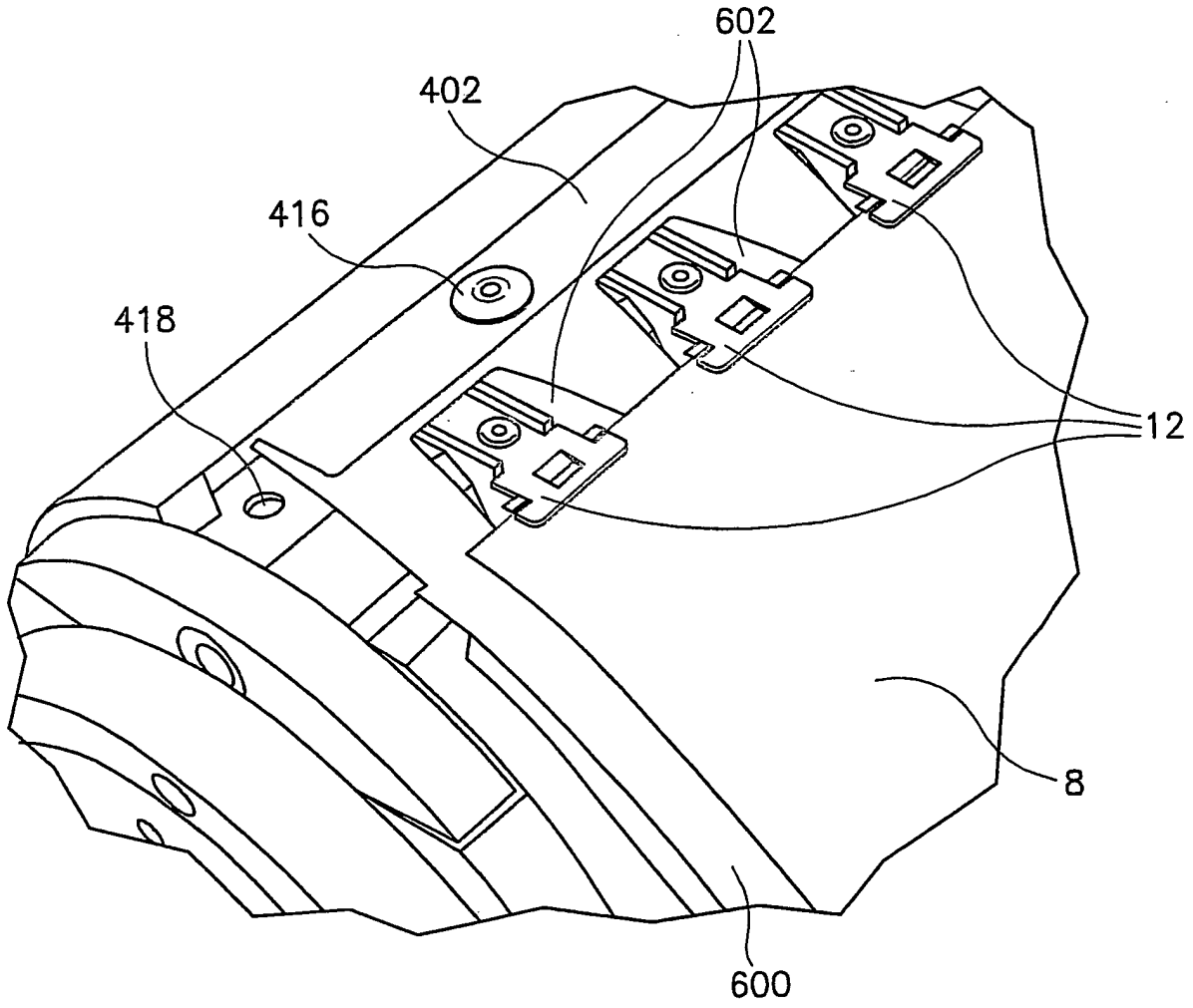


FIG.7

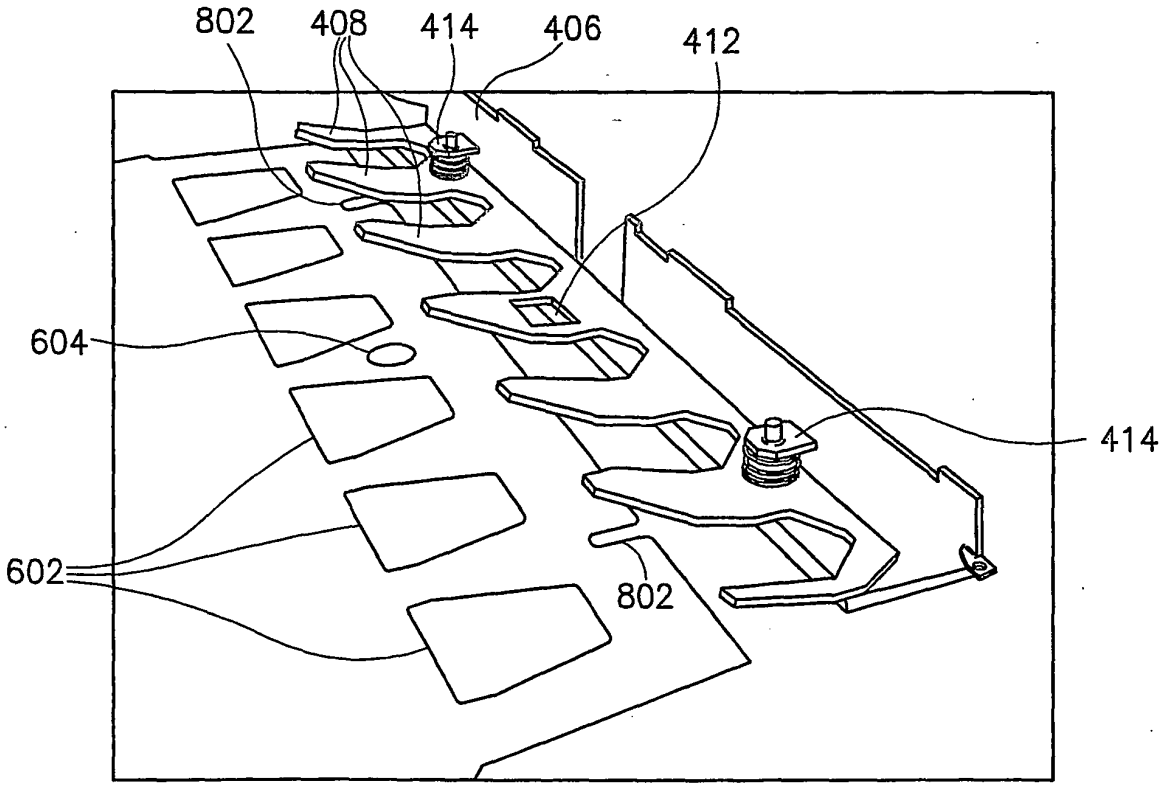


FIG.8A

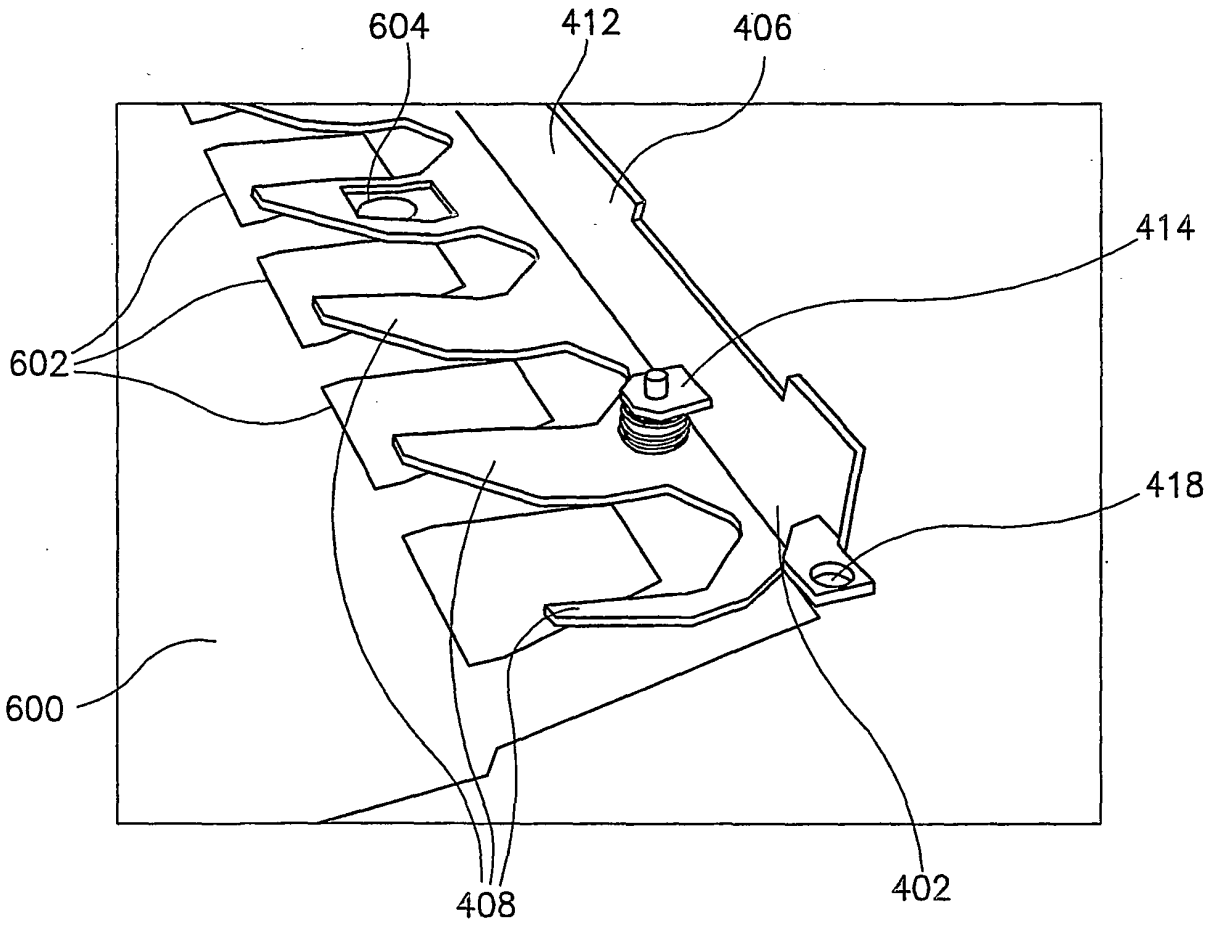


FIG.8B

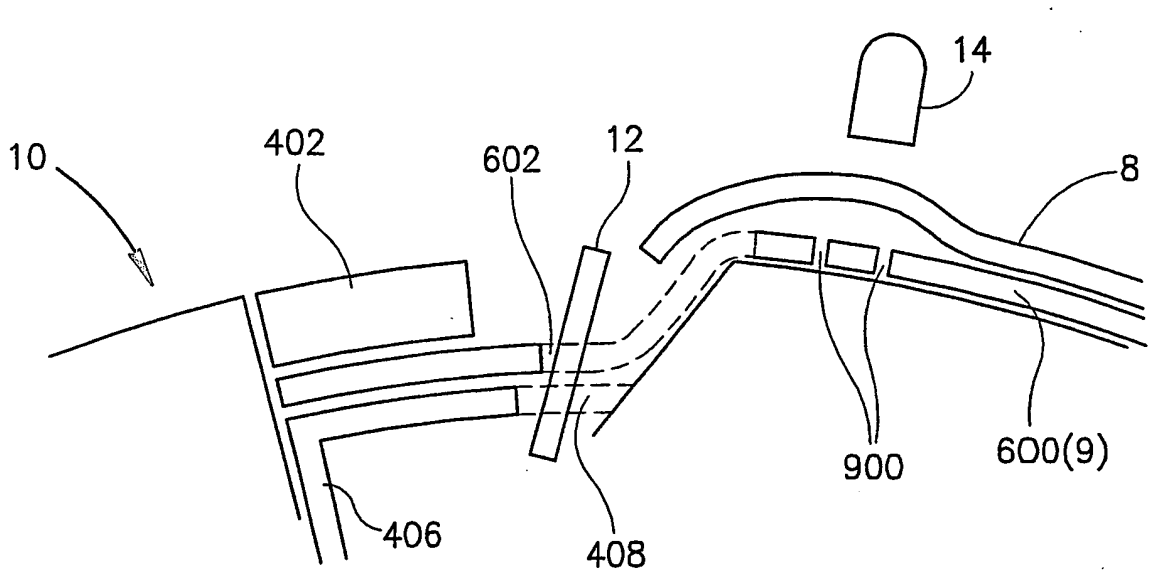


FIG.9

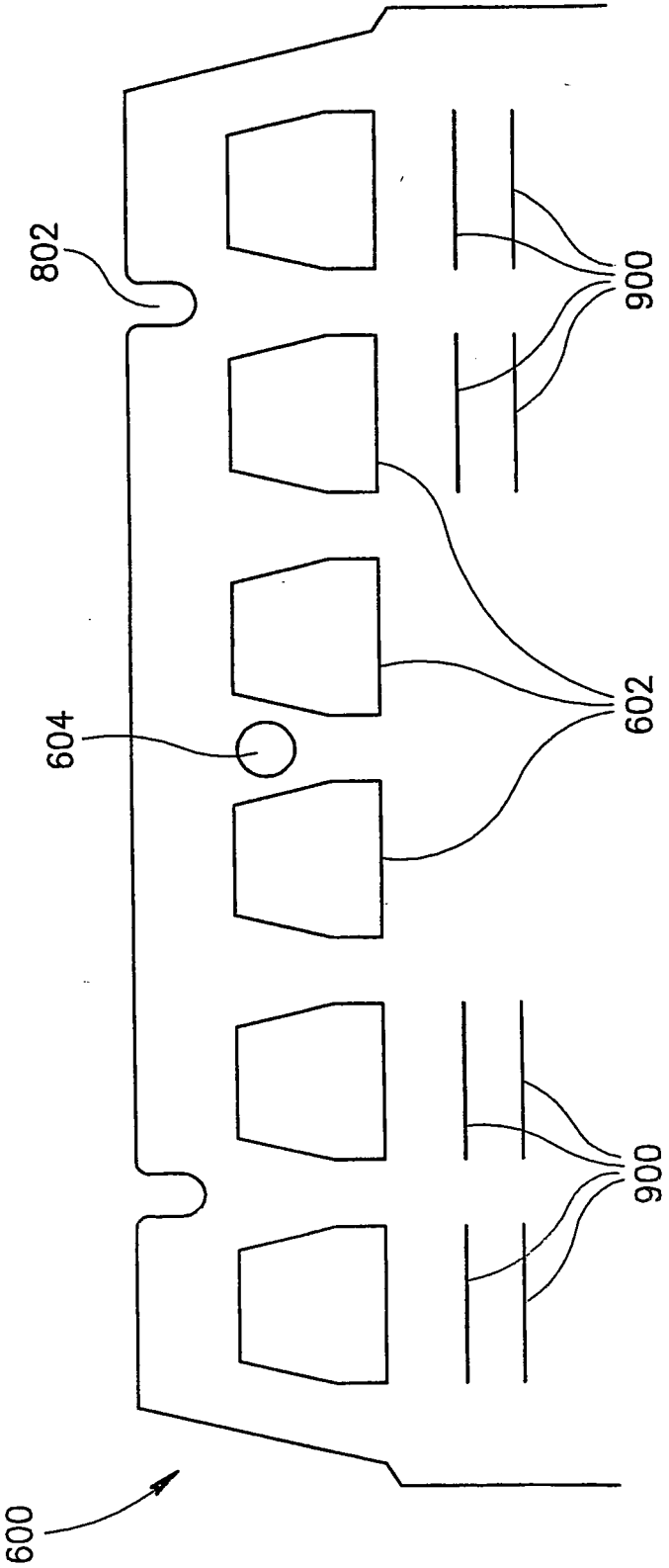


FIG.10

REFERENCES CITED IN THE DESCRIPTION

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