(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 288 148 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
23.03.2005 Bulletin 2005/12

(51) Int Cl.[7]: **B65H 9/04**, B65H 9/10, B65H 1/02

(21) Application number: **01000417.4**

(22) Date of filing: **03.09.2001**

(54) **Method and device for aligning sheets along a single edge**

Methode und Vorrichtung zum Ausrichten von Blättern nach einer Kante

Procédé et dispositif pour aligner des feuilles le long d'un bord unique

(84) Designated Contracting States:
DE FR GB

(43) Date of publication of application:
05.03.2003 Bulletin 2003/10

(73) Proprietor: **AGFA-GEVAERT**
2640 Mortsel (BE)

(72) Inventors:
- **Leys, Paul**
  2640, Mortsel (BE)
- **Bruyndonckx, Kris**
  2640, Mortsel (BE)

(56) References cited:
EP-A- 0 296 816
DE-A- 3 002 594
GB-A- 2 154 518
US-A- 5 651 540
US-A- 5 890 713
EP-A- 0 846 565
DE-A- 19 822 307
US-A- 4 997 323
US-A- 5 700 002

EP 1 288 148 B1

Printed by Jouve, 75001 PARIS (FR)

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a method and a device for aligning sheets. More specifically the invention relates to a method and a device for aligning thermal-sensitive sheets to be used in a thermal printer.

BACKGROUND OF THE INVENTION

[0002] Thermal imaging or thermography is a recording process wherein images are generated by the use of thermal energy.

[0003] In thermography three approaches are known:

1. Direct thermal formation of a visible image pattern by image-wise heating of a recording material containing matter that by chemical or physical process changes color or optical density.
2. Image-wise transfer of an ingredient necessary for the chemical or physical process bringing about changes in color or optical density to a receptor element containing other of the ingredients necessary for said chemical or physical process followed by uniform heating to bring about said changes in color or optical density.
3. Thermal dye transfer printing wherein a visible image pattern is formed by transfer of a colored species from an image-wise heated donor element onto a receptor element.

[0004] Thermographic materials of type 1 can be rendered photothermographic by incorporating a photosensitive agent which after exposure to UV, visible or IR light, e.g. by means of a laser, is capable of catalyzing or participating in a thermographic process bringing about changes in color or optical density.

[0005] A survey of direct thermal imaging methods is given in the book "Imaging systems" by Kurt I. Jacobson-Ralph E. Jacobson, The Focal Press - London and New York (1976), Chapter VII under the heading "7.1 Thermography".

[0006] Common thermal printers that do no use a laser light source comprise a rotatable drum and an elongate thermal head which is spring-biased towards the drum to firmly line-wise contact a heat-sensitive material which is passed between the head and the drum. The thermal head includes a plurality of heating elements. The image-wise heating of a sheet is performed on a line by line basis, with the heating elements geometrically juxtaposed along each other in a bead like row running parallel to the axis of the drum. Each of these elements is capable of being energized by heating pulses, the energy of which is controlled in accordance with the required density of the corresponding picture element. The sheet is advanced between the head and the drum by frictional contact of its rear side with the drum.

[0007] Patent application EP-A-0 846 565 discloses such a thermal printer having a thermal head.

[0008] The images that are printed on such a thermal printer are often used for diagnostic purposes, medical diagnosis in particular. Customarily such images for medical diagnosis are printed on a transparent support. Examples of such images are echograms, CT scans, NMR images. These images are negative-type images, which means that their background is substantially black, the image details having lesser optical densities. Fig. 1 shows two sheets 10 that bear images that are printed by a thermal printer having a thermal head. The image areas E are substantially black and the margins A, B, C and D are transparent. The image cannot be printed on the sheet up to the edge since otherwise the thermal sensitive layer of the sheet would be squeezed at the edge due to the pressure between head and drum, which would soil the thermal head and the transport rollers.

[0009] These images are viewed on a light box for diagnosis. On the light box, the images can be positioned so that the transparent margins B are outside of the illuminated area while black screens can be moved in the light box, like curtains, so that they cover the margins C and D. However, if two sheets 10 are positioned alongside each other, as shown in Fig. 1, a transparent area between the two image areas E remains.

[0010] Radiologists are unfamiliar with such a transparent area, which does not exist in conventional AgX X-ray images. Moreover, a large transparent area has a dazzling effect. Fig. 1 shows two mammographic images. In mammography, it is customary to view the images of the right and of the left breast on a light box, positioned with respect to each other as shown in Fig. 1 (reference sign 15 in Fig. 1 indicates the contours of the breasts). Both sheets 10 are pushed against each other so that no space is left between them (for clarity, in Fig. 1 an open space is shown between the sheets 10). Thus, a transparent area of twice margin A remains between the images. Up till now, such mammographic images did not have a transparent margin, because they were made e.g. by a conventional AgX apparatus or in a photothermographic printer wherein the laser can expose the sheet up to its edges.

[0011] It would be advantageous to print such mammographic images by means of a printer with a thermal head, since this is less expensive than using a photothermographic printer. However, when printed by a conventional printer with a thermal head, on a light box the transparent area between the two images is disturbing.

[0012] Patent application **EP-A-0 296 816** discloses a sheet registration apparatus that includes two edge stops for

aligning a corner of a sheet; another discussed embodiment includes a single edge stop.

[0013] Patent **US-A-5 700 002** discloses a sheet processing apparatus that has at least one sheet receiving tray for accommodating sheets, and an aligning device that presses end surfaces of the sheets accommodated in the tray to align the sheets; the sheets are aligned on two edges.

OBJECTS OF THE INVENTION

[0014] It is therefore an object of the invention to provide a thermal printer having a thermal head that can print mammographic images that are suitable for diagnosis on a light box.

[0015] It is a further object of the invention to provide a method that allows obtaining, by means of a thermal printer having a thermal head, mammographic images that are suitable for diagnosis on a light box.

SUMMARY OF THE INVENTION

[0016] The above-mentioned objects are realised by a thermal printer including a device as claimed in claim 1 and by a thermal printer performing a method as claimed in claim 8. The dependent claims set out preferred embodiments of the invention.

[0017] A sheet 10 having a straight edge 11, as shown in Fig. 1, is accurately aligned in accordance with the invention. An image can then be printed on the sheet leaving only a small margin A, of e.g. 1.1 mm, between the image area E and the straight edge 11. A transparent area of twice such a small margin A, between two image areas E, is not disturbing when viewed on a light box. Because of the accurate alignment, the margin A has a nearly constant width so that there is no risk of the image area E coming too close to the sheet edge 11, which would result in soiling the thermal head as mentioned above. One margin, margin A in Fig. 1, has a small width; the other margins, margins B, C and D in Fig. 1, may have a larger width.

[0018] In a preferred embodiment of the invention, shown in Fig. 2, the straight edge 11 of sheet 10 is aligned with respect to an alignment axis 25 that is perpendicular to the axis 45 of the drum of the thermal printer. Sheet 10 as shown in Fig. 1 may be a rectangular sheet having the standard dimensions of 10" x 12". The image is then printed line-wise with the image lines perpendicular to edge 11, i.e. parallel to edge 12. Preferably, edge 12 is the short, 10", sheet edge and edge 11 is the long, 12", sheet edge. An advantage of this embodiment is that a shorter and hence less expensive thermal head may be used than if the printed image lines would be parallel to the longer sheet edge 11.

[0019] Further advantages and embodiments of the present invention will become apparent from the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The invention is described with reference to the following drawings without the intention to limit the invention thereto, and in which:

Fig. 1 shows two mammographic images;
Fig. 2 shows an embodiment of a device according to the invention;
Fig. 3 shows another embodiment of a device according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0021] Fig. 2 shows a first embodiment of a device according to the present invention. A sheet 10, which may be fed from a sheet tray in a thermal printer, is dropped onto two supporting stops 27 and 28. The sheet is now in a first, non-aligned position, which is shown in Fig. 2. To accurately align sheet 10, it is moved from this first non-aligned position to a second aligned position (not shown) wherein the straight edge 11 of sheet 10 contacts two alignment stops 21, 22. In the embodiment of Fig. 2, in the second aligned position sheet 10 contacts the alignment stops 21, 22 in points Q_1 and Q_2. These two points define an alignment axis 25. In the second aligned position, sheet 10 is thus aligned with its straight edge 11 with respect to alignment axis 25.

[0022] In order to obtain an accurately defined position of the aligned sheet 10, only one of the two supporting stops 27, 28 supports sheet 10 in its second aligned position. In the embodiment of Fig. 2, sheet 10 contacts in its second aligned position the first and second alignment stops 21, 22 and the first supporting stop 27; it does not contact the second supporting stop 28. Furthermore, sheet 10 makes contact with contact element 34 which pushes sheet 10 against the alignment stops 21, 22. Sheet 10 as shown in Fig. 2 is rectangular. Moreover alignment axis 25 is vertical. The first supporting stop 27 is positioned higher than the second supporting stop 28, i.e. $y_{27} > y_{28}$ wherein y_{27} and y_{28} are the coordinates with respect to vertical axis y of respectively the first alignment stop 27 and the second alignment

stop 28. In this way, when sheet 10 contacts the alignment stops 21 and 22, it does not contact the second supporting stop 28.

[0023] In a preferred embodiment of the invention, the first supporting stop 27, which supports sheet 10 in its second aligned position, is nearer the alignment axis 25 than the second supporting stop 28, i.e. in Fig. 2 distance $d_{27} < d_{28}$. In this way, the second aligned position is more stable than if $d_{27} > d_{28}$.

[0024] Fig. 3 shows another embodiment in accordance with the invention. Contrary to the embodiment shown in Fig. 2, in the embodiment of Fig. 3 the supporting stops 27 and 28 each contact a different edge of sheet 10 in its first non-aligned position: the first supporting stop 27 contacts edge 14 while the second supporting stop 28 contacts edge 13.

[0025] Sheet 10 is moved to its second aligned position by moving means 30. An embodiment of moving means 30 is shown schematically in Fig. 2; it comprises an electromagnet 31, a resilient element 32 such as a spring, a lever 33 that can pivot around point P and a contact element 34 on lever 33. To move sheet 10, electromagnet 31 is energized and pulls lever 33, and contact element 34 on lever 33, in the direction of arrow R. Contact element 34 contacts edge 13 of sheet 10 and pushes sheet 10 against alignment stops 21 and 22. Lever 33 is used to increase the stroke of electromagnet 31. An advantage of resilient element 32 is that a given force is applied to edge 13 without enforcing edge 13 to move over a fixed displacement, which would be the case if the resilient element 32 would be omitted. Enforcing a fixed displacement would cause a deformation of sheet 10 by pressing sheet 10 against alignment stops 21 and 22. Applying the force through resilient element 32 on the other hand gently pushes sheet 10 against the alignment stops 21 and 22. Instead of the moving means 30 shown in Fig. 2, any other moving means as known in the art may be used.

[0026] Preferably, before moving sheet 10 against alignment stops 21 and 22, sheet 10 is given a slight touch. This touch may be given by moving means 30. The purpose of this touch is to obtain a good first non-aligned position of sheet 10, since dropping sheet 10 may e.g. have caused the sheet to be not well supported by the supporting stops 27, 28. In the embodiment of Fig. 2, touching the sheet is accomplished by shortly energizing the electromagnet 31 just before the electromagnet 31 is energized again to move the sheet. The complete cycle of touching and moving sheet 10 may be quite short, e.g. less than 1 second.

[0027] In a preferred embodiment of the invention, at least one of the alignment stops 21, 22 is adjustable. In the embodiment of Fig. 2, alignment stop 21 is adjustable. Point Q_1 is the contact point of alignment stop 21 with sheet 10 in its second aligned position. By rotating alignment stop 21 around its pivot point 24, contact point Q_1 moves towards or away from pivot point 24, since arc 23 on which Q_1 is located is positioned eccentrically with respect to pivot point 24.

[0028] In another embodiment of the invention, the first and second alignment stops 21, 22 are both part of a single element that contacts sheet 10 in its second aligned position by means of these first and second alignment stops 21, 22.

[0029] Advantages of a device in accordance with the invention are that it is simple and inexpensive, yet it allows accurate sheet alignment.

[0030] After aligning the sheet, an image may be printed on the sheet in a thermal printer having a thermal head. It is preferred, as shown in Fig. 2, that the drum axis 45 of the thermal printer is perpendicular to the alignment axis 25. Printing may proceed as follows. The aligned sheet is seized by a transport mechanism in the thermal printer - the transport system may include the thermal head and the drum. Moving means 30 is now switched off; i.e. in the embodiment of Fig. 2 electromagnet 31 is de-energized so that contact element 34 is withdrawn from sheet 10. The image is printed line-wise, while sheet 10 is advanced between the thermal head and the drum. In the embodiment shown in Fig. 2, the image lines are parallel to edge 12 of sheet 10 (after alignment). The image is printed with a small and nearly constant margin that is adjacent to straight edge 11. Preferably - as shown in Fig. 2, wherein y represents a vertical axis - the alignment axis 25 is vertical and the drum axis 45 is horizontal.

[0031] To adjust the alignment device, a special test image may be written, preferably in the factory during production of the thermal printer. Using measurements of this test image, the alignment device is then adjusted, e.g. by adjusting alignment stop 21 in Fig. 2. In this way, the small margin of the sheet - i.e. margin A in Fig. 1 - will have a nearly constant width. To set the magnitude of the margin width, the position of the thermal head along its axis may be adjusted (the axis of the thermal head is parallel to the drum axis 45).

EXAMPLE

[0032] An aligning device as shown in Fig. 2 is used with the following coordinates with respect to axis y:

$y_{28} = 0$;
$y_{27} = 0.2$ mm;
$y_{24} = 41.6$ mm;
$y_{22} = 206.6$ mm;
$y_{34} = 131.1$ mm;

y_{45} = 295.4 mm;

and with the following distances:

d_{27} = 42 mm;
d_{28} = 214 mm.

Sheet 10 is a thermal-sensitive sheet:

- having a support of poly(ethylene terephtalate) with a thickness of 0.18 mm;
- having dimensions 302.5 mm (= the length of edges 11 and 13) x 252 mm (= the length of edges 12 and 14) and a perpendicularity not larger than 1.5 mm over 300 mm.

[0033] Those skilled in the art will appreciate that numerous modifications and variations may be made to the embodiments disclosed above without departing from the scope of the present invention.

List of reference signs

[0034]

10	sheet
11, 12	edge
13, 14	edge
15	contour
21, 22	alignment stop
23	arc
24	point
25	alignment axis
27, 28	supporting stop
30	moving means
31	electromagnet
32	resilient element
33	lever
34	contact element
45	drum axis
d_{27}, d_{28}	distance
y	vertical axis
y_{22}, y_{24}, y_{27}, y_{28}, y_{34}, y_{45}	coordinate with respect to y-axis
A,B,C,D	margin
E	image area
P, Q_1, Q_2	point
R	arrow

Claims

1. A device for aligning sheets (10), the sheet (10) having a straight edge (11), the device comprising:

- two alignment stops (21, 22) defining an alignment axis (25);
- a first (27) and a second (28) supporting stop for supporting said sheet (10) on at least one edge (13, 14) against gravity in a first non-aligned position of said sheet (10);
- moving means (30) comprising a contact element (34) for moving said sheet (10) from said first non-aligned position to a second aligned position, said straight edge (11) of said sheet (10) being pushed against said two alignment stops (21, 22) by said contact element (34) in said second aligned position; **characterized in that** said first supporting stop (27) is positioned at a height coordinate (y_{27}) with respect to the vertical axis (y) that is different from the height coordinate (y_{28}) of said second supporting stop (28) with respect to the vertical axis (y), so that in said second aligned position said first supporting stop (27) supports said sheet without said second supporting stop (28) supporting said sheet.

2. The device according to claim 1 wherein said first supporting stop (27) is positioned at a smaller distance (d_{27}) from said alignment axis (25) than said second supporting stop (28).

3. The device according to any one of the preceding claims wherein at least one (21) of said two alignment stops (21, 22) is adjustable.

4. The device according to any one of the preceding claims wherein said moving means (30) comprises a resilient element (32).

5. A thermal printer including a device according to any one of the preceding claims.

6. The thermal printer according to claim 5 further comprising:

- a thermal head for line-wise printing an image onto said sheet (10);
- a drum for transporting said sheet (10) past said thermal head;

wherein said drum has a drum axis (45) perpendicular to said alignment axis (25).

7. A method for aligning a sheet (10), using the device according to any one of claims 1 to 4, comprising the steps of:

a. dropping said sheet (10) by gravity;
b. subsequently supporting said sheet (10) by said first (27) and second (28) supporting stops;
d. subsequently moving said straight edge (11) of said sheet (10) towards said two alignment stops (21, 22);
e. subsequently pushing said straight edge (11) of said sheet (10) against said two alignment stops (21, 22), while said first supporting stop (27) supports said sheet (10) without said second supporting stop (28) supporting said sheet (10).

8. The method according to claim 8 further comprising the step of:

c. giving said sheet (10) a touch;

wherein said step c follows said step b and precedes said step d.

9. A method for printing an image on a sheet (10) in a thermal printer, using the apparatus according to claim 6, the method comprising the steps of:

- aligning said sheet (10) according to claim 7 or claim 8;
- seizing said sheet (10) by a transport mechanism;
- withdrawing said contact element (34) from said sheet (10);
- image-wise heating said thermal head so as to write said image on said sheet (10).

Patentansprüche

1. Eine Vorrichtung zum Ausrichten von Bogen (10), wobei der Bogen (10) eine rechte Kante (11) aufweist und die Vorrichtung folgende Elemente umfasst :

- zwei Ausrichtanschläge (21, 22), die eine Ausrichtungsachse (25) definieren,
- einen ersten (27) und einen zweiten (28) Stützanschlag, durch die der Bogen (10) an zumindest einer Kante (13, 14) in einer ersten, nicht ausgerichteten Position des Bogens (10) der Schwerkraft entgegen unterstützt wird,
- ein mit einem Kontaktelement (34) versehenes Verschiebungsmittel (30), das den Bogen (10) von seiner ersten, nicht ausgerichteten Position zu einer zweiten, ausgerichteten Position verschiebt,

wobei die rechte Kante (11) des Bogens (10) in der zweiten, ausgerichteten Position durch das Kontaktelement (34) gegen die zwei Ausrichtanschläge (21, 22) gedrückt wird,
dadurch gekennzeichnet, dass der erste Stützanschlag (27) an einer Höhenkoordinate (y_{27}), bezogen auf die vertikale Achse (y), angeordnet ist, die zur Höhenkoordinate (Y_{28}) des zweiten Stützanschlags (28), bezogen auf

die vertikale Achse (y), unterschiedlich ist, so dass der Bogen in seiner zweiten, ausgerichteten Position nur durch den ersten Stützanschlag (27) und nicht durch den zweiten Stützanschlag (28) unterstützt wird.

2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Abstand (d_{27}) zwischen dem ersten Stützanschlag (27) und der Ausrichtungsachse (25) kleiner ist als der Abstand zwischen dem zweiten Stützanschlag (28) und der Ausrichtungsachse (25).

3. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** zumindest einer (21) der zwei Ausrichtanschläge (21, 22) einstellbar ist.

4. Vorrichtung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** das Verschiebungsmittel (30) ein biegsames Element (32) umfasst.

5. Ein Thermodrucker mit einer Vorrichtung nach einem der vorstehenden Ansprüche.

6. Thermodrucker nach Anspruch 5, der ferner folgende Elemente umfasst :

- einen Thermokopf zum zeilenweisen Drucken eines Bildes auf dem Bogen (10) und
- eine Trommel, durch die der Bogen (10) am Thermokopf vorbeigefördert wird,

dadurch gekennzeichnet, dass die Trommel eine senkrecht auf die Ausrichtungsachse (25) verlaufende Trommelachse (45) aufweist.

7. Ein der Reihe nach durch die folgenden Schritte gekennzeichnetes Verfahren zum Ausrichten eines Bogens (10) unter Verwendung der Vorrichtung nach einem der Ansprüche 1 bis 4 :

a. schwerkraftgemäßes Herunterfallen des Bogens (10),
b. Unterstützen des Bogens (10) durch den ersten (27) und zweiten (28) Stützanschlag,
d. Verschieben der rechten Kante (11) des Bogens (10) zu den zwei Ausrichtanschlägen (21, 22) und
e. Drücken der rechten Kante (11) des Bogens (10) gegen die zwei Ausrichtanschläge (21, 22), wobei der Bogen nur durch den ersten Stützanschlag (27) und nicht durch den zweiten Stützanschlag (28) unterstützt wird.

8. Verfahren nach Anspruch 8, das ferner folgenden Schritt umfasst:

c. leichtes Berühren des Bogens (10),

wobei Schritt (c) an Schritt (b) anschließt und Schritt (d) vorangeht.

9. Ein durch die folgenden Schritte gekennzeichnetes Verfahren zum Drucken eines Bildes auf einem Bogen (10) in einem Thermodrucker unter Verwendung der Vorrichtung nach Anspruch 6 :

- Ausrichten des Bogens (10) nach Anspruch 7 oder Anspruch 8,
- Ergreifen des Bogens (10) durch einen Transportmechanismus,
- Entfernen des Kontaktelements (34) vom Bogen (10) und
- bildmäßiges Erwärmen des Thermokopfes, um das Bild auf dem Bogen (10) zu schreiben.

Revendications

1. Dispositif pour aligner des feuilles (10), la feuille (10) possédant un bord droit (11), le dispositif comprenant :

- deux butées de mise en alignement (21, 22) définissant un axe de mise en alignement (25) ;
- une première butée de support (27) et une deuxième butée de support (28) pour supporter ladite feuille (10) le long d'au moins un bord (13, 14) à l'encontre de la pesanteur dans une première position de non mise en alignement de ladite feuille (10) ;
- un moyen de déplacement (30) comprenant un élément de contact (34) pour déplacer ladite feuille (10) depuis ladite première position de non mise en alignement jusqu'à une deuxième position de mise en alignement,

ledit bord droit (11) de ladite feuille (10) étant poussé contre lesdites deux butées de mise en alignement (21, 22) par ledit élément de contact (34) dans ladite deuxième position de mise en alignement ;

caractérisé en ce que ladite première butée de support (27) est disposée à une coordonnée de hauteur (y_{27}) par rapport à l'axe vertical (y) qui est différent de la coordonnée de hauteur (y_{28}) de ladite deuxième butée de support (28) par rapport à l'axe vertical (y), de telle sorte que dans ladite deuxième position de mise en alignement, ladite première butée de support (27) supporte ladite feuille sans que ladite deuxième butée de support (28) ne supporte ladite feuille.

2. Dispositif selon la revendication 1, dans lequel ladite première butée de support (27) est disposée à une distance (d_{27}) plus courte dudit axe de mise en alignement (25) que ne l'est ladite deuxième butée de support (28).

3. Dispositif selon l'une quelconque des revendications précédentes, dans lequel au moins une butée (21) parmi lesdites deux butées de mise en alignement (21, 22) est réglable.

4. Dispositif selon l'une quelconque des revendications précédentes, dans lequel ledit moyen de déplacement (30) comprend un élément résilient (32).

5. Imprimante thermique englobant un dispositif selon l'une quelconque des revendications précédentes.

6. Imprimante thermique selon la revendication 5, comprenant en outre :

- une tête thermique pour imprimer ligne par ligne une image sur ladite feuille (10) ;
- un tambour pour transporter ladite feuille (10) devant ladite tête thermique ;
  ledit tambour possédant un axe de tambour (45) perpendiculaire audit axe de mise en alignement (25).

7. Procédé pour la mise en alignement d'une feuille (10), en utilisant le dispositif selon l'une quelconque des revendications 1 à 4, comprenant les étapes consistant à :

a. laisser tomber ladite feuille (10) sous l'influence de la pesanteur ;
b. faire ensuite supporter ladite feuille (10) par lesdites première et deuxième butées de support (27, 28) ;
d. déplacer ensuite ledit bord droit (11) de ladite feuille (10) en direction desdites deux butées de mise en alignement (21, 22) ;
e. pousser ensuite ledit bord droit (11) de ladite feuille (10) contre lesdites deux butées de mise en alignement (21, 22), tandis que ladite première butée de support (27) supporte ladite feuille (10) sans que ladite deuxième butée de support (28) ne supporte ladite feuille (10).

8. Procédé selon la revendication 7, comprenant en outre l'étape consistant à :

c. toucher légèrement ladite feuille (10) ;

ladite étape c suivant ladite étape b et précédant ladite étape d.

9. Procédé pour imprimer une image sur une feuille (10) dans une imprimante thermique, en utilisant l'appareil selon la revendication 6, le procédé comprenant les étapes consistant à :

- mettre ladite feuille 10 en alignement conformément à la revendication 7 ou à la revendication 8 ;
- faire en sorte que ladite feuille (10) soit saisie par un mécanisme de transport ;
- retirer ledit élément de contact (34) de ladite feuille (10) ;
- chauffer en forme d'image ladite tête thermique de façon à pouvoir reproduire ladite image sur ladite feuille (10).

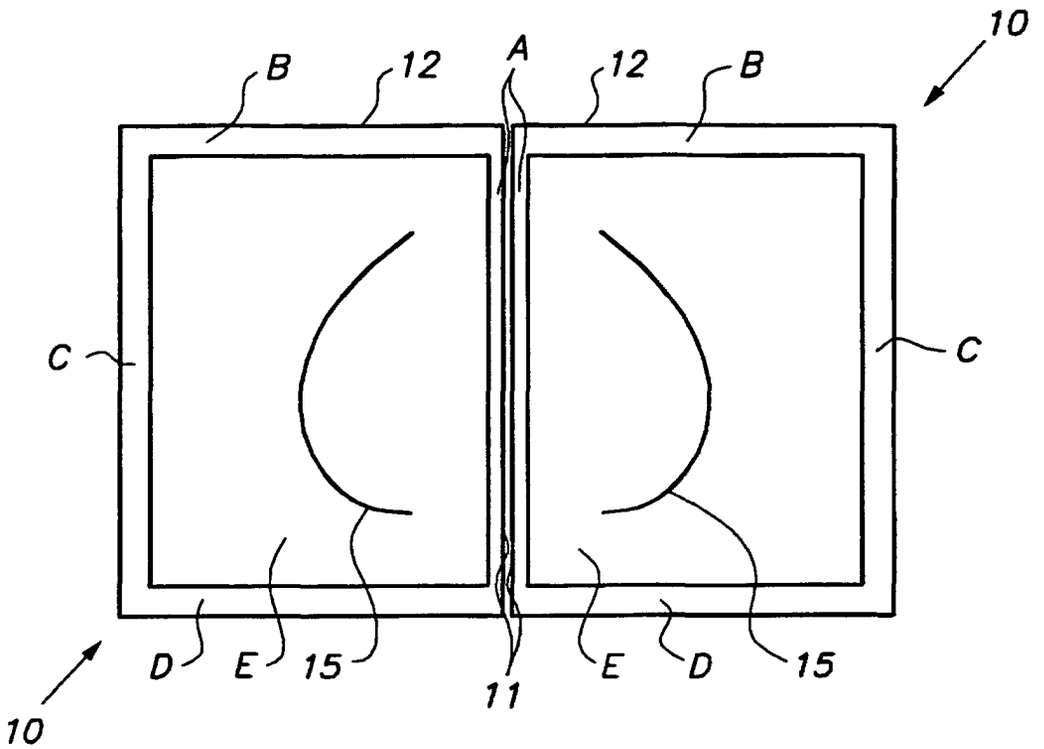

FIG. 1

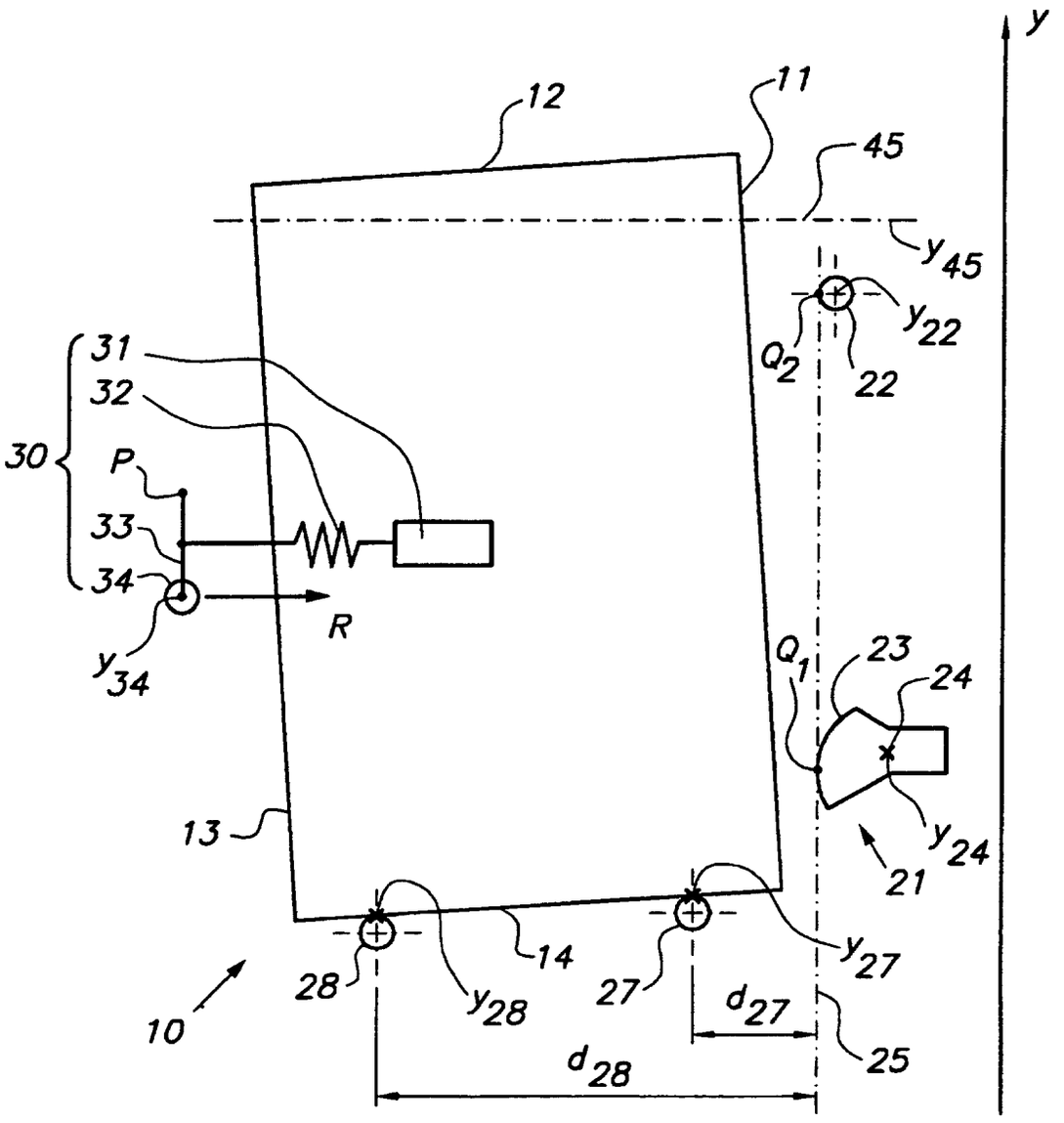
y
12
11
45
y_{45}
y_{22}
Q_2
22
31
32
30
P
33
34
R
y_{34}
Q_1
23
24
y_{24}
21
13
14
y_{27}
y_{28}
28
27
d_{27}
25
10
d_{28}

FIG. 2

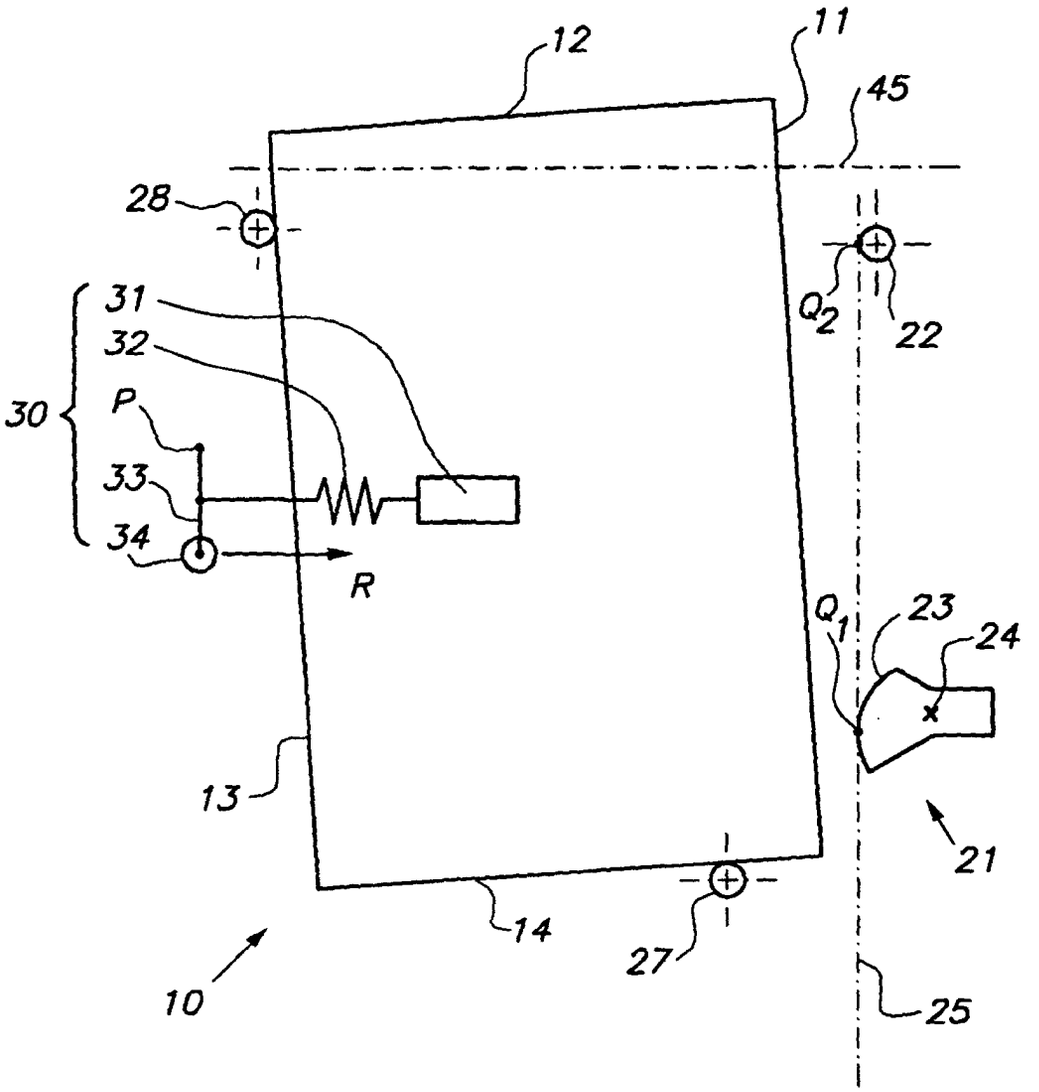

FIG. 3