

Description

The present invention relates to an image fixing device for use in an image forming apparatus such as a copying machine, a printer or the like. More specifically, the present invention relates to a roller-type fixing device in which an image carried by a recording member is fixed to the recording member as the recording member is pinched and driven between and conveyed by a pair of rollers. Hitherto, various image fixing methods for image

forming apparatus have been proposed. Among these proposed methods, a roller-type fixing method, more particularly a heated roller type fixing method, has been widely used in which an image is fixed to an image carrying recording member as the recording member is made to pass through a nip between a heating roller and pressure roller.

For an illustration of the prior art see DE-A-3 119 522.

Fig. 9 is a longitudinal sectional view of a known image fixing device of the heat roller type, while Fig. 10 is a side elevational view of the fixing device. The fixing device has a frame 1 which is composed of left and right side panels 1a and 1b and upper and lower stays 1c and 1d connected between side panels 1a and 1b. The frame 1 rotatably supports and accommodates the fixing roller 2 and the pressing roller 4.

This fixing device is assembled by assembling the frame 1 and then mounting the fixing roller 2 and the pressing roller 4 or, alternatively, by assembling the frame 1 while simultaneously mounting the fixing roller 2 and the pressing roller 4. In both cases, it is necessary to move the fixing roller 2 and the pressing roller 4 into the frame or half-finished frame from lateral sides of the side panels 1a and 1b. This undesirable impairs production efficiency.

In addition, special assembly jigs are required for assembling the left and right side panels 1a and 1b and upper and lower stays 1c and 1d at high dimensional precision.

An object of the present invention is to provide an image fixing device which is easily assembled without requiring a special jig.

Another object of the present invention is to provide an image fixing device which can be assembled by moving a fixing roller into a frame in a direction perpendicular to the axis of the fixing roller.

Still another object of the present invention is to provide an image fixing device in which rollers are supported by partly-opened bearings.

According to the present invention there is provided an image fixing device comprising a frame, a fixing roller, a drive gear provided at or near one end of said roller, a first bearing rotatably supporting a first end of said roller adjacent said drive gear, a second bearing rotatably supporting a second end of said roller remote from said drive gear, said frame supporting said

roller through said bearings, characterised in that said first bearing extends around the entire circumference in a region at or near said first end of said roller, while said second bearing extends around and supports only part of the circumference in a region at or near said second end of said roller.

The frame may accommodate fixing and pressure rollers, a supporting member for the latter being pivotable between a closed position and opened position where the first and second rollers are rotatable into the frame in directions perpendicular to the axes of the respective rollers.

In yet another aspect of the present invention, there is provided an image fixing device with a heating roller that contains a heat source and which is supported through bearings on a frame. Also included are abnormal temperature rise prevention means attached to the frame which will cut off the supply of electric power to the heat source in the event of an abnormal temperature rise of the heating roller. A supporting member which is rotatable between a closed and opened position is provided. While the supporting member is in the open position, the heating roller is insertable into the frame in a direction perpendicular to its axis and in such a way that the abnormal temperature rise prevention means is set at a predetermined positional relationship to the heating roller as a result of that insertion.

A support member may be included which is rotatable to an open position at which the fixing roller is insertable into the frame by movement in a direction perpendicular to the axis of the fixing roller.

The above and other objects, features and advantages of the present invention will become clear from the following description of the preferred embodiments when the same is read in conjunction with the accompanying drawings.

In the accompanying drawings:-

Fig. 1 is a side elevational view of an embodiment of the fixing device of the present invention as viewed from the side opposite to the driving side;

Fig. 2 is a side elevational view of the fixing device of Fig. 1 as viewed from the driving side;

Fig. 3 is a perspective view of the fixing device;

Fig. 4 is a plan view of a fixing roller;

Figs. 5 and 6 are side elevational views of the fixing device illustrating the manner in which a fixing roller is mounted in the fixing device during assembling of the fixing device;

Fig. 7 is a side elevational view of the fixing device illustrating the manner in which a pressing roller is mounted in the fixing device during assembling of the fixing device;

Fig. 8 is a side elevational view of an embodiment of an image fixing device included for the purpose of reference only;

Fig. 9 is a longitudinal sectional view of a known image fixing device; and

Fig. 10 is a side elevational view of a fixing device shown in Fig. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

An image fixing device embodying the present invention will be described with reference to Figs. 1 to 7.

Referring to these Figures, the image fixing device has a frame 1 which is integrally formed from a heat-resistant plastic material. The frame 1 rotatably carries a fixing roller 2 in which is disposed a halogen heater 12 for heating the fixing roller. The halogen heater 12 generates heat when supplied with electrical power from a power supply which is not shown.

A temperature sensing element (not shown) is held in contact with the surface of the fixing roller 2. The supply of the electrical power to the heater 12 is controlled in accordance with the output from the temperature sensing element so as to maintain the surface of the fixing roller at a predetermined temperature.

The frame 1 rotatably supports an idler shaft 11 which engages with a pressing plate 7. The pressing plate 7 is rotatable about the axis of the idler shaft 11, as will be seen from Fig. 7. A pressing roller 4 having a rubber layer is rotatably supported by the pressing plate 7.

The fixing roller 2 and the pressing roller 4 are supported by the following structures. As will be seen from Fig. 4, a bearing 8 and a gear 9 are beforehand mounted on the driving-side end of the fixing roller 2. The bearing 8 and the gear 9 are kept from coming off the fixing roller 2 by means of stopper rings 20. The other end of the fixing roller, i.e., the end opposite to the driving side end, is supported by a partly-opened U-shaped bearing 3. The driving-side end of the fixing roller 2 is supported by the frame 1 through bearing 8 which is beforehand mounted on the fixing roller 2. As will be seen from Figs. 5 and 6, the side panels of the frame 1 are provided with substantially U-shaped openings 1a and 1b which open in the upward direction. The bearings 3 and 8 supporting the respective ends of the fixing roller 2 are received in openings 1a and 1b.

The pressing roller 4 is supported at its both ends by bearings 5 and 5. As will be seen from Fig. 1, each bearing 5 is provided with a sliding surface only over half circumference thereof which receives the load of the pressing roller 4. The bearing 5 is supported on the pressing plate 7 through a compression spring 6.

A drive gear 10 meshing with the aforementioned gear 9 is supported by the idler shaft 11. When the drive gear is rotatably driven by the driving power source which is not shown, the torque of the drive gear 10 is transmitted to the fixing roller 2 via the gear 9, so that the fixing roller 2 and the pressing roller 4

contacting the fixing roller 2 are rotated. As shown in Fig. 2, an external force F acting on the fixing roller 2, generated due to a specific pressure angle of contact between the gears 9 and 10, is borne by a portion T of the frame, whereby any tendency for the fixing roller 2 to be lifted is suppressed.

The end of the fixing roller 2 opposite to the driving-side end is free from the external force produced by the contact between the gears 9 and 10. This end of the fixing roller 2 is therefore stably held in U-shaped bearing 3 as a result of the force produced by the pressing springs 6.

As shown in Fig. 3, the frame 1 is provided with an inlet guide 13 and an ejection guide 14. The inlet guide 13 is arranged so as to guide the recording paper carrying an unfixed image to the nip between the fixing roller 2 and the pressing roller 4, such that the image carrying surface of the recording paper is brought into contact with the fixing roller 2. The ejecting guide 14 is adapted to guide the recording paper to a paper ejecting roller (not shown), after fixing of the image.

Namely, in operation, a recording member such as a sheet of recording paper is guided by the inlet guide to the above-mentioned nip.

The recording member is made to pass through the nip between the fixing roller 2 and the pressing roller 4 which backs up the fixing roller 2. The image carried by the recording member is fixed to the recording member by heat and pressure applied by the fixing roller 2 and the pressing roller 4 during passage of the recording member through the nip.

The recording paper which has passed through the nip is guided by the ejection guide to the ejection roller and is then ejected by the traction of the ejection roller.

The frame 1 also is provided with a thermo-switch 15 for cutting off the supply of the electrical power to the halogen heater in the event of an abnormal rise of the temperature of the fixing roller 2, and the frame 1 is also provided with a phosphor bronze plate 16 which provides an electrical connection between the thermo-switch 15 and the halogen heater 12.

A description will now be given of the process for mounting the fixing roller 2 and the pressing roller 4, with specific reference to Figs. 5 to 7.

As stated before, the fixing roller 2 is provided with the bearing 8 and the gear 9 on the driving-side end thereof, as shown in Fig. 4 before mounting. In order to mount this fixing roller 2, the fixing roller 2 is simply dropped into the openings 1a and 1b formed in the frame 1 perpendicularly to the axis of fixing roller 2, as indicated by the arrows in Figs. 5 to 7 arrows. Consequently, both ends of the fixing roller 2 are rotatably supported by the frame 1 through the bearings 8 and 3.

In order to mount the pressing roller 4, the bearings 5 and the pressing springs 6 are first assembled

together with the pressing plate 7. The pressing plate 7, with its hook portions retained on the idler shaft 11, is rotated clockwise around idler shaft 11, as viewed in Fig. 7 so as to open a passage for introducing the pressing roller 4. With the pressing plate 7 opened, the pressing roller 4 is moved into the bearings 8, 3 in a direction perpendicular to the axis of the idler shaft 11, whereby the pressing roller 4 is easily mounted in the frame. Then, pressing plate 7 is rotated counterclockwise as indicated by the arrow in Fig. 7 and is fixed to the frame 1 by means of a screw 7a. In this state, the pressing roller 4 is urged by the pressing springs 6 to resiliently contact the fixing roller 2.

After the completion of the assembly process described above, the inlet guide 13 and the ejection guide 14 are mounted on the frame 1. The thermo-switch 15 and the phosphor bronze plate 16 are mounted in the frame 1 before the mounting of the fixing roller 2.

Thus, the thermo-switch 15 can be arranged at a proper positional relation to the fixing roller 2 simply by mounting the fixing roller, so that the assembly process is remarkably simplified. In addition, since the fixing roller 2 is mounted by being moved in the direction which is orthogonal to the axis thereof, there is no risk for the surface of the fixing roller 2 to be damaged by the thermo-switch.

Furthermore, the resilient contact between the fixing roller 2 and the pressing roller 4 can easily be attained by fixing the pressing plate to the frame 1, thus contributing to a further facilitation of the assembly.

In this embodiment, a phosphor bronze plate 16 is attached to the frame 1 which provides a high degree of electrical insulation, so that lead wires and other conductive parts are eliminated to realize a compact wiring arrangement. This also contributes to simplification of the assembly process and, hence, to a reduction in the cost of production.

In the illustrated embodiment, mounting precisions for the components such as the fixing roller 2, pressing roller 4, inlet guide 13 and the ejection guide 14 are also enhanced by virtue of the fact that these components are mounted on the frame 1 which is integrally formed from a plastic.

The frame 1 may be formed from a sheet metal or from a combination of a sheet metal and a plastic sheet. Considering that the frame is preferably electrically insulating, it is preferred that the frame is integrally molded from a plastic.

Fig. 8 shows, for reference, an embodiment in which the direction of pressure angle of the contact between the gears 9 and 10 substantially coincides with the direction of the pressure exerted by the pressing roller 4. With this arrangement, it is possible to prevent the fixing roller 2 from being lifted even when U-shaped bearings are used for supporting

both the driving-side end and the opposite end of the fixing roller 2.

The term "direction of pressure angle" is used in this specification to mean the direction of a line which intersects the common tangential line of both gears 9 and 10 at the same angle as the pressure angle to the common tangential line.

Claims

1. An image fixing device comprising a frame (1), a fixing roller (2), a drive gear (9) provided at or near one end of said roller, a first bearing (8) rotatably supporting a first end of said roller adjacent said drive gear, a second bearing (3) rotatably supporting a second end of said roller remote from said drive gear, said frame (1) supporting said roller through said bearings (8, 3), characterised in that said first bearing (8) extends around the entire circumference in a region at or near said first end of said roller, while said second bearing (3) extends around and supports only part of the circumference in a region at or near said second end of said roller.
2. An image fixing device as claimed in claim 1, characterised in that said second bearing (3) supports about half the circumference of said roller (2).
3. An image fixing device as claimed in claim 1 or 2, characterised in that said first and second bearings (8, 3) are slide bearings which slidably support said roller.
4. An image fixing device as claimed in claim 1, 2 or 3, characterised in that said second bearing (3) is open ended to enable said second end of said roller (2) to be inserted into said second bearing by movement in the direction of insertion.
5. An image fixing device as claimed in any one of claims 1-4, characterised in that a second roller (4) is disposed in said frame (1) and held in pressure contact with the first roller (2).
6. An image fixing device as claimed in claim 5, characterised in that the direction of insertability of said first roller is substantially the same as the direction of pressure of contact between said pressure roller and said fixing roller.
7. An image fixing device as claimed in any one of claims 1-5, characterised in that the direction of insertability of said first roller is substantially the same as the direction of pressure angle of the pressure acting on said drive gear.



together with the pressing plate 7. The pressing plate 7, with its hook portions retained on the idler shaft 11, is rotated clockwise around idler shaft 11, as viewed in Fig. 7 so as to open a passage for introducing the pressing roller 4. With the pressing plate 7 opened, the pressing roller 4 is moved into the bearings 8, 3 in a direction perpendicular to the axis of the idler shaft 11, whereby the pressing roller 4 is easily mounted in the frame. Then, pressing plate 7 is rotated counterclockwise as indicated by the arrow in Fig. 7 and is fixed to the frame 1 by means of a screw 7a. In this state, the pressing roller 4 is urged by the pressing springs 6 to resiliently contact the fixing roller 2.

After the completion of the assembly process described above, the inlet guide 13 and the ejection guide 14 are mounted on the frame 1. The thermo-switch 15 and the phosphor bronze plate 16 are mounted in the frame 1 before the mounting of the fixing roller 2.

Thus, the thermo-switch 15 can be arranged at a proper positional relation to the fixing roller 2 simply by mounting the fixing roller, so that the assembly process is remarkably simplified. In addition, since the fixing roller 2 is mounted by being moved in the direction which is orthogonal to the axis thereof, there is no risk for the surface of the fixing roller 2 to be damaged by the thermo-switch.

Furthermore, the resilient contact between the fixing roller 2 and the pressing roller 4 can easily be attained by fixing the pressing plate to the frame 1, thus contributing to a further facilitation of the assembly.

In this embodiment, a phosphor bronze plate 16 is attached to the frame 1 which provides a high degree of electrical insulation, so that lead wires and other conductive parts are eliminated to realize a compact wiring arrangement. This also contributes to simplification of the assembly process and, hence, to a reduction in the cost of production.

In the illustrated embodiment, mounting precisions for the components such as the fixing roller 2, pressing roller 4, inlet guide 13 and the ejection guide 14 are also enhanced by virtue of the fact that these components are mounted on the frame 1 which is integrally formed from a plastic.

The frame 1 may be formed from a sheet metal or from a combination of a sheet metal and a plastic sheet. Considering that the frame is preferably electrically insulating, it is preferred that the frame is integrally molded from a plastic.

Fig. 8 shows, for reference, an embodiment in which the direction of pressure angle of the contact between the gears 9 and 10 substantially coincides with the direction of the pressure exerted by the pressing roller 4. With this arrangement, it is possible to prevent the fixing roller 2 from being lifted even when U-shaped bearings are used for supporting

both the driving-side end and the opposite end of the fixing roller 2.

The term "direction of pressure angle" is used in this specification to mean the direction of a line which intersects the common tangential line of both gears 9 and 10 at the same angle as the pressure angle to the common tangential line.

Claims

1. An image fixing device comprising a frame (1), a fixing roller (2), a drive gear (9) provided at or near one end of said roller, a first bearing (8) rotatably supporting a first end of said roller adjacent said drive gear, a second bearing (3) rotatably supporting a second end of said roller remote from said drive gear, said frame (1) supporting said roller through said bearings (8, 3), characterised in that said first bearing (8) extends around the entire circumference in a region at or near said first end of said roller, while said second bearing (3) extends around and supports only part of the circumference in a region at or near said second end of said roller.
2. An image fixing device as claimed in claim 1, characterised in that said second bearing (3) supports about half the circumference of said roller (2).
3. An image fixing device as claimed in claim 1 or 2, characterised in that said first and second bearings (8, 3) are slide bearings which slidably support said roller.
4. An image fixing device as claimed in claim 1, 2 or 3, characterised in that said second bearing (3) is open ended to enable said second end of said roller (2) to be inserted into said second bearing by movement in the direction of insertion.
5. An image fixing device as claimed in any one of claims 1-4, characterised in that a second roller (4) is disposed in said frame (1) and held in pressure contact with the first roller (2).
6. An image fixing device as claimed in claim 5, characterised in that the direction of insertability of said first roller is substantially the same as the direction of pressure of contact between said pressure roller and said fixing roller.
7. An image fixing device as claimed in any one of claims 1-5, characterised in that the direction of insertability of said first roller is substantially the same as the direction of pressure angle of the pressure acting on said drive gear.



8. An image fixing device as claimed in any one of claims 1-5, characterised in that said frame is provided with a support portion for receiving an external force which is exerted on said first roller as a result of driving of said first roller by said drive gear. 5
9. An image fixing device as claimed in claim 8, characterised in that said second bearing is open at a region adjacent said second roller. 10
10. An image fixing device as claimed in any one of claims 6, 7, 8 or 9, when appended to claim 5, characterised in that pressing means (5, 6) are provided for keeping said first and second rollers in resilient contact with each other. 15
11. An image fixing device as claimed in any one of claims 5-10, characterised in that said frame (1) has a support portion (7) for receiving an external force acting on said first roller as a result of driving of said first roller by said drive gear (9). 20
12. An image fixing device as claimed in any one of claims 5-11, characterised in that said frame (1) has a supporting member (7) which supports said second roller (4) through bearings, said supporting member (7) being adapted to be fixed to a predetermined portion of said frame so that said second roller is automatically set in said frame on fixing. 25
13. An image fixing device as claimed in claim 12, characterised in that the second roller is set into pressure contact with said first roller within said frame by the fixing of said supporting member to said predetermined portion of said frame. 30
14. An image fixing device as claimed in claim 13, characterised in that said second roller is mounted on said supporting member for movement in a direction perpendicular to the axis of said second roller. 35
15. An image fixing device as claimed in claim 12 or 13, characterised in that said supporting member (7) is pivotally mounted on said frame, the position of said pivot determining the direction of insertion of said second roller. 40
16. An image fixing device as claimed in any one of claims 1-15, characterised in that the bearing supporting said first roller, at the opposite to said drive gear, has an upwardly opening arcuate form. 45
17. An image fixing device as claimed in any one of claims 1-16, characterised in that a heater (12) is provided in said first roller. 50
18. An image fixing device as claimed in claim 17, characterised in that a temperature sensing element is provided on said frame and is capable of sensing the temperature of the surface of said first roller for controlling the switching state of the heater. 55
19. An image fixing device as claimed in any one of claims 1-18, characterised in that said frame (1) is made of an electrically insulating material.
20. An image fixing device as claimed in any one of claims 1-18, characterised in that said frame (1) is molded from a plastics material.

Patentansprüche

1. Bildfixiervorrichtung, die aufweist: einen Rahmen (1), eine Fixierwalze (2), ein Antriebszahnrad (9), das an einem Ende der Walze oder nahe diesem vorgesehen ist, ein erstes Lager (8), das ein zum Antriebszahnrad benachbartes, erstes Ende der Walze drehbar lagert, ein zweites Lager (3), das ein vom Antriebszahnrad entferntliegendes, zweites Ende der Walze drehbar lagert, wobei der Rahmen (1) die Walze über die Lager (8, 3) lagert, dadurch gekennzeichnet, daß sich das erste Lager (8) um den gesamten Umfang herum in einem Bereich am ersten Ende der Walze oder nahe diesem erstreckt, wobei sich das zweite Lager (3) in einem Bereich am zweiten Ende der Walze oder nahe diesem um nur einen Teil des Umfangs herum erstreckt und diesen lagert.
2. Bildfixiervorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß das zweite Lager (3) ungefähr die Hälfte des Umfangs der Walze (2) lagert.
3. Bildfixiervorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß das erste und das zweite Lager (8, 3) Gleitlager sind, die die Walze gleitfähig lagern.
4. Bildfixiervorrichtung nach Anspruch 1, 2 oder 3, dadurch gekennzeichnet, daß das zweite Lager (3) ein offenes Ende hat, um zu ermöglichen, daß das zweite Ende der Walze (2) durch Bewegung in Einführrichtung in das zweite Lager eingeführt wird.
5. Bildfixiervorrichtung nach einem der Ansprüche 1-4,



dadurch gekennzeichnet, daß
eine zweite Walze (4) im Rahmen (1) angeordnet ist und mit der ersten Walze (2) in Druckberührung gehalten wird.

6. Bildfixiervorrichtung nach Anspruch 5,
dadurch gekennzeichnet, daß
die Einführrichtung der ersten Walze im wesentlichen die gleiche Richtung ist, wie die Richtung der Berührungskraft zwischen der Drückwalze und der Fixierwalze.
7. Bildfixiervorrichtung nach einem der Ansprüche 1-5,
dadurch gekennzeichnet, daß
die Einführrichtung der ersten Walze im wesentlichen die gleiche Richtung ist, wie die Richtung des Eingriffswinkels der am Antriebszahnrad wirkenden Druckkraft.
8. Bildfixiervorrichtung nach einem der Ansprüche 1-5
dadurch gekennzeichnet, daß
der Rahmen mit einem Lagerabschnitt versehen ist, um eine äußere Kraft aufzunehmen, die als Ergebnis des Antriebs der ersten Walze durch das Antriebszahnrad auf die erste Walze ausgeübt wird.
9. Bildfixiervorrichtung nach Anspruch 8,
dadurch gekennzeichnet, daß
das zweite Lager in einem Bereich benachbart zur zweiten Walze offen ist.
10. Bildfixiervorrichtung nach einem der Ansprüche 6, 7, 8 oder 9, wenn diese von Anspruch 5 abhängen,
dadurch gekennzeichnet, daß
Drückeinrichtungen (5, 6) vorgesehen sind, um die erste und die zweite Walze miteinander in elastischer Berührung zu halten.
11. Bildfixiervorrichtung nach einem der Ansprüche 5-10,
dadurch gekennzeichnet, daß
der Rahmen (1) einen Lagerabschnitt (7) hat, um eine äußere Kraft aufzunehmen, die als Ergebnis des Antriebs der ersten Walze durch das Antriebszahnrad (9) auf die erste Walze wirkt.
12. Bildfixiervorrichtung nach einem der Ansprüche 5-11,
dadurch gekennzeichnet, daß
der Rahmen (1) ein Lagerelement (7) hat, das die zweite Walze (4) über Lager lagert, wobei das Lagerelement (7) dazu geeignet ist, an einem vorbestimmten Abschnitt des Rahmens befestigt zu werden, so daß die zweite Walze beim Fixieren

im Rahmen automatisch eingebracht wird.

13. Bildfixiervorrichtung nach Anspruch 12,
dadurch gekennzeichnet, daß
die zweite Walze durch das Befestigen des Lagerelements an dem vorbestimmten Abschnitt des Rahmens mit der ersten Walze im Rahmen in Druckberührung gebracht wird.
14. Bildfixiervorrichtung nach Anspruch 13,
dadurch gekennzeichnet, daß
die zweite Walze am Lagerelement montiert wird, um in eine Richtung bewegt zu werden, die zur Achse der zweiten Walze senkrecht verläuft.
15. Bildfixiervorrichtung nach Anspruch 12 oder 13,
dadurch gekennzeichnet, daß
das Lagerelement (7) am Rahmen drehbar montiert ist, wobei die Position des Drehpunktes die Einführrichtung der zweiten Walze bestimmt.
16. Bildfixiervorrichtung nach einem der Ansprüche 1-15,
dadurch gekennzeichnet, daß
das die erste Walze lagernde Lager am zum Antriebszahnrad entgegengesetzten Ende eine sich nach oben öffnende bogenartige Form hat.
17. Bildfixiervorrichtung nach einem der Ansprüche 1-16,
dadurch gekennzeichnet, daß
eine Heizeinrichtung (12) in der ersten Walze vorgesehen ist.
18. Bildfixiervorrichtung nach Anspruch 17,
dadurch gekennzeichnet, daß
ein Temperatur-Meßfühler am Rahmen vorgesehen ist und in der Lage ist, die Oberflächentemperatur der ersten Walze zu messen, um den Schaltzustand der Heizeinrichtung zu steuern.
19. Bildfixiervorrichtung nach einem der Ansprüche 1-18,
dadurch gekennzeichnet, daß
der Rahmen (1) aus einem elektrisch isolierenden Material gefertigt ist.
20. Bildfixiervorrichtung nach einem der Ansprüche 1-18,
dadurch gekennzeichnet, daß
der Rahmen (1) aus Plastikmaterial geformt ist.

Revendications

1. Dispositif de fixation d'images comportant un bâti (1), un rouleau (2) de fixation, une roue dentée (9) d'entraînement placée à ou à proximité d'une ex-



- trémité dudit rouleau, un premier palier (8) supportant en rotation une première extrémité dudit rouleau à proximité immédiate de ladite roue dentée d'entraînement, un second palier (3) supportant en rotation une seconde extrémité dudit rouleau à distance de ladite roue dentée d'entraînement, ledit bâti (1) supportant ledit rouleau par l'intermédiaire dudit palier (8, 3), caractérisé en ce que ledit premier palier (8) s'étend sur toute la circonférence dans une zone à ou proche de ladite première extrémité dudit rouleau, tandis que ledit second palier (3) s'étend autour de et ne supporte qu'une partie de la circonférence dans une zone à ou proche de ladite seconde extrémité dudit rouleau.
2. Dispositif de fixation d'images selon la revendication 1, caractérisé en ce que ledit second palier (3) supporte environ la moitié de la circonférence dudit rouleau (2).
 3. Dispositif de fixation d'images selon la revendication 1 ou 2, caractérisé en ce que lesdits premier et second paliers (8, 3) sont des paliers lisses qui supportent par glissement ledit rouleau.
 4. Dispositif de fixation d'images selon la revendication 1, 2 ou 3, caractérisé en ce que ledit second palier (3) est ouvert aux extrémités pour permettre à ladite seconde extrémité dudit rouleau (2) d'être insérée dans ledit second palier par un mouvement dans la direction d'insertion.
 5. Dispositif de fixation d'images selon l'une quelconque des revendications 1-4, caractérisé en ce qu'un second rouleau (4) est disposé dans ledit bâti (1) et est maintenu en contact sous pression avec le premier rouleau (2).
 6. Dispositif de fixation d'images selon la revendication 5, caractérisé en ce que la direction dans laquelle ledit premier rouleau peut être inséré est sensiblement identique à la direction de la pression de contact entre ledit rouleau presseur et ledit rouleau de fixation.
 7. Dispositif de fixation d'images selon l'une quelconque des revendications 1-5, caractérisé en ce que la direction dans laquelle ledit premier rouleau peut être inséré est sensiblement identique à la direction de l'angle de la pression agissant sur ladite roue dentée d'entraînement.
 8. Dispositif de fixation d'images selon l'une quelconque des revendications 1-5, caractérisé en ce que ledit bâti est pourvu d'une partie de support destinée à recevoir une force extérieure qui est exercée sur ledit premier rouleau par suite de l'entraînement dudit premier rouleau par ladite roue dentée d'entraînement.
 9. Dispositif de fixation d'images selon la revendication 8, caractérisé en ce que ledit second palier est ouvert dans une zone adjacente audit second rouleau.
 10. Dispositif de fixation d'images selon l'une quelconque des revendications 6, 7, 8 et 9, en dépendance de la revendication 5, caractérisé en ce que des moyens (5, 6) de pression sont prévus pour maintenir lesdits premier et second rouleaux en contact élastique l'un avec l'autre.
 11. Dispositif de fixation d'images selon l'une quelconque des revendications 5-10, caractérisé en ce que ledit bâti (1) comporte une partie (7) de support destinée à recevoir une force extérieure agissant sur ledit premier rouleau par suite de l'entraînement dudit premier rouleau par ladite roue dentée (9) d'entraînement.
 12. Dispositif de fixation d'images selon l'une quelconque des revendications 5-11, caractérisé en ce que ledit bâti (1) comporte un élément (7) de support qui supporte ledit second rouleau (4) au moyen de paliers, ledit élément (7) de support étant conçu pour être fixé à une partie prédéterminée dudit bâti afin que ledit second rouleau soit positionné automatiquement dans ledit bâti lors de la fixation.
 13. Dispositif de fixation d'images selon la revendication 12, caractérisé en ce que le second rouleau est positionné en contact sous pression avec ledit premier rouleau à l'intérieur dudit bâti par la fixation dudit élément de support à ladite partie prédéterminée dudit bâti.
 14. Dispositif de fixation d'images selon la revendication 13, caractérisé en ce que ledit second rouleau est monté sur ledit élément de support de façon à se déplacer dans une direction perpendiculaire à l'axe dudit second rouleau.
 15. Dispositif de fixation d'images selon la revendication 12 ou 13, caractérisé en ce que ledit élément (7) de support est monté de façon pivotante sur ledit bâti, la position dudit pivot déterminant la direction d'insertion dudit second rouleau.
 16. Dispositif de fixation d'images selon l'une quelconque des revendications 1-15, caractérisé en ce que le palier supportant ledit premier rouleau, à l'opposé de ladite roue dentée d'entraînement, présente une forme courbe ouverte vers le haut.

17. Dispositif de fixation d'images selon l'une quelconque des revendications 1-16, caractérisé en ce qu'un élément chauffant (12) est prévu dans ledit premier rouleau.



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18. Dispositif de fixation d'images selon la revendication 17, caractérisé en ce qu'un élément capteur de température est prévu sur ledit bâti et est capable de capter la température de la surface dudit premier rouleau pour commander l'état de commutation de l'élément chauffant.

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19. Dispositif de fixation d'images selon l'une quelconque des revendications 1-18, caractérisé en ce que ledit bâti (1) est formé d'une matière électriquement isolante.

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20. Dispositif de fixation d'images selon l'une quelconque des revendications 1-18, caractérisé en ce que ledit bâti (1) est moulé en matière plastique.

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