

Description**BACKGROUND OF THE INVENTION****5 Field of the Invention**

The present invention relates to a recording apparatus for forming a visible image on a recording material according to received signals and fixing said visible image by heat.

10 Related Background Art

In conventional recording apparatus, such as facsimile apparatus, utilizing thermal image fixation, such as a laser beam printer utilizing plain paper for recording, the image fixing heater has to be always turned on because the temperature elevation thereof is slow. Thus the heater is so designed as to be continuously turned on to maintain a constant temperature regardless whether the facsimile apparatus is in the stand-by, receiving or transmitting state.

Such continuous energization of the fixing heater leads to following drawbacks:

- (1) A high electric power consumption, giving rise to a high running cost;
- (2) The operation becomes very uneconomical in the facsimile apparatus if the percentage of transmission is high, because the fixing heater is turned on during the stand-by state and transmission state, though the recording is required only in the reception and copying mode; and
- (3) cooling for example with a fan is indispensable for avoiding temperature increase in the apparatus, and the dimension of the apparatus is inevitably increased for this reason.

Document JP-A-61 029 261 discloses a recording apparatus wherein the operation of a controller, which controls the automatical reading and storing of image data and sends out signals for starting and terminating the energization of a heater, depends on the reception of a call and the fixing means are activated directly after the receipt of a call.

Furthermore, from document JP-A-63 063 276 a recording apparatus is known wherein the driving of the fixing means is controlled in such a way that the power supply is stopped when the reception of image data is awaited, however, the activation of the fixing means depends on the reception of a call, that is the fixing means are activated directly after the receipt of a call.

SUMMARY OF THE INVENTION

In consideration of the foregoing, an object of the present invention is to provide an improved recording apparatus.

Another object of the present invention is to provide a recording apparatus capable of reducing the electric power consumption.

Still another object of the present invention is to provide a recording apparatus capable of preventing temperature increase therein.

Still another object of the present invention is to provide a recording apparatus forming an image by an electrophotographic process, capable of energizing image fixing means in response to a received signal.

Still another object of the present invention is to provide a recording apparatus capable of energizing image fixing means at every predetermined communication unit.

Still another object of the present invention is to provide a recording apparatus capable of heating control for image fixing means according to the communication mode.

Still another object of the present invention is to provide a recording apparatus in which the power supply to image fixing means is turned off in the substituted reception mode.

According to the invention this object is accomplished by a recording apparatus comprising: communication means for receiving transmitted image data, recording means for forming a visible image on a recording material according to the image data received by said communication means, and fixing means for heat-fixing the visible image formed on said recording material by said recording means, said recording apparatus being characterized by further comprising control means adapted to start the heating of said fixing means after completion of communication of the signals relating to image communication conducted between said recording apparatus and a partner apparatus, at the beginning of reception of said image data or after the start of reception of said image data by said communication means, wherein said fixing means comprises a heating member which can be heated to the fixing temperature within several seconds, a heat-resistant sheet and a back-up member opposed to and maintained in pressure contact with said heating member thereby maintaining

said recording material in close contact with said heating member across said heat-resistant sheet.

The foregoing and still other objects of the present invention, and the advantages thereof, will become fully apparent from the following description to be taken in conjunction with the attached drawings.

5 BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram of a facsimile apparatus constituting an embodiment of the present invention;

Fig. 2 is a cross-sectional view of the facsimile apparatus;

Figs. 3A to 3C are timing charts showing the timing of heating of a heat generating member;

10 Fig. 4, consisting of Figs. 4A and 4B, is a flow chart of control sequence for the heat generating member;

Fig. 5 is a timing chart of heating for a different image transmission mode; and

Fig. 6, consisting of Figs. 6A and 6B, and Fig. 7, consisting of Figs. 7A and 7B, are flow charts of control sequence of the heat generating member in the substituted reception mode.

15 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 is a schematic block diagram of a facsimile apparatus constituting an embodiment of the present invention, wherein provided are a reader unit 1 for reading an original document at the transmission; an operation unit 2 for setting the transmitting or receiving operation; a network control unit (NCU) 3 for effecting transmission to or reception from a communication channel; a modem 4 for demodulating analog signals from the NCU into digital signals or modulating digital signals into analog signals for transmission to the NCU; a memory 6 for storing data demodulated by the modem 4 and processed by a control circuit 7; and a recorder unit 5 for printing the data received from the memory 6 through the control circuit 7.

Fig. 2 is a schematic cross-sectional view of a facsimile apparatus embodying the present invention. A charger 23 uniformly charges a photosensitive drum 10 covered with a photosensitive layer composed for example of zinc oxide or an organic semiconductor. The photosensitive drum 10 uniformly charged with said charger 23 is imagewise exposed to a laser beam emitted from an optical system unit including a semiconductor laser, a polygon mirror etc. to form an electrostatic latent image, which is then rendered visible, in a developing unit 26, with toner particles composed for example of heat-fusible resin. On the other hand, a sheet P is advanced from a cassette 15, by a sheet feed roller 16, to the position of registration rollers 12. Then the sheet P is forwarded to an image transfer position by the registration rollers 12 positioned in mutual contact in vertical direction and driven in synchronization with the image formed on the photosensitive drum 10. Thus the toner image on the photosensitive drum 10 is transferred onto the sheet P by means of a transfer charger 11. Then the sheet P separated from the photosensitive drum 10 by already known separating means is transported along a transport guide 9 to a fixing unit 14, and is charged onto a tray 13 after image fixation by heating. After the transfer of the toner image, the toner remaining on the photosensitive drum 10 is removed by a cleaner 17. A sensor 20 is provided for detecting the presence of sheet in the cassette 15.

The fixing unit 14 includes a heating member 8 generating heat by electric power supply, a pressure roller 18 and a heat resistant sheet (fixing film) 19. The heating member 8 is a linear member of a low heat capacity fixed to the apparatus, and is composed for example of an alumina substrate of 1.0 mm in thickness, 6 mm in width and 240 mm in length, coated with a resistance material of a width of 1.5 mm, which is given electric current supply from both ends. The electric power supply is conducted for example with pulses of DC 100 V with repeating cycle of 20 msec., and the pulse duration is varied in a range from 0.5 to 5 msec. according to the desired temperature and energy emission controlled by an unrepresented temperature detector.

The fixing film 19 is moved, in a direction indicated by an arrow, in contact with the heating member 8 controlled in temperature and energy emission as explained above. Said fixing film is for example composed of a heat resistant film, such as polyimide, polyetherimide, PES or PFA of a thickness of 20 μ , coated, at least on a face contacting the image, with a releasing layer of a thickness of 10 μ composed of a fluorinated resin such as PTFE or PAF and a conductive material. In general, the total thickness is less than 100 μ , preferably 40 μ . The pressure roller 18 provided with a releasing rubber layer, composed for example of silicone rubber, presses the heating member 8 across the fixing film with a total pressure of 4 - 7 kg. The sheet with unfixed toner image is guided along the guide 9 to the fixing unit, and the fixed image is obtained by the heating.

The fixing film explained above may also be formed as an endless film.

55 Figs. 3A to 3C are timing charts showing the function of the facsimile apparatus at the reception. The codes and functions of the signals are summarized in Tab. 1.

Tab. 1

<u>No.</u>	<u>Code</u>	<u>Function</u>
5	115 CED	Caller identification, for auto facsimile reception;
10	116 DIS	Initial identification, for transmitting facsimile functions to the other station;
15	117 DCS	Reception command, for selecting reception mode according to the function of the other station;
20	118 TCF	Training check, for checking transmission error prior to image transmission;
25	119 CFR	Reception ready confirmation, for informing the read state for reception;
	120 PIX	Image signal;
30	121 EOP	End of procedure, indicating end of transmission of a page without succeeding pages;
35	122 MCF	Message confirmation, indicating proper reception of image;
	123 DCN	Disconnect, for disconnecting the channel;
40	124 MPS	Multi-page signal, indicating end of transmission of a page, with a succeeding page;
45	125 EOM	End of message, indicating end of transmission of a page with a succeeding page.

50 Fig. 3A is a timing chart, indicating the timing of heating of the heating member 8 in case of single page reception. The heating operation of the heating member 8 is started at the start of reception of the PIX (image) signal 120 by the receiving unit, after the transmission of the CFR signal 119. Because of a small heat capacity, the heating member 8 can be heated to the fixing temperature within several seconds. This is sufficiently in time for the start of image recording after the reception, since the transmission of an image usually takes several
55 ten seconds to several minutes. After the completion of recording, the heating is terminated in response to the EOP signal 121 indicating the reception of one page only.

Fig. 3B shows the timing of heating of the heating member 8 in case of multiple-page reception. The heating is started in the same manner as in the single page reception, but the heating operation of the heating member

8 is continued even after the recording of a page if the MPS (multi-page signal) 121 has been received. The same procedure is continued if the MPS signal 121 is received in succession. Finally the heating of the heating member 8 is turned off and the reception is terminated when the EOP 121 is received after the PIX signal 120.

Fig. 3C shows the timing of heating in case of a mode change in the transmitted images in the multi-page reception. If the EOM signal 125 is received after the recording of a 1st page, the heating of the heating member 8 is turned off once, because the protocol signal for the next page takes time.

Subsequently the heating operation of the heating member 8 is started again at the start of reception of image signal of the next page, after the protocol (DIS, DCS - CFR). The procedure is same as explained above if the EOM signal 125 is received. Finally, in response to the EOP signal 121, the heating operation of the heating member 8 is turned off and the reception is terminated.

Fig. 4 is a flow chart for the above-explained control.

In response to a received call signal, the CED signal is transmitted (step 1), and then the DIS signal is transmitted to inform the facsimile function to the calling apparatus (step 2). Then the DCS signal for designating the reception mode is received from the calling apparatus (step 3), and the TCF signal for checking transmission error is received (step 4). If there is no transmission error, the CFR signal is transmitted to the calling apparatus to inform that the apparatus is ready for reception (step 5). Then the sequence waits until the start of reception of the image signal PIX (step 6). At the start of reception the image signal is stored in the memory 6, and the power supply to the heating member 8 is started (step 7). When the reception of the image signal PIX is completed (step 8), there is started the recording operation based on the received image signal (step 9). The image data are read from the memory 6 and are used for turning the laser beam on and off, thereby forming, on the photosensitive drum 10, an electrostatic latent image which is developed with toner in the developing unit 26. Also the sheet is fed from the cassette 15 to the position of the registration rollers, and is advanced to the image transfer position in synchronization with the image on the photosensitive drum 10. After the transfer of the toner image onto the sheet, it is transported to the fixing unit 14 for image fixation by heating. Then there is discriminated whether EOP signal, indicating the end of procedure, has been received (step 10), and, if received, the message confirmation signal MCF, indicating the proper reception of the image, is transmitted to the other apparatus (step 11). Then the sequence awaits the completion of the recording operation (step 12), and the power supply to the heating member 8 is turned off (step 13). Subsequently the procedure is terminated by receiving the DCN signal for disconnecting the channel.

If the EOP signal is not received in the step 10, there is discriminated whether the multi-page signal MPS, indicating the end of transmission of a page and the presence of a next page, has been received (step 15). If it is received, the message confirmation signal MCF is sent to the other apparatus (step 16). Then the image signal PIX of the next page is received and stored in the memory 6. After the completion of reception (steps 17, 18), and the sequence returns to the step 9.

On the other hand, if the multi-page signal MPS is not received in the step 15, the message confirmation signal MCF is sent to the other apparatus (step 19). Then, when the recording is completed (step 20), the power supply to the heating member 8 is turned off (step 21) and the sequence returns to the step 2.

In case of Fig. 3A, 3B or 3C, the sequence respectively proceeds to a flow a, b or c.

Fig. 5 shows the timing of heating of the heating member 8 in case of transmitted images of different modes with different scanning line densities. If the heating of the heating member is started x seconds after the start of reception of the PIX signal 20 in the standard mode STD, the heating in the FINE mode of higher scanning line density can be started after 2x seconds, because the communication time is doubled in said mode. Also in the ULTR mode with still higher scanning line density, the heating can be started after 4x seconds, since the communication in this case is quadrupled.

Another Embodiment

The heating member employed in the foregoing embodiment requires several seconds to reach the fixing temperature after the start of heating, but the heating member of improved performance requiring several ten to several milliseconds for heating allows control in the unit of each line, thereby further reducing the electric power consumption.

In such control for each line, it is possible to judge the content of image information and to dispense with the heating in case a line consists of all white pixels.

In the substituted reception when the recording sheet or toner is absent, the image data are simply stored in the memory. In such state it is possible not to start heating even after the start of reception of the image signal, thereby preventing waste of electric power consumption.

Fig. 6 is a flow chart for conducting such control, wherein steps 1 to 14 are same as those in Fig. 4 and will not therefore be explained. In this case, between the steps 5 and 6 shown in Fig. 4, there is conducted

discrimination on the presence or absence of recording sheet, based on the output of the sensor 20 (step 30). In case of absence of recording sheet, the sequence proceeds to a step 31 for waiting until the reception of the image signal PIX, and, when the reception is started, the received image signal is stored in the memory 6 (step 32). When the reception of the image signal PIX is completed (step 33), there is awaited the reception of the end-of-procedure signal EOP (step 34). and the message confirmation signal MCF is sent to the other apparatus (step 35). Then in response to the reception of the disconnect signal DCN (step 36), the procedure is terminated.

It is also possible, if the recording sheet or the toner becomes absent in the course of a recording operation, to turn off the power supply to the heating member and to start substituted reception.

Fig. 7 is a flow chart for conducting such control, wherein same steps as those in Figs. 4 and 6 are represented by same numbers. In the present embodiment, in the multi-page reception, the power supply to the heating member 8 is turned off after the recording of each page, and the sequence returns to the step 30 for discriminating the presence of the recording sheet. If the recording sheet is absent, there is adopted the substituted reception mode starting from the step 31, and the received image signal is stored in the memory 6 (steps 32, 33) as in Fig. 6. Then, if the end-of-procedure signal EOP is received in a step 34, steps 35 and 36 are executed in the same manner as in Fig. 6. On the other hand, if the EOP signal is not received in the step 34, the sequence proceeds to a step 37 for discriminating the reception of the multi-page signal MPS.

If received, the MCF signal is transmitted (step 38) and the sequence returns to the step 30. If the MPS signal is not received, the MCF signal is transmitted (step 39) and the sequence returns to the step 2. In this manner, the presence of the recording sheet is discriminated after the storage of image signal of each page even after the substituted reception mode is selected, and the recording operation is re-started when the recording sheets are replenished.

It is also possible, after the substituted reception mode is once selected, to store all the image signal of this communication into the memory.

In the present embodiment the substituted reception mode is selected in response to the absence of the recording sheet, but it is also possible to effect the change of mode in response to the absence of other consumable materials such as toner.

Also, in the foregoing embodiments, the power supply to the heating member is started in response to the reception of the image signal PIX, but it may also be started in response to the reception of protocol signals preceding the image signal PIX.

In the foregoing embodiments, the recording sheet is heated by the heating member across a heat-resistant film, but the present invention is not limited to such embodiment and is applicable to apparatus equipped with various fixing means for image fixation by immediate heating.

There is disclosed a facsimile apparatus capable of economizing the power required for the heater for heat fixation of the recorded image. Instead of continuous heating, the heater is activated in response to a particular signal in the received message, and is deactivated after the recording of a page, or plural pages in case of a continuous receiving operation.

Claims

1. A recording apparatus comprising:
communication means (3) for receiving transmitted image data,
recording means (5) for forming a visible image on a recording material (P) according to the image data received by said communication means (3), and
fixing means (14) for heat-fixing the visible image formed on said recording material (P) by said recording means (5),
said recording apparatus being characterized by further comprising
control means (7) adapted to start the heating of said fixing means (14) after completion of communication of the signals relating to image communication conducted between said recording apparatus and a partner apparatus, at the beginning of reception of said image data or after the start of reception of said image data by said communication means (3), wherein said fixing means (14) comprises a heating member (8) which can be heated to the fixing temperature within several seconds, a heat-resistant sheet (19) and a back-up member opposed to and maintained in pressure contact with said heating member (8) thereby maintaining said recording material (P) in close contact with said heating member (8) across said heat-resistant sheet (19).
2. A recording apparatus according to claim 1, characterized in that



discrimination on the presence or absence of recording sheet, based on the output of the sensor 20 (step 30). In case of absence of recording sheet, the sequence proceeds to a step 31 for waiting until the reception of the image signal PIX, and, when the reception is started, the received image signal is stored in the memory 6 (step 32). When the reception of the image signal PIX is completed (step 33), there is awaited the reception of the end-of-procedure signal EOP (step 34), and the message confirmation signal MCF is sent to the other apparatus (step 35). Then in response to the reception of the disconnect signal DCN (step 36), the procedure is terminated.

It is also possible, if the recording sheet or the toner becomes absent in the course of a recording operation, to turn off the power supply to the heating member and to start substituted reception.

Fig. 7 is a flow chart for conducting such control, wherein same steps as those in Figs. 4 and 6 are represented by same numbers. In the present embodiment, in the multi-page reception, the power supply to the heating member 8 is turned off after the recording of each page, and the sequence returns to the step 30 for discriminating the presence of the recording sheet. If the recording sheet is absent, there is adopted the substituted reception mode starting from the step 31, and the received image signal is stored in the memory 6 (steps 32, 33) as in Fig. 6. Then, if the end-of-procedure signal EOP is received in a step 34, steps 35 and 36 are executed in the same manner as in Fig. 6. On the other hand, if the EOP signal is not received in the step 34, the sequence proceeds to a step 37 for discriminating the reception of the multi-page signal MPS.

If received, the MCF signal is transmitted (step 38) and the sequence returns to the step 30. If the MPS signal is not received, the MCF signal is transmitted (step 39) and the sequence returns to the step 2. In this manner, the presence of the recording sheet is discriminated after the storage of image signal of each page even after the substituted reception mode is selected, and the recording operation is re-started when the recording sheets are replenished.

It is also possible, after the substituted reception mode is once selected, to store all the image signal of this communication into the memory.

In the present embodiment the substituted reception mode is selected in response to the absence of the recording sheet, but it is also possible to effect the change of mode in response to the absence of other consumable materials such as toner.

Also, in the foregoing embodiments, the power supply to the heating member is started in response to the reception of the image signal PIX, but it may also be started in response to the reception of protocol signals preceding the image signal PIX.

In the foregoing embodiments, the recording sheet is heated by the heating member across a heat-resistant film, but the present invention is not limited to such embodiment and is applicable to apparatus equipped with various fixing means for image fixation by immediate heating.

There is disclosed a facsimile apparatus capable of economizing the power required for the heater for heat fixation of the recorded image. Instead of continuous heating, the heater is activated in response to a particular signal in the received message, and is deactivated after the recording of a page, or plural pages in case of a continuous receiving operation.

40 Claims

1. A recording apparatus comprising:
communication means (3) for receiving transmitted image data,
recording means (5) for forming a visible image on a recording material (P) according to the image data received by said communication means (3), and
fixing means (14) for heat-fixing the visible image formed on said recording material (P) by said recording means (5),
said recording apparatus being characterized by further comprising
control means (7) adapted to start the heating of said fixing means (14) after completion of communication of the signals relating to image communication conducted between said recording apparatus and a partner apparatus, at the beginning of reception of said image data or after the start of reception of said image data by said communication means (3), wherein said fixing means (14) comprises a heating member (8) which can be heated to the fixing temperature within several seconds, a heat-resistant sheet (19) and a back-up member opposed to and maintained in pressure contact with said heating member (8) thereby maintaining said recording material (P) in close contact with said heating member (8) across said heat-resistant sheet (19).
2. A recording apparatus according to claim 1, characterized in that



said heating member (8) has a small heat capacity.

3. A recording apparatus according to claim 1, characterized in that said control means (7) is adapted to terminate the heating of said fixing means (14) in accordance with the completion of recording.
- 5 4. A recording apparatus according to claim 1, characterized in that said control means (7) controls the beginning and duration of heating of said fixing means (14) responsive to several different signals which correspond to a selected communication mode.
- 10 5. A recording apparatus according to claim 1, characterized in that said control means (7) terminates the heating of said fixing means (14) in accordance with the completion of recording of a page of image data in accordance with a signal (EOP) which indicates the end of transmission of a page without succeeding pages.
- 15 6. A recording apparatus according to claim 1, characterized in that said control means (7) terminates the heating of said fixing means (14) in accordance with the completion of recording a series of pages whereby a multipage signal (MPS) takes place between the transmission of succeeding pages and a signal (EOP) indicates end of transmission of a page without succeeding pages.
- 20 7. A recording apparatus according to claim 1, characterized in that said control means (7) controls the heating of said fixing means (14) in the reception, wherein said control means (7) is adapted to prohibit a start of heating of said fixing means (14) in a substituted reception mode, in which the image data are simply stored in a memory when a consumable material necessary for recording is absent.
- 25 8. A recording apparatus according to claim 1, characterized in that said control means (7) controls the heating of said fixing means (14) in reception, wherein said control means (7) is adapted to interrupt the heating of said fixing means (14) when the substituted reception mode, in which the image data are simply stored in a memory when material necessary for recording is absent, is selected in course of a recording operation.
- 30 9. A recording apparatus according to claim 8, characterized in that said fixing means (14) comprises a heating member (8) generating heat by electric power supply, and said control means (7) is adapted to turn on and off the power supply to said heating member (8) in accordance with said signals which indicate the beginning and the end of recording and to turn off the power supply to said heating member (8) when said substituted reception mode is selected.
- 35 10. A recording apparatus according to claim 8 or 9, characterized by detection means (20) for detecting the absence of said recording material (P), wherein said substituted reception mode is selected in response to a detection signal from said detection means (20).
- 40 11. A recording apparatus according to any of the preceding claims 1 to 3, characterized in that said heating member (8) generates heat by electric power supply.
- 45 12. A recording apparatus according to claim 11, characterized in that said fixing means (14) requires several ten to several milliseconds for heating; and said control means (7) is adapted to turn on and off the power supply to said heating member (8) during the heat-fixing of each line of said visible image.
- 50 13. A recording apparatus according to any of the preceding claims 1 to 12, characterized in that said control means (7) is adapted to vary the time of start of power supply to said fixing means (14) according to said communication mode.
- 55 14. A recording apparatus according to claim 13, characterized in being capable of functioning in a first communication mode with a first scanning line density and in a second communication mode with a second scanning line density higher than said first scanning line density, wherein said control means is adapted to delay the start of power supply to said fixing means (14) in said first communication mode less than in said second communication mode.



Patentansprüche

1. Aufzeichnungsgerät mit
 einer Übertragungseinrichtung (3) zum Empfangen von gesendeten Bilddaten,
 einer Aufzeichnungsvorrichtung (5) zum Erzeugen eines sichtbaren Bildes auf einem Aufzeich-
 nungsmaterial (P) entsprechend den durch die Übertragungseinrichtung (3) empfangenen Bilddaten und
 einer Fixiervorrichtung (14) zum Wärmefixieren des durch die Aufzeichnungsvorrichtung (5) auf
 dem Aufzeichnungsmaterial (P) erzeugten sichtbaren Bildes,
 gekennzeichnet durch
 eine Steuereinrichtung (7), die das Heizen der Fixiervorrichtung (14) nach Abschluß der Übertra-
 gung der Signale, die sich auf eine zwischen dem Aufzeichnungsgerät und einem Teilnehmergerät durch-
 geführte Bildübertragung beziehen, zum Beginn des Empfangs des Bilddaten oder nach dem Beginn des
 Empfangs der Bilddaten durch die Übertragungseinrichtung (3) startet, wobei die Fixiervorrichtung (14)
 ein Heizteil (8), das innerhalb einiger Sekunden auf die Fixiertemperatur erwärmt werden kann, ein wär-
 mebeständiges Blatt (19) und ein Ersatzteil aufweist, das dem Heizteil (8) gegenüberliegt und in Druck-
 kontakt mit ihm gehalten wird, wodurch das Aufzeichnungsmaterial (P) durch das wärmebeständige Blatt
 (19) hindurch in engem Kontakt mit dem Heizteil (8) gehalten wird.
2. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 das Heizteil (8) eine geringe Wärmekapazität hat.
3. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 die Steuereinrichtung (7) das Heizen der Fixiervorrichtung (14) entsprechend dem Abschluß der
 Aufzeichnung beendet.
4. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 die Steuereinrichtung (7) den Beginn und die Dauer des Heizens der Fixiervorrichtung (14) im An-
 sprechen auf einige verschiedene Signale steuert, die einer ausgewählten Übertragungsart entsprechen.
5. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 die Steuereinrichtung (7) das Heizen der Fixiervorrichtung (14) entsprechend dem Abschluß der
 Aufzeichnung einer Seite von Bilddaten entsprechend einem Signal (EOP) beendet, das das Ende des
 Sendens einer Seite ohne nachfolgende Seite anzeigt.
6. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 die Steuereinrichtung (7) das Heizen der Fixiervorrichtung (14) entsprechend dem Abschluß der
 Aufzeichnung einer Reihe von Seiten beendet, wobei ein Mehrseitensignal (MPS, "multipage signal") zwi-
 schen dem Senden der nachfolgenden Seiten und einem Signal (EOP) auftritt, das das Ende des Sendens
 einer Seite ohne nachfolgende Seiten anzeigt.
7. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 die Steuereinrichtung (7) das Heizen der Fixiervorrichtung (14) bei dem Empfang steuert, wobei
 die Steuereinrichtung (7) einen Beginn des Heizens der Fixiervorrichtung (14) in einer Ersatz-Empfangs-
 Betriebsart verhindert, wobei die Bilddaten einfach in einem Speicher gespeichert werden, wenn ein für
 die Aufzeichnung erforderliches Verbrauchsmaterial fehlt.
8. Aufzeichnungsgerät nach Anspruch 1,
 dadurch gekennzeichnet, daß
 die Steuereinrichtung (7) das Heizen der Fixiervorrichtung (14) bei dem Empfang steuert, wobei
 die Steuereinrichtung (7) das Heizen der Fixiervorrichtung (14) unterbricht, wenn die Ersatz-Empfangs-
 Betriebsart, in der die Bilddaten einfach in einem Speicher gespeichert werden, wenn ein für die Aufzeich-
 nung erforderliches Verbrauchsmaterial fehlt, im Verlauf eines Aufzeichnungsvorgangs ausgewählt wird.



9. Aufzeichnungsgerät nach Anspruch 8,
dadurch gekennzeichnet, daß
die Fixiervorrichtung (14) ein Heizteil (8) aufweist, daß durch Zufuhr von elektrischer Energie Wärme erzeugt, und
5 die Steuereinrichtung (7) die Stromzufuhr zu dem Heizteil (8) entsprechend den Signalen ein- und ausschaltet, die den Beginn und das Ende der Aufzeichnung anzeigen, und die Stromzufuhr zu dem Heizteil (8) ausschaltet, wenn die Ersatz-Empfangs-Betriebsart ausgewählt ist.
10. Aufzeichnungsgerät nach Anspruch 8 oder 9,
gekennzeichnet durch
eine Erfassungseinrichtung (20) zum Erfassen des Fehlens des Aufzeichnungsmaterials (P), wobei die Ersatz-Empfangs-Betriebsart im Ansprechen auf ein Erfassungssignal aus der Erfassungseinrichtung (20) ausgewählt wird.
11. Aufzeichnungsgerät nach einem der vorangehenden Ansprüche 1 bis 3,
dadurch gekennzeichnet, daß
das Heizteil (8) durch Zufuhr von elektrischer Energie Wärme erzeugt.
12. Aufzeichnungsgerät nach Anspruch 11,
dadurch gekennzeichnet, daß
20 die Fixiervorrichtung (14) einige zehn bis einige Millisekunden zum Heizen benötigt und die Steuereinrichtung (7) die Stromzufuhr zu dem Heizteil (8) während der Wärmefixierung jeder Zeile des sichtbaren Bildes ein- und ausschaltet.
13. Aufzeichnungsgerät nach einem der vorangehenden Ansprüche 1 bis 12,
dadurch gekennzeichnet, daß
25 die Steuereinrichtung (7) den Zeitpunkt des Beginns der Stromzufuhr zu der Fixiervorrichtung (14) entsprechend der Übertragungsart verändert.
14. Aufzeichnungsgerät nach Anspruch 13,
dadurch gekennzeichnet, daß
30 sie in einer ersten Übertragungsart mit einer ersten Abtastzeilendichte und in einer zweiten Übertragungsart mit einer zweiten Abtastzeilendichte arbeitet, die höher als die erste Abtastzeilendichte ist, wobei die Steuereinrichtung den Beginn der Stromzufuhr zu der Fixiervorrichtung (14) in der ersten Übertragungsart weniger als in der zweiten Übertragungsart verzögert.

Revendications

1. Un appareil d'enregistrement comprenant :
40 des moyens de communication (3) pour recevoir des données d'image transmises, des moyens d'enregistrement (5) pour former une image visible sur une matière d'enregistrement (P), conformément aux données d'image qui sont reçues par les moyens de communication (3), et des moyens de fixage (14) pour fixer par la chaleur l'image visible formée sur la matière d'enregistrement (P) par les moyens d'enregistrement (5), cet appareil d'enregistrement étant caractérisé en ce qu'il
45 comprend en outre des moyens de commande (7) conçus pour faire démarrer le chauffage des moyens de fixage (14) après l'achèvement de la transmission des signaux concernant la transmission d'image qui est effectuée entre l'appareil d'enregistrement et un appareil associé, au début de la réception des données d'image ou après le début de la réception des données d'image par les moyens de communication (3), les moyens de fixage
50 (14) comprenant un élément chauffant (8) qui peut être chauffé en quelques secondes jusqu'à la température de fixage, une feuille résistant à la chaleur (19) et un élément d'appui opposé à l'élément chauffant (8) et maintenu en contact avec pression contre celui-ci, pour maintenir ainsi la matière d'enregistrement (P) en contact serré avec l'élément chauffant (8), avec interposition de la feuille résistant à la chaleur (19).
- 55 2. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que l'élément chauffant (8) a une faible capacité calorifique.
3. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que les moyens de commande



(7) sont conçus pour arrêter le chauffage des moyens de fixage (14) sous l'effet de l'achèvement de l'enregistrement.

- 5 4. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que les moyens de commande (7) commandent le début et la durée du chauffage des moyens de fixage (14) sous la dépendance de plusieurs signaux différents qui correspondent à un mode de communication sélectionné.
- 10 5. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que les moyens de commande (7) arrêtent le chauffage des moyens de fixage (14) sous l'effet de l'achèvement de l'enregistrement d'une page de données d'image, conformément à un signal (EOP) qui indique la fin de la transmission d'une page sans pages suivantes.
- 15 6. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que les moyens de commande (7) arrêtent le chauffage des moyens de fixage (14) sous l'effet de l'achèvement de l'enregistrement d'une série de pages dans des conditions dans lesquelles un signal de pages multiples (MPS) est intercalé entre la transmission de pages successives, et un signal (EOP) indique la fin de la transmission d'une page sans pages suivantes.
- 20 7. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que les moyens de commande (7) commandent le chauffage des moyens de fixage (14) au cours de la réception, les moyens de commande (7) étant conçus pour interdire le démarrage du chauffage des moyens de fixage (14) dans un mode de réception de substitution, dans lequel les données d'image sont simplement enregistrées dans une mémoire, lorsqu'une matière consommable nécessaire pour l'enregistrement est absente.
- 25 8. Un appareil d'enregistrement selon la revendication 1, caractérisé en ce que les moyens de commande (7) commandent le chauffage des moyens de fixage (14) au cours de la réception, les moyens de commande (7) étant conçus pour interrompre le chauffage des moyens de fixage (14) lorsque le mode de réception de substitution, dans lequel les données d'image sont simplement enregistrées dans une mémoire lorsqu'une matière nécessaire pour l'enregistrement est absente, est sélectionné au cours d'une opération d'enregistrement.
- 30 9. Un appareil d'enregistrement selon la revendication 8, caractérisé en ce que les moyens de fixage (14) comprennent un élément chauffant (8) qui produit de la chaleur lorsqu'il est alimenté en énergie électrique, et les moyens de commande (7) sont conçus pour établir et interrompre l'alimentation en énergie de l'élément chauffant (8) conformément aux signaux qui indiquent le début et la fin de l'enregistrement, et pour interrompre l'alimentation en énergie de l'élément chauffant (8) lorsque le mode de réception de substitution est sélectionné.
- 35 10. Un appareil d'enregistrement selon la revendication 8 ou 9, caractérisé par des moyens de détection (20) pour détecter l'absence de la matière d'enregistrement (P), le mode de réception de substitution étant sélectionné sous l'effet d'un signal de détection qui provient des moyens de détection (20).
- 40 11. Un appareil d'enregistrement selon l'une quelconque des revendications 1 à 3 précédentes, caractérisé en ce que l'élément chauffant (8) produit de la chaleur en étant alimenté avec de l'énergie électrique.
- 45 12. Un appareil d'enregistrement selon la revendication 11, caractérisé en ce que les moyens de fixage (14) nécessitent quelques millisecondes à quelques dizaines de millisecondes pour chauffer; et les moyens de commande (7) sont conçus pour établir et interrompre l'alimentation en énergie de l'élément chauffant (8) pendant le fixage par la chaleur de chaque ligne de l'image visible.
- 50 13. Un appareil d'enregistrement selon l'une quelconque des revendications 1 à 12 précédentes, caractérisé en ce que les moyens de commande (7) sont conçus pour faire varier l'instant de début de l'application d'énergie aux moyens de fixage (14) conformément au mode de communication.
- 55 14. Un appareil d'enregistrement selon la revendication 13, caractérisé en ce



qu'il est capable de fonctionner dans un premier mode de communication avec une première densité de lignes de balayage et dans un second mode de communication avec une seconde densité de lignes de balayage supérieure à la première densité de lignes de balayage, et les moyens de commande sont conçus pour moins retarder le début de l'application d'énergie aux moyens de fixage (14) dans le premier mode de communication que dans le second mode de communication.

5

10

15

20

25

30

35

40

45

50

55