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D E C I S I O N
of 2 July 1997

Case Number: T 0488/94 - 3.4.2

Application Number: 90109811.1

Publication Number: 0399500

IPC: G03G 15/16

Language of the proceedings: EN

Title of invention:
Image forming apparatus

Applicant:
MITA INDUSTRIAL CO., LTD.

Opponent:
-

Headword:
Main and auxiliary requests/MITA

Relevant legal provisions:
EPC Art. 54, 56, 84, 113, 123(2)
EPC R. 67

Keyword:
"Inventive step - (yes) after amendment"
"Basis of decisions - opportunity to comment (no)"
"Reimbursement of the appeal fee (yes)"

Decisions cited:
T 0169/96

Catchword:

Before refusing an application in the case of main and auxiliary requests, the Examining Division in accordance with Article 113(1) EPC will not only have to communicate its arguments regarding non-allowability of the main request to the applicant, but also regarding non-allowability of the auxiliary request if the result of the subsequent examination of the auxiliary request is also negative. A "direct" rejection of an auxiliary request without preceding communication of the grounds on which the rejection is based would only comply with the requirements of Article 113(1) EPC under rather exceptional circumstances (see reasons 3. to 3.6).



Case Number: T 0488/94 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 2 July 1997

Appellant: MITA INDUSTRIAL CO., LTD.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 3 February 1994
refusing European patent application
No. 90 109 811.1 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: S. V. Steinbrener
L. C. Mancini

Summary of Facts and Submissions

- I. The appellant lodged an appeal against the decision of the Examining Division to refuse European patent application No. 90 109 811.1.

The Examining Division held that neither claim 1 according to the main request nor claim 1 according to the auxiliary request were allowable since the claimed subject matter lacked the inventive step required by Articles 52(1) and 56 EPC having regard to the following documents:

- D1: Patent Abstracts of Japan, vol. 8, no. 257 (P-316) [1694], 24 November 1984 & JP-A-59 126 571
- D2: Patent Abstracts of Japan, vol. 7, no. 87 (P-190) [1232], 12 April 1983 & JP-A-58 14 170.

During appeal proceedings the Board considered the following further documents cited in the European search report for the present application:

- D3: Patent Abstracts of Japan, vol. 13, no. 210 (P-872) [3558], 17 May 1989 & JP-A-1 26 878, including an English translation of the latter document, and
- D4: US-A-4 579 441.

- II. In the communication of 2 May 1997 pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal, the Board pointed out that the subject matter of claim 1 according to both requests lacked novelty with respect to document D3 and would not be inventive with respect to a combination of documents D4 and D2.

III. Oral proceedings took place on 2 July 1997.

IV. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of amended claims 1 to 13 as filed at the oral proceedings, with description and drawings to be adapted.

Furthermore, reimbursement of the appeal fee was requested.

V. The wording of claim 1 on which the present decision is based, reads as follows:

"1. A transfer type image forming apparatus comprising:

an image bearing member (1) having a small radius of curvature;

transferring means (5, 6) for electrostatically transferring a toner image formed on said image bearing member (1) onto a receiving substrate (S), said substrate (S) being detached from the image bearing member (1) by virtue of its stiffness and/or its own weight, said transferring means (5, 6) comprising a discharge wire (6) disposed within a case (5A) of electrically conductive material having a U-shaped cross-section, wherein the U-shape opens toward the image bearing member (1),

an insulating member (7) disposed on the downstream side of the case (5A) in the feed direction of the substrate, said insulating member (7) being provided with a plurality of ribs (74) thereon for guiding the substrate (S), the ribs (74) being disposed in an intersecting direction to the feed direction with spaces therebetween; and

charge removing means (8) for attracting charges from the rear surface of the substrate (S) after detachment from the image bearing member (1), wherein said charge removing means (8) are made of electrically conducting material and are disposed in close vicinity of the downstream side of said insulating member (7), whereby the charge removing action of said charge removing means (8) spreads over said spaces between the ribs (74) and whereby charges on the rear surface of the substrate (S) are removed when the substrate (S) is being guided by the ribs (74),

wherein said insulating member (7) has a hook-like shape in cross-section, comprising

- a first upright section (71) in contact with the downstream side surface of said U-shaped case (5A),
- a flat section (72) arranged to cover a downstream portion of the opening of the U-shaped case (5A), and
- a second upright section (73) positioned at the upstream end of the flat section (72) and projecting towards the image bearing member (1),

said flat section (72) and said second upright section (73) regulating the breadth of the discharging area, and

said ribs (74) for guiding the substrate (S) are provided on the upper surface of the flat section (72) adjacent to said second upright section (73)."

(The suspension points and the inverted comma at the beginning of the penultimate paragraph of claim 1 as submitted at the oral proceedings have been deleted.)

Claims 2 to 13 as submitted at the oral proceedings are appended to claim 1.

VI. The appellant's argumentation in support of its requests may be summarised as follows:

As is well known in the field of electrostatic transfer devices such as copying machines, the rear surface of a receiving substrate, e.g. a sheet of paper, is charged by a transfer means so that the toner image can be transferred from a photosensitive drum to the front surface of the receiving substrate. In copying machines of small size having small, highly curved drums, the substrate - when conveyed in feed direction - is detached from the drum due to its stiffness and own weight after image transfer. Nevertheless, the residual charges on the rear side of the substrate must be removed in order to prevent the substrate from forming waves in the feed direction. Therefore, some charge removing means must be provided at the downstream side of the transfer means.

When reducing the size of a copying machine, the following problems arise in the above context:

- (i) in view of the desired size reduction transfer and removing means should be as close as possible;
- (ii) a discharge "short-circuit" between transfer and removing means being at different potentials must be effectively suppressed;
- (iii) in order to achieve an effective charge removal, the "removal area", i.e. the extension of the charge removing action of the removing means, should be as large as possible and in close vicinity to the transfer means; and

- (iv) a smooth paper transport over the transfer and removing means must be guaranteed by guiding members which however should not be stained by floating toner particles to prevent the substrates from becoming dirty.

In the prior art, these different problems partly requiring conflicting measures for their solution have not been dealt with satisfactorily. In particular, in documents D1, D3 or D4 a relatively thick insulating member is provided between the transfer means and the charge removing means, thus coping with problem (ii) but making the situation worse with respect to problems (i) and (iii). Moreover, toner adhesion in accordance with problem (iv) must be expected in all of these prior art solutions, in particular if guiding ribs are extending over the transfer means as is the case in documents D2 or D3. Finally, documents D1 and D4 do not prevent sheet material from entering into the transfer means.

The embodiment shown in Figure 11 of document D3 comprises an insulating plate 19 which may be integral with insulating member 15 and is placed against the U-shaped shield 10 in order to prevent the discharge from the transfer means from affecting the discharge from the charge removing means and thus reducing the charge removal efficiency. However, with such a configuration at least problems (i) and (iv) still remain. If the downstream portion of the U-shaped shield were to be covered more effectively than it is the case in Figure 11, the thickness of plate 19 would have to be increased, leading to a displacement of discharge wire 11 of the corotron and thus aggravating the size problem (i).

The insulating member now claimed has a specific shape possessing several advantages over the cited prior art: although it is small in size, little interaction between the discharges of the transfer and charge removing means is achieved by providing the flat and second upright sections whilst maintaining a high charge removing efficiency since the charge removing area extends up to, and in part over, the transfer means. Moreover, due to the flat section there is no danger that the paper sheet enters into the U-shaped case, and the guiding ribs extending on the flat section and shielded by the second upright section are not charged by the transfer means so that unintentional staining is avoided.

Having regard to its request for reimbursement of the appeal fee, the appellant maintained that Article 113(1) EPC had been infringed by the Examining Division since it rejected the then auxiliary request directly in its decision to refuse the application without communicating the reasons for non-allowability of this request to the applicant beforehand.

Reasons for the Decision

1. *Articles 84 and 123 EPC*

Claim 1 now under consideration is based on original claim 1 with amendments

- at page 1, lines 14 to 18 derived from Figure 1 and page 6, lines 31 to 35 of the application documents as filed;

- at page 2, lines 5 to 15 derived from Figures 1 and 3 and page 8, lines 12 to 21 of the application documents as filed; and
- at page 2, lines 19 to 20 derived from page 8, lines 23 to 25 of the application documents as filed,

and further contains minor clarifications in lines 1, 21, 29 and 32 of page 1.

Dependent claims 2 to 13 correspond to original claims 2, 3, 5 to 8, 15, 16 and 19 to 23 including minor corrections and clarifications in claims 3 to 7 and 9.

Therefore, in the Board's view the requirements of Articles 84 and 123(2) EPC are met.

Furthermore, in the present case the two-part form of claims is considered less suitable for claim 1 since a delimitation of the claimed subject matter against the closest prior art (see item 2.1 below) would lead to a more lengthy and involved claim.

2. *Articles 54 and 56 EPC*

- 2.1 In the Board's view, document D3 comes closest to the claimed subject matter.

In D3, there is disclosed a transfer type image forming apparatus comprising all the features of page 1 and page 2, first paragraph of claim 1 now under consideration (see D3, Figures 1 and 11 and associated text: image bearing member 1 having small radius of curvature (see page 8, lines 8 to 9 of the English translation); transferring means 9; receiving substrate 8 being detached by its stiffness and/or weight (see

page 12, lines 28 to 35 of the English translation); discharge wire 11; case of electrically conductive material having a U-shaped cross-section 10; insulating member 15; ribs 22 disposed in an intersecting direction (see Figure 8 and page 12, lines 14 to 18); and charge removing means 16 of electrically conducting material (see page 10, lines 4 to 18 of the English translation)).

In particular, since the ribs which the insulating member is provided with in the prior art, serve the purpose of guiding the receiving substrate and are disposed with spaces therebetween (see D3, page 12, lines 8 to 18 of the English translation), a "charge removing action" of the known charge removing means must also be considered to spread over the spaces between the ribs, and charges on the rear surface of the receiving substrate are removed when the substrate is being guided by the ribs.

Having regard to the remaining features of claim 1, the Board finds that the insulating member according to D3 also has a "first upright section" 15 in contact with the downstream side surface of the U-shaped case 10 (see D3, Figure 11). As the insulating plate 19 may be formed integrally with the "first upright section" 15 (see D3, page 15, lines 15 to 20 of the English translation), the insulating member may be seen to comprise a "flat section" as well, formed by the integral portion extending on the downstream side wall of case 10 and connecting the "first upright section" 15 and the thin insulating plate 19 disposed on both sides of the wall. Furthermore, in this case it appears that the insulating plate 19 forms a "second upright section" of the known insulating member. Finally, the ribs for guiding the substrate would also seem to be provided in D3 on the upper surface of the "flat section" (i.e. optional connecting portion) adjacent to

said "second upright section" 19.

However, said optional connecting portion on the side wall of the U-shaped case is not considered to cover a downstream portion of the **opening** of the U-shaped case and apparently cannot make a substantial contribution to regulating the breadth of the discharging area. Any such regulating function could only be attributed to the "second upright section" of D3 (i.e. insulating plate 19) since it limits the discharge of the transfer corotron 9 in the direction of the charge removing means (see D3, page 15, lines 6 to 15 of the English translation).

Moreover, according to D3 the "second upright portion" 19 extends from the top end of case 10 to the level of discharge wire 11, i.e. "projects" in the opposite direction.

Therefore, the subject matter of claim 1 differs from the closest prior art in that

- (a) the insulating member has a hook-like cross-section including a second upright section projecting towards the image bearing member;
- (b) the flat section is arranged to cover a downstream portion of the opening of the U-shaped case; and
- (c) the flat section regulates (in combination with the second upright section) the breadth of the discharging area.

2.2 Since none of the remaining documents discloses such a hook-like configuration of the insulating member, the subject matter of claim 1 must be considered novel with respect to the available prior art (Article 54 EPC).

2.3 The basic problem of undesirable discharge interaction between transfer and removing means has already been described in document D3 (see page 4, line 22 to page 5, line 5 of the English translation). The problem arises from the fact that in small copying devices the respective electrodes of the charge removing means and the transfer means are in close vicinity and connected to potentials of opposite polarities. By the resulting discharge interference charge removal from the rear side of the substrate and/or image transfer to the front side of the substrate may be affected. In order to solve this problem, document D3 already proposes the provision of a "discharge suppressing means" between the transfer means and the charge removing means (see D3, claim 1). The discharge suppressing means described in D3 are more or less all of the type including a complete or partial substitution of insulating material for the metallic downstream wall of the U-shaped case (see D3, Figures 1, 2, 9, 10, 16 and 17). In Figure 11 of D3, a thin insulating plate is added to a conventional case.

Nevertheless, these prior art solutions still appear to have the disadvantage of a rather thick insulating member 15 which by its thickness

- regulates the separation between transfer means and charge removing means and thus contributes to the suppression of discharge interactions between both means; and

- is capable of bearing the guiding ribs 22.

Moreover, the charge removal area does not appear to extend substantially over the U-shaped case 10 of the transfer means 9, and the guiding ribs are exposed to the discharge of the transfer means.

2.4 The combined technical effect of the different features (a) to (c) of the present application can be seen in the provision of a more compact insulating member which nevertheless is advantageous with respect to charge removal from the substrate, suppression of undesirable discharge interference and paper jam prevention (see the present application page 1, lines 15 to 19; page 7, lines 10 to 18; page 8, lines 12 to 21; page 9, lines 14 to 20 and 28 to 33; page 9, line 37 to page 10, line 5 and page 10, lines 18 to 24).

Therefore, the technical problem which is solved by the present application with respect to the closest prior art would appear to relate to an improvement of the closest prior art by achieving the above effect.

2.5 In contrast to the prior art, the hook-like shape of the insulating member as defined in claim 1 now under consideration clearly allows a much thinner first upright section 71 (see Figures 1 and 3 of the present application) since the flat section 72 extending over the opening of the U-shaped case of the transfer means serves as mechanical support for the guiding ribs 74. Furthermore, the thickness of the first upright section is not important for the suppression of discharge interaction between the transfer and removing means due to the fact that the breadth of the discharging area of the transfer means is effectively regulated by the flat and second upright sections. By providing the flat and second upright sections over the U-shaped case the charge removal area can be extended into close vicinity of the transfer area and immediate and effective charge removal is achieved. Moreover, although extending over part of the transfer corotron, the guiding ribs are

shielded by the flat and second upright sections from direct exposure to transfer side-effects leading to staining by the attraction of floating toner particles. Finally, the hook-like shape also prevents paper sheets from entering the transfer corotron.

- 2.6 As has already been pointed out above in the context of novelty, a hook-like insulating member comprising a first upright section, a flat section and a second upright section projecting towards the drum is not known from the remaining prior art. Nor are the above synergetic effects of the claimed configuration rendered obvious by the remaining documents considered in the present case.

Document D1 which has been acknowledged in the introductory part of the present application and document D4 relate to similar apparatus having an insulating member which however is separate from, and positioned at the downstream side of, the transfer corotron (see D1, the abstract; D4, Figures 2 and 3 and associated text). Both documents do not hint at a more compact solution. Document D2 provides detachable guiding ribs on the charge removal means (here: a destaticising corotron) in order to prevent entry of paper into said means. There is, however, no insulating member provided between the charge removing and transfer means.

Nor do the remaining documents of the European Search Report give any incitation to the claimed invention. The Board is also convinced that in view of the specific shape of the claimed insulating member appearing in Figures 1 to 10 of the present application, the search must have been carried out with this shape in mind and therefore should be complete in this respect.

2.7 Hence, in the Board's opinion the subject matter of claim 1 meets the requirements of Articles 54 and 56 EPC, and claim 1 is thus allowable.

Dependent claims 2 to 13 concern particular embodiments of the claimed subject matter and are therefore also allowable.

The description still has to be adapted to the new set of claims. In particular, the embodiments of Figures 11 to 14 being inconsistent with the subject matter of claim 1 as amended are to be deleted from the present application. This adaptation shall be carried out before the first instance after remittal of the present case.

3. *Rule 67 EPC*

3.1 The appellant asserted that in the present case an auxiliary request was submitted with the letter of 8 November 1993 which has been directly rejected by the Examining Division in its subsequent refusal dated 3 February 1994 without any further preceding communication.

3.2 Article 113(1) EPC states that "the decisions of the European Patent Office may only be based on grounds or evidence on which the parties concerned have had an opportunity to present their comments". This normally means that the grounds for non-allowability of a request must be communicated to the parties before giving a decision so that the parties can take due note of the EPO's position and can give their counterarguments which might still influence the course of events.

In the proceedings before the EPO main and auxiliary requests are allowed. According to Article 113(2) EPC, the EPO is bound to the requests of the applicant or patent proprietor. In case of main and auxiliary requests, this means that the EPO is also bound to the order of the requests (see, e.g., T 169/96), i.e. the auxiliary request is to replace the main request as a subsequent request with equal rights if the main request is not considered allowable. Before refusing an application in the case of main and auxiliary requests, the Examining Division will therefore in accordance with Article 113(1) EPC not only have to communicate its arguments regarding non-allowability of the main request to the applicant, but also regarding non-allowability of the auxiliary request if the result of the subsequent examination of the auxiliary request is also negative.

3.3 In the Board's view, a "direct" rejection of an auxiliary request without preceding communication of the grounds on which the rejection is based would only comply with the requirements of Article 113(1) EPC under rather exceptional circumstances, e.g. if there can be no doubt about the fact that the arguments already communicated to the applicant with respect to the subject matter of the main request at least implicitly apply with equal force to the subject matter of the auxiliary request, e.g., in that the amendments and/or additions distinguishing the auxiliary request from the main request do not change the technical contents of an independent claim which was not considered allowable before or do not remove objections under Articles 84, 83 and 123 EPC already raised before against the main request.

3.4 However, in the present case such exceptional circumstances do not exist. From the appellant's letter dated 8 November 1993, it is clearly apparent that an

auxiliary request was filed, claim 1 of which has been amended by adding a feature derived from page 9, lines 5 to 8 of the application documents as filed, i.e. "said ribs (74) having downstream portions which project downstream with respect to the insulating member, and the charge removing means (8) is disposed in the close vicinity of the downstream portions of the ribs (74)". Furthermore, by addition of this feature the technical contents of claim 1 has been clearly changed since no such "downstream projecting portions" were provided in claim 1 according to the main request (nor in the previous dependent claims).

Although the Examining Division took due note of the existence of said auxiliary request in its decision refusing the present application, it directly rejected the auxiliary request for lack of inventive step, thereby offending against Article 113(1) EPC since the appellant was not given an opportunity to present its comments on the non-allowability of the auxiliary request. With respect to the question of whether the right to be heard pursuant to Article 113(1) EPC has been infringed or not, the Board does not consider the technical relevance of an added feature to be of importance as long as it makes a technical contribution to the claimed subject matter and is not of an implicit or purely editorial nature.

3.5 Whether the Examining Division might have been misled in its approach by the wording of Guidelines E-X, 5 must be left open. Nevertheless, the cited passage explicitly dealing with supplementary requests in the last-but-one paragraph could give the wrong impression that such a request may be addressed for the first time in the final decision.

3.6 Since Article 113(1) EPC is an important procedural right "intended to ensure that no party is caught

unawares by reasons being given in a decision turning down his request on which he has not had the opportunity to comment" (see "Case Law of the Boards of Appeal of the European Patent Office", EPO Munich 1996, page 200) this procedural violation must be considered substantial. Moreover, it deprived the appellant of the possibility of making further amendments during the examination phase, which finally led to a positive result in the appeal proceedings, and therefore in accordance with Rule 67 EPC reimbursement of the appeal fee is considered equitable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside; the case is remitted to the Examining Division with the order to grant a patent on the basis of amended claims 1 to 13 as filed at the oral proceedings, with description and drawings to be adapted.
2. The appeal fee shall be reimbursed.

The Registrar:

The Chairman:

E. Görgmaier

E. Turrini