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File Number: T 775/90 - 3.4.2  
Application No.: 85 105 143.3  
Publication No.: 0 159 721  
Title of invention: Image forming apparatus

Classification: G03G 15/01

**D E C I S I O N**  
of 24 June 1992

Proprietor of the patent: Kabushiki Kaisha Toshiba  
Opponent: Océ-Nederland B.V.

Headword:

**EPC** Articles 56 and 123(2)

Keyword: "Main request: added subject-matter - yes"  
"First to third auxiliary requests: inventive step - no"

**Catchwords**

Mere automisation of functions previously found desirably and performed by any experienced user of the apparatus corresponds to the general trend in technics and cannot as such be considered inventive.



Case Number : T 775/90 - 3.4.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.2  
of 24 June 1992

**Appellant :**  
(Proprietor of the patent)

Kabushiki Kaisha Toshiba  
72, Horikawa-cho  
Saiwai-ku  
Kawasaki-shi  
Kanagawa-ken 210 (JP)

**Representative :**

Henkel, Feiler, Hänzler & Partner  
Möhlstrasse 37  
W - 8000 München 80 (DE)

**Respondent :**  
(Opponent)

Océ-Nederland B.V.  
St. Urbanusweg 43  
NL - 5914 CC Venlo (NL)

**Representative :**

Hanneman, Henri W.A.M.  
Océ-Nederland B.V.  
Patents and Information  
Postbus 101  
NL - 5900 MA Venlo (NL)

**Decision under appeal :**

Decision of Opposition Division of the European  
Patent Office dated 18 July 1990 and posted on  
1 August 1990 revoking European patent  
No. 0 159 721 pursuant to Article 102(1) EPC.

**Composition of the Board :**

**Chairman :** E. Turrini  
**Members :** W.W.G. Hofmann  
L.C. Mancini

## Summary of Facts and Submissions

- I. European patent No. 0 159 721 was granted on the basis of European patent application No. 85 105 143.3.
- II. The patent was revoked by a decision of the Opposition Division on opposition by the Respondent, on the ground that the subject-matter of Claim 1 according to the main and first auxiliary requests did not involve an inventive step and that Claim 1 according to the second auxiliary request contained subject-matter extending beyond the content of the application as filed.

In the reasons for the decision the following documents were referred to:

- (D1) US-A-3 960 445;
- (D2) "Xerox Disclosure Journal" vol. 2, no. 6, 1977, page 37;
- (D3) US-A-4 097 139;
- (D4) US-A-4 413 899.

- III. The Appellant (Patentee) lodged an appeal against this decision.
- IV. Oral proceedings were held before the Board, at the end of which the Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis

of the main request with the set of Claims 1 and 20 to 25 filed on 28 November 1990 and Claims 2 to 19 as granted;

of the first auxiliary request with the set of Claims 1 to 23 filed on 11 June 1992;

of second and third auxiliary requests with corresponding sets of claims (Claims 1 to 22 and Claims 1 to 21) as filed during the oral proceedings.

According to each of the requests, Claim 1 is the only independent claim.

Claim 1 according to the main request reads as follows:

"1. An image forming apparatus comprising:

a housing (1);

an image carrier (7) disposed in the housing (1) and adapted to carry thereon a latent image corresponding to an original image;

a developing device (10) for developing the latent image formed on the surface of the image carrier (7), said developing device (10) including first developing means (32a) for developing the latent image by means of a first developing agent (G1) and second developing means (32b) for developing the latent image by means of a second developing agent (G2);

selecting means (156, 171) for selecting said first or second developing means that is to be operated; and

means (63) for driving the developing device (10),

c h a r a c t e r i z e d in that:

at least one of said first and second developing means (32a, 32b) is operator-removably set in the housing (1) and is movable between a position to which a driving force is transmitted from (read "from") said driving means (63) and a position which is outside of the housing (1), along a guide path extending at right angles to the axial direction of said image carrier (7)."

Claim 1 of the Appellant's first auxiliary request is distinguished from Claim 1 of the main request only by the

fact that the characterising portion is replaced by the following text:

"characterized in that, each of the developing means (32a, 32b) is removably set in the housing (1), one (32a) of them being user-removably." (The last word of this claim as well as the corresponding word in the additional text cited below should evidently read "user-removable".)

Claim 1 of the Appellant's second auxiliary request is distinguished from Claim 1 according to the first auxiliary request only by the addition, at the end of the latter claim, of the words:

"and that the user-removably (read "user-removable") developing means (32a) is arranged to be drawn out upward from the housing (1)."

Claim 1 of the Appellant's third auxiliary request corresponds to Claim 1 according to the second auxiliary request, the word "and" of the additional text of the second auxiliary request being however deleted and the following text being added at the end of the latter claim:

"and characterized by further comprising detecting means (187a and 187b) for detecting the presence of the first and/or second developing means (32a and/or 32b) in the housing (1), and control means (171) for prohibiting the selecting means from selecting that or those means which are found to be absent from the housing (1) by the detecting means (187a and 187b)."

The Respondent for his part requests that the appeal be dismissed.

V. Appellant's arguments in support of his requests can be summarised as follows:

D1 does not disclose any developing means which are user-removably set in the housing. Nor could D3 suggest to the skilled person the idea of constructing one of the developing means so that it is user-removable since the developing unit according to this document cannot really be considered as being removable by a user. Complicated actions involving pivoting of the developing unit and even using a movable cart have to be performed for removing the developing unit. In particular, it is easier to draw such a developing unit out upward from the housing as suggested by the invention in suit than to slide it horizontally (see D3), in which case it is necessary, before the sliding movement, to pivot the unit off from its position adjacent the photoconductive belt to avoid scratching of the latter. Moreover, the expert cannot learn from D3 how the developing means shown therein can be used in an image forming apparatus comprising two developing means. Means for detecting the presence of the developing means in the housing as specified in Claim 1 according to the third auxiliary request, are not disclosed in any of the prior art documents. Such detection means and control means for prohibiting the selection of developing means not present in the housing are very useful for avoiding waste of time since otherwise a whole copying cycle might be run without producing a copy.

VI. The arguments presented by the Respondent are in substance as follows.

The term "operator-removable" (or "user-removable") contained in Claim 1 is not appropriate to characterise a

machine construction because the operator (or user) is an undefined person having undefined skills and is not a part of the machine construction itself.

D1 discloses the features of the preamble of Claim 1. D3 discloses developing means that are removable by a user. Thus a combination of documents D1 and D3 leads to the subject-matter of Claim 1. Removing the developing unit according to D3 is not difficult. Pivoting the unit away from the photoconductive belt is not a complicated action, and sliding such a unit out on bars in a lateral direction may be easier than lifting it up and out of the housing. How easy it is to remove a developing unit by drawing it out upward (as compared with the procedure described in D3), depends on the overall construction of the image forming apparatus which is not defined in Claim 1. Therefore, choosing an upward direction instead of a horizontal one for drawing the developing unit out is a trivial alternative. Detecting means for detecting the presence of parts necessary for the correct functioning of the apparatus are widely used in the field of photocopiers (e.g. for checking the presence of copying paper). Thus, specially applying detecting means also for detecting the presence of the developing means is obvious, and it is trivial that developing means which are found to be absent should not be selected for developing an image.

#### Reasons for the Decision

1. The appeal is admissible.

2. Main request

2.1 In Claim 15 and on page 6, lines 26, 27 of the application as originally filed it is disclosed that the

first and second developing means are removably set in the housing. Present Claim 1 according to the Appellant's main request goes beyond this disclosure since it defines the developing means to be "operator-removable". While the feature "removable" alone provides very little specification of the arrangement of the part in question (since after all any part of a machine can be removed in some way), "operator-removable" indicates that removing the part in question should be easy enough to be done by anyone who wants to operate the apparatus for forming images of an original image.

The disclosure of the feature "operator-removable" could only be derived from page 6, lines 27 to 33 of the original description. In this section of the description it is stated that the first or upper developing unit is constructed so that a user can easily draw it out upward from the housing, while the second or lower developing unit is designed for a serviceman's lateral attachment or detachment for maintenance or inspection. This means that an arrangement allowing removal by a user - who may in this case be considered as approximately equivalent to an "operator" - is only provided for the first developing unit. The second developing unit is constructed to be somewhat less easily detachable and attachable (only by a serviceman). This difference regarding the degree of ease for removing the two developing means has been lost in the present Claim 1. According to Claim 1, not only the first but also the second developing means or both developing means could be operator-removable, contrary to the original disclosure.

Regarding the last feature of Claim 1 "along a guide path extending at right angles to the axial direction of said image carrier", neither a guide path alone, nor any right angles to the axial direction of the image carrier are



disclosed in the original application documents (including the drawings). A guide path is mentioned nowhere and even the Appellant could not point out a place of disclosure for this feature.

Concerning the direction of movement of the developing means, the only relevant parts of the original application documents indicate that the first developing means is drawn out "upward" (page 6, line 30) and "loaded or unloaded from the top side of the housing" (page 18, lines 30 and 31), while the attachment or detachment of the second developing means is "lateral" (page 6, line 32). These indications are not precise enough to define right angles.

- 2.2 Claim 20 again mentions the "guide path" and the "vertical" direction, neither of which features are originally disclosed.

The inserting/removing means comprising a handle, hooks, shafts and pins specified in Claims 24 and 25 are originally disclosed in Figures 10, 12 and 13 and on page 17, line 36 to page 18, line 19. However, this disclosure only relates to the first developing means. A disclosure relating to removing or holding means for the second developing means is not contained in the original application.

- 2.3 The claims according to the main request thus contain subject-matter which extends beyond the content of the application as filed in the sense of Article 123(2) EPC. The Appellant's main request is therefore not allowable.

- 3. First auxiliary request

- 3.1 The points of objection under Article 123(2) EPC mentioned

above are mainly removed in the claims according to the first auxiliary request (and the following requests) of the Appellant, and during the oral proceedings the Appellant has indicated his general willingness to provide further amendments within the frame of the first to third auxiliary requests if this should be necessary under Article 123(2) EPC. Thus, some minor points which may remain, will not be dealt with here since they are of no relevance for the judgment of inventive step which, as shown below, anyway leads to the result that the first to third auxiliary requests are not allowable.

3.2 The Respondent has objected to the term "user-removable" as not being appropriate to characterise a machine. The Board, however, cannot see a lack of clarity (Article 84 EPC) in this respect. Although the user is not a part of the machine itself, he may nevertheless serve as some kind of standard for a functional definition of the construction of one of the developing means and its arrangement in the machine, with regard to the degree of difficulty of removing it. Just because the skills of the users vary over a wide range, a "user-removable" part must be fairly easy to remove. The fact that the term "user-removable" still leaves a broad range of possibilities for the arrangement of the development means, is in the view of the Board not a question of clarity, but has to be taken into account for the judgment of novelty and inventive step.

3.3 Novelty

3.3.1 D1 discloses an image forming apparatus (electro-photographic copier) having all the features of the pre-characterising part of Claim 1. In particular, this known apparatus includes first developing means (34) comprising a first developing agent and second developing means (32)

comprising a second developing agent, selecting means for selecting said first or second developing means that is to be operated, and means for driving the developing device (cf. in particular Figures 1, 2 and 4; column 4, lines 5 to 25; column 6, lines 52 to 67; and column 9, lines 13, 14).

However, while the developing units of the known apparatus (like in fact any part whatsoever of any apparatus) must be considered as being "removable", it is not indicated that one of the developing units is so easily removable as would have to be the case if the unit were intended to be removed by a user.

3.3.2 D3 describes an image forming apparatus (electro-photographic copier) comprising a latent image carrier and a pair of developing units containing toner of different colour, one of which units at a time is located in operative position in the housing and driven by driving means, and the other one of which is remote from the housing (cf. in particular Figure 3 and "abstract").

Contrary to the opinion of the Appellant, it is clear that the developing units of the known apparatus are constructed and arranged to be user-removable since no overly demanding manipulations are required for their removal from the housing and since it is expressly stated that the developing units are intended to be exchanged during the production of one single multicolour copy, i.e. between the copying cycles corresponding to the different colours of the image to be made (cf. column 2, lines 51 to 62; column 5, lines 31 to 45; column 6, line 64 to column 7, line 17; and column 7, lines 59 to 61). Nobody could reasonably assume that during the production of one copy anyone else but the user of the apparatus is present.

However, D3 does not describe selecting means for selecting the first or second developing means that is to be operated (which would imply that two developing means are present in the apparatus at the same time).

3.3.3 Since the other cited documents do not come closer to the subject-matter of Claim 1, the apparatus according to Claim 1 of the first auxiliary request is novel in the sense of Article 54 EPC.

#### 3.4 Inventive step

3.4.1 D1 represents the closest prior art since the image forming apparatus described therein comprises two developing means including toner of different colour, and selecting means for selecting the first or second developing means that is to be operated. According to one of the image forming modes of this apparatus, an image having two colours, one of which (black) is the standard colour, can be formed without replacing cartridges including developing units. Thus, the known apparatus already solves the problem stated in column 1, lines 34 to 42 of the patent in suit.

The specification of the patent in suit does not anywhere mention a technical problem which, starting from the disclosure of D1, could be solved by the further features according to Claim 1, i.e. by one of the developing means being user-removable. However, even without an explicit statement, it is apparent that by the possibility to exchange one of the developing means, the number of applicable colours is increased which is, in principle, always desirable.

3.4.2 A person skilled in the art who wants to increase the number of available colours beyond the two colours provided according to D1, will readily realise that the teachings of D3 open up the possibility to achieve this without having to provide additional space in the housing for a third developing unit. It is therefore obvious to combine the teachings of D3 with those of D1 and to construct one of the developing units of the apparatus according to D1 so that it is user-removable.

The Appellant has argued that an expert would not know how to use an exchangeable developing unit in a copier which already includes two selectable developing units. The Board, however, cannot see any difficulty a person skilled in the art might have in this respect since both functions (selectability and exchangeability) may very well be provided in addition to each other without undue interference.

3.4.3 It is thus concluded that the subject-matter of Claim 1 according to the first auxiliary request lacks an inventive step in the sense of Article 56 EPC and is therefore not patentable under Article 52(1) EPC.

The Appellant's first auxiliary request is therefore not allowable.

4. Second auxiliary request - Inventive step

4.1 Claim 1 according to the second auxiliary request additionally contains the feature that the user-removable developing means is arranged to be drawn out upward from the housing (corresponding to page 6, lines 27 to 30 of the original description).

According to D3, the user-removable developing means is drawn out sideways from the housing.

In a copier there are evidently only the two general directions, upwards or sideways, in which parts may be drawn out in practice. No unexpected effect is achieved by specially choosing the upward direction. In fact, the Board cannot even see that in the general apparatus as claimed any advantageous effect at all is achieved by this feature, although the Appellant has asserted that it is easier and requires less manipulation to draw the developing unit out upwards. As the Respondent has emphasised, the question whether it is easier to draw the developing unit out sideways or upwards, and in particular whether an initial pivoting movement as mentioned in D3 is necessary to avoid scratching of the photoconductive member, depends on a great number of constructional parameters (e.g. form and relative position of photoconductive member and developing unit, weight of the developing unit etc.) none of which are specified in Claim 1.

Under these circumstances, the Board is of the opinion that simple switching from one known alternative (drawing out sideways) to the other one (drawing out upwards) does not require an inventive skill of a person constructing a copying apparatus.

The remainder of the features of Claim 1 have already been dealt with above.

- 4.2 The subject-matter of Claim 1 according to the second auxiliary request therefore does not involve an inventive step in the sense of Article 56 EPC and is consequently not patentable under Article 52(1) EPC.

The Appellant's second auxiliary request is therefore not allowable.

5. Third auxiliary request - Inventive step

5.1 Claim 1 according to the third auxiliary request additionally contains the features of original Claim 17, i.e. the fact that the apparatus comprises detecting means for detecting the presence of the first and/or second developing means in the housing, and control means for prohibiting the selecting means from selecting that or those means which are found to be absent.

These features must be seen in context with the fact that both developing means are "removable" and, in particular, one of them "user-removable", and the selected developing means might therefore not always be present in the housing. It is clear that time (and copying paper) might unnecessarily be wasted if the apparatus could be made to perform a copying cycle and try to develop the image with a developing unit which is actually not present. The question, however, is whether in order to avoid such inconvenience, providing detection and controlling means is obvious or not.

5.2 Document D3 which relates to a user-removable developing unit, does not mention a detector for the presence of the unit. None of the cited documents could directly suggest such detecting and controlling means.

5.3 However, in the view of the Board, strong suggestions in this direction come from the every day practice of a person skilled in the art.

A user of a copier having an exchangeable developing unit as the one described in D3 will readily see in practice

that it is annoying if a whole copying cycle is performed without producing a copy, just because it was overlooked that the developing unit was not inserted in the apparatus.

For such reasons, it is nothing but the normal procedure of doing a job on a machine having easily removable parts (speaking quite generally), that an experienced user first has a look to see whether all necessary parts are present, and of course does not try to use a part which is not present. In the case of a copier having a user-removable developing unit, an experienced user will first check whether the developing unit he wants to use is present.

Providing detecting means for detecting the presence of the developing means and controlling means for prohibiting the selection of developing means not present is nothing but automatisisation of these functions which up to then had been performed by the user (and a skilled constructor of copiers whose task it is to improve their construction, is certainly also an experienced user), and it is not surprising that letting the automatic means do this work is more convenient for the user and less susceptible to negligence.

Mere automatisisation of functions previously performed by persons corresponds to the general trend in technics and cannot as such be considered inventive.

Moreover, as the Respondent has pointed out, copiers are highly automatised apparatuses, and the idea of checking, by means of detectors, the presence and position of relevant parts (paper, toner, doors, etc.) is very common in this field.



5.4 The subject-matter of Claim 1 according to the third auxiliary request therefore does not involve an inventive step in the sense of Article 56 EPC, and thus does not relate to a patentable invention (Article 52(1) EPC).

The Appellant's third auxiliary request is therefore also not allowable.

6. Therefore, the grounds of opposition mentioned in Article 100 EPC prejudice the maintenance of the European patent in the amended forms corresponding to the main and the three auxiliary requests.

**Order**

**For these reasons, it is decided that:**

**The appeal is dismissed.**

**The Registrar:**

**The Chairman:**

**P. Martorana**

**E. Turrini**