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Case Number: T 0095/18 - 3.4.03

Application Number: 09180157.1

Publication Number: 2199869

IPC: G03G15/00, G03G15/01, G03G15/16, G03G15/20

Language of the proceedings: EN

Title of invention:
Belt member feeding device and image forming apparatus provided with the same

Applicant:
Canon Kabushiki Kaisha

Headword:

Relevant legal provisions:
EPC Art. 52(1), 56
RPBA Art. 12(1), 12(2), 12(4)

Keyword:
Inventive step - (no)
Late-filed first auxiliary request - request could have been filed in first instance proceedings (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
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Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0095/18 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 24 March 2022

Appellant: (Applicant)	Canon Kabushiki Kaisha 30-3-2 Shimomaruko Ohta-ku Tokyo 146-8501 (JP)
Representative:	TBK Bavariaring 4-6 80336 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 7 July 2017 refusing European patent application No. 09180157.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	M. Papastefanou
Members:	S. Ward
	D. Prietzel-Funk

Summary of Facts and Submissions

I. The appeal is against the decision of the Examining Division to refuse European patent application No. 09 180 157 on the grounds that the claimed subject-matter did not involve an inventive step within the meaning of Article 56 EPC.

II. At the end of the oral proceedings held before the Board the appellant confirmed its requests to be that the decision under appeal be set aside and that a patent be granted based on one of: the main request filed with the letter dated 24 March 2016, a modified main request filed with the letter dated 18 February 2022, a first auxiliary request filed with the statement setting out the grounds of appeal, a modified first auxiliary request filed with the letter dated 18 February 2022, a second auxiliary request filed with the statement setting out the grounds of appeal or a modified second auxiliary request filed with the letter dated 18 February 2022.

III. The following documents are referred to:

D1: WO 97/19009 A2
D2: US 5 365 321
D4: EP 1 731 454 A2
D6: JP 2002 132057 A
D7: EP 0 733 957 A2

IV. (i) Claim 1 of the main request reads as follows:

"An image forming apparatus (60; 70; 80) comprising:
a rotatable belt member (606; 71; 81);

stretching means (603, 604, 617) for stretching said belt member (606; 71; 81); and
steering means (1) for stretching said belt member (606; 71; 81), wherein said steering means (1) includes a rotatable portion (2) rotatable with rotation of said belt member (606; 71; 81),
a first frictional portion (3) provided at one axial end of said rotatable portion (2) for slidable contact with said belt member (606; 71; 81) and configured not to be rotatable with rotation of said belt member (606; 71; 81),
a second frictional portion (3) provided at the other axial end of said rotatable portion (2) for slidable contact with said belt member (606; 71; 81) and configured not to be rotatable with rotation of said belt member (606; 71; 81),
supporting means (4, 6, 8) configured to steer said belt member (606; 71; 81), and configured to support said rotatable portion (2), said first frictional portion (3), and said second frictional portion (3), and
a rotation shaft (21) rotatably supporting said supporting means (4, 6,8),
wherein said supporting means (4, 6, 8) is capable of steering said belt member (606; 71; 81) by rotation of said supporting means (4, 6, 8) by a force resulting from sliding between said belt member (606; 71; 81) and said first frictional portion (3) and a force resulting from sliding between said belt member (606; 71; 81) and said second frictional portion (3),
wherein each of said first and second frictional portions (3) has such an inclined surface that a distance between the rotational axis of said rotatable portion (2) and the inclined surface increases toward an outside with respect to a direction of the rotational axis, wherein

said belt member (606; 71; 81) has a width enough to contact said first frictional portion (3) while contacting said second frictional portion (3)."

(ii) Claim 1 of the modified main request is the same as claim 1 of the main request, except that the feature:

"said belt member (606; 71; 81) has a width enough to contact said first frictional portion (3) while contacting said second frictional portion (3)"

has been replaced by:

"said belt member (606; 71; 81) has a width which is greater than that of said rotatable roller (2) and is less than a width of a combination of said rotatable roller (2), said first frictional portion (3) and said second frictional portion (3)".

(iii) Claim 1 of the first auxiliary request comprises all features of claim 1 of the main request together with the following additional feature:

"wherein each of said first and second frictional portions (3) is made of electroconductive resin material".

(iv) Claim 1 of the modified first auxiliary request is the same as claim 1 of the first auxiliary request except for the feature replacement mentioned above under point (ii).

(v) Claim 1 of the second auxiliary request comprises all features of claim 1 of the main request together with the following additional feature:

"said rotatable portion (2) is in connection with said first and second frictional portions (3)."

(vi) Claim 1 of the modified second auxiliary request is the same as claim 1 of the second auxiliary request except for the feature replacement mentioned above under point (ii).

V. Following the summons to oral proceedings the Board sent the appellant a communication under Article 15(1) RPBA setting out its provisional views. The Board noted that although the Examining Division's inventive step objection against claim 1 of the main request was based on D1, similar objections could be raised based on D2 or on the combination of D4 and D2. The question whether the first auxiliary request was to be admitted into the procedure was to be discussed, and the subject-matter of claim 1 of the second auxiliary request did not appear to be inventive. There appeared to be a problem regarding the requirements of Article 123(2) EPC for all requests.

VI. The appellant's arguments, insofar as they are relevant to the present decision, may be summarised as follows:

The subject-matter of claim 1 of the main request differed from D4 (embodiment of Fig. 7B and paragraph [0035]) in providing that each of the first and second frictional portions had an inclined surface, such that a distance between the rotational axis of the rotatable portion and the inclined surface increased toward an outside with respect to a direction of the rotational axis. The technical problem solved by this feature was to generate a greater force than that generated by cylindrical portions.

Although D2, in the embodiment of Figs. 8(a) to 8(e), disclosed a tension guide 9c having ends 9d formed as divergent tapered sections, the central section of the tension guide was not a roller, as in D4, but a fixed member over which the belt was arranged to slide. Moreover, friction was not mentioned in D2 in relation to this embodiment. The structures for guiding the belt disclosed in D4 and D2 were thus contrary to each other, and the skilled person would not consider a combining them. Any suggestion otherwise would be based on hindsight.

Claim 1 of the first auxiliary request comprised the additional feature that each of the first and second frictional portions was made of electroconductive resin material. This had the technical effect that electrical charge on the belt member could be avoided since the belt member was in contact with the electroconductive portions. This subject-matter involved an inventive step in view of the cited prior art.

Claim 1 of the second auxiliary request comprised the additional feature that the rotatable portion was "in connection with" the first and second frictional portions. This meant a concrete contact between them, as shown in Figs. 3 and 4 of the application. This subject-matter involved an inventive step in view of the cited prior art.

The modified main request and first and second auxiliary requests addressed an objection under Article 123(2) EPC raised in the Board's communication.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request: Inventive step*

2.1 As noted by the Board in its communication, D4 provides a suitable starting point for the discussion of inventive step. In particular, in the embodiment of Fig. 7B and paragraph [0035], D4 discloses a belt control roller 35 having cylindrical frictional end portions 70a, 70b. If the belt strays from its intended position on the roller, the frictional end portions serve to generate a force which pivots the roller about supporting shaft 73 (see Figs. 5A, 5B). This has the effect of urging the belt back to its intended position.

2.2 The appellant does not dispute that the subject-matter of claim 1 of the main request differs from the arrangement of D4 only in the following feature:

"wherein each of said first and second frictional portions (3) has such an inclined surface that a distance between the rotational axis of said rotatable portion (2) and the inclined surface increases toward an outside with respect to a direction of the rotational axis".

2.3 Under point 4.2 of its communication the Board stated that the technical problem solved by the first and second frictional portions having an outwardly tapering shape appeared to be to generate a greater force than that generated by cylindrical portions (see e.g. the paragraph bridging pages 27 and 28 of the description

of the present application). The appellant agreed with this formulation of the problem.

2.4 In the embodiment of Figs. 8(a) to 8(e), D2 discloses a tension guide 9c which, by pivoting around axis rod 23, performs a similar function to that of the belt control roller of D4. The ends 9d of tension guide 9c are realised as divergent tapered sections whose diameters increase in a direction away from the middle of the tension guide toward the outside.

2.5 In column 8, lines 57-63 of D2 the following is stated:

"In this embodiment, the ends 9d of the tension guide 9C are divergent tapered sections. Therefore, when the fusing film 7 rides on one of the ends 9d, a quite asymmetrical load distribution is attained on the tension guide 9C with respect to the axis rod 23. This means that a larger force is exerted to return the fusing film 7 to the original position".

In the light of this, it would be obvious for the skilled person to employ such tapered end portions in the arrangement of D4 in order to solve the posed problem.

2.6 D2 discloses two arrangements for the central section of the tension guide. It may be a roller, as in the fourth embodiment (Figs. 9-12) and the fifth embodiment (Figs. 13-16), or it may be a fixed member made of a material having a low friction factor over which the belt ("fusing film 7") slides, as in the first embodiment (Figs. 1-4), the second embodiment (Figs. 5-7) and the third embodiment (Fig. 8). The appellant is therefore correct that in the embodiment of D2 in which tapered end portions are provided (the third

embodiment; Fig. 8), the central section of the tension guide is not a roller, but a fixed member over which the belt slides, whereas in D4 the equivalent feature is roller 35.

2.7 The Board does not, however, accept the argument that, as a result of this difference, the skilled person would not consider incorporating the tapered end portions disclosed in D2 into the arrangement of D4. It is clear from the passage cited above under point 2.5 that the geometrical form of the divergent tapered sections results in a larger force being exerted to return the belt to its original position. There is nothing in D2 which would suggest that this effect is in any way dependent on the manner in which the belt moves over the central section of the tension guide, nor can the Board see any reason to suppose this to be the case.

2.8 The appellant is correct that it is not mentioned in the embodiment of Fig. 8 of D2 whether the end portions are frictional, but the Board does not see this as relevant. Whether the end portions in D2 are frictional or not, it remains the case that D4 discloses generating the required force by frictional end portions, and D2 (embodiment of Fig. 8) discloses generating the required force (or at least a part of it) by the geometrical form of the end portions. The skilled person wishing to increase the force generated would combine both measures.

2.9 In the light of the above, the Board judges that subject-matter of claim 1 of the main request does not involve an inventive step within the meaning of Articles 52(1) and 56 EPC.

3. *Modified main request: Inventive step*

3.1 At oral proceedings the chair stated the Board's view that the above finding would necessarily apply also to claim 1 of the modified main request, and this was not disputed by the appellant.

3.2 Hence, the Board judges that subject-matter of claim 1 of the modified main request does not involve an inventive step within the meaning of Articles 52(1) and 56 EPC.

4. *First auxiliary request: Admission into the proceedings*

4.1 Article 12(4) RPBA 2007 gives the Board the power to hold inadmissible facts, evidence or requests which could have been presented in the first instance proceedings. The first auxiliary request was not presented in the first instance proceedings, and the Board can see no reason why it could not have been, nor has any reason been given by the appellant.

4.2 In addition, according to Article 12(3) RPBA 2020 (as well as Article 12(2) RPBA 2007, which was in force at the time when the statement setting out the grounds of appeal was filed) the statement of grounds of appeal shall contain a party's complete case, setting out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld, and specifying expressly all the facts, arguments and evidence relied on. This means that any request filed during appeal proceedings must be properly substantiated (see *Case Law of the Boards of Appeal*, 9th Ed. 2019, V.A.4.12.5).

4.3 Claim 1 of the first auxiliary request comprises the additional feature that "each of said first and second frictional portions (3) is made of electroconductive resin material". This feature was comprised in dependent claim 5 as originally filed. In the search opinion of 28 October 2011 none of the dependent claims were considered allowable, and in point 4.2 of the search opinion the following was stated:

"claim 5: Electrically conductive rollers are well-known in the field. Specifically, see D6, par. [0033] or D7, column 4, lines 46-49 and figure 1. Therefore the skilled person skilled in the art would consider to use electrically conductive frictional portions without involving an inventive step, (frictional portions are electroconductive)".

The objections against the dependent claims were referred to in the Examining Division's communications of 26 November 2013 (point 3.4), 16 April 2015 (point 3.5) and 20 November 2015 (point 4.4).

4.4 During the examination procedure the feature that the frictional portions were made of electroconductive resin material was found only in a dependent claim, and it is therefore understandable that the objections against this feature were not mentioned in any of the replies of the applicant. However, in appeal, this feature became part of independent claim 1 of the first auxiliary request, and for the reasons stated above, it was incumbent upon the appellant to fully substantiate why this request was considered to meet all of the requirements of the EPC.

4.5 The Board accepts that the statement of grounds of appeal includes some reasoning in this respect (page 7,

first and second paragraphs), including the technical effect achieved by this feature ("any electrical charge of the belt member 606; 71; 81 can be avoided since the belt member 606; 71; 81 is in contact with said electroconductive portions 3").

4.6 However, where a feature which has been found by the Examining Division to be obvious in the light of the prior art is incorporated into an independent claim of a request in appeal, and where the appellant considers this feature to contribute to the claimed subject-matter being inventive, proper substantiation of the request requires the appellant to provide reasons why the finding of Examining Division was wrong.

The statement of grounds of appeal did not, however, contain any reasons why the objections of the Examining Division were wrong in this respect, nor did it contain any discussion of the documents D6 and D7 on which the objections of the Examining Division were based. The requirements of Article 12(3) RPBA 2020 are therefore not met in relation to the first auxiliary request.

4.7 For the reasons given above, the Board decided not to admit the first auxiliary request into the proceedings.

5. *Modified first auxiliary request: Admission into the proceedings*

5.1 At oral proceedings the chair stated the Board's view that the above finding would necessarily apply also to claim 1 of the modified first auxiliary request, which also comprised the feature that "each of said first and second frictional portions (3) is made of electroconductive resin material". The appellant did

not wish to offer any comment on this, and so the Board sees no reason to deviate from its stated conclusion.

5.2 Hence, the modified first auxiliary request is not admitted into the proceedings pursuant to Article 12(4) RPBA 2007.

6. *Second auxiliary request: Inventive step*

6.1 Claim 1 of the second auxiliary request comprises the additional feature that the "rotatable portion (2) is in connection with said first and second frictional portions (3)". According to the appellant, this feature is illustrated in Figs. 3 and 4 of the present application. In terms of being "in connection", the Board can see no difference between the arrangement depicted in these drawings and that of Fig. 7B of D4.

6.2 The appellant argues that "in connection with" means that the frictional portions are in "concrete contact" with the rotatable portion, and that this is not explicitly stated in D4.

The Board sees no reason to ascribe to the claimed expression "in connection with" the unduly narrow meaning of being in direct (or "concrete") contact. In the Board's view, the expression "in connection with" generally includes the concept of being connected via a further element, and it is also not stated in the one passage in the present application in which this expression appears (page 18, lines 21-23) that a narrow interpretation is intended.

Even if, contrary to what appears to be depicted in Fig. 7B, it were considered that the frictional portions 70a, 70b of D4 might not be in "concrete

contact" with the rotatable portion 35, they nevertheless would be "in connection with" the rotatable portion, in that all of these features are mounted on the same support arrangement, and mutually pivot, together with the support arrangement, about the supporting shaft 73 to guide the belt 35.

Hence the additional feature is disclosed in D4, and the Board therefore judges that the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step within the meaning of Articles 52(1) and 56 EPC for the reasons stated above in relation to the main request.

7. *Modified second auxiliary request: Inventive step*

7.1 At oral proceedings the chair stated the Board's view that the above finding would necessarily apply also to claim 1 of the modified second auxiliary request, and this was not disputed by the appellant.

7.2 Hence, the Board judges that subject-matter of claim 1 of the modified second auxiliary request does not involve an inventive step within the meaning of Articles 52(1) and 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

S. Sánchez Chiquero M. Papastefanou

Decision electronically authenticated