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D E C I S I O N
of 4 February 1998

Case Number: T 0950/96 - 3.2.3

Application Number: 90113178.9

Publication Number: 0465698

IPC: D21F 11/04, D21F 9/00

Language of the proceedings: EN

Title of invention:
Multi-ply web former and method

Applicant:
Beloit Technologies, Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
-

Decisions cited:
-

Catchword:
-



Case Number: T 0950/96 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 4 February 1998

Appellant: Beloit Technologies, Inc.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 13 June 1996
refusing European patent application
No. 90 113 178.9 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: J. du Pouget de Nadaillac
M. K. S. Aúz Castro

Summary of Facts and Submissions

- I. The present appeal lies from the decision of an Examining Division of the European Office dated 13 June 1996, refusing European patent application No. 90 113 178.9 on the ground of infringement of Article 123(2) EPC.

The Applicant - hereinafter the Appellant - lodged the appeal on 8 August 1996 and paid the appeal fee on the same date. The statement of grounds was received on 14 October 1996, together with a new Claim 1 submitted to replace Claim 1 of the previous requests of the Appellant.

- II. Said Claim 1 reads as follows:

"A method for forming a multi-ply paper web, comprising the steps of:

- (a) forming a base ply web (W_b) on a travelling foraminous base forming wire (36);
- (b) bring first and second looped forming wires (10, 10a, 20, 20a) into co-running engagement in a forming zone extending between a guide roll (12, 12a) and a turning roll (14, 14a) disposed within the first looped forming wire (10, 10a) wherein the overall substantially continuous contour of the forming zone has the first forming wire (10, 10a) having an inner surface curved concave downwardly, and the second forming wire (20, 20a) having an inner surface curved convex upwardly path of travel,

- (c) projecting an aqueous top ply stock stream onto at least one of the first and second looped forming wires (10, 10a, 20, 20a),
- (d) dewatering the top ply stock stream in the forming zone through the first forming wire (10, 10a) by applying sub-atmospheric air pressure to the stock stream solely beneath its curved concave downwardly path of travel to thereby form a lower web surface of a top ply web (W_T),
- (e) expressing water upwardly in the forming zone through the second wire (20, 20a) over its path of travel over **at least one** stationary, concave downwardly shaped, surface solely by wire tension and centrifugal force and without applying sub-atmospheric air pressure to the stock stream upwardly through the second forming wire to thereby form an upper web surface of the top ply web (W_T),
- (f) bringing the upper web surface of the top ply web (W_T) into co-running engagement with the base ply web (W_B) to effect ply-bonding therewith to form a multi-ply web; characterized by
- (g) projecting said aqueous top ply stock stream into a throat (24) formed by the converging first and second forming wires (10, 10a; 20, 20a); and
- (h) expressing substantially all of the water expressed upwardly through the second wire (20, 20a) while the first and second forming wires (10, 10a, 20, 20a) travel over said **at least one** stationary, concave downwardly shaped, surface."

The Board has underlined in Claim 1 the expression, which according to the decision contested by the present appeal infringes Article 123(2) EPC. The expression "at least one", also emphasized by the Board in heavy type, is introduced into the claim for the first time, replacing the indefinite article "a". Moreover a feature, namely the feature (f), of the previous Claim 1 (according to the auxiliary request in the preceding proceedings) is deleted.

III. The Appellant requests that a patent be granted on the basis of the above Claim 1 as well as Claim 2 filed on 7 November 1991, and the description and drawings as specified on page 3 of the contested decision.

Reasons for the Decision

1. The appeal is admissible.
2. The main issue under question is the allowability of the expression "substantially all" which, however, in the present Claim 1 is to be read in conjunction with the feature "at least one stationary...surface".
3. In the present invention, two looped forming wires are arranged above one another, the "first forming wire" being the lower one. The last feature (h) of Claim 1 specifies that substantially all of the water expressed upwardly is expressed upwardly through the second, thus upper (or top), second wire while the first and second wires travel over at least one stationary, concave downwardly shaped, surface. According to the description, as originally filed, on page 9, last paragraph, this or these concave downwardly shaped surface(s) are the wire-contacting surfaces of the foil boxes and vacuum boxes, which are positioned within the

loop of the lower forming wire. In the embodiment shown in Figure 1, a single foil box is provided in this loop, whereas in the embodiment according to Figure 2, a foil box and two vacuum boxes are shown. Thus, the new added feature, that the first and second forming wires travel over said at least one stationary, concave downwardly shaped surface, covers these two embodiments and is therefore supported by the patent application as originally filed.

4. In the first embodiment (Figure 1), a save-all or auto-slice is positioned within the loop of the top forming wire, just above the foil box of the other forming wire. According to the description, pages 6 and 7, the water is removed from the inner side of this top forming wire by means of lip(s) or slot(s) of said auto-slice and directed into a drain. Only these water removing means are disclosed for the top forming wire and they are positioned approximately in the middle of the forming zone, which according to feature b) of the claim extends between the upward guide roll and the downward turning roll, considering the movement direction of the wires in this forming zone. Therefore, in this first embodiment, it is clear that substantially all the water expressed upwardly has to be expressed at the level of this auto-slice, the position of which corresponds to that of the single stationary, concave downwardly shaped surface of the foil box. Figure 1 confirms this by showing the trailing edge of the auto-slice positioned at the same level as the trailing edge of the foil box.

According to the Examining Division, the respective amount of water expressed upwardly cannot be determined, since no indications are given in the description as to the parameters of the centrifugal forces and the wire tension, which urge the water upwardly. The Board is not of the opinion that these

parameters are necessary, since the patent application as a whole indicates the location of the water receiving means. Said location implicitly discloses in which part of the forming zone substantially all the water will be expressed.

5. In the second embodiment according to Figure 2, a foil box first and then two successive vacuum boxes constitute the dewatering means along the forming zone and within the loop of the lower forming wire. Within the loop of the top forming zone, two auto-slices are shown, the first one positioned between the foil box and the first vacuum box and the second one located intermediate the two vacuum boxes. On page 10 of the description it is made clear that the water expressed upwardly is collected into these auto-slices and on page 12, lines 3 to 6, it is emphasised that water expressed through the top forming wire need only be collected by the auto-slices. Here also, no other collecting means are disclosed for the water expressed upwardly. Moreover, the function of the second vacuum box, which is located downstream of the second auto-slice, is to further dewater the top ply web through the lower surface of said web (page 11, first lines) and to effect the transfer of the newly formed top ply web onto the lower forming wire. It seems to be clear that this separation of the wires implies that the upwardly directed dewatering is finished, having essentially occurred while both forming wires travel over the concave surfaces of the foil box and the first vacuum box. Therefore, the contested feature is also supported by the description having regard to this second embodiment.

6. One argument of the Examining division was that in the first embodiment according to Figure 1 the turning roll located at the downstream end of the forming zone would also participate in the upwardly directed dewatering,

since in this embodiment this roll is a suction roll and both forming wires are still guided together with the top ply web for a short circumferential distance over the surface of this roll, so that water is expressed upwardly by centrifugal force.

In the application as filed, however, no support for this assumption can be found. The most common use of a suction roll is to guide webs or felts, when their direction is to be changed. In the present application, only this function is disclosed, since a turning roll is mentioned, which moreover according to the description has the particular aim of bringing the newly formed top web into ply-bonding contact with the base web. This base web comes horizontally from the side opposite to the one of the top ply web and is supplied tangentially onto the lower surface of the turning roll, so that the upper surface of the top ply web is brought into contact with the upper surface of the base ply web. Should water still be urged upwardly during this short travel of the wires over the turning roll surface, then said water would fall onto the base ply web. Such a result would be in contradiction with the object of the present application, which aims at a ply-bonding at lower web moisture, as disclosed on page 12 of the description. Therefore, the top ply web has to be essentially dewatered before reaching the turning roll. This view is confirmed by the second embodiment of the present application, in which such a dewatering function of the turning roll is excluded, since this roll is not formed as a suction roll and the upper forming wire is separated from the newly formed web by the second vacuum box before reaching said turning roll.

7. Feature (f) of the corresponding Claim 1 (Auxiliary request), on which the contested decision is partly based, had the following wording: "said step of dewatering the top ply stock stream through the first forming wire being carried out at a location substantially opposed to where the water is expressed upwardly through the second forming wire according to step e)".

Since no corresponding feature may be found in the original independent claims, removal of this feature is justified.

8. For all these reasons, the Board comes to the conclusion that the subject-matter of Claim 1 does not extend beyond the content of the application as filed and is therefore allowable under Article 123(2) EPC. The same applies to Claim 2.

9. It follows from the decision under appeal that the claims, on which this decision is based, have not yet been finally examined, having regard to novelty and inventive step. Thus, the application is not yet ready for grant.

However, since the Examining Division in several communications had in view of the disclosure of document D1 objected to the lack of novelty of the subject-matter of Claims 1 and 2 according to various requests of the Appellant during the previous proceedings, the Board has considered this prior art and comes to the conclusion that at least the subject-matter of Claims 1 and 2 presently on file are new, since in the method and apparatus according to D1 at least the overall substantially continuous contour of the forming zone does not comprise the first and second forming wires, the aqueous top ply stock stream is not projected into a throat formed by said wires and

part of the water is expressed upwardly while the first and second forming wires travel over a rotating, concave downwardly shaped surface. Figure 1 of D1 clearly shows water collecting means associated with the turning roll.

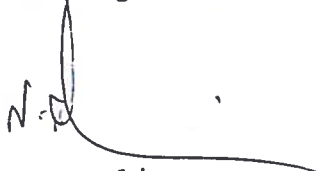
Therefore, the Board deems it not appropriate to complete the examination for novelty or to decide the issue of inventive step, but makes use of the power given to it by Article 111(1) EPC, to remit the case to the Examining Division for further prosecution. During this prosecution the Examining Division should also take account of the other requirements of the EPC (for example Rule 29(1) EPC).

Order


For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution.

The Registrar:


N. Maslin

The Chairman:


C. T. Wilson