BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 361/90 - 3.2.2

Application No.: 86 902 737.5

Publication No.: 0 303 592

Title of invention: Dryer felt run

Classification: D21F 5/04

DECISION
of 13 May 1992

Applicant: BELOIT CORPORATION

Headword:

EPC Article 56

Keyword: "Inventive step (no)"
"Kinematic reversal"

Case Number : T 361/90 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 13 May 1992

Appellant : BELOIT CORPORATION
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Decision under appeal : **Decision of Examining Division of the European Patent Office dated** 28 November 1989 **refusing European patent application No.** 86 902 737.5 **pursuant to Article 97(1) EPC.**

Composition of the Board :

Chairman : G. Szabo
Members : M. Noel
J. van Moer

Summary of Facts and Submissions

I. European patent application No. 86 902 737.5 (international publication No. WO 87/06635) was refused by decision of the Examining Division for the reason that the subject-matter of the main claim was lacking novelty having regard to the disclosure in document

(1) DE-A-3 132 040.

II. The Appellant lodged an appeal on 26 January 1990 against the decision, paying the appeal fee and submitting a Statement of Grounds in due course. With the Statement of Grounds he submitted two amended independent claims, which read as follows:

"1. A paper web drier section (5) having an upper horizontal tier of a plurality of rotary dryers (7) spaced from one another less than the diameter of the dryers (7),

a lower horizontal tier of rotary dryers (8) spaced from one another and adjacently spaced from said upper dryers (7), and with said upper dryers (7) forming with the lower dryers (8) respective generally triangular pockets (9),

an endless drier felt (10) trained to run a paper web (W) sinuously successively and in direct contact on the upper perimeter areas of said upper and lower dryers (7,8),

means (11,12,13,14) for effecting running of all of said dryers (7,8) and said felt (10) in one direction, and

a pair of felt rolls (19,20) in each pocket (19) for maximizing the wrap of the felt (10), and thereby the web (W) on the dryer perimeters, a first (19) of said pair of felt rolls in each pocket (9) located for controlling running of said felt (10) and web (W) from the lower dryer (8) located at the onrunning side of the pocket (9) into said pocket (9) and then in onrunning direction onto the upper dryer (7) defining the pocket (9), and a second (20) of said pair of felt rolls in each pocket (9) controlling running of the felt (10) and web (W) from the offrunning side of the upper dryer (7) into the pocket (9) and then onto the onrunning side of the lower dryer (8) at the offrunning side of said pocket (9),

said second felt roll (20) forming with the downrunning drier felt (10) and said first felt roll (19) a generally downwardly opening broke-receiving and ejection subpocket (21) under said upper dryer (7) and within said pocket (9),

characterized in that said first felt rolls (19) are located generally above said second felt rolls (20) and form a short tuck of the felt (10) into said pockets (9), thereby permitting broke to be ejected downwardly while inhibiting any tendency of the broke to clog the dryer section (5).

2. A method of operating a paper web drier section (5) having an upper horizontal tier of a plurality of rotary dryers (7) spaced from one another less than the diameter of the dryers (7), a lower horizontal tier of rotary dryers (8) spaced from one another and adjacently spaced from said dryers (7), and with said upper dryers (7) forming with the lower dryers (8) respective generally triangular pockets (9), the method comprising the steps of:

running a paper web (W) on an endless drier felt (10) sinuously successively and in direct contact on the upper perimeter areas of said upper and lower dryers (7,8),

running all of said dryers (7,8) and said felt (10) carrying said web (W) in one direction, maximizing the wrap of the felt (10), and thereby the web (W), on the dryer perimeters by running the felt (10) over and about a pair of felt rolls (19,20) in each pocket (9),

by a first (19) of said pair of felt rolls in each pocket (9) controlling running the felt (10) and web (W) from the lower dryer (8) located at the onrunning side of the pocket (9) into said pocket (9) and then in an onrunning direction onto the upper dryer (7) defining the pocket (9),

by means of a second (20) of said pair of felt rolls in each pocket (9) controlling running of the felt (10) and web (W) from the offrunning side of the upper dryer (7) into the pocket (9) and then onto the onrunning side of the lower dryer (8) at the offrunning side of said pocket, and

forming, by means of said second felt roll (20) with the downrunning dryer felt (10) and said first felt roll (19) a generally downwardly opening broke-receiving and ejection subpocket (21) within said pocket (9),

characterized by locating said first felt roll (19) above the second felt roll (20) in said pocket (9), and forming a short tuck of the felt (10) into the pocket (9), thereby permitting broke to be ejected downwardly while inhibiting any tendency of the broke to clog the dryer section (5)."

III. In his written submissions and at the oral proceedings held on 13 May 1992, the Appellant argued substantially that the Figure 2 embodiment of document (1) presented a serious disadvantage in the event of a web break, namely there was a tendency of a broke to be drawn from the upper drier towards the uprunning felt, thereby clogging the drier system. By changing the positioning of the felt rolls vertically according to arrangement in the present application, so that the first felt roll (seen in web travel direction) was to be located generally above the second felt roll, downward ejection of the broke was facilitated and, consequently, any tendency of a broke to clog the drier system was inhibited.

By considering the disclosure made in document (1) the skilled person should have been diverted away from the claimed subject-matter since, because of ever-increasing speed of conventional dryers, it was considered as essential in document (1) to locate the felt rolls as close as practical to the point where the felt and web left a rotary dryer to avoid web breaks. Therefore, any modification in the structural arrangement of document (1) would have represented an additional complication. Contrary to that, the unexpected simplicity of the solution now proposed should be regarded as a typical indication of inventive step.

IV. The Appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1 and 2 submitted with the Statement of Grounds.

He also requests that the appeal fee be reimbursed and, auxiliarily, that the case be referred back to the Examining Division.

Reasons for the Decision

1. The appeal is admissible.

2. There is no formal objection under Article 123(2) EPC to the current version of the claims.

3. Closest prior art

In the Board's view, document (1) must be regarded, as was also recognised by the Appellant, as the state of the art closest to the invention since it discloses a paper web drier system having all structural features set out in the precharacterising portion of either independent Claims 1 or 2 and, in particular (see Figure 2):

- upper and lower horizontal tiers of rotary dryers spaced from one another, said upper dryers 43,45 forming with the lower dryers 42,44 generally triangular pockets,

- a drier felt 9 trained to run a paper web 6 sinuously and in direct contact on the upper perimeter areas of the upper and lower dryers, successively,

- a pair of felt rolls 52,53 in each pocket for maximising the wrap of felt and web on the dryer perimeters, the first felt roll 52 being provided for controlling running of the felt and web from the lower dryer 42 into said pocket and then onto the upper dryer, and the second felt roll 53 being provided for further controlling the running of the felt and web from the offrunning side of the upper dryer 43 into the pocket and then onto the onrunning side of the following lower dryer 44,

- said first and second felt rolls 52,53 forming with the downrunning drier felt a generally downwardly opening broke-receiving and ejection subpocket, under the upper dryer 43.

Moreover, although the solution proposed in document (1) deals principally with the problem of avoiding excessive deformations and breaks in the web due to the high centrifugal forces occurring when the web wraps around the dryers, it remains that the teaching of document (1) also addresses the problem of permitting easy and rapid downward ejection of the broke, should a break occur for other reasons (document (1), page 5, second paragraph).

4. <u>Problem and solution</u>

The above-mentioned aim of the closest prior art already corresponds to the problem set forth in the application, of handling the broke in the event of a break in the web (application, page 2, lines 5 to 8). However, the embodiment according to Figure 2 of document (1) may present a disadvantage in the event of a break in the web, namely there is a risk of a broke to be drawn from the offrunning side of the upper dryer towards the uprunning felt, thereby impeding downwardly ejection of the broke and clogging the drier system. This is attributed to the fact that the first felt roll 52 controlling the web at the onrunning side of the upper dryer is located below the second felt roll 53.

With respect to the teaching of document (1), the objective technical problem underlying the present application is, therefore, to provide an arrangement which assists with higher efficacy in diverting the broke downwardly away from the drier-section without clogging the drier system. The solution is given by the features set out in the characterising portion of respective Claims 1 and 2 according to which, essentially, the first felt roll 19 is located generally above the second felt roll 20 so as to form a short tuck of the felt into the pocket. Claim 2 is merely expressing the appropriate method of operating a web drier according to Claim 1.

5. Novelty

The subject-matter of either Claim 1 or 2 is distinguished from the embodiment disclosed in document (1) in that the felt rolls are mounted in inverted vertical positions relative to each other.

Since no document other than document (1) comes closer to the subject-matter of these claims, they must be regarded as novel within the meaning of Article 54 EPC.

6. Inventive step

6.1 Since, as shown in Figure 2 of document (1), the running felt facing the second and upper felt roll 53 is moving in the upward direction, it appears, at first sight, that a broke might be influenced towards the upper dryer with a risk of clogging the whole system. It thus appears questionable whether the arrangement described in document (1) could be really efficient.

However, the Board sees no reason to challenge the indications given clearly and unambiguously in document (1) (cf. page 5, second paragraph), according to which the arrangement enables a broke to be ejected downwardly away in a satisfying manner. A careful observation of Figure 2 shows that the distance between the upper felt roll 53 and the opposite uprunning felt could be large enough to ensure a proper downwardly ejection of the broke, if any, further assisted favourably by the clockwise direction of rotation of said upper felt roll.

6.2 Further, in both embodiments to be compared, there is a critical region situated below the upper dryer and corresponding to the broke-receiving subpocket 21 in the application, where a broke arriving from the offrunning side of the upper dryer is liable to recirculate, i.e. to be drawn again towards the onrunning side of the upper dryer, thereby causing the drier section to clog. Therefore, also with the proposed solution, efficacy of the result to be obtained, that is a downward ejection of the broke, is not absolutely guaranteed.

6.3 Furthermore, the Board does not see any significant difference in the functioning of the respective embodiments since, in both cases, the most critical narrow passage provided for the broke to go through is defined by two felts facing each other and travelling in opposite directions, that is having counter effects. Thus, in the embodiment according to the application, while downward ejection of the broke is facilitated by the downrunning felt running about the lower felt roll 20, this movement may be hindered at the same time by the uprunning opposite felt running around the upper felt roll 19.

6.4 Moreover, the Board observes that reversal of the respective vertical positions of the felt rolls is equivalent to a reversal of the direction of rotation of the dryers, with the consequence of the felt running in a reversed direction. This can easily be recognised together with the relevant effect. Should this idea be applied to the embodiment of document (1), the first felt roll 53 would be located above the second felt roll 52, as is the case in the present application. Such considerations lead the Board to the conclusion that reversal of the positioning of the felt rolls represents no more than a mere kinematic reversal falling within the normal competence of a person skilled in the art, without the production of any surprising or advantageous effect whatsoever.

6.5 In an appendix presented together with the Statement of Grounds, the Appellant submitted three possibilities which, according to him, would have immediately and preferably occurred to the skilled person looking after solutions for modifying the Figure 2 embodiment of document (1), in order to facilitate ejection of the broke. Thus, it is believed that the skilled person would have considered the possibility to move the elements horizontally away from each other (Appendix A) or to use felt rolls of smaller diameter (Appendix B) or else to introduce therebetween a guiding plate (Appendix C).

In the Board's view, reversal of the vertical positions of the felt rolls represents still a fourth equivalent possibility as readily available for the skilled person as the preceding ones, yet without supporting the presence of any inventive step. The fact that the Appellant asserted that one possibility (the claimed solution) was better than the other ones does not render the alleged better possibility non-obvious. The differences between all proposed possibilities are not so significantly different from each other, that the claimed possibility could not be derived from a routine optimisation. The Board is thus satisfied that it would not be beyond the capabilities of the skilled person aware of document (1) to decide to reverse the respective positions of the felt rolls so as to arrive at the subject-matter of Claim 1 as a solution of the stated technical problem. Claim 2 merely defines the obvious manner of operating the same.

6.6 For all the foregoing reasons, the subject-matters of Claims 1 and 2 involve no inventive step within the meaning of Article 56 EPC.

7. <u>Reimbursement</u>

In accordance with Rule 67 EPC, reimbursement of an appeal fee shall be ordered when a Board of Appeal deems an appeal to be allowable, provided such reimbursement is equitable by reason of a substantial procedural violation. Since in the present case the appeal is not allowable, there is no basis for reimbursement of the appeal fee.

8. Remittal to the first instance

In the decision under appeal (Point 6) the Examining Division expressed its opinion about claims eventually amended in the sense of the claims now under dispute and came to the conclusion that even if the claims were so amended, they would nevertheless lack inventive step for the same grounds as those maintained by the Board in the present proceedings (reversion of known features).

Since the Appellant has again been given an opportunity to present his comments under Article 113(1) EPC, but failed to produce any new argument challenging the above conclusion, the Board is in the position to exercise directly the competence of the first instance, in accordance with Article 111(1), and sees therefore no reason to refer the case back to that instance.

Order

For these reasons, it is decided that:

1. The appeal is dismissed.

2. The request for reimbursement of the appeal fee is rejected.

The Registrar: The Chairman:

S. Fabiani G. Szabo

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