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**Datasheet for the decision
of 22 July 2008**

Case Number: T 0823/06 - 3.3.09

Application Number: 96925288.1

Publication Number: 0837774

IPC: B32B 31/00

Language of the proceedings: EN

Title of invention:
Label scanning system

Applicant:
Alcan Packaging Food and Tobacco Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Novelty, inventive step (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0823/06 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 22 July 2008

Appellant: Alcan Packaging Food and Tobacco Inc.
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Representative: Schuhmann, Albrecht
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 14 December 2005
refusing European application No. 96925288.1
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. Kitzmantel
Members: W. Ehrenreich
W. Sekretaruk

Summary of Facts and Submissions

- I. European patent application No. 96 925 288.1 was filed on 8 July 1996 as International patent application PCT/US96/11506 in the name of MALINER, Bruce, J. and was published as WO 97/02951. The application, entitled "*Label Scanning System*", was assigned pursuant to a declaration of transfer dated 23 December 1997 to *Lawson Mardon Packaging USA Inc.*, now *Alcan Packaging Food and Tobacco Inc.*.
- II. With the decision of the Examining Division issued in writing on 14 December 2005 the application was refused. The decision was based on a set of Claims 1 to 15 filed with the letter dated 2 September 2005. Independent Claims 1 and 10 read as follows:

"1. A method of producing a roll of labels for use in a continuous feed labeling system in which triggering marks on said rolls are detected by irradiating the labels in succession with electromagnetic radiation at one frequency and detecting corresponding electromagnetic radiation at a difference frequency emitted by the triggering marks, each of the triggering marks comprising a luminophor material which, when exposed to said electromagnetic radiation at said one frequency, emits electromagnetic radiation at said different frequency,
the method characterized by the steps of:

(i) providing a said continuous roll of said labels with said triggering marks each registered to an interface between adjacent labels;

(ii) scanning the roll of labels using electromagnetic radiation of said one frequency and obtaining a measure of the amount of electromagnetic radiation of said different frequency emitted by a said triggering mark in response to irradiation by the electromagnetic radiation of said one frequency;

(iii) comparing the measured electromagnetic radiation of said different frequency with a reference level to determine whether or not the measured electromagnetic radiation of said different frequency exceeds by a predetermined margin a reference level corresponding to a maximum level of electromagnetic radiation of said different frequency emitted by coloured parts of the label when irradiated by said electromagnetic radiation of said one frequency; and

(iv) if the measured electromagnetic radiation of said different frequency from the triggering mark does not exceed said maximum level by said predetermined margin, increasing the amount of luminophor material in the triggering marks."

"10. A roll of labels for use in a continuous feed labeling system, characterized in that each of said labels (12) includes one or more coloured portions thereon and at least one triggering mark (28) registered to an edge of said label, said triggering mark being formed of luminophor material capable of emitting visible light when exposed to UV light, said coloured portions each being formed of a coloured ink that is different from said luminophor material, the amount of luminophor in said triggering mark being predetermined such that said visible light emitted by

each of said triggering marks has an intensity that exceeds by a predetermined amount the maximum intensity of visible light emitted by said coloured portions."

The Examining Division held that the claimed subject-matter was not inventive over the disclosure in document D1 (US-A 3 536 550).

It was argued that the concept of controlling a cutter intended to cut individual labels from a continuous label roll by light emitted from luminescent triggering marks registered to the interface between adjacent labels, was known from D1.

Since any person skilled in the art would have considered it necessary for a proper functioning of this labelling system that the light emitted from the triggering marks exceeded the maximum intensity of the light emitted from other parts of the label, this measure did not involve an inventive step.

III. On 14 February 2006 the Applicant lodged an appeal against the decision of the Examining Division. The Statement of the Grounds of Appeal was submitted on 13 April 2006.

In response to a communication of the Board dated 7 April 2008 the Appellant filed four sets of claims as bases for a new main request and auxiliary requests 1 to 3 and in response to the Board's fax communication of 10 July 2008 a further set of claims according to auxiliary request 4.

All requests were replaced during the oral proceedings held on 22 July 2008 by a single set of process claims 1 to 6 as the basis for a new main request.

Claim 1 of this request reads as follows:

"1. A method of producing rolls of labels for use in a continuous feed labeling system in which triggering marks on said rolls registered to respective interfaces between adjacent labels are detected by irradiating the labels in succession with modulated UV light and detecting corresponding modulated fluorescence emitted by the triggering marks, each of the triggering marks comprising a luminophor material which, when exposed to said UV light, emits fluorescence and each label has coloured portions that also emit fluorescence when irradiated by UV light, the method characterized by the steps of:

(i) providing sample labels having triggering marks comprising a predetermined amount of luminophor registered to respective interfaces between adjacent labels;

(ii) scanning the sample labels using modulated UV light and measuring correspondingly modulated fluorescence emitted by said triggering marks in response to irradiation by the modulated UV light;

(iii) comparing the measured modulated fluorescence from the triggering marks with a reference-level representing a maximum level of the modulated fluorescence detected from said coloured portions when irradiated by said modulated UV light to determine whether or not the measured modulated fluorescence from the triggering marks exceeds said reference level by a predetermined minimum ratio; and

(iv) if the measured modulated fluorescence from the triggering marks does not exceed said reference maximum level by said ratio, increasing the amount of luminophor material in the triggering marks."

Claims 2 to 6 are dependent on Claim 1.

IV. The Appellant's arguments concerning inventive step may be summarised as follows:

D1, like the invention, concerns a bottle-labelling system with labels printed on rolls, the individual labels being cut off by cutting means whose operation is triggered by marks indicating the intersection between adjacent labels. D1, however, represents what was by then an outdated technology, using labels with a simple coloration printed by offset printing. In contrast, modern labels were by now printed by flexographic printing, exhibiting a much denser graphic design, an intense coloration and often including flashy promotional banners.

Furthermore, at the time when D1 was issued, only a few kinds of bottles were in use and the labels were only slightly different in shape, whereas modern labels are extremely diverse and have to accommodate a variety of differently sized and shaped containers. Because of this diversity it became necessary to adjust the system for detection of the triggering marks to the different labels to be applied.

This meant that the labelling operation had to be interrupted for adjustment of the label triggering mark

detection system, causing a highly undesirable disruption of the labelling process, especially when considering the high speed at which modern bottle-labelling machines run.

One way to avoid this drawback was to choose a label design that enhances the contrast between the label-separating triggering marks and the label proper, thereby improving the detectability of the marks without a need to adjust the settings of the triggering mark detection system of the labelling system.

Prior art solutions of this kind used more condensed graphics, employed special filtering systems or foresaw "dead zones", ie areas with no graphics around the triggering marks. All these attempts did not solve the problem adequately. In particular, the provision of "dead zones" was considered highly undesirable by the profession, as it meant that valuable promotion space was squandered.

The present invention solved the problem by setting a prescribed contrast ratio between the fluorescence signal emitted from the triggering marks and a maximum reference level of fluorescence signals emitted from the coloured portions of the label and adjusting, on a sample label, the amount of luminophor in the triggering marks until the detected fluorescence from the triggering mark exceeded that of the reference level by a prescribed minimum ratio. This measure considerably improved the signal-to-noise ratio between the fluorescence signal emitted by the triggering mark and the noise caused by the fluorescence emitted by coloured portions of the label. Since the application

of the triggering marks onto the label rolls was done beforehand no interference with the trigger mark detection system of the bottle-labelling machine was necessary when switching from one label design to another.

This problem solution was neither disclosed nor suggested in D1.

- V. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of Claims 1 to 6 filed on 22 July 2008.

Reasons for the Decision

1. The appeal is admissible.
2. The process Claims 1 to 6 in the version submitted on 22 July 2008 (main request) meet the formal requirements according to Articles 84 and 123(2) EPC.
3. Novelty

The relevant prior art for the assessment of novelty of the claimed process is D1, which describes the preparation of label rolls for use in a continuous labelling system by applying control elements to the label web in the form of printed indicia (triggering marks) to which invisible luminescent inks are applied which emit visible fluorescence detectable by a UV scanning device (D1, column 8, line 20 to column 10, line 29; see section 4.2 below).

However, the combination of the process steps (i) to (iv) defined in Claim 1 is not expressly and unambiguously disclosed in D1.

In particular, the steps of measuring the modulated fluorescence emitted from the triggering marks and comparing it with a reference level of the fluorescence emitted from the coloured portions of the label (step (iii)) and the subsequent adjustment of the luminophor material in the triggering mark (step (iv)) are not mentioned in D1.

The claimed process is therefore novel over the disclosure of this document.

4. Inventive Step

4.1 The subject-matter of the application

The application is concerned with the provision of rolls of labels, for use in a continuous feed labelling system. The triggering marks on the interfaces between adjacent labels should be reliably detectable by a UV-label scanning system even if the labels include dense graphics and highly coloured portions (WO publication, page 1, lines 5 to 8; page 2, lines 25 to 28 and page 5, lines 10 to 25).

According to Claim 1 of the main request the rolls of labels are prepared by applying the following four process steps in succession:

- (i) provision of sample labels with triggering marks comprising a predetermined amount of luminophor;

- (ii) scanning the labels using modulated UV light and measuring the modulated fluorescence emitted by the triggering marks;
- (iii) comparing the fluorescence signal measured in step (ii) with a reference level representing the maximum level of the modulated fluorescence detected from the coloured portions of the label when irradiated with the modulated UV light, in order to determine whether the signal emitted by the triggering mark exceeds the maximum reference level by a predetermined minimum ratio;
- (iv) increasing the amount of luminophor in the triggering mark if the predetermined minimum ratio is not exceeded.

4.2 The closest prior art

D1 is representative of the closest prior art. The document discloses a method of producing rolls of labels for use in a continuous feed labelling system. The process is carried out in a rotary offset printing press (column 3, lines 44 to 49), and includes the following additional steps:

- (a) register elements (46) in the form of printed indicia are applied to the web (figure 10) which are provided with an invisible fluorescent ink (column 8, lines 20 to 39 and lines 69 to 73);
- (b) the register marks emit fluorescence in response to radiation with UV light and can be distinguished by a scanning device from the usual

- printing inks employed in printing the labels
(column 8, lines 39 to 45); and
- (c) the labels are tested by a UV testing device in order to check the effectiveness of the register mark (column 9, lines 22 to 27).

4.3 The problem to be solved

The claimed process differs from the process described in D1 in that

- a maximum reference level of the fluorescence emitted by coloured portions of the label is determined on a sample label;
- the maximum reference level is compared with the measured fluorescence signal emitted by the triggering marks in order to determine whether the signal exceeds the reference level by a predetermined minimum ratio;
- the fluorescence emission of the triggering marks is adjusted by increasing the amount of luminophor material (fluorescent ink) in the event that the signal emitted by the triggering mark does not exceed the maximum reference level by the minimum ratio.
- only thereafter is the label roll completed with the proper fluorescence emitting intensity of the triggering marks.

The Appellant convincingly argued in the oral proceedings that the above steps make it possible to reliably process modern labels of different kinds on a continuous feed labelling system which were "noisy" due

to their dense graphic and coloured printing, allowing also the presence of "loud" promotional banners.

Therefore, the problem to be solved is seen as the provision of a process for the production of labels on which the fluorescence signals emitted by the triggering marks can be reliably detected by the UV scanning system of a bottle-labelling plant despite the presence of interfering coloured fluorescent areas on the label surface.

4.4 Obviousness

D1 does not address the problem of the conflicting interference of fluorescence signals emitted by the triggering marks and those emitted by the label background.

Although it is mentioned in column 9, lines 23 to 27 of D1 that the effectiveness of the register marks should be examined during the printing of the label with invisible inks, this passage, when read in context with the information given in column 9, lines 1 to 18, only teaches the skilled person to check the effectiveness of the application of these control elements which, due to their being invisible, cannot be checked with the naked eye. This information does not suggest controlling the intensity of the colour marking, even less measuring and comparing it with a reference level and possibly adjusting it to an intensity difference such that fluorescence emission originating from the trigger marks can be reliably distinguished from that originating from the label colouring itself, in order to optimize the signal-to-noise ratio.

The claimed process is therefore based on an inventive step.

5. It follows that Claim 1 as well as dependent Claims 2 to 6 are allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division with the order to grant a European patent on the basis of the following documents:
 - Claims 1 to 6 filed on 22 July 2008;
 - Figures 1 to 4 as originally filed; and
 - a consequentially amended description.

The Registrar

The Chairman

G. Nachtigall

P. Kitzmantel