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D E C I S I O N
of 4 May 2001

Case Number: T 0992/99 - 3.2.4

Application Number: 96910030.4

Publication Number: 0819081

IPC: B65B 51/30

Language of the proceedings: EN

Title of invention:

Method and apparatus for automatically packaging a food or non
food product

Applicant:

Cryovac, Inc.

Opponent:

-

Headword:

Food packaging/CRYOVAC

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0992/99 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 4 May 2001

Appellant: Cryovac, Inc.
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Representative: Marchi, Massimo
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 28 April 1999
refusing European patent application
No. 96 910 030.4 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: P. Petti
C. Holtz

Summary of Facts and Submissions

- I. The European patent application No. 96 910 030.4 filed on 5 April 1996 was refused by a decision of the examining division dispatched on 28 April 1999.

The reason the examining division gave for the refusal was that the subject-matter of the independent claims 1 and 4 did not involve an inventive step (Article 56 EPC) having regard to the content of document US-A-4 924 659 or WO-A-93/01091 and to the prior art relating to conventional packaging methods using pre-formed bags made of thermoplastic material.

- II. The appellant lodged an appeal against this decision on 18 June 1999 and paid the appeal fee on 19 June 1999. The statement setting out the grounds of appeal was filed on 27 August 1999.

- III. In response to a communication of the board, the appellant filed with the letter dated 18 July 2000 amended Claims 1 to 17.

Minor amendments concerning Claims 1 and 4 and the description were agreed during a telephone call between the appellant and the rapporteur of the board on 24 January 2001. These amendments were annexed to the communication of the board dispatched on 26 January 2001 and were approved by the appellant with the letter (facsimile) dated 9 March 2001.

A further amendment to claim 4 was agreed during a telephone call between the appellant and the rapporteur of the board on 26 April 2001.

Independent Claims 1 and 4 read as follows:

- "1. An automatic packaging method comprising the steps of
- (a) continuously unwinding a centre-folded film from a roller;
 - (b) forming a recess between the film webs by folding them around a pair of inverting heads having a substantially triangular shape;
 - (c) feeding spaced products into the thus formed recess;
 - (d) sealing and severing said continuously travelling film so as to form bags each containing a product wherein
 - (e) the width (w) of each product is detected by at least one sensor means (19) so as to automatically adjust the distance between where welds along the two transverse sides of the product are to be provided and, thus, the width of each bag, such that said film webs of said continuously travelling film are sealed close to each product to be packaged along each of the two transverse sides of said product
 - (f) such welds being produced only while the front side remains open,
 - (g) the transverse welds are severed so as to form a plurality of bags with one open mouth on the front side wherein each bag encloses a product to be

packaged, and

(h) sealing or clipping said open mouth close to the front side of said product."

"4. An automatic apparatus for packing a food or non food product comprising a roll (1) of a center-folded film (3) of thermoplastic material, guiding means (7) suitable for straddling the two webs (31, 32) of said center-folded film (3) and forming a recess (12) capable of enclosing a product (10, 10a and 10b) to be packaged, conveying means (13, 20) suitable for advancing said film (3) enclosing said product (10, 10a and 10b) in a preselected travelling direction (18), wherein the apparatus also comprises I-shaped bar means for sealing (16), extending only in a direction transverse to the direction of motion of the packaging film, movable vertically and horizontally, suitable for performing transversal welds (33, 34) of said film (3) along each of the two transverse sides of said product and severing means (29) suitable for separating said transversal welds (33, 34), said bar means (16) being operatively connected to actuator means (27, 28) suitable for bringing and keeping them in contact with said film (3) in order to perform said transversal welds (33, 34), while said film (3) is in motion, advanced by said conveying means (13, 20), so that, after separation of said transversal welds (33, 34), a bag (21) is formed with an open mouth (30) enclosing the product (10, 10a and 10b), and in that it further comprises at least one sensor means (19) suitable for detecting the width of said product (10, 10a, 10b), capable of emitting a first signal at the passage of a leading edge (101) of the product (10, 10a, 10b) and a second signal at the

passage of a trailing edge (102) thereof, said sensor means (19) being operatively connected to control means (15) capable of operating said bar means (16) to leave a constant distance between said edges (101, 102) of said product (10, 10a, 10b) and said transversal welds (33, 34)."

IV. The appellant requested that the impugned decision be set aside and a patent be granted on the basis of the following documents:

Claims: No. 1 as annexed to the communication of the board dispatched on 26 January 2001; No. 2, 3 and 5 to 17, as filed with the appellant's letter dated 18 July 2000; No. 4, as annexed to the communication of the board dispatched on 26 January 2001 but amended as agreed during the telephone call on 26 April 2001;

Description: pages 1 and 6 to 12 of document WO-A-96/31397;
page 2 of document WO-A-96/31397 but with the insertion (between lines 17 and 18) as annexed to the communication of the board dispatched on 26 January 2001;
pages 3 to 5 filed with the letter dated 18 July 2000;
page 13 of document WO-A-96/31397 but with the deletion of part of the last sentence, from the term ", and modification" (lines 16 and 17) to the term "of the invention" (line 18).

Drawings: Sheets 1/3 to 3/3 (Figures 1 to 5) of

document WO-A-96/31397.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

2.1 The present Claim 1 differs from Claim 1 of document WO-A-96/31397

in that the feature (in Claim 1 of document WO-A-96/31397)

(a) "sealing and severing said travelling film close to each product to be packaged along each of the two transverse sides of said product so as to form a plurality of bags with one open mouth on the front side wherein each bag encloses a product to be packaged"

has been replaced by the following features:

(i) "sealing and severing said **continuously** travelling film **so as to form bags each containing a product**",

(ii) "said **film webs of said continuously** travelling film **are sealed** close to each product to be packaged along each of the two transverse sides of said product, such welds being produced **only while the front side remains open**" and

- (iii) **the transverse welds are severed** so as to form a plurality of bags with one open mouth on the front side wherein each bag encloses a product to be packaged (emphasis added);

and in that the following feature has been added:

- (iv) "the width (w) of each product is detected by at least one sensor means (18) so as to automatically adjust the distance between where welds along the two transverse sides of the product are to be provided and, thus, the width of each bag".

The amendments according to items (i) to (iii) only clarify the original feature (a). The amendment according to item (iv) above can be unambiguously derived from the description of document WO-A-96/31397 (see page 5, lines 13 to 21).

2.2 The present Claim 4 differs from the combination of features specified in Claims 4 and 11 of document WO-A-96/31397

in that the term "bar means for sealing (16)" has been replaced by the expression

- (v) "I-shaped bar means for sealing (16), extending only in a direction transverse to the direction of motion of the packaging film", and
- (vi) in that the term "width" has replaced the term "length" in the expression "at least one sensor means (19) suitable for detecting the length of said product (10, 10a, 10b)".

The amendment according to item (v) can clearly be derived from the drawings of document WO-A-96/31397 (see Figure 1). The amendment according to item (vi) can be derived from the description of document WO-A-96/31397 (page 8, lines 4 to 7).

- 2.3 The amendments to the dependent claims 2, 3 and 5 to 17 only concern the renumbering of these claims.
- 2.4 The amendments to the description consist essentially in its adaptation to the amended claims.
- 2.5 The board is satisfied that these amendments do not contravene Article 123(2) EPC.

3. *The prior art*

3.1 The most relevant prior art is represented by documents WO-A-93/01091 and US-A-4 924 659.

3.1.1 Document WO-A-93/01091 discloses (see particularly Figure 6) an automatic packaging method comprising the steps of

- continuously unwinding a centre-folded film from a roller 16,
- forming a recess between two film webs by folding them around a pair of inverting heads 22,
- feeding spaced products 19 into the thus formed recess,
- sealing and severing said continuously travelling film so as to form bags each containing a product,

- the two film webs of said continuously travelling film being sealed close to each product to be packaged along **the front side** of said product (**longitudinal seal**),
- the two film webs of said continuously travelling film being sealed close to each product to be packaged along each of the two transverse sides of said product (transversal or cross seals),
- the transverse seals are severed so as to form a plurality of closed bags wherein each bag encloses a product to be packaged.

This document also discloses an automatic apparatus for packaging a product comprising a roll 16 of a centre-folded film of plastic material, guiding means 22 suitable for straddling two webs of said centre-folded film and forming a recess capable of enclosing a product 19 to be packaged, conveying means 25 suitable for advancing said film enclosing said product in a predetermined travelling direction, **longitudinal sealing means 28 for longitudinally sealing the two webs close to the front side of the products**, bar means 50 for transversely sealing the two webs, the bar means extending only transversely to the direction of motion of the packaging film, the bar means being movable vertically and horizontally and being suitable for performing transversal seals of said film along each of the two transverse sides of said product, severing means 74 suitable for separating the transverse seals, the bar means being operatively connected to actuator means suitable for bringing and keeping them in contact with the film in order to perform the transversal seals, while said film is in motion, so that, after

separation of the transversal seals, a **closed bag** enclosing the product is formed.

3.1.2 Document US-A-4 924 659 discloses (see particularly Figures 1 to 4) an automatic packaging method comprising the steps of

- unwinding a centre-folded film from a roller 5,
- forming a recess between the film webs by folding them about a pair of inverting heads 4 having substantially triangular shape,
- feeding spaced products G into the thus formed recess,
- sealing and severing said travelling film so as to form bags each containing a product, the film webs of said travelling film being sealed along each of the two transverse sides **and the front side** of the product to be packaged.

This document also discloses an automatic apparatus for packaging a product comprising a roll 5 of a centre-folded film of plastic material, guiding means 4 suitable for straddling two webs of said centre-folded film and forming a recess capable of enclosing a product G to be packaged, pulling and conveying means 8, 6 suitable for advancing said film enclosing said product in a predetermined direction, bar means 71, 72 for sealing and severing, the bar means extending both in the transverse and in the longitudinal direction (i.e. the bar means being L-shaped), the bar means being pivotally movable, the bar means being suitable for performing transversal seals and a longitudinal

seal of said film and for separating the transverse seals, the bar means being operatively connected to actuator means 17 suitable for bringing and keeping them in contact with the film in order to perform a transversal and longitudinal seals, so that a closed bag enclosing the product is formed.

This document relates to the problem of adjusting the vertical position of the seal with respect to the height of the product to be packaged.

3.2 The further documents cited in the Search Report and in the description of the application also concern packaging apparatuses in which a tube is firstly formed from a film unwound from a roller, the products being fed into the tube, the tube being sealed in transverse direction to form closed packages.

3.3 The prior art referred to in the description of the application (page 1, line 7 to page 2, line 7) concerns a packaging method comprising the steps of loading the product to be packaged into a pre-formed bag having an open mouth, and sealing the open mouth of the bag enclosing the product. It has to be assumed that the standard equipment "such as the traditional sealing and clipping devices or a shrinking tunnel" referred in the decision under appeal (see section 3 on page 4) relate to this prior art.

4. *Novelty*

The subject-matter of independent Claim 1 is novel with respect to the available prior art.

5. *Problem and solution*

5.1 Document WO-A-93/01091 is considered as being the closest prior art. Document US-A-4 924 659 is less relevant in so far as it concerns an apparatus in which the height of the sealing mechanism can be adjusted according to the height of the product to be packaged and in which the film is advanced intermittently.

5.2 The subject-matter of Claim 1 differs from the closest prior art essentially in that

- (a) **the width of each product is detected by at least one sensor means so as to automatically adjust the distance between where the welds along the two transverse sides of the product are to be provided and, thus, the width of each bag,** such that said film webs of said continuously travelling film are sealed close to each product to be packaged along each of the two transverse sides of said product;
- (b) the transverse welds are produced **only while the front side remains open;**
- (c) sealing or clipping said open mouth close to the front side of said product.

The subject-matter of Claim 4 differs from this prior art in that

- (a') the apparatus comprises at least one sensor means (19) suitable for detecting the width of the product capable of emitting a first signal at the passage of a leading edge of the product and a second signal at the passage of a trailing edge thereof, said sensor means being operatively

connected to control means capable of operating said bar means to leave a constant distance between said edges of said product and said transverse seals;

(b') the apparatus is suitable for forming a **bag with an open mouth** enclosing the product.

5.3 According to the method disclosed in document WO-A-93/01091, each product to be packaged is fed into the recess formed by folding the film webs around the inverting heads by means of a flight chain lug conveyor 24 which registers the placement of the Article so that the transverse seals will occur in the proper position.

The apparatus according to this document is also suitable for packaging the Articles with a printed film, an electronic detector 18 being located on the film dispenser side to align the print on the film with the product to be packaged.

Document WO-A-93/01091 does not refer to the problem of adjusting the dimensions of the package in accordance with the dimensions of the products to be packaged. According to this method of packaging, the position of the transverse seals is predetermined in accordance with the position of the print on the web, which is detected by the electronic detector 18. It has to be understood that the apparatus known from this document is suitable for continuously packaging a series of Articles having the same dimensions (implicitly by the fact that the film can be printed). When the Articles of a different size have to be packaged, a resetting of the apparatus is required.

5.3.1 The distinguishing features (a) and (a') result in providing transverse seals which are closed to the edges of the products to be packaged even when the products fed into the recess formed between the webs have different widths.

The distinguishing features (b) and (b') make it possible to adjust the longitudinal seal in accordance with the length of each single product.

5.4 Thus, the problem to be solved is to provide a method and apparatus capable of automatically adjusting the size of the package in accordance with the size of the product to be packaged, i.e. to provide a method and apparatus in which any single resulting package may have a different width without requiring resetting of the apparatus.

The board is satisfied that this problem is solved by the combination of features specified in Claim 1 or in Claim 4.

6. *Inventive step*

6.1 Neither document US-A-4 924 659 nor any of the further documents cited in the Search Report discloses an automatic packaging apparatus or a packaging method in which the transverse seals are produced before the longitudinal seal has been produced so as to form a bag with an open mouth enclosing the product (see feature (b) or (b')).

Furthermore, it has to be noted that, in the embodiment according to WO-A-93/01091, due to the location of the gas nozzle 46 ending at a point slightly downstream

from the longitudinal seal section 28, it is impossible to locate the cross sealers upstream of the longitudinal sealer.

- 6.2 The prior art referred to in the above section 3.3 concerns packaging machines and methods in which pre-formed bags, i.e. of bags with an open mouth are used.

According to the description of the application, these methods lack flexibility not only because not all standard formats of the bags fit the size of the products to be packaged but also because the machines working with pre-formed bags require setting to the format of the bags which are used. Furthermore, the methods using pre-formed bags do not allow high packaging speed and are costly because of the storage of the bags (see description, page 1, line 21 to page 2, line 7). Therefore, a skilled person starting from a method in which the bags containing the product are automatically formed in the packaging machine, when concerned with the problem of adjusting the size of each package to that of the product without resetting the machine, would not turn to a conventional packaging method based on the use of pre-formed bags.

Therefore, it would not be obvious to introduce into the method according the closing prior art a step according to feature (b) or to modify the apparatus according to this prior art so as to make it suitable for forming a bag with an open mouth as defined by feature (b').

Thus, having regard to the available prior art, a skilled person would not be led towards the subject-

matter of Claims 1 and 4 by the available prior art.
The subject-matter of Claims 1 and 4 meets, therefore,
the requirements of Article 56 EPC.

7. Therefore, a patent can be granted on the basis of the independent Claims 1 and 4 and of dependent Claims 2, 3 and 5 to 17, which concern particular embodiments of the inventions defined in Claims 1 and 4.

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 patent on the basis of the following documents:

Claims: No. 1 as annexed to the communication of the board dispatched on 26 January 2001; No. 2, 3 and 5 to 17, as filed with the appellant's letter dated 18 July 2000; No. 4, as annexed to the communication of the board dispatched on 26 January 2001 but amended as agreed during the telephone call on 26 April 2001;

Description: pages 1 and 6 to 12 of document WO-A-96/31397;
page 2 of document WO-A-96/31397 but with the insertion (between lines 17 and 18) as annexed to the communication of

the board dispatched on 26 January 2001;
pages 3 to 5 filed with the letter dated
18 July 2000;

page 13 of document WO-A-96/31397 but
with the deletion of part of the last
sentence, from the term ", and
modification (lines 16 and 17) to the
term "of the invention" (line 18);

Drawings:

Sheets 1/3 to 3/3 (Figures 1 to 5) of
document WO-A-96/31397.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries