

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen

D E C I S I O N
of 15 September 1993

Case Number: T 0295/91 - 3.2.4

Application Number: 84303163.4

Publication Number: 0128668

IPC: A22C 13/02

Language of the proceedings: EN

Title of invention:
Process of forming an end closure

Patentee:
Devro, Inc.

Opponent:
Teepak, Inc.

Headword:
-

Relevant legal norms:
EPC Art. 56

Keyword:
"Inventive step: no"

Decisions cited:
-

Catchword:
-



Case Number: T 0295/91 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 15 September 1993

Appellant:
(Proprietor of the patent) Devro, Inc.
Loeser Avenue
PO BOX 858
Somerville
New Jersey 08870 (US)

Representative: MacDougall, Donald Carmichael
Cruikshank & Fairweather
19 Royal Exchange Square
Glasgow G1 3AE (GB)

Respondent:
(Opponent) Teepak, Inc.
Executive Plaza East, Suite 1100
1211 West 22nd Street
Oak Brook, Illinois 60521 (US)

Representative: Weber, Dieter, Dr.
Weber, Dieter, Dr.
Seiffert, Klaus, Dipl.-Phys.
Lieke, Winfried, Dr.,
Postfach 61 45
Gustav-Freytag-Straße 25
D- 65051 Wiesbaden (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office dispatched on 5 February
1991 revoking European patent No. 0 128 668
pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: C.A.J. Andries
Members: R.E. Gryc
M.V.E. Lewenton

Summary of Facts and Submissions

I. European Patent No. 0 128 668 comprising thirteen claims was granted to the Appellant on 19 August 1987 on the basis of the European patent application No. 84 303 163.4 claiming the priority date of 11 May 1983.

II. The patent was revoked by a decision of the Opposition Division reached at the oral proceedings of 17 January 1991 and sent by post on 5 February 1991. The ground for revocation was lack of inventive step in view of the following documents:

D1: US-A-3 162 893 and

D2: US-A-3 965 537.

III. The Appellant (Patentee) lodged an appeal by facsimile on 5 April 1991 and simultaneously paid the relevant fee. The Statement of Grounds and a new set of twelve claims comprising two independent claims (a process Claim 1 and a product Claim 7) were filed on 3 June 1991. Additional evidence hereafter referred to as document:

D4: Video tape "Devro Voice Over"

was filed with the Statement of the Grounds of Appeal.

IV. The two independent claims read as follows:

Claim 1:

"A process of forming an end closure for a stick (10) of shirred tubular food casing, the process comprising twisting the free end (14) of the casing characterised in that the twisting of the free end results in the

formation of an axially extended neck resembling that of a bottle which comprises two parts, a twisted conical end portion adjacent to the casing leading to a tightly twisted portion (16), and that only the tightly twisted portion (16) is heated and pressed simultaneously to form a seal."

Claim 7:

"A stick (10) of shirred edible casing having a closure formed in one end of the casing by twisting the end, characterised in that the twisted end extends axially and resembles a neck of a bottle and comprises two parts, a twisted conical end portion adjacent to the casing leading to a tightly twisted portion (16) and that only the tightly twisted portion (16) has been heated and pressed simultaneously to form a seal."

V. In his statement the Appellant contended mainly that:

- document D2 gives general comments which do not refer back specifically to Document D1,
- the heat seal shown in Document D2 burst under pressure when filled at high speed (see document D4) so that the skilled person would be put off the idea of heat sealing,
- even if the skilled person were to consider combining documents D1 and D2 there are many ways of combining them and he can arrive at the invention only through an ex post facto analysis.

In his reply the Respondent referred in particular to the following new document:

D5: GB-B-2 070 909

(the corresponding application GB-A-2 070 909 hereafter referred to as D'5 has been published on 16 September 1981) which indicates (see page 1, lines 41 to 51 of the application) that attempts had been made to close the end of a shirred casing by knotting and heat sealing the casing material.

VI. In a communication sent to the parties on 6 August 1993 the Board drew their attention to its provisional opinion that Claim 1 is limited neither to edible casings, nor to high speed stuffing processes, that document D1 appears to disclose the state of the art closest to the invention, and that document:

D3: US-A-3 780 488

seems to solve a problem similar to that according to the invention.

In reply, by a letter dated 20 August 1993 the Appellant filed a new document:

D6: EP-B1-0 129 100

which shows that when faced with the same problem at approximately the same point in time as the priority date of the disputed patent the skilled person (Respondent) just modified the twisted end closure without introduction of any form of fusing concept like in the invention.

VII. By a further letter dated 31 August 1993 the Appellant filed four auxiliary requests based respectively on the following Claims 1:

First auxiliary request:

"A process of forming an end closure for a stick (10) of shirred tubular food casing, the process comprising twisting the free end (14) of the casing to form an axially extended neck (16) resembling the neck of a bottle characterised by heating and pressing the neck (16) to form a seal."

Second auxiliary request:

"A process of forming an end closure for a stick (10) of shirred tubular edible food casing which restricts rupture during automatic stuffing, the process characterised by the combination of:

- a) twisting the free end of the casing until the twisted end normally has between 8 and 16 twists some of which form a conical end portion adjacent to the shirred casing leading to an axially extending neck (16) formed of relatively tightly configured twists; and
- b) using heated jaws applied to the formed neck (16) to simultaneously heat and press the neck (16) and construct a heat sealed portion of the neck."

Third auxiliary request:

"A process of forming an end closure for a stick (10) of shirred tubular edible food casing, the process characterised by the combination of:

- a) twisting the free end of the casing until the twisted end normally has between 8 and 16 twists some of which form a conical end portion adjacent to the shirred casing leading to an axially extending neck (16) formed of relatively tightly configured twists; and thereafter
- b) using heated jaws applied to the formed neck (16) to simultaneously heat and press the neck (16) so that a seal is formed and the resultant closure has a set which resists untwisting and has substantial physical integrity which restricts rupture during automatic stuffing."

Fourth auxiliary request:

"A process of forming an end closure for a stick (10) of shirred tubular sausage casing, the process characterised by the combination of the sequential steps of:

- a) twisting the free end of the casing until the twisted end normally has between 8 and 16 twists some of which form a conical end portion adjacent to the shirred casing leading to an axially-extending neck (16) formed of the remaining twists;
- b) using heated jaws to simultaneously heat and press the formed neck (16) and form a heat seal therein; and
- c) cutting or trimming the neck (16) to sever the residual free end from the heat sealed end closure so that after it is cut there are between 4 and 8 twists in the end seal, 2 of which are in the constructed heat sealed portion of the neck (16)."

VIII. Oral proceedings

Oral proceedings took place on 15 September 1993. The Appellant contended mainly:

- that the following expression in Claim 1 filed with letter of 3 June 1991: "a tightly twisted portion" should be read: "a more tightly twisted portion",
- that document D1 discloses the prior art closest to the invention,
- that the problem to be solved is to improve integrity of the seal known from document D1,
- that document D2 describes a particular heat sealed arrangement formed by joining together opposed internal surfaces and heat sealing across the full width of the casing (see column 2, lines 16 to 20),
- that although in column 1, line 46, document D2 refers to document D1, it also specifies at line 67 of column 1 that the known type of end closures used with

- cellulosic casings may not be suitable for use with collagen casings,
- that therefore to combine the teaching of document D2 with that of document D1 is not realistic,
 - that document D3 concerns a different type of article from the one in the invention i.e. a prefilled article the end of which is not twisted,
 - that document D6 shows that when faced with the same problem at virtually the same point in time as the priority date of the patent, the Respondent himself chose a solution completely different from the invention, and
 - that even with an *ex-post facto* analysis the skilled person would not arrive at the solution of the disputed patent.

The Respondent contested this argumentation and pointed out that documents D2 and D3 both also disclose general teachings and that in document D5 alone the skilled person would learn both twisting and heat sealing. The Appellant requested that he be allowed to show during the oral proceedings the video film (document D4) put forward by him.

The chairman stated that the Board had seen and accepted the facts shown on the video film but considered that there was no further necessity to see it again during the oral proceedings.

IX. Requests

The Appellant requested that the decision under appeal be set aside and the patent be maintained as a main request with the set of claims filed with letter of 3 June 1991 and as first, second, third and fourth subsidiary requests with the corresponding claims filed with letter dated 31 August 1993.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. *Admissibility*

The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC; it is admissible.

2. *Amendments (Article 123 EPC)*

The question whether there are any formal objections to the current versions of the European Patent according to the different requests need not be answered since these requests have to be rejected on other grounds anyway.

3. *Interpretation of independent Claims*

In the context of the description and in view of Figure 1C, the expression in the independent Claims: "a tightly twisted portion" should be interpreted as: "a more tightly twisted portion than the twisted conical end portion". The word "seal" in the expression "to form a seal" in the independent claims should be interpreted as designing a seal "for the purpose of the operation" which does not, according to the Appellant, permit the air enclosed in the casing to escape.

4. *Main request*

4.1 *Novelty (Article 54 EPC)*

After having examined all of the available prior art documents, the Board is satisfied that none of them discloses a process or a stick comprising in combination

all the features described in Claim 1 respectively Claim 7. Since this has never been disputed during the proceedings, there is no need for further detailed substantiation of this matter.

The subject-matter as set forth in Claim 1 and Claim 7 is thus to be considered as novel within the meaning of Article 54 EPC with respect to the prior art brought to the consideration of the Board.

4.2 The closest state of the art

4.2.1 In agreement with the parties, the Board considers that among all the citations opposed to the patent, D1 discloses the state of the art closest to the process claimed in Claim 1 or to the stick of Claim 7. In particular D1 describes a process of forming an end closure for a stick of shirred tubular food casing, the process comprising twisting the free end of the casing so that the twist results in the formation of an axially extended neck resembling that of a bottle which comprises two parts, namely a first part in the form of a twisted conical end portion adjacent to the casing and leading to a second part in the form of a tightly twisted portion forming a seal.

4.2.2 The subject-matter of Claim 1 respectively Claim 7 differs from this closest state of the art in particular by the fact that the tightly twisted portion and only the said portion is heated and pressed simultaneously to form the seal.

4.3 The problem and its solution

4.3.1 The technical problem to be solved as objectively determined when starting from this closest state of the art appears to reside in the improvement of the

construction of the twisted seal described in document D1 in order to provide sufficient physical integrity to it so that it resists untwisting (see the patent as granted, column 1, lines 41 to 45).

4.3.2 The Board is satisfied that the implementation of the measures cited in section 4.2.2 above in a process or a stick according to document D1 brings a solution to the above-mentioned problem.

4.4 Inventive step

4.4.1 Since a normal task of the person skilled in the art is, in particular, to recognise drawbacks of the existing means and to search for improvements capable of overcoming them, no contribution to the inventive step of the solution can possibly be seen in the perception of the problem as determined objectively above, particularly since the untwisting of the closure can be easily detected during stuffing.

4.4.2 The person qualified to solve a problem is considered to be the specialist of the particular technical field, in which the particular problem prompts a skilled person to seek a solution and not merely the person concerned by a possible application of the invention. In the present case, this problem undeniably confronts the automated food stuffing specialist and in particular the sausage product manufacturer.

However, to stabilize a twist is not a problem specific to the manufacture of sausages and the skilled person is admittedly expected also to consult neighbouring fields and the state of the art in a more general field dealing with the solution of a general problem which the invention seeks to solve, such as the field of packaging a product into a tubular plastic casing.

Therefore, the assessment of whether the problem's solution involves an inventive step must be made by reference not only to a sausage product manufacturer, but also to the knowledge and ability of a packaging specialist,

- 4.4.3 When confronted with the problem of avoiding untwisting of the end of the tubular plastic casing i.e. the problem of stabilizing the twist, the packaging specialist would normally review all the usual means for holding an already existing constriction and the question to be answered remains thus whether the prior art seen in the light of his general common knowledge would provide the person skilled in the art starting from a twisted end closure according to document D1 with enough information and hints to lead him to the solution proposed in Claim 1, or Claim 7.

From Document D3, the skilled person learns that in the field of film packages of the type gathered at an end portion, encircling bands or clips or heat sealing in the clip region have already been used even if found unsatisfactory to achieve a hermetically tight closure (see document D3, column 1, lines 5 to 43).

From page 1, lines 41 to 51 of Document D'5, the skilled person learns additionally other known techniques such as compressing twisted cords and plugs, using adhesives, or knotting and heat sealing the casing material.

- 4.4.4 Heat sealing being one of the few means commonly used for manufacturing end closures of tubular plastic casings, the solution given in Claim 1 appears as the result of a selection among a limited number of known techniques some requiring the use of additional fixing means (i.e. links, encircling bands, clips or glue), others requiring only particular process steps (i.e.

axial compression or fusion of the plastic material) without additional means.

The act of selecting the most appropriate and economic method from a limited number of techniques known to be suitable for a certain purpose forms part of the normal activities of the man skilled in the art, who, moreover, is naturally inclined to choose techniques requiring the less additional means and to prefer the simplest of these techniques.

Apart from the fact that it is common knowledge for a person skilled in the art to use together two different closing techniques, one in addition to another, when it is found that the result obtained with the first one is not sufficient, such a general knowledge is also already known in the same technical field (see "knotting **and** heat sealing" according to the prior art cited in Document D'5 and "gathering or tying **and** application of a fusing energy" according to the prior art cited in Document D3).

Therefore, once it was clear that twisting alone according to Document D1 was not sufficient, it cannot be considered to be inventive either to try to use another known closing technique or to add to the method known from Document D1 an additional step which could prevent the complete untwisting of the existing twisted closure, such additional step being the application of pressure and heat in that part of the twisted area which should remain untwisted.

- 4.4.5 Furthermore it is common knowledge that the plies of a plastic film would be better welded together when fused under pressure and also the skilled person would learn from column 1, lines 17 to 22 of Document D1, that in order to prevent bursting there should be a certain

degree of resiliency in the twisted end i.e. the twist should not be rigidified along all its length in order to be able to provide a certain amount of "give".

Therefore, an inventive step can hardly be seen in the act of pressing simultaneously when heating and in the act of fusing only the most tightly twisted portion of the end closure.

- 4.4.6 The Appellant submitted that the skilled person starting from an end closure according to Document D1 would be put off the idea of heat sealing it by the fact that the heat sealed end closures described in Document D2 burst under pressure (see Document D4).

The Board cannot follow this submission because the initial impact of the product injected into the casing according to Document D1 is already absorbed by the resiliency of the twist which is known to prevent bursting of the casing (see column 1, lines 17 to 22). Furthermore, in the present case, the skilled person does not intend to form the closure itself by heat sealing as in Document D2 but uses heat sealing just to enable the end portion to resist untwisting. For this reason the Board saw no necessity to show the video film (document 4) during the oral proceedings.

- 4.4.7 The Board is also of the opinion that the prejudice against heat sealing expressed in Document D3 (see column 1, lines 39 to 43) would not prevent the skilled person from applying this technique on the end closure of document D1 because the aim of the process according to the disputed patent is not to seal the twisted end hermetically as researched in document D3 but to provide an already existing seal with a substantial integrity (see column 1, lines 35 to 45 of the European patent).

4.5 The aforementioned reasons together with the fact that no functional interrelationship or synergistic effect results from the addition of the features of Claim 1 lead the Board to the conclusion that its subject-matter follows plainly and logically from the common prior art closing techniques and does not fulfil the conditions of Article 52 EPC as far as inventive step is concerned.

5. *Subsidiary requests*

5.1 The scope of Claim 1 of the first subsidiary request being more general than that of Claim of the main request, the reasons given above for refusing the claim remain valid.

5.2 Claims 1 corresponding to the second and third auxiliary requests differ from Claim 1 of the main request only by added details about the nature of the casing, the number of twists and the heating means. These features clarify the content of the claim but a combination of these features with the subject-matter of Claim 1 of the main request provides no additional effect and does not add anything with respect to inventive step.

5.3 The same objection remains valid concerning the process step of cutting or trimming the neck present in Claim 1 of the fourth auxiliary request. This additional process-step does not contribute anything to the solution of the above defined problem to be solved. Furthermore such a process-step used to discard excess casing material as well as its obtained advantages is already commonly known as it can be seen in Document D2 (see column 2, lines 43 to 45 and column 3, lines 47 to 52).

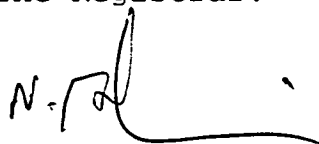
5.4 The subject-matter of all Claims 1 of the four subsidiary requests therefore cannot be considered to involve an inventive step within the meaning of Article 56 EPC, so that these Claims 1 cannot form a basis for the maintenance of the patent.

Order

For these reasons, it is decided that:

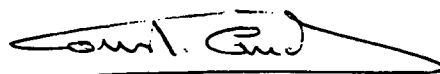
The appeal is dismissed.

The Registrar:



N. Maslin

The Chairman:



C. Andries

AG.