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Bezeichnung der Erfindung:
Title of invention:
Titre de l'invention : Heat sealable polypropylene film and method for its production

Klassifikation / Classification / Classement : C 08 J 7/04

ENTSCHEIDUNG / DECISION

vom / of / du 31 October 1986

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent / Titulaire du brevet : British Cellophane Ltd. (respondent)

Einsprechender / Opponent / Opposant : Kalle AG (appellant)

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Art. 52(1) and 56 EPC

Kennwort / Keyword / Mot clé: "Inventive step - Replacement of a component"

Leitsatz / Headnote / Sommaire

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Case Number : T 254 /84

D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 31 October 1986

Appellant : (Opponent)
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Decision under appeal :
Decision of Opposition Division of the European Patent Office dated 18 July 1984 rejecting the opposition filed against European patent No. 8904 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : P. Lançon
Member : G. Szabo
Member : C. Payraudeau

Summary of Facts and Submissions

I. European patent No. 8904 was granted on 27 October 1986 with 10 claims in response to the European patent application No. 79 301 701.3 filed on 20 August 1979 claiming the priority of the earlier application (GB-3 584 678) of 6 September 1978. Claim 1 was worded as follows:

"A heat-sealable oriented polypropylene film comprising a base film of oriented polypropylene having on one surface a layer of a random propylene/ethylene copolymer in which the ethylene content lies in the range between 2% and 6% by weight and on the other surface a predominantly linear random copolymer of ethylene and between 6% and 40% by weight of the random copolymer of at least one further alpha olefin having at least three carbon atoms per molecule".

II. The Opponent filed opposition against the European patent on 27 July 1983 requesting that it be revoked on grounds of non-patentability for lack of inventive step. The opposition was supported by:

(1) DE-A-1 694 694
(2) FR-A-2 079 206 and
(3) GB-A-1 440 317

III. The Opposition Division rejected the opposition in a decision of 18 July 1984. The reason for the rejection was that notwithstanding the disclosure of a structure B-X-B in (3), wherein B is a layer of a linear random ethylene/alpha-olefin copolymer and X is a base film of oriented polypropylene, and of A-X-A in (1), wherein A is a layer of random propylene/ethylene copolymer, the novel combination A-X-B showed unexpected advantages in the

elimination of slippage in high speed packaging machines and provided a good heat sealing performance. There was no reference to slippage in (1) and no hint which would have induced the skilled person to replace a layer of B with that of A in (3). This was not the case of substituting a known component with another for its known properties. For the first time different layers were used on both sides of the polypropylene film.

IV. The Opponent filed an appeal with the payment of the fee on 2 November 1984 and submitted a Statement of Grounds on 3 January 1985. The Respondent (Patentee) filed his reply on 3 May 1985.

V. The Appellant argued that all components of the claimed combination were known. The problem of providing good running properties and heat sealing was merely solved by using the best material for the purpose, and the result was expected. Document (1) even disclosed the low coefficient of friction for the material in question which indicated its suitability for high speed machines. The modification is an "analogous substitution" in the sense of the decision in the "Moulding composition/BAYER" case (T 192/82, OJ 9/1984, 415).

VI. The Respondent emphasized that the composition was the first of its kind. It had taken a considerable time and effort to solve the problems associated with the state of the art. Document (2), which disclosed the two layer composition A-X, had not revealed either the favourable non-slip properties of component A. The friction coefficients at ambient temperatures had no relevance to the relevant properties at high temperatures of use.

VII. The Appellant requests that the impugned decision be set aside and the patent be revoked. The Respondent requests that the appeal be rejected or alternatively the patent be maintained in a restricted form with a main claim submitted in the letter dated 1 May 1985, received on 3 May 1985 (pages 11 and 12).

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. There can be no formal objection to the current version of the claims in the main request, since it is adequately supported by the disclosure and claims as originally filed.

3. The subject-matter of the claims relate to layered heat-sealable polypropylene films. The closest state of the art is represented by document (3) which describes compositions comprising three layers having the B-X-B structure. Such films provide adequate heat-seals at temperatures around 140°C at high speeds, but they tend to slip excessively when passing through various rollers causing unacceptable variations in the length of bags produced therefrom (cf. EP-8904, col. 3, lines 8-16). Given this state of the art, the technical problem was to eliminate the undesirable slippage but nevertheless maintain the heat-sealing properties of the composition. The solution of this problem comprises the suggested A-X-B structure, replacing thereby one of the B-type of layers of the cited art with an A-type layer on the surface of the film.

4. The layered film according to the patent was compared with that according to the state of the art described in (3) (cf. example in the patent-in-suit, in particular col. 5, lines 15-29, and 46-60). The same heat-seal strength (450g/38mm) could be maintained at the same speed (46m/min) in both instances. However, when the variations of pack length were compared at a speed of 37m/min, the B-X-B structure according to (3) showed a variation of 7mm over an average pack length of only 240mm, whilst the A-X-B structure according to the patent-in-suit varied only 2mm at a higher average pack length of 258mm. The results suggest that the technical problem was successfully solved by the claimed composition.

Since none of the documents cited in the proceedings before the EPO revealed the A-X-B structure as such, the subject-matter of the claims is undisputedly novel.

5. As regards the inventive step, document (1), being in the same narrow field of packaging technology and using the same film as a base, was available to the skilled person in addition to the closest art represented by (3). The former also related to polypropylene films with three component layers and was stated to be suitable for heat-sealing. When used in the suggested manner, as the comparative tests in the patent showed, (col. 5, lines 30-45), no adequate heat-seals were obtained with such A-X-A composition at speeds above 22m/min although the pack lengths still varied within acceptable limits under those conditions. There was therefore no sufficient reason for assuming that a high speed packing technique could be based on an outer layer of the A-type, let alone the elimination of slippage at that speed. In fact there was nothing in that document, or in (2) describing the A-X composition, which suggested expressly or by implication that undue slippage would be

eliminated or reduced when A-type material appears on the surface. If anything, the prior art confirmed the impression that only one type of cover layer was to be used on the surface of the polypropylene base.

6. The Appellant's argument that the proper comparison should have been with polypropylene films having a heat-seal layer on one side only, i.e. B-X, cannot be accepted. Any comparison with embodiments of the closest state of the art should be carried out with those which show "... the closest possible structural approximation - in a comparable type of use - to the subject-matter of the invention" ("Spiro compounds/CIBA-GEIGY, T 181/82, OJ 9/1984, 401), B-X is only a notional construct without a specific example in the state of the art and cannot quality in the circumstances for the purpose.

7. Contrary to the submission from the Appellant, the Board takes the view that the replacement of a layer of the B-type in (3) with a layer of the A-type is not an "analogous substitution" in the sense of the cited decision. Layers of the B-type were introduced to the composition to reduce the heat seal temperatures in order to avoid distortions (cf. EP-8904, col. 1, lines 21-28 and 35-42). It is true that the A-type has similar properties in this respect (cf. Ibid, lines 29-35) but has been unsatisfactory from the point of view of sealing at higher speeds (cf. Ibid, col. 2, lines 47-59). Thus there is no question of replacing something with alternative means of a known, equivalent or improved performance. If anything the introduction of a layer of A-type promised a worsening of the situation without suggesting the improvement with regard to the elimination of slippage.

8. The Appellants argued that (3) had disclosed that whenever the olefin content exceeded 12 mole %, the material became "tacky" and difficult to handle, and that this did not only reveal the problem with slippage but would have led the skilled person to the claimed solution. As explained above, the experience with slippage was revealed in consequence of the use of films according to (3) and recognized by the present Patentees as part of the state of the art. In any case, the same document did not in any way point to (1) as a possible source for a modification, which could resolve the slippage problem. As to the reference to low coefficients of friction in (2), in relation to a composition of the type A-X, this information relates to ambient temperatures. Again, it is not understood why this should be useful in predicting the non-slip properties of the layer at the 100 to 140°C temperatures of heat-sealing, when, if anything, "hot-grip" properties are required and not a low coefficient of friction.

9. In view of the discouraging problems associated with the outer components, the advantageous performance of the composition was not predictable. That only the positive contributions of the parts would dominate the results and the negative aspects could disappear, was unexpected. The Opponents have submitted no evidence which challenged the facts on which the invention relies. The subject-matter of the main claim is therefore based on an inventive step and the same applies to related method claims for the preparation of polypropylene films.

Order

For this reason it is decided that:
The appeal is dismissed.

The Registrar

The Chairman

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