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**Datasheet for the decision
of 11 November 2007**

Case Number: T 1397/04 - 3.3.09

Application Number: 95301646.6

Publication Number: 0732061

IPC: A23G 3/30

Language of the proceedings: EN

Title of invention:

Continuous gum base manufacturing using a mixing restriction element

Patentee:

WM. WRIGLEY JR. COMPANY

Opponent:

Pfizer Inc.

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Main request - novelty, no"

"Auxiliary request - novelty, yes - inventive step, yes"

"Late filed documents - admissibility, no"

Decisions cited:

-

Catchword:

-



Case Number: T 1397/04 - 3.3.09

DECISION
of the Technical Board of Appeal 3.3.09
of 11 November 2007

Appellant 1:
(Patent Proprietor)

WM. WRIGLEY JR. COMPANY
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Appellant 2:
(Opponent)

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Representative:

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Decision under appeal:

Interlocutory decision of the Opposition
Division of the European Patent Office posted
18 October 2004 concerning maintenance of
European patent No. 0732061 in amended form.

Composition of the Board:

Chairman: P. Kitzmantel
Members: N. Perakis
W. Sekretaruk

Summary of Facts and Submissions

I. Mention of the grant of European patent No 0 732 061 in respect of European patent application No 95301646.6 in the name of WM. WRIGLEY JR. COMPANY, which had been filed on 13 March 1995, was announced on 29 December 1999 (Bulletin 1999/52). The patent, entitled "Continuous gum base manufacturing using a mixing restriction element", was granted with fifteen claims. The sole independent process Claim 1 reads as follows:

"1. A single continuous process for producing a chewing gum base comprising the steps of:

a) continuously adding one or more elastomers, fillers and plasticisers into a processing section of a continuous mixer;

b) subjecting the elastomer, filler and plasticizer to a highly distributive mixing operation in the mixer;

c) passing the highly distributively mixed elastomer, filler and plasticizer through at least one mixing restriction element after said highly distributive mixing operation; and

d) continuously discharging the resulting chewing gum base from the mixer while steps a), b) and c) are in progress;

at least one mixing restriction element being located intermediate the highly distributive mixing and the said discharge of the gum base."

Claims 2 to 15 were dependent, directly or indirectly, on Claim 1.

II. A Notice of Opposition was filed against the patent by Pfizer Inc. on 29 September 2000. The Opponent requested the revocation of the patent in its full scope on the grounds that the subject-matter of the claims lacked novelty and inventive step (Article 100(a) EPC).

The Opposition was *inter alia* supported by the following documents:

D1 : FR-A-2 635 441

D1A: English translation of D1

[The Board in this decision will exclusively refer to D1A because the accuracy of the translation has not been objected to and because this has been the version used by the parties throughout the appeal proceedings]

D4 : Declaration of Michael Starer dated 29 April 1997 accompanied by Exhibits D4A to D4K

D5 : First Declaration of Edward Beecher dated 29 April 1997 accompanied by Exhibits D5A and D5B

D6 : US-A-4 187 320

D7 : US-A-5 045 325

D8 : US-A-5 158 725

The Opponent contested the novelty of the subject-matter of Claim 1 on the one hand on the basis of the disclosure of document D1A and on the other hand on the basis of alleged public prior uses evidenced by documents D4, D5 and the Exhibits accompanying them. It also contested inventive step in view of the combination of either of D6 or D7, considered as the closest prior art, with D8 respectively.

With its letter dated 3 September 2002 the Opponent filed the following document:

D5C: Second Declaration of Edward Beecher dated 24 July 2002

III. With its letter dated 28 May 2004 the Patent Proprietor filed as an Auxiliary Request an amended set of 14 claims and an adapted description. The sole independent process Claim 1 reads as follows:

"1. A single continuous process for producing a chewing gum base comprising the steps of:

a) continuously adding one or more elastomers, fillers and plasticisers into a processing section of a continuous mixer;

b) subjecting the elastomer, filler and plasticizer to a highly distributive mixing operation in the mixer;

c) passing the highly distributively mixed elastomer, filler and plasticizer through at least one mixing restriction element after said highly distributive mixing operation; and

d) continuously discharging the resulting chewing gum base from the mixer while steps a), b) and c) are in progress;

at least one mixing restriction element being located intermediate the highly distributive mixing and the said discharge of the gum base; and wherein elastomers are continuously added into the continuous mixer at a first combined feed rate; and plasticizers are continuously added into the continuous mixer at a second combined feed rate which is at least equal to the first combined feed rate."

Claims 2 to 14 were dependent, directly or indirectly, on Claim 1.

IV. By its interlocutory decision orally announced on 28 July 2004 and issued in writing on 18 October 2004 the Opposition Division held that account having been taken of the amendments made by the Patent Proprietor during the opposition proceedings, the patent and the invention to which it related met the requirements of the EPC.

With regard to the Main Request, *ie* the granted claims, the Opposition Division held that the subject-matter of Claim 1 lacked novelty over the disclosure of document D1A. In particular it considered that D1A disclosed a continuous process carried out in a twin-screw extruder, as in the claimed process, for producing a chewing gum pre-blend having a composition which could not be distinguished from the gum base of the patent in suit and which process also comprised, as in the claimed process, subjecting the gum ingredients to a highly distributive mixing, passing the obtained mixture through at least one mixing-restriction element, the latter being located between the highly distributive mixing and the discharge of the gum from the extruder. It thus concluded that D1 anticipated the subject-matter of Claim 1 of the Main Request.

With regard to the Auxiliary Request it considered that the subject-matter of its Claim 1 was novel over the alleged prior uses and that it involved an inventive step over the documents filed in support of the opposition and their combinations.

As far as the alleged public prior uses were concerned, it considered that:

- the leasing, sales and setting up of the twin-screw extruder from Werner & Pfleiderer Corporation (called "W&P" in this decision) to Leaf Incorporated (called "Leaf" in this decision) were subject to a tacit secrecy agreement, and
- the alleged oral disclosures of the design and operation of that extruder for the production of chewing gum base were not sufficiently substantiated.

In respect of the issue of inventive step the Opposition Division considered that the skilled person starting from D1, considered as representing the closest prior art, and seeking to provide an alternative process for the manufacture of a gum base having the ingredients and the consistency mentioned in the claimed subject-matter would not combine the teaching of D1 with the disclosure of either D6 or D7.

- V. On 6 December 2004 the Patent Proprietor (Appellant 1) filed an appeal against the decision of the Opposition Division rejecting the Main Request and paid the appeal fee on the same day.

In the Statement setting out the Grounds of Appeal filed on 18 February 2005 Appellant 1 requested that the impugned decision be set aside, the novelty of the subject-matter of Claim 1 of the Main Request be acknowledged and the case be remitted to the Opposition Division for consideration of inventive step. Appellant 1 denied that D1A disclosed a chewing gum base, an initial highly distributive mixing operation

or even that any such operation was followed by passing the mixture through a mixing restriction element.

VI. On 20 December 2004 the Opponent (Appellant 2) filed an appeal against the decision of the Opposition Division requesting reversal of the interlocutory decision and the full revocation of the patent. It paid the appeal fee on the same day.

In the Statement setting out the Grounds of Appeal filed on 28 February 2005 Appellant 2 maintained the novelty objection raised before the Opposition Division against the subject-matter of Claim 1 of the auxiliary request on the basis of the alleged public prior uses. It also argued that the subject-matter of that request lacked an inventive step over the combination of D1A with D6, that of D8 with D6, or that of D6 with either D1A or D8. Finally it filed new documents D12 to D18 and raised further objections of lack of inventive step based on those documents.

VII. With its letter dated 12 July 2005 Appellant 1 filed observations with regard to the appeal of the Opponent. It requested that:

- the Opponent's appeal be dismissed,
- the case be remitted to the Opposition Division if the alleged prior uses were considered by the Board to be public, in order to allow a proper consideration of novelty and inventive step, and
- the late-filed documents D12 to D18 be not admitted into the proceedings.

- VIII. With its letter dated 18 July 2005 Appellant 2 filed observations with regard to the appeal of the Patent Proprietor and requested that this appeal be dismissed. Concerning the patentability of the subject-matter of the Main Request it argued that it not only lacked novelty over the disclosure of D1A and the alleged public prior uses but that it also lacked an inventive step over the obvious combination of document D8, considered to represent the closest prior art, with either D6 or D7.
- IX. With its letter dated 10 September 2007 the new representative of Appellant 2 reiterated the request for full revocation of the patent and submitted further arguments with regard to the issues of lack of novelty in view of the alleged public prior uses, admissibility of the late-filed documents D12 to D18 and lack of inventive step.
- X. At the oral proceedings held before the Board on 11 October 2007 Appellant 1 submitted an amended description page 3.
- XI. The written and oral submissions made by Appellant 1 (Patent Proprietor), insofar as they are relevant to the present decision, can be summarized as follows:

Main Request: Novelty over D1A

- The subject-matter of Claim 1 of the Main Request was novel over D1A.
- Firstly, D1A disclosed a gum base concentrate which was different from the claimed gum base because it was not the final product but the core for the manufacture of a large variety of gum bases.

- Anyway, the skilled person would distinguish between the final gum base and a gum base concentrate being an intermediate product not yet final.
- Secondly, D1A did not disclose highly distributive mixing.
- The patent in suit disclosed three types of means which produced highly distributive mixing (paragraphs [0034] and [0035]); none of these were disclosed in D1A.
- D1A disclosed mixing elements with high shearing (HM), which produced dispersive mixing and led to cutting up of the elastomer.
- The counter-current mixing elements (CM) of D1A, which corresponded to the reverse conveyance elements of the patent and functioned as mixing-restriction elements to provide back pressure, were not modified and, thus, did not provide highly distributive mixing (patent: paragraph [35]).
- In fact, D1A did not deal with distributive mixing since it concerned only the manufacturing process of the premix (gum base concentrate) and not the manufacture of a gum base which would require an additional process step. Therefore, there was no basis for the assumption that highly distributive mixing was implicitly disclosed since there was no reason to carry out such a mixing step.
- Furthermore, dispersive mixing could not be considered to comprise distributive mixing, as the skilled person would attribute different characteristics to these mixing types.
- Distributive mixing was a concept already known in the art; it was not invented by Appellant 1. It was applied in the patent in suit (paragraph [42]) in

order to stabilize the mixture and avoid loss of water (sweating).

- The shear mixing elements were different from the kneading elements (figure 2 versus figure 4 of the patent) and did not produce distributive mixing.
- Although D1A disclosed that improvement of homogeneity was sought, this did not mean that the mixture obtained was homogeneous.

Both Requests: Novelty over the alleged prior uses

- An alleged public prior use related to the public operation of a continuous twin-screw extrusion machine for the continuous manufacture of chewing gum base.
- The leasing and sales of that machine by its manufacturer Werner & Pfleiderer Corporation to Leaf Incorporated did not render its operation publicly available because both firms were bound by confidentiality as the result of their commercial relationship. Following normal commercial practice Leaf would have treated the extrusion apparatus installed and used on its own commercial property as a trade secret.
- This explained why Leaf did not publicize the manufacturing process of the chewing gum base using the W&P extruder and why no declarations had been submitted originating from Leaf's staff.
- This was also supported by the evidence submitted by Appellant 2, which indicated that it was a general rule within W&P to adapt the construction of the extruder to the customer's specific needs.
- That was the reason why Beecher, the process engineer of W&P, went to Leaf's premises and

arranged the screw elements according to Leaf's needs.

- Thus Leaf, like W&P, contributed to the design and set up of the extruder, and had an interest in preventing W&P from disclosing the apparatus without its agreement.
- Appellant 2 had not provided the "terms and conditions" of the leasing and sales of such a large piece of equipment as the W&P extruder. Such a document might contain the terms of a secrecy agreement.
- It was not clear that the extrusion apparatus used by Leaf contained the same screw elements in the same configuration as the claimed apparatus. There were inconsistencies concerning the extruder arrangement in the various pieces of evidence filed. It could not be concluded clearly and unambiguously that this evidence exhibited a highly distributive mixing.
- Not only did Appellant 2 not provide any proof originating from Leaf but it also did not request the hearing of Starer and Beecher as witnesses as indicated by Appellant 1.
- The documents on which Appellant 2 relied (Exhibits of D4 and D5) had blackened passages and were thus incomplete. It was not appropriate to rely on such documents, of which only Appellant 2 knew the complete contents.
- A further alleged public prior use was based on the oral disclosures of Starer and Beecher to other chewing base gum manufacturers. However, these were not substantiated, as no information was filed in respect of the "what", the "when" and the

"circumstances" under which these disclosures had taken place.

- No independent corroborating evidence was submitted by witnesses from those manufacturers in support of the alleged facts.
- The amounts of the ingredients used for the manufacture of the gum base, which corresponded to the additional feature of Claim 1 of the Auxiliary Request, was know-how which belonged to Leaf and which W&P had no right to disclose, even if it knew it.
- There was no evidence that Beecher, who was not a gum base expert but a process engineer, had advised Leaf on the chewing gum formulation. Thus, the part of his second declaration (D5C), relating to Leaf's chewing gum base composition, must have been based on hearsay.
- The statement in D5C relating to the process steps disclosed by Beecher to others lacked credibility because the statements essentially copied the language of Claim 1 of the patent in suit. It was not believable that the declarant's actual recollection of events accorded precisely with the language used in Claim 1, filed three years later.
- As all evidence in support of the alleged public prior use lay within the power and knowledge of Appellant 2, and Appellant 1 had no access to it at all, the Board should not apply the principle of balance of probabilities but the more rigorous standard of "beyond all reasonable doubt".

Auxiliary Request: Inventive step

- The late-filed documents D12 to D18 should not be admitted in the proceedings. Although they were filed for consideration of inventive step of the Auxiliary Request, no reason was provided as to why they could not have been filed earlier.
- D1A was not considered as the closest prior art because it disclosed the preparation of a hard concentrate. This resulted from the fact that the elastomer content was always higher than the content of the plasticizer (D1A, page 9, lines 12-16).
- D8 could not be considered as the closest prior art because it did not relate to chewing gums but to compositions used in tires. These compositions comprised carbon black, which coloured the tire, non-conventional elastomers, crosslinking agents, non-consumable antioxidants and petroleum based oils. Since D8 related to the processing of entirely different compositions, the skilled person would not have considered it to be of any relevance.
- The skilled person also would not have considered D8, having regard to its IPC classification.
- D6 was the closest prior art as it disclosed a two-stage batch process for preparing a chewing gum base. The feed rates of elastomer and plasticizer, which could be calculated from the respective content of these ingredients in the base gum, fell within the claimed feed rates. However, there was nothing in D6 to indicate that these compositions could be used in a continuously operating extruder where completely different processing conditions applied.
- The technical problem in view of D6 was to come up with a proper continuous process.

- The skilled person starting from D6 would not have combined its teaching with either D1A or D8. He would not have used D1A because it disclosed only high elastomer content gums, ie hard gums. He would not have used D8 because it disclosed tire rubbers. Furthermore, there was no expectation of success from such a combination of these documents because the extruders of either D1A or D8 did not involve a highly distributive mixing. Additionally, the short residence time (1 minute and 30 seconds) of the gum constituents in the twin-screw extruder following D1A would not be sufficient for such a mixing. In fact the use of such a short residence time was foreseen in D1A in order to avoid leaking of the oil out of the gum.
- A secondary consideration in favour of the presence of an inventive step was that it was not technically easy to realize a continuous process starting from D6.

XII. The written and oral submissions made by Appellant 2 (Opponent), insofar as they are relevant to the present decision, can be summarized as follows:

Main Request: Novelty over D1A

- The subject-matter of Claim 1 of the Main Request lacked novelty over D1A.
- D1A disclosed a gum base concentrate which comprised the same ingredients as the gum base of the claimed subject-matter. There was no functional difference between the disclosed gum concentrate and the claimed gum base. The content of elastomer in the gum base composition according to the patent in suit (paragraph [12], lines 51; paragraph [14], table)

encompassed that disclosed in D1A (page 9, lines 12 and 20).

- There was no clear distinction between the claimed highly distributive mixing and the disclosed highly dispersive mixing. The structural elements of the mixing apparatus of D1A unavoidably produced distributive mixing, even if one argued that the disclosed mixing elements related rather to dispersive than distributive mixing.
- Figures 6a to 6c of the patent in suit showed that, when highly dispersive mixing was performed, highly distributive mixing occurred.
- Though in general highly dispersive mixing occurred at mixing under high shear/high force in an aggressive process and highly distributive mixing occurred at lower shear/lower force, there was no mutual exclusion between high and low shear in a mixing process.
- The description (paragraph [0041]) further disclosed that "(a)n adequate dispersive mixing will produce a smooth, rubbery fluid" which was construed to mean that all ingredients were mixed with one another, necessarily leading to a certain degree of distributive mixing.
- The claimed subject-matter was not so defined as to relate to distributive mixing obtained as the result of the use of specific elements of the mixing apparatus.
- Anyway, the list of such specific elements in the patent in suit was not exhaustive.
- D1A implicitly disclosed that the twin-screw elements performed distributive mixing, by disclosing that they improved the distribution in

the finished product (page 5, lines 24-29), and that they improved the homogeneity of the finished product (page 7, line 12-18).

- This was in agreement with the patent in suit which disclosed in the definition of the highly distributive mixing that it formed a substantially homogeneous chewing gum base blend (paragraph [0017]).

Both Requests: Novelty over the alleged prior uses

- The only available evidence consisted of the declarations of Starer and Beecher, ie D4, D5 and D5C.
- The content of these declarations was to be considered true because of the grave consequences imposed by American Law for untrue declarations.
- Moreover, Beecher was the process engineer who set up the Leaf extruder at the Leaf premises and had thus all the relevant information at his disposal.
- There were clear indications that no secrecy agreement, not even a tacit one, had existed between Leaf and W&P. Beecher confirmed that he had felt free to tell others about the machine, the screw elements and the mixing process and that Leaf was also entirely free to publicize the extrusion process.
- Third parties were able to freely take notice of the process run on the Leaf extruder.
- Starer and Beecher used the sales to Leaf as a selling point to other chewing gum base manufacturers.

- Evidence directly from Leaf was unnecessary as the Starer and Beecher declarations disclosed the twin-screw extruder and its operation to the public.
- There was no evidence available for the "what" and the "when" of the disclosures made by Starer and Beecher to the public.
- Beecher (D5C, paragraph 18) was aware of the chewing gum base formulation used at Leaf. It had an elastomer content of about 11% and a paraffin wax and emulsifier content of about 17%.

Auxiliary Request: Inventive step

- D1A should be considered to represent the closest prior art.
- It did not disclose the feed rates of the elastomer and the plasticizer. However, this was a trivial change with no genuine significance.
- The technical problem to be solved by the claimed invention was the provision of an alternative process for the preparation of a soft gum (bubblegum). The solution was achieved by modifying the feed rate of the gum ingredients (elastomer and plasticizer) so that the plasticizer content was at least equal to the content of the elastomer. However, this solution was obvious over D1A which disclosed an elastomer content of 30% and a plasticizer content of 20%. The skilled person searching for a softer gum base would have no difficulties in reducing the 30% elastomer content by about 10% and arriving at a content equal to or lower than that of the plasticizer.
- Such a soft gum base was, anyway, already disclosed in D6. However, this document did not represent the

closest prior art because it only disclosed the general technical knowledge concerning the increase of the plasticizer content in the gum product manufactured following a batch-wise process.

- But even if D6 was considered to represent the closest prior art, the skilled person pushed by the increased demand for soft gums and based on economic considerations (need for cheaper, quicker, more efficient process) would have considered the continuous extruder of D1A suitable to replace the kettle of D6 for the preparation of soft gums.
- The short residence time of the mixture in the extruder of D1A should not be considered as a technical prejudice because it was not a feature of the claimed subject-matter.
- Beside D1A, D8 could alternatively be considered to represent the closest prior art. This document concerned elastomers in general and not exclusively elastomers for tires. The nature of the elastomers was not limited by the Applicant's best known industrial activity (*ie* as tire manufacturer).
- The disclosure of D8 did not attach particular importance to the amount of plasticizer. The examples, which were preferred embodiments, did not limit the scope of the disclosure to tire elastomers. The disclosure of carbon black and zinc dioxide was not limited to tire production as they were known food additives. Furthermore, D8 had the same IPC class as the patent in suit.
- The only difference as regards D8 concerned the feed rates of the elastomer and the plasticizer. This was, however, a trivial change with no genuine significance.

- The technical problem having regard to D8 was to provide a new application of the known process, *ie* to prepare soft gum bases.
- The solution was obvious on the basis of general technical knowledge or D6, which disclosed the preparation of soft gum base formulations.

XIII. Appellant 1 (Patent Proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted or on the basis of the following documents:

Claims:

1-14 filed with letter dated 28 May 2004

Description pages:

2, 5-9 as granted

4 filed on 28 July 2004

3 filed on 11 October 2007

Drawings:

1/3-3/3 as granted

XIV. Appellant 2 (Opponent) requested that the decision under appeal be set aside and the European patent be revoked.

Reasons for the Decision

1. The appeals are admissible.
2. The late-filed documents

The Board considers that the late-filed documents D12 to D18 submitted by Appellant 2 with its Statement setting out the Grounds of Appeal are not *prima facie*

more relevant than the documents already in the file and they are therefore not admitted in the procedure.

3. ***The Main Request - Novelty (Article 54 EPC)***

3.1 The subject-matter of Claim 1 of the Main Request lacks novelty over the disclosure of D1A.

3.1.1 This document (page 5, lines 3-16; page 6, line 23 to page 7, line 18; page 7, lines 25-26; page 8, penultimate paragraph; figures 1 and 2) discloses a single continuous process for producing a chewing gum base concentrate with high elastomer content, which content is encompassed by that disclosed in the patent in suit (paragraph [0012], lines 49-52; paragraph [0014], the table).

3.1.2 D1A (Figures 1 and 2) also discloses the claimed sequence of process steps. Thus, the disclosed process comprises the step of continuously adding the mixture of elastomers and plasticizers and of the mineral fillers into the twin-screw extruder (6).

The extruder defines a processing section of a continuous mixer. The elastomers and plasticizers are introduced via the vibrating gravimetric measuring apparatus (4) at the most upstream sleeve (0) of the twin-screw extruder while the mineral fillers are introduced via the vibrating gravimetric measuring apparatuses (5) at two distinct sleeves (0) and (2').

- 3.1.3 Furthermore, for the skilled person the process comprises a highly distributive mixing operation of the added ingredients (elastomers, plasticizers and fillers) in the twin-screw extruder, as can be inferred from:
- the introduction of the mineral fillers at two distinct sleeves which "improve(s) their distribution in the finished product" (page 5, last three lines) and "improve(s) the homogeneity of the finished product" (page 7, lines 14-18),
 - the use of high shearing mixing elements (HM) (figure 2; page 9, line 3) thereby establishing the conditions for a highly distributive mixing,
 - and the step of transporting the mixture through three consecutive counter-current mixing elements (CM) (figure 2; page 9, line 4), which correspond to the mixing restriction elements of the claimed invention.

The above conclusion takes into account that the word "highly" in the term "highly distributive mixing" used in present Claim 1 does not define, according to the patent specification, any particular degree of distribution but is to be understood in a merely qualitative way, ie to mean a mode of mixing that leads to a more or less homogeneous intermingling of the various components.

- 3.1.4 Furthermore, the process of D1A comprises the step of continuously discharging the manufactured chewing gum base concentrate from the twin-screw extruder (page 2, lines 8-9; page 5, lines 15-16; page 8, lines 17-20; figures 1 and 2) while the previous steps are in progress, the arrangement being such that the counter-current elements (CM) are located between the highly

distributive mixing units and the extruder outlet (Figure 2).

3.2 In the Board's judgment, on the basis that D1A discloses a chewing base gum concentrate rather than a chewing gum base, the claimed subject-matter is not different from the disclosure of D1A, because, having regard to the ingredients of the claimed composition and the ones disclosed in D1A, no difference can be identified. In both cases the ingredients are elastomers, plasticizers and fillers; the elastomer contents are broadly overlapping since D1A discloses a range of 30-90 % wt while the description of the patent in suit discloses a range of 5-95 % wt, and the same is true for the other ingredients (D1A: page 9, lines 12-16; patent specification: paragraph [0041], the table). Consequently, the qualification of the disclosed chewing gum composition as a concentrate does not establish any compositional differentiation from the chewing base gum of the claimed process.

3.3 Nor is the argument of Appellant 1 convincing that the process disclosed in D1A does not comprise a highly distributive mixing, because the high shearing means (HM) of D1A, which disentangles the elastomers, would cause highly dispersive, but not highly distributive mixing. As set out above, there is no distinct frontier between these mixing states during a mixing process in an extruder comprising a series of high shearing mixing elements (HM) and counter-current mixing elements (CM); as a consequence, highly dispersive mixing will inevitably also produce (highly) distributive mixing.

Furthermore, it would appear that in any event highly distributive mixing marks a transitional state within the whole mixing process in the twin-screw extruder of D1A.

Furthermore, D1A also discloses that the particular manner of introduction of the ingredients in the extruder, *ie* before the final mixing restriction element (CM) of sleeve 4', improves the distribution and the homogeneity of the finished product (page 5, lines 24-29; page 7, lines 14-18). As the Board understands it, this statement refers to the occurrence of highly distributive mixing in the same manner as homogeneity is reported in the patent in suit to represent the result of highly distributive mixing (page 3, lines 35-36; page 6, lines).

Thus, despite the fact that D1A does not disclose low shearing mixing elements for the production of highly distributive mixing, it inevitably involves such a mixing as part of the continuous mixing process in the specific twin-screw extruder.

3.4 Since the subject-matter of Claim 1 lacks novelty, the Main Request is not allowable.

4. ***The Auxiliary Request - Novelty (Article 54 EPC)***

4.1 Claim 1 of Auxiliary Request compared to Claim 1 of the Main Request comprises the following additional process feature:

"(the) elastomers are continuously added into the continuous mixer at a first combined feed rate; and (the) plasticizers are continuously added into the

continuous mixer at a second combined feed rate which is at least equal to the first combined feed rate".

- 4.2 D1A does not disclose this additional feature. This has been acknowledged by Appellant 2, who contested the novelty of the subject-matter of Claim 1 of the Auxiliary Request only on the basis of alleged public prior uses.

The Board, however, does not consider that any of the alleged public prior uses, put forward by Appellant 2, have been fully and properly established.

- 4.2.1 Alleged public prior use by leasing and sales to Leaf of a twin-screw extruder manufactured by W&P.

The Board in agreement with Appellant 2 acknowledges on the basis of the declarations of Starer (D4) and Beecher (D5) and the Exhibits accompanying these declarations that a twin-screw extruder for continuous gum base manufacturing (D4, Exhibits C and D), having the same structural features as those of the extruder used in the claimed process (D4, paragraphs 22 and 32; D5, paragraphs 9 and 16), was leased to Leaf by W&P upon an order issued by the former (D4, Exhibit E). The extruder was delivered at Leaf's facility in Memphis, Tennessee, in November 1990 (D4, Exhibit F), assembled and tested by Beecher in April 1991, *ie* before the priority date of the patent in suit (D4, Exhibits G and H; D5, paragraph 7) and replaced in October 1991 (D4, Exhibit J) by a new extrusion machine (D4, Exhibit K; D5, paragraph 14). This twin-screw extruder comprised screw bushings and kneading elements specified by Leaf with the assistance of W&P and was thus not solely of

W&P design (D4, Exhibit D, section 2.7; Exhibit E, Item "A"; Exhibit G, front page, last paragraph; D5, paragraphs 9, 14 and 15).

However, the declarations D4 and D5 as well as the Exhibits accompanying them fail to disclose the additional technical feature of the subject-matter of Claim 1 of the Auxiliary Request.

The statement in the second Beecher declaration D5C relating to this feature is not supported by any corroborating evidence showing that Beecher was aware of this additional feature before the priority date of the patent. Under these circumstances, the Board concurs with Appellant 1, who has argued that the corresponding statements in D5C are unreliable because they refer to details of events ten years ago which at the time were not within the explicit remit of the declarant W&P engineer, namely the formulation of the gum base composition or the related processing details. This is particularly conspicuous with regard to indication of the exact component percentages given in paragraph 18 of D5C, whose authenticity would in the circumstances demand corroborative evidence.

Moreover, since the concrete arrangement of the various screw elements and the operating conditions imposed by the gum base formulation were, at least to a major extent, based on Leaf's proprietary information, the presumption must be that publication of this information was not in Leaf's commercial interests. On the contrary, safeguarding a commercial advantage required non-publication and, particularly, non-transfer of this information to competitors. Thus the Board concludes that, even in the absence of an

explicit secrecy agreement, confidentiality must have governed the relationship between Leaf and W&P at least in this respect.

It is interesting in this context that Appellant 2 (Opponent) did not produce (i) any evidence stemming directly from Leaf, (ii) any document defining the terms and conditions of the lease and sales of the extruder between W&P and Leaf, (iii) did not ask that Mr Starer and Mr Beecher be heard as witnesses in order to further clarify the circumstances of the alleged prior public use.

Thus, the alleged public prior use by the lease and sales to Leaf of a twin-screw extruder manufactured by W&P has not been established.

- 4.3 Alleged public prior use by oral disclosures of Starer and Beecher concerning the Leaf process carried out on the W&P twin-screw extruder.

The Board rejects this alleged prior use because it has not been sufficiently substantiated. Apart from vague statements in D4, D5 and D5C, Appellant 2 has failed to provide precise information on what exactly was disclosed by Starer and Beecher, at what time and under which circumstances.

4.4 Consequently the Board finds that the subject-matter of Claim 1 of the Auxiliary Request is novel.

5. ***Auxiliary Request - Inventive step (Article 56 EPC)***

5.1 The Board considers that the subject-matter of Claim 1 also involves an inventive step.

5.2 The closest prior art

5.2.1 The Board in agreement with Appellant 1 considers that D6 represents the closest prior art because it relates to a process for preparing a chewing gum base, the ingredients of which and their mass proportions fall within those of the claimed process.

D6 (column 1, lines 7-10, 26-32, 36-55; column 2, lines 8-39; column 3, line 63 to column 4, line 49) discloses a two-stage process for the preparation of a chewing gum base utilizing elastomers, fillers and plasticizers, the chewing gum base having an elastomer content of 5-15 ppw and a plasticizer content of 15-55 ppw (table on top of column 4), which means that the plasticizer content (*ie* sum of "Elastomer Solvent" and "Oleaginous Plasticiser") is at least equal to the elastomer content. The process is carried out in conventional mixing kettles (column 1, lines 44-45; column 2, lines 11-14; column 4, lines 39-49).

5.2.2 The Board does not concur with Appellant 2 that either D1A or D8 should be considered to represent the closest prior art.

D1A discloses a continuous process for preparing a chewing gum base concentrate involving a continuous twin-screw extruder according to which the elastomers and plasticizers are continuously added into the extruder at such feed rates that the feed rate of the elastomers is always higher than the feed rate of the plasticizers. This follows from the fact that the concentrates disclosed in D1A always comprise more elastomers than plasticizers (page 9, lines 12-16 and 21-23; page 10, lines 11-13). Thus the Board concludes that D1A relates to a continuous process for the manufacture of a different type of chewing gum base.

D8 (column 1, lines 6-10; column 2, lines 3-60; column 3, lines 34-61; column 3, line 65 to column 4, line 38; column 5, lines 6-19, 62-63; column 6, lines 15-31, 51-56; column 7, line 42 to column 8, line 2) discloses a method for the continuous manufacture of rubber compounds utilizing a twin-screw extruder to mix the components in multiple mixing zones, similarly to the claimed process. However, with regard to their compositional conception the rubber compounds of D8, which include curing agents (used to convert the plastic elastomer state into an elastomeric state, unsuitable for chewing gums), are conventionally used in technical and/or tire applications, and are therefore different from elastomer compositions used in chewing gum manufacture irrespective of the possible use of elastomers comprising the same units in D8 and according to the claimed invention (see Examples).

5.3 The technical problem

The subject-matter of Claim 1 of the Auxiliary request differs from the disclosure of D6 in that the chewing gum base is manufactured following a continuous process which is conducted by using a mixer comprising specific elements in a specific configuration that allows highly distributive mixing of the chewing gum base ingredients.

The patent in suit (page 2, lines 22 and 49-51; page 4, lines 7-16) discloses that these technical characteristics provide a simpler and quicker process for the manufacture of chewing gum bases, in particular high quality chewing gum bases.

The patent application contains evidence (examples 1-3; paragraph [0061]) that these technical objectives have been attained.

5.4 The obviousness of the claimed solution

5.4.1 The Board in agreement with Appellant 1 does not consider obvious the use of a continuous process, instead of the batch-wise process of D6, using the specific mixer construction, instead of the conventional mixing kettles of D6.

5.4.2 As the Board understands it, the skilled person in the art, in view of the procedural advantages to be expected from a continuous process as compared to the more complex batch-wise process of D6, would certainly be interested in such a process for the manufacture of soft chewing gum bases.

However, he would not find any information in the art relating to the necessary means for realizing such a continuous process in concrete terms.

5.4.3 The skilled person would have had no reason to consider either D1A or D8, despite their disclosure of a continuous process using a twin-screw extruder.

5.4.4 D8 is directed to non-food rubber compounds (see above point 5.2.2), ie to fundamentally different technical applications, and for this reason this document would not be considered relevant prior art by the skilled person.

5.4.5 D1A relates to the manufacture of chewing gum concentrates with high elastomer content and the twin-screw extruder configuration used is understood to be adapted to the process requirements necessary for the preparation of such compositions. The skilled person cannot be considered to *prima facie* assume the suitability of the extruder configuration and further process parameters of D1A for compositions with considerably lower elastomer content and considerably higher plasticiser content whose rheology is therefore different.

In this context, the skilled person would also not consider that the short extruder residence time of the compositions of D1A would be appropriate for the preparation of the softer "inventive" compositions. According to D1A, the residence time of 1 minute and 30 seconds is necessary in order to avoid excessive temperature and shearing stresses for an excessively long time (page 2, lines 5-7; page 5, lines 12-14;

page 6, lines 11-14; page 8, penultimate paragraph; claim 1). This argument does not apply to the same extent to the softer "inventive" compositions using a much higher plasticiser content. In accordance with the argument of Appellant 1, such a short residence time would instead be understood by the skilled person to lead to incomplete homogenisation of such soft compositions with the consequence of leaking out of the oil (plasticizer) (see paragraph [0042]).

Thus the Board concludes that only on the basis of hindsight would the skilled person combine D6 with D1A and that even if he had done so, he would not have come to the claimed subject-matter since further non-obvious adaptations would have been required.

5.5 Consequently the subject-matter of Claim 1 of the Auxiliary Request is not obvious over the cited prior art.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division with the order to maintain the patent with the following documents:

Claims:

1-14 filed with letter dated 28 May 2004

Description pages:

2, 5-9 as granted

4 filed at the oral proceedings of
28 July 2004

3 filed at the oral proceedings of
11 October 2007

Drawings:

1/3-3/3 as granted

The Registrar:

The Chairman:

G. Röhn

P. Kitzmantel