

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 5 November 2018**

Case Number: T 0383/15 - 3.3.09

Application Number: 03760598.7

Publication Number: 1517615

IPC: A23G1/04, A23G1/10

Language of the proceedings: EN

Title of invention:

METHOD AND DEVICE FOR LIQUEFYING OF A POWDERY FAT BASED
PRODUCT PARTICULARLY IN THE PRODUCTION OF CHOCOLATE AND THE
LIKE

Patent Proprietor:

Nestec S.A.

Opponents:

Mars, Incorporated
Bobzien, Christoph

Headword:

Relevant legal provisions:

EPC Art. 54, 83, 100(a), 100(b), 111(1)

Keyword:

Main request: sufficiency of disclosure (yes), novelty (yes)
remittal for further prosecution

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0383/15 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 5 November 2018

Appellant:
(Patent Proprietor)

Nestec S.A.
Avenue Nestlé 55
1800 Vevey (CH)

Representative:

Rupp, Christian
Mitscherlich PartmbB
Patent- und Rechtsanwälte
Postfach 33 06 09
80066 München (DE)

Respondent:
(Opponent 1)

Mars, Incorporated
6885 Elm Street
McLean, Virginia 22101 (US)

Representative:

Cockerton, Bruce Roger
Carpmaels & Ransford LLP
One Southampton Row
London WC1B 5HA (GB)

Respondent:
(Opponent 2)

Bobzien, Christoph
c/o Lippert, Stachow & Partner
Frankenforster Str. 135-137
51427 Bergisch Gladbach (DE)

Representative:

Lippert Stachow Patentanwälte Rechtsanwälte
Partnerschaft mbB
Frankenforster Strasse 135-137
51427 Bergisch Gladbach (DE)

Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 23 December
2014 revoking European patent No. 1517615
pursuant to Article 101(3) (b) EPC.**

Composition of the Board:

Chairman W. Sieber
Members: N. Perakis
 F. Blumer

Summary of Facts and Submissions

- I. This decision concerns the appeal filed by the patent proprietor against the opposition division's decision revoking European patent No. 1 517 615.

- II. Notices of opposition were filed by opponents 1 and 2 requesting that the patent be revoked in its entirety on the grounds of Article 100(a) (lack of novelty and lack of inventive step) and 100(b) EPC.

Independent claims 1 and 15 as granted read as follows:

"1. A method for lowering the viscosity of a fat based mixture comprising solids and fat that have been previously refined to a powdery or pasty mass, and with the solids being not significantly coated with the fat, characterized in that the powdery or pasty mass is submitted to elongational flow effective, as such, to provide breaking up of the agglomerates and intimate interactions of the solids with the fat thereby resulting in the production of a pasty mass with coating of the solids with the fat and wherein the predominant elongational flow is achieved by forcing a flow of the fat based mixture through a plurality of flow constrictions (35) positioned in parallel and/or series relative to said flow."

"15. Use of a device for reducing viscosity of a fat based mixture comprising solids and fat that have been refined to a powdery or pasty mass by a method according to claim 1 characterized in that it comprises a die assembly (3) comprising at least one die plate (30, 31, 32, 33) with a plurality of holes (35) and a pressure generating device (2) to exert a pressure on the mixture located upstream of the die assembly (3) to

force the powdery or pasty mass through the holes (35) and thereby creates an elongational flow effective to achieve breaking up of the agglomerates and intimate interactions of the solids with the fat."

III. The documents cited in opposition include:

D1 : "Industrial Chocolate Manufacture and Use",
edited by S.T. Beckett, third edition, Blackwell
Science, 1999, pages 153-181;

D2 : US 4 713 256 A;

D6 : FR 953 602 A;

D7 : GB 788 757 A; and

D11: Declaration of Ruzbeh Feroze Masani, dated
1 October 2014.

IV. The opposition division's decision was based on the claims as granted (main request) and auxiliary request 1 filed on 6 October 2014.

With respect to the main request, the opposition division held that the subject-matter of claim 1 lacked novelty over the disclosures of D2 and D6 and that the subject-matter of claim 15 lacked novelty over the disclosure of D6.

With respect to auxiliary request 1, the opposition division held that the subject-matter of claim 1 lacked novelty over the disclosure of D2.

V. The patent proprietor (in the following: the appellant) appealed against the opposition division's decision and

requested that the decision be set aside and that the patent be maintained as granted (main request) or that, alternatively, the patent be maintained on the basis of the claims of any of auxiliary requests 1 to 6 as filed with the statement setting out the grounds of appeal dated 22 April 2015.

The appellant also requested that, should the board decide in favour of Article 54 EPC for any of the requests, the case be remitted to the opposition division for further prosecution.

For the purposes of this decision, only the main request is relevant.

- VI. By letter of 22 July 2015, opponent 2 (in the following: respondent 2) filed observations on the appeal and requested that the appeal be dismissed. Furthermore, it requested that auxiliary requests 2 to 6 be not admitted into the proceedings.
- VII. By letter of 7 September 2015, opponent 1 (in the following: respondent 1) filed observations on the appeal and requested that the appeal be dismissed and that auxiliary requests 2 to 6 not be admitted into the proceedings.
- VIII. By letter of 9 February 2016, the appellant commented on the respondents' observations.
- IX. On 4 July 2018, the board issued a communication in preparation for oral proceedings setting out its preliminary opinion on the issues of sufficiency of disclosure and novelty.

- X. By letter of 17 September 2018, respondent 2 elaborated further on its objections.
- XI. On 5 November 2018, oral proceedings before the board took place as scheduled.
- XII. The arguments put forward by the appellant in its written submissions and during the oral proceedings relevant to the present decision may be summarised as follows:

Main request - sufficiency of disclosure

- The invention underlying the subject-matter of claim 1 as granted is sufficiently disclosed. The starting material is a powdery or pasty mass obtained from a conventional refiner. The apparatus used creates a predominant elongational flow that effectively lowers the viscosity of the starting material.
- The patent in suit contains working examples, which would allow the skilled person to carry out the claimed invention. Although these examples do not disclose the viscosity of the starting material before its submission to a predominant elongational flow, the lowering of the viscosity is clearly achieved at least after the third pass of the mass through the holes of the die plate which operate as flow constrictions.
- The respondents, which bore the burden of proof, have not submitted any evidence to substantiate their allegations.

- With regard to the technical details of the flow constrictions, in paragraph [0026] of the patent in suit the skilled person is instructed to adapt them depending on circumstances.

Main request - novelty

- The subject-matter of claim 1 as granted is novel over D2, D6 and D7. These documents do not directly and unambiguously disclose a predominant elongational flow effective to provide breaking up of the agglomerates, to coat the solids with the fat and thereby to lower the viscosity of the fat-based mixture.
- D2, in particular the part relating to the screw conveyor depicted in figure 2, does not disclose, explicitly or implicitly, that the orifices 80, which are formed in the diaphragm 8, create an effective predominant elongational flow which breaks up the agglomerates and coats the solid particles with fat. In the conveyor in figure 2, the breaking up of the agglomerates and the coating of the solid particles has already taken place upstream of these orifices, namely in the reverse pitch zone B2 as a result of the rolling and shearing obtained in that zone, which produces various flow regimes, potentially a turbulent flow. Thus, a turbulent flow, let alone a predominant elongational flow, can not be derived from D2.
- D6 discloses a raw chocolate mass which is forced through an end-plate having a plurality of openings which correspond to the flow constrictions required in the claimed method. However, this raw chocolate mass is not disclosed to be refined to a pasty mass

with solid particles significantly coated with fat as required by the claimed invention. Furthermore, the solitary nozzle plate is not disclosed to break up the agglomerates and to coat the solid particles with fat. In fact, these effects are produced upstream of the nozzle plate when vigorous pressure is applied on the raw chocolate mass but not when the mass is pushed through the nozzles.

- D7 discloses spaces created by pins which serve to mix and knead the chocolate mass. It does not directly and unambiguously disclose that these spaces create a predominant elongational flow.

XIII. The arguments put forward by the respondents in their written submissions and during the oral proceedings relevant to the present decision may be summarised as follows:

Main request - sufficiency of disclosure

The invention underlying the subject-matter of claim 1 as granted is insufficiently disclosed because the following features are so unclear that the skilled person does not know whether he is operating within or outside the scope of the invention:

- "with the solids being not significantly coated with the fat"

This phrase implies some degree of coating, but it is impossible to determine whether the degree is "significant".

- "elongational flow effective, as such, to provide breaking up ..." and "predominant elongational flow"

The patent does not disclose how the elongational flow can be determined or monitored. As some elongational flow is inevitably created in the flow constrictions of the cited prior art, either the elongational flow of the claimed invention is not novel or the patent in suit does not sufficiently disclose this feature. Furthermore, the examples of the patent in suit provide only one way of achieving predominant elongational flow, which is not sufficient to cover the entire scope of the claimed invention.

- "lowering the viscosity"

The examples of the patent in suit fail to disclose the initial viscosity of the starting chocolate material and thus do not show that the viscosity has indeed been lowered after a first and a second pass through the holes of the plate (flow constrictions). The viscosity is lowered only after a third pass in which a plate with holes different in number and diameter has been used.

Main request - novelty

- The subject-matter of claim 1 lacks novelty over D2.
- The unclear feature "with the solids being not significantly coated with the fat" has to be interpreted broadly. Thus, it does not distinguish

the subject-matter of claim 1 from the disclosure of D2.

- The feature relating to the "predominant elongational flow" relates to the powdery or pasty mass flow at the level of flow restrictions, which represents a very specific and small section of the flow. However, claim 1 does not indicate the type of flow before and after the flow restrictions. Thus, the claimed method cannot be distinguished from the method of D2 based on the type of the flow before and after the flow restrictions.

- The only issue in respect of D2 is whether it discloses a "predominant" elongational flow. However, the set up of D2 is the same as in the patent in suit (figure 1 of the patent in suit *versus* figure 2 of D2). Consequently, D2 also creates a predominant elongational flow in the section after zone B3 and before zone C. In this section, the material is pushed by the screw conveyor, which acts as a pressure generating means (equivalent to the pump of figure 1 of the patent in suit) through dies constituted by orifices 80 formed in diaphragm 8.

- The appellant's argument that the claimed method differed from D2's in that the material has not been modified before passing through the flow constrictions whereas the material of D2 has been modified by shearing within the screw conveyor before passing through the flow constrictions is not correct. The gear pump in figure 1 of the patent acts in the same manner as the screw conveyor of figure 2 in D2 since they are both used as pressure generating means exerting pressure

upstream of the die plate (claim 7), and it is impossible that no breaking up of agglomerates occurs in the gear pump of the patent in suit.

- The subject-matter of claim 1 also lacks novelty over D6. The raw mass of cocoa particles and sugar is refined to a powdery or pasty mass during its transportation by an Archimedes screw (extruder) along a barrel and is subsequently submitted to a predominant elongational flow by forcing it under high pressure through the nozzles of an end plate.
- The subject-matter of claim 1 also lacks novelty over D7. The elements of D7, namely the pins fastened on the shaft, by necessity act as flow constriction elements which subject the powdery mass to some elongational flow.

Reasons for the Decision

Main request (claims as granted)

1. Sufficiency of disclosure

The respondents argued that the invention underlying the subject-matter of claim 1 as granted was insufficiently disclosed because the following features were so unclear that the skilled person would not know whether he was operating within its scope.

The board is, however, not convinced that the alleged lack of clarity would prevent the skilled person from carrying out the claimed invention as explained below.

1.1 "with the solids being not significantly coated with the fat"

This feature concerns the solids of the powdery or pasty mass obtained by a conventional refining step of the crude ingredients forming the starting fat-based mixture. Based on the technical evidence at hand, it is beyond doubt that this step belongs to the common general knowledge of the skilled person.

1.1.1 D1, a reference book for chocolate manufacture which is cited in paragraphs [0023], [0035] and [0038] of the patent in suit, discloses in point 9.1.2 [underlining added by the board]:

"In the majority of chocolate manufacturing plants the conche is preceded by a roll refiner or a hammer mill. These grind the chocolate masse to produce a crumbly paste or powder ... The ground chocolate masse ... cannot flow because most of the surfaces of the sugar ... are freshly broken and uncoated by fat. The conching process is required to smear the fat over these surfaces so that the particles can flow past one another."

1.1.2 The fact that feature 1 relates to a conventional refining step is also acknowledged in the patent in suit [underlining added by the board]:

"[0002] In the traditional manufacture of chocolate or chocolate-line compounds, finely ground powders are dispersed in a continuous fat phase"

"[0003] In the traditional chocolate production method, the chocolate ingredients are normally mixed and ground"

in a refiner or mill to sufficiently reduce particle size of solids. Then, the paste is conched..."

"[0004] Conching of the refined flakes is usually regarded as an essential production step for the development of the final texture of the chocolate ... Then, the solids are coated with the fat and the fat phase finally disperses throughout the chocolate mass"

- 1.1.3 Furthermore, this is acknowledged in the cited prior art, e.g. D2 (column 1, lines 8-23 and 31-37, column 3, lines 59-60 and column 3, line 66 to column 4, line 2) [underlining added by the board]:

"Generally, to produce plain chocolate, a pasty mass of cocoa is first prepared which is mixed with sugar previously ground to a very small particle size, of the order of 100 microns. The pasty mass of cocoa and sugar ... are mixed in suitable proportions with a minimum of cocoa butter and the chocolate paste thus prepared then undergoes refining in a device constituted by a plurality of cylinders, generally five, between which the particle size is again reduced until a refined paste is obtained in flake or very fine powder form, of the order of 10 to 20 microns, which can then be mixed with a predetermined proportion of cocoa butter"

"For producing quality chocolate, the refined mass is subjected to the process long known under the name of conching ..."

"In general, it is accepted that the conching treatment enables the production of a dispersion of the particles of sugar and cocoa in a continuous fatty phase constituted on the one hand by fats extracted from the

cocoa ... and on the other hand of the cocoa butter or other additives incorporated in the paste"

"In FIG. 1 shows schematically a conventional installation for the preparation of a chocolate paste ... The mixture so prepared then passes into refining device 14 constituted, mostly, by a five-roll grinder, and at its outlet 15 is obtained a paste refined to the desired degree of particle size, for example of the order of 15 to 20 microns".

1.1.4 Lastly, this is corroborated by Mr Masani's declaration (D11, point 4):

"In this light, I wish to highlight that I as a skilled person in the art of chocolate making am well aware of the fact that sugar, cocoa and milk solids need firstly to be mixed with fat, which will result in only some of the material being already being coated with fat which material is then passed through the refiner.

The refiner then serves to break up the particles ... during said refining many of the particles having fresh uncoated surfaces will also stick together, hence forming agglomerates. Accordingly, following the refining stage, these agglomerates must be further broken up, in doing so exposing further fresh surfaces to be coated with fat, hence dispersing the fat throughout the chocolate mass. This is basic knowledge in refining chocolate compositions ...

I also noticed that D1 discloses on page 154, first paragraph, that particles in the ground chocolate mass used in the initial steps of the traditional conching process are freshly broken and insofar uncoated by fat,

although the mass already contains the majority of fat".

- 1.1.5 In conclusion, this feature is clear, and the skilled person could be expected to carry it out based on his common general knowledge.
- 1.2 "elongational flow effective, as such, to provide breaking up ..." and "predominant elongational flow"
- 1.2.1 "Elongational flow" is undoubtedly a commonly known phenomenon as apparent from the standard text book D1 (see figure 9.2 (b)).

Furthermore, an "effective" elongational flow as required by the claimed invention is an elongational flow which provides breaking up of the agglomerates and intimate interactions of the solids with the fat thereby resulting in the product of a pasty mass with coating of the solids with the fat. The respondents, which bear the burden of proof, have not submitted any evidence showing that the skilled person at the application date would not have the technical means necessary for determining when the elongational flow was effective in the terms of the claimed invention or for monitoring the elongational flow so that it became effective.

Lastly, the effective elongational flow of the claimed invention is the "predominant" flow which is achieved by forcing a flow of the fat-based mixture through a plurality of flow restrictions (35) positioned in parallel and/or series relative to said flow. Again, the respondents have not shown that they were unable to obtain a predominant elongational flow under the claimed conditions. Regarding this point, paragraph

[0026] of the patent in suit instructs the skilled person that the number, average diameter and shape of the holes of a die plate (i.e. of the flow constrictions) may be selected depending on factors such as the degree of elongational flow required, throughput rates, back pressure, recipes and combinations thereof.

In conclusion, this feature is both clear and could be carried out by the skilled person based on his common general knowledge and the information provided in the patent in suit.

- 1.2.2 The respondents argued that the patent in suit did not instruct the skilled person how to achieve a predominant elongational flow different from the elongational flow obtained at the flow constrictions of the prior art, e.g. D2, where the pasty mass was forced to flow through them. It appears that the respondents disregard the fact that the claimed invention concerns an effective elongational flow achieved at flow constrictions which the skilled person would have to adapt in accordance to circumstances. It is beyond doubt that this effective elongational flow is not the result of a simple transport of the material through the holes since it requires breaking up of the agglomerates and intimate interactions of the solids with the fat thereby resulting in the production of a pasty mass with coating of the solids with the fat. As already mentioned, the respondents have not shown that the skilled person would have been unable to check whether these effects had taken place.

Also, the argument of the respondents that the examples in the patent do not show that the claimed invention can be performed across its entire scope has not been

substantiated by technical evidence and is therefore considered a mere assertion.

1.3 "lowering the viscosity"

The respondents disputed the fact that the claimed invention lowered the viscosity of the fat-based mixture. The board does not agree. The board refers to the aim of the claimed invention, which is to replace the traditional conching of fat-based mixtures carried out in the chocolate making process (paragraph [0001]).

The respondents did not contest that traditional conching reduces the viscosity of a chocolate fat-based mixture. Indeed, D1 discloses on page 155, last paragraph:

"... one of the main aims of conching is to produce the optimum viscosity for the subsequent processing. The actual viscosity can be reduced by adding more fat ... this in turn increases the cost of the product"

Comparative example 1.1 of the patent in suit reports that dry conching leads to a finished chocolate mass with a plastic viscosity of 2.3 Pa.s (paragraphs [0051] and [0052]). Although the initial viscosity of the starting material is not provided, it can plausibly be assumed based on common general knowledge that its viscosity is reduced.

In example 1.2 (according to the invention), the same viscosity of 2.3 Pa.s is achieved with elongational flow after the third pass (paragraph [0053]). It can therefore be concluded, despite the non-disclosure of the initial viscosity, that the claimed method also

lowers the viscosity of the initial mixture, be it only after the third pass.

Furthermore, in the absence of technical evidence disclosing the initial viscosity of the starting mixture in example 1.2, it cannot be concluded that the first and second pass failed to lower the initial viscosity and represent failures of the claimed invention.

1.4 In summary, the patent in suit discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

2. Novelty

2.1 Claim 1 concerns:

- a method for lowering the viscosity of a fat based mixture comprising solids and fat (feature 1)
- that have been previously refined to a powdery or pasty mass, and with the solids being not significantly coated with the fat (feature 2),

characterized in that

- the powdery or pasty mass is submitted to (predominant) elongational flow effective, as such, to provide breaking up of the agglomerates and intimate interactions of the solids with the fat thereby resulting in the production of a pasty mass with coating of the solids with the fat, and wherein the predominant elongational flow is achieved by forcing a flow of the fat based mixture through a plurality of flow constrictions (35)

positioned in parallel and/or series relative to said flow (feature 3).

According to feature 3, the effective (predominant) elongation flow is obtained by forcing the fat-based mixture through a structure which consists of flow constrictions (35) positioned in parallel and/or series relative to said flow, where the agglomerates are broken up, and the solids are coated with the fat.

2.2 The disclosure of D2

2.2.1 D2 discloses a process which enables chocolate to be prepared continuously and in a very short time while respecting the essential requirements of the traditional process (column 2, lines 35-38). An essential requirement of the traditional process is the reduction in viscosity in order to obtain an unctuous fluid pasty mass which can be easily moulded (column 1, lines 41-44). As the process of D2 lowers the viscosity of a chocolate mixture (i.e. a fat base mixture comprising solids and fat), it discloses feature 1 of claim 1.

2.2.2 In a preliminary step of the process of D2, grinding of the ingredients leads to a refined pasty mass having the desired degree of particle size, for example, of the order of 15 to 20 microns (column 2, lines 47 to 49, column 3, line 59 to column 4, line 2).

Admittedly, D2 does not explicitly disclose that the solid particles of the refined pasty mass are not significantly coated with fat. This is, however, implicit to the skilled person in view of his common general knowledge.

Reference is made to D1 (page 153, last paragraph to page 154 first paragraph), a handbook about the industrial manufacture of chocolate, which discloses that in most chocolate manufacturing plants, the conche is preceded by a roll refiner or a hammer mill which grinds the chocolate masse to produce a crumbly paste of powder and that the ground chocolate mass (corresponding thus to the refined pasty mass of D2), although containing the majority of the fat (both cocoa and cow's butter), cannot flow because most of the surfaces of the sugar (and of the non-fat milk solids, when present) are freshly broken and uncoated by fat. D1 acknowledges that a conching step is required to smear the fat over these surfaces so that the particles can flow past one another (page 154, lines 6-7). D1 also discloses that some of the particles form loosely connected agglomerates, perhaps due to the presence of moisture or amorphous sugar on the sugar surface, which are broken up by the mixing action of the conche. Some of these agglomerates contain droplets of fat, which must be freed from the surrounding particles and smeared thinly over their surfaces (page 154, lines 8-12). This is corroborated by the declaration of Mr Masani (D11, point 4).

Since the method of D2 involves a chocolate pasty mass which has been refined (before having been submitted to conching) with solids which have not been significantly coated with the fat, it also discloses feature 2 of claim 1.

2.2.3 Lastly, whether D2 discloses feature 3 of claim 1 must be assessed.

The preliminary refined paste is subjected to a continuous dry conching treatment in a screw conveyor

and then to a liquefaction treatment (liquid conching) incorporating additives in proportions according to the recipe (column 2, lines 33-47; column 4, lines 14-17).

The dry conching

The dry conching treatment of D2, which is advantageously carried out in several successive treatment zones of the screw conveyor, each comprising a kneading sector, comprises a first step of simple kneading of the refined paste with a rise in temperature and then at least one second kneading step with the production of rolling and shearing effects whose intensity increases gradually (column 2, lines 53-58; column 3, lines 4-6; column 4, lines 35-37 and 51-63). The intensity of said rolling and shearing effects is determined so that the means of regulating the temperature of the material enable the latter to be maintained at the optimum conching level (column 2, lines 59-64).

Each treatment zone of the conveyor comprises a section for compression of the material in which the screws have a close pitch and a braking section which, according to the desired degree of rolling and shearing, can include eccentric disks or reverse pitch threads provided with apertures for the passage of the material downstream (column 3, lines 34-39). The flow resulting from rolling and shearing - a kind of turbulent flow - is different from the claimed elongational flow.

In the specific conveyor depicted in figure 2, threads 31, 31' of the two screws 3, 3' in the reverse pitch section B2 are provided with apertures 32, 32' forming windows which extend radially between the

shaft 30 and the periphery of the thread. These apertures enable the passage downstream of a certain amount of material under the effect of pressure (column 5, lines 56-62). The result is a rolling and especially a shearing effect in the reverse pitch zone B2, particularly on passage into the windows (column 6, lines 27-29).

The effect of rolling and shearing obtained especially in the reverse pitch zone B2 can be reinforced, if necessary, by an extrusion effected at the outlet of the treatment zone B. For this purpose, the latter comprises a third zone B3 with a closer pitch which takes up the material again emerging from the braking zone B2 to cause it to pass through dies constituted for example by orifices 80 formed in a diaphragm 8 (column 7, lines 1-9). It is concluded that the dies are disclosed to reinforce rolling and shearing.

Thus, phenomena occur inside the screw conveyor, which are related to conching and which permit the effects thereof to be obtained. More concretely, due to the temperature increase caused primarily by mechanical working and friction, the globules of the fatty phases contained in the cocoa fluidify and, due to the intense kneading and to the rolling and shearing effects, have a tendency to migrate to the surface and to coat the solid particles of cocoa and sugar. In this way, a treatment quite analogous to (conventional) dry conching is achieved, i.e. the fluidisation of the paste with the aid of the fatty material contained in the cocoa without the addition of cocoa butter (column 7, lines 35-43 and 50-58). The skilled person would also expect that during such a process the agglomerates would be broken up (see D1, page 154, lines 8-10).

D2 further discloses that under the effect of pressure, the paste mixture passes through a plurality of flow constrictions positioned in parallel relative to the flow in zones B2 and B3 (i.e. dies constituted by orifices 80 formed in diaphragm 8 situated after zone B3 and before zone C). It is plausible that this leads to breaking up of the agglomerates and intimate interactions of the solids with the fat thereby resulting in the production of a pasty mass coating of the solids with the fat. However, D2 does not disclose, explicitly or implicitly, that at this part of the apparatus a predominant elongational flow is achieved. What D2 explicitly discloses is rolling and shearing. It might be that the skilled person would implicitly derive from D2 that some elongational flow is achieved but certainly not the claimed predominant elongational flow.

The liquid conching

With regard to the subsequent step of liquid conching, D2 discloses that it is carried out by combining the effects of kneading, rolling and shearing and at a temperature maintained at the optimum conching level in an additional zone of the screw conveyor or in a second screw conveyor supplied with the dry-conched paste and into which are introduced the necessary amounts of cocoa butter and additives (column 2, line 65 to column 3, line 3; column 5, lines 21-32). This process step does not disclose, directly or indirectly, a predominant elongational flow but a flow resulting from rolling and shearing.

- 2.2.4 To sum up, the key aim of D2 is to mimic a traditional conche and for this it essentially employs rolling and

shearing which result in a kind of turbulent flow but not an elongational flow, let alone a predominant elongational flow. An elongational flow would be at odds with the key aim of D2.

The flow at the apertures of the windows in zone B2 and at the orifices 80 of diaphragm 8 between zone B3 and zone C is determined by the rolling and shearing which produce various flow regimes, potentially a turbulent flow. But even if some elongational flow was produced, it would not be a predominant elongational flow.

2.2.5 Contrary to the allegations of the respondents, D2 does not disclose that the eventual breaking up of the agglomerates in the screw extruder was due to an elongational flow. Simply because the screw extruder of D2 and the gear pump of the patent in suit are pressure generating means, this does not mean that the process operations as required by claim 1 took place in D2.

2.2.6 Therefore, D2 does not directly and unambiguously disclose the method of claim 1.

2.3 The disclosure of D6

D6 discloses a method for the treatment of raw chocolate mass to obtain a desired plastic consistency (page 1, lines 8-12). According to a first embodiment of D6, the raw chocolate mass is fed into an Archimedes screw where it is submitted to a pressure of 200 kg/cm² (approximately 200 bar) and kneaded, thus accelerating its change of state from a granular to a homogeneous paste (page 2, lines 14-19; page 2, line 101 to page 3, line 11). The mass is then expelled out of the screw through one or more nozzles (page 1, lines 46-56; page 2, lines 62-69 and 75-87). In D6, the flow created

in the Archimedes screw, where a vigorous pressure is applied and where a transformation of the material occurs by a kneading action making it more homogeneous, appears to be a turbulent flow (page 2, lines 15-20).

D6 does not disclose that the raw chocolate mass is refined to a pasty mass with the solids being not significantly coated with the fat. More importantly, it does not disclose the key feature of claim 1, namely that the pasty mass forced to flow through the nozzles (falling under the definition of the flow constrictions of claim 1) is submitted to a predominant elongational flow effective to provide breaking up of the agglomerates and intimate interactions of the solids with the fat thereby resulting in the production of a pasty mass with coating of the solids with the fat. These effects are produced upstream of the nozzle plate where the raw chocolate mass is subjected to a vigorous pressure.

Thus, D6 also does not directly and unambiguously disclose the method of claim 1.

2.4 The disclosure of D7

D7 discloses a machine for liquefying a chocolate mass which comes from a refining roller mill and is treated subsequently in a mixing and grating machine (page 1, lines 9-12). The machine comprises a shaft having mixing and transporting elements which rotates in a chamber provided with further mixing elements cooperating with the elements of the shaft (page 1, lines 41-49). Among the elements fastened to the shaft, there are pins arranged as combs for mixing and kneading, their rows being interrupted to make place for conveying blades (page 1, lines 71-75). The mass is

submitted to a powerful mixing and kneading when conveyed along the shaft from an inlet opening to an outlet opening of the chamber (page 2, lines 36-41).

The spaces between the elements (in particular the pins) of the liquefying machine do not directly and unambiguously act as flow constrictions which create an elongational flow, let alone a predominant elongational flow. The motion of static pins, i.e. the pins of the chamber, relative to rotating pins, i.e. the pins of the shaft, apparently produce simple shear mixing, according to page 2, lines 40-49:

"Simultaneously there is a powerful mixing and kneading effect by the pins 3 and 17. In this simple manner the powdery chocolate mass is quickly and securely mixed and liquified, whereby agglomerated particles are immediately loosened. These particles are furthermore turned in all positions under the influence of pressure and the sharp edges and corners are rounded off by friction against each other"

Thus, even D7 does not directly and unambiguously disclose the method of claim 1.

3. Claims 2 to 14

Dependent claims 2 to 14 relate to preferred embodiments of the method of independent claim 1 and thus satisfy the requirements of sufficiency of disclosure and novelty *mutatis mutandis*.

4. Claim 15 as granted

Independent claim 15 concerns the use of a device for reducing the viscosity of a fat-based mixture (see

point II). In analogy to the method claim 1, the invention underlying independent use claim 15 as granted is sufficiently disclosed and the subject-matter of this claim is novel over the cited documents.

5. Remittal

For the above reasons, the impugned decision is to be set aside.

As the substantive requirement of inventive step has not yet been assessed by the opposition division, the board considers it appropriate to exercise its discretion under Article 111(1) EPC and to remit the case to the opposition division for further prosecution based on the claims as granted (main request).

6. Auxiliary requests 1 to 6

Since the board has decided to remit the case to the opposition division for further prosecution based on the claims of the main request, there is no need to examine the appellant's auxiliary requests.

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 for further prosecution based on claims 1 to 15 as granted.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated