

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 3488-TXT-PCT	FOR FURTHER ACTION	See item 4 below
International application No. PCT/US2018/037071	International filing date (<i>day/month/year</i>) 12 June 2018 (12.06.2018)	Priority date (<i>day/month/year</i>) 13 June 2017 (13.06.2017)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant CORN PRODUCTS DEVELOPMENT, INC.		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	This REPORT consists of a total of 14 sheets, including this cover sheet.																								
	In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																								
3.	This report contains indications relating to the following items: <table style="width: 100%;"> <tr> <td style="width: 5%; text-align: center;">☒</td> <td style="width: 25%;">Box No. I</td> <td style="width: 70%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;">☐</td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;">☒</td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;">☒</td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;">☒</td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;">☐</td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;">☒</td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;">☒</td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	☒	Box No. I	Basis of the report	☐	Box No. II	Priority	☒	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	☒	Box No. IV	Lack of unity of invention	☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	☐	Box No. VI	Certain documents cited	☒	Box No. VII	Certain defects in the international application	☒	Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Date of issuance of this report 17 December 2019 (17.12.2019) Authorized officer Simin Baharlou e-mail: pct.team9@wipo.int
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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No. PCT/US2018/037071	International filing date (day/month/year) 12.06.2018	Priority date (day/month/year) 13.06.2017
International Patent Classification (IPC) or both national classification and IPC INV. A23L25/00 A23L7/122 A23G3/34 A23G3/48 A23P20/10 A23L29/212 A23L11/00 A21D13/24 A21D13/60 A21D13/043 A21D10/00 A21D2/36 A21D2/18 ADD. C08B30/14		
Applicant CORN PRODUCTS DEVELOPMENT, INC.		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465	Date of completion of this opinion see form PCT/ISA/210	Authorized Officer Telephone No. +49 89 2399-0 
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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☐ forming part of the international application as filed:
 - ☐ in the form of an Annex C/ST.25 text file.
 - ☐ on paper or in the form of an image file.
 - b. ☐ furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. ☐ furnished subsequent to the international filing date for the purposes of international search only:
 - ☐ in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - ☐ on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

☐ the entire international application

☒ claims Nos. 20

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):

☒ no international search report has been established for the whole application or for said claims Nos. 20

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

☐ furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13*ter*.1(a) or (b).

☒ See Supplemental Box for further details

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:
- ☐ paid additional fees
 - ☐ paid additional fees under protest and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☒ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-19

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement
- | | | |
|-------------------------------|-------------|-------------|
| Novelty (N) | Yes: Claims | <u>1-19</u> |
| | No: Claims | |
| Inventive step (IS) | Yes: Claims | |
| | No: Claims | <u>1-19</u> |
| Industrial applicability (IA) | Yes: Claims | <u>1-19</u> |
| | No: Claims | |
2. Citations and explanations
- see separate sheet**

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability.

Only claims 1-19 have been searched.

Re Item IV

Lack of unity of invention

This Authority considers that the application does not meet the requirements of unity of invention and that there are 2 inventions covered by the claims indicated as follows:

(1) claims: 1-19

coated food stuff comprising an edible substrate with a moisture content of less than 5%, a coating comprising a layer of a mixture comprising pre-gelatinized waxy cassava starch and a second starch or flour in a ratio of 3:1-1:3 and an adhesion syrup

(2) claim: 20

A sheetable dough composition comprising a pre-gelatinized waxy corn starch, a second starch or flour and a liquid.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The common concept linking together these separate inventions is that the composition comprises

pre-gelatinized waxy cassava starch and a second starch or flour

which, as such, is well-known in the art, see e.g.

EP2829182 discloses in § 3 a composition comprising from about 10% (w/w) to about 40% (w/w) pregelatinized waxy potato starch, pregelatinized waxy cassava starch, or any mixture thereof; from about 10% (w/w) to about 20% (w/w) gum; and from about 40% (w/w) to about 70% (w/w) dispersant.

Therefore the common concept does not comprise any same or corresponding special technical features and is consequently not a single general inventive concept.

Starting from this common concept, the following is noted:

Invention 1, comprises the additional features of b) an edible substrate having a low moisture content, b) a coating with specific starches in a specific ratio and c) the adhesion syrup.

These features are related to the solution of the problem of coating the food stuff.

Invention 2, on the other hand, comprises the additional features of a liquid.

These features are related to the solution to the problem of preparing a sheetable dough.

Consequently, the features of invention 1 and invention 2 which make a technical contribution over the common matter are different.

As the problems they solve are different, these features are not corresponding either.

There is thus no relationship among these inventions which would involve same or corresponding special technical features, such that the requirement of unity of invention is not met.

This opinion will therefore only deal with claims 1-19.

The application has been divided into the above groups of inventions which individually are considered to meet the requirement of unity of invention.

If the applicant pays additional fees for one (or more) not yet searched group(s) of invention(s), then the further search(es) may reveal further prior art that gives evidence of a further lack of unity 'a posteriori' within one (or more) of the not yet searched group(s). In such a case only the first invention in this (each of these) group(s) of inventions, which is considered to lack unity of invention, will be the subject of a search. No further invitation to pay further additional fees will be issued. This is because Article 17(3)(a) PCT stipulates that the ISA shall establish the International Search Report on those parts of the international application which relate to the invention first mentioned in the claims ('main invention') and for those

parts which relate to inventions in respect of which the additional fees were paid. Neither the PCT nor the PCT guidelines provide a legal basis for further invitations to pay further additional search fees (W17/00, point 11 and W1/97, points 11-16). In such a case the non-searched claims may be the subject of one or more divisional applications (see W18/07, point 26).

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. PRIOR ART

Reference is made to the following documents:

- D1 WO 2013/141854 A1 (CONAGRA FOODS RDM INC; PEREZ AGUIRRE BLANCA [MX]; JONES DONALD L [US];) 26 September 2013 (2013-09-26)
- D2 US 2012/288590 A1 (SOANE DAVID S [US] ET AL) 15 November 2012 (2012-11-15)
- D3 US 2 868 647 A (VOLLINK WILLARD L) 13 January 1959 (1959-01-13)

2. NOVELTY and INVENTIVE STEP

Notwithstanding the below-mentioned lack of clarity, the present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-19 does not involve an inventive step in the sense of Article 33(3) PCT.

2.1 Document D1 seems to be directed to the same subjective technical problem as the present application and is thus considered to be the closest prior art to the subject-matter of claim 1 and discloses in claims 1-20

a popped popcorn product, the popped popcorn product comprising:

- popped popcorn (cf. claim 19: moisture content 2-6%)
- a **coating** cooked on the popped popcorn, wherein the coating includes

- a) a binder wherein the binder includes a binding agent (**corn syrup i.e. adhesion syrup**), maltodextrin and a **starch**, and
- b) a flavor system adhered to the binder, wherein the flavor system includes a seasoning and **at least one member** of a group consisting of: **a flour and a starch**,

wherein the starch of the binder includes Tapioca starch, wherein the **Tapioca starch** is 10-20% by total **weight of the binder** (claim 4),

wherein the flour of the flavor system includes a wheat flour and wherein the wheat flour is 5-15% by total weight of the **flavor system** (claim 7).

The popped popcorn is 30-40% by total weight of the popped popcorn product; the flavor system is 25-35% by total weight of the popped popcorn product (cf. § 38-41).

It is noted that in the coated popcorn product the binder binds the flavor system to the popcorn product and forms a coating, so that in the coated popcorn product it is indistinguishable from where the starch in the coating came from (and therefor the product not be delimited from claim 1).

The subject-matter of claim 1 therefore mainly differs from the process disclosed in D1 in that

- the cassava starch is **waxy** (i.e. low amylose) and the ratio of waxy cassava starch: another starch/flour is 3:1-1:3

and is therefore new.

The technical effect achieved by using an **waxy** cassava starch in a certain ratio to another starch/flour can not be determined as the application does not give any explanation (with regard to an unexpected technical effect over prior art using non-waxy cassava starch) and does not contain any comparative examples showing a non-obvious effect over prior art (i.e. it has not been made credible that the type of cassava starch and the ratio is crucial for achieving a unexpected technical effect and for solving the problem).

In the absence of evidence that this difference taken alone or in combination provides an unexpected or non-obvious technical effect with regard to the taste or texture of the product, the objective technical problem to be solved may only be seen in the provision of a coated food stuff comprising a coating comprising an alternative cassava starch in an alternative amount.

The use of **waxy** cassava starch is considered to be randomly selected from a range of possible cassava starches, from which the skilled person would select during routine work, depending the circumstances and the desired properties of the product without exercising inventive skills (cf. D3, column 2, lines 55-56 and column 3, lines 1-2 which suggests the use of gelatinized starches such as **waxy** maize starch and **tapioca starch** (i.e. waxy maize starch and waxy tapioca starch)).

The ratio of the waxy cassav -starch:starch/flour in the coating is considered to be **randomly selected** from a range of possible ranges, from which the skilled person would select during routine work, depending in the circumstances without exercising inventive skill.

Thus, the subject-matter of claim 1 does not appear be inventive (Article 33(3) PCT).

A similar inventive step objection may be formulated based on the disclosure of D2 (cf. claims 1-79 and § 30 selection of e.g. nuts).

2.2 Dependent claims 2-19 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to novelty and/or inventive step, since they are either already disclosed in D1 (cf. claims 7, 8, 10, 11, 12), or well known in the state of the art (claims 6 and 9) and/or lie within the reach of the customary practice followed by persons skilled in the art.

The technical features of said claims 2-5, 13, 14, 16-19 (relating to specific bulk densities and bulk volumes, fracturability, hardness, dissolvability), claim 13 (relating to the number of coatings with a specific expansion), claim 14 (relating to roasted peanuts with 11 layers of baked coating which specific bulk density, bulk volume and expansion) **have not been shown to substantiate a technical effect in a non-obvious manner nor** has it been shown that a problem has been solved by the application of these features.

In conclusion, since the technical features of above mentioned claims have neither been shown to substantiate a technical effect in a non-obvious manner nor has it been shown that a problem has been solved by the application of these features, the subject-matter of claims 2-19 does not appear to involve an inventive step (Article 33(3) PCT).

Re Item VII

Certain defects in the international application

To meet the requirements of Rule 5.1(a)(ii) PCT, the document **D1-D2** should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

Re Item VIII

Certain observations on the international application

3. CLARITY

The application does not meet the requirements of Article 6 PCT, because the subject-matter of claims 1-19 is not clear.

3.1 It is clear from the description § 3, 5, 6, 35-37, 49, and § 66 ff that the feature "baking" is essential to the definition of the invention.

The features with regard to bulk density, bulk volume etc. can not be obtained if the coating is not baked.

Since independent claim 1 does not contain this feature (baked coating) it does not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

3.2 The feature "pregelatinized" of claim 1 of coating mixture b) is considered to be vague and unclear and leaves the reader in doubt as to the meaning of the technical feature to which it refers (because in a e.g. baked or popped coated endproduct, one can not distinguish if the starch in the coating was already pregelatinized or not, because after exposing the coating to heat, the starch will gelatinize), thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT).

It is also noted that in table 2 of the application as filed waxy tapioca starch (low and high cook) is used and it not specified if that the waxy tapioca starch was pregelatinized e.g. by drum drying, spray cooking, extruding or chemically modification. It appears that the waxy tapioca starch is not "pregelatinized" thereby leading to a contradiction between claim 1 and description.

This introduces ambiguity and does not allow to properly delimit the claim from prior art.

The feature "pregelatinized" in claim 1 was disregarded when assessing novelty and inventive step.

3.3 The term "adhesion syrup" in claim 1 is vague and unclear (because according page 5, § 33 of the description as filed the adhesion liquid is **water** or syrup) thereby leaving the reader in doubt as to the meaning of the technical feature to which it refers, and rendering the definition of the subject-matter of said claim unclear (Article 6 PCT). This term was broadly interpreted when assessing novelty and inventive step.

3.4 The term "waxy" used in claim 1-19 has no well-recognized meaning (as § 12 explains that the term is interchangeable with the term "low-amylase" which is a relative term) and leaves the reader in doubt as to the meaning of the technical feature to which it refers ("low" to which extent and as compared to what), thereby rendering the definition of the subject-matter of said claim unclear (Article 6 PCT).

This term was broadly interpreted when assessing novelty and inventive step.

3.5 Claim 16 defines a "fracturability" value and claim 17 defines a "hardness" value. However, the "fracturability" and the "hardness" are dependent on the measuring conditions (cf. § 15 and 17). Since these conditions are not defined, the subject-matter of claim 16 and 17 is not clear (Article 6 PCT).

It is noted that the measuring of fracturability and hardness are performed under the exact same conditions with the same texture analyser.

It is thus unclear how these values of 4,5-5,5 for the fracturability in claim 16 and the values of 850-550g for the hardness defined in claim 17 are determined and what these terms mean (Article 6 PCT). The respective features of claims 16 and 17 have therefore been disregarded when assessing novelty and inventive step.

3.6 The terms "test coated" in claim 15 and "base coating" in claims 18-19 are vague and unclear and leave the reader in doubt as to the meaning of the technical feature to which they refer, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT). The respective features of claims 15 and 18-19 have therefore been disregarded when assessing novelty and inventive step.

3.7 The relative term "lower fracturability" used in claim 18 and "higher dissolvability" in claim 19 have no well-recognized meaning and leave the reader in doubt as to the meaning of the technical feature to which they refer (to which extent and as compared to what), thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT). The respective features of claims 18-19 have therefore been disregarded when assessing novelty and inventive step.

3.8 Furthermore, claims 18 and 19 attempt to define the subject-matter in relation to a further undefined "base coating" in which waxy corn starch is substituted by a "**another** pregelatinized waxy starch" the amount of which is undefined. However, features merely defined by means of reference to a hypothetical reference product can not be seen as an inherent feature that would further specify the claimed coating. It thus leaves the reader in doubt as to the meaning of the technical feature to which it refers, thereby rendering the definition of the subject-matter of said claims unclear (Article 6 PCT).

The respective features of claims 18 and 19 have therefore been disregarded when assessing novelty and inventive step.