

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference GD023303	FOR FURTHER ACTION See Form PCT/IPEA/416																									
International application No. PCT/AU2023/051339	International filing date (<i>day/month/year</i>) 20 December 2023	Priority date (<i>day/month/year</i>) 20 December 2022																								
International Patent Classification (IPC) or national classification and IPC See Supplemental Box																										
Applicant HIVE CHILLING IP PTY LTD																										
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 8 sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ a total of 10 sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications not taken into account by this Authority because they were not available at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4<i>bis</i>, 70.2(e), 70.16 and 91.2). ☐ Superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ a separate electronic file containing a sequence listing (<i>sent to the International Bureau only</i>).																										
4. This report contains indications relating to the following items: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">☒</td> <td style="width: 20%;">Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td>☐</td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td>☐</td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td>☒</td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td>☒</td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td>☐</td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td>☐</td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td>☒</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 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
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Date of submission of the demand 21 October 2024	Date of completion of this report 17 April 2025																									
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Box No. I

Basis of the report

1. With regard to the **language**, this report 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 (under Rules 12.3(a) and 23.1 (b)).
- ☐ publication of the international application (under Rule 12.4(a)).
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a) and (b)).
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished, or
- ☒ the description: pages **1-15** , as originally filed/furnished
pages , received by this Authority on with the letter of
- ☒ the claims: Nos. , as originally filed/furnished
Nos. , as amended (together with any statement) under Article 19,
Nos. **1-21** , received by this Authority on **24 March 2025** with the letter of **24 March 2025**
- ☒ the drawings: pages **1/6-6/6** , as originally filed/furnished
pages , received by this Authority on with the letter of
- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (specify):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
- ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.4bis and 70.2(e)).
6. With regard to top-up searches (Rules 66.1ter and 70.2(f)):
- ☒ A top-up search was carried out by this Authority on 19 December 2024.
- ☐ Additional relevant documents have been discovered during the top-up search.
- ☐ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies)
has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. IV**Lack of unity of invention**

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has, within the applicable time limit:
- ☐ restricted the claims
 - ☐ 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
 - ☐ neither restricted the claims nor paid additional fees
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is:
- ☐ complied with.
 - ☒ not complied with for the following reasons:

See Supplemental Box

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.

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 1-21	YES
	Claims NONE	NO
Inventive step (IS)	Claims 1-21	YES
	Claims NONE	NO
Industrial applicability (IA)	Claims 1-21	YES
	Claims NONE	NO

2. CITATIONS AND EXPLANATIONS:**CITATIONS**

D1: WO 2020/240287 A1 (ARCHER et al.) 03 December 2020
D2: US 2015/0140190 A1 (NESTEC SA) 21 May 2015
D3: US 2008/0271610 A1 (VEDSTED et al.) 06 November 2008
D4: US 2009/0142462 A1 (ZHU) 04 June 2009
D5: US 2021/0046690 A1 (BUHLER AG) 18 February 2021

NOVELTY (N)

The invention defined by claims 1-21 is considered novel, and therefore complies with PCT Article 33(2) with regard to novelty.

None of the cited prior art documents **D1-D3** explicitly disclose, for example, the combination of the following features/aspects:

- Storing the materials therein for a predetermined period of time as a stationary batch of material for freezing/chilling.
- Introducing a defrost heat exchange medium into the module to replace the refrigerant heat exchange medium to cause the material at the interface of the module to at least partially melt.
- The body is extruded from metal and comprises a plurality of channels extending the length of the body.
- The formation of a stationary batch of material for freezing/chilling.

INVENTIVE STEP (IS)

The invention defined by claims 1-21 is considered to contain an inventive step and therefore complies with PCT Article 33(3).

While **D1-D3** teach towards several of the features defined by the presently amended claims, it is considered that not all features would be considered obvious to the person skilled in the art. For example, when considering independent claims 1 and 10:

None of the cited art teaches storing the materials therein for a predetermined period of time as a stationary batch of material for freezing/chilling, nor the provision of a flow of material into the one modules, the stopping of further flow into the one module, nor the recommencing of flow of material into the at least one module following the defrost. Similarly, none of the cited documents specifically teaches towards batch operation, and instead primarily teach towards continuous operation. The formation of a stationary batch of material, the stopping/recommencing of flow of material into the one module is considered not obvious as any one of **D1-D3** fail to provide the requisite teaching and motivation. Similarly the conversion of a continuous process to a batch process is not obvious, as it would require significantly augmenting the system - the cited art fails to provide the requisite motivation to do so.

Similarly, none of the cited art teaches towards introducing a defrost heat exchange medium into the module to replace the refrigerant heat exchange medium to cause the material at the interface of the module to at least partially melt. Instead, **D1**, for example, teaches towards providing material in a flowable state, and thus the provision of a defrost heat exchange medium is redundant. Therefore, there is no motivation in the cited art to prompt the person skilled in the art to modify any one of **D1-D3** and include the aforementioned feature and arrive at the claimed invention.

By virtue of their dependence on an independent claim containing an inventive step, claims 2-9, 11-21 are also considered to contain an inventive step.

INDUSTRIAL APPLICABILITY (IA)

The invention defined in the claims is considered to meet the requirements of Industrial Applicability under Article 33(4) of the PCT because it can be made by, or used in, industry.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International Application No.

Supplemental Box – IPC marks**PCT/AU2023/051339***F28D 7/10 (2006.01)**A22B 5/00 (2006.01)**A22B 7/00 (2006.01)**A23K 30/00 (2016.01)**F28D 21/00 (2006.01)**F28F 9/02 (2006.01)**F28F 13/02 (2006.01)*

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:

Support:

Claims 1, 9-14, 17-21 lack support as they omit essential features which are necessary for the working of the invention, and thus fail to comply with PCT Article 6.

Upon reading the specification, it is clear a channel formed between an external wall spaced from the internal wall is essential such that the flow of heat exchange medium (e.g. refrigerant) is provided. Without which, there appears to be no means which have been enabled by the specification that would facilitate the partial freezing/chilling, and subsequent defrosting of the material.

The specification as filed (Page 3 lines 3-5) describes the need to provide an alternative heat exchange system that can simply and effectively handle fibrous matter". As the means of facilitating heat exchange is at least in-part central to the invention, then the features associated therewith (such as those defined in amended claims 2, 5, 15, 16) should be defined in the respective independent claims.

The present specification (Page 3 line 13 - Page 5 line 28; Page 7 lines 4-20) also clearly describes the arrangement of an inner wall and outer wall defining a channel for the heat exchange medium to flow through, thus facilitating the chilling/freezing and defrosting of the material.

As such claim 1 fails to define the features necessary for the working of the invention such that the invention achieves the stated surprising technical benefit - that being a system that can simply and effectively handle fibrous matter. By virtue of their dependence on independent claim 1, claims 9-14, 17-21 also lack support.

Claims 1-21 are considered to lack support as they are broader than justified by the contribution to the art and therefore do not comply with PCT Article 6.

Upon reading the present specification (Page 2 lines 21-23; Page 4 lines 1-7) it is clear that the system described is specific to partially freezing/chilling materials such as animal viscera/offal for pet food production, as well as fruit, vegetables and other potential waste products which can be reused or disposed of.

However, the claims as currently drafted encompass all materials, which is very broad in scope. To emphasise this point, the claims encompass subject matter such as tubular ice/slurry makers, which are known to include both icing and de-icing phases (where refrigerant phases are changed and flow through the heat exchange conduit to partially melt the ice so that it can be removed).

While the description does support a subset of applicable materials, the claims - which define the monopoly for which protection is sought - fail to define the material in a manner consistent with that taught in the present specification. To this end a system and/or method for freezing/chilling materials as claimed is considered to encompass subject matter which has not been enabled by the present specification, and extends beyond the present specification's contribution to the art.

Clarity:

Claim 10 "the interface" lacks proper antecedent basis. For the purpose of examination, I have construed this as "an interface".

Continuation of: **Box IV**

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept. This Authority has found that there are different inventions based on the following features that separate the claims into distinct groups:

- Group I: Claims 1-9 direct to a system for freezing/chilling materials. The features of a pump for applying positive pressure to the materials to facilitate flow; wherein at least one module is in fluid communication with said pump to receive the materials and store the materials therein for a predetermined time; and the module having an internal wall, are specific to this group of claims.
- Group II: Claims 10-21 direct to a method for freezing/chilling materials. The feature of introducing a defrost heat exchange medium into the module to replace the refrigerant heat exchange medium to cause the material at the interface of the module to at least partially melt, is specific to this group of claims.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

When there is no special technical feature common to all the claimed inventions there is no unity of invention. In the above groups of claims, the identified features may have the potential to make a contribution over the prior art but are not common to all the claimed inventions and therefore cannot provide the required technical relationship. The only features common to all of the claimed inventions and which provides a technical relationship among them include:

- The provision of freezing/chilling materials;
- Introducing a flow of material into a module/space.

However the above features do not make a contribution over the prior art because they are disclosed in:

D1: WO 2020/240287 A1 (ARCHER, et al.) 3 December 2020

D2: US 2015/0140190 A1 (NESTEC SA) 21 May 2015

D3: US 2008/027161 A1 (VEDSTED, et al.) 6 November 2008

Therefore in the light of this document this common feature cannot be a special technical feature. Therefore there is no special technical feature common to all the claimed inventions and the requirements for unity of invention are consequently not satisfied *a posteriori*.