

Citation: CCR Technologies, Ltd. (Re), 2021 CACP 4
Commissioner's Decision #1557
Décision du Commissaire #1557
Date: 2021-01-29

TOPIC: F00 Novelty
O00 Obviousness
B00 Ambiguity or Indefiniteness

SUJET: F00 Nouveauté
O00 Évidence
B00 Caractère ambigu ou indéfini

Application No. : 2,809,209
Demande n° 2 809 209

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2,809,209, having been rejected under subsection 30(3) of the *Patent Rules* (SOR/96-423) as they read immediately before October 30, 2019 (“former *Rules*”) has consequently been reviewed in accordance with paragraph 199(3)(c) of the *Patent Rules* (SOR/2019-251) (“*Patent Rules*”). The recommendation of the Board and the decision of the Commissioner are to notify the Applicant that a specific amendment is necessary for compliance with the *Patent Act* and *Patent Rules*.

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INTRODUCTION

- [1] This recommendation concerns the review of rejected Canadian patent application number 2,809,209 (“the instant application”), which is entitled “PROCESS FOR RECOVERY OF PROCESSING LIQUIDS” and is owned by CCR TECHNOLOGIES, LTD. (“the Applicant”). A review of the rejected application has been conducted by the Patent Appeal Board (“the Board”) pursuant to paragraph 199(3)(c) of the *Patent Rules*. As explained in more detail below, our recommendation is to notify the Applicant that a specific amendment is necessary for compliance with the *Patent Act* and *Patent Rules*.

BACKGROUND

The Application

- [2] The instant application was filed under the *Patent Cooperation Treaty* and has an effective filing date in Canada of August 23, 2011. It was laid open to public inspection on March 15, 2012.
- [3] The instant application relates to a process for the recovery of processing liquids that are used to scrub undesirable components from a gas stream, such as a natural gas product stream or a an exhaust gas stream from utility vent and flue gas streams. Over time the processing liquid accumulates contaminants that must be removed on a regular or continuous basis in order for the effectiveness of the process liquid as a scrubbing medium to be maintained. The goal of the processing liquid recovery process of the instant application is to recover the liquid in a more energy efficient manner.

Prosecution History

- [4] On December 21, 2017, a Final Action (“FA”) was written pursuant to subsection 30(4) of the former *Rules*. The FA stated that the instant application is defective on the grounds that, of the claims on file at the time of the FA (“claims on file”), claims 1-3 lacked novelty and therefore do not comply with paragraph 28.2(1)(b) of the *Patent Act*, claims 1-3 and 8 would have been obvious and therefore do not comply with section 28.3 of the *Patent Act*, and claim 7 is indefinite and therefore does not comply with subsection 27(4) of the *Patent Act*.
- [5] In a June 20, 2018 response to the FA (“R-FA”), the Applicant proposed amendments to claim 1 on file and provided arguments, which were focussed on amended claim 1. The

Applicant also proposed an amendment to claim 7 on file to address the identified indefiniteness defect.

- [6] As the Examiner considered the application not to comply with the *Patent Act*, pursuant to paragraph 30(6)(c) of the former *Rules*, the application was forwarded to the Board for review on September 19, 2018 along with an explanation outlined in a Summary of Reasons (“SOR”). The SOR set out the position that the claims on file identified as having lacked novelty and having been obvious were still considered to be defective. However, the SOR indicated that the proposed amendment to claim 7 on file would overcome the indefiniteness defect.
- [7] In a letter dated October 15, 2018, the Board forwarded to the Applicant a copy of the SOR and requested that the Applicant confirm its continued interest in having the application reviewed.
- [8] In a response dated November 8, 2018, the Applicant indicated its continued interest in having the application reviewed.
- [9] The present panel (“the Panel”) of the Board was formed to review the instant application under paragraph 199(3)(c) of the *Patent Rules*.

ISSUES

- [10] The issues to be addressed are whether:
- Claims 1-3 on file lack novelty;
 - Claims 1-3 and 8 would have been obvious; and
 - Claim 7 is indefinite.

LEGAL PRINCIPLES AND OFFICE PRACTICE

Claim Construction

- [11] In accordance with *Free World Trust v Électro Santé Inc*, 2000 SCC 66, essential elements are identified through a purposive construction of the claims done by considering the whole of the disclosure, including the specification and drawings (see also *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at paras 49(f) and (g) and 52). This is performed from the point

of view of the person skilled in the art in light of the relevant common general knowledge (“CGK”).

- [12] In accordance with the Patent Office practice notice “*Patentable subject-matter under the Patent Act*,” (CIPO, November 2020), “all elements set out in a claim are presumed essential, unless it is established otherwise or is contrary to the language used in the claim.”

Novelty

- [13] Paragraph 28.2(1)(b) of the *Patent Act* sets out the conditions under which a claim may be found to lack novelty in view of a disclosure by a third party:

28.2 (1) The subject-matter defined by a claim in an application for a patent in Canada (the “pending application”) must not have been disclosed

...

(b) before the claim date by a person not mentioned in paragraph (a) in such a manner that the subject-matter became available to the public in Canada or elsewhere.

- [14] There are two separate requirements in order to show that a prior art document anticipates a claimed invention: a prior disclosure of the claimed subject matter; and the prior disclosure must enable the claimed subject matter to be practised by a person skilled in the art (*Apotex Inc v Sanofi Synthelabo Canada Inc*, 2008 SCC 61 [“*Sanofi*”] at paragraphs 24-29).

- [15] “Prior disclosure” means that the prior art must disclose subject matter which, if performed, would necessarily result in infringement of the patent. The person skilled in the art looking at the disclosure is “taken to be trying to understand what the author of the description [in the prior patent] meant” (*Sanofi* at paragraph 32). At this stage, there is no room for trial and error or experimentation by the skilled person. The prior art is simply read “for the purposes of understanding it”: see *Sanofi*, at paragraph 25, citing *Synthon B.V. v SmithKline Beecham plc*, [2006] 1 All ER 685, [2005] UKHL 59.

- [16] “Enablement” means that the person skilled in the art would have been able to perform the invention without undue burden. The person skilled in the art is assumed to be willing to make trial and error experiments to get it to work: *Sanofi*, at paragraphs 26-27.

Obviousness

- [17] The *Patent Act* requires that the subject-matter of a claim not be obvious to a person skilled

in the art. Section 28.3 of the *Patent Act* states:

28.3 The subject-matter defined by a claim in an application for a patent in Canada must be subject matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to

(a) information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and

(b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.

[18] In *Sanofi* at paragraph 67, the Supreme Court of Canada stated that it is useful in an obviousness inquiry to use the following four-step approach:

(1) (a) Identify the notional “person skilled in the art”;

(b) Identify the relevant common general knowledge of that person;

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

(3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

Indefiniteness

[19] Subsection 27(4) of the *Patent Act* requires claims to distinctly and explicitly define subject-matter:

The specification must end with a claim or claims defining distinctly and in explicit terms the subject-matter of the invention for which an exclusive privilege or property is claimed.

[20] In *Minerals Separation North American Corp v Noranda Mines Ltd*, [1947] Ex CR 306, 12 CPR 99 at 146, the Court emphasized both the obligation of an Applicant to make clear in the claims the ambit of the monopoly sought and the requirement that the terms used in the claims be clear and precise:

By his claims the inventor puts fences around the fields of his monopoly and warns the public against trespassing on his property. His fences must be clearly placed in order to give the necessary warning and he must not fence in any property that is not his own. The terms of a claim must be free from avoidable ambiguity or obscurity and must not be flexible; they

must be clear and precise so that the public will be able to know not only where it must not trespass but also where it may safely go.

ANALYSIS

Claim Construction

The person skilled in the art

[21] The FA did not identify a person skilled in the art. In light of the background discussion in the “Description of the Prior Art” section of the instant application, and the subject-matter of the claims, we view the person skilled in the art to be a person skilled in the art of contaminant removal from industrial product gases. This expertise includes the removal of water and acid gases from natural gas or the removal of acid gases, CO₂, etc. from flue gas streams.

The relevant common general knowledge

[22] The FA did not identify the relevant CGK. We set out below the points of CGK that we have taken to be generally known at the claim date, based on the information found in the “Description of the Prior Art” in the instant application:

- The use of processing liquids to remove components from a gas product of an industrial process and the need to then remove those components, which are usually contaminants, from the processing liquid in order to recover and reuse the processing liquid;
- The components to be removed from the processing liquid comprise components that are less volatile and more volatile than the processing liquid itself;
- The use of processing liquids to remove water and acidic gases from natural gas products of oil and gas wells and the fact that removal of the water helps prevent the formation of gas hydrates that can cause problems such as gas transmission line blockages, plugging of blowout preventers and fouling of process equipment;
- Past attempts to prevent the formation of gas hydrates include removal of the free water, maintaining elevated temperatures and/or reduced pressures or the addition of freezing point depressants (antifreezes);
- The solubility of natural gas brine product in the alcohols and glycols (antifreezes) used

as processing liquids and the consequent contamination of these processing liquids with the dissolved salts in the brine product;

- The scrubbing of natural gas to remove acidic components such as CO₂, H₂S, sulfur oxides, etc., by means of processing liquids such as liquid amines and the eventual contamination of the amines after extended use by the residual buildup of heat-stable salts, which leads to degraded performance of the amine processing liquid;
- The use of alkanolamines as well as proprietary blends of alkanolamines, amines and additives to scrub exhaust gas streams of contaminants such as carbon dioxide and the consequent buildup of such contaminants in the processing liquids and need to remove them to maintain effectiveness of the processing liquid;
- Past attempts at reclaiming/recovering the contaminated processing liquids described at page 4 of the instant application;
- The general desire to recover or clean such processing liquids due to their cost and the difficulty of disposing of them in an environmentally suitable manner; and
- The typical storage of such processing liquids in storage or surge tanks with the concomitant loss of the available energy that is used to clean them.

Claim terms and essential elements

[23] In the FA at page 2, a table was set out equating terminology used in the claims with what was considered to be more common terminology to those skilled in the art in the field. The Applicant did not take issue with the content of this table and we reproduce it here for convenient reference, as it is useful in comparing the elements of the claims with those of the prior art:

Element	Reference character	Terminology used by Applicant
ABSORPTION step	N/A	"absorber/scrubber"
REGENERATION step	58	"separation system"
FURTHER SEPARATION	7	"first separation zone"

Second separation	26	"second separation zone"
rich solvent (entering the	66	"spent processing liquid"
lean solvent (withdrawn for further	1	"feed mixture"
lean solvent (returned to ABSORPTION	65	"substantially degassed processing liquid stream"
heated lean solvent returned to	8	"hot vapor stream"
heating of the withdrawn lean	12	"heating said stream of feed mixture"
first residuum stream	9	"first residuum stream"

- [24] In the FA at pages 6-7, an issue was raised regarding the volatilization of the processing liquid in the first separation zone (7), as set out in claim 1 on file. The FA contended that the volatilization of the processing liquid, or bringing it to a temperature above its boiling point was not supported by the instant application and therefore the claims could not be interpreted as setting out the formation of a vapor stream from the processing liquid. The FA also contended that the only heat source for this step was the heated first residuum stream 13.
- [25] However, we note that claim 1 on file specifies the heating of the feed mixture (12) and its introduction into the first separation zone (7), and that by these steps, a portion of the water and the processing liquid is formed into a hot vapor stream (8). The instant application discloses that a heater (12) may be used prior to the entry of the feed stream (1) into the first separation zone (7) as a heat source and also discloses the use of reboiler (59) to heat the degassed processing liquid from the distillation column (60)/regenerator before it is routed to the first separation zone (7).
- [26] We further note that the first separation zone (7) is disclosed as utilizing a “still or flash vessel 7” (instant application at page 8). As such, a source of heat is not the only means of forming the hot vapor stream (8). The reduction in pressure provided by such a flash vessel would also contribute to forming a vapor stream comprising a portion of the water and processing liquid as claimed.
- [27] We therefore take the language of the claims as is, with a hot vapor stream (8) of a portion

of the water and processing liquid being formed in the first separation zone (7).

[28] With respect to essentiality of the claimed elements, there has been no suggestion during the prosecution that any elements of the claims on file are non-essential. Further, the claims do not use language indicating that any of the steps in each claim are optional, a preferred embodiment or one of a list of alternatives. Therefore we proceed on the basis that all elements of the claims are essential.

Novelty

[29] Claim 1 is the only independent claim indicated as being defective, the other independent claim, claim 7, having been determined to be patentable in the FA. Claim 1 is reproduced here for convenient reference:

1. A process for recovering a processing liquid from a feed mixture recovered from a gas purification system, the process characterized by:

recovering a stream of feed mixture (1) from a separation system (58) forming part of the gas purification system, the feed mixture comprising water, a processing liquid having a higher boiling point than water, at least one component that is more volatile than the processing liquid, and at least one component that is less volatile than the processing liquid, the component that is less volatile than the processing liquid being selected from the group consisting of inorganic salts, iron salts, salts of organic acids, and carbonates, and wherein the processing liquid is used for CO₂ removal;

heating the stream of feed mixture (12);

introducing the heated stream of feed mixture (1) into a first separation zone (7) wherein at least a portion of the water and a portion of the processing liquid is volatilized to produce a hot, vapor stream (8) comprising volatilized water and the volatilized portion of the processing liquid, and a first residuum stream (9) comprising at least some of the less volatile component and the unvolatilized portion of the water and the processing liquid;

introducing the hot vapor stream (8) back into the separation system (58), the separation system (58) including a distillation unit comprising a distillation column (60) and a reboiler (59);

using heat from the hot vapor stream (8) to heat the distillation column (60) by heating spent processing liquid (66) from a gas absorber/scrubber to degas the spent processing liquid (66) and produce a substantially degassed processing liquid stream (64); and

introducing at least part of the substantially degassed processing liquid stream (64) into the first separation zone (7) as at least a part of feed mixture (1)

Prior art document D4

[30] The FA indicated that claims 1-3 on file lacked novelty and did not comply with paragraph 28.2(1)(b) of the *Patent Act* in view of the following prior art document:

D4: US 2010/0083696 A1 Hoang-Dinh, *et al.* Pub: April 8, 2010

[31] D4 discloses a method for treating a gas mixture wherein an absorbing solution (i.e., processing liquid) is contacted with a gas mixture, thereby removing acid gases from the gas mixture. The method is focussed on the regeneration of the absorbing solution so as to remove the acid gases from it and reuse it. In that respect, D4 discloses the use of a series of regenerators 11, 21 and 31, illustrated in Figure 1 and reproduced below, whose purpose is to concentrate the acids gases that are removed from the absorbing solution:

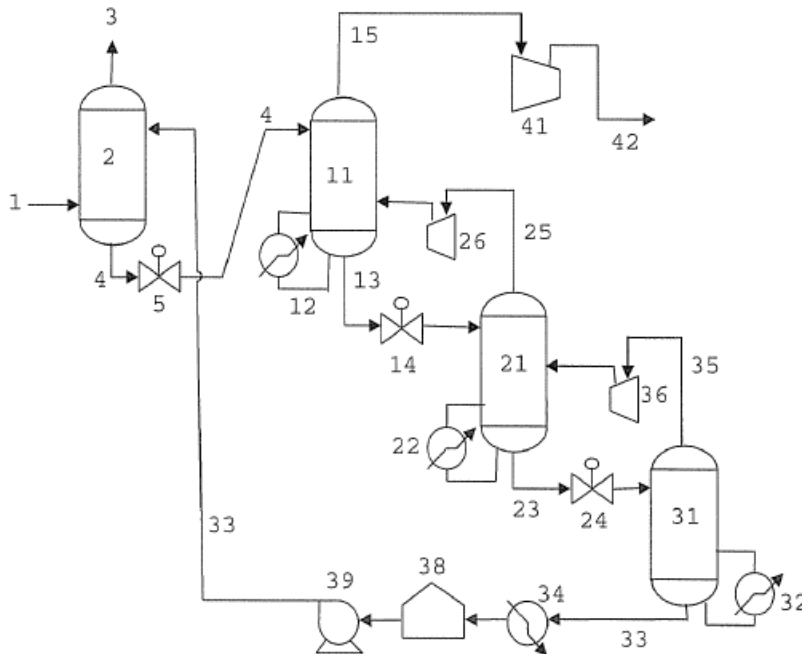


Figure 1

[32] The FA set out at pages 3-4 a comparison of the elements of claims 1-3 on file with what was disclosed in D4. For the purposes of our assessment we will focus on specific points relating to the comparison with claim 1.

[33] In the FA comparison of the elements of claim 1 with those of D4, the first separation zone (7) and separation system (58), which itself comprises distillation column (60), of claim 1

on file, are equated with the regenerators 21 and 11 of D4. We note that in claim 1 the separation zone (7) is given a “first” designation because a later dependent claim introduces a “second” separation zone.

[34] The distillation column (60) of the instant application is a “regenerator” like those of D4, whose purpose is to remove contaminants from the processing liquid so that it may be reused. In claim 1 on file this “regenerator” is used to “degas the spent processing liquid (66) and produce a substantially degassed processing liquid stream (64).” The degassed processing liquid stream (64) is the bottom product stream from the distillation column (60) (i.e., “regenerator”) shown in Figure 2 of the instant application, reproduced below:

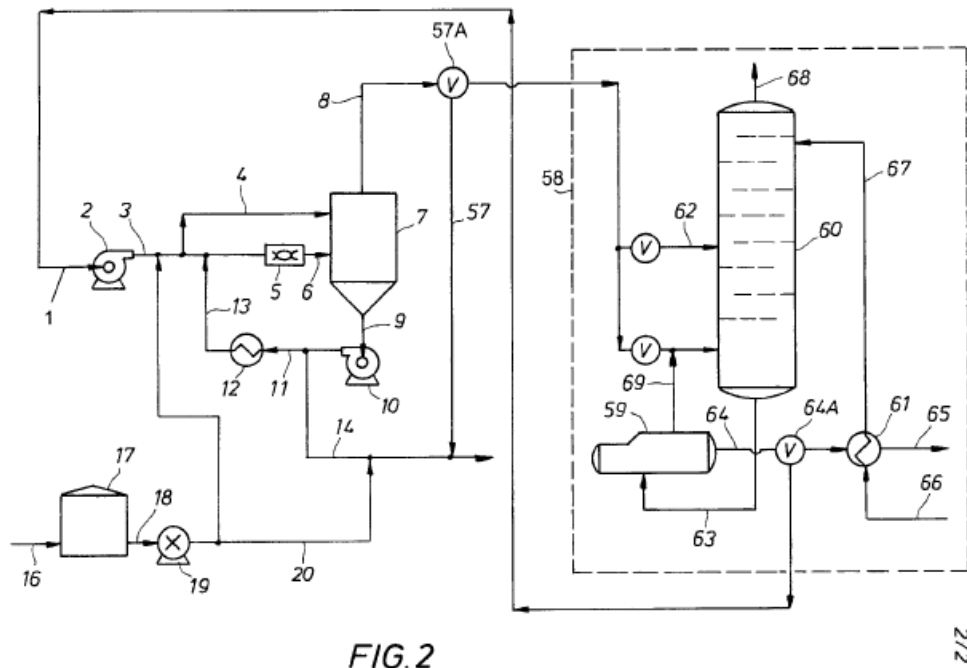


FIG. 2

2/2

[35] As disclosed in the instant application, shown above in Figure 2 and set out in claim 1 on file, what is fed to the separation zone (7) is the degassed processing liquid.

[36] In the FA, the regenerator 21 in D4 has been equated with the separation zone (7) of the instant application. The FA indicated that the step in claim 1 of “introducing the hot vapor stream 8 back into the separation system (58) was equivalent to D4 where “at the head output of the second regenerator 21 is connected a conduit 25 for conveying gas from the second regenerator 21 to the first regenerator 11 [0086].” However, as element 21 of D4 is

a regenerator, the gas stream that would be conveyed from conduit 25 would be an acid gas stream, not a degassed absorbing or processing liquid steam, as is set out in the claims on file.

[37] In claim 1 on file, the degassed processing liquid is heated and introduced into a first separation zone (7) where a portion of this heated degassed processing liquid is formed into a hot vapor steam 8, the rest being collected at the bottom of the first separation zone as a residuum stream (9). These steps occur after the processing liquid has been degassed or “regenerated” in the distillation column (60) (i.e., “regenerator”).

[38] In light of the above, the process disclosed in D4 relating to the functioning of regenerators 21 and 11 is fundamentally different than that of claim 1 on file. In D4 the heated gas that is used in the regenerator 11 is a contaminant acid gas rather than a hot vapor stream of the absorbing or processing liquid.

[39] We have reviewed the remainder of D4 and can find no other process variation disclosed therein that would render claim 1 anticipated. With respect to the embodiment disclosed therein illustrated by Figure 3 and discussed at paragraph [0138], an optional step of including a flash vessel 51 is discussed where the absorbing liquid is flashed to create flashed gases. However, the flashed gases are not used as a heat source in the regenerators. As disclosed they “may be treated downstream, notably for recovering a possible hydrocarbon fraction contained in the flashed gases, in addition to the acid gases.”

[40] We can find no disclosure or suggestion in D4 to create a hot vapor stream of the regenerated/degassed absorbing liquid and to use that heated gas stream as a heat source in the regenerator/distillation column (60). We agree with the statement by the Applicant in the response dated September 1, 2017 at page 3:

D4 teaches only the removal of acid gases overhead from the regenerators with the liquid portion being sent downstream to subsequent regenerators. D4 seeks to maximize the amount/purity of acid gases recovered from the regenerators and, thus, minimize the vaporization of absorbing solution. In contrast, Applicant's application seeks to vaporize the processing liquid thereby concentrating the amount of non-volatile contaminants in the liquid solution and minimize the volume of processing liquid which is converted to a first residuum. (See first partial paragraph on page 16).

[41] In light of the above, we conclude that independent claim 1 on file is novel in view of D4. It follows that claims 2 and 3, which depend on claim 1, also are novel. Further, given that the other independent claim on file, claim 7 also includes the steps discussed above in

relation to claim 1 as well as an additional separation zone step, we agree with the FA that claim 7 on file is novel in view of D4.

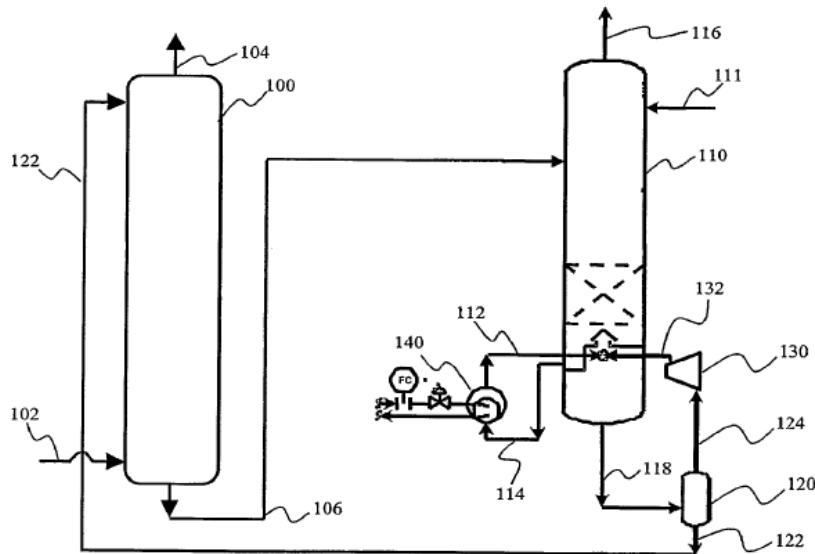
Prior art document D7

[42] Given our conclusion above in respect of D4, for completeness we have reviewed the other prior art document D7, which in the FA was used only in the context of the obviousness assessment. D7 is identified below:

D7: CA 2,632,425 A1 Reddy, *et al.* Pub: July 5, 2007

[43] D7 discloses a process similar to that described in the instant application and that of D4. D7 discloses a method of regenerating a solvent which has been used to remove acid gases from a feed stream, for example to remove carbon dioxide from plant flue gases by means of an amine-based solvent. The solvent in this case is equivalent to the processing liquid of the instant application or the absorbing solution of D4.

[44] Figure 1 of D7 has been reproduced below for convenient reference:



[45] Like the instant application and the claims on file, D7 discloses a process wherein a rich solvent 106 (i.e., absorbing solution/processing liquid) is fed to a stripping column 110 (i.e., regenerator/distillation column) where the acid gases are removed from the solvent so that it may be recovered and reused again in a absorber 100 that is used to scrub the acid

gases from the flue gas.

[46] In the case of D7 the lean or “degassed” solvent is discharged from the bottom of the stripping column 110, with the acid gas 116 that has been removed from the solvent routed downstream for further processing. D7 also discloses the use of a flash drum 120, which would be equivalent to the first separation zone (7) of the instant application that also may use a flash vessel.

[47] However, in the case of D7, the flashed vapor 124 produced in flash drum 120 is compressed and then returned to the bottom of the stripping column 110 where it is used to help remove the acid gases from the feed stream 106 of rich solvent. While D7 discloses the use of a reboiler to heat the main steam stripping medium, D7 does not suggest heating the lean solvent exiting the bottom of the stripping column before it is fed to flash drum 120 to generate the flashed vapor 124 that is fed back to the stripping column. As such it lacks the “heating the stream of feed mixture” step of claim 1 on file.

[48] In light of the above, we conclude that claim 1 on file is novel in view of D7, as are the claims that depend on claim 1. Likewise, as claim 7 on file shares the elements of claim 1 discussed above, it too is novel in view of D7.

Conclusions on Novelty

[49] In light of the above, we conclude that claims 1-9 on file are novel in view of prior art documents D4 or D7 and therefore comply with paragraph 28.2(1)(b) of the *Patent Act*.

Obviousness

(1)(a) Identify the notional “person skilled in the art”

[50] We have identified the person skilled in the art above under Claim Construction and apply the same characterization here.

(1)(b) Identify the relevant common general knowledge of that person

[51] We have identified the relevant CGK above under Claim Construction and apply the same criteria in the obviousness analysis.

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it

[52] For the purpose of the assessment of obviousness, we proceed using all the elements of the claims, as we have done above in the novelty assessment.

(3) Identify what if any differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed

[53] In the FA at page 5, having been identified as lacking novelty, claims 1-3 were also identified as having been obvious. Claim 8 was identified as having been obvious in view of a combination of D4 and D7.

[54] In light of our conclusions in respect of novelty, we will review both prior art documents individually and in combination in assessing the obviousness of the claims.

[55] With respect to D4, we have discussed under the novelty assessment that D4 does not disclose or suggest the creation of a hot vapor stream of the regenerated/degassed absorbing liquid and the use of that heated gas stream as a heat source in the regenerator/distillation column (60).

[56] With respect to D7, we have concluded that D7 does not disclose or suggest heating the lean solvent exiting the bottom of the stripping column before it is fed to flash drum 120 to generate the flashed vapor 124 that is fed back to the stripping column. As such it lacks the “heating the stream of feed mixture” step of claim 1 on file.

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

[57] Considering D4 alone, there is nothing in the relevant CGK identified above that would suggest the creation of a hot vapor stream of the regenerated/degassed absorbing liquid and the use of that heated gas stream as a heat source in the regenerator/distillation column (60).

[58] We therefore conclude that claim 1 on file would not have been obvious in view of D4.

[59] With respect to D7, the relevant CGK does not suggest heating the flashed gases produced

in a flash vessel from a degassed/lean processing liquid/solvent, which gases are then used as part of a processing liquid/solvent regenerator/stripping column.

[60] We therefore conclude that claim 1 on file would not have been obvious in view of D7.

[61] Further, considering D4 and D7 in combination, we see no motivation for the person skilled in the art to combine the two documents and make the modifications necessary to arrive at the subject-matter of claim 1 on file.

[62] Starting from D4, the person skilled in the art would need to either repurpose one of the regenerators in the embodiment of Figure 1 in order to act as a flash vessel for the degassed absorbing solution, or to repurpose the flashed gas 52 in the embodiment of Figure 3 in order to act as a heat source for the regenerator series, as well as add a heat source before the flash vessel 51. D7 does disclose a flash drum 120 that produces gas that is used in the stripping/regenerating process, but does not disclose or suggest any heating of the flashed gas before re-entry into the stripping column/regenerator. As such, even in combination the skilled person would not arrive at the subject-matter of claim 1 on file.

[63] Likewise, starting from D7, the skilled person would find no motivation in D4 to add a heating step before the production of flashed gases in the flash drum 120, as D4 does not suggest or disclose this in association with the embodiment that includes the flash vessel 51. Further, while D4 does disclose heating means in conjunction with the regenerators 11, 21 and 31 of Figure 1 in association with the bottom liquid product, these regenerators serve a different purpose than the flash vessels used in D7 and the instant application.

[64] We therefore conclude that claim 1 on file would not have been obvious in view of a combination of D4 and D7.

Conclusions on Obviousness

[65] In light of the above, we conclude that claim 1 on file would not have been obviousness in view of D4 or D7 taken individually or in combination. Likewise, dependent claims 2-6, 8 and 9, which depend directly or indirectly on claim 1 would not have been obvious. Independent claim 7, which shares the elements of claim 1 discussed above would also not have been obvious. Therefore all of claims 1-9 on file would not have been obvious and are compliant with section 28.3 of the *Patent Act*.

Indefiniteness

- [66] In the FA at page 7, claim 7 on file was indicated as being defective due to a lack of antecedent for “the second separation zone” in the penultimate line of page 19 of the instant application.
- [67] In the RFA at page 2, the Applicant proposed modifying this first instance of the “second separation zone” to read “a second separation zone” to thereby provide a proper antecedent for the subsequent instance of the expression.
- [68] We agree that in claim 7 on file the expression “the second separation zone” has no proper antecedent and causes a lack of clarity in the claim, contrary to the requirements of subsection 27(4) of the *Patent Act*. However, this defect may be remedied by the proposed amendment to claim 7 in the RFA.

Proposed claims

- [69] While the RFA proposed amending claim 1 on file in light of the defects raised in the FA, in view of our conclusions in respect of novelty and obviousness above, such amendments are not necessary.
- [70] However, given our conclusion in respect of indefiniteness, the proposed amendment to claim 7 on file is considered to be an amendment necessary for compliance with the *Patent Act*.

CONCLUSIONS

- [71] We have determined that claims 1-9 on file are novel and are therefore compliant with paragraph 28.2(1)(b) of the *Patent Act* and that claims 1-9 on file would not have been obvious and are therefore compliant with section 28.3 of the *Patent Act*.
- [72] We have also determined that claim 7 on file is indefinite and is therefore non-compliant with subsection 27(4) of the *Patent Act*.

RECOMMENDATION OF THE BOARD

[73] In view of the above, the Panel recommends that the Applicant be notified, in accordance with subsection 86(11) of the *Patent Rules*, that a specific amendment is “necessary” for compliance with the *Patent Act* and *Patent Rules*, namely:

- Amendment of the expression “the second separation zone” at line 19 of claim 7 on file to read “a second separation zone.”

Stephen MacNeil

Philip Brown

Paul Fitzner

Member

Member

Member

DECISION OF THE COMMISSIONER

[74] I concur with the conclusions and recommendation of the Board. In accordance with subsection 86(11) of the *Patent Rules*, I hereby notify the Applicant that the following amendment, and only this amendment, must be made in accordance with paragraph 200(b) of the *Patent Rules* within three (3) months of the date of this decision, failing which I intend to refuse the application:

- Amendment of the expression “the second separation zone” at line 19 of claim 7 on file to read “a second separation zone.”

Virginie Ethier

Assistant Commissioner of Patents

Dated at Gatineau, Quebec

this 29th day of January, 2021