

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RONALD E. BOOTH, III

Appeal No. 95-4354
Application 08/137,633¹

ON BRIEF

Before RONALD H. SMITH, CAROFF and DOWNEY, Administrative Patent Judges.

DOWNEY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal, under 35 U.S.C. § 134, from the final rejection of claims 1-3 and 5, all the claims pending in the application.

¹ Application for patent filed October 15, 1993.

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The invention is directed to a method of capturing nitrogen from air using a gas separation membrane and employing both a high feed side air pressure and a vacuum on the permeate side to produce high flow rates of nitrogen.

Applicant indicates that all the claims stand or fall together. 37 C.F.R. § 1.192(c). Accordingly, we direct our attention to claim 1 the only independent claim in the application² which reads as follows:

1. A process for producing nitrogen gas from air at an enhanced flow rate wherein the oxygen content of the produced gas is 8% or less using a membrane separator, the process comprising: (a) moving compressed air at a pressure from about 40 psig to about 120 psig into a membrane separator containing a plurality of hollow fiber membranes confined in a container, the separator being adapted to permit selectively the passage therethrough of oxygen, carbon dioxide and water vapor while restraining the passage of nitrogen; (b) applying a vacuum to the permeate side of the separator of from about 3.4 psia to about 13.2 psia to provide an enhanced flow rate of nitrogen wherein the flow rate of nitrogen is at least twofold higher to fourfold higher than is observed without applied vacuum; (c) collecting under pressure the resultant non-permeate gas from the membrane separator.

The references relied upon by the examiner are:

McNeill	4,781,907	Nov. 1, 1988
Tsang et al. (Tsang)	4,883,023	Nov. 28, 1989
Rice	4,894,068	Jan. 16, 1990

² Claim 1 is reproduced in the brief at pages 7 and 8. In this reproduction, claim 1, line 5, the term "containg" should read --containing--.

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Claims 1 and 3 stand rejected as anticipated under 35 U.S.C. § 102(b) as being clearly anticipated by Tsang; and claims 2 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Tsang in view of McNeill or Rice.

We reverse.

Opinion

Tsang discloses separating nitrogen from compressed air by use of a membrane separator containing hollow tubular fiber members. The feed air is compressed and fed into the separator at 120 psig (column 4, line 42). Tsang indicates that there is a pressure drop across the fiber membranes of 3-5 psi; that oxygen and water permeate through the wall and is presented to the outlet port 28 as moist oxygen enriched air having an oxygen content of about 90% with a fluid pressure of between 3-5 psi; and that the nitrogen is slower to permeate the walls and is presented at outlet port 32 as dry nitrogen enriched air having a fluid pressure of about 115-117 psi with a nitrogen concentration of about 95%.

The examiner alleges that these parameters of Tsang are within those recited by applicant in his claims. The examiner then concludes that the flow rate of nitrogen in Tsang must also

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be enhanced in the same two fold higher rate than that without the applied vacuum.

As noted previously, Tsang indicates that the oxygen fluid pressure is between 3-5 psi. Applicant urges that this 3-5 psi means psig. The examiner does not agree with applicant and explains:

because permeate line "29" which is [sic] the oxygen enriched line from the membrane separator "26" communicates with compressor section "15" of turbocharger "12" to compress such stream to above atmospheric pressure for most conditions of vehicle operation. That line "29" would provide a suction at the permeate outlet "28" of membrane separator "26" at a fluid pressure of between 3-5 psi. As that is a suction produced by compressor section "15", it is the Examiner's position that the '3-5 psi' must refer to vacuum and should be interpreted as 3-5 psig. The same applies to the nitrogen retentate (non-permeate stream) pressure of 115-117 psi...(emphasis added).

In our view, Tsang does not provide enough detail to conclude that Tsang anticipates claim 1 for two reasons. First, while we agree with the examiner that the compressor 15 does in fact reduce the pressure in line 30 to which line 29 is attached, the amount of suction and its effect on line 29 and at outlet 28 is not discussed by Tsang. Thus, there is but speculation that the suction from the compressor would be at the level required by the claims. In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981). (Inherency, however, may not be established by

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probabilities or possibilities. The mere fact that a certain thing *may* result from a given set of circumstances is not sufficient). Second, while the examiner alleges that 3-5 psi is a parameter of the instant claims, he goes on to say that 3-5 psi "must refer to vacuum and should be interpreted as 3-5 psig." Applicant's reply brief acknowledges that he too has interpreted the 3-5 psi as 3-5 psig. Applicant further explains that³,

[B]y definition AT ZERO PSIG the pressure is 14.7 pounds per square inch (one atmosphere of pressure)... [T]herefore "3-5" PSIG is 3-5 pounds per square inch ABOVE ATMOSPHERIC PRESSURE AND NOT UNDER VACUUM. At 3-5 psig the total pressure is 14.7 (one atmosphere) plus 3-5 equalling 17.7 to 19.7 pounds per square inch (total). Pressure above one atmosphere is not vacuum... (original emphasis).

Both applicant and the examiner interpret 3-5 psi in Tsang as 3-5 psig and we believe this to be a reasonable interpretation in view of the fact that the only reference by Tsang in his patent is to psig when referring to feed flow. With this interpretation by the examiner and the applicant that 3-5 psi is 3-5 psig, and with applicant's showing that 3-5 psig is above atmospheric

³ For this explanation applicant relies on "Chemical Engineering Handbook", Perry and Chilton, 5th Edition, Chapter 5, Page 4, McGraw Hill. (a copy of this page is attached to the decision).

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pressure which showing the examiner does not dispute⁴, it is clear that the parameters of Tsang do not anticipate the 3.2 psia to 13.4 psia of the instant claims as originally alleged by the examiner. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, USPQ 385, 388 (Fed. Cir. 1984). (Anticipation within 35 U.S.C. § 102 is established only when a single prior art reference discloses, expressly, or under the principles of inherency, each and every element of a claimed invention).

Accordingly, based on this record the decision of the examiner is reversed.

REVERSED

RONALD H. SMITH)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
MARC L. CAROFF)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES

⁴ The examiner entered and considered applicant's reply brief but he did not deem a response to applicant's arguments as necessary. See Paper No. 13.

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MARY F. DOWNEY)
Administrative Patent Judge)

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