

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KAMALESH K. SIRKAR, SUDIPTO MAJUMDAR and TARUN PODDAR

Appeal No. 1997-1733
Application 08/248,062

ON BRIEF

Before OWENS, WALTZ, and LIEBERMAN, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's refusal to allow claims 1 and 3-23 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

Appellants claim an apparatus for transferring a volatile solute from a gaseous mixture to a liquid absorbent, including pressure difference control means for maintaining a difference between the pressure of the gaseous mixture on one side of a porous membrane and the pressure of the liquid absorbent on the other side of the membrane, such that an interface between the gaseous mixture and the liquid absorbent is substantially immobilized at the membrane. Claim 1 is illustrative and reads as follows:

1. A volatile solute-transfer system for transferring a volatile solute from a gas-feed mixture to a liquid absorbent, the solute-transfer system comprising:

(a) an absorption module;

(b) a porous membrane located within and connected to the absorption module, the porous membrane being wettable by the liquid absorbent, the porous membrane dividing the absorption module into a gas feed chamber and a liquid absorbent chamber, the absorption module having a gas-feed mixture inlet port and a gas-feed mixture outlet port which communicate with the gas-feed mixture inlet port and a gas-feed mixture outlet port which communicate with the gas-feed chamber and a liquid absorbent inlet port and a liquid absorbent outlet port which communicate with the liquid absorbent chamber, in which the absorption module contains a pressure difference control means for maintaining a difference between a gas pressure of the

gas-feed mixture in the gas feed chamber and a liquid pressure of a liquid absorbent in the liquid absorbent chamber substantially within a predetermined

pressure range so that an interface between the gas-feed mixture and the liquid absorbent is substantially immobilized at the membrane, to effectively prevent the formation of a dispersion of gas-feed mixture and liquid absorbent in either chamber on opposing sides of the membrane;

(c) a regeneration module; and

(d) a nonporous membrane that is permeable to the volatile solute located within and connected to the regeneration module, the nonporous membrane dividing the regeneration module into a liquid absorbent chamber and a vacuum atmosphere or sweep vapor chamber, the regeneration module having a liquid absorbent inlet port and a liquid absorbent outlet port which communicate with the liquid absorbent chamber and a vacuum outlet port or sweep vapor outlet port which communicates with the vacuum or sweep vapor chamber.

THE REFERENCES

Schofield et al. (Schofield)	5,236,474	Aug. 17, 1993
Birbara et al. (Birbara)	5,281,254	Jan. 25, 1994
Babcock	5,354,469	Oct. 11, 1994
		(filed Jun. 14, 1993)

THE REJECTIONS

Claims 1, 3, 4, 6-8, 10-15, 17, 18 and 21-23 stand

Appeal No. 1997-1733
Application 08/248,062

rejected under 35 U.S.C. § 102(e) as being anticipated by Birbara. Claims 5 and 19 stand rejected under 35 U.S.C. § 103 as being obvious over Birbara in view of Schofield, and claims 9, 16 and 20 stand rejected under 35 U.S.C. § 103 as being obvious over Birbara in view of Babcock.¹

OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the aforementioned rejections are not well founded. Accordingly, we reverse these rejections.

Both of appellants' independent claims require a pressure control means for maintaining a difference in pressure between the gas and liquid absorbent within a range so that an interface between the gas and liquid absorbent is immobilized at a membrane separating the gas and the liquid absorbent.

The examiner argues that whatever produces Birbara's

¹The statement of the rejection over Birbara in view of Babcock in the answer states that the rejection is of claims 9-16 and 20 rather than claims 9, 16 and 20 as stated in the final answer, we consider the "9-16" to be a typographical error and the rejection to be of claims 9, 16 and 20 as stated in the final rejection.

partial pressure gradient of the material being absorbed corresponds to appellants' means for controlling the difference between the pressures of the gas and liquid absorbent (answer, page 5). As pointed out by appellants (brief, page 10), their claims require means for maintaining a pressure difference between the bulk gas and liquid phases. This limitation is not met by an apparatus wherein there is only a partial pressure gradient of a component through the gas phase and a concentration gradient of the component in the liquid. The closest Birbara appears to come to appellants' claimed invention is at column 4, line 61 to column 5, line 1, where he discloses that the pore size must be such that any pressure gradient across the membrane does not expel the amine from the pores. This, however, is not a disclosure of a control means for maintaining a pressure gradient between the gas and liquid absorbent but, rather, is merely a teaching that there can be a pressure gradient provided it is not so large that it expels the amine from the pores.

The examiner argues that Birbara has the structure to meet appellants' claims 1, 3, 4, 6-8, 10-15, 17, 18 and 21-23

Appeal No. 1997-1733
Application 08/248,062

(answer, page 6). This argument is not well taken because the examiner does not explain, and it is not apparent, where Birbara discloses the required means for maintaining a difference between the pressure of the gas and the pressure of the liquid absorbent.

For the above reasons, the examiner has not carried the burden of establishing a *prima facie* case of anticipation of the invention recited in claims 1, 3, 4, 6-8, 10-15, 17, 18 and 21-23. Consequently, we reverse the rejection of these claims.

The examiner does not rely upon Schofield or Babcock for any teaching which remedies the above-discussed deficiency in Birbara, or explain why Birbara would have fairly suggested, to one of ordinary skill in the art, means for maintaining a difference between the gas pressure and the liquid absorbent pressure. Hence, we reverse the rejections of claims 5 and 19 over Birbara in view of Schofield and claims 9, 16 and 20 over Birbara in view of Babcock.

Appeal No. 1997-1733
Application 08/248,062

DECISION

The rejections of claims 1, 3, 4, 6-8, 10-15, 17, 18 and 21-23 under 35 U.S.C. § 102(e) as being anticipated by Birbara, claims 5 and 19 under 35 U.S.C. § 103 as being obvious over Birbara in view of Schofield, and claims 9, 16

Appeal No. 1997-1733
Application 08/248,062

and 20 under 35 U.S.C. § 103 as being obvious over Birbara in
view of Babcock, are reversed.

REVERSED

TERRY J. OWENS)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
THOMAS A. WALTZ)	
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
PAUL LIEBERMAN)	
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