

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ARBOR D. DRINKWINE and BRIAN R. CAGE

Appeal No. 94-1098
Application 07/712,581¹

ON BRIEF

Before COHEN, JOHN D. SMITH and STAAB, *Administrative Patent Judges*.

STAAB, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 1, 3, 5-10 and 25-29, all the claims pending in the application.² We reverse.

¹Application for patent filed June 10, 1991.

²A proposed amendment filed subsequent to the final rejection has not been entered. See the advisory letter mailed December 17, 1992 (Paper No. 9).

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Appellants' invention pertains to a method "for generating a chemical vapor stream having a preselected vapor concentration suitable for use in calibrating vapor detectors and/or providing a reference for use in evaluating the performance of different vapor detectors" (specification, page 2). Independent claim 1 is illustrative of the appealed subject matter and reads as follows:

1. A method of generating a stream containing a preselected concentration of vapor of a chemical for use in a vapor detector, said method comprising the steps of:

providing a column;

providing said chemical on a substrate in the column;

controlling the temperature within a zone of the column to within approximately 0.1 EC of a preselected temperature to provide a concentration of said vapor within the zone;

passing a carrier gas at a controlled rate through the column to mix with the vapor and form said stream containing the preselected concentration of vapor; and

directing the stream from the column to the vapor detector.

Claim 25, the other independent claim on appeal, is similar to claim 1 except that instead of calling for the step of controlling the temperature in the column to within approximately 0.1 EC of the preselected temperature to provide a concentration of vapor, claim 25 calls for the step of controlling the temperature in the column to provide a saturation concentration

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of vapor in the stream.

The references of record relied upon by the examiner in support of rejections under 35 U.S.C. § 103 are:

Gelman	2,880,071	Mar. 31, 1959
Stenger et al. (Stenger)	3,459,938	Aug. 5, 1969
Jones et al. (Jones)	3,877,875	Apr. 15, 1975
Munk	4,942,018	Jul. 17, 1990

The following rejections under 35 U.S.C. § 103 are before us for review:

- a) claims 1, 6, 8-10, 25 and 29, unpatentable over Stenger;³
- b) claims 3, 26 and 27, unpatentable over Stenger in view of Munk;
- c) claims 5 and 28, unpatentable over Stenger in view of Jones; and
- d) claim 7, unpatentable over Stenger in view of Gelman.

Stenger, the principal reference, is directed to a method and apparatus for determining the inorganic carbon content of a liquid. Stenger's method involves generating a stream of carrier gas free of carbon dioxide by means of a carrier gas supply means 2, and injecting into the stream at inlet 64 (see Figure 2) a sample of a liquid whose inorganic carbon content is to be

³A rejection of these claims as being anticipated by Stenger has been withdrawn. See page 7 of the answer.

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determined. The stream of carrier gas and liquid is then passed through a conduit 6 having a heated zone 21 maintained by a heating means 4 at an elevated temperature below that at which significant combustion or decomposition occurs with respect to organic compositions in the sample analyzed and above the temperature required to vaporize the liquid sample (column 3, lines 32-43). The heating conduit contains a carbonate-reactive body formed from particulate solids coated with an acidic coating (column 3, lines 44-55). As explained at column 2, lines 38-43:

At the temperature of the heated zone, the volatile components of the liquid are largely vaporized without oxidation. Any dissolved carbon dioxide is thus released. In addition, vaporization deposits non-volatile inorganic carbonates on the carbonate-reactive body. At the elevated temperature of the heated zone, such carbonates readily liberate carbon dioxide upon contacting the acid surface of the carbonate-reactive body.

The resulting product gases are then swept from the heated zone 21 by the carrier gas and thence into an analyzer 7 for quantitatively determining the carbon dioxide content of the gas stream.

Considering first the standing rejection of claims 1, 6, 8-10, 25 and 29 as being unpatentable over Stenger, in rejecting these claims the examiner proffers the following rationale:

The reference [Stenger] does not disclose a method

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for vapor detection, however the method described in the reference can be altered to detect the vapor of [a] chemical of interest since the reference teaches all the essential steps such as: a conduit containing a substrate that can hold the liquid sample to be analyzed, a heating means with a temperature control to generate a concentration of vapor and a carrier gas to carry the stream of vapor to the detector. Therefore, it would have been obvious to one of ordinary skill in the art to use the method taught by the reference for vapor detection of various chemicals by changing the substrate in accordance with the chemical and by controlling the temperature to generate a selected concentration of vapor. [answer, page 5]

With respect to the step of controlling the temperature to within approximately 0.1 EC, and the step of controlling the carrier gas pressure, the examiner further contends that:

it is clearly evident that the temperature in the process [of Stenger] can be controlled. The range of the temperature selected depends on the chemical process that is being carried out; it is well within the knowledge of one in the art to set the temperature at a level that is appropriate for the chemical reaction being conducted and maintain the set point within as small a range of variability as possible. Stenger et al. also disclose on column 4[,] lines 52-55 a carrier gas flow control means consisting of a pressure regulator, a valve, a flow meter and a back flow check valve; it would, therefore, have been obvious that the flow rate of the carrier gas can be controlled. [answer, page 9]

As to the claim 25 requirement of controlling the temperature in the column to provide a saturation concentration of vapor in the stream, the examiner contends that this step is "is within the purview of one of ordinary skill in the art"

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(answer, page 10).

We cannot support this rationale. It is crystal clear that, in the normal operation, Stenger is concerned with determining the concentration of a chemical, carbon dioxide, in a liquid sample. In contrast, the claimed subject matter is directed to a method of generating a known concentration of chemical vapor. The examiner has not adequately explained, and it is not apparent to us, why one of ordinary skill in the art would have found it desirable, and thus obvious, to generate a known concentration of chemical vapor during normal operation of Stenger's apparatus. In this regard, the mere fact that the prior art *could* be modified to produce the claimed subject matter does not make such a modification obvious unless the prior art suggests the desirability of doing so. *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

In responding to an argument on page 5 of appellants' brief that Stenger teaches away from the claimed invention because producing a known vapor concentration would be directly contrary to Stenger's purpose, the examiner theorizes about what might occur in the event the need should arise to calibrate the

analyzer of Stenger.⁴ Without reference to anything in Stenger's disclosure, the examiner sets forth the following theory:

It was well known in the art that before using any analytical equipment, a calibration of the equipment is routinely done to ensure the equipment is performing properly. When doing a calibration, a known concentration of standard or control is used to produce a vapor which is subsequently being detected; therefore, the process of producing a known vapor concentration is not only obvious but also required in the Stenger et al. process. The method steps to carry out the process of calibration by using a preselected concentration of standard or control to produce a known concentration of vapor in the Stenger et al. process is well within the knowledge of one skilled in the art. Therefore Stenger et al. do not teach away from the claimed invention and the process of using a preselected concentration to produce a known concentration of vapor would have been an obvious step in the Stenger et al. process as a step that is readily apparent to one skilled in the art. [answer, page 8]

Although apparently unbeknownst to the examiner, Stenger, at column 2, line 60 through column 3, line 10 does discuss calibrating the carbon dioxide analyzer 35. As we understand it, calibration of Stenger's analyzer is accomplished by comparing analyzer signal readings against standard calibration curves. In order to obtain comparable readings, operating conditions,

⁴Our review of the record reveals that the examiner first brought up the matter of calibrating Stenger's apparatus in the advisory letter mailed December 17, 1992 (Paper No. 9) in response to appellants' proposed amendment filed subsequent to the final rejection.

including temperature and carrier flow rate, must be identical, or at least within the operational levels, used in developing the standard curves so that the comparison is independent of these variables.

In our view, calibrating Stenger's analyzer in this way would not result in the claimed method. Independent claim 1 is directed to a method of generating a stream containing a preselected concentration of *vapor of a chemical* comprising the steps of, *inter alia*, providing *said chemical* on a substrate in a column, controlling temperature in the column to provide a concentration of *said vapor*, and passing a carrier gas through the column to mix with *the vapor* and form the steam containing the preselected concentration of vapor. Independent claim 25 contains similar language. Consistent with appellants' disclosure,⁵ we interpret this claim language as requiring the vapor of the claims to be a gaseous or vapor phase of the very

⁵See, for example, page 5, lines 7-11, of the specification wherein it is stated that "The vapor generator 10 includes a plurality of porous glass beads 12, coated with a liquid or solid chemical substance, which may be volatilized to produce the desired vapor." Also see page 11, lines 18-22, of the specification wherein it is stated that "It has been found that maintaining the transfer line within the range of approximately 100 to 150EC provides satisfactory results when the vapor mixture comprises nitrogen and TNT vapors."

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same chemical provided on the substrate, as opposed to, for example, a gaseous or vapor phase of a reactant produced by compounds provided on the substrate. Since in Stenger the carbon dioxide gas produced in heated zone 21 is either (1) a *reactant* produced when non-volatile inorganic carbonates deposited on the carbonate-reactive body 20 react with the acidic coating thereof, or (2) dissolved carbon dioxide *released directly into the carrier gas stream* by vaporizing volatile components of the liquid, it cannot be said that Stenger's carbon dioxide gas is the gaseous or vapor phase of a chemical provided on the material 67. Nor does Stenger suggest modifying the method thereof to provide for such a circumstance, in our view.

In light of the foregoing, we cannot sustain the § 103 rejection of claims 1, 6, 8-10, 25 and 29 as being unpatentable over Stenger.

We have also reviewed the Munk, Jones and Gelman references additionally relied upon by the examiner in rejecting the remainder of the appealed claims but find nothing therein which makes up for the deficiencies of Stenger discussed above. Accordingly, we cannot sustain the rejection of claims 3, 26 and 27 as being unpatentable over Stenger and Munk, the rejection of claims 5 and 28 as being unpatentable over Stenger and Jones, or

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the rejection of claim 7 as being unpatentable over Stenger and
Gelman.

The decision of the examiner is reversed.

REVERSED

IRWIN CHARLES COHEN)	
Administrative Patent Judge))	
)	
)	
JOHN D. SMITH)	BOARD OF PATENT
Administrative Patent Judge))	APPEALS AND
)	INTERFERENCES
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LAWRENCE J. STAAB)	
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