

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JAMES R. STOY, JAMES L. G. SCHRODT
and ERIC L. BERGER

Appeal No. 1999-0072
Application 08/692,466¹

ON BRIEF

Before CALVERT, McQUADE and GONZALES, Administrative Patent Judges.

McQUADE, Administrative Patent Judge.

DECISION ON APPEAL

James R. Stoy et al. appeal from the final rejection of claims 1 through 12, all of the claims pending in the

¹ Application for patent filed August 5, 1996.

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application.² We reverse and remand the application to the examiner for further consideration.

The invention relates to

two-phase fluid flow systems used in industrial applications such as the steam flooding of oil fields or fluid distribution systems used in oil refineries, factories or the like. More particularly, the invention relates to methods and apparatus for measuring and controlling quantitatively in response to the measurements, the vapor/liquid mixture ratio (steam quality) at piping junctions in such fluid flow systems [specification, page 1].

Inasmuch as the copies of claims 1 through 12 appearing in the appendix to the appellants' brief (Paper No. 13) contain numerous inaccuracies over and above those noted on page 3 in the examiner's answer (Paper No. 14), we have referred to the claims as they are officially entered into the record in reviewing the appealed rejection.

The references relied upon by the examiner as evidence of obviousness are:

Nogami	3,438,385	Apr. 15, 1969
Statler	5,146,941	Sept. 15, 1992
Stoy et al. (Stoy)	5,415,195	May 16, 1995

² Claim 4 has been amended subsequent to final rejection.

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Claims 1 through 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nogami in view of Stoy and Statler.

Reference is made to the appellants' brief (Paper No. 13) and to the examiner's final rejection and answer (Paper Nos. 8 and 14) for the respective positions of the appellants and the examiner with regard to the merits of this rejection.

Nogami discloses a system for controlling the flow of two components A and B so as to produce a blended product C having a desired component ratio. The system includes, inter alia, first and second flow signal generators 1 and 2 for detecting or measuring the flows of components A and B, a valve 4 for controlling the flow of component B as compared with the flow of component A, and a device 3 for regulating the control valve in response to the flow signal generators to achieve the desired product component ratio.

Stoy discloses "a method and apparatus for controlling phase splitting of gas-liquid mixtures flowing through reducing branch T pipe junctions and, in particular, . . . a method and apparatus which will assure that the reduced

diameter branch will not receive virtually dry vapor" (column 1, lines 8 through 13). With respect to a representative first embodiment, Stoy teaches that

the first embodiment of the subject invention 10 is associated with a straight-through section of large diameter pipe 12, from which a fraction of the flow is removed through a smaller diameter branch outlet pipe 14 extending generally perpendicular to the straight-through section 12. A known flow constriction 16, such as the illustrated orifice (or a venturi not shown), is located within the smaller diameter branch outlet pipe 14 spaced from the junction. A sump 18 depends from the straight-through section 12 generally opposite the opening to the branch outlet pipe 14. A liquid bypass pipe 20 has one end connected to a takeoff point 22 located near the bottom of the sump 18 and its other end connected to a point 24 on the branch outlet pipe 14 downstream of the flow constriction 16. The length and inside diameter of the liquid bypass pipe 20 are designed such that the friction pressure drop of the liquid flowing through the bypass pipe 20 equals the pressure drop of the vapor flowing through the branch outlet flow constriction 16 at [a] nominal design vapor extraction ratio. Because the friction pressure drop of the liquid in the bypass pipe 20 and the constriction 16 induced pressure drop of the vapor are both [proportional] to the square of the velocity of the flowing media, the system is self-compensating for changes in vapor extraction ratio. The liquid-vapor mass ratio at the exit to the branch outlet pipe 14 remains constant in spite of changes in extraction ratio [column 2, line 56, through column 2, line 15].

Statler discloses a "high turndown mass flow control system for the regulation of gas flow to a variable pressure

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system such as a gas turbine engine" (Abstract). The flow control system includes a flow control subsystem 14 comprising a throttling control valve 18 and a mass flow measurement subsystem 16 comprising a flow restriction element 22 and transducers 26 and 24 for measuring the pressure upstream of the restriction and the pressure drop across the restriction.

As implicitly conceded by the examiner, none of these references teaches or would have suggested the subject matter

recited in the claims on appeal. Nevertheless, the examiner has concluded that

[i]t would have been obvious at the time of the . . . invention to one of ordinary skill in the art to modify the control system of Nogami by including the phase splitter of Stoy as a source of fluids for the two components (A and B; Nogami) in order to provide a control system for providing desired steam quality ratios; further, it would have been obvious at the time of the . . . invention to one of ordinary skill in the art to modify the flow sensors of Nogami by substituting the flow sensors as taught by Statler in order to provide flow sensors that only require pressure and pressure drop readings across an orifice and further are reliable and cost-efficient [final rejection, page 2].

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As is apparent from the foregoing descriptions, however, the teachings of Nogami, Stoy and Statler are not particularly relevant to one another. The only suggestion for combining these disparate references in the manner proposed by the examiner stems from hindsight knowledge derived solely from the appellants' disclosure. The use of such hindsight knowledge to support a conclusion of obviousness is, of course, impermissible. Therefore, we shall not sustain the standing 35 U.S.C. § 103 rejection of claims 1 through 12.

Finally, the application is remanded to the examiner to consider:

a) whether the appellants' use of the terms "line" and "leg" in the claims is inconsistent on its face and/or when read in light of the underlying disclosure, and thus warrants an appropriate objection or 35 U.S.C. § 112, second paragraph, rejection; and

b) whether the preamble of claim 9, which is directed to

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a "system for measuring the mass flow rate of a two phase fluid," is inconsistent with the body of the claim which fails to recite any means or element for actually doing so (the "means" recited in the last clause in the claim provides a total mass flow rate of the vapor phase rather than the total mass flow rate of the vapor and liquid phases), thus warranting an appropriate 35 U.S.C. § 112, second paragraph, rejection.

In summary:

a) the decision of the examiner to reject claims 1 through 12 is reversed; and

b) the application is remanded to the examiner for further consideration.

REVERSED AND REMANDED

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IAN A. CALVERT)	
Administrative Patent Judge)	
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JOHN P. McQUADE)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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JOHN F. GONZALES)	
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