

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. 60

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte FREDERICK W. AHRENS

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Appeal No. 1998-1053  
Application No. 07/974,832

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HEARD: July 11, 2000

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Before CALVERT, FRANKFORT, and JENNIFER D. BAHR,  
Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 11, 14, 17 through 30 and 33 through 37. Claims 15, 16, 31 and 32, which are the only other claims remaining in the application, stand allowed.

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Claims 12 and 13 have been canceled.

Appellant's invention relates to the manufacture of fibrous webs in which a foamed fiber-containing slurry (a.k.a., a foamed furnish) is deposited on a moving support to form a continuous web that is further treated to form a product such as tissue paper (specification, page 1). More specifically, the invention is directed to a method of controlling the jet of foamed furnish leaving the pressurized headbox of a paper or tissue making machine. A copy of representative claims 1, 10, 14, 24, 26, 29 and 35, as reproduced from the Appendix to appellant's brief, is attached to this decision.

The prior art references relied upon by the examiner in rejecting the appealed claims are:

Justus	4,086,130	Apr. 25,
1978		
Lebeau et al. (Lebeau)	4,374,703	Feb. 22,
1983		
Stotz	4,384,922	May 24,

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1983

Cheshire et al. (Cheshire)      4,764,253      Aug. 16,

1988

Franzen, "Direct Measurement of Jet Velocity As An Aid To Papermaking"; Tappi J., July 1987.

Talvio, "A study of Paper Machine Head Box Control System With Linear Transfer Functions"; Congres IFAC, 1966, Landres.

Claims 35 through 37 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which appellant regards as the invention.

Claims 1, 2, 5 through 7, 10, 11, 17 through 29 and 33 through 37 stand rejected under 35 U.S.C. § 103 as being unpatentable over Cheshire in view of Justus and Stotz "with or without Franzen."

Claims 3, 4, 8, 9, 14 and 30 stand rejected under 35 U.S.C. § 103 as being unpatentable over the prior art as applied by the examiner in the immediately preceding

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rejection, and further in view of Talvio or Lebeau.<sup>1</sup>

Rather than attempt to reiterate the examiner's full commentary with regard to the above-noted rejections and the conflicting viewpoints advanced by the examiner and appellant regarding those rejections, we make reference to the examiner's answer (Paper No. 51, mailed June 26, 1997) and the supplemental examiner's answer (Paper No. 54, mailed November 4, 1997) for the reasoning in support of the rejections, and to appellant's brief (Paper No. 50, filed April 4, 1997) and reply brief (Paper No. 52, filed August 26, 1997) for the arguments thereagainst.

#### OPINION

In reaching our decision in this appeal, we have given careful consideration to appellant's specification and claims,

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<sup>1</sup> While the rejection on page 5 of the examiner's answer included claims 15, 16 and 31, we understand this to be in error, since on pages 1, 3 and 8 of the answer the examiner has specifically indicated that claims 15, 16, 31 and 32 "are allowed" or have been "allowed over the prior art."

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to the applied prior art references, and to the respective positions articulated by appellant and the examiner. As a consequence of our review, we have made the determinations which follow.

Looking first at the examiner's rejection of claims 35 through 37 under 35 U.S.C. § 112, second paragraph, we note that the examiner finds the step in these claims relating to "measuring parameters determinative of the density and pressure of the foamed furnish" to be unclear and to introduce ambiguity into the step of "estimating a current velocity" also found in these claims. More particularly, the examiner has indicated that

[i]t is not clear if the term "parameters determinative" of claim 35 excludes or includes direct "measurement of the density and pressure" or is it drawn to measuring other parameters which are used to determine the density and pressure." [sic] Thus, it is not clear what measurements are excluded from the term "said estimating consisting essentially of using the measurements determinative of density and pressure" (answer, page 6).

While not having responded to this rejection in the main brief (Paper No. 50), in the reply brief (Paper No. 52)

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appellant has urged that the term "determinative" found confusing by the examiner, when read in light of the specification,

clearly means parameters which can be used to determine a particular feature, but do not constitute that feature itself. It is respectfully submitted that the Examiner's attempt to ignore this language and include direct measurement of the features of interest within this definition would render the estimating step confusing, since an estimated feature would clearly not be needed if a direct measurement thereof was provided (page 2).

However, during the oral hearing held July 11, 2000, appellant's counsel indicated that the claim terminology in question clearly was intended to cover direct measurement of both density and pressure.

Given the conflicting positions set forth in appellant's reply brief and at the oral hearing on July 11, 2000, we are at a loss to clearly understand what the scope and content of claims 35 through 37 on appeal are intended to be and exactly what measurements are to be excluded by appellant's use of the terminology "parameters determinative of" in the measuring step and "consisting essentially of" in the estimating step of

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these claims. Accordingly, we will sustain the examiner's rejection of claims 35 through 37 under 35 U.S.C. § 112, second paragraph.

Before turning to the examiner's rejections of the claims on appeal based on prior art, we note that it is an essential prerequisite that the scope and content of the claimed subject matter be fully understood prior to the application of prior art thereto. Accordingly, we focus our attention on appellant's other claims on appeal (i.e., other than claims 35 through 37 treated above) to derive an understanding of the scope and content thereof.

Independent claims 1, 5, 10, 11 and 24 include the step of "measuring parameters determinative of the density and pressure of the foamed furnish," claim 14 sets forth a step of "measuring the density and the pressure of said flow of foamed furnish," claim 30 recites the step of "directly measuring the density and the pressure of the foamed furnish," while independent claims 26, 27, 28 and 29, set forth a step of "measuring parameters directly determinative of density and

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pressure of the foamed furnish." Given the paucity of examples and disclosure in appellant's specification concerning exactly what the various parameters referenced in these claim recitations may be, or are intended to encompass, we find that we are at a loss to understand exactly what a parameter "determinative" of density or pressure of the foamed furnish is, relative to a parameter that is "directly determinative" of density or pressure of the foamed furnish, and how such recitations in any meaningful way are different than the step of simply measuring the density and pressure of the foamed furnish or directly measuring the density and pressure of the foamed furnish as in claims 14 and 30. In this regard, we also again make note of the conflicting arguments put forth by appellant in the reply brief and by appellant's counsel at the oral hearing of July 11, 2000 concerning what may be included or excluded by the term "determinative." Allowed claims 31 and 32, and claims 35 through 37 on appeal suffer from similar problems to those noted in the claims immediately above. In independent claim 29, we are similarly at a loss to understand exactly what is meant by "a parameter determinative of the velocity of the moving foraminous support" and what is meant

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in the comparing step wherein the estimated current target pressure of the foamed furnish in the headbox is compared with "a parameter derived from said density measurement and said pressure measurements."

As a further point, we observe that independent claims 1, 5 and 24 include the negative limitation of "using neither direct measurement of flow volume rate nor direct measurement of flow velocity of the jet" (added to the application in Paper No. 38, July 28, 1995) in the step of estimating a current velocity, while claims 10, 11 and 14 set forth the negative limitation of "using neither direct measurement of flow velocity nor direct measurement of volume flow rate of the jet" in the step of estimating a current velocity. In the first instance, it is unclear whether the "flow volume rate" is "of the jet" leaving the pressurized headbox or at some other point in the system, and in the second instance it is unclear whether the "flow velocity" is "of the jet" leaving the pressurized headbox or at some other point in the system. Thus, it is unclear exactly what is and is not included in these claim recitations. Allowed claims 15 and 16 include the

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same negative limitation and thus appear to also be indefinite.

Independent claims 26 and 27 set forth a step of "measuring parameters directly determinative of density and pressure of the foamed furnish" and an estimating step which is based "substantially exclusively upon . . . said measurements determinative of density and pressure." In this regard, we see the same problem that the examiner has highlighted in claims 35 through 37 discussed above, i.e., that it is not clear exactly what is excluded from these claims by the use of the "directly determinative" and "substantially exclusively upon" language, especially in light of the conflicting statements made in the reply brief and at the oral hearing of July 11, 2000 as noted supra.

Claim 2, which depends from claim 1, sets forth that the estimating step of claim 1 comprises "estimating an ideal jet velocity, providing an empirically derived correction factor . . . and estimating the current jet velocity as a function of the estimated ideal jet velocity and the empirically derived

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correction factor." Claim 3, which depends from claim 2, sets forth that "the estimating step comprises using the measurement determinative of density and one of the measurements determinative of pressure to estimate a parameter related to the air content of the furnish." Our problem here is that we do not understand exactly which "the estimating step" is being referred to in claim 3, i.e, the estimating step of claim 1 or one of the two estimating steps set forth in claim 2. In addition, we are at a loss to understand what is meant by the language in claim 3 regarding "one of the measurements determinative of pressure," since we see nothing in claims 1 and 2 that would indicate that more than one measurement determinative of pressure was made or is required. Claims 7 and 8, which are dependent from claims 5 and 6, include the same types of ambiguity found in claim 3.

Claim 17, which depends from claim 1, indicates that "the density and pressure are measured before and in the headbox," while claim 18, which also depends from claim 1, sets forth that the current velocity is "estimated using only density and pressure measurements." Our problem here is that it is not

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clear if the density and pressure measurements recited in claims 17 and 18 are the same as or in addition to the measurement of "parameters determinative of the density and pressure of the foamed furnish" already set forth in claim 1. Similar problems are present in claims 20 and 21 which are dependent from independent claim 5 and in claim 25 which depends from independent claim 24.

As a result of the ambiguity in the language of the claims as discussed above, we are compelled to enter a new ground of rejection under 35 U.S.C. § 112, second paragraph. Thus, under the provisions of 37 CFR 1.196(b), we enter the following new ground of rejection against all of the claims pending in this application.

Claims 1 through 11 and 14 through 37 are rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which appellant regards as the invention. More specifically, for the reasons noted supra, we find that the claims pending in this application, including the claims currently indicated by

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the examiner as being allowed, are unclear, sometimes inconsistent, and indefinite.

Turning to the examiner's rejections of the appealed claims under 35 U.S.C. § 103, we emphasize again that the claims on appeal contain unclear language which renders the subject matter thereof indefinite for reasons stated supra as part of our new ground of rejection under 35 U.S.C. § 112, second paragraph. Accordingly, we find that it is not possible to apply the prior art relied upon by the examiner to the appealed claims in deciding the question of obviousness under 35 U.S.C. § 103 without resorting to considerable speculation and conjecture as to the meaning of the questioned limitations in the claims. This being the case, we are constrained to reverse the examiner's rejection of claims 1 through 11, 14, 17 through 30 and 33 through 37 under 35 U.S.C. § 103 in light of the holding in In re Steele, 305 F.2d 859, 862-63, 134 USPQ 292, 295 (CCPA 1962). We hasten to add that this reversal of the examiner's rejections is not based on the merits of the rejections, but on technical grounds relating to the indefiniteness of the appealed claims.

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In view of the foregoing, the examiner's decision rejecting claims 35 through 37 under 35 U.S.C. § 112, second paragraph, is affirmed, but the decision of the examiner rejecting claims 1 through 11, 14, 17 through 30 and 33 through 37 under 35 U.S.C.

§ 103 is reversed. In addition, pursuant to 37 CFR § 1.196(b), we have entered a new ground of rejection against all pending claims under 35 U.S.C. § 112, second paragraph.

The decision of the examiner is affirmed-in-part.

In addition to affirming the examiner's rejection of one or more claims, this decision contains a new ground of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53, 131, 53, 197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that "a new ground of rejection shall not be considered final for purposes of judicial review."

Regarding any affirmed rejection, 37 CFR § 1.197(b) provides:

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(b) Appellant may file a single request for rehearing within two months from the date of the original decision . . . .

37 CFR § 1.196(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

(1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner . . . .

(2) Request that the application be reheard under § 1.197(b) by the Board of Patent Appeals and Interferences upon the same record . . . .

Should the appellant elect to prosecute further before the Primary Examiner pursuant to 37 CFR § 1.196(b)(1), in order to preserve the right to seek review under 35 U.S.C. § 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the appellant elects prosecution before the examiner

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and this does not result in allowance of the application,  
abandonment or a second appeal, this case should be returned  
to the Board of Patent Appeals and Interferences for final  
action on the affirmed rejection, including any timely request  
for rehearing thereof.

No time period for taking any subsequent action in  
connection with this appeal may be extended under 37 CFR  
§ 1.136(a).

AFFIRMED-IN-PART; 1.196(b)

IAN A. CALVERT	)	
Administrative Patent Judge	)	
	)	
	)	BOARD OF PATENT
CHARLES E. FRANKFORT	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
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CLAIM 1

A method of controlling a jet of foamed furnish leaving a

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pressurized headbox of a paper or a tissue making machine comprising the steps of:

feeding foamed furnish to a pressurized headbox to form a jet of said furnish;

measuring parameters determinative of the density and pressure of the foamed furnish;

estimating a current velocity of the jet using the measurements determinative of density and pressure and using neither direct measurement of flow volume rate nor direct measurement of flow velocity of the jet;

providing a target velocity of the jet;

comparing the estimated and target jet velocities to derive a control signal; and

utilizing the control signal to control the feeding step to vary the estimated jet velocity to the target velocity.

#### CLAIM 10

A method of regulating the velocity of a jet of foamed furnish leaving a pressurized headbox of a paper or a tissue making machine comprising the steps of:

feeding foamed furnish to a pressurized headbox to cause a jet of said furnish to leave the headbox;

measuring parameters determinative of the density and pressure of the foamed furnish fed to the headbox and the pressure of the foamed furnish in the headbox to derive respective density and pressure measurements;

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estimating a current velocity of the jet of foamed furnish leaving the headbox using the density and pressure measurements

using neither direct measurement of flow velocity nor direct measurement of flow volume flow rate of the jet; and

comparing the estimated current jet velocity with a target velocity and controlling said feeding step to move the estimated current velocity and the target velocity closer to each other.

#### CLAIM 14

A method of controlling the velocity of a jet of foamed furnish leaving a pressurized headbox of a paper or a tissue making machine comprising the steps of:

operating a pump to provide a flow of foamed furnish;

measuring the density and the pressure of said flow of foamed furnish and using resulting measurements to estimate an atmospheric pressure air content;

delivering said flow of foamed furnish to a pressurized headbox having a slice emitting a jet of said foamed furnish and measuring the pressure of the foamed furnish in the headbox;

estimating the current velocity of said jet of foamed furnish using the estimated atmospheric pressure air content and the measured pressure in the headbox using neither direct measurement of flow velocity nor direct measurement of volume flow rate of the jet; and

comparing the estimated current velocity of said jet of foamed furnish with a target velocity and controlling said pump to move the estimated and target velocities closer to

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each other.

CLAIM 24

A method of controlling a jet of foamed furnish leaving a pressurized headbox of a paper or a tissue making machine comprising the steps of:

feeding foamed furnish to a pressurized headbox to form a jet of said furnish;

measuring parameters determinative of the density and pressure of the foamed furnish;

estimating current velocity of the jet using the measurements determinative of density and pressure but using neither direct measurement of volume flow rate nor direct measurement of flow velocity of the jet; and

using said measured parameters to control said feeding step.

CLAIM 26

A method of controlling a jet of foamed furnish leaving a pressurized hydraulic headbox of a paper or a tissue making machine comprising the steps of:

feeding foamed furnish through a positive displacement pump to a pressurized hydraulic headbox to form a jet of said furnish;

measuring parameters directly determinative of density

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and pressure of the foamed furnish at closely adjacent locations between said pump and said headbox;

measuring a parameter directly determinative of the pressure of the foamed furnish at a location in said headbox;

estimating a current velocity of the jet based substantially exclusively upon: said measurements determinative of density and pressure; the density of the liquid phase; and the difference in height between said jet and said location in said headbox at which said parameter determinative of the pressure of the foamed furnish in the headbox is measured;

providing a target velocity of the jet;

comparing the estimated and target jet velocities to derive a control signal; and

utilizing the control signal to control the speed of the positive displacement pump to vary the estimated jet velocity to the target velocity.

#### CLAIM 29

A method of regulating a jet of foamed furnish leaving a pressurized hydraulic headbox of a paper or a tissue making machine having a moving foraminous support comprising the steps of:

feeding foamed furnish to a pressurized hydraulic headbox to form a jet of said furnish to leave the headbox;

providing a parameter determinative of the velocity of the moving foraminous support;

measuring parameters directly determinative of the density and pressure of the foamed furnish fed to the headbox and the pressure of the foamed furnish in the headbox to

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derive respective density and pressure measurements and estimating a current target pressure of foamed furnish in said headbox based substantially exclusively upon: said parameter determinative of the velocity of said moving foraminous support; said measurements of density and pressure; the density of the liquid phase; and the difference in height between said jet and said location in said headbox at which the pressure of the foamed furnish in the headbox is measured; and

comparing the estimated current target pressure of the foamed furnish in the headbox with a parameter derived from said density measurement and said pressure measurements and controlling said feeding step to move the estimated current target pressure in the headbox and the headbox pressure measurement closer to each other.

CLAIM 36

A method of controlling a jet of foamed furnish leaving a pressurized headbox of a paper or a tissue making machine comprising the steps of:

feeding foamed furnish to a pressurized headbox to form a jet of said furnish;

measuring parameters determinative of the density and pressure of the foamed furnish;

estimating a parameter related to a current target pressure of the foamed furnish in the headbox, said estimating consisting essentially of using the measurements determinative of density and pressure;

comparing the measurement determinative of pressure in the headbox with the parameter related to current target pressure in the headbox to derive a control signal; and

utilizing the control signal to control the feeding step to vary the measurement determinative of pressure in the headbox to the parameter determinative of current target

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pressure in the headbox.