

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BORIS DAHLBLOM,
JORGEN DAHLIN, MATS ERIK LARSSON,
ERIK MATTSSON, ARNE SUNDKVIST
and ARNOLD ALMQVIST

Appeal 2008-0820
Application 10/450,164
Technology Center 1700

Decided: January 30, 2008

Before EDWARD C. KIMLIN, CHUNG K. PAK, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 3 and 23. Claims 1, 2, 4-8, 11-22, 24, and 25 have been allowed. Claim 3 is illustrative:

3. A process for continuously recovering inorganic material from a deinking sludge obtained as reject material in the recovery of recycled fiber

from waste paper, wherein the inorganic material to be recovered is present as such in the deinking sludge, the process comprising:

- (a) controlling and/or adjusting the proportion of organic material in the form of fiber material in the deinking sludge so that it is or becomes 15-40%, calculated on the dry solids content,
- (b) adjusting the water content of the deinking sludge so that the dry solids content becomes 10-35%, step (a) and step (b) being so adjusted to each other that the deinking sludge is pumpable,
- (c) increasing the pressure of the pumpable deinking sludge to at least 22 MPa,
- (d) increasing the temperature of the pumpable deinking sludge to supercritical or almost supercritical temperature,
- (e) adding a medium containing oxygen to the deinking sludge in a sufficient quantity to oxidize all organic material, which takes place at supercritical temperature and pressure in a reactor,
- (f) recovering energy released at the oxidation of the organic material in a suitable form, and
- (g) subjecting the flow of material from which energy has been recovered and which comprises said inorganic material, gases and water, to material separation comprising recovery of the valuable inorganic material,

wherein said step (a) and step (b) are adapted to each other so that, after said step (b) the deinking sludge has a COD content within the interval 40-200 g/l.

The Examiner relies upon the following references as evidence of obviousness:

Modell	4,543,190	Sep. 24, 1985
Adams	6,063,237	May 16, 2000
Maxham	5,332,474	Jul. 26, 1994
Klyosov	5,777,086	Jul. 7, 1998

Huggett, Estimation of Rate of Heat Release by Means of Oxygen Consumption Measurements, *Fire and Materials* 4, No. 2, 61-62 (1990).

Modell et al., Supercritical Water Oxidation of Pulp Mill Sludges, *TAPPI Proceedings*, Engineering Conference, 393-396 (1991)(*TAPPI*).

Appellants' claimed invention is directed to a process for continuously recovering inorganic material from a deinking sludge. The sludge is recovered as a reject material from the recycle fiber of waste paper. The process entails controlling or adjusting the proportion of organic material in the form of fiber material as well as the water content of the sludge before the sludge is pumped through a high pressure pump and brought to super critical temperature. The proportion of organic material is adjusted to 15-40% of the dry solids content whereas the water content is adjusted to 10-35%. The sludge is oxidized at supercritical temperature and pressure in a reactor and then proceeds to a material separation station to recover inorganic material.

Appealed claims 3 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Modell et al. (*TAPPI*) in view of Modell, Adams, and Huggett.

Appellants do not present separate arguments for claims 3 and 23. Accordingly, the claims stand or fall together.

We have thoroughly reviewed each of the arguments advanced by Appellants. However, we are in complete agreement with the Examiner's reasoned analysis and application of the prior art, as well as the Examiner's cogent disposition of the arguments raised by Appellants. Accordingly, we

will adopt the Examiner's reasoning as our own in sustaining the rejection of record, and we add the following for emphasis only.

Appellants maintain that Modell et al. is irrelevant to the present invention since the reference "refers to the treatment of pulp mill sludges and not to the recovery of inorganic material from a deinking sludge" (Br. 14, first para.). Appellants content that "[c]ontrary to deinking sludge, pulp mill sludge does not contain fillers or pigments" (Br. 14, second para.). However, we fully concur with the Examiner that Modell et al. is directed to producing clean effluents from sludge, in general, and is applicable not only to paper mill sludges. As explained by the Examiner, Modell et al.'s Abstract discloses that supercritical water oxidation (SCWO) is a process that oxidizes organics very effectively at moderate temperatures and "[i]s an environmentally acceptable alternative for sludge treatment." Hence, we find no error in the Examiner's reasoning that one of ordinary skill in the art would have gleaned from Modell et al. that SCWO is applicable to the oxidation of organics in general, and to sludges in general that contain waste organic materials" (Ans. 9, first para.). Also, the Examiner accurately notes that Modell et al. disclose "producing clean effluents ... a solid which is primarily oxides and insoluble salts of metals contained in the sludge" (Modell et al., p. 395, col. 1, first para.). Furthermore, the Examiner cites patents to Maxham and Klyosov for teaching that pulp, paper, and deinking sludges contain inorganic materials, such as clays, calcium carbonate, etc.

Appellants also maintain that "Modell does not mention the adjustment of the proportion of neither organic material so that it becomes 15-40%, nor the dry solids content so that it becomes 10-35%" (Br. 15, second para.). However, as pointed out by the Examiner, Modell '190

"discloses a process for oxidation of organics in supercritical water with the concentration of organic material of 2-25% by weight in the aqueous solution, depending on the heating value of the organic, in order to optimize the reactor temperature (col. 3, ll. 25-27 and col. 8, ll. 7-12 [and] also discloses that a higher concentration is used with a feed having a lower heating value" (Ans. 10, last two full sentences). Also, Modell et al. "discloses adjusting the solids content to 10% for sludges for oxidation without addition of auxiliary fuel (p 393, col 1, 2nd par under Introduction)" (Ans. 11, second para.). Consequently, we agree with the Examiner's assessment that "one of ordinary skill in the art would have recognized that the reactor temperature is dependent on the heating value of the feed and that the heating value is dependent on the amount the organic material in the feed (a result effective variable) thus the organic concentration in the feed must be controlled or adjusted as necessary to provide the proper heating value to control the reactor temperature" (*id.*). Adams provides additional evidence that it was known in the art that the feed concentration is a result effective variable regarding control of the reactor temperature.

Appellants acknowledge that "[i]n Modell '190, the concentration of the organic material is adjusted and in Adams the solid content is adjusted in order to achieve a desired temperature in the reactor," but argues that in the present invention the dry solid content and concentration of organic material is adjusted to each other such that the deinking sludge is pumpable and the capacity of the process is increased (Br. 17, second para.). However, we agree with the Examiner that "[a] desired reactor temperature is taught by all three references and adjusting feed and inorganic concentration to obtain the desired temperature is taught by both Modell ('190) and Adams et al and was

known to one of ordinary skill in the art" (Ans. 15, second para.). Appellants have established nothing unobvious in adjusting two known result effective variables to each other. Indeed, it would seem that controlling the organic material content would necessarily also control the dry solids content.

Appellants point to the Examiner's acknowledgement that neither Modell et al., Modell '190, nor Adams "explicitly" discloses the recited COD content and argues that such an acknowledgement is in direct contrast to the Examiner's citation to Huggett for concluding that Modell et al. does disclose the claimed COD content. However, there is nothing inconsistent in the Examiner's analysis based on Huggett for drawing the reasonable conclusion that that which is not explicit in Modell et al. is, implicitly, necessarily so. Furthermore, we observe that Appellants have not refuted the Examiner's analysis spanning pages 7 and 8 of the Answer. As explained by the Examiner, "[t]he correlation of Huggett was used to compare the heating values disclosed by Modell to an equivalent COD content" (Ans. 16, second para.).

As a final point, we note that Appellants base no argument upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the *prima facie* case of obviousness established by the Examiner.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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