

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL R. EMKEN

Appeal No. 1996-1896
Application No. 08/206,973¹

ON BRIEF

Before GARRIS, PAK, and KRATZ, Administrative Patent Judges.
PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's refusal to allow claims 1 through 16 and 18 which are all of the claims pending in the application.

¹ Application for patent filed March 7, 1994.

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Claim 1 is representative of the subject matter on appeal and reads as follows:

1. A method of controlling the rate of deposition of pyrocarbon onto a substrate while it is being levitated in an enclosure along with a fluidized bed of particles in order to produce a precise thickness of deposit of pyrocarbon of uniform crystalline properties, which method comprises

establishing a bed of particles in fluidized condition in a coating zone within an enclosure along with at least one substrate to be coated, all of which are levitated by supplying an upward flow of a gaseous atmosphere which comprises an inert gas,

heating said bed of particles and said substrate to a pyrolysis temperature in said coating zone and supplying said levitating gaseous atmosphere in a form that includes a mixture of a hydrocarbon component and an inert gas component, each of which components is supplied to said coating zone at a certain initial flow rate, such that pyrolysis of said hydrocarbon occurs causing pyrocarbon to be deposited upon surfaces of said substrate and upon said particles in said coating zone,

monitoring either (a) the weight of said fluidized bed, or (b) the differential pressure between a location within or below said bed and a location above said bed, to determine changes that occur either in said weight or in said differential pressure, and

adjusting the amount of said hydrocarbon component being supplied as a part of said upward coating flow based upon changes determined to have occurred either in said weight or in said differential pressure so as to compensate for such changes and thereby precisely regulate the rate of deposition of pyrocarbon over time and thereby produce a precise thickness of pyrocarbon coating of uniform crystalline

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properties upon said surfaces of said substrate during a coating run lasting for a definite period of time.

As evidence of obviousness, the examiner relies on the following prior art:

Lester et al. (Lester)	4,329,260	May 11, 1982
Accuntius et al. (Accuntius)	5,284,676	Feb. 8, 1994 (Filed Nov. 18, 1991)
Emken et al. (Emken)	5,328,713	July 12, 1994 (Filed Mar. 16, 1993)

Claims 1 through 7 and 10 through 16 stand rejected under 35 U.S.C. § 103 as unpatentable over Emken alone or in view of Lester. Claims 1 through 16 and 18 stand rejected under 35 U.S.C. § 103 as unpatentable over Accuntius alone or in view of Lester.

Upon careful consideration of the opposing arguments and evidence presented on appeal, we concur with appellant that the applied prior art fails to establish a *prima facie* case of obviousness regarding the claimed subject matter.

Accordingly, we will not sustain any of the examiner's 35 U.S.C. § 103 rejections for essentially those reasons set forth in the Brief. We add the following primarily for emphasis.

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As required by the appealed claims, Emken and Accuntius disclose a method of coating pyrocarbon onto a substrate in a fluidized bed in the presence of particles to obtain a precise thickness of deposit of pyrocarbon of uniform crystalline structure and uniform physical properties on the substrate. See Emken, column 3, lines 15-20 and Accuntius, column 10, lines 14-20. The examiner finds that the method involves fluidizing both the particles and the substrate with a levitating gas comprising an inert gas, heating both the particles and the substrate to a pyrolysis temperature and supplying a mixture of a hydrocarbon component as a part of the levitating gas to produce and deposit pyrocarbon on surfaces of the substrate and the particles. See Answer, pages 3-5 and 7-9. The examiner finds that Emken also teaches monitoring the weight of the fluidized bed to determine the change in weight over a period of time. See Answer, page 3. The examiner finds that Accuntius also teaches monitoring the differential pressure between a location within or below the bed and a location above the bed to determine the change in the pressure difference. See Answer, page 7. According to the examiner (Answer, pages 3 and 7), in response to the

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change in weight or the pressure difference, both Emken and Accuntius teach adjusting the amount of particles added or withdrawn to obtain "precise coating characteristics and thickness".

The examiner recognizes that both Emken and Accuntius do not teach adjusting the mixture of hydrocarbon component in response to the change in weight or the pressure difference. See Answer, pages 5 and 9. The examiner, however, concludes that adjusting the mixture of hydrocarbon component in response to the change in weight or the pressure difference would have been obvious to one of ordinary skill in the art either because "[t]he amount of coating gas supplied to a coating device is a well known 'cause effective' variable", see Answer, pages 5 and 9, or because Lester "discloses by varying operating parameters of time, temperature and particular pyropolymer precursor, the thickness of the carbonaceous pyropolymer on the surface of the inorganic support can be adjusted to a predetermined size", see Answer, pages 6 and 10.

Although the examiner might have established that there is a suggestion to adjust the flow rate of hydrocarbon to

obtain desired coating thicknesses in a coating process, the examiner has not supplied any evidence that adjusting the amount of the hydrocarbon component fed to the fluidized bed is useful for obtaining the claimed product, namely "a precise thickness of deposit of pyrocarbon of **uniform** crystalline structure and **uniform** physical properties". The Bokros declaration (expert declaration) submitted by appellant indicates that those of ordinary skill in the art believed that the flow rate of hydrocarbon needs to be maintained at a constant level to obtain uniform crystalline structure. See page 3. Emken and Accuntius relied upon by the examiner also indicate that to obtain a precise thickness of deposit of pyrocarbon of uniform crystalline structure and uniform physical properties, it is desirable to maintain the overall chemical composition at a constant desired value. See, e.g., Emken, column 2, lines 1-9 and 24-41, column 3, lines 24-45 and column 4, lines 5-20, and Accuntius, column 1, lines 39-51. In other words, it is desirable to maintain the flow rate of hydrocarbon at a constant level to prevent the change in the overall chemical composition.

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Given these teachings, we conclude that the examiner has not demonstrated that there is a suggestion of and/or a reasonable expectation of success in forming "a precise thickness of deposit of pyrocarbon of **uniform** crystallin structure and **uniform** physical properties" on a substrate by adjusting the flow rate of the hydrocarbon component in response to the change in weight or the pressure difference in a fluidized bed. Accordingly, we reverse the examiner's decision rejecting all of the appealed claims under 35 U.S.C. § 103 as unpatentable over either Emken or Accuntius alone, or taken together with Lester.

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The decision of the examiner is reversed.

REVERSED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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CHUNG K. PAK)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
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PETER F. KRATZ)	
Administrative Patent Judge)	

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CP/RWK

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