

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte JERRY ZUCKER

Appeal No. 2006-0832  
Application No. 10/155,253

ON BRIEF

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

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-9 and 16-26.

BACKGROUND

Appellant's invention relates to a printed battery including a flexible backing sheet and printed conductive and electrode layers. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

A printed battery comprising  
a flexible backing sheet;  
a first conductive layer printed on said sheet;  
a first electrode layer printed on said first  
conductive layer, the first electrode layer comprising an  
active material having a particle size less than or equal to 0.5  
microns;

a second electrode layer printed on said first electrode layer, the second electrode layer comprising an active material having a particle size less than or equal to 0.5 micron; and

a second conductive layer printed on said second electrode layer.

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

Parker	6,369,793	Apr. 09, 2002 <sup>1</sup>
Schubert et al. (Schubert)	US 2003/0165744	Sep. 04, 2003 <sup>2</sup>

Claims 1-9 and 16-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Parker in view of Schubert.

OPINION

Having carefully considered each of appellant's arguments set forth in the brief and reply brief and the evidence of record, appellant has not persuaded us of reversible error on the

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<sup>1</sup> Application filed on March 30, 1999.

<sup>2</sup> The Schubert published application was filed on Dec. 17, 2002 (a date subsequent to the filing date of the subject application). However, the Schubert publication claims priority under § 119(e) to several provisional applications filed on Feb. 12, 2002. Appellants have not disputed the availability of the subject matter contained in Schubert as prior art to the presently claimed invention, on the record before us.

part of the examiner in concluding that the appealed claimed subject matter would have been obvious to one of ordinary skill in the art at the time of the invention within the meaning of § 103(a). Accordingly, we will affirm the examiner's obviousness rejection for substantially the reasons set forth in the answer and as further emphasized below.

Appellant argues the rejected claims as a group. Thus, we select claim 1 as the representative claim on which we shall decide this appeal.

Appellant does not quibble with the examiner's well-founded determination that Parker discloses a printed battery, including inter alia, a flexible substrate or backing sheet, a first contact (conductive) layer (24), an anode (electrode) layer (26), a cathode (electrode) layer (30), and a contact (conductive) layer 32. See column 4, lines 23-57 and drawing figure 2 of Parker.

That disclosure of Parker corresponds with the battery called for in representative appealed claim 1 but for explicitly describing particle sizes for the active material of first and second electrode layers thereof, as recited in representative claim 1. However, the examiner correctly notes that Parker (column 5, lines 4-7) teaches that each of those layers of the

disclosed battery are formed to be about .0002 inch to about .0008 inch (about 5-20 microns) thick in dry form so as to arrive at a desired thin battery. See page 4 of the answer.

As further intimated by the examiner (answer, page 7), Parker clearly suggests that the active material particles used in forming the battery layers, including the electrode layers, must be sized at least small enough to permit the formation of the thin layers containing those particles. In other words, it is the examiner's view that Parker certainly suggests employing particles of the active materials of dimensions much smaller than the thickness dimensions (5-20 microns) of the layers desired to be formed by Parker. We agree with that determination of the examiner.

As for the specific 0.5 micron or less particle sizes of each of the electrode layers recited in appealed claim 1, we agree with the examiner that Parker would have reasonably led one of ordinary skill in the art to choose active material particle sizes much less than the 5 micron (.0002 inch) minimum thickness of the electrode layers formed using those particles. See In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) ("[W]here the general conditions of a claim are disclosed in

the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.").

Notwithstanding that the teachings of Parker alone make manifest the prima facie obviousness of the claimed battery, the examiner further buttresses that obviousness evidence by further referring to the teachings of Schubert concerning the formation of flexible thin batteries formed with printed layers. In this regard, the examiner correctly points out that Schubert teaches that the particle sizes of active material in the separate layers of such a battery is a result effective variable and should be at least twice as small in dimensions as the thickness of the layer to be formed therewith. See page 4 of the answer and paragraph 0042 of Schubert. Moreover, the examiner notes that Schubert exemplifies using an average of 0.3 to 1.0 micron size jet-milled electrode (cathode) particles in forming a printed electrode in Example 5. In this regard, we also note that Schubert shows the use of around 1 micron sized particles for the cathode and anode electrode layers even when those layers are formed up to as much as 190 microns thick in Example 8.

Given the combined disclosures of Parker and Schubert, the examiner has reasonably determined that one of ordinary skill in the art would have been led to employ small particles for the

very thin electrode layers desired by Parker; that is, particles of size range, such as less than the here claimed 0.5 micron with a reasonable expectation of achieving a useful flexible battery having the desired slim profile and appropriate electrical properties.

Given the above and for the reasons well-stated by the examiner in the answer, appellant's arguments suggesting a lack of motivation and improper use of hindsight by the examiner are without persuasive effect. Parker clearly is not limited to the maximum layer thicknesses and associated maximum sized particles of active materials that can possibly be used in forming the electrode layers of the battery, as appellant's arguments (brief, pages 9-18) would have us accept.

In addition, appellant's arguments in the brief and reply brief suggesting that Schubert teaches away from the examiner's proposed combination with Parker are clearly without merit in terms of showing reversible error in the examiner's rejection.

As to the specific question of "teaching away," our reviewing court in In re Gurley, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) stated:

[a] reference may be said to teach away when a person of ordinary skill, upon [examining] the reference,

would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.

Here, we agree with the examiner that Schubert provides facts which support the examiner's obviousness contention regarding the proposed modification of Parker as outlined in the answer and above. Certainly, Schubert does not serve as a teaching away from the claimed subject matter as appellant maintains. In this regard, we find no discouragement with respect to using particle sizes for the electrode active materials in the size range claimed for forming the electrode layers of Parker based on the teachings of Schubert with respect to the marginal or poor rate capabilities of jet-milled electrolytic magnesium dioxide (EMD), as discussed in paragraph 0062 of Schubert. That potential disadvantage of using jet-milled EMD cathode material discussed in Schubert is limited to certain battery applications using EMD cathode material and can be offset by employing a larger area electrode and/or using different graphite contents as further discussed in paragraph 0062 of Schubert. Of more significance, we note that the representative appealed claim 1 does not require the use of jet-milled EMD and neither does Parker require such an active

material for the cathode. As such, appellant's teaching away contention is lacking in merit.

We disagree with appellant's speculation that the proposed modification of Parker would destroy the intended function of Schubert by preventing the formation of thin battery electrode layers. The paragraph 0062 passage of Schubert referred to by appellant indicates that thicker electrodes may be required for some battery applications using jet-milled EMD as cathode material. Such a disclosure is hardly proof that the non-EMD cathode materials of Parker could not be made thin if small particles of cathode material, such as the zinc disclosed by Parker, were employed in making the cathode.

Consequently, on this record, appellants have not persuaded us of any error in the strong prima facie case of obviousness presented by the examiner based on the arguments furnished in the briefs. It follows that we shall sustain the examiner's obviousness rejection of the appealed claims before us.

#### CONCLUSION

The decision of the examiner to reject claims 1-9 and 16-26 under 35 U.S.C. § 103(a) as being unpatentable over Parker in view of Schubert is affirmed.

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

AFFIRMED

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

PFK/TF

Comment [jvn1]: Type address

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