Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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AND INTERFERENCES

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Ex parte LEE EVAN NAKAMURA, and STEWART EUGENE TATE

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Appeal No. 2004-2258
Application 10/145,543

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HEARD: May 4, 2005

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Before KRASS, BARRY, and SAADAT, Administrative Patent Judges,

KRASS , Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 25-51, and 76-81.

The invention pertains to a data access system. In particular, a search request specifying a number of results to be retrieved from a desired starting point is received

and, in response to the search request, data is located in an in-memory database table and the specified number of results from a desired starting point is returned.

Representative independent claim 25 is reproduced as follows:

25. A method of locating data in a memory of a computer, comprising:

receiving a search request specifying a number of results to be retrieved from a desired starting point;

locating the data in an in-memory database table; and

returning the specified number of results from the desired starting point.

The examiner relies on the following references:

Hull et al. (Hull)	5,465,353	Nov. 7, 1995
Shaughnessy	5,555,388	Sep. 10, 1996
Farrell	5,664,153	Sep. 2, 1997
Hoover et al. (Hoover)	5,724,575	Mar. 3, 1998
Hoang	5,761,657	Jun. 2, 1998
Hooper et al. (Hooper)	5,819,282	Oct. 6, 1998
Peltonen et al. (Peltonen)	5,926,807	Jul. 20, 1999
Pereira	6,122,640	Sep. 19, 2000
Wittgreffe et al. (Wittgreffe)	6,253,208	Jun. 26, 2001
Judd et al. (Judd)	6,360,215	Mar. 19, 2002
Dugan et al. (Dugan)	6,363,411	Mar. 26, 2002
Pohlmann et al. (Pohlmann)	6,366,926	Apr. 2, 2002
Carper et al. (Carper)	6,390,374	May 21, 2002 (Filed Aug. 31, 1999)
Hara et al. (Hara)	6,427,145	Jul. 30, 2002 (Filed Mar. 1, 2000)

Claims 25-51, and 76-81 stand rejected under 35 U.S.C. § 103. As evidence of obvious, the examiner offers Wittgreffe, Peltonen, Hooper and Pereira with regard to independent claims 25, 34, and 43, adding Judd with regard to claims 26, 35, and 44, further adding Hull and Hara with regard to claims 27, 36, and 45, still further adding Shaughnessy with regard to claims 28-30, 37-39, and 46-48, and still further adding Pohlmann with regard to claims 31, 40, and 49. With regard to claims 32, 33, 41, 42, 50, 51, and 76-81, the examiner offers the combination of Wittgreffe, Peltonen, Hooper, and Pereira, adding Hoover to the combination with regard to claims 32, 41, and 50, adding Hoang to the combination with regard to claims 33, 42, and 51, adding Carper and Dugan to the combination with regard to claims 76, 78, and 80, and adding Carper and Farrell to the combination with regard to claims 77, 79, and 81.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). To reach a conclusion of obviousness under § 103, the examiner must produce a factual basis supported by a teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a prima facie case. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir.

1984). The examiner may satisfy his/her burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead the individual to combine the relevant teachings of the references. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

With regard to the independent claims, it is the examiner's position that Wittgreffe teaches "receiving a search request" at column 3, lines 30-62, but does not teach specifying the number of results, specifying the search start point, locating the data in a database table, or the use of an in-memory database table.

The examiner turns to Peltonen for a teaching of specifying the number of results and specifying the search starting point, citing column 16, lines 33-37, and column 18, lines 51-59. The examiner finds that it would have been obvious to combine Peltonen and Wittgreffe since both teach the use of databases with tables and the use of queries for retrieving data from the databases.

The examiner recognizes that Peltonen does not teach locating data in a database table and the use of an in-memory database table, so the examiner turns to Hooper, at column 1, line 67, column 2, lines 1-3, and column 7, lines 45-47, for "...locating the data in an ...database table," and to Pereira, at column 9, lines 60-66, for a teaching of "...in an in-memory database table...," contending that it would have been obvious to combine all of these references because Wittgreffe, Peltonen, Hooper, and Pereira all teach the use of databases with tables, with Hooper and Pereira teaching the use of in-memory access to data.

Appellants take the following position: They note that conventional cache designs do not ensure that desired data will be present in memory when needed, and that when the desired data is not in a cache, additional time is required to retrieve the data from the database tables held in a secondary storage via I/O subsystems. To remedy this problem, the instant invention, as claimed, "involves an in-memory database table that holds the data to be retrieved" (principal brief-page 12). Appellants note that the examiner acknowledges that Wittgreffe, Peltonen, and Hooper all fail to teach or suggest the feature of "locating the data in an in-memory database table" and that the examiner relies on Pereira for the use of an in-memory database table at column 9, lines 60-66, by stating that a mapping table can be stored, e.g., on a file system or in memory.

Appellants urge that Pereira creates a mapping table that maps rowids of the source table to rowids of the rows inserted into the new table and that the mapping table in Pereira "does not contain data useful to end users (e.g., in response to the recited search request). Instead, the mapping table contains information regarding where rows are unloaded from the source table and where they are stored in the new table...Thus, Pereira fails to make up for the acknowledged deficiencies of Wittgreffe, Peltonen and Hooper because Pereira also fails to teach or suggest 'locating the data in an in-memory database table' in response to the received search request" (principal brief-page 13).

In addition, appellants take issue with the examiner's assertion that Pereira

teaches an in-memory database table because column 9, lines 58-67, of Pereira places no constraint that the mapping table be stored in the form of a database table in memory, expressly indicating that the mapping table can be stored as a table on a file system, "which teaches away from the step of 'locating the data in an in-memory database table'...Pereira cannot guarantee that data to be retrieved [from the mapping table] in response to a search request is located in an in-memory database table, i.e., database table in a memory. The use of mapping tables, which might reside in a memory, does not correspond to storing real portions of a database in memory" (principal brief-page 13).

The examiner's response is that a "table that may be stored in the DBMS is clearly a database table. Likewise, Pereira teaches that the table may also be stored in memory. Claims 24 [sic, 25], 34, and 43 do not claim persistent storage of the table in memory. For these reasons, the Pereira [sic] teaches '...an in-memory database table...' at col. 9, lines 62-66..." (answer-page 14).

We have reviewed the evidence before us and, while we view the instant independent claims as rather broad in scope, we only determine the propriety of the examiner's rejection

and not the patentbility of the instant claimed subject matter.

It is clear, from the examiner's explanation, that the examiner relies only on the Pereira reference for a teaching of the claimed "in-memory database table," specifically referring to column 9, lines 62-66. Our study of this cited portion of Pereira shows only

that a "mapping" may be stored in the form of a "table" in the data base management system (DBMS) in memory, on a file system, etc. Thus, Pereira seems to be saying that the mapping, not data, is stored in the table. This mapping identifies how certain data will be treated, but the mapping is not the data itself. Accordingly, it is difficult to see how any "data" would be located in the memory which stores the "mapping." Yet, the instant claims require that "data" be located in the in-memory database table and the data must comprise, at least in part, that data upon which a search request is made, in accordance with the claimed subject matter. The portion of Pereira cited by the examiner does not indicate that such data is stored in any in-memory database table.

We do not agree with the examiner's general statement that any table that may be stored in the DBMS is a database table, as it relates to the instant claims. This is because the instant claims, broad as they may be, require locating data in that in-memory database table, and that data must comprise the searchable database. If not, the claim requirement of locating data in a memory of a computer and locating that data in response to a search request would have no meaning; that is, all of the data of the database permitted to be searched must be in the in-memory database table. This is clearly not the case in Pereira and the examiner has not indicated any other reference as teaching the claimed location of data in an "in-memory database table."

The database table referred to by the instant claims must be given the meaning ascribed by the instant specification, since the meaning of this term appears to be in dispute between appellants and the examiner. The bottom of page 1 of the instant

specification indicates that such tables are "typically stored on random access storage devices...such as magnetic or optical disk drives for semi-permanent storage." The instant invention seeks to take such a large database table and place it within memory. Therefore, the in-memory database table of the instant claims must be capable of at least semi-permanent storage. The mapping in Pereira does not constitute data, and the data that is using the mapping table is clearly not in "semi-permanent storage," as apparently required by the instant claims, because any data using the mapping table of Pereira is fleeting data; it is not stored "semi-permanently" and may not be considered to be "data in an in-memory database table," as claimed.

Moreover, in our view, the examiner has not provided sufficient motivation for combining the applied references. The examiner appears to have picked and chosen various references based on a word search, finding "received property search requests" in Wittgreffe (column 3, line 62), "to retrieve the specified number of rows starting at or near the row..." in Peltonen (column 18, lines 54-56), "a signed number of rows to return" in Peltonen (column 16, line 37), "locate the qualified data objects" in Hooper (column 7, lines 45-46), and "mapping can be stored in the form of a table in the DBMS, in memory" in Pereira (column 9, lines 63-65), and then simply declaring that it would have been obvious to combine the teachings of these references because they all "teach the use of databases with tables and Hooper and Pereira use in-memory access to data" (answer-page 5).

This conclusion of obviousness based on the commonality of certain elements is

not, in itself, a proper basis on which to conclude obviousness of the claimed subject matter within the meaning of 35 U.S.C. § 103. The examiner must set forth some reason why the skilled artisan would have combined the references in the manner sought by the examiner in order to arrive at the instant claimed subject matter. What is it about the commonality of certain elements that would have led the artisan to have modified a search request of Wittgreffe to specify a number of results to be retrieved, as alleged to be taught by Peltonen and further modified to locate data in an in-memory database table, as alleged to be disclosed by Pereira or Hooper? The examiner does not expressly say.

Because the examiner has neither established a teaching or suggestion in the prior art for the claimed "in-memory database table," nor a convincing rationale for combining the prior art references in such a manner as to reach the instant claimed subject matter, we will not sustain the rejection of independent claims 25, 34, and 43 under 35 U.S.C. § 103. Moreover, since none of the many other references, cited for limitations of the dependent claims, is seen to provide for the deficiencies of Wittgreffe, Peltonen, Hooper and Pereira, we also will not sustain the rejection of claims 26-33, 35-42, 44-51, and 76-81 under 35 U.S.C. § 103.

Our decision herein should not be construed to mean that a different application of the applied references, along with a convincing rationale as to the obviousness of providing for an in-memory database table, and a proper reason for combining certain references, may not have been successful in providing the requisite evidence of

obviousness, within the meaning of 35 U.S.C. § 103. Our decision means only that the examiner has not provided that evidence in the instant case. It may very well be that the location of data in cache, in external memory, and/or in an in-memory database table would have been equally obvious, within the meaning of 35 U.S.C. § 103, but the examiner has made no such allegation and the examiner has provided no supporting evidence for us to consider.

Accordingly, based on the evidence the examiner did offer, and on the examiner's rationale, we will not sustain the rejection of claims 25-51, and 76-81 under 35 U.S.C. § 103.

The examiner's decision is reversed.

REVERSED

Errol A. Krass Administrative Patent Judge	)
	) BOARD OF PATENT
Lance Leonard Barry Administrative Patent Judge	) APPEALS AND
	) INTERFERENCES
Mahshid D. Saadat Administrative Patent Judge	)

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