Exhibit 1

OBLON
SPIVAK

ATTORNEYS AT LAW

Docket No.: 358121US91RX

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

RE: Control No.: 90/010,856
Inventor(s): Richard Michael NEMES
Filing Date: February 9, 2010
For: METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL USING A HASHING TECHNIQUE WITH EXTERNAL CHAINING AND ON-THE-FLY REMOVAL OF EXPIRED DATA
Group Art Unit: 3992
Examiner: A. J. Kosowski

SIR:

Attached hereto for filing are the following papers:

Amendment in *Ex Parte* Reexamination of U.S. Patent No. 5,893,120 in Reply to Office Action of July 23, 2010 w/Exhibits A-C
Statement under 37 C.F.R. §1.560
Submission under 37 C.F.R. §1.555/1.565 in *Ex Parte* Reexamination of U.S. Patent No. 5,893,120 w/Attachments (7)
Certificate of Service

Credit card payment is being made online (if electronically filed), or is attached hereto (if paper filed), in the amount of **$0.00** to cover any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, please charge or credit the difference to Deposit Account No. **15-0030**.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.

Scott A. McKeown
Registration No. 42,866

Customer Number
22850
(703) 413-3000 (phone)
(703) 413-2220 (fax)
(OSMMN 10/09)

DOCKET NO: 358121US91RX

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE REEXAMINATION OF U.S. PATENT NO. 5,893,120	:
INVENTOR: RICHARD MICHAEL NEMES	: EXAMINER: A. J. KOSOWSKI
CONTROL NO: 90/010,856	:
FILED: FEBRUARY 9, 2010	: GROUP ART UNIT: 3992
FOR: METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL USING A HASHING TECHNIQUE WITH EXTERNAL CHAINING AND ON-THE-FLY REMOVAL OF EXPIRED DATA	:

AMENDMENT IN *EX PARTE* REEXAMINATION OF U.S. PATENT NO. 5,893,120

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

In response to the Office Action in *ex parte* reexamination dated July 23, 2010, please consider the following:

Description of claim status and support of claims begin on page 3.

A listing of claims begins on page 4 of this paper.

Remarks begin on page 7 of this paper.

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DESCRIPTION OF CLAIM STATUS AND SUPPORT

Claim 1 is maintained in the originally issued scope of U.S. Patent 5,893,120.

Claim 2 is maintained in the originally issued scope of U.S. Patent 5,893,120.

Claim 3 is clarified herein. Support for the clarifying change is found in the claims as originally submitted, as well as at least Fig. 3 boxes 39-40.

Claim 4 is maintained in the originally issued scope of U.S. Patent 5,893,120.

Claim 5 is maintained in the originally issued scope of U.S. Patent 5,893,120.

Claim 6 is maintained in the originally issued scope of U.S. Patent 5,893,120.

Claim 7 is clarified herein. Support for the clarifying changes is found in the claims as originally submitted, as well as at least Fig. 3 boxes 39-40.

Claim 8 is maintained in the originally issued scope of U.S. Patent 5,893,120.

New Claims 9-12 find support as follows:

Claim 9 – at least Fig. 4, box 55; col. 7, lines 48-50.

Claim 10 – at least col. 8, lines 14-29; FIG. 5, boxes 78-81; and pseudo code.

Claim 11 – at least Fig. 4, box 55; col. 7, lines 48-50.

Claim 12 – at least col. 8, lines 14-29; FIG. 5, boxes 78-81; and pseudo code.

IN THE CLAIMS

1. An information storage and retrieval system, the system comprising:

a linked list to store and provide access to records stored in a memory of the system, at least some of the records automatically expiring,

a record search means utilizing a search key to access the linked list,

the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed, and

means, utilizing the record search means, for accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list.

2. The information storage and retrieval system according to claim 1 further including means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records.

3. (Amended) A method for storing and retrieving information records using a linked list to store and provide access to the records, at least some of the records automatically expiring, the method comprising the steps of:

accessing the linked list of records to search for a target record,

identifying at least some of the automatically expired ones of the records while searching for the target record, and

removing at least some of the automatically expired records from the linked list when the linked list is accessed.

4. The method according to claim 3 further including the step of dynamically determining maximum number of expired ones of the records to remove when the linked list

is accessed.

5. An information storage and retrieval system, the system comprising:

a hashing means to provide access to records stored in a memory of the system and using an external chaining technique to store the records with same hash address, at least some of the records automatically expiring,

a record search means utilizing a search key to access a linked list of records having the same hash address,

the record search means including means for identifying and removing at least some expired ones of the records from the linked list of records when the linked list is accessed, and

meals, utilizing the record search means, for inserting, retrieving, and deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records.

6. The information storage and retrieval system according to claim 5 further including means for dynamically determining maximum number for the record search means to remove in the accessed linked list of records.

7. (Amended) A method for storing and retrieving information records using a hashing technique to provide access to the records and using an external chaining technique to store the records with same hash address, at least some of the records automatically expiring, the method comprising the steps of:

accessing a linked list of records having same hash address <u>to search for a target record</u>,

identifying at least some of the automatically expired ones of the records while searching for the target record,

removing at least some of the automatically expired records from the linked list when the linked list is accessed, and

inserting, retrieving or deleting one of the records from the system following the step of removing.

8. The method according to claim 7 further including the step of dynamically determining maximum number of expired ones of the records to remove when the linked list is accessed.

9. (New) The method of claim 3, further comprising:

deallocating memory of the at least some of the automatically expired records.

10. (New) The method of claim 9, further comprising:

inserting the target record into the linked list if the target record was not found during the searching.

11. (New) The method of claim 7, further comprising:

deallocating memory of the at least some of the automatically expired records.

12. (New) The method of claim 11, wherein the inserting, retrieving or deleting includes inserting the target record into the linked list if the target record was not found during the searching.

I. REMARKS

Favorable reconsideration of this reexamined patent (hereinafter, '120 Patent), as presently amended, and in light of the following discussion, is respectfully requested.

After entry of the foregoing amendment, Claims 1-12 remain pending in this reexamination. Claims 3 and 7 are clarified herein. New claims 9-12 are added, support for which is separately listed *supra*. No new or broadening matter is added.

By way of summary, the Official Action in *ex parte* reexamination presents the following issues: Claims 1, 3, 5 and 7 stand rejected under 35 U.S.C. §102 as being unpatentable over Morrison, et al. (NPL Doc, A Queuing Analysis of Hashing with Lazy Deletion, hereinafter "Morrison"); Claims 1-8 stand rejected under 35 U.S.C. §102 as being unpatentable over Thatte, et al. (U.S. Patent No. 4,695,949, hereinafter "Thatte"); Claims 2, 4, 6 and 8 stand rejected under 35 U.S.C. §103 as being unpatentable over Morrison in view of Dirks (U.S. Patent No. 6,119,214, hereinafter "Dirks"); Claims 2, 4, 6 and 8 stand rejected under 35 U.S.C. §103 as being unpatentable over Morrison in view of Thatte; and Claims 1-8 stand rejected under 35 U.S.C. §103 as being unpatentable over Dirks in view of Morris, et al. (U.S. Patent No. 5,724,538, hereinafter "Morris").

II. INTERVIEW IN EX PARTE REEXAMINATION

The Patent Holder appreciatively acknowledges the in-person interview conducted on November 19, 2010. Patent Holder's reexamination counsel Mr. Scott McKeown participated in the interview together with inventor Dr. Richard Nemes and Bedrock Computer Technologies President Dr. David Garrod. On behalf of the USPTO, Examiners Alexander Kosowski, Eric Keasel, and Joshua Campbell participated.[1] During the interview, the Patent Holder's representative, together with inventor Richard Nemes discussed the technology of the '120 Patent in light of the outstanding issues presented in the Outstanding Action of July 23, 2010.

The Examiners indicated that the presented distinctions were persuasive, and that the discussion was helpful in focusing the issues.

[1] A complete written statement of the reasons presented at the interview for patentability of the presently presented claims is provided under separate cover in accordance with 37 CFR 1.560.

III. CONCURRENT PROCEEDINGS

The '120 Patent is subject to ongoing litigation styled as *Bedrock Computer Technologies, LLC v. SoftLayer Technologies, Inc., et al.*, No. 6:09cv269.

A notice of concurrent proceedings accompanies this response consistent with MPEP § 2282. More specifically, Patent Holder has submitted a provisional claim construction order and briefing on a motion by the defendants that challenges certain claims of the '120 Patent as indefinite.

IV. DECLARATION EVIDENCE SUBMITTED UNDER 37 C.F.R. § 1.132

Attached, as Exhibits A-C, is declaration evidence submitted herewith under 37 C.F.R. § 1.132. Lawrence Pileggi, Ph.D., as detailed in the opening paragraphs of each declaration, is one of skill in the art.

Exhibits will be discussed in more detail below; however, these Exhibits generally corresponds to the following topics at issue in this reexamination, noted below for ease of reference:

A. (Exhibit A) – **The Claimed Structure of the '120 Patent**

Dr. Pileggi explains in Exhibit A the structure of the '120 Patent corresponding to the claimed structure of means-plus-function claims 1 and 5.

B. (Exhibit B) – **Thatte Suspends Access Prior to Removal of Records**

Dr. Pileggi explains in Exhibit B that the claims require access and expired data removal be performed *at the same time*.[2] Further, Dr. Pileggi explains that Thatte describes suspending access while garage collection is performed.[3]

C. (Exhibit C) – **Dirks Predetermed Memory Segment Processing**

Dr. Pileggi explains in Exhibit C that Dirks describes determinable memory sweeps that are independent of data access.[4] Moreover, Dr. Pileggi explains that modifying Dirks to provide a linked list would require a change in operating principle.[5]

[2] Exhibit B, ¶ 14.
[3] Exhibit B, ¶ 20.
[4] Exhibit C, ¶ ¶ 13-14.
[5] Exhibit C, ¶ ¶ 15-16.

V. THE ADOPTED REJECTIONS FAIL TO IDENTIFY EQUIVALENT STRUCTURES THAT PERFORM IDENTICAL FUNCTIONS TO THAT RECITED BY CLAIMS 1-2 & 5-6

The outstanding rejections of record were proposed by Third Party Request on February 9, 2010. In adopting these rejections, the Official Action suffers from the same fatal flaw as that of the Request, namely, a reliance on the wrong claim interpretation standard.[6]

The broadest reasonable interpretation that may be applied to means-plus-function claims is that defined by 35 U.S.C. § 112, 6th paragraph. The PTO may not disregard the structure disclosed in the patent specification corresponding to such language when rendering a patentability determination. Yet, the Office has adopted proposed rejections of the Third Party that apply a broadest reasonable interpretation, independent of the specification; this is incorrect.[7]

Patent Owner notes that a proper structural equivalent must perform the identical function of the claimed means-plus-function claim elements. In this regard, the PTO's reviewing court has emphasized that conclusory findings that omit analysis as to "means" claim limitations are improper in *Gechter v. Davidson*, 43 USPQ2d 1030, 1035 (Fed. Cir. 1997), as follows:

> In addition, the [PTO] never construed the scope of the structures disclosed in the specification for the claimed "receiving means," nor did the [PTO] expressly find that the "receiving means" disclosed in the specification was structurally equivalent to that embodied in [the reference]. Moreover, the [PTO] also failed to define the exact function of the receiving means, as well as to find that [the reference] disclosed the identical function. (emphasis added, citation omitted).

By virtue of adopting flawed proposed rejections, the Office has failed to carry its burden for identifying the structure in the '120 Patent corresponding to the means-plus-function limitations of at least claims 1 and 5, let alone for showing that the prior art structure is the same as or equivalent to such structure. In fact, both the Third Party Request and the Official Action are silent as to their treatment of the means-plus-function claims.

Properly construed, as explained next, claims 1-2 and 5-6 are patentably distinguishable over the art of record.

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[6] *See* the Request of February 9, 2010 at pages 13-14.

[7] Patent Holder, pursuant to the Federal Register Notice of June 25, 2010, reserves the right to appeal this fundamental deficiency.

A. The Broadest Reasonable Interpretation Accorded Means-Plus-Function Claims is Mandated by Statute (35 U.S.C. § 112, ¶ 6th)

Claims 1, 2, 5 and 6 of the '120 Patent have been found to invoke 35 U.S.C. § 112, 6th paragraph in the litigation of the '120 Patent styled as *Bedrock Computer Technologies, LLC v. Softlayer Technologies, Inc. et al* (EDTX).[8] A declaration of Dr. Lawrence Pileggi (Exhibit B) is submitted evidencing the same understanding of the mapping of means-plus-function features to the '120 Patent as found by the District Court.

Claim 1 of the '120 Patent recites,

> **1.** An information storage and retrieval system, the system comprising:
>
> a linked list to store and provide access to records stored in a memory of the system, at least some of the records automatically expiring,
>
> a record search means utilizing a search key to access the linked list,
>
> the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed, and
>
> means, utilizing the record search means, for accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list.
>
> (emphasis added)

Claim 5 of the '120 Patent recites,

> **5.** An information storage and retrieval system, the system comprising:
>
> a hashing means to provide access to records stored in a memory of the system and using an external chaining technique to store the records with same hash address, at least some of the records automatically expiring,
>
> a record search means utilizing a search key to access a linked list of records having the same hash address,
>
> the record search means including means for identifying and removing at least some expired ones of the records from the linked list of records when the linked list is accessed, and
>
> meals, utilizing the record search means, for inserting, retrieving, and deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records.
>
> (emphasis added)

[8] The court has also determined that claims 2 and 6 recite additional means-plus-function features. As the base claims are distinguishable in their own right, these claims are ignored herein for purposes of brevity, as is the *hashing means* feature of claim 5.

In order to properly interpret means-plus-function claims, 35 U.S.C. § 112, 6th paragraph requires a two-step approach. The first step in construing a means-plus-function claim limitation is to define the particular function of the claim limitation. The second step in construing a means-plus-function claim limitation is to look to the specification and identify the corresponding structure, material or acts for that particular function. *In re Donaldson Co.*, 16 F.3d 1189 (Fed. Cir. 1994); *See also* (MPEP 2181-2183).

Exhibit A (Corresponding Structure of '120 Patent)

In accordance with the underlined claim terms above, each of claim 1 and claim 5 recite three separate means-plus-function claim features. These claimed features are grouped together based upon their related functionality. The claim features are grouped as follows: 1) *record search means;* 2) *means for identifying and removing;* and 3) *means ... for accessing* (claim 1) and *means ... for inserting, retrieving, and deleting* (claim 5).

The '120 Patent provides particular components and algorithmic structure linked to the function(s) of the above underlined means-plus-function features of claims 1 and 5. Support for the *record search means,* and the *means for identifying and removing* features, is:

> CPU 10 and RAM 11 of FIG. 1 and col. 3, lines 52-56; and, portions of the application software, user access software or operating system software, as described at col. 4 lines 22-48, programmed with software instructions as described in Boxes 31-42 of FIG. 3 and in col. 5, line 53 - col. 6, line 34, and/or programmed with software instructions as described in the pseudo-code of Search Table Procedure (cols. 11 and 12) or Alternate Version of Search Table Procedure (cols. 11, 12, 13, and 14). Pileggi Decl., Exh. A at ¶ ¶ 13-14.

This corresponding structure involves code identified in the '120 Patent as the "search table procedure." The '120 Patent contains three descriptions of the "search table procedure" code, one in flowchart form at FIG. 3, and two pseudo-code versions at cols. 11-14. All three descriptions of the '120 Patent's "search table procedure" share a common structural feature: namely, they all include code that, as part of a single process, both searches for a target record (FIG. 3, boxes 39-40; or code "if p^.recod_contents.key = record_key then begin position := p; previous_position := previous_p" in the pseudo-code descriptions) and identifies expired record(s) (FIG. 3, box 38; or code "if p^.record_contents is expired" in the pseudo-code descriptions). One of skill in the art would understand that this structure is

linked to the above noted function(s) of the *record search means* and the *means for identifying and removing.* Pileggi Decl., Exh. A at ¶ 15.

Support for the *means ... for accessing* of claim 1 is:

> CPU 10 and RAM 11 of FIG. 1 and col. 3, lines 52-56; and,
> Portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions that provide the insert, retrieve, or delete record capability as described in the flowchart of FIG. 5 and col. 7, line 65 – col. 8, line 32, FIG. 6 and col. 8, lines 33-44, or FIG. 7 and col. 8, lines 45-59, respectively, and/or programmed with software instructions that provide the insert, retrieve or delete record capability as described in the pseudo-code of Insert Procedure (cols. 9 and 10), Retrieve Procedure (cols. 9, 10, 11, and 12), or Delete Procedure (cols. 11 and 12), respectively.[9] Pileggi Decl., Exh. A at ¶ 16.

The structure in the specification that corresponds to the *means ... for accessing* and *means for inserting, retrieving, and deleting* limitations (in claims 1 and 5, respectively) includes, at least, code that invokes a version of the "search table procedure" as part of an insertion, retrieval, or targeted record deletion, thereby causing the insertion, retrieval, or deletion and the removal of one or more expired records to occur "at the same time." One of skill in the art would understand that this structure is linked to the above noted function(s) of the *means ... for accessing* and the *means ... for inserting, retrieving, and deleting* of claims 1 and 5. Pileggi Decl., Exh. A at ¶ 17.

In comparing means-plus-function claim elements to prior art features, *first* a prior art function must be indentified that is identical to the claimed function. After this threshold determination is performed, the structure of the prior art that performs this function is identified and compared to that of the patent specification (such as defined above) for the purpose of determining structural equivalence.

As noted above, the adopted third party rejections provide no such analysis, and for good reason ---the proper analysis demonstrates that the submitted art is systemically different than the claimed invention of the '120 Patent.

[9] For purposes of brevity, the entire structure corresponding to the *means ... for inserting, retrieving, and deleting* limitation of claim 5 is not separately detailed. It is sufficient to note that it, too, involves code that invokes the "search table procedure" as part of the normal hash table access (i.e., insert, retrieve, delete) routines.

VI THIRD PARTY CLAIM REJECTIONS ADOPTED BY THE OFFICE

A. REJECTIONS UNDER 35 U.S.C. §102

The Official Action has rejected Claims 1, 3, 5 and 7 under 35 U.S.C. §102 as being unpatentable over Morrison. Patent Holder respectfully traverses the rejection.

Morrison describes a mathematical analysis by which an amount of excess space in a dynamic dictionary may be computed. An assumption of the dynamic dictionary studied is that is utilizes a "hashing with lazy deletion" technique.[10]

In rejecting the above noted claims as anticipated by Morrison, the Office incorporates the Third Party proposed rejection as detailed in claim charts CC-A (As described by pages 25-32 of the Third Party Request). The cited aspects of the Request merely provide conclusory statements that provide no analysis of any structure of the '120 Patent relative to an equivalent structure of Morrison.

For example, the *record search means* of claims 1 and 5 includes the structure that the '120 Patent identifies as the "search table procedure." The '120 Patent contains three descriptions of the "search table procedure" code, one in flowchart form at FIG. 3, and two pseudo-code versions at cols. 11-14. All three descriptions of the '120 Patent's "search table procedure" share a common structural feature: namely, they all include code that, as part of a single process, both searches for a target record (FIG. 3, boxes 39-40; or code "if p^.recod_contents.key = record_key then begin position := p; previous_position := previous_p" in the pseudo-code descriptions) and identifies expired record(s) (FIG. 3, box 38; or code "if p^.record_contents is expired" in the pseudo-code descriptions). Pileggi Decl., Exh. A at ¶¶13-15.

There is simply no analysis of how Morrison provides any equivalent structure to the *record search means* of claims 1 and 5, which both searches for and identifies a target record and identifies expired ones of the records while searching. In fact, no such structure can be said to exist, as Morrison provides no such functionality.

Morrison simply describes that items *are inserted and sought as usual.*[11]

Method Claims 3-4 and 7-8

It is believed that the method claims, as issued, include the aforementioned features based upon a proper reading of these claims in light of the specification. Nevertheless, to

[10] Morrison at Abstract.
[11] *Id.*

advance this reexamination to conclusion, base claims 3 and 7 are amended to explicitly recite analogous features to those distinguished above. Specifically, the claims are clarified to recite that the accessing of the linked list of records involves (at least in part) searching for a target record, and that identification of expired records is performed while searching for the target record.

Accordingly, Patent Holder respectfully Requests that the Rejection of claims 1, 3, 5 and 7 under 35 U.S.C. §102 be withdrawn.

B. The Official Action has rejected Claims 1-8 under 35 U.S.C. §102 as being unpatentable over Thatte. Patent Holder respectfully traverses the rejection.

Claim 1 of the '120 Patent recites a system for retrieving and storing data, including, among other things,

> . . . . .
>
> the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed, and
>
> means, utilizing the record search means, for accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list.

(emphasis added)[12].

Thatte describes a memory management system "for managing a block oriented memory of the type in which each memory block has an associated reference count representing the number of pointers to it from other memory blocks and itself." (Thatte, abstract.) The memory management system includes a process called "reconciliation," which performs garbage collection. This "reconciliation" process removes records from a block of memory that are identified as "garbage." Pileggi Decl., Exh. B at ¶13.

Thatte "operates in association with the MMU [memory management unit] which performs three operations on the reference count filter, Insert, Delete, and Reconcile." (Thatte, col. 6:64-67.) Pileggi Decl., Exh. B at ¶14.

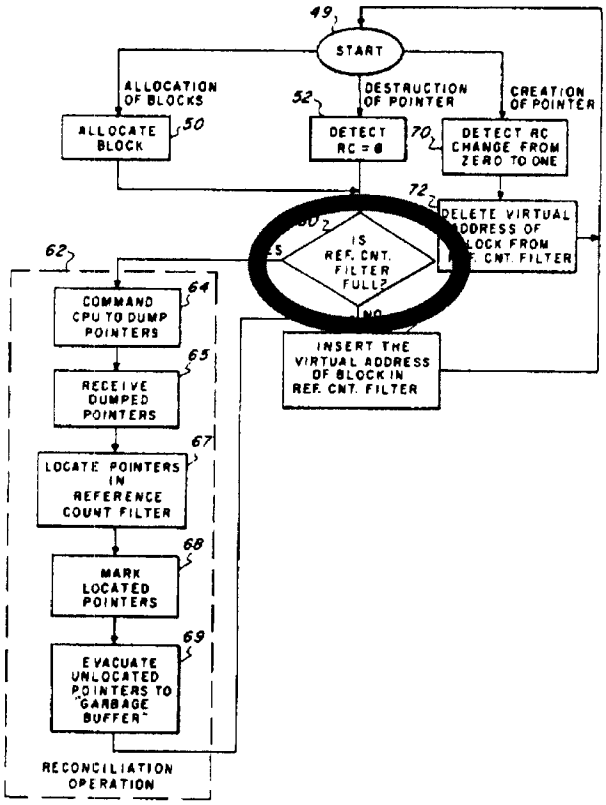
As explained in Thatte, if the system needs to insert a new record into the reference count filter but finds that the reference count filter is full, all operations are **suspended** while a reconciliation (garbage collection) process executes for the entire filter:

> If the reference count filter is determined to be full, box 60, the MMU suspends the insertion operation and performs a reconciliation operation, box

[12] For the purposes of this discussion, claim 5 recites substantially similar functionality.

62, on the reference count filter, as described below, to create a room in the reference count filter so that the suspended insertion operation can be completed. (Thatte, col. 7:21-26 (describing FIG. 6).)

Thatte's FIG. 6 shows the above-described suspension/resumption of an insertion operation. As depicted, the suspension/resumption occurs at box 60 ("IS REF. CNT. FILTER FULL?") in the flowchart.



(annotation added)

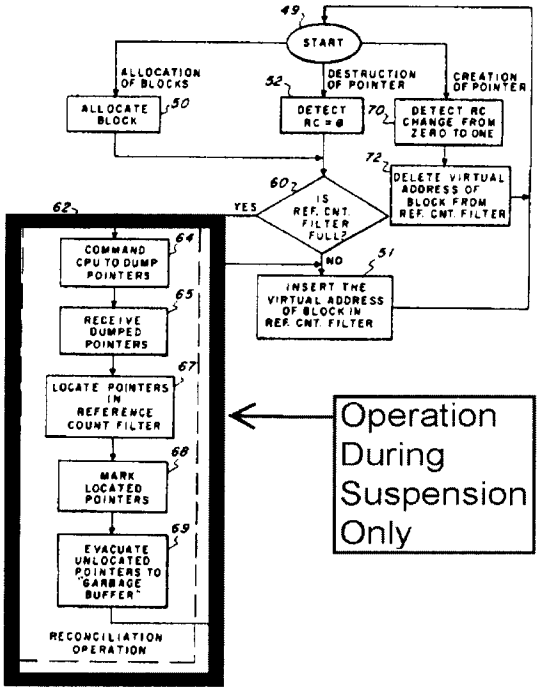
The "Reconcile" or "reconciliation" process of Thatte defines the garbage collection process. It is performed when the table is *full, and for the entire table*:

> "*When the table is full, a reconciliation operation is performed* to identify those addresses which are contained in a set of binding registers associated with the CPU, and any address not contained in the binding registers are evacuated into a garbage buffer for subsequent garbage collection operations." (Thatte, abstract.)

> "If the reference count filter is determined to be full, box 60, the MMU suspends the insertion operation and performs a reconciliation operation." (Thatte, col. 7:21-23.)

> "As mentioned above, after an insert operation is suspended due to a full reference count filter, the MMU needs to make a room in the reference count filter so that the suspended insert operation can be resumed and completed. The MMU 40 makes the necessary room by performing a reconciliation operation, box 62." (Thatte, col. 7:40-45.)

In other words, once processing is suspended based upon the state of the Reference Count Filter, the reconciliation operation sweeps through the entire reference count filter, identifies records that are no longer needed, and moves them to a separate "garbage buffer." These aspects are shown in steps 64-69 of Fig. 6. (See Pileggi Decl., Exh. B at ¶19.)



At the point of a suspension (to garbage collect) at box 60, the insert operation would not have progressed to the point where the linked list into which the new record would ultimately be inserted had been accessed. Thus, once operation is suspended, there cannot be an access to the linked list and removal of expired records *at the same time.* This is because any access of data by Thatte is suspended until **after** global garbage collection for the entire table is completed (*See* box 51 of Fig. 6). Yet, this functionality is explicitly required by all the means-plus-function claims of the '120 Patent. Thus, not only is the function not found in Thatte, but, as a result, there can be no corresponding structure. Pileggi Decl., Exh. B at ¶20.

Method Claims 3-4 and 7-8

It is believed that the method claims, as issued, include the aforementioned features based upon a proper claim interpretation in light of the specification. Nevertheless, to advance this reexamination to conclusion, base claims 3 and 7 are amended to explicitly recite analogous features to those distinguished above. Specifically, the claims are clarified to recite that the accessing of the linked list of records is (at least in part) to search for a target record, and that identification of expired records is performed while searching for the target record.

Accordingly, Patent Holder respectfully Requests that the Rejection of claims 1-8 under 35 U.S.C. §102 be withdrawn.

C. REJECTIONS UNDER 35 U.S.C. §103

The Official Action has rejected Claims 1-8 under 35 U.S.C. §103 as being unpatentable over Dirks in view of Morris. Patent Holder respectfully traverses the rejection.

Dirks is directed to an open addressed hash table. Dirks attempts to provide a solution to the problem of "efficiently allocating and de-allocating large amounts of address space in a virtual memory system that does not require excessive processing time and therefore does not result in unacceptable delays in the operation of a computer." (col. 2:59-63.) Dirks purportedly addresses this problem, explaining, "virtual memory space is managed in a manner which allows new address ranges to be allocated and de-allocated *in a constant, small amount of time*, such that the need for a single complete sweep of all memory allocation records in a page table, to remove unused entries and prepare the addresses for further use, can be avoided." (col. 2:66-3:5.) "Thus, rather than halting the operation of the computer for a considerable period of time to scan the entire page table when a logical address area is deleted, the memory manager of the present invention carries out *a limited, time-bounded examination* upon each address allocation." (col. 3:26-29.). Pileggi Decl., Exh. C at ¶10

In operation, page table 18 of Dirks is swept to collect inactive mappings by cleaning small sequential segments of the page table. Dirks describes this sweep operation in terms of numerically indexed table entries — "entries 0-19 in the page table are examined. ... entries 20-39 in the page table are examined" (col. 7:19-31). Dirks is not directed to navigation of list-type data structures. For this teaching, the Morris reference has been identified.

Dirks performs its "limited, time-bounded examination" using the following procedures: (i) "each time a VSID is assigned from the free list to a new application or thread,

a fixed number of entries in the page table are scanned to determine whether they have become inactive" (col. 7:2-4); (ii) "the number of page table entries that are examined upon each allocation of a VSID in the free list can be determined from the total number of entries in the page table and the number of threads and applications that are allowed to be active at any given time."[13]; (iii) "The *predetermined number of entries* that are swept is identified as k, where k = total number of page table entries / maximum number of active treads. In the example given previously, k=10000/500=20." (col. 8:27-33); (iv) "it is not necessary that the number of examined entries be fixed for each step. Rather, it might vary from one step to the next. The only criterion is that *the number of entries examined on each step be such that all entries in the page table are examined in a determinable amount of time or by the occurrence of a certain event*, e.g. by the time the list of free VSIDs is empty." (col. 7:40-46.). These operations are generally referred to in Dirks as a "recycle sweep."

The Memory Segment Sweeps of Dirks are Independent of Data Access

Notably, in Dirks, the entries that are examined during a particular segment of the recycle sweep are in no way related to, or associated with, the VSID allocated before the sweep of the entries. The swept entries are also unrelated to any pages that have been mapped to physical memory and entered into the hash table prior to the sweep. Indeed, the sweep proceeds through predetermined portions of the page table without any correlation with non-garbage collection uses of the table (e.g., insertion or searching of pages mapped to physical memory).

The recycle sweeps of Dirks are also triggered by events — the assignment of VSIDs to threads or applications (see col. 7, lines 2-4, "each time a VSID is assigned from the free list to a new application or thread, a fixed number of entries in the page table are scanned ...") — that do not involve accesses to the page table. As Dirks is directed to allocation of new memory space, there is no discussion of initiating recycle sweeps upon, or in response to, non-garbage collection accesses of the page table, for example for insertion, deletion or retrieval operations. Pileggi Decl., Exh. C at ¶¶13-14

[13] "For example, if the page table contains 10,000 entries and 500 threads/applications are allowed to be active at any given time, the 10,000 page table entries should be covered in a maximum of 500 steps (assuming each thread and application is assigned one segment each). The *number of entries that are swept in each step is therefore 10,000/500=20 entries* per step." (col. 7:14-25)

Dirks in Combination with Morris

Aside from the failure of Dirks to describe any structure by which a removal of records is correlated to a data access (*record search means*), the combination of Dirks with Morris would require a change in the basic operating principle of Dirks. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). In this instance, the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in Dirks, as well as a change in the basic principle under which Dirks was designed to operate.

Simply stated, the recycle sweep of Dirks' garbage collection is well suited to the linear array (open) hash table for which it is designed, but would require an entirely different operating principle if used in combination with a chained hash table data structure, such as those claimed in the '120 Patent. This is because Dirks clearly articulates that the sweeps should be arranged such that all entries in the page table are examined on a regular schedule (see col. 7, lines 44-46: "all entries in the page table are examined in a determinable amount of time or by the occurrence of a certain event, e.g. by the time the list of free VSIDs is empty"). Dirks achieves this objective by assuring that the number of entries scanned on each sweep be predetermined, such that the time needed to scan these entries is predictable.

This approach, however, does not translate in a reasonable way to a chained hash table, in which records are unpredictably distributed among chains of different lengths. In a chained hash table, examining a predetermined number of entries on each sweep, as described in Dirks, may require traversing multiple chains and examining a potentially large and **indeterminate** number of table entries (anchor points). In particular, if an initially accessed chain does not contain the predetermined number of records to be examined, then the examination would need to proceed down the table to find another chain on which to continue the examination, but that process might involve examining a potentially large number of anchor points in the table, with the number limited only by the table size. Such a modification would destroy the predictability of the Dirks design, and change its basic operating principle of a "limited, time-bounded examination." Pileggi Decl., Exh. C at ¶¶ 15-16.

Method Claims 3-4 and 7-8

It is believed that the method claims, as issued, include the aforementioned features based upon a proper claim interpretation in light of the specification. Nevertheless, to advance this reexamination to conclusion, base claims 3 and 7 are amended to explicitly recite analogous features to those distinguished above. Specifically, the claims are clarified to recite that the accessing of the linked list of records is (at least in part) to search for a target record, and that identification of expired records is performed while searching for the target record.

Accordingly, Patent Holder respectfully Requests that the Rejection of claims 1-8 under 35 U.S.C. §103 be withdrawn.

D. The Official Action has rejected Claims 2, 4, 6 and 8 under 35 U.S.C. §103 as being unpatentable over Morrison in view of Dirks. Patent Holder respectfully traverses the rejection.

As noted above, Morrison does not provide all of the features of the issued claims for which it has been asserted. Likewise, Dirks has also been demonstrated as deficient in a similar regard. As such, these references in combination cannot present a *prima facie* case of obviousness. Moreover, the proposed combination would destroy the basic premise of Morrison, as its mathematical analysis of the "space complexity" of hashing with lazy deletion expressly relies on an assumption that ***all*** expired records are deleted.[14]

Furthermore, the claimed *means for dynamically determining. . .* has not been properly examined as no structure of the specification or art has been compared to ascertain structural equivalence. MPEP 2183. Therefore, these claims are independently distinguishable in addition to the clear deficiencies of the base claims.

Accordingly, Patent Holder respectfully Requests that the Rejection of claims 2, 4, 6 and 8 under 35 U.S.C. §103 be withdrawn.

E. The Official Action has rejected Claims 2, 4, 6 and 8 under 35 U.S.C. §103 as being unpatentable over Morrison in view of Thatte. Patent Holder respectfully traverses the rejection.

---

[14] See page 1159, where Morrison observes that "$N(t)+W(t)$ remains constant between arrivals, and $W(t)= 0$ immediately after an arrival." The $W(t)$ here represents the number of expired records, which is assumed by Morrison to be zero after a new insertion that triggers a purging of all expired records.

As noted above, Morrison does not provide all of the features of the issued claims for which it has been asserted. Likewise, Thatte has also been demonstrated as deficient in a similar regard. As such, these references in combination cannot present a *prima facie* case of obviousness. Moreover, a person skilled in the art would have no motivation to modify Morrison in the manner proposed because deleting fewer than all expired records in Morrison would destroy its basic premise.

Additionally, the claimed *means for dynamically determining. . .* has not been properly examined as no structure of the specification or art has been compared to ascertain structural equivalence. MPEP 2183. Therefore, these claims are independently distinguishable in addition to the clear deficiencies of the base claims.

Accordingly, Patent Holder respectfully Requests that the Rejection of claims 2, 4, 6 and 8 under 35 U.S.C. §103 be withdrawn.

VII NEW CLAIMS

New Claims 9-12, by virtue of their dependency, are distinguishable over all art of record at least for the aforementioned rationales.

Further, these claims recite more detailed aspects of the '120 Patent neither disclosed nor suggested by the art of record. For example, as the art of record does not disclose or suggest identifying expired records while searching for a target record, the more detailed recitation of this methodology as recited in claims 9-12, by definition, is also absent from all art of record.

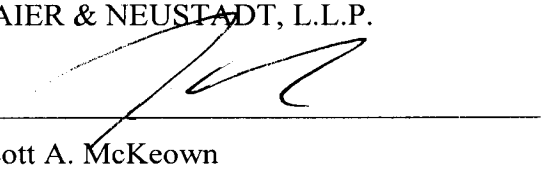
Accordingly, Patent Holder respectfully requests that these are allowable.

VIII CONCLUSION

Consequently, in view of the foregoing amendment and remarks, it is respectfully submitted that the present reexamined patent, is valid over the submitted prior art, in condition for a reexamination certificate, and such action is respectfully requested at an early date.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, L.L.P.



Scott A. McKeown
Attorney of Record
Registration No. 42,866

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 07/09)

EXHIBIT A

DOCKET NO: 358121US91RX

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN *EX PARTE* REEXAMINATION OF U.S. PATENT 5,893,120	:
RICHARD M. NEMES	: EXAMINER: KOSOWSKI, ALEXANDER J
SERIAL NO: 90/010,856	:
FILED: FEBRUARY 9, 2010	: GROUP ART UNIT: 3992
FOR: METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL USING A HASHING TECHNIQUE WITH EXTERNAL CHAINING AND ON-THE-FLY REMOVAL OF EXPIRED DATA	:

DECLARATION UNDER 37 C.F.R. § 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Dr. Lawrence Pileggi declares:

1. I received a Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University in 1989, with a thesis entitled Asymptotic Waveform Evaluation for Timing Analysis. I also hold both Master of Science and Bachelor of Science degrees in electrical engineering from the University of Pittsburgh.

2. Currently, I am the Tanoto Professor of Electrical and Computer Engineering at Carnegie Mellon University and the Director of the Focus Center Research Program (FCRP) for Circuit and System Solutions (C2S2).

3. I have previously held positions at Westinghouse Research and Development and the University of Texas at Austin.

4. Throughout my career, I have consulted for various semiconductor and electronic design automation (EDA) companies, and was a co-founder of Fabbrix (acquired by PDF Solutions) and Extreme DA.

5. My work has received various awards, including Westinghouse Corporation's highest engineering achievement award, the best CAD Transactions paper awards for 1991 and 1999, a Presidential Young Investigator award from the National Science Foundation, Semiconductor Research Corporation (SRC) Technical Excellence Awards in 1991 and 1999, the inaugural Richard A. Newton GSRC Industrial Impact Award, the SRC Aristotle award in 2008, and the IEEE Circuits and Systems Society Mac Van Vlakenburg Award in 2010.

6. I am a co-author of "Electronic Circuit and System Simulation Methods," McGraw-Hill, 1995 and "IC Interconnect Analysis," Springer, 2002. I have published over 250 refereed conference and journal papers and been issued more than twenty U.S. patents. I am also a fellow of the IEEE.

7. I am being compensated by the patent owner, Bedrock Computer Technologies, LLC, for time spent in connection with preparing this declaration. However, I have no personal interest in Bedrock as a company, in the patent subject to this reexamination proceeding, or in the outcome of any proceedings involving this patent.

8. I have thoroughly reviewed the Bedrock Patent (hereinafter, the "'120 Patent") including the claims of that patent in view of the specification.

9. I am not a lawyer. However, Counsel has explained to me that patent claims that are written in a means-plus-function format are interpreted in accordance with 35 U.S.C. § 112, 6th paragraph. I have been informed that claims 1 and 5 have been found to invoke 35 U.S.C. § 112, 6th paragraph in the litigation of the '120 Patent styled as *Bedrock Computer Technologies, LLC v. Softlayer Technologies, Inc. et al* (EDTX).

10. I understand that in order to properly interpret means-plus-function claims, 35 U.S.C. § 112, 6th paragraph requires a two-step approach. The first step in construing a means-plus-function claim limitation is to define the particular function of the claim limitation. The second step in construing a means-plus-function claim limitation is to

look to the specification and identify the corresponding structure, material or acts for that particular function.

11. Claim 1 of the '120 Patent recites,

> **1.** An information storage and retrieval system, the system comprising:
>
> a linked list to store and provide access to records stored in a memory of the system, at least some of the records automatically expiring,
>
> a record search means utilizing a search key to access the linked list,
>
> the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed, and
>
> means, utilizing the record search means, for accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list.
>
> (emphasis added)

12. Claim 5 of the '120 Patent recites,

> **5.** An information storage and retrieval system, the system comprising:
>
> a hashing means to provide access to records stored in a memory of the system and using an external chaining technique to store the records with same hash address, at least some of the records automatically expiring,
>
> a record search means utilizing a search key to access a linked list of records having the same hash address,
>
> the record search means including means for identifying and removing at least some expired ones of the records from the linked list of records when the linked list is accessed, and
>
> meals, utilizing the record search means, for inserting, retrieving, and deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records.
>
> (emphasis added)[1]

[1] For purposes of brevity, the *hashing means* feature above and dependent claim features are not addressed herein. It is my understanding that the above underlined claim features represent more significant aspects of the claims relative to the intended response to the outstanding action.

13. In accordance with the underlined claim terms above, each of claim 1 and claim 5 recite three separate means-plus-function claim features. These claimed features are grouped together based upon their related functionality. The claim features are grouped as follows: 1) *record search means;* 2) *means for identifying and removing;* and 3) *means ... for accessing* (claim 1) and *means ... for inserting, retrieving, and deleting* (claim 5).

14. I have reviewed the '120 Patent for the purpose of identifying the structure linked to the function(s) of the above underlined means-plus-function features of claims 1 and 5. Support for the *record search means,* and the *means for identifying and removing* features, is:

CPU 10 and RAM 11 of FIG. 1 and col. 3, lines 52-56; and,
Portions of the application software, user access software or operating system software, as described at col. 4 lines 22-48, programmed with software instructions as described in Boxes 31-42 of FIG. 3 and in col. 5, line 53 - col. 6, line 34, and/or programmed with software instructions as described in the pseudo-code of Search Table Procedure (cols. 11 and 12) or Alternate Version of Search Table Procedure (cols. 11, 12, 13, and 14).

15. This corresponding structure involves code identified in the '120 Patent as the "search table procedure." The '120 Patent contains three descriptions of the "search table procedure" code, one in flowchart form at FIG. 3, and two pseudo-code versions at cols. 11-14. All three descriptions of the '120 Patent's "search table procedure" share a common structural feature: namely, they all include code that, as part of a single process, both searches for a target record (FIG. 3, boxes 39-40; or code "if p^.recod_contents.key = record_key then begin position := p; previous_position := previous_p" in the pseudo-code descriptions) and identifies expired record(s) (FIG. 3, box 38; or code "if p^.record_contents is expired" in the pseudo-code descriptions). One of skill in the art would understand that this structure is linked to the above noted function(s) of the *record search means* and the *means for identifying and removing.*

16. Support for the *means ... for accessing* of claim 1 is:

CPU 10 and RAM 11 of FIG. 1 and col. 3, lines 52-56; and,
Portions of the application software, user access software or operating system software, as described at col. 4, lines 22-48, programmed with software instructions that provide the insert, retrieve, or delete record capability as described in the flowchart of FIG. 5 and col. 7, line 65 – col. 8, line 32, FIG. 6 and col. 8, lines 33-44, or FIG. 7 and

col. 8, lines 45-59, respectively, and/or programmed with software instructions that provide the insert, retrieve or delete record capability as described in the pseudo-code of Insert Procedure (cols. 9 and 10), Retrieve Procedure (cols. 9, 10, 11, and 12), or Delete Procedure (cols. 11 and 12), respectively.[2]

17. The structure in the specification that corresponds to the *means ... for accessing* and *means for inserting, retrieving, and deleting* limitations (in claims 1 and 5, respectively) includes, at least, code that invokes a version of the "search table procedure" as part of an insertion, retrieval, or targeted record deletion, thereby causing the insertion, retrieval, or deletion and the removal of one or more expired records to occur "at the same time." One of skill in the art would understand that this structure is linked to the above noted function(s) of the *means ... for accessing* and the *means ... for inserting, retrieving, and deleting* of claims 1 and 5.

18. The corresponding structures that I have identified herein are consistent with those that were identified by the United States District Court for the Eastern District of Texas in a an Oct. 29, 2010 provisional claim construction order in the previously noted litigation, *Bedrock Computer Technologies, LLC v. SoftLayer Technologies, Inc., et al.*, No. 6:09cv269 LED-JDL (E.D. Tex., Oct. 29, 2010).

19. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this reexamined patent and any corresponding reexamination certificate.

Date: 11/22/2010

Lawrence Pileggi Ph.D

[2] For purposes of brevity, I will not separately detail the entire structure that corresponds to the *means ... for inserting, retrieving, and deleting* limitation of claim 5. It is sufficient to note that it, too, involves code that invokes the "search table procedure" as part of the normal hash table access (i.e., insert, retrieve, delete) routines.

EXHIBIT B

DOCKET NO: 358121US91RX

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN *EX PARTE* REEXAMINATION OF U.S. PATENT 5,893,120	:
RICHARD M. NEMES	: EXAMINER: KOSOWSKI, ALEXANDER J
SERIAL NO: 90/010,856	:
FILED: FEBRUARY 9, 2010	: GROUP ART UNIT: 3992
FOR: METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL USING A HASHING TECHNIQUE WITH EXTERNAL CHAINING AND ON-THE-FLY REMOVAL OF EXPIRED DATA	:

DECLARATION UNDER 37 C.F.R. § 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

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1. I received a Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University in 1989, with a thesis entitled Asymptotic Waveform Evaluation for Timing Analysis. I also hold both Master of Science and Bachelor of Science degrees in electrical engineering from the University of Pittsburgh.

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6. I am a co-author of "Electronic Circuit and System Simulation Methods," McGraw-Hill, 1995 and "IC Interconnect Analysis," Springer, 2002. I have published over 250 refereed conference and journal papers and been issued more than twenty U.S. patents. I am also a fellow of the IEEE.

7. I am being compensated by the patent owner, Bedrock Computer Technologies, LLC, for time spent in connection with preparing this declaration. However, I have no personal interest in Bedrock as a company, in the patent subject to this reexamination proceeding, or in the outcome of any proceedings involving this patent.

8. I have reviewed U.S. Patent 4,695,949 (hereinafter "Thatte"). I understand the Official Action of July 23, 2010 ("Official Action") identifies Thatte as providing all of the features of claims 1-8. *Official Action* at page 3.

9. I have thoroughly reviewed the Bedrock Patent (hereinafter, the "'120 Patent") including the claims of that patent in view of the specification.

10. I am not a lawyer. However, Counsel has explained to me that patent claims that are written in a means-plus-function format are interpreted in accordance with 35 U.S.C. § 112, 6th paragraph. I have been informed that claims 1 and 5 have been found to invoke 35 U.S.C. § 112, 6th paragraph in the litigation of the '120 Patent styled as *Bedrock Computer Technologies, LLC v. Softlayer Technologies, Inc. et al* (EDTX).

11. I understand that in order to properly interpret means-plus-function claims, 35 U.S.C. § 112, 6th paragraph requires a two-step approach. The first step in construing a means-plus-function claim limitation is to define the particular function of the claim limitation. The second step in construing a means-plus-function claim limitation is to look to the specification and identify the corresponding structure for that particular function.

12. In comparing means-plus-function claim elements to prior art features, *first* a prior art function must be indentified that is identical to the claimed function. After this threshold determination is performed, the structure of the prior art that performs this function is identified and compared to that of the patent specification to determine whether it is identical or equivalent to the corresponding structure shown in the specification.[1]

13. My findings as explained next are based on my education, experience, and background in the fields discussed above.

14. Claim 1 of the '120 Patent recites a system for retrieving and storing data, including, among other things,

. . . . .

> the record search means including a means for identifying and removing at least some of the expired ones of the records from the linked list when the linked list is accessed, and
>
> means, utilizing the record search means, for accessing the linked list and, at the same time, removing at least some of the expired ones of the records in the linked list.

(emphasis added)[2]13. Thatte describes a memory management system "for managing a block oriented memory of the type in which each memory block has an associated reference count representing the number of pointers to it from other memory blocks and itself." (Thatte, abstract.). The memory management system includes a process called "reconciliation," which performs garbage collection. This "reconciliation" process removes records of a block memory that are identified as "garbage."

---

[1] I have provided a mapping of the structure of the '120 Patent that corresponds to the claimed means-plus-function features of claims 1 and 5 under separate cover. (Exhibit A). However, as explained herein, since the identical function is not found in Thatte, the question of structural equivalence need not be reached.

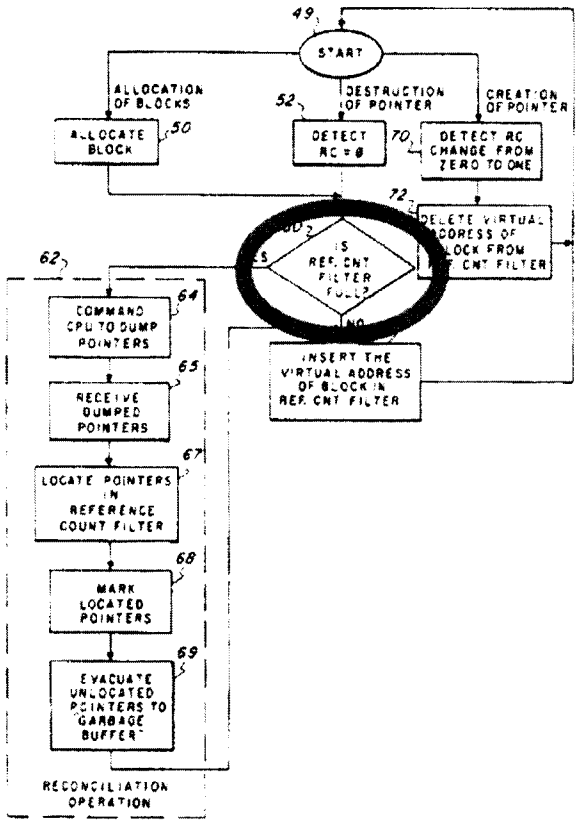
[2] For the purposes of this discussion, claim 5 recites substantially similar functionality.

15. Thatte "operates in association with the MMU [memory management unit] which performs three operations on the reference count filter, Insert, Delete, and Reconcile." (Thatte, col. 6:64-67.)

16. As explained in Thatte, if the system needs to insert a new record into the reference count filter but finds that the reference count filter is full, all operations are **suspended** while a reconciliation (garbage collection) process executes for the entire filter:

> If the reference count filter is determined to be full, box 60, the MMU suspends the insertion operation and performs a reconciliation operation, box 62, on the reference count filter, as described below, to create a room in the reference count filter so that the suspended insertion operation can be completed. (Thatte, col. 7:21-26 (describing FIG. 6).)

17. Thatte's FIG. 6 shows the above-described suspension/resumption of an insertion operation. As depicted, the suspension/resumption occurs at box 60 ("IS REF. CNT. FILTER FULL?") in the flowchart.

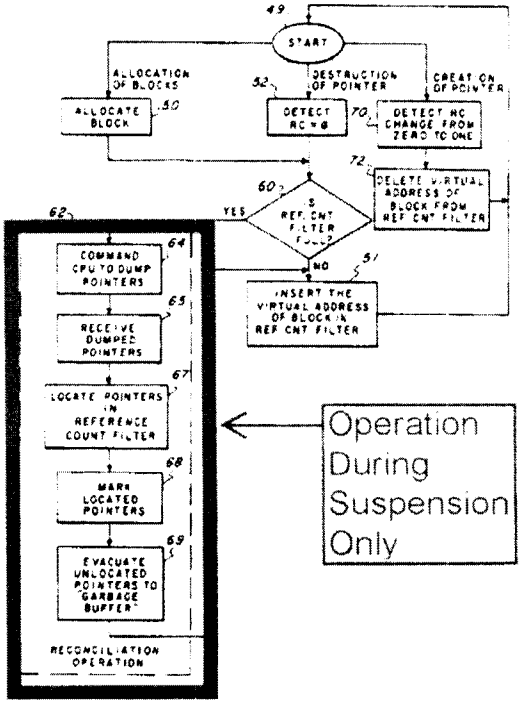


(annotation added)

18. The "Reconcile" or "reconciliation" process of Thatte defines the garbage collection process. It is performed when the table is *full, and for the entire table*:

> "*When the table is full, a reconciliation operation is performed* to identify those addresses which are contained in a set of binding registers associated with the CPU, and any address not contained in the binding registers are evacuated into a garbage buffer for subsequent garbage collection operations." (Thatte, abstract.)
>
> "If the reference count filter is determined to be full, box 60, the MMU suspends the insertion operation and performs a reconciliation operation." (Thatte, col. 7:21-23.)
>
> "As mentioned above, after an insert operation is suspended due to a full reference count filter, the MMU needs to make a room in the reference count filter so that the suspended insert operation can be resumed and completed. The MMU 40 makes the necessary room by performing a reconciliation operation, box 62." (Thatte, col. 7:40-45.)

19 In other words, once processing is suspended based upon the state of the Reference Count Filter, the reconciliation operation sweeps through the entire reference count filter, identifies records that are no longer needed, and moves them to a separate "garbage buffer." These aspects are shown in steps 64-69 of Fig. 6.



20. At the point of a suspension (to garbage collect) at box 60, the insert operation would not have progressed to the point where the linked list into which the new record would ultimately be inserted had been accessed. Thus, once operation is suspended, there cannot be an access to the linked list and removal of expired records *at the same time.* This is because any access of data by Thatte is suspended until **after** global garbage collection for the entire table is completed (*See* box 51 of Fig. 6). Yet, this functionality is explicitly required by all the means-plus-function claims of the '120 Patent.

21. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this reexamined patent and any corresponding reexamination certificate.

Date: 11/22/2010

Lawrence Pileggi Ph.D

EXHIBIT C

DOCKET NO: 358121US91RX

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

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RICHARD M. NEMES	: EXAMINER: KOSOWSKI, ALEXANDER J
SERIAL NO: 90/010,856	:
FILED: FEBRUARY 9, 2010	: GROUP ART UNIT: 3992
FOR: METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL USING A HASHING TECHNIQUE WITH EXTERNAL CHAINING AND ON-THE-FLY REMOVAL OF EXPIRED DATA	:

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7. I am being compensated by the patent owner, Bedrock Computer Technologies, LLC, for time spent in connection with preparing this declaration. However, I have no personal interest in Bedrock as a company, in the patent subject to this reexamination proceeding, or in the outcome of any proceedings involving this patent.

8. I have thoroughly reviewed the Bedrock Patent (hereinafter, the "'120 Patent") including the claims of that patent in view of the specification.

9. I have also reviewed U.S. Patent 6,119,214 (hereinafter, "Dirks"). I understand the Official Action of July 23, 2010 ("Official Action") identifies Dirks as providing all of the features of claims 1-8, with the exception of a linked list. The aspect of a linked list is identified as taught by U.S. Patent 5,724,538 (hereinafter, "Morris"). *Official Action* at page 4.

Scope & Content of Dirks

10. Dirks is directed to an open addressed hash table. Dirks attempts to provide a solution to the problem of "efficiently allocating and de-allocating large amounts of address space in a virtual memory system that does not require excessive

processing time and therefore does not result in unacceptable delays in the operation of a computer." (col. 2:59-63.) Dirks purportedly addresses this problem, explaining, "virtual memory space is managed in a manner which allows new address ranges to be allocated and de-allocated *in a constant, small amount of time*, such that the need for a single complete sweep of all memory allocation records in a page table, to remove unused entries and prepare the addresses for further use, can be avoided." (col. 2:66-3:5.) "Thus, rather than halting the operation of the computer for a considerable period of time to scan the entire page table when a logical address area is deleted, the memory manager of the present invention carries out *a limited, time-bounded examination* upon each address allocation." (col. 3:26-29.).

11. In operation, page table 18 of Dirks is swept to collect inactive mappings by cleaning small sequential segments of the page table. Dirks describes this sweep operation in terms of numerically indexed table entries — "entries 0-19 in the page table are examined. ... entries 20-39 in the page table are examined" (col. 7:19-31). Dirks is not directed to navigation of list-type data structures. For this teaching, I understand that the Morris reference has been identified.

12. Dirks performs its "limited, time-bounded examination" using the following procedures: (i) "each time a VSID is assigned from the free list to a new application or thread, *a fixed number of entries* in the page table are scanned to determine whether they have become inactive" (col. 7:2-4); (ii) "the number of page table entries that are examined upon each allocation of a VSID in the free list can be determined from the total number of entries in the page table and the number of threads and applications that are allowed to be active at any given time."[1]; (iii) "The *predetermined number of entries* that are swept is identified as k, where k = total number of page table entries / maximum number of active treads. In the example given previously, k=10000/500=20." (col. 8:27-33); (iv) "it is not necessary that the number of examined entries be fixed for each step. Rather, it might vary from one step to the next. The only criterion is that *the number of entries examined on each step be such that all entries in the page table are*

[1] "For example, if the page table contains 10,000 entries and 500 threads/applications are allowed to be active at any given time, the 10,000 page table entries should be covered in a maximum of 500 steps (assuming each thread and application is assigned one segment each). The *number of entries that are swept in each step is therefore 10,000/500=20 entries* per step." (col. 7:14-25)

examined in a determinable amount of time or by the occurrence of a certain event, e.g. by the time the list of free VSIDs is empty." (col. 7:40-46.). These operations are generally referred to in Dirks as a "recycle sweep."

Memory Segment Sweeps of Dirks are Independent of Data Access

13. Notably, in Dirks, the entries that are examined during a particular segment of the recycle sweep are in no way related to, or associated with, the VSID allocated before the sweep of the entries. The swept entries are also unrelated to any pages that have been mapped to physical memory and entered into the hash table prior to the sweep. Indeed, the sweep proceeds through predetermined portions of the page table without any correlation with non-garbage collection uses of the table (e.g., insertion or searching of pages mapped to physical memory).

14. The recycle sweeps of Dirks are also triggered by events — the assignment of VSIDs to threads or applications (see col. 7, lines 2-4, "each time a VSID is assigned from the free list to a new application or thread, a fixed number of entries in the page table are scanned ...") — that do not involve accesses to the page table. As Dirks is directed to allocation of new memory space, there is no discussion of initiating recycle sweeps upon, or in response to, non-garbage collection accesses of the page table, for example for insertion, deletion or retrieval operations.

Dirks in Combination with Morris

15. The recycle sweep of Dirks' garbage collection is well suited to the linear array (open) hash table for which it is designed, but would require an entirely different operating principle if used in combination with a chained hash table data structure, such as those claimed in the '120 Patent. This is because Dirks clearly articulates that the sweeps should be arranged such that all entries in the page table are examined on a regular schedule (see col. 7, lines 44-46: "all entries in the page table are examined in a determinable amount of time or by the occurrence of a certain event, e.g. by the time the list of free VSIDs is empty"). Dirks achieves this objective by assuring that the number of entries scanned on each sweep be predetermined, such that the time needed to scan these entries is predictable.

16. This approach, however, does not translate in a reasonable way to a chained hash table, in which records are unpredictably distributed among chains of different lengths. In a chained hash table, examining a predetermined number of entries on each sweep, as described in Dirks, may require traversing multiple chains and examining a potentially large and indeterminate number of table entries (anchor points). In particular, if an initially accessed chain does not contain the predetermined number of records to be examined, then the examination would need to proceed down the table to find another chain on which to continue the examination, but that process might involve examining a potentially large number of anchor points in the table, with the number limited only by the table size. Such a modification would destroy the predictability of the Dirks design, and change its basic operating principle of a "limited, time-bounded examination."

17. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this reexamined patent and any corresponding reexamination certificate.

Date: 11/22/2010

Lawrence Pfleggi Ph.D

Electronic Acknowledgement Receipt

EFS ID:	8904489
Application Number:	90010856
International Application Number:	
Confirmation Number:	3502
Title of Invention:	METHODS AND APPARATUS FOR INFORMATION STORAGE AND RETRIEVAL USING A HASHING TECHNIQUE WITH EXTERNAL CHAINING AND ON-THE-FLY REMOVAL OF EXPIRED DATA
First Named Inventor/Applicant Name:	5893120
Customer Number:	22850
Filer:	Scott Anthony McKeown/Corrine Cunningham
Filer Authorized By:	Scott Anthony McKeown
Attorney Docket Number:	358121US91RX
Receipt Date:	23-NOV-2010
Filing Date:	09-FEB-2010
Time Stamp:	18:42:50
Application Type:	Reexam (Patent Owner)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		BEDROCK.pdf	5317754 907ac372a326f4bed917b7aad7609184573 5d0c6	yes	144

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Reexam Miscellaneous Incoming Letter	1	1
	Response after non-final action-owner timely	2	42
	Reexam Miscellaneous Incoming Letter	43	45
	Notice of concurrent proceeding(s)	46	143
	Reexam Certificate of Service	144	144

Warnings:	
Information:	
Total Files Size (in bytes):	5317754

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/010,856	02/09/2010	5893120	358121US91RX	3502

22850 7590 01/14/2011

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED: 01/14/2011

Please find below and/or attached an Office communication concerning this application or proceeding.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patents and Trademark Office
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Alexandria, VA 22313-1450
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THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS

Lissi M. Marquis
NOVAK DRUCE & QUIGG LLP
1000 Louisiana Street, 53rd Floor
Houston, TX 77002

Date: 1-14-11

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. : 90010856
PATENT NO. : 5893120
ART UNIT : 3992

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified ex parte reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the ex parte reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Notice of Intent to Issue Ex Parte Reexamination Certificate	Control No.	Patent Under Reexamination	
	90/010,856	5893120	
	Examiner	Art Unit	
	ALEXANDER J. KOSOWSKI	3992	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

1. ☒ Prosecution on the merits is (or remains) closed in this *ex parte* reexamination proceeding. This proceeding is subject to reopening at the initiative of the Office or upon petition. *Cf.* 37 CFR 1.313(a). A Certificate will be issued in view of
   - (a) ☒ Patent owner's communication(s) filed: *23 November 2010*.
   - (b) ☐ Patent owner's late response filed: _____.
   - (c) ☐ Patent owner's failure to file an appropriate response to the Office action mailed: _____.
   - (d) ☐ Patent owner's failure to timely file an Appeal Brief (37 CFR 41.31).
   - (e) ☐ Other: _____.

   Status of *Ex Parte* Reexamination:
   - (f) Change in the Specification: ☐ Yes ☒ No
   - (g) Change in the Drawing(s): ☐ Yes ☒ No
   - (h) Status of the Claim(s):
     - (1) Patent claim(s) confirmed: *1,2,5 and 6*.
     - (2) Patent claim(s) amended (including dependent on amended claim(s)): *3,4,7 and 8*
     - (3) Patent claim(s) canceled: _____.
     - (4) Newly presented claim(s) patentable: 9-12.
     - (5) Newly presented canceled claims: _____
     - (6) Patent claim(s) ☐ previously ☐ currently disclaimed: _____
     - (7) Patent claim(s) not subject to reexamination: _____.

2. ☒ Note the attached statement of reasons for patentability and/or confirmation. Any comments considered necessary by patent owner regarding reasons for patentability and/or confirmation must be submitted promptly to avoid processing delays. Such submission(s) should be labeled: "Comments On Statement of Reasons for Patentability and/or Confirmation."

3. ☐ Note attached NOTICE OF REFERENCES CITED (PTO-892).

4. ☒ Note attached LIST OF REFERENCES CITED (PTO/SB/08 or PTO/SB/08 substitute).

5. ☐ The drawing correction request filed on _____ is: ☐ approved ☐ disapproved.

6. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   - ☐ been received.
   - ☐ not been received.
   - ☐ been filed in Application No. _____.
   - ☐ been filed in reexamination Control No. _____.
   - ☐ been received by the International Bureau in PCT Application No. _____.

   * Certified copies not received: _____.

7. ☐ Note attached Examiner's Amendment.

8. ☐ Note attached Interview Summary (PTO-474).

9. ☐ Other: _____.

cc: Requester (if third party requester)

DETAILED ACTION

1) This Office action addresses claims 1-8 and new claims 9-12 of United States Patent Number 5,893,120 (Nemes), for which it has been determined in the Order Granting Ex Parte Reexamination (hereafter the "Order") mailed 3/25/10 that a substantial new question of patentability was raised in the Request for *Ex Parte* reexamination filed on 2/9/10 (hereafter the "Request"). This is a response to the amendment filed 11/23/10. Claims 1-12 are allowable and/or confirmed below.

STATEMENT OF REASONS FOR PATENTABILITY AND/OR CONFIRMATION

2) Claims 1-12 are allowable and/or confirmed.

Examiner notes that the amendment filed 11/23/10 has been considered in its entirety, including the three separately submitted affidavits from Dr. Lawrence Pileggi.

In the amendment filed 11/23/10, patent owner (PO) has defined specific structure for the means plus function system claims, and has amended all the method claims to impart similar functionality. In view of these new definitions and amendments, examiner interprets how each piece of prior art is overcome as follows:

The five issues from the non-final office action are rejections in view of Morrison, Thatte, Morrison and Dirks, Morrison and Thatte and Dirks and Morris.

With regard to Morrison, PO has shown that there is no analysis of how Morrison provides the required record search means or searching for a target record as recited.

With regard to Thatte, PO and Dr. Lawrence Pileggi have shown that operations in Thatte are suspended while a reconciliation process executes. Therefore, linked list access and removal of expired records cannot occur at the same time, as recited.

With regard to Dirks and Morris, PO and Dr. Lawrence Pileggi have shown that modifying the linear array (open) has table of Dirks to utilize a chained hash table such as Morris would not be obvious at such a modification would destroy the predictability of the Dirks design.

With regard to Morrison and Dirks and Morrison and Thatte, the persuasive arguments above with regard to Morrison render these rejections moot.

Therefore, the following is an examiner's statement of reasons for patentability and/or confirmation of the claims found patentable in this reexamination proceeding:

Referring to claim 1, the claim is allowable over the prior art that was explained in the request and determined to raise a substantial new question of patentability in the order granting reexamination and over the prior art that was applied and discussed by the examiner in the present reexamination proceeding because that prior art does not explicitly teach an information storage and retrieval system comprising means utilizing record search means for accessing a linked list and, at the same time, removing at least some of the expired ones of the records in the linked list, in combination with the remaining elements or features of the claimed invention.

Referring to claim 3, the claim is allowable over the prior art that was explained in the request and determined to raise a substantial new question of patentability in the order granting reexamination and over the prior art that was applied and discussed by the examiner in the

present reexamination proceeding because that prior art does not explicitly teach a method for storing and retrieving information records using a linked list comprising accessing the linked list of records to search for a target record and identifying at least some of the automatically expired ones of the records while searching for the target record, in combination with the remaining elements or features of the claimed invention.

Referring to claim 5, the claim is allowable over the prior art that was explained in the request and determined to raise a substantial new question of patentability in the order granting reexamination and over the prior art that was applied and discussed by the examiner in the present reexamination proceeding because that prior art does not explicitly teach an information storage and retrieval system comprising means utilizing record search means for inserting, retrieving and deleting records from the system and, at the same time, removing at least some expired ones of the records in the accessed linked list of records, in combination with the remaining elements or features of the claimed invention.

Referring to claim 7, the claim is allowable over the prior art that was explained in the request and determined to raise a substantial new question of patentability in the order granting reexamination and over the prior art that was applied and discussed by the examiner in the present reexamination proceeding because that prior art does not explicitly teach a method for storing and retrieving information records using a hashing technique comprising accessing a linked list of records having same hash address to search for a target record and identifying at least some of the automatically expired ones of the records while searching for the target record, in combination with the remaining elements or features of the claimed invention.

Claims 2, 4, 6 and 8-12 depend on allowable claims, and are therefore also allowable.

Any comments considered necessary by PATENT OWNER regarding the above statement must be submitted promptly to avoid processing delays. Such submission by the patent owner should be labeled: "Comments on Statement of Reasons for Patentability and/or Confirmation" and will be placed in the reexamination file.

Conclusion

All correspondence relating to this ex parte reexamination proceeding should be directed as follows:

By U.S. Postal Service Mail to:

Mail Stop Ex Parte Reexam
ATTN: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to:

(571) 273-9900
Central Reexamination Unit

By hand to:

Customer Service Window
Randolph Building
401 Dulany St.
Alexandria, VA 22314

By EFS-Web:

Registered users of EFS-Web may alternatively submit such correspondence via the electronic filing system EFS-Web, at

https://sportal.uspto.gov/authenticate/authenticateuserlocalepf.html

EFS-Web offers the benefit of quick submission to the particular area of the Office that needs to act on the correspondence. Also, EFS-Web submissions are "soft scanned" (i.e., electronically uploaded) directly into the official file for the reexamination proceeding, which offers parties the opportunity to review the content of their submissions after the "soft scanning" process is complete.

Any inquiry concerning this communication or earlier communications from the Reexamination Legal Advisor or Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/Alexander J Kosowski/

Primary Examiner, Art Unit 3992

UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/011,426	01/10/2011	5893120		9372

22850 7590 02/22/2011

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
ART UNIT	PAPER NUMBER

DATE MAILED: 02/22/2011

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HOUSTON, TX 77002

MAILED

FEB 22 2011

CENTRAL REEXAMINATION UNIT

EX PARTE REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/011,426*.

PATENT NO. *5893120*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

Order Granting / Denying Request For Ex Parte Reexamination	Control No.	Patent Under Reexamination	
	90/011,426	5893120	
	Examiner	Art Unit	
	ANDREW L. NALVEN	3992	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

The request for *ex parte* reexamination filed *10 January 2011* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☒ PTO/SB/08, c)☒ Other: *Decision on Request*

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

2. ☐ The request for *ex parte* reexamination is DENIED.

This decision is not appealable (35 U.S.C. 303(c)). Requester may seek review by petition to the Commissioner under 37 CFR 1.181 within ONE MONTH from the mailing date of this communication (37 CFR 1.515(c)). **EXTENSION OF TIME TO FILE SUCH A PETITION UNDER 37 CFR 1.181 ARE AVAILABLE ONLY BY PETITION TO SUSPEND OR WAIVE THE REGULATIONS UNDER 37 CFR 1.183.**

In due course, a refund under 37 CFR 1.26 (c) will be made to requester:

a) ☐ by Treasury check or,

b) ☐ by credit to Deposit Account No. _____, or

c) ☐ by credit to a credit card account, unless otherwise notified (35 U.S.C. 303(c)).

cc:Requester (if third party requester)

DECISION GRANTING EX PARTE REEXAMINATION

A substantial new question of patentability affecting claims 1-8 of United States Patent Number 5,893,120 issued to Nemes (hereafter "the '120 patent") is raised by the request for *ex parte* reexamination submitted on January 10, 2011.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

Notification of Concurrent Proceedings

The patent owner is reminded of the continuing responsibility under 37 CFR 1.985 to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '120 patent throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP § 2686 and 2686.04.

PROSECUTION HISTORY

The '120 patent was issued on April 6, 1999 from an application filed January 2, 1997. During prosecution, claims 1-8 were initially rejected under the doctrine of double patenting in view of US Patents 5,121,495 and 5,287,499. Claims 1-8 were further rejected under §103 as being unpatentable over US Patent 5,287,499 and Shackelford. The Applicant argued against the rejections on record stating that the cited references did not address on the fly deletion of at least some record from a linked list based on automatic expiration of data.

Following the Applicant's arguments, the Examiner issued a notice of allowance. The Examiner stated his reasons for allowance by stating "[t]he prior art does not teach or fairly suggest a method and apparatus for on-the-fly deletion of records in linked lists based on automatic expiration of data as claimed." The application then issued as the '120 patent.

A first request for reexamination of the '120 patent was received on February 9, 2010 and was assigned control number 90/010,856 ("the '10856 proceeding"). Reexamination was ordered as to claims 1-8 in view of the Morrison, Thatte, Dirks, and Morris references. Following a non-final rejection of claims 1-8 on July 23, 2010, the Patent Owner responded by amending claims 3 and 7 and adding claims 9-12 while arguing that the references failed to show equivalent structure to the means plus function claim limitations presented in claims 1-8 and 9-12.

Following the claim amendments and remarks, a notice of intent to issue a reexamination certificate (NIRC) was mailed on January 14, 2011. The NIRC allowed or confirmed claims 1-12 and noting that the prior art cited in the request failed to show claim 1's limitation of a storage

and retrieval system comprising means utilizing record search means for accessing a linked list and, at the same time, removing at least some of the expired ones of the records in the linked list, in combination with the remaining elements or features of the claimed invention. The NIRC provided similar rationale for claims 3, 5, and 7. As of the time of this order, the reexamination certificate has not yet been issued.

Accordingly, a submitted prior art patent or publication may raise an SNQ if it is new and non-cumulative to the teachings previously considered and if it would have been important to a reasonable examiner in determining the patentability of the claims. If a new and non-cumulative references addresses the features deemed distinguishing during the '10856 proceeding and during prosecution such as the claimed means for accessing a linked list while at the same time removing expired records of the linked list that reference will raise a substantial new question.

PROPOSED SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

Third Party Requester ("Requester") requested reexamination of claims 1-8 of the '120 patent based upon the following prior art patents and publications:

1. "The Complexity of Hashing with Lazy Deletion" by Christopher Van Wyk et al that was published in 1986 (hereafter "Van Wyk").
2. US Patent No. 5,121,495 issued to Nemes on June 9, 1992 (hereafter "Nemes '495") that was cited in an earlier examination. Nemes '495 qualifies as prior art under §102(b).

3. US Patent No. 5,287,499 issued to Nemes on February 15, 1994 (hereafter "Nemes '499") that was cited in earlier reexamination. Nemes '499 qualifies as prior art under §102(b).
4. US Patent No. 4,695,949 issued to Thatte et al on September 22, 1987 (hereafter "Thatte") that was cited in earlier reexamination. Thatte qualifies as prior art under §102(b).
5. US Patent No. 6,119,214 issued to Dirks September 12, 2000 (hereafter "Dirks") that was cited in earlier reexamination. Dirks qualifies as prior art under §102(e).
6. US Patent No. 5,724,538 issued to Morris et al on March 3, 1998 (hereafter "Morris") that was cited in earlier reexamination. Morris qualifies as prior art under §102(e).

Requestor has alleged a substantial new question of patentability in light of the proposed rejections:

Issue 1 – Requestor alleges that Claims 1-8 are anticipated by Van Wyk under 35 U.S.C. §102(b).

Issue 2 - Requestor alleges that Claims 1, 3, 5, and 7 are rendered obvious by the combination of Nemes '495 in view of Nemes '499 under 35 U.S.C. 103(a).

Issue 3 - Requestor alleges that Claims 1-8 are anticipated by Thatte under 35 U.S.C. §102(b).

Issue 4 - Requestor alleges that Claims 1-8 are rendered obvious by the combination of Thatte in view of Dirks under 35 U.S.C. 103(a).

Issue 5 - Requestor alleges that Claims 1-8 are rendered obvious by the combination of Dirks in view of Morris under 35 U.S.C. 103(a).

ANALYSIS OF SUBSTANTIAL NEW QUESTIONS OF PATENTABILITY

Summary

Requestor has shown a substantial new question of patentability with regards to claims 1-8.

Analysis

A substantial new question of patentability is raised by a cited patent or printed publication when there is a substantial likelihood that a reasonable examiner would consider the prior art patent or printed publication important in deciding whether or not the claim is patentable. A substantial new question of patentability is not raised by prior art presented in a reexamination request if the Office has previously considered (in an earlier examination of the patent) the same question of patentability as to a patent claim favorable to the patent owner based on the same prior art patents or printed publications. In re Recreative Technologies, 83 F.3d 1394, 38 USPQ2d 1776 (Fed. Cir. 1996).

The instant request for reexamination is the second request for reexamination on the '120 patent. Accordingly, MPEP provisions on second or subsequent requests for ex parte reexamination apply. MPEP § 2240 states:

"If a second or subsequent request for ex parte reexamination is filed (by any party) while a first ex parte reexamination is pending, the presence of a substantial new question of patentability depends on the prior art (patents and printed publications) cited by the second or subsequent requester. If the requester includes in the second or subsequent request prior art which raised a substantial new question in the pending reexamination, reexamination should be ordered only if the prior art cited raises a substantial new question of patentability which is different from that raised in the pending reexamination proceeding. If the prior art cited raises the same substantial new question of patentability as that raised in the pending reexamination proceedings, the second or subsequent request should be denied."

Van Wyk Reference

Van Wyk fails to raise a substantial new question of patentability regarding claims 1-8 because Van Wyk does not provide any new and non-cumulative teachings that a reasonable examiner would consider important in determining patentability of the claims.

Van Wyk discloses a system of lazy deletion that *inserts a new record* while searching for and removing expired records (*Van Wyk, Page 19).* However, this teaching of lazy deletion is cumulative to at least the teachings of Morrison considered in the '10856 proceeding. The Morrison reference similarly discussed the system of lazy deletion that i*nserts a new record* while searching for and removing expired records. The two references are discussing the same lazy deletion system. In fact, Christopher Van Wyk is a co-writer of the Morrison reference.

Morrison initially was applied against claims 1-8 either under §102 or under §103 in combination with Dirks or Thatte. Following Patent Owner arguments and submissions of declarations under §1.132, all rejections under Morrison were withdrawn and the Examiner found that Morrison failed to teach the record search means as claimed. Specifically, the Examiner found persuasive the Patent Owner's argument that Morrison failed to teach both searching for a *target record* while identifying expired records (*see '10865 proceeding, NIRC)*. The Morrison reference instead taught inserting a new record and while doing so checking for and removing expired records.

Third Party Requester has submitted a declaration by Michael Kogan that asserts that Van Wyk discloses searching and identifying. However, the declaration makes clear that Van Wyk is similarly disclosing inserting a new record while concurrently checking for and removing expired records (*Declaration under §1.132 by Michael Kogan, Pages 4-5*). The question of whether Morrison and Van Wyk's lazy deletion system teaches the claimed record search means has already been considered.

Accordingly, Van Wyk does not raise a substantial new question of patentability as to claims 1-8.

Nemes '495 and Nemes '499 References

Nemes '495 and Nemes '499 fails to raise a substantial new question of patentability regarding claims 1-8 because neither reference provides a new and non-cumulative teachings that a reasonable examiner would consider important in determining patentability of the claims. Both the Nemes '495 and Nemes '499 references were considered by the Examiner during prosecution

of the '120 patent. Both references were specifically noted as being considered and distinguished from the claims of the '120 patent in the notice of allowance mailed on September 29, 1998. Further, the teachings of the Nemes references have not been presented in a new light. Third Party Requester asserts that a new light is presented because the references are presented together. However, a new combination of references does not in itself give rise to a SNQ. A reference itself must present a new and non-cumulative technological teaching that would be important to a reasonable Examiner. In this case, both references have been previously considered and are thus cumulative to the teachings already on record.

Accordingly, Nemes '495 and Nemes '499 do not raise a substantial new question of patentability as to claims 1-8.

Thatte Reference

Thatte raises a substantial new question of patentability regarding claims 1-8 as presented in Issues 3 and 4. The Request cites new and non-cumulative teachings of Thatte that a reasonable examiner would consider important in determining patentability of the claims that raise a substantial new question.

A SNQ may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier concluded examination(s), in view of a material new argument or interpretation presented in the request. *MPEP §2258.01.* The instant Request has presented Thatte in a new light. For example, Thatte discloses a system using a reference count table that can be implemented as a hash table bucket with corresponding linked lists that allows insertion of new records (*Thatte, column 8 lines 39-62, column 7 lines 27-*

36, Figure 6). When inserting a new record, a check is performed to determine if there is available space and if not, a reconciliation operation is performed to remove expired records (*Thatte, Figure 6*). In the '10856 proceeding, Thatte was considered and was found to not teach the distinguishing features of the claimed record search means because Thatte allegedly did not teach the removal of records when the linked list was accessed because the insertion of records operation is suspended while reconciliation/removal is performed (*'10856 Proceeding, Notice of Intent to Issue Reexamination Certificate*).

In this instant Reexamination, the Request has set presented Thatte in a new light and cited further portions of Thatte that suggesting an alternative interpretation whereby the reference count filter is inherently accessed while reconciliation/removal is taking place (*see Thatte, Figure 6 – Boxes 67 and 69, see also Declaration under §1.132 by Michael Kogan – Exhibit D*). These cited teachings are new and non-cumulative and are relevant to the reasons for confirmation of claims in the '10856 proceeding. Accordingly, they would be important to a reasonable Examiner in determining the patentability of the claims.

Dirks Reference

Dirks raises a substantial new question of patentability regarding claims 1-8 as presented in Issues 4 and 5. The Request cites new and non-cumulative teachings of Dirks that a reasonable examiner would consider important in determining patentability of the claims that raise a substantial new question.

A SNQ may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier concluded examination(s),

in view of a material new argument or interpretation presented in the request. *MPEP §2258.01.* The instant Request has presented Dirks in a new light. For example, Dirks discloses a system of lazy deletion that can delete records while a list is being accessed (*Dirks, column 6 lines 24-34 and 49-44).* In the '10856 proceeding, Dirks was considered and was found to not teach the distinguishing features of the claimed record search means because Dirks allegedly did not teach the claimed linked lists and Dirks was found to not be combinable with Morris (*'10856 Proceeding, Notice of Intent to Issue Reexamination Certificate; see also Declaration under §1.132 by Lawrence Pileggi, Page 3*).

In this instant Reexamination, the Request has set presented Dirks in a new light and cited further portions of Dirks that suggest that a linked list may be inherently taught or that it may at least not be incompatible to combine Dirks with a reference teaching a similar system employing linked lists (*see Dirks, column 9 lines 35-57, see also Declaration under §1.132 by Michael Kogan – Exhibit E*). These cited teachings are new and non-cumulative and are relevant to the reasons for confirmation of claims in the '10856 proceeding. Accordingly, they would be important to a reasonable Examiner in determining the patentability of the claims.

Morris Reference

Morris fails to raise a substantial new question of patentability regarding claims 1-8 because Morris does not provide any new and non-cumulative teachings that a reasonable examiner would consider important in determining patentability of the claims. Morris was previously considered in the '10856 proceeding and is accordingly not new and non-cumulative

unless it is presented in a new light. However, the present Request fails to present Morris in a new light.

A SNQ may be based solely on old art where the old art is being presented/viewed in a new light, or in a different way, as compared with its use in the earlier concluded examination(s), in view of a material new argument or interpretation presented in the request. *MPEP §2258.01.* To support a finding of a SNQ, the Request asserts that Morris is being presented in a new light in view of the submitted Declarations by Dr. Kogan. It is important to note that a SNQ can only arise in view of a patent or printed publication. The Declarations of Dr. Kogan are not printed and publications that can give rise to a SNQ; however, they may be considered in a reexamination.

In the present case, Morris is not presented in a new light because the same portions of Morris are presented for consideration as in the '10856 proceeding and no new and important teachings are presented. For example, in discussing the feature of a record search means, the '10856 proceeding relies upon Morris at column 3 line 54 through column 4 line 24 and column 6 lines 47 through 65 (*see '10856 Proceeding, Claim Chart F, Pages 2-10).* Similarly, the instant Request relies upon Morris at column 3 line 54 through column 4 line 24 and column 6 lines 47 through 65 (*see Request, Claim Chart E, Pages 1-9; see also Declaration under §1.132 by Michael Kogan – Exhibit E).* Thus, Morris has not been presented in a different way as compared to its use in the earlier reexamination. On the contrary, Morris has been presented in exactly the same way utilizing the same portions of Morris in both Requests. The proposed combination of Morris with Dirks may be presented in a new manner with regards to the new information of Dirks, but with regards to Morris the presentation is cumulative to the teachings

previously on record. Accordingly, Morris does not raise a substantial new question of patentability as to claims 1-8.

CORRESPONDENCE

All correspondence relating to this ex parte reexamination proceeding should be directed:

By EFS: Registered users may submit via the electronic filing system EFS-Web, at https://sportal.uspto.gov/authenticate/authenticateuserlocalepf.html.

By Mail to: Mail Stop *Ex Parte* Reexam
Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

By FAX to: (571) 273-9900
Central Reexamination Unit

By hand: Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

For EFS-Web transmissions, 37 CFR 1.8(a)(1)(i) (C) and (ii) states that correspondence (except for a request for reexamination and a corrected or replacement request for reexamination) will be considered timely filed if (a) it is transmitted via the Office's electronic filing system in accordance with 37 CFR 1.6(a)(4), and (b) includes a certificate of transmission for each piece of correspondence stating the date of transmission, which is prior to the expiration of the set period of time in the Office action.

Any inquiry concerning this communication or earlier communications from the Examiner, or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

Signed:

/Andrew Nalven/

Andrew Nalven
CRU Examiner
GAU 3992
(571) 272-3839

Conferee: ESK

Conferee: HT.