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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/019,938	04/30/2025	8332844	IVI844	4127
3624	7590	07/22/2025		
VOLPE KOENIG 30 SOUTH 17TH STREET, 18TH FLOOR PHILADELPHIA, PA 19103			EXAMINER GE, YUZHEN	
			ART UNIT	PAPER NUMBER
			3992	
			MAIL DATE	DELIVERY MODE
			07/22/2025	PAPER

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

The time period for reply, if any, is set in the attached communication.



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***EX PARTE* REEXAMINATION COMMUNICATION TRANSMITTAL FORM**

REEXAMINATION CONTROL NO. 90/019,938 .

PATENT UNDER REEXAMINATION 8332844 .

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 Request For Ex Parte Reexamination	Control No. 90/019,938	Patent Under Reexamination 8332844	
	Examiner YUZHEN GE	Art Unit 3992	AIA (FITF) Status No

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

The request for *ex parte* reexamination filed 04/30/2025 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: _____

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.

/YUZHEN GE/ Primary Examiner, Art Unit 3992	/Nick Corsaro/ Primary Examiner, Art Unit 3992	
cc:Requester (if third party requester)		

ORDER GRANTING REQUEST FOR EX PARTE REEXAMINATION

I. Acknowledgments

1. On Apr. 30, 2025, a third-party requester (“**the Requester**”) filed a request for *ex parte* reexamination of U.S. Patent 8,332,844 (“**‘844 Patent**”) which issued to Kulkarni et al. The ‘844 Patent was filed on Feb. 21, 2007 and issued on Dec. 11, 2012 from US Application No. 11/709477 (“**‘477 Application**”).
2. This request for *ex parte* reexamination was assigned control number 90/019,938 (“**EP ‘938 Request**”). The EP ‘938 Request requested reexamination of all claims, i.e., claims 1-27 (“**Requested Claims**”) of the ‘844 Patent.
3. In summary, a substantial new question of patentability (“**SNQ**”) affecting claims 1-27 of the ‘844 Patent is raised by the EP ‘938 Request and the EP ‘938 Request is granted.

II. Prosecution History

1. The Examiner conducted independent reviews of the prosecution history of the ‘477 Application and also reviewed the prosecution history in the EP ‘938 Request at pp. 11-14 and agrees with the summary of prosecution history in the EP ‘938 Request.
2. In summary, on 8/31/2010, in response to the Office action dated 5/25/2010, Applicant amended all the independent claims to include the term “only” in the following manner (claim 7 being a representative claim):

7. (Currently amended) A method for providing data to a plurality of compute nodes, comprising:
 storing blocks of a root image of said compute nodes on a first storage unit;
 storing leaf images for respective compute nodes on respective second storage units, said leaf images comprising only additional data blocks not previously contained in said root image and changes made by respective compute

nodes to the blocks of the root image, wherein said leaf images of respective compute nodes do not include blocks of said root image that are unchanged by respective compute nodes; and
caching blocks of said root image that have been accessed by at least one of said compute nodes in a cache memory.

-- Claim Amendment, Aug. 31, 2010, the '477 Application.

3. On 3/12/2012, the Office mailed an office action rejecting claims 1-27 under 35 USC § 102 and/or § 103 in view of a reference of US Patent No. 7,870,106 ("Nguyen"). However, Applicant overcame the rejection by arguing Nguyen was not prior art for claims 1-27 of the '477 Application.
4. On 7/17/2012, a telephone interview was conducted between the Applicant and the Examiner in the '477 Application.
5. On 8/6/2012, the Office mailed a notice of allowance allowing all the pending claims in which all the independent claims incorporated limitations similar to that of claim 7 shown above.

III. Prior Art In the EP '938 Request

A. References cited in the EP '938 Request

1. Sapuntzakis, et al. ("Sapuntzakis"), "Optimizing the Migration of Virtual Computers," *Operating Systems Review*, 36(SI), 377-390, published December, 2002, qualified as prior art under 35 U.S.C. § 102(b).
2. U.S. Patent No. 7,089,300 B1, entitled "Method and Apparatus for Administering the Operating System of a Net-Booted Environment," filed on October 18, 1999, and issued August 8, 2006 to Birse, et al ("Birse"), qualified as prior art under 35 U.S.C. § 102(e)
3. U.S. Patent Application Publication No. 2005/0283597 A1, entitled "System and Method for Booting Multiple Servers from a Single Operating System Image," filed on June 22,

2004, and published on December 22, 2005 to Holzmänn, qualifies as prior art under 35 U.S.C. § 102(e).

4. U.S. Patent Application Publication No. 2003/0182313 A1, entitled “System and Method for Determining Changes in Two Snapshots and for Transmitting Changes to Destination Snapshot,” filed on March 19, 2002, and published on September 25, 2003 to Federwisch, et al. (“Federwisch”), qualifies as prior art under 35 U.S.C. § 102(b).

B. Availability of references as prior art in the EP ‘938 Request

1. The prior art references listed above were neither cited nor considered during original prosecution of the ‘844 Patent. Therefore the above listed references are considered as “new” prior art. See MPEP § 2258.01.

IV. Proposed Substantial New Question of Patentability

A. Basis for raising SNQs

1. MPEP 2242 I states:

For “a substantial new question of patentability” to be present, it is only necessary that:

(A) the prior art patents and/or printed publications raise a substantial question of patentability regarding at least one claim, i.e., the teaching of the (prior art) patents and printed publications is such that a reasonable examiner would consider the teaching to be important in deciding whether or not the claim is patentable; and

(B) the same question of patentability as to the claim has not been decided by the Office in an earlier concluded examination or review of the patent, raised to or by the Office in a pending reexamination or supplemental examination of the patent, or decided in a final holding of invalidity (after all appeals) by a federal court in a decision on the merits involving the claim.

If a reexamination proceeding was terminated/vacated without resolving the substantial question of patentability question, it can be re-presented in a new reexamination request. It is not necessary that a “prima facie” case of

unpatentability exist as to the claim in order for “a substantial new question of patentability” to be present as to the claim. Thus, “a substantial new question of patentability” as to a patent claim could be present even if the examiner would not necessarily reject the claim as either fully anticipated by, or obvious in view of, the prior art patents or printed publications. As to the importance of the difference between “a substantial new question of patentability” and a “prima facie” case of unpatentability see generally *In re Etter*, 756 F.2d 852, 857 n.5, 225 USPQ 1, 4 n.5 (Fed. Cir. 1985).

B. Basis for raising an SNQ in current proceeding

1. The EP ‘938 Request alleges the following substantial new questions of patentability (SNQs) based on the above-identified prior art.

SNQ A. *Sapuntzakis* in view of *Holzmann* raises an SNQ for claims 1-13.

SNQ B. *Sapuntzakis* in view of *Federwisch* raises an SNQ for claims 14-27.

SNQ C. *Birse* in view of *Holzmann* raises an SNQ for claims 1-13.

SNQ D. *Birse* in view of *Federwisch* raises an SNQ for claims 14-27.

2. The Examiner finds that the requested claims 1, 7, 14, 19 and 23 are the independent claims of the ‘844 Patent and that the independent claims include similar limitations. Claim 7 is representative and reprinted below (emphasis added):

7. A method for providing data to a plurality of compute nodes, comprising:

storing blocks of a root image of said compute nodes on a first storage unit;

storing leaf images for respective compute nodes on respective second storage units, **said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image,**

wherein said leaf images of respective compute nodes do not include blocks of said root image that are unchanged by respective compute nodes; and

caching blocks of said root image that have been accessed by at least one of said compute nodes in a cache memory.

3. Based on the prosecution history described in Section II above, the Examiner concludes that if *Sapuntzakis* in view of *Holzmann*, *Sapuntzakis* in view of *Federwisch*, *Birse* in view of *Holzmann*, or *Birse* in view of *Federwisch*, discloses “**said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image**” in the context of computer storage or cluster computing, a substantial new question of patentability (SNQ) is raised by the corresponding combination of references.

4. Analysis of each of the above SNQs will be conducted in the next section. In summary, based on the analysis, the Examiner agrees that SNQ A-SNQ D are raised based on the identified prior art.

C. SNQ A-SNQ B

1. *Sapuntzakis* concerns system architecture for quickly moving the state of a running computer (including its OS, applications and user files on disk, and all data in memory)- called a “capsule” - across a network to another machine. *Sapuntzakis*, 2. This is achieved by reducing the amount of data sent over the network through use of several mechanisms. Of interest here is the use of “copy-on-write” (“COW”) disk images that track just the updates to the disk-storage component of capsules. *Sapuntzakis*, 2.

2. Computers and storage act as caches of capsules. As users travel (commute), the system can move their capsules to computers close to them, giving them a consistent environment.

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Sapuntzakis, 3. As capsules are mostly derived from other capsules, and thus differences between related capsules are small relative to their total size; disks in those capsules can be stored efficiently by creating a hierarchy where each child capsule can be viewed as inheriting from its parent - with the differences in disk state between them captured in a separate COW virtual disk. *Sapuntzakis*, 6.

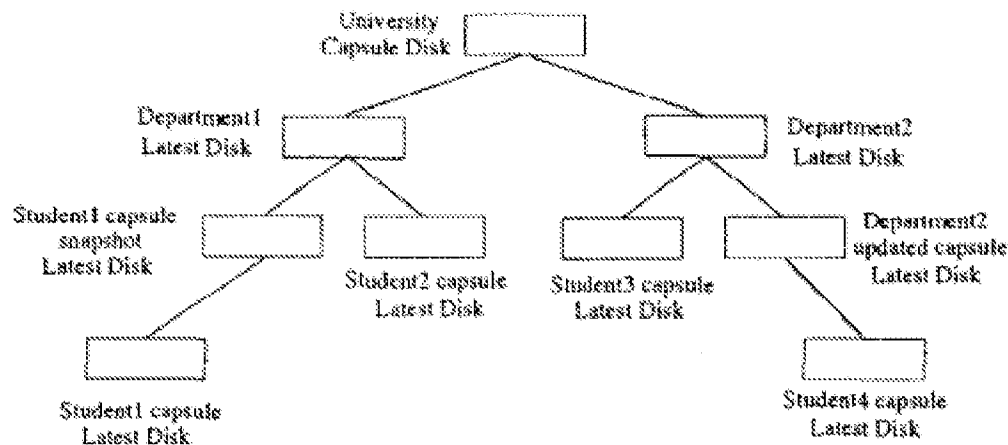


Figure 1: An example capsule hierarchy.

--Fig. 1 of Sapuntzakis.

3. At the hierarchy base is a root disk, which is a complete capsule disk. For example, administrators can install and maintain the same software set on multiple machines by creating one (inactive) capsule and distributing it to all machines. *Sapuntzakis*, 6. This approach shares similarities with disk imaging, but the disclosed system allows multiple capsules to exist on the same machine. *Sapuntzakis*, 5. All other nodes of the hierarchy represent a **COW** disk. Each path of **COW** disks originating from the root in the capsule hierarchy represents a capsule disk. Figure 1 shows an example of a capsule hierarchy (for a university) where the root capsule contains all

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software available to students, departments may extend the basic capsules with department-specific software, and student files are stored on networked storage servers. *Sapuntzakis*, 6.

4. Each COW disk is implemented as a bitmap file and a sequence of extent files (a sequence of blocks of the COW disk). The bitmap file contains one bit for each 16KB block on the disk, indicating whether the block is present in the COW disk. Writes to a capsule disk are performed by writing the data to the latest COW disk and updating its bitmap file. Reads involve searching the latest COW disk and its ancestor disks in turn until the required block is found. *Sapuntzakis*, 6. Because the root COW disk contains a copy of all blocks, the search is guaranteed to terminate. *Sapuntzakis*, 6-7.

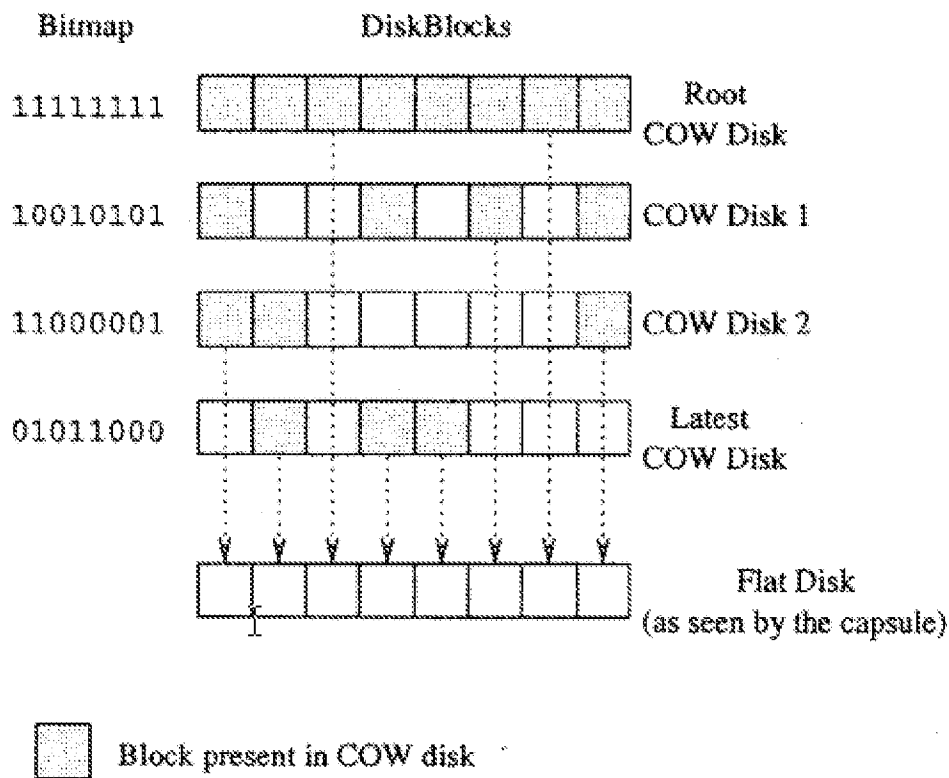


Figure 2: An example capsule disk.

-Fig. 2 of Sapuntzakis.

5. Fig. 2 shows an example capsule disk and the chain of COW disks that comprise the capsule disk. Notably, **none of the COW disks (from “COW Disk 1” to the “Latest COW Disk”) contain any unchanged blocks of the root disk.** Nor is the COW disk hierarchy visible to the user, as they see a normal flat disk as illustrated in the figure. *Sapuntzakis*, 7.

6. Therefore Sapuntzakis discloses **“said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image.”**

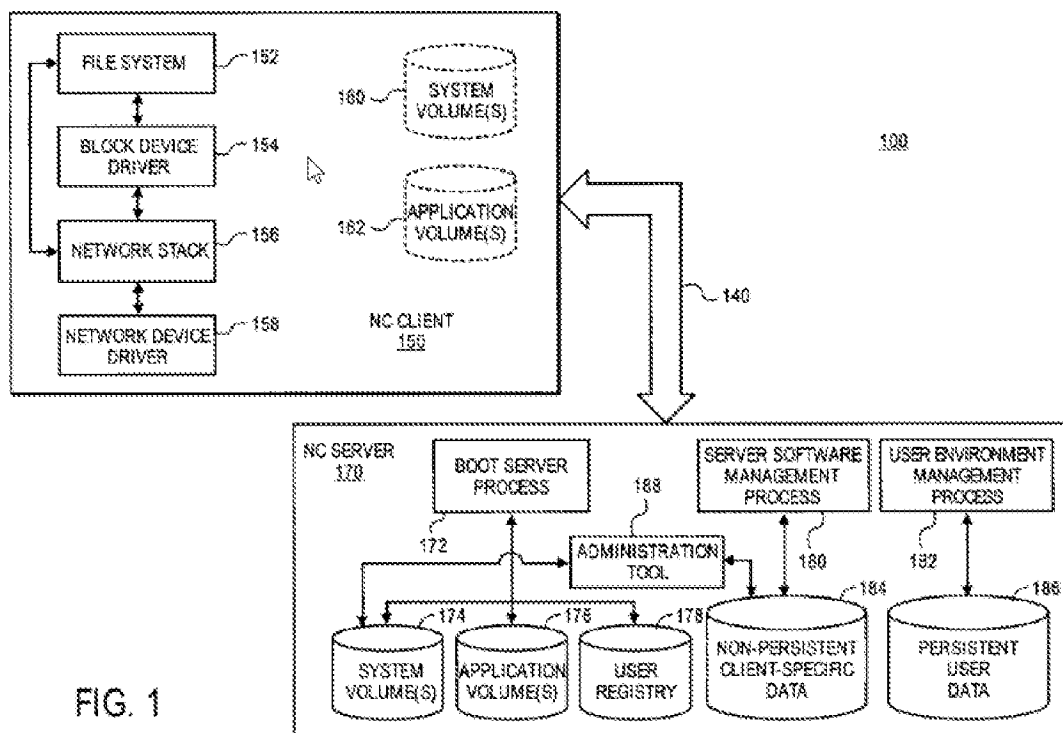
7. The teachings of Sapuntzakis are not cumulative to any written discussion of the Requested Claims on the record in the prosecution history for the Requested Claims. Additionally, these teachings regarding the Requested Claims, were not previously addressed during a prior examination, and are not the subject of a final holding of invalidity by Federal Courts.

8. Based on the above analysis and because Sapuntzakis appears to disclose the feature found important to the patentability of claim 7 in the ‘844 Patent, i.e., **“said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image,”** a reasonable examiner would find the teachings of *Sapuntzakis* important in deciding whether claim 7 of the ‘844 Patent is patentable and therefore Sapuntzakis in view of Holzmann raise an SNQ for claim 7 of the ‘844 Patent. Because other independent claims were allowed based on the same reason, *Sapuntzakis* in view of *Holzmann* raises an SNQ for claims 1-13 and *Sapuntzakis* in view of *Federwisch* raises an SNQ for claims 14-27.

D. SNQ C-SNQ D

1. *Birse* relates to the provision of an OS in a net-booted environment. *Birse*, 1: 18-21.

According to one embodiment, a server in a network computer ("NC") system maintains a copy of the OS that cannot be corrupted by ordinary users of the NC system. Additionally, the NC system may preserve user customizations (*e.g.*, preferences) by maintaining individual, user, storage areas. When an NC client boots from the network and accesses a stored copy of the OS from an NC server, the user's preferences are dynamically merged with the system environment provided to the NC client. *Birse*, 2:56-65. Advantageously, because of these features, a user may login to any NC client on the network and have the same user experience. *Birse*, 2:65-3:3.



--Fig. 1 of *Birse*.

2. The NC system includes an NC client 150 (*e.g.*, personal computer) coupled to an NC server 170 via data communication line 140. *Birse*, 4:65-5:8. NC server 170 can include one or more system volumes 174 (including a protected, read-only, master copy of the OS software), one or more application volumes 176, a user registry 178, non-persistent client-specific data 184 (temporary data storage), and persistent user data 186 (long-term storage for user information, *e.g.*, preferences, browser bookmarks, other desktop environment customizations). *Birse*, 5:9-29, 6:43- 48.

3. The NC server also includes a boot server process 172 (managing access to the system volumes 174 and the application volumes 176), a server software process 180 (managing access to the non-persistent client-specific data 184), and a user environment process 182 (maintaining the persistent user data 186). *Birse*, 5:46-6:34.

4. The NC client also includes a file system 152 (logical structures and software routines to control access to and from local and remote storage media), a block device driver 154 (servicing file system read/write requests to the system volume 160 or shadow volumes, discussed below), a network stack 156 (used to access the data communication link 140), and a network device driver 158. *Birse*, 7:6-60.

5. When an NC client boots from the network and accesses the operating system from an NC server, the user's preferences are dynamically merged with the system environment provided to the NC client. *Id.* 2:62-65. In one embodiment, one or more shadow volumes is created from the NC client 150 and stored with the non-persistent client-specific data 184 for the purpose of storing user preferences and/or changes to the operating system. *Birse*, 7:41-46.

6. “[In one embodiment,] **the shadow volume contains only those portions of the operating system that have been modified by the user** rather than a complete copy of the operating system as modified.” *Birse*, 11 :49-52, emphasis added. “[In another embodiment, the shared OS image 660 is divided into two parts:] [t]he NC server 170 also creates a shadow system volume 930 for each connected NC client. The shadow system volume 930 shadows the user system volume 924 by storing modifications that are made to the user system volume 924.” *Birse*, 14:49-53. “ ... [T]he shadow system volume 930 is used by the block device driver 154 of the NC client 150 to **implement a 'copyon- write' storage scheme in which modifications (writes) directed to the user system volume 930 are instead copied to the shadows stem volume 930.**” *Birse*, 14:56-61.

7. Therefore *Birse* discloses “**said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image.**”

8. The teachings of *Birse* are not cumulative to any written discussion of the Requested Claims on the record in the prosecution history for the Requested Claims. Additionally, these teachings regarding the Requested Claims, were not previously addressed during a prior examination, and are not the subject of a final holding of invalidity by Federal Courts.

9. Based on the above analysis and because *Birse* appears to disclose the feature found important to the patentability of claim 7 in the ‘844 Patent, i.e., “**said leaf images including only additional data blocks not previously contained in said root image and changes made by respective compute nodes to the blocks of the root image,**” a reasonable examiner would find the teachings of *Birse* important in deciding whether claim 7 of the ‘844 Patent is patentable

and therefore Birse in view of Holzmann raise an SNQ for claim 7 of the '844 Patent. Because other independent claims were allowed based on the same reason, *Birse* in view of *Holzmann* raises an SNQ for claims 1-13 and *Birse* in view of *Federwisch* raises an SNQ for claims 14-27.

V. 35 U.S.C. § 325 (d)

35 USC 325(d) states in part, “In determining whether to institute or order a proceeding under this chapter, chapter 30, or chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office.” Thus, in order for the director to exercise discretion as to whether to Order a reexamination proceeding under chapter 30, the Request must first be determined to be based on the same or substantially the same prior art or arguments that previously were presented to the Office.

A review of the post grant history of the '844 Patent indicates that the patent was subject the following prior Office post grant challenged filed before the filing date of the instant Request (90/019,938).

On November 28, 2024, Petitioner Liberty Mutual Insurance Company *et al.* filed a petition seeking *inter partes* review of claims 1-27 of the '844 patent (IPR2025-00202) which asserted the following grounds as raising a reasonable likelihood in prevailing:

RLP#	Claim(s) Challenged	35 U.S.C. §	Prior Art
1	1-13	103	Sapuntzakis and Holzmann
2	14-27	103	Sapuntzakis and Federwisch
3	1-13	103	Birse and Holzmann
4	14-27	103	Birse and Federwisch

On April 23, 2025, the PTAB terminated the IPR2025-00202 proceeding pre-institution in view of a joint settlement agreement between the parties.

On April 30, 2025, Petitioner American Airlines, Inc. and Southwest Airlines, Co. filed a petition seeking *inter partes* review of claims 1-27 of the '844 patent (IPR2025-00931) which asserted the following grounds as raising a reasonable likelihood in prevailing:

RLP #	Claim(s) Challenged	35 U.S.C. §	Prior Art
1	1-13	103	Sapuntzakis and Holzmann
2	14-27	103	Sapuntzakis and Federwisch
3	1-13	103	Birse and Holzmann
4	14-27	103	Birse and Federwisch

As of the mailing date of this Order, the PTAB has yet to issue a decision on the institution of the IPR2025-00931 petition.

On May 1, 2025, Petitioner Docker, Inc. filed a petition seeking *inter partes* review of claims 1-27 of the '844 patent (IPR2025-00840) which asserted the following grounds as raising a reasonable likelihood in prevailing:

RLP #	Claim(s) Challenged	35 U.S.C. §	Prior Art
1	1-13	103	Menage
2	14-27	103	Menage and Murphy
3	1-13	103	Birse and Rothman
4	14-27	103	Birse and Murphy

As of the mailing date of this Order, the PTAB has yet to issue a decision on the institution of the IPR2025-00840 petition.

A comparison between the prior art and arguments presented in the instant Request (90/019,938) and the IPR petitions, indicates that the grounds presented in the current request is based on the same prior art and arguments as were previously presented to the Office. As stated above, the current Request asserts following grounds as raising a substantial new question of patentability of the '844 patent.

SNQ #	Claim(s) Challenged	35 U.S.C. §	Prior Art
1	1-13	103	Sapuntzakis and Holzmann
2	14-27	103	Sapuntzakis and Federwisch
3	1-13	103	Birse and Holzmann
4	14-27	103	Birse and Federwisch

SNQ grounds #1-4 in the current Request are based on the same prior art as presented in IPR2025-00202 and IPR2025-00931, grounds RLP #1-4. Accordingly, the statutory threshold under 35 USC 325(d) permitting the Director to exercise discretion to reject this request is met.

However, in view of the following facts, the Examiner as delegated by the Director declines to exercise discretion to reject this Request because:

1. The fact that the prior IPR petition (IPR2025-00202) in which identical ground were presented was terminated pre-settlement in view of a joint settlement agreement between Petitioner and Patent Owner;
2. The fact that the other prior IPR petition (IPR2025-00931) in which identical grounds were presented has yet to have a decision on institution issued by the PTAB; and
3. The fact the Office has never considered Sapuntzakis or Birse relative to the patentability of claims 1-27 of the '844 patent.

Accordingly, *ex parte* reexamination of the '844 patent is thus Ordered based on the determination above that the 90/019,938 Request raises a substantial new question of patentability as to claims 1-27 of the '844 patent.

VI. Notice Re Patent Owner's Correspondence Address

1. Effective May 16, 2007, 37 C.F.R. § 1.33(c) has been revised to provide that:

The patent owner's correspondence address for all communications in an *ex parte* reexamination or an *inter partes* reexamination is designated as the correspondence address of the patent.

2. Revisions and Technical Corrections Affecting Requirements for *Ex Parte* and *Inter Partes* Reexamination, 72 FR 18892 (April 16, 2007) (Final Rule).

3. The correspondence address for any pending reexamination proceeding not having the same correspondence address as that of the patent is, by way of this revision to 37 CFR 1.33(c), automatically changed to that of the patent file as of the effective date.

4. This change is effective for any reexamination proceeding which is pending before the Office as of May 16, 2007, including the present reexamination proceeding, and to any reexamination proceeding which is filed after that date.

5. Parties are to take this change into account when filing papers, and direct communications accordingly.

6. In the event the patent owner's correspondence address listed in the papers (record) for the present proceeding is different from the correspondence address of the patent, it is strongly encouraged that the patent owner affirmatively file a Notification of Change of Correspondence Address in the reexamination proceeding and/or the patent (depending on which address patent owner desires), to conform the address of the proceeding with that of the patent and to clarify the record as to which address should be used for correspondence.

7. Telephone Numbers for reexamination inquiries:

Reexamination (571) 272-7703

Central Reexam Unit (CRU) (571) 272-7705

VII. Conclusion

1. Extensions of time under 37 C.F.R. § 1.136(a) will not be permitted in these proceedings because the provisions of 37 C.F.R. § 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 C.F.R. § 1.550(a)). Extensions of time in ex parte reexamination proceedings are provided for in 37 C.F.R. § 1.550(c).
2. This Office action is assigned paper no. 20240607. Paper numbers and paragraph numbers are for reference purposes only.
3. Patent Owner is reminded of the continuing responsibility under 37 C.F.R. § 1.565(a), to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving the '285 patent throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286. The third party requester is similarly apprised of the ability to disclose such proceedings.
4. Registered users of USPTO Patent Center may alternatively submit correspondence via the electronic filing system at <https://patentcenter.uspto.gov/>.
5. Any inquiry concerning this communication or as to the status of this proceeding, should be directed to the Central Reexamination Unit at telephone number (571) 272-7705.

/YUZHEN GE/

Primary Examiner, Art Unit 3992

(571) 272-7636

Conferees:

/NICK CORSARO/

Primary Examiner, Art Unit 3992

/ANDREW J. FISCHER/

Supervisory Patent Reexamination Specialist, Art Unit 3992