(12) **United States Patent**
Leahy et al.

(10) **Patent No.:** US 7,493,558 B2
(45) **Date of Patent:** Feb. 17, 2009

(54) **SYSTEM AND METHOD FOR ENABLING USERS TO INTERACT IN A VIRTUAL SPACE**

(75) Inventors: **Dave Leahy**, Oakland, CA (US); **Judith Challinger**, Santa Cruz, CA (US); **B. Thomas Adler**, San Francisco, CA (US); **S. Mitra Ardon**, San Francisco, CA (US)

(73) Assignee: **Worlds, Inc.**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 18 days.

(21) Appl. No.: **11/591,878**

(22) Filed: **Nov. 2, 2006**
(Under 37 CFR 1.47)

(65) **Prior Publication Data**

US 2007/0050716 A1 Mar. 1, 2007

Related U.S. Application Data

(63) Continuation of application No. 09/632,154, filed on Aug. 3, 2000, now Pat. No. 7,181,690, which is a continuation of application No. 08/747,420, filed on Nov. 12, 1996, now Pat. No. 6,219,045.

(60) Provisional application No. 60/020,296, filed on Nov. 13, 1995.

(51) **Int. Cl.**
G06F 13/00 (2006.01)
G06F 15/00 (2006.01)

(52) **U.S. Cl.** **715/704**; 715/751

(58) **Field of Classification Search** 715/706, 715/734, 853–854, 736–738, 761–762, 753, 715/765, 751
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,195,086 A	3/1993	Baumgartner et al.	
5,206,934 A	4/1993	Naef, III	
5,347,306 A *	9/1994	Nitta	348/14.1
5,388,196 A	2/1995	Pajak et al.	
5,491,743 A *	2/1996	Shiio et al.	709/204
5,572,248 A	11/1996	Allen et al.	
5,596,426 A	1/1997	Ueno et al.	
5,659,691 A	8/1997	Durward et al.	
5,736,982 A *	4/1998	Suzuki et al.	715/706

(Continued)

OTHER PUBLICATIONS

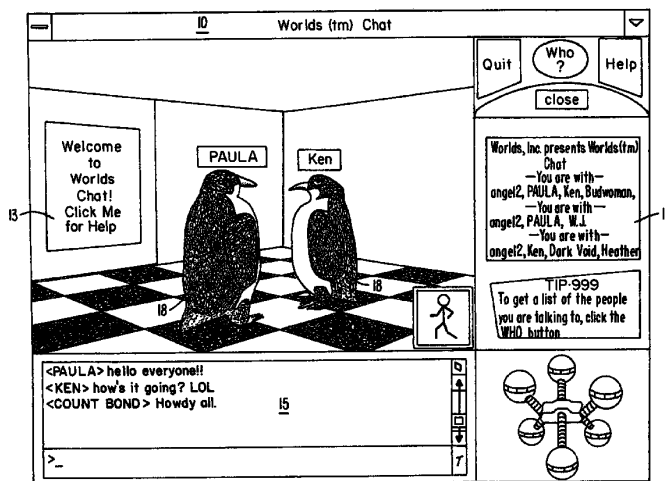Benford, Steve; "A Distributed Architecture for Large Collaborative Virtual Environments," IEEE. pp. 9/1-9/7, 1993.

(Continued)

Primary Examiner—Kevin Nguyen

(57) **ABSTRACT**

The present invention provides a highly scalable architecture for a three-dimensional graphical, multi-user, interactive virtual world system. In a preferred embodiment a plurality of users interact in the three-dimensional, computer-generated graphical space where each user executes a client process to view a virtual world from the perspective of that user. The virtual world shows avatars representing the other users who are neighbors of the user viewing the virtual word. In order that the view can be updated to reflect the motion of the remote user's avatars, motion information is transmitted to a central server process which provides positions updates to client processes for neighbors of the user at that client process. The client process also uses an environment database to determine which background objects to render as well as to limit the movement of the user's avatar.

15 Claims, 5 Drawing Sheets

U.S. PATENT DOCUMENTS

5,827,120	A	10/1998	Kikuchi et al.
5,829,041	A	10/1998	Okamoto et al.
5,841,980	A	11/1998	Waters et al.
RE36,574	E	2/2000	Hochstein et al.
6,042,477	A	3/2000	Addink
6,229,533	B1	5/2001	Farmer et al.

OTHER PUBLICATIONS

Club Caribe 1989 Quantum Computer Service.

Dive—A Multi-User Virtual Reality System Swedish Institute of Computer Science, Sep. 18, 1993.

"Release 1.0—Esther Dyson's Monthly Report," EDventure Holdings, Inc., Jun. 27, 1994, pp. 1-22. See particularly, pp. 15-17 re: "Knowledge Adventures Worlds.".

Valentine's Day Wedding in a Virtual World Newsbytes, Copyright Feb. 1996.

The Web's Wave of Fun Electronics Communities Services, Nov. 9, 1998.

U.S. International Searching Authority; International Search Report; Oct. 4, 2000; four pages.
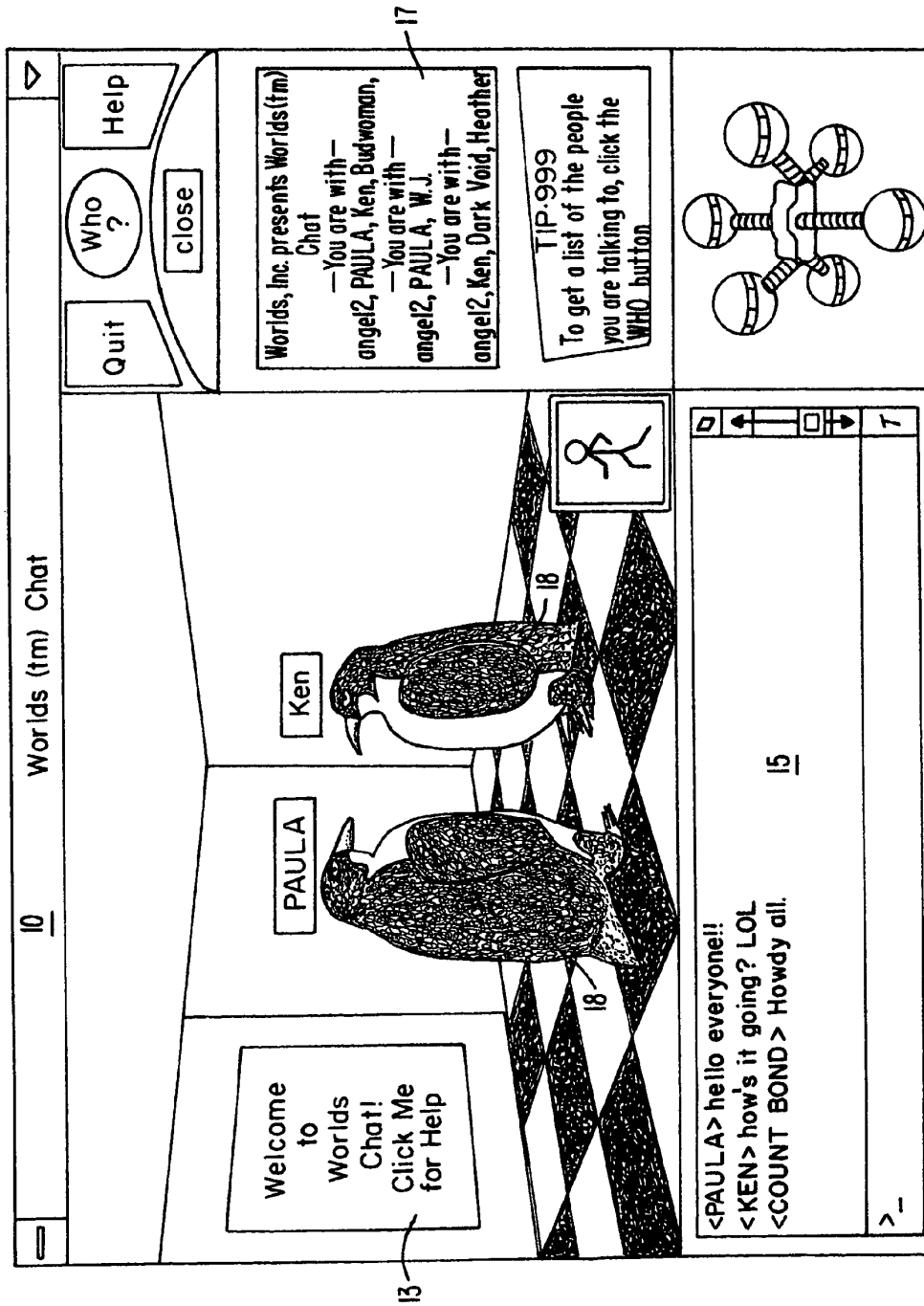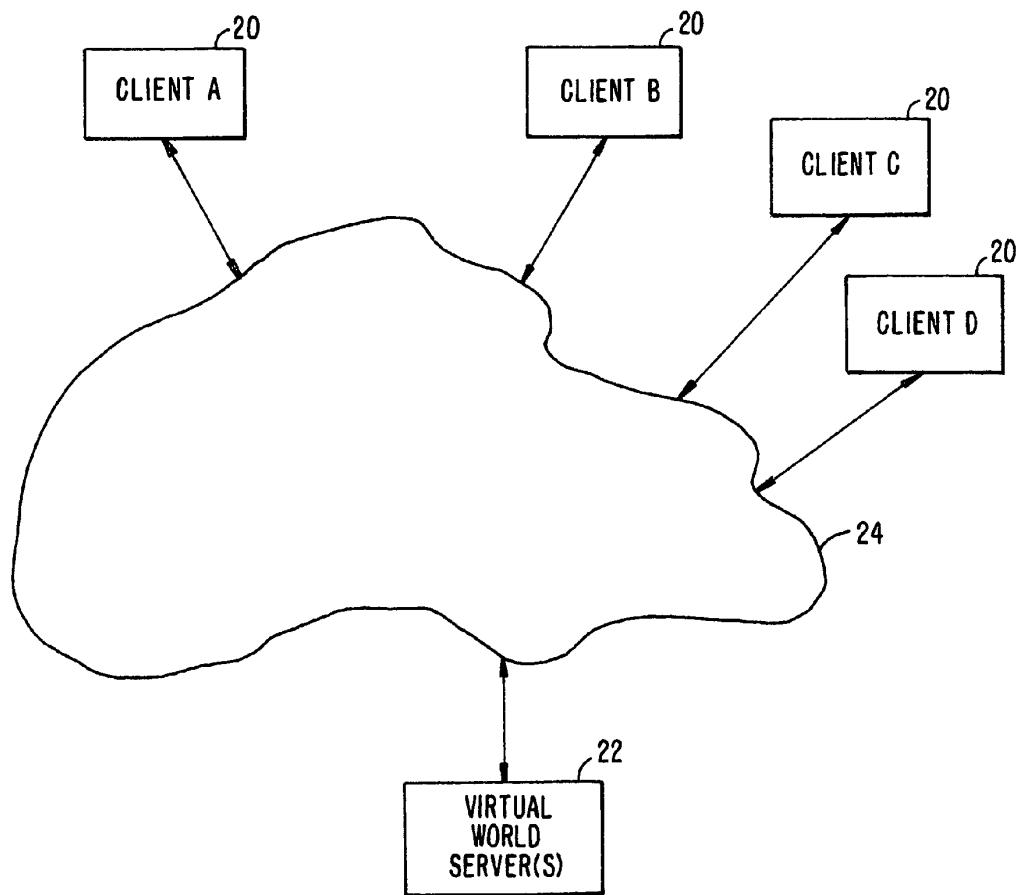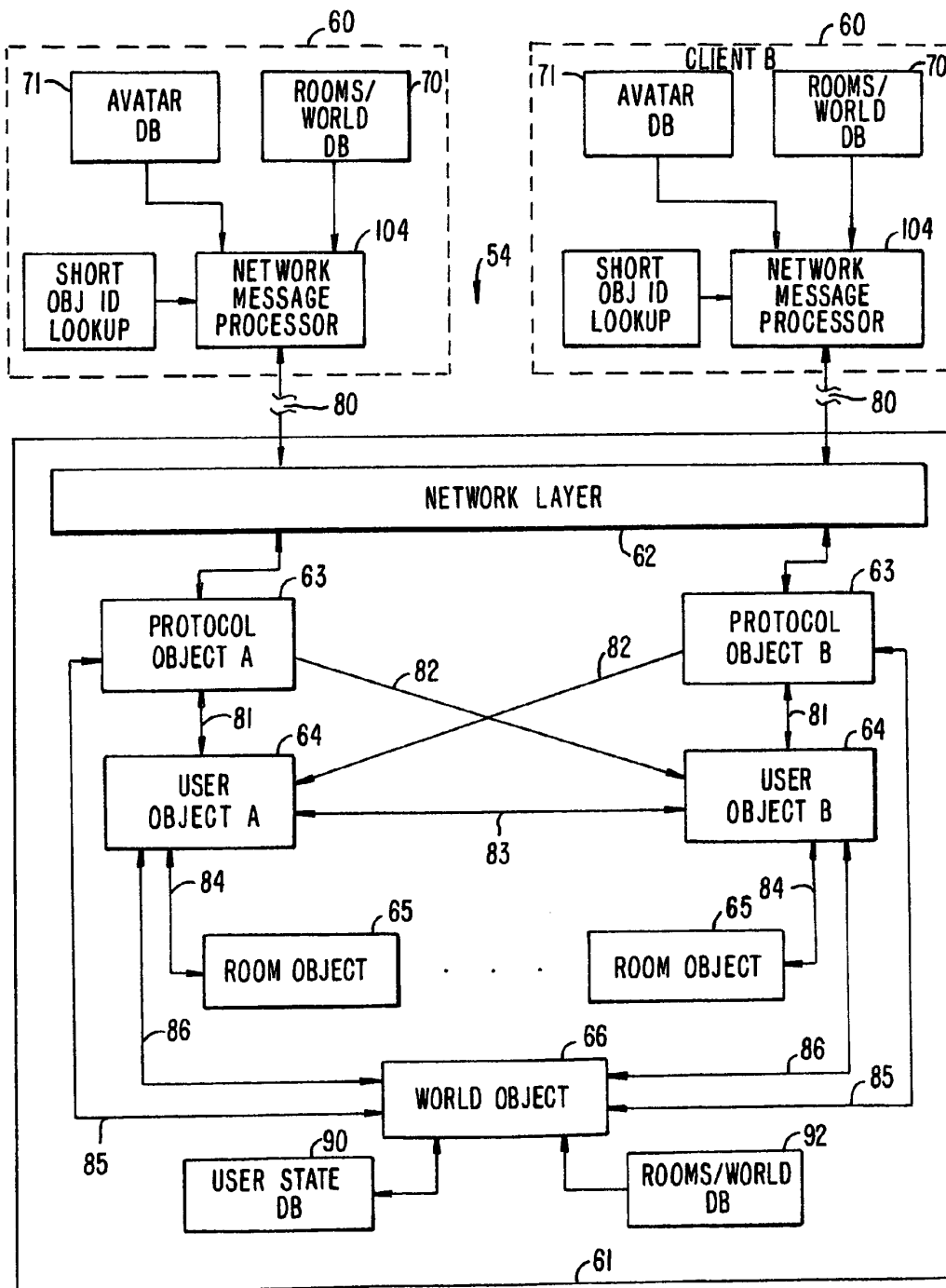
* cited by examiner

FIG. 1.

FIG. 2.

FIG. 3.

DOCKET ALARM

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts

Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research

With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips

Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS
Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS
Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS
Sync your system to PACER to automate legal marketing.

---

fastcase®
Smarter legal research.