



- [54] **AUTOMATIC DATA SYNCHRONIZATION BETWEEN A HANDHELD AND A HOST COMPUTER USING PSEUDO CACHE INCLUDING TAGS AND LOGICAL DATA ELEMENTS**
- [75] Inventor: **Charlie David Chase, Jr.**, Spring, Tex.
- [73] Assignee: **Compaq Computer Corporation**, Houston, Tex.
- [21] Appl. No.: **08/689,304**
- [22] Filed: **Aug. 7, 1996**
- [51] **Int. Cl.**<sup>6</sup> ..... **G06F 1/00; G06F 15/00; G06F 17/30; G06F 15/62**
- [52] **U.S. Cl.** ..... **395/200.78; 395/200.76; 395/821; 395/892; 395/893; 707/200; 707/203; 707/204**
- [58] **Field of Search** ..... **395/200.78, 200.76, 395/821, 892, 893; 707/200, 203, 204**

- [56] **References Cited**
- U.S. PATENT DOCUMENTS**
- 4,897,781 1/1990 Chang et al. .... 364/200
- 5,337,044 8/1994 Folger et al. .... 340/825.44
- 5,392,390 2/1995 Crozier ..... 395/161

**OTHER PUBLICATIONS**

Personal Air Communications Technology Brochure No. 32956.  
 PSCI (Pacific Communication Sciences, Inc.) Brochure entitled pACT: An Advanced Two-Way Messaging and Paging Protocol.  
 PCSI News Release dated Jun. 5, 1996, announcing Chip Set for pACT Two-Way Paging and Messaging Services.  
 Vendetti, Don, Wireless Tutorial—Narrowband PCS: Two-Way Messaging, Wireless for the Corporate User (1996).  
 PSCI, Product Brochure for PC18101F-01 Control Processor for AT&T pACT NPC System, Dec. 1, 1995.  
 PSCI, Product Brochure for PC11503T Modem IC for AT&T pACT NPC System, Dec. 1, 1995.

PSCI, Product Brochure for PC11504T Modem Processor for AT&T pACT NPC System, Dec. 8, 1995.  
 PSCI, Product Brochure for PC11605M Radio Transceiver for AT&T pACT NPC System, Dec. 1, 1995.  
 Thryft, Ann R., pACT Adds Sophistication to Two Way Paging Services, EBN, Jun. 17, 1996, 1996, p. 22.  
 Moore, Mark, "Pegasus to lack key functions", PC Week, Jun. 24, 1996, p.8.  
 Matzkin, Jonathan, "The New PDA Hand-held devices head online", PC Magazine, Jun. 25, 1996, p. 31.  
 Yoshida, Junko, "WebTV pulls Sony, Philips into the Net," Electronic Engineering Times, Jul. 15, 1996, p. 16.  
 Wirbel, Loring, "Alliance to spin a wireless Web", Electronic Engineering Times, Jul. 15, 1996, pp. 1,8.  
 Moore, Mark, "Users of Pegasus will get choice of wireless carriers", PC Week, Jul. 22, 1996, pp. 9,40.

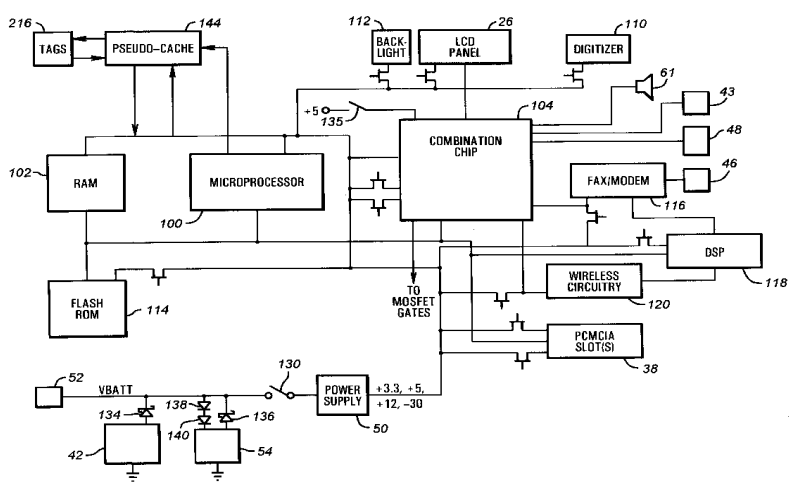
(List continued on next page.)

*Primary Examiner*—Zarni Maung  
*Assistant Examiner*—William D. Thomson  
*Attorney, Agent, or Firm*—Akin, Gump, Strauss, Hauer & Feld, LLP

[57] **ABSTRACT**

An apparatus is disclosed for performing dynamic synchronization between data stored in a handheld computer and a host computer, each having a plurality of data sets including at least one common data set, each computer having a copy of the common data set. The handheld computer has a processor, a communication port, and a data synchronization engine. The data synchronization engine has a pseudo-cache and one or more tags connected to the pseudo cache. Data is synchronized whenever data is written to main memory and/or when the associated pseudo-cache tag is invalidated. By strict adherence to a set of protocols, data coherency is achieved because the system always knows who owns the data, who has a copy of the data, and who has modified the data. The data synchronization engine resolves any differences in the copies and allows the storage of identical copies of the common data set in the host computer and in the handheld computer.

**25 Claims, 25 Drawing Sheets**



OTHER PUBLICATIONS

Wolfe, Alexander, "Microsoft poses PC specs", Electronic Engineering Times, Aug. 8, 1996, Issue 909, pp. 1, 8.  
Gardner, W. David, "Microsoft eyes one-way paging to jump-start handhelds", Electronic Engineering Times, Aug. 8, 1996, Issue 909, pp. 10, 16.

Grace, Elden, "RF Filter Technology for Wireless Communications", Wireless Design & Development, p. 8.

Sharp Model ZR-5700/ZR-5800 Keyboard Enhanced Personal Digital Assistant-Zaurus Operational Manual, pp. 1-61.

FIG. 1A

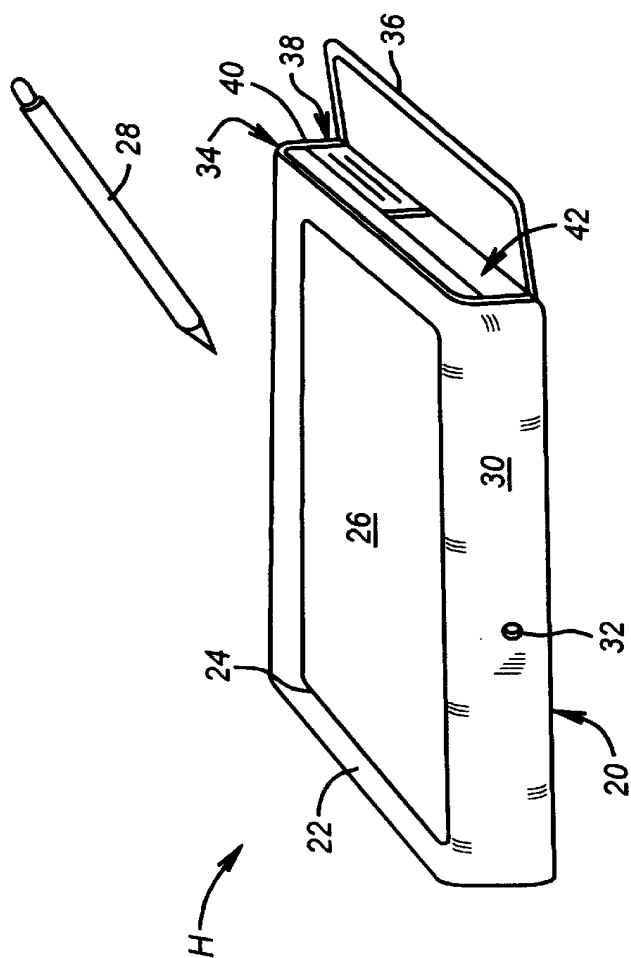
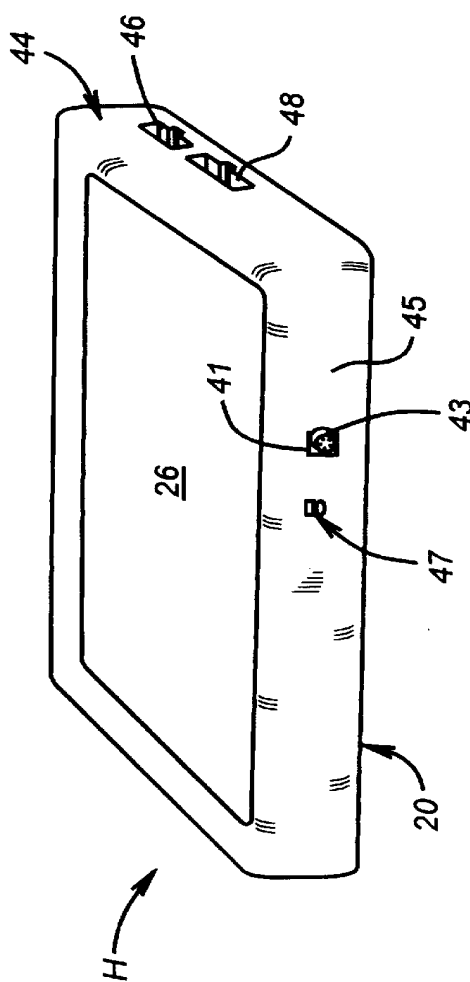


FIG. 1B



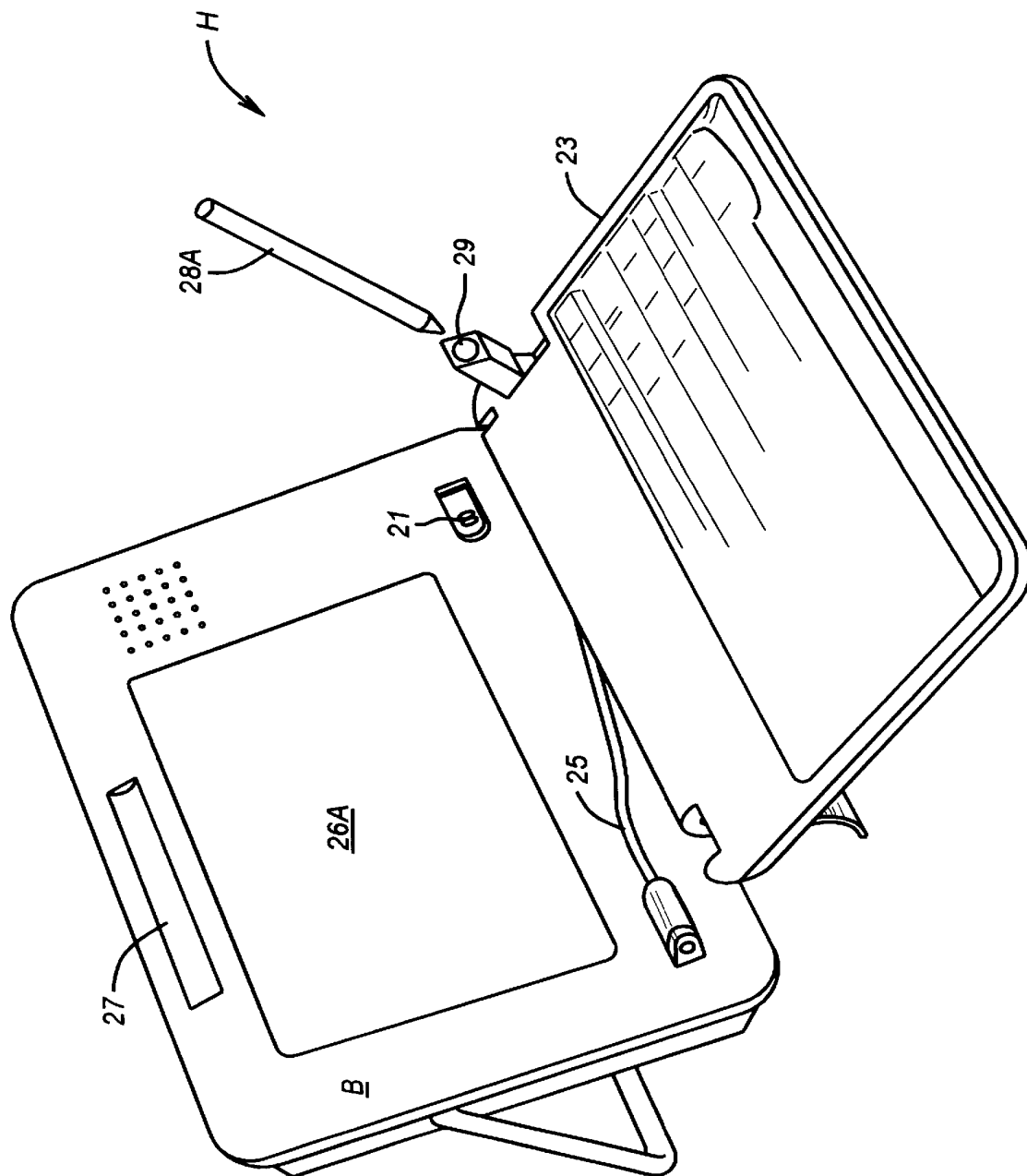


FIG. 1C

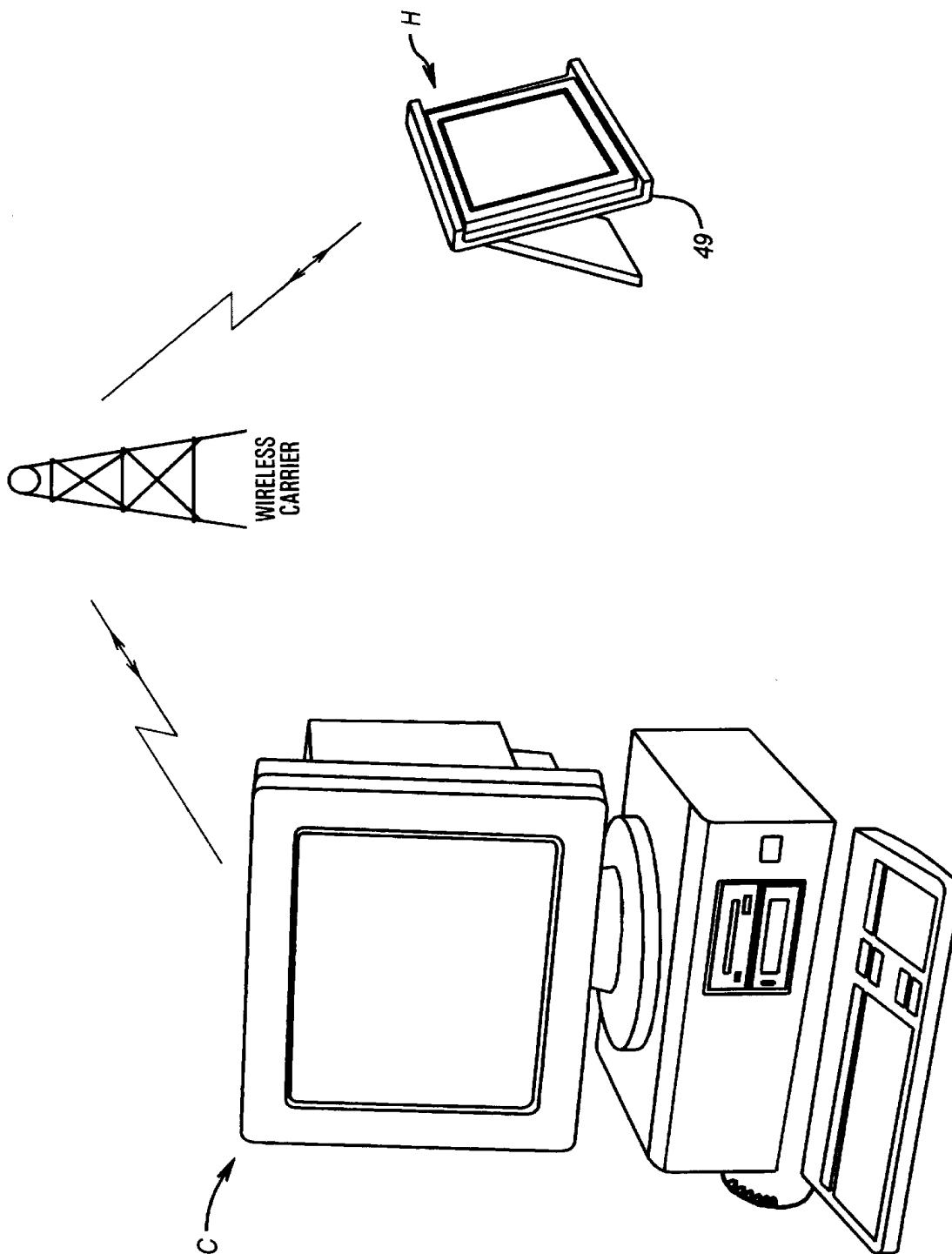


FIG. 1D

# 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.