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[54] ASSOCIATIVE TEXT SEARCH AND

Holt et al.

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[ا	RETRIEVAL SYSTEM HAVING A TABLE INDICATING WORD POSITION IN PHRASES			
[75]	Inventors:	John Holt, Centerville; David James Miller, Spring Valley; X. Allan Lu, Springboro; Ray Daley; Minh Doan, both of Dayton; Richard G. Graham, Beavercreek; Catherine Leininger, Dayton; Darin W. McBeath, Miamisburg; Thomas Pease, Mason; Stephen M. Sever, Kettering; Dale Waddell; Franz Weckesser, both of Dayton, all of Ohio		
[73]	Assignee:	Reed Elsevier, Inc., Newton, Mass.		
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Related U.S. Application Data

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[52]	U.S. Cl. 395/605 ; 395/792; 395/793;
	395/759; 395/760; 395/606; 395/603
[58]	Field of Search
	395/793, 603, 606, 795, 760; 364/419.19

[56] References Cited

U.S. PATENT DOCUMENTS

4,241,402	12/1980	Mayper, Jr. et al	364/200
4,270,182	5/1981	Asija	364/900
4,358,824	11/1982	Glickman et al	364/200
4,384,329	5/1983	Rosenbaum et al	364/300
4,471,459	9/1984	Dickinson et al	364/900
4,499,553	2/1985	Dickinson et al	364/900
4,554,631	11/1985	Reddington	364/300
4,580,218	4/1986	Raye	364/300
4,688,195		Thompson et al	364/300
4,706,212	11/1987	Toma	364/900
4,760,528	7/1988	Levin.	
4,787,035	11/1988	Bourne	364/300

4,819,156	4/1989	De Lorme et al 395/182.13
4,823,306	4/1989	Barbic et al
4,839,853	6/1989	Deerwester et al
4,852,003	7/1989	Zamora .
4,862,408	8/1989	Zamora

(List continued on next page.)

FOREIGN PATENT DOCUMENTS

WO 92/04681 3/1992 WIPO.

OTHER PUBLICATIONS

Wong, Wai Yee Peter, et al., "Implementations of Partial Document Ranking Using Inverted Files," *Information Processing & Management*, (Great Britain), vol. 29, No. 5, pp. 647–669, 1991.

Robert F. Jack, "Essential Guide to the Library IBM PC, vol. 4, Data Communications: Going Online", *Merkler Corp.* ©1987, pp. 62–67.

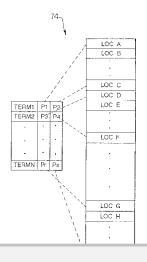
(List continued on next page.)

Primary Examiner—Gail O. Hayes Assistant Examiner—Joseph Thomas Attorney, Agent, or Firm—Reid & Priest LLP

[57] ABSTRACT

An associative text search and retrieval system uses one or more front end processors to interacting with a network having one or more user terminals connected thereto to allow a user to provide information to the system and receive information from the system. The system also includes storage for a plurality of text documents, and at least one processor, coupled to the front end processors and the document storage. The processor(s) search the text documents according to a search request provided by the user and provide to the front end processor a predetermined number of retrieved documents containing at least one term of the search request. The retrieved documents have higher ranks than documents not provided to the front end processor. The ranks are calculated using a formula that varies according to the square of the frequency in each of the text documents of each of the search terms.

15 Claims, 12 Drawing Sheets





U.S. PATENT DOCUMENTS

4,868,750	9/1989	Kucera et al	364/419
4,914,590	4/1990	Loatman et al	364/419
4,918,588	4/1990	Barrett et al	364/200
4,931,935	6/1990	Ohira et al	364/419
4,965,763	10/1990	Zamora .	
4,972,349	11/1990	Kleinberger	364/900
4,974,191	11/1990	Amirghodsi et al	364/900
4,991,087	2/1991	Burkowski et al	364/200
4,991,094	2/1991	Fagan et al	
5,005,127	4/1991	Kugimiya et al	
5,099,425	3/1992	Yuji et al	364/419
5,109,509	4/1992	Katayama et al	395/600
5,117,349	5/1992	Tirfling et al	395/600
5,123,103	6/1992	Ohtaki et al	395/600
5,265,065	11/1993	Turtle	395/600
5,321,833	6/1994	Chang et al	395/605
5,323,316	6/1994	Kadashevich et al	364/419
5,544,352	8/1996	Egger	395/605

OTHER PUBLICATIONS

Vu/Text®User Guide, A Knight Ridder Company, Aug. 1989 Chapter 7, p. 7.11.

Save™Retrieval Guide,. Jun. 1, 1990, pp. 12–17 of Chapter 12.

Dialog OnDisc User's Guide, Dialog Information Services, Inc.,©1987, pp. E-4 & E-5.

Dialog File 410, Acc. # 00035496: "New Full-Text Features in McGraw-Hill . . ." published Nov. 1968.

Dialog File 410, Acc, # 00044457: "KWIC and Hilight: How and When," published May 1988.

Croft, et al., "A Retrieval Model Incorporating Hypertext Links," *Hypertext* '89 Proceedings, Association for Computer Machinery, pp. 213–224 (Nov., 1989).

Turtle, et al., "Inference Networks for Document Retrieval," *Coins Technical Report 90–07*, University of Massachusetts, pp. 1–16, (Mar., 1990).

Turtle, et al., "Inference Networks for Document Retrieval," *Sigir 90,* Association for Computer Machinery, pp. 1–24 (Sep., 1990).

Turtle, "Inference Network for Document Retrieval," Ph. D. Dissertation, *Coins Technical Report 90–92*, University of Massachusetts (Feb., 1991).

Turtle, et al., "Efficient Probabilistic Inference for Text Retrieval," *RIAO '91 Conference Proceedings*, Recherche d'Information Assistee' par Ordinateur, Universitat Autonsma de Burcelona, Spain, pp. 644–661 (Apr., 1991).

Porter, "An Algorithm for Suffix Stripping," *Program*, vol. 14, pp. 130–137 (1980).

Turtle, et al., "Evaluation of an Inference Network-Based Retrieval Model," *Transactions on Information Systems*, Association for Computer Machinery, vol. 9, No. 3, pp. 187–222 (Jul., 1991).

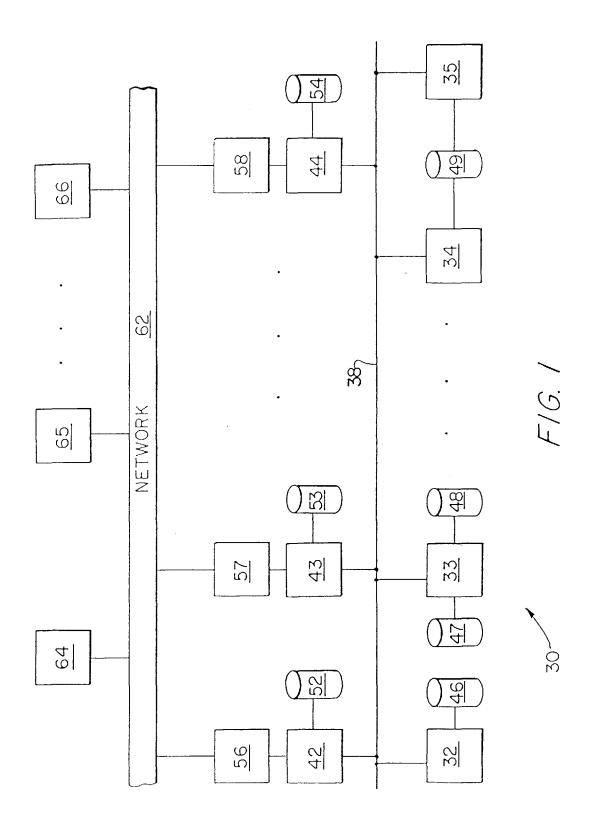
Croft, et al., "Interactive Retrieval for Complex Documents," *Information Proceeding and Management*, vol. 26, No. 5, pp. 593–613 (1990).

Haynes, "Describing a System for the Specialized User: A Case Study," *Proceedings—1985 National Online Meeting,* Learned Information, Inc., pp. 205–213 (Apr. 30, 1985).

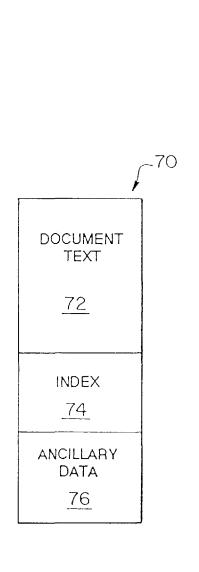
"Text Search and Retrieval Reference Manual for the Automated Patent System (APS)," U.S. Department of Commerce, pp. 1–5, 3–2 to 3–3, 3–8 to 3–9, 3–157–1 to 7–7, 7–35 to 7–37 (Oct. 21, 1992).

"Text Search and Retrieval Training Manual for the Automated Patent System (APS)," U.S. Department of Commerce, pp. 28, 29, 39–43 (Oct. 21, 1992).

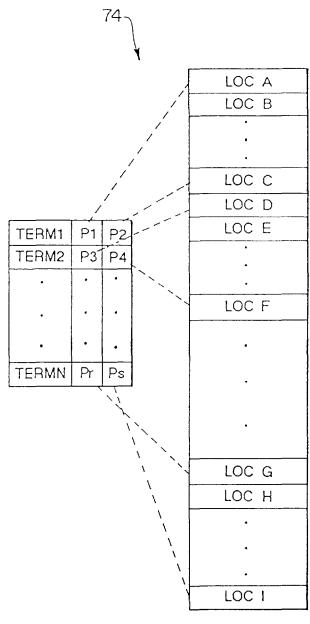




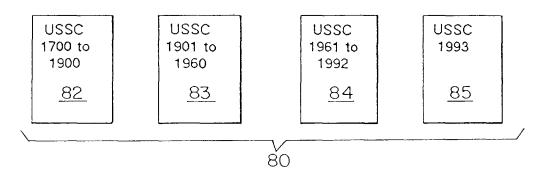




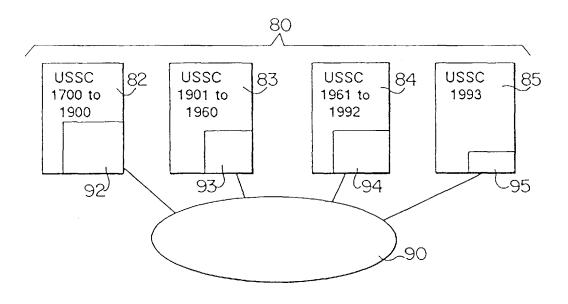
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