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United States Patent [19]

Doktor

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[54] **EASILY EXPANDABLE DATA PROCESSING SYSTEM AND METHOD**

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[21] Appl. No.: **862,176**

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Related U.S. Application Data

[60] Continuation of Ser. No. 439,207, May 11, 1995, Pat. No. 5,675,779, which is a division of Ser. No. 83,361, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 526,424, May 21, 1990, abandoned.

[51] **Int. Cl.**^{6} **G06F 17/30**
[52] **U.S. Cl.** **707/4**; 707/1
[58] **Field of Search** 707/1, 2, 3, 4, 707/5, 6, 7, 8, 9, 10, 100, 101, 102, 103, 104, 200; 345/352, 335

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[57] **ABSTRACT**

Machine automated techniques are described for a method of data processing called Relationships Processing. A computing system is disclosed which provides for the high speed recording and extraction of data objects (entities) and for the development data representing a queried relationship between the entities. The system is expandable to handle the relatively voluminous data bases of large, commercial data repositories. A user defines set of entities and allowed relationships between the entities. The user can expand this set of allowed entities and relationships at any time during the life of the system without reprogramming or compiling of computer program code or disrupting concurrent operational use of the system. Large systems can now be built that are no longer limited to a scope of design requirements known during initial systems development. For a given set of defined relationships the system allows the user to perform complex inquiries (again without programming at the code level) that would normally require multiple nested inquiries to be coded programmatically and would not achieve the performance levels of the Relationships Processor.

18 Claims, 19 Drawing Sheets
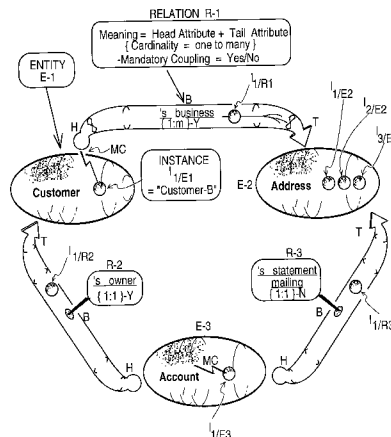
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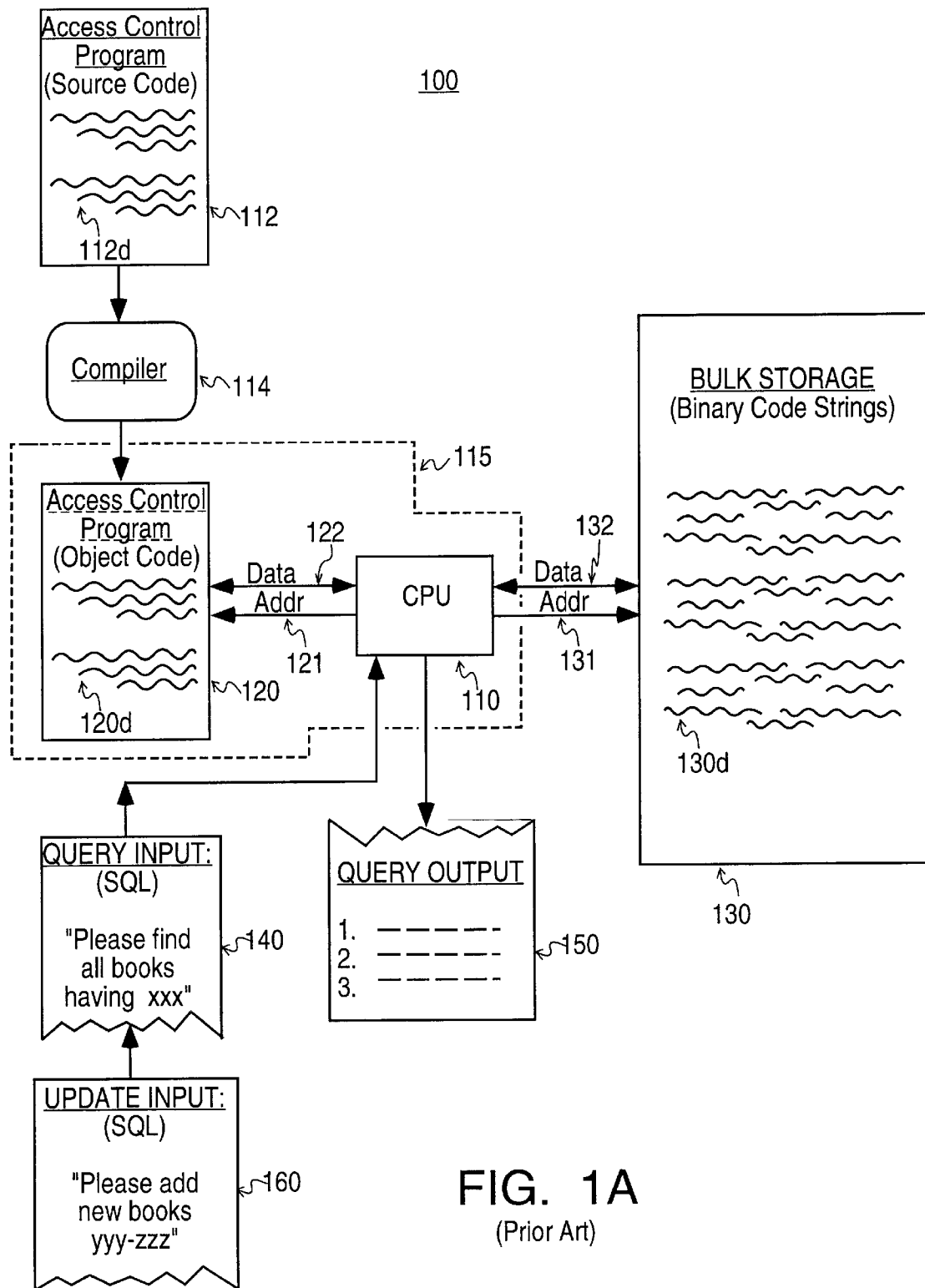
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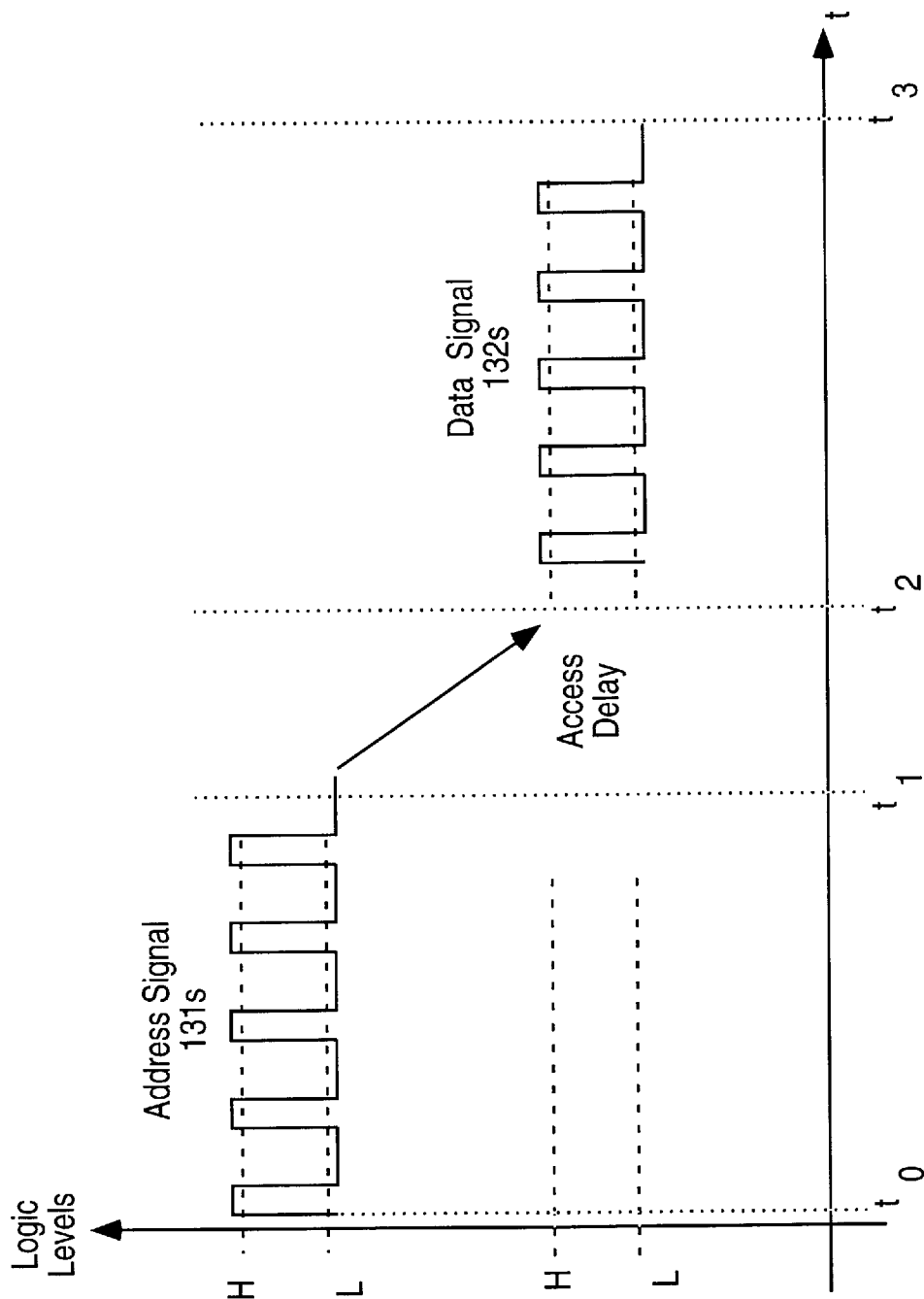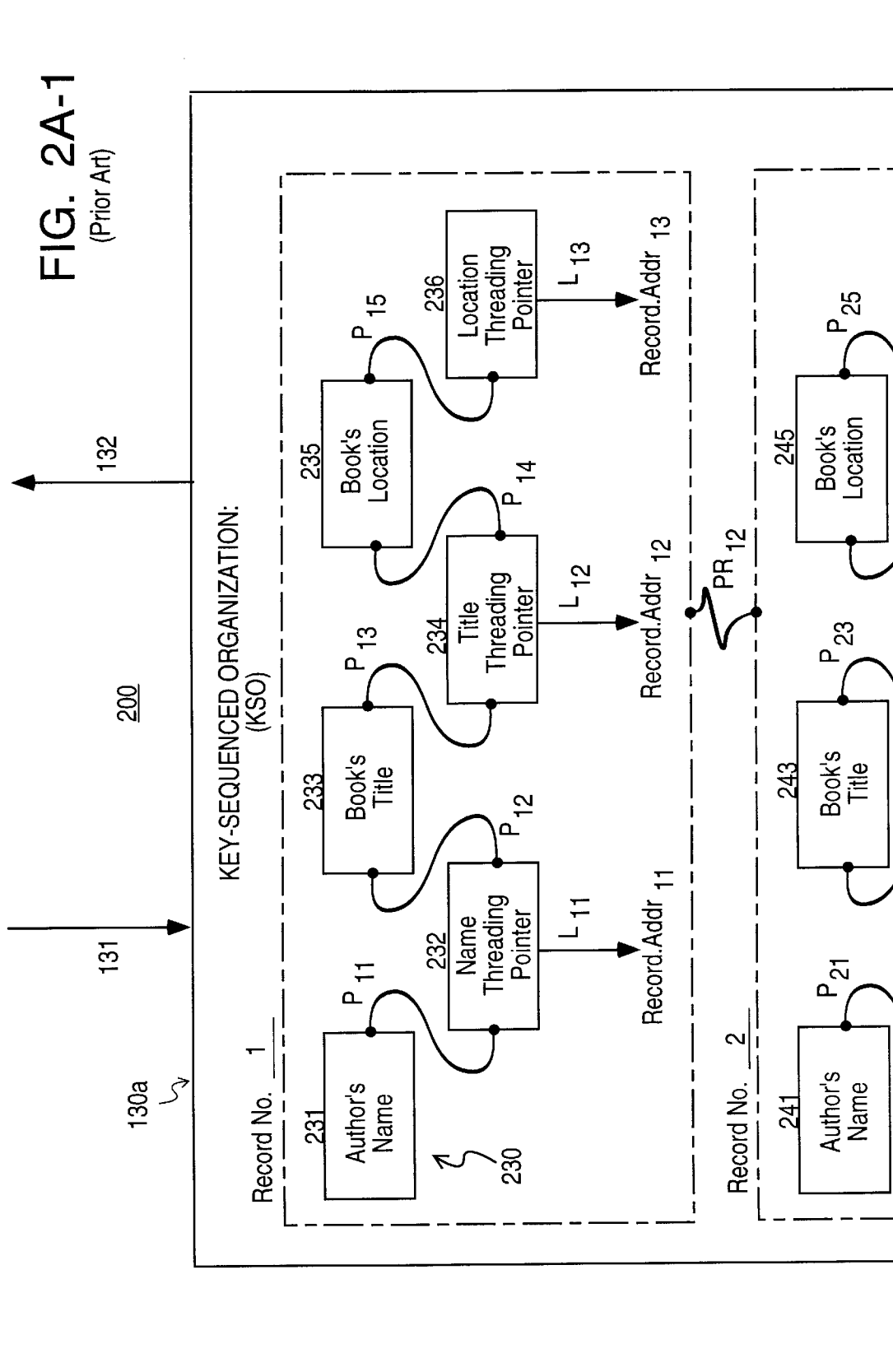Program
(Source Code)

~112

112d

↓

Compiler   ~114

↓

115

Access Control
Program
(Object Code)

Data   122
Addr
121
~120
120d

CPU

110

Data   132
Addr
131

BULK STORAGE
(Binary Code Strings)

130d

130

QUERY INPUT:
(SQL)

"Please find
all books
having xxx"   ~140

QUERY OUTPUT

1. — — — — —
2. — — — — —   ~150
3. — — — —

UPDATE INPUT:
(SQL)

"Please add
new books
yyy-zzz"   ~160

FIG. 1A
(Prior Art)

FIG. 1B

(Prior Art)

FIG. 2A-1
(Prior Art)

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