(54) Title: COMPUTER INTEGRATION NETWORK FOR CHANNELING CUSTOMER ORDERS THROUGH A CENTRALIZED COMPUTER TO VARIOUS SUPPLIERS
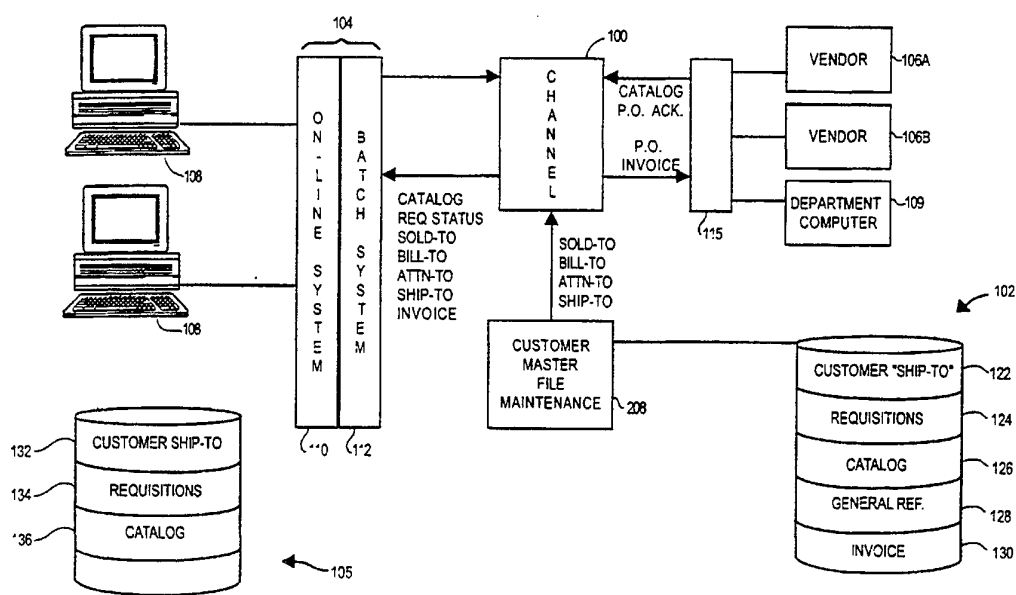
(57) Abstract

An electronic requisitioning system for channeling customer requisition orders to internal suppliers (109) and outside vendors (106a, 106b), and processing invoices using a centralized computer system (100). A customer accesses an electronic item catalog (126) and requisition form to place an order transmitted to the central computer system. Requisitions are segregated by supplier and sent as purchase orders to appropriate internal suppliers and outside vendors that ship the items directly to the customer. Invoices are centrally processed and the customer receives a combined invoice (130) for all item requisitions and may transmit payment back through to the central computer system.

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COMPUTER INTEGRATION NETWORK FOR CHANNELING CUSTOMER ORDERS THROUGH A CENTRALIZED COMPUTER TO VARIOUS SUPPLIERS

FIELD OF INVENTION

This invention relates to data processing for handling the ordering, order tracking and accounting of supplies. In addition, this invention relates to a centralized computer network for handling customer orders in conjunction with a variety of outside suppliers.

BACKGROUND AND SUMMARY OF THE INVENTION

FIGURE 1 is a simplified schematic diagram of a typical channel flow system 10 for handling customer orders, delivery of goods, and the accounting for the orders and deliveries in a typical transaction for the ordering of office supplies. The customer 12 completes a hand written order form 14 for several different types of office supplies. This completed order form is forwarded to a central supplier "X" 16.

The central supplier processes the customer order by splitting the one completed customer order form into information for individual vendors and prepares several vendor order forms 18, 20, 22, and 24 for the various office supplies that the customer has ordered. For example, the customer may have ordered printer ink that is not stocked by the central supplier. The order for printer ink is placed on another order form and sent by facsimile to an outside vendor such as XYZ office supply 18.

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Similarly, an order for non-stocked business
envelopes may be routed to the ABC envelope company
20.

The customer requisition orders 14 for supplies
that are stocked by the central supplier 16 are
entered 21 in the data processing system for that
supplier. This data processing system routes the
order to the appropriate departments, such as a
custom forms warehouse 22 and a stock forms warehouse
24.

Each of the outside vendors and departments
ships 26 the ordered products directly to the
customer 12. The outside vendors submit separate
invoices 28 for each completed order to a central
invoicing service 30. Similarly, the departments
route invoices electronically to the central invoice
service via the data processing system for the
central supplier. The central invoicing service
prepares and submits itemized invoices 32 for all of
the delivered products to the customer. The customer
submits payment 33 to the central invoicing service
which in turn pays the outside vendors and
departments for the delivered products.

A copy of the customer invoice is also sent to a
central customer assistance department 34 of the
central supplier 16. This customer assistance
department collects data on customer orders, delivery
of orders 35 and invoicing for delivered products in
a central database 36. This database is used to
respond to customer inquires 38 regarding pending

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orders and provides a capability for cancelling and changing pending orders 40. In addition, this database allows for the generation of reports regarding the flow of orders, deliveries and payment which is used by the customers, central suppliers and outside vendors to perform their respective tasks.

The current channel processing system is labor intensive in that data regarding orders and deliveries are repeatedly keyed into different computer systems at the customer, central supplier and outside vendors. This system is prone to data entry errors. The current system is redundant in data processing in that several different computer systems perform many of the same tasks, such as for status inquiry, invoicing, order entry and processing.

There is a long felt need for a data processing network to efficiently handle all aspects of customer orders channeled to a central supplier and filled by departments of the central supplier or by outside vendors. Such a channeled data processing system has been developed. The system includes a central computer located at the central supplier. This central computer is coupled, such as via modems, to computers at customer, department and outside vendor sites. These coupled computer systems in combination with the central computer form a data processing network capable of handling the data processing requirements for customer orders, routing those orders to appropriate departments or vendors, delivery of the ordered products, invoicing and payments, customer assistance and report generation.

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BRIEF DESCRIPTION OF THE DRAWINGS

The preferred embodiment of the invention is described in relation to the accompanying drawings. These drawings are as follows:

FIGURE 1 is a schematic diagram of a prior art channel system;

FIGURES 2 and 3 are block diagrams of an exemplary computer network for the subject invention;

FIGURES 4, 5, 8, 9 and 14 to 26 show flowcharts of an exemplary program for the present invention;

FIGURES 6, 7 and 10 to 13 show exemplary data display screens used with the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

FIGURE 2 shows a block diagram of the data processing hardware used to implement the present invention. A mainframe computer 100, such as an IBM 3090 computer, located on site at the central supplier provides a centralized data processing for the entire channel supplier system 101. The mainframe computer includes communications hardware 102, such as modems, for communicating with customer computer systems 104(a-c) and outside vendor computer systems 106(a-b). In addition, the mainframe computer main communicates directly with department workstations 108 and supervisory workstations 110 of the central supplier.

The customer computer systems may be, for example, an individual personal computer 104a at a small customer, a computer network 104b at another customer, or a mini- or main-frame computer at a large customer 104c. Similarly, the outside vendor computer systems may be personal computers 106a or other type of computer system or network 106b. The workstations and/or computer systems for departments and supervisors may be, for example, computer terminals or personal computers on a network coupled to the mainframe computer. The communications hardware, software and protocols for coupling the mainframe computer with the workstations is conventional and well known to persons skilled in the art. In addition, the workstations and mainframe computer may be connected to bank computers to process electronic fund transfer information between customers, central supplier and outside vendors.

The mainframe computer executes a transaction software program described below to collect and process the data for customer order, shipment tracking and invoicing. This data is maintained 208 in a conventional database format for access by the transaction software and by conventional report generation software. In addition, the databases 102 include data on customers 122, customer requisitions 124, on supply catalog items 126, invoicing 130 and general reference data 128.

FIGURE 3 is a high-level block-diagram of the data processing flow in the system. On the mainframe computer 100 at the central supplier, the transaction

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program 1000 (FIG. 4) is executed to centrally
process the data in the system and maintain 208
databases 102. These central databases may include
individual databases on the customer 122, e.g.
ship-to information, pending requisitions 124, master
product item catalog 126, general reference
information 128 such as product class codes and
product groups, and invoicing 130. Similar databases
106 can be maintained in each customer computer
system 104 if the customer system is compatible with
the central mainframe computer 100. Customer
databases 106 contain information inputted at the
customer workstations 108 and information
periodically exchanged between the customer computer
system 104 and the central supplier computer system
100.

     Each customer computer system 104 performs
on-line 110 and batch processing 112 operations.
On-line operations generally occur when a customer
user accesses the customer database 105 through a
workstation 108. For example, the customer database
contains information regarding the customer
authorization and delivery locations, e.g. "ship to"
information 132, pending requisition orders such as
items ordered, quantity and price 134, and a copy of
the portion of the product catalog accessible to that
customers 136. The main product catalog 126
maintained in databases in the central computer 100
is massive and each customer, during a set up phase,
selects the portion of the catalog that is to be
accessible to its authorized users. An authorized
customer employee logs onto the on-line sub-system

and interacts with customer databases in real time to
order products, inquire into the status of pending
requisitions, and browse and order directly from the
catalog.

The data entered by the customer employee is
stored in the customer database 106. The customer
database and the main system databases 102 are
periodically updated by operation of the batch
processing system 112 operated on the customer
computer system. A complementary batch process
occurs on the main computer system.

The vendor computer systems 106 (A&B) and
possibly with internal department computer systems
109, e.g., supply warehouse computer systems,
interface with the main computer system 100 via a
conventional interfacing equipment and software 115.
The main computer system and the vendor system
exchange data, such as purchase orders, purchase
order acknowledgments and invoices in a standard
formats, such as those established as Electronic Data
Interchange (EDI) standards. In addition, the vendor
supplies the main system, either automatically or
manually, with data regarding the vendor product item
catalog.

FIGURE 4 is a flowchart showing on a high level
the process flow through the transaction program
1000. In step 1002, a customer retrieves and inputs
data into the customer database 106 in the customer
computer system 104. In step 1004, the customer
selects information from its database and inputs

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information into the database, such as new
requisition data 134. Periodically, such as once a
day, new information added to the customer database,
such as new requisitions data files, is transmitted
to the main computer system 100 in step 1006. This
information is used to update the databases 102 in
the main system and, in particular, the requisition
database 124.

In steps 1008 and 1010, the main computer system
segregates data, such as requisition item
information, from the data supplied by the customer
and collates that information by individual vendors
and internal departments. If the requisition item is
to be delivered by an internal department, then the
information needed to fulfill the order, such as
ship-to and requisition item information is
transmitted directly to the appropriate department
computer system in step 1008. Similarly, if the
requisition is to be fulfilled by an outside vendor,
then the appropriate requisition (purchase order)
information is transmitted to the vendor in step
1010. The status of purchase orders being filled by
vendors is obtained by acknowledgement information
provided by the vendor in step 1012. In addition,
the system has the capability of monitoring costs,
prices and other data, and generating reports
regarding historical data trends and comparisons with
current data.

Invoice data from outside vendors and internal
departments is centrally processed in step 1014 and
submitted to a central accounts payable department

1016. Invoices may be transmitted directly to the
customer computer system, during the periodic data
exchange, in step 1018. In return, payment
information may flow from the customer to the main
computer system.

The master item catalog 126 is periodically
updated with information received from the individual
vendors 106 in step 1020. Since the master catalog
information includes data on the individual
customers, e.g., those authorized to order individual
items, the customer catalogs stored in each customer
database are easily updated from the master item
catalog.

FIGURE 5 shows the processing steps for the
on-line purchasing system 110 executed at the
customer computer system 104. An authorized user at
a customer workstation initially selects a function
operation from a system menu screen 1021 such as
shown in FIGURE 6. The available functions presented
in the menu screen include entering a new requisition
(FIG. 7), changing or deleting a requisition (step
1020). The system limits changes and deletions of
requisitions to only those requisitions not completed
and transmitted to the main computer system.

Pending (even non-completed) requisition data is
accessible from the database on the customer computer
system which may include data files on the customer
that placed the requisition (CUS SLTD) 1022, the
location to which the order is to be shipped (CUS
SHTO) 1024, the customer person to whom the delivery

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is to be made (CUS ATN TO) 1026, and the catalog
available to that customer (CUS CATALOG) 1028. This
information is initially established during set-up of
the customer connection to the main system and is
maintained by the central computer system.

The customer database files are updated for new
requisition orders, changes or deletions with
information such as the requisition header 1030,
(e.g., containing data on the requisition number,
customer shipping location and other information not
unique to the items ordered) and requisition details
1032, that includes information such as the item
number, quantity order and customer price. An
exemplary screen 1034 for making a requisition from a
customer workstation is shown in FIGURE 7. Data on
pending requisitions may be retrieved from the
customer database during a requisition inquiry in
step 1034 via screens, such as shown in FIGURES 10 to
12. In addition, the menu functions may include a
catalog inquiry in step 1035 and using a screen such
as shown in FIGURE 13.

In particular, FIGURE 8 shows the steps for
entering a new requisition, or changing or deleting a
pending requisition (or may be only an uncompleted
requisition). From the initial menu 1021 (FIG. 6),
at step 1040, the customer selects a function to add,
change or delete a requisition. This selection
causes the display of an appropriate screen such as
shown in FIGURES 7 and 10 to 12. If a new
requisition is to be added, a requisition screen 1034
(FIG. 7) is displayed on the customer workstation in

step 1042. Upon entry of a location identification code, the requisition screen automatically presents data 1044 regarding the customer, particular customer site, other identifying information regarding the customer and the particular authorized customer user. This information is retrieved from the customer database and, in particular, from customer database files, such as ship-to, attention-to and sold-to files 132. In addition, the new requisition entry screen 1034 automatically displays an identifying requisition number and date 1046.

The customer enters product item data 1048, 1050 regarding the particular items to be requisitioned, including the selected item number 1048 and quantity 1050 of items. Information regarding items, item numbers and price may be obtained on-line from the customer catalog 136 via a catalog screen 1052, such as shown in FIGURE 13. The customer catalog may be searched by product group or keyword. Quantity item ordering data 1051 may be entered directly into the catalog screen and the data then linked to the requisition screen. Information entered into the requisition screen 1058 is stored in the requisition database 134 of the customer computer system and, in particular, is segregated into requisition header information 1054 (e.g., requisition number, customer ship-to, and requisition date), and requisition detail information 1056 (such as requisitioned items, price and quantity).

Once stored, requisition information may be retrieved at the customer workstation via a

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requisition inquiry, step 1058 (and screen 1059 of
FIG. 10), a requisition change, step 1060 or
requisition delete function, step 1062, from the main
menu shown in FIGURE 6. The requisition status
information will retrieve information on all pending
requisitions (FIG. 10), items in a particular
requisition (FIG. 11) and delivery order status (FIG.
12), provided that the main computer has updated the
customer database with that information. This
updating is accomplished on a periodic batch basis,
such as once an day.

FIGURE 9 shows a flowchart of the steps that
occur when a customer makes a final requisition
selection and that selection is transmitted to the
main system computer. In step 1200, the customer
enters a completed requisition order such as the
screen 1034 shown in FIGURE 7. The customer computer
stores the completed requisition entry in its
requisition database 134. Control reports are
generated in step 1202 by the customer computer from
its databases to provide the customer with
information regarding its requisitions, such as
totals of items ordered, prices and other information.

The new completed requisition information in the
customer database is transmitted to the main system
computer 100 during periodic batch processing in step
1204. Similarly, update information, e.g., purchase
order acknowledgments, ship-to updates and product
item updates, from the main computer is transmitted
to the customer computer to update the customer
database in step 1206.

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Since all update information from the main
system is transmitted only on a periodic batch basis,
this information is transmitted to the customer
computer as a composite update file, 1208. Upon
receipt of this composite file, the customer computer
splits the file to update the appropriate customer
database files in step 1210.

For example, update information on requisitions
is received as sequence requisition update
information 1212 and the update information, in step
1214, is applied to the appropriate database(s) or
files for requisition headers, 1216, requisition
details, 1218, and requisition status, 1220. Control
reports are generated at the customer site to provide
adequate notice of new update information and may be
provided to just one management user for each
customer. Most update information is documented in
control reports. Generally, control reports state
the number and types of record files updated so that
this information can be compared to the number of
updates sent to the customer computer system.

Similarly, update information on the customer
catalog (SEQ CUS UPDATES) 1222 is processed 1224 to
update file items 1226 in the catalog database 136.
Since the master catalog database 126 on the main
computer correlates each catalog item entry by
customer and price, the individual customer catalogs
are readily updated. In addition, data files on a
particular customer, such as to whom at the customer
items are to be sold, billed, shipped and directed to
the attention of, 1228, are updated at the main

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computer system 100 and then transmitted to the
customer computer to update, step 1230, similar
database files 1232 in the customer databases. The
data in the catalog and customer update files are
also documented in control reports. The initial
customer specific information is entered when the
customer is initially set up to interact with the
main computer requisition system.

FIGURE 14 shows the data processing steps for
handling completed customer requisitions 1300
transmitted to the main system computer 100. The
customer computer system transmits data files (SEQ
CUS RQN) 1303 regarding requisitions in step 1302.
The data transmitted is initially verified in step
1304 and reformatted to data files (SEQ CHNL) 1305
compatible with the main computer system in step
1306. In step 1308, the new requisition data files
loaded into the requisition database 122, through
appropriate data files 1310, such as header (HDR) and
detail (DTL).

In step 1312, the data files loaded in the
databases 102, is edited such that the customer
number is converted, see data files 1314, to
appropriate bill-to, ship-to, sold-to and
attention-to data and then verified to ensure that
the data is consistent with stored data and that the
item numbers ordered conform to the item numbers in
the master catalog 126. In step 1316, the
requisition detail data on ordered items is split
into data for the appropriate outside vendor, see
data field 1318, and data for the appropriate

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internal departments, see data field 1320. The data
fields for the internal departments is again
reformatted in step 1322 for reloading back into the
databases 102 of the main computer system.
Generally, each internal department will maintain its
own databases, separate from those of the main
computer system, in a fashion similar to outside
vendors.

FIGURE 15 shows the data processing flow for
updating the status of requisition orders. In step
1350, a vendor transmitted requisition update file
1352 provided in a standard format, e.g., EDI, is
reformatted 1354 for loading, step 1356 into the main
system databases 102, and in particular the
requisition database 124. The loaded reformatted
data 1358 is compared to existing requisition data in
step 1359. An error file 1361 and report are
generated and the report printed, if necessary, in
step 1360. A status report file 1362 is also
generated and reports are printed on the status of
the requisitions 1364 and of the appropriate vendor
1366. In addition, a substitution file 1368 is
created when the data is reformatted in step 1350 and
a substitution report is generated in step 1370.

In addition, when the new requisition status
data files are loaded into the databases 102, then
specific information is extracted from this data in
step 1372, such as confirmed requisitions, and a
sequential data file 1374 is created of that
extracted information and maintained in the main
database 102. In step 1376, for example, the

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individual requisitions for particular items may be
grouped so as to order the items in standard bulk
units, e.g., cartons, from the vendor or department.
In step 1378, this file is used to update the
requisition detail information in the requisition
database 124 and to provide a requisition update file
1380 to be later transmitted to the customer to
update the customer database.

FIGURES 16 to 20 show the data processing flow
steps for processing invoices. Upon receipt of a
vendor invoice 1400, in a standard EDI format that
includes the price charged by the vendor 1401 to the
central supplier, the main computer system translates
and initially processes the invoice in step 1402.
The invoices is printed in step 1404 as a printed
invoice 1406 for control purposes. Moreover, an item
shipped data file (PART FIL) 1407 for item orders
filled, e.g., delivered by vendor or department, is
accessed to supply data to confirm that invoices are
not accepted for quantities shipped of any particular
item. The items shipped data is provided from the
vendor in order acknowledgement data. In addition,
any errors in the transmitted invoice are documented
in an error file 1408 and sent to a department, e.g.,
the financial (FIN) department 1410 for further
processing. The reformatted invoice data (TRANS IN)
1412 is again reformatted in step 1414 into an
appropriate database format file 1416 and then loaded
in the invoice database 130 in step 1418.

In step 1420, the reformatted invoice data 1422
(which may include invoice or credit information)

obtained from the requisition data file 130,
including requisition header and detail data, is
validated, step 1423, to confirm that the vendor
invoice is a participating vendor in the computerized
requisition system. Invoices received from
non-participating vendors or for orders to be handled
outside of the channel system are placed on data
files 1424, unrelated to the present system, for
invoices or credits from these vendors. Assuming
that the invoice data is validated, then the data is
edited, step 1426 for errors and report files, 1428,
are generated of edited invoice and credit
information.

In step 1430, the edited invoice data is again
reformatted and annotated with requisition data 130,
e.g., from requisition header and detail files (RQN
HDR and RQN DTL), to conform to the master database
102 format and is then stored in the master database
invoice file and master customer file (VLD CM) 131.
(MAST INV) 130 and validated.

In step 1440, data on invoices that have been
invoiced to the customer are extracted from the
invoice file 130 and sent in a marked invoice file
1442 annotated with corresponding data, such as the
price to be paid by the customer for the ordered
items, from the customer item file 1444. A price
mark-up data file 1445 may be used to convert the
price for an item paid by the central supplier into
the price charged to the customer for that item. In
addition, control reports are generated with the
marked invoice files. In step 1448, the invoice file

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data 1442 is reformatted into a standard invoice
format and sent to the customer (CUST) 1450 from a
invoicing service (NIS) via mail and/or an electronic
data file 1452 that is annotated with data from a
central invoicing department (CI) 1454.

In step 1456, the invoice confirmation data 1458
is extracted and associated with the appropriate
customer invoicing files 1460, and then applied to
update data in the databases in step 1462. In
updating the databases, the confirmed invoice files
1460 correlated with the requisition database 124 and
used to update 1464 the appropriate requisition
detail files (RQN DTL). If the invoice data does not
correspond to a requisition stored in the requisition
database, then the data is placed in a non-channel
invoice file 1466. The updated requisition detail
files are applied to update the requisition header
(REQ HDR), history (HIST) and statistics files in
step 1468.

In step 1470, confirmed invoices are extracted
from the invoice file 130 and forwarded as a vendor
invoice file 1472 to an accounts payable department
1474 for payment of the vendor. Similarly, an
accounts payable report is generated at step 1476.
In step 1478, invoices with an extracted status, see
file 1442, but not processed into a confirmed
invoice, see file 1458, within a specified period,
such as five days, are placed in an invalid invoice
file 1480 and forwarded to a financial department
1482 for handling. Similarly, files and/or reports
on valid and invalid credit memoranda (CM) and

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invoices found invalid for other reasons are also
sent to the financial department 1482.

FIGURE 21 shows the data processing flow for
processing of source data from an internal department
of the central supplier. In step 1500, data is
extracted from various department files 1502, such as
for maintaining customer data files and used to
update customer files 122, such as sold-to, bill-to
and ship-to files. In addition, in step 1504,
customer attention file 1507, e.g., update,
information is extracted from the updated customer
files using the customer master location file 1506 as
a driver to generate customer update 1508 data to be
sent to the customer computer system to update the
customer databases.

FIGURE 22 shows the generation of vendor
purchase orders from a vendor order file 1510 that
contains data on the customer, items ordered and
price to the central supplier. This data is
reformatted into standard purchase order forms 1512
for each vendor in step 1514. These purchase orders
are then electronically transmitted, step 1516, to
the appropriate vendor.

FIGURES 23 to 26 show the data flow for
assembling and maintaining a master item catalog 126
and the individual customer catalogs 136. Individual
vendors 1550, provide data (see FIGURE 13) to the
central computer system regarding the items offered
by that vendor, including the price to the central

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supplier, in step 1552. Each item in the master
catalog 126 has an associated vendor item field 1554.

The master vendor item catalog 126 is initially
assembled, in step 1556, from information provided
from the vendor, such as an electronically readable
tape. Subsequent items from a particular vendor are
added to the master catalog in step 1558. All vendor
items may be classified by a class code from a class
code file 1560 or product group file from the general
reference database file 128.

The price to the customer for each vendor item
is established by the central supplier in step 1562
using data from a vendor cost file 1564. The price
for each item may be established on an individual
customer basis and loaded into files for the customer
item catalog and item price 1566. Similarly, the
customer price and item files can be updated when the
vendor item data is changed in step 1568.

The individual customer catalogs 136 includes
individual customer item data 1566. The customer
initially selects the items to be offered in its
customer catalog in step 1572 using data files on
vendor items 1554, product classes and groups 1576,
and customer sold to data 1578. The customer items
may be later added to, step 1580, or changed, step
1582. Usually, the customer item files are generated
at the central supplier rather than at the customer
computer system. In addition, customer pricing, step
1586, and unique item pricing, step 1548, may be
applied to items listed in the customer item data

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files 1566. In addition, previously supplied cost
data (SEQ CUS CST) 1567 may also be maintained.

The customer catalog 136 is assembled, step
1600, by extracting, 1602, data from prior item order
files, 1604, for that customer to generate a data
file 1606 for comparing and merging, step 1608, data
1607 extracted, step 1609, data on items in the
master catalog and other data files 1610. These
files are periodically updated to, for example, make
price changes in step 1612. The resulting data file
1616 containing customer catalog updates is applied
to update the customer catalog in steps 1618 and 1620.

The invention has been described in connection
with what is presently considered the preferred
embodiment. The invention is not limited to this
embodiment. Rather, the invention covers various
modifications and equivalent arrangements included
within the spirit and scope of the appended claims.

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WHAT IS CLAIMED IS:

1. A requisition tracking system comprising:
a central computer system maintaining data
files containing data on customers, customer
initiated requisitions, invoicing and a product items,
said central computer system electronically receiving
requisition orders from a plurality of customer
computer systems and formatting said requisition
orders into purchase orders, and receiving invoice
data from a plurality of supply departments or
vendors computer systems,
each of said customer computer systems
electronically communicating with said central
computer system to enter said requisition orders for
particular product items, and having data files
containing data on requisitions and product items, and
each of said vendor computer systems
electronically communicating with said central
computer system for receiving said purchase orders
and for transmitting said invoices.

2. A requisition tracking system as in claim 1
wherein said data on product items is in the form of
an electronic catalog accessible via said customer
computer systems and identifying products available
for requisition.

3. A requisition tracking system as in claim 2
wherein said electronic catalog includes data
uniquely identifying product items by an alphanumeric
designation, description and said catalog being
searched by keyword and product category codes.

AMENDED CLAIMS
[received by the International Bureau on 5 September 1994 (05.09.94);
original claims 1,3 amended;
new claims 4-9 added;
remaining claim unchanged (4 pages)]

1. A requisition tracking system comprising:

a central computer system having a memory containing data files and a data communication unit for communicating with other computer systems, said central computer system maintaining said data files containing data on customers, customer initiated requisitions, invoicing and product items, said central computer system electronically receiving requisition orders from a plurality of customer computer systems, generating purchase orders from information in the requisition orders, individually addressing each purchase order to a selected vendor, transmitting each purchase order to a vendor computer system for the selected vendor, and receiving invoices from a plurality of vendor computer systems, wherein said invoices identify the requisition orders that each vendor has accepted,

each of said customer computer systems having a communication unit for electronically communicating with said central computer system to transmit customer data and said requisition orders for requisitional product items, and having a memory with data files containing data on requisitions and product items, and

each of said vendor computer systems having a communication unit for electronically communicating with said central computer system for receiving said purchase orders and for transmitting said invoices having data including an acceptance of a requisition order.

2. A requisition tracking system as in claim 1 wherein said data on product items is in the form of an electronic catalog accessible via said customer computer systems and identifying products available for requisition.

AMENDED SHEET (ARTICLE 19)

3. A requisition tracking system as in claim 2 wherein said electronic catalog includes data uniquely identifying product items by an alphanumeric designation, description, keywords and product category codes, and said catalog being searched using one of said customer computer systems by keyword and product category codes.

4. A requisition tracking system as in claim 1 wherein said central computer system reformats data from said invoices from a plurality of vendor computer systems into individual customer invoices and electronically transmits said customer invoices to said customer computer systems.

5. A requisition tracking system as in claim 1 wherein said central computer system maintains said customer initiated requisition data files with current status data that indicates whether a requisitioned product item has been shipped to a customer and said vendor computer systems transmits status data to said central computer system indicating that said requisitioned items have been shipped.

6. A requisition tracking system as in claim 5 wherein said central computer system transmits said current status data regarding the requisitional product items.

7. A requisition tracking system as in claim 1, wherein said customer computer system periodically transmits update data indicative of an authorized customer and said central computer system maintains said customer data files by updating the customer data files with said update data received from said customer computer systems.

8. A requisitioning computer system as in claim 1 wherein said data files in said central computer system include historical data on the customers, requisition orders, and product items, and said central computer system processes said historical data in generating a report of certain selected extracts of said historical data.

9. A requisition system comprising:

a central computer system at a first location having

data files containing information on customers, product and service catalogs, suppliers of products and services, customer requisitions of products and services, purchase orders, and invoices,

a processing unit for selecting vendors to supply customer requisitioned products and services, and for generating purchase orders for each selected vendor that identifies a requisitioned product or service, a requisitioning customer who requisitioned the product or service, and the selected vendor to supply the requisitioned product or service, and

a communication unit for receiving customer requisitions from a plurality of customer computer systems and invoices from a plurality of vendor computer systems, and for transmitting purchase orders to the vendor computer systems;

the plurality of customer computer systems are at locations remote from said central computing system and receive data from the data files in the central computer system including catalogs, and transmit requisition orders for one or more products or services selected from the catalogs;

the plurality of vendor computer systems receive, accept and process the requisition orders received from the central computer system, generate invoices containing product and service shipping information, and

2 6

product and service cost information and transmit the invoices to the central computer.
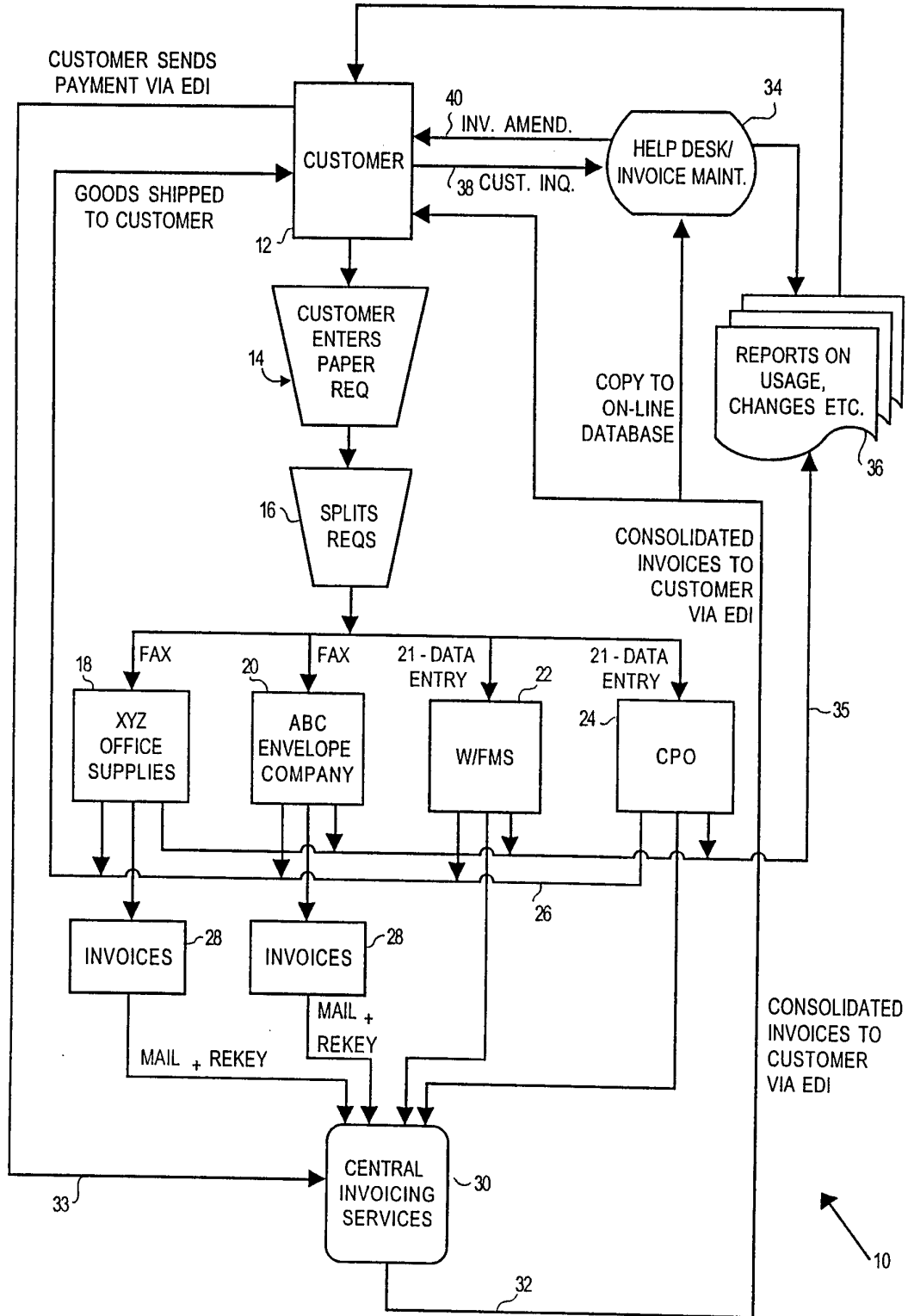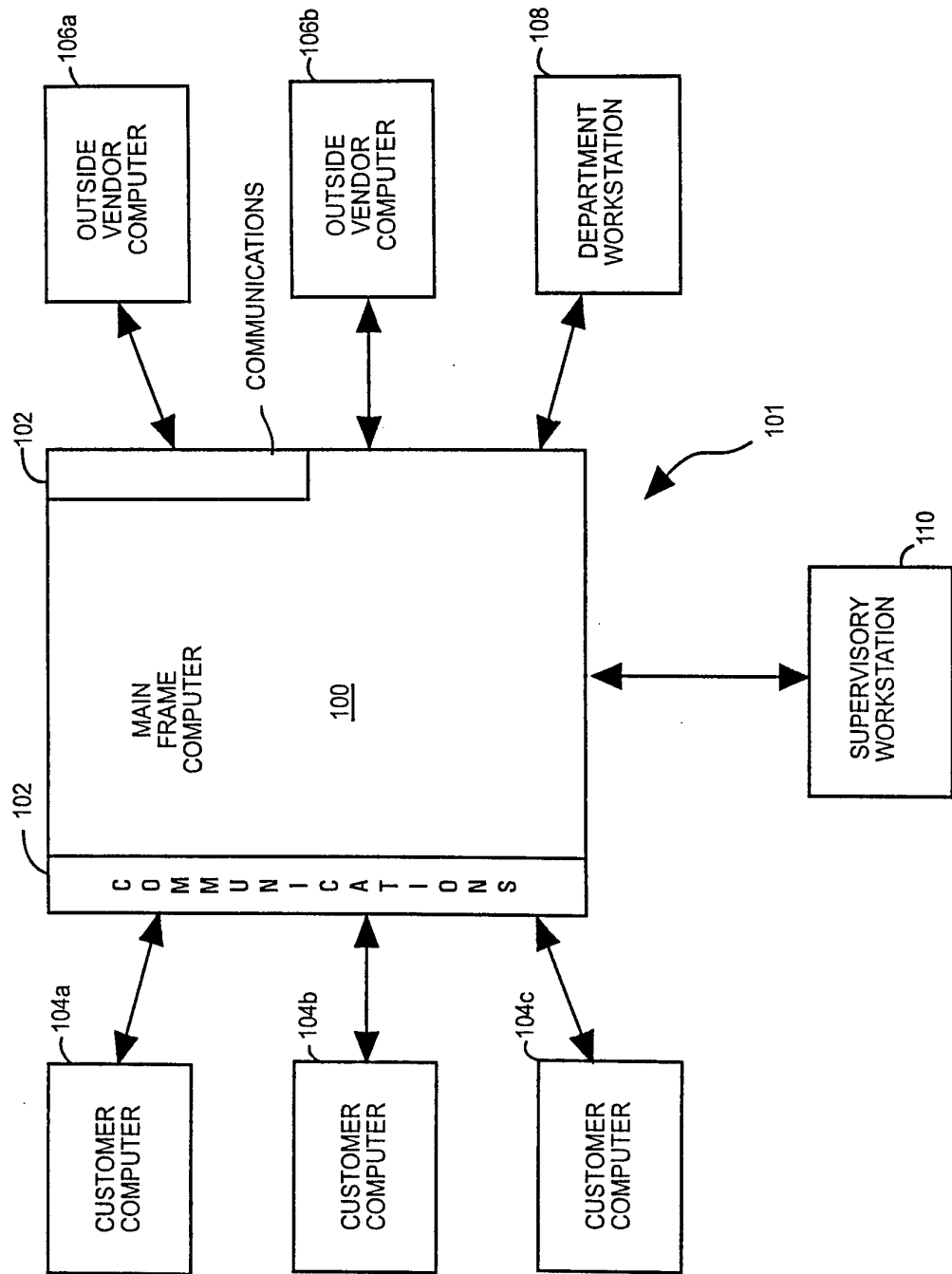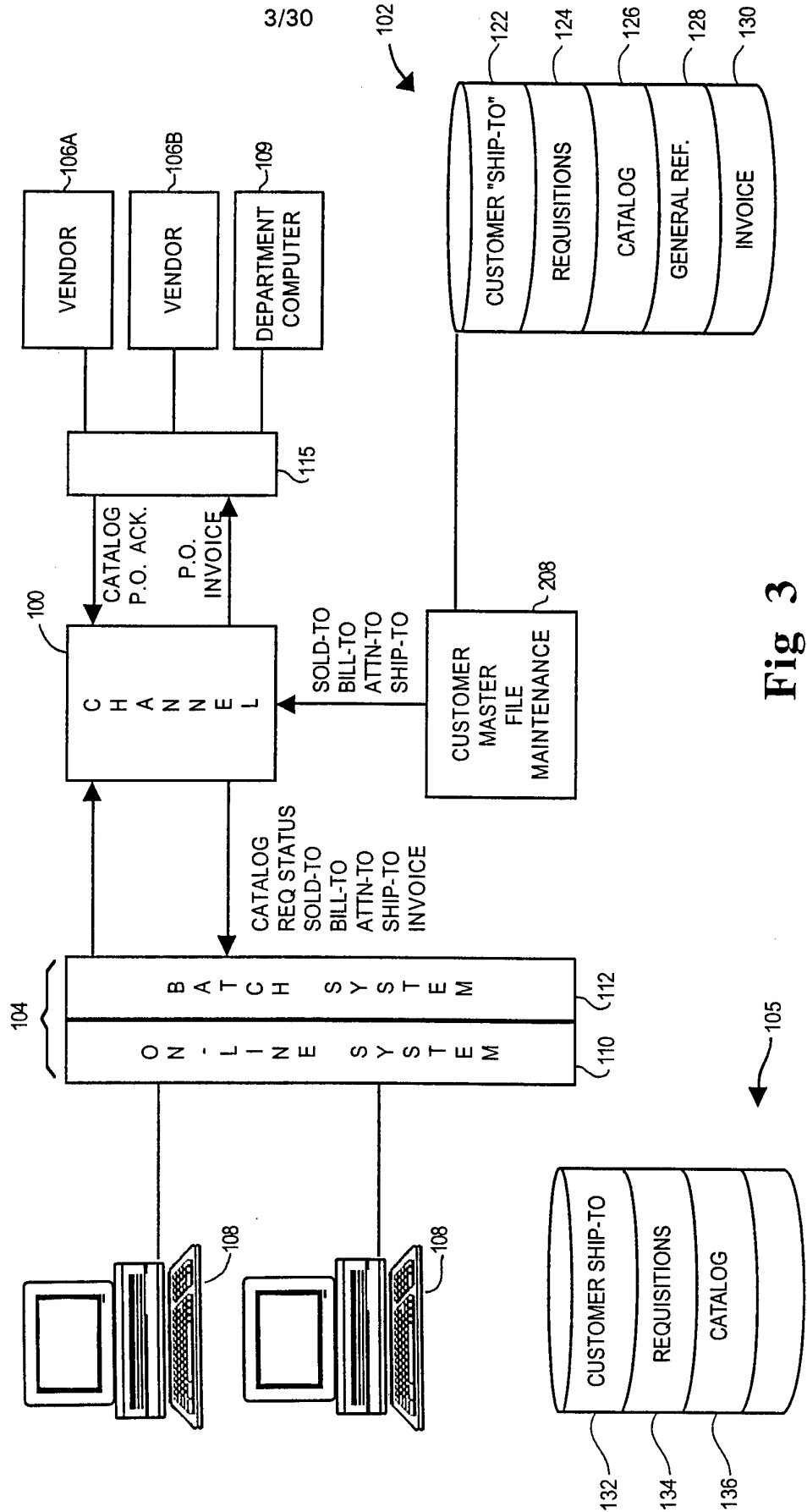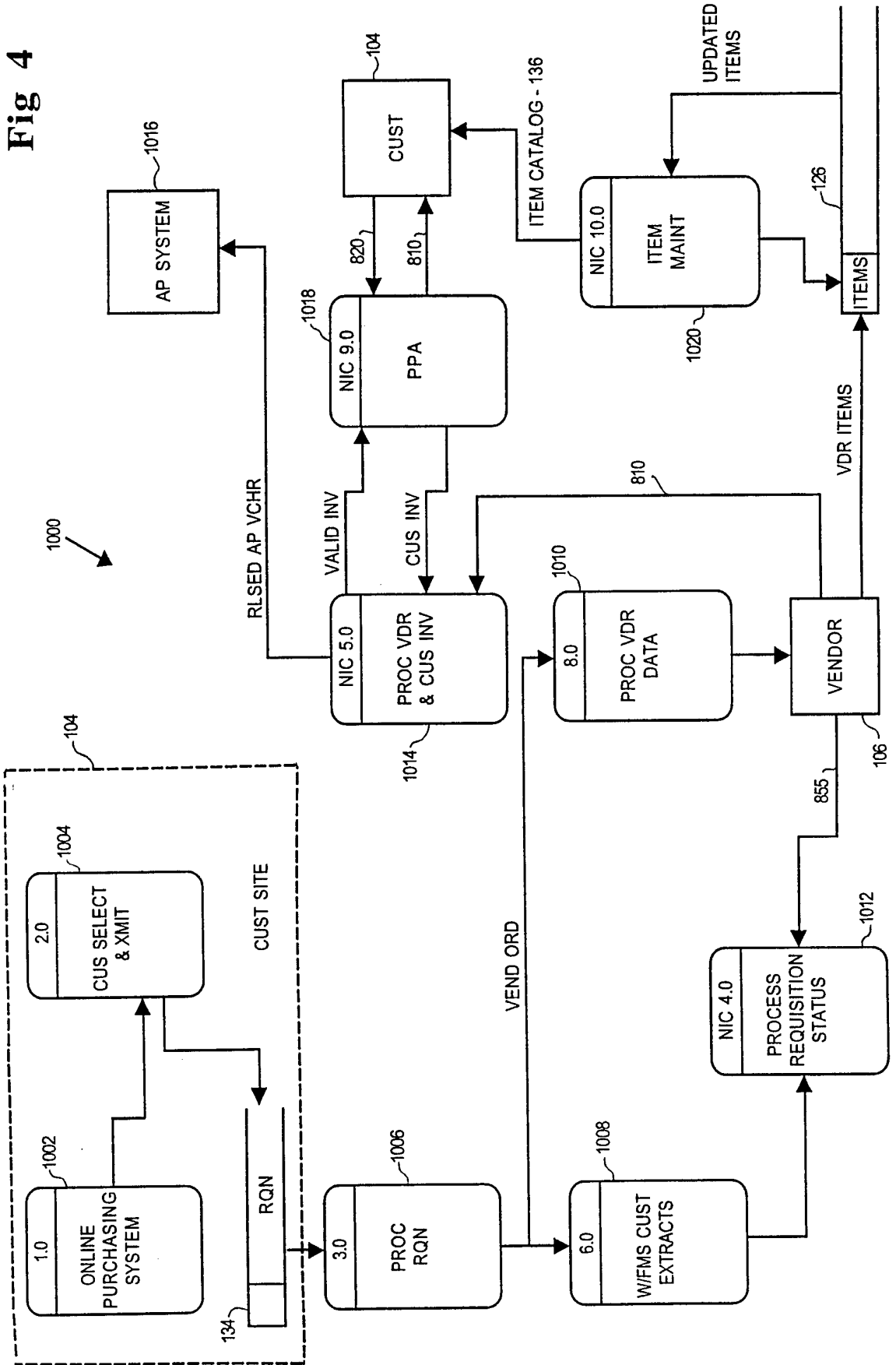
Fig 1 (PRIOR ART)

2/30

Fig 2

Fig 3

Fig 4

Fig 5

6/30

~1021

```
ICO1          CHANNEL/INTEGRATED SUPPLIER SYSTEM        MM-DD-YYYY
                         SYSTEM MENU                    HH:MM  AM


              CUSTOMER NUMBER.:   9999999999999
              CUSTOMER NAME...:   TEST CUSTOMER

                       1.  NEW REQUISITION ENTRY
                       2.  REQUISITION STATUS INQUIRY
                       3.  CHANGE REQUISITION
                       4.  DELETE REQUISITION
                       5.  ITEM CATALOG INQUIRY
                       6.  EXIT SYSTEM


                       SELECT A FUNCTION:    _




PFK:  1=HELP;  3=EXIT
```
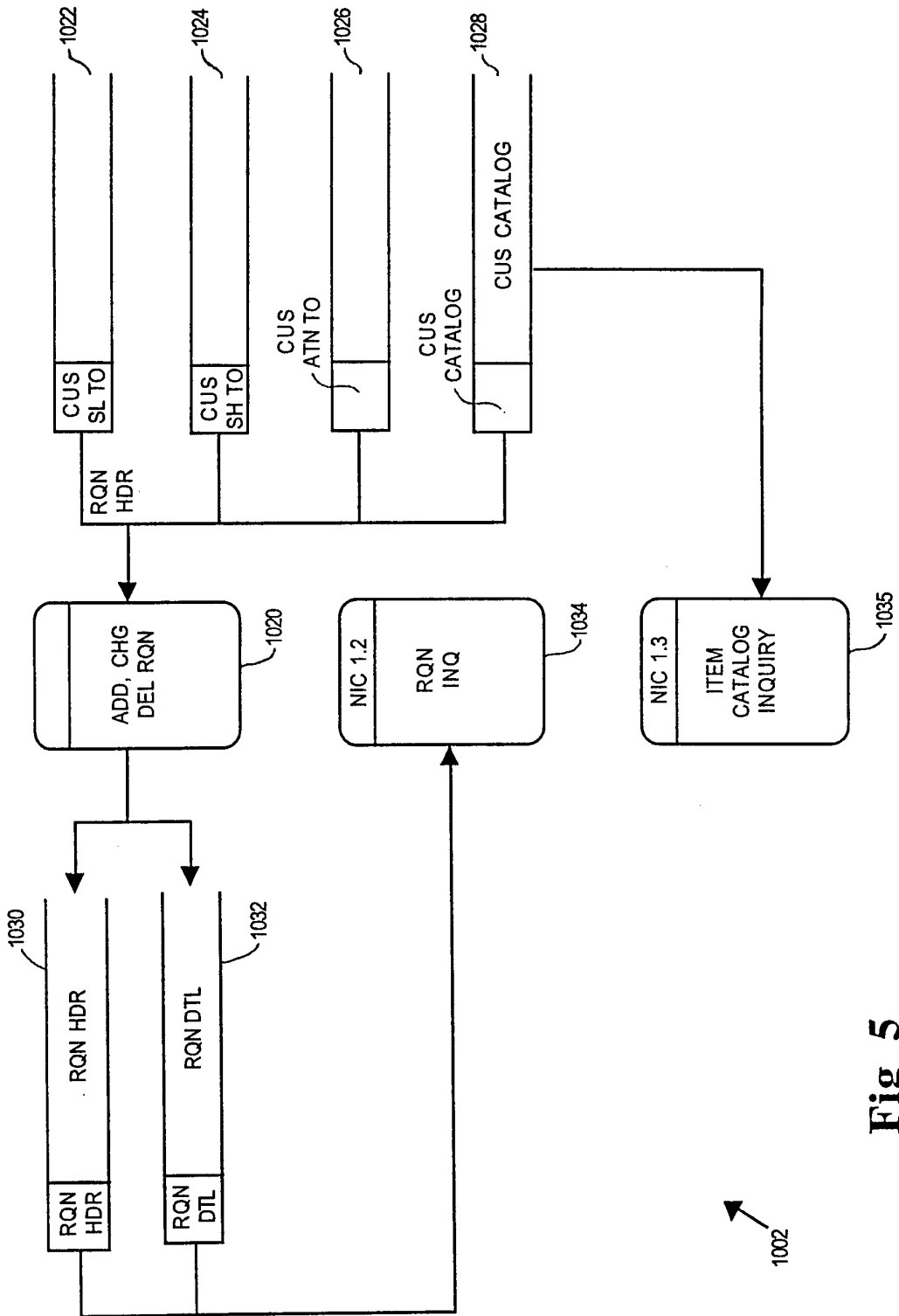
Fig 6

7/30

```
ICO2              CHANNEL/INTEGRATED SUPPLIER SYSTEM      01-20-1992
                       NEW REQUISITION ENTRY             03:05   PM

STATUS.........: ENTRYLVL        SHIP-TO ID..: 3-6543210-10002
REQUISITION #..:      329        SHIP-TO NAME: CUSTOMER NAME
REQUISITION DATE: 01-20-1992     ADDRESS 1...:
BANK CENTER.....: 5101-0101537   ADDRESS 2...: 1 CUSTOMER'S LOCATION
ORDERED BY......: _____  CITY........: CHICAGO
PHONE NUMBER....: _____  STATE.......: IL  ZIP: 606060000
REMARKS.........: _____
HOLD REQUISITION (Y/N) ? N

LINE  ITEM NUMBER   QUANTITY  UM  QTY/UM  ITEM DESCRIPTION
 1    AB16RB_____    46     BX     1    RUBBER BANDS           NONE
 2    AM21452          35     CS     1    5X8 SCRATCH PADS       WHITE
 3    AM47103          58     DZ     1    2 1/2 ADD ROLL         WHITE
 4    _____  _____
 5    _____  _____
 6    _____  _____
 7    _____  _____
 8    _____  _____


PFK: 1=HELP;  3=SAVE;  7=PG BWD;  8=PG FWD;  10=CATALOG;  12=CANCEL
```

Fig 7
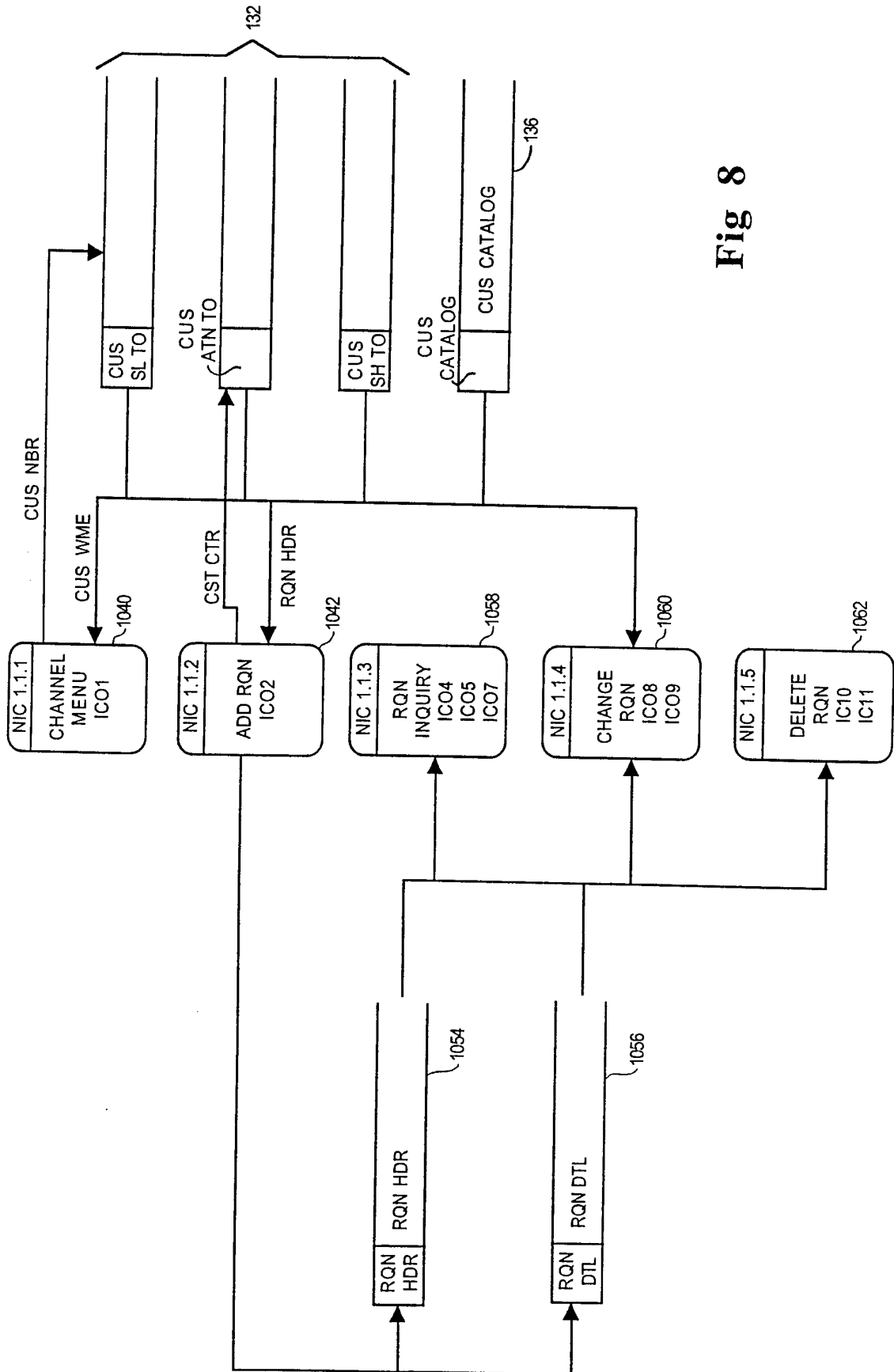
Fig 8
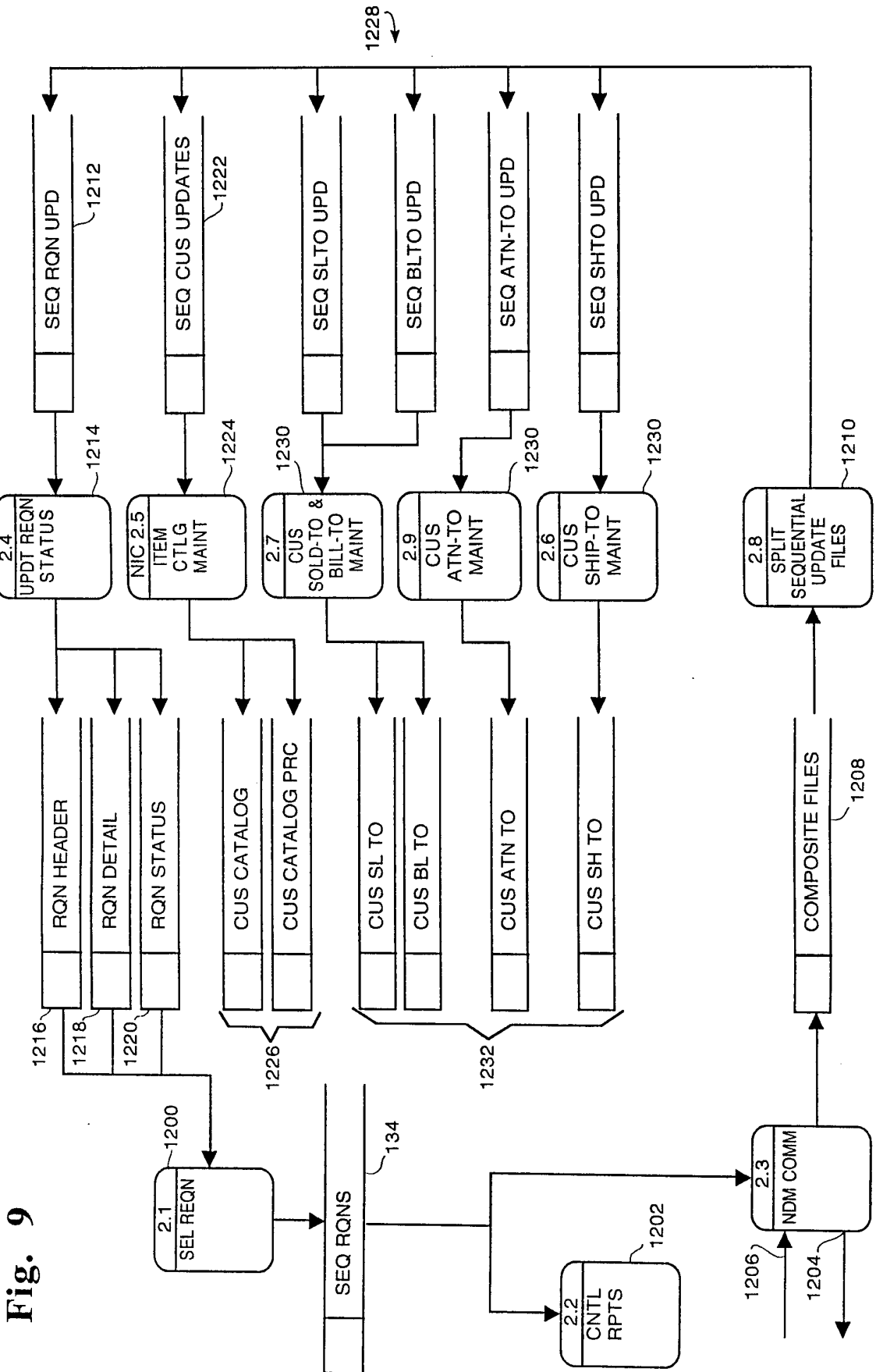
Fig. 9

```
ICO4            CHANNEL/INTEGRATED SUPPLIER SYSTEM         01-21-1992
                    INQUIRY REQUISITION SELECTION           10:11  AM
                                           _____
REQUISITION NBR.......:  _____      BANK CENTER:
REQUISITION STATUS....:  _____
REQUISITION DATE FROM:  01-01-1991    TO:  _____

-------  ENTER INFORMATION ABOVE TO LIMIT REQUISITION SELECTIONS  -------

REQN NUMBER    DATE         STATUS     ORDERED BY    PHONE # / EXT
$    214    12-11-1991    SHIPPED      JDK           6284
|    215    12-11-1991    TRANSMIT     JDK           6284
|    216    12-11-1991    TRANSMIT     JDK           6482
|    217    12-11-1991    TRANSMIT
|    218    12-12-1991    TRANSMIT                   999
|    219    12-12-1991    TRANSMIT
|    220    12-12-1991    TRANSMIT
|    221    12-12-1991    TRANSMIT

PAGE  07  * MORE PAGES *                            BROWSE FROM (Y/N):N
PLACE CURSOR ON REQN LINE, KEY "S" AND PRESS ENTER TO DISPLAY DETAIL

PFK:  1=HELP;  3=EXIT;  5=REFRESH;  7=PG BWD;  8=PG FWD;  12=CANCEL
```

1059

Fig 10

```
ICO5                  CHANNEL/INTEGRATED SUPPLIER SYSTEM              01-21-1992
                             REQUISITION INQUIRY                        12:57  PM

STATUS.........:  IN-PROC          SHIP-TO ID..:  3-65453210-10088
REQUISITION #..:       214         SHIP-TO NAME:  CUSTOMER NAME
REQUISITION DATE:  12-11-1991      ADDRESS 1...:
BANK CENTER....:  5101-0101007     ADDRESS 2...:  1 CUSTOMER'S LOCATION
ORDERED BY.....:  JDK              CITY........:  CHICAGO
PHONE NUMBER...:  6284             STATE.......:  IL ZIP:  606060000
REMARKS........:

LNE ITEM NUMBER   QUANTITY UM ITEM DESCRIPTION           STATUS    DATE
 $  1 B-89              10 RL PLASTIC BAGS/GREEN          SHIPPED   01-21-1992
 |  2 BC 1001           10 PK EASY PAY                    IN-PROC   12-11-1991
 |  3 BC 1003           10 BX MERCHANT DEP ENVELOPE       IN-PROC   12-11-1991
 |  4 BC 1004           10 PK BANK CR CARD SUMM TRAN      IN-PROC   12-11-1991
 |  5 BMS-001A          10 CT TELLER TAPE SHARP 2-PL      IN-PROC   12-11-1991
 |  6 BMS-003B          10 CT TELLER TAPE 3-7/16 2-P      SHIPPED   12-11-1991
 |  7 BMS-005           10 BX TELLER TAPE 2 PLY IBM       IN-PROC   12-11-1991
 |  8 BMS-006           10 CT PROOF 3.5X5.5  1-PLY        BACKORD   12-11-1991

PAGE    01  * MORE PAGES  *        START BROWSE LINE NBR  : ___
PLACE CURSOR ON DETAIL LINE, KEY "S" AND PRESS ENTER TO DISPLAY STATUS

PFK:  1=HELP;  3=EXIT;  7=PG BWD;  8=PG FWD;  12=CANCEL
```

Fig 11

```
ICO7           CHANNEL/INTEGRATED SUPPLIER SYSTEM          01-21-1991
                 REQUISITION DETAIL LINE STATUS INQUIRY      04:07  PM

REQUISITION NBR.:      214      DATE... 12-11-1991   STATUS... IN PROC

LINE NBR......:   1
ITEM NUMBER.. B-89                         QTY ORD..    10   STATUS.. SHIPPED
DESCRIPTION.. PLASTIC BAGS/GREEN            SHIP QTY.    10   DATE.... 01-21-1992
                                           QTY B/O..     0

     VEND
SEQ  STAT  QTY SHIPPED  DATE SHIP  CARRIER      BILL OF LADING NUMBER
 1   AC        7        01-13-1992 UPS          92-3312779-A
 2   IS        3        01-17-1992 UPS          92-3313193-A

                                    START BROWSE LINE NBR....:  _____

PAGE  01

PFK:  1=HELP;  3=EXIT;  7=PG BWD;  8=PG FWD;  12=CANCEL
```

Fig 12

```
IC26          CHANNEL/INTEGRATED SUPPLIER SYSTEM         MM-DD-YYYY
                     ITEM CATALOG INQUIRY                 HH:MM AM

PRODUCT GROUPS:
    1: FORMS              4: COMPUTER SUPPLIES      7:
    2: ENVELOPES          5:                        8:
    3: OFFICE SUPPLIES    6:                        9:

GROUP SELECTION.: 3
ITEM SEARCH.....: PEN_____   DISPLAY SEQUENCE:  K  (K=KEYWORD, N=ITEM NBR)

QUANTITY  ITEM NUMBER   UM   QTY/UM  ITEM DESCRIPTION
          V1-ITEM1      EA     1     BALL POINT PEN - MED/R     RED
26 24     V1-ITEM14     EA    12     PENCILS  #2                GOLD
____      V1-ITEM15     EA    25     VENDOR ITEM 15             SILVER
____      V1-ITEM2      EA     1     BALL POINT PEN - MED/B     BLUE
____      V1-ITEM3      EA     1     BALL POINT PEN - MED/B     BLACK
____      V1-ITEM4      EA     1     BALL POINT PEN - MED/G     GREEN
____      V1-ITEM5      EA     1     FELT TIP PEN - FINE/RE     RED
____      V1-ITEM6      EA     1     FELT TIP PEN - FINE/BL     BLACK
PAGE  1   * MORE PAGES *

PFK:  1=HELP;  3=EXIT;  5=REFRESH;  7=PG BWD;  8=PG FWD;  10=REQN;  12=CANCEL
```

1052

1051

Fig 13

Fig. 14A

Fig. 14B

Fig. 15A

Fig. 15B

18/30

Fig. 16A

Fig. 16B

FIN —1482

REPORT

HISTORY

STATS

CI —1454

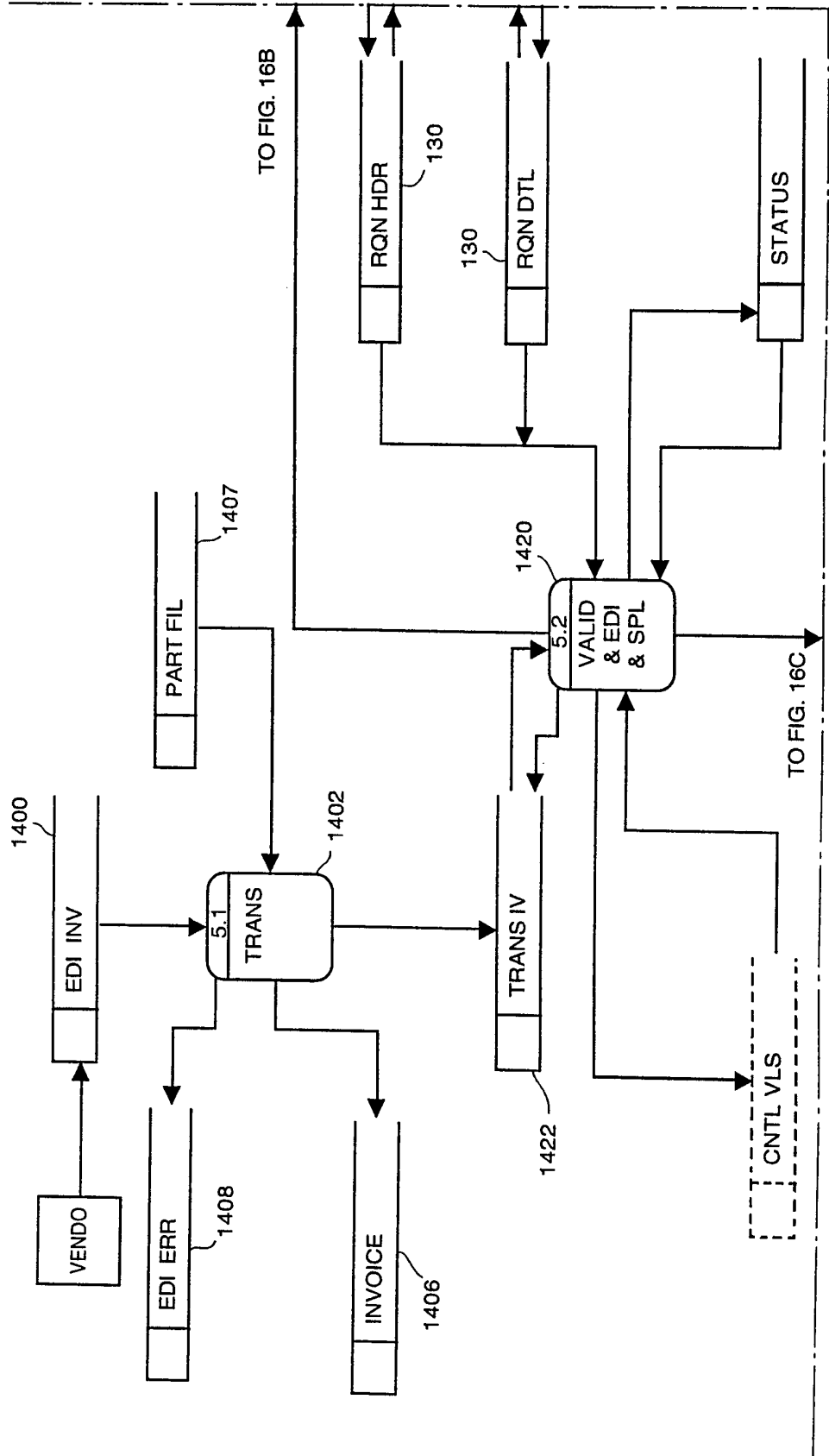TO FIG. 16D

NCHNL IN

VLD CM

IVD CM

IVD INV

DTL RPT

HDR RPT

NIS 5.5 UPDAT —1462

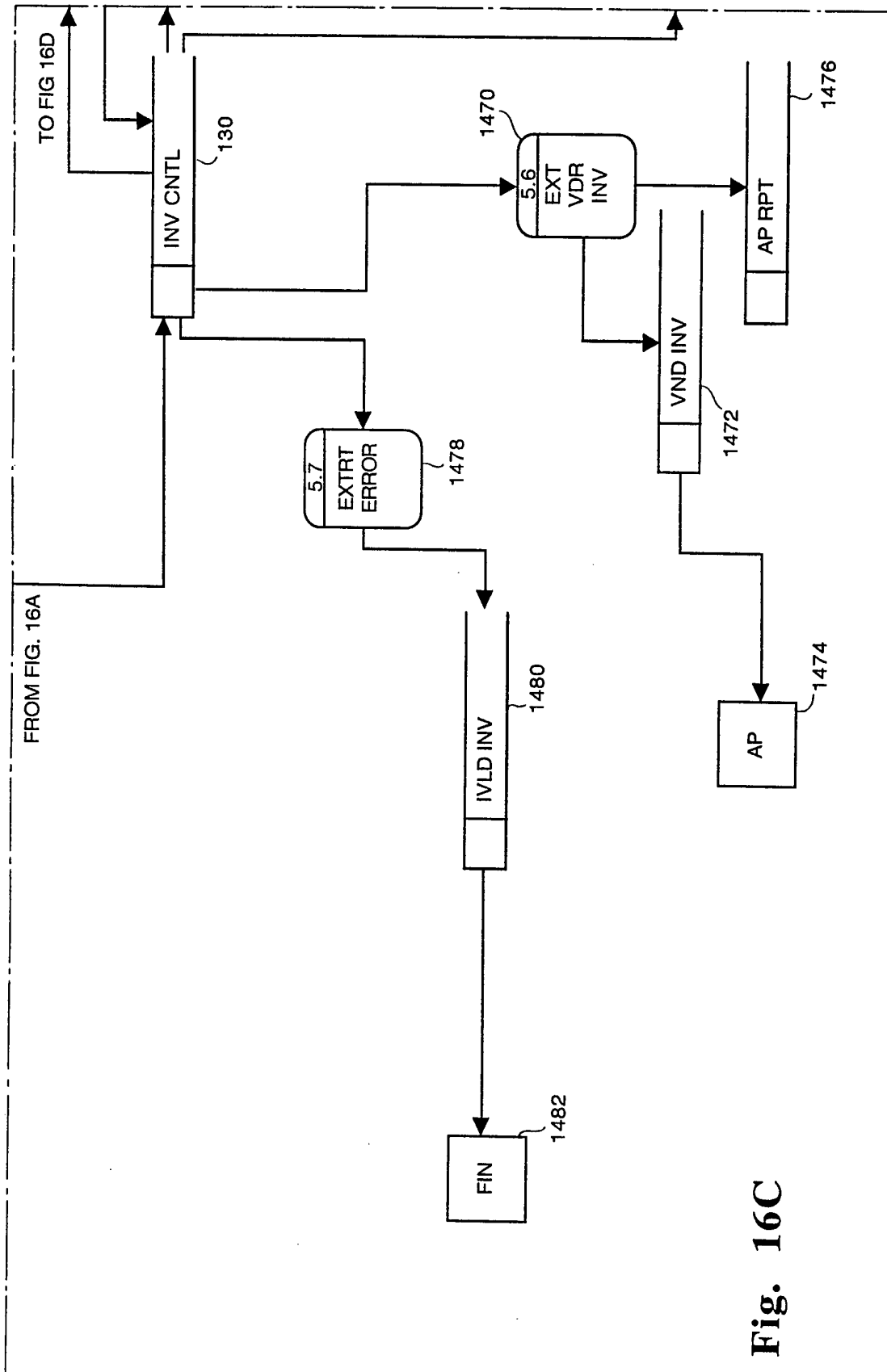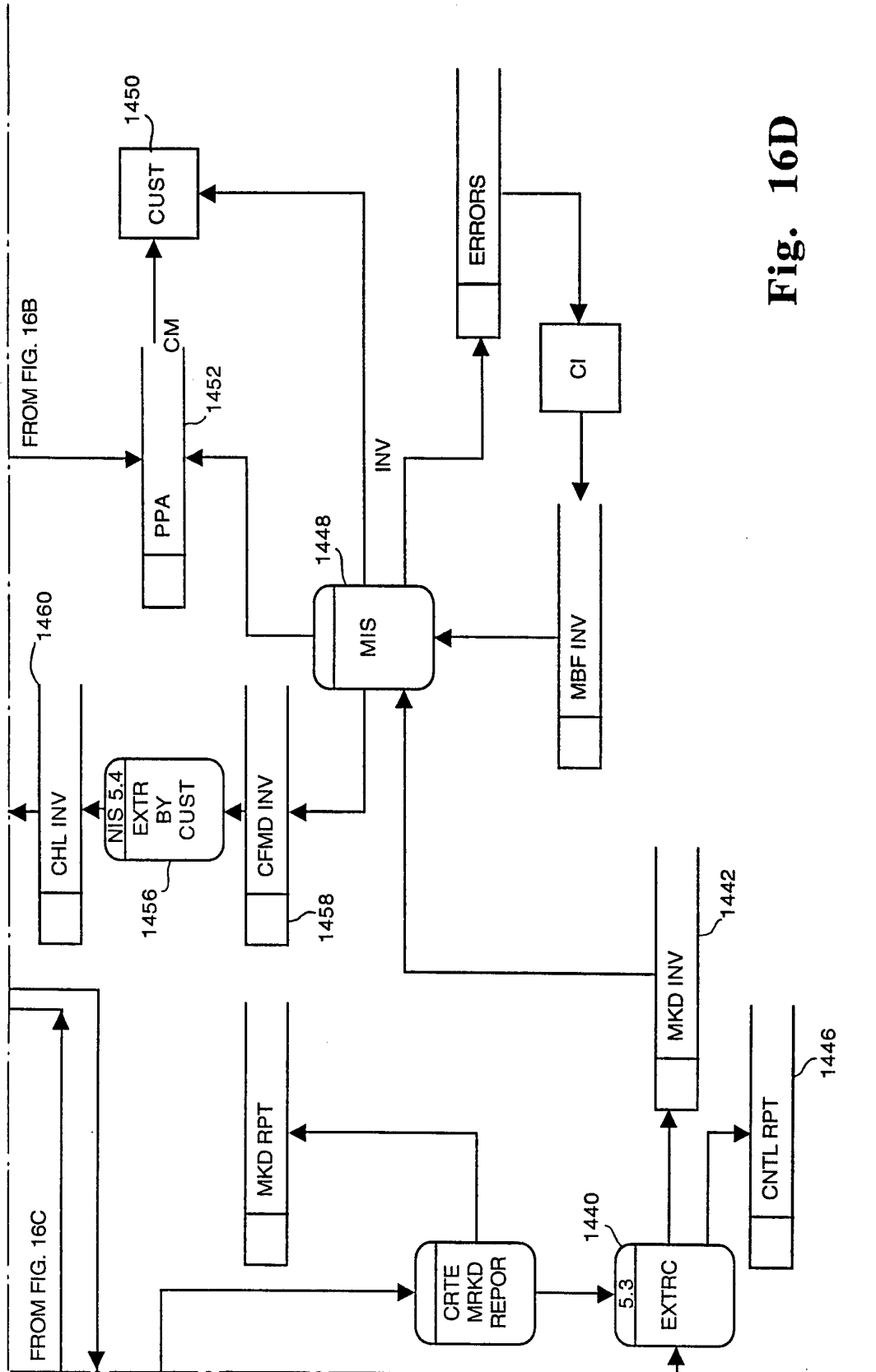FROM FIG 16A

Fig. 16C

Fig. 16D

Fig. 17

Fig. 18

Fig. 19

INV CNTL

130

CUS ITEM

1444

EXTRA
MARKU
REFOR

1440

MARKED UP R

1445

1442

MKD INV

Fig. 20

CMFD INV

1460

SPLIT
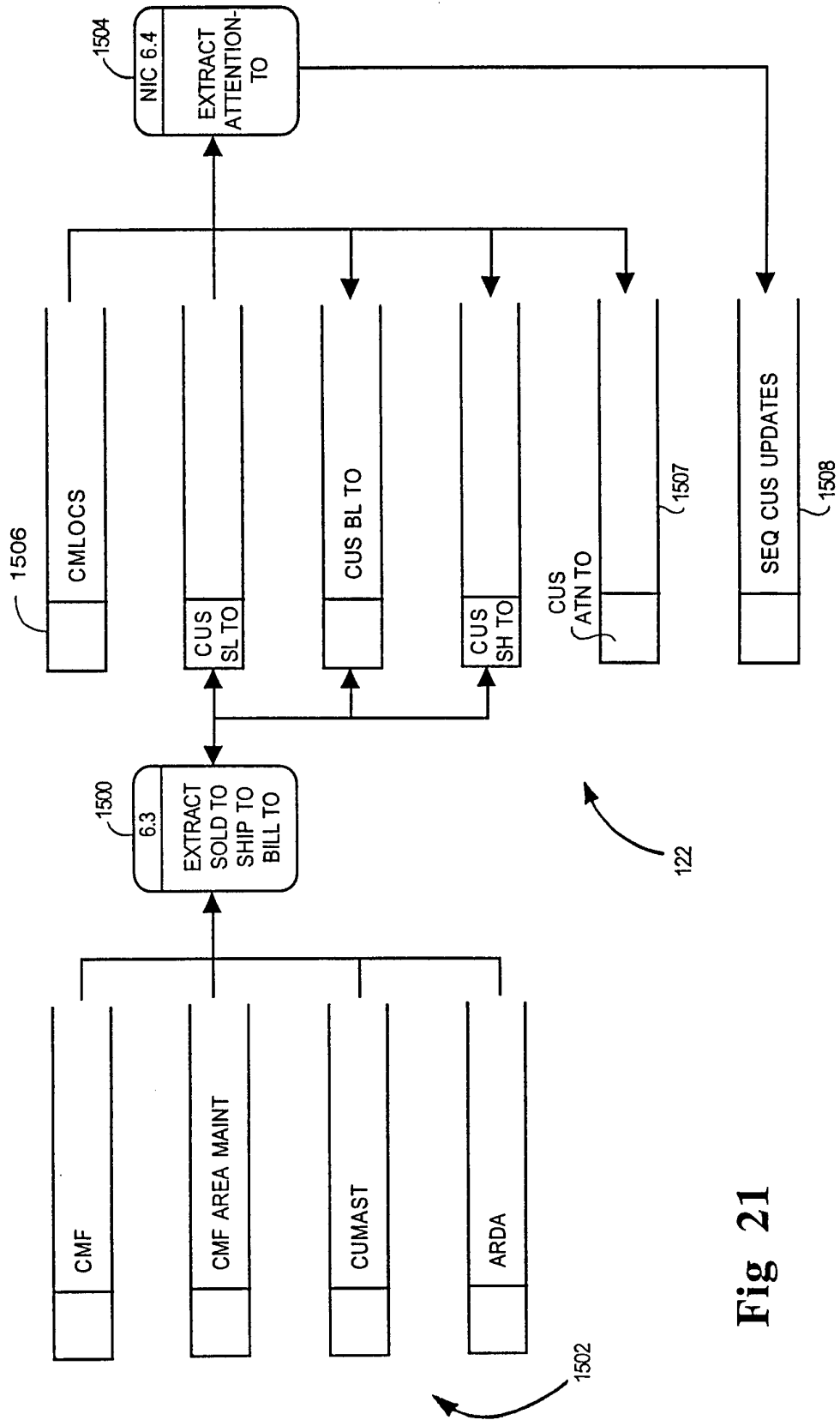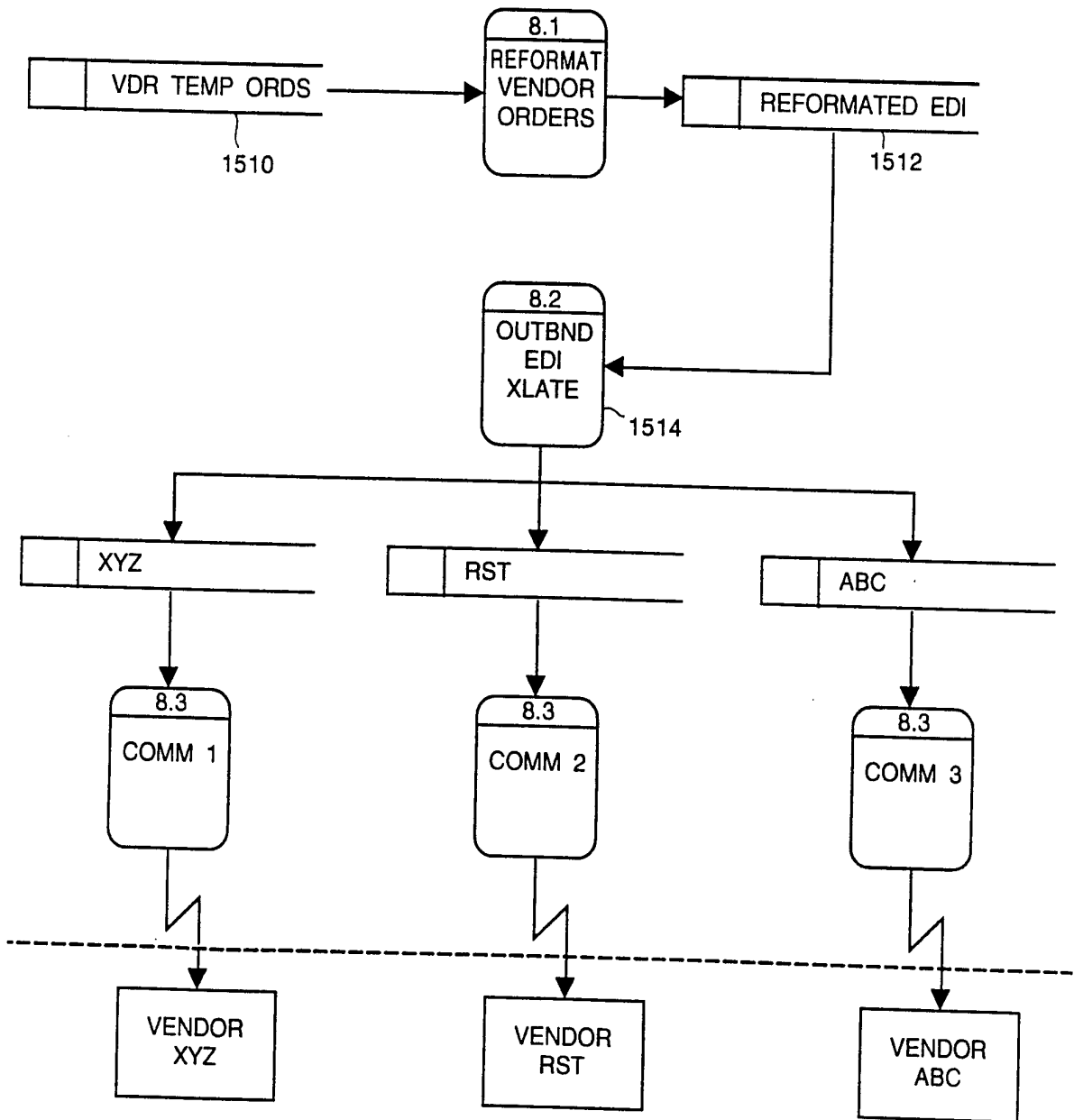AND
UPDAT

1464

NCHNL IN

1466

124

RQN DTL

STATS

UPD
HDR
STATS

1468

RQN HDR

HIST

25/30
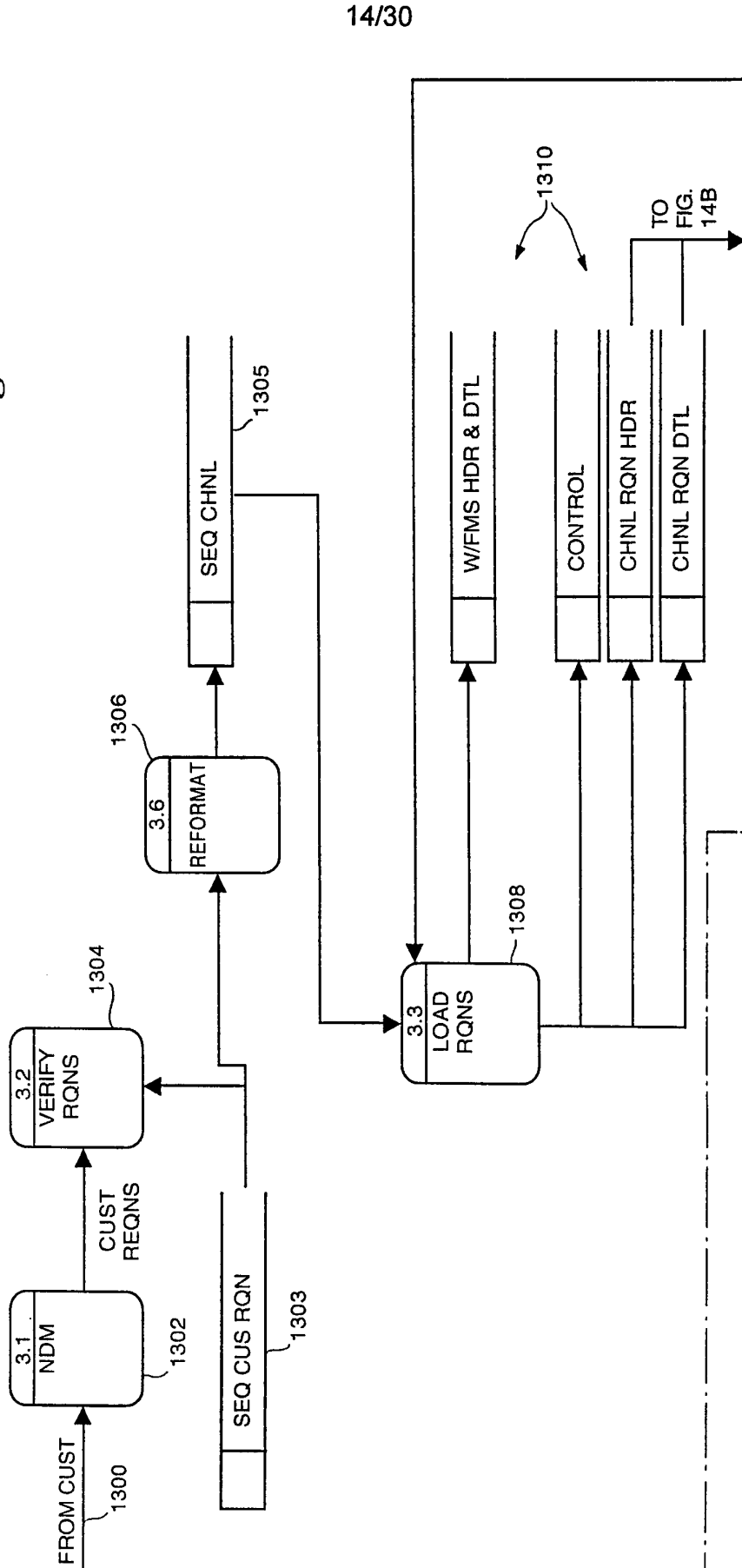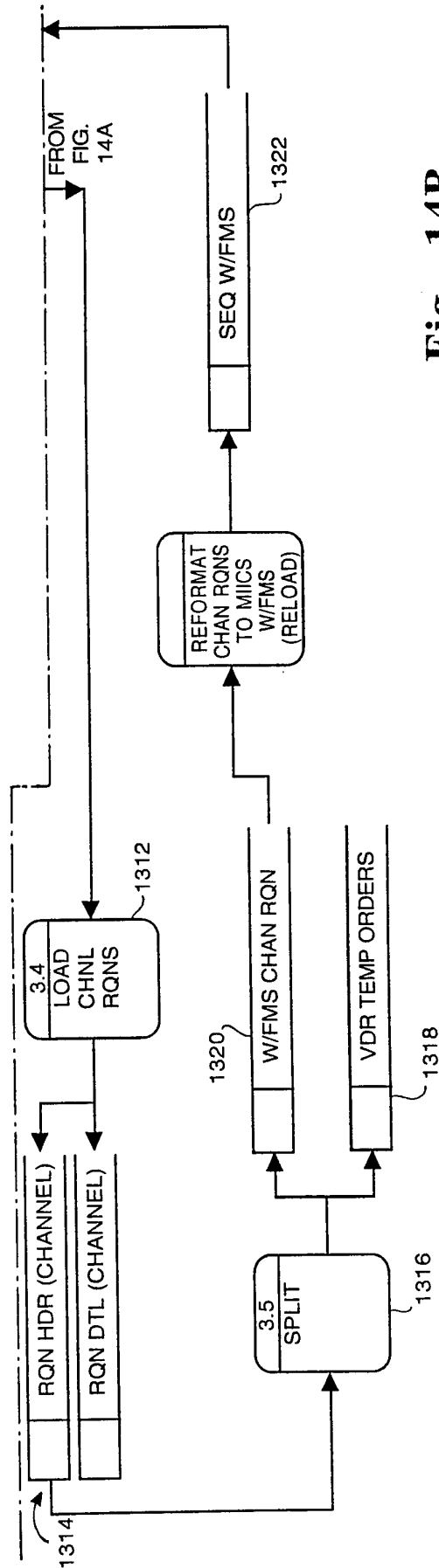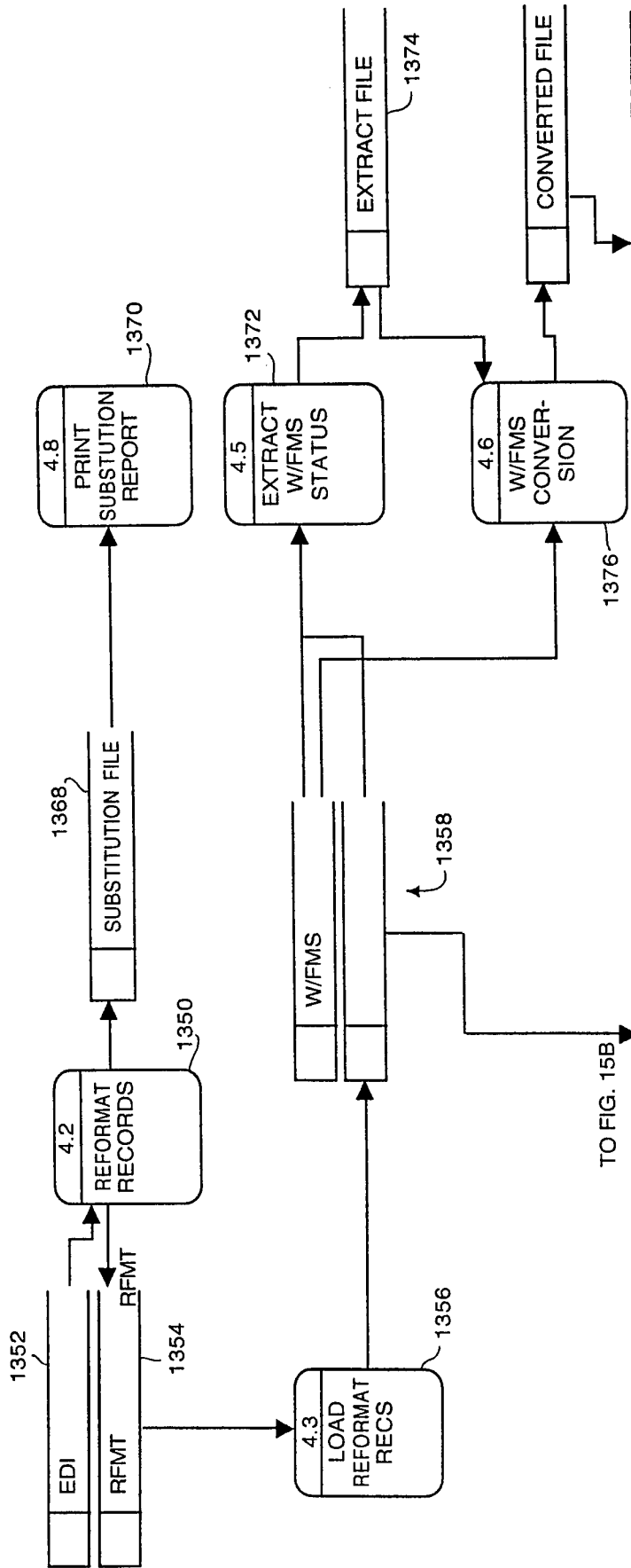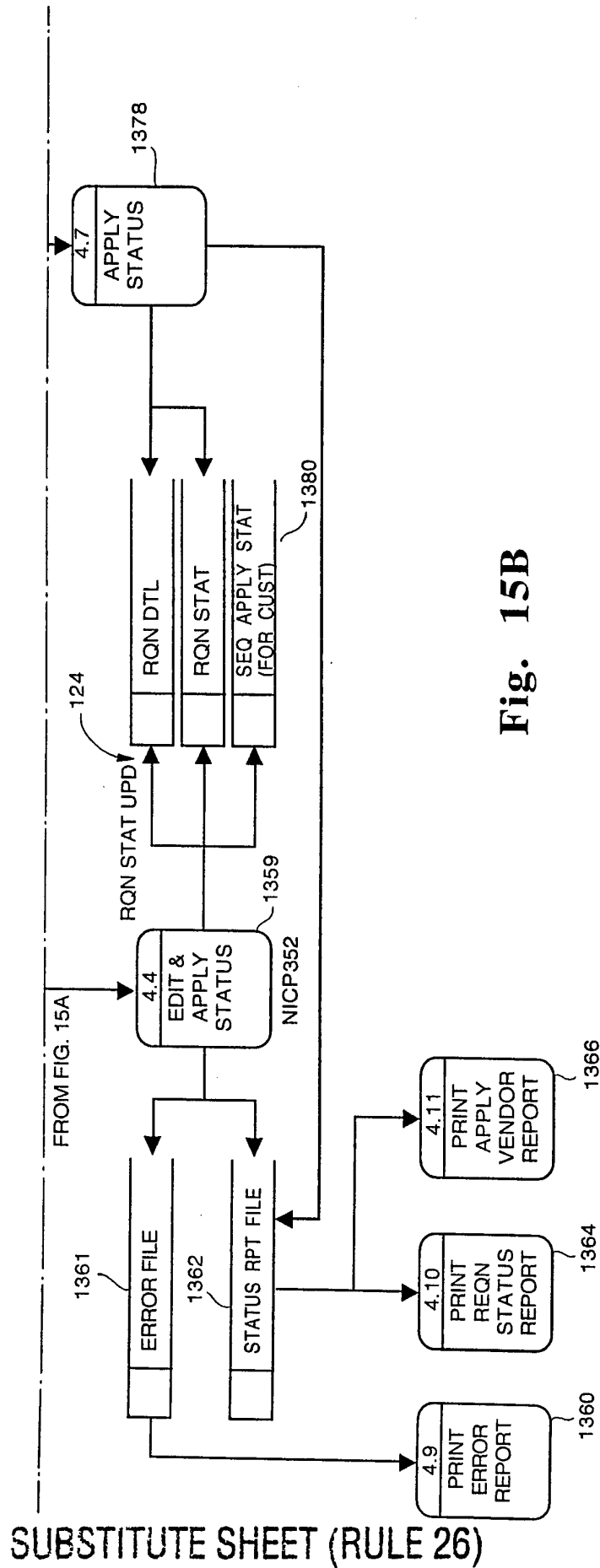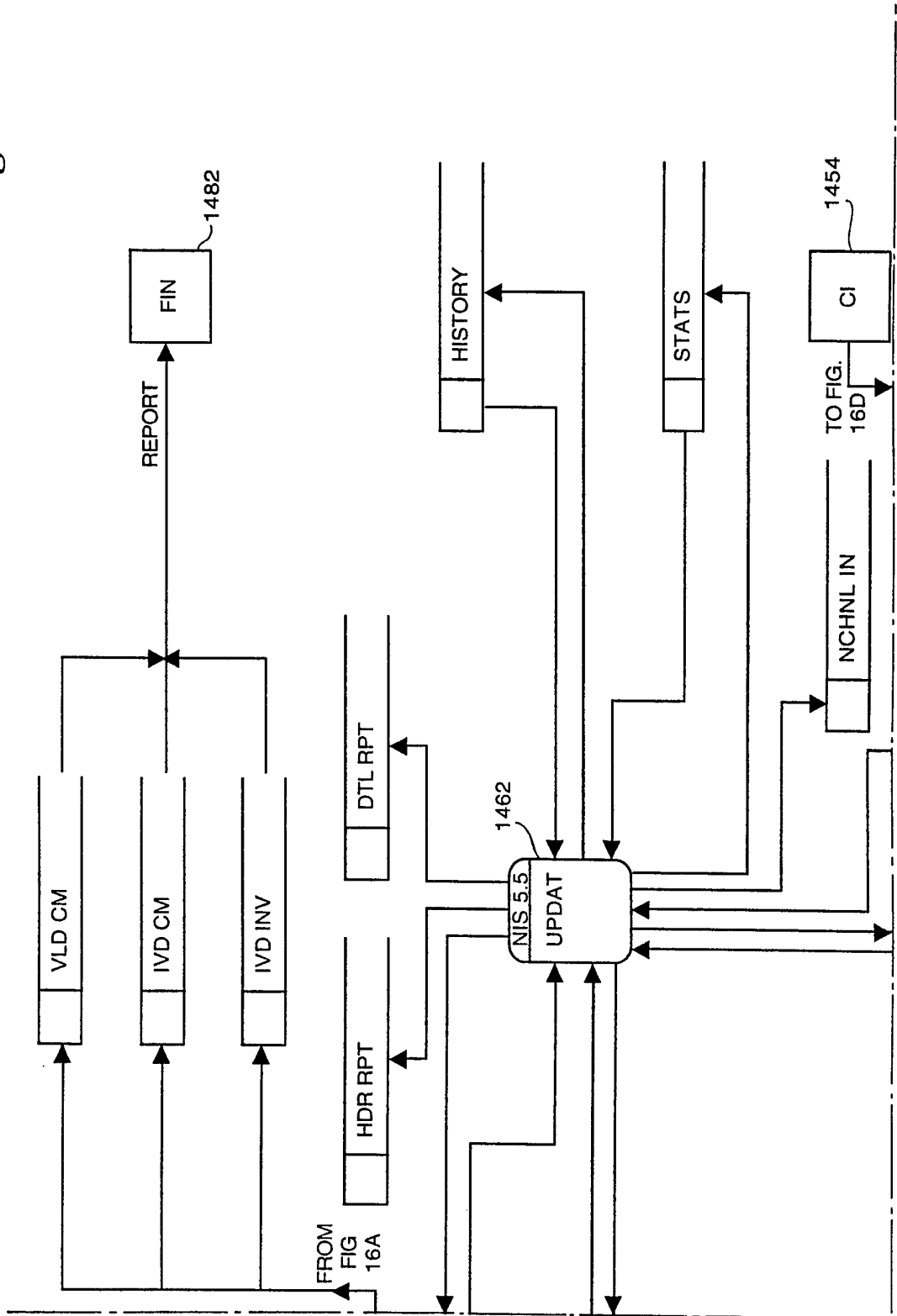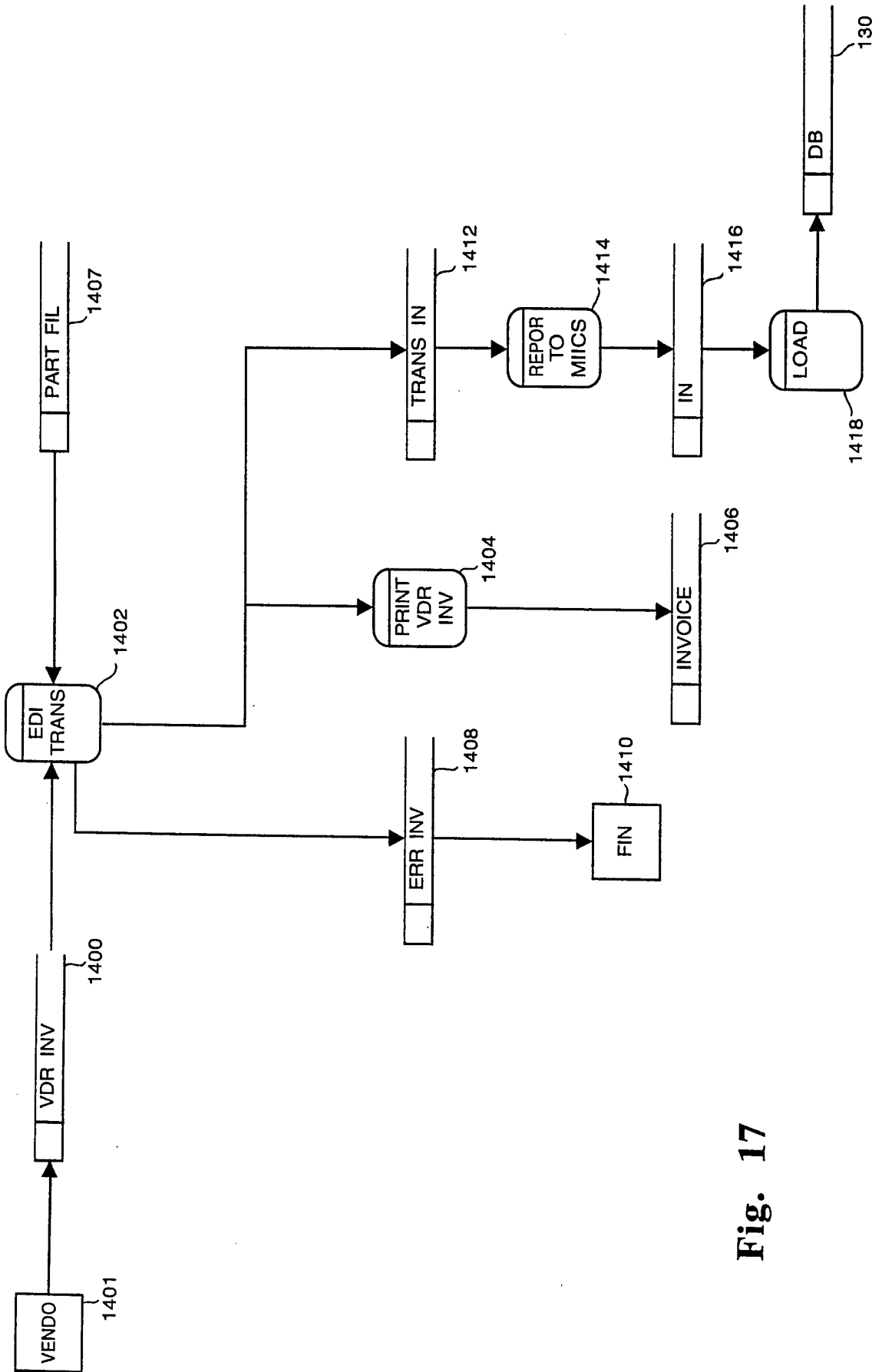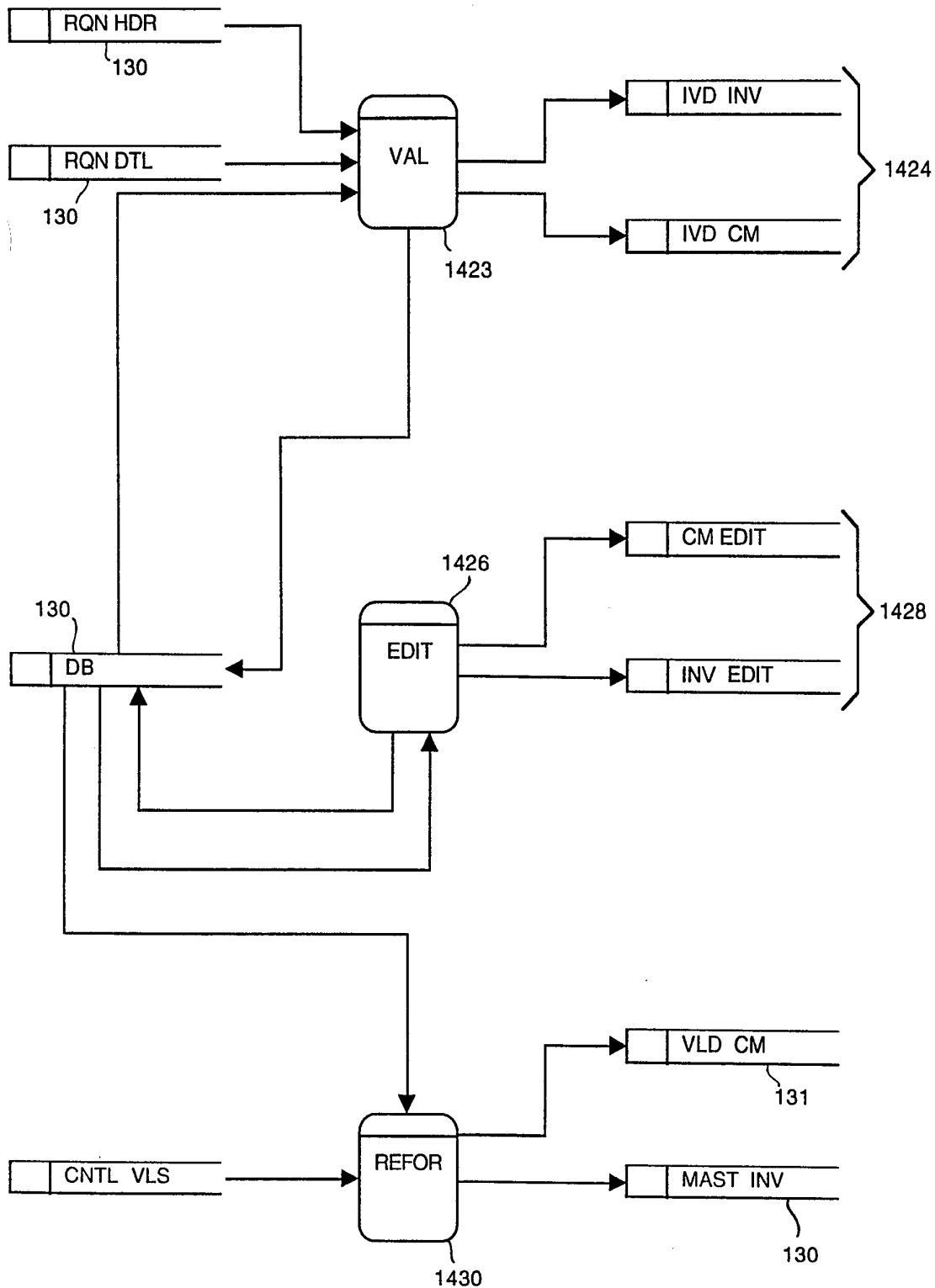
Fig 21
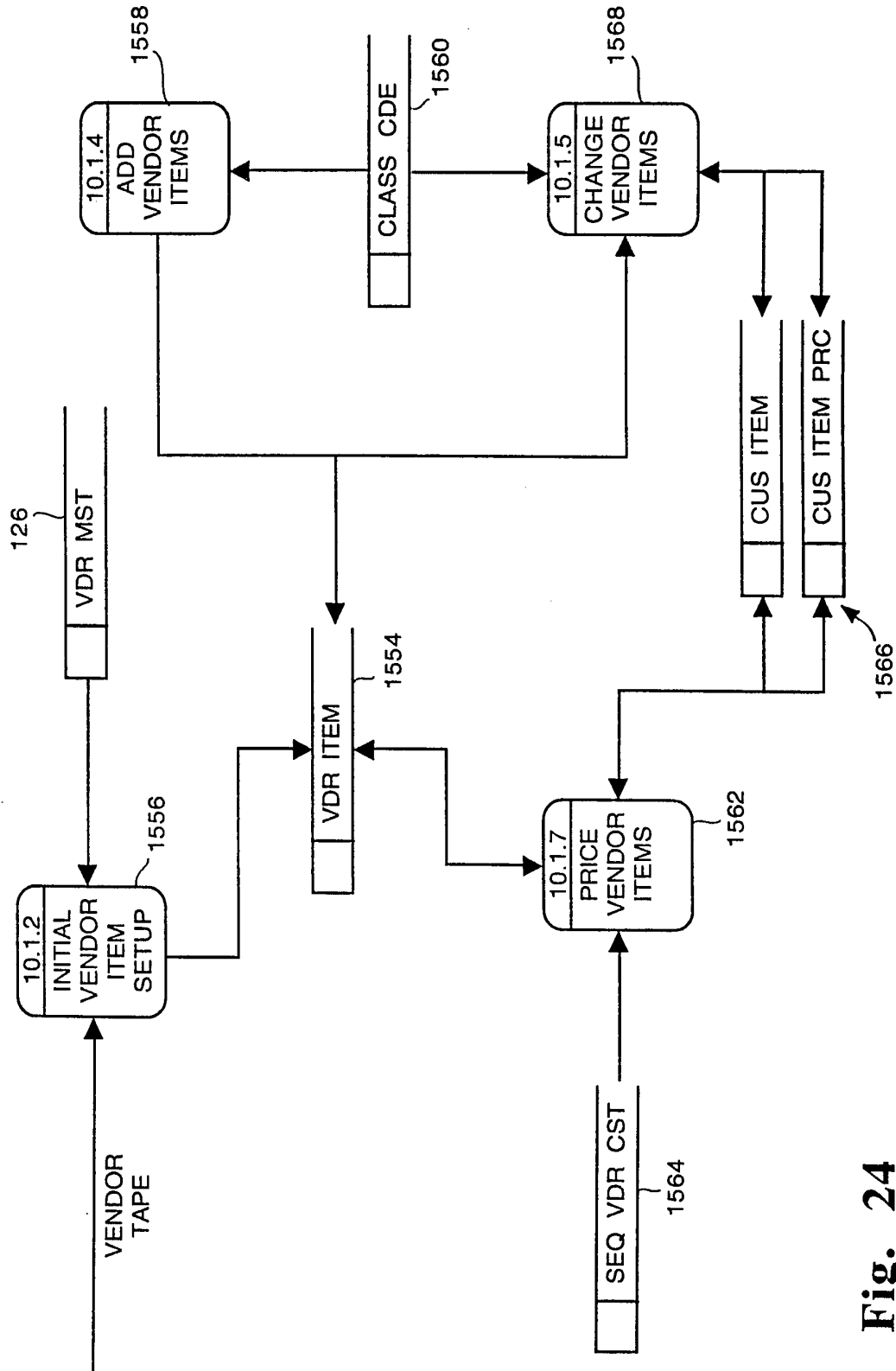
Fig. 22

Fig 23

Fig. 24
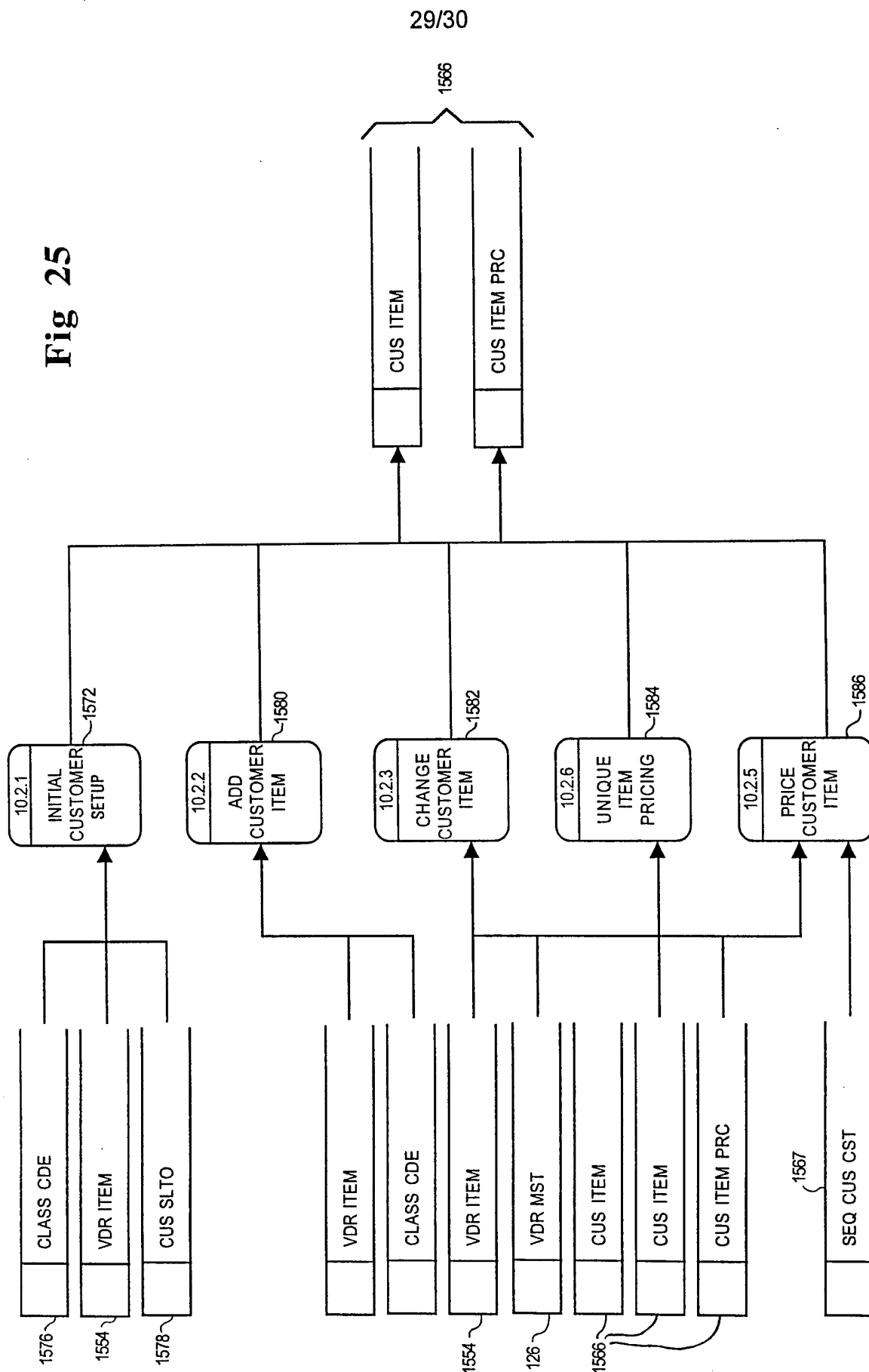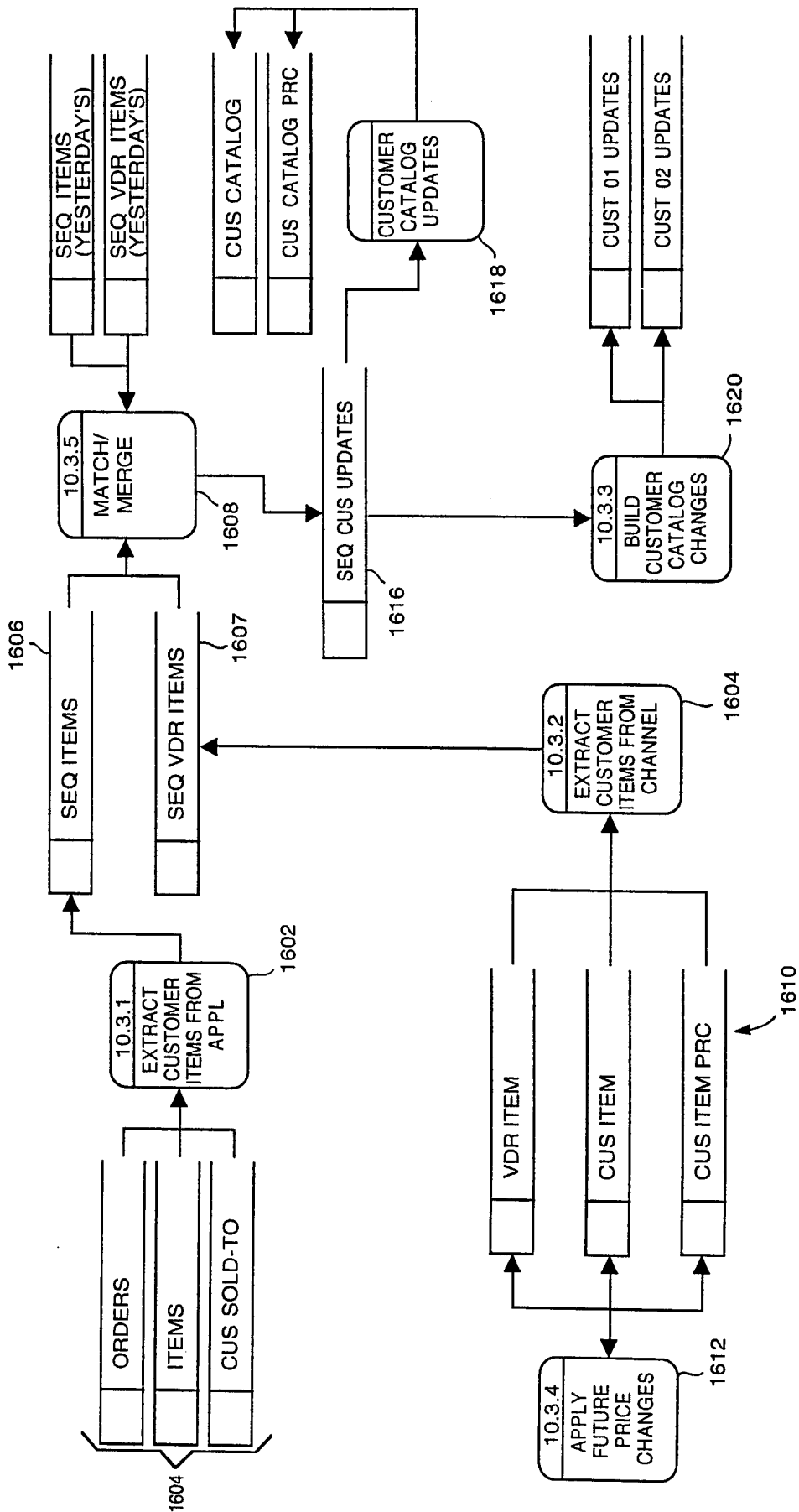
29/30

Fig 25

30/30
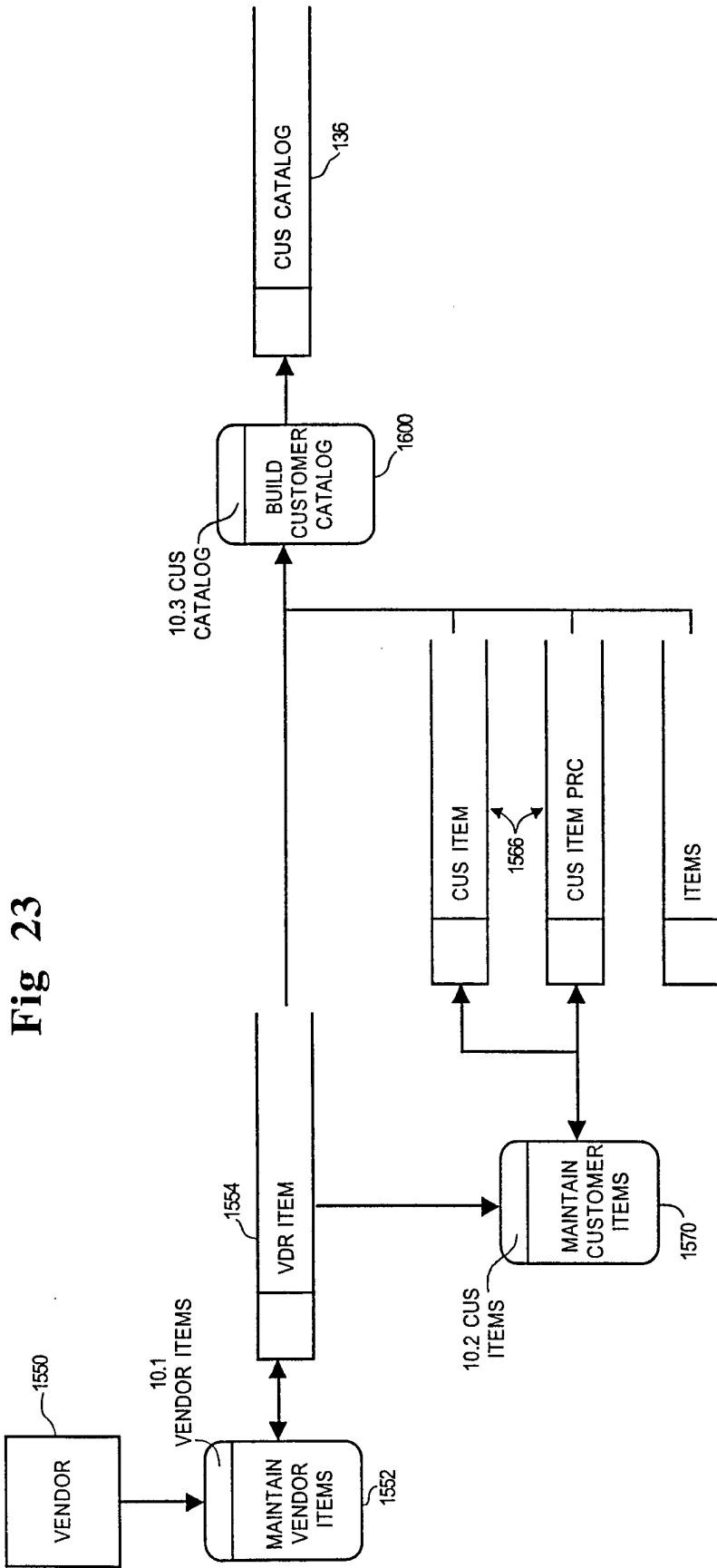
Fig. 26

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US94/05046

A. CLASSIFICATION OF SUBJECT MATTER
IPC(5)   :GO6F 15/22, 15/24
US CL   : 364/401, 403
According to International Patent Classification (IPC) or to both national classification and IPC

B.   FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
U.S. :   364/401, 402, 403, 408

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
NONE

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 4,992,940 (DWORKIN) 12 February 1991, the abstract, figs. 1, 4-6, col. 1 line 63 to col. 2 line 41, col. 3 line 48 to col. 4 line 61, col. 8 lines 9-37 and col. 10 lines 46-53.	1-3
A, P	US, A, 5,224,034 (KATZ ET AL) 29 June 1993, abstract.	1-3
A	US, A, 4,975,841 (KEHNEMUYI ET AL) 04 December 1990, abstract.	1-3
A	US, A, 5,204,821 (INUI ET AL) 20 April 1993, abstract.	1-3
A	US, A, 4,984,155 (GEIER ET AL) 08 January 1991, abstract.	1-3

[X] Further documents are listed in the continuation of Box C.	[ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be part of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
11 JUNE 1994	JUN 2 7 1994

Name and mailing address of the ISA/US	Authorized officer
Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	ROBERT A. WEINHARDT for
Facsimile No. N/A	Telephone No. (703) 305-9780

Form PCT/ISA/210 (second sheet)(July 1992)*

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 4,621,325 (NAFTZGER ET AL) 04 November 1986, abstract.	1-3
A	US, A, 4,713,761 (SHARPE ET AL) 15 December 1987, abstract.	1-3
A	US, A, 4,972,318 (BROWN ET AL) 20 November 1990, abstract.	1-3
A	US, A, 5,117,354 (LONG ET AL) 26 May 1992, abstract.	1-3