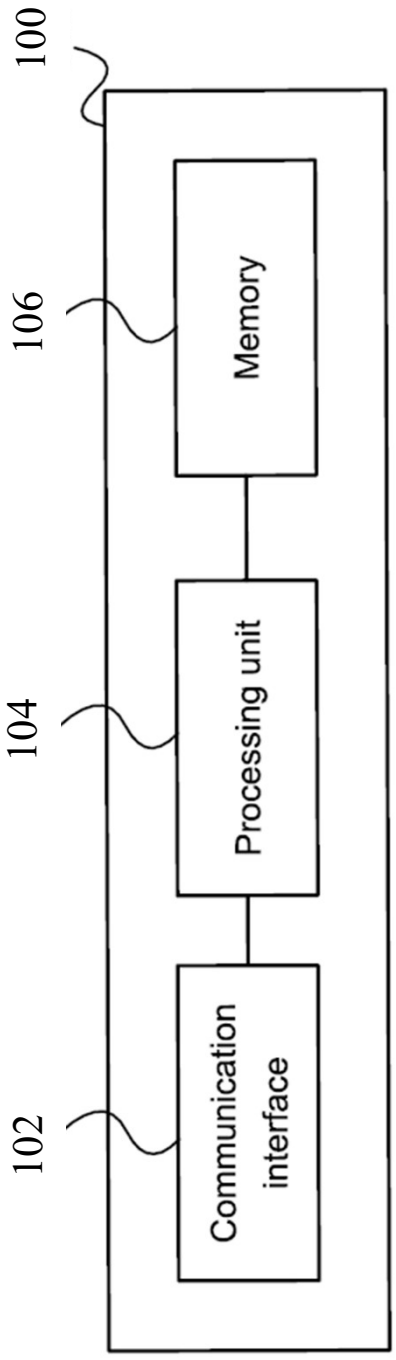

100
106
Memory
104
Processing unit
102
Communication interface

FIG. 1A

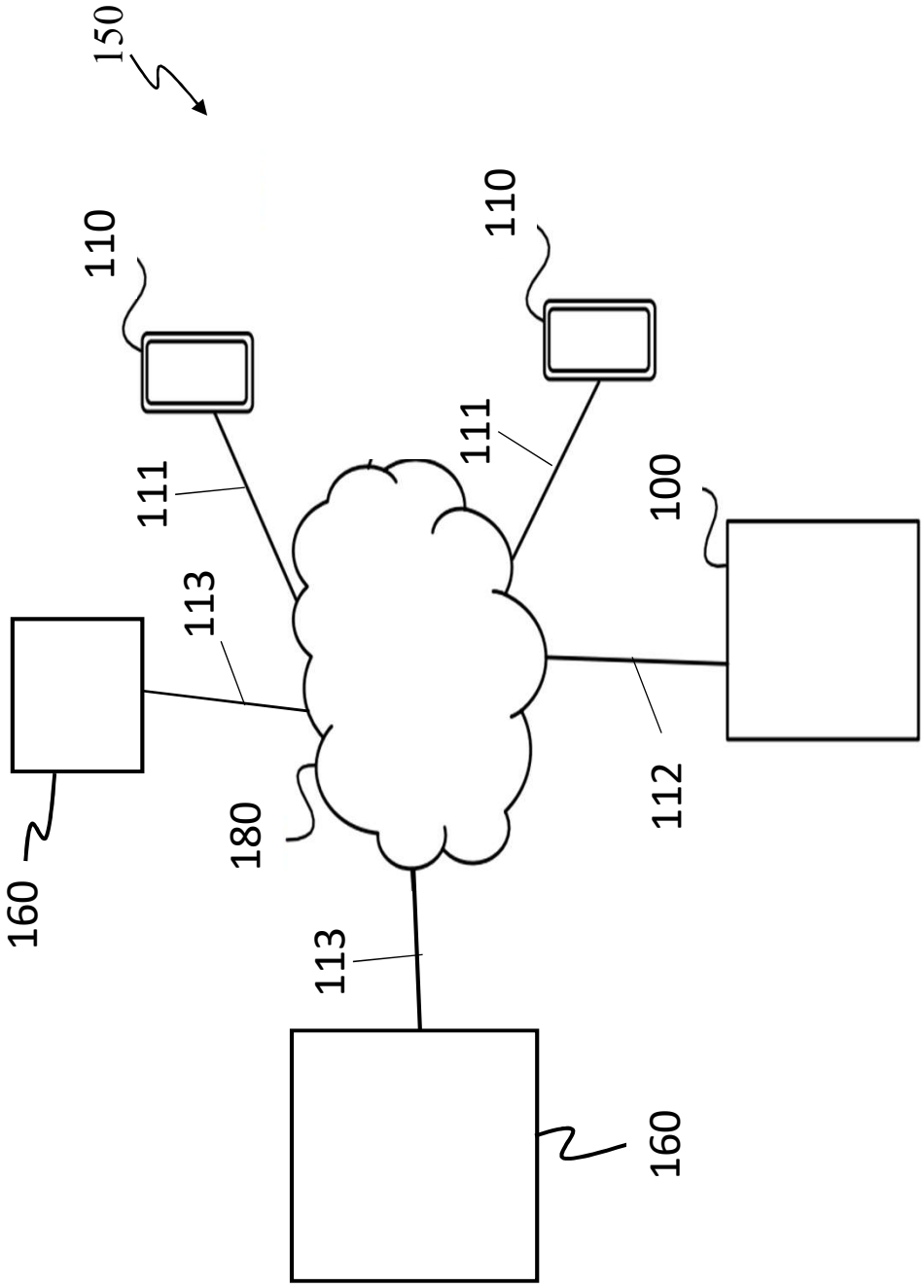


FIG. 1B

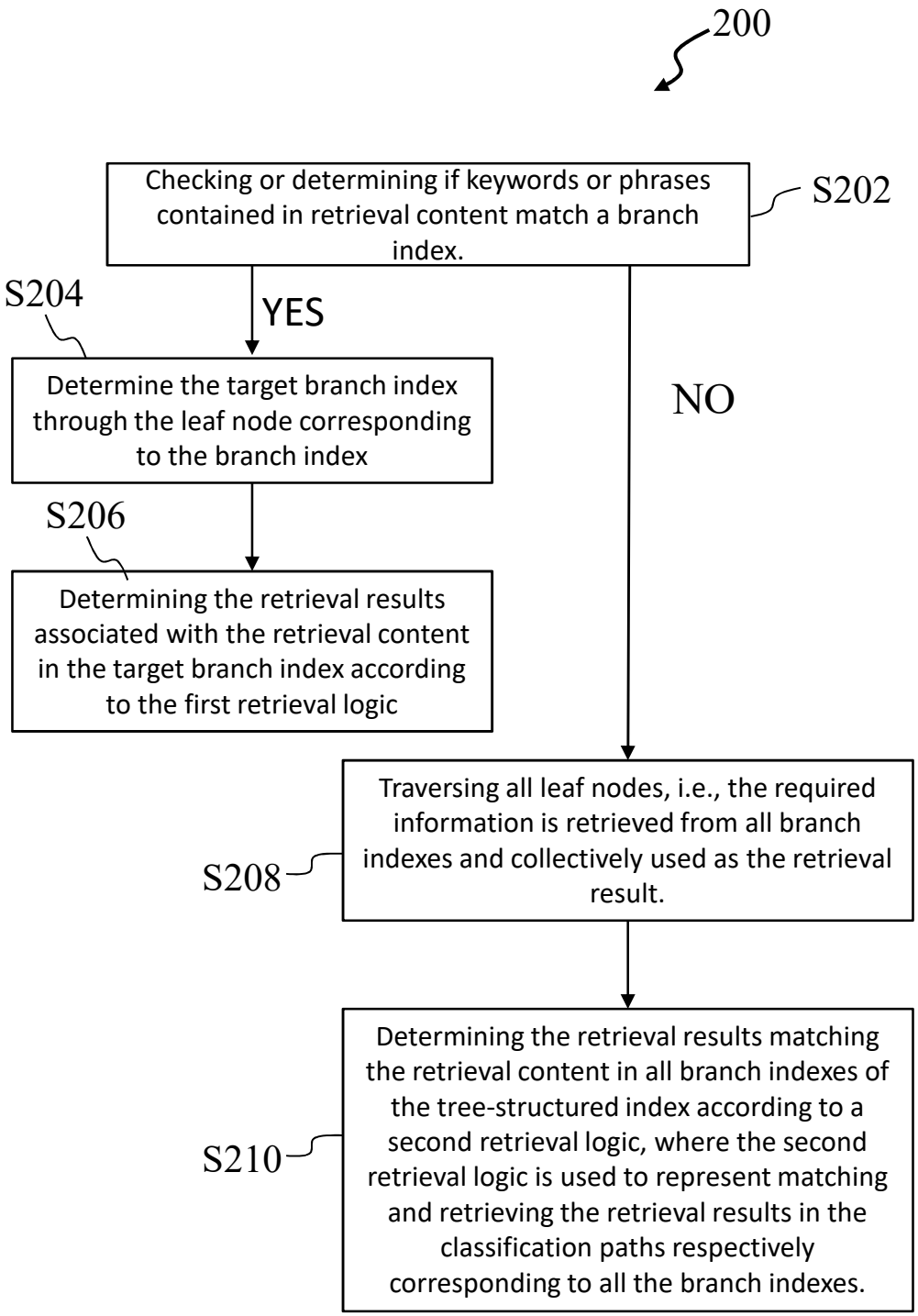

200
Checking or determining if keywords or phrases contained in retrieval content match a branch index.
S202
YES
NO
S204
Determine the target branch index through the leaf node corresponding to the branch index
S206
Determining the retrieval results associated with the retrieval content in the target branch index according to the first retrieval logic
Traversing all leaf nodes, i.e., the required information is retrieved from all branch indexes and collectively used as the retrieval result.
S208
Determining the retrieval results matching the retrieval content in all branch indexes of the tree-structured index according to a second retrieval logic, where the second retrieval logic is used to represent matching and retrieving the retrieval results in the classification paths respectively corresponding to all the branch indexes.
S210

FIG. 2A

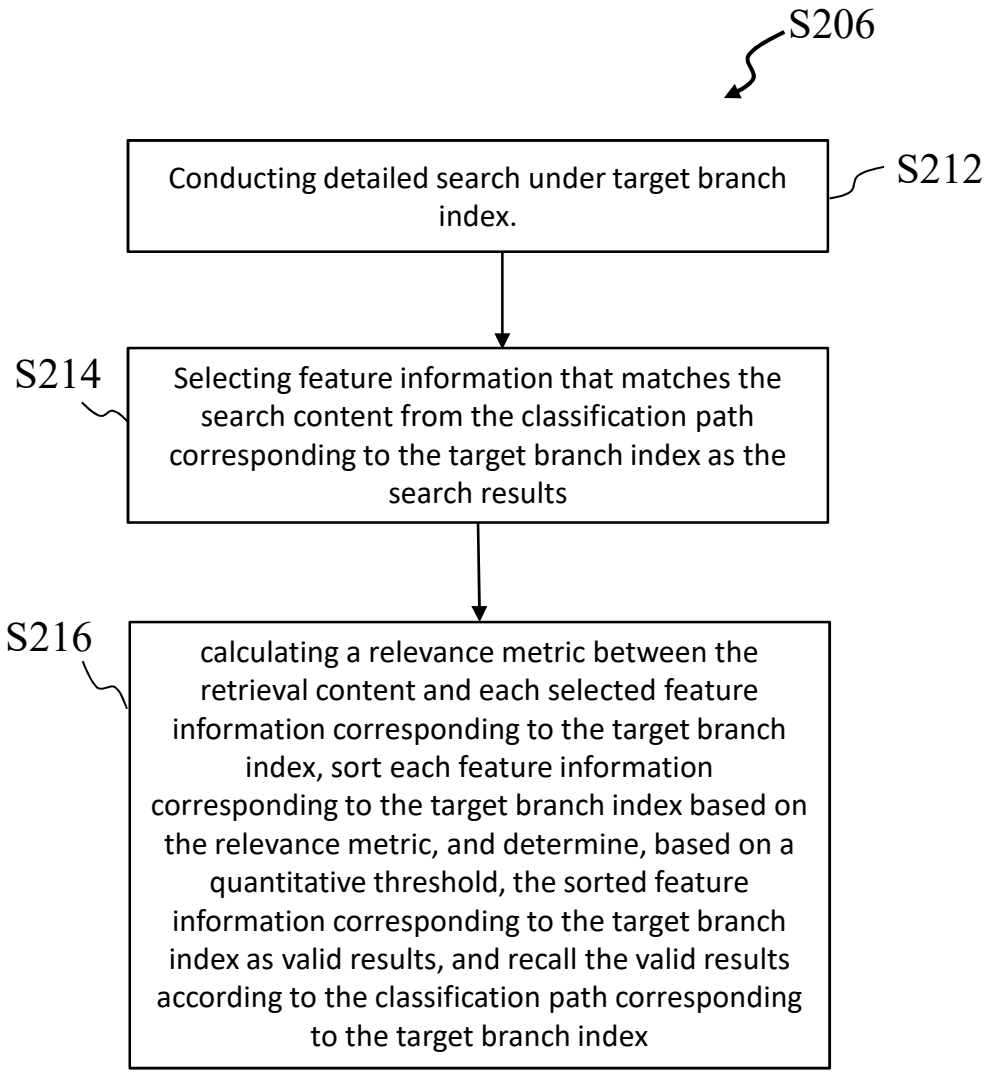

S206
Conducting detailed search under target branch index.
S212
S214
Selecting feature information that matches the search content from the classification path corresponding to the target branch index as the search results
S216
calculating a relevance metric between the retrieval content and each selected feature information corresponding to the target branch index, sort each feature information corresponding to the target branch index based on the relevance metric, and determine, based on a quantitative threshold, the sorted feature information corresponding to the target branch index as valid results, and recall the valid results according to the classification path corresponding to the target branch index

FIG. 2B

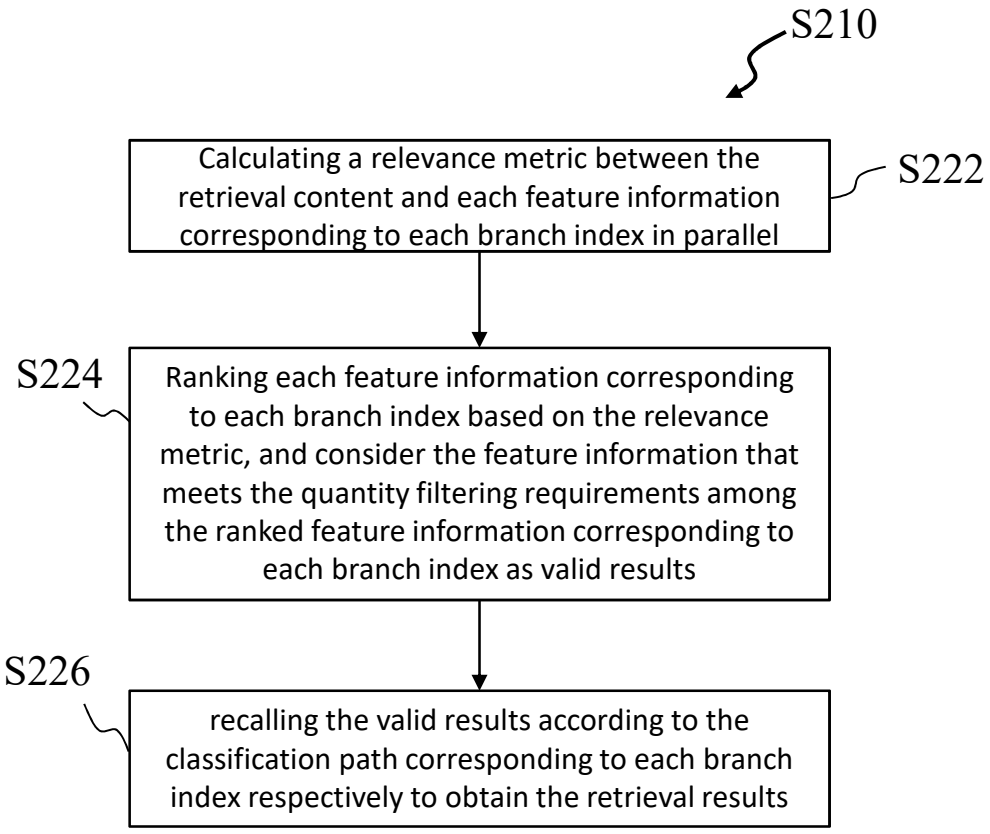
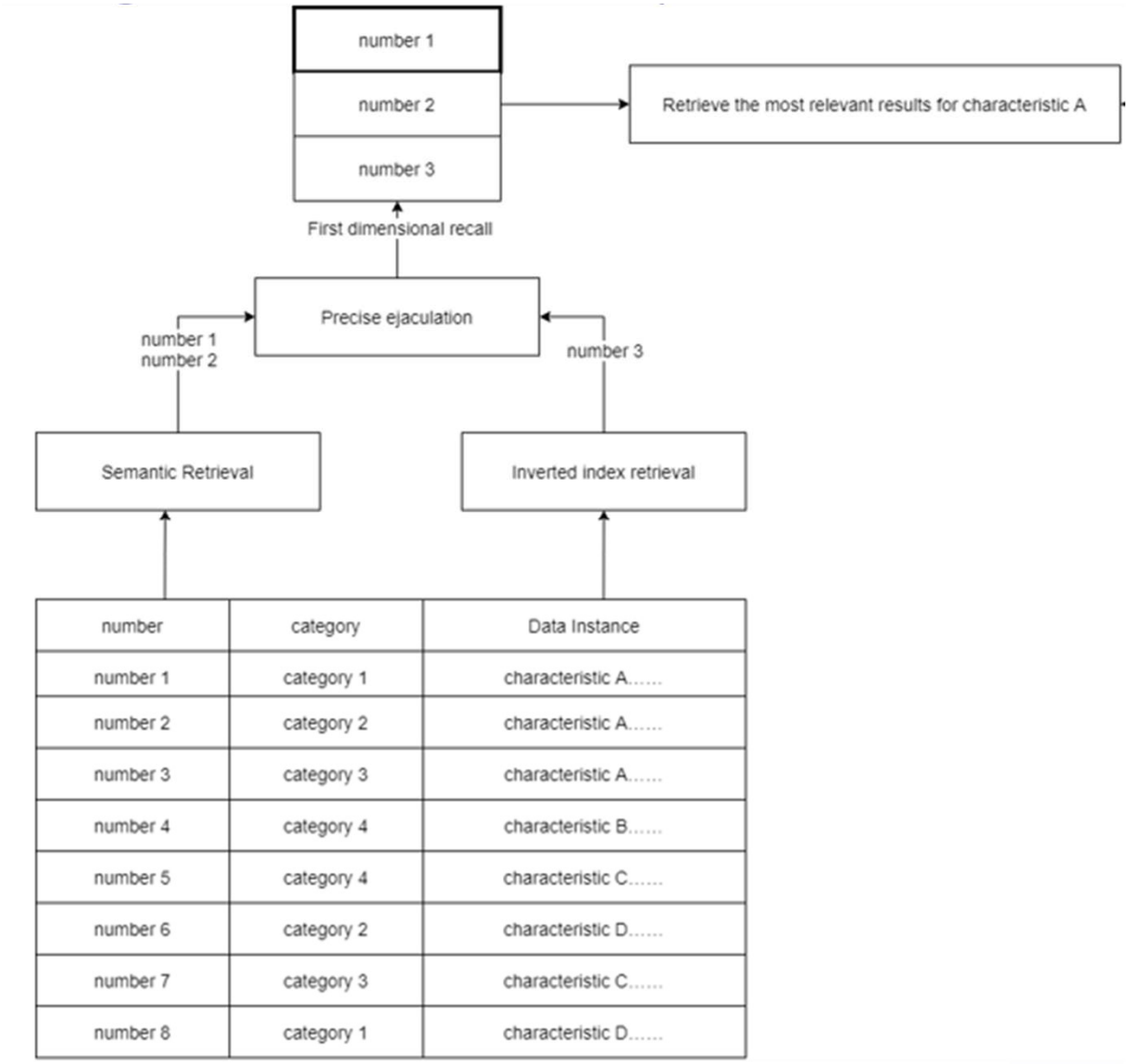

S210
Calculating a relevance metric between the retrieval content and each feature information corresponding to each branch index in parallel
S222
S224
Ranking each feature information corresponding to each branch index based on the relevance metric, and consider the feature information that meets the quantity filtering requirements among the ranked feature information corresponding to each branch index as valid results
S226
recalling the valid results according to the classification path corresponding to each branch index respectively to obtain the retrieval results

FIG. 2C



number	category	Data Instance
number 1	category 1	characteristic A……
number 2	category 2	characteristic A……
number 3	category 3	characteristic A……
number 4	category 4	characteristic B……
number 5	category 4	characteristic C……
number 6	category 2	characteristic D……
number 7	category 3	characteristic C……
number 8	category 1	characteristic D……

FIG. 3A

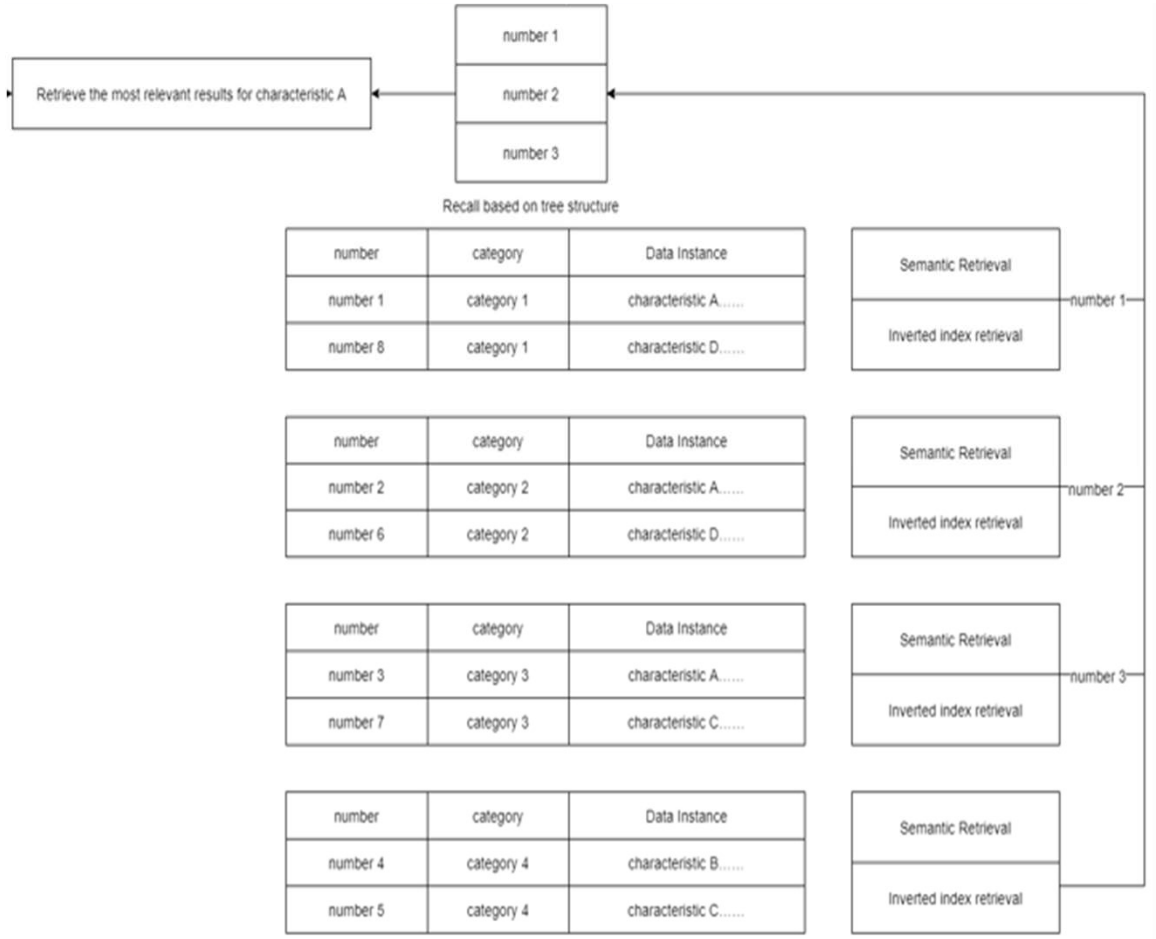

Retrieve the most relevant results for characteristic A
number 1
number 2
number 3
Recall based on tree structure
number
category
Data Instance
number 1
category 1
characteristic A.....
number 8
category 1
characteristic D.....
Semantic Retrieval
Inverted index retrieval
number 1
number
category
Data Instance
number 2
category 2
characteristic A.....
number 6
category 2
characteristic D.....
Semantic Retrieval
Inverted index retrieval
number 2
number
category
Data Instance
number 3
category 3
characteristic A.....
number 7
category 3
characteristic C.....
Semantic Retrieval
Inverted index retrieval
number 3
number
category
Data Instance
number 4
category 4
characteristic B.....
number 5
category 4
characteristic C.....
Semantic Retrieval
Inverted index retrieval

FIG. 3B

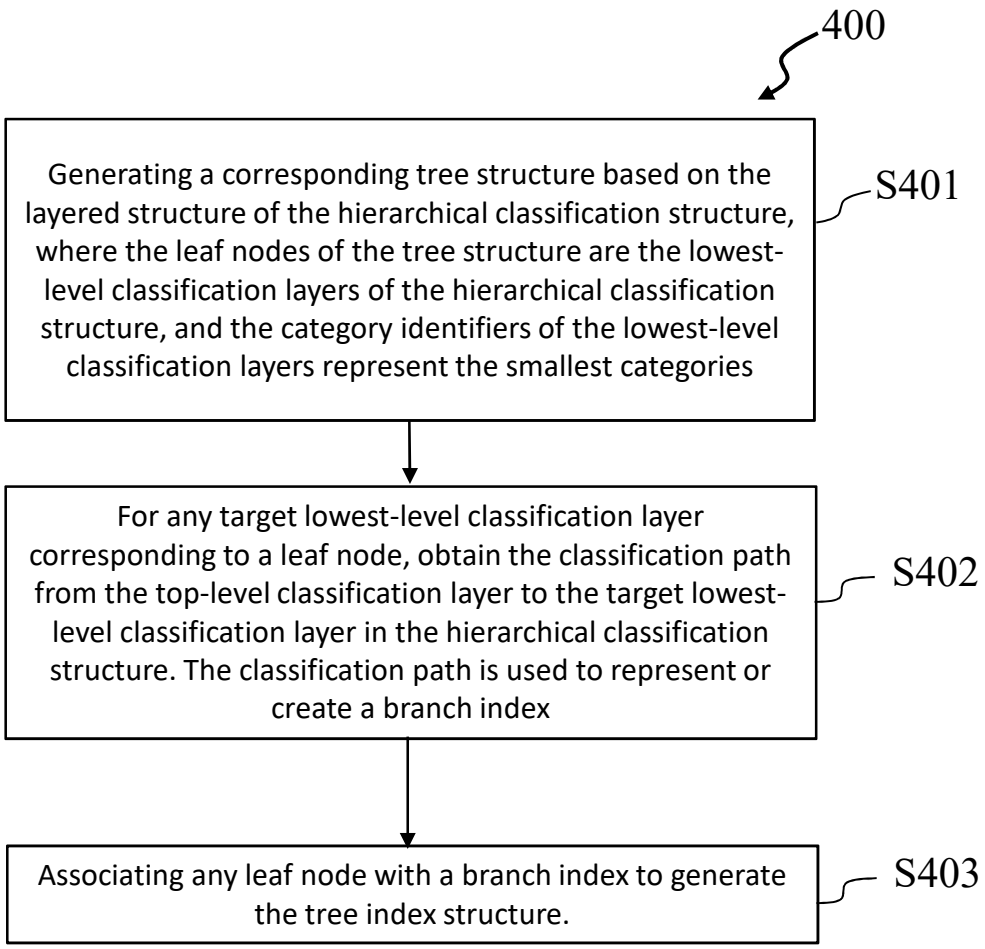

400
Generating a corresponding tree structure based on the layered structure of the hierarchical classification structure, where the leaf nodes of the tree structure are the lowest-level classification layers of the hierarchical classification structure, and the category identifiers of the lowest-level classification layers represent the smallest categories
S401
For any target lowest-level classification layer corresponding to a leaf node, obtain the classification path from the top-level classification layer to the target lowest-level classification layer in the hierarchical classification structure. The classification path is used to represent or create a branch index
S402
Associating any leaf node with a branch index to generate the tree index structure.
S403

FIG. 4

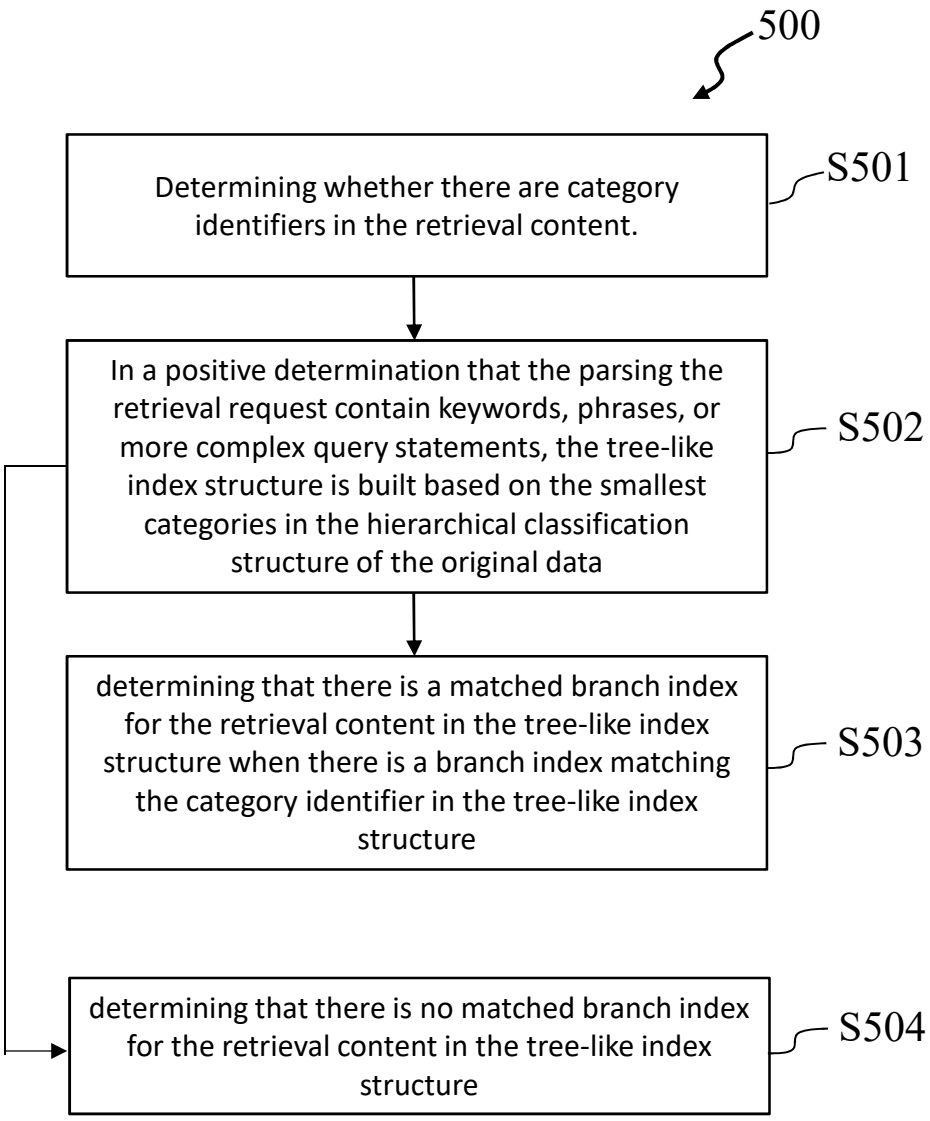

500
Determining whether there are category identifiers in the retrieval content.
S501
In a positive determination that the parsing the retrieval request contain keywords, phrases, or more complex query statements, the tree-like index structure is built based on the smallest categories in the hierarchical classification structure of the original data
S502
determining that there is a matched branch index for the retrieval content in the tree-like index structure when there is a branch index matching the category identifier in the tree-like index structure
S503
determining that there is no matched branch index for the retrieval content in the tree-like index structure
S504

FIG. 5

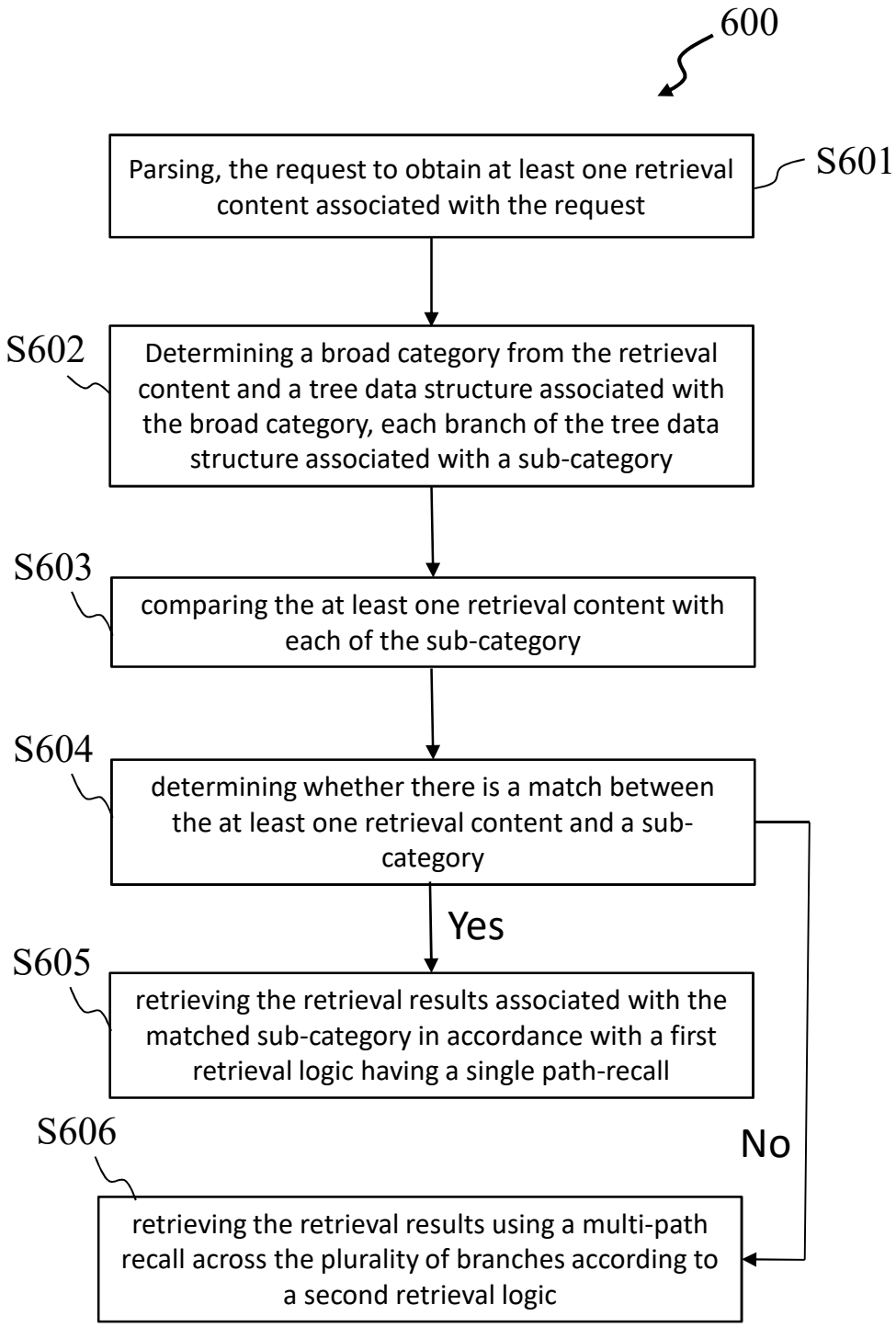

600
Parsing, the request to obtain at least one retrieval content associated with the request
S601
S602
Determining a broad category from the retrieval content and a tree data structure associated with the broad category, each branch of the tree data structure associated with a sub-category
S603
comparing the at least one retrieval content with each of the sub-category
S604
determining whether there is a match between the at least one retrieval content and a sub-category
Yes
S605
retrieving the retrieval results associated with the matched sub-category in accordance with a first retrieval logic having a single path-recall
S606
No
retrieving the retrieval results using a multi-path recall across the plurality of branches according to a second retrieval logic

FIG. 6