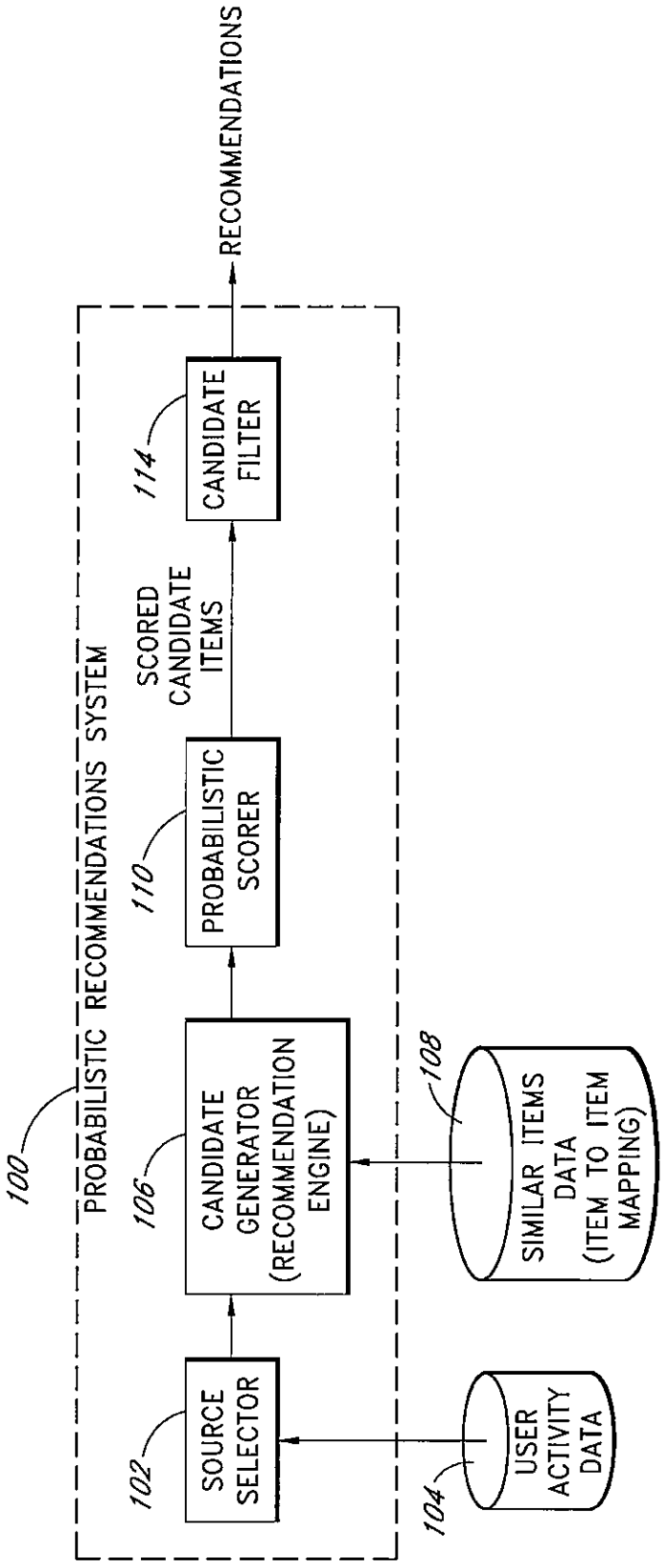

RECOMMENDATIONS
PROBABILISTIC RECOMMENDATIONS SYSTEM
100
CANDIDATE FILTER
114
SCORED CANDIDATE ITEMS
PROBABILISTIC SCORER
110
CANDIDATE GENERATOR (RECOMMENDATION ENGINE)
106
SOURCE SELECTOR
102
SIMILAR ITEMS DATA (ITEM TO ITEM MAPPING)
108
USER ACTIVITY DATA
104

FIG. 1

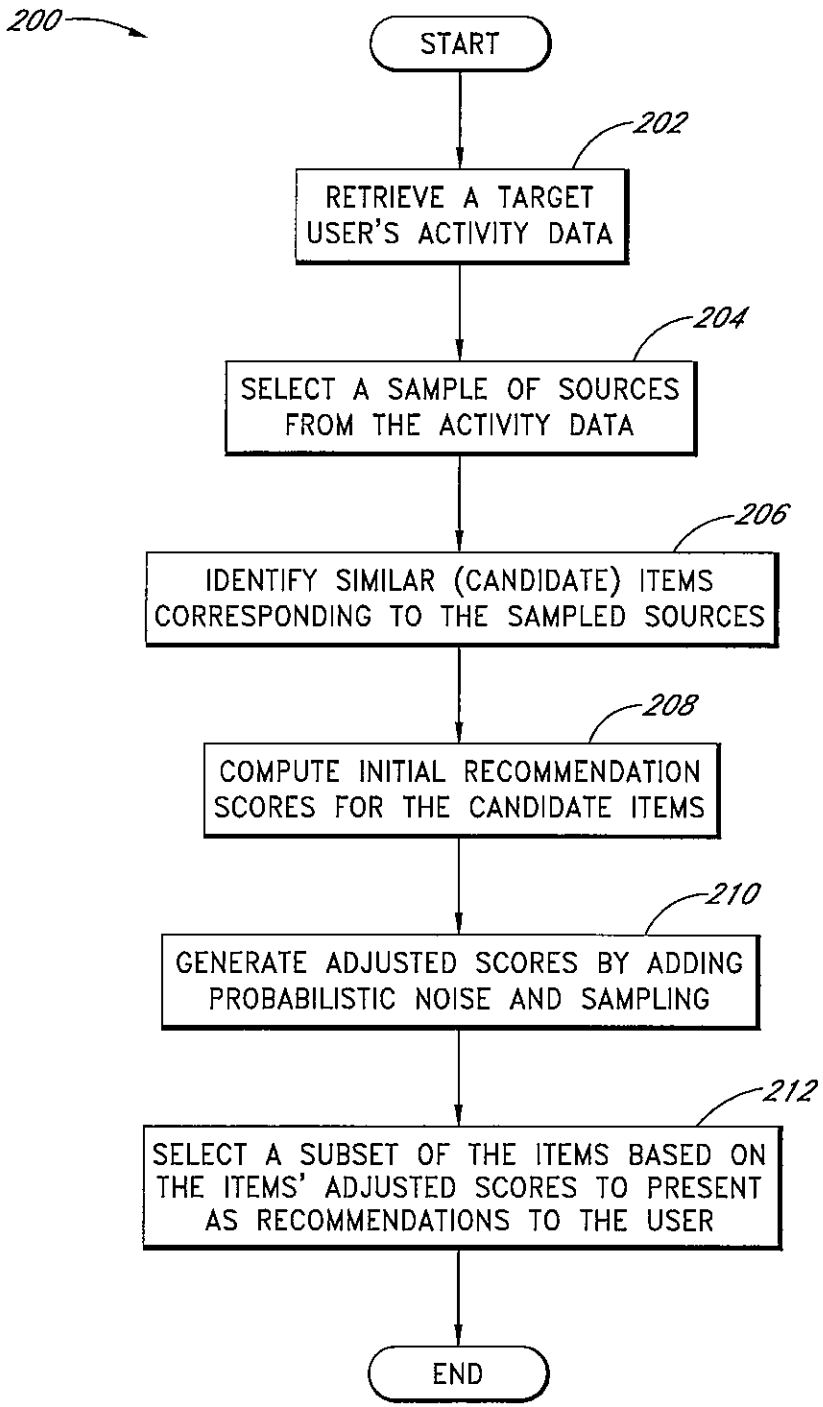

200
START
202
RETRIEVE A TARGET USER'S ACTIVITY DATA
204
SELECT A SAMPLE OF SOURCES FROM THE ACTIVITY DATA
206
IDENTIFY SIMILAR (CANDIDATE) ITEMS CORRESPONDING TO THE SAMPLED SOURCES
208
COMPUTE INITIAL RECOMMENDATION SCORES FOR THE CANDIDATE ITEMS
210
GENERATE ADJUSTED SCORES BY ADDING PROBABILISTIC NOISE AND SAMPLING
212
SELECT A SUBSET OF THE ITEMS BASED ON THE ITEMS' ADJUSTED SCORES TO PRESENT AS RECOMMENDATIONS TO THE USER
END

FIG. 2

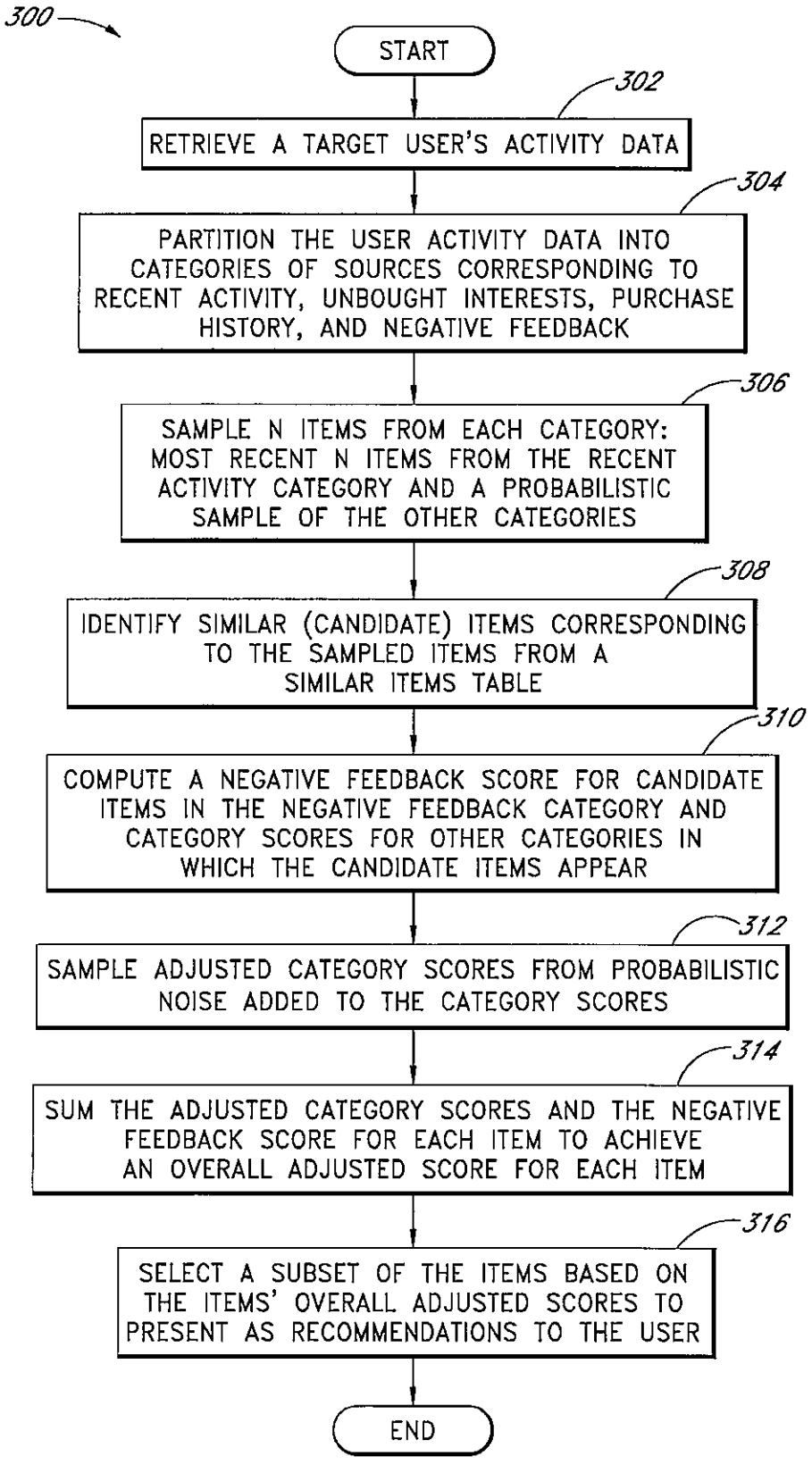

300
START
302
RETRIEVE A TARGET USER'S ACTIVITY DATA
304
PARTITION THE USER ACTIVITY DATA INTO CATEGORIES OF SOURCES CORRESPONDING TO RECENT ACTIVITY, UNBOUGHT INTERESTS, PURCHASE HISTORY, AND NEGATIVE FEEDBACK
306
SAMPLE N ITEMS FROM EACH CATEGORY: MOST RECENT N ITEMS FROM THE RECENT ACTIVITY CATEGORY AND A PROBABILISTIC SAMPLE OF THE OTHER CATEGORIES
308
IDENTIFY SIMILAR (CANDIDATE) ITEMS CORRESPONDING TO THE SAMPLED ITEMS FROM A SIMILAR ITEMS TABLE
310
COMPUTE A NEGATIVE FEEDBACK SCORE FOR CANDIDATE ITEMS IN THE NEGATIVE FEEDBACK CATEGORY AND CATEGORY SCORES FOR OTHER CATEGORIES IN WHICH THE CANDIDATE ITEMS APPEAR
312
SAMPLE ADJUSTED CATEGORY SCORES FROM PROBABILISTIC NOISE ADDED TO THE CATEGORY SCORES
314
SUM THE ADJUSTED CATEGORY SCORES AND THE NEGATIVE FEEDBACK SCORE FOR EACH ITEM TO ACHIEVE AN OVERALL ADJUSTED SCORE FOR EACH ITEM
316
SELECT A SUBSET OF THE ITEMS BASED ON THE ITEMS' OVERALL ADJUSTED SCORES TO PRESENT AS RECOMMENDATIONS TO THE USER
END

FIG. 3

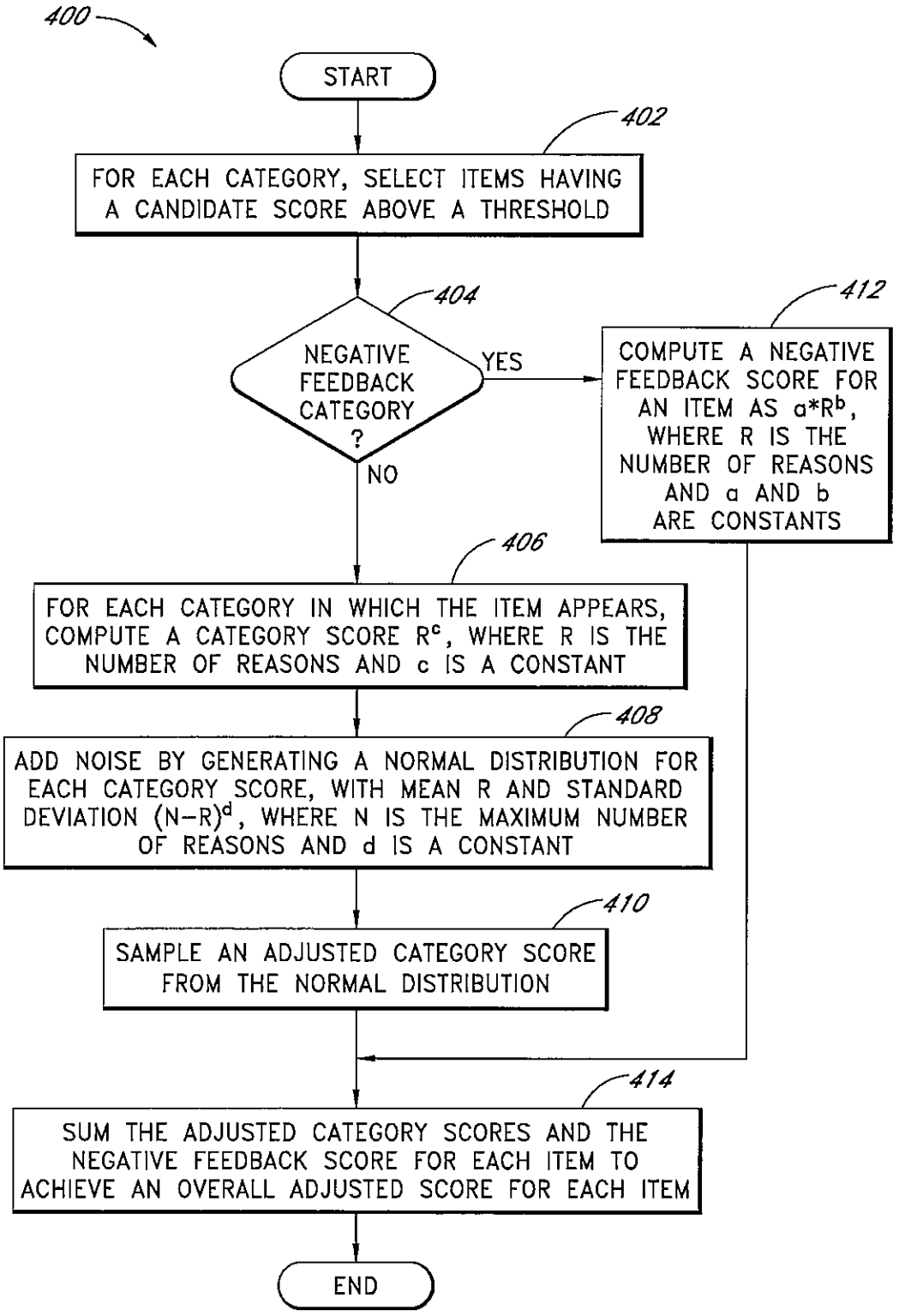

400
START
402
FOR EACH CATEGORY, SELECT ITEMS HAVING A CANDIDATE SCORE ABOVE A THRESHOLD
404
NEGATIVE FEEDBACK CATEGORY ?
YES
NO
412
COMPUTE A NEGATIVE FEEDBACK SCORE FOR AN ITEM AS a*R^b, WHERE R IS THE NUMBER OF REASONS AND a AND b ARE CONSTANTS
406
FOR EACH CATEGORY IN WHICH THE ITEM APPEARS, COMPUTE A CATEGORY SCORE R^c, WHERE R IS THE NUMBER OF REASONS AND c IS A CONSTANT
408
ADD NOISE BY GENERATING A NORMAL DISTRIBUTION FOR EACH CATEGORY SCORE, WITH MEAN R AND STANDARD DEVIATION (N-R)^d, WHERE N IS THE MAXIMUM NUMBER OF REASONS AND d IS A CONSTANT
410
SAMPLE AN ADJUSTED CATEGORY SCORE FROM THE NORMAL DISTRIBUTION
414
SUM THE ADJUSTED CATEGORY SCORES AND THE NEGATIVE FEEDBACK SCORE FOR EACH ITEM TO ACHIEVE AN OVERALL ADJUSTED SCORE FOR EACH ITEM
END

FIG. 4

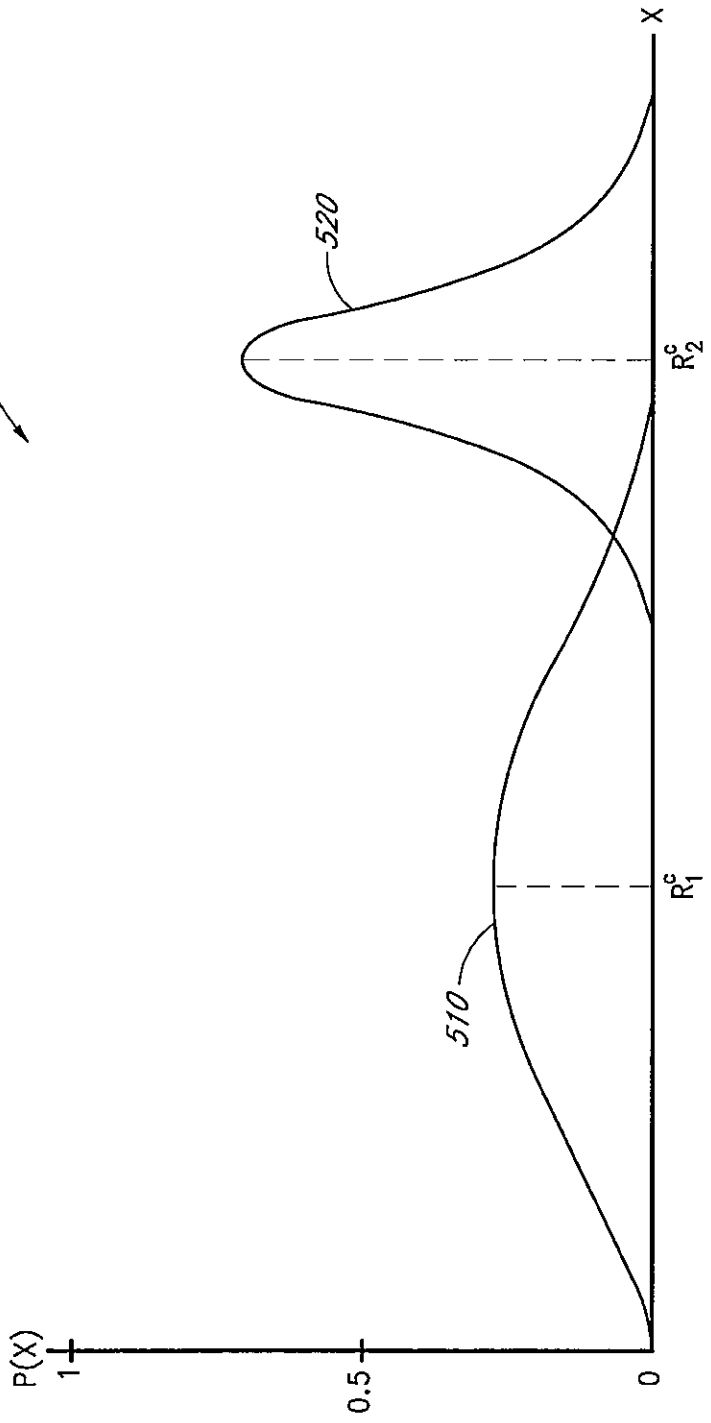


FIG. 5

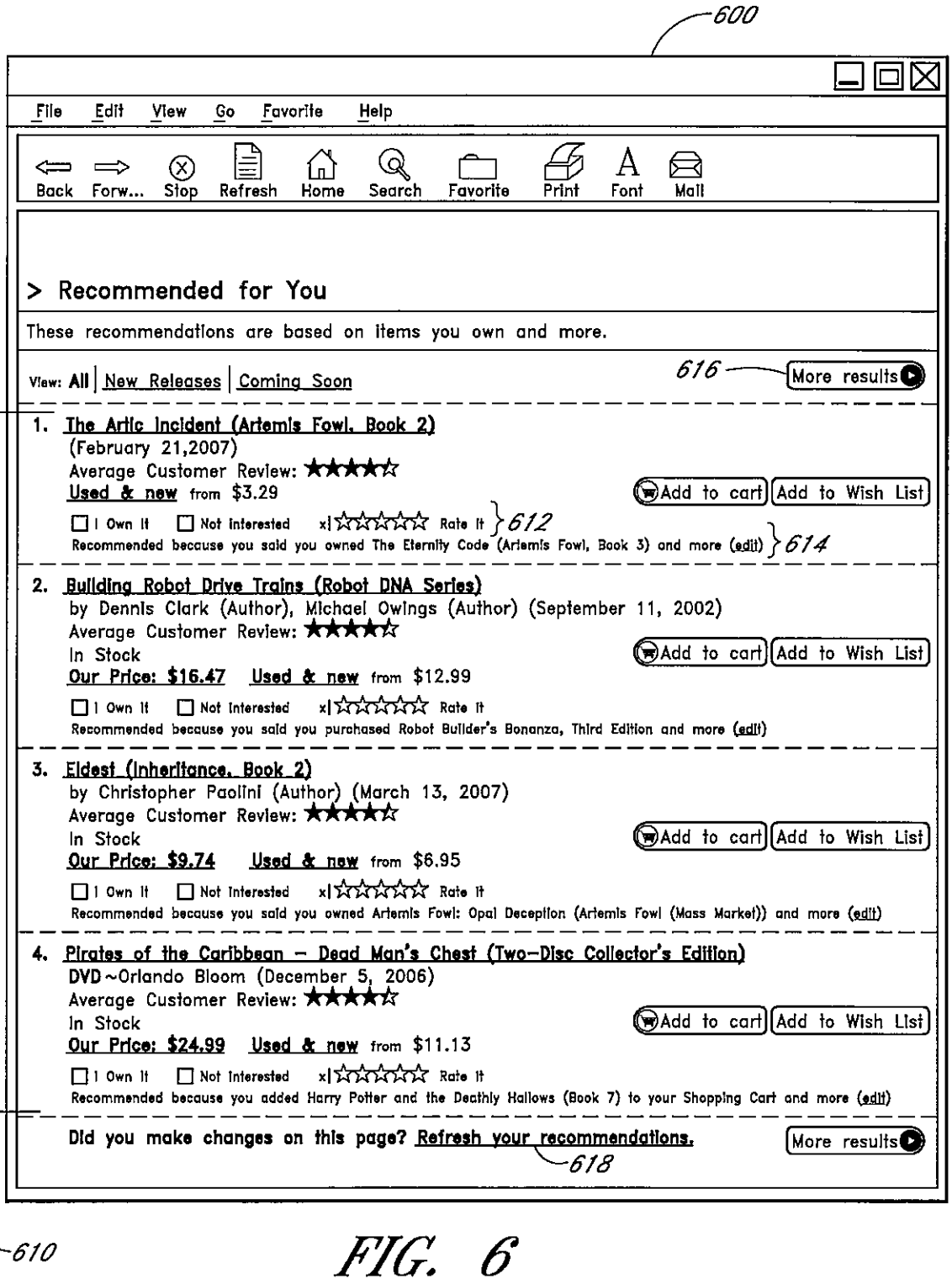

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Rate It
612
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Rate It
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610

FIG. 6

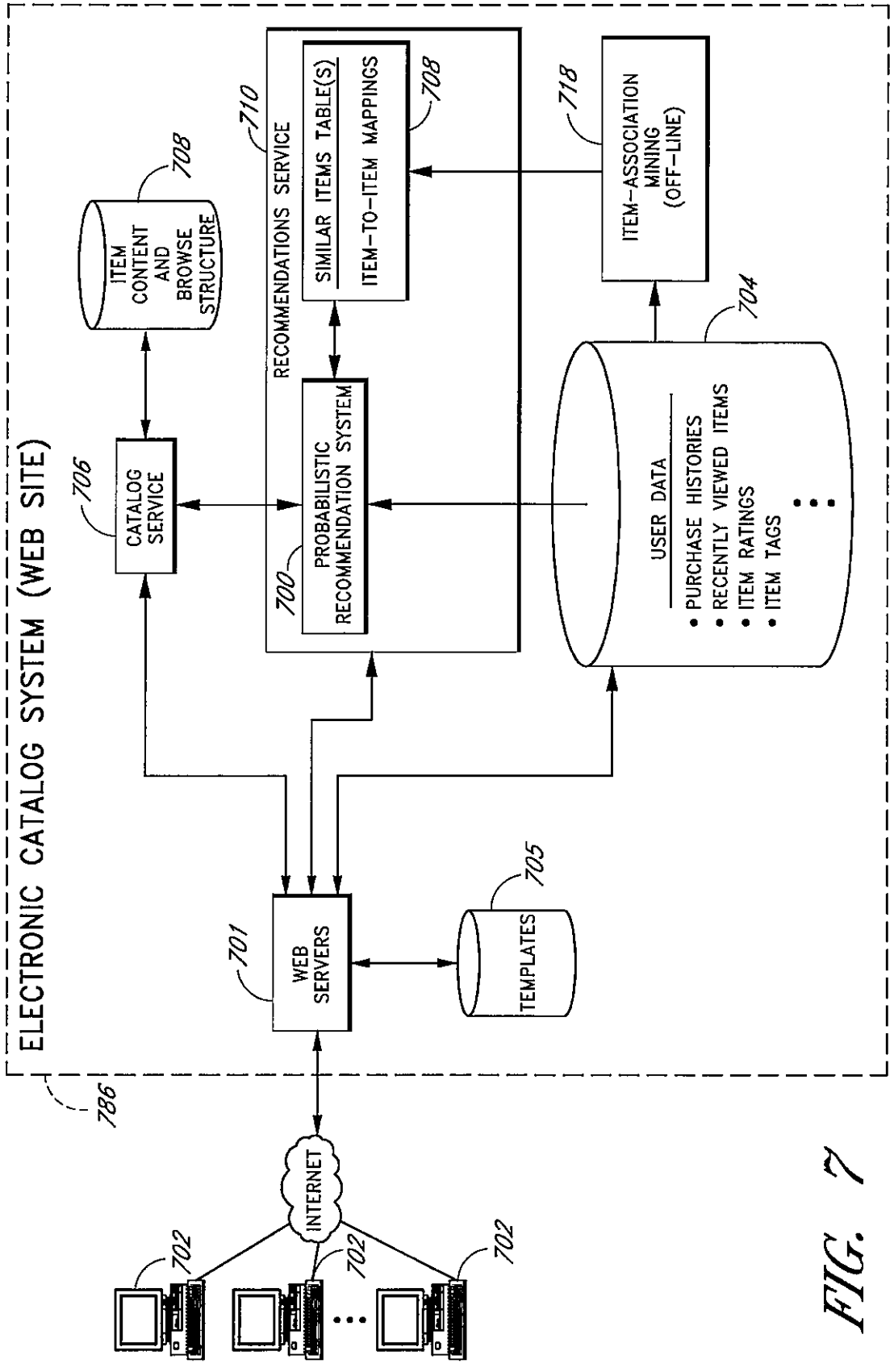

ELECTRONIC CATALOG SYSTEM (WEB SITE)
RECOMMENDATIONS SERVICE
SIMILAR ITEMS TABLE(S)
ITEM-TO-ITEM MAPPINGS
ITEM CONTENT AND BROWSE STRUCTURE
ITEM-ASSOCIATION MINING (OFF-LINE)
CATALOG SERVICE
PROBABILISTIC RECOMMENDATION SYSTEM
USER DATA
• PURCHASE HISTORIES
• RECENTLY VIEWED ITEMS
• ITEM RATINGS
• ITEM TAGS
WEB SERVERS
TEMPLATES
INTERNET
786
700
701
702
704
705
706
708
710
718

FIG. 7