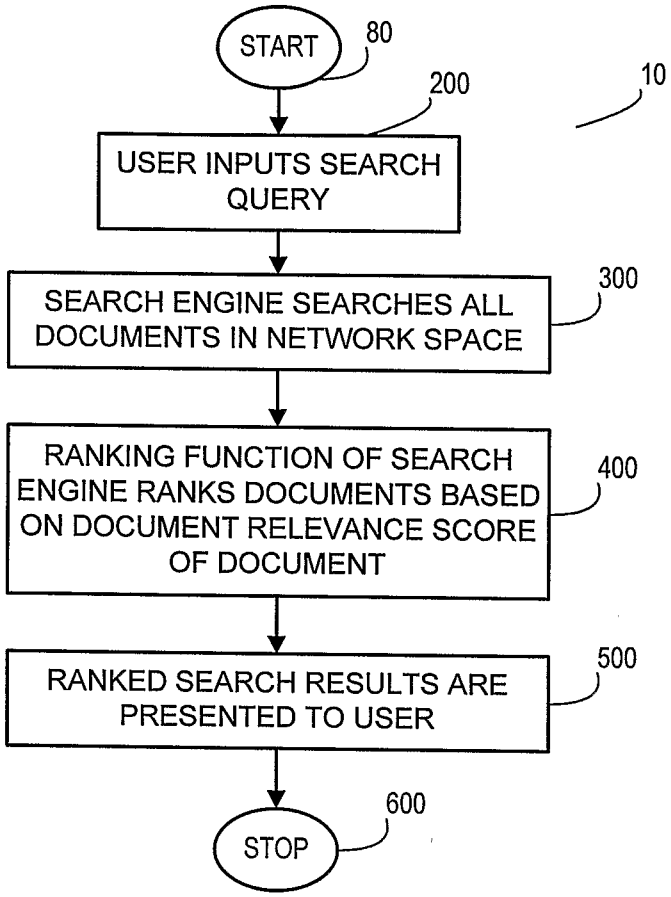

START
80
200
10
USER INPUTS SEARCH QUERY
300
SEARCH ENGINE SEARCHES ALL DOCUMENTS IN NETWORK SPACE
400
RANKING FUNCTION OF SEARCH ENGINE RANKS DOCUMENTS BASED ON DOCUMENT RELEVANCE SCORE OF DOCUMENT
500
RANKED SEARCH RESULTS ARE PRESENTED TO USER
600
STOP

FIG. 1

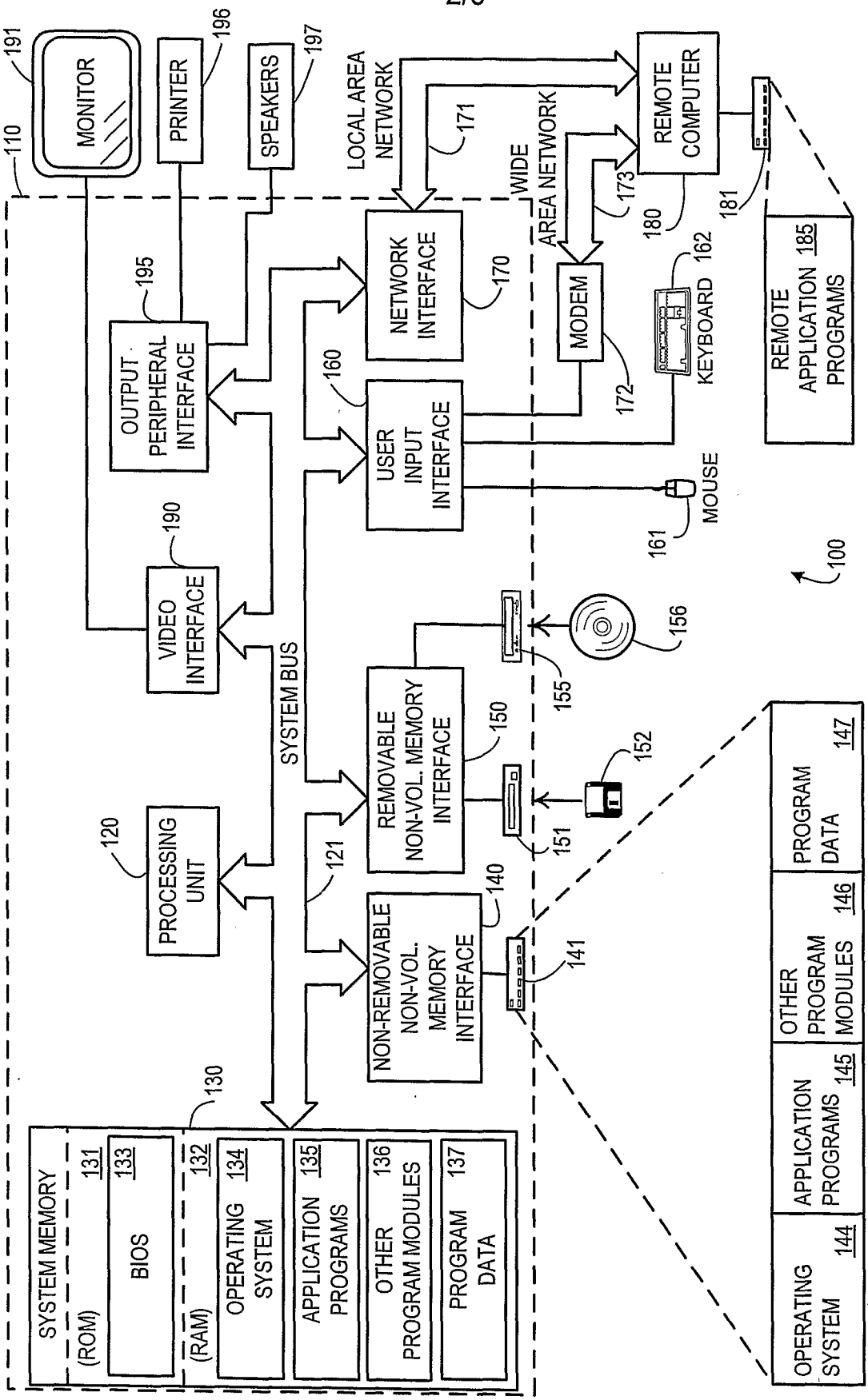

MONITOR
191
PRINTER
196
SPEAKERS
197
110
LOCAL AREA NETWORK
WIDE AREA NETWORK
171
173
REMOTE COMPUTER
180
181
OUTPUT PERIPHERAL INTERFACE
195
NETWORK INTERFACE
170
MODEM
172
KEYBOARD
162
REMOTE APPLICATION PROGRAMS
185
160
USER INPUT INTERFACE
MOUSE
161
VIDEO INTERFACE
190
100
SYSTEM BUS
156
155
REMOVABLE NON-VOL. MEMORY INTERFACE
150
152
151
PROCESSING UNIT
120
121
140
NON-REMOVABLE NON-VOL. MEMORY INTERFACE
141
PROGRAM DATA
147
OTHER PROGRAM MODULES
146
APPLICATION PROGRAMS
145
OPERATING SYSTEM
144
SYSTEM MEMORY
(ROM)
131
BIOS
133
(RAM)
132
OPERATING SYSTEM
134
APPLICATION PROGRAMS
135
OTHER PROGRAM MODULES
136
PROGRAM DATA
137
130

FIG. 2

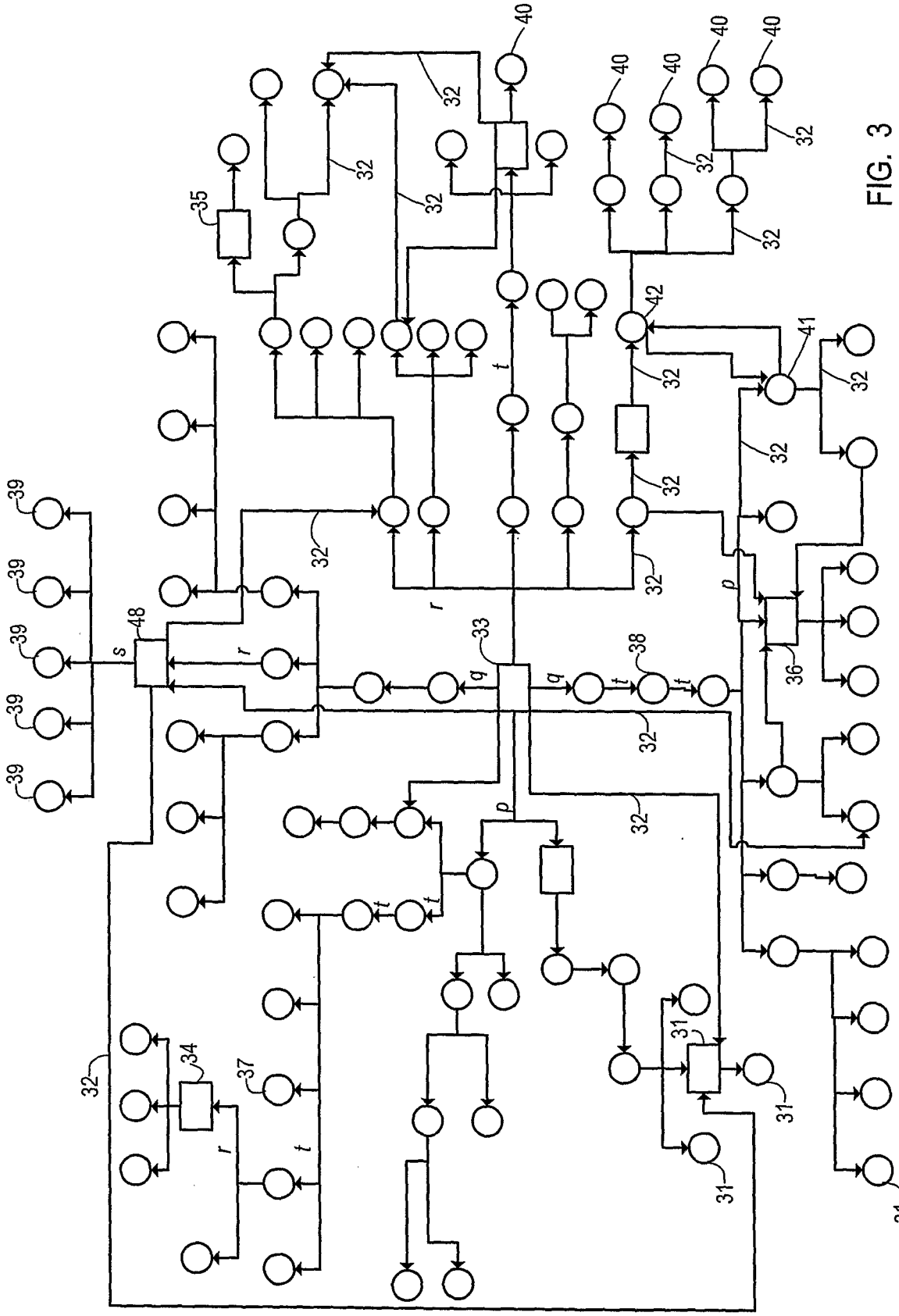


FIG. 3

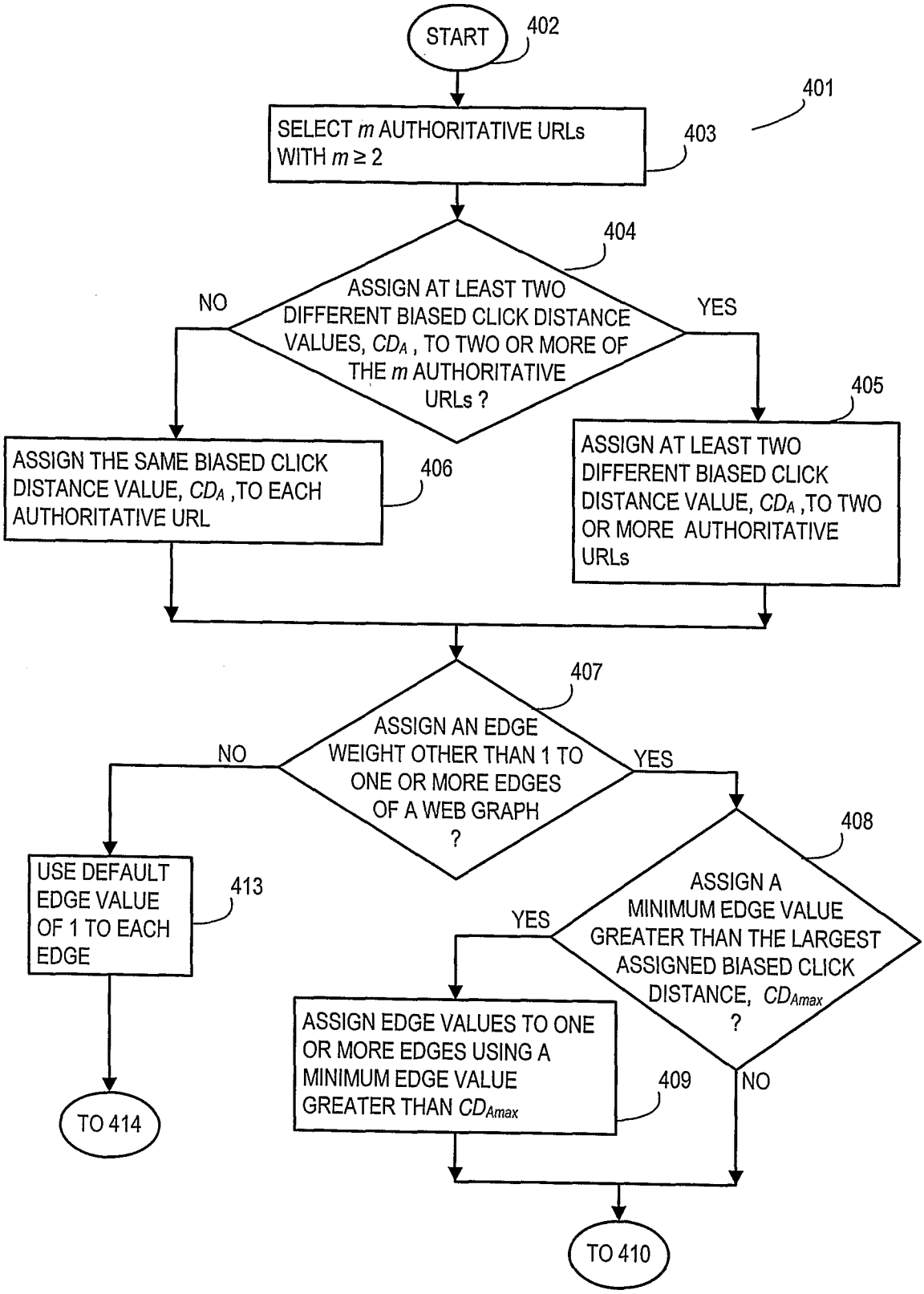

START
402
401
SELECT m AUTHORITATIVE URLs WITH m ≥ 2
403
404
ASSIGN AT LEAST TWO DIFFERENT BIASED CLICK DISTANCE VALUES, CDA , TO TWO OR MORE OF THE m AUTHORITATIVE URLs ?
NO
YES
405
ASSIGN THE SAME BIASED CLICK DISTANCE VALUE, CDA ,TO EACH AUTHORITATIVE URL
406
ASSIGN AT LEAST TWO DIFFERENT BIASED CLICK DISTANCE VALUE, CDA ,TO TWO OR MORE AUTHORITATIVE URLs
407
ASSIGN AN EDGE WEIGHT OTHER THAN 1 TO ONE OR MORE EDGES OF A WEB GRAPH ?
NO
YES
408
ASSIGN A MINIMUM EDGE VALUE GREATER THAN THE LARGEST ASSIGNED BIASED CLICK DISTANCE, CDAmax ?
YES
NO
USE DEFAULT EDGE VALUE OF 1 TO EACH EDGE
413
ASSIGN EDGE VALUES TO ONE OR MORE EDGES USING A MINIMUM EDGE VALUE GREATER THAN CDAmax
409
TO 414
TO 410

FIG. 4A

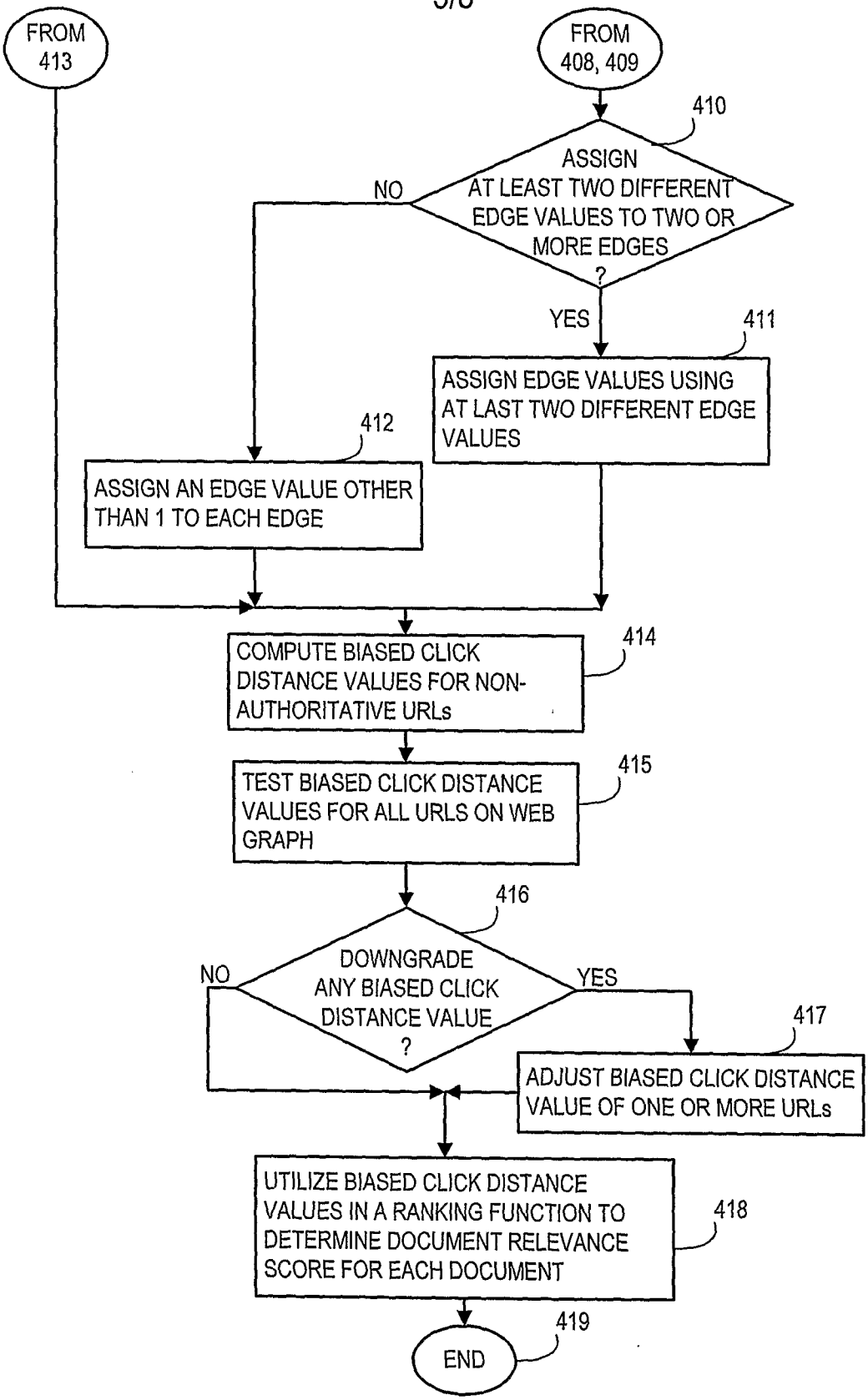

FROM 413
FROM 408, 409
410
ASSIGN AT LEAST TWO DIFFERENT EDGE VALUES TO TWO OR MORE EDGES ?
NO
YES
411
ASSIGN EDGE VALUES USING AT LAST TWO DIFFERENT EDGE VALUES
412
ASSIGN AN EDGE VALUE OTHER THAN 1 TO EACH EDGE
414
COMPUTE BIASED CLICK DISTANCE VALUES FOR NON-AUTHORITATIVE URLs
415
TEST BIASED CLICK DISTANCE VALUES FOR ALL URLS ON WEB GRAPH
416
DOWNGRADE ANY BIASED CLICK DISTANCE VALUE ?
NO
YES
417
ADJUST BIASED CLICK DISTANCE VALUE OF ONE OR MORE URLs
418
UTILIZE BIASED CLICK DISTANCE VALUES IN A RANKING FUNCTION TO DETERMINE DOCUMENT RELEVANCE SCORE FOR EACH DOCUMENT
419
END

FIG. 4B

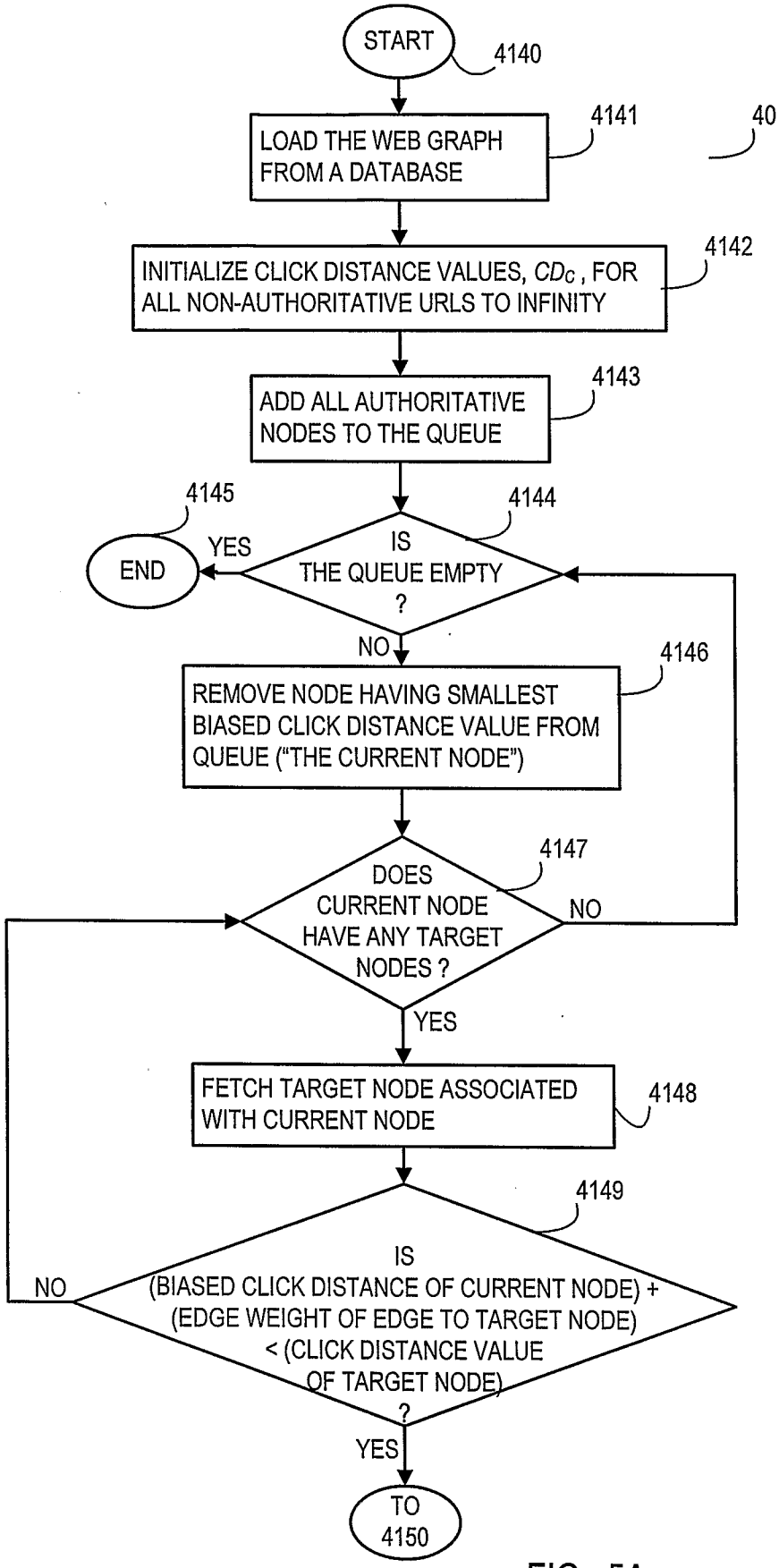

START
4140
LOAD THE WEB GRAPH FROM A DATABASE
4141
40
INITIALIZE CLICK DISTANCE VALUES, CD_C, FOR ALL NON-AUTHORITATIVE URLS TO INFINITY
4142
ADD ALL AUTHORITATIVE NODES TO THE QUEUE
4143
4145
4144
END
YES
IS THE QUEUE EMPTY ?
NO
4146
REMOVE NODE HAVING SMALLEST BIASED CLICK DISTANCE VALUE FROM QUEUE ("THE CURRENT NODE")
4147
DOES CURRENT NODE HAVE ANY TARGET NODES ?
NO
YES
FETCH TARGET NODE ASSOCIATED WITH CURRENT NODE
4148
4149
IS (BIASED CLICK DISTANCE OF CURRENT NODE) + (EDGE WEIGHT OF EDGE TO TARGET NODE) < (CLICK DISTANCE VALUE OF TARGET NODE) ?
NO
YES
TO 4150

FIG. 5A

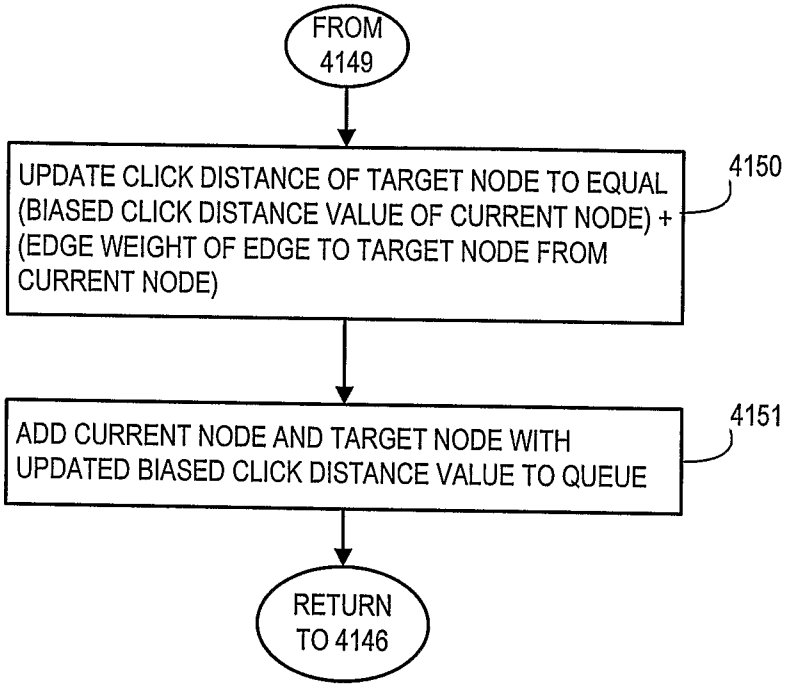

FROM 4149
UPDATE CLICK DISTANCE OF TARGET NODE TO EQUAL (BIASED CLICK DISTANCE VALUE OF CURRENT NODE) + (EDGE WEIGHT OF EDGE TO TARGET NODE FROM CURRENT NODE)
4150
ADD CURRENT NODE AND TARGET NODE WITH UPDATED BIASED CLICK DISTANCE VALUE TO QUEUE
4151
RETURN TO 4146

FIG. 5B

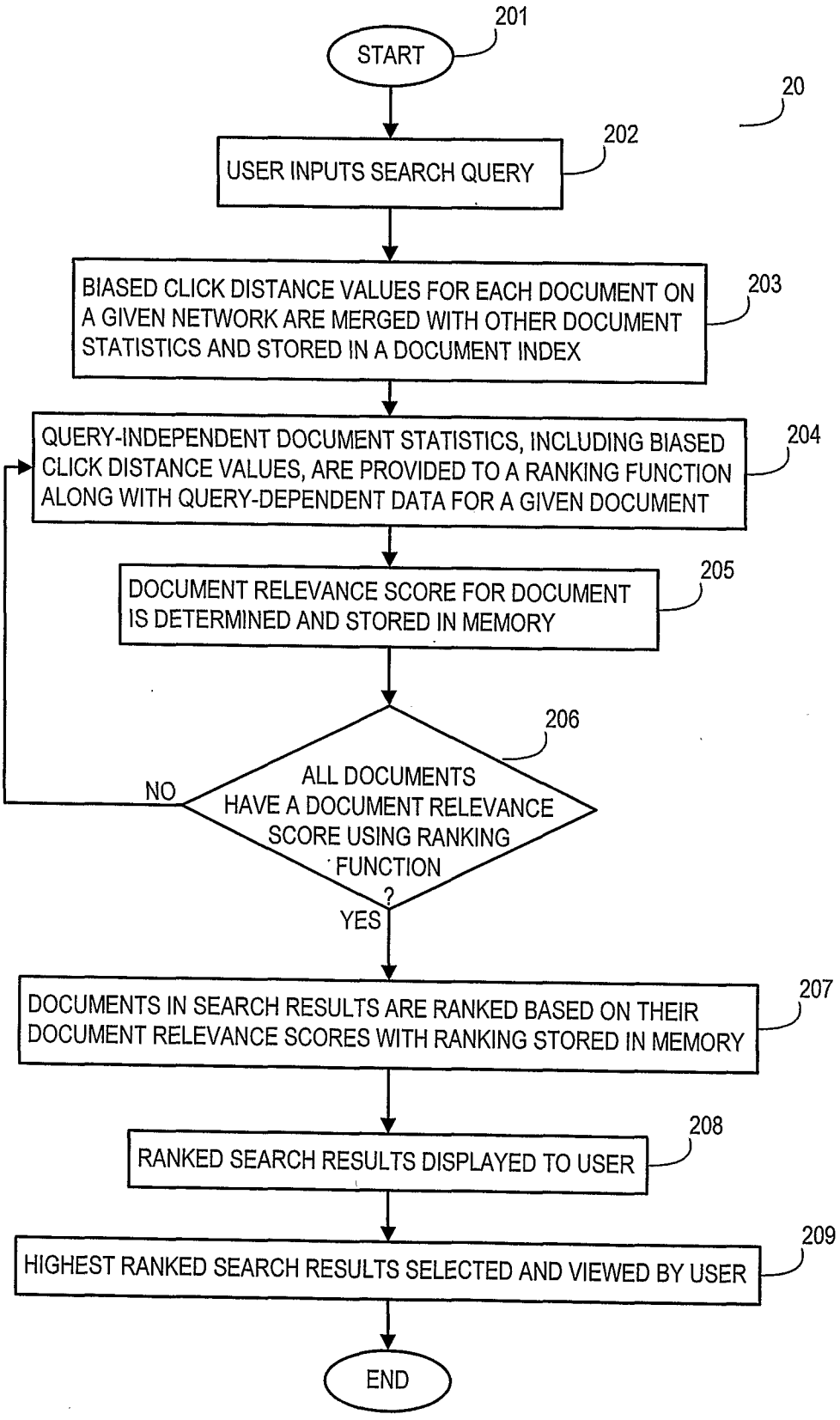

201
START
20
202
USER INPUTS SEARCH QUERY
BIASED CLICK DISTANCE VALUES FOR EACH DOCUMENT ON A GIVEN NETWORK ARE MERGED WITH OTHER DOCUMENT STATISTICS AND STORED IN A DOCUMENT INDEX
203
QUERY-INDEPENDENT DOCUMENT STATISTICS, INCLUDING BIASED CLICK DISTANCE VALUES, ARE PROVIDED TO A RANKING FUNCTION ALONG WITH QUERY-DEPENDENT DATA FOR A GIVEN DOCUMENT
204
DOCUMENT RELEVANCE SCORE FOR DOCUMENT IS DETERMINED AND STORED IN MEMORY
205
206
ALL DOCUMENTS HAVE A DOCUMENT RELEVANCE SCORE USING RANKING FUNCTION ?
NO
YES
DOCUMENTS IN SEARCH RESULTS ARE RANKED BASED ON THEIR DOCUMENT RELEVANCE SCORES WITH RANKING STORED IN MEMORY
207
RANKED SEARCH RESULTS DISPLAYED TO USER
208
HIGHEST RANKED SEARCH RESULTS SELECTED AND VIEWED BY USER
209
END

FIG. 6