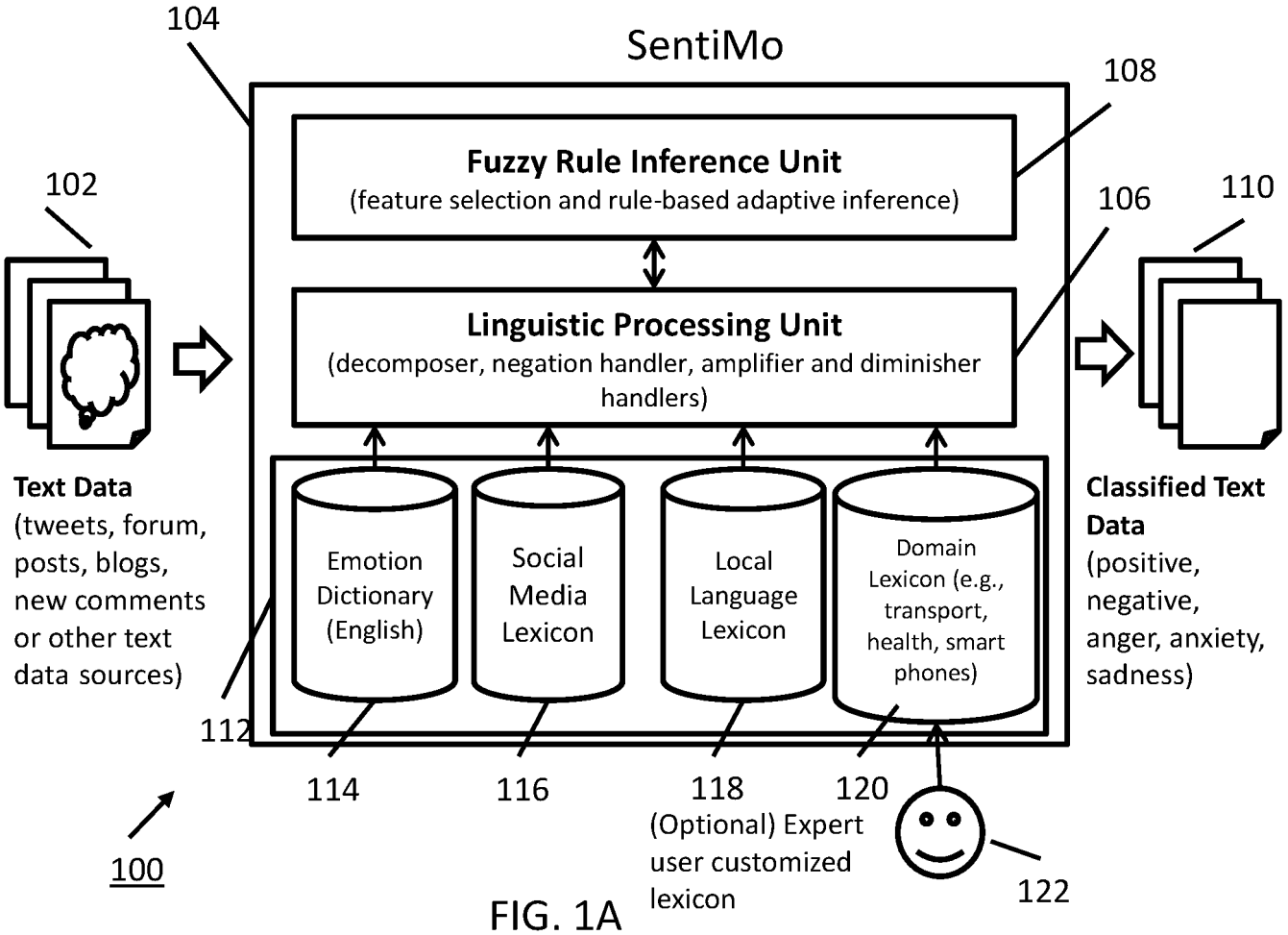

104
SentiMo
108
Fuzzy Rule Inference Unit
(feature selection and rule-based adaptive inference)
102
106
110
Linguistic Processing Unit
(decomposer, negation handler, amplifier and diminisher handlers)
Text Data
(tweets, forum, posts, blogs, new comments or other text data sources)
Emotion Dictionary (English)
Social Media Lexicon
Local Language Lexicon
Domain Lexicon (e.g., transport, health, smart phones)
Classified Text Data
(positive, negative, anger, anxiety, sadness)
112
114
116
118
120
(Optional) Expert user customized lexicon
122
100

FIG. 1A

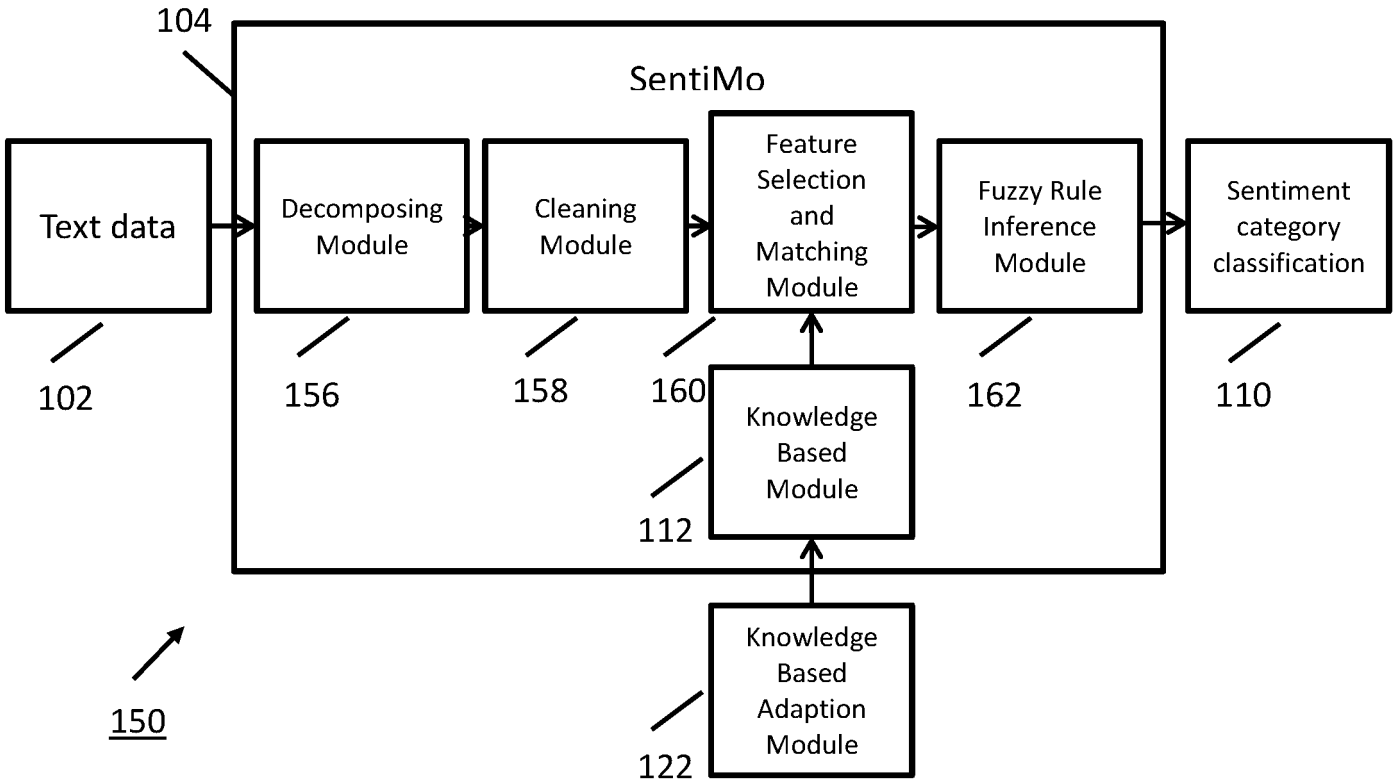

104
SentiMo
Text data
Decomposing Module
Cleaning Module
Feature Selection and Matching Module
Fuzzy Rule Inference Module
Sentiment category classification
102
156
158
160
162
110
Knowledge Based Module
112
Knowledge Based Adaption Module
122
150

FIG. 1B

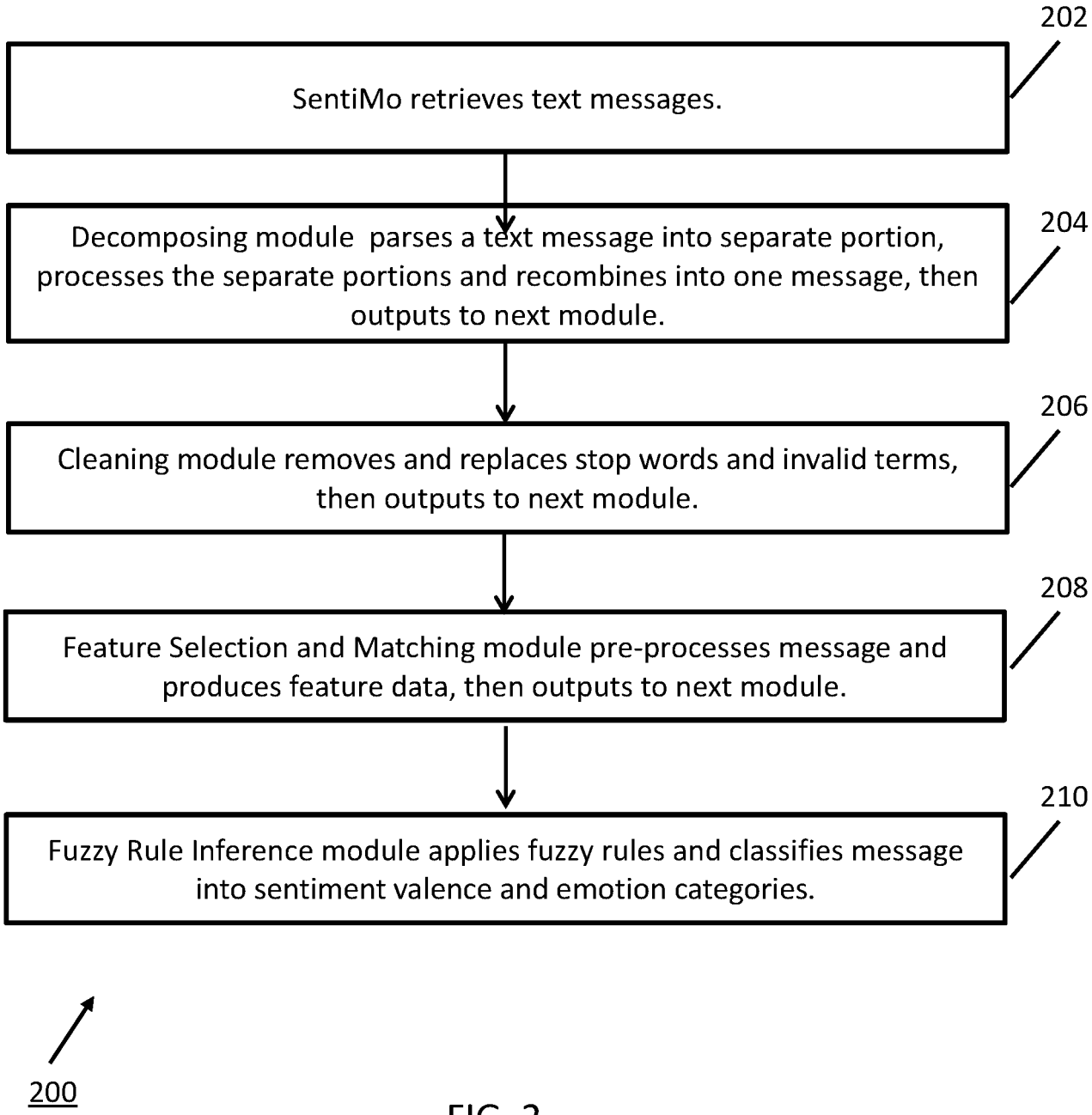

202
SentiMo retrieves text messages.
204
Decomposing module parses a text message into separate portion, processes the separate portions and recombines into one message, then outputs to next module.
206
Cleaning module removes and replaces stop words and invalid terms, then outputs to next module.
208
Feature Selection and Matching module pre-processes message and produces feature data, then outputs to next module.
210
Fuzzy Rule Inference module applies fuzzy rules and classifies message into sentiment valence and emotion categories.
200

FIG. 2

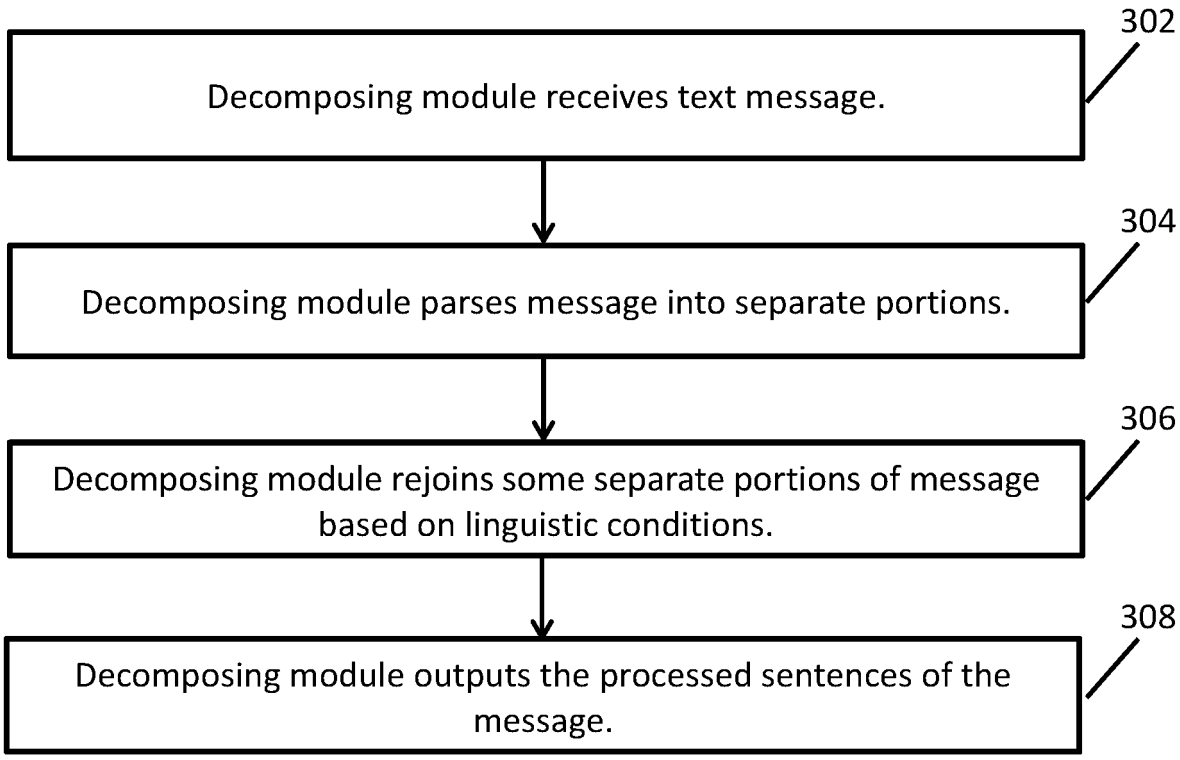

Decomposing module receives text message.
302
Decomposing module parses message into separate portions.
304
Decomposing module rejoins some separate portions of message based on linguistic conditions.
306
Decomposing module outputs the processed sentences of the message.
308
300

FIG. 3A

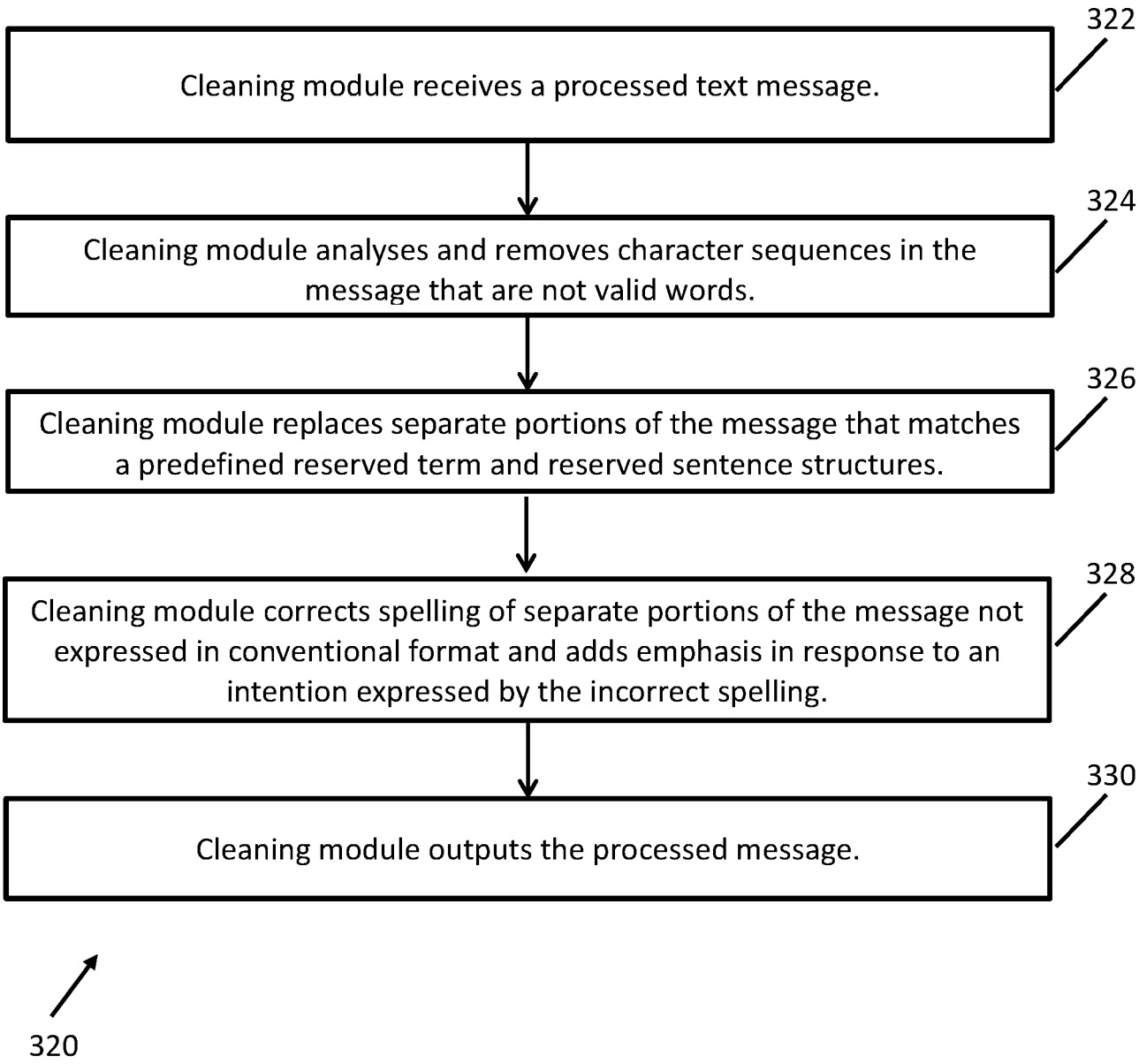

322
Cleaning module receives a processed text message.
324
Cleaning module analyses and removes character sequences in the message that are not valid words.
326
Cleaning module replaces separate portions of the message that matches a predefined reserved term and reserved sentence structures.
328
Cleaning module corrects spelling of separate portions of the message not expressed in conventional format and adds emphasis in response to an intention expressed by the incorrect spelling.
330
Cleaning module outputs the processed message.
320

FIG. 3B

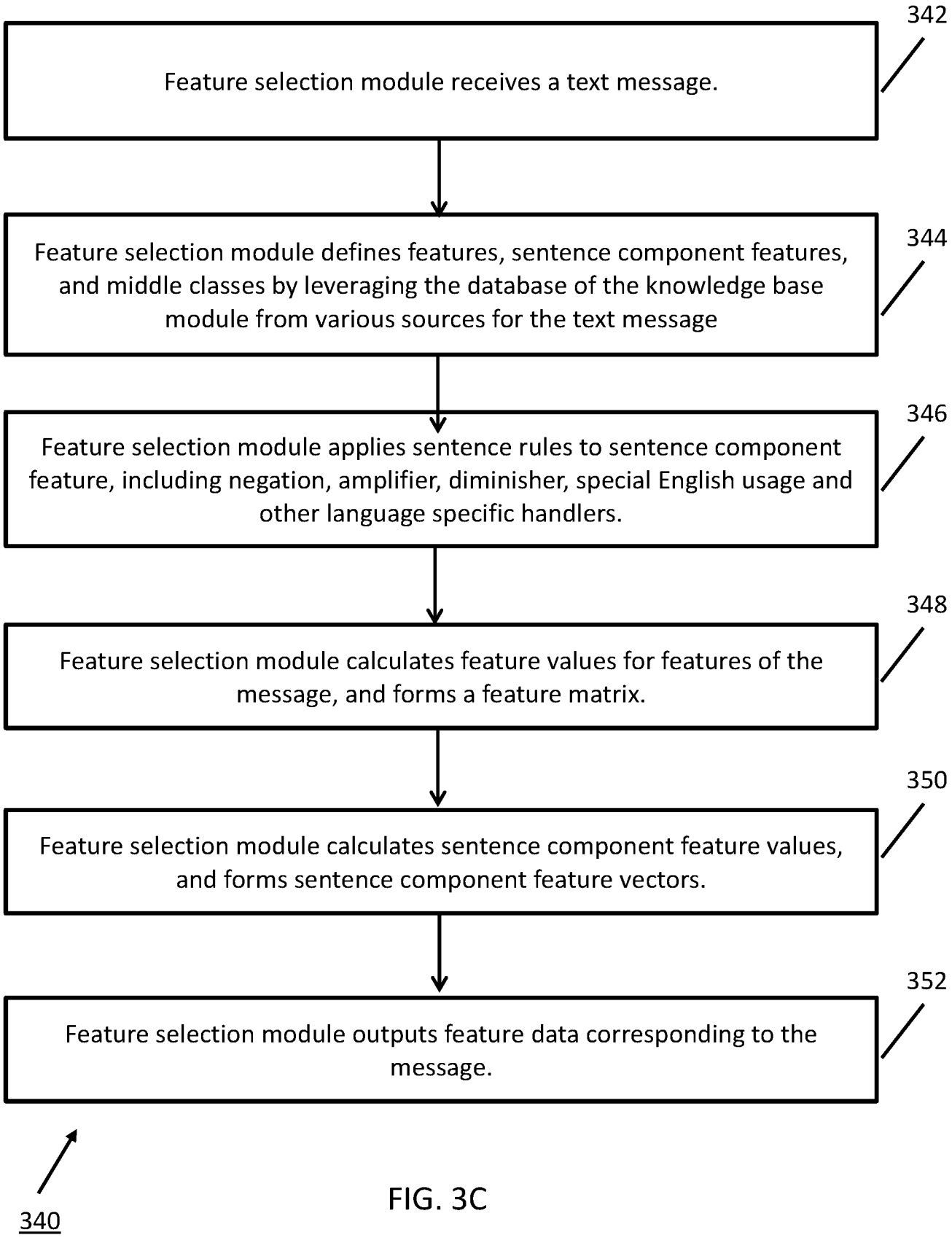

342
Feature selection module receives a text message.
344
Feature selection module defines features, sentence component features, and middle classes by leveraging the database of the knowledge base module from various sources for the text message
346
Feature selection module applies sentence rules to sentence component feature, including negation, amplifier, diminisher, special English usage and other language specific handlers.
348
Feature selection module calculates feature values for features of the message, and forms a feature matrix.
350
Feature selection module calculates sentence component feature values, and forms sentence component feature vectors.
352
Feature selection module outputs feature data corresponding to the message.
340

FIG. 3C

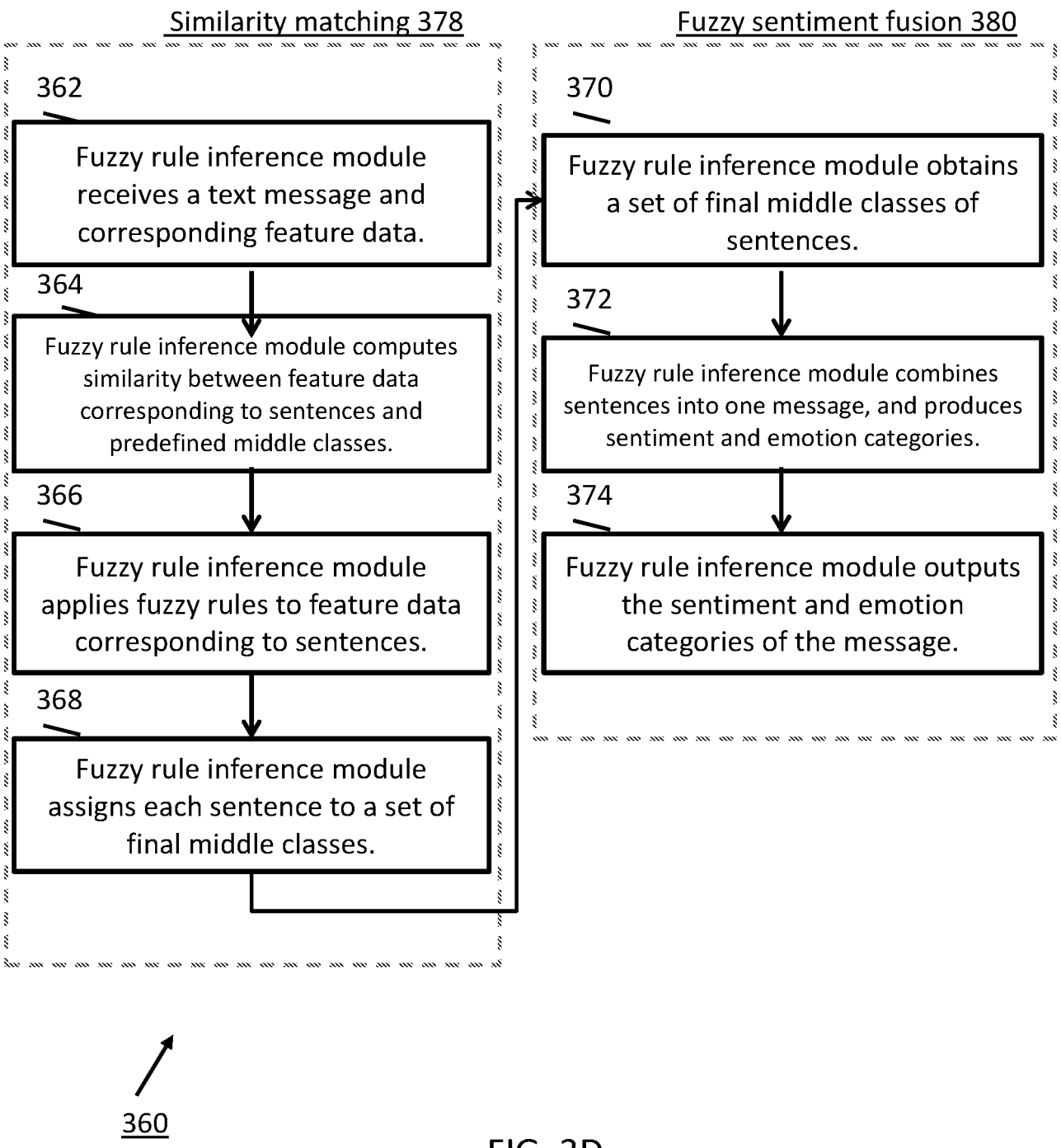

Similarity matching 378
362
Fuzzy rule inference module receives a text message and corresponding feature data.
364
Fuzzy rule inference module computes similarity between feature data corresponding to sentences and predefined middle classes.
366
Fuzzy rule inference module applies fuzzy rules to feature data corresponding to sentences.
368
Fuzzy rule inference module assigns each sentence to a set of final middle classes.
Fuzzy sentiment fusion 380
370
Fuzzy rule inference module obtains a set of final middle classes of sentences.
372
Fuzzy rule inference module combines sentences into one message, and produces sentiment and emotion categories.
374
Fuzzy rule inference module outputs the sentiment and emotion categories of the message.
360

FIG. 3D

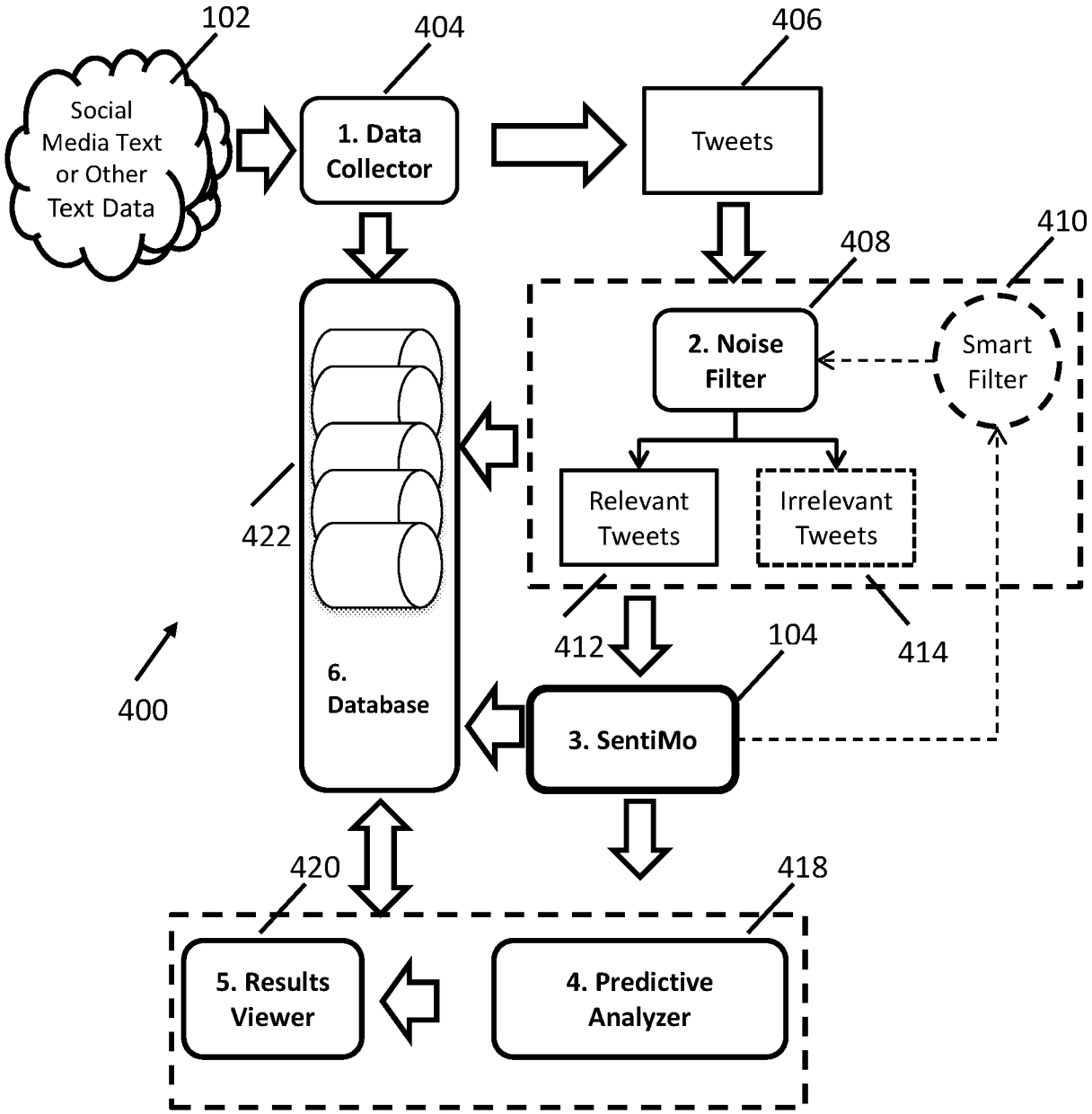

102
404
406
Social Media Text or Other Text Data
1. Data Collector
Tweets
410
408
2. Noise Filter
Smart Filter
422
Relevant Tweets
Irrelevant Tweets
412
414
104
400
6. Database
3. SentiMo
420
418
5. Results Viewer
4. Predictive Analyzer

FIG. 4

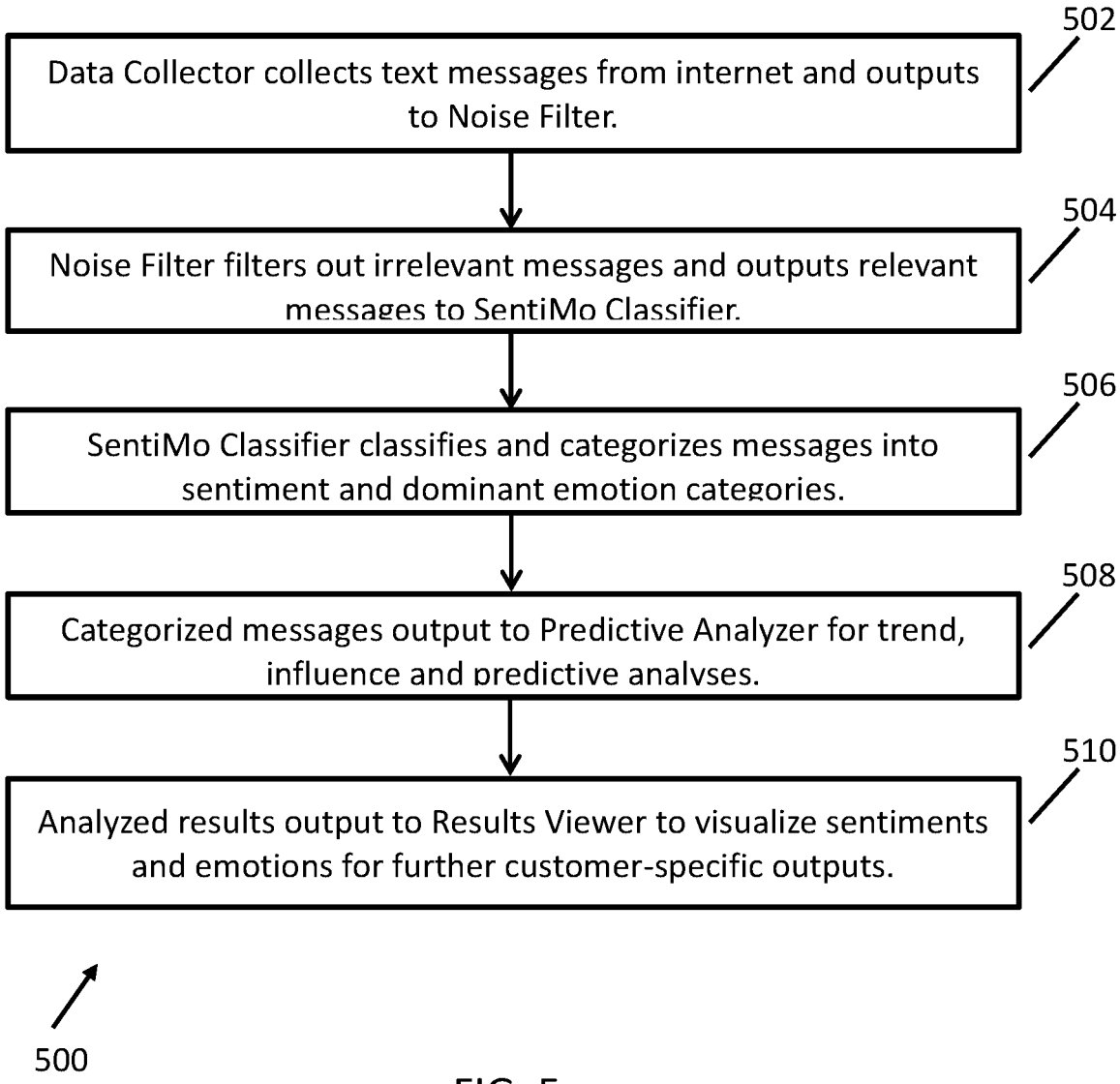

502
Data Collector collects text messages from internet and outputs to Noise Filter.
504
Noise Filter filters out irrelevant messages and outputs relevant messages to SentiMo Classifier.
506
SentiMo Classifier classifies and categorizes messages into sentiment and dominant emotion categories.
508
Categorized messages output to Predictive Analyzer for trend, influence and predictive analyses.
510
Analyzed results output to Results Viewer to visualize sentiments and emotions for further customer-specific outputs.
500

FIG. 5

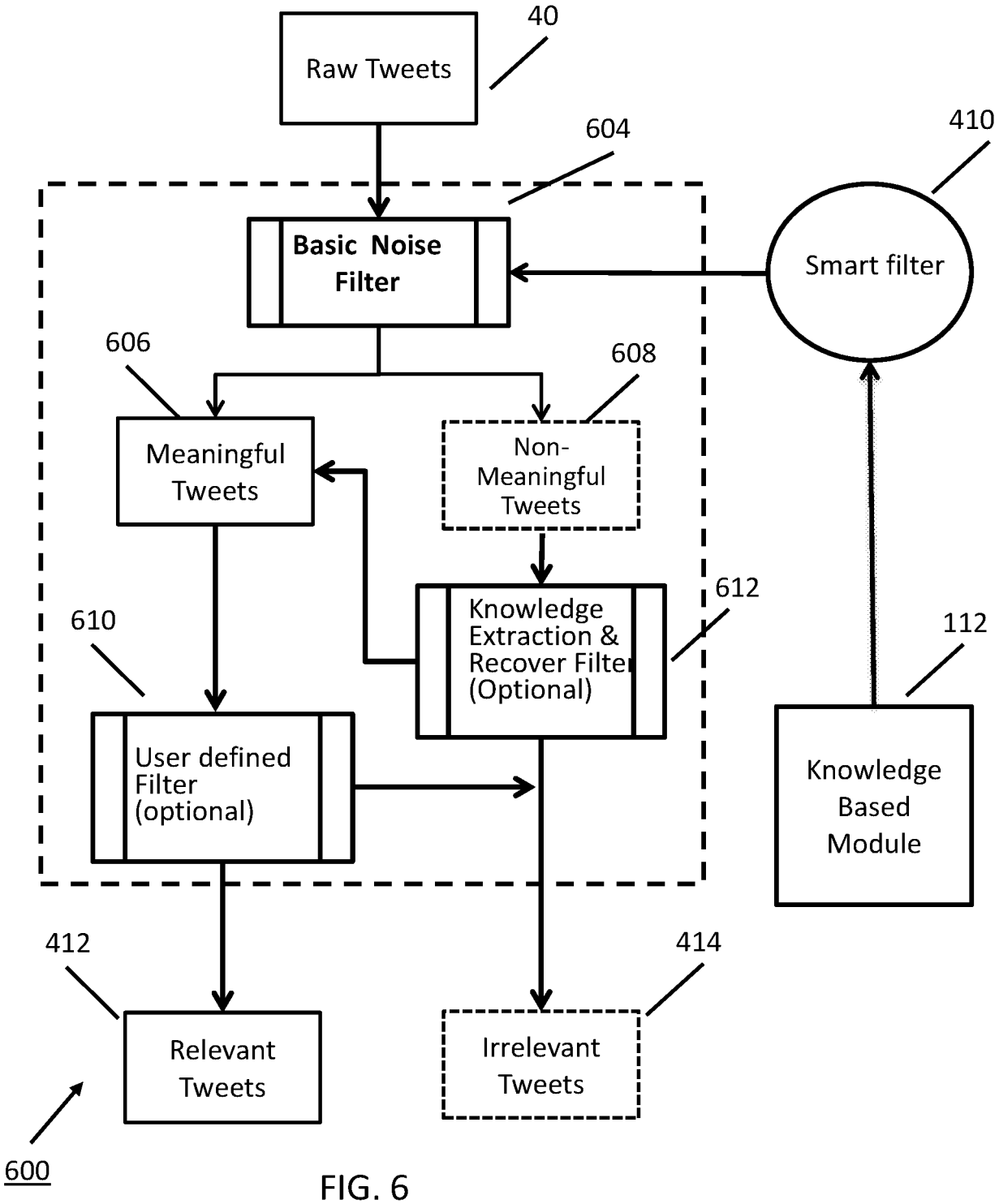

Raw Tweets
40
604
410
Basic Noise Filter
Smart filter
606
608
Meaningful Tweets
Non-Meaningful Tweets
612
610
Knowledge Extraction & Recover Filter (Optional)
112
User defined Filter (optional)
Knowledge Based Module
412
414
Relevant Tweets
Irrelevant Tweets
600

FIG. 6

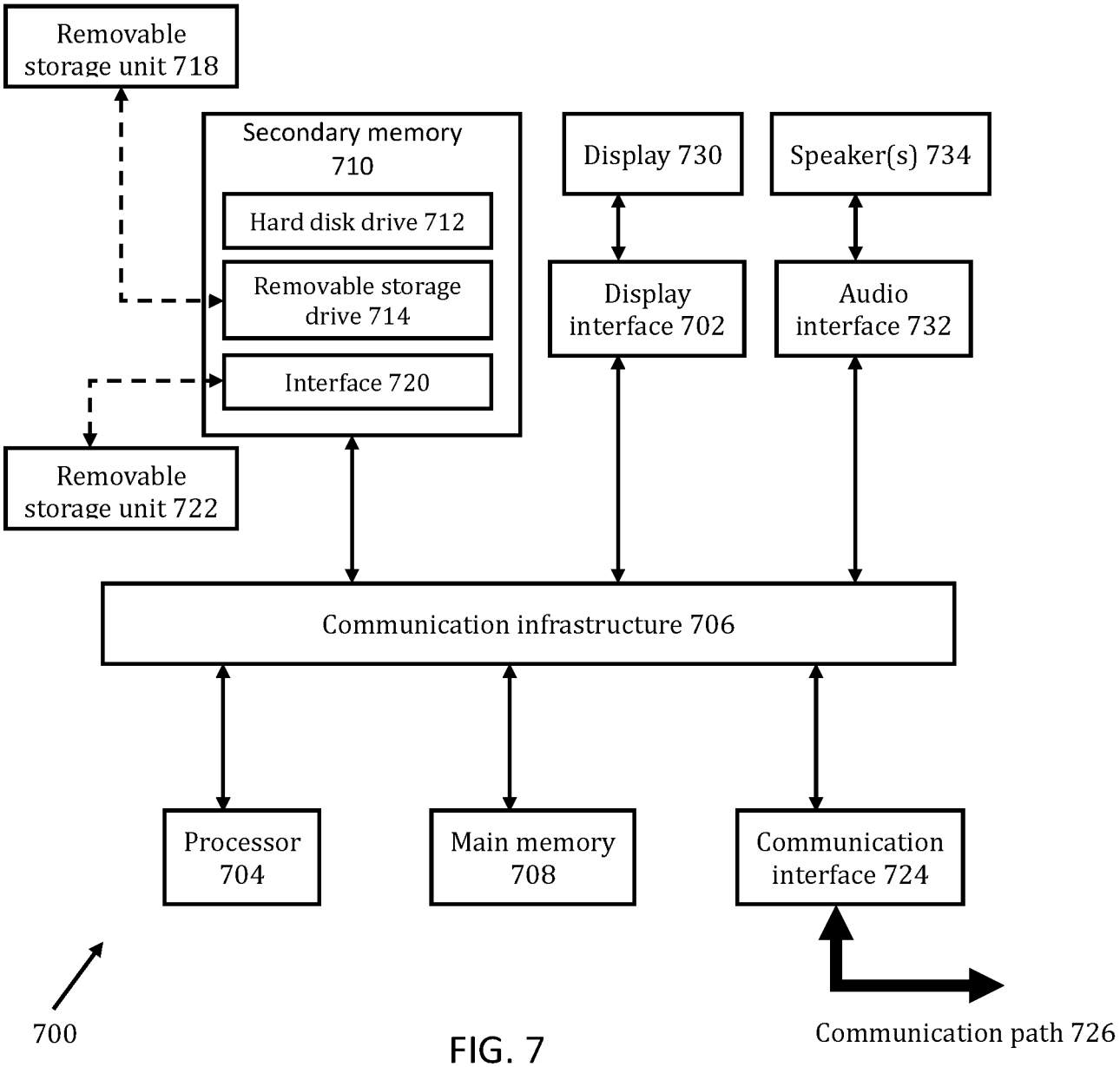

Removable storage unit 718
Secondary memory 710
Hard disk drive 712
Removable storage drive 714
Interface 720
Removable storage unit 722
Display 730
Speaker(s) 734
Display interface 702
Audio interface 732
Communication infrastructure 706
Processor 704
Main memory 708
Communication interface 724
700
Communication path 726

FIG. 7