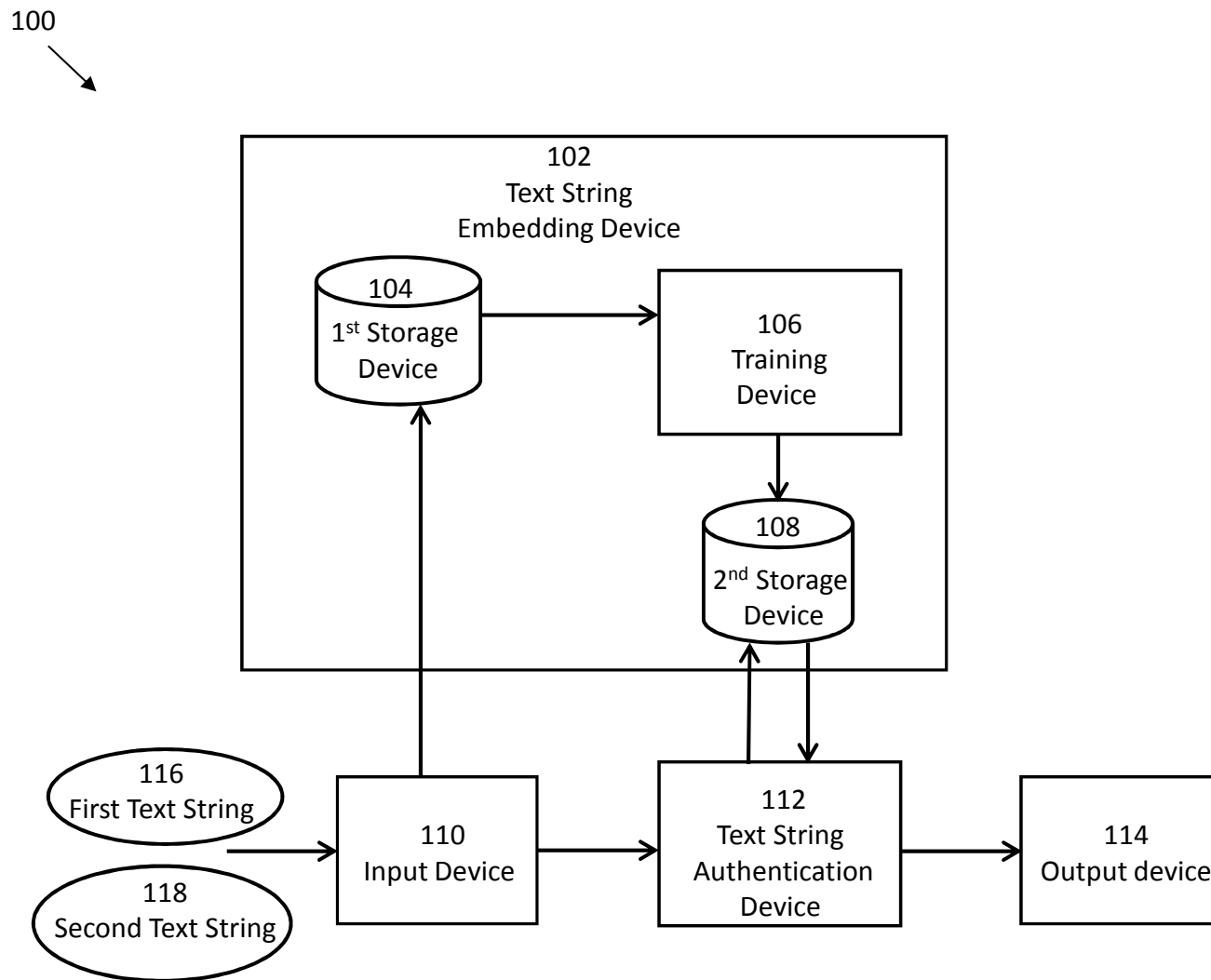


**Figure 1**

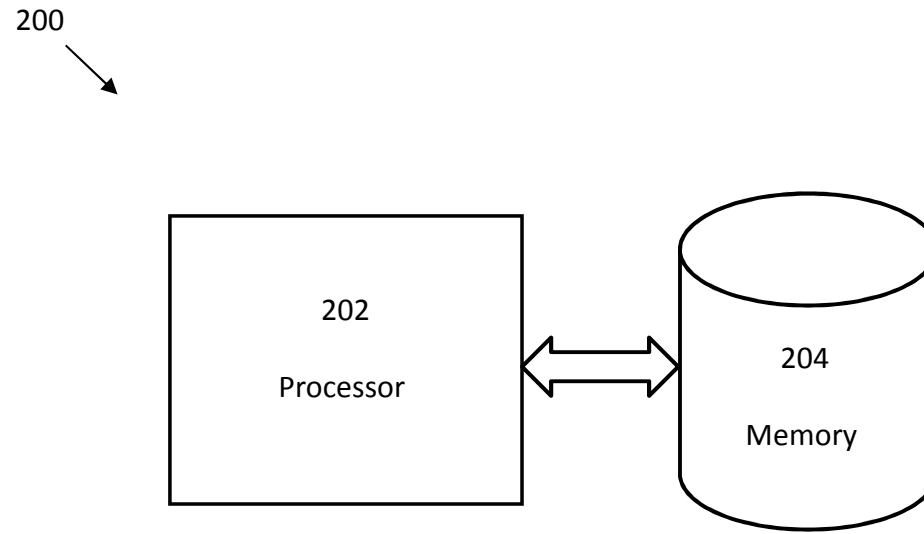


Figure 2

300



302

accessing stored history data comprising text strings and device identifiers, wherein each of the device identifiers is associated with one or more of the text strings



304

generating an embedding look-up table comprising a plurality of keys and a plurality of values, wherein the generating the embedding look-up table comprises:

- splitting the text strings in the history data into a plurality of words;

- generating a graph with the plurality of words and the device identifiers by:

- denoting each word in the plurality of words as a node of a first type;

- denoting each of the device identifiers as a node of a second type; and

- for each node of the second type, building edges by linking the node of the second type denoting one of the device identifiers to ones of the nodes of the first type, the linked ones of the nodes of the first type denoting words that are comprised in one or more of the text strings associated with the one of the device identifiers;

- training an embedding model using the generated graph; and constructing the embedding look-up table based on the trained embedding model, wherein each of the plurality of keys of the embedding look-up table comprises one of the nodes of the first type and the nodes of the second type, and wherein each of the plurality of values of the embedding look-up table comprises a vector corresponding to the one of the nodes of the first type and the nodes of the second type

Figure 3

400 →

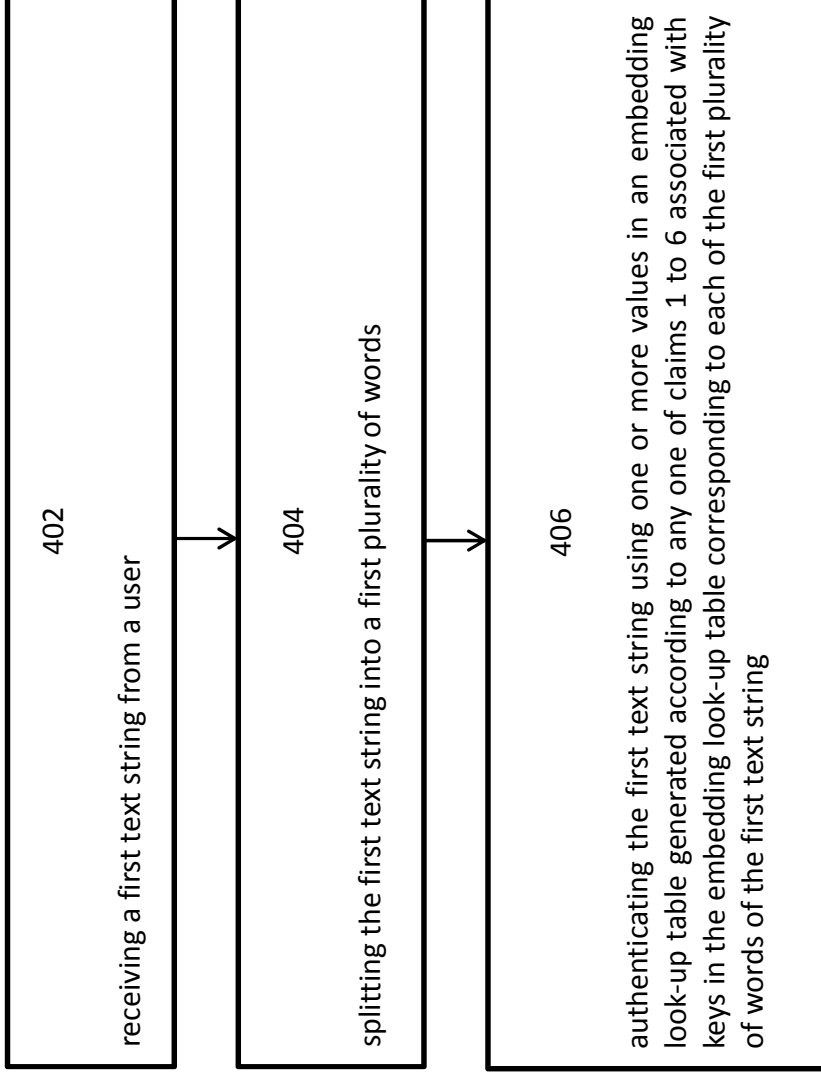


Figure 4

500



History Data			
Address Number	Device identifier	Address	Split words
#1	device 1	Bishan Block 129 Singapore 570129	Bishan Block 129 Singapore 570129
#2	device 2	Bishan Block 131 06-02 Singapore 570131	Bishan Block 131 06-02 Singapore 570131
#3	device 1	Bishan Blk 129 SG	Bishan Blk 129 SG
...	...	...	...

Figure 5

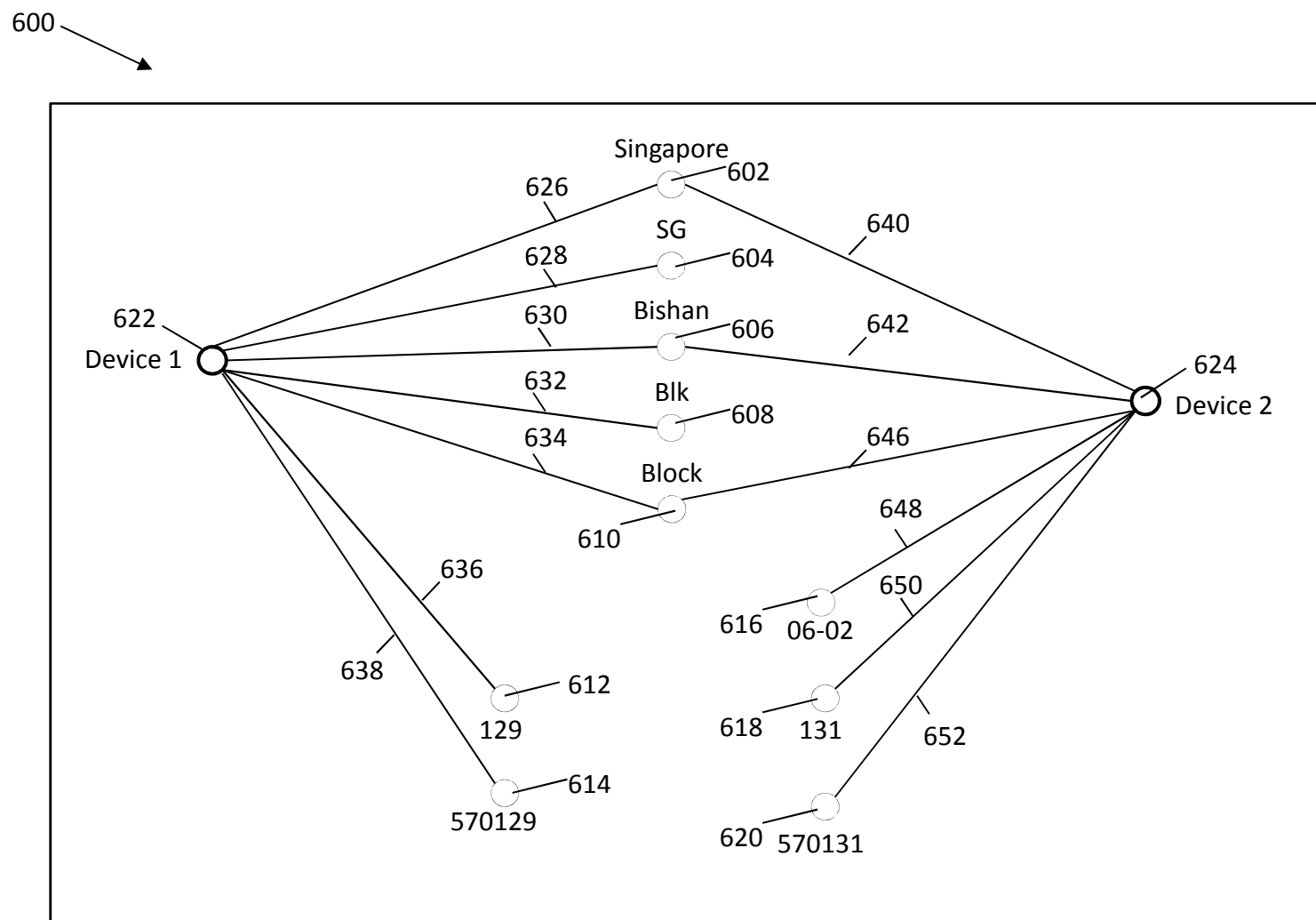
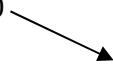


Figure 6

700 

Embedding Look-up Table	
Node (Key)	Vector (Value)
device 1	vector_device1
device 2	vector_device2
Singapore	vector_Singapore
SG	vector_SG
Bishan	vector_Bishan
Blk	vector_Blk
Block	vector_Block
129	vector_129
131	vector_131
570129	vector_570129
570131	vector_570131
06-02	vector_06-02
...	...
unknown words	vector UNK

Figure 7

