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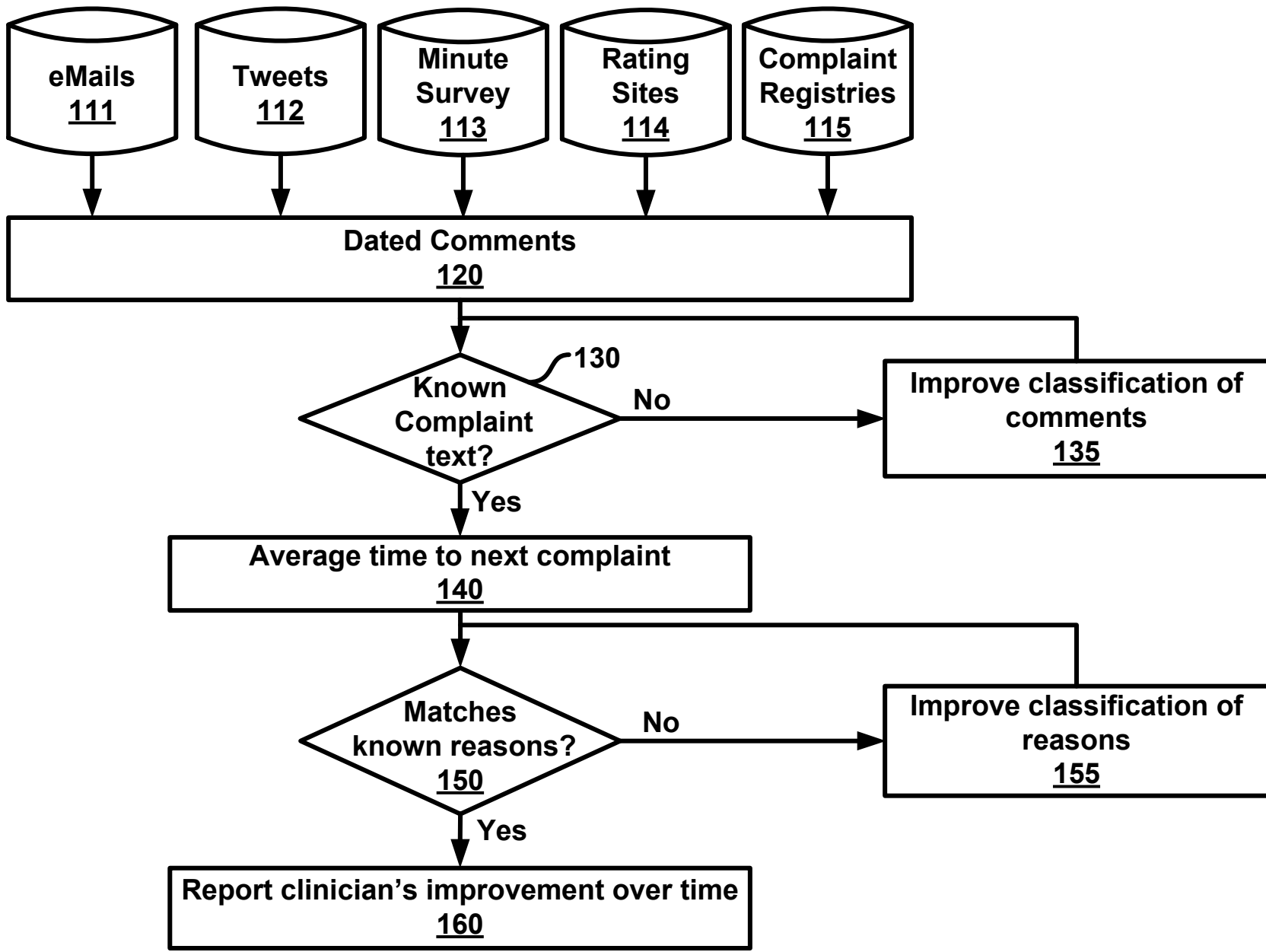


FIG. 1

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Comments	Complaint/Praise	Complaint Date
Very <u>KNOWLEDGABLE</u> <u>doctor</u>	↑	Jan. 01, 2012 reclassify
The <u>staff</u> were so <u>helpful</u>		Jan. 01, 2012 reclassify
I had to <u>wait</u> a <u>long time</u>	↓	Jan. 01, 2012 reclassify
The <u>doctor</u> was <u>not helpful</u>	↓	Jan. 01, 2012 reclassify
Nothing but <u>GOOD THINGS</u>	↑	Dec. 31, 2011 reclassify

FIG. 2

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Title: Sentiment Analyzer
Inventor: Farrokh Alemi
Docket No.: 1048-1U

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Consecutive Dissatisfied Patients

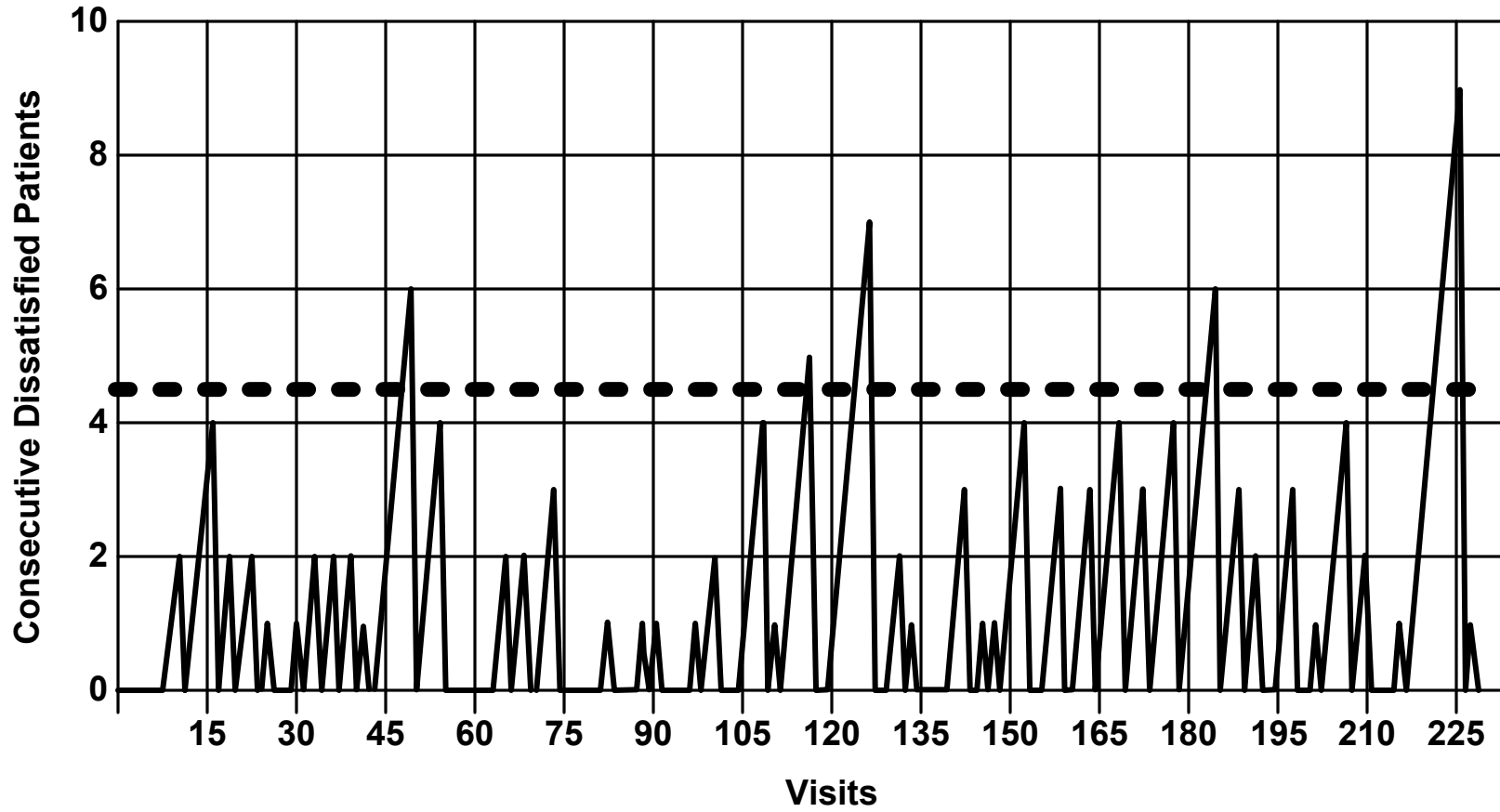


FIG. 3



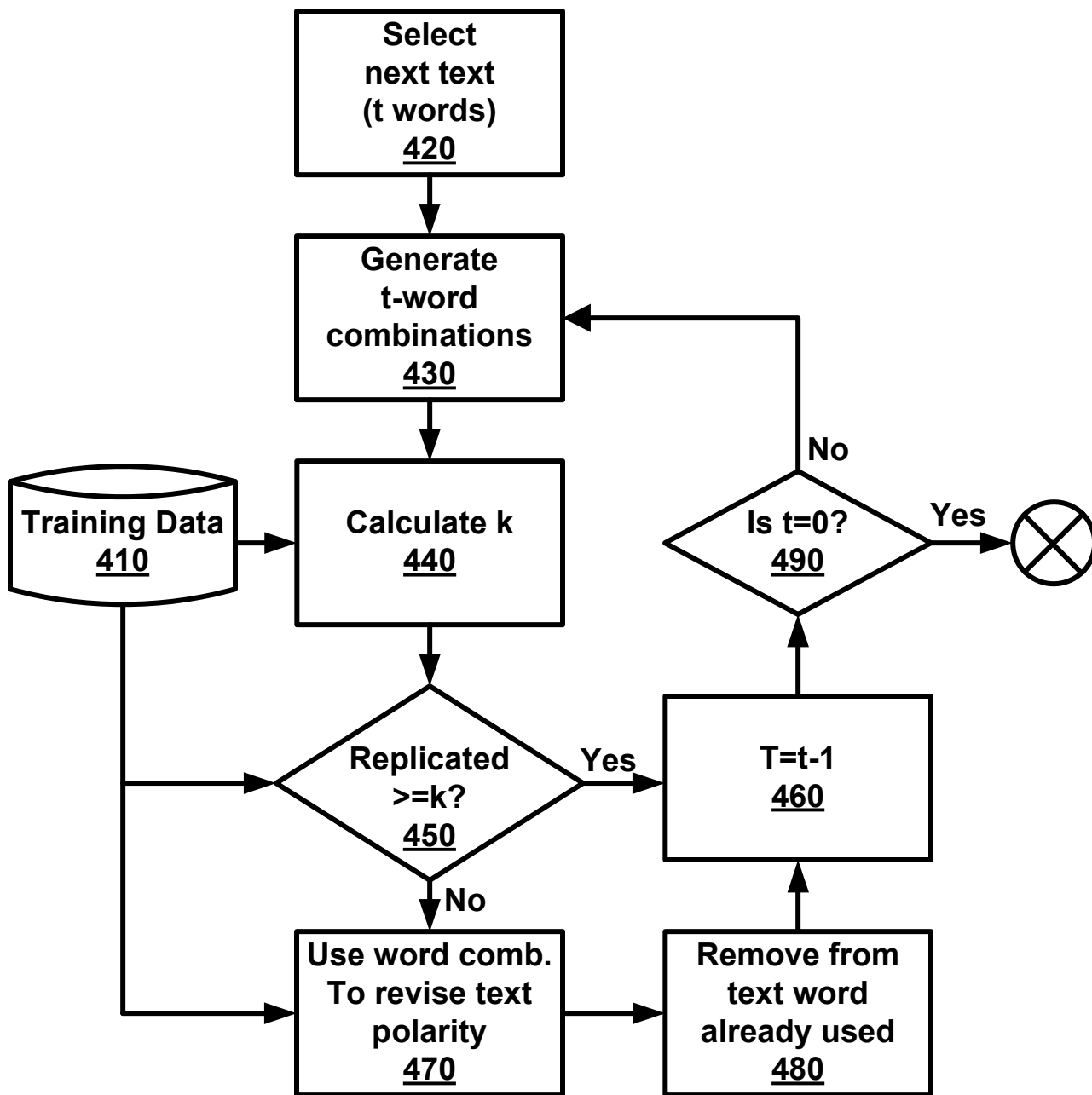


FIG. 4



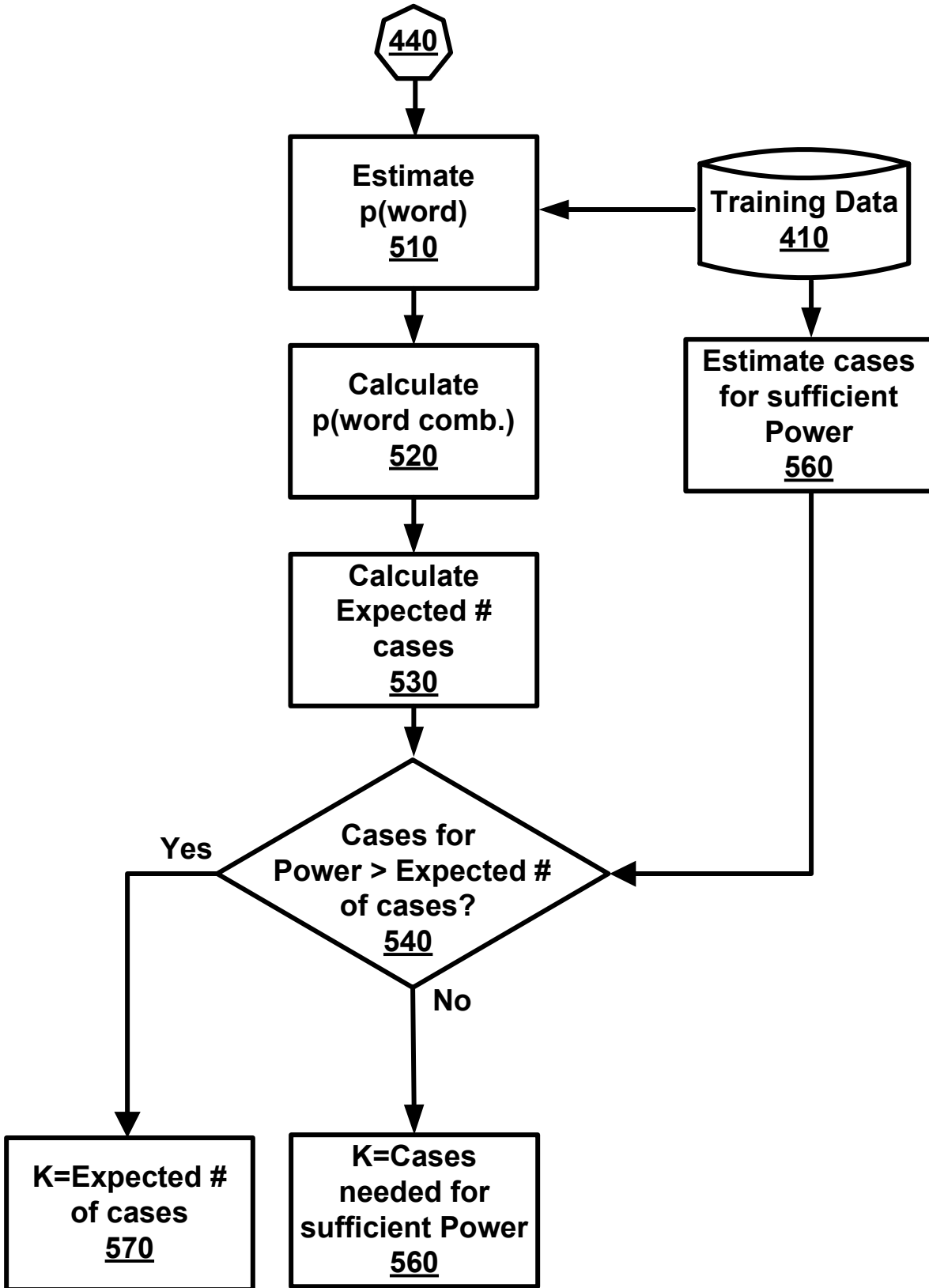


FIG. 5



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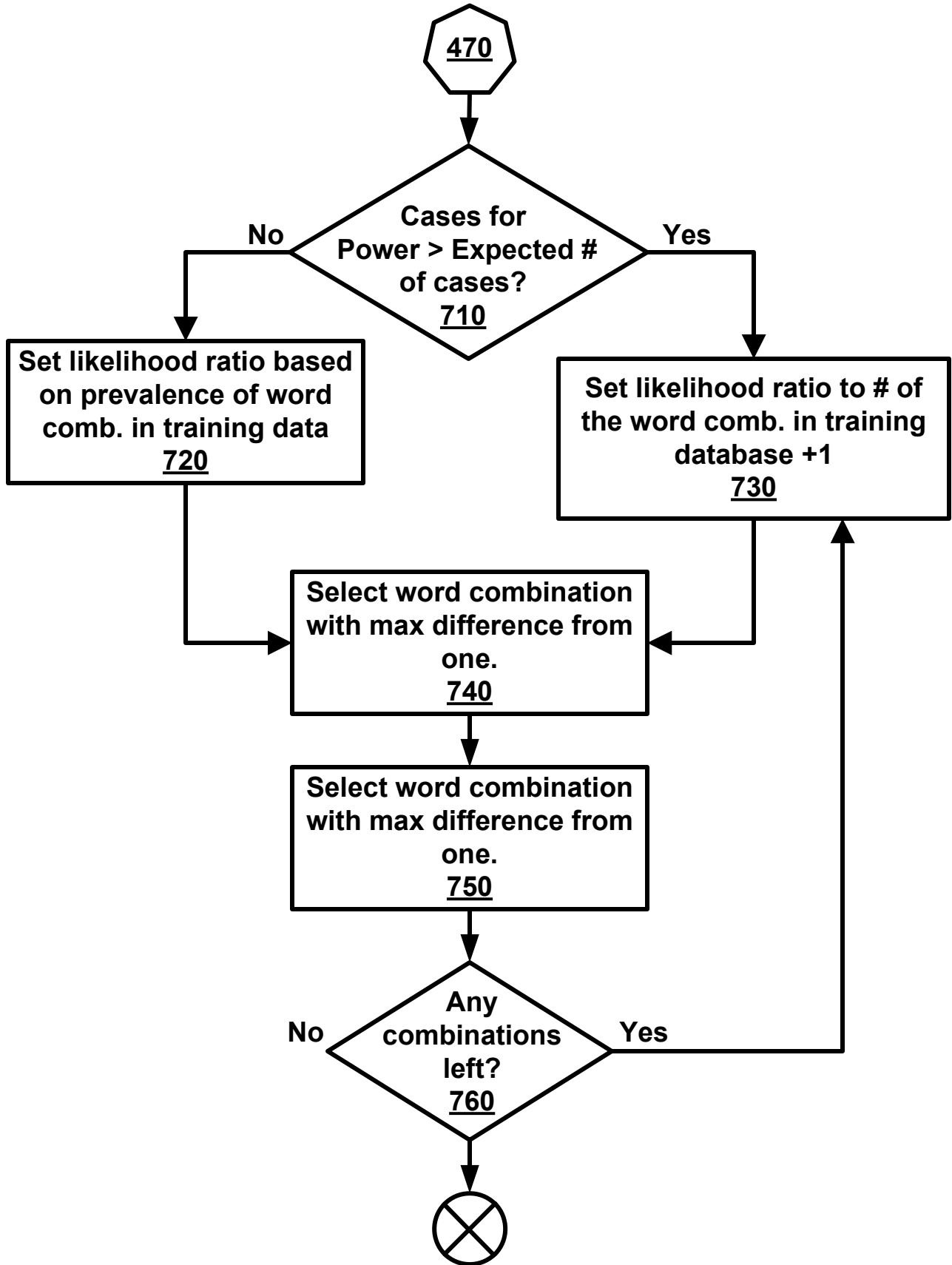


FIG. 6

**Longer but less frequent word combination preferred
to shorter but more frequent word combination**

Case	Words		Polarity	Word combination	Likelihood ratio	Number of Words
	Not	Happy				
1		+	+	Happy	$= \frac{1/1}{9/9} = .11$	1
2		+	+			
3	+	+	-			
4		+	+	Not happy	$= \frac{1/1}{0/9} = \infty$	2
5		+	+			
6		+	+			
7		+	+			
8		+	+			
9		+	+			
10		+	+			

FIG. 7

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Prevalence of Word Combination in Training Set				
		Word Combination X_1, X_2, \dots, X_t		
		Present	Absent	Total
$Y_j = 1$	Success	$a = \sum_j Y_j m_{v,j}$	$b = \sum_j Y_j (1 - m_{v,j})$	<u>$a+b$</u>
$Y_j = 0$	Failure	$c = \sum_j (1 - Y_j) m_{v,j}$	$d = \sum_j (1 - Y_j) (1 - m_{v,j})$	<u>$c+d$</u>
Total		<u>$a+c$</u>	<u>$b+d$</u>	<u>$g=a+b+c+d$</u>

FIG. 8A

Prevalence of Word Combination in Training Set Based on Revised Definition of Match				
		Word Combination X_1, X_2, \dots, X_t		
		Present	Absent	Total
$Y_j = 1$	Success	$a' = \sum_j S_{v,j} Y_j m_{v,j}$	$b' = \sum_j S_{v,j} Y_j (1 - m_{v,j})$	$a' + b'$
$Y_j = 0$	Failure	$c' = \sum_j S_{v,j} (1 - Y_j) m_{v,j}$	$d' = \sum_j S_{v,j} (1 - Y_j) (1 - m_{v,j})$	$c' + d'$
Total		$a' + c'$	$b' + d'$	

FIG. 8B

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A Numerical Example

Sentences in Training Set	j	$m_{v,j}$	$i_{v,j}$	$o_{v,j}$	$S_{v,j}$	Y_j
No one was examining patient on Wednesday	1	0	2	7	0.00	0
Patient had no bladder control.	2	0	5	4	0.00	1
Patient was incontinent on Friday but not on Thursday.	3	1	2	5	0.36	1
Patient was incontinent on no days that I remember.	4	1	1	5	0.40	0
Patient was incontinent on Friday.	5	1	2	1	0.57	1
Patient was incontinent on many days.	6	1	0	0	1.00	1
	Table 1:			Present	Absent	Total
	Success Y=1			3	1	4
	Failure Y=0			1	1	2
	Total			4	2	6
	LR=	1.5				
	Table 2:			Present	Absent	Total
	Success Y=1			1.94	0.00	1.94

FIG. 9





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Prevalence of Word Combination in Training Set

		Word Combination		
		Present	Absent	Total
$Y_v = 1$	Success	a	g-f-a	g-f
$Y_v = 0$	Success	0	f	f
Total		a	g-a	g

FIG. 10

Example for Prevalence of Word Combination in Different Cases

**Word Combination:
"Stupid"**

	Present	Absent	Total
Complaint	3	897	900
Praise	0	100	100
Total	3	997	1000

FIG. 11

Maximum Likelihood Ratio Given the Marginal Probabilities

		Word Combination		
		Present	Absent	Total
$Y_v = 1$	Success	a-x		g-f
$Y_v = 0$	Success	x		f
Total		a		g

FIG. 12





Calculation of Likelihood Ratio of zero

Word Combination

	Present	Absent	Total
$Y_v = 1$ Success	0	g-f-a	g-f
$Y_v = 0$ Success	a	f	f
Total	a	g-a	g

FIG. 13

Example for Calculation of Likelihood Ratio of zero

**Word Combination:
"Brave"**

	Present	Absent	Total
Complaint	0	900	900
Praise	2	98	100
Total	2	998	1000

FIG. 14



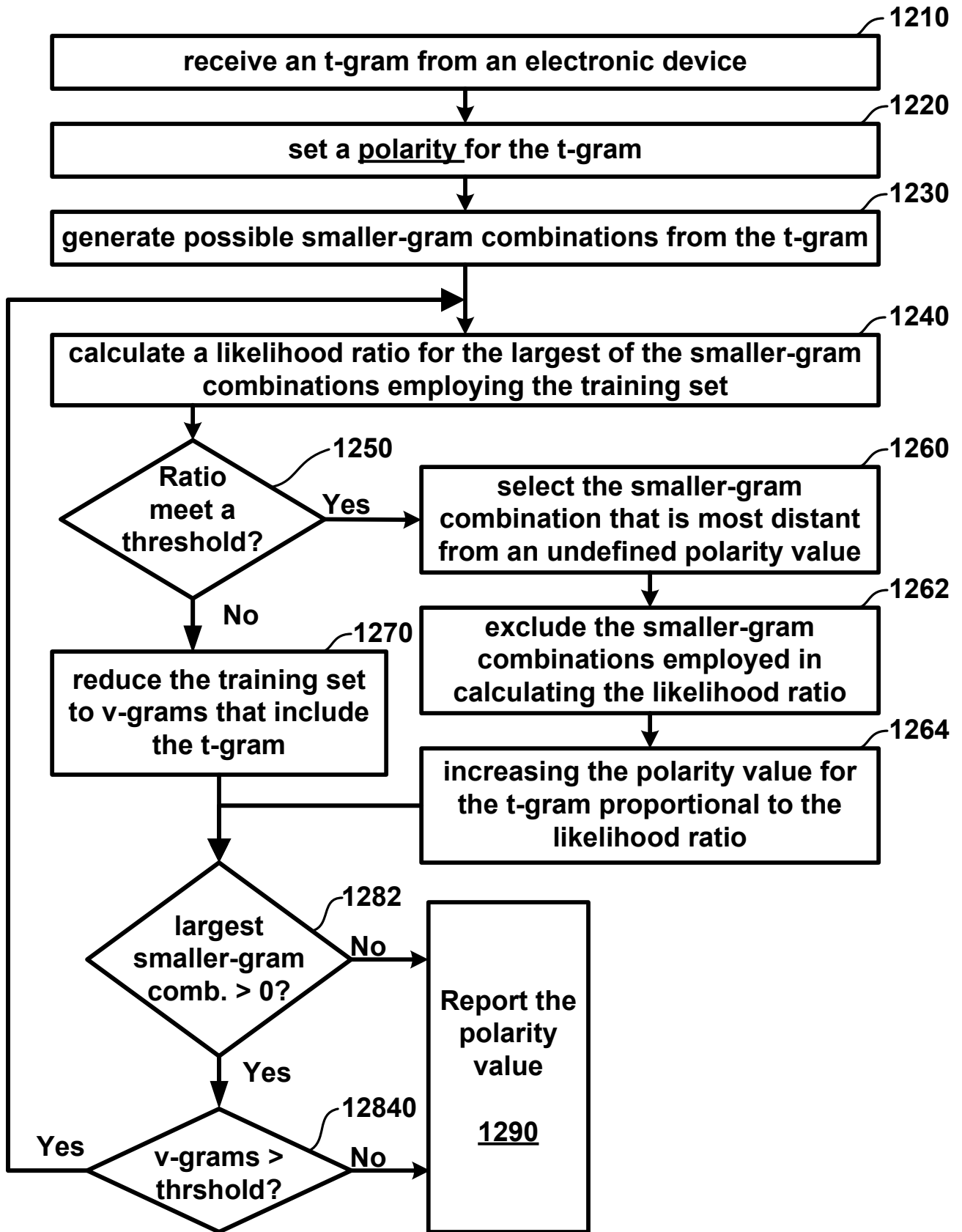


FIG. 15

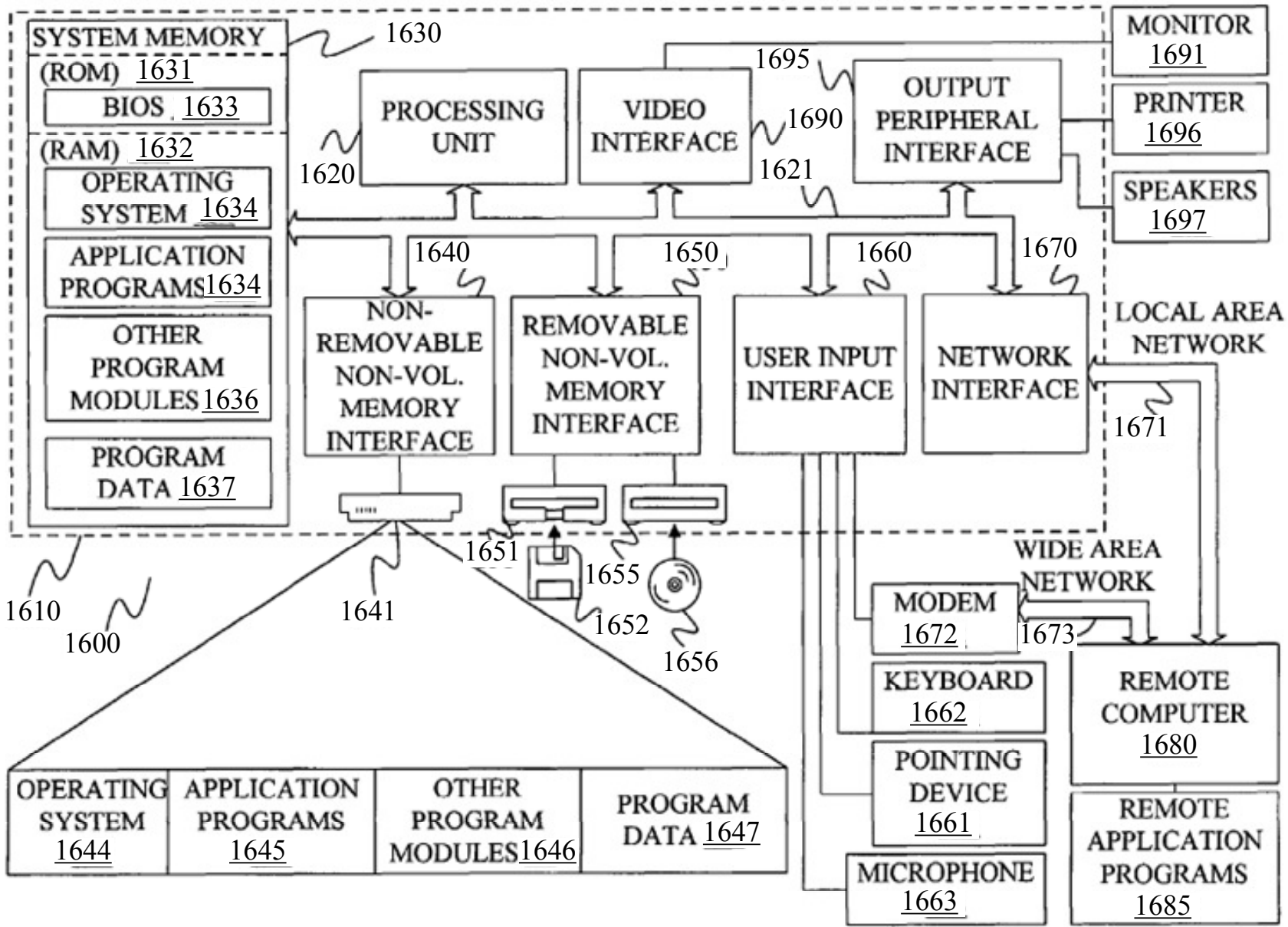


FIG. 16