

FIG. 1

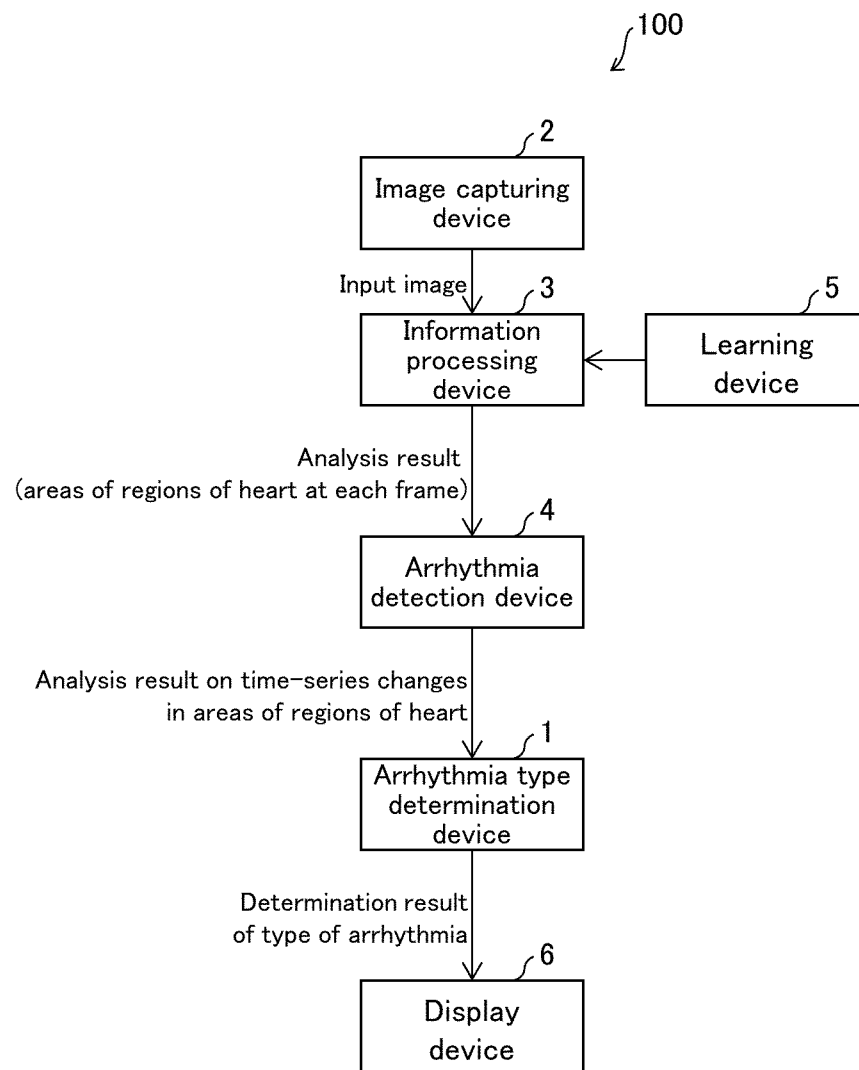


FIG. 2

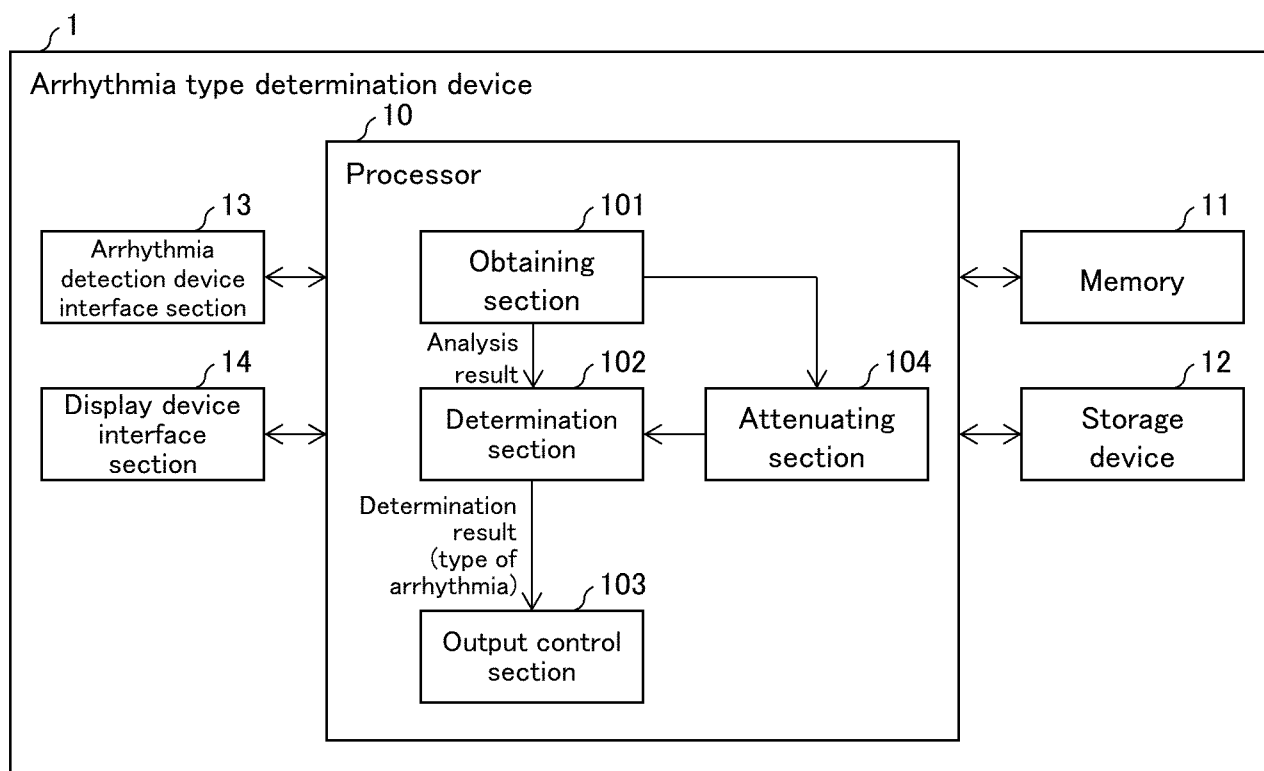


FIG. 3

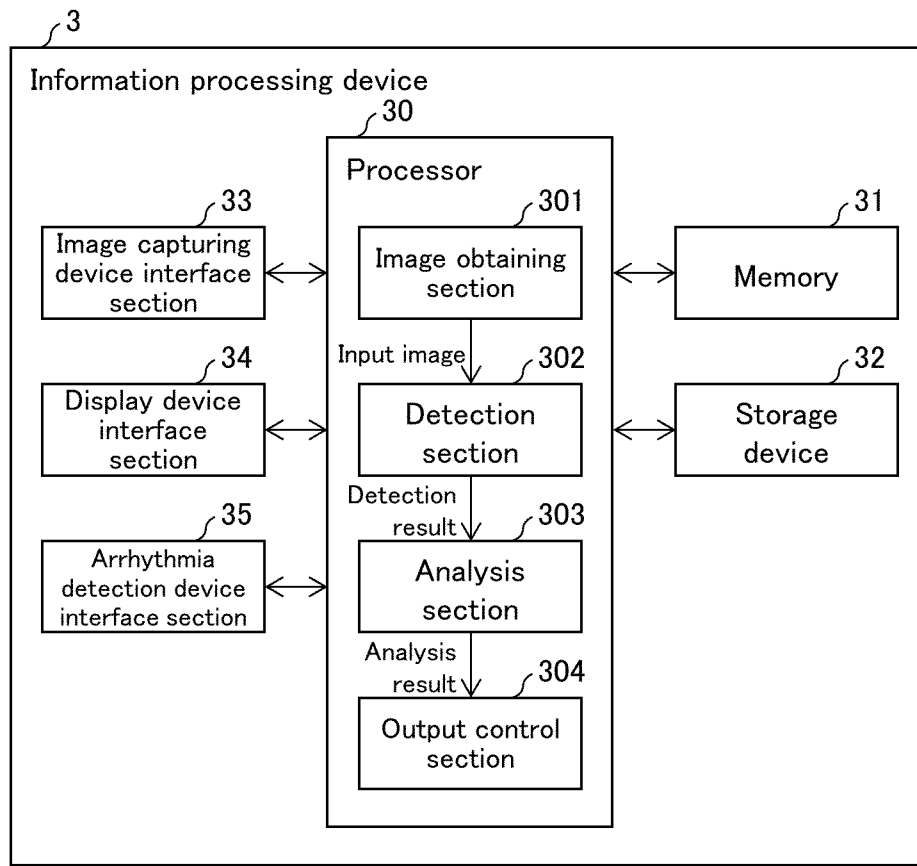


FIG. 4

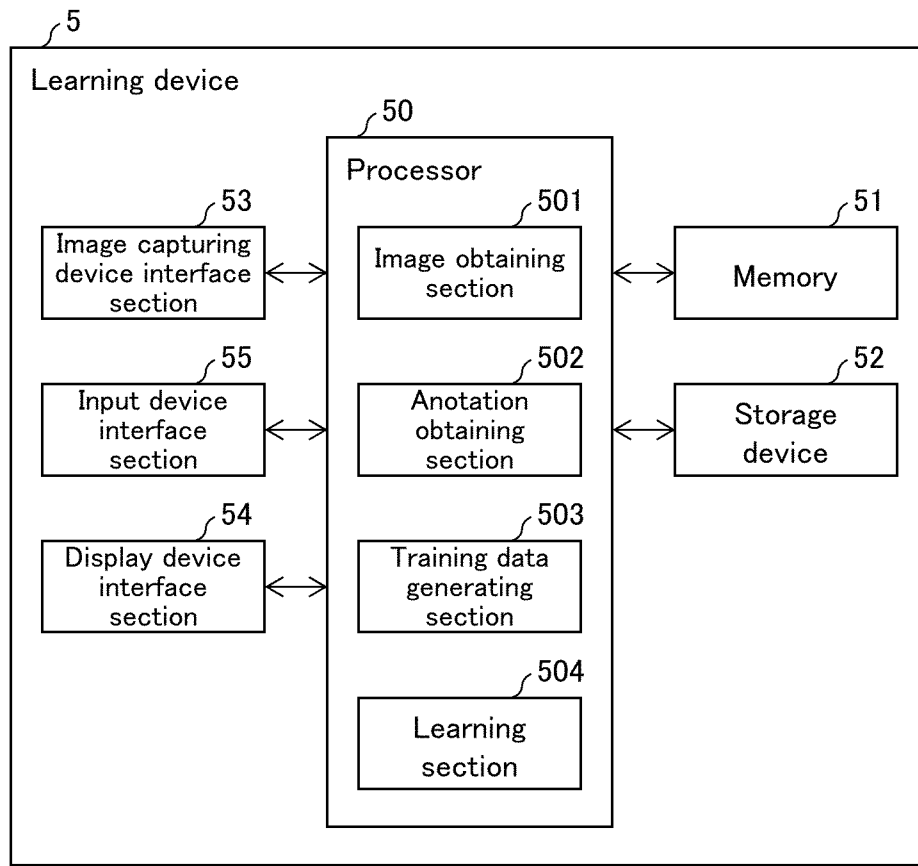


FIG. 5

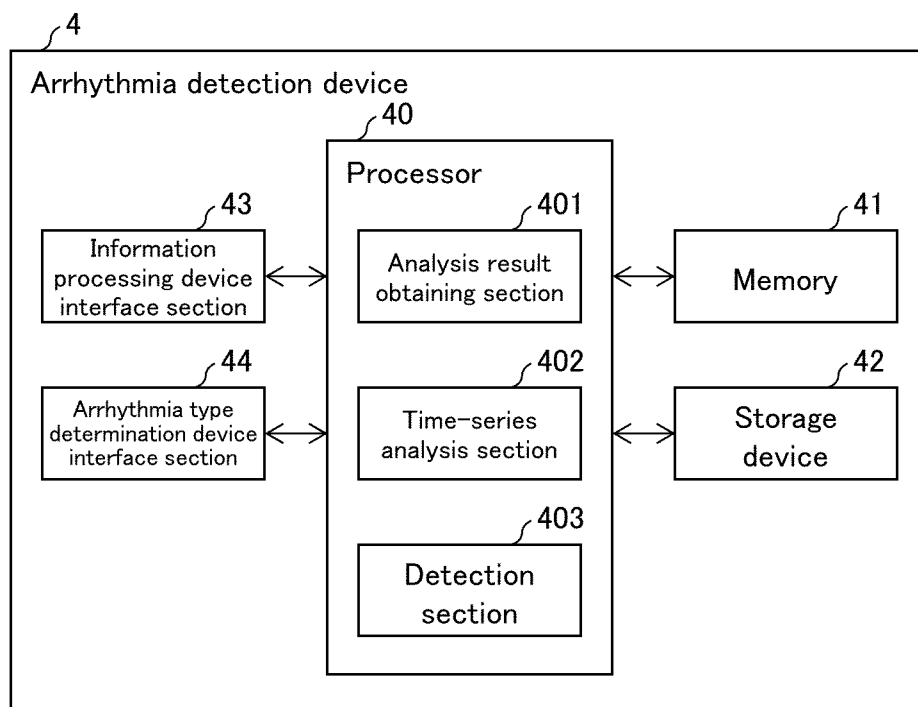


FIG. 6

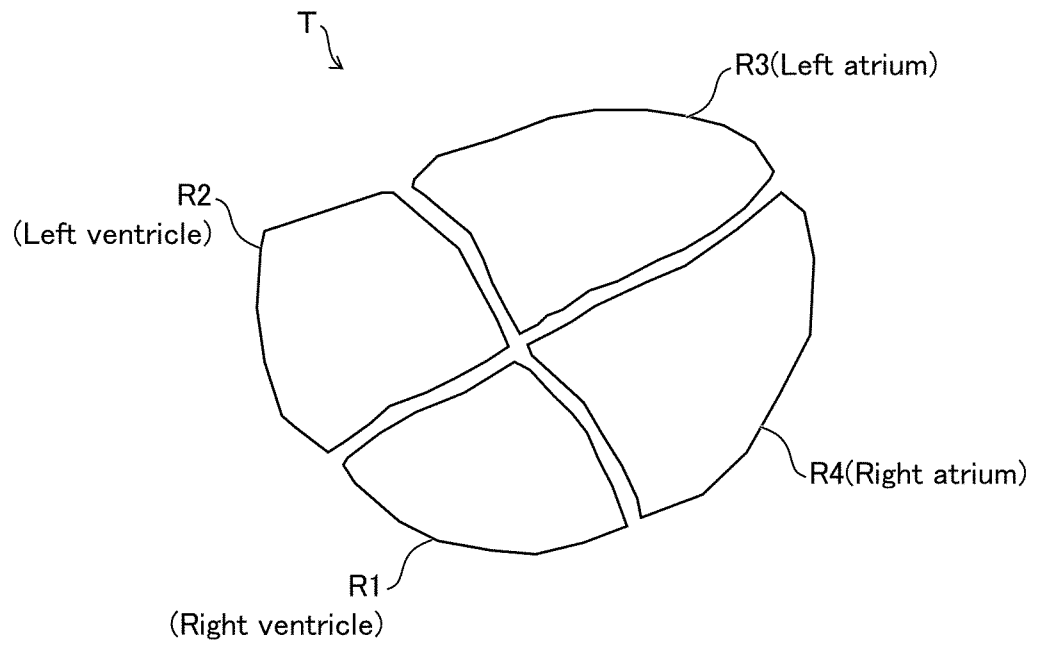


FIG. 7

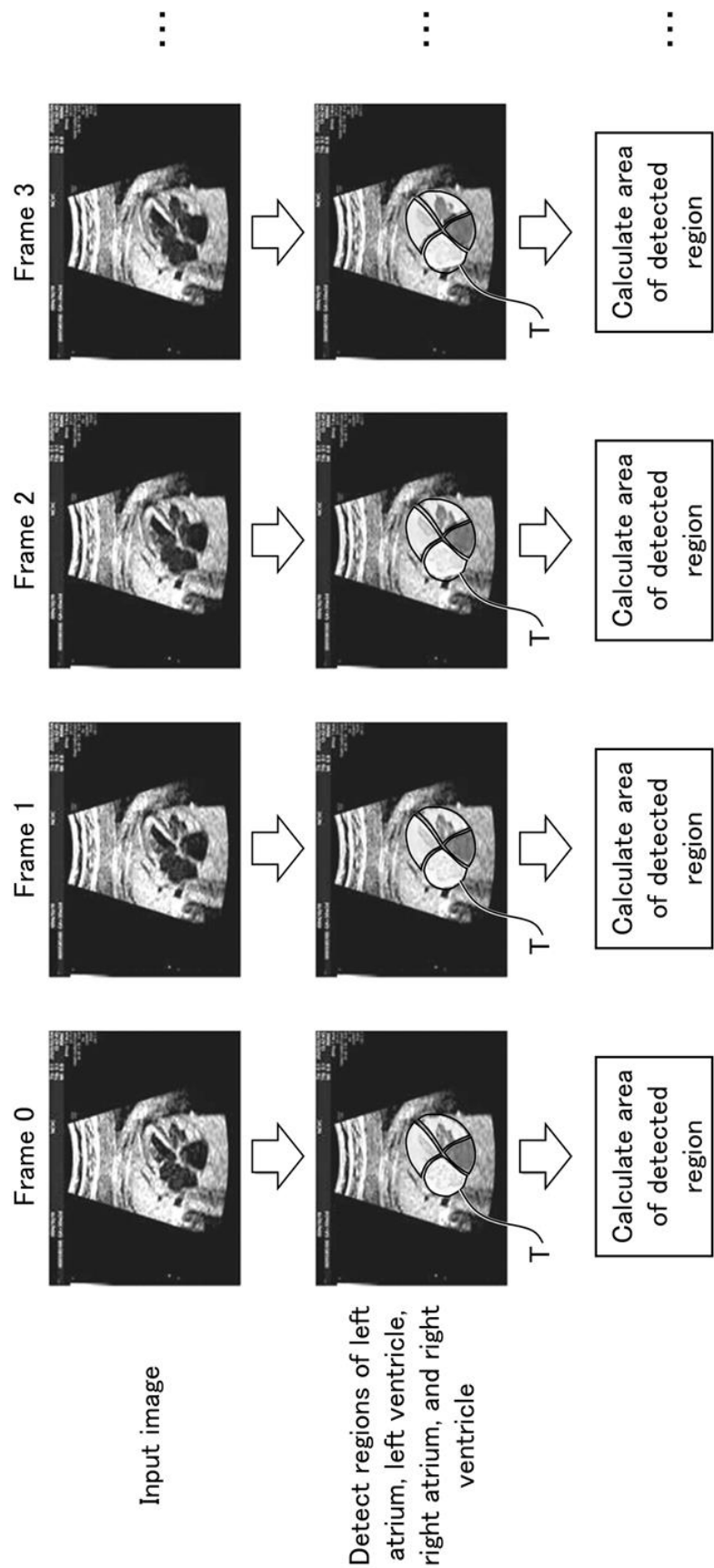


FIG. 8

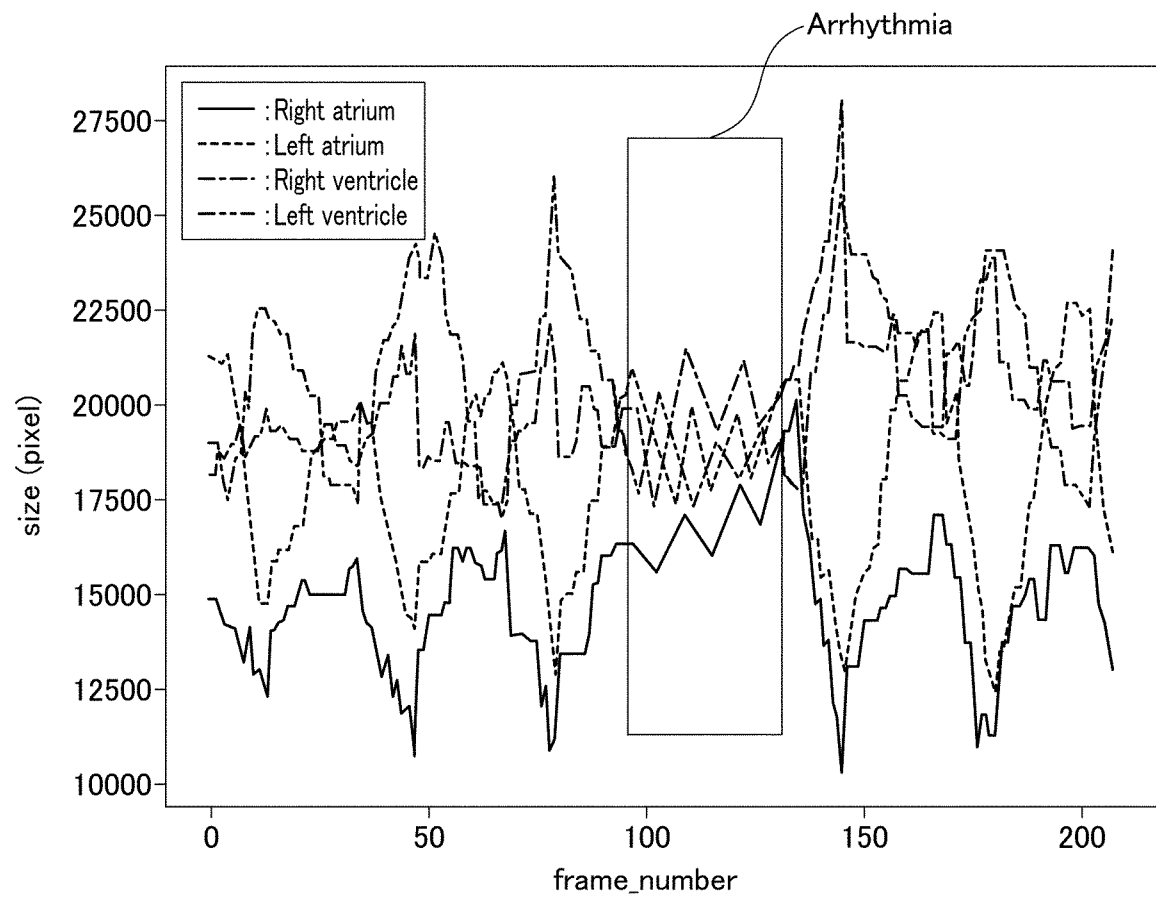


FIG. 9

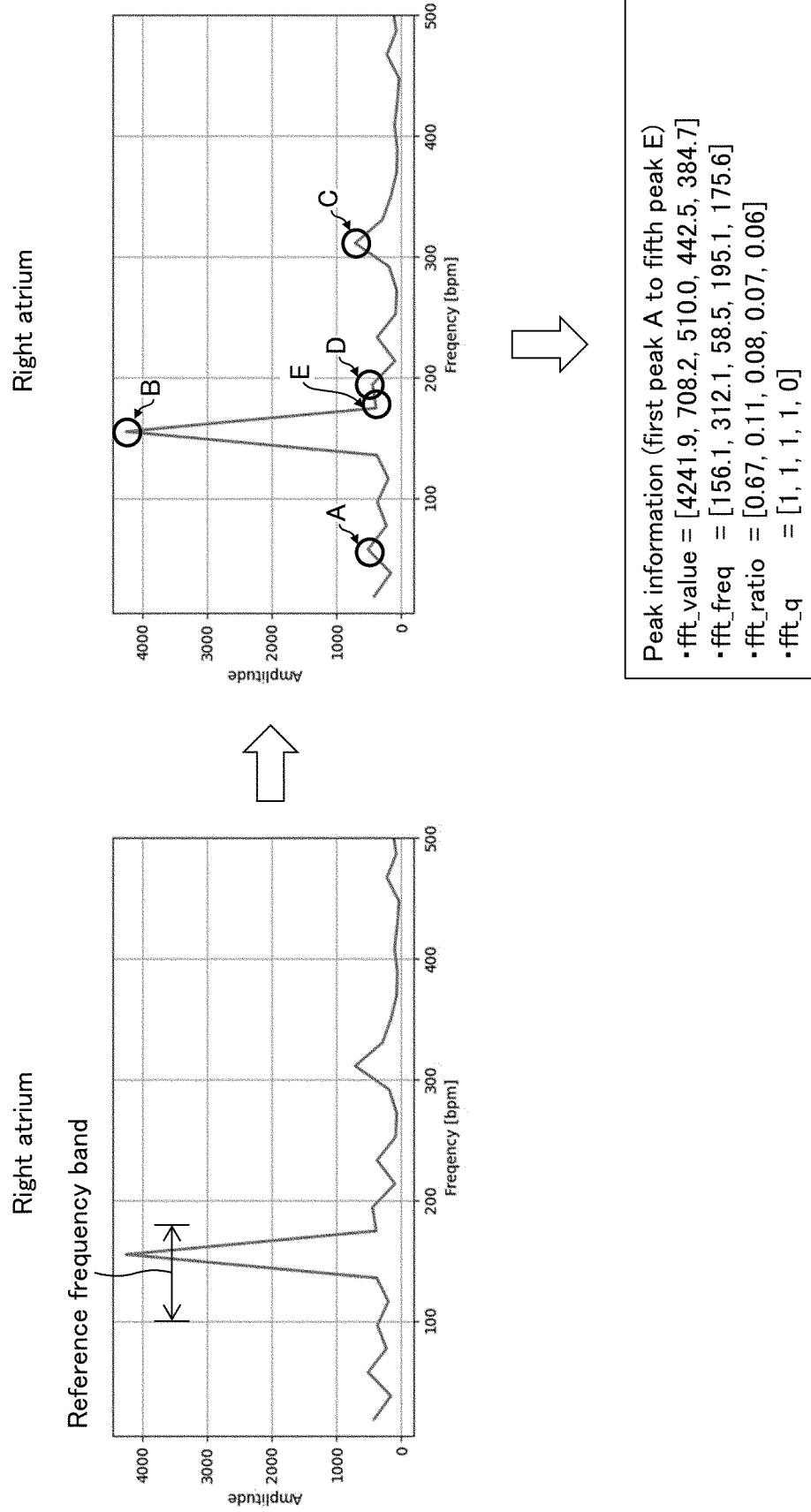


FIG. 10

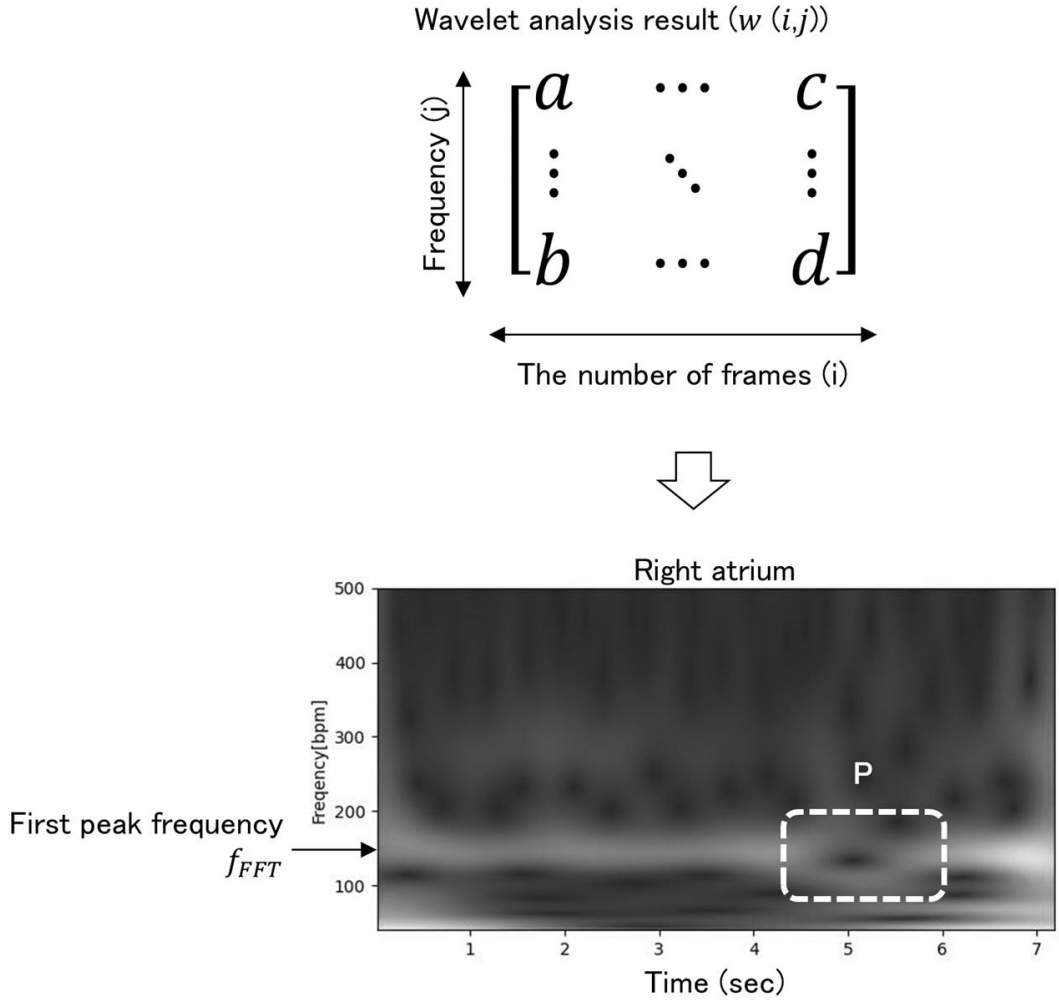


FIG. 11

$$w'_{i,j} = \frac{w_{i,j}}{1 + \frac{|f_i - f_{FFT}|}{\alpha}}$$

- $f_{FFT}$ : First peak frequency
- $w_{i,j}$ : Wavelet analysis result ( $i$ -th frame,  $j$ -th frequency)
- $\alpha$ : Adjustment parameter for correction level (stronger correction for lower value)

FIG. 12

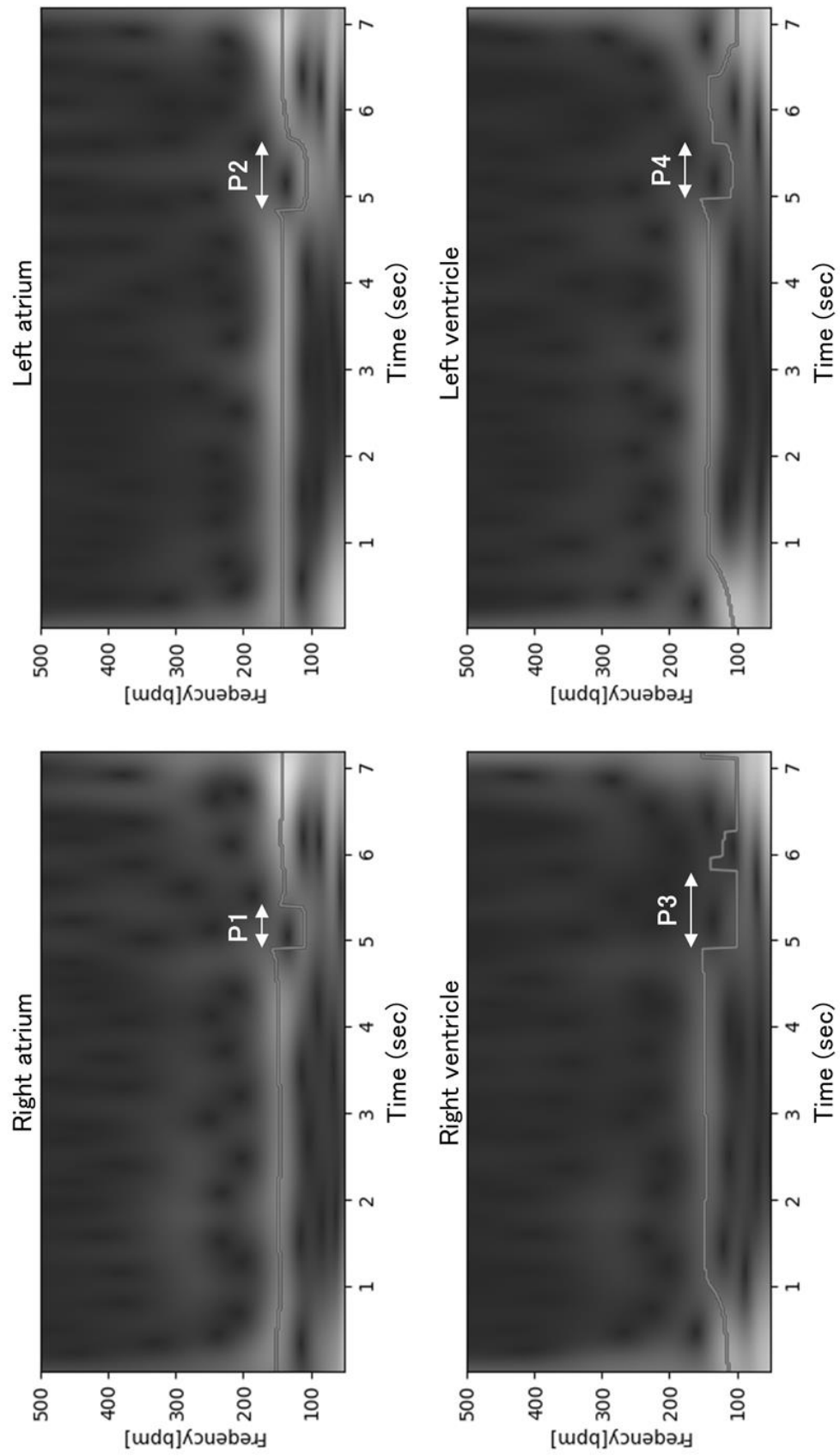


FIG. 13

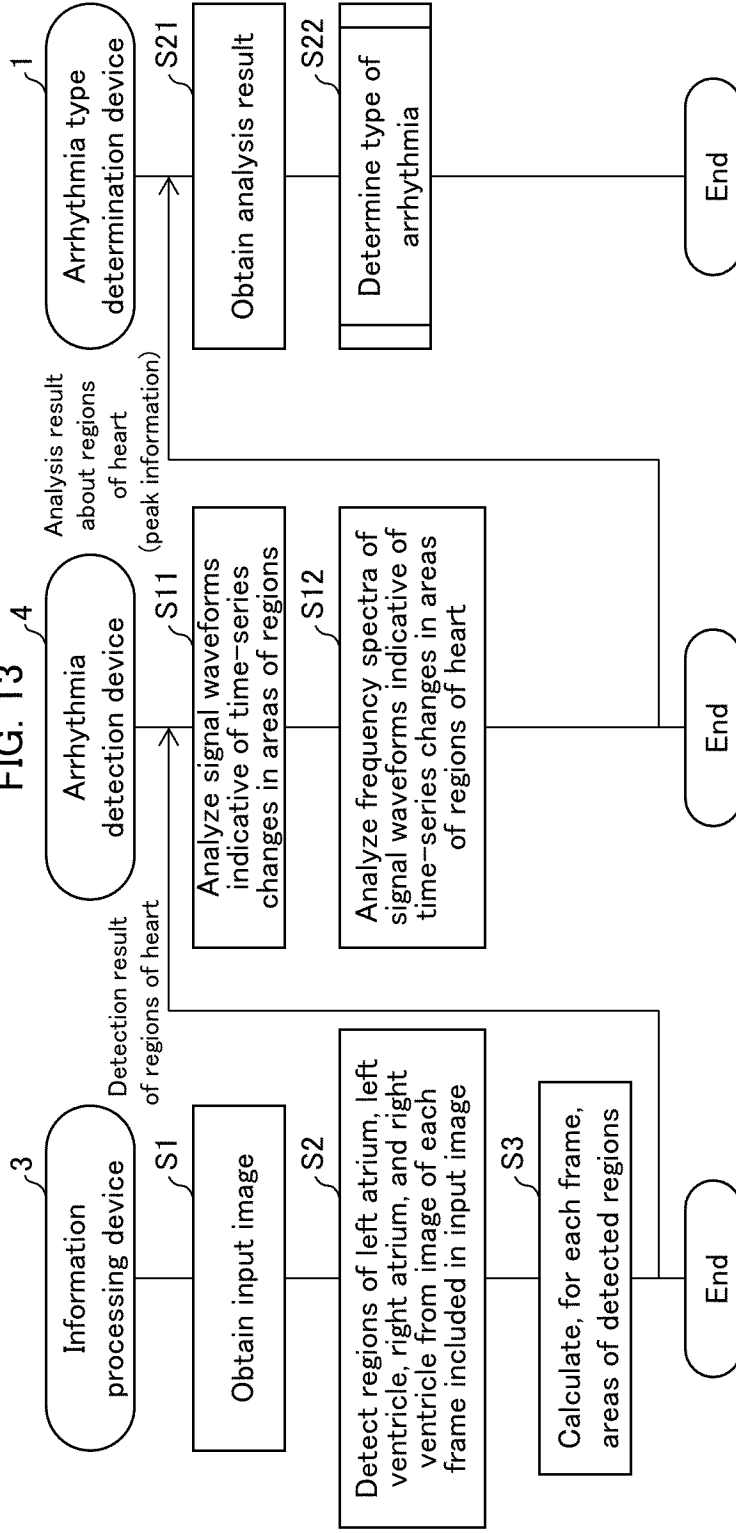


FIG. 14

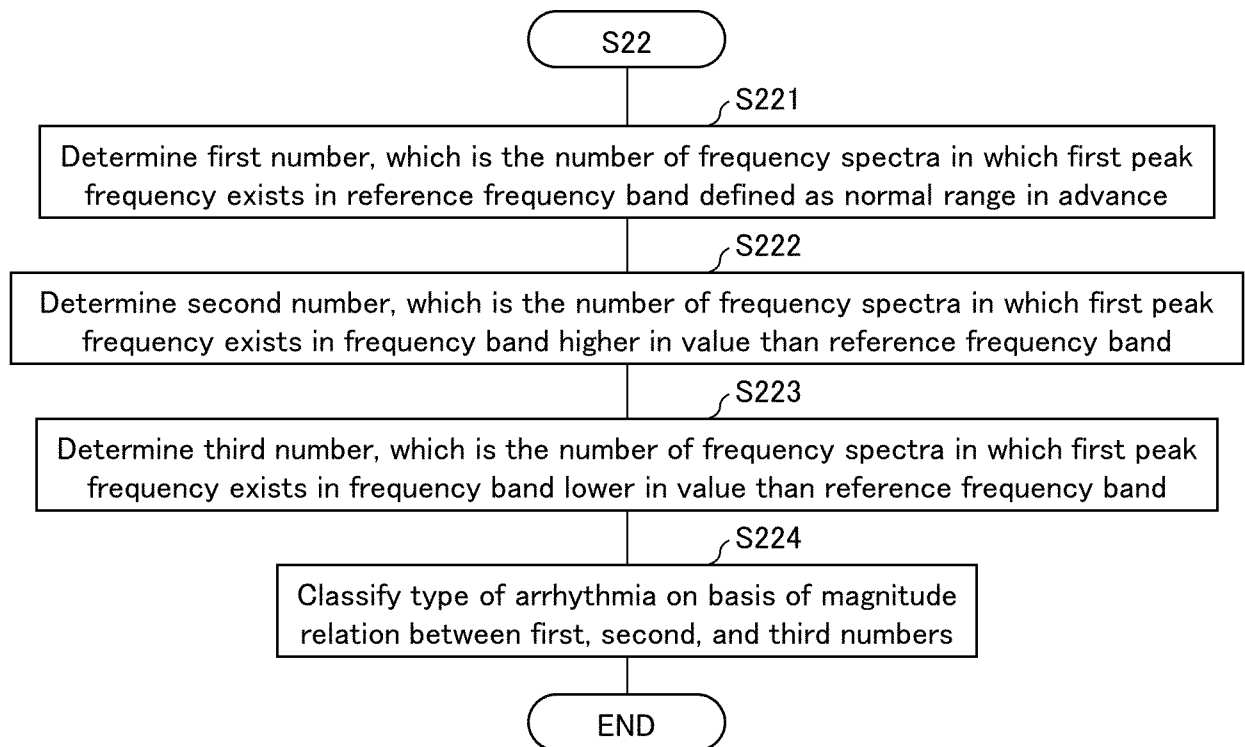


FIG. 15

| First peak<br>frequency exists in<br>frequency band<br>higher in value than<br>reference<br>frequency band | First peak<br>frequency exists<br>in reference<br>frequency band | First peak<br>frequency exists in<br>frequency band<br>lower in value than<br>reference<br>frequency band | Type of<br>arrhythmia | First peak<br>frequency exists in<br>frequency band<br>higher in value than<br>reference<br>frequency band | First peak<br>frequency exists<br>in reference<br>frequency band | First peak<br>frequency exists in<br>frequency band<br>lower in value than<br>reference<br>frequency band | Type of<br>arrhythmia |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|
| 4                                                                                                          | 0                                                                | 0                                                                                                         | 1                     | 0                                                                                                          | 1                                                                | 3                                                                                                         | 2                     |
| 0                                                                                                          | 4                                                                | 0                                                                                                         | 3                     | 2                                                                                                          | 2                                                                | 0                                                                                                         | 1 or 3                |
| 0                                                                                                          | 0                                                                | 4                                                                                                         | 2                     | 2                                                                                                          | 0                                                                | 2                                                                                                         |                       |
| 3                                                                                                          | 1                                                                | 0                                                                                                         | 1                     | 0                                                                                                          | 2                                                                | 2                                                                                                         | 2 or 3                |
| 3                                                                                                          | 0                                                                | 1                                                                                                         | 1                     | 2                                                                                                          | 1                                                                | 1                                                                                                         | 1                     |
| 1                                                                                                          | 3                                                                | 0                                                                                                         | 1 or 3                | 1                                                                                                          | 2                                                                | 1                                                                                                         | 3                     |
| 1                                                                                                          | 0                                                                | 3                                                                                                         | 2                     | 1                                                                                                          | 1                                                                | 2                                                                                                         | 2                     |
| 0                                                                                                          | 3                                                                | 1                                                                                                         | 3                     |                                                                                                            |                                                                  |                                                                                                           |                       |

Classifications of type of arrhythmia  
1: Atrial flutter (AFL) or supraventricular achycardia (SVT)  
2: Sinus bradycardia or complete atrioventricular block (CAVB)  
3: Normocardia, complete atrioventricular block (CAVB), premature atrial contraction (PAC),  
or premature ventricular contraction (PVC)

FIG. 16

|                       |                   | Ground truth label |     |     |                   |     |      |     |
|-----------------------|-------------------|--------------------|-----|-----|-------------------|-----|------|-----|
|                       |                   | Normocardia        | PAC | AFL | Sinus bradycardia | PVC | CAVB | SVT |
| Classification result | Normocardia       | 67                 | 14  | 3   | 0                 | 7   | 11   | 6   |
|                       | PAC               | 67                 | 14  | 3   | 0                 | 7   | 11   | 6   |
|                       | AFL               | 0                  | 0   | 9   | 0                 | 0   | 0    | 13  |
|                       | Sinus bradycardia | 0                  | 0   | 0   | 3                 | 1   | 19   | 0   |
|                       | PVC               | 67                 | 14  | 3   | 0                 | 7   | 11   | 6   |
|                       | CAVB              | 67                 | 14  | 3   | 3                 | 8   | 24   | 6   |
|                       | SVT               | 0                  | 0   | 9   | 0                 | 0   | 0    | 13  |
| Total                 |                   | 67                 | 14  | 12  | 3                 | 8   | 24   | 16  |

FIG. 17

|                      |                   | Ground truth      |      |
|----------------------|-------------------|-------------------|------|
|                      |                   | Sinus bradycardia | CAVB |
| Determination result | Sinus bradycardia | 3                 | 19   |
|                      | CAVB              | 3                 | 19   |

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|                      |                   | Ground truth      |      |
|----------------------|-------------------|-------------------|------|
|                      |                   | Sinus bradycardia | CAVB |
| Determination result | Sinus bradycardia | 3                 | 1    |
|                      | CAVB              | 0                 | 18   |