United States Patent [19]

Byrne

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[54] **MULTI-MODE RADIO TELEPHONE**

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[21] Appl. No.: **407,682**

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.^{6}** **H04Q 7/38**

[52] **U.S. Cl.** **379/58**; 379/59; 379/61; 370/95.3

[58] **Field of Search** 379/58, 59, 60, 379/61; 370/95.1–95.3

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[57] **ABSTRACT**

A radio telephone (**200**) is operable in a cordless telephone system or in a cellular telephone system, in each of which reception and transmission occur in time slots. A microprocessor (**210**) of the telephone has an additional control entity (**212**) which predicts temporal overlap or coincidence of receive and transmit slots in the two systems. This information is used either to alter the time slots to avoid the predicted overlap or coincidence or to reduce the effect of interference, for example by muting certain slots or repeating signals in previous slot or slots.
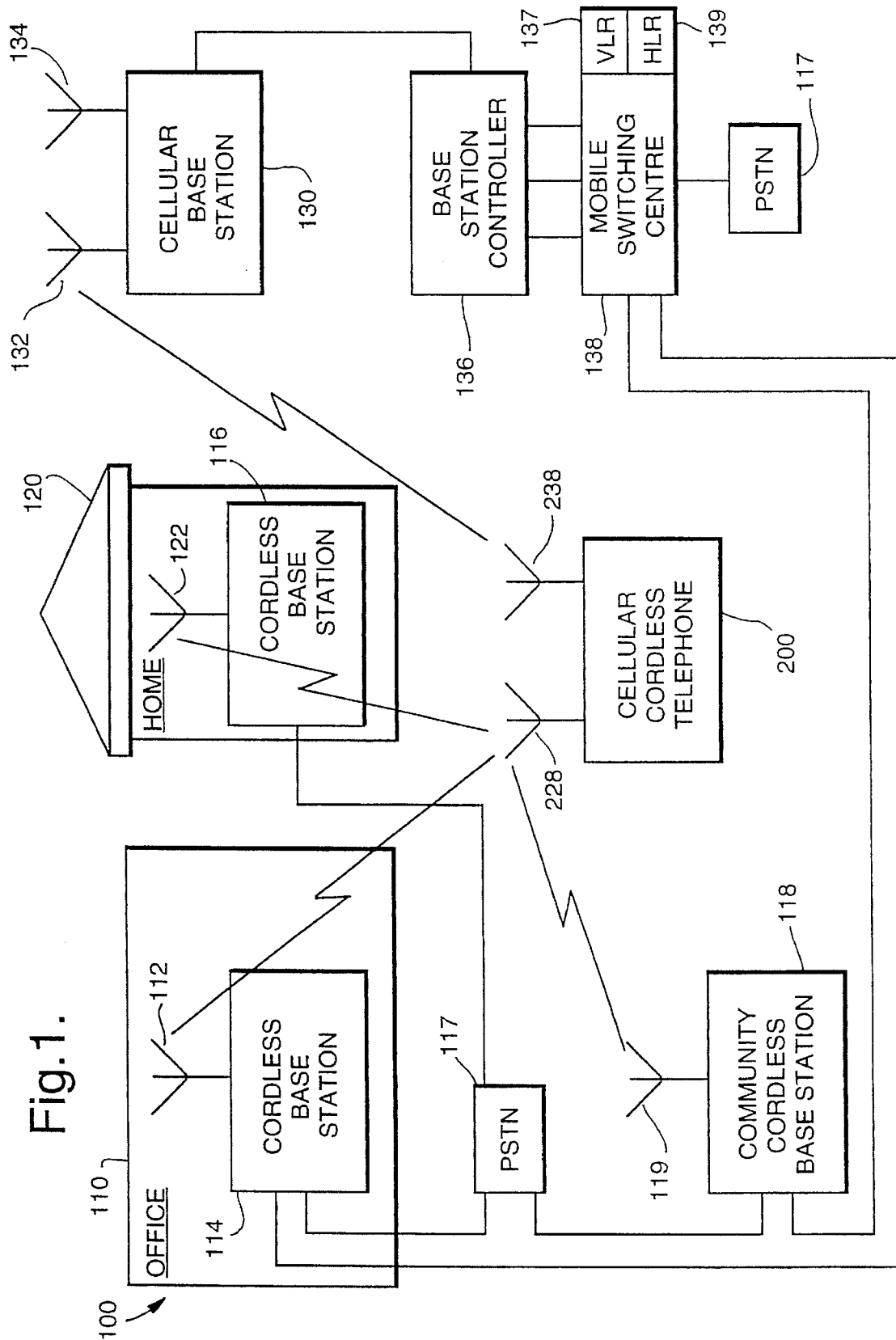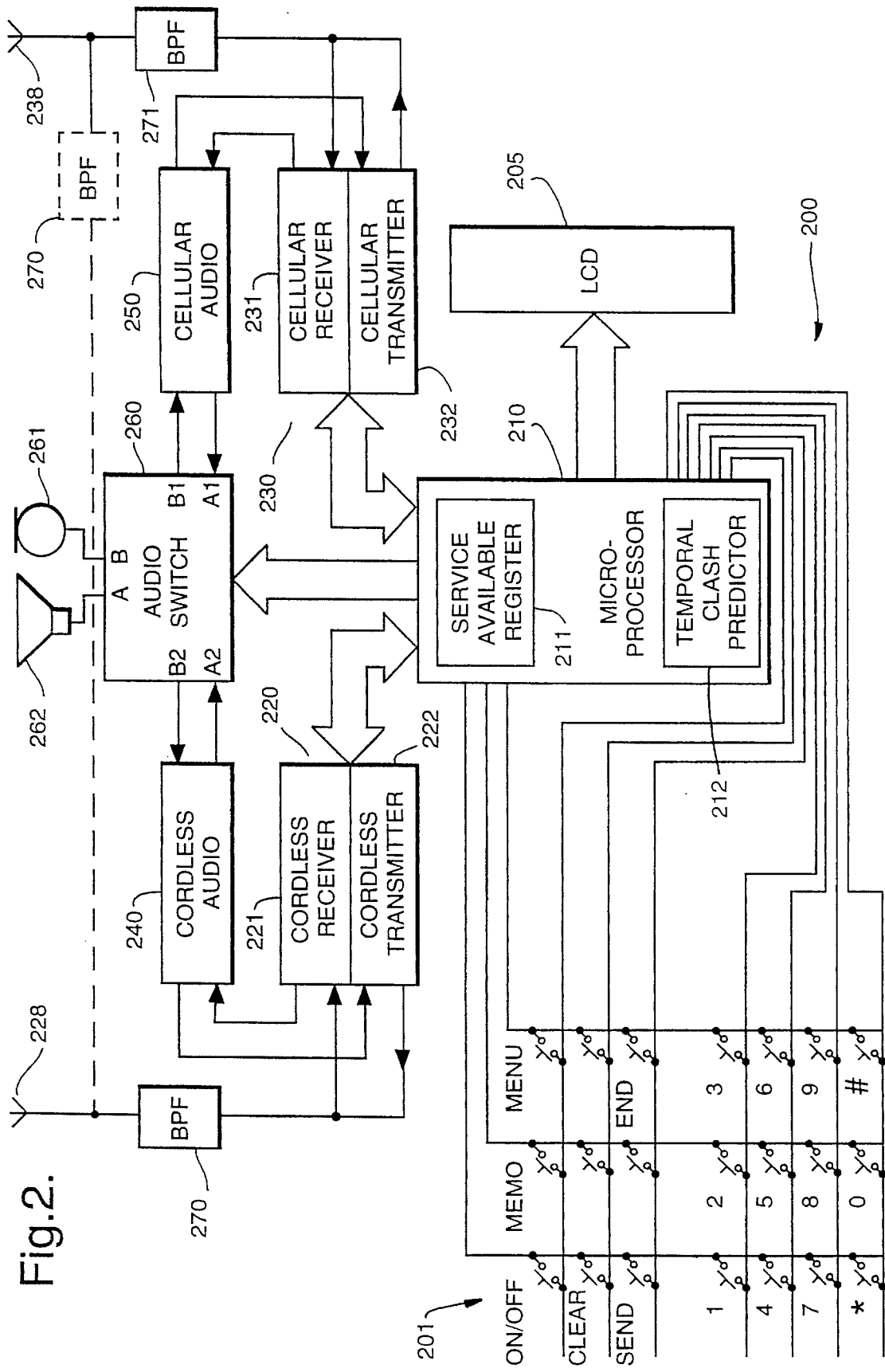
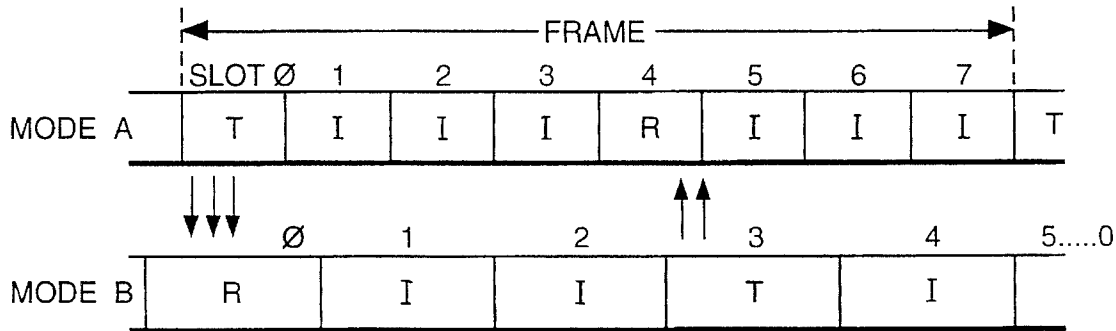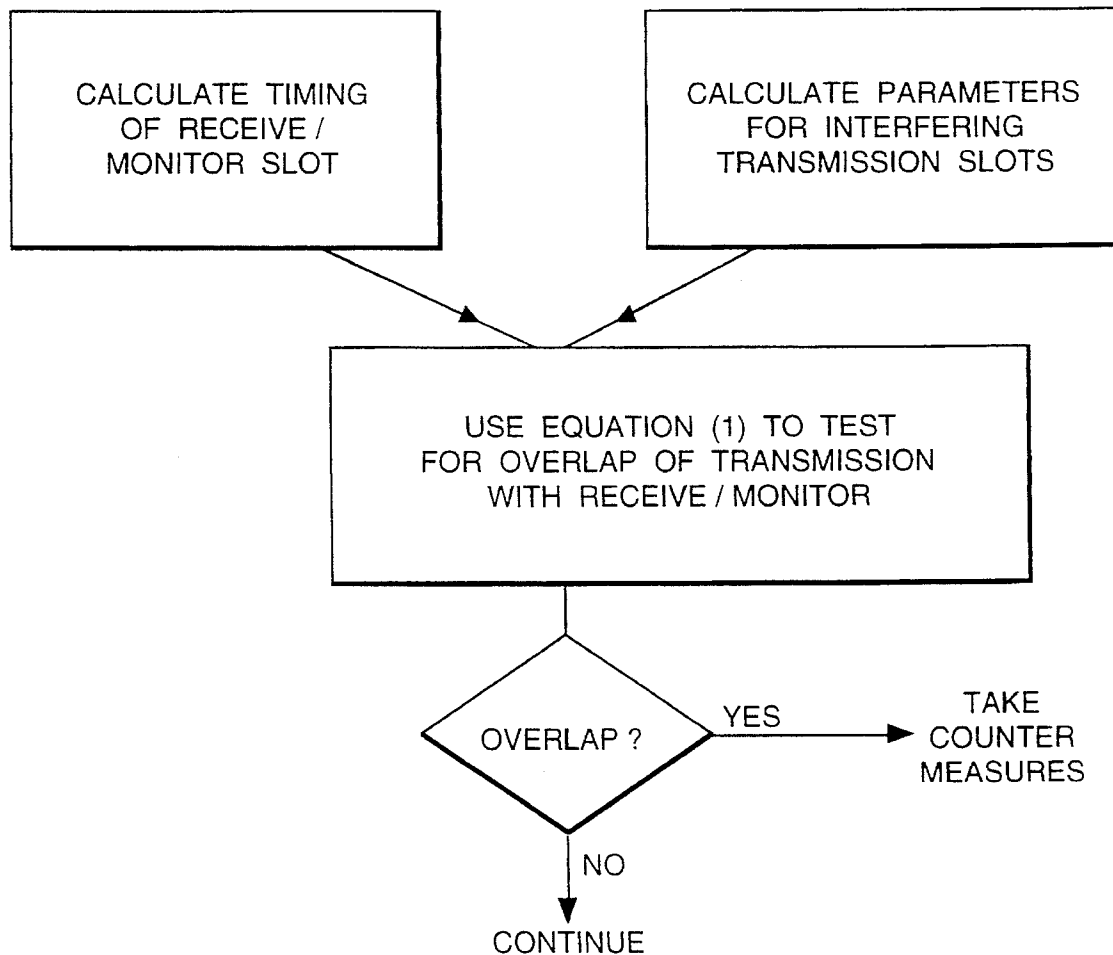**10 Claims, 4 Drawing Sheets**

Fig.1.

Fig.2.

Fig.3.

	SLOT Ø	1	2	3	4	5	6	7	
MODE A	T	I	I	I	R	I	I	I	T

	Ø	1	2	3	4	5.....0
MODE B	R	I	I	T	I	

Fig.4.

CALCULATE TIMING
OF RECEIVE /
MONITOR SLOT

CALCULATE PARAMETERS
FOR INTERFERING
TRANSMISSION SLOTS

USE EQUATION (1) TO TEST
FOR OVERLAP OF TRANSMISSION
WITH RECEIVE / MONITOR

OVERLAP ?

YES → TAKE
COUNTER
MEASURES

NO

CONTINUE

Fig.5.


```
SLOT CLASH PREDICTED
        │ Y
        ▼
SELECT SLOT WITH NO
CLASH FOR MAXIMUM TIME
      POSSIBLE
        │
        ▼
PERFORM HANDOVER TO THE
       NEW SLOT
```

Fig.6.


```
BIT DETECTION ──── SCALING (X) ──── VITERBI DECODER ──► DECODED BITS
                      │
                      │
            COEFFICIENT
            1 = NO CLASH
            <1 = CLASH
                  ▲
                  │
            CLASH PREDICTION
```
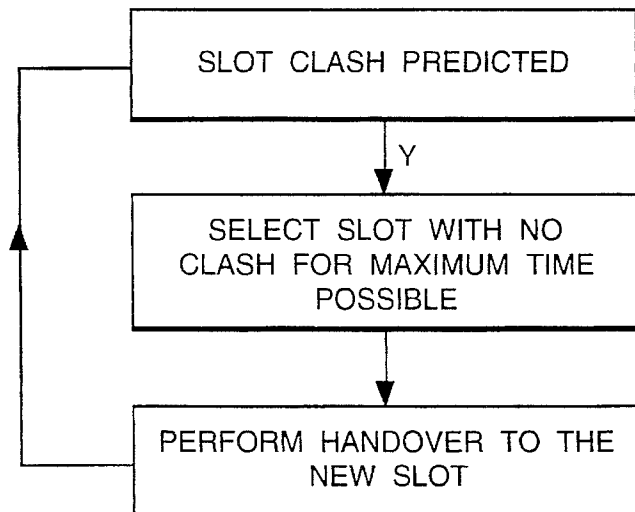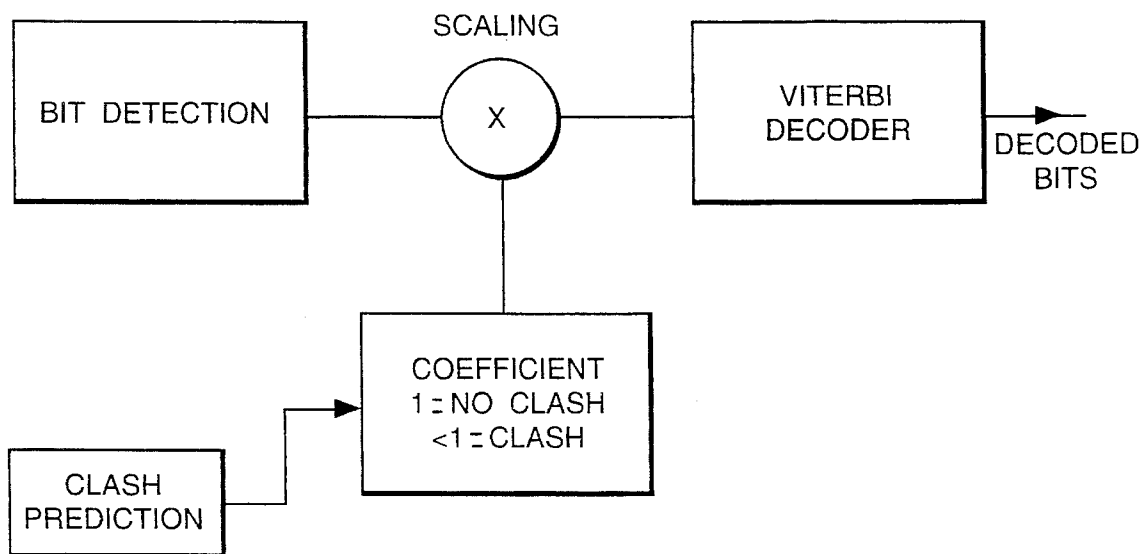
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