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Richmond et al.

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(54) **METHOD AND APPARATUS FOR RADIO FREQUENCY SECURITY SYSTEM WITH AUTOMATIC LEARNING**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 348 days.

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(52) U.S. Cl. **340/5.23**; 340/5.61; 340/5.71; 340/5.2; 340/5.21; 340/5.62; 340/825.69; 340/825.72
(58) **Field of Search** 340/825.69, 5.23, 340/5.71, 5.2, 5.21, 5.61, 5.62, 5.63; 341/176

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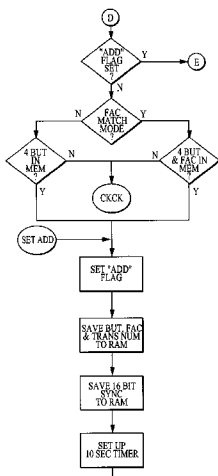Claims pending in re–issue application No. 08/700,610 filed Feb. 15, 2000.

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A brochure entitled, "MegaCode Transmitters MDT/MDT2/MDT", Copyright 1992 Moore–O–Matic.

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Assistant Examiner—Vernal Brown
(74) Attorney, Agent, or Firm—J. Mark Holland & Associates

(57) **ABSTRACT**

A security system for control access of multiple users to a selected area combines rotating electronic security code or equivalent technology with an automatic self-learning receiver. The first transmitter is "learned" by the receiver manually, but subsequent transmitters are learned without the need for actuating the conventional "manual learn" mode of the receiver. Instead, by simply sending the transmit signal twice within a fixed time period, users of the subsequent transmitters use "self-learning" circuitry (interposed between conventional transmitter and receiver technology) in a way that is relatively transparent to the user. Other aspects of conventional systems are provided, such as separate control via computer or otherwise of an authorized list of uniquely-identified transmitters. In alternative embodiments, even the first transmitter/controller can be programmed into the receiver (such as at the time of manufacturing or installing the system).
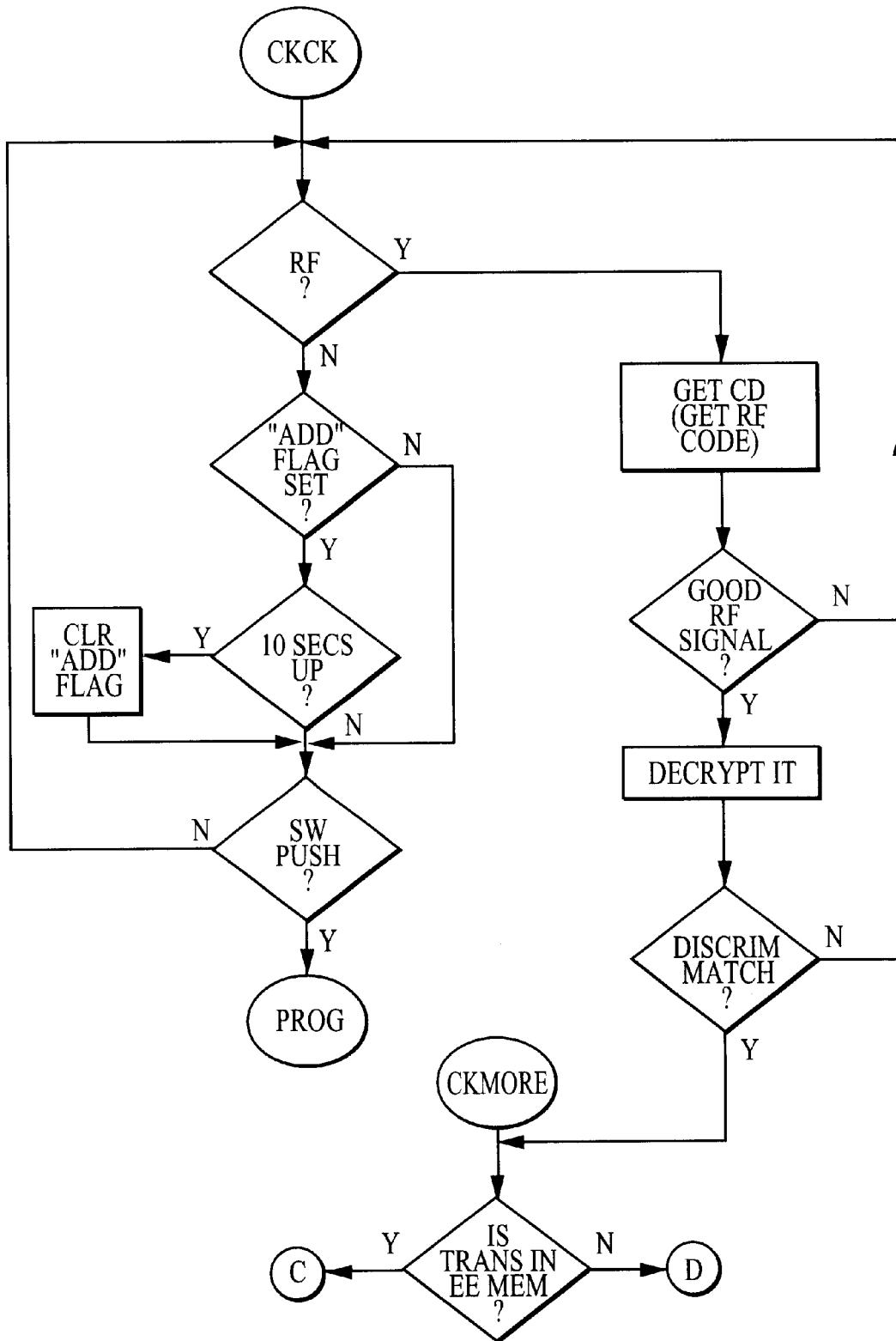
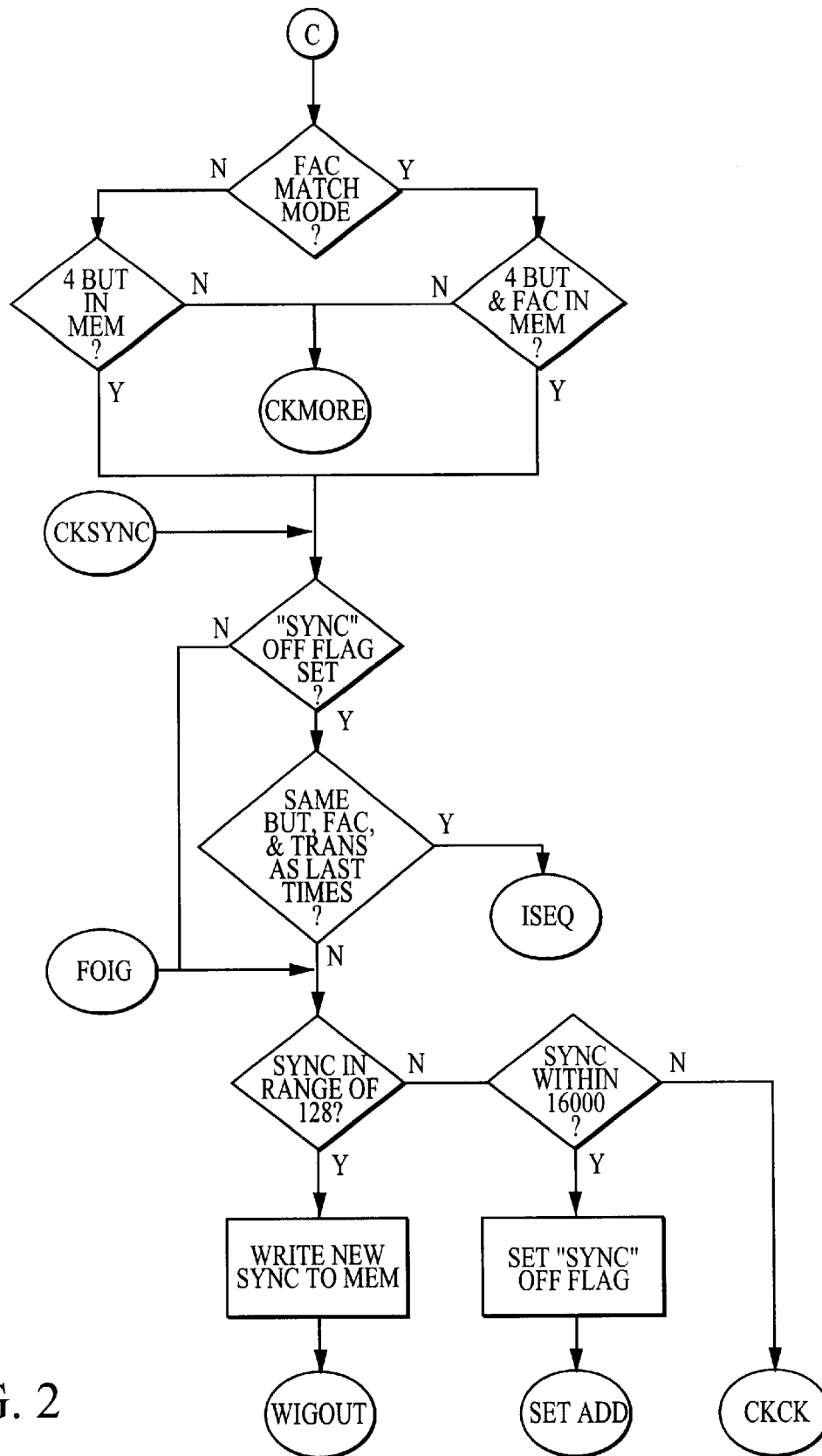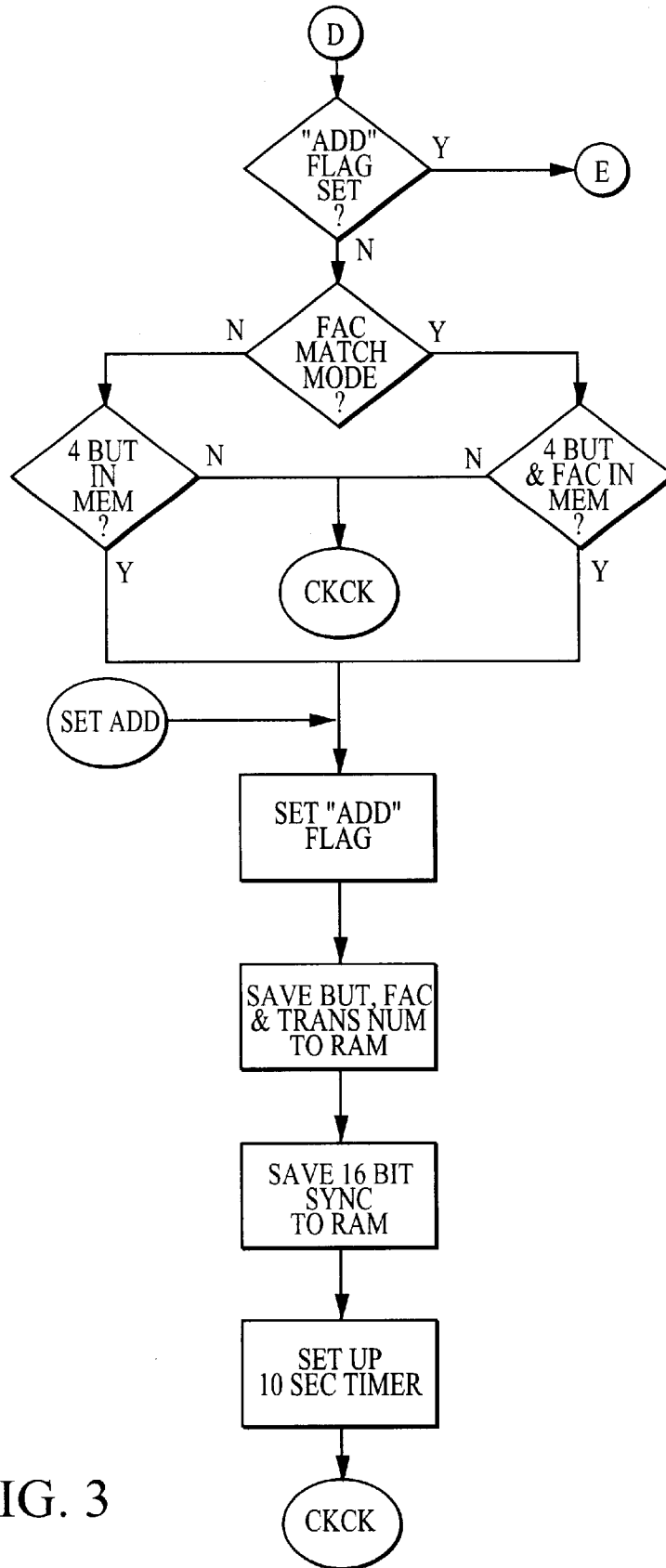**60 Claims, 9 Drawing Sheets**

FIG. 1

C

FAC MATCH MODE ?
N ← → Y

4 BUT IN MEM ?
N

4 BUT & FAC IN MEM ?
N

CKMORE

Y (left)   Y (right)

CKSYNC →

"SYNC" OFF FLAG SET ?
N

Y

SAME BUT, FAC, & TRANS AS LAST TIMES ?
Y → ISEQ

N

FOIG →

SYNC IN RANGE OF 128?
N → SYNC WITHIN 16000 ?
N

Y (left)   Y (right)

WRITE NEW SYNC TO MEM

SET "SYNC" OFF FLAG

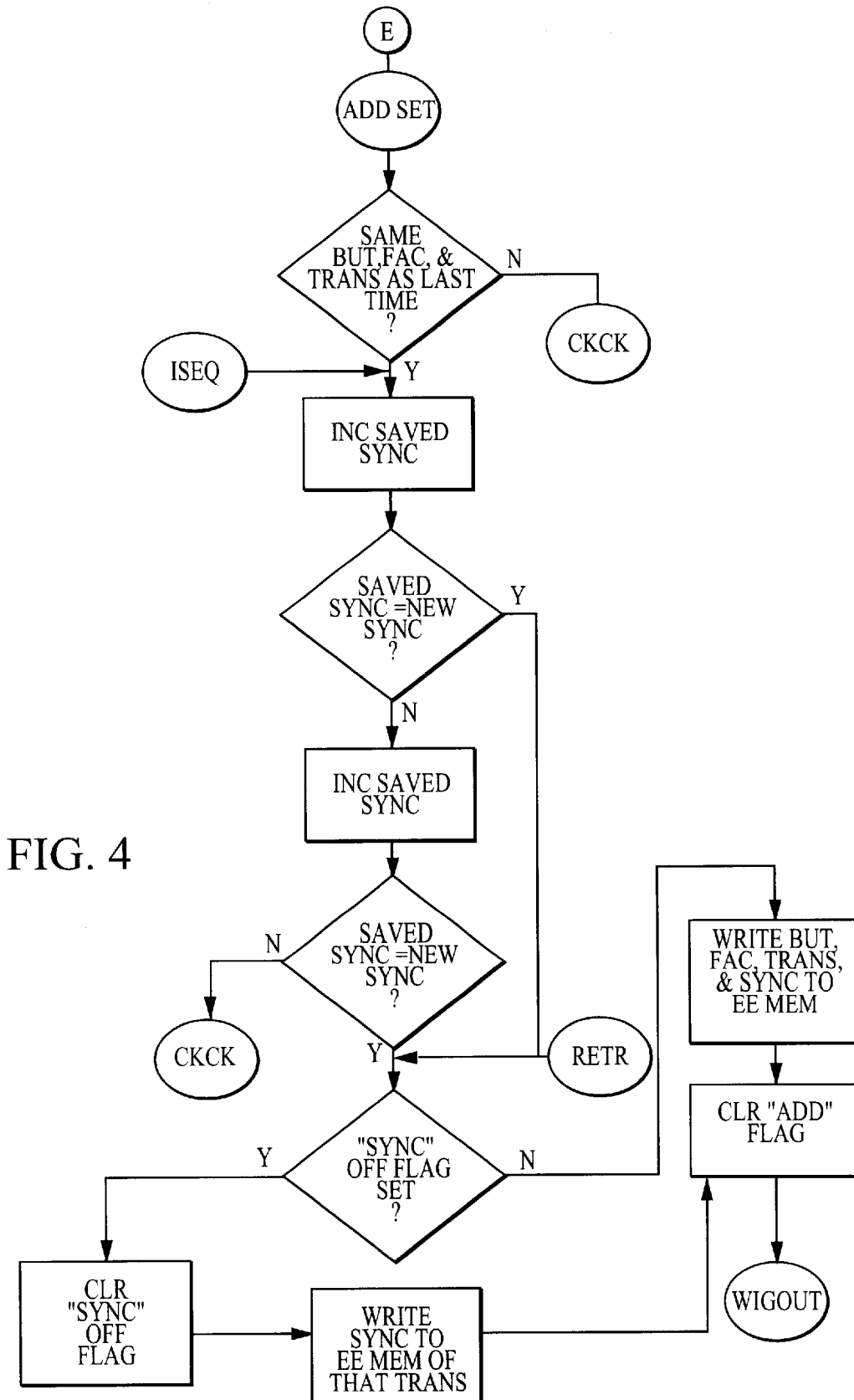WIGOUT   SET ADD   CKCK

FIG. 2

FIG. 3

FIG. 4

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