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(12) **United States Patent**  
**Richmond et al.**

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- (54) **METHOD AND APPARATUS FOR RADIO FREQUENCY SECURITY SYSTEM WITH AUTOMATIC LEARNING**
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- (73) Assignee: **Doorking, Inc.**, Inglewood, CA (US)
- (\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 348 days.

A recent opinion by the Federal Circuit entitled, Overhead Door Corporation and GMI Holdings, Inc., v. Chamberlain Group, Inc. filed on Oct. 13, 1999.

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A brochure entitled, "AccessPro Wireless Access Control", Copyright 1995 Linear Corporation.

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- (21) Appl. No.: **09/603,831**
- (22) Filed: **Jun. 26, 2000**
- (51) **Int. Cl.**<sup>7</sup> ..... **G05B 19/00**
- (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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(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).

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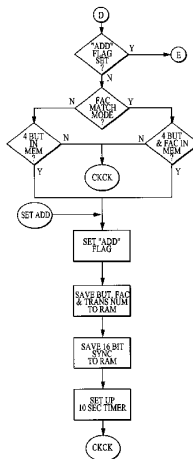
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**60 Claims, 9 Drawing Sheets**



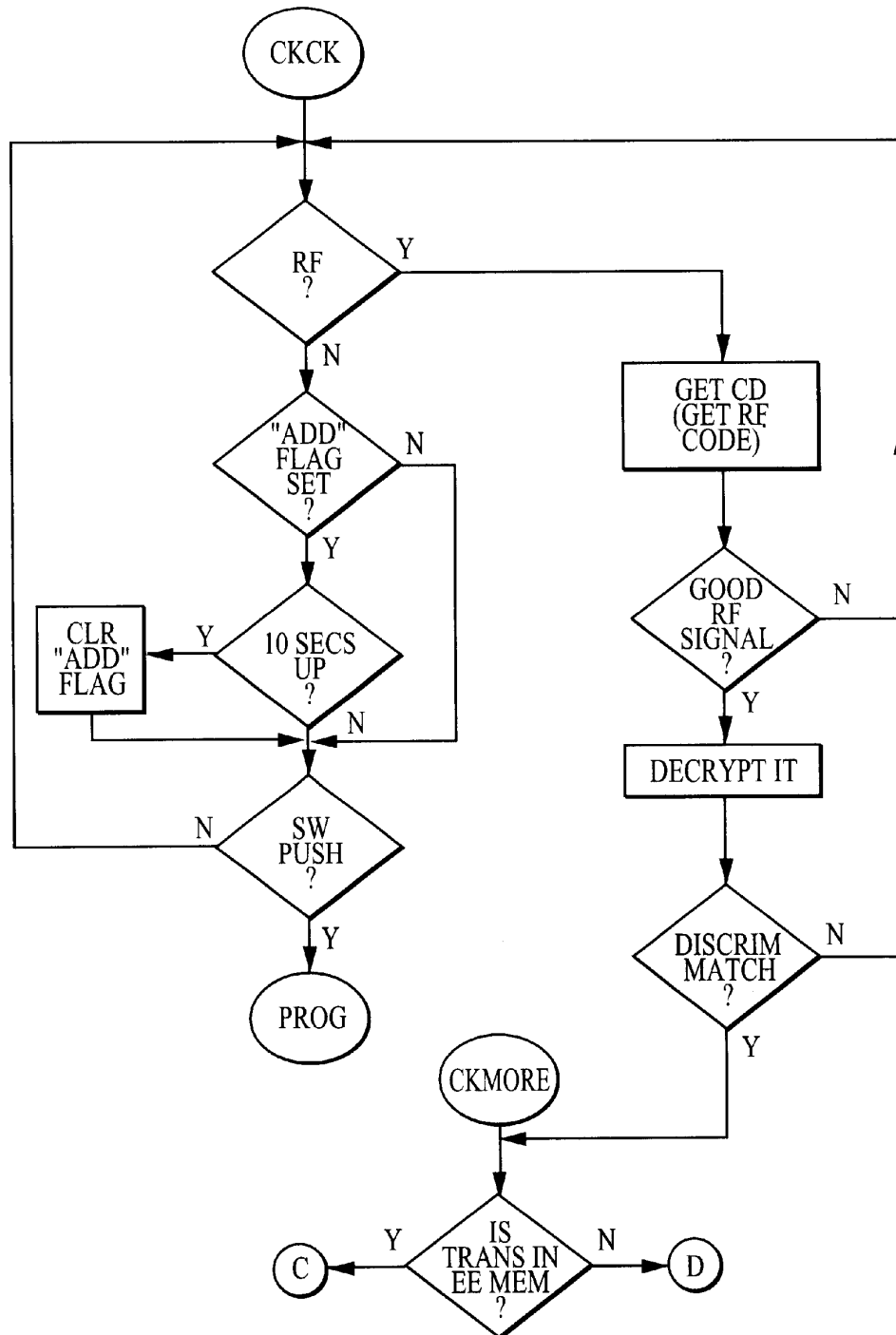


FIG. 1

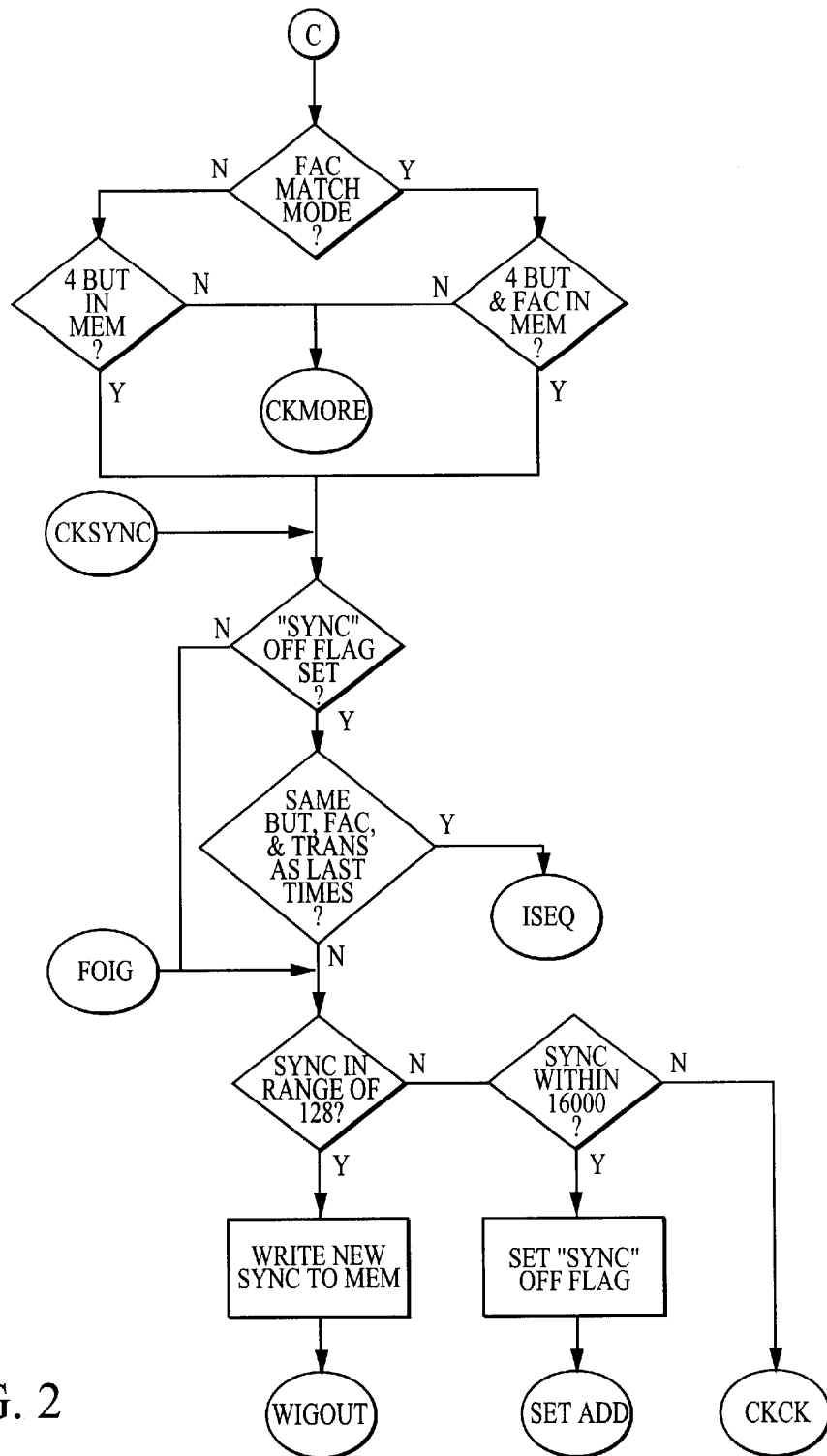


FIG. 2

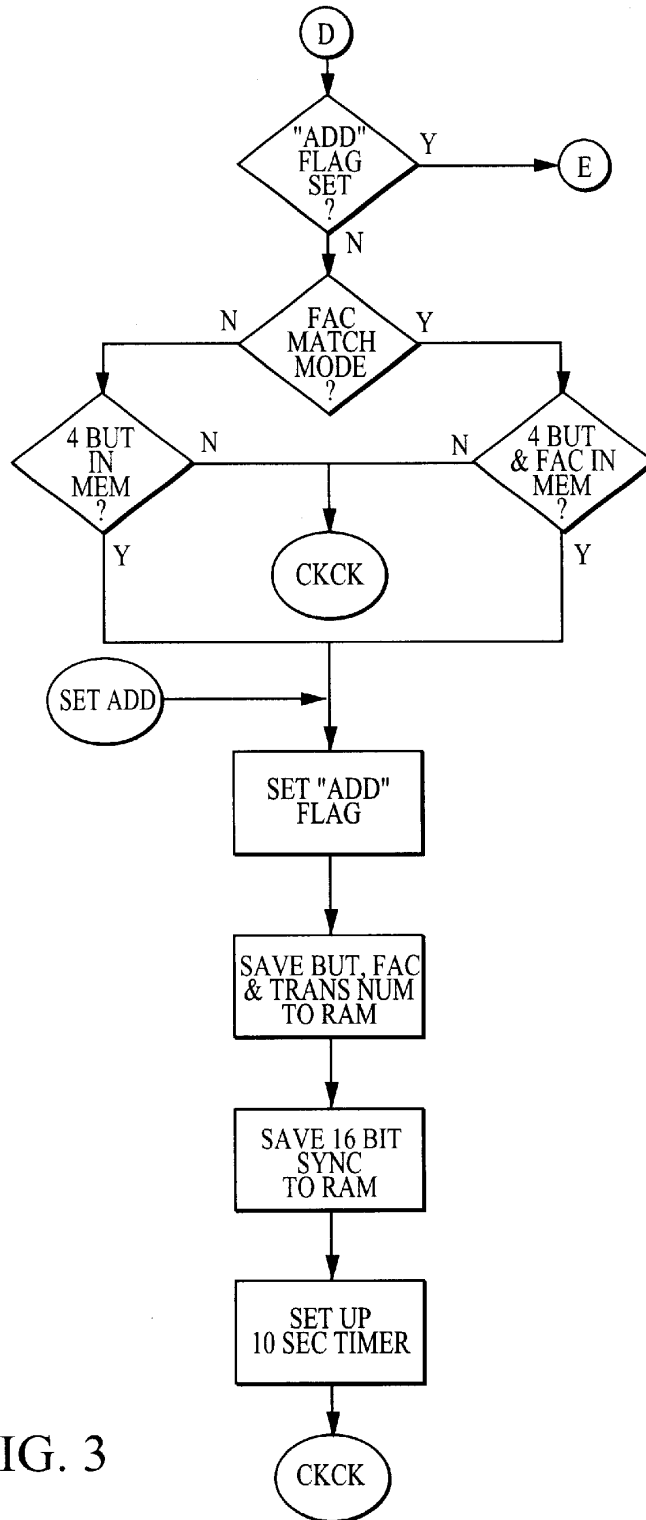


FIG. 3

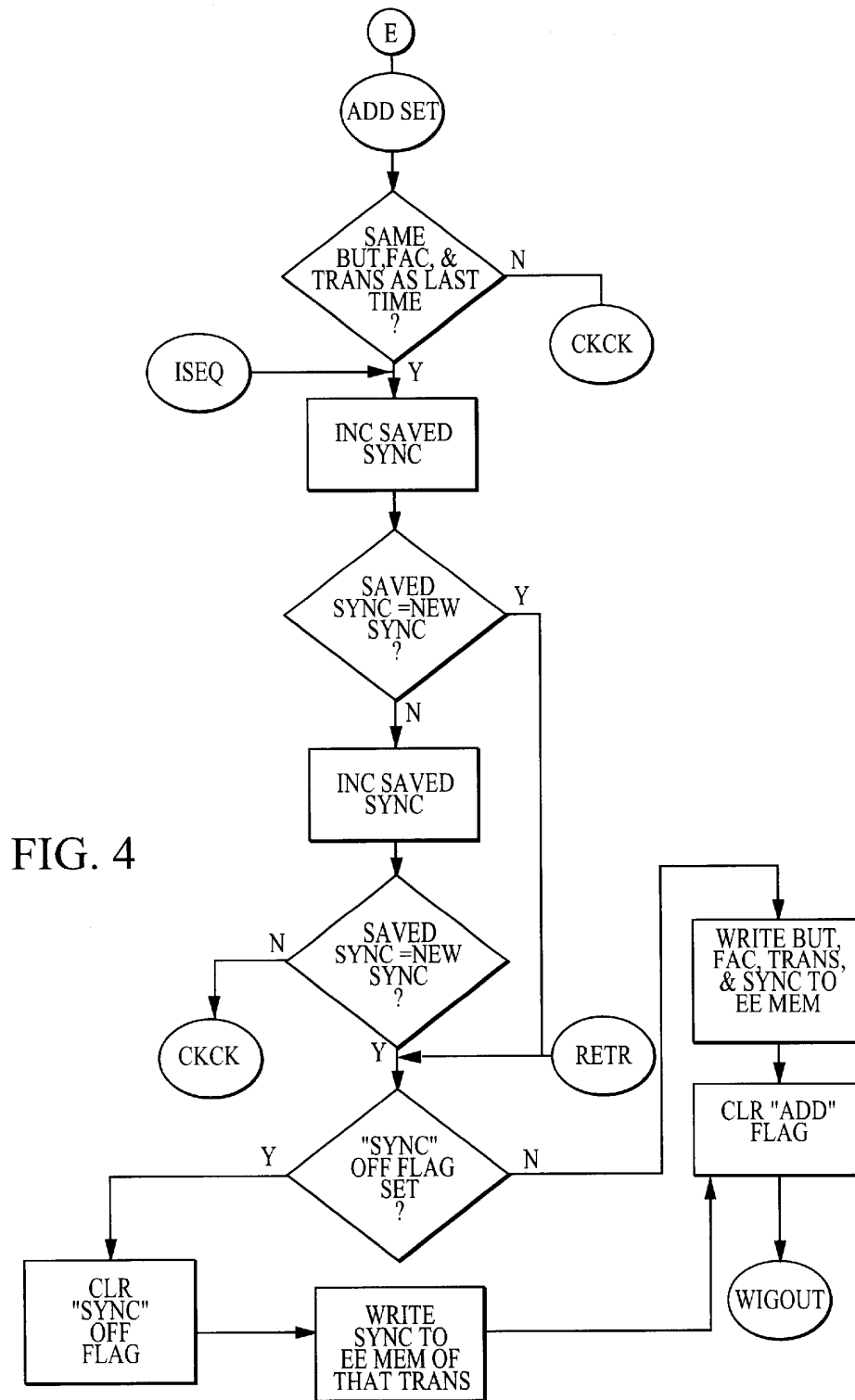


FIG. 4

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