United States Patent [19]

Hsu et al.

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[54] **FINGERPRINT ACTUATION OF CUSTOMIZED VEHICLE FEATURES**

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[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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[51] **Int. Cl.**^{7} **G06F 7/04**

[52] **U.S. Cl.** **340/825.31**; 340/825.3; 340/825.34; 340/430; 340/539; 340/825.69; 382/115; 382/124; 382/125; 382/126

[58] **Field of Search** 340/825.31, 825.3, 340/825.34, 430, 539, 825.69; 382/115, 224, 126, 124, 125

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[57] **ABSTRACT**

Apparatus, and a corresponding method for its use, for gaining access to and operating a vehicle, such as a car (**10**), by means of at least one fingerprint sensor (**16**) installed inside the vehicle at a convenient location and, optionally, outside the vehicle (at **14**), in or near a door handle (**12**). Once an authorized user's identify has been verified in a fingerprint matching device (**30**), various vehicle subsystems are automatically adjusted to the identified user's preferred settings, which are stored in a memory (**98**). In addition, starting the vehicle engine is enabled if an interior fingerprint sensor has been used, or the vehicle is unlocked if an exterior fingerprint sensor has been used. Vehicle subsystems that are automatically adjusted to the user preferences include seats (**38**), mirrors (**40**), steering wheel (**42**), climate control (**44**), airbag (**52**), telephone (**46**), radio (**50**) and onboard computer (**54**), as well as performance control features (**48**) such as suspension and transmission adjustment. Door locks (**34**) and security system features (**36**) are also automatically controlled, as is a radio transmitter (**56**) that is automatically customized to open the user's home garage door or office parking entry gate. Features of a number of different fingerprints are stored in the device to allow for operation of the vehicle (**10**) by different family members, as authorized by a primary user.
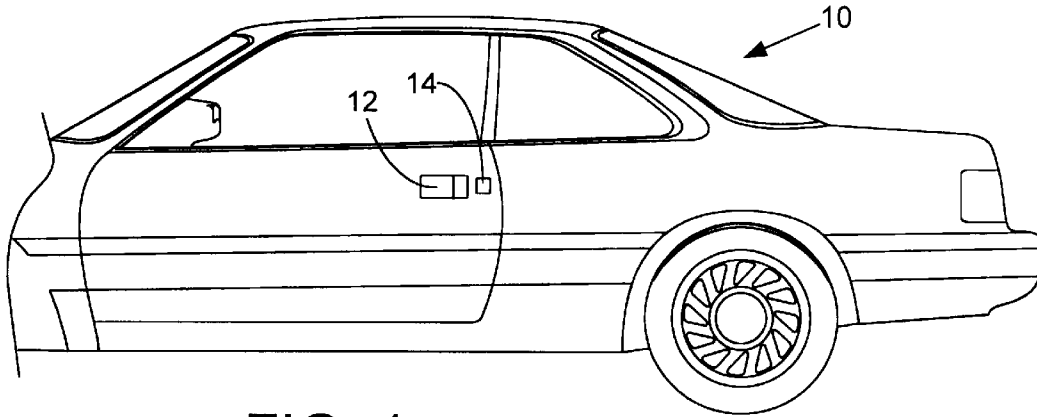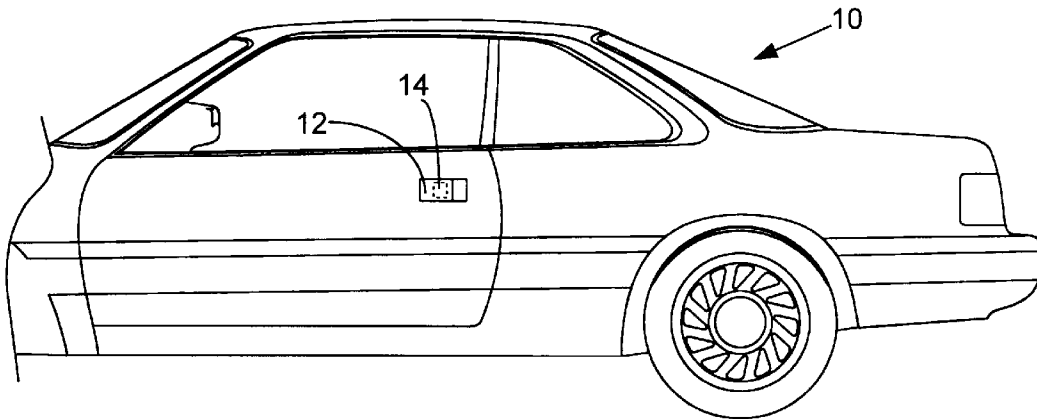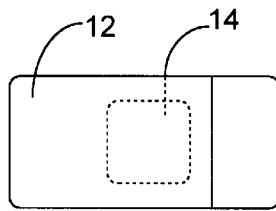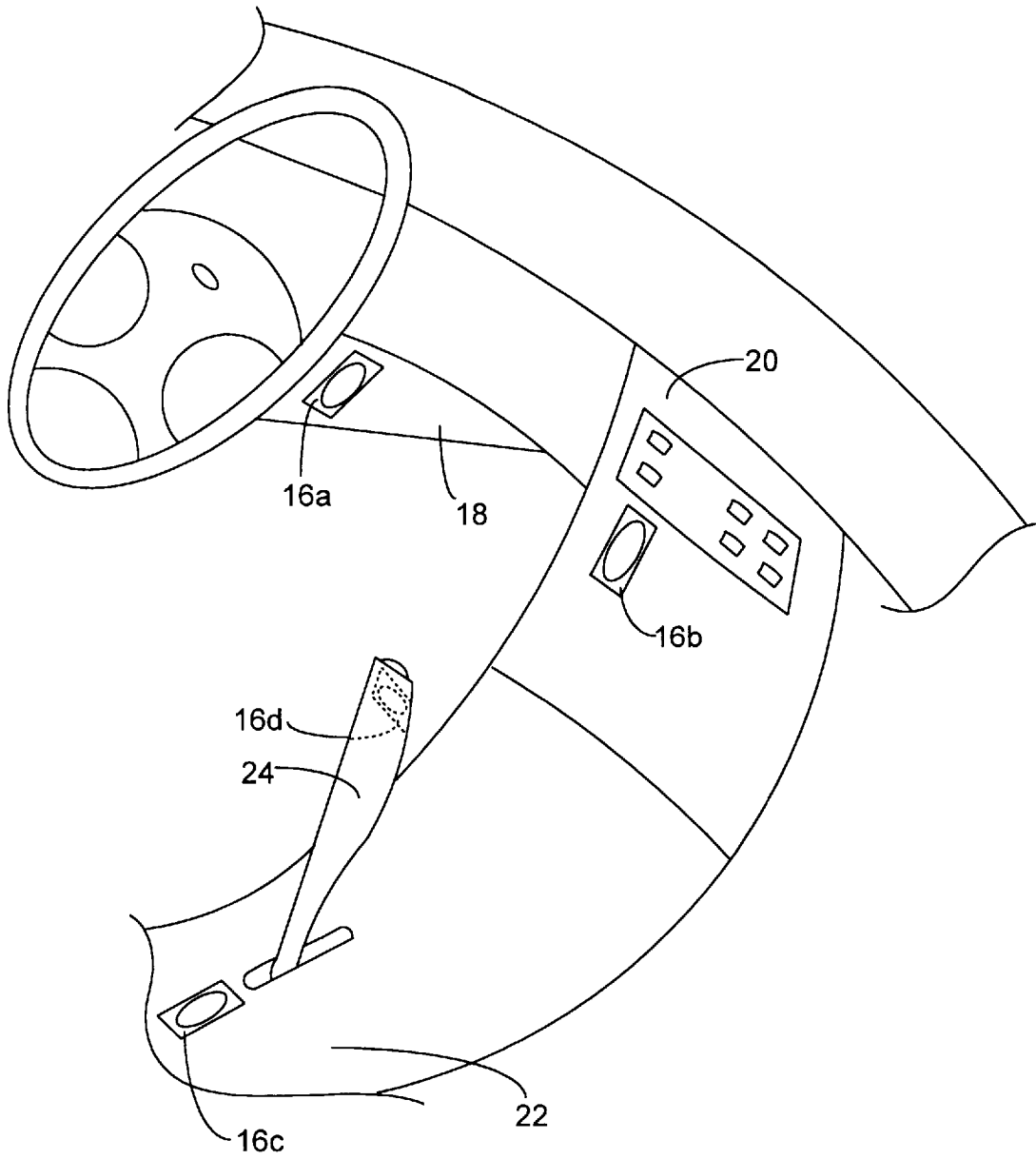
26 Claims, 7 Drawing Sheets

FIG. 1

FIG. 2

FIG. 3

FIG. 4

FIG. 5

HOME GARAGE DOOR — OPEN/CLOSE — 58

OFFICE PARKING GATE — OPEN/CLOSE — 60

TRANSMITTER — CONTROL ACCESS — 56

IN-CAR COMPUTER — 54

SELECT DATA SUBSCRNS.
- TRAFFIC
- WEATHER
- STOCKS
- NEWS
- SPORTS

LOGIN
FETCH E-MAIL
APPOINT-MENT BOOK
NAVIGA-TION PREFS.
SPEECH RECOGNTN.
SET VOICE PROFILE

INTERIOR FINGERPRINT SENSOR — SCAN FINGER — 16

DOOR-MOUNTED FINGERPRINT SENSOR — SCAN FINGER — 14

FINGERPRINT MATCHING DEVICE — CHECK ID — 30

AIRBAG — ADJUST FORCE — 52

CLIMATE CONTROL — ADJUST TEMP. — 44

ENTERTAIN-MENT CENTER — ADJUST RADIO — 50

STEERING WHEEL — ADJUST POSN. — 42

PERF. CONTROL — ADJUST SUSPN. & TRANSMN. — 48

MIRRORS — ADJUST POSNS. — 40

MOBILE PHONE — SELECT ACC., SET SPEED DIAL — 46

SEATS — ADJUST POSNS. — 38

DOOR LOCK — LOCK/UNLOCK — 34

ENGINE — RUN/STOP — 32

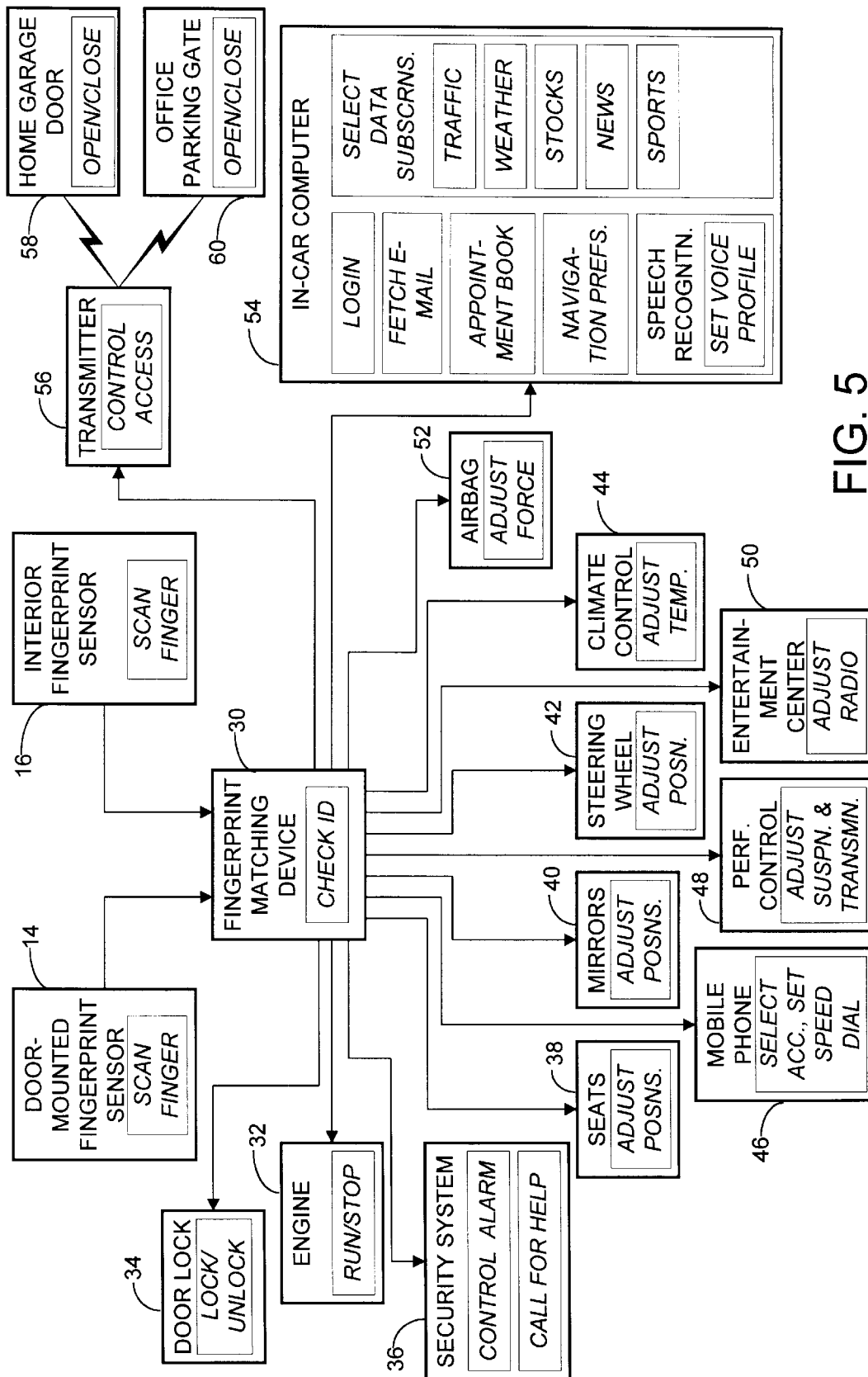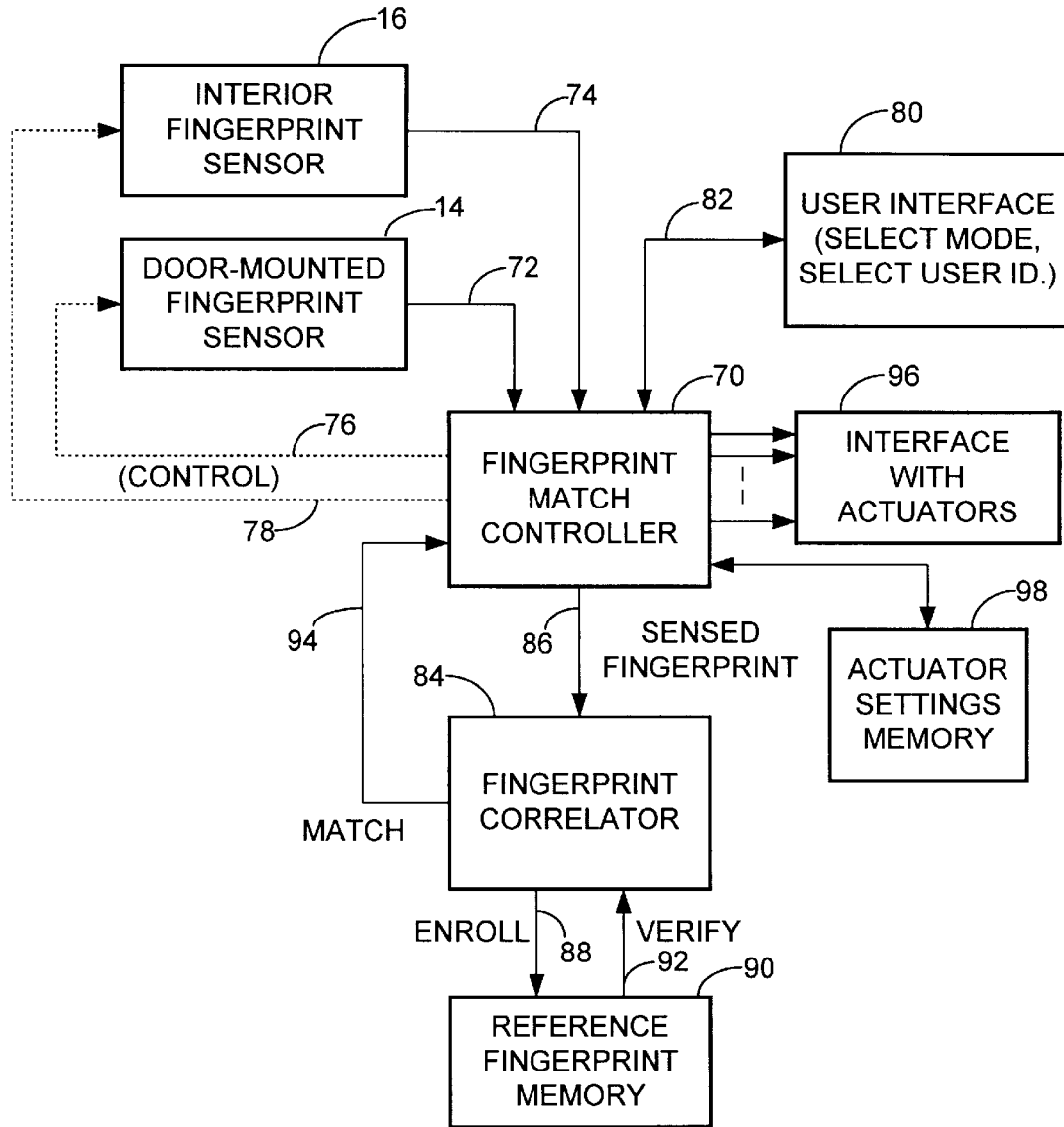SECURITY SYSTEM — CONTROL ALARM — CALL FOR HELP — 36

FIG. 6

DOCKET ALARM

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