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(54) **USE OF PERSONAL COMMUNICATION DEVICES FOR USER AUTHENTICATION**

(75) Inventors: **Sten-Olov Engberg**, Storvreta (SE); **Ake Jonsson**, Fagersta (SE)

(73) Assignee: **April System Design AB**, Solna (SE)

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H04L 12/14 (2006.01)
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(58) **Field of Classification Search** 380/247, 380/249; 455/411; 713/202, 182, 183, 185; 705/74; 235/382.5; 379/114.2; 709/219
See application file for complete search history.

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Primary Examiner—Gilberto Barrón, Jr.
Assistant Examiner—Matthew Heneghan
(74) *Attorney, Agent, or Firm*—Knobbe, Martens, Olson & Bear LLP
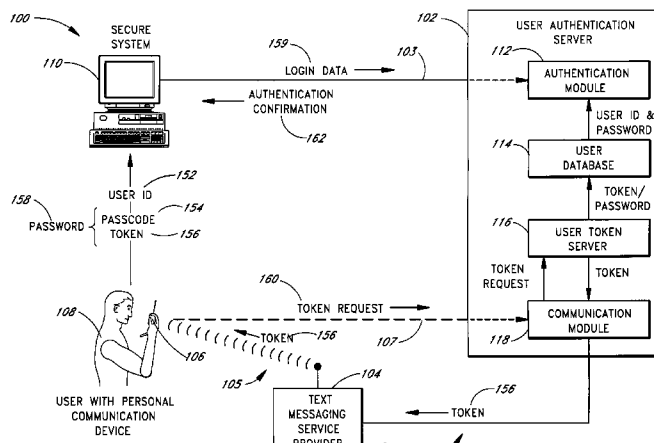
(57) **ABSTRACT**

A password setting system for a secure system includes a user token server and a communication module. The user token server generates a random token in response to a request for a new password from a user. The server creates a new password by concatenating a secret passcode that is known to the user with the token. The server sets the password associated with the user's user ID to be the new password. The communication module transmits the token to a personal communication device, such as a mobile phone or a pager carried by the user. The user concatenates the secret passcode with the received token in order to form a valid password, which the user submits to gain access to the secure system. Accordingly, access to the system is based upon: nonsecret information known to the user, such as the user ID; secret information known to the user, such as the passcode; and information provided to the user through an object possessed by the user, such as the token.

7 Claims, 11 Drawing Sheets

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FIG. 1

Logon To Network:

USER ID

PASSWORD

Note: Your password is your passcode followed by a valid token

FIG. 2A

Logon To Network:

USER ID

PASSCODE

TOKEN

FIG. 2B

Please enter a user ID to request a Token
Token will be instantly transmitted to your registered Personal
Communication Device and will be valid for one minute

USER ID

FIG. 2C

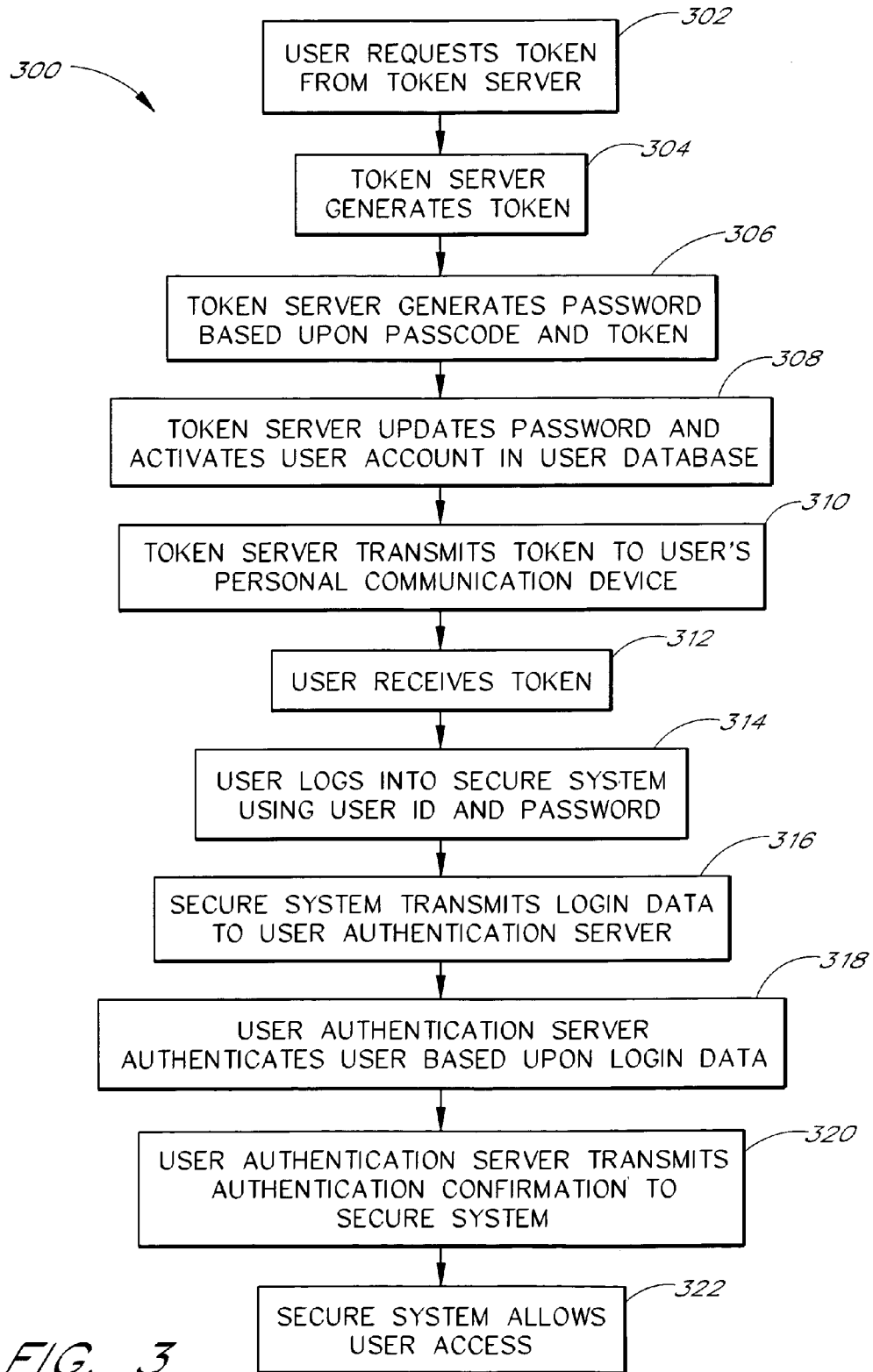Logon To Network:

PASSCODE

TOKEN

FIG. 2D

300

302
USER REQUESTS TOKEN
FROM TOKEN SERVER

304
TOKEN SERVER
GENERATES TOKEN

306
TOKEN SERVER GENERATES PASSWORD
BASED UPON PASSCODE AND TOKEN

308
TOKEN SERVER UPDATES PASSWORD AND
ACTIVATES USER ACCOUNT IN USER DATABASE

310
TOKEN SERVER TRANSMITS TOKEN TO USER'S
PERSONAL COMMUNICATION DEVICE

312
USER RECEIVES TOKEN

314
USER LOGS INTO SECURE SYSTEM
USING USER ID AND PASSWORD

316
SECURE SYSTEM TRANSMITS LOGIN DATA
TO USER AUTHENTICATION SERVER

318
USER AUTHENTICATION SERVER
AUTHENTICATES USER BASED UPON LOGIN DATA

320
USER AUTHENTICATION SERVER TRANSMITS
AUTHENTICATION CONFIRMATION TO
SECURE SYSTEM

322
SECURE SYSTEM ALLOWS
USER ACCESS

FIG. 3

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