United States Patent [19]

Audebert

[54] **SYSTEM AND METHOD FOR USER AUTHENTICATION HAVING CLOCK SYNCHRONIZATION**

[75] Inventor: **Yves Audebert**, Foster City, Calif.

[73] Assignee: **Activcard**, Sursesnes Cedex, France

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 620,162, Mar. 22, 1996, Pat. No. 5,737,421.

[51] **Int. Cl.^{6}** **H04K 1/00**; H04L 9/00; G06K 5/00

[52] **U.S. Cl.** **380/23**; 235/382; 380/25; 380/48; 380/49

[58] **Field of Search** 380/23, 25, 48, 380/49; 235/382

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Primary Examiner—Stephen C. Buczinski
*Attorney, Agent, or Firm*—Stevens, Davis, Miller & Mosher, L.L.P.

[57] **ABSTRACT**

The system includes a first unit adapted to communicate with a second unit. The second unit grants conditional access to a function or service in accordance with an authentication operation. Both units are capable of running software for generating passwords by means of encryption of several dynamic variables as for example a time dependent variable and/or a variable representing the number of formulated authentication requests. The encryption may be performed using a dynamic key. In order to synchronize the values of the variables generated in concert but independently in the units, only some of the least significant digits of the variables are transferred from the card-like unit to the other unit, with the transfer being performed by adding the digits to the password. This synchronization information is combined with corresponding variables in the second unit and used to calculate therein a value which has to match with the password calculated in the second unit in order to gain access to the function or service. In a "virtual token" implementation, the first unit can be a smart card, which stores the dynamic key and the variable representing the number of formulated authentication requests and executes an encryption algorithm, a smart card reader and a personal computer. Either the smart card reader or the personal computer can generate the time dependent variable. In a "software token" implementation, the functions of the first unit are performed by a computer such as a personal computer, thus eliminating the need for a smart card or a smart card reader.
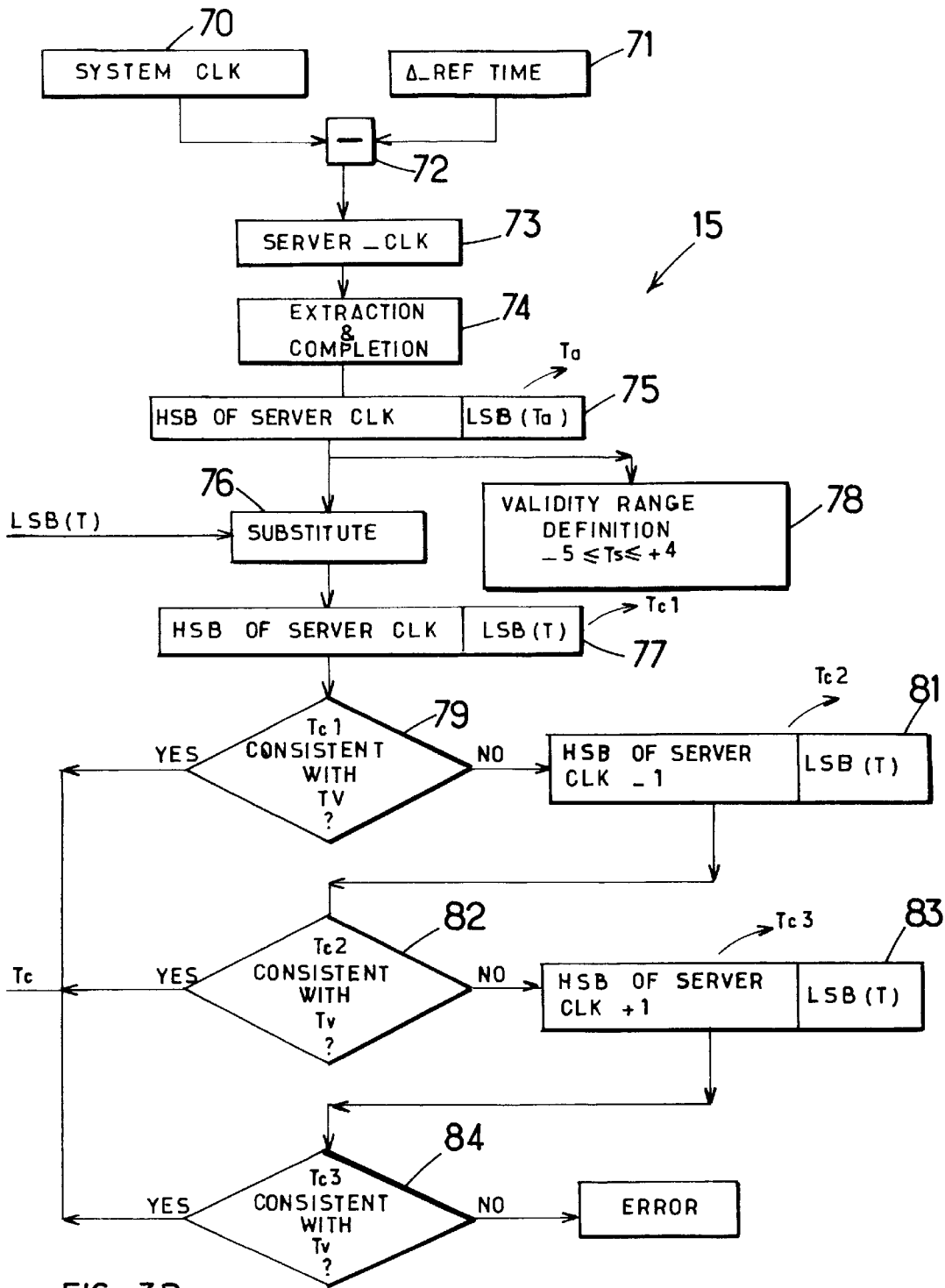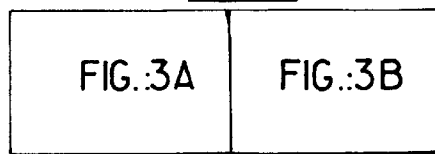
50 Claims, 9 Drawing Sheets

FIG.: 1

FIG.:8

FIG. : 2

FIG.:3B

FIG.:3

FIG.:3A	FIG.:3B
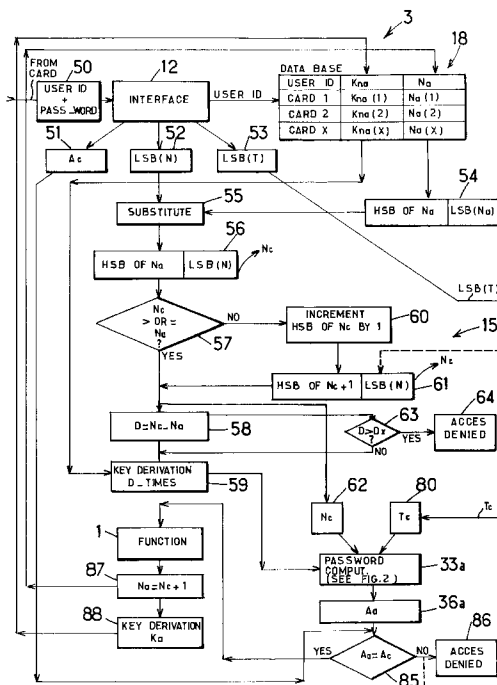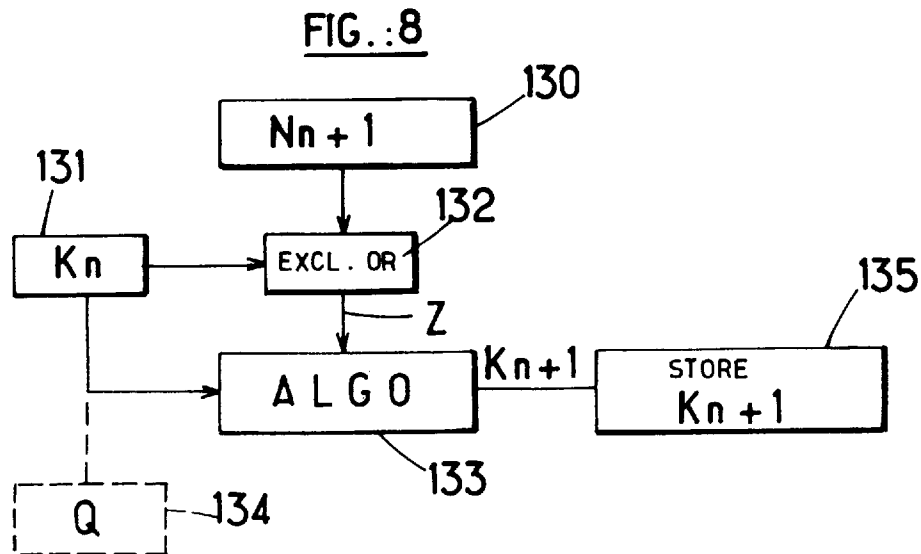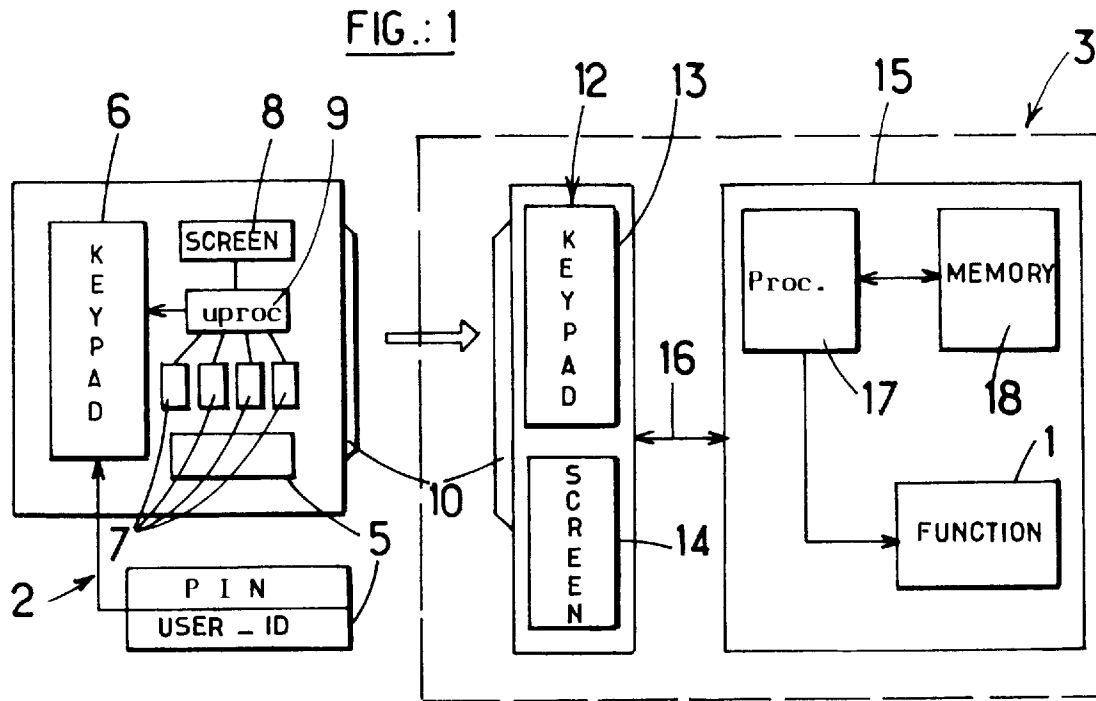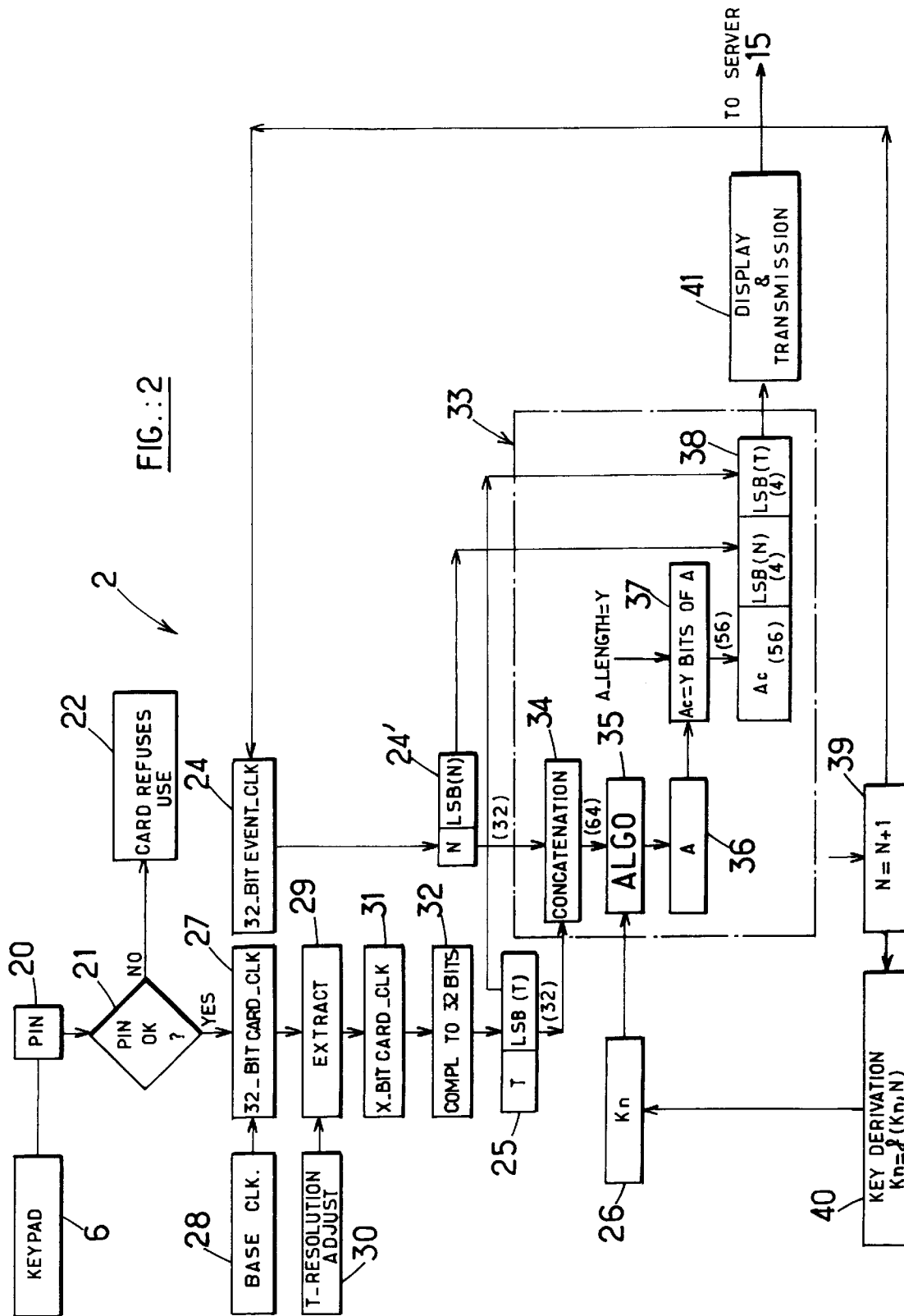
FIG.:3A

DOCKET ALARM
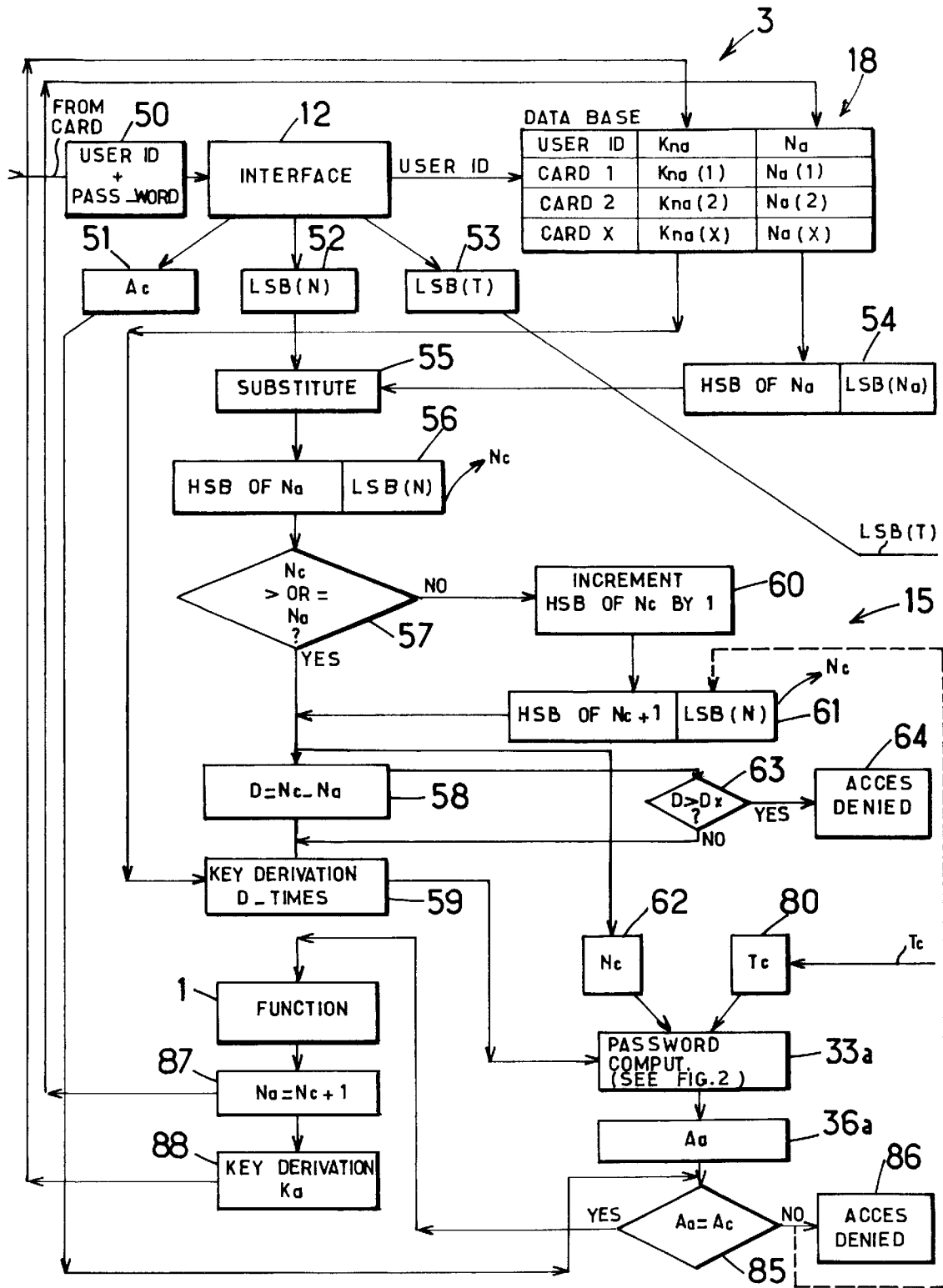
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