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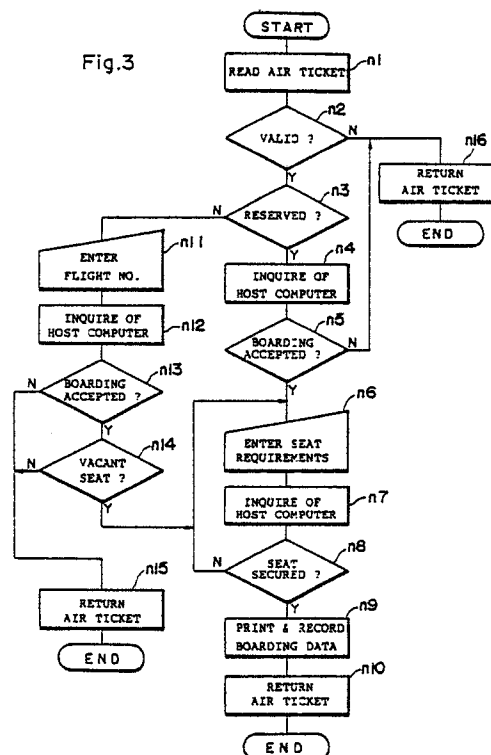
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54 **Automatic checkin apparatus.**

57 In an automatic checkin apparatus, an air ticket is received by an air ticket reading section (12) to read contents recorded on the air ticket; boarding procedure such as seat allocation is effected in communication with a host computer (20) by a boarding procedure processing section (10); and the air ticket on which boarding card data are printed on the basis of boarding procedure by a boarding card data printer (11) is returned to the passenger. This apparatus can save labor necessiated for boarding procedure, improve checkin efficiency, while using an air ticket in common with a boarding card.

Fig.3



Automatic Checkin Apparatus

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to an automatic checkin apparatus which can receive air tickets and process necessary boarding procedure.

Description of the Prior Art

The conventional checkin procedure in airport is as follows:

At a checkin counter, a passenger hands an air ticket to a clerk and says a flight number and a seat desired. The counter clerk enters these data into a terminal device through keys to transmit them to a host computer to allocate the required seat and issue a boarding card.

In the above-mentioned conventional method, since data entry operations are all effected by a counter clerk via keys, a number of clerk should be stationed at each check counter. Further, there exists another problem in that error tends to be produced since a clerk intervenes in the transmission of data, i.e., data are inputted by the clerk to transmit the contents of an air ticket and passenger's requirements to a host computer.

SUMMARY OF THE INVENTION

With these problems in mind, therefore, it is the primary object of the present invention to provide an automatic checkin apparatus which can allow passengers to checkin for themselves.

To achieve the above-mentioned object, an automatic checkin apparatus of the present invention comprises air ticket reading means for receiving an air ticket and reading data recorded thereon; boarding procedure processing means for processing boarding procedure including seat allocation when the air ticket read through said air ticket reading means is a valid air ticket; and printing means for printing boarding card data including a seat number on the air ticket or boarding card and issuing the printed air ticket or boarding card.

The automatic checkin apparatus operates as follows:

(1) The air ticket reading means reads a passenger's air ticket.

(2) The boarding procedure processing means processes boarding procedure such as seat allocation on the basis of the read data.

(3) The boarding card data printing means prints boarding card data on the air ticket or a boarding card on the basis of boarding procedure and returns the air ticket or issue the boarding card to the passenger.

By doing these, boarding procedure can be automatized and allowed to be operated by passengers themselves. Further, an air ticket can be used in common with a boarding card. Of course, a boarding card may be issued.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective outside view showing an embodiment of an automatic checkin apparatus according to the present invention;

Fig. 2 is a block diagram of a controller incorporated in the automatic checkin apparatus;

Fig. 3 is a flowchart showing the operations of the controller incorporated in the automatic checkin apparatus;

Fig. 4 is a perspective view showing a checkin apparatus of another embodiment which is effective to air tickets on which seat numbers has been allocated, in particular;

Fig. 5 is a block diagram showing hardware configuration of the apparatus shown in Fig. 4;

Fig. 6 is an illustration showing a format of the air ticket data; and

Fig. 7 is a flowchart showing software configuration of the apparatus shown in Fig. 4.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Fig. 1 is an outside view of an embodiment of the automatic checkin apparatus according to the present invention. An air ticket insertion slot 1 is provided on a vertical operation panel so that a passenger who requires checkin can insert his air ticket for himself. A CRT 3 for indicating operation guidance and processed status for passengers, and ten-key pad 4 for entering a flight name or number and seat requirements are arranged on a horizontal operation panel. The seat requirements are smoking seat, nosmoking seat, window-side seat, aisle-side seat, etc. These seat requirements are represented by numerical codes on the CRT 3. Therefore, the passenger can designate the seat requirements by entering a numerical code via the ten-key pad 4. Further, a printer 11 (see Fig. 2) is provided inside the air ticket insertion slot 1 to print boarding card data on the inserted air ticket.

Fig. 2 is a block diagram of a controller of the above automatic checkin apparatus. A microcomputer 10 for controlling the operation of the apparatus is made up of a CPU, ROM, RAM, etc. To this microcomputer 10, various sections are connected such as a printer 11 for printing boarding card data including a seat number on the surface of the inserted air ticket by thermoprinting method, for example; a magnetic stripe reader/writer 12 for reading air ticket data recorded on a magnetic film (magnetic stripe) formed on the reverse side of the air ticket and writing the boarding card data; a display section 13 for controlling the CRT 3; and an operation control section 14 for controlling ten-key pad 4.

Further, the microcomputer 10 is connected to a host computer 20 via an exclusive line. In this host computer, a seat table and passengers' name are stored, respectively for each flight.

Fig. 3 is a flowchart showing the operation of the automatic checkin apparatus of the present invention.

When an air ticket is inserted by a passenger, contents of the air ticket are read (in step n1), and control checks whether the air ticket is valid with respect to flight route, etc. on the basis of the read contents (in step n2). If the air ticket is valid, control proceeds to in step n3 to check whether the ticket is a reservation ticket by which a flight number is reserved.

If reserved, control inquires of the host computer about the reserved flight number (in step n4). If the host computer 20 answers boarding acceptance, control receives seat requirements (smoking seat, nonsmoking seat, etc.) entered when the passenger operates the ten-key pad 4 (in step n6), and control inquires again of the host computer 20 about seats on the basis of the entered requirements (in step n7). If a seat is secured on the basis of the requirements, control actuates the printer 11 and the magnetic stripe reader/writer 12 to print boarding card data such as a seat number on the air ticket and to magnetically record these data (in step n9), and then returns the printed air ticket through the air ticket insertion slot 1 (n10). A boarding card data may be printed and magnetically recorded on a boarding card in place of the air ticket to issue a boarding card. If a seat is not secured on the basis of the requirements entered in step n8, control returns to step n6 again on the basis of the decision of step 8 to receive another seat requirement entry.

If the inserted air ticket is not reserved and decided so (in step n3), control proceeds to step n11 to receive a flight number entered via the ten-key pad 4. Control inquires of the host computer about the entered flight number (in step 12). If boarding is accepted (in step n13) and there exists

a vacant seat (in step n14), control receives seat requirements (in step n6).

Further, if the ticket is determined invalid (in step n2), if boarding is not accepted in the corresponding flight number (in step n5 and n13), and if no vacant seat is present (in step 14), the inserted air ticket is returned to the passenger (in steps n15 and n16) to complete the operation.

The magnetic stripe reader/writer 12 and the step n1 correspond to the air ticket reading means; the steps n6 to n8 correspond to boarding procedure processing means; and the printer 11 and steps n9 and n10 correspond to the boarding card data printing means.

As described above, in the automatic checkin apparatus according to the present invention, since boarding procedure can be effected on the basis of contents recorded on an air ticket and read from the air ticket reading means, and further the boarding card data are printed on the air ticket before being returned to the passenger; passengers themselves can effect checkin without intervention of clerks, thus realizing automatization of passenger checkin work.

Therefore, it is possible to improve the efficiency of checkin procedure processing without increasing clerks. Further, since data are not entered through keys by a clerk, it is possible to eliminate erroneous data entry and reduce erroneous checkin, thus enhancing service for passengers.

In the above-mentioned embodiment, checkin procedure is effected for air tickets on which no seat number is allocated when passengers purchased an air ticket. However, on the other hand, there are of course air tickets on which each seat number can be allocated when passengers purchase an air ticket. In these air tickets, an allocated or reserved seat number has already been recorded on the air ticket and stored in the host computer. For these air tickets, no seat allocation is required in the checkin procedure. However, it is still necessary to confirm the passenger that he has intention to board the airplane corresponding to the air ticket. This is because if he has no intention of boarding, it is necessary to give a chance of boarding to another passenger by handling the ticket as being cancelled.

An embodiment of the automatic checkin apparatus of the present invention, which can implement checkin procedure to confirm boarding intention of passengers who have an air ticket on which a seat number has already been reserved when the ticket was purchased, will be described hereinbelow.

Fig. 4 is an outside view showing the automatic checkin apparatus of this type. As shown, the checkin apparatus 31 is provided with a CRT 32 with a

touch panel as a keyboard function and an air ticket insertion slot 33 on a front panel thereof.

As shown in Fig. 5, the control section of the checkin apparatus 31 is a microcomputer composed of a CPU 34, RAM 35, ROM 36, etc. By controlling the CRT 32 with the touch panel, a ticket reader 37 for reading data from a magnetic stripe of a ticket, and a communications interface 38 to the control section, it is possible to implement various functions as described later.

Fig. 7 is a flowchart showing a program executed by the CPU 34. The operation of the apparatus of the present invention will be described hereinbelow with reference to this flowchart.

When program starts, data on an air ticket are inputted (in step n21). In this embodiment, air ticket data (including a reserved seat number data) can be entered when an air ticket having a magnetic stripe is inserted into the ticket insertion slot 33 or when a clerk enters air ticket data by depressing keys on the touch panel of the CRT 32.

In air tickets used for this embodiment, a perforation is formed in each air ticket. Therefore, each passenger can reserve an any desired seat number when he purchases the ticket. However, it is of course possible to use such air tickets as used for the checkin apparatus as shown in Fig. 1.

As depicted in Fig. 6, the air ticket data are passenger name, boarding data, boarding route or section, flight number, and seat number, which are all recorded on a magnetic stripe on the ticket.

Within the RAM 35 of the checkin apparatus 31, data of air tickets which have already been sold are previously recorded. Therefore, the checkin apparatus 31 itself can discriminate the validity of air ticket data. However, it is of course possible to discriminate the validity thereof in communication with the host computer.

After air ticket data have been entered, the validity of the entered air ticket data are determined on the basis of data already recorded (in step n22).

If determined to be invalid (NO in step n22), the air ticket is automatically returned to the passenger through the ticket insertion slot 33 (in step n23).

In contrast with this, if the entered data match the recorded data and therefore an air ticket is determined to be valid (YES in step n22), intention of boarding the corresponding flight number is determined (in step n24).

To determine the boarding intention, the following two methods are possible. In the first method, boarding intention is determined when a valid air ticket was inserted twenty minutes before the corresponding scheduled boarding time (departure time). In the second method, boarding intention is determined when a passenger depresses a key

indicating "boarding" arranged on the touch panel of the CRT 32 twenty minutes before the corresponding departure time.

Once the presence of boarding intention is confirmed (YES in step n24), control communicates with the host computer via the communication interface 38 and transfers air ticket data to the host computer. Simultaneously, in the host computer, a flag indicative of the presence of boarding intention rises at a predetermined area of a file corresponding to the flight number, and control in the host computer stores a completion of boarding procedure (checkin processing) (in step n25). After data communications between the host computer and the checkin apparatus have been completed, the entered air ticket is returned to the passenger through the ticket insertion slot 33 (in step n26).

According to the apparatus of the present invention as described above, a passenger can reserve a seat when he purchases an air ticket at a tourist bureau. Further, when he wants to cancel the seat once reserved, the reserved seat can be canceled when he does not operate this checkin apparatus 31 installed in an airport lobby, for instance. In contrast, when he does not want cancel the seat, the reserved seat can be confirmed when he operates this checkin apparatus 31.

Further, a passenger who intends to board a plane can transmit his intention of boarding by only inserting his air ticket into the checkin apparatus 31 till 20 minutes before the scheduled boarding time.

Being different from the conventional air passenger service, since no clerks are required at airport counters and checkin procedure can be mechanized, it is possible to eliminate crowding or confusion at the counter field with passengers who want to cancel or change seats.

On the other hand, since terminal unit or apparatus (including the checkin apparatus shown in Fig. 1) communicatable with a host computer are installed at airport counters as is well known, when the time 20 minutes before the boarding time has passed, it is possible to confirm vacant seat in on-line manner with reference to a flight number file in the host computer through the terminal apparatus. The vacant seat thus confirmed are immediately sold efficiently to other passengers (e.g. sky mates) who are waiting for cancelled seats.

Where the function of the checkin apparatus shown in Fig. 4 is added to that shown in Fig. 1, it is possible to effect checkin procedure to all passengers who have air tickets on which a seat number is allocated or not allocated by a single checkin apparatus. However, it is of course possible to install the checkin apparatus shown in Fig. 4 separately. In this case, this apparatus is usable to

confirm the boarding intention of the passengers who have air tickets on which a seat number is reserved under the name of "passenger terminal device".

Claims

1. An automatic checkin apparatus comprising:
 - (a) air ticket reading means (12) for receiving an air ticket and reading data recorded thereon;
 - (b) boarding procedure processing means (10) for processing boarding procedure including seat allocation when the air ticket read by said air ticket reading means is a valid air ticket; and
 - (c) printing means (11) for printing boarding card data including a seat number on the air ticket or a boarding card and issuing the printed air ticket or boarding card.
2. A method of automatically checking-in passengers which comprises the following steps of:
 - (a) reading data recorded on an air ticket (n1);
 - (b) checking whether the read air ticket is valid (n2);
 - (c) if valid, checking whether the air ticket is a reserved ticket (n3);
 - (d) if a reserved ticket, inquiring of a host computer about the boarding acceptance (n4);
 - (e) if accepted (n5), entering seat requirements (n6);
 - (f) inquiring of the host computer about the entered seat requirements to secure a seat under requirements (n7);
 - (g) if a seat is secured (n8); printing and recording necessary boarding card data on the air ticket (n9); and
 - (h) returning the printed air ticket (n10).
3. The method of claim 2, which further comprises the following steps of:
 - (a) if not a reserved ticket in step (c) (n3), entering a flight number (n11);
 - (b) inquiring of the host computer about the boarding acceptance (n12);
 - (c) if accepted (n13), checking whether there exists a vacant seat (n14); and
 - (d) if exists, returning to step (e).
4. The automatic checkin apparatus as set forth in claim 1, which further comprises:
 - (a) first determining means (34) for determining validity of a reserved seat data read from an air ticket inserted by a passenger or entered by passenger's manual operation;
 - (b) second determining means (34) for determining a presence or absence of boarding intention with respect to the reserved seat data on the basis of the fact that an air ticket has been inserted thereinto or that a passenger has performed a

predetermined manual operation thereto a predetermined time before a boarding time relating to the reserved seat data; and

(c) transmitting means (38) for transmitting a checkin end to a corresponding reserved seat file in a host computer when said first determining means determines the validity of the reserved seat data and said second determining means determines the presence of boarding intention.

5. A passenger terminal apparatus, which comprises:

(a) first determining means (34) for determining validity of a reserved seat data read from an air ticket inserted by a passenger or entered by passenger's manual operation;

(b) second determining means (34) for determining a presence or absence of boarding intention with respect to the reserved seat data on the basis of the fact that an air ticket has been inserted thereto or that a passenger has performed a predetermined manual operation thereto a predetermined time before a boarding time relating the reserved seat data; and

(c) transmitting means (38) for transmitting a boarding intention to a corresponding reserved seat file in a host computer when said first determining means determines the validity of the reserved seat data and said second determining means determines the presence of boarding intention.

Fig.1

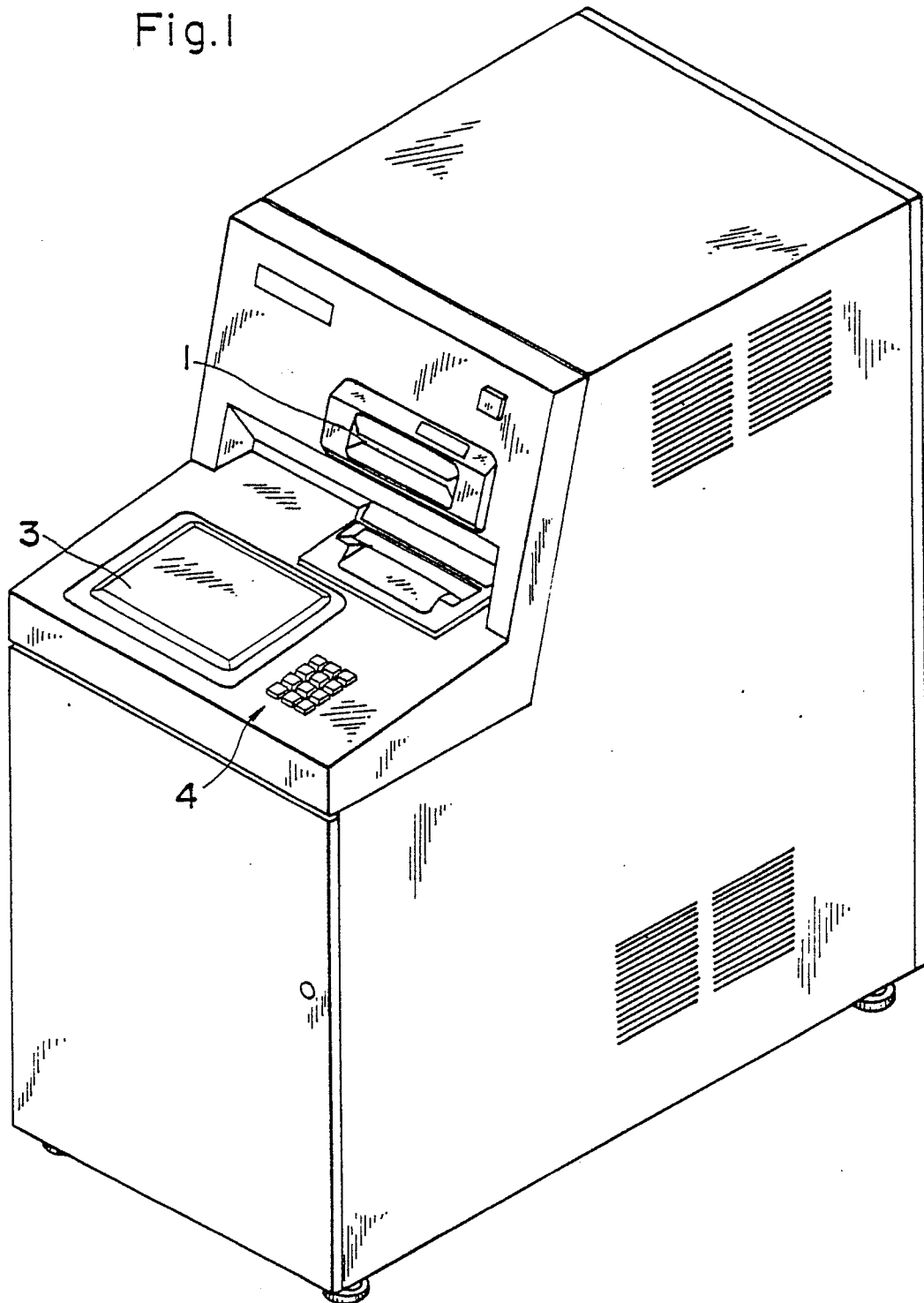


Fig.2

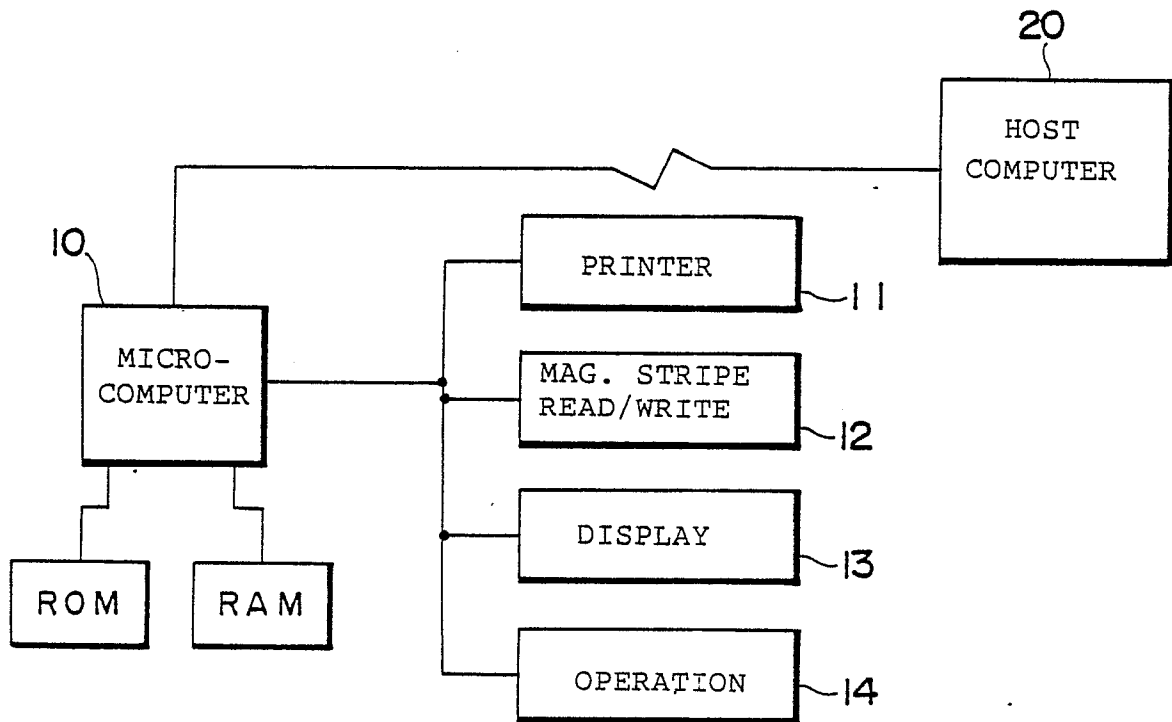
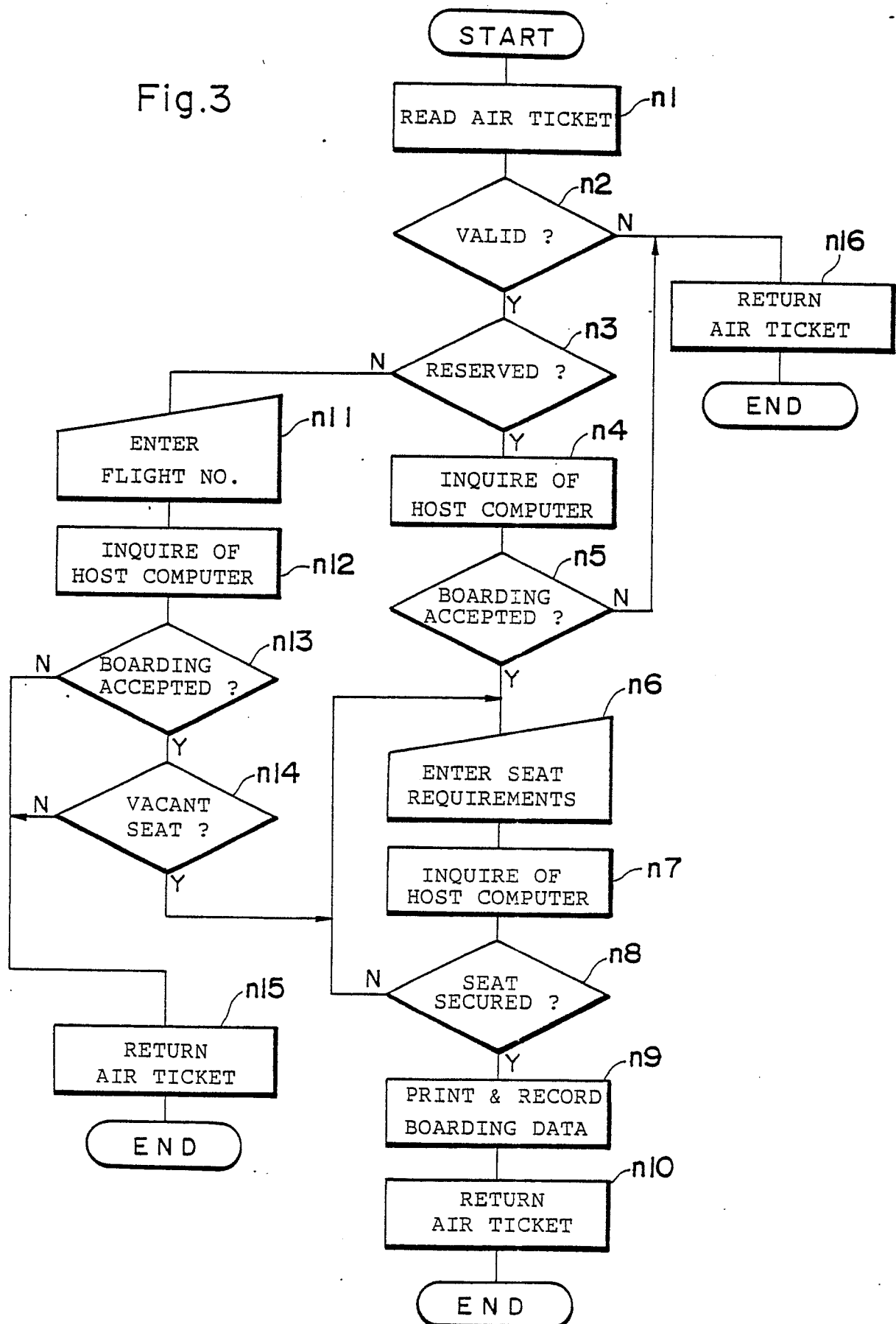


Fig.3



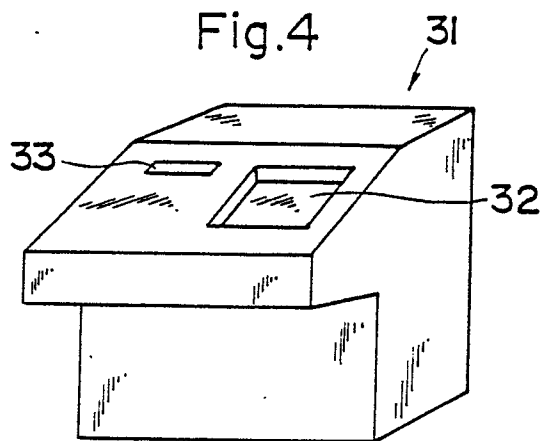


Fig.6

AIR TICKET DATA

PASSENGER NAME
BOARDING DATE
BOARDING ROUTE OR SECTION
FLIGHT NUMBER
SEAT NUMBER

Fig.5

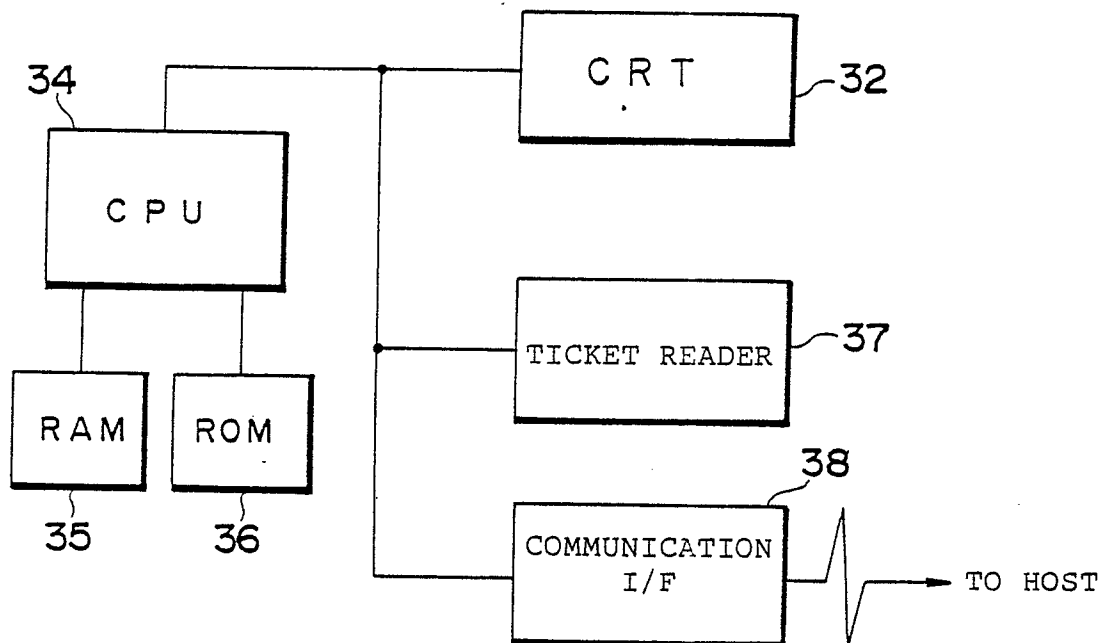


Fig.7

