(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 342 632 A2**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **89108847.8**

(51) Int. Cl.4: **G04G 11/00**

(22) Date of filing: **17.05.89**

(30) Priority: **17.05.88 JP 120164/88**

(43) Date of publication of application:
23.11.89 Bulletin 89/47

(84) Designated Contracting States:
DE GB

(71) Applicant: **SHARP KABUSHIKI KAISHA**
22-22 Nagaike-cho Abeno-ku
Osaka 545(JP)

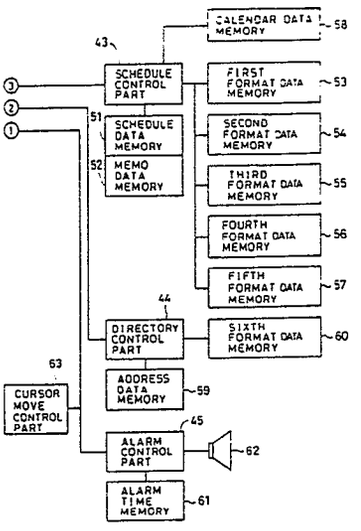
(72) Inventor: **Nakao, Hiroshi**
156-16, Hatanosho Tawaramoto-cho
Shiki-gun Nara-ken(JP)
Inventor: **Shibata, Yukihiro Takanohara Ahban C404**
2-2, Kabutodai Kizu-cho
Soraku-gun Kyoto(JP)
Inventor: **Nishida, Hiroshi**
364, Higashiitoudo-cho
Tenri-shi Nara-ken(JP)
Inventor: **Kawamura, Takuji**
3-9-3, Shigigaoka Sango-cho
Ikoma-gun Nara-ken(JP)
Inventor: **Nakamura, Keji**
Yamato dormitory 492, Minosho-cho
Yamatokoriyama-shi Nara-ken(JP)
Inventor: **Tubouchi, Koichi**
1-21-503, Tsurumainishi-machi
Nara-shi Nara-ken(JP)
Inventor: **Shiraki, Tatsuya**
419-10, Hatanosho Tawaramoto-cho
Shiki-gun Nara-ken(JP)
Inventor: **Ijuin, Makoto**
1-22-403, Tsurumainishi-machi
Nara-shi Nara-ken(JP)
Inventor: **Kakuda, Kiyoshi**
Sejuru Tegai 202 38, Tegai-cho
Nara-shi Nara-ken(JP)
Inventor: **Inoue, Jun**
Kounan Nyutaun 47 Kounan-cho
Kouga-gun Shiga-ken(JP)

(74) Representative: **Reinhard, Skuhra, Weise**
Friedrichstrasse 31
D-8000 München 40(DE)

(54) Data processing apparatus with schedule control function.

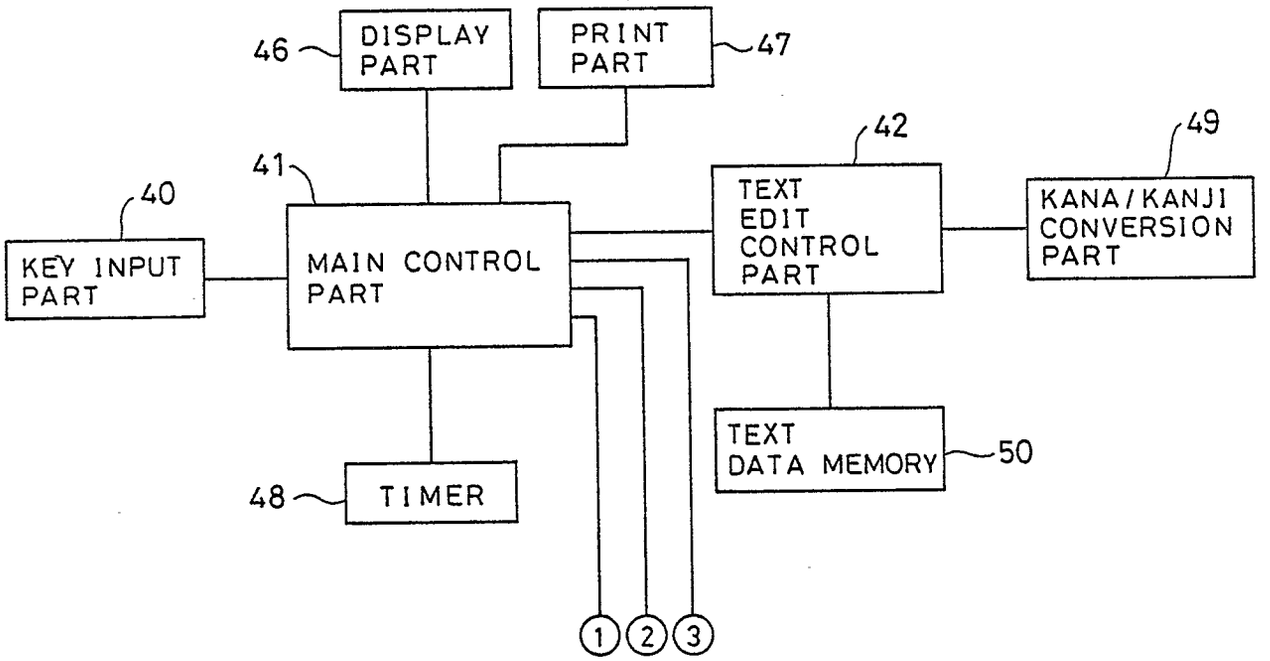
(57) A data processing apparatus provided with an input part for inputting a schedule, a memory for storing data on a schedule and a calendar, a write/read part for writing/reading schedule data and reading a calendar to the memory, a display part for displaying schedule data and/or a calendar, a schedule control part for editing schedule data and others; the schedule control part comprising A) a function to have the display part display both schedule data and calendar and also to identify and display the date of the calendar corresponding to the date of schedule to edit, B) a function to erase collectively the schedule data within a designated area, C) a function to correct data which corresponds to the format of the destination to which the data is copied when copying, D) a function to shift the schedule data to a designated time or date.

FIG.1b



EP 0 342 632 A2

FIG. 1a


46
DISPLAY PART
PRINT PART
47
42
49
41
40
TEXT EDIT CONTROL PART
KANA / KANJI CONVERSION PART
KEY INPUT PART
MAIN CONTROL PART
TEXT DATA MEMORY
50
48
TIMER
1
2
3

DATA PROCESSING APPARATUS WITH SCHEDULE CONTROL FUNCTION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a data processing apparatus and, more particularly, to a data processing apparatus with a schedule control function, wherein a schedule of meetings, arrangements and other types of events can be stored in a memory at every date, specified when necessary, allowing display at a particular schedule to be stored on specified dates.

2. Description of the Prior Art

Normally, this kind of data processing apparatus includes a word processor with a schedule control function mounted on a character processing function, an office computer with a schedule control function mounted on the data processing function, or an electronic pocketbook provided only with a schedule control function and the like.

The schedule control function refers to that in which schedule data is inputted by a predetermined format and is stored according to a predetermined method (such as, for example, data order, time order or the like), includ ing conditions such as data and others that may be further specified, allowing a visual output of desired schedule data. Then, the schedule data refers basically to a date, a time and a content entered at specific times, and the content may include, for example, meetings, arrangements and the like.

The construction wherein a plurality of future calendar appointments and events are stored in a memory at particular daily, weekly, or other date interval periods, and for a selected time period these appointments and events are outputted to a display unit that has been disclosed in U.S. Patent No. 4,162,610, titled "ELECTRONIC CALENDAR AND DIARY".

However, according to this kind of data processing apparatus, when a day's schedule which has already been prepared is modified, the schedule must be erased completely to start again or make changes. Further erasing must be repeated for every time schedule affected by the new schedule once it is inputted.

Then, since only a single copy function is provided for copying schedule content, copying conditions, for example, special copying tasks such as specifying a full-square character into a half-square character or the like cannot be accomplished at the time of copying.

Further, when modifying a schedule, a new data will be specified and the content of the schedule must be stored again, which can be very troublesome.

Still further, although the above data processing apparatus is provided with a function to display a schedule and another function to display a calendar, both functions are operated in a separate mode, therefore such schedule as they exist at present cannot be confirmed by having a particular data searched in the calendar appearing on the same display screen.

SUMMARY OF THE INVENTION

A data processing apparatus with schedule control function of the invention comprises basically:

key input means for inputting schedule data and other various instructions;

storage means for storing a multiplicity of schedule data as individual units;

calendar storage means for storing calendar data;

write/read means for writing/reading schedule data to the storage means;

calendar read means for reading a calendar out of the calendar storage means upon receipt of a calendar read instruction from the key input means;

display means for displaying read-out schedule data and/or calendar; and

cursor moving means for moving a cursor within a schedule data display area and carrying out various designations including the designation of specific schedule data.

Further, the data processing apparatus of the invention may provide the following construction A):

search means for searching a data corresponding to the data of the schedule data to which the cursor is positioned in the displayed calendar when the schedule data and the calendar are read out to the display means; and

identification display means for identifying and displaying a data from the calendar which is to be searched.

According to the above construction A), a calendar is displayed concurrently when a schedule is prepared or modified, and a data in the calendar is identified and displayed corresponding to the data selected in the schedule, therefore a correct weekday and week can be secured.

Then, the above data processing apparatus of the invention may provide the following construction B):

cursor position storage means for storing the start and end positions of the cursor in the cursor moving means;

area designating means for designating the schedule data specified by the start position to the end position of the cursor in the storage means; and

batch erase means for erasing the schedule data in a designated area collectively upon receipt of an erase instruction from the key input means.

According to the construction B), a specified area can be erased collectively by giving an erase instruction to an area in which the beginning and end of a schedule item to be erased are specified.

Also, the data processing apparatus of the invention may provide the following construction C):

format investigation means for investigating the format of data which exists at a particular destination where data is to be copied and is specified by cursor movement of the cursor moving means; and

copy means for copying data specified by the cursor moving means to a particular destination after making corrections which adapt it to the format of data which exists at that destination upon receiving copy instruction from the key input means.

According to the construction C), specified data is corrected and copied according to a format of the data which already exists at the destination to which data is to be copied. Accordingly, time for investigating the particular format of the destination and then correcting and adapting specified data so that the format can be saved.

Further, the data processing apparatus of the invention may comprise:

D) shift means for shifting schedule data specified by the cursor moving means to a destination specified by the cursor moving means upon receipt of a shift instruction from the key input means.

According to the construction D), schedule data can be shifted to a specified location simply by specifying the destination, thus simplifying modification of a schedule.

Then, the data processing apparatus of the invention may contain at least one of the above constructions A) to D). Preferably, the data processing apparatus according to the invention will contain the construction A), and to which any one or more of the constructions of those B) to D) may be added.

Further, in the invention, the cursor may be graphic or symbolic (picture) subject to its having the capability to designate a specified collection of data items (when specifying a schedule) and an ability to indicate a destination to shift or copy all or parts of the schedule and other pieces of information.

BRIEF DESCRIPTION OF THE DRAWINGS

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:

Fig. 1 to Fig. 20 relate to a Japanese word processor given in one embodiment of the invention.

Figs. 1a and 1b are block diagrams representing a construction of the word processor;

Fig. 2 is a diagram showing an initial format;

Fig. 3 to Fig. 6 are diagrams showing display formats A, B, C and D, respectively;

Fig. 7 is a flowchart illustrating a process for erasing schedule data collectively;

Fig. 8 is a flowchart illustrating a process for copying schedule data;

Fig. 9 to Fig. 11 are explanatory drawings showing a display state for the copying process;

Fig. 12 is a flowchart illustrating a process for shifting schedule data;

Fig. 13 is a flowchart illustrating a process for identifying and displaying schedule data;

Fig. 14 is an explanatory drawing showing the display state of the identifying and displaying process;

Fig. 15 is a flowchart illustrating the sorting function for schedule data;

Fig. 16 to Fig. 18 are explanatory drawings showing the display state for the sorting function;

Figs. 19a and 19b are flowcharts illustrating a display format switching process;

Fig. 20a to Fig. 20c are explanatory drawings showing the display state for the display format switching process.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

In Fig. 1, 40 denotes the key input part which operates as the key input means, providing numerous keys, including numeric keys, function keys, alphabet/kana keys, a schedule mode selector key, a switching key for changing to various schedule formats. The key input part 40 is connected to a main control part 41, and schedule data inputted from the key input part 40, a character string for kana/kanji conversion and various designations are provided to the main control part 41.

The main control part 41 controls the text edit

control part 42, a schedule control part 43, a directory control part 44 and an alarm control part 45 according to various programs stored in ROM (not indicated) and incorporated therein, and also controls a display part 46, a print part 47 and a timer 48.

From controlling the kana/kanji conversion part 49 and a text data memory 50, the text edit control part 42 creates text according to data inputted from the key input part 40, and stores the created text in the text data memory 50.

The kana/kanji conversion part 49 is a unit for converting inputted kana data into corresponding kanji or kana, on which any construction known in the relevant field may be employed. Text data memory 50 may be constituted, for example, of RAM, or may be constituted of RAM and an external memory using floppy disk or the like as a storage medium.

The basic function of the Japanese word processor is performed according to the aforementioned construction..

The construction for the schedule control which is a feature of the embodiment will be described next.

Construction for Schedule Control

The schedule control part 43 operates mainly for schedule control, functioning as the read/write means, calendar read means, search means and identification display means. The schedule control part 43 controls schedule data memory 51, memo data memory 52, and format data memories 53 to 57 for first to fifth format (to be described hereinafter) which are the storage means, and a calendar data memory 58 as the calendar storage means. The schedule data memory 51 stores a multiplicity of schedule data individually. Then, the schedule data is basically constituted by its data, time and content entered at each occasion, and is stored in the schedule data memory 51 by the day. In addition, the schedule data may include a graphic symbol or mark to represent visually the contents of the data memory, also alarm set data for setting data and time so that an alarm is annunciated for ensuring the schedule already entered, and also a secret set data for keeping the entered content from being tampered with by unauthorized individuals. The memo data stored in the memo data memory 52 refers to a remark, which includes additional information which cannot be entered in the contents of the schedule data, but is assigned to one particular data. Further, the calendar data memory 58 stores a calendar consisting of an array of months, days and weeks in tabulation for several years.

Then, the aforementioned schedule control part 43 carries out write/read operations on the schedule data or memo data to the schedule data memory 51 or memo date memory 52, and also carries out operations to read the calendar from the calendar data memory 58.

Further the schedule control part 43 has a schedule format control flag for indicating the schedule format display state. When the schedule mode selector key is depressed on the key input part 40, the schedule control part 43 sets the schedule format control flag from the initial value "0" to display a second format (see Fig. 3). When the switching key is depressed again on the key input part 40 when in the schedule mode state, the schedule control part 43 updates the value by referring to the value of the schedule format control flag. The schedule control part 43 then displays the next schedule format according to the updated value. The format control flag therefore updates the value according to the sequence "0" → "1" → "2" → and back to "0" whenever the switching key is depressed, and the page displayed thereby changes from the second format to the → third format → fourth format and back to the second format.

The first format data memory 53 stores an initial display screen format F which is displayed when the power is supplied initially, and as shown in Fig. 2, functions to display a schedule data of the day (today's), which is computed, by the timer 48, and includes a memo data of the day, and a calendar of the month to which the day pertains each on the same display screen.

The second format data memory 54 stores, as shown in Fig. 3, a display screen format A for displaying calendars for three complete months including the month and the day on which the power is supplied or a specified date, the preceding month and the following month thereto, and a schedule for several days including today's date or specified date each on the same display screen.

The third format data memory 55 stores, as shown in Fig. 4, a display screen format B consisting of the schedule from a certain starting date only.

The fourth format data memory 56 stores, as shown in Fig. 5, a display screen format C consisting of a schedule for the one month immediately preceding today's date.

The fifth format data memory 57 stores, as shown in Fig. 6, a display screen format D consisting of an annual schedule of predetermined events, anniversaries and others.

Then, the directory control part 44 operates for controlling data on directory management, stores directory data such as full name, company name, phone number, address and others in an address

data memory 59, reads the directory data and displays on a screen of the display part 46 in a predetermined display format stored as the sixth format data memory 60.

When an alarm data is set in the schedule data, the alarm control part 45 drives an alarm generator 62 which is activated when alarm time data stored in an alarm time memory 61 corresponds to a predetermined date.

A cursor control part 63 as the cursor moving means operates for controlling the movement of the cursor in, for example, various formats displayed on the display part 46 as the display means, and storing cursor positions (cursor start and end positions) upon receiving a designation for area specification from the key input part 40.

The display part 46 comprises, for example, a CRT or LCD and the driving circuits thereof, displaying read-out schedule data and/or calendar.

The print part 47 may employ printers of heat transfer type, needle dot impact type and the like which are known well in the industry. It may be otherwise Centronics-type interface for external printers.

The timer 48 computes the present date and time according to date and time data inputted from the key input part 40 at initialization, and outputs specific time information used for schedule management and alarm control to the schedule control part 43 through the main control part 41. The timer 48 is backed up by a battery so that it will operate even after power for the entire system is cut off.

Operation for Schedule Control

Referring next to the operation for schedule control featuring the embodiment, we start from the assumption that certain schedule data and memo data are stored beforehand in the schedule data memory 51 and the memo data memory 52 respectively. Then, if the power is turned on, data which indicates today's data according to the timer 48 output is checked, the schedule control part 43 then searches for the schedule for the date stored in the schedule data memory 51, and displays the appropriate schedule data on the display part 46. Then, memo data for the date stored in the memo data memory 52 is also searched, and a calendar of this month is concurrently read out of the calendar data memory 58. Next, the schedule control part 43 reads the initial display screen format F from the first format data memory 53. Thus the schedule control part 43 indicates on the read- out display screen format F to display today's schedule data and memo data and the calendar for the month on a display screen of the display part 46 through the main control part 41.

(a) Process for Erasing Schedule Data Collectively

Following with the aforementioned assumption, an operation for erasing schedule data collectively will be described first according to Fig. 7.

The schedule mode selector key is depressed to call the schedule format (second format) shown in Fig. 3. Thus a format for specifying an area for erasing a schedule data is displayed (STEP 100). Next, the key input part 40 is operated so as to position a cursor at the head (starting point) of a schedule data to erase. An area specifying key of the key input part 40 is depressed to store the starting point in the cursor control part 63 as the cursor position storage means. Next, the cursor is positioned at the end (end position) of the schedule data to be erased. Then, the area specifying key is pushed again to store the end point in the cursor control part 63 (STEP 101). Thus the area to erase is defined by the schedule control part 43 as the area designating means. Next a function key "ERASE" is selected, and by depressing the run key of the key input part 40 (STEP 102), the schedule data in a specified area is erased collectively by the schedule control part 43 as the batch erase means (STEP 103). When the cancel key is depressed in STEP 102, the flow returns to STEP 100.

The batch erase operation can be applied not only in the second format but also in all formats with "ERASE" included in the key display guide.

(b) Process for Copying Schedule Data

Next, the operation for copying data which must be altered to correspond to the format of the data at a particular destination will now be described according to Fig. 8.

First, data to be copied (on a screen) is selected by moving the cursor (STEP 110), and the selected data is stored in a buffer within the main control part 41. The data may refer to characters, picture images and the like, and the selected data has a selection range manifested by meshing display, inversion display and the like. Next, whether or not the copying key has been depressed is judged (STEP 111), and if YES, then a copying destination is selected. The destination will be selected by moving the cursor to the appropriate position where data must be copied (STEP 112). Next, whether or not the format has been set to the destination is investigated (STEP 113). This investigation is done by the main control part 41 inquiring the schedule control part 43 (the format investigation means) what format has been set for its copying destination.

The format setting refers to a conversion from

half size letters to full size letters, a type face change and the like in the case of characters and also to a rotation, enlargement, reduction and the like in the case of picture images. Then, in the case of schedule data, it may also refer to an alarm set cancel, time change and the like. Next, when the run key is depressed, the schedule control part 43 as a copying means, copies the selected data correspondingly to the format of the destination to which the data is to be copied (STEP 114).

Fig. 9 to Fig. 11 represents an example of the copy process on a display screen for each operation. Fig. 9 represents an example of the copy process for characters, indicating the result obtained through copying selected characters "ABCDEF" to a specified cursor position 70. In this case, a format is not set at the destination to which the data is copied.

Fig. 10 represents an example of the copying process for graphic forms, wherein a reduced domain format 71 is set for the destination to which the graphic forms are copied. In this case, a selected graphic form 72 is copied to a reduced domain 71 after being reduced.

Fig. 11 represents an example of the copying process for schedule data, indicating the result obtained through copying a selected schedule content "START" at a cursor position 73. In this case, times and schedule contents are displayed which correspond to the destination format. Accordingly, time "5 : 00" and "START" are displayed at the destination to which they have been copied.

(c) Process for Shifting Schedule Data

An operation for shifting schedule data will be described next according to Fig. 12.

First, the cursor is positioned to schedule data to shift on the third format shown in Fig. 4 (STEP 120). Here a shift key is depressed and if it is determined that YES in STEP 121 has been selected, a mark is displayed on the schedule data to shift through, for example, meshing display, inversion display or the like (STEP 122). Next, whether or not key input has entered is judged (STEP 123). If YES, then whether or not the cancel key has been selected is also judged (STEP 124). If NO, it is further whether or not judged the key [↑] or [↓] for moving the cursor has been selected (STEPS 125 → 127 → 123, STEPS 125 → 126 → 127 → 123). When the operation for moving the cursor is completed and the destination for shifting of the schedule data is fixed, it is judged whether or not the run key has been depressed (STEP 128). Here, when the run key is depressed, the schedule control part 43 as the shift means, shifts the schedule data to the cursor position at the specified destination (STEP 129). The schedule data can be shifted not only in the third format but also in other format having schedule entry and modification modes.

Thus, the schedule data before the shift operation is deleted, and the new schedule data is inserted in the ascending sequence.

(d) Process for Identification Display of Schedule Data

Next described, in Fig. 13, is a process for displaying the content of a schedule covering several days (from a specified data) by inputting the date, and displaying calendars for the current month including those immediately preceding and following the current month, and identity for the purpose of displaying the date to which the cursor in a schedule is positioned in the calendar.

First, when a date is inputted from the key input part 40 for entry, modification and confirmation of schedules (STEP 130), the schedule control part 43 retrieves the schedule data from memory 51, thus schedule content corresponding to the inputted date is read out. Further calendars corresponding to the year and month are inputted from the calendar data memory 58 and the months immediately preceding and following the year and month are read out. The read-out contents have a display format which is adjusted according to the format stored in the the first format data memory 53, and displayed on a screen of the display part 46 through the main control part 41 (STEP 132) (Fig. 14). In this case, the main control part 41, determines concurrently to which position in the displayed calendar the inputted date corresponds. The main control part 41 further includes the identification display means which displays the corresponding calendar date in inversion, thereby identifying the position (STEP 133). Next, whether or not the cursor key has been operated is judged (STEP 134), and if YES, the cursor movement control part 63 (as the cursor moving means) moves the cursor positioned in the schedule content vertically by operation of the cursor key (STEP 135). If NO is decided in STEP 134, whether or not the data change key has been depressed is judged (STEP 136), and if YES has been decided, the process shifts to STEP 135. However if NO has been decided, then it returns to STEP 134. Next, whether or not the date change key at the cursor position has been depressed is judged (STEP 137), and if YES has been decided, the cursor display position of the schedule content and the date of calendar at the display position are checked each time by the main control part 41, and if there has been a date change, then to which

position in the calendar display coincides to the change date is computed, and this position in the calendar is displayed in inversion (STEP 138). Then simultaneously therefore, the calendar date displayed previously in inversion can be returned to normal display (STEP 139).

Fig. 14 indicates the aforementioned operation on a screen. A reference numeral 80 denotes the cursor position before the move in a schedule, 81 denotes the cursor position after the move in the schedule, 82 denotes the cursor position before the move in a calendar, 83 denotes the cursor position after the move in the calendar.

Next, an operation for storing inputted schedule data automatically by its order of date and time will be described according to Fig. 15.

First, a schedule input window is called (STEP 140), and then schedule data is inputted STEP 141). Next, when the run key is pushed (STEP 142), the inputted schedule data is sorted by date by referring to the schedule data memory 51 (STEP 143), and the exact insertion position by date is determined (STEP 144). Next, it is sorted by time (STEP 145), and an insertion position by time is determined (STEP 146). The schedule data having the new insertion position determined by date and time is stored in the schedule data memory 51 through the schedule control part 43 (STEP 147).

Fig. 16 through Fig. 18 indicate the aforementioned operation on a screen. Fig. 16 shows an input window for inputting schedule data. Fig. 17 shows a window display for inputted schedule data and the content of the schedule previously inputted. Fig. 18 shows the state wherein sorting is effected by depressing a run key, and the new schedule is rearranged by the order of date and time.

An operation for switching a calendar schedule display format (second format), a detailed schedule display format (third format) a monthly schedule display format (fourth format) will be described next according to Fig. 19.

First, whether or not a schedule mode selector has has been depressed is judged (STEP 150), and if YES, a schedule format control flag is set to "0" (STEP 151), and the second format of a schedule is displayed (STEP 152). Then following input queuing (STEP 153), whether or not the switching key has been depressed is judged (STEP 154), and if YES, the value of the control flag is checked and if it has the set value of "0", the control flag value is set to "1" (STEP 157), and a schedule third format is displayed (STEP 158) and the process returns to STEP 153. In STEP 155, where the value of the control flag is "1" (STEP 159), the control flag value is set to "2" (STEP 160), the schedule fourth format is displayed (STEP 161) and the process returns to STEP 153. Further in STEP 155, where the value of the referred control flag is "2" (STEP 162), the control flag value is set to "0" (STEP 163), the schedule second format is displayed (STEP 164) and the process returns to STEP 153. Fig. 20 indicates the aforementioned operation on a display screen, wherein A, B, C represent the second format, third format and fourth format as they occur each time the switching key has been depressed. The format which can be selected is not necessarily limited to what has been described above, and it may include another schedule input format E, such as an annual even display format D.

Although only one embodiment of the invention has been disclosed and described herein, it is apparent that other embodiments and modifications of the invention, for example, an alphabetical word processor replacing a Japanese word processor may derive a similar benefit from the invention.

Claims

1. A data processing apparatus with schedule control function comprising:
key input means for inputting schedule data and various instructions;
storage means for storing a multiplicity of schedule data individually;
calendar storage means for storing calendar data;
write/read means for writing/reading schedule data to said storage means;
calendar read means for reading a calendar from said calendar storage means upon receipt of a calendar read instruction from said key input means;
display means for displaying a read-out schedule data and/or calendar;
cursor moving means for moving a cursor within a display area of the schedule data and giving various designations including designation of specific schedule data;
search means for searching a date corresponding to the date of the schedule data to which the cursor is positioned in the displayed calendar when the schedule data and the calendar are read out to said display means; and
identification display means for identifying and displaying a date of the calendar to be searched.

2. The data processing apparatus of claim 1, further comprising:
cursor position storage means for storing the start and end positions of the cursor in the said cursor moving means each therein;
area designating means for designating the schedule data specified by the start position to the end position of the cursor in said storage means; and

batch erase means for erasing the schedule data in a designated area collectively upon receipt of an erase instruction from said key input means.

3. The data processing apparatus of claim 1, further comprising:
format investigation means for investigating a format of data at the destination to which data is to be copied when the copying destination is designated by movement of the cursor of said cursor moving means, and
copy means for copying data designated by said cursor moving means to a particular destination after correcting it to meet the format required by the destination to which data is to be copied upon receipt of a copy instruction from said key input means.

4. The data processing apparatus of claim 1, further comprising:
shift means for shifting the schedule data designated by said cursor moving means to a destination designated by said cursor moving means upon receipt of a shift instruction from said key input means.

5. The data processing apparatus of claim 1, 2, 3 or 4, in which said storage means comprises RAM for storing schedule data rearranged by order of date and time.

6. The data processing apparatus of claims 1, 2, 3 or 4, in which said display means comprises a CRT or LCD and its driving circuit, capable of displaying selectively a first format for displaying a schedule of the day on which a power was turned on, including a memo data of the day, and a calendar of the month to which the day pertains on the same screen; a second format for displaying a calendar of the month on which the power was turned on or another designated day pertains and calendars of the months immediately preceding and following the month, a schedule for several days including the day on which the power was turned on or otherwise specified on the same screen; a third format for displaying only a schedule from a certain date; a fourth format for displaying a monthly schedule of the month referred to; and a fifth format for displaying a twelve month schedule.

FIG. 1a

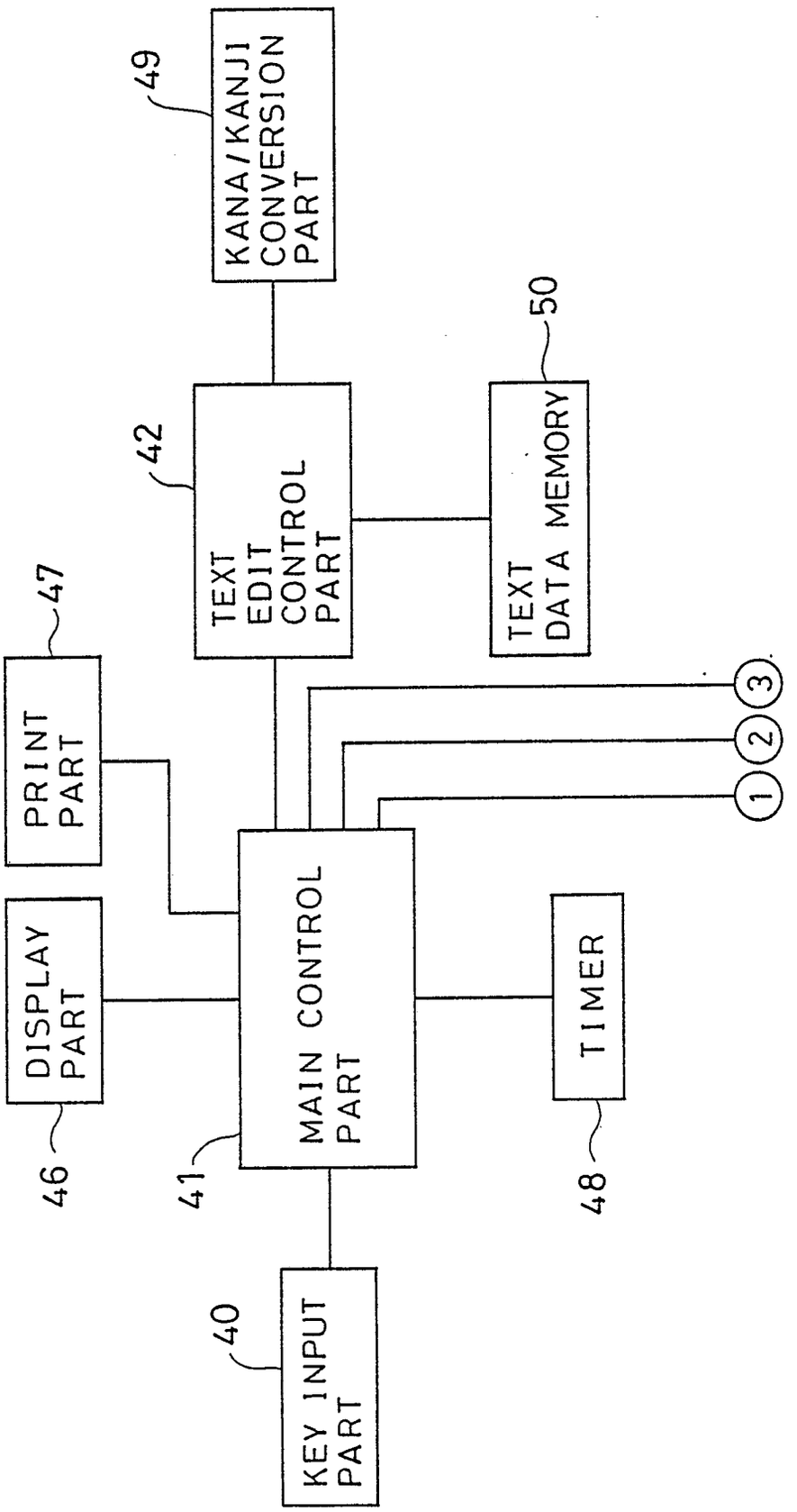

KANA/KANJI CONVERSION PART
49
TEXT EDIT CONTROL PART
42
TEXT DATA MEMORY
50
PRINT PART
47
DISPLAY PART
46
MAIN CONTROL PART
41
TIMER
48
KEY INPUT PART
40
1
2
3

FIG.1b

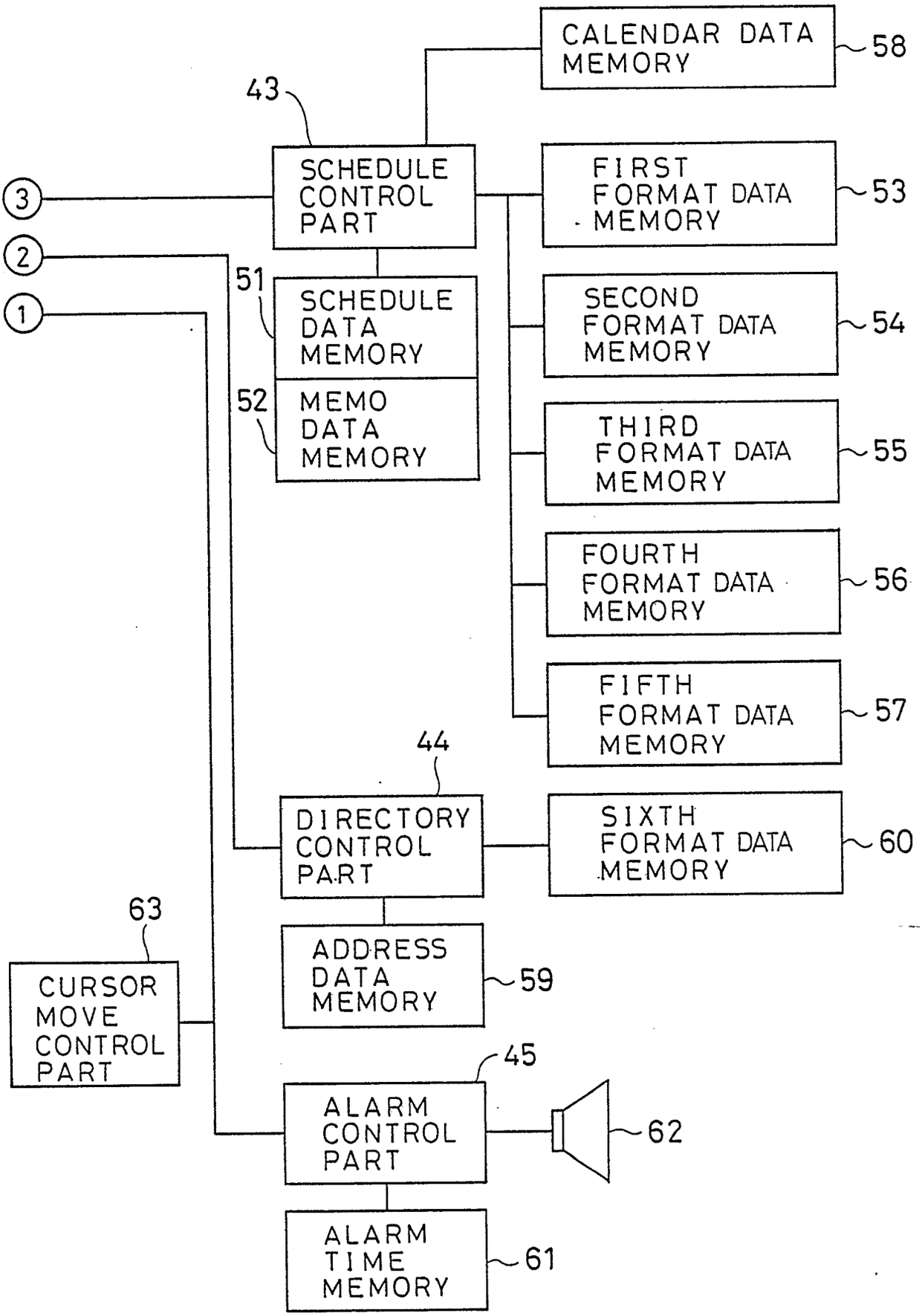
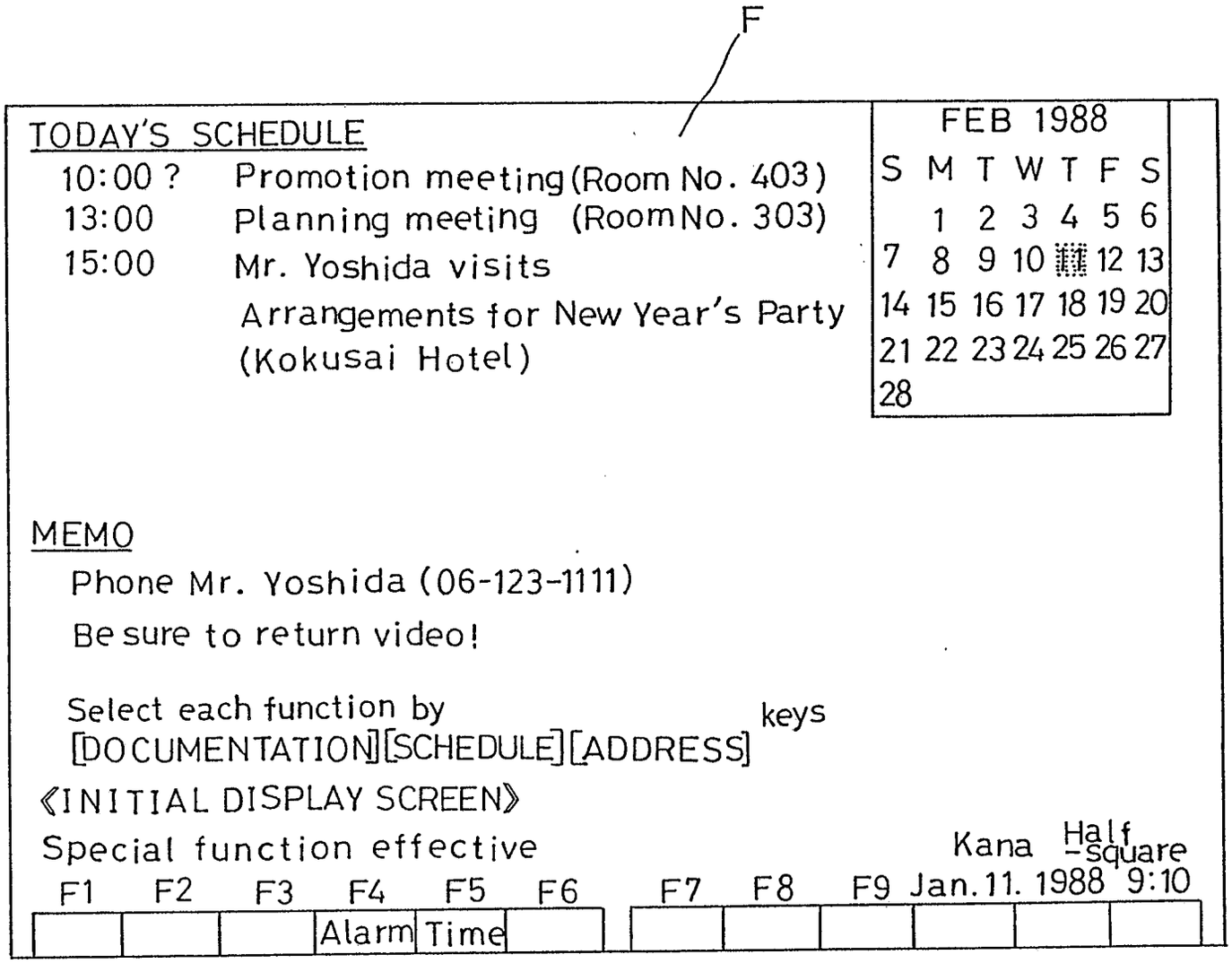

CALENDAR DATA MEMORY
58
43
SCHEDULE CONTROL PART
FIRST FORMAT DATA MEMORY
53
3
2
1
51
SCHEDULE DATA MEMORY
SECOND FORMAT DATA MEMORY
54
52
MEMO DATA MEMORY
THIRD FORMAT DATA MEMORY
55
FOURTH FORMAT DATA MEMORY
56
FIFTH FORMAT DATA MEMORY
57
44
DIRECTORY CONTROL PART
SIXTH FORMAT DATA MEMORY
60
63
ADDRESS DATA MEMORY
59
CURSOR MOVE CONTROL PART
45
ALARM CONTROL PART
62
ALARM TIME MEMORY
61

FIG. 2



EP 0 342 632 A2

FIG. 3

SECOND FORMAT

A

DEC 1987

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

JAN 1988

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

FEB 1988

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

JAN 1988

8(F)	10:00? ○Promotion meeting(Room No.403) 13:00 Planning meeting(Room No 303) Arrangements for New Year's Party(Kokusai Hotel)3 4 5 6 7 8 9 20 1 2 3 4 5	✎
9(S)		
10(S)		
11(M)	9:00 Prearrangement with Mr. Takada 12:00 Lunching with Mr. Tanaka 14:00 Liaison conference(Room No. 202)	

《SCHEDULE》

Function 2: Can be entered by F1 key

Romaji Kana Half-square

Jan. 11. 1988 9:00

F1	F2	F3	F4	F5	F6	F7	F8	F9			
Entry	Modification	Remark	Retrieval	Date	Event	Switching	List	Display change			Erase

EP 0 342 632 A2

FIG. 4 THIRD FORMAT

B

JAN 1988

31(T)	17:25	Evening meeting	
1(F)			
2(S)			
3(S)			
4(M)			
5(T)	11:35	Go to Tokyo (HIKARI 240)	✎
6(W)	9:30	Report on US market	
	12:00	Lunching with Mr. Yoshida	
7(T)	10:00	Strategy meeting (Room No. 204)	
8(F)	10:00	○Promotion meeting (Room No. 403)	✎
	13:00	Planning meeting (Room No. 303)	
		Arrangements for New Year's Party (Kokusai Hotel)	
9(S)			
10(S)			
11(M)	9:00	Prearrangement with Mr. Takada	
	▶12:00	Lunching with Mr. Tanaka	
	14:00	Liaison conference (Room No. 202)	

《SCHEDULE》

Function 2: Can be inputted by F1 Key

Kana Half-square

Jan. 11. 1988 9:10

F1	F2	F3	F4	F5	F6	F7	F8	F9			
Entry	Modi-fica-tion	Re-mark	Re-triev-al	Date	Event	Switch-ing	List	Dis-play change			Erase

EP 0 342 632 A2

FIG. 5

FOURTH FORMAT

C

SCHEDULE FOR JAN 1988

1(F)	09 ○ Predrragement with Mr. Takada 12 Lunching with Mr. Tanaka 13 Word processor 17 Depart from Tokyo
2(S)	13 □ Liaison conference 14 Idea 09 Morning meeting (403 11 Group ※
3(S)	
4(M)	10 Liaison conference 14 Idea
5(T)	
6(W)	14 ? 17 ?
7(T)	
8(F)	
9(S)	
10(S)	
11(M)	
12(T)	
13(W)	
14(T)	
15(F)	

16(S)	
17(S)	
18(M)	
19(T)	
20(W)	
21(T)	
22(F)	
23(S)	
24(S)	
25(M)	
26(T)	
27(M)	
28(T)	
29(F)	
30(S)	
31(S)	

※Including other schedule

《SCHEDULE》

Ending to shift to date with cursor

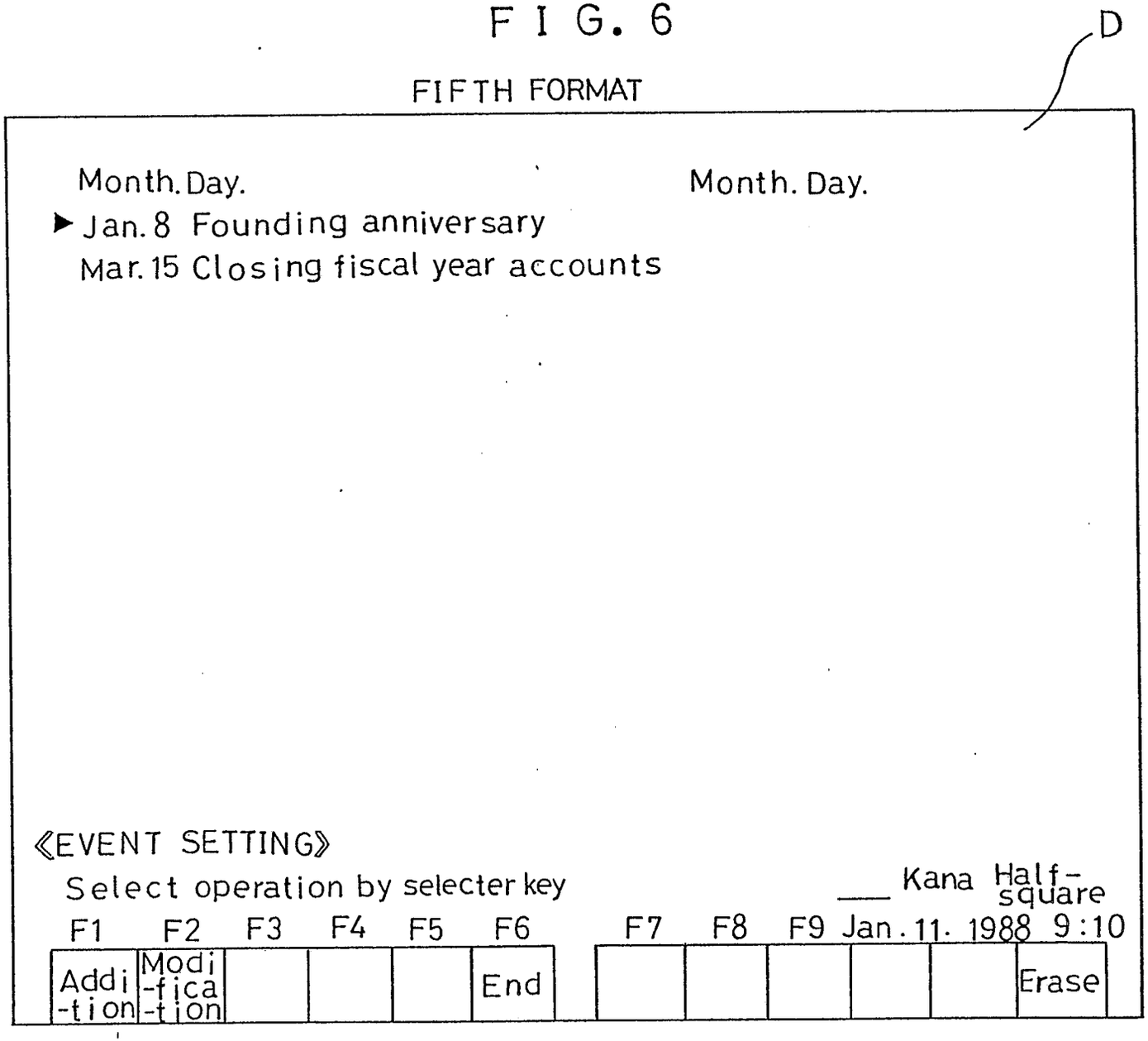
Kana Half-square

Jan. 11. 1988 9:10

F1	F2	F3	F4	F5	F6	F7	F8	F9
Preced-ing day	Follow-ing day				End	Preced-ing month	Follow-ing month	

EP 0 342 632 A2

FIG. 6



EP 0 342 632 A2

FIG. 8

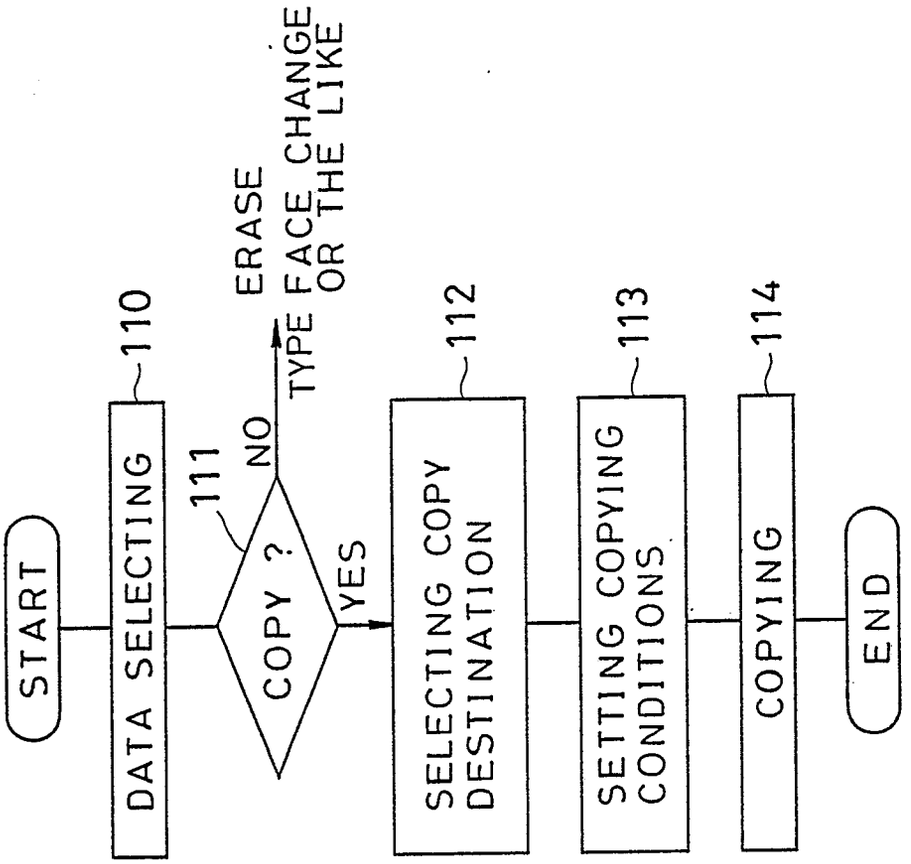

START
DATA SELECTING
110
111
COPY ?
NO
ERASE
TYPE FACE CHANGE
OR THE LIKE
YES
SELECTING COPY
DESTINATION
112
SETTING COPYING
CONDITIONS
113
COPYING
114
END

FIG. 7

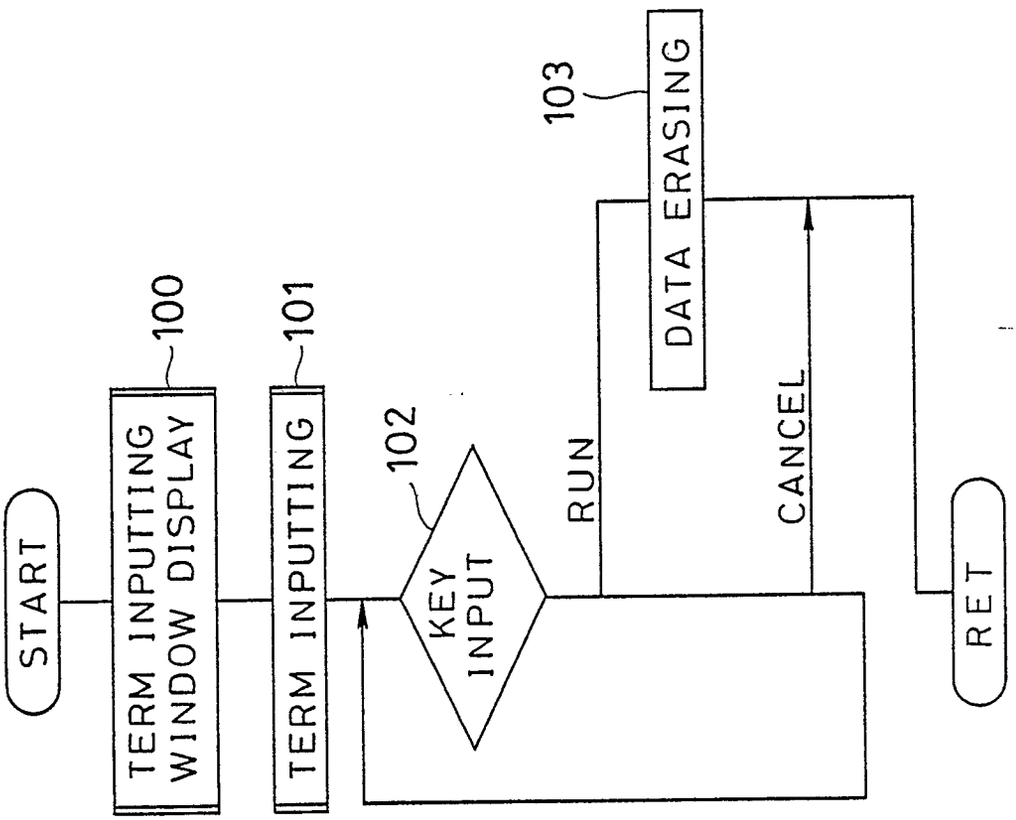

START
TERM INPUTTING
WINDOW DISPLAY
100
TERM INPUTTING
101
KEY
INPUT
102
RUN
DATA ERASING
103
CANCEL
RET

FIG. 9

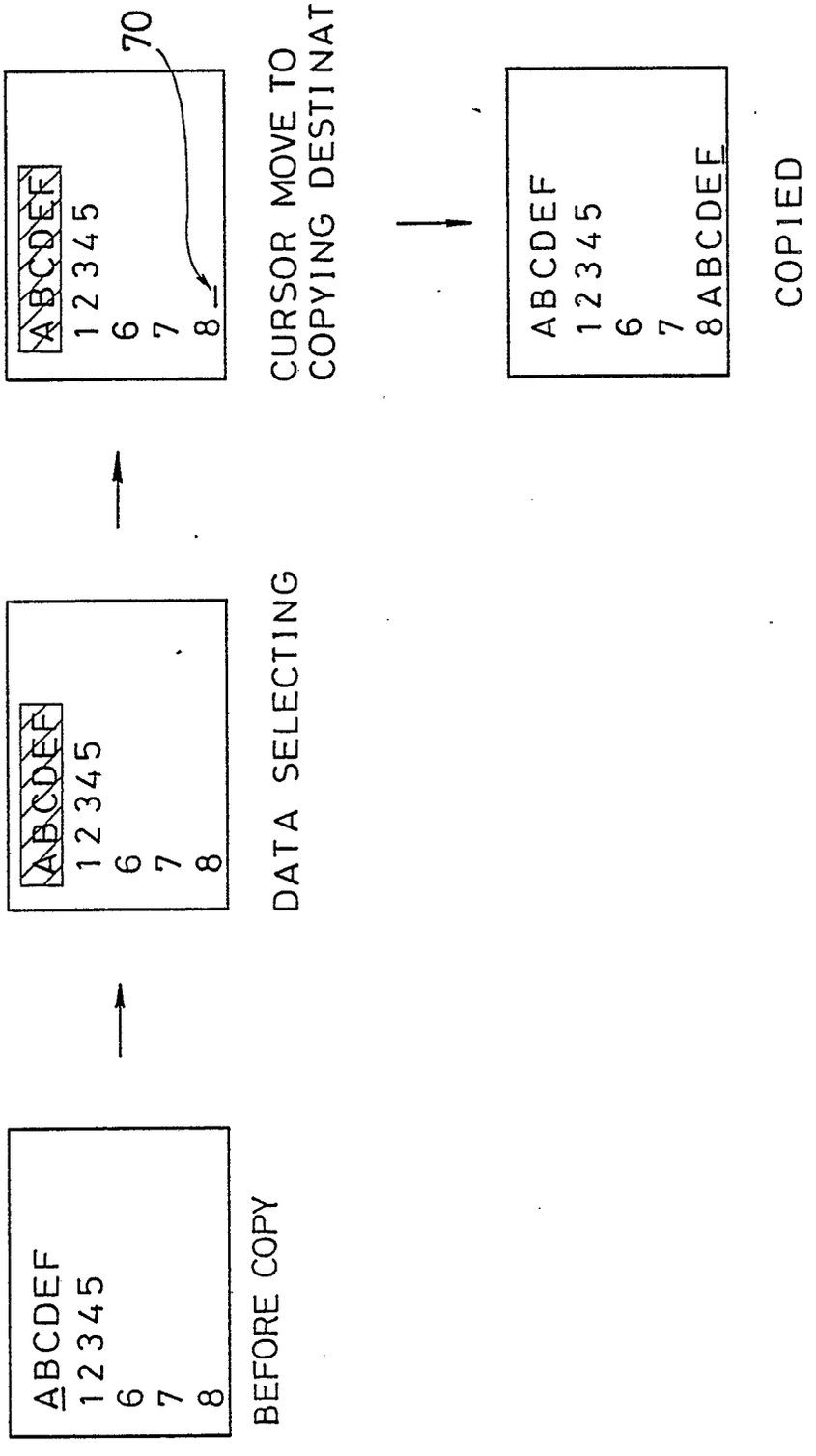

ABCDEF
12345
6
7
8
BEFORE COPY
ABCDEF
12345
6
7
8
DATA SELECTING
ABCDEF
12345
6
7
8
70
CURSOR MOVE TO
COPYING DESTINATION
ABCDEF
12345
6
7
8ABCDEF
COPIED

FIG. 10

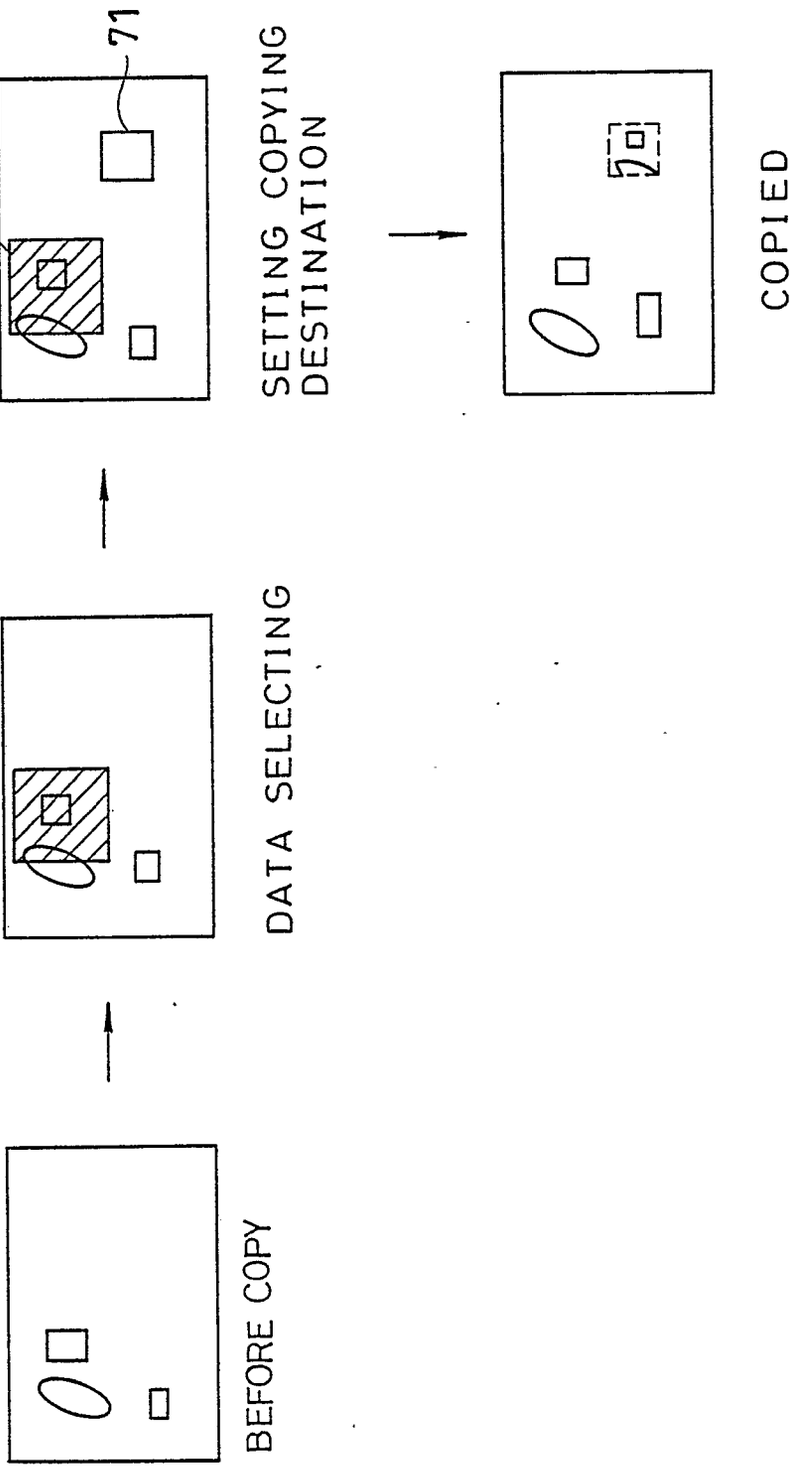

71
72
BEFORE COPY
DATA SELECTING
SETTING COPYING DESTINATION
COPIED

FIG. 11

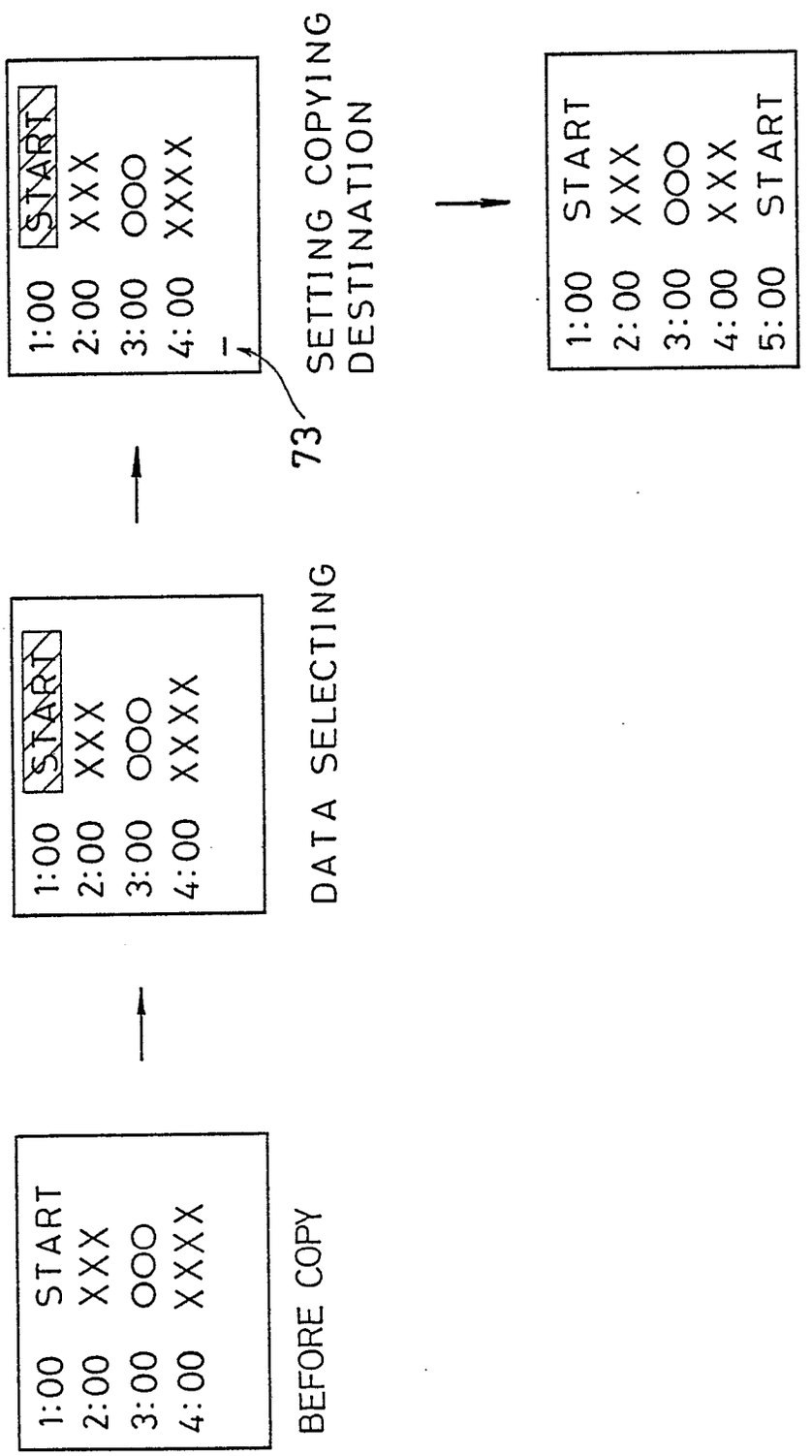

1:00 START
2:00 XXX
3:00 OOO
4:00 XXXX
BEFORE COPY
DATA SELECTING
SETTING COPYING DESTINATION
73
COPIED

FIG. 12

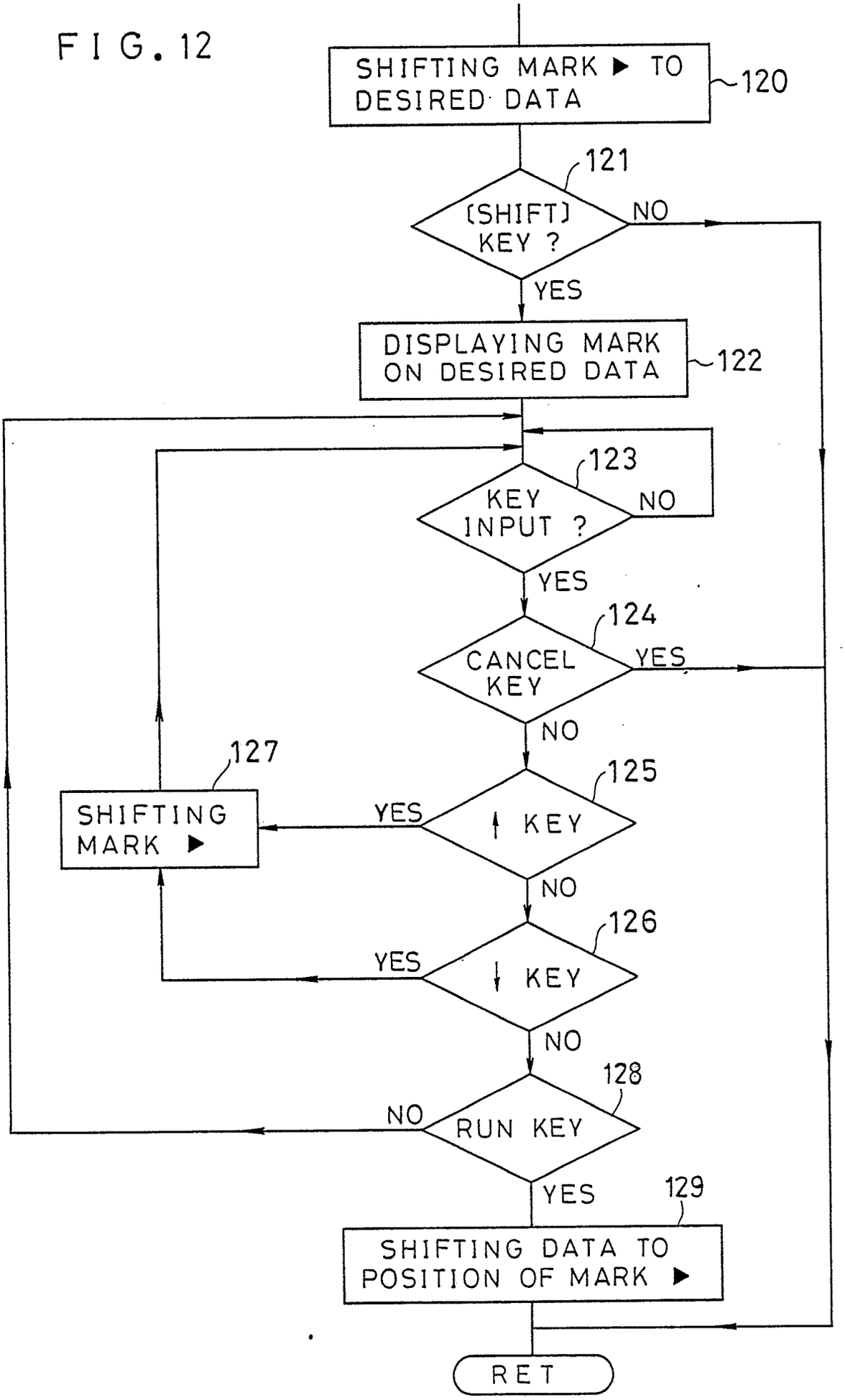

SHIFTING MARK ▶ TO DESIRED DATA
120
121
[SHIFT] KEY ?
NO
YES
DISPLAYING MARK ON DESIRED DATA
122
123
KEY INPUT ?
NO
YES
124
CANCEL KEY
YES
NO
127
125
SHIFTING MARK ▶
YES
↑ KEY
NO
126
YES
↓ KEY
NO
128
NO
RUN KEY
YES
129
SHIFTING DATA TO POSITION OF MARK ▶
RET

FIG. 13

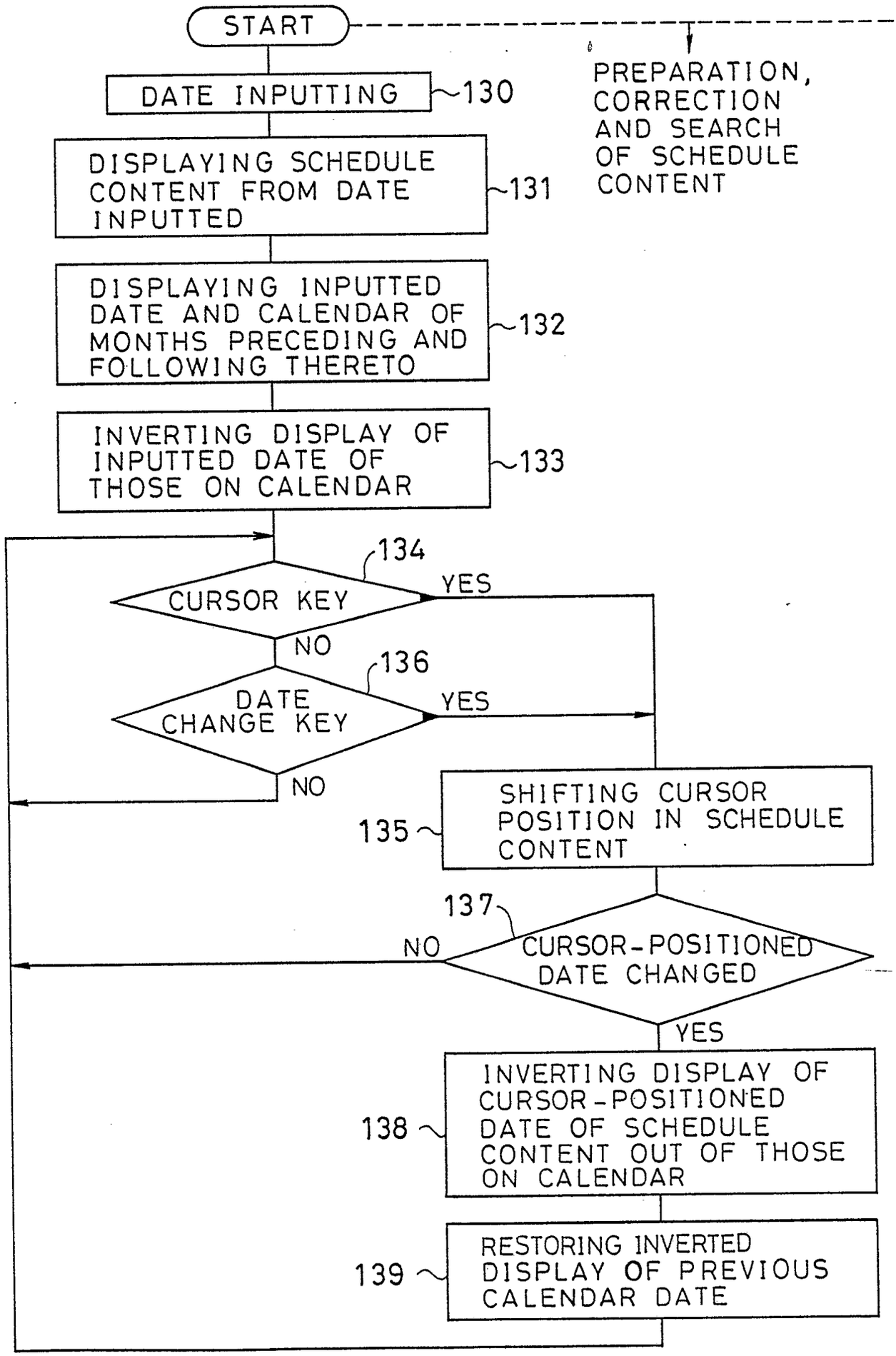
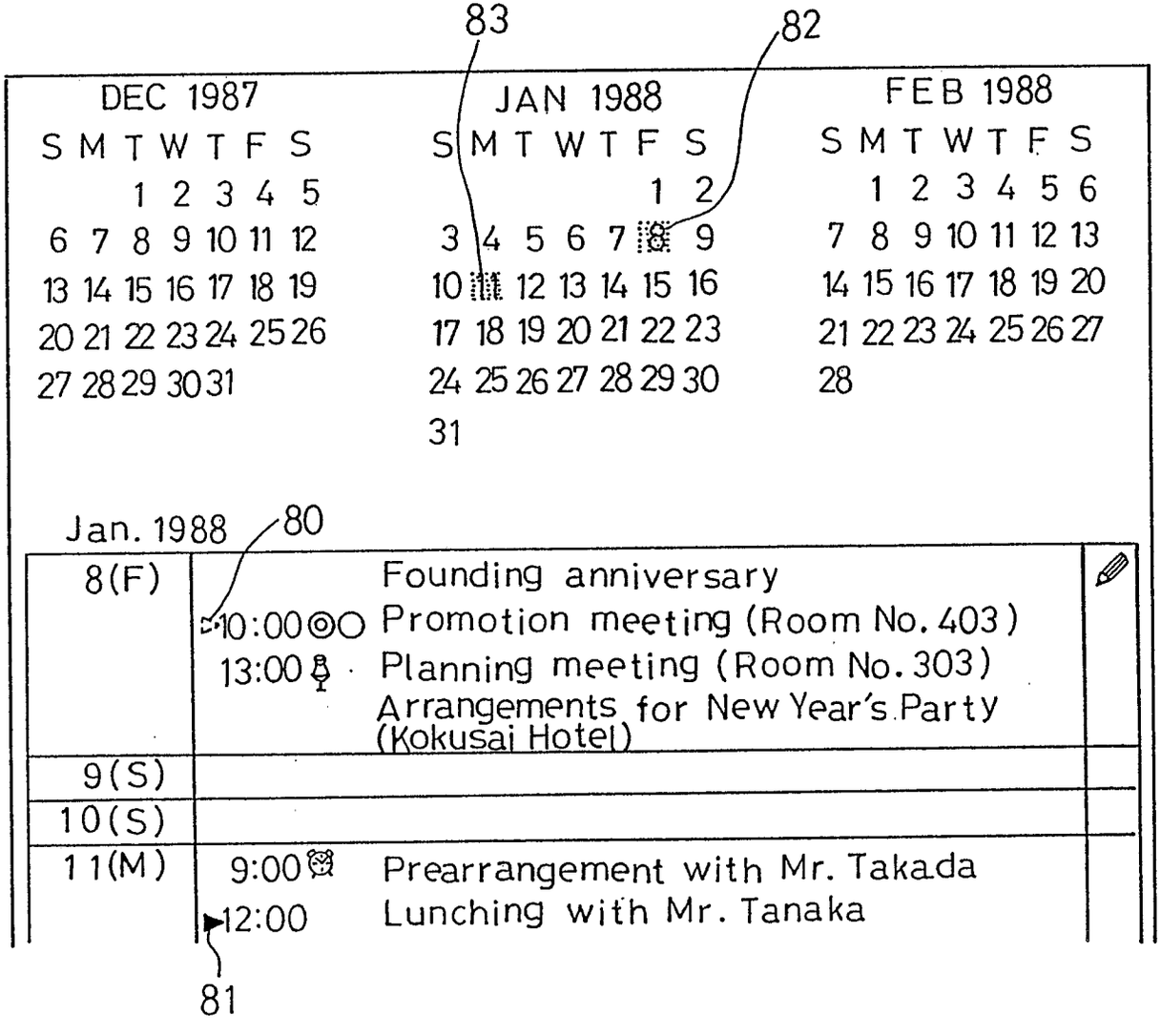

START
PREPARATION, CORRECTION AND SEARCH OF SCHEDULE CONTENT
DATE INPUTTING
130
DISPLAYING SCHEDULE CONTENT FROM DATE INPUTTED
131
DISPLAYING INPUTTED DATE AND CALENDAR OF MONTHS PRECEDING AND FOLLOWING THERETO
132
INVERTING DISPLAY OF INPUTTED DATE OF THOSE ON CALENDAR
133
134
CURSOR KEY
YES
NO
136
DATE CHANGE KEY
YES
NO
SHIFTING CURSOR POSITION IN SCHEDULE CONTENT
135
137
CURSOR-POSITIONED DATE CHANGED
NO
YES
INVERTING DISPLAY OF CURSOR-POSITIONED DATE OF SCHEDULE CONTENT OUT OF THOSE ON CALENDAR
138
RESTORING INVERTED DISPLAY OF PREVIOUS CALENDAR DATE
139

FIG. 14



EP 0 342 632 A2

FIG.15

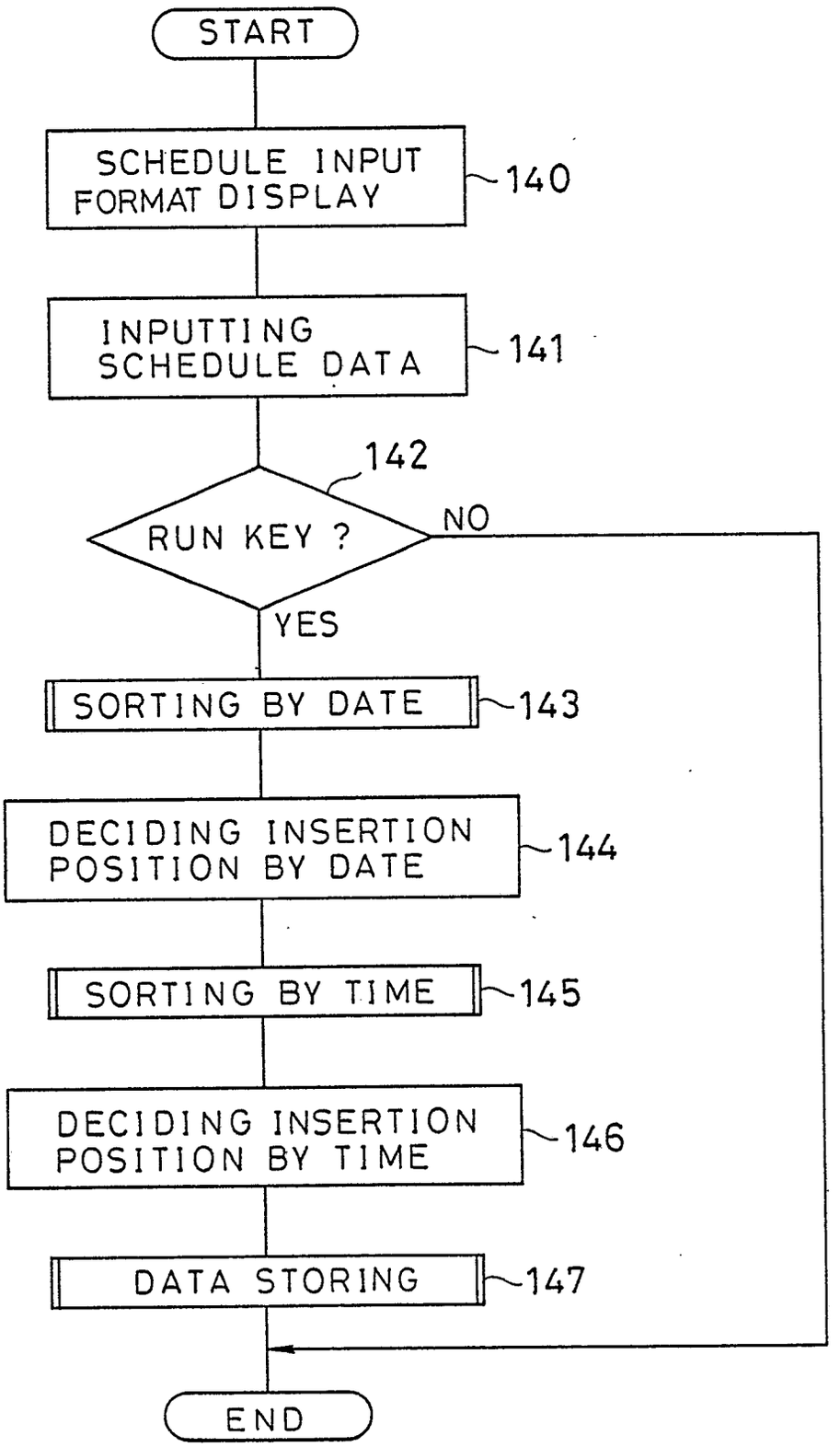

START
SCHEDULE INPUT FORMAT DISPLAY
140
INPUTTING SCHEDULE DATA
141
142
RUN KEY ?
NO
YES
SORTING BY DATE
143
DECIDING INSERTION POSITION BY DATE
144
SORTING BY TIME
145
DECIDING INSERTION POSITION BY TIME
146
DATA STORING
147
END

FIG. 16

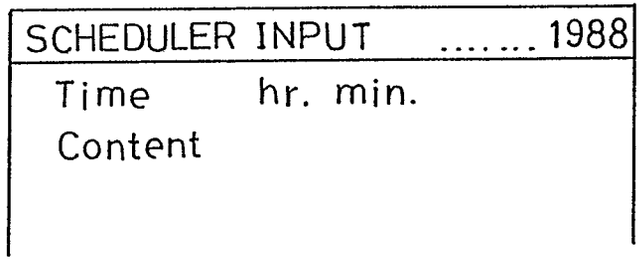
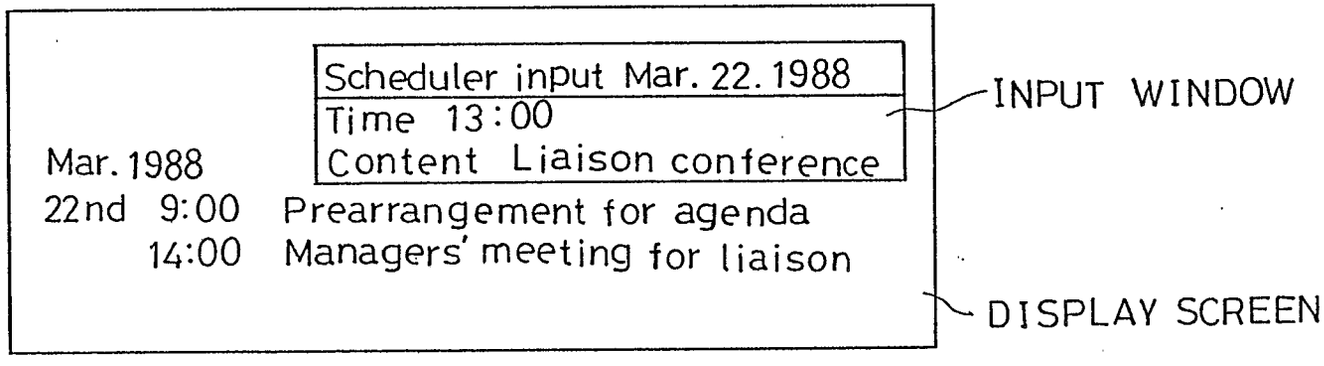
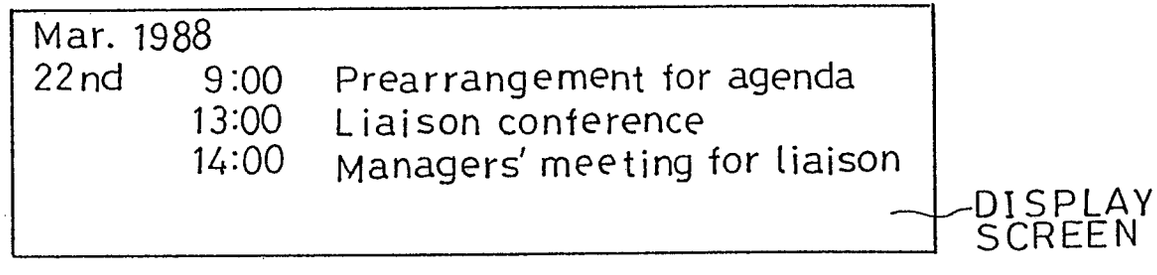


FIG. 17



RUN KEY

FIG. 18



EP 0 342 632 A2

FIG. 19a

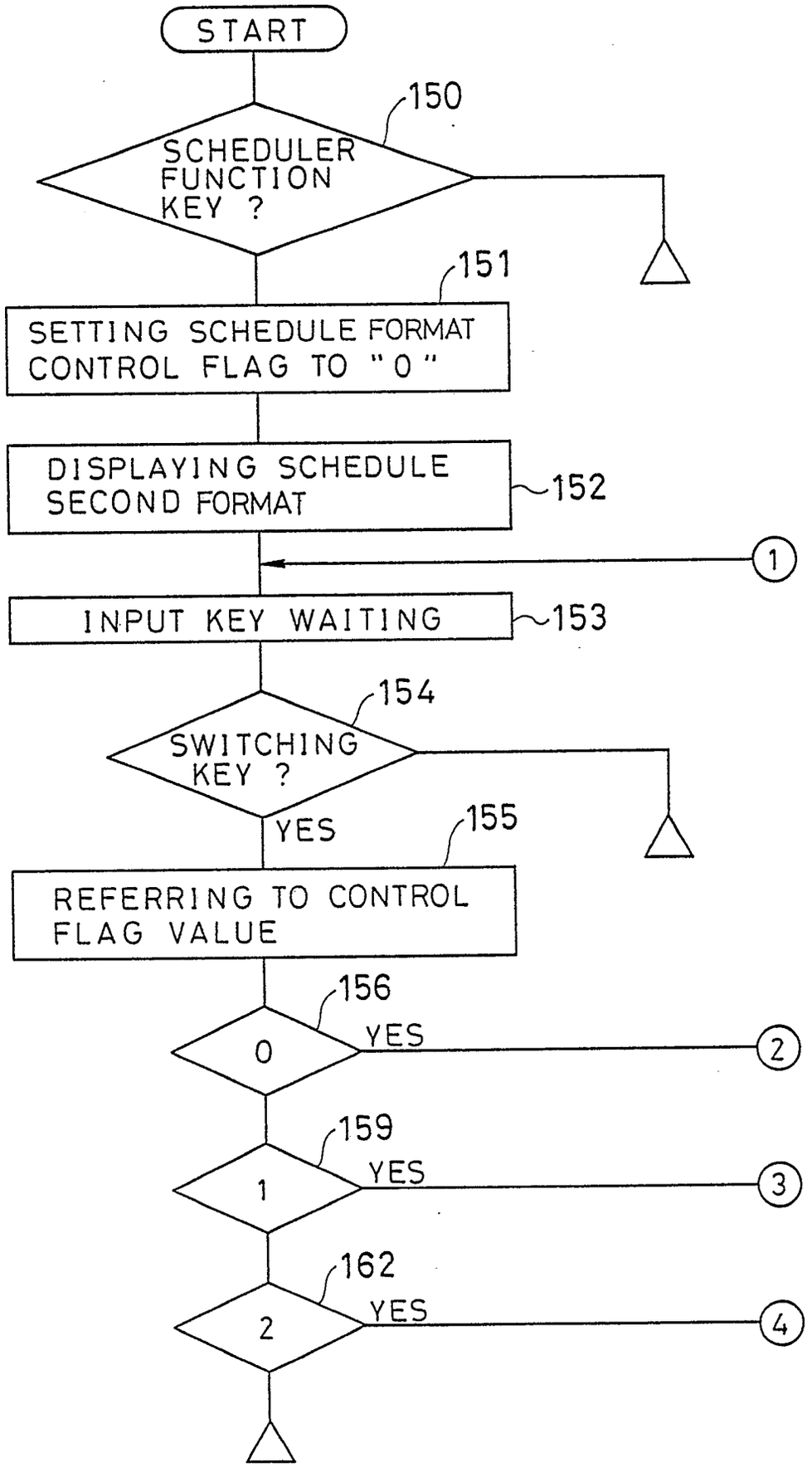

START
150
SCHEDULER FUNCTION KEY ?
151
SETTING SCHEDULE FORMAT CONTROL FLAG TO "0"
DISPLAYING SCHEDULE SECOND FORMAT
152
1
INPUT KEY WAITING
153
154
SWITCHING KEY ?
YES
155
REFERRING TO CONTROL FLAG VALUE
156
0
YES
2
159
1
YES
3
162
2
YES
4

FIG.19b

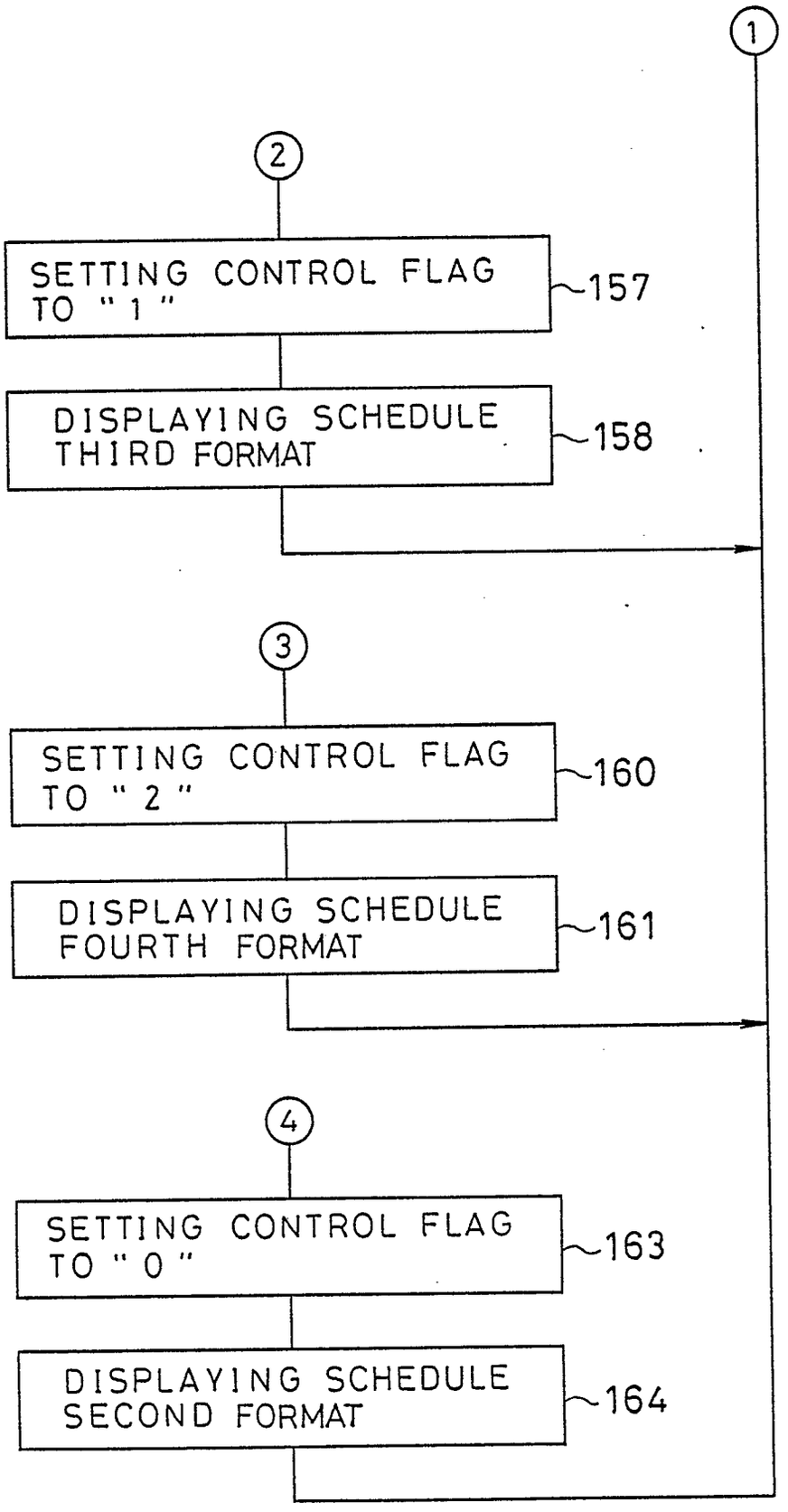

1
2
SETTING CONTROL FLAG TO "1"
157
DISPLAYING SCHEDULE THIRD FORMAT
158
3
SETTING CONTROL FLAG TO "2"
160
DISPLAYING SCHEDULE FOURTH FORMAT
161
4
SETTING CONTROL FLAG TO "0"
163
DISPLAYING SCHEDULE SECOND FORMAT
164

FIG. 20a

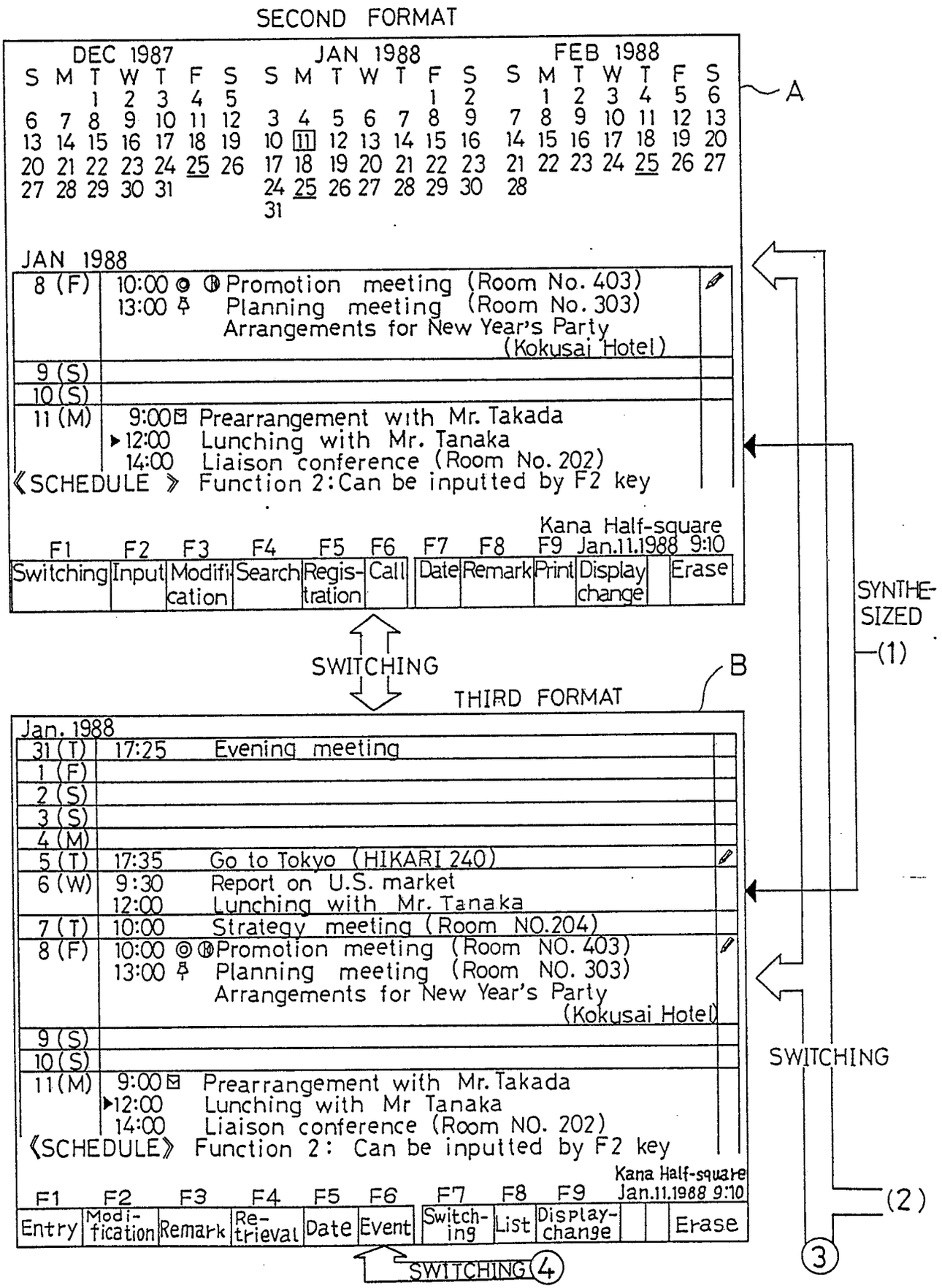
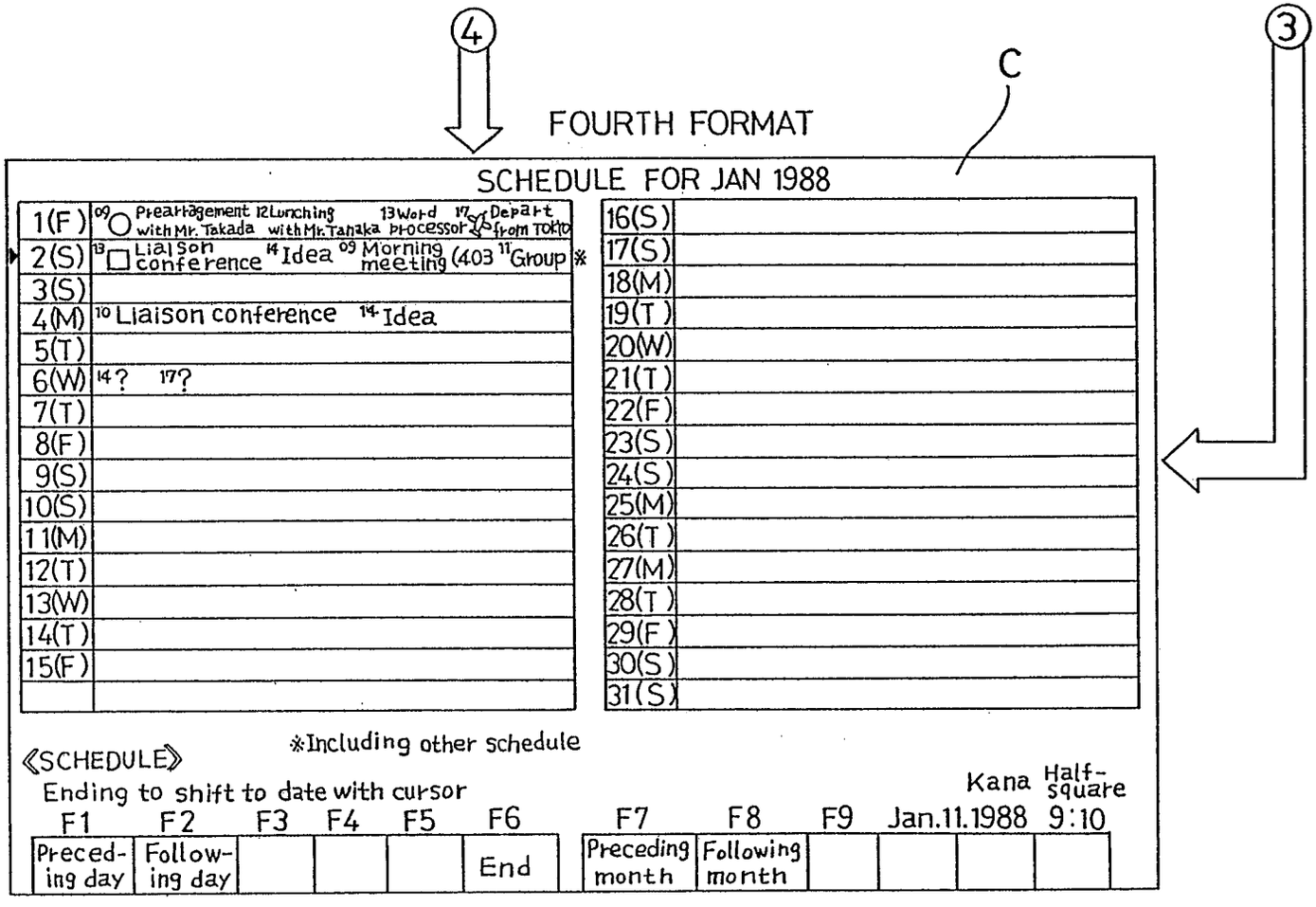
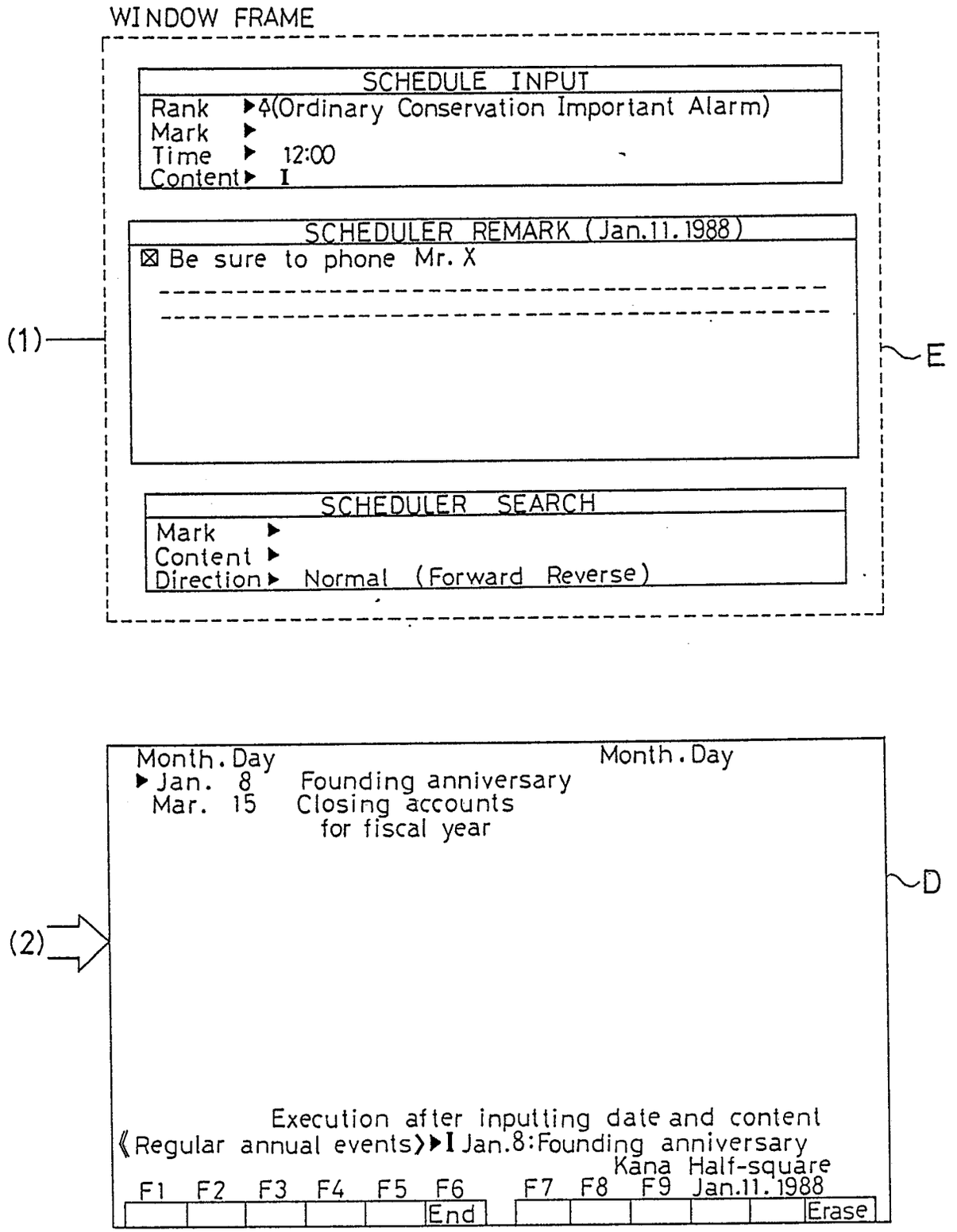

SECOND FORMAT
DEC 1987
S M T W T F S
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31
JAN 1988
S M T W T F S
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
FEB 1988
S M T W T F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28
A
JAN 1988
8 (F) 10:00 Promotion meeting (Room No. 403)
13:00 Planning meeting (Room No. 303)
Arrangements for New Year's Party
(Kokusai Hotel)
9 (S)
10 (S)
11 (M) 9:00 Prearrangement with Mr. Takada
▶12:00 Lunching with Mr. Tanaka
14:00 Liaison conference (Room No. 202)
《SCHEDULE》 Function 2: Can be inputted by F2 key
Kana Half-square
F1 F2 F3 F4 F5 F6 F7 F8 F9 Jan.11.1988 9:10
Switching Input Modification Search Registration Call Date Remark Print Display change Erase
SYNTHESIZED
(1)
SWITCHING
B
THIRD FORMAT
Jan. 1988
31 (T) 17:25 Evening meeting
1 (F)
2 (S)
3 (S)
4 (M)
5 (T) 17:35 Go to Tokyo (HIKARI 240)
6 (W) 9:30 Report on U.S. market
12:00 Lunching with Mr. Tanaka
7 (T) 10:00 Strategy meeting (Room NO.204)
8 (F) 10:00 Promotion meeting (Room NO. 403)
13:00 Planning meeting (Room NO. 303)
Arrangements for New Year's Party
(Kokusai Hotel)
9 (S)
10 (S)
11 (M) 9:00 Prearrangement with Mr. Takada
▶12:00 Lunching with Mr Tanaka
14:00 Liaison conference (Room NO. 202)
《SCHEDULE》 Function 2: Can be inputted by F2 key
Kana Half-square
F1 F2 F3 F4 F5 F6 F7 F8 F9 Jan.11.1988 9:10
Entry Modification Remark Retrieval Date Event Switching List Display-change Erase
SWITCHING
(2)
(3)
SWITCHING (4)

FIG. 20b



EP 0 342 632 A2

FIG.20c


WINDOW FRAME
SCHEDULE INPUT
Rank ▶4(Ordinary Conservation Important Alarm)
Mark ▶
Time ▶ 12:00
Content ▶ I
SCHEDULER REMARK (Jan.11.1988)
☒ Be sure to phone Mr. X
(1)
E
SCHEDULER SEARCH
Mark ▶
Content ▶
Direction ▶ Normal (Forward Reverse)
Month.Day
Month.Day
▶Jan. 8 Founding anniversary
Mar. 15 Closing accounts for fiscal year
D
(2)
Execution after inputting date and content
《Regular annual events》▶I Jan.8:Founding anniversary
Kana Half-square
F1 F2 F3 F4 F5 F6 F7 F8 F9 Jan.11.1988
End
Erase