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***Inquiries***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Crescelle dela Torre whose telephone number is (703) 305-9782. The examiner can normally be reached on Mondays-Thursdays from 8:30 am to 4:00 pm, and on alternating Fridays from 8:30 am to 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim, can be reached at (703) 305-3821.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.

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| Application No. | Applicant(s) | | |
|---|---|---|---|
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| Examiner | | Group Art Unit | Page 1 of 1 |
| Crescelle Delatorre | | 2773 | |

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| C | 4,931,957 | 6/1990 | Takagi et al. | 345 | ~~113~~ 453 |
| D | 5,091,866 | 2/1992 | Takagi | 345 | ~~343~~ 803 |
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| G | 5,757,371 | 5/1998 | Oran et al. | 345 | ~~348~~ 779 |
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| W | | |
| X | | |

# United States Patent [19]

**Takagi**

[11] **Patent Number: 4,862,389**

[45] **Date of Patent: Aug. 29, 1989**


[54] **INFORMATION PROCESSOR WITH MULTI-WINDOW DISPLAY FUNCTION**


[75] Inventor: **Shiro Takagi**, Yokohama, Japan

[73] Assignee: **Kabushiki Kaisha Toshiba**, Kawasaki, Japan



[21] Appl. No.: **100,884**

[22] Filed: **Sep. 25, 1987**

[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**[4] ..... **G06F 15/626; H01R 1/06**

[52] **U.S. Cl.** ..... **364/521;** 340/721

[58] **Field of Search** ..... 364/521, 300, 518, 522; 340/721, 711, 747, 750



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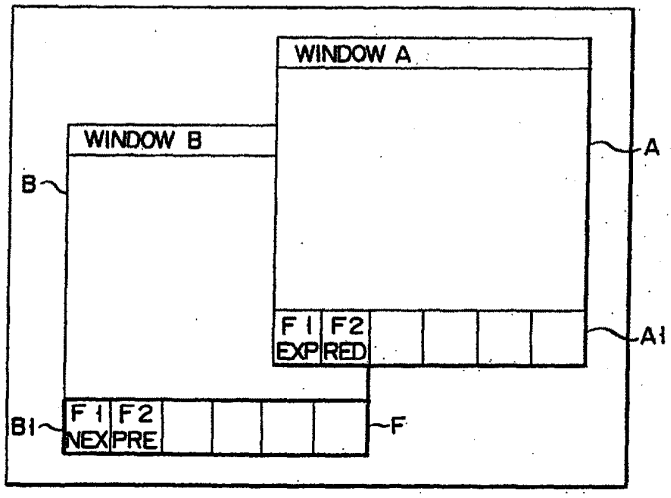
[57] **ABSTRACT**

When a function change key on a keyboard is operated, a key check section detects its operation and sends a function change key code to a function-key-use right changing unit. In response to this code, the unit calculates the window number of a window different from the window currently having the function-key-use right, and notifies a function key notifier that the calculated window is a new window having the function-key-use right. The same unit directs a CRT controller to display a marking frame around the function area of the new window. Upon depression of a function key, the key check section inputs a function key code to the function key identifier. The function key identifier notifies the task operating in the window having the function-key-use right of the input function code.


**31 Claims, 6 Drawing Sheets**



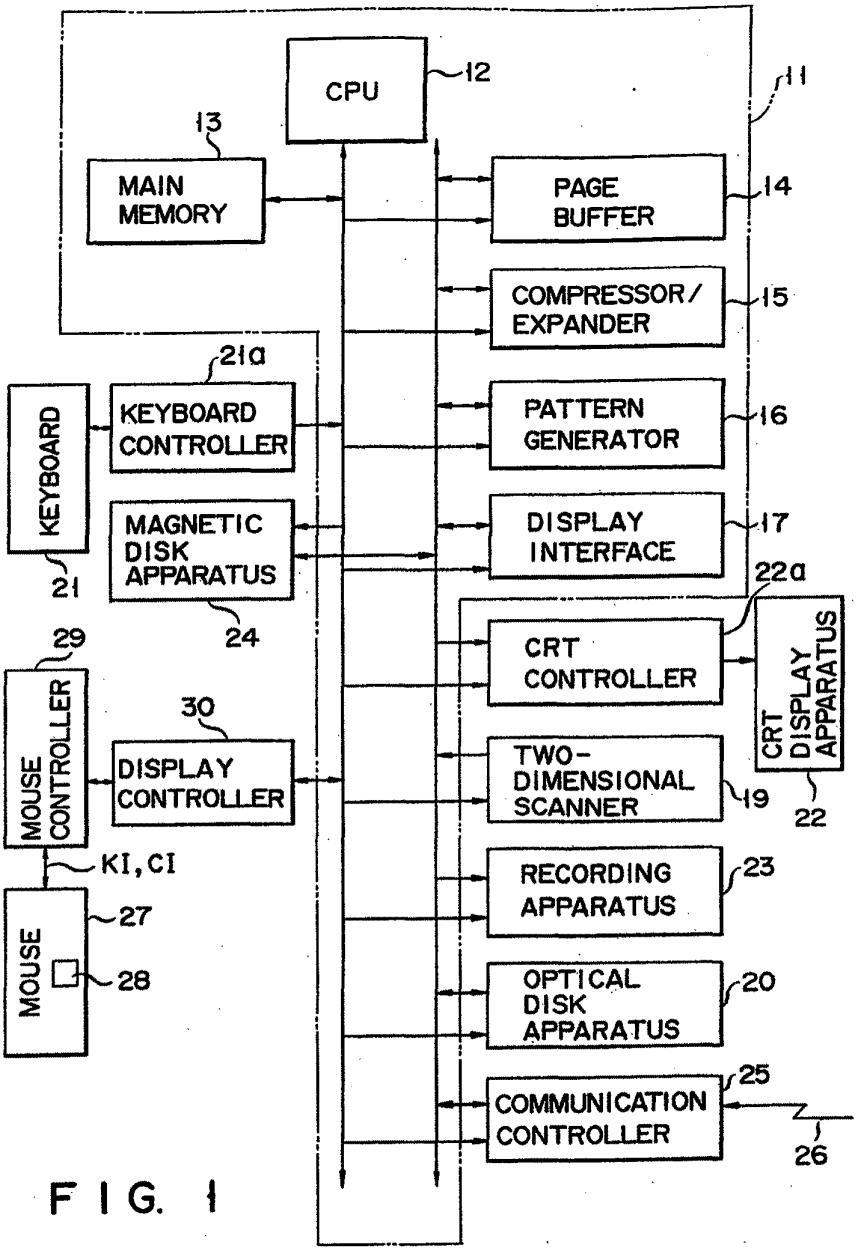



FIG. 1

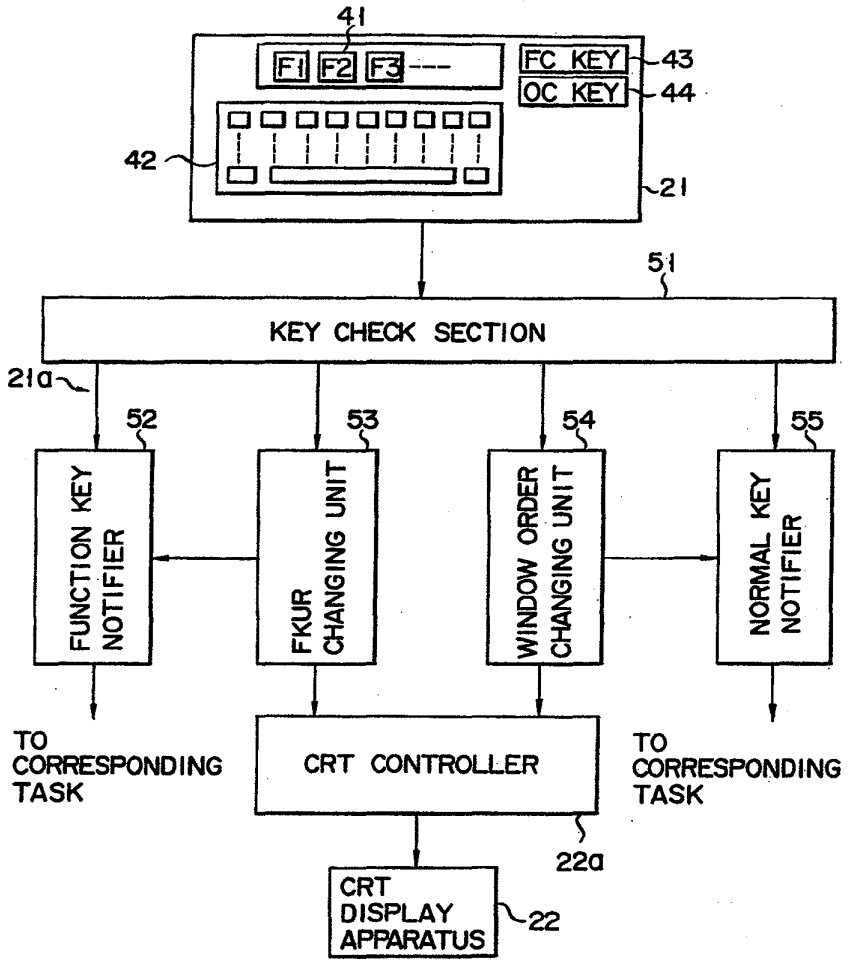



FIG. 2

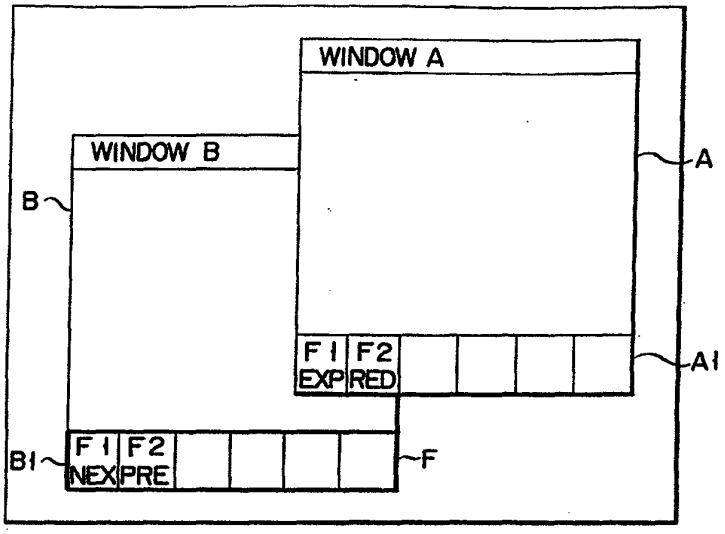



FIG. 3A

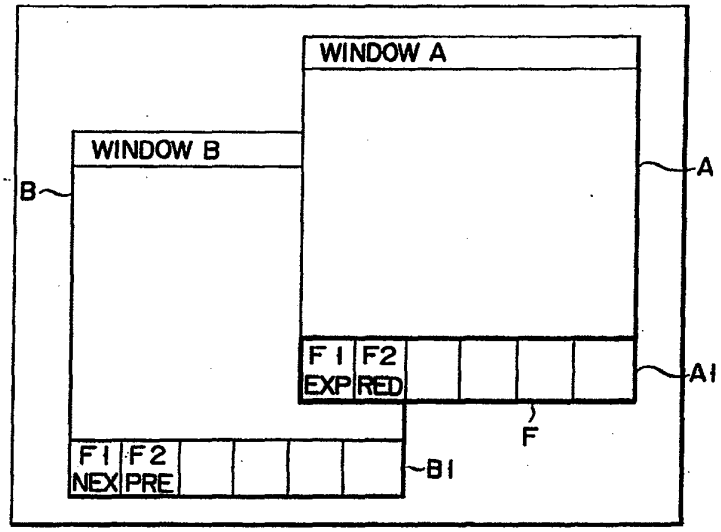



FIG. 3B

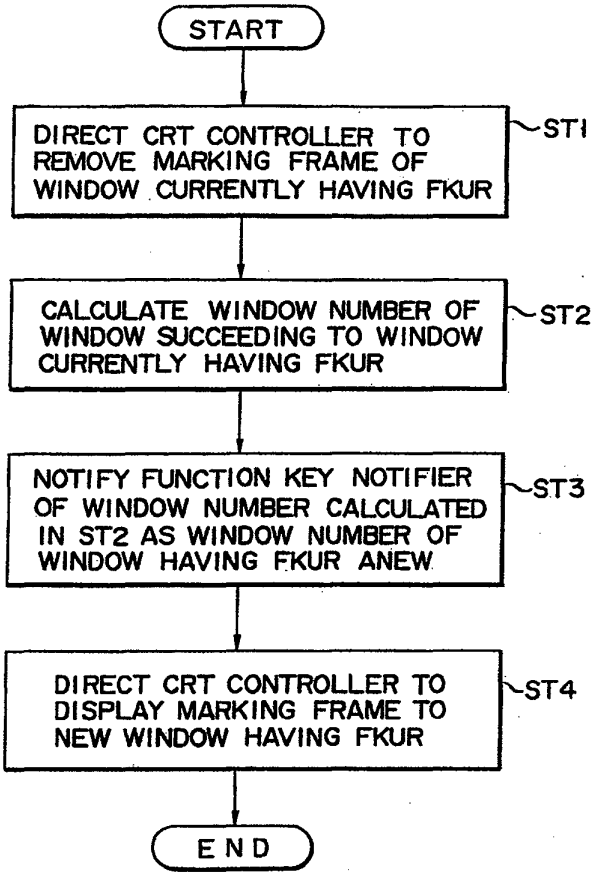



FIG. 4

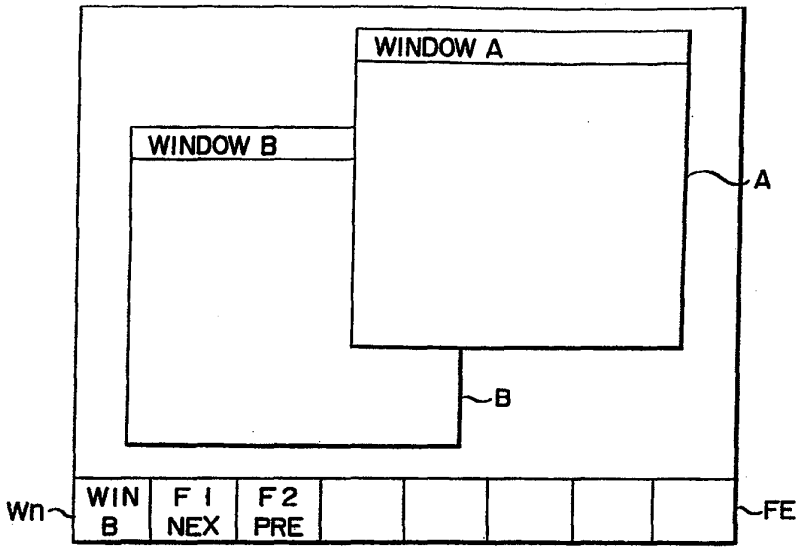



FIG. 5A

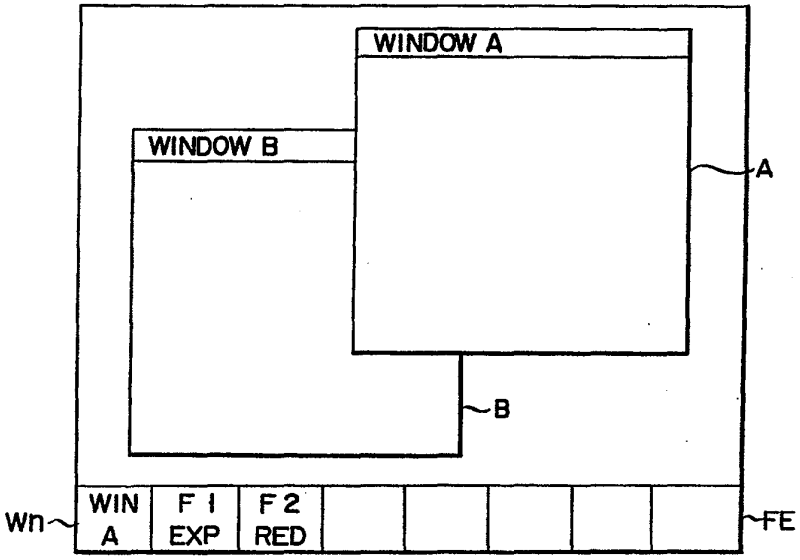



FIG. 5B

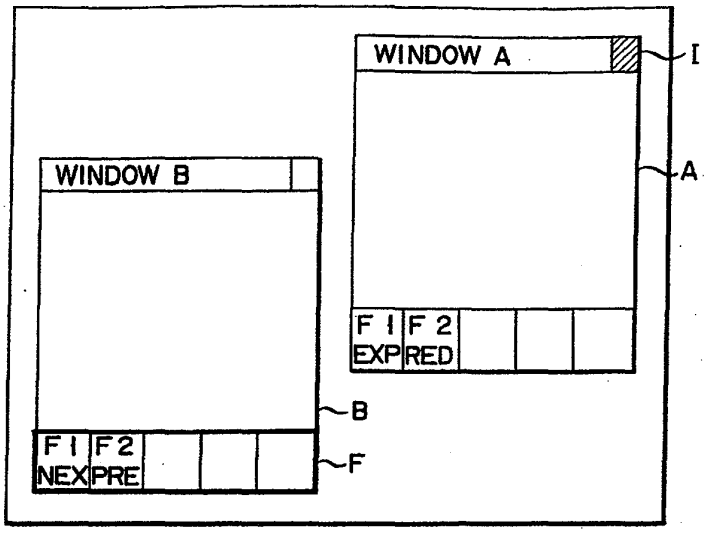



FIG. 6A

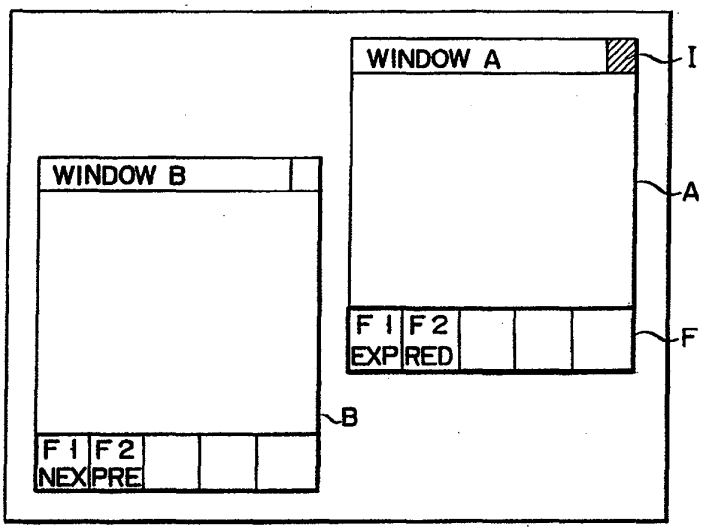



FIG. 6B

# INFORMATION PROCESSOR WITH MULTI-WINDOW DISPLAY FUNCTION

## BACKGROUND OF THE INVENTION

This invention relates to an information processor having a multi-window display function and capable of executing various types of controls by function keys and the like.

As is well known, various types of information processors based on multi-task and multi-window display systems have been developed. The multi-window system is discussed in "News Preliminary Technical Overview", Oct. 1986, by Sun Microsystems Inc., and by Gettys J., "Problems Implementing Window Systems in UNIX", 1986 Winter USENIX Technical Conference Proceedings, Jan. 1986.

When the multi-window display is performed using this type of information processor, a plurality of windows are often displayed, overlapping each other. Also in this case, the right to use the keyboard is given to the uppermost (top) window of those overlapping windows on the CRT screen. Information entered from the keyboard is input to the top window. To enter information into windows other than the top window, the overlapping order (hereinafter referred to simply as the "order") of the windows must be changed so that the window to be keyed-in the information is located at the top in the CRT screen. In other words, some operation to give the right of the keyboard-use to the desired window is needed before information is keyed in.

An information processor with a multi-task function is frequently operated in a multi-mode, in which windows are assigned to various tasks, respectively. In such operation, a plurality of windows displayed frequently overlap each other, because of the limited size of the CRT screen.

To enter information into each window, the processing information of the task associated with the window is keyed in by function keys on the keyboard. Accordingly, the window displays the processing information assigned to the function keys.

In some situations, an operator may desire to enter processing information by the function keys to a window which is not the top window, and without changing its order. For example, in an information processor of the type in which information is retrieved from an optical disk apparatus, and the retrieved information is to be displayed, the information that the operator desires is retrieved from the optical disk apparatus by accessing functions in the first window, and the retrieved information is then displayed in the second window, which may be displayed above (on) or below (under) the first window. In order that the second window successively displays the plural pieces of information which are retrieved by accessing functions in the first window, the first or second function key, for example, must be used for entering the information to the first window. "The first function key in the first window" functions to display the information succeeding the information being currently displayed in the second window. "The second function key" functions to display the information preceding the currently displayed information.

In the conventional information processor, only the top window has the right to use keyboard keys including the function keys, and the right to use only the function keys cannot be applied to other windows. To



give the right of the function keys use to another window, the order of that window must be set to the top. To change the window order, many CRT screens must be updated, and this updating takes much time. Thus, in order to display the next information, every time the first function key is to be input to the first window, the first window must become the top window. To see the information image in the second window, the operator must again execute the operation to change the second window to the top window. This is time consuming and troublesome work.

## SUMMARY OF THE INVENTION

Accordingly, with the view of overcoming the problem due to the fact that it is impossible to change only the directions to the processing information corresponding to the plurality of windows, this invention has an object to provide an information processor in which the directable processing information is changeable without changing the window order of the window, and hence various processings can be performed in a simple and quick manner.

According to one aspect of this invention, there is provided an information processing apparatus comprising: means for displaying a plurality of windows in a partially overlapping fashion, each of the windows displaying the processing information provided for each window, the processing information containing a plurality of processing commands, means for selecting the processing information displayed corresponding to one window, of those processing information displayed for each window, means for intensitively displaying the processing information corresponding to the selected window, means for designating one processing command of the intensitively displayed processing information, and means for processing according to the processing command as designated by the designating means.

According to another aspect of this invention, there is provided an information processing apparatus comprising means for displaying a plurality of windows, and processing information corresponding to one window of said windows, the processing information containing a plurality of processing commands, means for selecting the window in which the processing information is to be displayed, means for changing and displaying the processing information corresponding to the selected window on the display means, means for designating one processing command of the displayed processing information, and means for processing according to the processing command as designated by the designating means.

According to a further aspect of this invention, there is provided an information processing apparatus comprising means for keying in information, means for displaying a plurality of windows, each of the windows displaying the processing information provided for each window, one of the windows displaying an identifier to indicate that key-in by said key-in means is acceptable, the processing information containing a plurality of processing commands, means for selecting the processing information displayed corresponding to one window, of those processing information displayed for each window, the selecting means being contained in the key-in means, means for intensitively displaying the processing information corresponding to the selected window, means for designating one processing command of the intensitively displayed processing informa-

tion, and means for processing according to the processing command as designated by the designating means.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a block diagram of a configuration of an information processor according to one embodiment of this invention;

FIG. 2 shows a view illustrating a major portion of the information processor of FIG. 1;

FIGS. 3A and 3B show views of examples of displays useful in explaining the operation of the FIG. 1 information processor;

FIG. 4 shows a flow chart illustrating the operation of the FIG. 1 information processor;

FIGS. 5A and 5B show views of examples of displays containing other display contents; and

FIGS. 6A and 6B show views of examples of displays containing additional display contents.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows a configuration of an embodiment of information processor according to this invention.

Main controller 11 is made up of CPU12, main memory 13, page buffer 14, compressor/expandor 15, pattern generator 16, and display interface 17. CPU 12 can perform multi-task operations for various types of controls. Main memory 13 stores the control programs for CPU 12. Page buffer 14 has a memory capacity of 512 kb (=128 blocks), for example. Compressor/expandor 15 compresses the image information (reduces the redundancy of the information) and expands the same (restores the redundancy of the information). Pattern generator 16 stores the pattern information of characters, symbols, etc.

As a reader, two-dimensional scanner 19 two-dimensionally scans the document image (not shown) with a laser beam, for example, to obtain electrical signals corresponding to the document image. Optical disk apparatus 20 sequentially records the image information and the like, which are read out by scanner 19 and transferred through main controller 11, on an optical disk (not shown). Keyboard 21 keys-in the retrieval information relating to the image information, and commands for various types of operations. The output signal of keyboard 21 is supplied to CPU 21 via keyboard controller 21*a*. Cathode ray tube display apparatus (CRT display apparatus) 22 as a display is for displaying the image information which has been read out by the scanner 19 and supplied through main controller 11, or information which has been read out from the optical disk by optical disk apparatus 20 and supplied through the same route. CRT display apparatus 22 is controlled by CRT display controller 22*a*. The controller 22*a* has additional functions to control the display windows, and the display of the cursor moved by the mouse.

Recording apparatus 23, such as printer, prints out the image information, which has been read out by two-dimensional scanner 19 and supplied through main controller 11, or information which has been read out from the optical disk and supplied through the same route. Magnetic disk apparatus 24 stores, on a magnetic disk (not shown), a title table containing retrieval titles corresponding to the image information as the retrieval information, which has been entered by keyboard 21, for example. Communication controller 25, coupled with an external apparatus via communication line 26, transmits an image retrieval request signal and retrieval information, for example, and supplies the image retrieval request signal and the retrieval information, as sent to it, to main controller 11. Mouse 27, as an operating means, is for moving the cursor on the screen of CRT display apparatus 22. Mouse 27 is provided with a click button 28 as an input means. Mouse 27 is coupled with mouse controller 29, which produces cursor position signal KI on the CRT screen and operation signal CI representing operation states of click button 28. These signals output from mouse controller 29 are supplied to display controller 30 (and to main controller 11).

FIG. 2 shows a configuration of the major portion of the information processor according to this invention.

Keyboard 21 contains function keys 41, and normal keys 42 such as kana (Japanese phonetic symbols) keys and alphanumeric keys. The keyboard further contains function change (FC) key 43 for changing the window having the function-key-use right, and order change (OC) key 44 for changing a window order.

Keyboard controller 21*a* contains key check section 51. This section checks which of function keys 41, FC key 43, OC key 44, and normal keys 42, the key code input from keyboard 21 belongs to. When, as the result of the check, the key code corresponds to function keys 41, key check section 51 supplies the key code to function key notifier 52. When the key code corresponds to FC key 43, it is supplied to function-key-use right (FKUR) changing unit 53, from keyboard 21. When the key code corresponds to OC key 44, key check section 51 supplies the key code to window-order changing unit 54. Similarly, when the key code corresponds to normal key 42, it is transferred to normal key notifier 55.

Function key notifier 52 notifies the task operating in the window having the right to use function keys 41, of the input function key code. In this case, the notifier 52 has received the notification of this window from FKUR changing unit 53.

According to the supply of the key code from key check section 51, unit 53 deprives the window currently owning the right of function keys use of the right, and gives it to another window. Then, it informs function key notifier 52 and CRT controller 22*a* of the window now having the function-key-use right. In this case, unit 53 has stored the number of windows currently being displayed and the window number of the window currently having the function-key-use right under control of CPU 12. In response to the operation by FC key 43, FKUR changing unit 53 updates the number of the window currently having the function-key-use right. When the window number exceeds the number of windows, it is set to "1". If the number of windows is "2", the window number is updated "1", "2", "1", "2", . . . in response to the operation of FC key 43. FKUR changing unit 53 notifies function key notifier 52 of this window number. According to this window number, it further notifies CRT controller 22*a* of the new owner of the function-key-use right.

According to the window number from the FKUR changing unit 53, CRT controller 22*a* intensifies the display of the window, as the present owner of the function-key-use right, of those windows on the CRT screen. Window-order changing unit 54 changes the order of the window according to the supply of the key code from key check section 51, viz., the operation of OC key 44. Further, it informs normal key notifier 55 and CRT controller 22*a* of the window having owned the right. CRT controller 22*a* causes CRT display appa-

ratus 22 to update the images according to the signal from window-order changing unit 54. Normal key notifier 55 notifies the task operating in the window as the top window of the normal key code, in response to the signal supplied from window-order changing unit 54.

The operation of the information processor thus arranged will be described. FIGS. 3A and 3B show examples of the displays by CRT display apparatus 22. In this example, window A of window number "1" and window B of window number "2" are displayed partially overlapping each other. Function areas A1 and B1 are used in each of windows A and B. These function areas A1 and B1 have displays of command names of commands which will be executed when function keys 41 are operated. In FIGS. 3A and 3B, command name "EXP" means "expansion", "RED" means "reduction", "NEX" means "next", and "PRE" means "previous". In window A, for example, when first function key "F1" is operated, the image in the window A is expanded. When second function key "F2" is operated, the image in the window A is reduced. In window B, for example, when first function key "F1" is operated, window B displays the information following to the information being currently displayed in window A. When second function key "F2" is operated, window B displays the information preceding the currently displayed information in the window A.

The function area of the window having the function-key-use area is placed in the intensitive display, viz., surrounded by marking frame F, for example. From this marking frame F, the operator can see what kind of command is executed when he operates one of function keys 41. The intensitive display may be composed of an inverted display, the flickering display, and the like, in addition to the marking frame.

FIG. 4 shows a flowchart illustrating the operation of FKUR changing unit 53. When FC key 43 is operated, function change key code is supplied to FKUR changing unit 53, from key check section 51. Upon receipt of this, FKUR changing unit 53, in step ST1, directs CRT controller 22*a* so as to remove the function area marking frame F in the window currently having the function-key-use right (window B in FIG. 3A). In step ST2, FKUR changing unit 53 calculates the window number ("1" in FIG. 3A) of a window different from the window currently having the function-key-use right (whose number is "2" in FIG. 3A). Then, in step ST3, it informs function key notifier 52 that the new window having the function-key-use right is window (A) of "1". In step ST4, it directs CRT controller 22*a* to apply marking frame F to the function area (A1) of the new window (A). In turn, the display as shown in FIG. 3B is obtained.

The display of FIG. 3A is for the case that the window B has the right to use function keys 41. Under this condition, if FC key 43 is operated, the function area A1 of window A is surrounded by marking frame F, as shown in FIG. 3B. The designation of the command for window A by function key 41 is acceptable.

The display thus configured is very useful for the information processor of the type in which information is retrieved from an optical disk and displays the retrieved information. For example, an operator retrieves some types of information necessary for the processing in the window B, from the optical disk, and successively displays the images of the retrieved information in window A. In this case, the operator must operate function key "F1" or "F2", for example, for the window B. Here, function key "F1" functions to display the information following the information now being displayed in the window A. Function key "F2" functions to display the preceding information. To expand, for example, the image information displayed in window A, only two steps of key operation are required; FC key 43 is operated and function key "F1" is operated. It is noted that the function keys 41 are effective for entering the information in window A, without changing the order of the windows. Thus, the window order change is not required for switching the top window, i.e., having the function-key-use right, to another window. Therefore, there is no need for the image up-dating for window order change, thus expediting the information processing.

FIGS. 5A and 5B show examples of other displays on the screen of CRT display apparatus 22.

While windows A and B have function areas A1 and B1, respectively, in the FIGS. 3A and 3B case, a single function area FE is provided in the bottom part of the screen containing windows A and B. The window name Wn of the window having the right to use function keys 41 and the names of the commands of function keys 41, which are for the window, are displayed in the function key area FE. In this case, the FKUR changing unit 53 operates as follows:

(1) To calculate the window number ("1") of the window following to the window of window number ("2") (window B in FIG. 5A) currently having the right to use the function keys 41.

(2) To notify function key notifier 52 of the window (A) of "1" as the new window having the function-key-use right.

(3) To direct CRT controller 22*a* to display "WIN A" as the window name Na corresponding to the number "1" of the new window (A) and the command name as well in function area FE. As the result of such operations, the display as shown in FIG. 5B is obtained.

In the display state shown in FIG. 5A, the window B has the right to use function keys 41. Under this condition, if FC key 43 is operated, the display on the function area FE is changed as shown in FIG. 5B and the command for window A can be designated by function keys 41.

Further examples of displays on the screen of CRT display 22 are illustrated in FIGS. 6A and 6B.

In these examples, the function areas A1 and B1 are provided in windows A and B, as in the case of FIGS. 3A to 3B, but these windows are not overlapped. In these examples, since the windows are not overlapped, it is necessary to discriminate the top window from another window. To this end, identifier I is displayed in the window having function-key-use right in order to identify the window. The operation of the FKUR changing unit 53 is as indicated by the flowchart of FIG. 4.

In this instance, only the function-key-use right can be switched from one window to another window. Therefore, when the function-key-use right is switched, there is no need for changing the window order, and hence for updating the images. In this respect, the information processing speed is improved.

It should be noted that this invention is not limited to the above-mentioned specific embodiments, but may variously be changed within the scope of the invention.

As seen from the foregoing, only the processing information which can be designated, can be changed without changing the display states of the window. The

information processor according to this invention is simple in operation and quick in processing.

What is claimed is:

1. An information processing apparatus comprising:

display means for displaying a plurality of windows, ordered by a display priority, each of the windows having a processing area that displays information to be processed and a function area that displays a plurality of function commands;

designating means, having a plurality of function keys, for designating one function command by operation of one of the function keys, each of the function commands displayed in the function area of the each window indicating a processing operation that corresponds to each function key of the designating means;

selecting means for selecting the window that contains the function command corresponding to the function key of the designating means that is operated, without changing a display condition of the windows;

distinguishing means for indicating on the display means the function area of the window selected by the selecting means; and

processing means for performing, when one of the function keys is operated, a processing operation according to the function command that is distinctly displayed on the display means and that corresponds to the function key operated.

2. The information processing apparatus according to claim 1, wherein the display means displays the windows in a partially overlapping order representative of the display priority of the windows.

3. The information processing apparatus according to claim 1, wherein the distinguishing means displays a marking frame on the display means around the function area of the window selected by the selecting means.

4. The information processing apparatus according to claim 1, wherein the selecting means comprises a key switched in the designating means, and in response to the operation of the key switch, the distinguishing means indicates on the display means one of the function areas.

5. The information processing apparatus according to claim 1, further comprising:

means for checking that the selecting means and the function keys are operated;

means, when the selecting means is operated, for operating the distinguishing means; and

means, when any one of the function keys is operated, for operating the processing means.

6. An information processing apparatus comprising:

display means for displaying a plurality of windows, ordered by a display priority, the display means having a window display area that displays information to be processed, and a function area that displays a plurality of function commands each corresponding to one window;

designating means, having a plurality of function keys, for designating one function command by operation of one of the function keys, each of the function commands displayed in the function area of the display means indicating a processing operation that corresponds to each function key of the designating means;

selecting means for selecting the window that contains the function command corresponding to the function key of the designating means that is operated, without changing a display condition of the windows;

changing/displaying means for changing and displaying the function commands in the function area corresponding to the window selected by the selecting means; and

processing means for performing, when one of the function keys is operated, a processing operation according to the function command that is distinctly displayed on the display means and that corresponds to the function key operated.

7. The information processing apparatus according to claim 6, wherein the display means displays the windows in a partially overlapping order representative of the display priority of the windows.

8. The information processing apparatus according to claim 6, wherein the function area includes a region for displaying an indicative display representing the window selected by the selecting means.

9. The information processing apparatus according to claim 6, wherein the selecting means comprises a key switch in the designating means, and in response to the operation of the key switch, the changing/displaying means changes the function commands displayed in the function area to other function commands corresponding to the window, selected by the selecting means.

10. The information processing apparatus according to claim 6, wherein the function area includes a region for displaying an indicative display representing the window selected by said selecting means, and in response to the operation of said key switch, the changing/displaying means includes means for changing the indicative display representing the window selected by the selecting means.

11. The information processing apparatus according to claim 6, further comprising:

means for checking that the selecting means and the function keys are operated;

means, when the selecting means is operated, f operating the changing/displaying means; and

means, when any one of the function keys is operated, for operating the processing means.

12. An information processing apparatus comprising:

means for keying in information;

display means for displaying a plurality of windows, each of the windows having a processing area that displays information to be processed and a function area that displays a plurality of function commands;

designating means, having a plurality of function keys, for designating one function command by operation of one of the function keys, each of the function commands displayed in the function area of the each window indicating a processing operation that corresponds to each function key of the designating means, one of the windows displaying an identifier to indicate that, by operating the function keys of the designating means, a designation of the function command is acceptable;

selecting means for selecting the window that contains the function command corresponding to the function key of the designating means that is operated, without changing a display condition of the windows;

distinguishing means for indicating on the display means the function area of the window selected by the selecting means; and

processing means for performing, when one of the function keys is operated, a processing operation according to the function command that is distinctly displayed by the display means and that corresponds to the function key operated.

13. The information processing apparatus according to claim 12, wherein the distinguishing means displays a marking frame on the display means around the function area of the window selected by the selecting means.

14. The information processing apparatus according to claim 12, wherein the selecting means comprises a key switch in the designating means, and in response to the operation of said key switch, the distinguishing means indicates on the display means one of the function areas.

15. The information processing apparatus according to claim 14, further comprising:

means for checking that the selecting means and the function keys are operated;

means, when the selecting means is operated, for operating the distinguishing display means; and

means, when any one of the function keys is operated, for operating the processing means.

16. An information processing apparatus comprising:

input means for performing a key-input, the input means having a plurality of function keys and a function change key;

window display means for displaying a plurality of windows, each of the windows having an area that displays information to be processed;

means for storing a window number representing the window that corresponds to the key-input function of the input means;

function command display means for displaying onto the window display means a plurality of function commands for the window that is represented by the window number stored in the storing means, each of the function commands indicating a processing operation that corresponds to each function key of that input means;

means for changing the window number stored in the storing means in response to the key-input by the function change key of the input means, without changing a display condition of the windows; and

processing means for performing, when the key-input by one of the function keys is performed, a processing according to the function command that is displayed on the window display means and that corresponds to the key-input by the function key.

17. The information processing apparatus according to claim 16, wherein the window display means includes displaying means for displaying the windows with a display priority that orders the windows, each of the windows having a processing area in which information to be processed is displayed and a function area in which a plurality of function commands is displayed, the function command display means includes distinguishing display means for distinctly displaying onto the window display means the function area of the window that is represented by the window number stored in the storing means, and the processing means includes processor means for performing the processing according to the function command that corresponds to the key-input by the function key.

18. The information processing apparatus according to claim 16, wherein the window display means includes means for displaying the windows in a partially overlapping order representative of the display priority of the windows.

19. The information processing apparatus according to claim 17, wherein the distinguishing display means includes means for displaying a marking frame around the function area of the window represented by the window number stored in the storing means.

20. The information processing apparatus according to claim 17, wherein the distinguishing display means includes means for distinctly and successively displaying one of the function areas onto the display means in response to the key-input by the function change key of the input means.

21. The information processing apparatus according to claim 16, further comprising:

means for checking that the key-input by the function keys and the function change key is performed;

means for operating, when the key-input by the function change key is performed, the window number changing means; and

means for operating, when the key-input by the function keys is performed, the processing means.

22. The information processing apparatus according to claim 16, wherein the window display means includes displaying means for displaying the windows with a display priority that orders the windows, the displaying means having a window display area for displaying the windows and a function area that displays the plurality of function commands, the function command display means includes function command displaying means for displaying, in the function area of the displaying means, the function commands for the window represented by the window number stored in the storing means, and the processing means includes processor means for performing the processing according to the function command that corresponds to the key-input by the function key of the function commands in the function area.

23. The function processing apparatus according to claim 22, wherein the window display means includes means for displaying the windows in a partially overlapping order representative of the display priority of the windows.

24. The information processing apparatus according to claim 22, wherein the function area includes a region for displaying an indicative display for indicating the window that is represented by the window number stored in the storing means.

25. The information processing apparatus according to claim 22, wherein the function command display means includes means for changing the function commands displayed in the function area, in response to the key-input by the function change key, to other function commands for the other window.

26. The information processing apparatus according to claim 25, wherein the function area includes a region for displaying an indicative display indicating the window represented by the window number stored in the storing means, and the displaying means includes means for changing the indicative display displayed in the function area to other indicative display indicating the other window in response to the key-input by the function change key.

27. The information processing apparatus according to claim 22, further comprising:

means for checking that the key-input by the function keys and the function change key is performed;

means, when the key-input by the function change key is performed, for operating the window number changing means, and

means, when the key-input by the function keys is performed, for operating the processing means.

28. The information processing apparatus according to claim 16, wherein each of the windows displayed on the window display means has a processing area that displays information to be processed and a function area that displays a plurality of function commands, the window display means includes means for displaying an identifier to indicate that the key-input by the function key to the window represented by the window number stored in said storing means is acceptable, the function command display means includes distinguishing display means for distinctly displaying onto the displaying means the function area of the window, that is represented by the window number stored in the storing means, and the processing means includes processor means for performing the processing according to the function command in the function area distinctly displayed on the displaying means that corresponds to the key-input by the function key.

29. The information processing apparatus according to claim 28, wherein the distinguishing display means includes means for displaying a marking frame around the function area of the window represented by the window number.

30. The information processing apparatus according to claim 28, wherein the distinguishing display means includes means for distinctly and successively displaying one of the function areas onto the display means, in response to the key-input by the function change key of the input means.

31. The information processing apparatus according to claim 28, further comprising:

means for checking that the key-input by the function keys and the function change key is performed;

means, when the key-input by the function change key is performed, for operating the window number changing means; and

means, when the key-input by the function keys is performed, for operating the processor means.

* * * * *

# United States Patent [19]

**Takagi et al.**

[11] **Patent Number: 4,885,704**

[45] **Date of Patent: Dec. 5, 1989**


[54] **ELECTRONIC DOCUMENT FILING APPARATUS WITH ICON SELECTION**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[73] Assignee: **Kabushiki Kaisha Toshiba**, Kawasaki, Japan



[21] Appl. No.: **99,902**

[22] Filed: **Sep. 22, 1987**

[30] **Foreign Application Priority Data**

Jan. 12, 1987 [JP] Japan ..... 62-4741
Jan. 31, 1987 [JP] Japan ..... 62-21030

[51] **Int. Cl.**[4] ..... **G09G 1/06**

[52] **U.S. Cl.** ..... **364/521**; 364/518; 364/200; 382/41; 340/710

[58] **Field of Search** ..... 364/521, 518, 200 MS File; 382/41; 358/21 R, 280; 340/709, 710, 711



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| 4,772,882 | 9/1988 | Mical | 340/709 |

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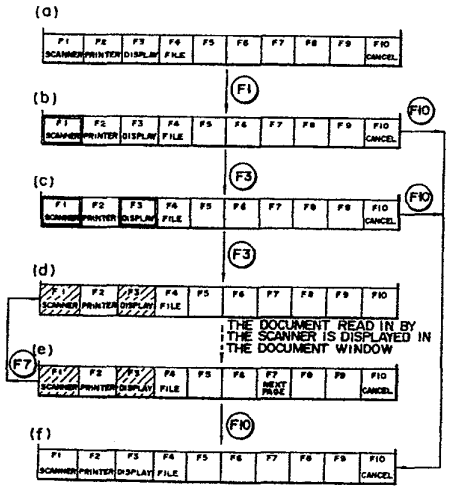
*Primary Examiner*—A. D. Pellinen
*Assistant Examiner*—David Osborn
*Attorney, Agent, or Firm*—Finnegan, Henderson, Farabow, Garrett and Dunner



[57] **ABSTRACT**

A data processing apparatus includes a scanner for scanning a document, a display device for displaying the picture information, and a file device for filing the picture information. The display device can display the picture information and selection marks, i.e., icons or commands, for selecting the scanner, display device and file device. The marks are designated by a mouse to select the scanner, the display device and file device. Upon the completion of designation of the marks, the scanner, display device and file device are operated in the order in which the selection marks have been designated by the mouse.


**24 Claims, 23 Drawing Sheets**



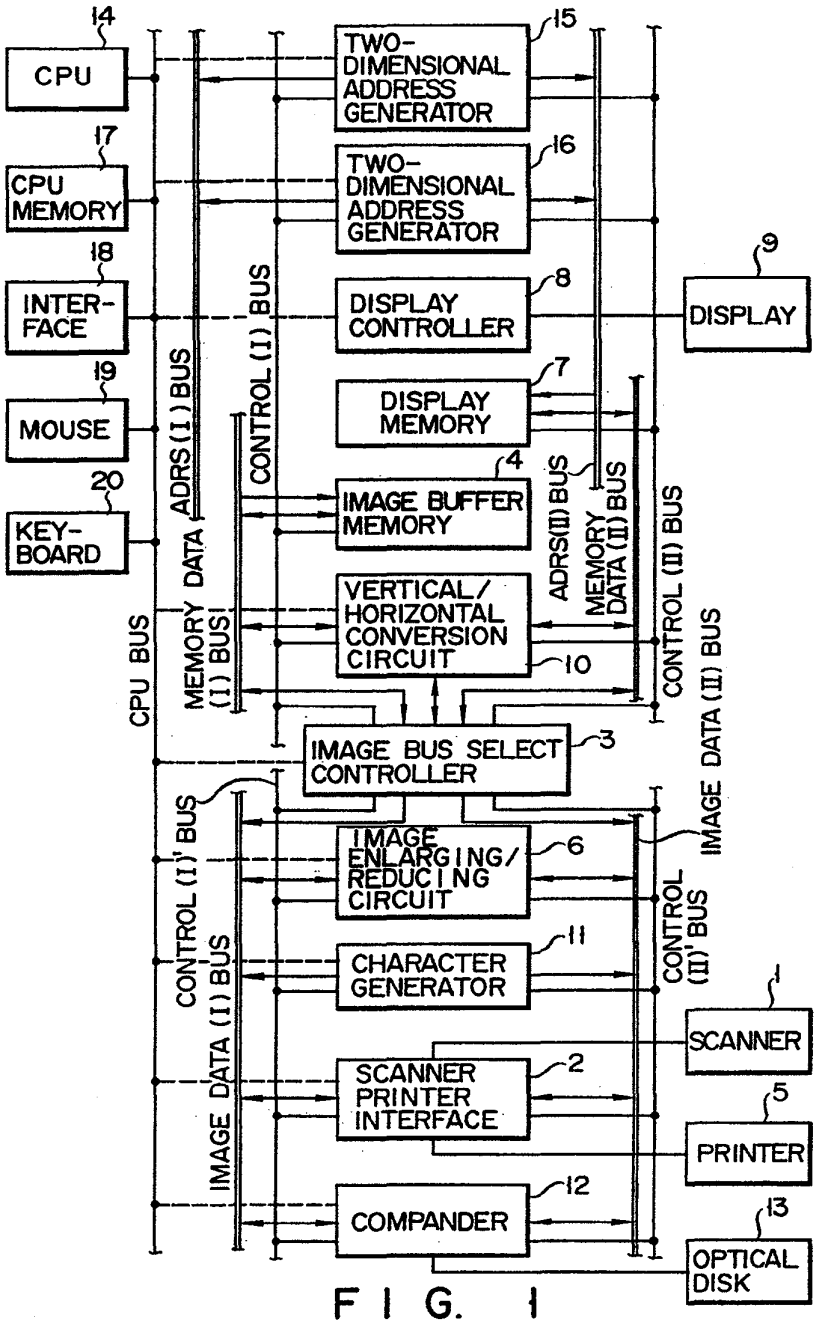



FIG. 1

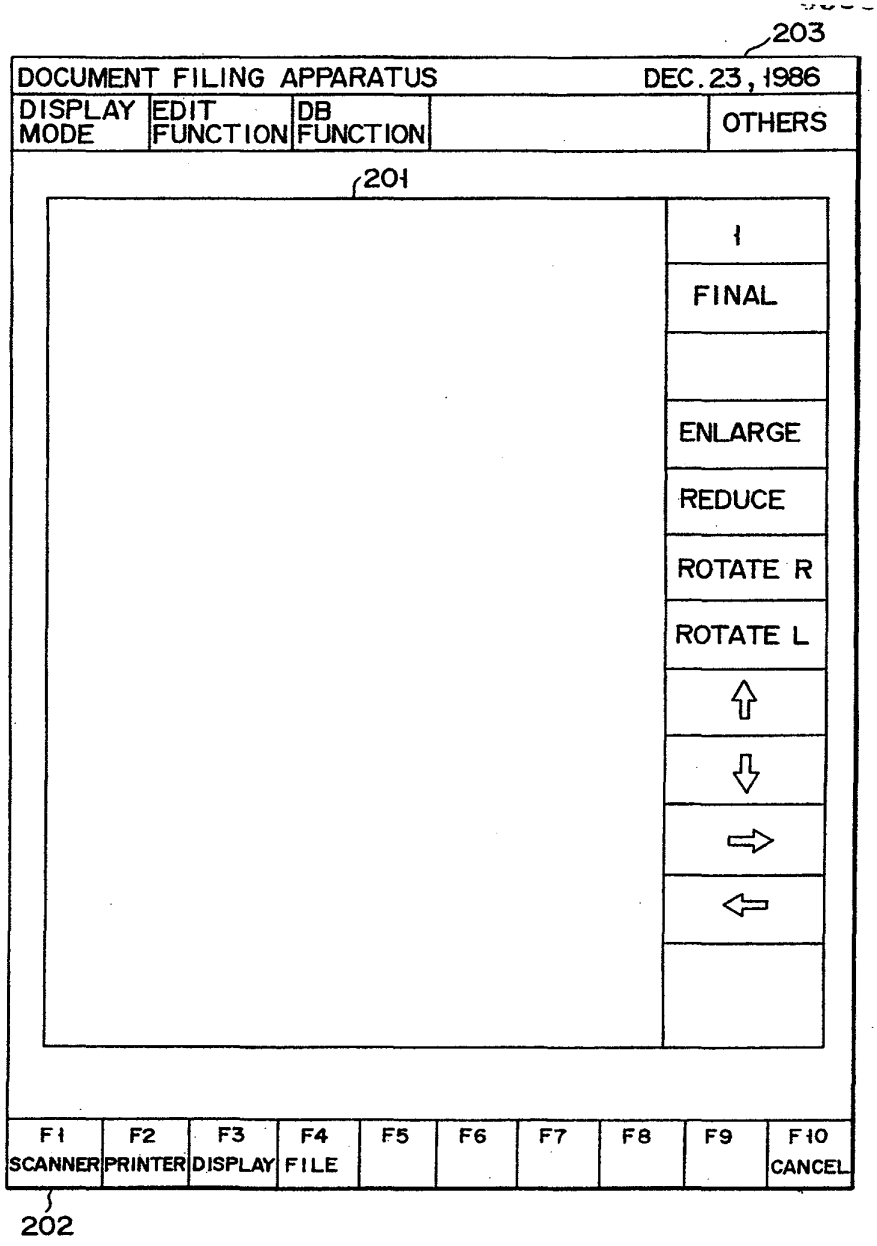



FIG. 2

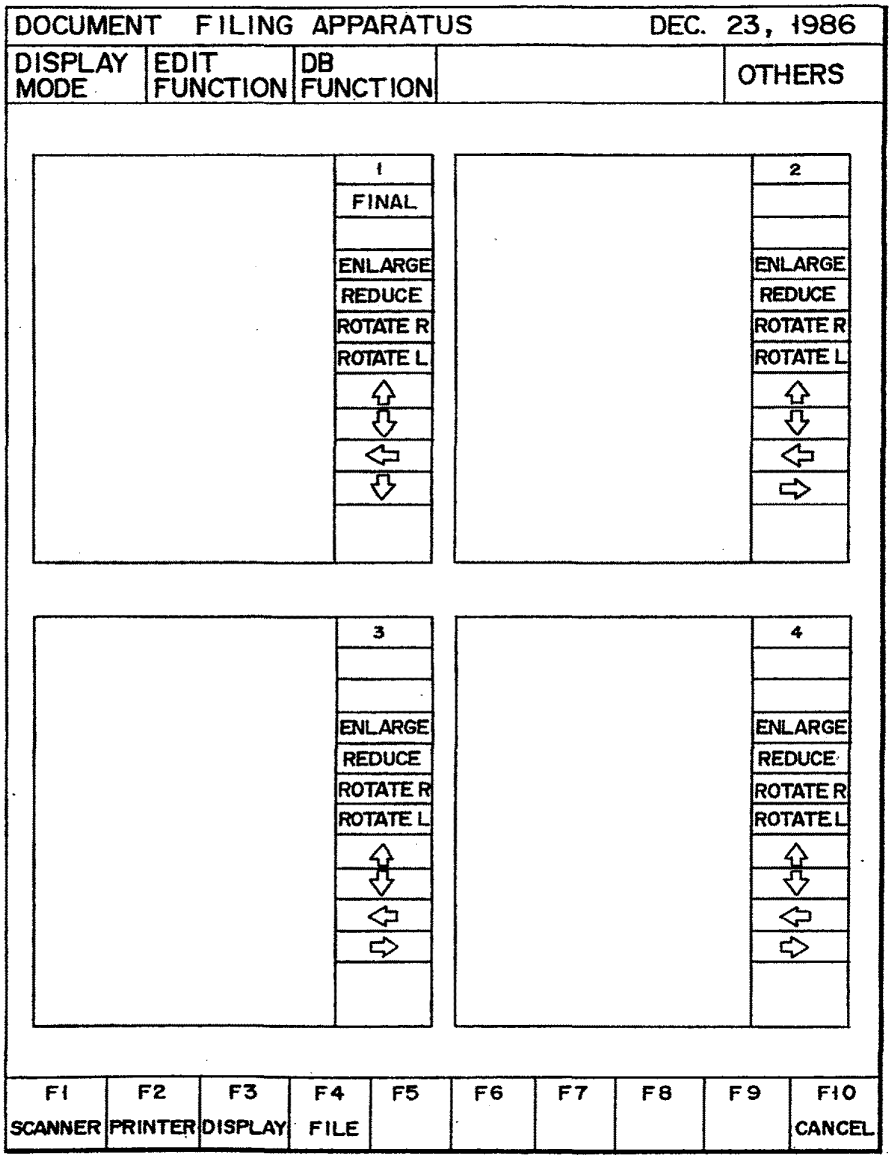



FIG. 3A

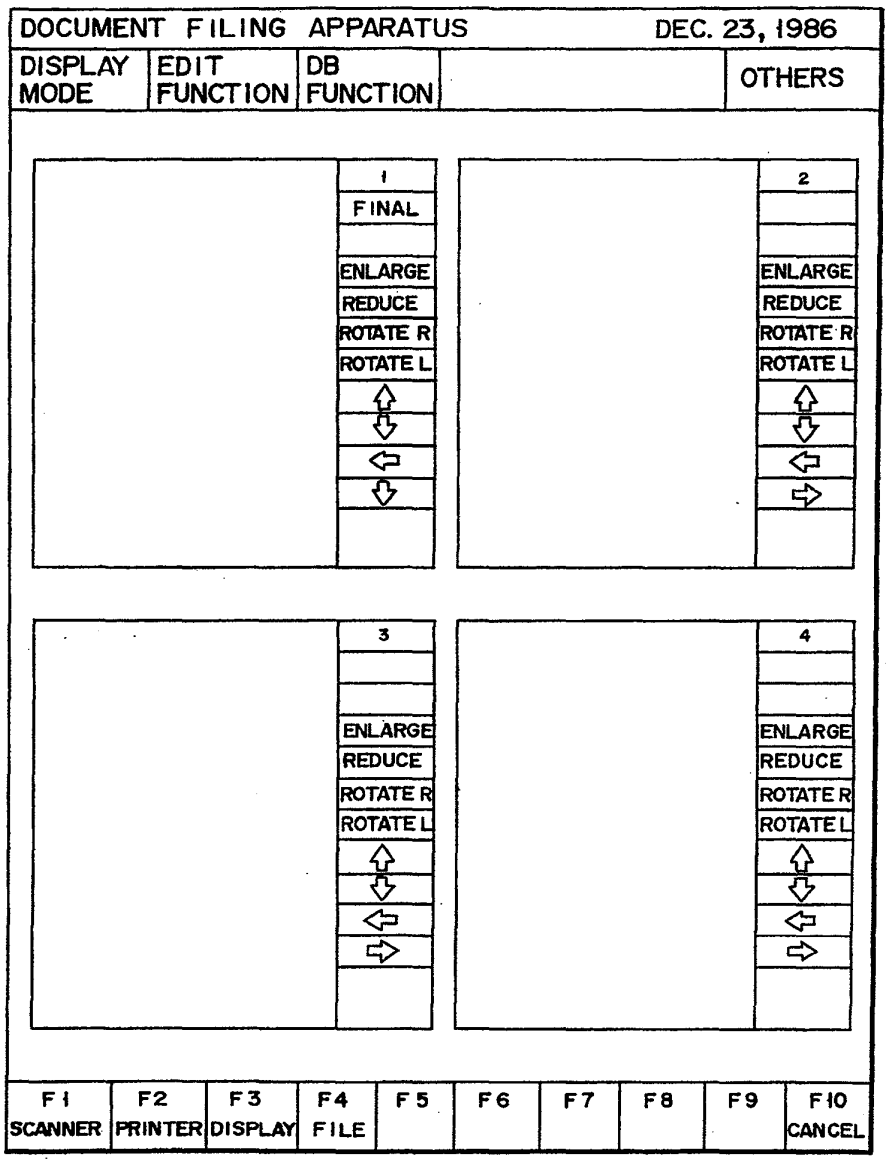



FIG. 3B

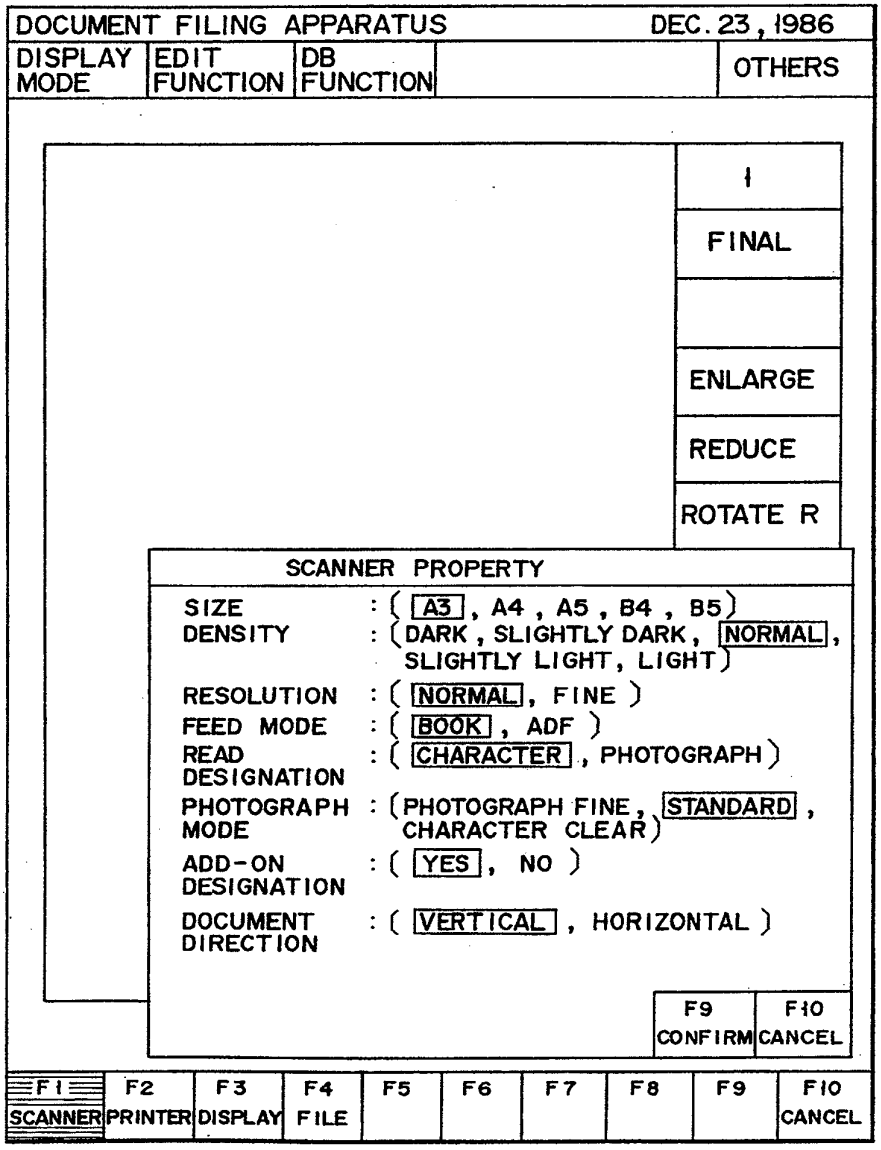



FIG. 4

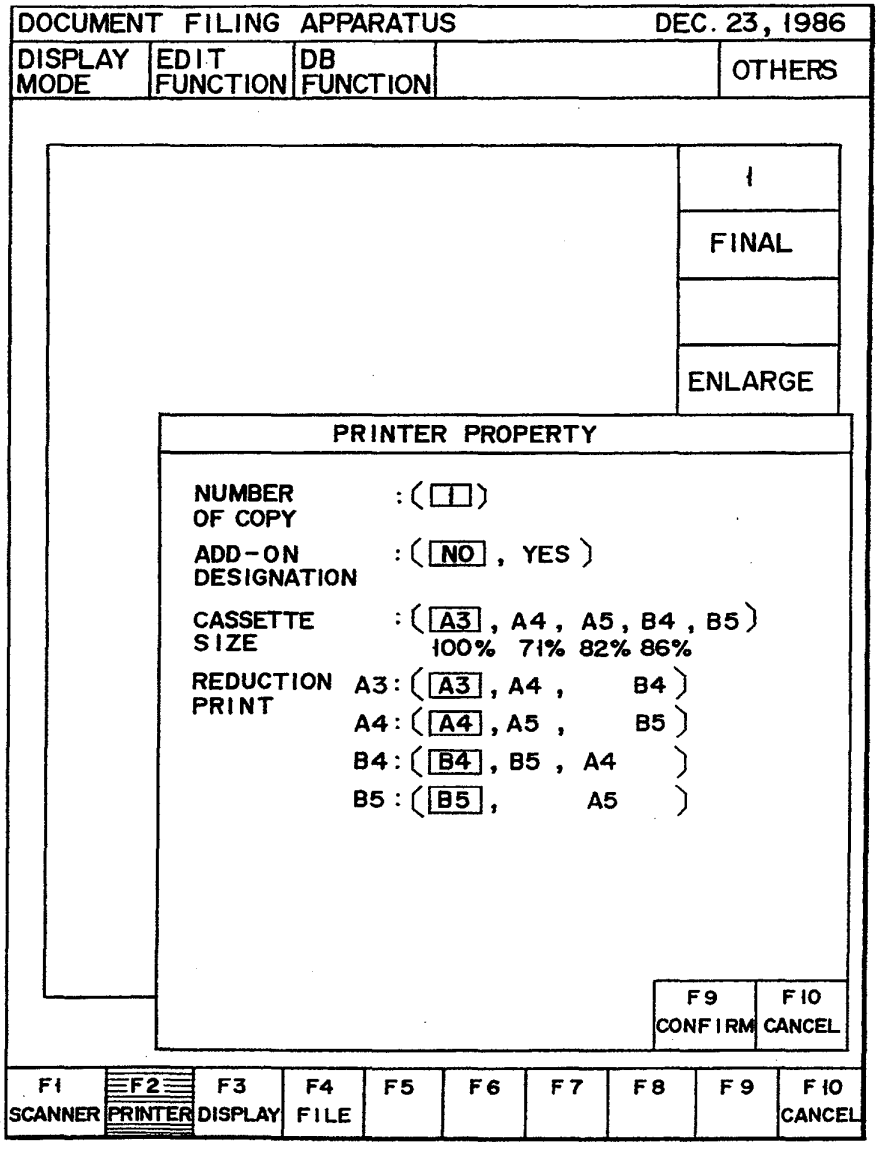



FIG. 5

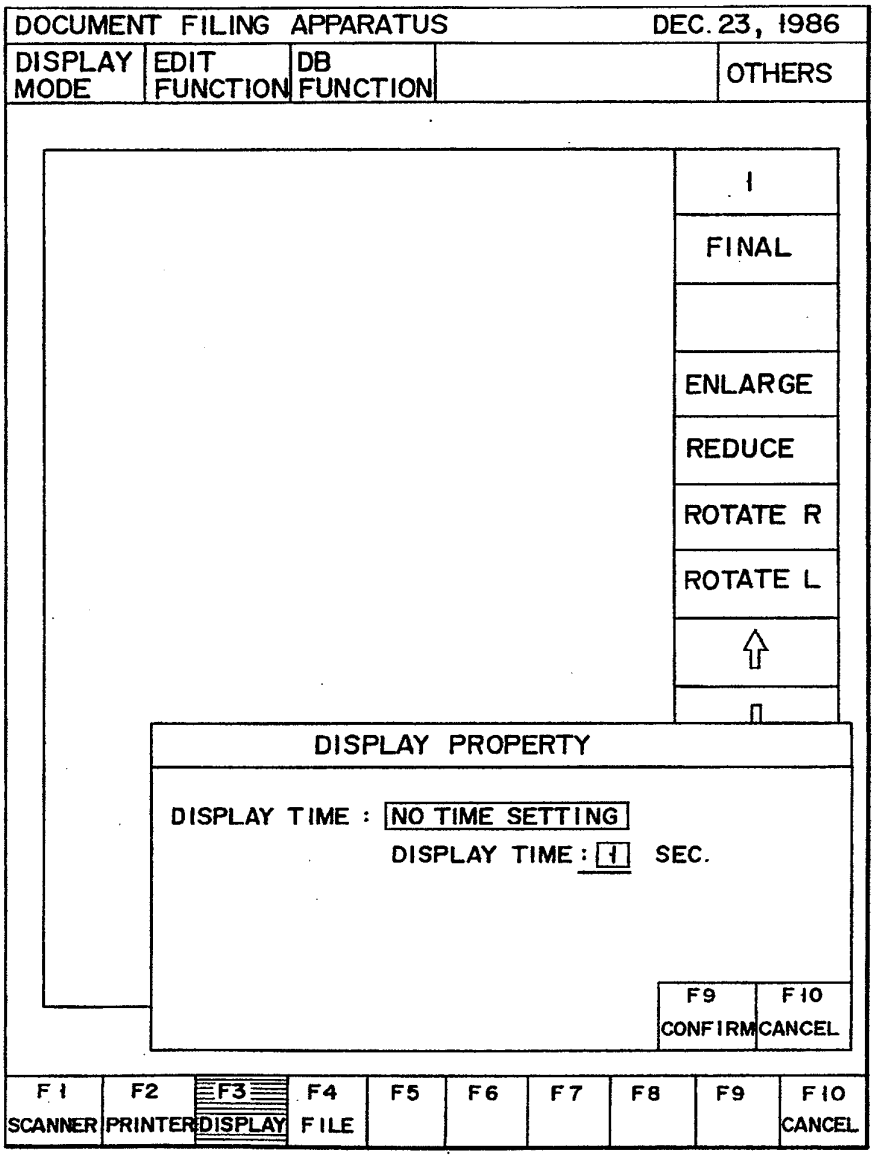



FIG. 6

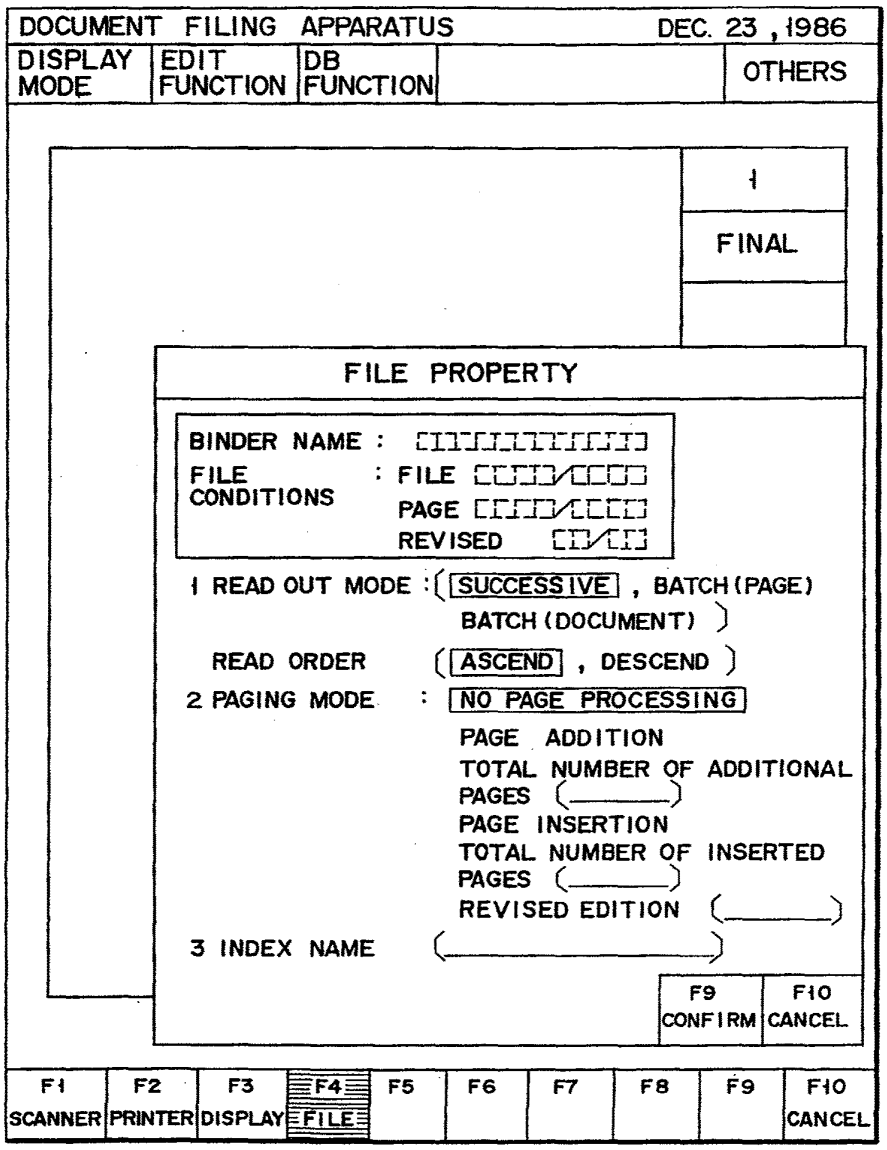



FIG. 7

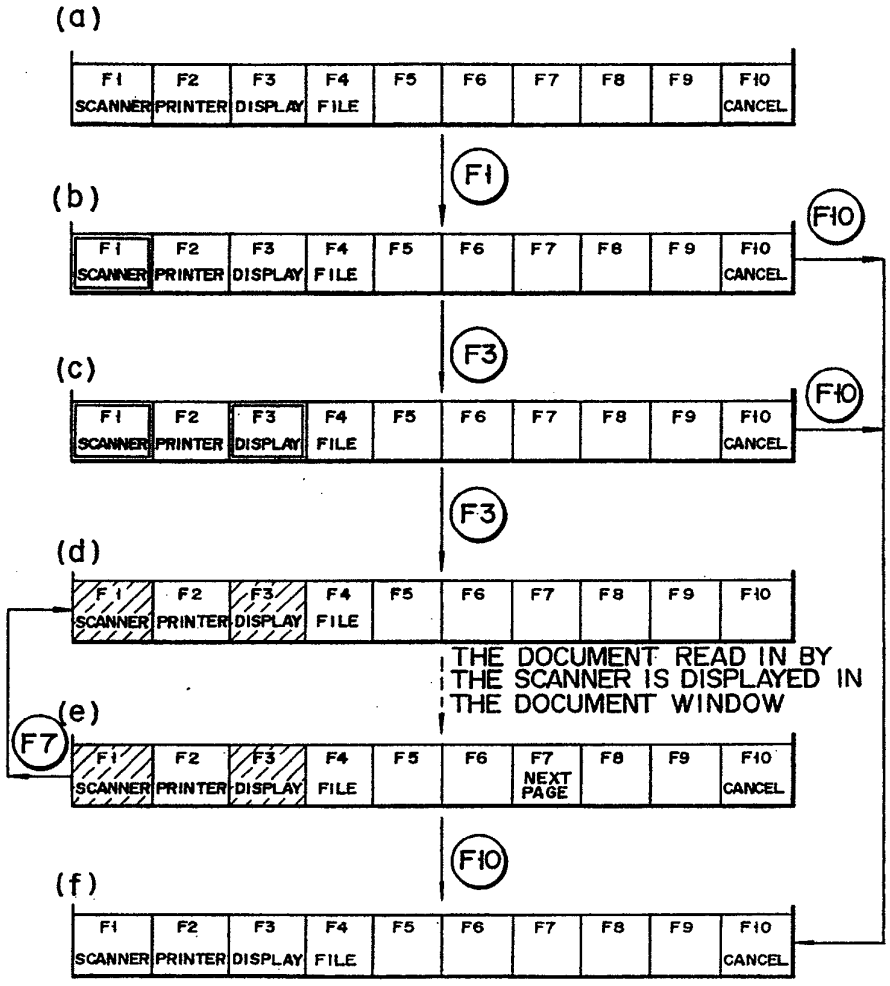



FIG. 8

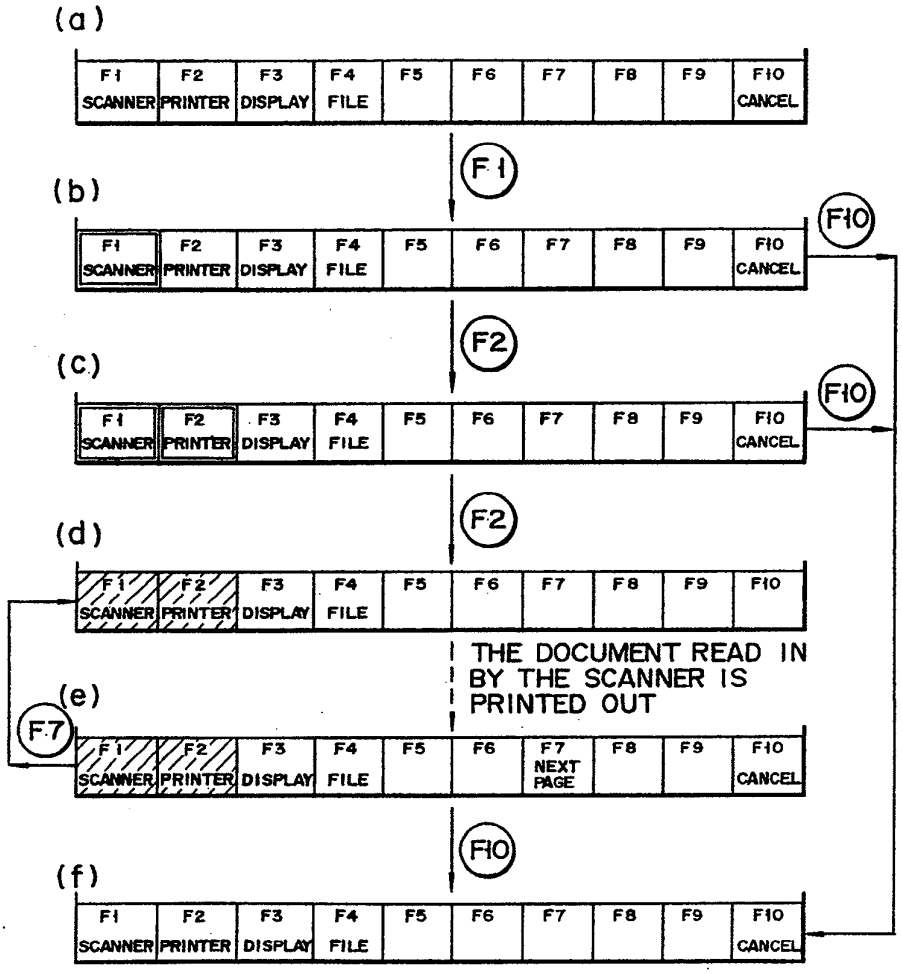



FIG. 9

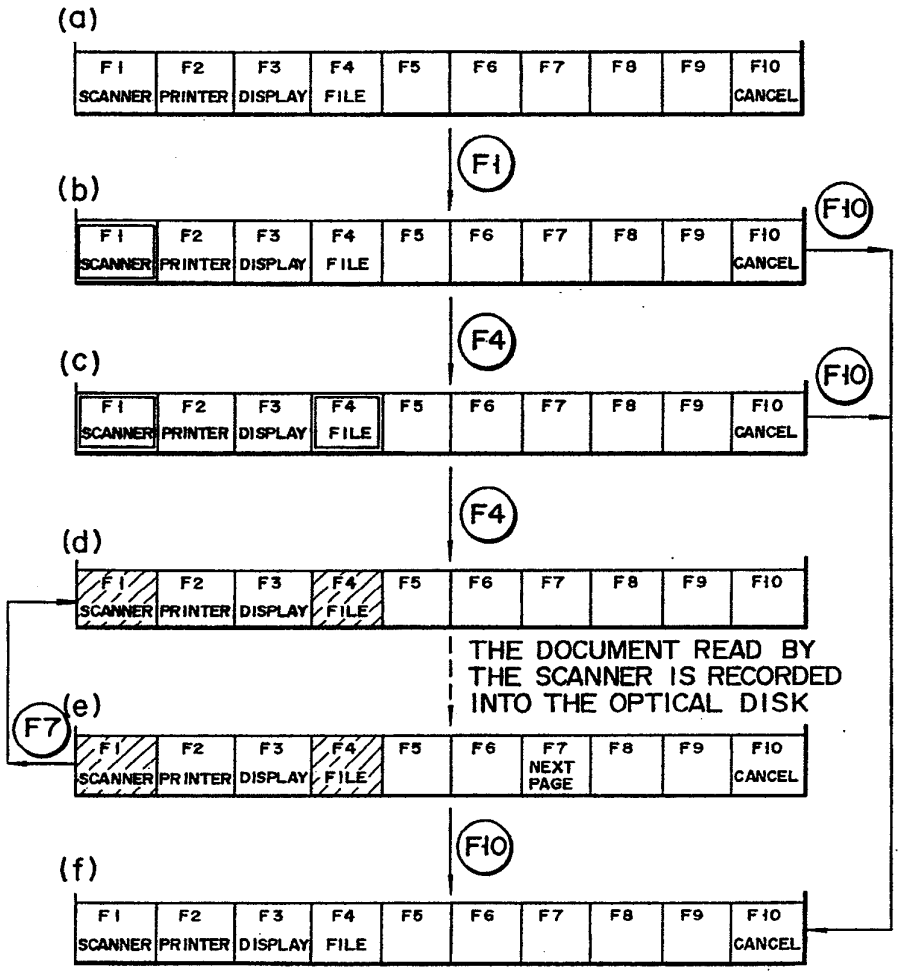



FIG. 10

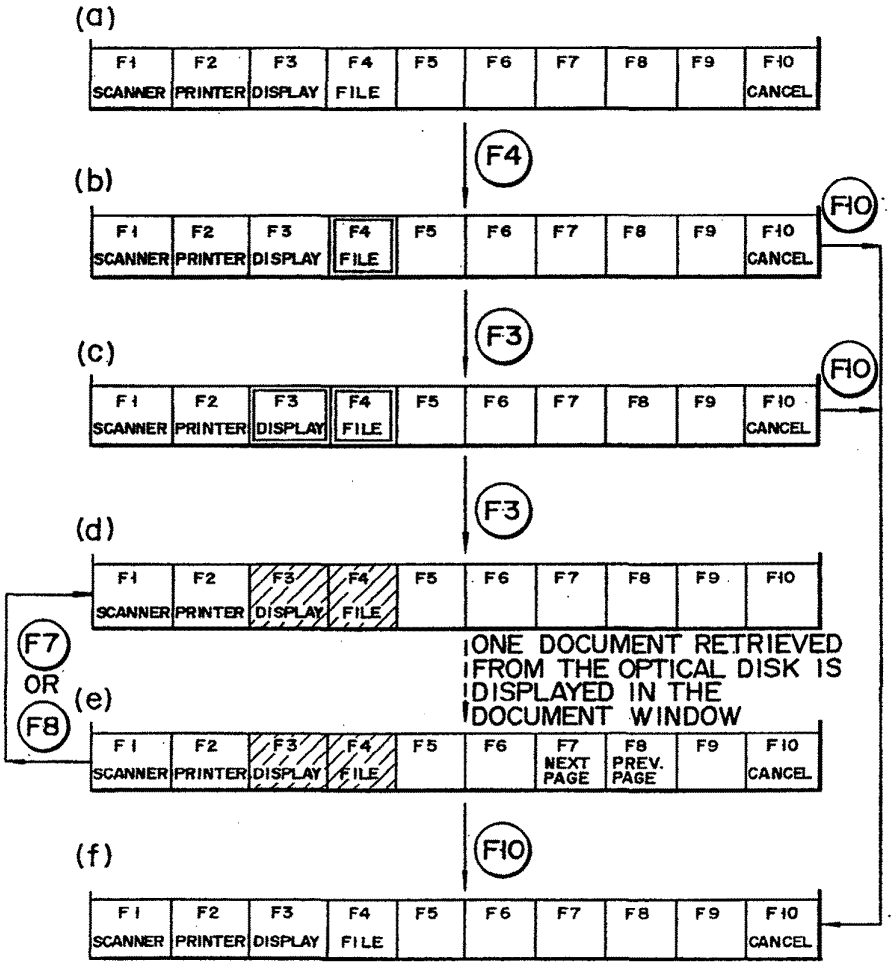



FIG. 11

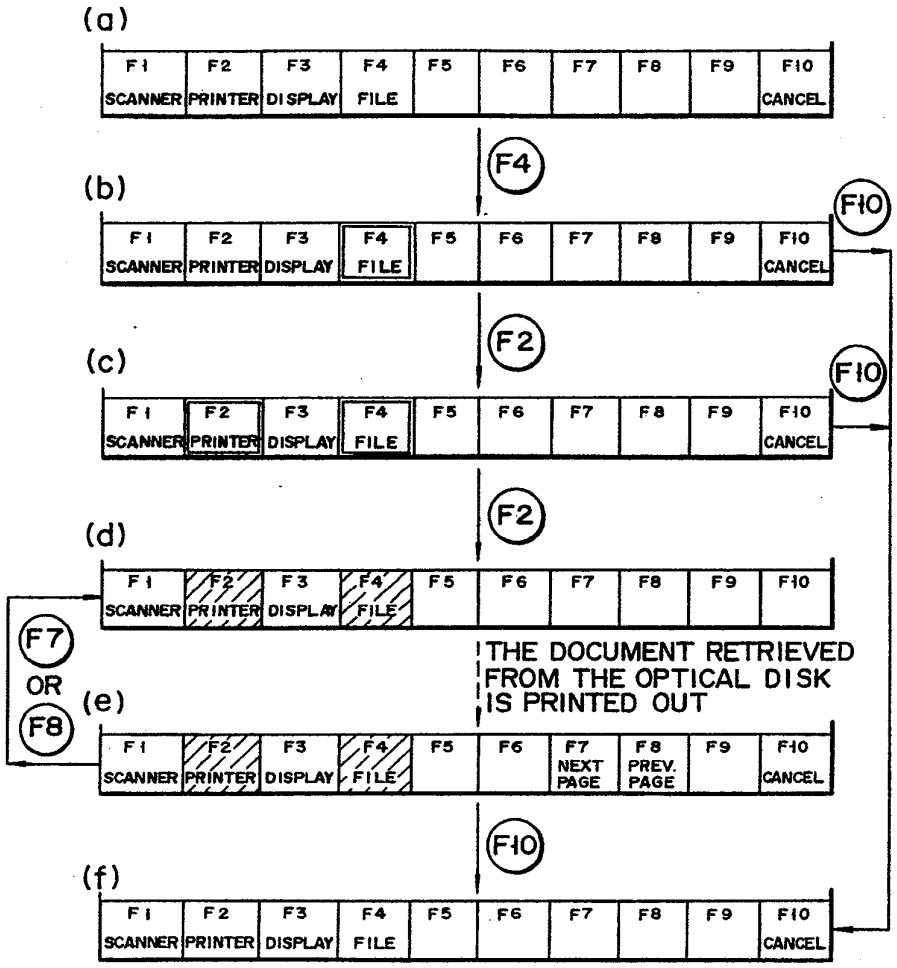



FIG. 12

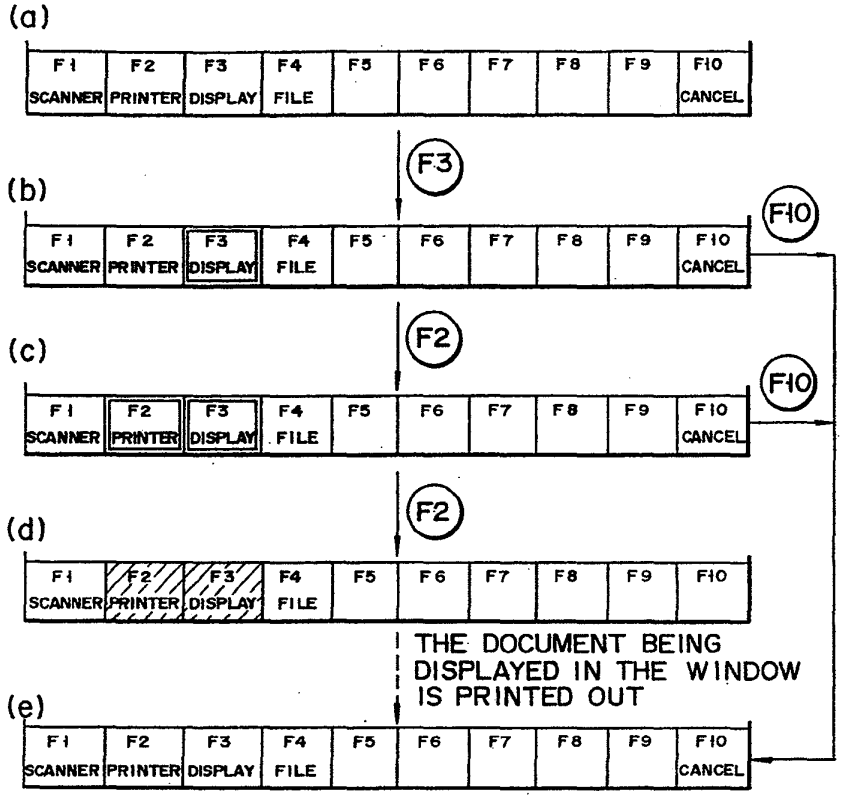



FIG. 13

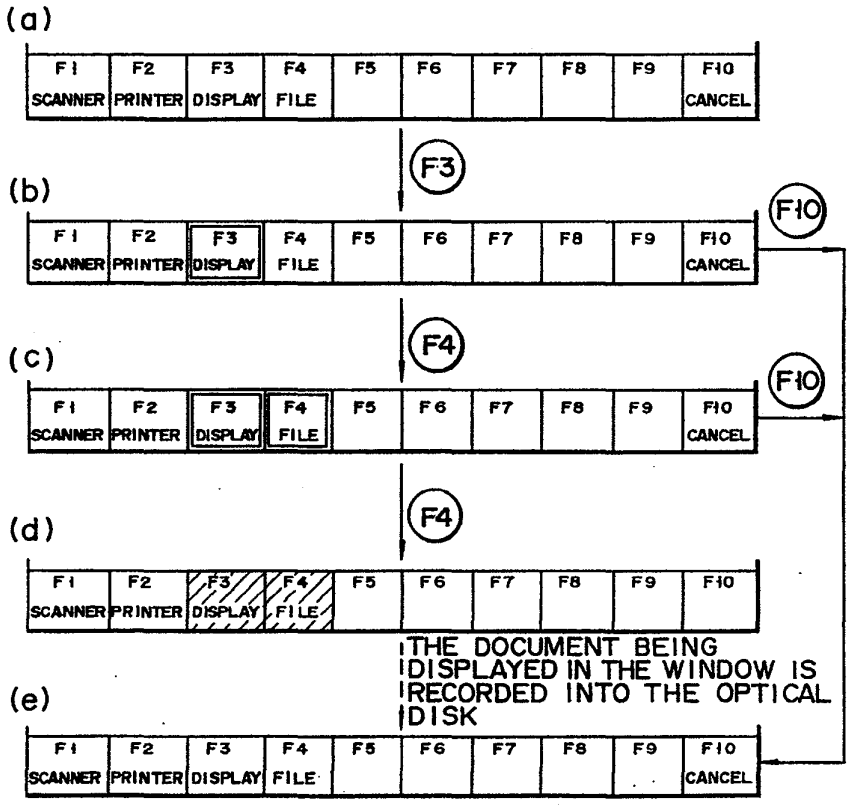



FIG. 14

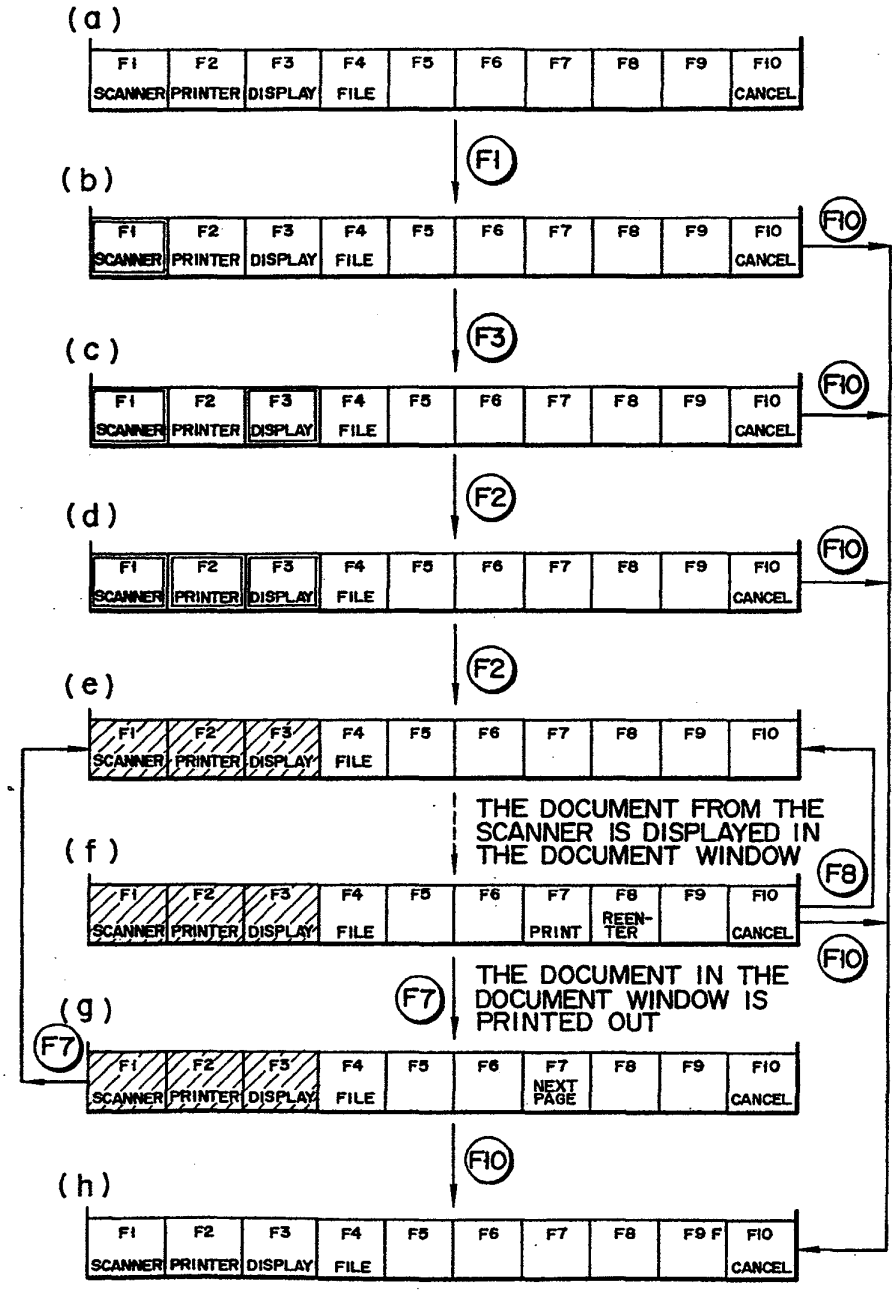



FIG. 15

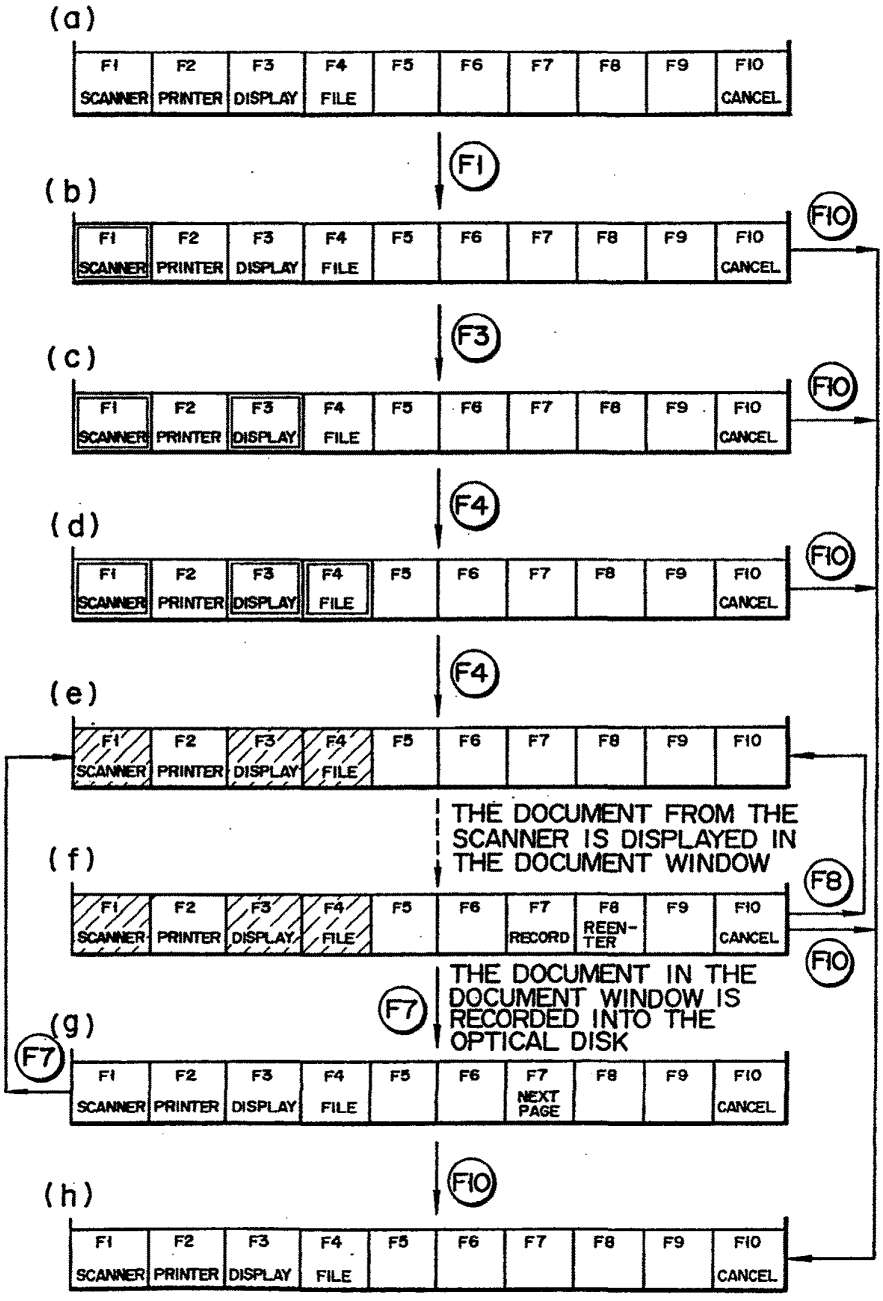



FIG. 16

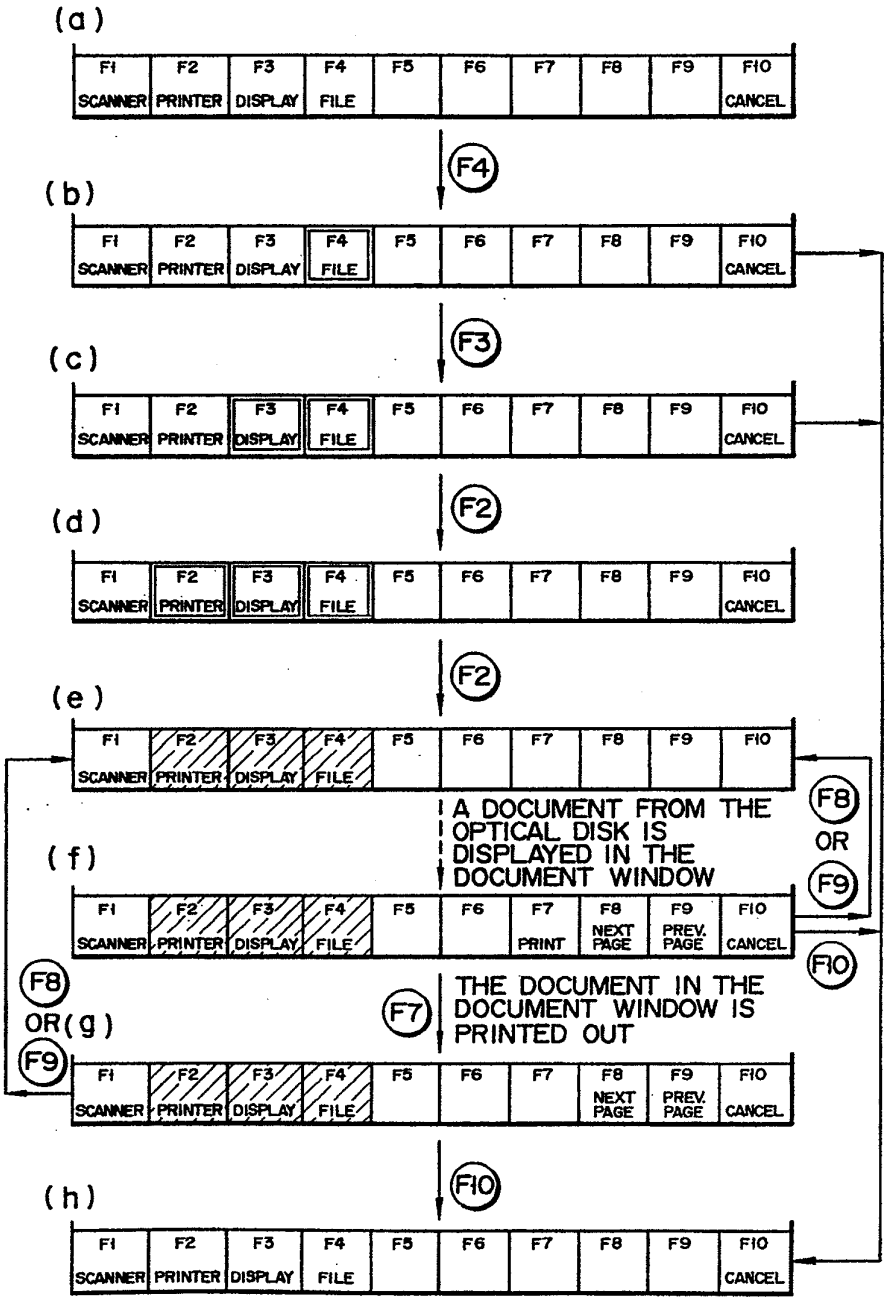



FIG. 17

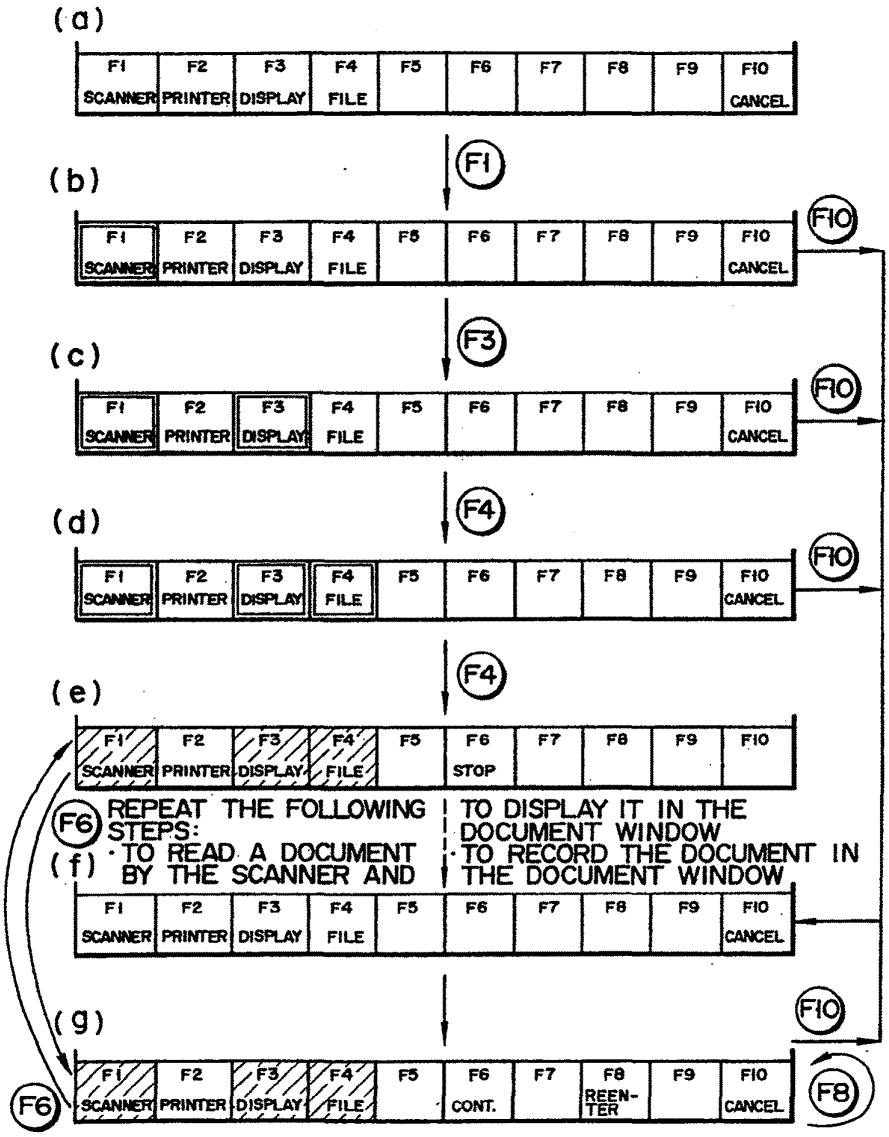



FIG. 18

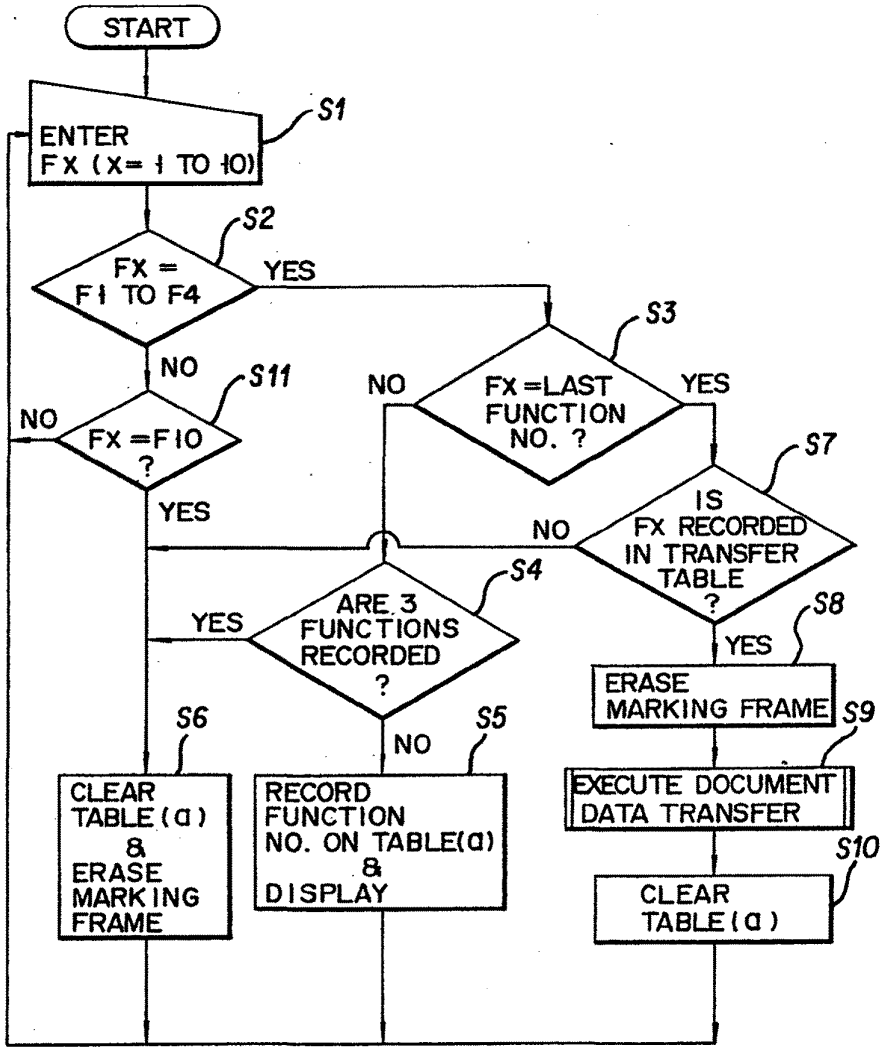



FIG. 19

(a) DESIGNATION TABLE

| NUMBER OF DESIGNATED ICONS | 1ST | 2ND | 3RD |
|---|---|---|---|
| | | | |

(b) TRANSFER TABLE

| NO | NUMBER OF DESIGNATED ICONS | 1ST | 2ND | 3RD |
|---|---|---|---|---|
| 1 | 2 | SCANNER F1 | DISPLAY F3 | |
| 2 | 2 | SCANNER F1 | PRINTER F2 | |
| 3 | 2 | SCANNER F1 | FILE F4 | |
| 4 | 2 | FILE F4 | DISPLAY F3 | |
| 5 | 2 | FILE F4 | PRINTER F2 | |
| 6 | 2 | DISPLAY F3 | PRINTER F2 | |
| 7 | 2 | DISPLAY F3 | FILE F4 | |
| 8 | 3 | SCANNER F1 | DISPLAY F3 | PRINTER F2 |
| 9 | 3 | SCANNER F1 | DISPLAY F3 | FILE F4 |
| 10 | 3 | FILE F4 | DISPLAY F3 | PRINTER F2 |

FIG. 20

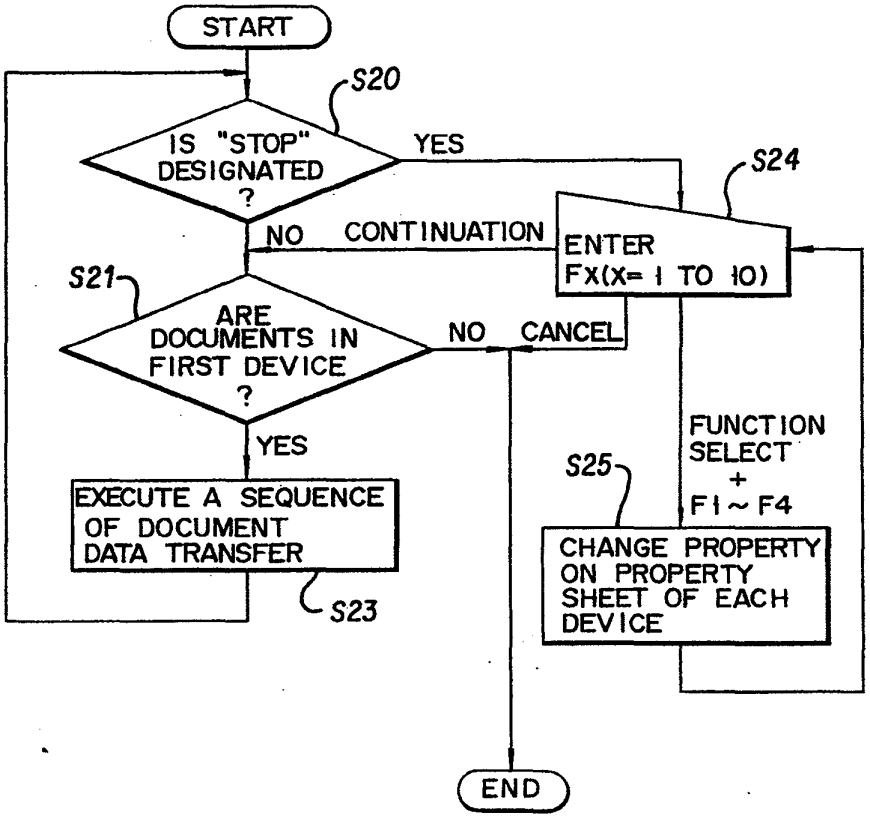



FIG. 21

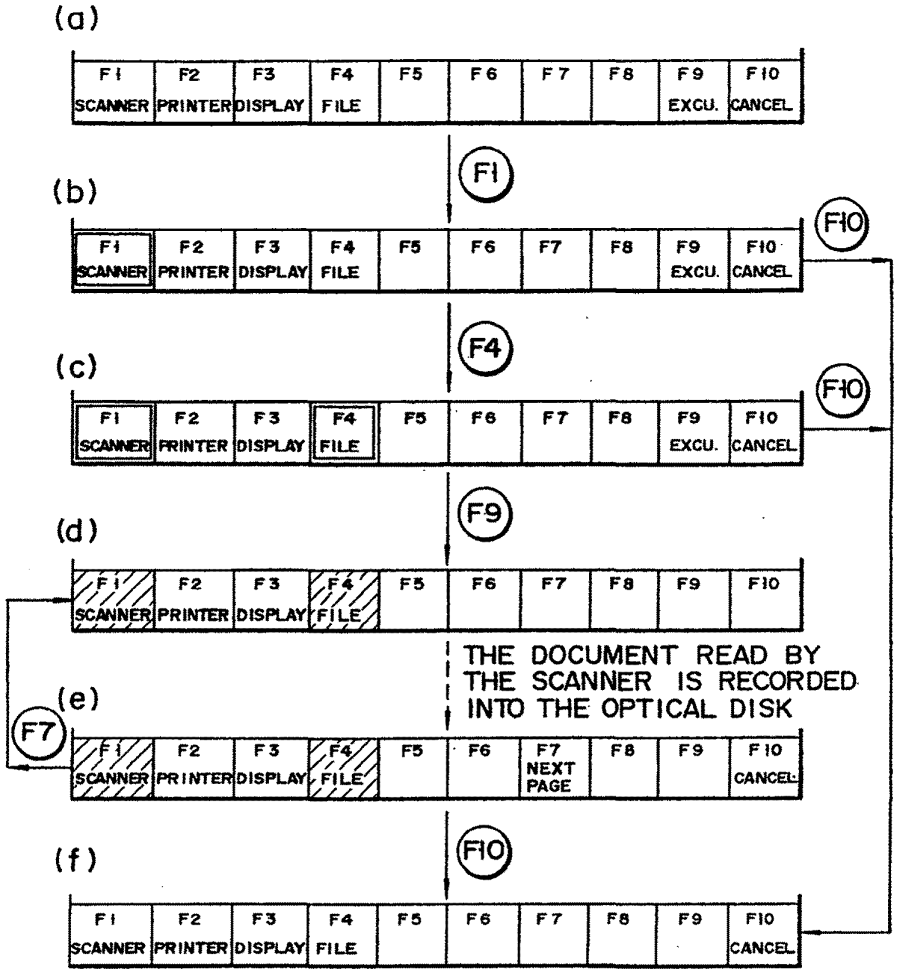



FIG. 22

# ELECTRONIC DOCUMENT FILING APPARATUS WITH ICON SELECTION

## BACKGROUND OF THE INVENTION

This invention relates to a data processing apparatus for executing data processing according to the menu displayed on a display screen and, more particularly, to a document filing apparatus performing operations similar thereto.

In recent times, several electronic document filing apparatuses have been developed and put to practical use. A document filing apparatus converts the information, including character and pictorial information, printed on documents, into electronic document image data, and files the data in a recording medium of large memory capacity, such as an optical disk or magnetic tape.

While conventional paper filing requires the availability of a large amount of document storage space, the electronic filing apparatus requires very little space for storing optical disks or magnetic tapes. The electronic filing apparatus can edit the document image data easily, by categorizing or classifying the data into groups, and assigning a key word to each group. In addition, it can record and retrieve a number of items of data quickly and easily.

The prior art document filing apparatus can perform a variety of operations such as data retrieval, data registration or recording, data deletion. To operate the apparatus, an operator designates or selects one of the above operations, as desired, whereupon the apparatus performs the desired operation. For example, when the operator designates "data retrieval", the apparatus then operates in the data retrieval mode and, having retrieved the desired document data from the recording medium, displays and/or print it.

When the data record mode is designated, the filing apparatus scans a document or documents, reads out the document data, and records it into a recording medium. Each operation mode of the filing apparatus is composed of many hierarchy sub-modes, which implies that in any of the operation modes, a given task can be accomplished only after the sub-modes have been performed. In addition, in the prior art filing apparatus, a given task can be accomplished only by use of a specific designated operation mode. Because of this, when the apparatus completes every operation, it must set in the initial mode. Consequently, the apparatus cannot continuously operate in different modes, and its operating speed as a whole is rather low.

## SUMMARY OF THE INVENTION

It is an object of this invention to provide a document filing apparatus capable of executing a plurality of processing operations, such as data retrieval and data recording, with a few key operations.

A data processing device according to this invention comprises a memory unit for storing data to be recorded, a display unit for displaying the data stored in the memory unit, and a designation unit for designating selection marks also called "icons" or "commands") for selecting at least the memory unit and the display unit. When the memory unit and the display unit are operated, the display unit displays the selection marks. A first detector detects that the selection marks have been designated, in selective sequence, by the designating unit, and a second detector detects the completion of the designation of the selection marks. A drive unit drives the memory unit and the display unit in the order in which the marks have been designated, in response to the detection signal of the second detector.



## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a block diagram of a document filing apparatus according to one embodiment of this invention;

FIG. 2 shows a display including a single document window on the display screen;

FIGS. 3A and 3B show displays each containing four display windows;

FIG. 4 shows a display containing scanner properties;

FIG. 5 shows a display containing printer properties;

FIG. 6 shows a display containing display properties;

FIG. 7 shows a display containing file properties;

FIGS. 8 to 18 diagrammatically show transient phases of various document data transfer modes;

FIG. 19 shows a flowchart illustrating a flow of document data transfer operation;

FIG. 20 shows a designation table (a) and a transfer table (b);

FIG. 21 shows a flowchart illustrating a flow of document data transfer when a continuous document readout mode is used; and

FIG. 22 shows a transient phase of document data transfer operations, using a function area with a function for starting document data transfer processings.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In a document filing apparatus shown in FIG. 1, scanner 1 and printer 5 are connected to scanner/-printer interface 2. This interface 2 is connected to image data buses (I) and (II), and control buses (I)' and (II)'. These buses (I) and (II), and (I)' and (II)' are coupled with image-emlarging/reducing circuit 6, character generator 11, and compander 12. Compander 12, coupled with optical disk 13, appropriately compresses and expands the document image data recorded and reproduced to and from optical disk 13.

Image buses (I) and (II), and control buses (I)' and (II)' are connected through image bus select controller 3 to memory data buses (I) and (II). Memory data buses (I) and (II), and control buses (I)' and control buses (I) and (II) are coupled with image buffer memory 4, display memory 7, display controller 8, vertical/ horizontal conversion circuit 10 and two-dimensional address generators 15 and 16. These generators 15 and 16 are connected through address (ADRS) bus (I) to image buffer memory 4, and through address (ADRS) bus (II) to display memory 7. Display memory 7 is coupled with display controller 8 for controlling display 9.

Scanner printer interface 2, image bus 6, display controller 8, vertical/horizontal conversion circuit 10, character generator 11, compander 12, and two-dimensional address generators 15 and 16 are coupled via the CPU bus to CPU 14. The CPU bus is connected to CPU memory 17, interface 18, mouse 19 and keyboard 20.

In the apparatus shown in FIG. 1, the document image data read out by scanner 1 is loaded into the apparatus through interface 2, and stored via bus select controller 3 into image memory 4.

The document image data stored in image memory 4 is subjected to enlarging or reducing by the circuit 6, and stored into display memory 7, and is displayed by

display 9 under control of display controller 8. When it is not necessary to enlarge or reduce the document image data, image-enlarging/reducing circuit 6 does not perform its operation, as a matter of course. The document image data is transferred from display memory 7 to image memory 4 in a similar way.

FIG. 2 shows an initial display on the screen of display 9 in the document filing apparatus according to the present invention. As shown, document window 201 for displaying document images including characters is substantially centered in the display screen. Icons (also called "selection marks" or "commands") are arrayed in the right portion of the document window 201, and give an operator various necessary indications, such as image-enlarging and reducing, and rotation and scroll of the displayed image. These indications by the icons are designated by a mouse or related keys on the keyboard. For example, if the "Enlarge" icon is designated, the document displayed within the document window is enlarged.

The display further contains a function area 202 provided in connection with function keys F1 to F10. The function area contains icons F1 to F10 indicating various devices for inputting and outputting documents such as a scanner, printer, display, and file. The functions of these icons F1 to F10 are:

Scanner (F1): To enter the document data from scanner 1, and transfer it to another device.

Printer (F2): To print the document data transferred from another device, by printer 5.

Display (F3): To display the document data transferred from another device by display 9, and to store it into internal image memory 4. Further, this indicates that the document data is read out from internal image memory 4 and transferred to another device.

File (F4): To record the document data transferred from another device on the optical disk, and to read out the document data from the optical disk, and to transfer it to another device.

Many types of processings can be done by appropriately combining the above four devices represented by F1 to F4, and transferring the document data between devices. For example, if the document data is transferred from the scanner (F1) to the printer (F2), a hard copy of the document can be obtained.

The document filing apparatus according to the present invention can execute ten types of document data transfers, or ten types of document data transfer modes as given below, by appropriately combining the scanner (F1), the printer (F2), the display (F3) and the file (F4).

(1) Scanner (F1)/Display (F3); Mode 1

To enter the document data from scanner 1 and to display it on document window 201.

(2) Scanner (F1)/printer (F2); Mode 2 To enter the document data from scanner 1 and to print it by printer 5.

(3) Scanner (F1)/file (F4); Mode 3 To enter the document data from scanner 1 and to record it on optical disk 13.

(4) File (F4)/display (F3); Mode M4 To retrieve the document data from optical disk 13 and to display it on document window

201.

(5) File (F4)/printer (F2); Mode M5 To retrieve the document data from optical disk 13 and print it by printer 5.

(6) Display (F3)/printer (F2); Mode M6 Print out the document data within document window 201 by printer 5.

(7) Display (F3)/file (F4); Mode M7 To record the document data within document window 201 on optical disk 13.

(8) Scanner (F1)/display (F3)/printer (F2); Mode M8 To enter the document data from scanner 1, and display it on document window 201, and check and print it by printer 5.

(9) Scanner (F1)/display (F3)/file (F4); Mode M9 To enter the document data from scanner 1, display it on document window 201, and check and record it on optical disk 13.

(10) File (F4)/display (F3)/printer (F2); Mode M10 To retrieve the document data from optical disk 13, display it on document window 201, and check and print it by printer 5.

As seem from the above descriptions, most of the retrieving and recording processings of those filing processings can be made by transferring the document data among those devices such as the scanner, printer, display and file.

Actually, optical disk 13 is used for the file. Before the processings (1) to (10) above, it is necessary to open and close the optical disk. These processings are performed in the DB function in menu bar area 203 shown in FIG. 2. This area contains a display mode and an edition function. These are for executing the following processings.

Display mode: Changes the number of document windows 201 displayed by display 9 between 1 and 4, as shown in FIGS. 2 and 3.

Edition function: To apply to the document image displayed on document window 201 some editions, for example, composing, layout, text input, etc.

DB function: To format, open and close optical disk 13, and to arrange all of the documents recorded on optical disk 13 under predetermined conditions, and to save the arranged document data into the file or to delete the document meeting predetermined conditions.

The scanner, printer, display and file have their own respective properties concerning the document transfers. Property sheets for changing or checking the properties of these devices can be displayed by display 9. FIGS. 4 to 7 show displays with these properties. These properties can be displayed by operating the function keys corresponding to function select keys on keyboard 20. The properties can also be displayed by using mouse 19. In this case, a mouse cursor is moved to a desired icon, and the right button of mouse 19 is pushed and released from its pushed state (clicked). To erase the property sheet, key F9 or F10 is pushed on the keyboard. When using mouse 19 for property sheet erasure, the mouse cursor is set to the icon of F9 (confirmation) or F10 (erasure), and the left button of the mouse is clicked.

The property sheet of the scanner is used for setting properties such as the size of an input document, document density, read-out resolution, and feed mode (book or ADF (automatic document feed) mode), also called batch mode. The book mode enters the image data of one sheet of document. The ADF mode successively enters the image data of the documents contained in the ADF holder.

The property sheet of the printer is used for setting the property of the number of printings, for example. The display property sheet is used for setting a display

step. When icon F10 of "Cancel" is designated, the document transfer operation can be stopped at any time point. The operation to display the property sheets of the printer, display and file, and to check and change the properties, is possible also at any time point.

Modes 9 and 10

FIGS. 16 and 17, respectively, show a sequence of document data transfer operations of modes 9 and 10. Mode 9 transfers document data among scanner (F1), display (F3), and file (F4). Mode 10 transfers document data among file (F4), display (F3) and printer (F2).

In the operation modes as mentioned above, the properties of scanner 1 and file each indicates the book mode and the successive read-out mode. Every time one document is transferred, the step to check the displayed document is needed. This step corresponds to the steps (f) and (g) in FIG. 16.

The operation of the document filing apparatus when the property of scanner 1 is the ADF mode, will be described. The same thing is true for the operation when the file is in the batch read-out mode. FIG. 18 diagrammatically shows a sequence of document data transfer among the scanner (F1), display (F3) and file (F4) when the scanner is in the ADF mode. In this operation sequence, the steps (a) to (e) are for directing the document transfer. This mode is different from the above-mentioned one in that, in step (e), "Stop" is displayed on icon F6. Unless the "Stop" icon is designated by the mouse cursor 19 in step (e), scanner 1 scans and reads out the document data of all of the documents contained in the ADF holder of the scanner. Each of these documents is displayed for a predetermined period of time on the document window, and then these document data are successively stored into optical disk 13.

The display time of document in the document window is set by the display property. When an operator designates the icon "Stop" in step (e), the document transfer is temporarily stopped, and function area 202 gives the display shown in step (g). Under this condition, if "Reenter" (F8) is designated, scanner reads out the document data.

When the stop of document transfer is removed, and the document transfer is started again, icon (F6) of "Continue" is designated, and the operation returns to step (e). When the data transfer of the holder contained documents is completed, or when icon "Cancel" (F10) is designated, the document transfer is completed, the operation goes to step (f).

As described above, when using the document filing system according to this invention, the directions for retrieval, record or registration, and the like can be executed by merely designating three to four icons representing devices.

If the display mode in menu bar area 203 shown in FIGS. 2 and 3 is designated, one and four document windows 201 can be alternately displayed. Four document image buffers corresponding to the four windows are provided in the device represented by "Display" (F3).

In the scanner-display document data transfer, i.e., in the mode M1, when one document window is used as shown in FIG. 2, the document is displayed on the document window 201. When four document windows 201 are used as shown in FIG. 3, the document is displayed on the document window 201 containing the "Final" icon located at the top in the menu bar area.

In the display-printer document transfer, i.e., the mode M6, the document displayed on the document window 201 with the "Final" icon, is printed out. Of those document windows, only one icon can have the "Final" icon. Every time the space key onto the keyboard is depressed, this icon is shifted from one window to another window. With depression of space key, the "Final" icon is cyclically shifted among those four document windows. This allows the operator to display a maximum of four documents in desired document windows 201, and further to print the document in a desired document window 201 or to record it into optical disk 13. The icon indicated by "Final" can be represented by a black mark, white mark, or stripe mark, etc.

In the display of FIG. 3(*a*), the document window 201 marked "1" in the upper left on the screen is the input/output document window. In the FIG. 3(*b*) display, the document window with "2" in the right upper is the input/output document window.

The operations of the FIG. 1 circuit relating to the document data transfer operations as illustrated in FIGS. 8 to 18, will be described referring to a flowchart of FIG. 19. Tables to be used in the description of the operations are illustrated in FIG. 20. A designation table (a) holds the number of icons as designated by the operator, and the order of function numbers corresponding to the icons. A transfer table (b) holds the number of icons for the document transfer processings which can be made by the document filing apparatus, and the order of function numbers. These tables are referred to during the document data transfer processings. These tables (a) and (b) are stored in CPU memory 17.

In operation, when the power supply is turned on, the initial states at the respective portions of the document filing apparatus are set up according to a program stored in CPU memory 17. At this time, display 9 displays document window 201, function area 202, and menu bar area 203, as shown in FIG. 2. This display pattern data is the data as transferred from the CPU memory or an external floppy disk to the display memory 7. Under this condition, the data corresponding to any of icons F1 to F10 is designated and entered by means of the keyboard or the mouse 19 (S1). The entered data is checked by CPU 14 to determine whether it coincides with one of icons F1 to F4 (S2). If the answer is YES, CPU 14 checks if the function number corresponding to the input or entered data coincides with the last function number in the designation table (a) of FIG. 20 (S3). If NO, CPU 14 checks if the function numbers of three or more have been recorded on the designation table (S4). If the answer is NO, the number of icons in the designation table is increased by one, and the function number as designated and entered is written into the designation table. The marking frame is displayed on the icon corresponding to the function number recorded anew (S5). After this, the operation returns to step S1.

If more than three function numbers are stored in the designation table, viz., the answer is YES, the designation table (a) is cleared, and the marking frame of icon is erased (S6). If the designated and entered function number coincides with the last function number in the designation table, the order (e.g., F1–F3) of the function numbers in the designation table (a) is compared with each of the orders (F1–F3, F1–F2, F1–F4, . . . ) of function numbers in the transfer table (b) (S7). If the same order is found, the marking frame in the icon is erased

(S8) and the document transfer processing is started in the order shown in the designation table (a) (S9). For example, when the function numbers are stored in the designation table in the order of F1–F3, the document is read out by scanner 1, and the document data is transferred to the image data bus, through scanner printer interface 2. The document data in display memory 7 is read out by display controller 8, and input to display 9, and displayed as a document image. Thus, the document data transfer from scanner 1 to display 9 is automatically performed.

Upon completion of the document data transfer, the designation table (a) is cleared (S10), and the operation returns to step S1. If the order in the designation table (a) is not registered in the transfer table (b) (57), the designation table (a) is cleared and the marking frame of the icon is erased (S6), and the operation returns to step S1. If the designated and entered data is F10 (S11), the designation table (a) is cleared, and the marking frame of the icon is erased (S6), and the operation returns to step S1.

If the designation table (a) stores the function numbers in the order of F1–F3–F4 corresponding to the document data transfer operation of FIG. 16, the document is read out by scanner 1, and the document data is transferred to the image data bus via scanner printer interface 2. The document data on the Image data bus is transferred through image bus select controller 3 to image buffer memory 4 and display memory 7. The document data in display memory 7 is read out by display controller 8, and input display 9, and displayed in the form of a document image. The document data in image buffer memory 4 is read out, and input to compander 12 via image bus select controller 3 and the image data bus. The document data is subjected to the companding processing in compander 12, and is input to and stored in optical disk 13 as the file. In this way, the document data 1 is transferred to display 9 and optical disk 13, from scanner 1.

The operation of the document filing apparatus to be described referring to FIG. 21 is the operation of FIG. 18 in which the mode of the first device in the document data transfer contains the ADF mode automatically feeding documents.

When the document data transfer processing starts, the CPU checks the readout mode of the first device (the first device in the designation table (a)), for example, scanner 1, in the document data transfer. When this mode is the batch read-out mode such as the ADF mode, the following operation procedure will be performed. The CPU checks if the "Stop" icon is designated (S20). If the answer is NO, the CPU checks whether the document to be transferred to scanner 1 is present or not (S21). If YES, a sequence of document data transfer processings are executed uninterruptedly (S23). For example, when the designation for the scanner, display and printer is made, the document data enter, the document display, and the document print are successively executed in connection with the first sequence of document data transfer processings.

After completion of the first sequence of the document data transfer processings, the CPU returns to the control flow to check the designation and entering of the "Stop" icon (S20). The second and subsequent sequences of document data transfer processings will be continued uninterruptedly until the "Stop" icon is designated or the transferred documents in the first device run out. As the documents in the first device run out, the document data transfer processing ends.

When the "Stop" icon is designated (S20), the document data transfer operation icon is stopped till the next designation and entering of data. When the "Continue" is designated (S24), the CPU returns to the control flow to check whether or not the document to be transferred is contained in the first device, and enters the control loop for the sequence of document data transfer processings.

In step S24 for designation and entering of data, the function select and F1 to F4 are designated and entered, the property sheets of the devices corresponding to F1 to F4 are displayed and the properties of these devices are checked and, if necessary, changed (S25). The control returns to step S24.

In the above-mentioned embodiment, at the start of document data transfer, the icon corresponding to the finally designated device is designated two times. An alternative measure to start the document data transfer is illustrated in FIG. 22. In the measure, the icon F9 in function area 202 displays "Execution" for executing the data transfer. This icon F9 is designated by a mark cursor or related corresponding function keys on the keyboard. More specifically, in FIG. 22, to start the execution of the mode M3 of the scanner-file document transfer, the icons are designated in the order of F1 (scanner), F4 (file) and F9 (execution). After the start of data transfer processing, the "Execution" disappears in icon F9.

As described above, the document data transfer processing can be repeatedly executed uninterruptedly by setting the first device in the continuous read-out mode.

It is evident that this invention is applicable to other data processors such as CD-ROMs, word processors, and personal computers, in addition to the document filing apparatus. When it is applied to CD-ROMs, scanner 1 for document data entering is not required.

As described above, the number of steps for many operations, for example, document data retrieval, is reduced, and the operation shifts can be made smoothly.

What is claimed is:

1. A data processing apparatus comprising:
filing means for filing data;
display means for displaying the data filed in said filing means and a plurality of commands including at least a display command for displaying the data from said filing means, and a file command for filing the data displayed on said displaying means;
means for sequentially, manually designating the commands displayed on said display means;
first detection means, for detecting the commands in the order in which the commands have been designated by said designating means;
second detection means, for detecting the completion of the designation of the commands, and outputting a signal representing the completion of the designation; and
means for driving at least one of said filing means and said display means, in the order in which the commands have been designated by said designating means, in response to the signal output from said second detection means.

2. The data processing apparatus according to claim 1, wherein said display means has means for superimposing a marking frame on each of the commands designated by said designating means.

3. The data processing apparatus according to claim 1, wherein said second detection means includes means for detecting that said designating means has designated one of said commands at least two times, and for transferring to said driving means a command initiating execution of processing.

4. The data processing apparatus according to claim 1, wherein said driving means includes means for driving, in the designated order, said filing means and said display means, in response to the signal from said second detection means.

5. The data processing apparatus according to claim 1, wherein said display means includes means for displaying an execution command representing execution of processing, and wherein said second detection means includes means for detecting that the execution comand has been designated by said designating means, and for transferring to said driving means a signal initiating execution of processing.

6. The data processing apparatus according to claim 5, wherein said display means includes means for erasing the execution command, in response to the receipt of the signal from said second detection means.

7. The data processing apparatus according to claim 1, wherein said data processing apparatus further comprises scanning means including a scanner for scanning a document to produce image data of the document.

8. The data processing apparatus according to claim 1, wherein said filing means includes an optical disk device for recording the data.

9. The data processing apparatus according to claim 1, wherein said designating means includes a mouse for controlling a cursor displayed on the display means for selectively designating the commands displayed on said display means.

10. A data processing apparatus comprising:

means for scanning a document to obtain picture information;

means for storing picture information;

means for displaying the picture information in said storing means, and for displaying a plurality of commands representing said storing means, said scanning means, and said display means;

means for sequentially, manually designating the command representing said display means and at least one of the commands representing said storing means and said scanning means;

first detection means, for detecting the commands in the order in which the commands have been designated by said designating means;

second detection means, for detecting the completion of the designation of the commands, and for outputting a signal representing the completion of the designation;

means for setting a batch mode for the command first designated by the designating means to continuously process data; and

means for continuously driving said display means and at least one of said storing means and said scanning means, in the order in which the commands have been designated by said designating means, in response to the signal output from said second detection means when said batch mode is set for said first designated command.

11. The data processing apparatus according to claim 10, wherein said display means displays a "stop" command for instructing the stopping of processing, and wherein said second detection means detects that the "stop" command is designated by said designating means, and outputs the signal indicating the end of processing, and wherein said setting means releases the batch mode in response to the stop signal.

12. The data processing apparatus according to claim 10, wherein said second detection means has means for detecting that said continuous processing has been completed, and said setting means releases the batch mode in response to the detection of completion of said continuous processing.

13. The data processing apparatus according to claim 10, wherein said display means includes means for superimposing a marking frame on the commands designated by said designating means.

14. The data processing apparatus according to claim 10, wherein said second detection means includes means for detecting that said designating means has designated one of the commands at least two times, and for transferring to said drive means, the signal representing the completion of the designation.

15. The data processing apparatus according to claim 10, wherein said display means displays an "execution" command representing execution of processing, and wherein said second detection means detects that the "execution" command has been designated by said designating means, and for transferring to said drive means the signal representing completion of the designation.

16. The data processing apparatus according to claim 10, wherein said designating means designates, in a selective sequence, said scanning means, said storing means, and said display means.

17. The data processing apparatus according to claim 16, wherein said storing means is an optical disk device for recording the image data.

18. The data processing apparatus according to claim 10, further including means for printing the information, and wherein said designating means includes means for designating, in a selective sequence, said display means, said printing means and said storing means.

19. A data processing apparatus comprising:

display means for displaying image information to be processed, and a plurality of commands including a display command and a file command;

selecting means for sequentially, manually selecting two of the plurality of commands displayed on said display means; and

optical memory means for storing the image information displayed on the display means, in response to the display command and the file command sequentially selected by said selecting means.

20. A data processing apparatus comprising:

means for displaying data, and a plurality of commands including an input command, a file command, and a display command;

means for sequentially, manually selecting at least two of the plurality of commands displayed on said display means;

means for inputting data in response to only the input command and at least one of the display command and the file command, which commands are sequentially selected by said selection means; and

means for storing the data input by said inputting means, in response to only the input command followed by at least one of the file command and a command group sequentially including the display command and the file command; and

wherein said display means displays the data from one of said inputting means and said storing means,

in response to one of the input commands, the file command, and the display command, which commands are sequentially selected by said selecting means.

21. In a data processing apparatus including a scanner for scanning data, a file device for filing the data, a display for displaying the data, and a printer for printing the data, a method for processing the data comprising the steps of:

displaying, on the display, at least two of a scanner command for instructing the inputting of data from the scanner, a file command for instructing the filing of the data either for input or output, a display command for instructing the displaying of data either for input or output, and a printing command for instructing the printing of data for output;

selecting, in a desired order, the commands displayed on said display; and

executing the selected commands, in the order in which the commands have been selected, wherein the data input according to a first command is output by subsequent commands.

22. The method according to claim 21, wherein said selecting step comprises a step of selecting the scanner command first, the display command second, and the printing command third.

23. The method according to claim 21, wherein said selecting step comprises a step for selecting the scanner command first, the display command second, and the file command third.

24. The method according to claim 2, wherein said selecting step comprises a step for selecting the file command first, the display command second, and the printing command third.

* * * * *

# United States Patent [19]

**Takagi et al.**

[11] **Patent Number: 4,931,957**

[45] **Date of Patent: Jun. 5, 1990**


[54] **IMAGE INFORMATION PROCESSING APPARATUS**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[73] Assignee: **Kabushiki Kaisha Toshiba**, Kanagawa, Japan



[21] Appl. No.: **141,770**

[22] Filed: **Jan. 11, 1988**

[30] **Foreign Application Priority Data**

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[51] **Int. Cl.**[5] ..... **G09G 3/06**; G06F 15/20

[52] **U.S. Cl.** ..... **364/521**; 340/710; 340/721; 340/747; 364/518; 364/523

[58] **Field of Search** ..... 364/518–522, 364/523; 340/710, 711, 723, 712, 724, 721, 747



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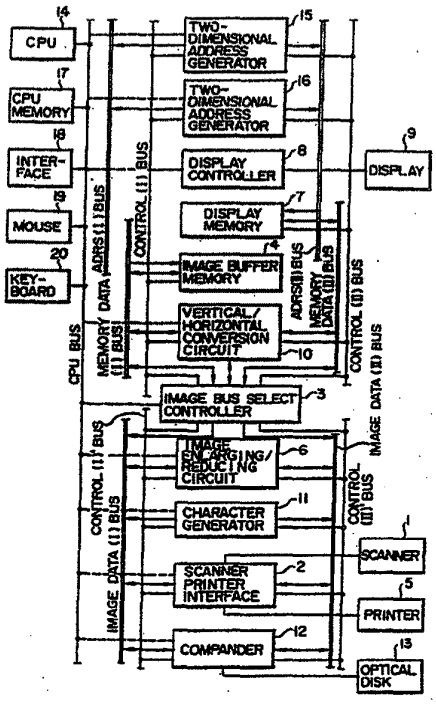
*Primary Examiner*—Gary V. Harkcom
*Assistant Examiner*—H. R. Herndon
*Attorney, Agent, or Firm*—Finnegan, Henderson, Farabow, Garrett and Dunner



[57] **ABSTRACT**

An image information processing apparatus for storing and retrieving image information on and from an optical memory means, which has a selecting means for sequentially manually selecting a plurality of image processing commands, a scanning means for inputting image information from an original image, a display means for display the image information and a designation means. The display means has at least two display areas and displays the image information from one of the scanning means and the optical memory means in only one of the two display areas in response to the selection of the selection means. The designation means manually designates the one of the display areas to display the image information.


**11 Claims, 23 Drawing Sheets**



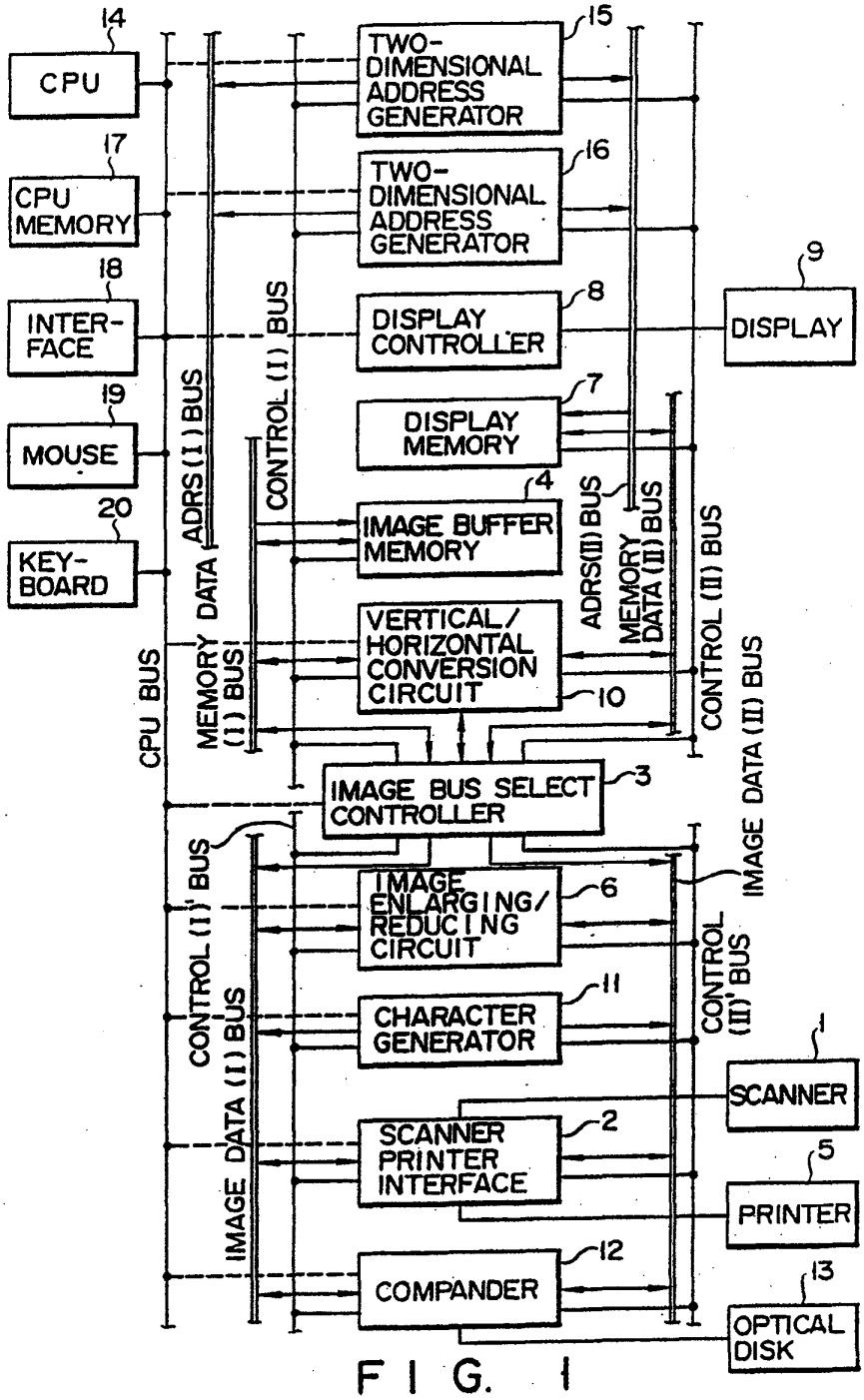



FIG. 1

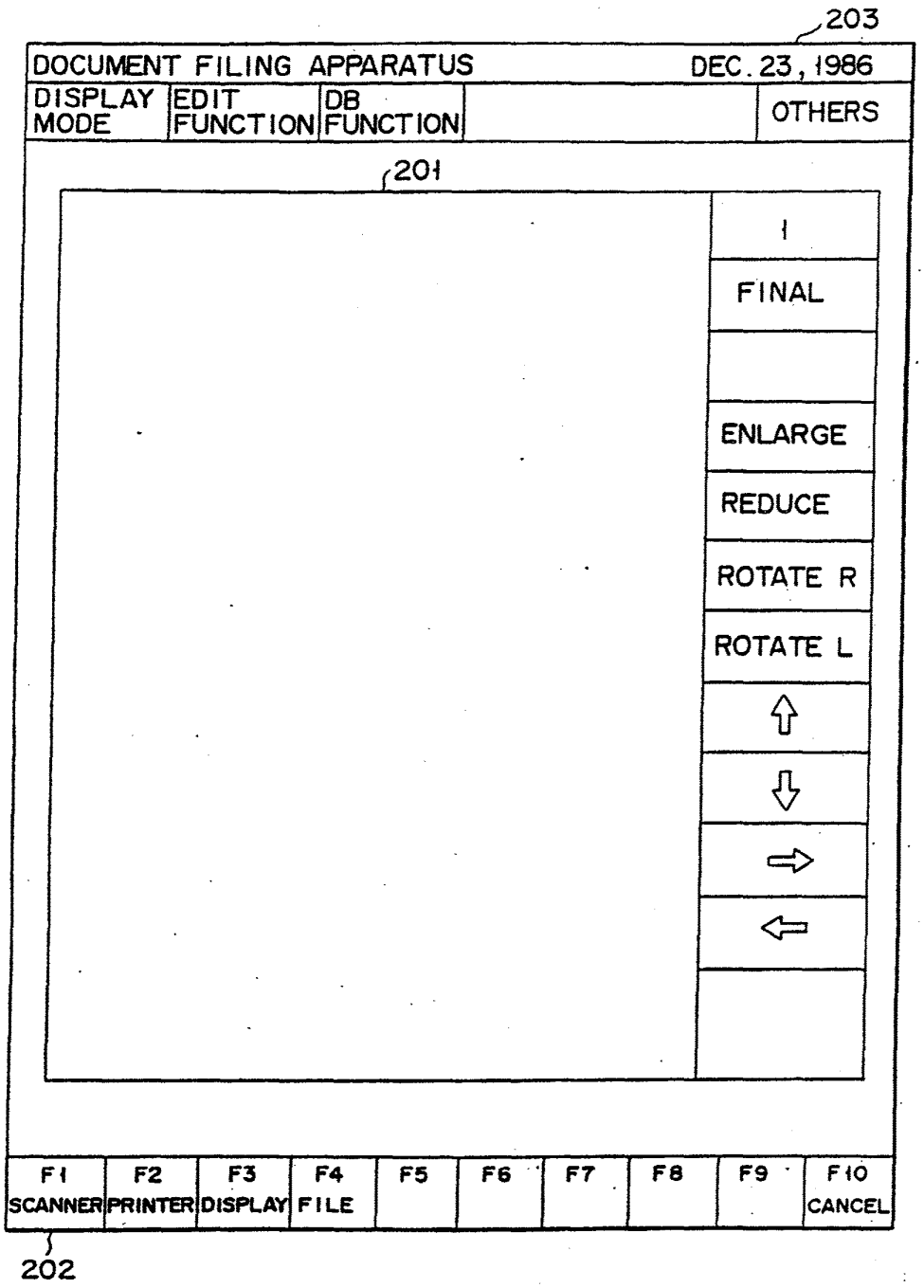



FIG. 2

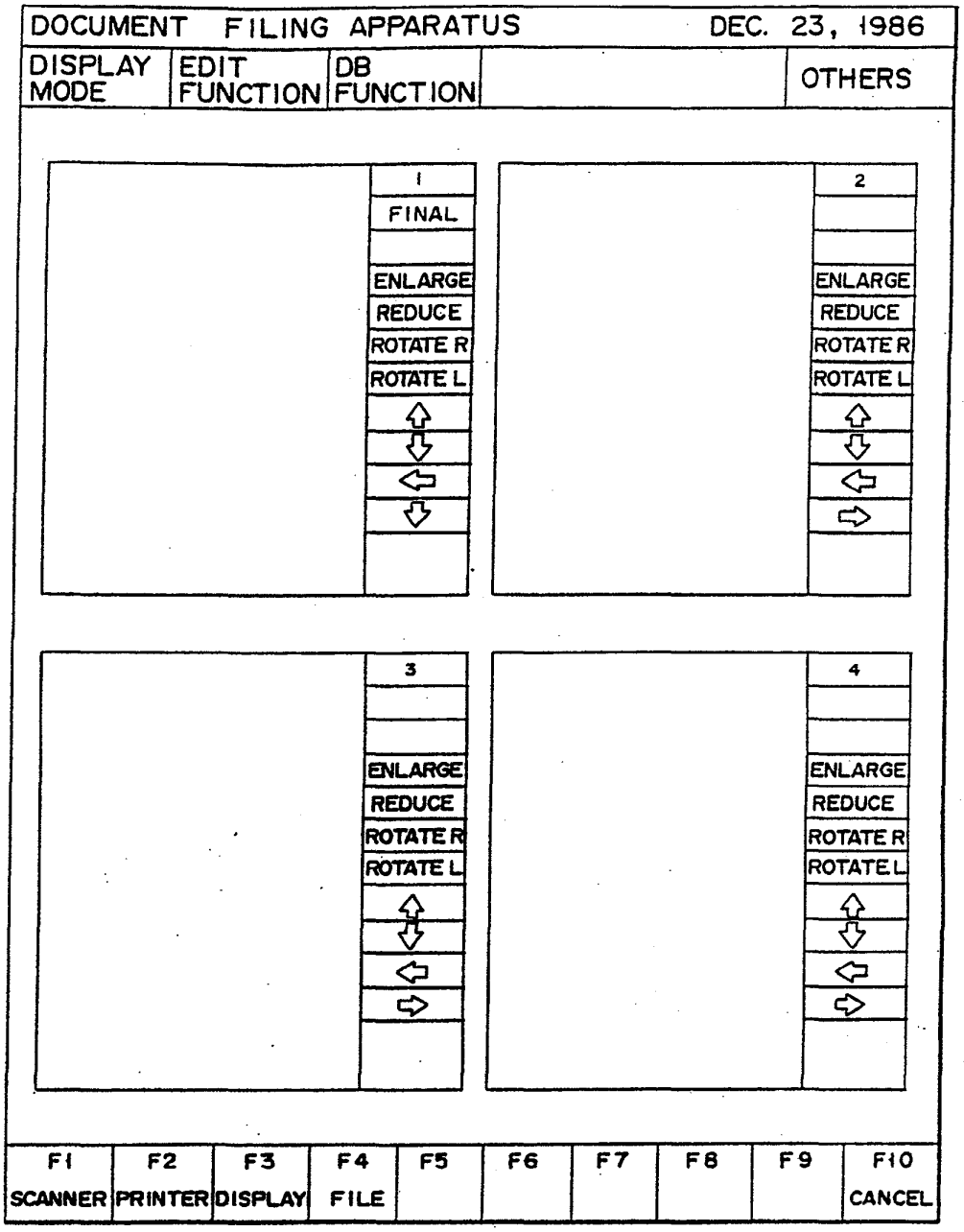



FIG. 3A

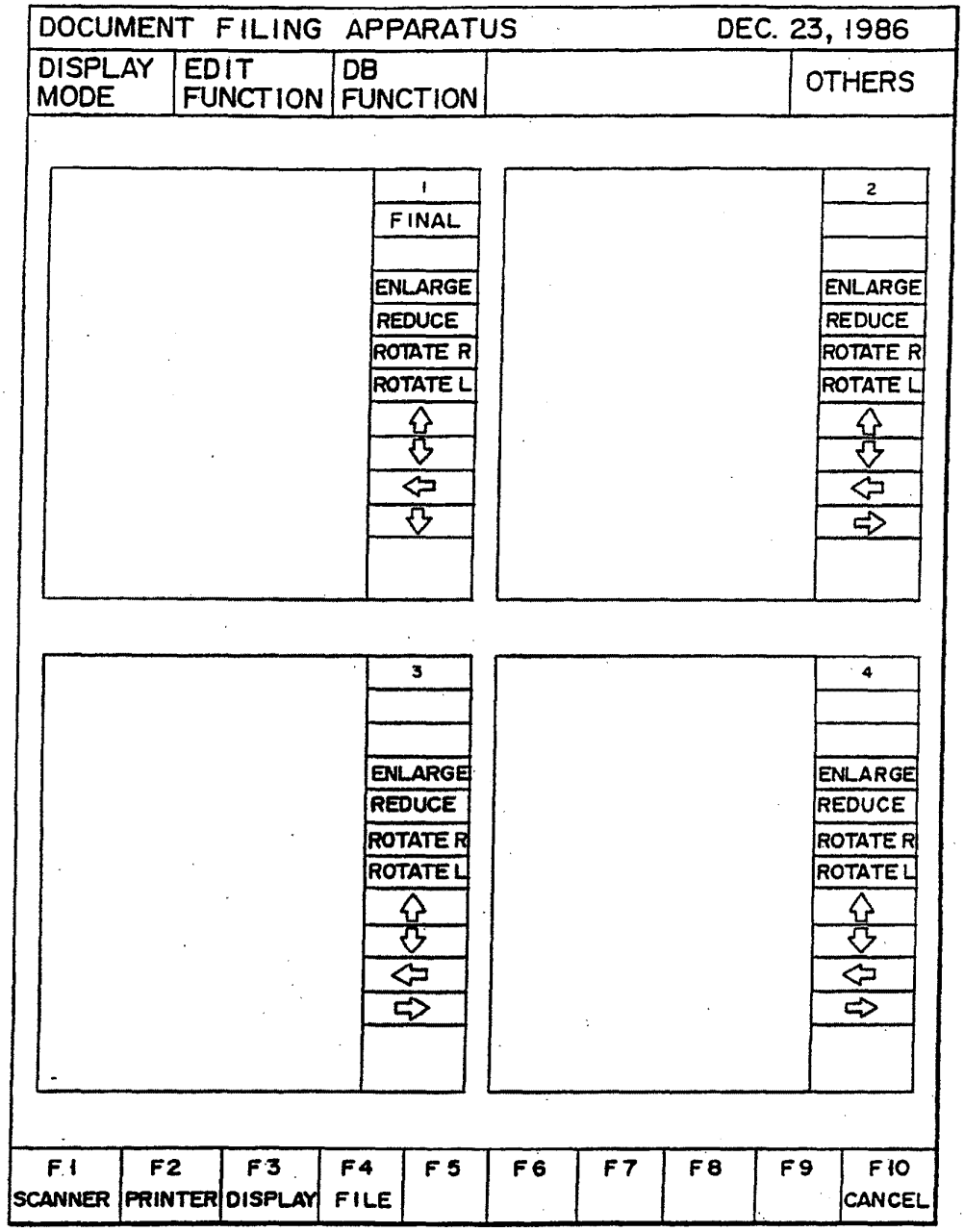



FIG. 3B

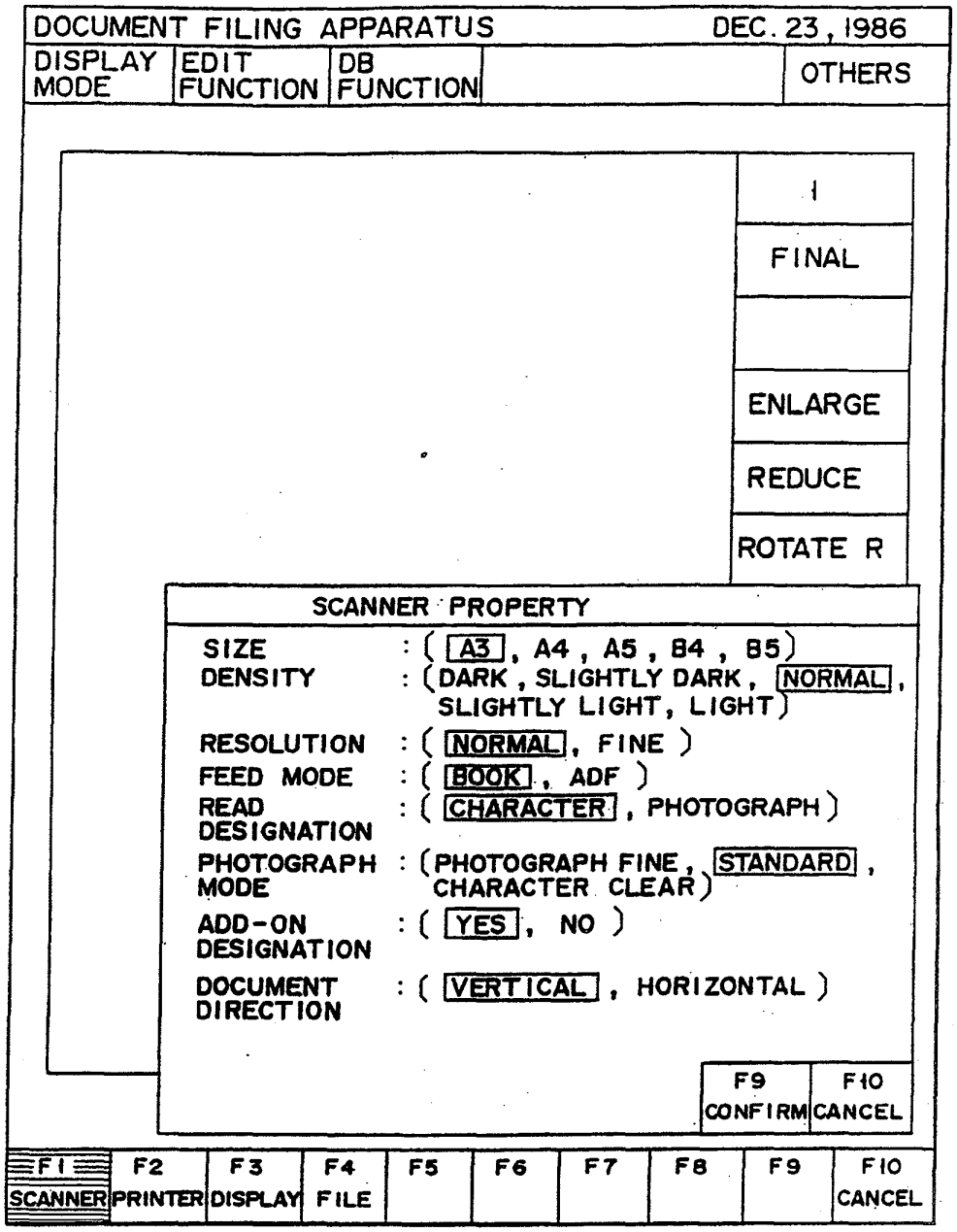



FIG. 4

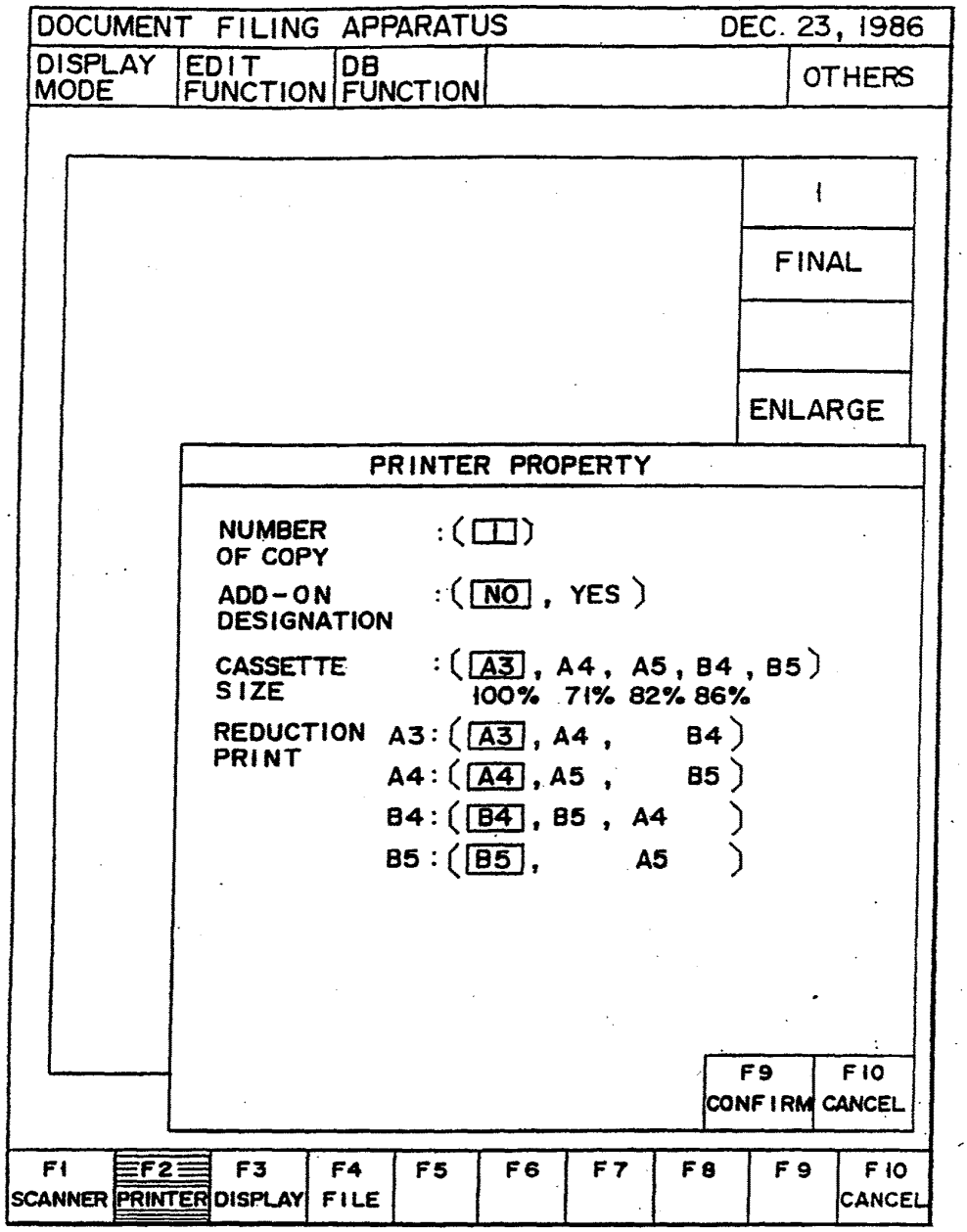



FIG. 5

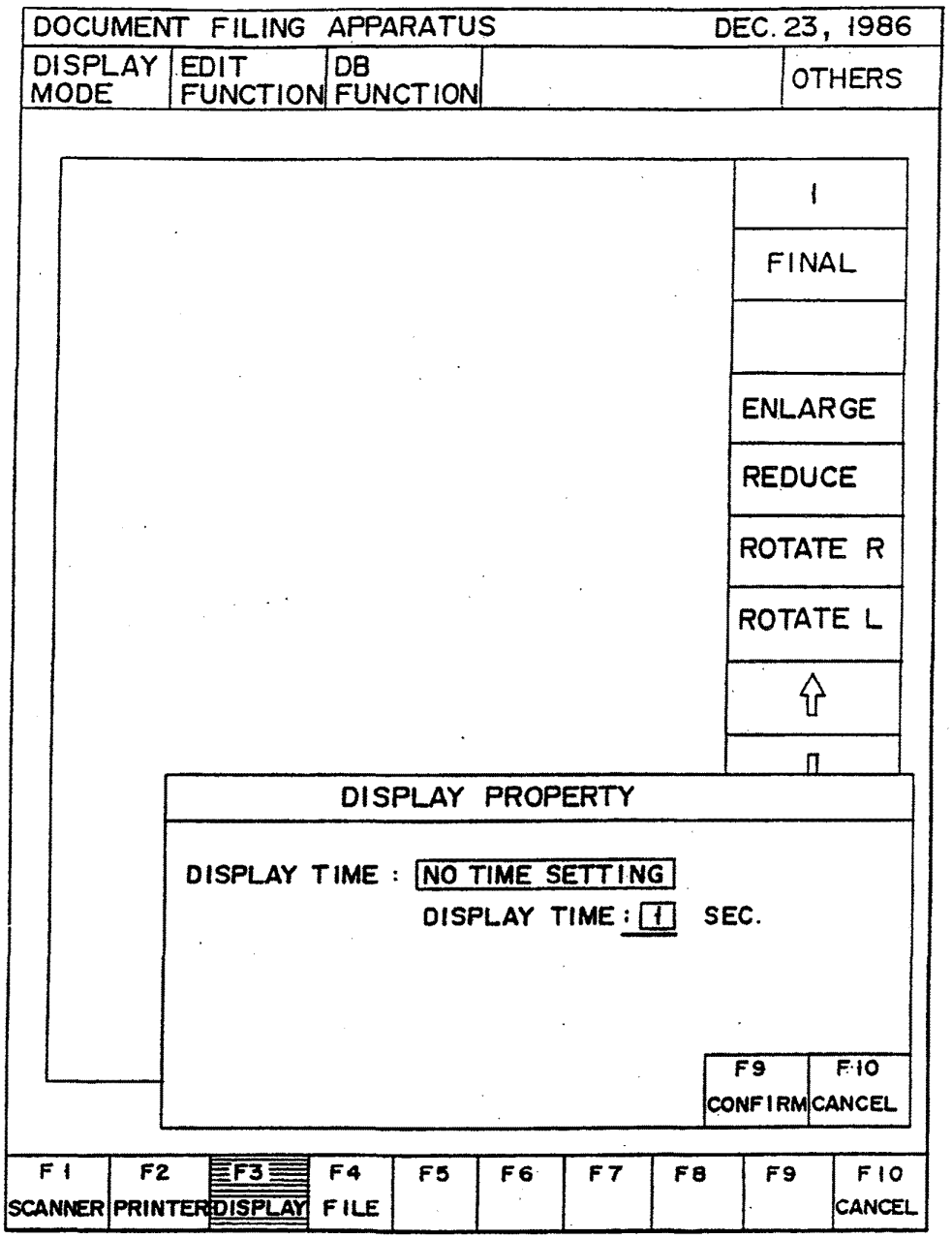



FIG. 6

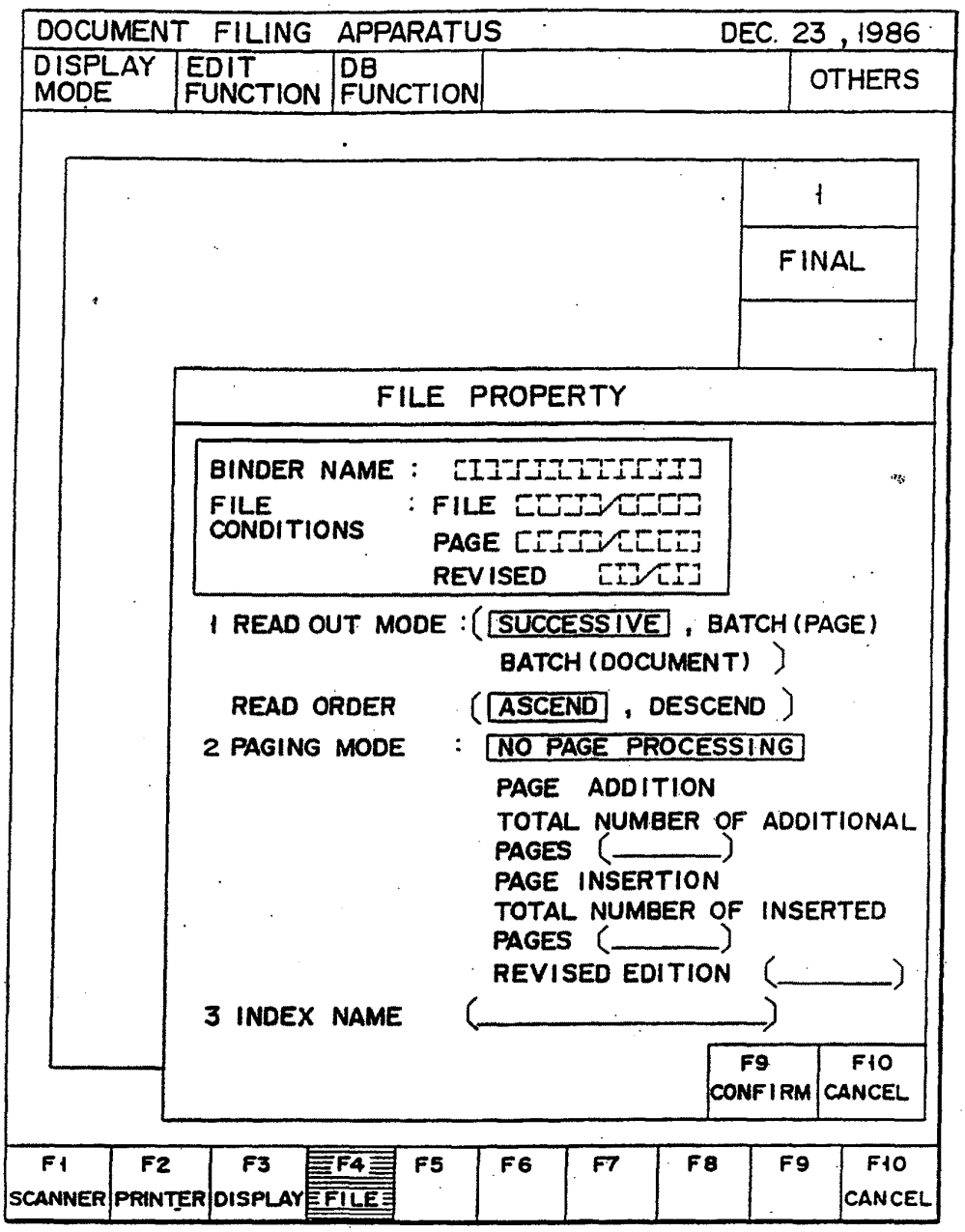



FIG. 7

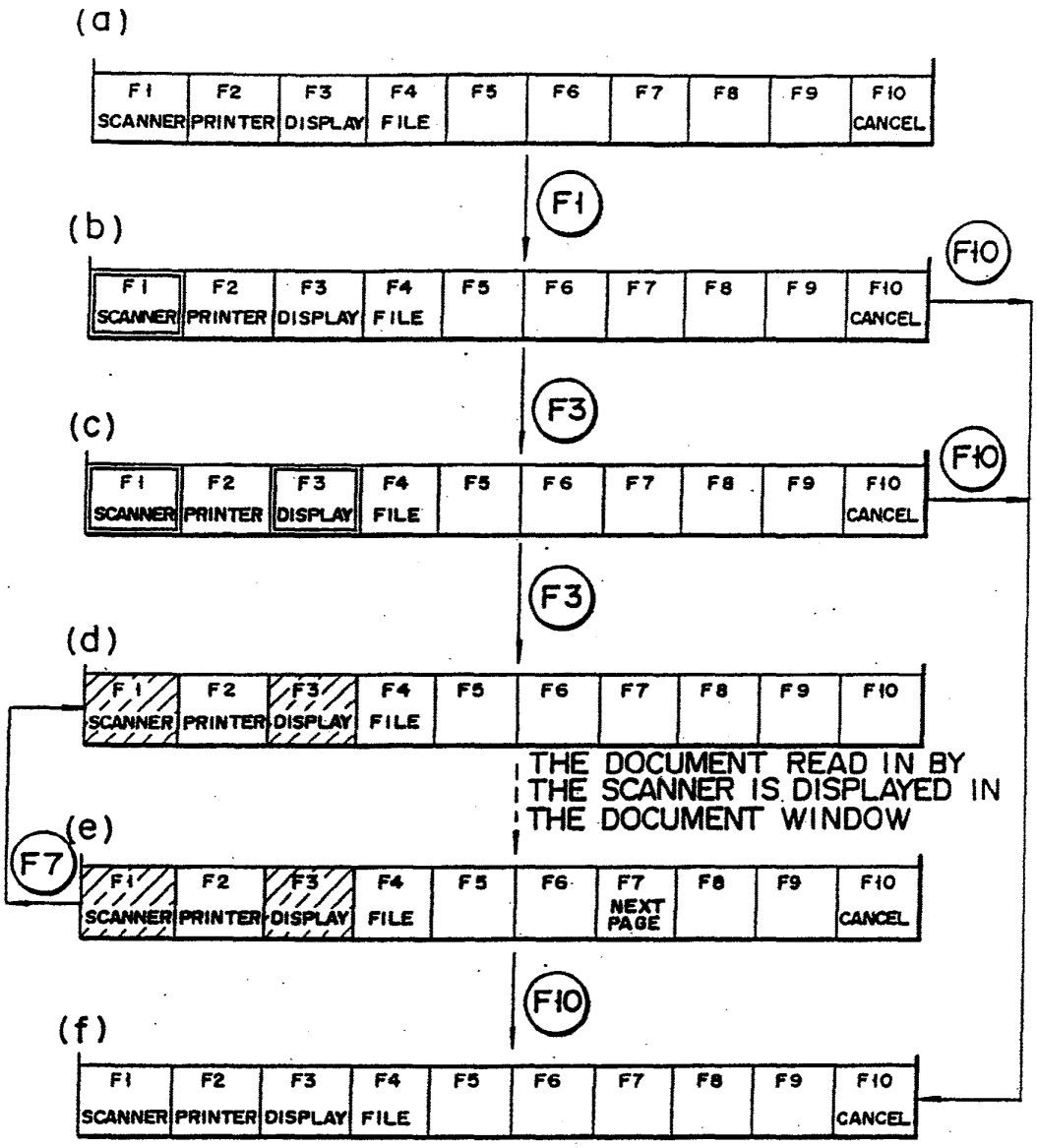



FIG. 8

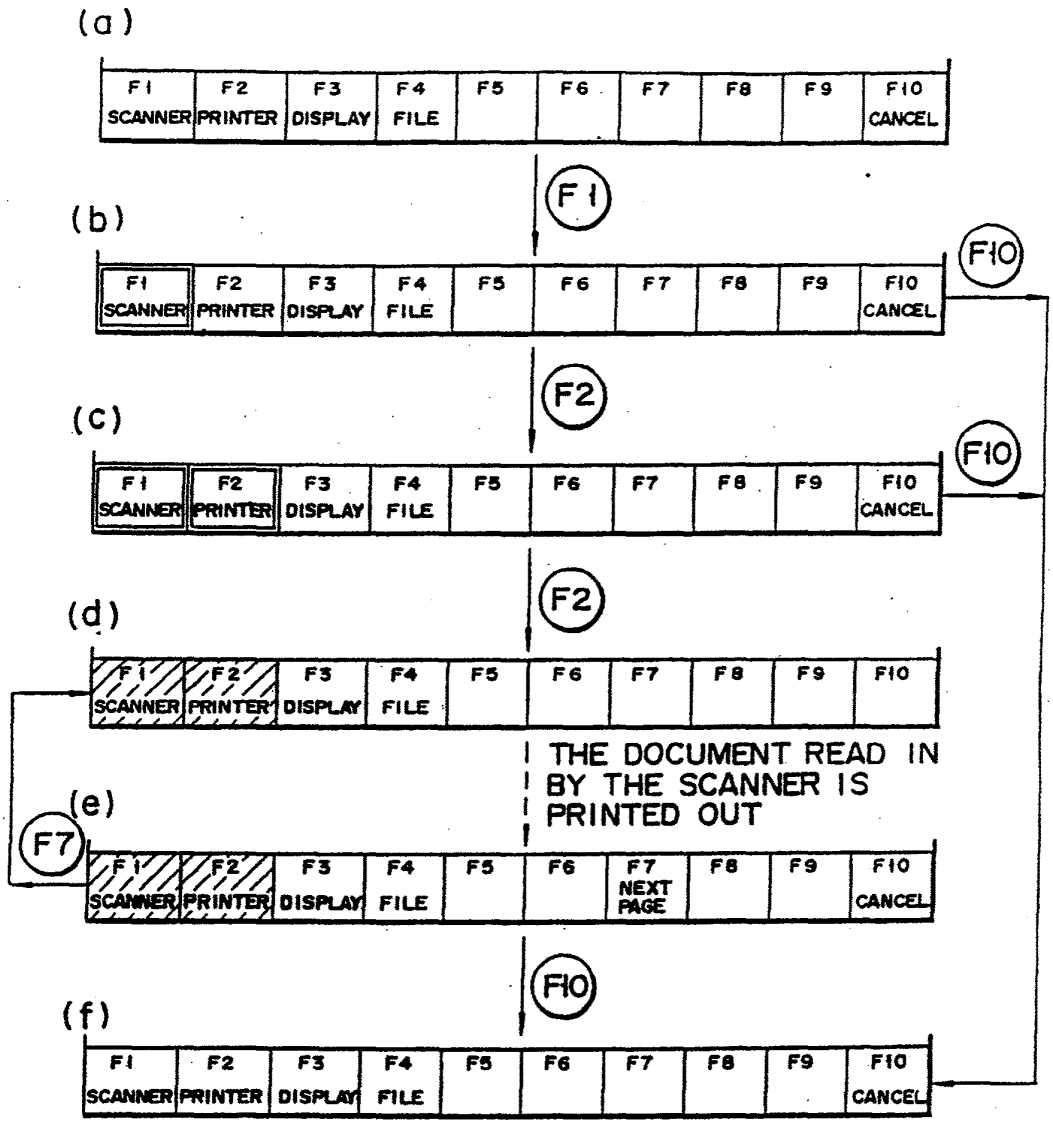



FIG. 9

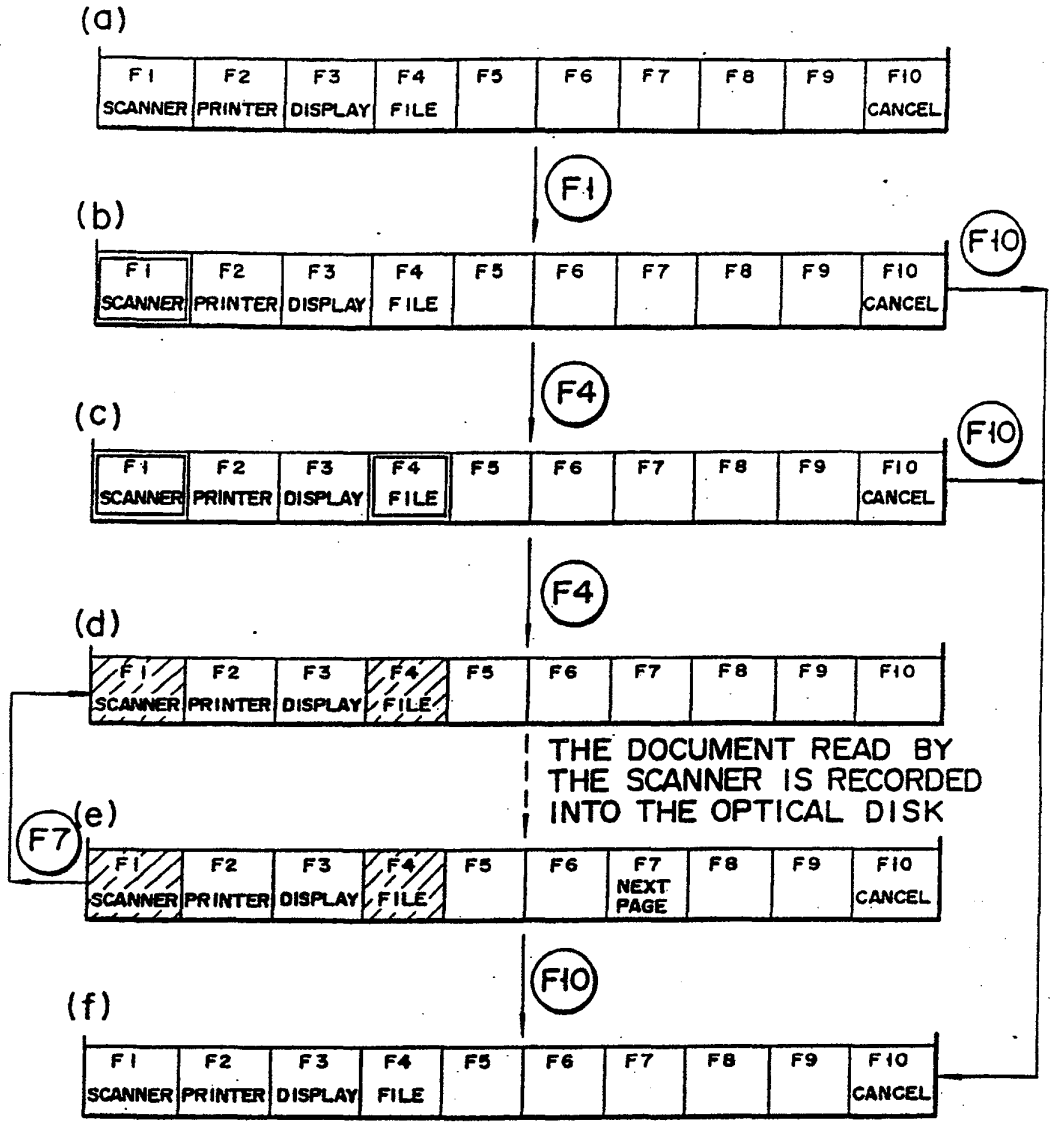



FIG. 10

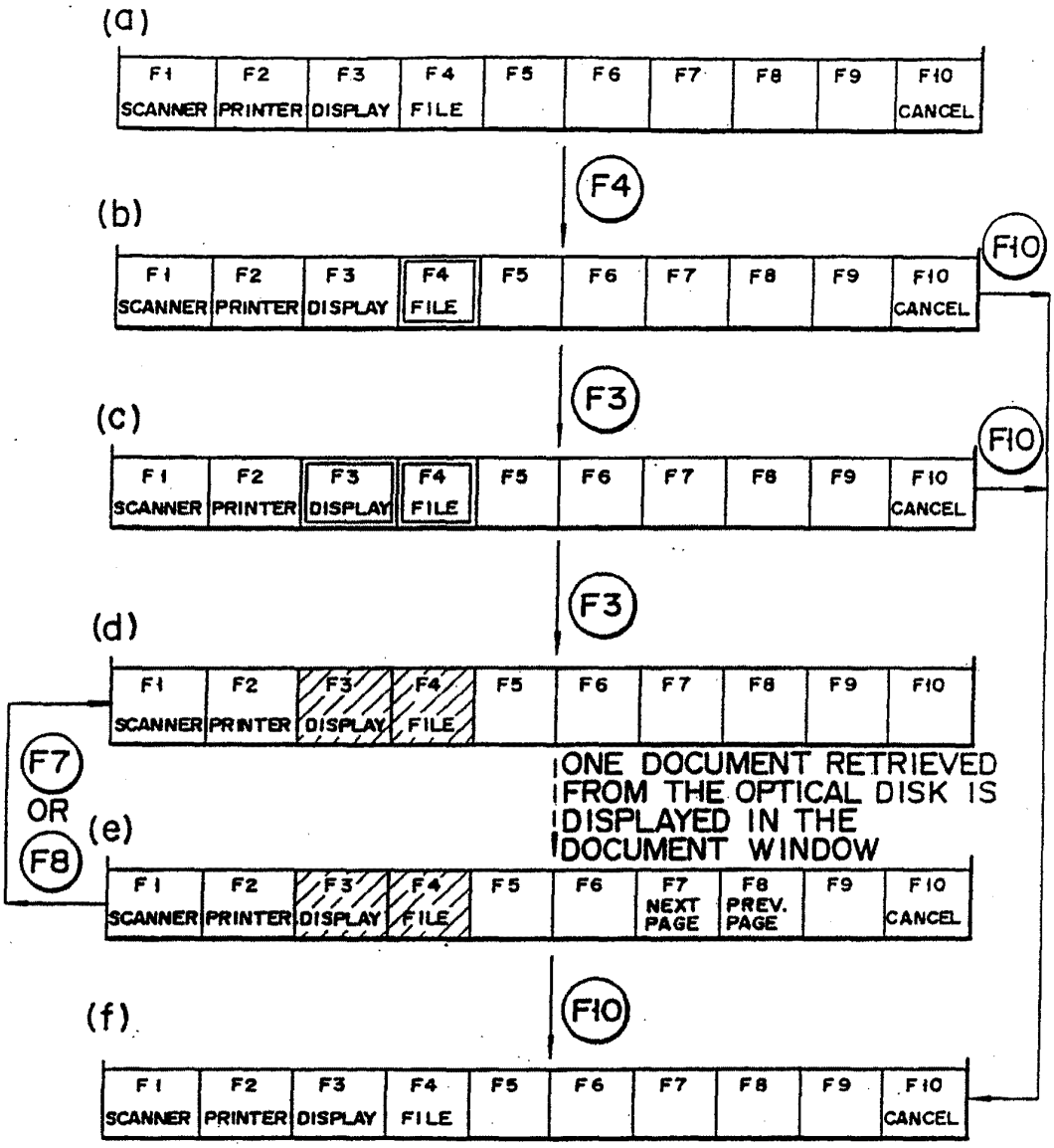



FIG. 11

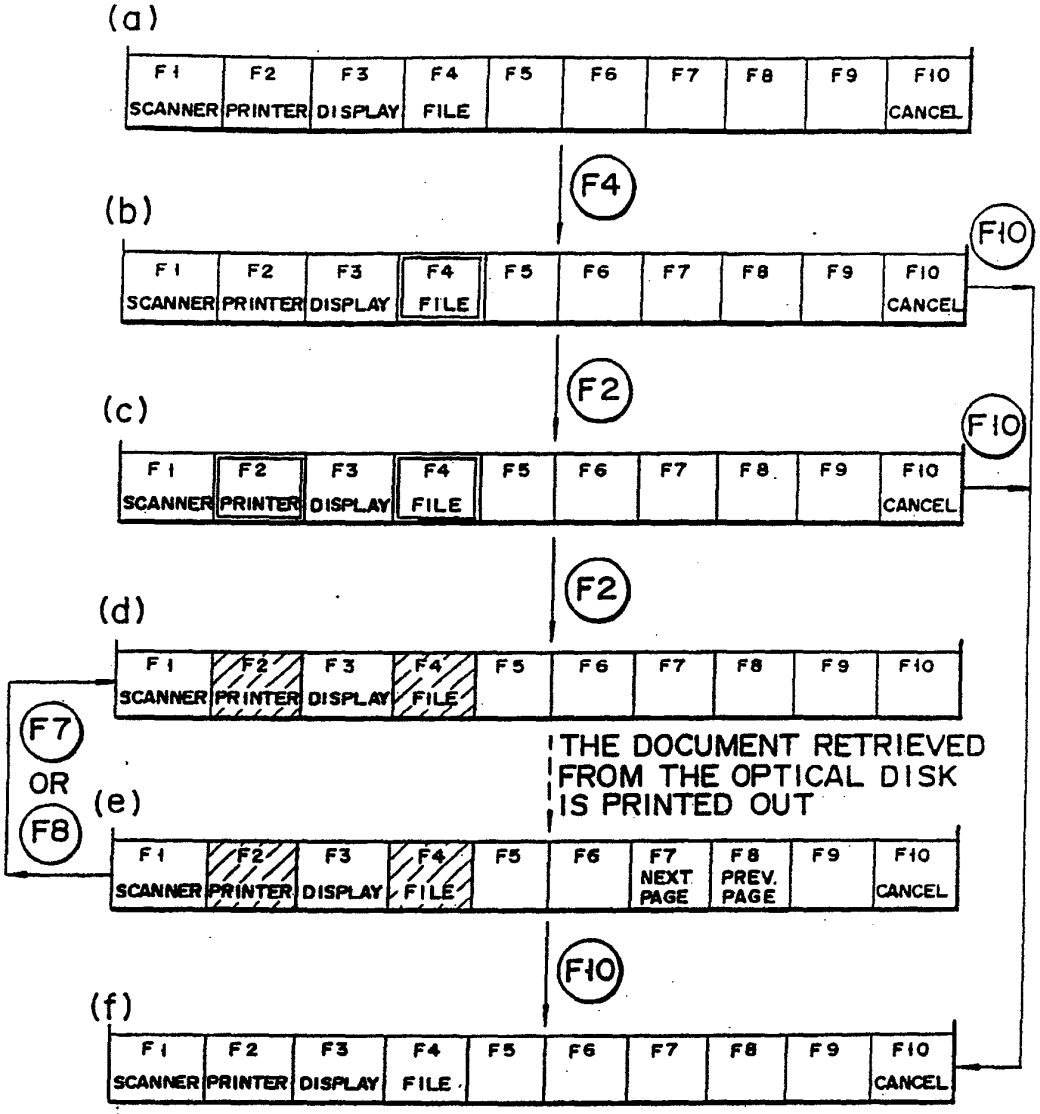



FIG. 12

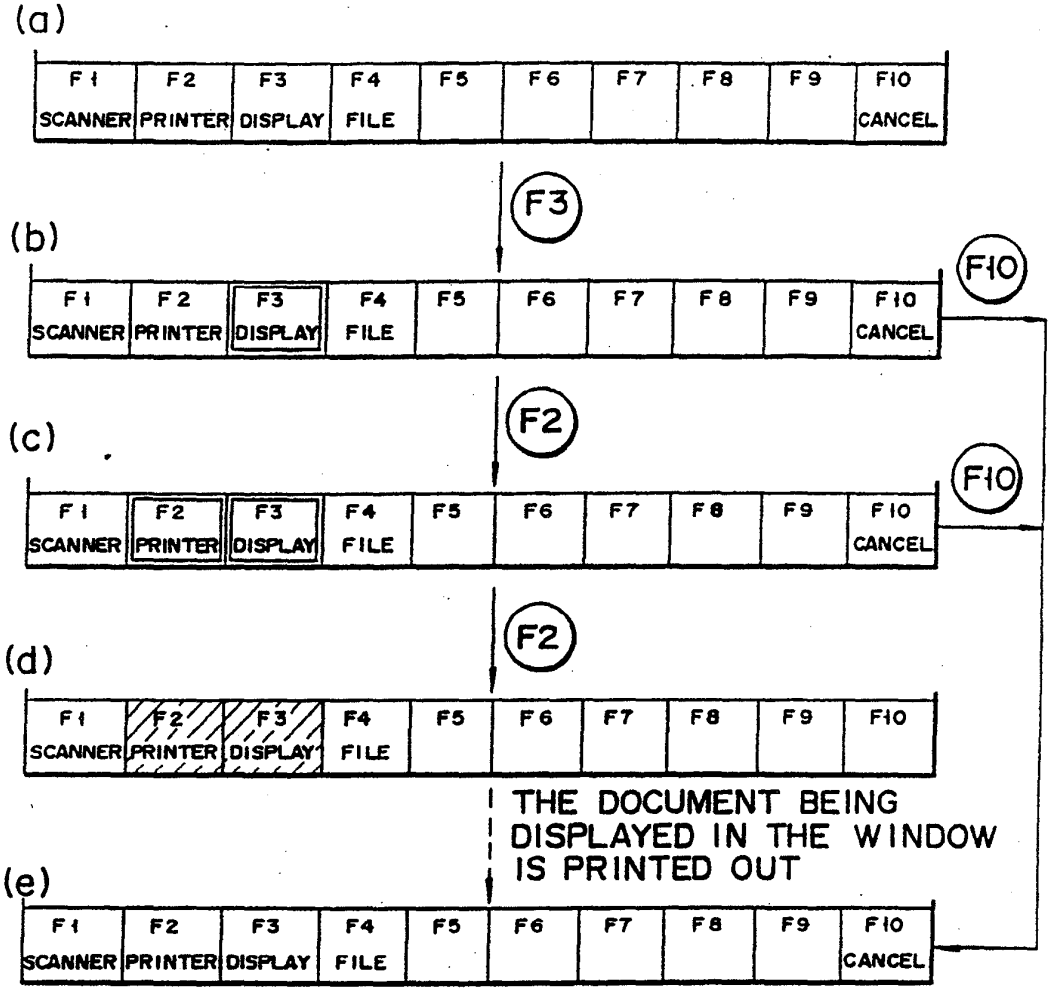



FIG. 13

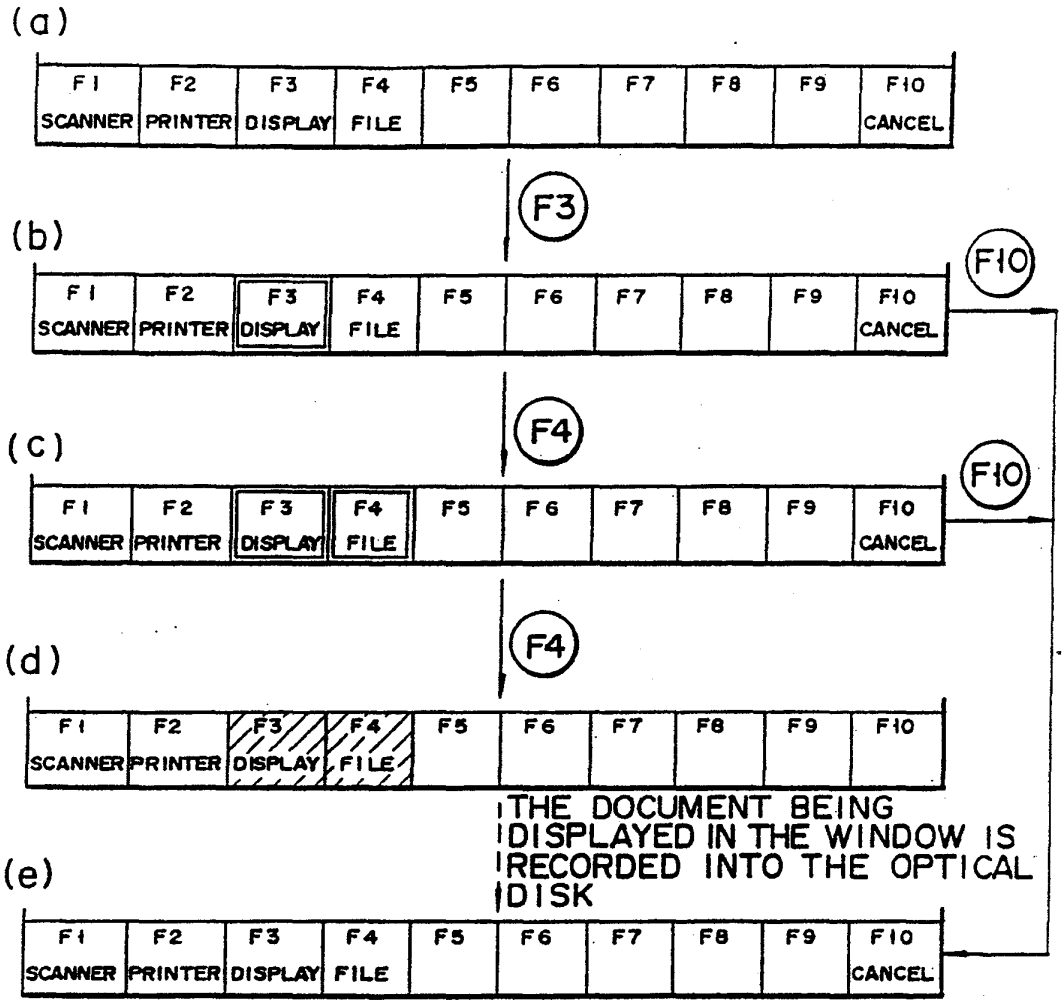



FIG. 14

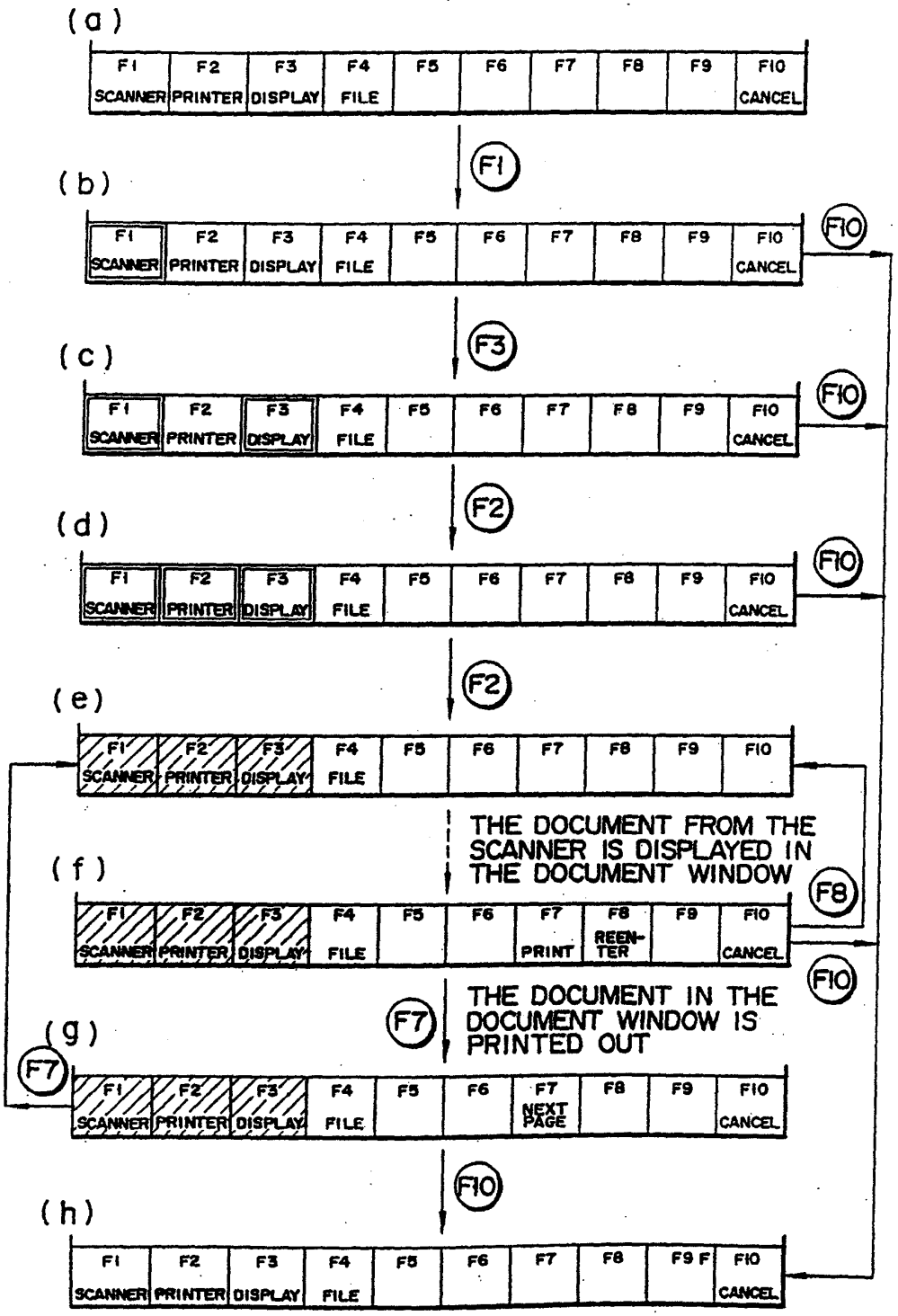



FIG. 15

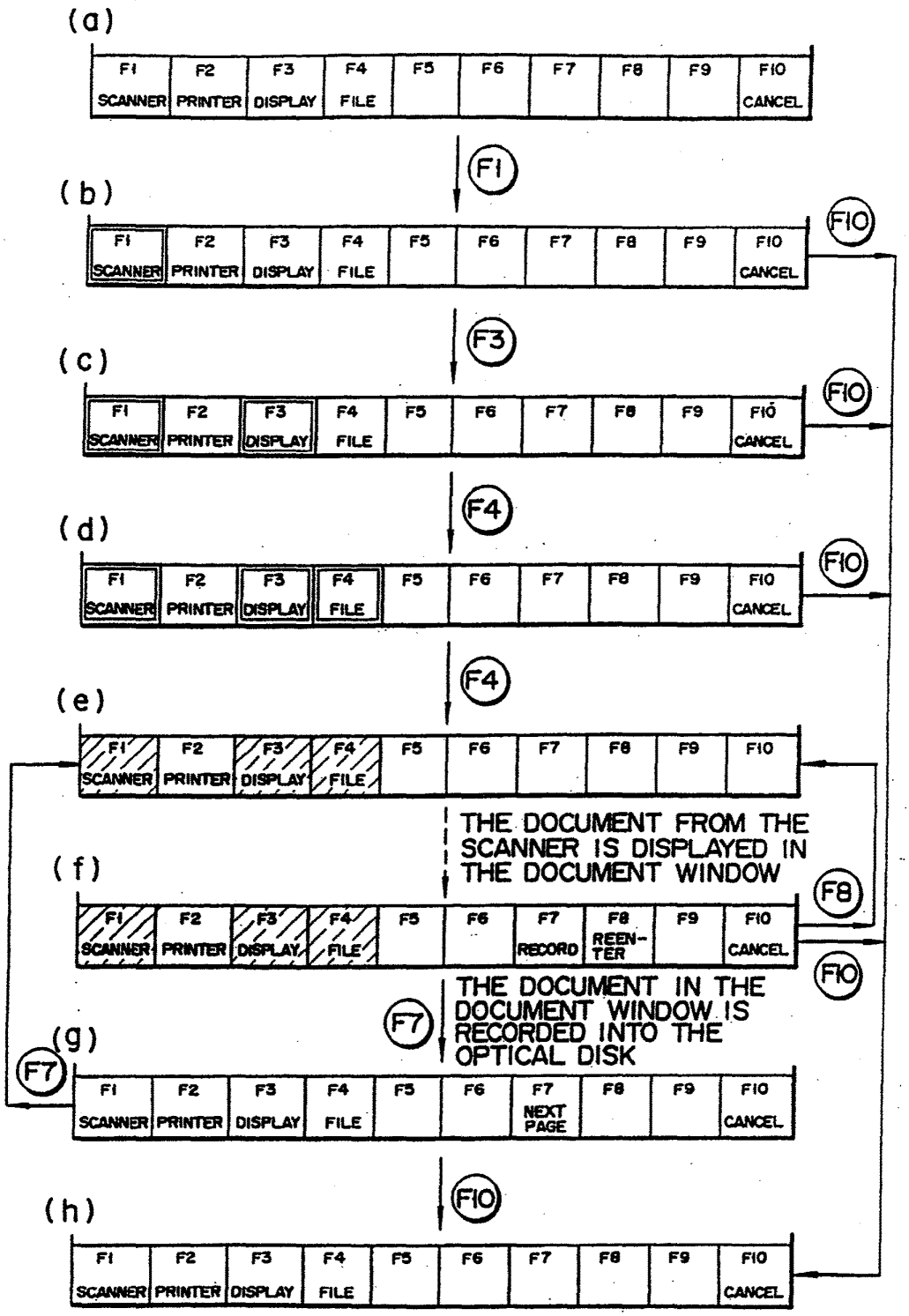



FIG. 16

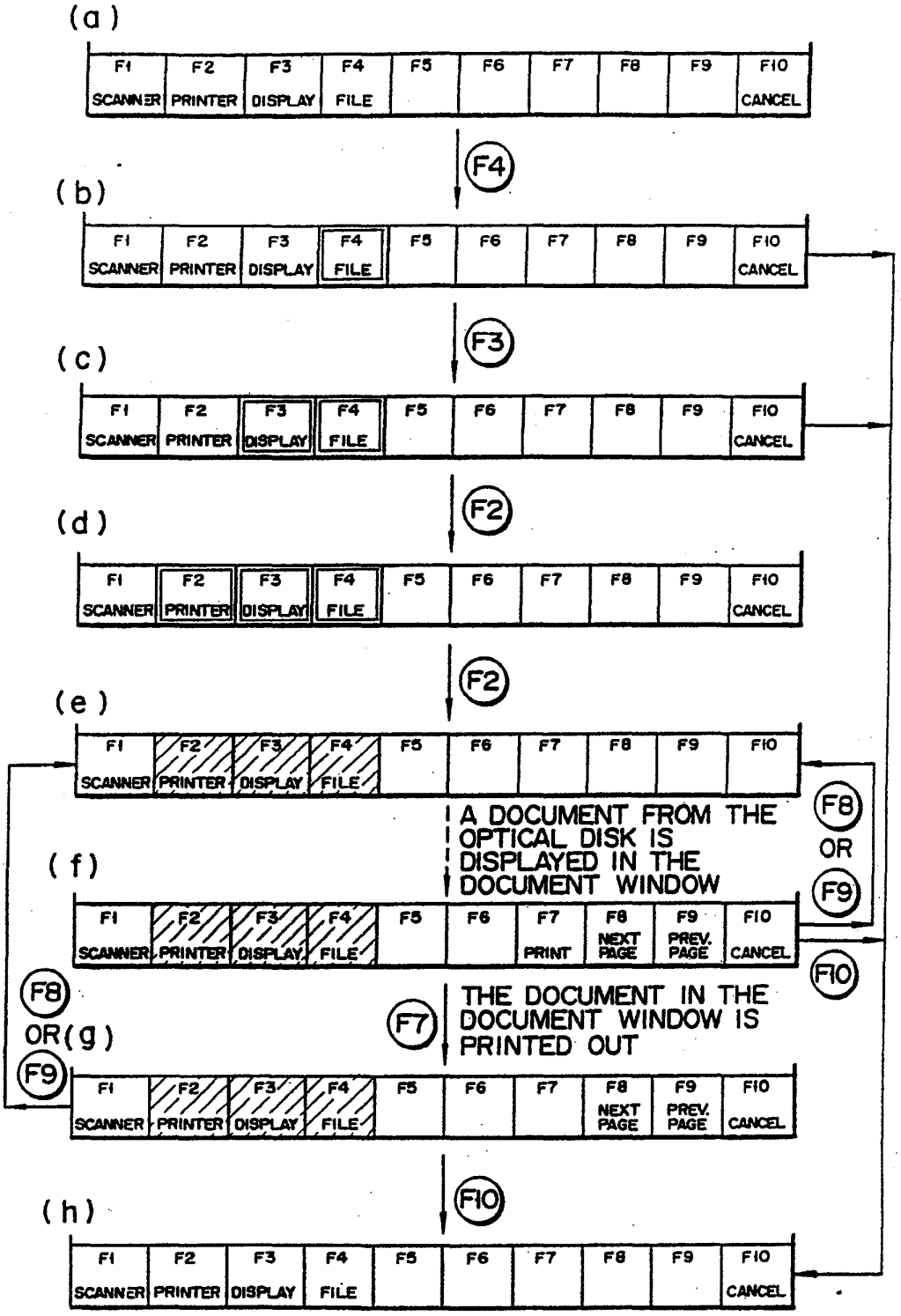



FIG. 17

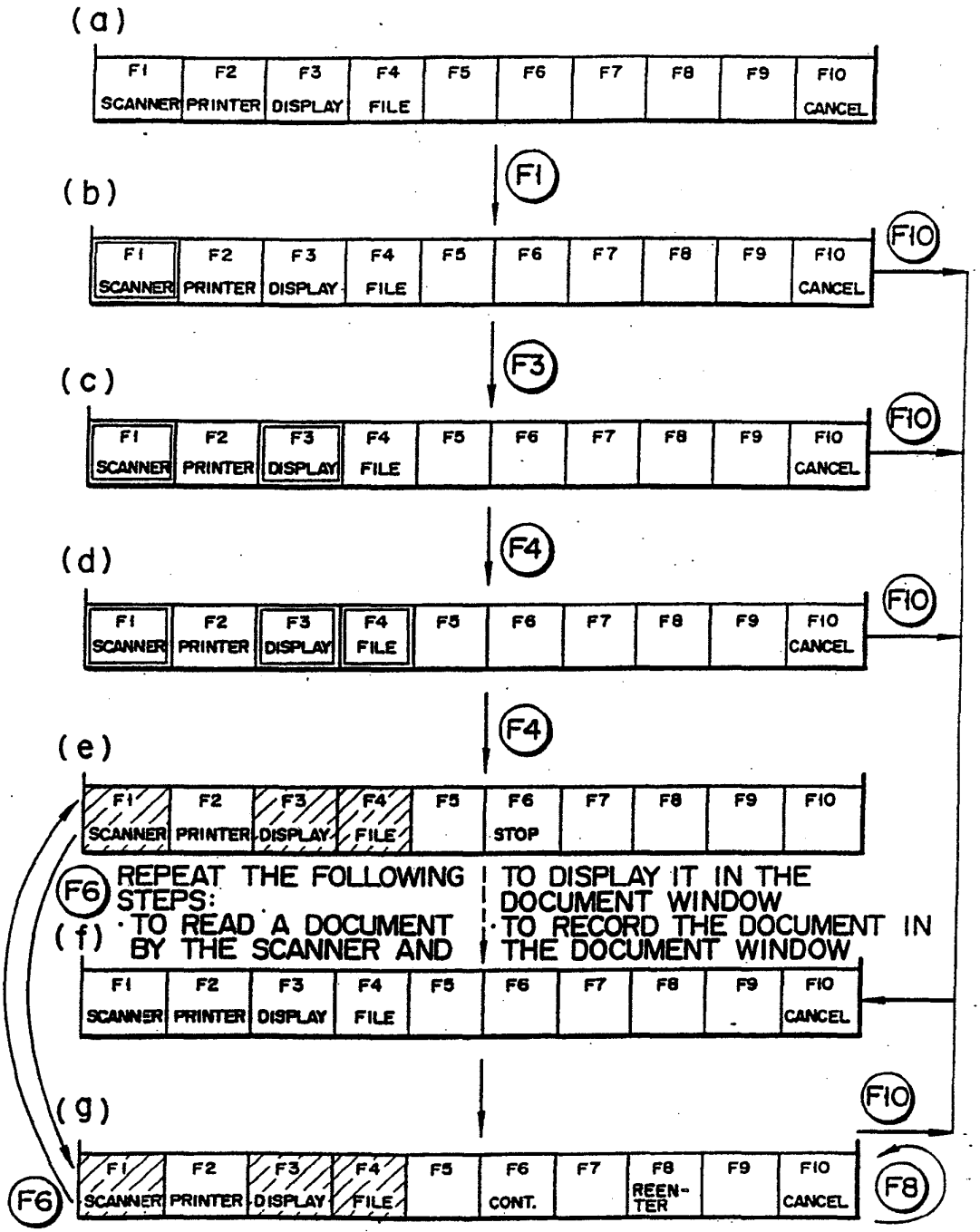



FIG. 18