and method of the present invention without the departing from the spirit and scope of the invention as claimed below.

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We Claim:

1. A method for organizing information in a computer filing system having a display device and a first plurality of documents, said method comprising :

providing a graphical representation of a first document and a graphical representation of a second document from said first plurality of documents;

creating a collection of documents comprising a second plurality of documents having said first document and said second document;

displaying a graphical representation of said collection of documents on said display device;

viewing at least one of the documents in said collection by displaying an indicia of said at least one document.

2. A method as in claim 1 further comprising the step of displaying a base for said collection of documents and wherein said collection of documents is created by one of said user and said computer filing system.

3. A method as in claim 2 further comprising a step of selecting said collection of documents for further action by positioning said cursor over said base and by indicating to the computer system that said collection of documents has been selected.

4. A method as in claim 1 further comprising the step of:

creating a plurality of collections of documents from said collection of documents by comparing an internal representation maintained by said

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computer system for each document in said collection of documents with an internal representation created by said system for each of said collections of documents.

5. A method as in claim 1 wherein the step of creating said collection of documents comprises positioning said cursor over said graphical representation of said first document and selecting said first document and moving said first document such that said first document overlaps said second document and then signalling to said computer system that a collection of documents is to be created.

6. A method as in claim 1 wherein the step of creating said collection of documents comprises selecting both said first and said second documents and signalling to said computer system that a collection of documents is to be created.

7. A method as in claim 1 further comprising creating a representation of said collection of documents based on an internal representation of each of the documents in said collection of documents.

8. A method as in claim 7 wherein said computer filing system determines said representation of said collection of documents and wherein said internal representation of each of the documents in said collection of documents comprises a representation of words within each of the documents.

9. A method as in claim 8 wherein said internal representation of each of the documents comprises, for a particular one of the documents, a

vector containing a representation of words within said particular one of the documents and a representation of the uniqueness of the words in said particular one of the documents relative to the words said first plurality of documents.

10. A method as in claim 8 wherein said representation of said collection of documents comprises a vector containing a representation of words within at least some of the documents in said collection of documents.

11. A method as in claim 1 further comprising viewing the contents of said collection of documents by displaying a graphical representation of each document in said collection within a region on said display device.

12. A method as in claim 3 further comprising viewing the contents of said collection of documents by selecting said collection and signalling to the computer system to display a graphical representation of each document in said collection within a region on said display device.

13. A method as in claim 1 further comprising viewing the contents of said collection of documents by displaying in an overlapping manner the graphical representations of each document.

14. A method as in claim 1 wherein said step of creating a collection of documents comprises creating a base for said collection and selecting said first and said second documents and signalling to said computer system that said first and said second documents are in said collection.

15. A method as in claim 1 further comprising adding a third document having a graphical representation to said collection by selecting said third document and moving said third document so as to position said graphical representation of said third document over said graphical representation of said collection and signalling to said computer system to add said third document to said collection.

16. A method as in claim 15 further comprising removing said first document from said collection by positioning said cursor over said graphical representation of said first document and selecting said first document and moving said graphical representation of said first document away from said graphical representation of said collection.

17. A method as in claim 1 wherein said step of viewing comprises pointing a cursor on said display device at a graphical representation of one of said documents in said collection for a predetermined period of time to reveal an indicia of said document in said collection.

18. A method as in claim 17 wherein said graphical representation of said collection is displayed on said display device while said indicia is displayed on said display device.

19. A method as in claim 18 wherein a means for indicating the location of said document within the graphical representation of said collection is displayed when said indicia is displayed.

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20. A method as in claim 19 wherein said means for indicating the location comprises a graphical representation having a cone shape which has an apex and a base, said apex being adjacent to the location of said document.

21. A method as in claim 17 wherein said collection of documents comprises mail documents which originated from an electronic mail message and wherein said indicia for each of said mail documents comprises a list of words in each of said mail documents.

22. A method as in claim 17 wherein said indicia is a miniature of said document.

23. A method as in claim 17 wherein said indicia is a reproduction of said document.

24. A method as in claim 17 wherein said indicia has multiple pages for a multiple page document and wherein the user views the multiple pages of said indicia by signalling to the computer to move from page to page of said indicia.

25. A method as in claim 21 wherein indicia for documents in said collection other than said mail documents include miniatures of said documents other than said mail documents.

26. A method as in claim 21 further comprising creating a representation of said collection of documents based on an internal representation of each of the documents in said collection and wherein said list

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of words for each mail document is obtained from said internal representation of each mail document.

27. A method as in claim 26 wherein said internal representation of each of the documents in said collection comprises, for a particular one of the documents, a vector containing a representation of words within said particular one of the documents and a representation of the uniqueness of words in said particular one of the documents relative to the words in said first plurality of documents.

28. A method as in claim 15 further comprising providing a first zone of a second zone on said graphical representation of said collection and wherein when said graphical representation of said third document is positioned over said first zone, the user of said computer system controls the orientation of the graphical representation of said third document relative to said collection so that the user controls the appearance of said graphical representation of said collection to the extent of the orientation of said graphical representation of said third document relative to said graphical representation of said collection, and wherein when said graphical representation of said third document is positioned over said second zone, the computer systems controls the orientation of the graphical representation of said third document relative to said collection so that the computer system controls the appearance of said graphical representation of said collection.

29. A method as in claim 1 wherein said graphical representation of said collection conveys visual information about the contents of said collection.

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30. A method as in claim 29 wherein said graphical representation of said collection is dynamic such that adding or removing documents to said collection changes the graphical representation of said collection.

31. A method as in claim 1 wherein said step of creating a collection comprises indicating to said computer system that a collection of documents is to be created using said first document as a sample document and wherein said computer system searches said first plurality of documents to find said second document.

32. A method as in claim 31 wherein said computer filing system creates said collection by modifying an attribute of documents within said collection, wherein said attribute is used by said computer filing system for said first document and said second document.

33. A method as in claim 31 further comprising creating a representation of said collection of documents based on an internal representation of said first document.

34. A method as in claim 8 wherein said graphical representation is in multiple colors such that said computer filing system provides a color for a particular document in said collection based on a measure of the similarity between the representation of said collection and the internal representation of said particular document.

35. A method as in claim 34 wherein one of the hue and saturation of a color is varied according to said measure of the similarity.

36. A method as in claim 7 wherein the user of said computer filing system provides a third document to said filing system and instructs said computer filing system to file said third document and wherein said computer filing system determines whether to add said third document to said collection based on a measure of similarity between the representation of said collection and an internal representation of said third document.

37. A method for organizing information in a computer system having a display device, said method comprising:

providing a representation of a first document and a representation of a second document;

creating a collection of documents comprising said first and said second documents;

displaying a representation of said collection of documents;

determining a representation of said collection when a third document is added to said collection based on one of: (a) an internal representation of each of the documents in said collection, and (b) a user defined specification.

38. A method as in claim 37 wherein said computer system has a filing system having a graphical user interface and said method is performed in part by said filing system and wherein said representations of said first document, said second document, and said collection of documents are graphical representations.

39. A method as in claim 38 wherein said user defined specification is a sample document designated by said user to act as an internal representation of said collection.

40. A method as in claim 38 wherein said user defined specification is a collection of words specified by said user.

41. A method as in claim 38 wherein internal representations of documents in said collection are used to determine relevancy comparisons between said collection of documents and a third document added by one of said user and said computer system.

42. A method as in claim 38 wherein said user defined specification comprises a programmable means for causing the execution of a series of instructions and wherein said programmable means is activated by selecting a graphical representation of said user defined specification on said display device.

43. A method as in claim 38 wherein said step of determining an internal representation of said collection occurs each time a document is added to or removed from said collection.

44. A method as in claim 43 wherein said step of determining a representation of said collection occurs each time a modified document is stored to replace a preexisting document in said collection.

45. A method as in claim 38 further comprising viewing at least one of the documents in said collection by positioning a cursor provided by said computer system on said display device on a graphical representation of said at least one document in said collection for a predetermined period of time to reveal an indicia of said document in said collection.

46. A method as in claim 45 wherein said graphical representation of said collection is displayed on said display device while said indicia is displayed on said display device and wherein said indicia is a graphical representation of said document.

47. A method as in claim 46 wherein a means for indicating the location of said document within the graphical representation of said collection is displayed when said indicia is displayed.

48. A method as in claim 45 wherein said computer filing system provides a call to the program which created said at least one document and said program responds to said computer filing system by providing said indicia.

49. A method as in claim 38 wherein said graphical representation of said collection includes a means for selecting said collection.

50. A method as in claim 49 further comprising moving said collection by selecting said collection and indicating to said computer system to move said collection.

51. A method as in claim 50 wherein said means for selecting comprises at least one of a base and a top means and a wrapping means for identifying the documents within said collection as a collection and wherein said step of moving comprises pointing a cursor provided by said computer system on said display device at said means for selecting and selecting said collection and moving said cursor while said collection is selected.

52. A method as in claim 45 further comprising selecting a selective viewing mode such that only a user specified type of document is selected for viewing wherein only indicia for said user specified type of document is displayed when viewing documents in said collection during said selective viewing mode.

53. A method as in claim 52 wherein said user specified type of document is one of (i) documents containing pictures, (ii) electronic mail documents, (iii) documents containing a "To" field, and (iv) documents containing a chart.

54. A method as in claim 38 further comprising viewing at least one of the documents in said collection by selecting said at least one document to reveal an indicia of said document in said collection.

55. A method as in claim 54 further comprising moving said graphical representation of said document to a location near said collection, said step of moving being performed by said computer system after selecting said document.

56. A method as in claim 55 wherein said step of moving is an animation provided by said computer system and wherein said animation includes flipping said graphical representation of said document.

57. A method as in claim 55 wherein each time the user selects a document for viewing from said collection, a graphical representation of said document so selected moves to said location.

58. A method as in claim 55 wherein said indicia is a full size reproduction of said document, said indicia being displayed behind the graphical representation of said collection and the graphical representation of the document at said location.

59. A method as in claim 38 wherein said representation of said collection is a user defined specification and said user defined specification is modified and wherein said computer system adds new documents to said collection on the basis of said modified user defined specification.

60. A method as in claim 59 wherein said computer system adds to said collection on the basis of a comparison between the internal representation of each of said new documents and said modified user defined specification.

61. A method as in claim 38 wherein said representation of said collection is said user defined specification and wherein the user indicates to said computer system to add a fourth item to said collection, which fourth item has an internal representation which does not match said user defined

specification, and wherein, after the user has indicated to add said fourth item to said collection, said computer system prompts the user to determine whether the fourth item is to be added to said collection without modifying said user defined specification or the fourth item is to be added and said user defined specification is to be modified.

62. A method as in claim 61 wherein said computer system prompts the user by displaying a window means for editing the user defined specification and wherein said fourth item is one of a document, a pile and a folder.

63. A method as in claim 38 further comprising creating a plurality of collections of documents from said collection of documents by comparing an internal representation maintained by said computer system for each document in said collection with an internal representation created by said computer system for each of said collections of document.

64. A method as in claim 38 further comprising displaying a window means having user commands for viewing said collection.

65. A method as in claim 63 wherein said collection of documents is a subdirectory of documents and wherein said graphical representation of said collection is one of a folder and a container representation means for indicating that said container representation means contains documents.

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66. A computer filing system for organizing information in a computer system having a processor, a bus, and memory for storing information including a plurality of documents, said computer filing system comprising:

a display means for producing a display of graphical representations, said display means coupled to said processor;

a cursor control means coupled to said processor, said cursor control means for controlling the position of a cursor on said display;

a switch means for indicating a selection of an object displayed on said display, said switch means coupled to said processor and having a first and a second position;

a graphical representation of a first document and a graphical representation of a second document, said cursor control means and said switch means being used with said graphical representations of said first and said second documents to create a collection of documents comprising said first and said second documents;

a means for creating a graphical representation of said collection of documents comprising said first and said second document; and

a means for determining a representation of said collection, said means for determining providing a representation based on an internal representation of said first and said second documents.

67. An apparatus as in claim 66 wherein said collection of documents has user manipulatable graphical user interface features allowing said user to operate on said collection as a group of documents.

68. An apparatus as in claim 66 further comprising a means for determining a representation of said collection each time a document is added to said collection.

69. An apparatus as in claim 68 wherein said means for determining includes a table showing the number of times a preselected group of words is used at least once in each of said documents stored in said computer system.

70. A method as in claim 1 wherein said graphical representation is in multiple colors such that said computer system provides a color for a particular document based on an attribute of said particular document.

71. A method as in claim 70 wherein one of the color parameters in a color space is varied according to said attribute.

72. A method as in claim 1 wherein said step of creating a collection of documents comprises creating a means for selecting a collection of documents and wherein said means for selecting includes one of a representation of said collection and a user defined specification.

ABSTRACT OF THE DISCLOSURE

A method and apparatus for organizing information in a computer filing system. The method and apparatus include the creation of a pile comprising a collection of documents and displaying a graphical representation of the collection of documents. The method and apparatus further include browsing the collection of documents by pointing a cursor at a particular item in the collection of documents to reveal an indicia for the particular item in the collection of documents. The filing system can automatically divide a pile (e.g. a collection of documents from an electronic mail network) into subpiles on the basis of the content of each document in the pile, and the filing system, at the user's request can automatically file away documents into existing piles in the computer system on the basis of a similarity match between the content (or other internal representation) of the document and the content (or other internal representation) of existing piles in the computer system. The filing system can also create a pile from a sample document by using the internal representation of the document as the internal representation of the new pile. The computer filing system provides various interfaces in connection with piles to the user of the system to provide feedback and other information to the user, including information concerning the documents and piles in the computer's filing system.

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Attorney's Docket No.: 04860.P624 Patent

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD AND APPARATUS FOR ORGANIZING INFORMATION IN A COMPUTER SYSTEM

the specification of which

_____ is attached hereto.

_X_ was filed on April 30, 1992 as Application Serial No. 07/876,921 and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the same was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119, of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	Filing Date	(Status -- patented, pending, abandoned)
(Application Serial No.)	Filing Date	(Status -- patented, pending, abandoned)

FC5320 * 05/29/96

I hereby appoint Paul A. Apffel, Reg. No. 35,427; Keith G. Askoff, Reg. No. 33,828; Aloysius T. C. AuYeung, Reg. No. 35,432; Bradley J. Bereznak, Reg. No. 33,474; Roger W. Blakely, Jr., Reg. No. 25,831; Jeffrey Jay Blatt, Reg. No. 30,244; Stephen D. Gross, Reg. No. 31,020; David R. Halvorson, Reg. No. 33,395; George W. Hoover, Reg. No. 32,992; Tracy L. Hurt, Reg. No. 34,188; Eric S. Hyman, Reg. No. 30,139; Stephen L. King, Reg. No. 19,180; James D. McFarland, Reg. No. 32,544; George R. Meyer, Reg. No. 35,284; Ronald W. Reagin, Reg. No. 20,340; James H. Salter, Reg. No. 35,668; James C. Scheller, Reg. No. 31,195; Ira M. Siegel, Reg. No. 28,907; Maria McCormack Sobrino, Reg. No. 31,639; Stanley W. Sokoloff, Reg. No. 25,128; Edwin H. Taylor, Reg. No. 25,129; Lester J. Vincent, Reg. No. 31,460; Ben J. Yorks, Reg. No. 33,609; Philip K. Yu, Reg. No. 35,742; and Norman Zafman, Reg. No. 26,250; my attorneys; and Anthony C. Murabito, Reg. No. 35,295; and Edwin A. Sloane, Reg. No. 34,728; my patent agents; of BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (310) 207-3800, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor Richard Mander

Inventor's Signature R Mander Date 6-5-92

Residence Palo Alto, California (City, State) Citizenship New Zealand (Country)

Post Office Address 899 Webster #2
Palo Alto, California 94301

Full Name of Second/Joint Inventor Daniel E. Rose

Inventor's Signature Daniel E. Rose Date 6-15-92

Residence San Jose, California (City, State) Citizenship U.S.A. (Country)

Post Office Address 1084 South Blaney
San Jose, California 95129

Full Name of Third/Joint Inventor Gitta Salomon

Inventor's Signature Gitta Salomon Date 6-3-92

Residence Palo Alto, California (City, State) Citizenship U.S.A. (Country)

Post Office Address 816 Cowper Street #3
Palo Alto, California 94301

Full Name of Fourth/Joint Inventor Yin Yin Wong

Inventor's Signature Yin Yin Wong Date 6.2.92

Residence Menlo Park, California (City, State) Citizenship U.S.A. (Country)

Post Office Address 970 Alice Lane #4
Menlo Park, California 94025

Full Name of Fifth/Joint Inventor Timothy Oren

Inventor's Signature [signature] Date 4/15/92

Residence Sunnyvale, California (City, State) Citizenship U.S.A. (Country)

Post Office Address 961 Glenbar Avenue
Sunnyvale, California 94087

Full Name of Sixth/Joint Inventor Susan Booker

Inventor's Signature [signature] Date 4/3/92

Residence San Carlos, California (City, State) Citizenship U.S.A. (Country)

Post Office Address 147 Highland Avenue
San Carlos, California 94070

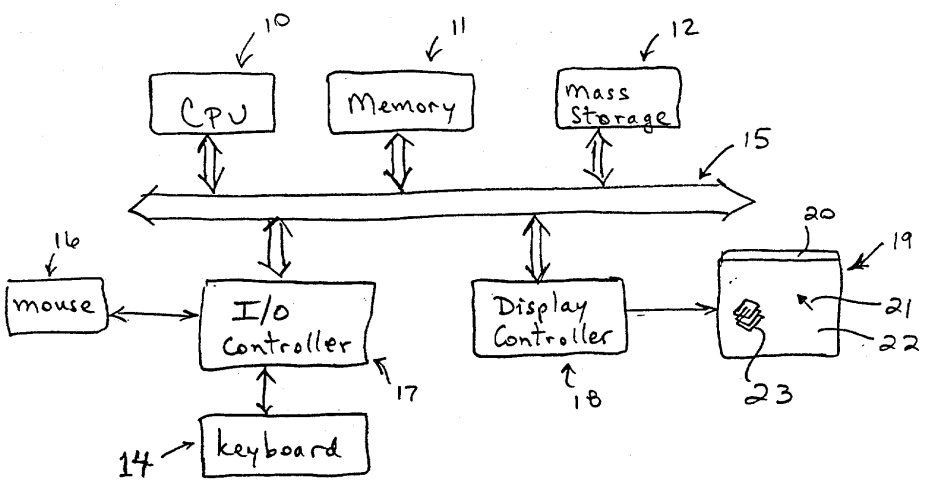
Full Name of Seventh/Joint Inventor Stephanie Houde

Inventor's Signature Stephanie Houde Date 6/17/92

Residence Cambridge, MA (City, State) Citizenship U.S.A. (Country)

Post Office Address 279 Harvard Street #33
Cambridge, MA 02139

Figure 1



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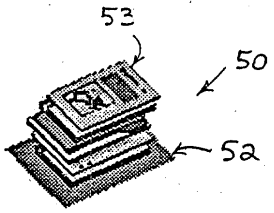


Fig. 2a

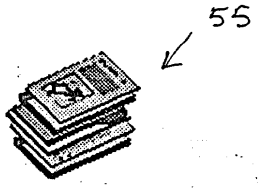


Fig. 2b

Fig. 2c

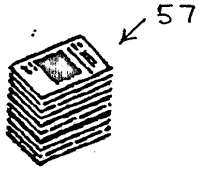


Fig. 2d

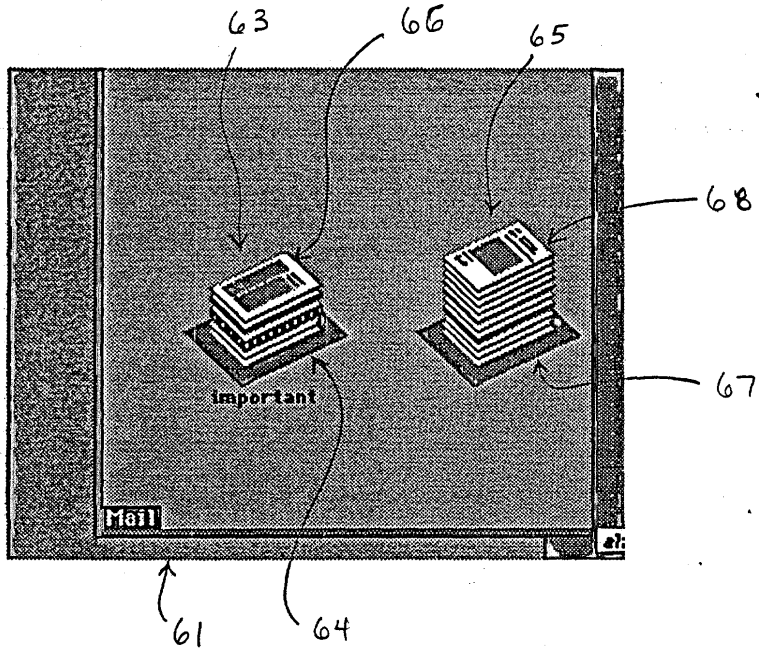


Figure 2e

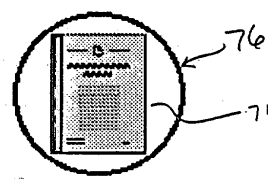


Figure 2f

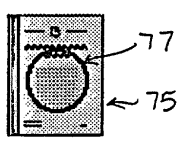


Figure 2g

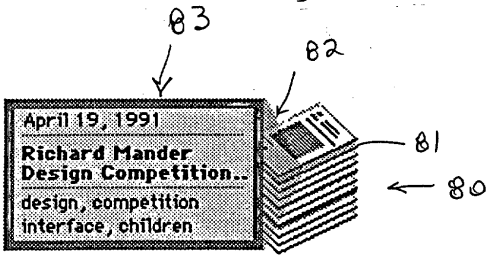


Figure 4f

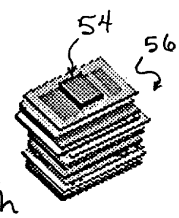


Figure 2h

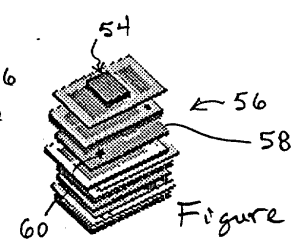


Figure 2i

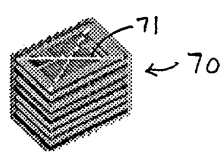


Figure 2j

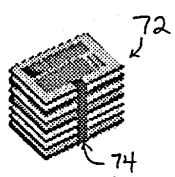


Figure 2k

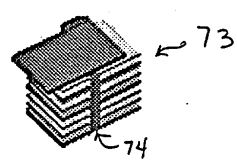


Figure 2l

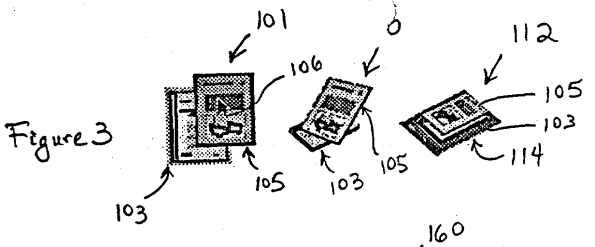


Figure 3

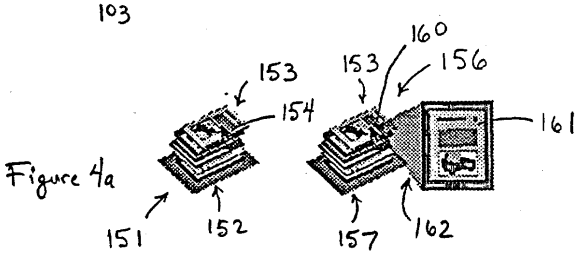


Figure 4a

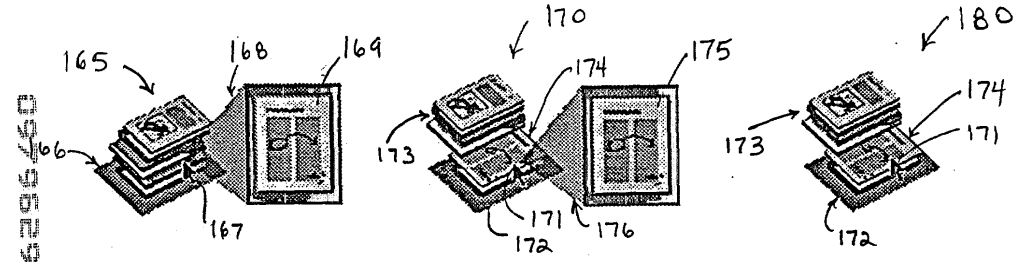


Fig. 4b

Fig. 4c

Fig. 4d

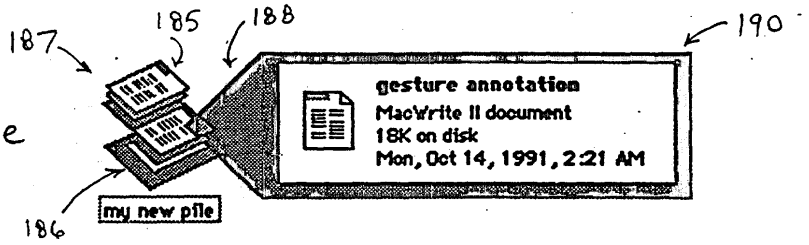


Fig. 4e

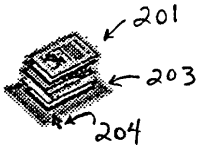


Fig. 5a

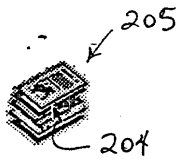


Fig. 5b

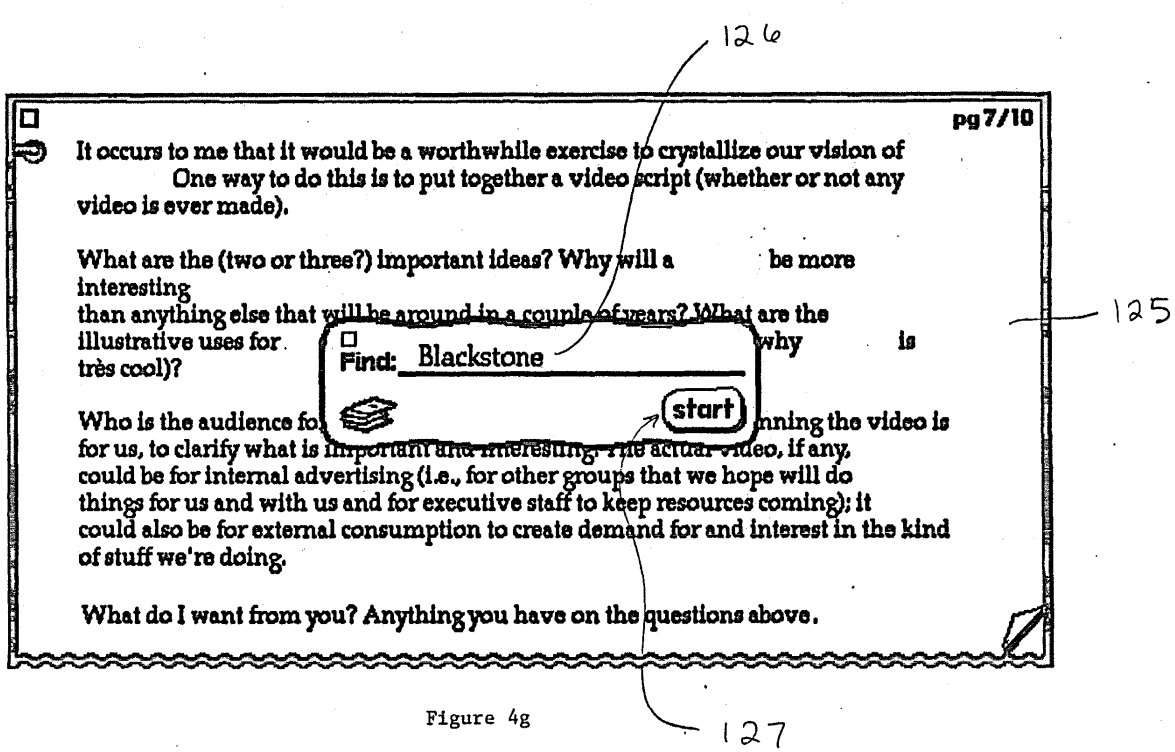

pg 7/10
It occurs to me that it would be a worthwhile exercise to crystallize our vision of
One way to do this is to put together a video script (whether or not any video is ever made).
What are the (two or three?) important ideas? Why will a be more interesting
than anything else that will be around in a couple of years? What are the illustrative uses for
why is très cool)?
Find: Blackstone
start
Who is the audience fo
nning the video is for us, to clarify what is important and interesting. The actual video, if any, could be for internal advertising (i.e., for other groups that we hope will do things for us and with us and for executive staff to keep resources coming); it could also be for external consumption to create demand for and interest in the kind of stuff we're doing.
What do I want from you? Anything you have on the questions above.
126
125
127

Figure 4g

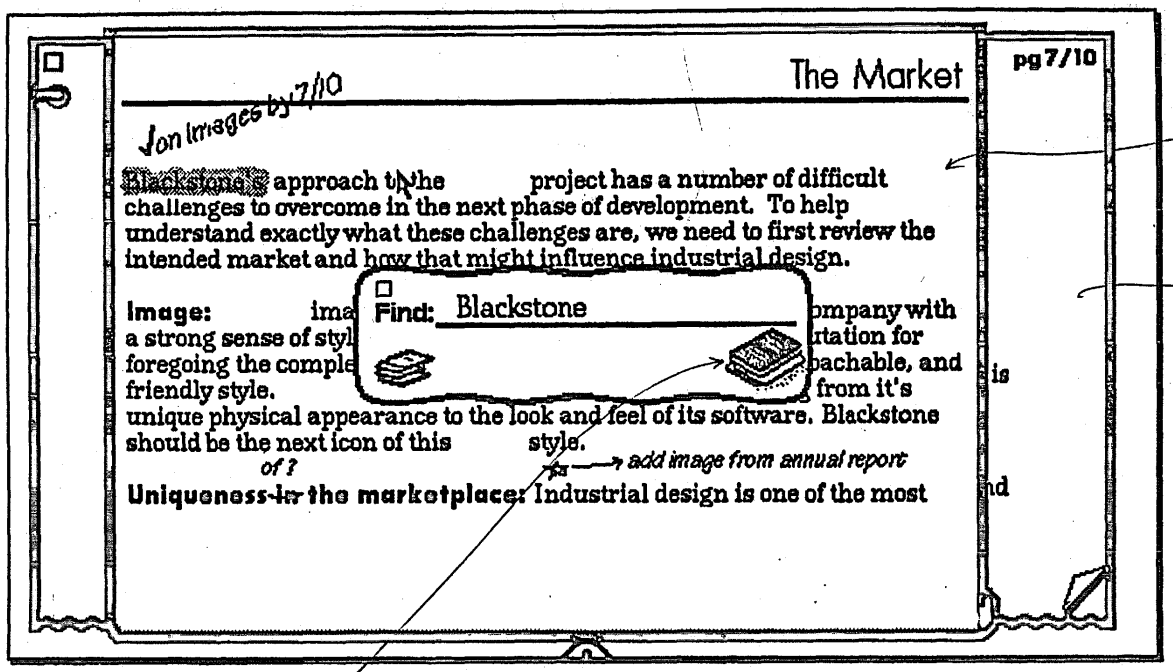


Figure 4h

101 FH 106
APMW0025950

TO/220'26296760

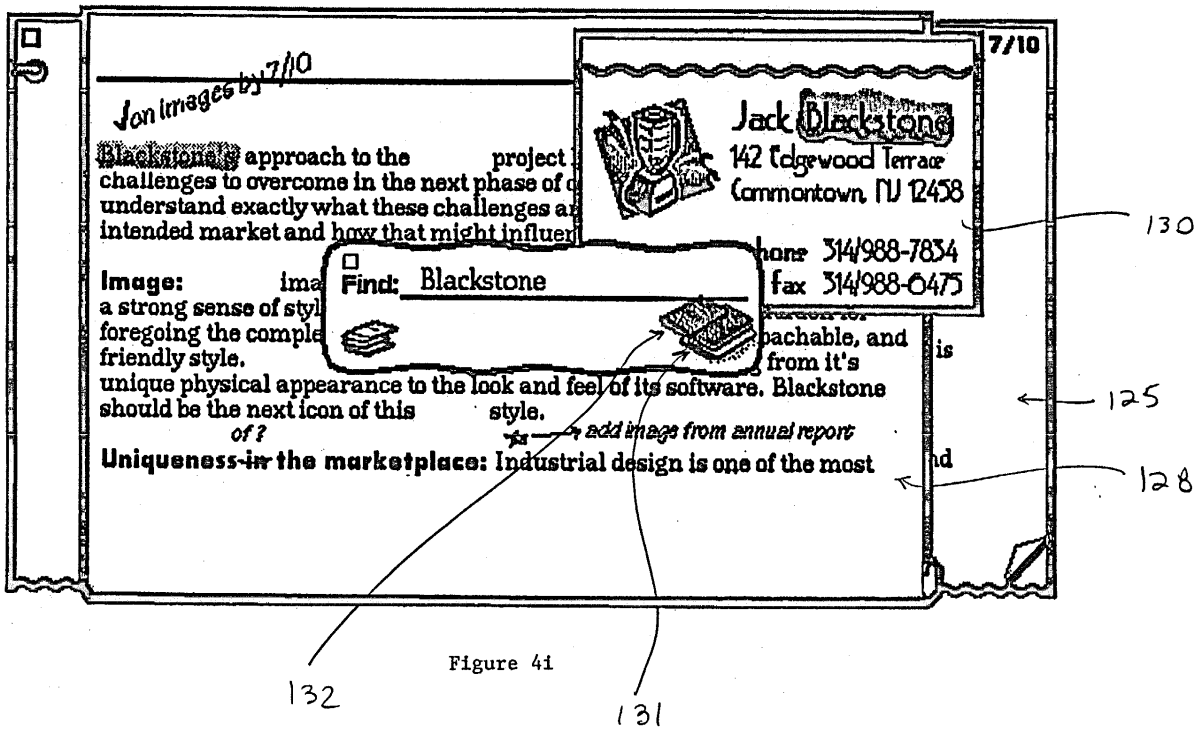


Figure 4i

101 FH 107
APMW0025951

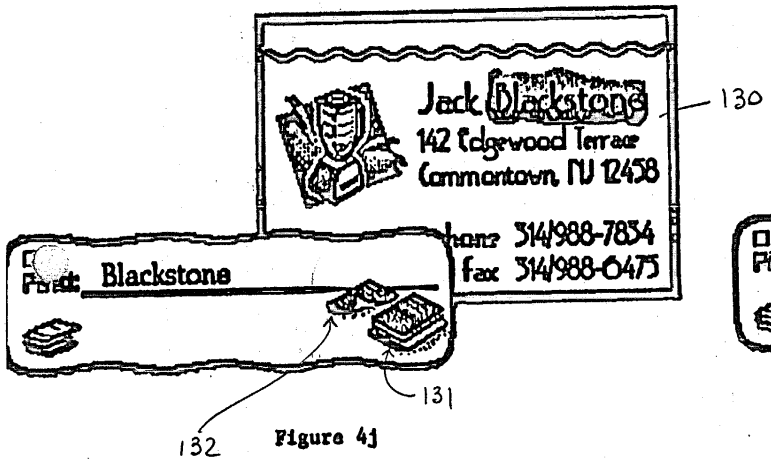


Figure 4j

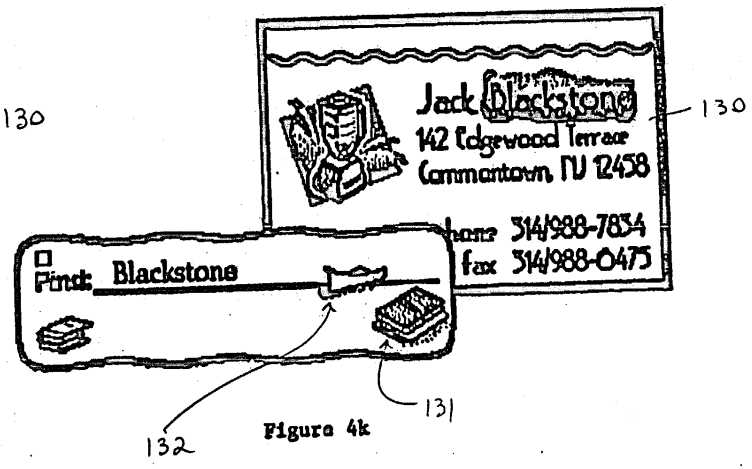


Figure 4k

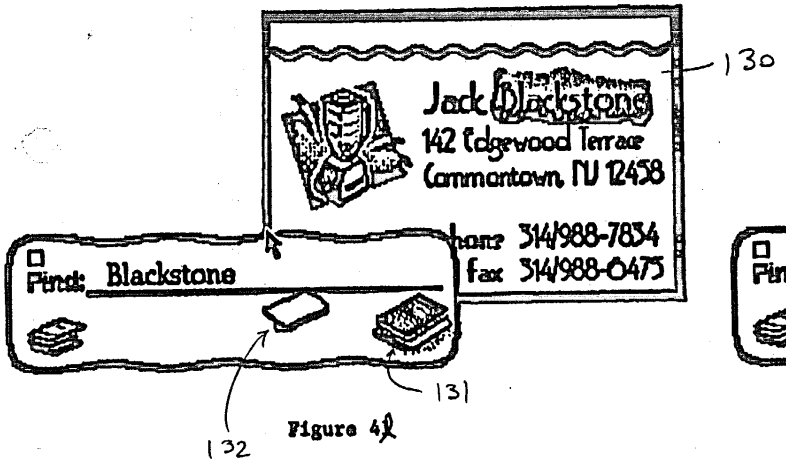


Figure 4l

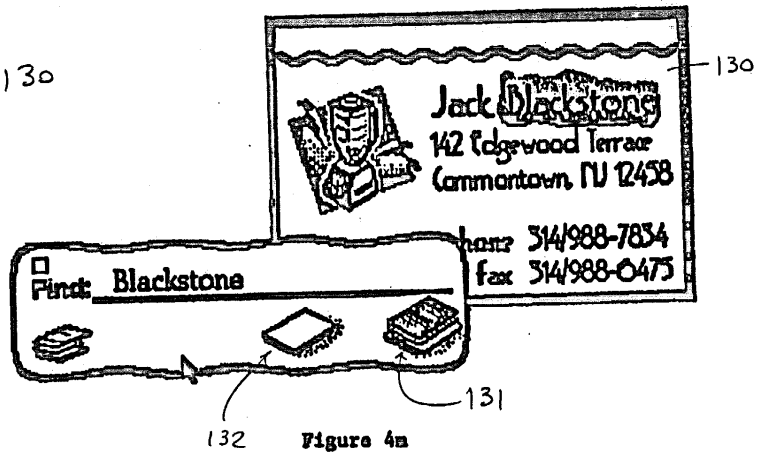


Figure 4m

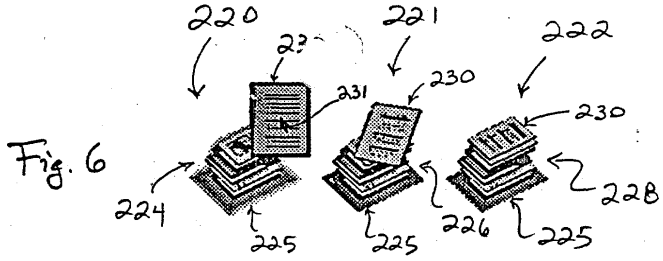


Fig. 6

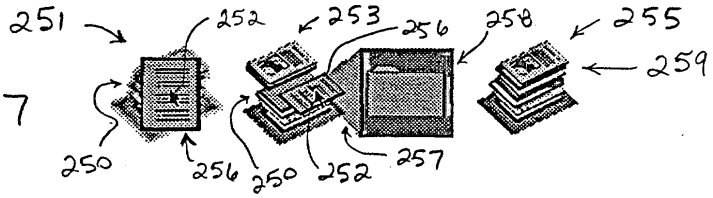


Fig. 7

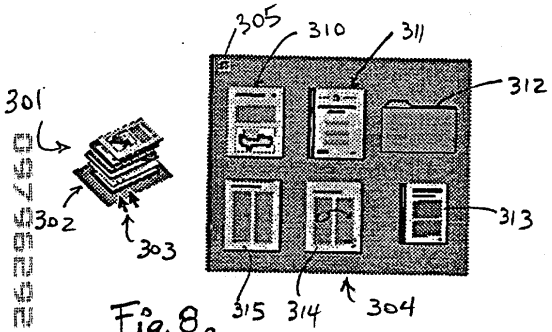


Fig. 8a

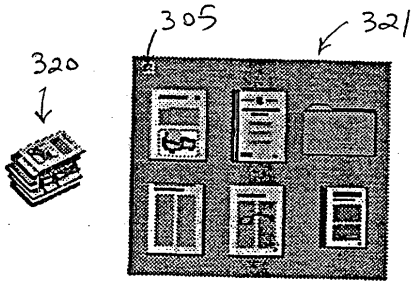


Fig. 8b

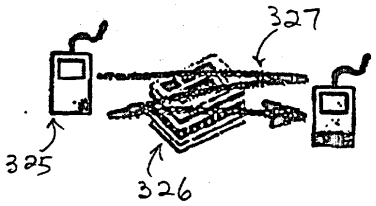


Fig. 8c

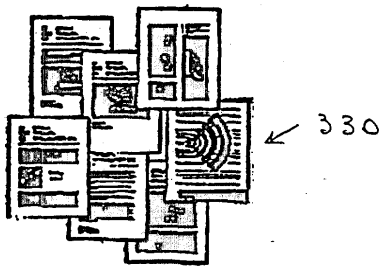


Fig. 8d

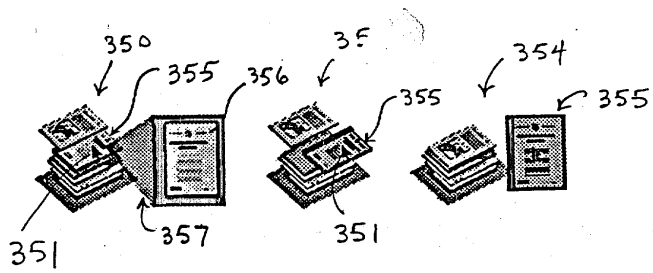


Fig. 9a

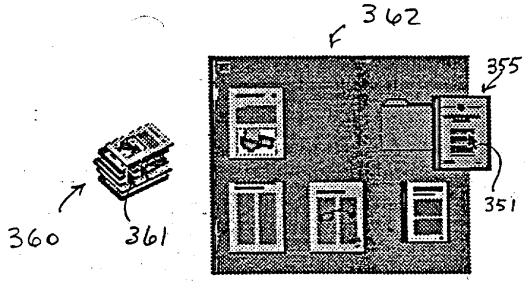


Fig. 9b

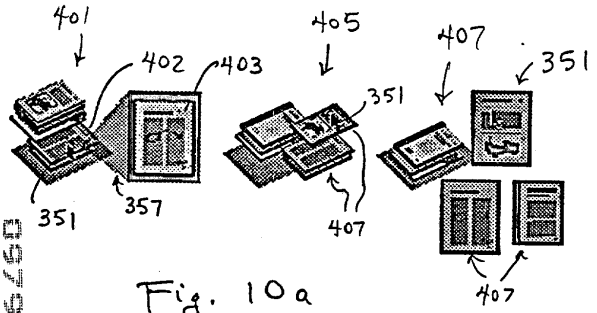


Fig. 10a

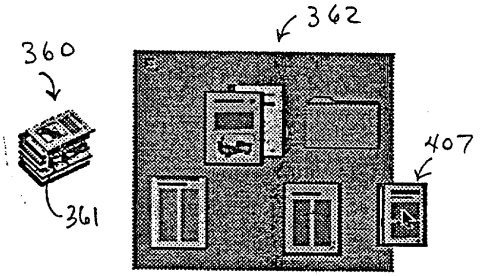


Fig. 10b

Fig. 11a

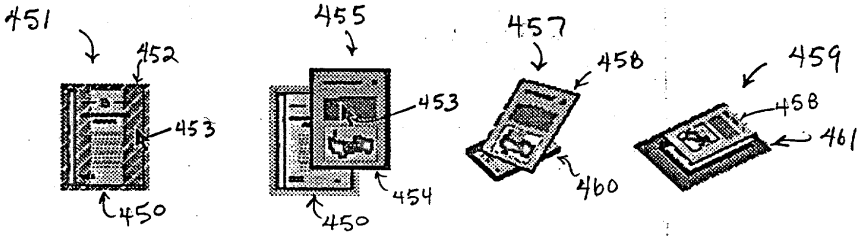


Fig. 11b

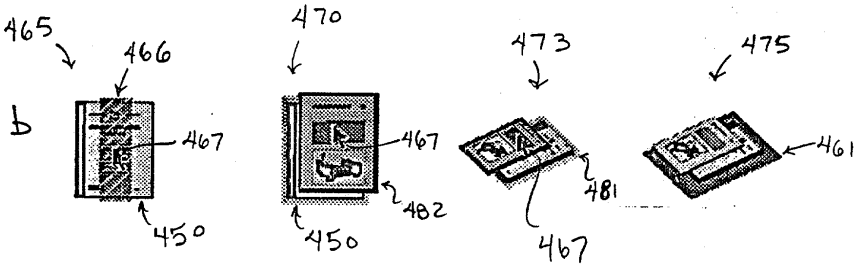


Fig. 12a

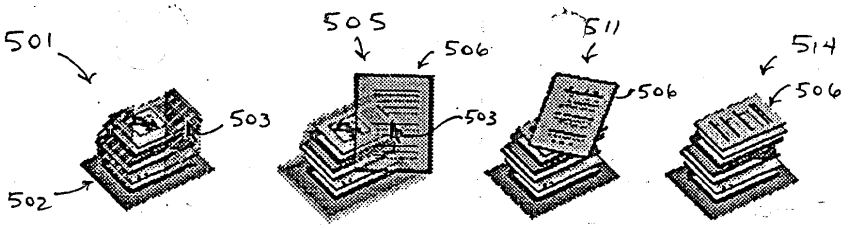


Fig. 12b

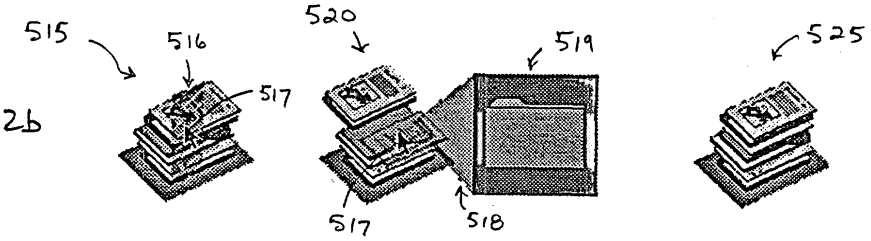
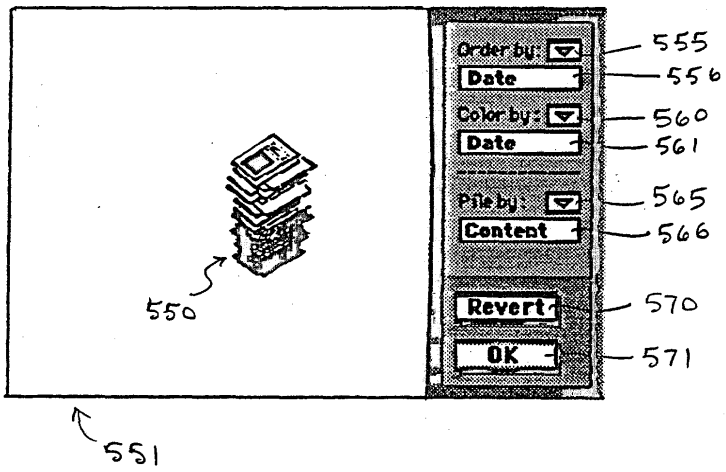


Fig. 13a



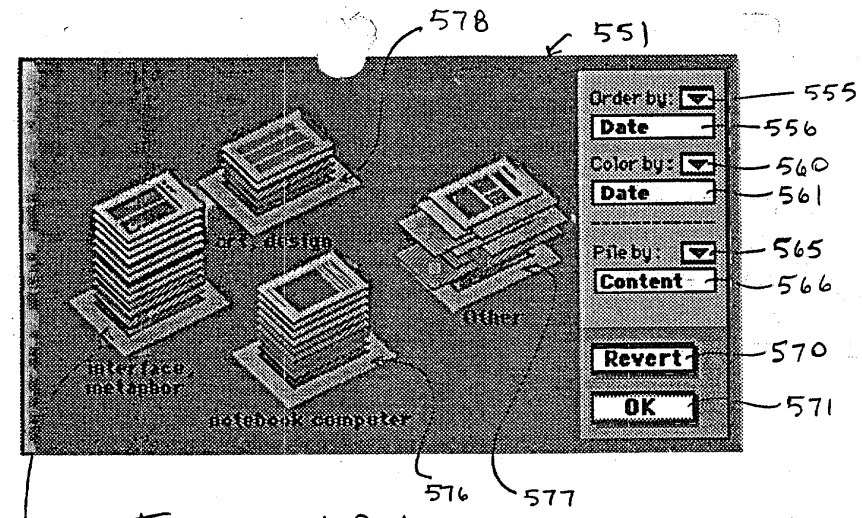

578
551
Order by:
Date
Color by:
Date
Pile by:
Content
Revert
OK
555
556
560
561
565
566
570
571
art, design
Other
interface, metaphor
notebook computer
575
576
577

Figure 13 b

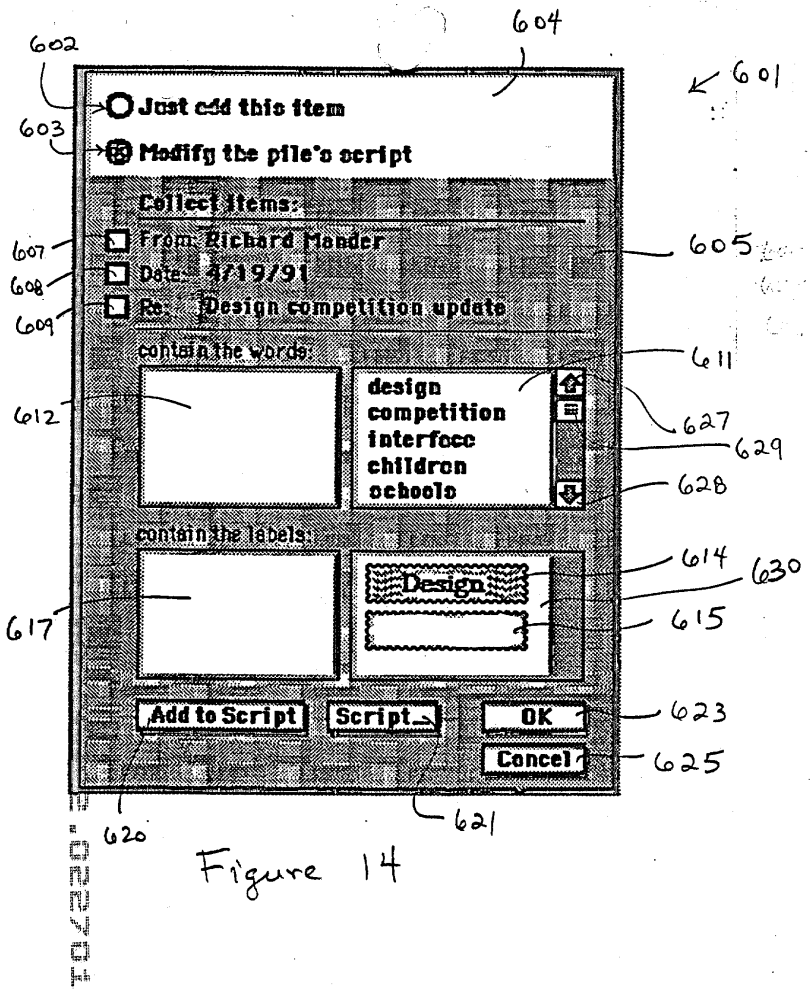
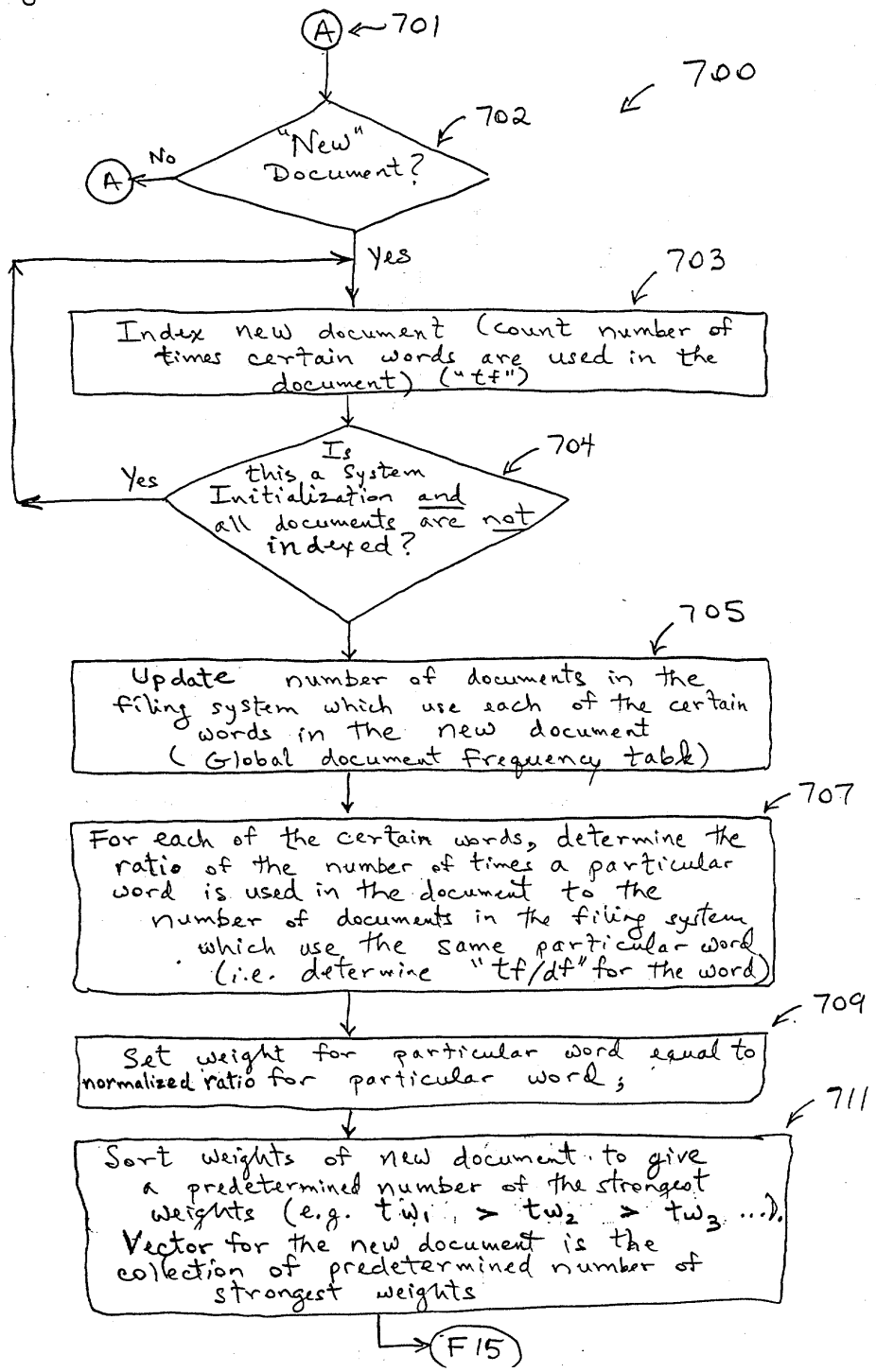

602
604
601
Just add this item
603
Modify the pile's script
Collect items:
From: Richard Mander
605
607
Date: 4/19/91
608
Re: Design competition update
609
contain the words:
611
612
design
competition
interface
children
schools
627
629
628
contain the labels:
614
630
Design:
617
615
Add to Script
Script
OK
623
Cancel
625
620
621

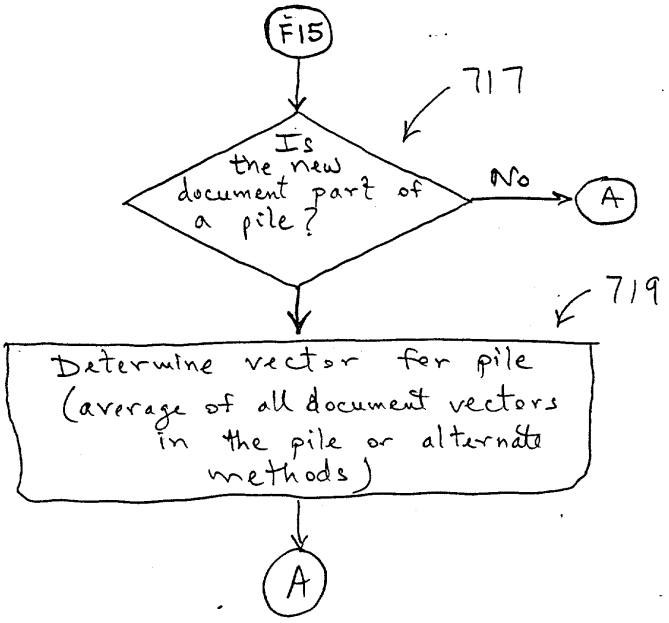
Figure 14

Figure 15



42-381 100 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL

Figure 15 (Continued)



42-381 50 SHEETS 5 SQUARE
42-382 100 SHEETS 5 SQUARE
42-389 200 SHEETS 5 SQUARE
NATIONAL

Figure 16

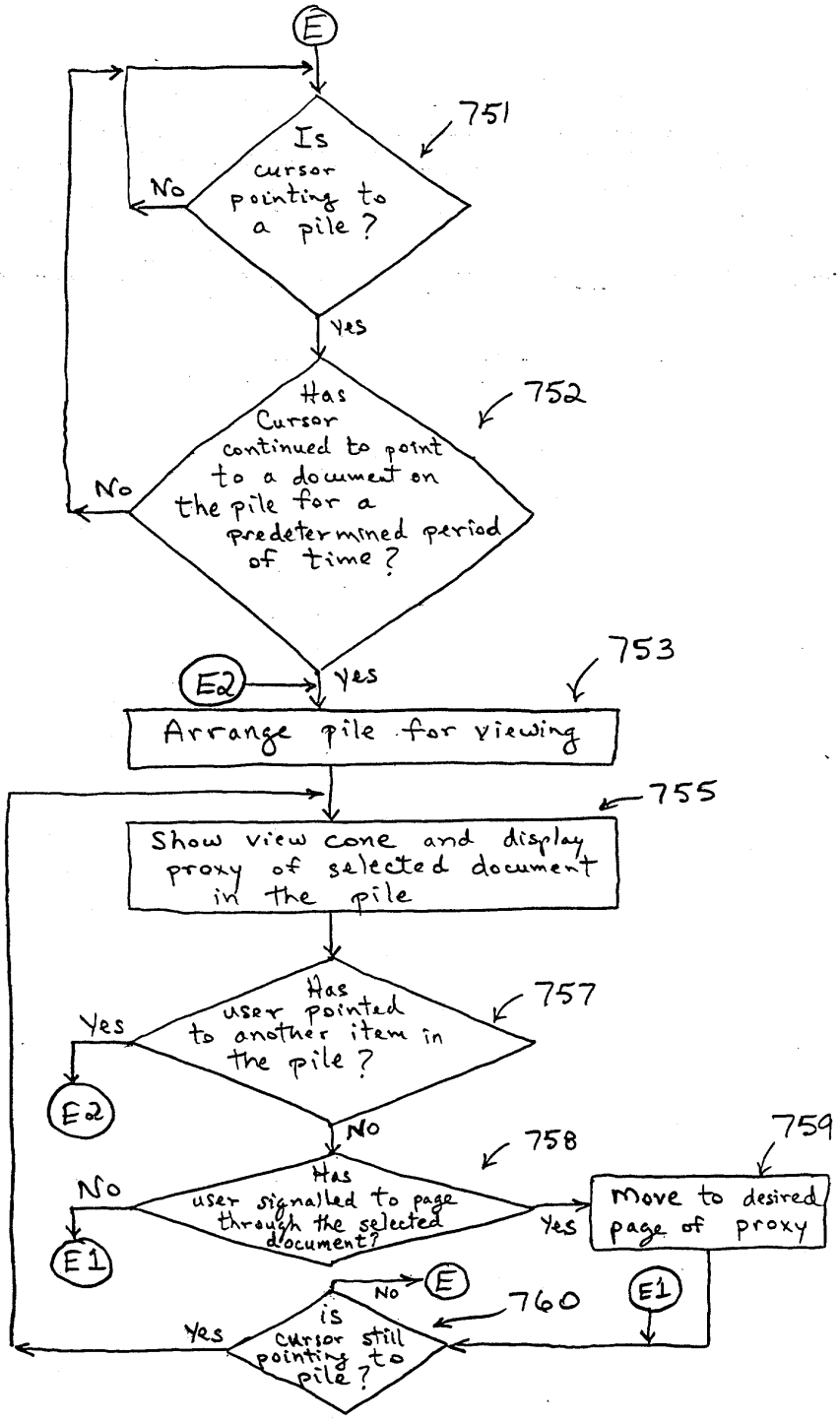

E
751
Is cursor pointing to a pile?
No
Yes
752
Has Cursor continued to point to a document on the pile for a predetermined period of time?
No
Yes
E2
753
Arrange pile for viewing
755
Show view cone and display proxy of selected document in the pile
757
Has user pointed to another item in the pile?
Yes
E2
No
758
Has user signalled to page through the selected document?
No
E1
Yes
759
Move to desired page of proxy
E1
760
is cursor still pointing to pile?
No
E
Yes

Figure 17

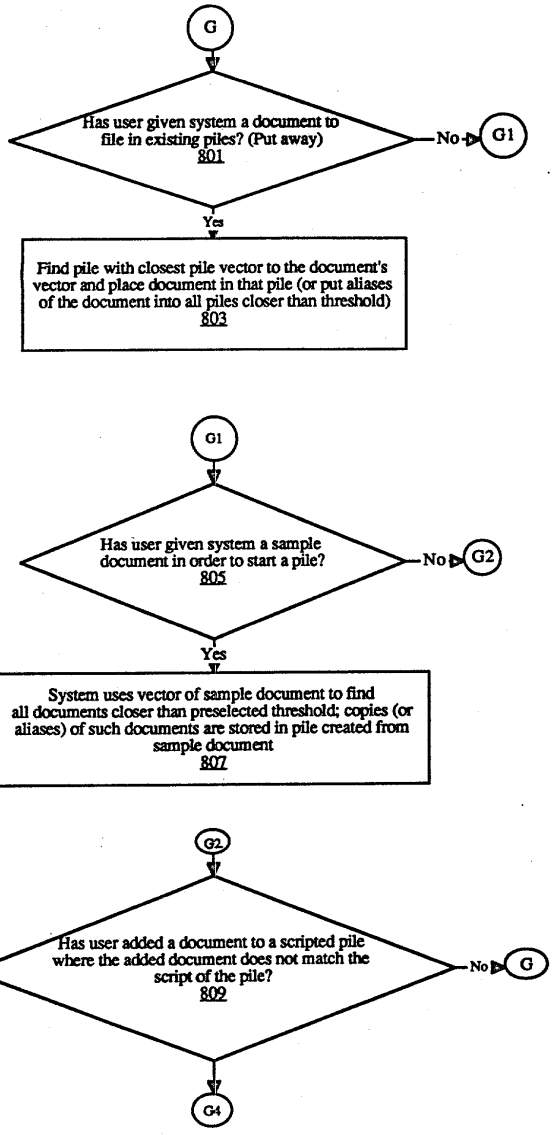

G
Has user given system a document to file in existing piles? (Put away)
801
No
G1
Yes
Find pile with closest pile vector to the document's vector and place document in that pile (or put aliases of the document into all piles closer than threshold)
803
G1
Has user given system a sample document in order to start a pile?
805
No
G2
Yes
System uses vector of sample document to find all documents closer than preselected threshold; copies (or aliases) of such documents are stored in pile created from sample document
807
G2
Has user added a document to a scripted pile where the added document does not match the script of the pile?
809
No
G
G4

Figure 17 Continued

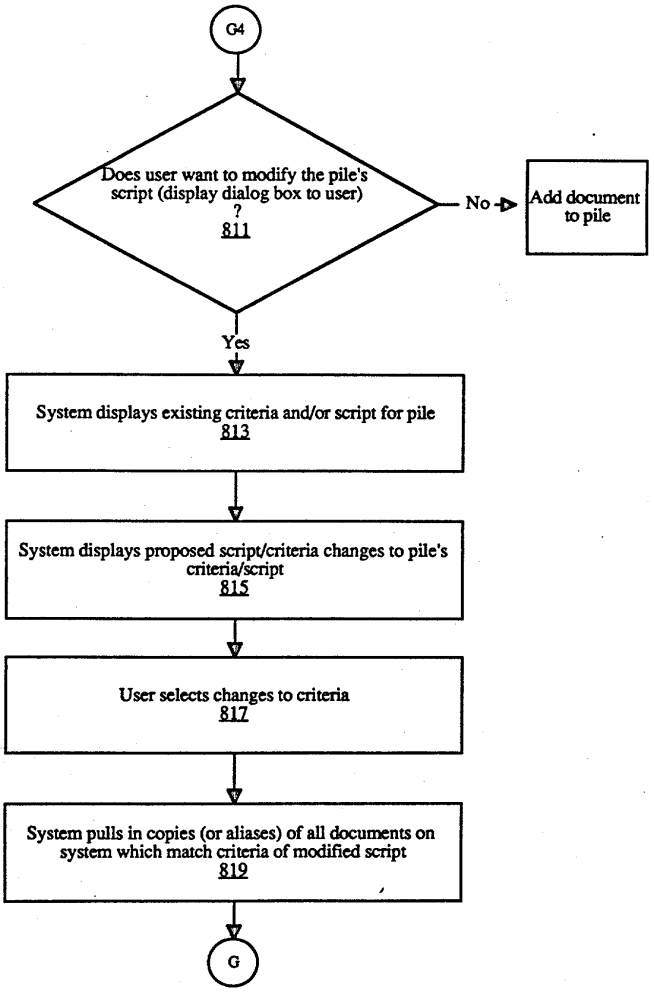
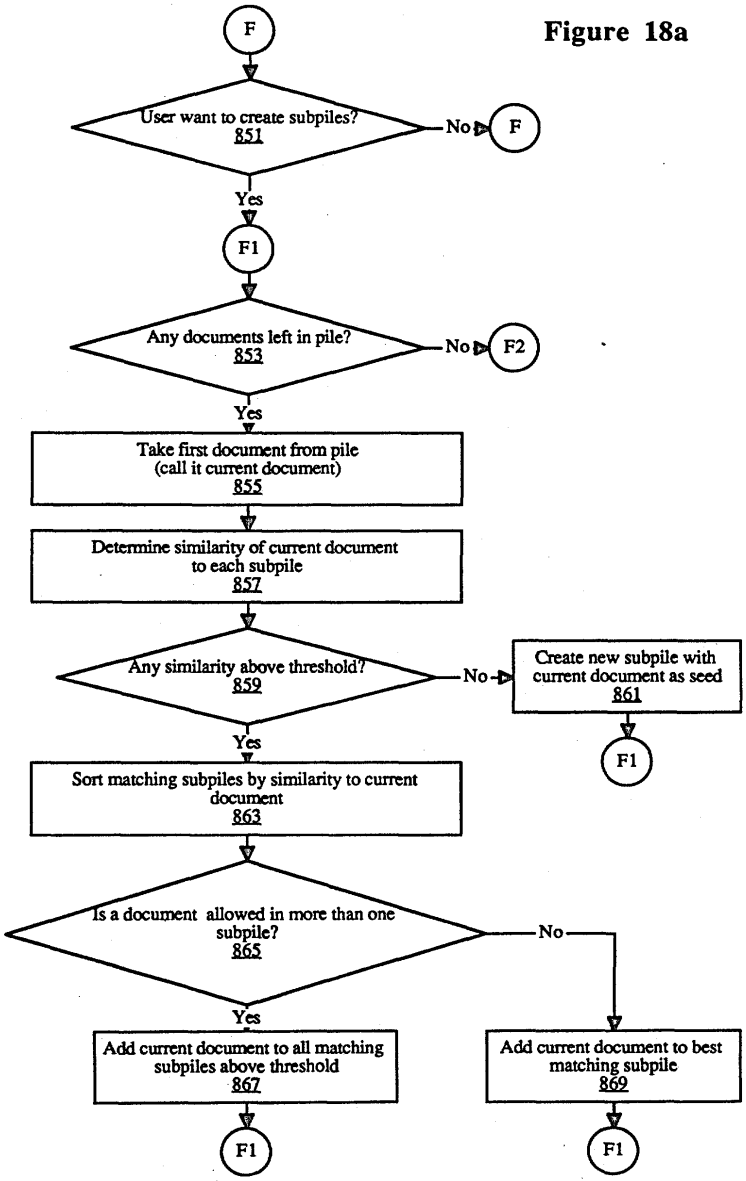


Figure 18a


F
User want to create subpiles?
851
No
F
Yes
F1
Any documents left in pile?
853
No
F2
Yes
Take first document from pile
(call it current document)
855
Determine similarity of current document
to each subpile
857
Any similarity above threshold?
859
No
Create new subpile with
current document as seed
861
F1
Yes
Sort matching subpiles by similarity to current
document
863
Is a document allowed in more than one
subpile?
865
No
Yes
Add current document to all matching
subpiles above threshold
867
F1
Add current document to best
matching subpile
869
F1

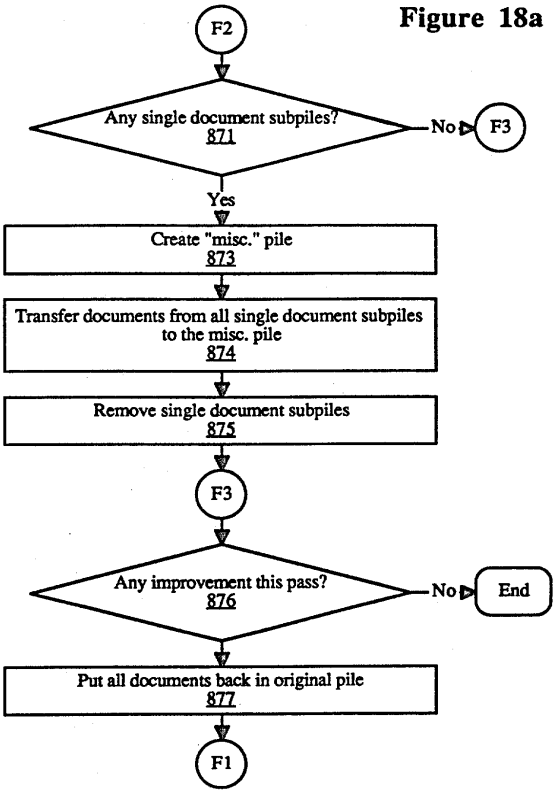



Figure 18a Continued