(12) **United States Patent**
Anwar

(10) **Patent No.:** US 7,450,114 B2
(45) **Date of Patent:** Nov. 11, 2008

(54) **USER INTERFACE SYSTEMS AND METHODS FOR MANIPULATING AND VIEWING DIGITAL DOCUMENTS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 738 days.

(21) Appl. No.: **09/835,458**

(22) Filed: **Apr. 16, 2001**

(65) **Prior Publication Data**

US 2002/0011990 A1   Jan. 31, 2002

(30) **Foreign Application Priority Data**

Apr. 14, 2000   (GB) 0009129.8

(51) **Int. Cl.**
G06F 3/033 (2006.01)
G06F 3/041 (2006.01)

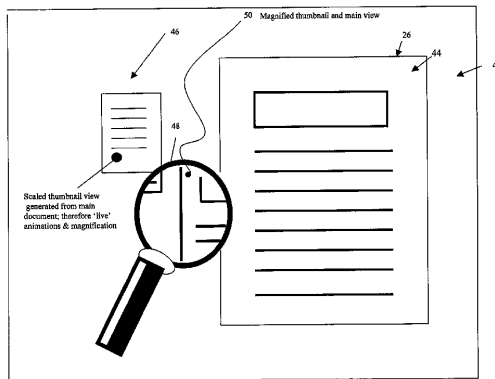(52) **U.S. Cl.** **345/179**; 345/173; 178/18.01

(58) **Field of Classification Search** 345/156–184; 178/18.01, 18.03, 19.01, 20.01
See application file for complete search history.

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(57) **ABSTRACT**

Systems, including handheld computing devices that include system code stored within the memory and adapted to be executed by the processor. The system code can process an input byte stream that is representative of contents to be displayed on the touch sensitive display and can generate a content document file representative of an internal representation of the content. A tool document file may also be stored in the memory and may provide an internal representation of a document providing an image that is representative of a graphical tool. Associated with a tool document can be tool code that is capable of processing the content document file to create an internal representation of the contents that presents the content in a manner that achieves a display effect associated with the tool. The device will also include parsing code that processes the content document file, the tool document file, and the processed internal representation to generate a screen document for display on the touch sensitive display in a manner that portrays the display effect.

5 Claims, 11 Drawing Sheets

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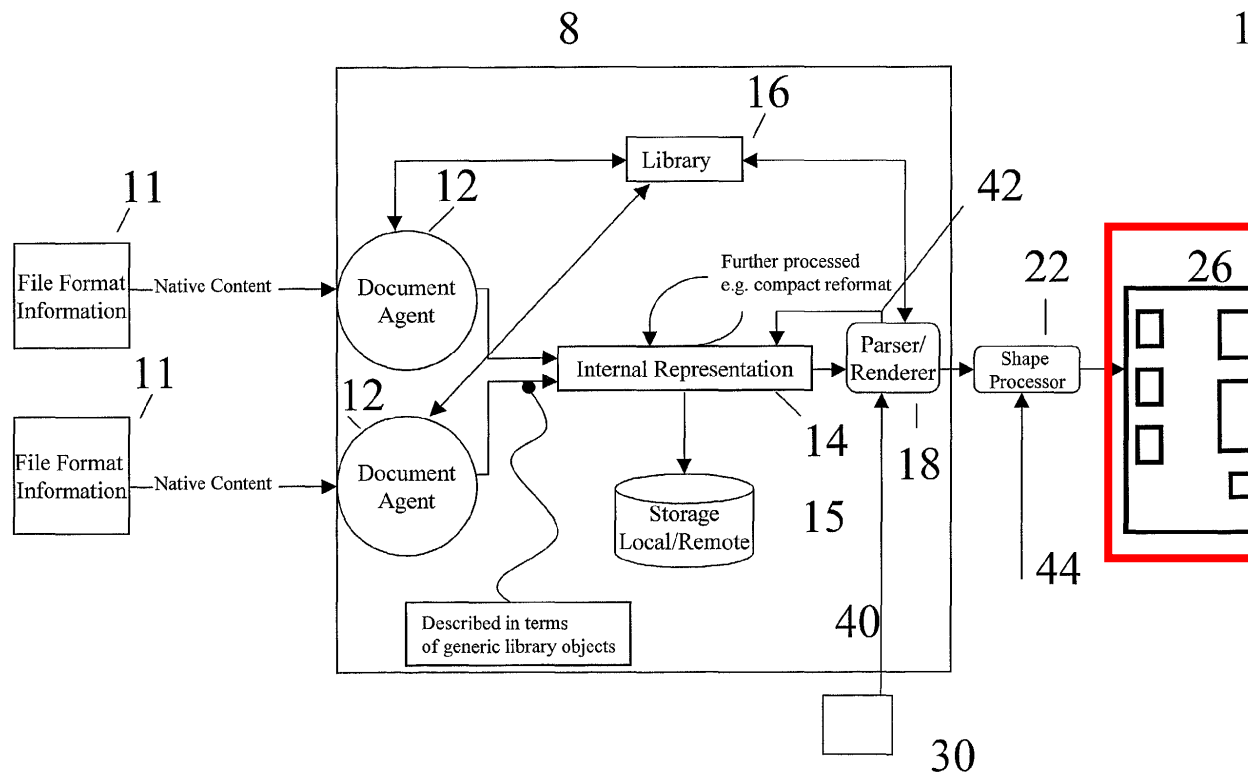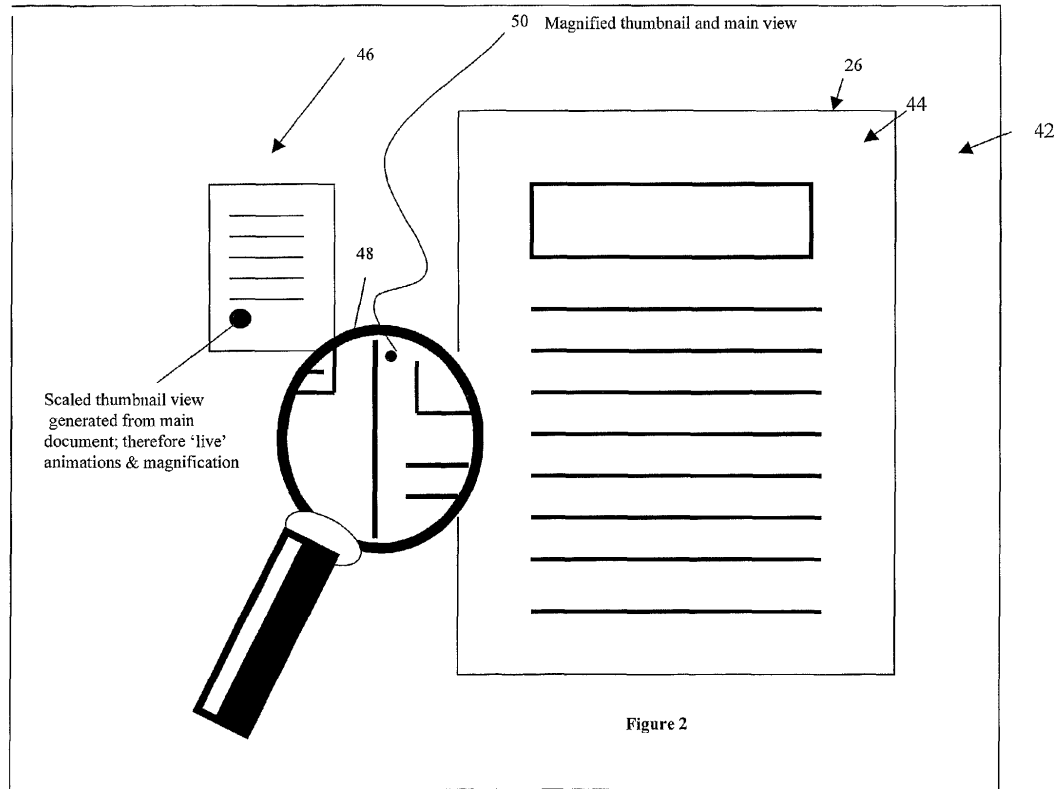
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8

1

16

Library

11

12

42

File Format Information ──Native Content──▶ **Document Agent**

Further processed e.g. compact reformat

22

26

11

12

File Format Information ──Native Content──▶ **Document Agent**

Internal Representation

Parser/ Renderer

Shape Processor

14

18

15

Storage Local/Remote

40

Described in terms of generic library objects

30

44

Figure 1

50　Magnified thumbnail and main view

46

26

44

42

48

Scaled thumbnail view
generated from main
document; therefore 'live'
animations & magnification

Figure 2

Interaction still possible
in thumbnail, main view,
and magnification

26

"bubble" thumbnails

66

54

64

44

62

60

68

70

72

Figure 3

Current view

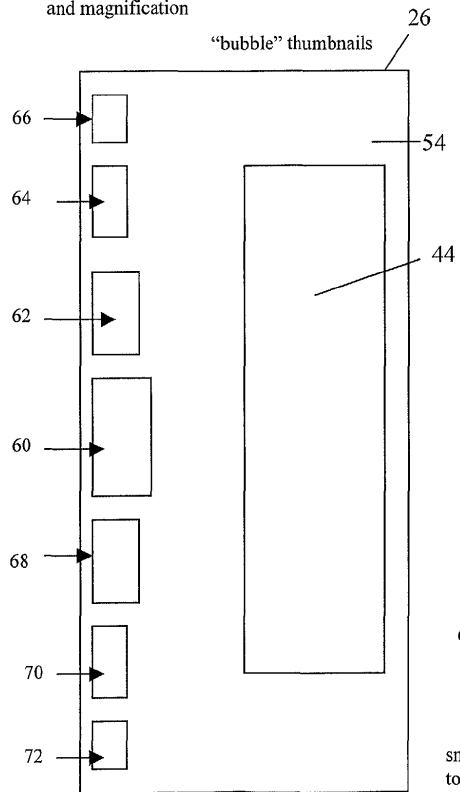smaller views proportional
to 'distance' from current page

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