

thread 246d may simply cease transmitting a file to some destination if an associated security code is not received first.

A pass/fail security key 246e may include operation of an executable 80 to determine whether some security access criterion has been met. Successful execution of the process 246e or thread 246e may be required for any user seeking to send, receive, or otherwise use information in a document 90 protected by security data 74 in a security image 120.

From the above discussion, it will be appreciated that the present invention provides an apparatus and method for assuring security of a document regardless of the form into which the document may be embodied. Moreover, the security information remains regardless of translation of the document between forms, particularly between photocopied hard copies and scanned electronic copies, and between electronic copies in different storage devices.

The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative, and not restrictive. The scope of the invention is, therefore, indicated by the appended claims, rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

What is claimed and desired to be secured by United States Letters Patent is:

1. A machine for providing media-independent security for a document, the machine comprising:

- a processor programmed to execute instructions effective to create a document file and security instructions effective to create a security code; and
- a memory device operably connected to the processor to store the document file, the memory device comprising:
 - a security executable comprising the security instructions to be executed by the processor;
 - a first block storing a substantive portion containing data corresponding to a readable image, readable by a user, and adaptable to be output by the processor as part of a document,
 - a second block storing a format portion containing data corresponding to a layout of the document effective to be incorporated with the document by the processor for presentation to a user, and
 - a third block storing a security portion, corresponding to the security code and independent from the substantive portion, the security portion containing data corresponding to a security image effective to be output by the processor as an inseparable part of the document, independent of medium, but rendered by the processor to be output as an image, visually undetectable and visually unreadable by a user.

2. The machine of claim 1, further comprising an input device operably connected to the processor to provide an input signal selected by a user, the input signal corresponding to security data to be encoded in the security portion to correspond to the security code.

3. The machine of claim 2, further comprising an output device operably connected to the processor to receive an output signal corresponding to the document file, the output device being adaptable to output a document corresponding to the document file in a medium adaptable to render the substantive portion readable by a user and the security portion readable only at a resolution greater than the resolution of human vision.

4. The machine of claim 1, further comprising an output device operably connected to the processor to receive an

output signal corresponding to the document file, the output device being adaptable to output a document corresponding to the document file in a medium adaptable to render the substantive portion readable by a user and the security portion readable only at a resolution greater than the resolution of human vision.

5. The machine of claim 4 wherein the output device further comprises a printer having a resolution sufficient to print a pattern of marks at a resolution greater than that of the eye of a user.

6. The machine of claim 4 wherein the output device further comprises a monitor having a screen to output a substantive image corresponding to the substantive portion, independent from the security portion, and readable by a user.

7. The machine of claim 1 further comprising:

a scanner operably connected to the processor to read a hard copy of the document into a bit map to transfer the document to document data corresponding to the substantive portion and the security portion independent from the substantive portion; and

the processor programmed to execute a document processor adapted to read the substantive portion and the security portion of the document data.

8. The machine of claim 7 wherein the document processor further comprises executables effective to read and store the substantive portion and the security portion independently from one another.

9. The machine of claim 7 wherein the bit map comprises a security pattern, encoded in binary symbols corresponding to the security portion.

10. The machine of claim 7 wherein the processor is further programmed to execute a security executable, the security executable comprising a set of instructions effective to operate on the security portion, and wherein the security data corresponds to security information input in plain text selected by a user to be encoded by the security executable for placement in the security portion of the document.

11. The machine of claim 10 wherein the security executable further contains a set of instructions effective to convert the security plain text to security binary data associated with a pattern selected by a user as a part of the security information, and included in the security portion.

12. The machine of claim 1 wherein the processor is further programmed to execute a palette module effective to present a pattern encoding palette to a user for selecting a pattern for encoding the security portion.

13. The machine of claim 1 wherein the processor is further programmed to execute a security data input module effective to receive inputs from a user, the inputs corresponding to security data to be encoded in the security portion.

14. The machine of claim 1 wherein the processor is further programmed to execute a word processor effective to read and write data corresponding to the substantive portion between the processor, an input device for receiving inputs from a user, and an output device for outputting the document to a user.

15. The machine of claim 1 wherein the processor is programmed to create the document file as objects including at least two objects selected from the group consisting of a background object, an image object, and a watermark object.

16. The machine of claim 15 wherein the background object, image object, and watermark object are associated with a background plane, an image plane, and a watermark plane, respectively.

17. The machine of claim 1 wherein the security portion comprises a bit map representation of a security pattern encoding in binary symbols security data input to the processor.