

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EARLY WARNING SERVICES, LLC,

Petitioner,

v.

INTELLECTUAL VENTURES II, LLC,

Patent Owner.

Case No. IPR2024-01221

U.S. Patent No. 7,314,167

PATENT OWNER'S PRE-INSTITUTION SUR-REPLY

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PATENT OWNER'S EXHIBIT LIST

Ex. 2001	Declaration of Kai Johnson
Ex. 2002	Resume of Kai Johnson
Ex. 2003	" <i>Embedding Of Any Type Of Data In Images Based On A Human Visual Model And Multiple-Based Number Conversion</i> ," Da-Chun Wu and Wen-Hsiang Tsai, Pattern Recognition Letter, Volume 20, Issue 14, December 1999, Pages 1511-1517
Ex. 2004	"Lossless Generalized-LSB Data Embedding," Celik, Mehmet Utku, et al., <i>IEEE transactions on image processing</i> 14.2 (2005): 253-266
Ex. 2005	"Lossless Data Embedding For All Image Formats," Fridrich, Jessica, Miroslav Goljan, and Rui Du. In <i>Security and watermarking of multimedia contents IV</i> (Vol. 4675, pp. 572-583). SPIE, 2002
Ex. 2006	<i>Embedding Data in 3D Models</i> , R. Ohbuchi et al., IBM Japan Tokyo Research Laboratory, Interactive Distributed Multimedia Systems and Telecommunication Services: 4th International Workshop, IDMS'97 Darmstadt, Germany, September 10–12, 1997 Proceedings 4, Springer Berlin Heidelberg, 1997
Ex. 2007	<i>Embedding Biometric Identifiers In 2D Barcodes For Improved Security</i> , Noore, Afzel, Nikhil Tungala, and Max M. Houck. <i>Computers & Security</i> 23.8 (2004): 679-686
Ex. 2008	Data hiding in image and video. II. Designs and applications," Wu, Min, Heather Yu, and Bede Liu. <i>IEEE Transactions on Image Processing</i> 12.6 (2003): 696-705
Ex. 2009	Symbol SPT 1800 Series Product Reference Guide
Ex. 2010	Symbol SPT 1700 Series Product Reference Guide
Ex. 2011	Introduction to Bar Codes for the Automated Laboratory
Ex. 2012	Image Definition - Merriam Webster
Ex. 2013	FDIC Bulletin

Ex. 2014	Supplemental Declaration of Kai Johnson
Ex. 2015	ISO/IEC 15420-2000 standard
Ex. 2016	Ralston, A., & Reilly, E. D. (Eds.). (1993). <i>Encyclopedia of computer science</i> (3rd ed.). Van Nostrand Reinhold. p. 369
Ex. 2017	Advanced Encryption Standard (AES), 2001
Ex. 2018	Reading QR Codes Without a Computer
Ex. 2019	<i>American National Standard Code for Information Interchange</i> , American National Standards Institute, Inc.

I. Embedding Information In An Image Is Different From Encryption

Petitioner erroneously equates "encrypted" with "embedded," basing numerous arguments on this false premise. As Patent Owner's (PO's) expert explains in his Supplemental Declaration, "encrypted" and "embedded" have different meanings. Ex. 2014, ¶¶ 10-19 (explaining "encryption") and 20-32 (explaining "embedding"). The '167 Patent likewise uses these terms differently. In the '167 Patent, "embedding" (hiding) information in an image is required, while encryption is an optional feature that "may" be included. From the '167 Patent "Summary":

[T]he apparatus includes an image capture device configured to capture an image having information embedded therein, ... a processor configured to: verify the user based on the input information to ensure that the user is authorized to use the apparatus, and ...

... The processor may also be configured to decode the information embedded in the image ... by using an encryption, decryption or ... Ex. 1001, 3:17-35 (emphasis added)

See also, id., at 7:1-5 ("If the image 340 has been generated using an encryption or decryption algorithm, the derivation process may correspond to the encryption or decryption algorithm used to create the information") (emphasis added).

Consistent with the Summary, independent claim 1 recites an image "having embedded information therein" while "decryption" first appears in dependent claim 3. The doctrine of claim differentiation underscores that "embedding" and "encryption" are different in the '167 Patent, and that encryption is not required in claim 1. Ex. 2014, ¶¶ 29, 46.

II. Examples Of Embedding Information In Images (Including Barcode Images)

In his Supplemental Declaration (Ex. 2014, ¶¶21-29), PO's expert explains an example of embedding information in an image, taken from the “Graphical Indicia” article (Ex. 1037, *submitted by Petitioner*). There, an image is partitioned into an array of “blocks,” each of which may be “dark” or “light,” representing a component of the image. Then, the method chooses a halftone pattern based on the color of the block and the information to be encoded in the image, and substitutes the halftone pattern for the block of the image Ex. 1037, 2-3; Ex. 2014, ¶22. The article illustrates the selection of halftone patterns in Fig. 3, reproduced below (left).

Message Block Bits Color	00	01	10	11
Light				
Dark				

Figure 3

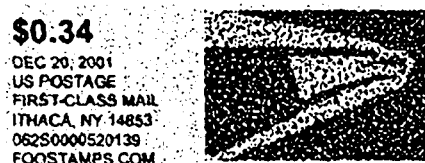


Figure 4

As the article explains, each pixel in the base image is replaced by a halftone pattern selected based on the color of the pixel and the information to be embedded in the image. Figure 4 (above, right) of the “Graphical Indicia” article shows an image of a postmark with information embedded using the halftone pattern. Ex. 2014, ¶27.

As Patent Owner's expert explains, the information embedded in the image could be used *by itself* to provide security for a transaction, *or* could be *combined with encryption* to provide security for a transaction. Ex. 2014, ¶¶29-30.

The '167 Patent also discloses that the captured image can be an image of a bar code with embedded data. *Id.*, 6:49-51. A standard bar code (such as a UPC bar code) includes groupings of black bars and spaces, where each grouping corresponds to a numerical digit. The black bars and spaces representing those digits are not¹ hidden, and are not embedded information. Ex. 2014, ¶¶6-9 and 33. In an example of a barcode image with embedded data from the time of the '167 Patent, the intensity of certain pixels within the black bars is varied to imperceptibly hide information. Ex. 2007, 3 (information "embedded into the black bar of the 2D barcode image" where "[t]he embedding process replaces the intensity value of the selected barcode pixels with, I and M bits ...") Thus, in the example, the barcode image contains both (i) unhidden bars and spacing corresponds to numerical digits, and (ii) embedded (hidden) information contained in selected pixels of the black bars. Ex. 2014, ¶32.

III. Petitioner Construction Renders The Claim Term "Embedding" Superfluous

Petitioner asserts that "embedded" refers to "any information derived from a barcode, whether encrypted, unencrypted, hidden, or unhidden and provided for any purpose." Reply, at 4. Under Petitioner's interpretation, claim 1 could have simply

¹ The Reply argues that "PO's construction of "embedded reads on conventional barcodes, which contain hidden information." Reply, note 1. PO disagrees. Nothing about the bars and spaces in a conventional barcode is hidden. The widths of the bars and spaces are in plain view, can be read by human or a conventional bar code scanner, and therefore offer no level of security. Ex. 2014, ¶¶6-9 and 33.

referred to an "*image having information therein*" -- which would have covered "any" information "derived from" a bar code. But that is not what the claim says; rather, the claim recites an "*image having embedded information therein.*" Petitioner's proposed construction affords no meaning to the claim term "embedded," impermissibly rendering it superfluous.²

IV. The Reply Conflates Embedding Data In An Image With Embedding Data In A Code

The Reply paraphrases several new exhibits showing the embedding of information *in a barcode*. Reply, at 3-4. Here, Petitioner's argument departs from the claim language, which speaks of *embedding* information in an *image* rather than in a *code*. There is a material difference between embedding information *in a barcode*, and embedding information in *an image (such as an image of a barcode.)* Here, the claims recite an "*image* having information *embedded* therein," and the claim language must be interpreted in that context. While "embedded" may be used in the literature in one way when referring to embedding information *in images* and differently when referring to embedding information *in codes*, only the former is relevant here.

² See, e.g., *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950-951 (Fed. Cir. 2006)(claims are interpreted with an eye toward giving effect to all terms in the claim); *Elekta Instrument S.A. v. O.U.R. Scientific Int'l, Inc.*, 214 F.3d 1302, 1305, 1307 (Fed. Cir. 2000) (rejection interpretation rendering claim term superfluous).

V. The '167 Patent Disparaged Systems That Relied Solely On User Information Like A PIN For Security.

The Reply (at 2) argues that the "verify the user" step already "weave[s] the 'provide security' limitation into the claims." Petitioner's reading of "provid[ing] security" is inconsistent with the '167 Patent as a whole. The "verify the user" step is met simply by having a user enter a static PIN. However, the '167 Patent *disparaged* systems based on static PINs as being "of nominal effectiveness." Ex. 1001, 1:37-38. It would be inconsistent with the specification as a whole to interpret the claims of the '167 Patent such that the *only* "security" required by the claim was met by a system disparaged in the background of the Patent. Claims should not be read so broadly as to encompass prior art distinguished in the specification. *SciMed Life Sys. v. Advanced Cardiovascular Sys.*, 242 F.3d 1337 (Fed. Cir. 2001); *Ekchian v. Home Depot, Inc.*, 104 F.3d 1299, 1304, (Fed. Cir. 1997).

VI. Petitioner's New Exhibits Support PO's Proposed Construction

As explained in the Supplement Declaration of PO's expert, each of the additional exhibits submitted with the Reply supports PO's position that "embedded" is a term of art that refers to hiding information in images. Ex. 2014, ¶¶47-71.

Respectfully submitted,

Dated: December 19, 2024

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CERTIFICATE OF SERVICE

The undersigned certifies that pursuant to 37 C.F.R. § 42.6(e), a copy of the foregoing **PATENT OWNER'S PRE-INSTITUTION SUR-REPLY** was served via email (as consented to by counsel) on December 19, 2024 to lead and backup counsel of record for Petitioners as follows:

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