Petitioners' Demonstratives

ASSA ABLOY AB et al., v.
CPC Patent Technologies PTY LTD.

IPR2022-01006, IPR2022-01045, IPR2022-01089

US Patent Nos. 9,665,705 and US 9,269,208

September 28th, 2023

I. **Overview of the ’705 and ’208 Patents**

II. **Claim Construction: “Biometric Signal”**

III. **Mathiassen Teaches the Series/Duration Limitation**

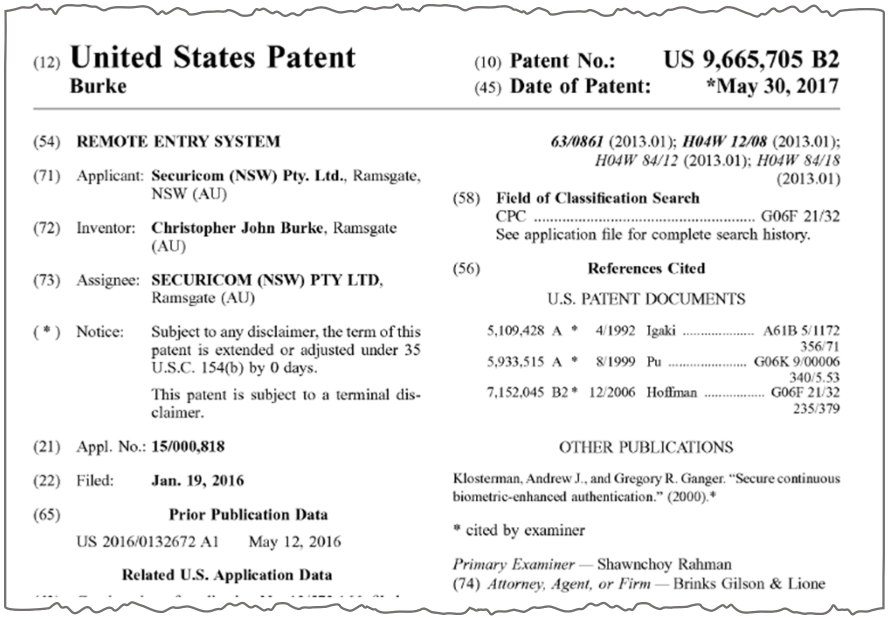
IV. **Mathiassen/Bianco Teach The Mapping and Populating Limitations**

V. **Motivation to Combine Bianco and Mathiassen**

VI. **The Petition Is Not Time Barred**

I. Overview of the ’705 and ’208 Patents

’705/’208 Patents: “Remote Entry System”



(12) **United States Patent**
Burke

(10) **Patent No.:** **US 9,665,705 B2**
(45) **Date of Patent:** ***May 30, 2017**

(54) **REMOTE ENTRY SYSTEM**

(71) Applicant: **Securicom (NSW) Pty. Ltd.**, Ramsgate, NSW (AU)

(72) Inventor: **Christopher John Burke**, Ramsgate (AU)

(73) Assignee: **SECURICOM (NSW) PTY LTD**, Ramsgate (AU)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **15/000,818**

(22) Filed: **Jan. 19, 2016**

(65) **Prior Publication Data**

US 2016/0132672 A1 May 12, 2016

Related U.S. Application Data

63/0861 (2013.01); ***H04W 12/08*** (2013.01); *H04W 84/12* (2013.01); *H04W 84/18* (2013.01)

(58) **Field of Classification Search**
CPC G06F 21/32
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,109,428 A * 4/1992 Igaki A61B 5/1172
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235/379

OTHER PUBLICATIONS

Klosterman, Andrew J., and Gregory R. Ganger. “Secure continuous biometric-enhanced authentication.” (2000).*

* cited by examiner

Primary Examiner — Shawnchoy Rahman
(74) *Attorney, Agent, or Firm* — Brinks Gilson & Lione

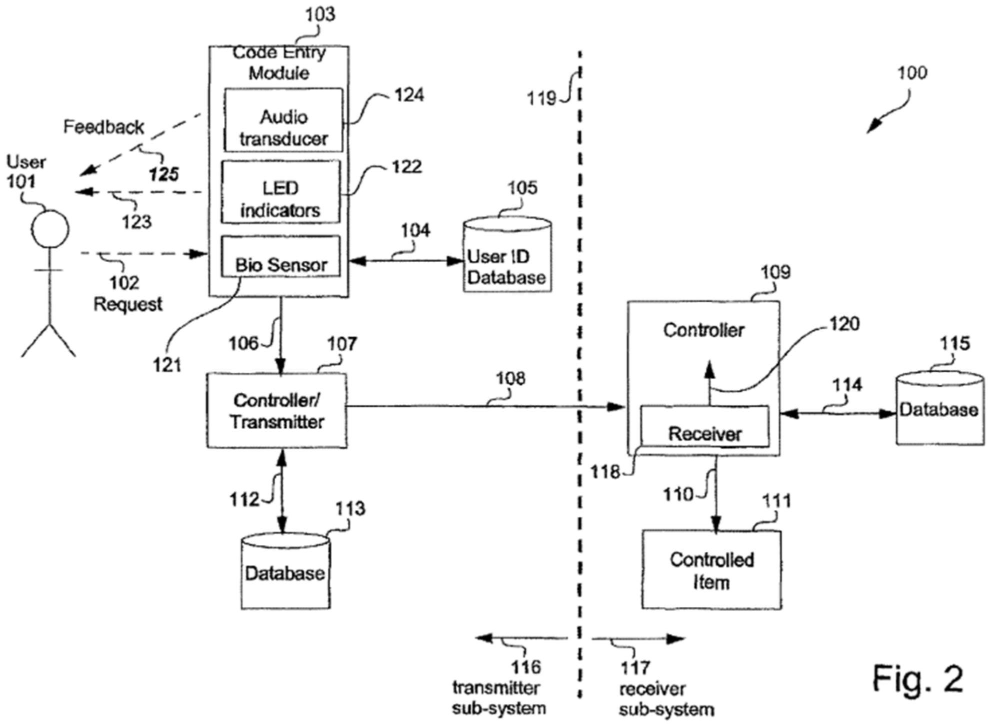


Fig. 2

Ex. 1001, Fig. 2

Paper 2 (Pet.) at 4-8; Ex. 1001, Fig. 2

II. Claim Construction: “Biometric Signal”

Pet. at 9-12; Ex.1005, ¶¶ 45-57; Paper 35 (Reply), 7-12; Ex.1029, ¶¶3-15

Timing: PO Presents Its Claim Construction Theory For the First Time in its POR

“**Patent Owner does not propose any claim constructions** [in its POPR], nor does Patent Owner comment on claim constructions proposed by Petitioner.”

IPR2022-01006, Institution Decision, 41

Patent Owner

“Here, the specification makes clear that a ‘**biometric signal**’ as used in connection with the claimed invention is **a physical attribute of the user**”

Paper 31 (POR), 10

Pet. at 9-12; Ex.1005, ¶¶ 45-57; Paper 34 (Reply), 7-12; Ex.1029, ¶¶3-15

Timing: Petitioners Are Permitted to Rebut PO’s New Claim Construction Arguments

> “The **patent owner may** then respond to these positions and/or **propose additional terms for construction**…**The petitioner may respond to any such new claim construction issues raised by the patent owner**, but cannot raise new claim construction issues that were not previously raised in its petition.”

Patent Trial and Appeal Board Consolidated Trial Practice Guide (Nov. 2019), 44-45

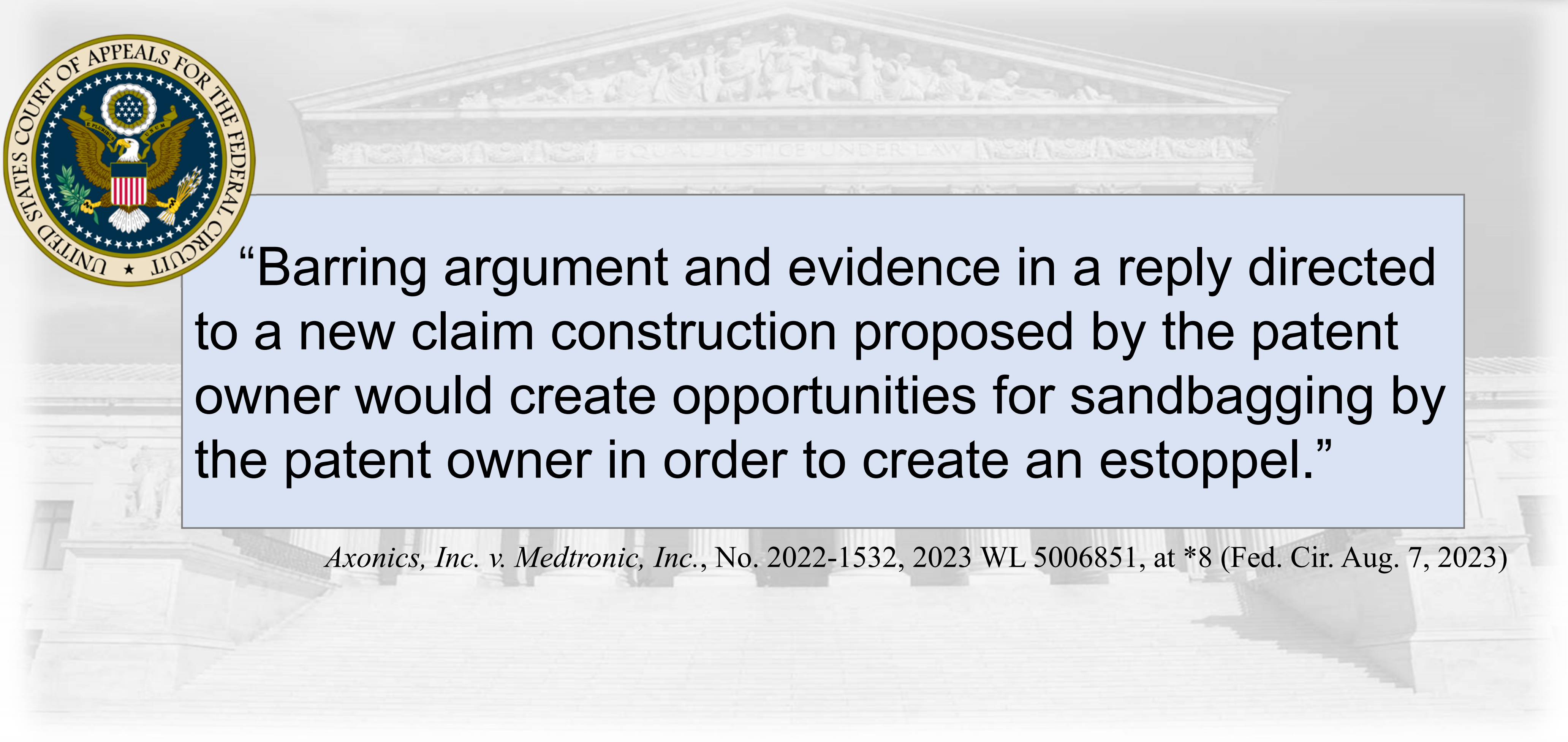
Patent Owner

> “Petitioners’ Reply offers an untimely and erroneous construction of “biometric signal” in a hindsight-based effort to salvage their invalidity challenge.”

Paper 41 (PO Surreply), 1

Pet. at 9-12; Ex.1005, ¶¶ 45-57; Paper 34 (Reply), 7-12; Ex.1029, ¶¶3-15

Timing: Petitioners Are Permitted to Rebut PO’s New Claim Construction Arguments



> “Barring argument and evidence in a reply directed to a new claim construction proposed by the patent owner would create opportunities for sandbagging by the patent owner in order to create an estoppel.”

Axonics, Inc. v. Medtronic, Inc., No. 2022-1532, 2023 WL 5006851, at *8 (Fed. Cir. Aug. 7, 2023)

Claim Construction: “Biometric Signal”

ASSA ABLOY

Petitioner

Per its use in the patents, a “biometric signal” is the input and output of a biometric sensor

IPR2022-01006, Petition, 46; Reply, 7-10

Patent Owner

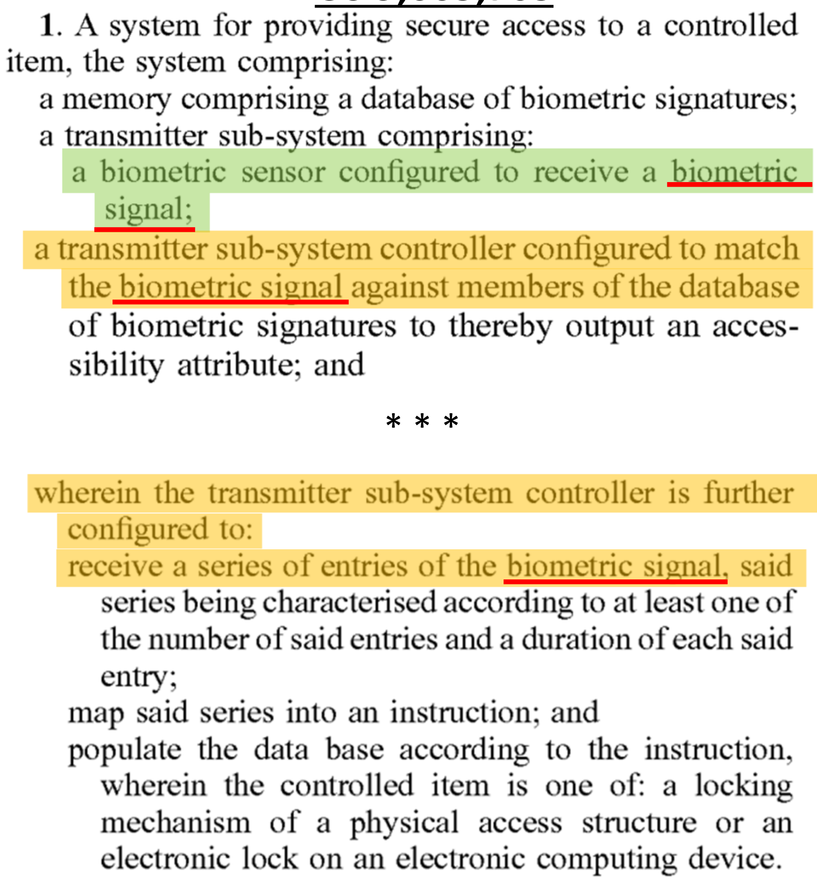
“physical attribute of the user (i.e., fingerprint, facial pattern, iris, retina, voice, etc.)”

IPR2022-01006, POR, 9

Pet. at 10-11, 41-46; Reply at 7-11

Claim Construction: Claims

US 9,665,705



1. A system for providing secure access to a controlled item, the system comprising:

a memory comprising a database of biometric signatures;

a transmitter sub-system comprising:

a biometric sensor configured to receive a biometric signal;

a transmitter sub-system controller configured to match the biometric signal against members of the database of biometric signatures to thereby output an accessibility attribute; and

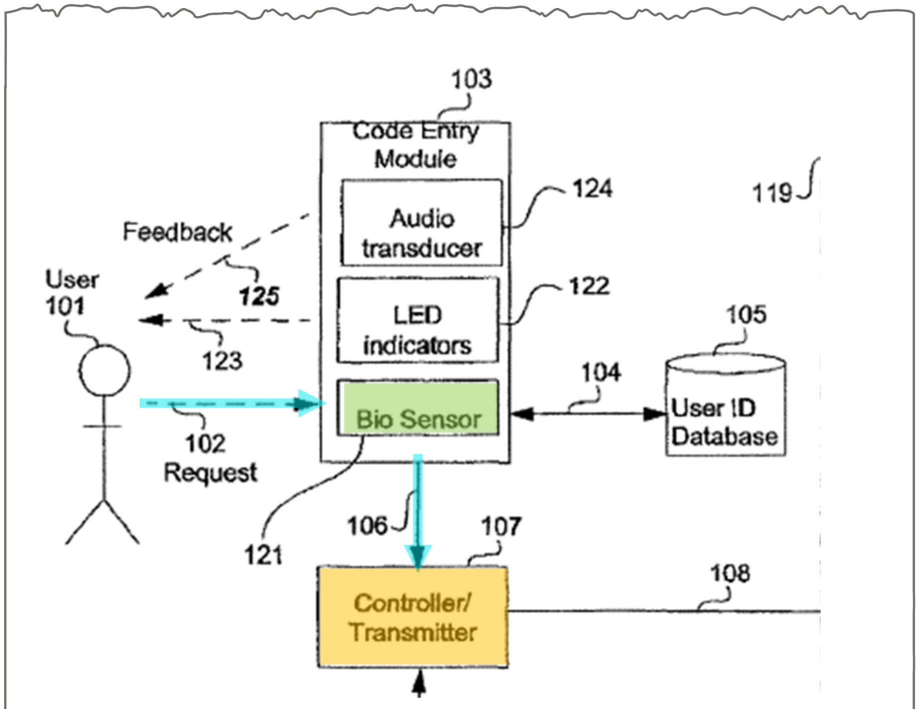
* * *

wherein the transmitter sub-system controller is further configured to:

receive a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

map said series into an instruction; and

populate the data base according to the instruction, wherein the controlled item is one of: a locking mechanism of a physical access structure or an electronic lock on an electronic computing device.

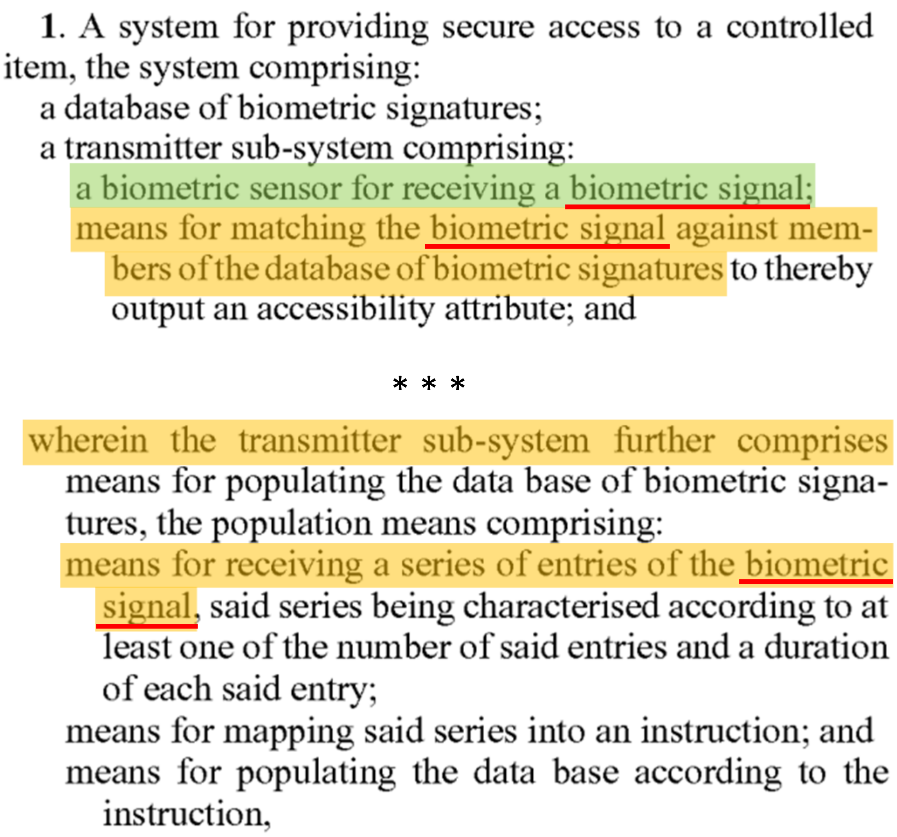


Ex. 1001, Fig. 2 (excerpted and annotated)

Ex-1001 ('705 Patent), Cl.1 (excerpted and annotated); Ex-1001 ('208 Patent), Cl.1 (excerpted and annotated)

Claim Construction: Claims

US 9,269,208



1. A system for providing secure access to a controlled item, the system comprising:

a database of biometric signatures;

a transmitter sub-system comprising:

a biometric sensor for receiving a biometric signal;

means for matching the biometric signal against members of the database of biometric signatures to thereby output an accessibility attribute; and

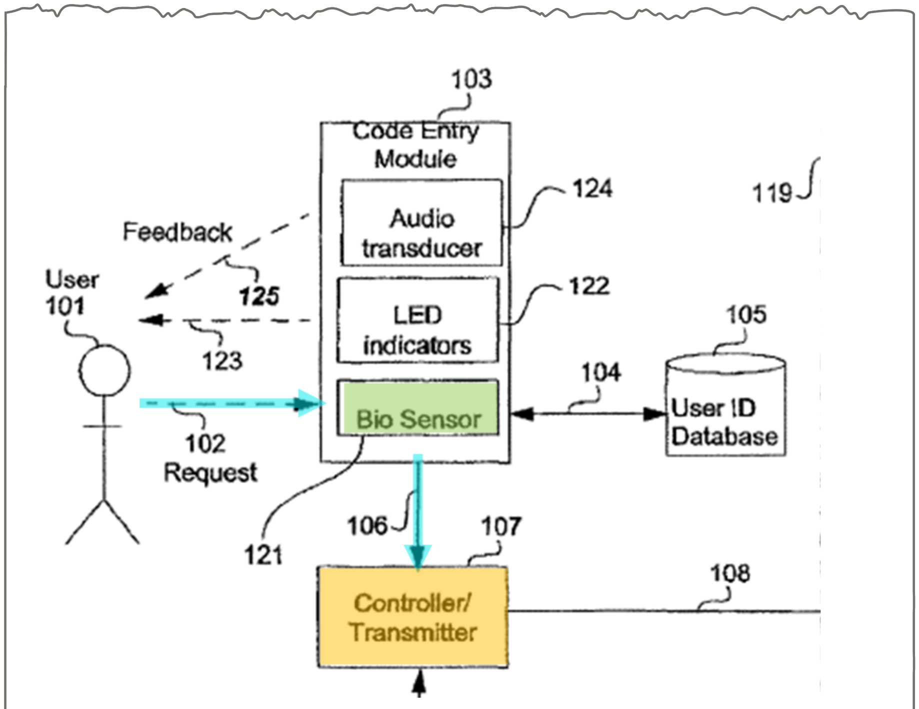
* * *

wherein the transmitter sub-system further comprises means for populating the data base of biometric signatures, the population means comprising:

means for receiving a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

means for mapping said series into an instruction; and

means for populating the data base according to the instruction,

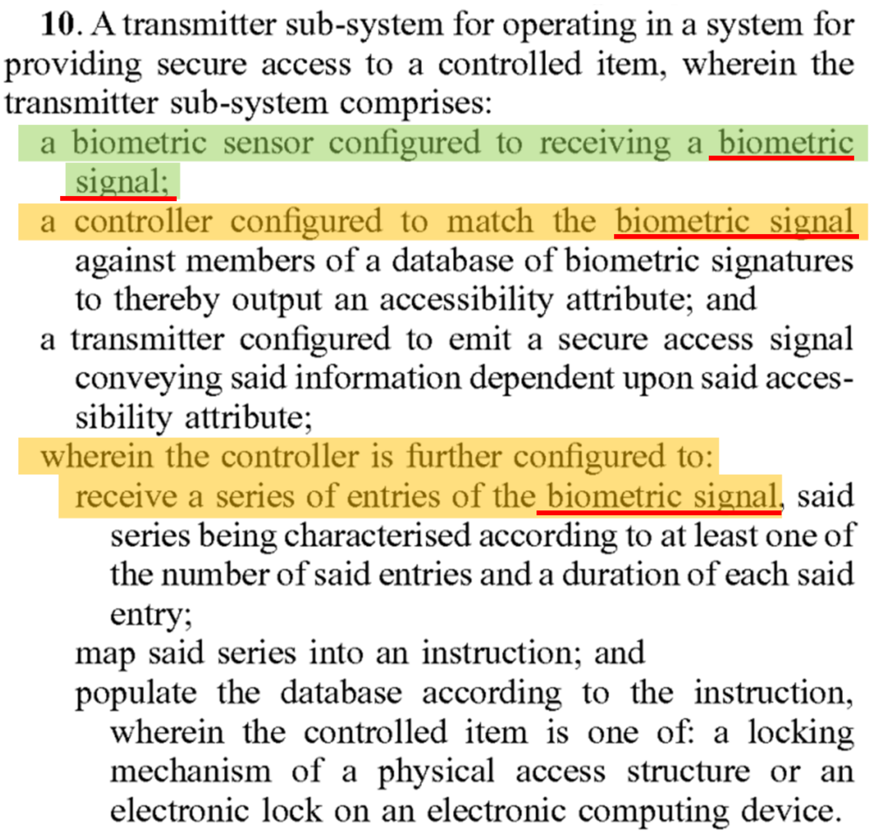


Ex. 1001, Fig. 2 (excerpted and annotated)

Ex-1001 ('705 Patent), Cl.1 (excerpted and annotated); Ex-1001 ('208 Patent), Cl.1 (excerpted and annotated)

Claim Construction: Claims

US 9,665,705



10. A transmitter sub-system for operating in a system for providing secure access to a controlled item, wherein the transmitter sub-system comprises:

a biometric sensor configured to receiving a biometric signal;

a controller configured to match the biometric signal against members of a database of biometric signatures to thereby output an accessibility attribute; and

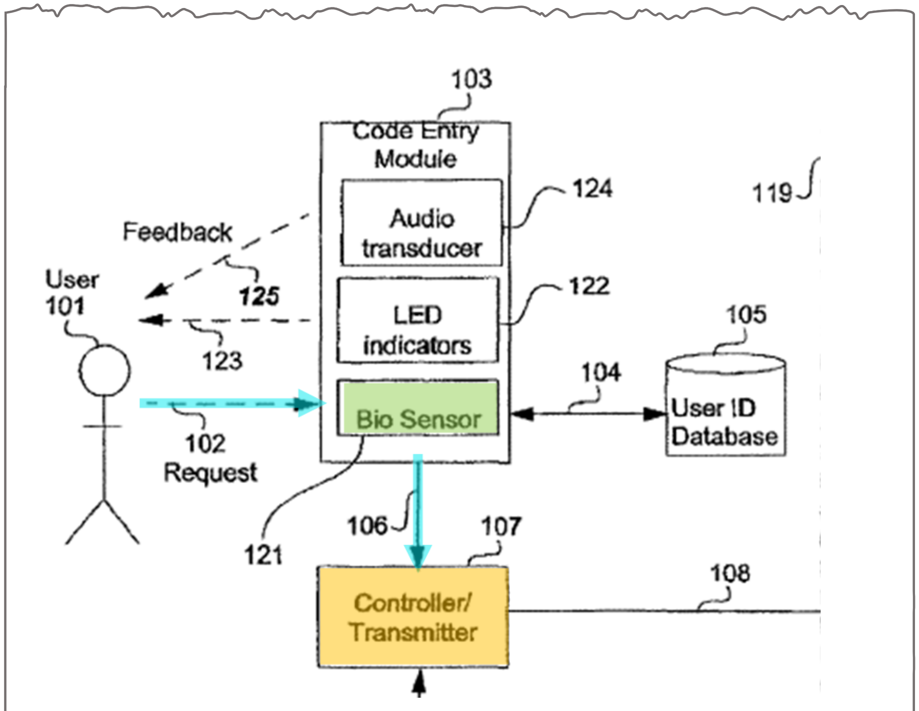
a transmitter configured to emit a secure access signal conveying said information dependent upon said accessibility attribute;

wherein the controller is further configured to:

receive a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

map said series into an instruction; and

populate the database according to the instruction, wherein the controlled item is one of: a locking mechanism of a physical access structure or an electronic lock on an electronic computing device.



Ex. 1001, Fig. 2 (excerpted and annotated)

Ex-1001 ('705 Patent), Cl.10

Claim Construction: “Biometric Signal”

ASSA ABLOY

Petitioner

Challenged Patents describe each of the following using “Biometric Signal”

- A “request…to a corresponding biometric sensor” Ex-1001, 5:54-63
- Illegible finger presses Ex-1001, 13:65-14:10
- Control information by finger presses Ex-1001, 10:56-67
- Authentication by fingerprint Ex-1001, 1:34-39, 8:20-26

Pet. at 45-47; Reply at 5-11; Ex-1001, 1:34-39, 5:54-63, 10:55-11:8, 8:20-26 13:65-14:10

“Biometric Signal” Is A Request To A Biometric Sensor

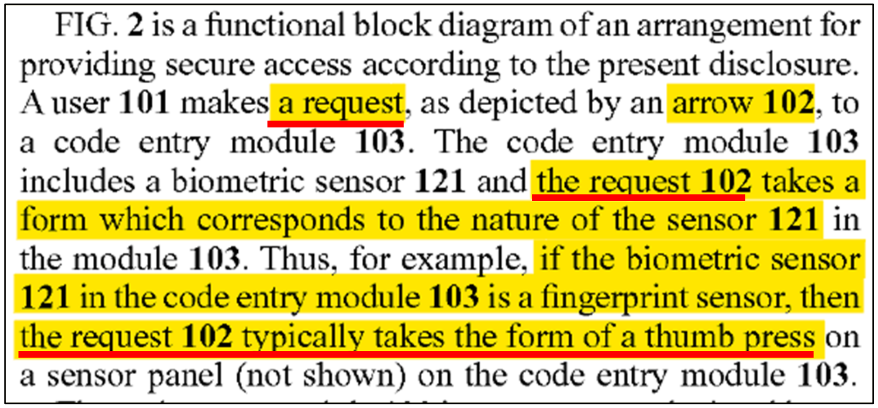
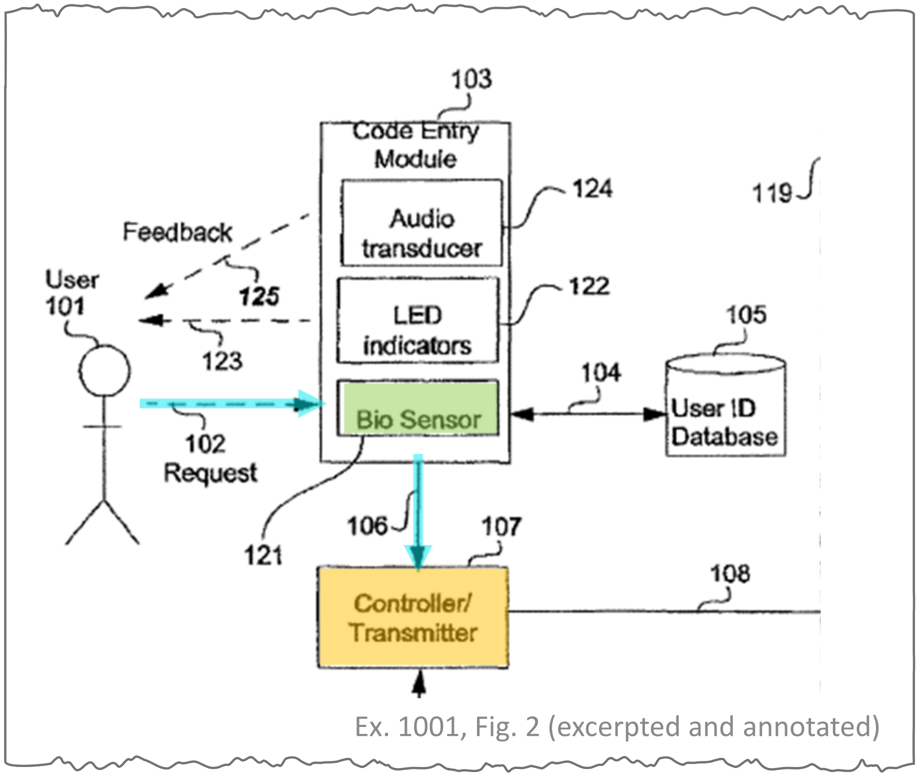


FIG. 2 is a functional block diagram of an arrangement for providing secure access according to the present disclosure. A user **101** makes a request, as depicted by an arrow **102**, to a code entry module **103**. The code entry module **103** includes a biometric sensor **121** and the request **102** takes a form which corresponds to the nature of the sensor **121** in the module **103**. Thus, for example, if the biometric sensor **121** in the code entry module **103** is a fingerprint sensor, then the request **102** typically takes the form of a thumb press on a sensor panel (not shown) on the code entry module **103**.

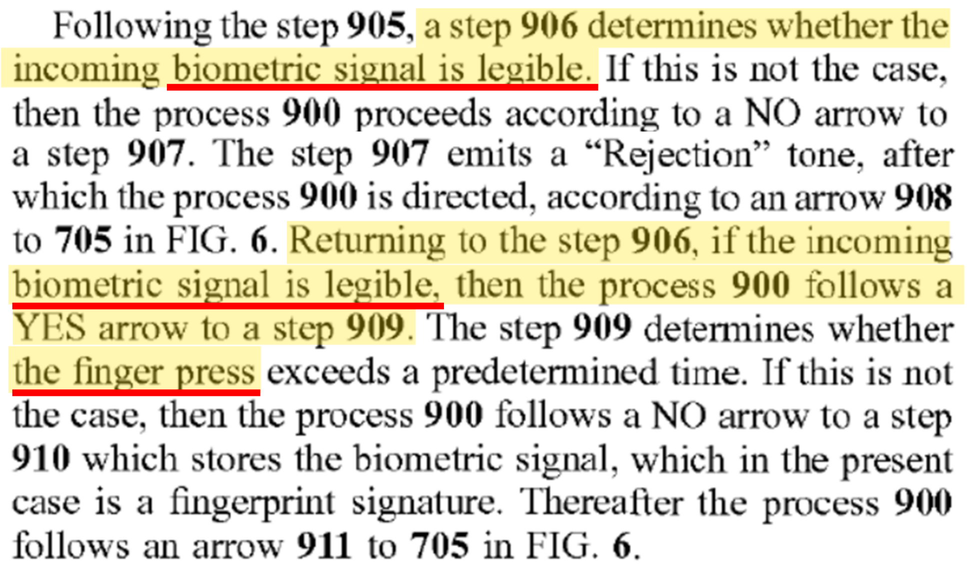
Ex-1001, 5:54-63



Ex. 1001, Fig. 2 (excerpted and annotated)

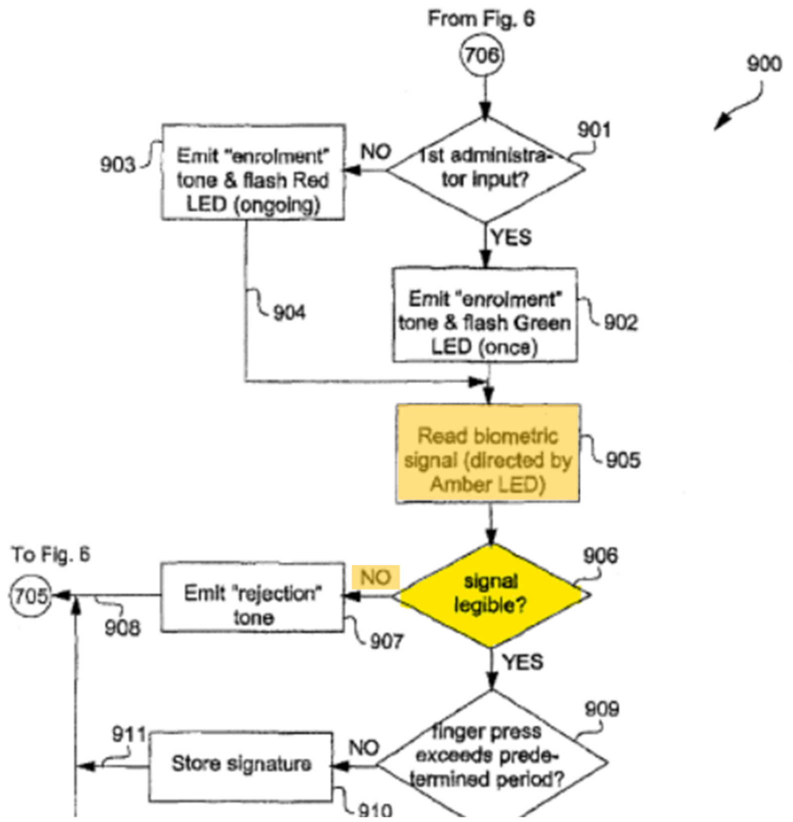
Pet. at 45-47; Reply at 5-11; Ex-1001, 5:54-63, 10:56-67

“Biometric Signal” Can Include Illegible Finger Presses



Following the step **905**, a step **906** determines whether the incoming biometric signal is legible. If this is not the case, then the process **900** proceeds according to a NO arrow to a step **907**. The step **907** emits a “Rejection” tone, after which the process **900** is directed, according to an arrow **908** to **705** in FIG. **6**. Returning to the step **906**, if the incoming biometric signal is legible, then the process **900** follows a YES arrow to a step **909**. The step **909** determines whether the finger press exceeds a predetermined time. If this is not the case, then the process **900** follows a NO arrow to a step **910** which stores the biometric signal, which in the present case is a fingerprint signature. Thereafter the process **900** follows an arrow **911** to **705** in FIG. **6**.

Ex-1001, 13:65-14:10



From Fig. 6
706
900
901
1st administrator input?
NO
903
Emit "enrolment" tone & flash Red LED (ongoing)
YES
904
Emit "enrolment" tone & flash Green LED (once)
902
Read biometric signal (directed by Amber LED)
905
To Fig. 6
705
906
NO
Emit "rejection" tone
signal legible?
908
907
YES
909
911
Store signature
NO
finger press exceeds predetermined period?
910

Ex. 1001, Fig. 9 (excerpted and annotated)

Pet. at 45-47; Reply at 5-11; Ex-1001, 13:65-14:10

"Biometric Signal" Used for Series of Finger Presses

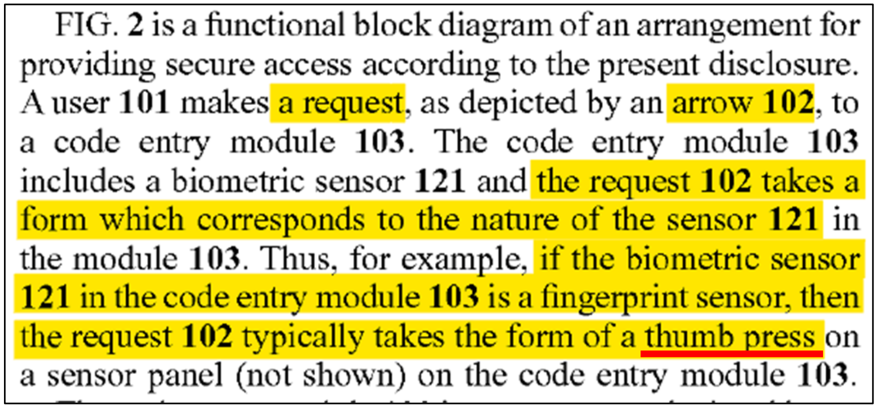


FIG. 2 is a functional block diagram of an arrangement for providing secure access according to the present disclosure. A user 101 makes a request, as depicted by an arrow 102, to a code entry module 103. The code entry module 103 includes a biometric sensor 121 and the request 102 takes a form which corresponds to the nature of the sensor 121 in the module 103. Thus, for example, if the biometric sensor 121 in the code entry module 103 is a fingerprint sensor, then the request 102 typically takes the form of a thumb press on a sensor panel (not shown) on the code entry module 103.

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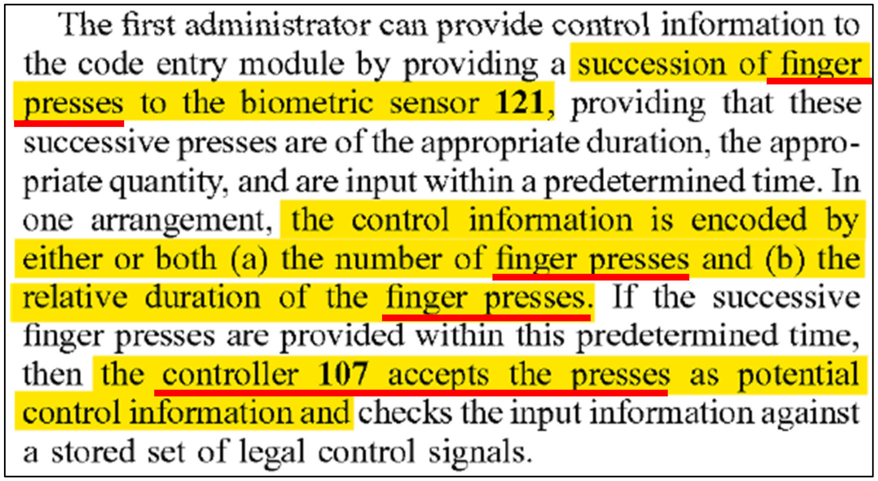
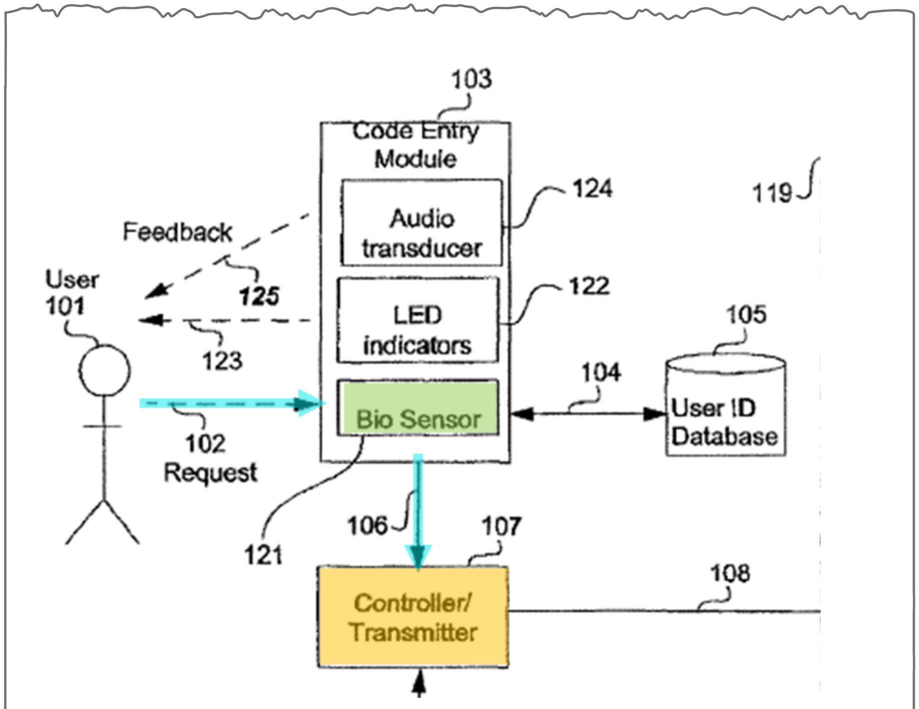
Ex-1001, 5:54-63



The first administrator can provide control information to the code entry module by providing a succession of finger presses to the biometric sensor 121, providing that these successive presses are of the appropriate duration, the appropriate quantity, and are input within a predetermined time. In one arrangement, the control information is encoded by either or both (a) the number of finger presses and (b) the relative duration of the finger presses. If the successive finger presses are provided within this predetermined time, then the controller 107 accepts the presses as potential control information and checks the input information against a stored set of legal control signals.

Ex-1001, 10:56-67



Ex. 1001, Fig. 2 (excerpted and annotated)

Pet. at 45-47; Reply at 5-11; Ex-1001, 5:54-63, 10:56-67

“Biometric Signal” Used for Fingerprint Authentication

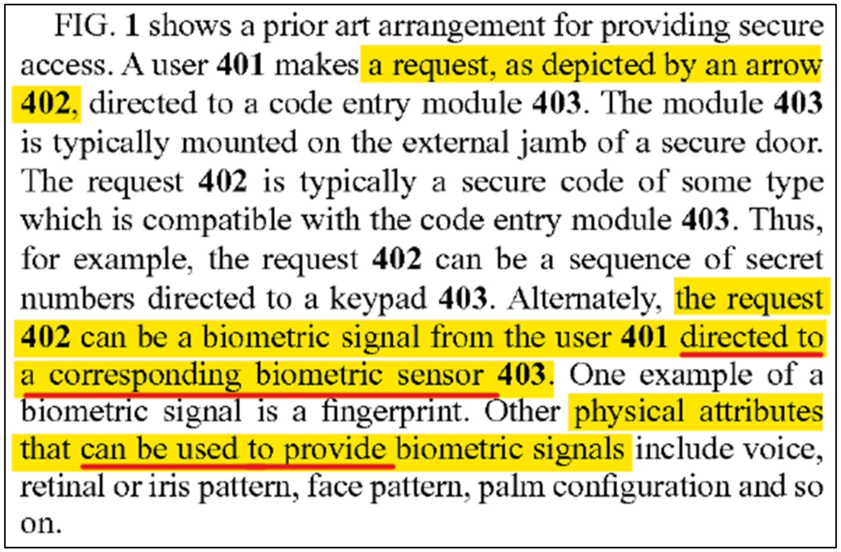
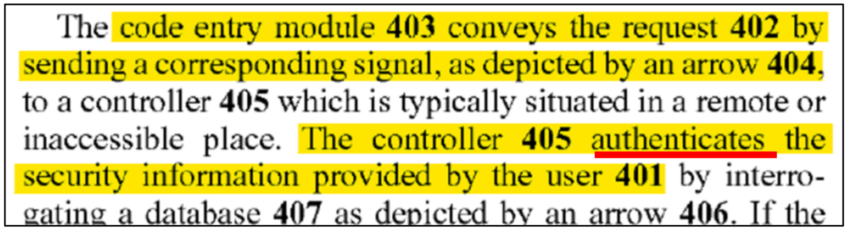


FIG. 1 shows a prior art arrangement for providing secure access. A user **401** makes a request, as depicted by an arrow **402**, directed to a code entry module **403**. The module **403** is typically mounted on the external jamb of a secure door. The request **402** is typically a secure code of some type which is compatible with the code entry module **403**. Thus, for example, the request **402** can be a sequence of secret numbers directed to a keypad **403**. Alternately, the request **402** can be a biometric signal from the user **401** directed to a corresponding biometric sensor **403**. One example of a biometric signal is a fingerprint. Other physical attributes that can be used to provide biometric signals include voice, retinal or iris pattern, face pattern, palm configuration and so on.

Ex-1001, 1:19-33



The code entry module **403** conveys the request **402** by sending a corresponding signal, as depicted by an arrow **404**, to a controller **405** which is typically situated in a remote or inaccessible place. The controller **405** authenticates the security information provided by the user **401** by interrogating a database **407** as depicted by an arrow **406**. If the

Ex-1001, 1:34-39

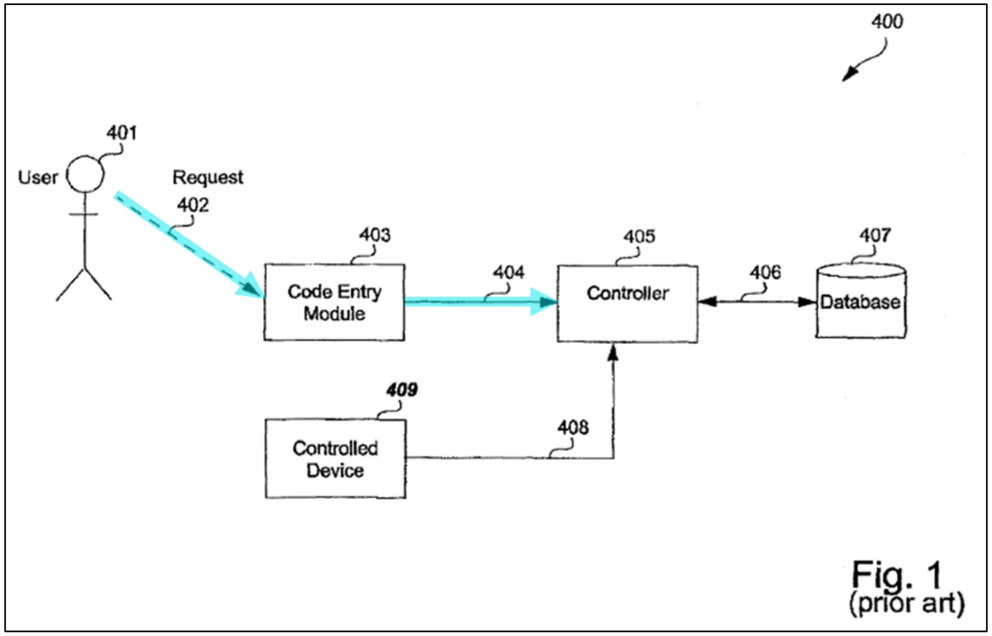


Fig. 1
(prior art)

Ex. 1001, Fig. 1 (annotated)

Pet. at 45-47; Reply at 5-11; Ex-1001, 1:19-39

Lexicography Requires More

Patent Owner

"the specification of the '705 Patent define[s] a biometric signal as a 'physical attribute'…"

But the specification provides no such definition

"To act as its own lexicographer, a patentee must 'clearly set forth a definition of the disputed claim term' other than its plain and ordinary meaning."

Thorner v. Sony Computer Entertainment America LLC, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (*quoting CCS Fitness, Inc. v. Brunswick Corp.,* 288 F.3d 1359, 1366 (Fed. Cir. 2002)).

Reply at 8; POR at 11.

Claim Construction: “Biometric Signal”

Patent Owner

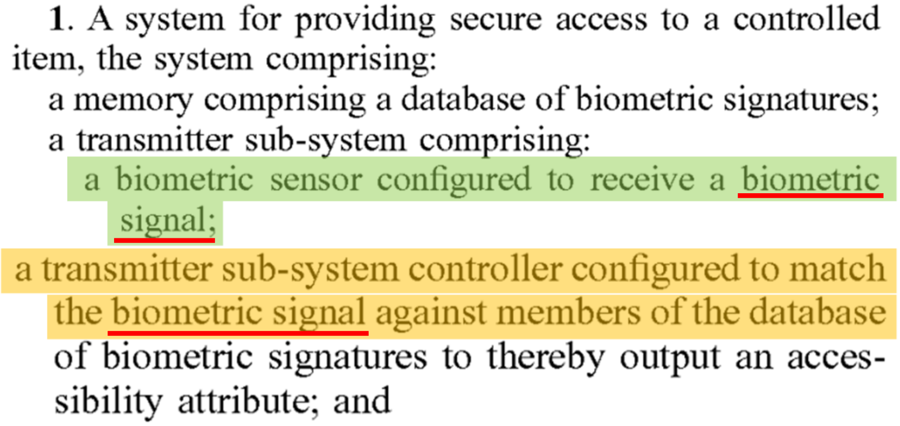
> “merely sensing finger movements for purposes of navigation did not require capturing the fingerprint, i.e., capturing the ridges and valleys of the **entire fingerprint**.”

IPR2022-01006, POR, 35

Reply at 7-11; POR, 35

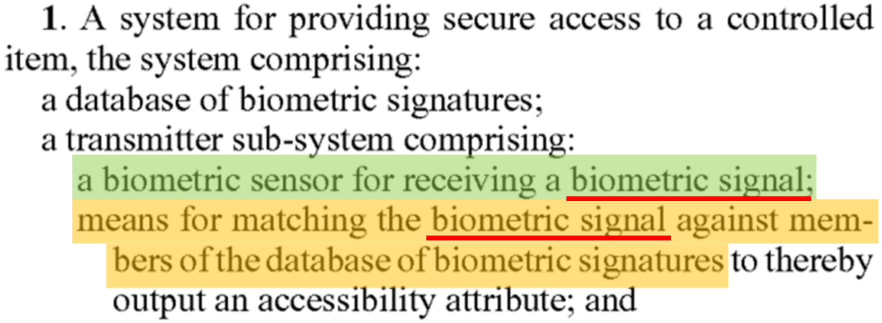
Claims Do Not Require an Entire Fingerprint

US 9,665,705



1. A system for providing secure access to a controlled item, the system comprising:
a memory comprising a database of biometric signatures;
a transmitter sub-system comprising:
a biometric sensor configured to receive a biometric signal;
a transmitter sub-system controller configured to match the biometric signal against members of the database of biometric signatures to thereby output an accessibility attribute; and

US 9,269,208



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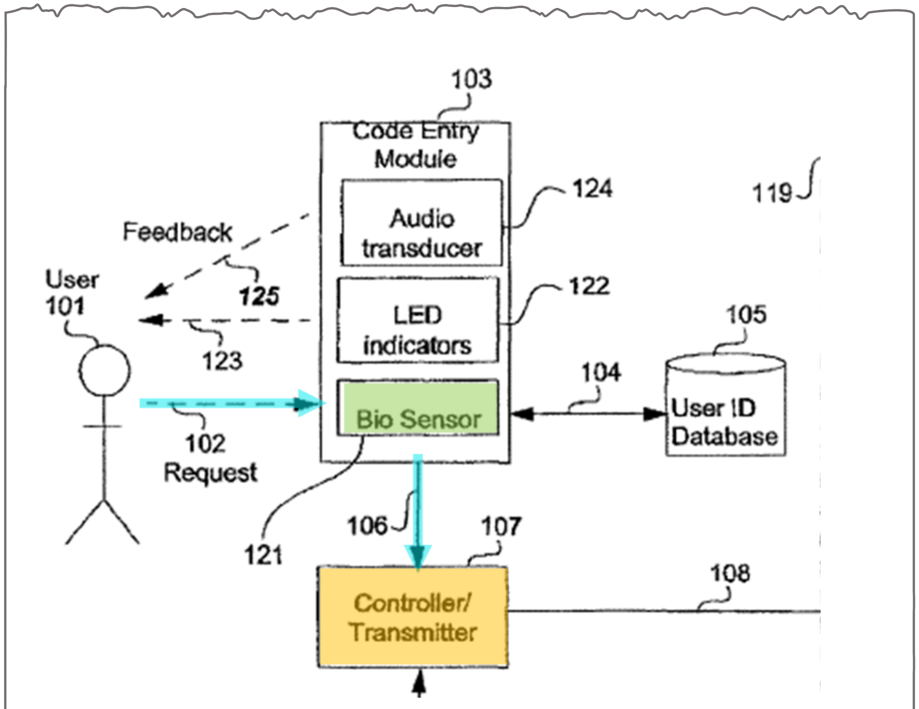

Ex. 1001, Fig. 2 (excerpted and annotated)

Reply, 4-11; Ex-1001 ('705 Patent), Cl.1 (excerpted and annotated); Ex-1001 ('208 Patent), Cl.1 (excerpted and annotated)

Specification Does Not Require an Entire Fingerprint

ASSA ABLOY

Petitioner

Challenged Patents describe each of the following using "Biometric Signal"

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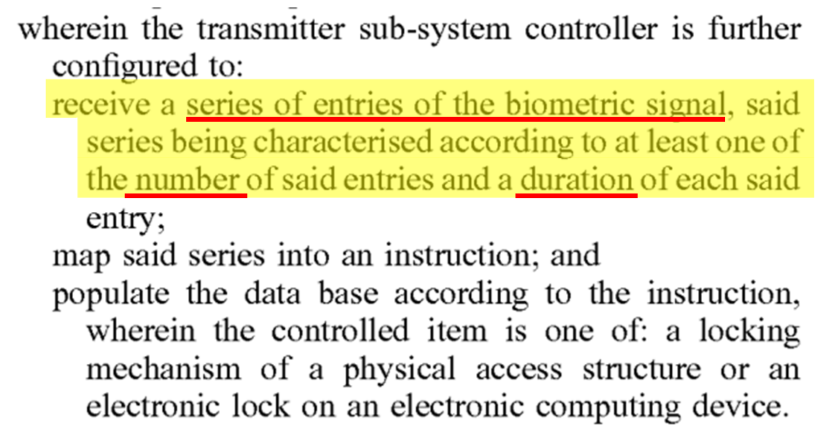
Pet. at 45-47; Reply at 5-11; Ex-1001, 1:34-39, 5:54-63, 10:55-11:8, 8:20-26 13:65-14:10

III. Mathiassen Teaches the Series/Duration Limitation

IPR2022-01006 Pet. at 41-46; Ex.1002, ¶¶ 160-170; IPR2022-01045 ‘208 Pet. at 41-46; Ex.1002, ¶¶ 182-187; IPR2022-01089 Pet. at 39-44; Ex.1002, ¶¶ 358-369.

The Series/Duration Limitation

US 9,665,705

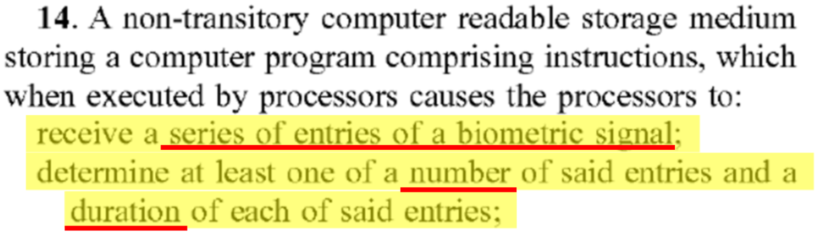


wherein the transmitter sub-system controller is further configured to:

receive a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

map said series into an instruction; and

populate the data base according to the instruction, wherein the controlled item is one of: a locking mechanism of a physical access structure or an electronic lock on an electronic computing device.

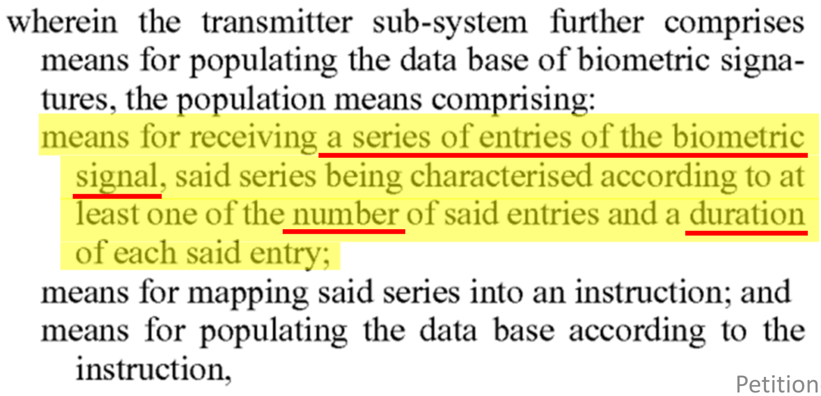


14. A non-transitory computer readable storage medium storing a computer program comprising instructions, which when executed by processors causes the processors to:

receive a series of entries of a biometric signal;

determine at least one of a number of said entries and a duration of each of said entries;

US 9,269,208

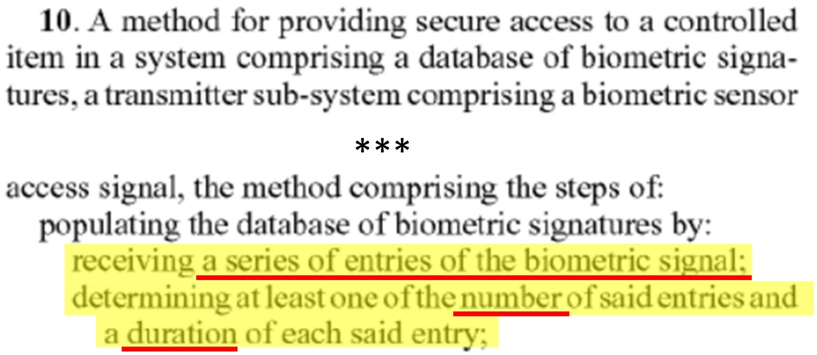


wherein the transmitter sub-system further comprises means for populating the data base of biometric signatures, the population means comprising:

means for receiving a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

means for mapping said series into an instruction; and

means for populating the data base according to the instruction,



10. A method for providing secure access to a controlled item in a system comprising a database of biometric signatures, a transmitter sub-system comprising a biometric sensor

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access signal, the method comprising the steps of:

populating the database of biometric signatures by:

receiving a series of entries of the biometric signal;

determining at least one of the number of said entries and a duration of each said entry;

Petitioners' Demonstratives, not evidence

Ex-1001 ('705 Patent), Cl.1, 14 (excerpted and annotated); Ex-1001 ('208 Patent), Cl.1, 9, 10 (excerpted and annotated)

Mathiassen Teaches the Series/Duration Limitation

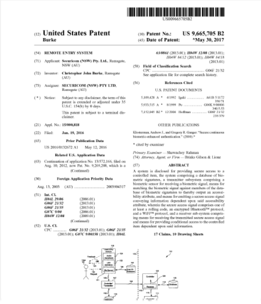
ASSA ABLOY

Petitioner

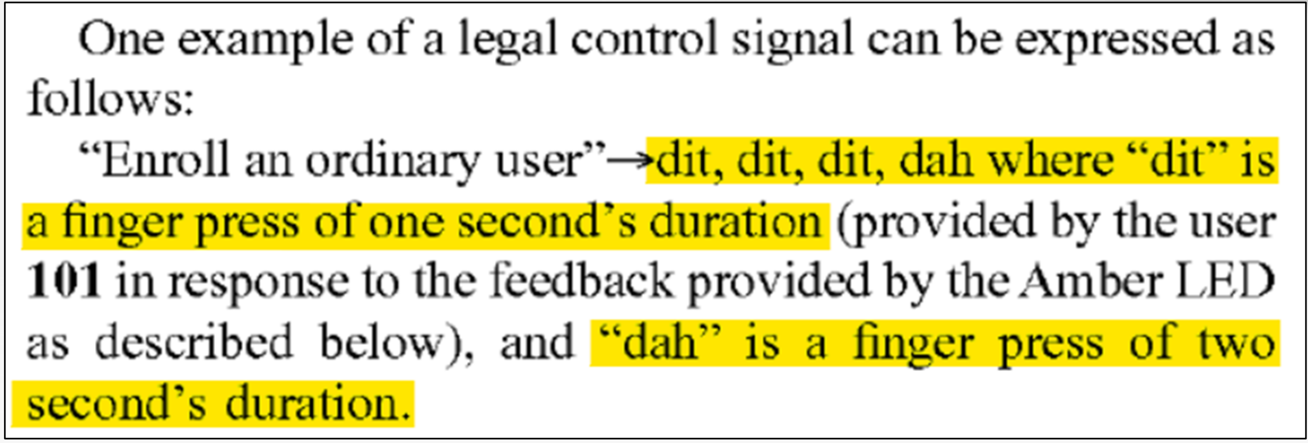
- Mathiassen Includes the Same Teaching As Challenged Patents
- Mathiassen Teaches Scanning Fingerprint Data For Inputting Commands
- Strong Motivation to Combine Mathiassen and Bianco
- Mathiassen's Teachings Not Limited to Stripe Sensors

Pet. at 41-46, 54-58; Reply at 12-16, 18-20; EX-1004, 14:14-21, 18:29-38; EX-1001, 10:56-11:7

Mathiassen Includes the Same Teaching As Challenged Patents

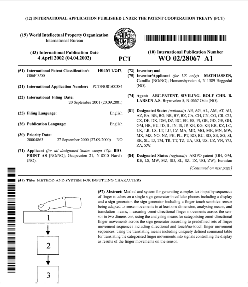


‘705 / ’208 Patent



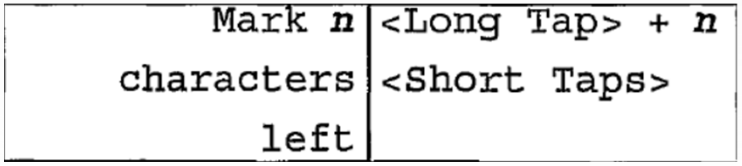
One example of a legal control signal can be expressed as follows:

“Enroll an ordinary user”→dit, dit, dit, dah where “dit” is a finger press of one second’s duration (provided by the user **101** in response to the feedback provided by the Amber LED as described below), and “dah” is a finger press of two second’s duration.



Ex. 1004 Mathiassen

“the invention thus uses **a fingerprint sensor** as touch-sensitive switch 1 that has the ability **to register finger connections on the sensor** and the **duration of such touches….”**



Mark *n* characters left	<Long Tap> + *n* <Short Taps>

Pet. at 41-46; Ex-1004, 21:15-17, Table 2; Reply, 13; Ex-1001, 11:1-8

Mathiassen Includes the Same Teaching As Challenged Patents

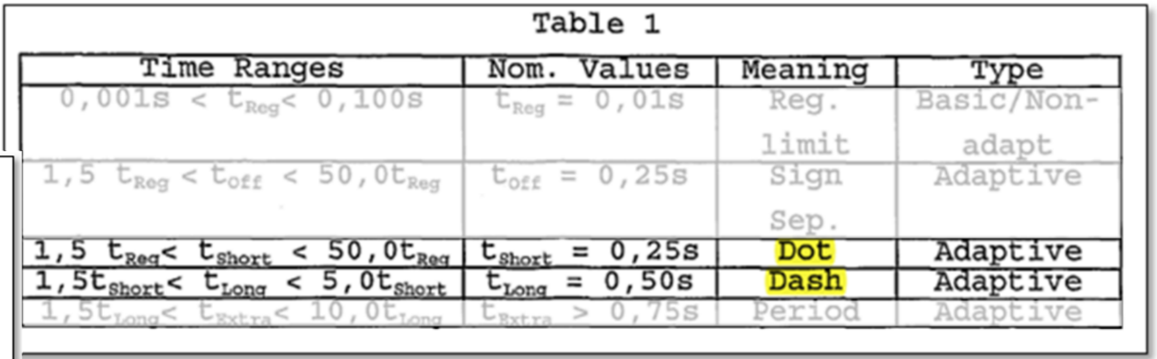
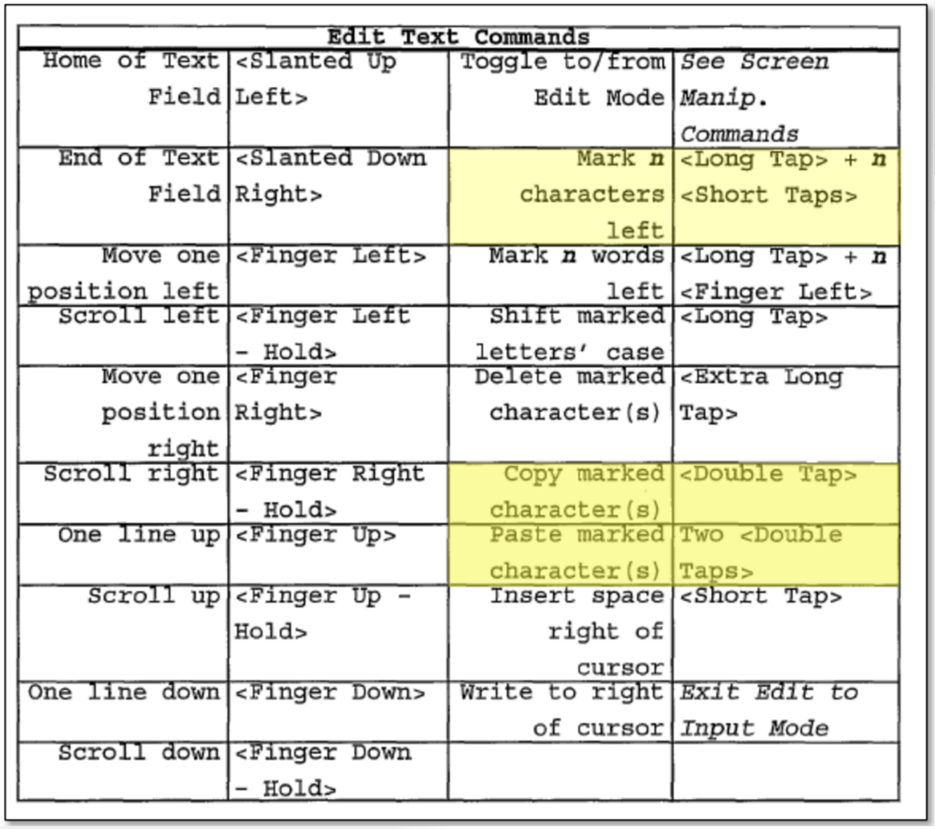


Table 1

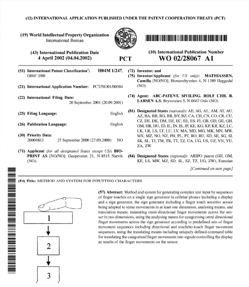
Time Ranges	Nom. Values	Meaning	Type
$0,001s < t_{Reg} < 0,100s$	$t_{Reg} = 0,01s$	Reg. limit	Basic/Non-adapt
$1,5\ t_{Reg} < t_{off} < 50,0t_{Reg}$	$t_{off} = 0,25s$	Sign Sep.	Adaptive
$1,5\ t_{Reg} < t_{Short} < 50,0t_{Reg}$	$t_{Short} = 0,25s$	Dot	Adaptive
$1,5t_{Short} < t_{Long} < 5,0t_{Short}$	$t_{Long} = 0,50s$	Dash	Adaptive
$1,5t_{Long} < t_{Extra} < 10,0t_{Long}$	$t_{Extra} > 0,75s$	Period	Adaptive

Ex.1004, Table 1



Edit Text Commands			
Home of Text Field	<Slanted Up Left>	Toggle to/from Edit Mode	*See Screen Manip. Commands*
End of Text Field	<Slanted Down Right>	Mark *n* characters left	<Long Tap> + *n* <Short Taps>
Move one position left	<Finger Left>	Mark *n* words left	<Long Tap> + *n* <Finger Left>
Scroll left	<Finger Left - Hold>	Shift marked letters' case	<Long Tap>
Move one position right	<Finger Right>	Delete marked character(s)	<Extra Long Tap>
Scroll right	<Finger Right - Hold>	Copy marked character(s)	<Double Tap>
One line up	<Finger Up>	Paste marked character(s)	Two <Double Taps>
Scroll up	<Finger Up - Hold>	Insert space right of cursor	<Short Tap>
One line down	<Finger Down>	Write to right of cursor	*Exit Edit to Input Mode*
Scroll down	<Finger Down - Hold>		

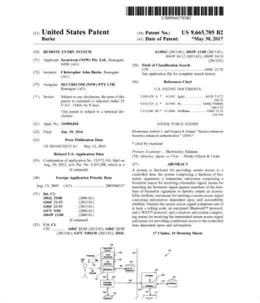
Ex.1004, Table 2



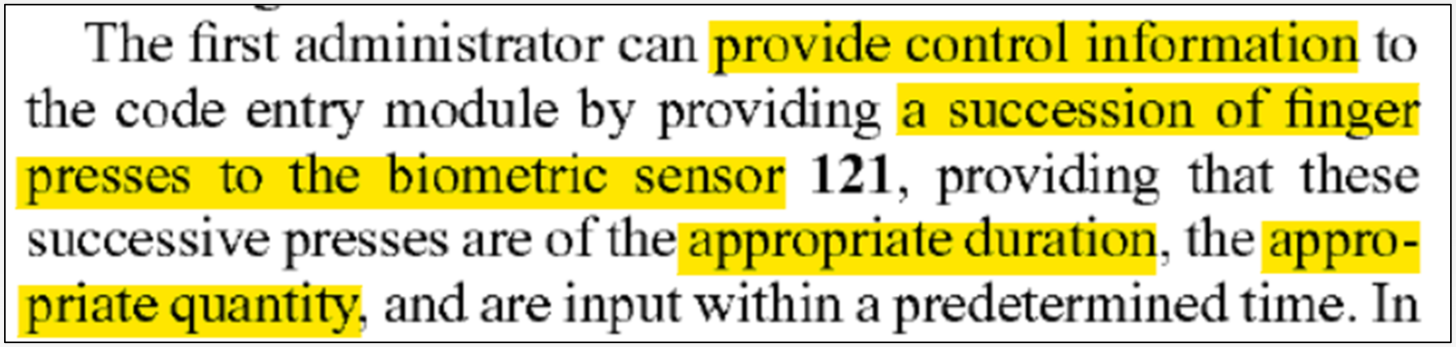
Ex. 1004
Mathiassen

Pet. at 41-46; Reply, 14-16; Ex.1004, 14:14-21, 18:29-38, 21:15-19

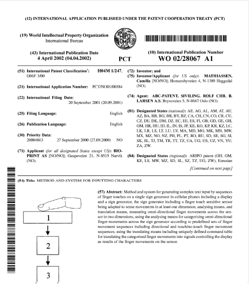
Mathiassen Includes the Same Teaching As Challenged Patents



'705 / '208 Patent



The first administrator can provide control information to the code entry module by providing a succession of finger presses to the biometric sensor 121, providing that these successive presses are of the appropriate duration, the appropriate quantity, and are input within a predetermined time. In

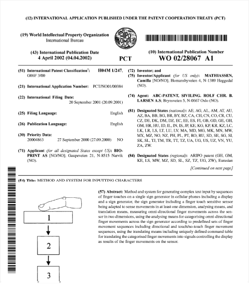


Ex. 1004 Mathiassen

"It is an object of this invention to provide **a simple solution for feeding information** into a small unit, e.g. a cellular phone, by **using sensors which have already been provided** for other purposes."

Pet. at 41-46; Ex-1004, 3:28-31; Reply, 13-14; Ex-1001, 10:56-60

PO’s Expert Agrees that Mathiassen Teaches a “Number” and “Duration” of Finger Presses and “Mapping” into a Command



Ex. 1004
Mathiassen

“Word separation may be done by **finger command <Long Tap>** and period (“punctum”) may be entered as **two consecutive <Long Taps>, etc**. The user may at any time toggle to Edit Text Mode by **finger command sequence <Extra long Tap> - <Finger Down>** as per Table 2. End of Message may be given by **finger command sequence comprising two consecutive <Extra Long Taps>**.”

Patent Owner’s Expert
Samuel Russ

“Q. And included within that universe [in Mathiassen] is **the ability to recognize a series of presses of varying durations and map that into a command**; correct?

A. Among other things, **yes...**”

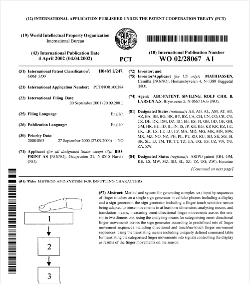
Ex-1004, 14:14-21; Ex-1028, 146:11-147:6

Mathiassen Teaches Scanning Fingerprint Data For Inputting Commands

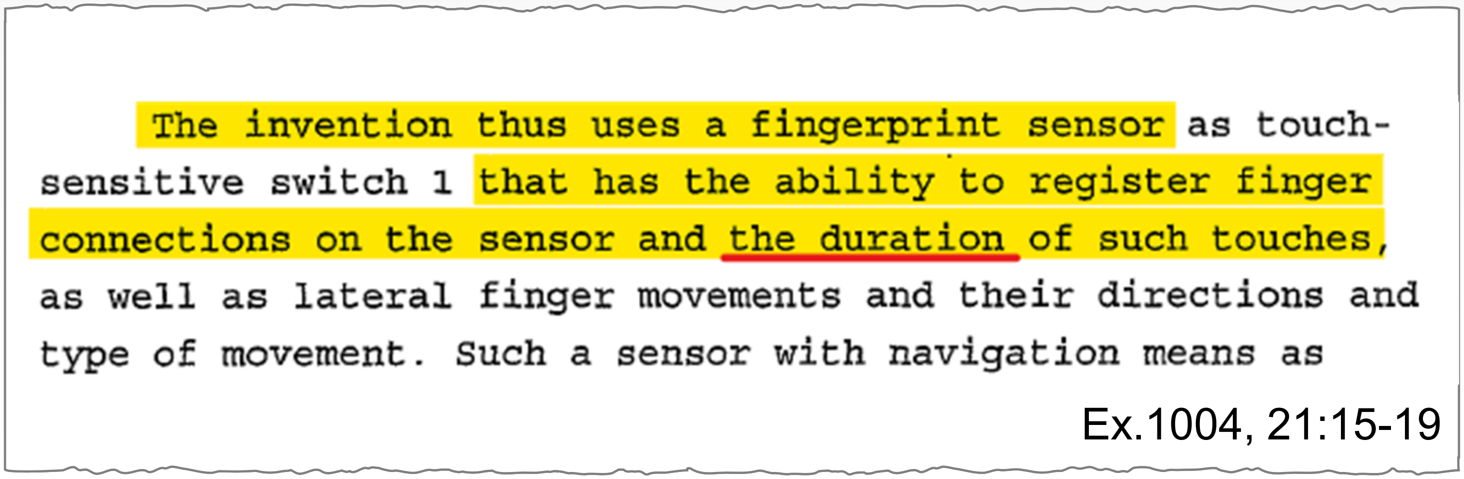
Patent Owner

"Mathiassen has no teaching or suggestion that the fingerprint is scanned and measured with each of the successive finger touches.."

PO Sur Reply, 15



Ex. 1004 Mathiassen



The invention thus uses a fingerprint sensor as touch-sensitive switch 1 that has the ability to register finger connections on the sensor and the duration of such touches, as well as lateral finger movements and their directions and type of movement. Such a sensor with navigation means as

Ex.1004, 21:15-19

Pet. at 41-46; Reply, 14-16; Ex.1004, 21:15-19; PO Surreply, 15

Petitioners' Demonstratives, not evidence

ASSA ABLOY Ex. 1030
ASSA ABLOY AB v. CPC Patent Technologies Pty Ltd.
IPR2022-01006 - U.S. Patent No. 9,665,705

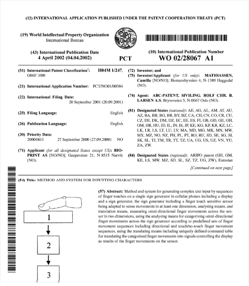
Mathiassen Teaches Analyzing Fingerprint Duration for Commands

Patent Owner

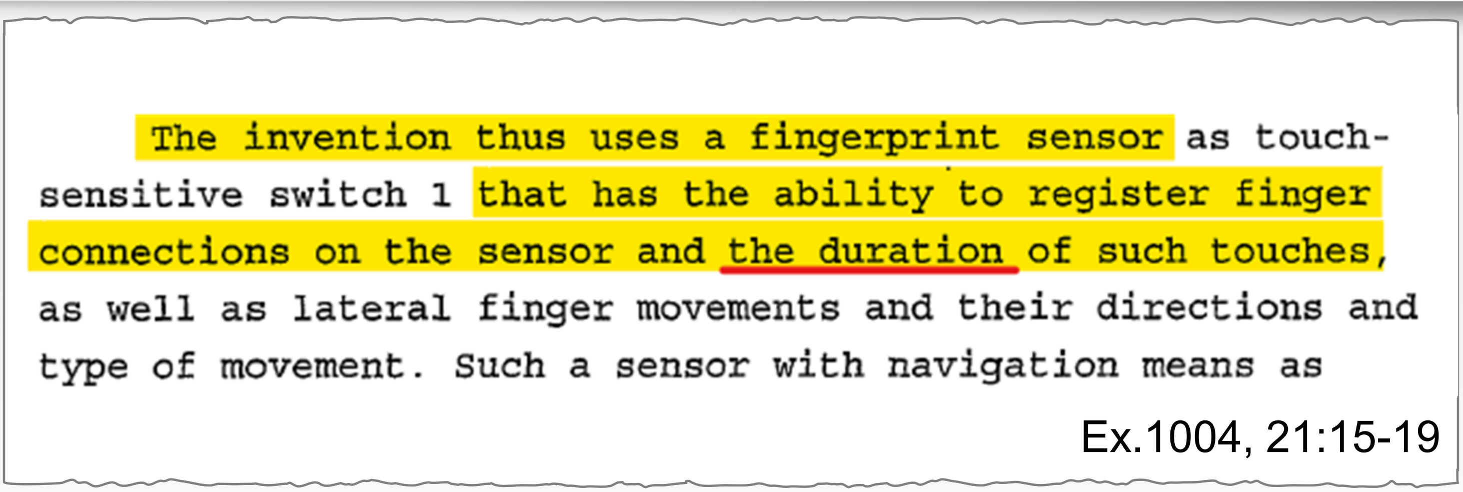
> “Petitioners have pointed to **no prior art wherein duration is measured in connection with a fingerprint** or any other physical biometric attribute…The first mention of this novel approach in the entire record is in the application for the ’705 Patent itself.”

POR, 46

Mathiassen Teaches Analyzing Fingerprint Duration for Commands

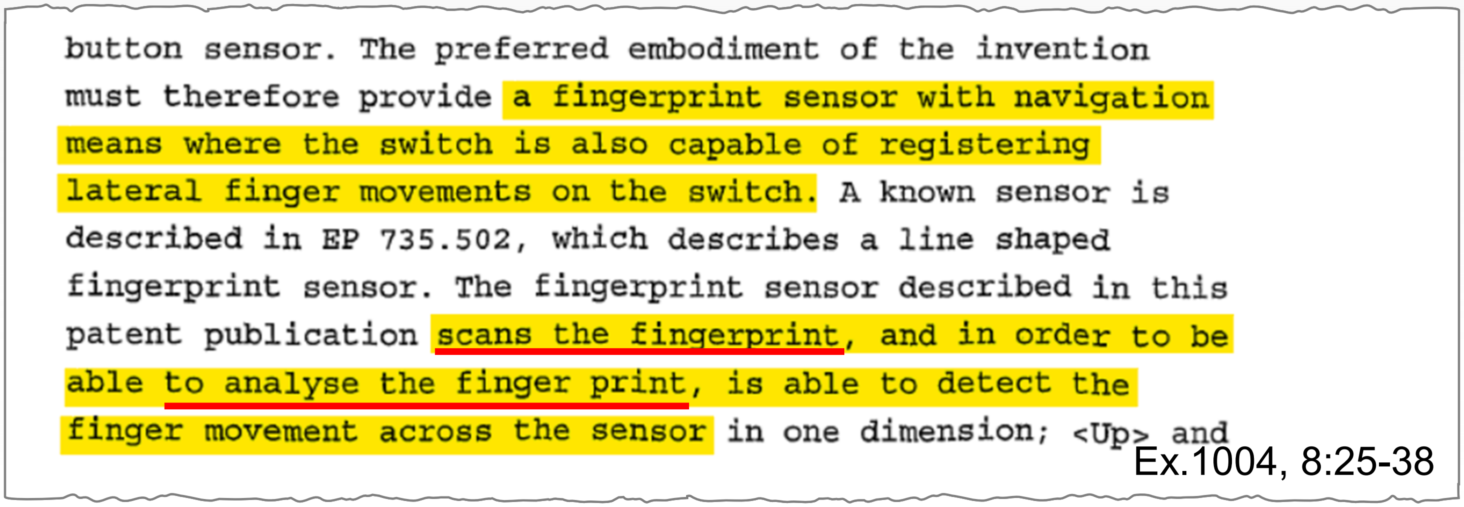


Ex. 1004 Mathiassen



The invention thus uses a fingerprint sensor as touch-sensitive switch 1 that has the ability to register finger connections on the sensor and the duration of such touches, as well as lateral finger movements and their directions and type of movement. Such a sensor with navigation means as

Ex.1004, 21:15-19

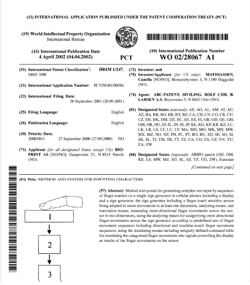


button sensor. The preferred embodiment of the invention must therefore provide a fingerprint sensor with navigation means where the switch is also capable of registering lateral finger movements on the switch. A known sensor is described in EP 735.502, which describes a line shaped fingerprint sensor. The fingerprint sensor described in this patent publication scans the fingerprint, and in order to be able to analyse the finger print, is able to detect the finger movement across the sensor in one dimension; <Up> and

Ex.1004, 8:25-38

Pet. at 41-46; Reply, 14-16; Ex.1004, 21:15-19, 8:25-38

PO’s Expert Agrees Mathiassen Teaches Analyzing Fingerprint Data for Commands



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PCT

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(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20004863 27 September 2000 (27.09.2000) NO

(71) Applicant *(for all designated States except US)*: **BIO-PRINT AS** [NO/NO]; Gaupeveien 21, N-8515 Narvik (NO).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **MATHIASSEN, Camilla** [NO/NO]; Homansbyveien 4, N-1389 Heggedal (NO).

(74) Agent: **ABC-PATENT, SIVILING. ROLF CHR. B. LARSEN A.S**; Brynsveien 5, N-0667 Oslo (NO).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian

[Continued on next page]

(54) Title: METHOD AND SYSTEM FOR INPUTTING CHARACTERS

(57) Abstract: Method and system for generating complex text input by sequences of finger touches on a single sign generator in cellular phones including a display and a sign generator, the sign generator including a finger touch sensitive sensor being adapted to sense movements in at least one dimension, analysing means, and translation means, measuring omni-directional finger movements across the sensor in two dimensions, using the analysing means for categorising omni-directional finger movements across the sign generator according to predefined sets of finger movement sequences including directional and touch/no-touch finger movement sequences, using the translating means including uniquely defined command table for translating the categorised finger movements into signals controlling the display as results of the finger movements on the sensor.

Ex. 1004 Mathiassen

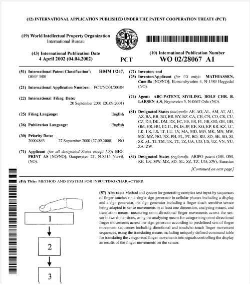
“**The fingerprint sensors…scans the fingerprint**, and in order to be able to **analyse [sic] the finger print**, is able **to detect the finger movement across the sensor** in one dimension…”

Patent Owner’s Expert
Samuel Russ

“**Part of the fingerprint is being imaged in connection with gestures**…if it’s a tap, then a very tiny part, just the part that sits over the sensor…**whatever part of the fingerprint passes over the sensor in the course of doing the gesture.**”

Pet. at 41-46; Ex-1004, 8:30-32; Petitioners’ Reply, 6; Ex-1028, 115:10-25

PO’s Expert Agrees Mathiassen’s Teachings Are Not Limited To A Stripe Sensor



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[Continued on next page]

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Ex. 1004 Mathiassen

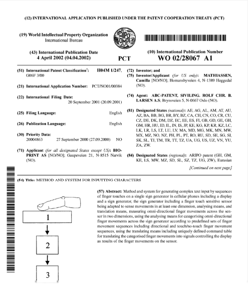
“**many types of fingerprint sensors** have been made…**fingerprint sensors will therefore be significantly enhanced** if it can be combined with other functionality…”

Patent Owner’s Expert
Samuel Russ

“Well, it **[Mathiassen] acknowledges that many fingerprint sensors have been made**, one of which is a stripe sensor.”

Pet. at 41-46; Ex-1004, 1:28-38; Petitioners’ Reply, 15-16; Ex-1028, 80:4-20

Mathiassen Teaches Many Types of Fingerprint Sensors



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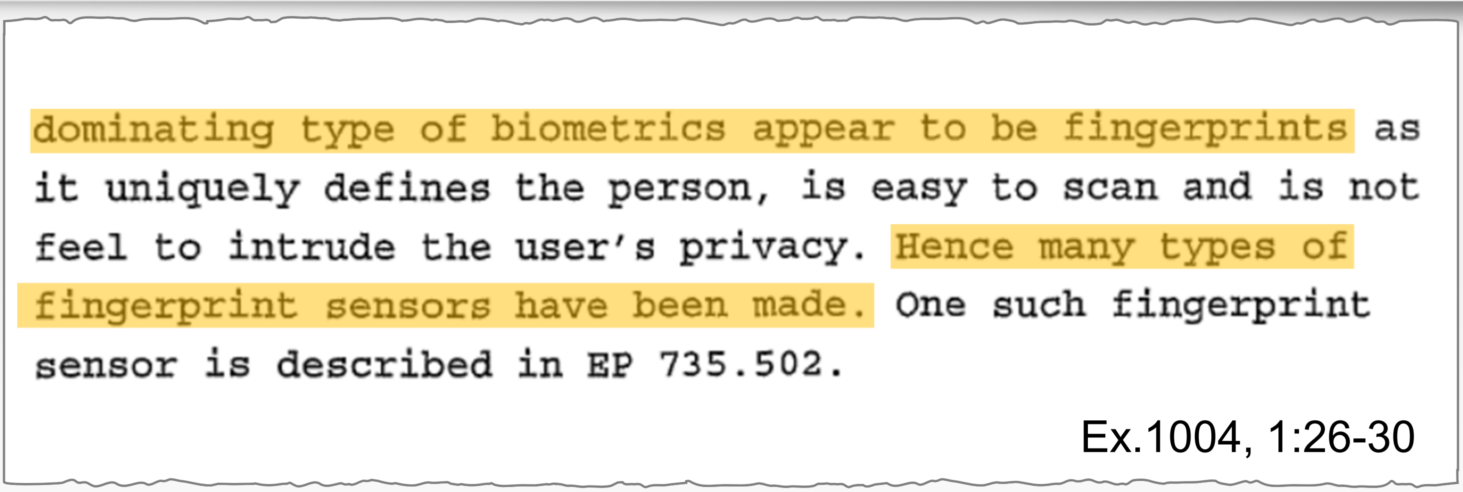
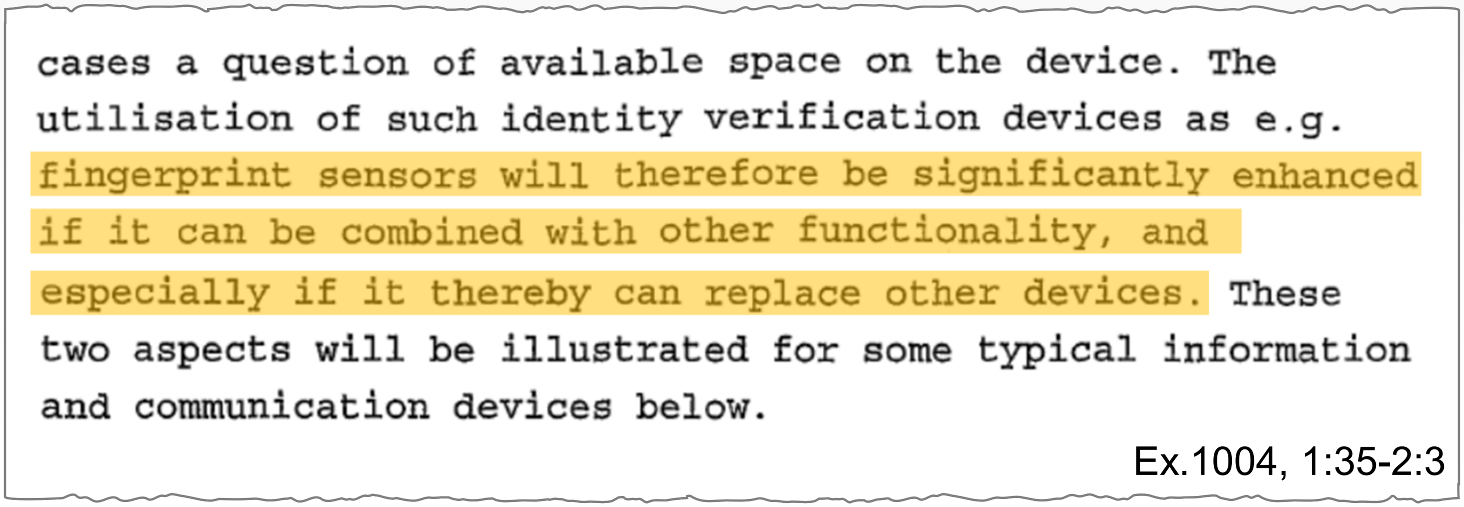
Ex. 1004 Mathiassen



dominating type of biometrics appear to be fingerprints as it uniquely defines the person, is easy to scan and is not feel to intrude the user's privacy. Hence many types of fingerprint sensors have been made. One such fingerprint sensor is described in EP 735.502.

Ex.1004, 1:26-30



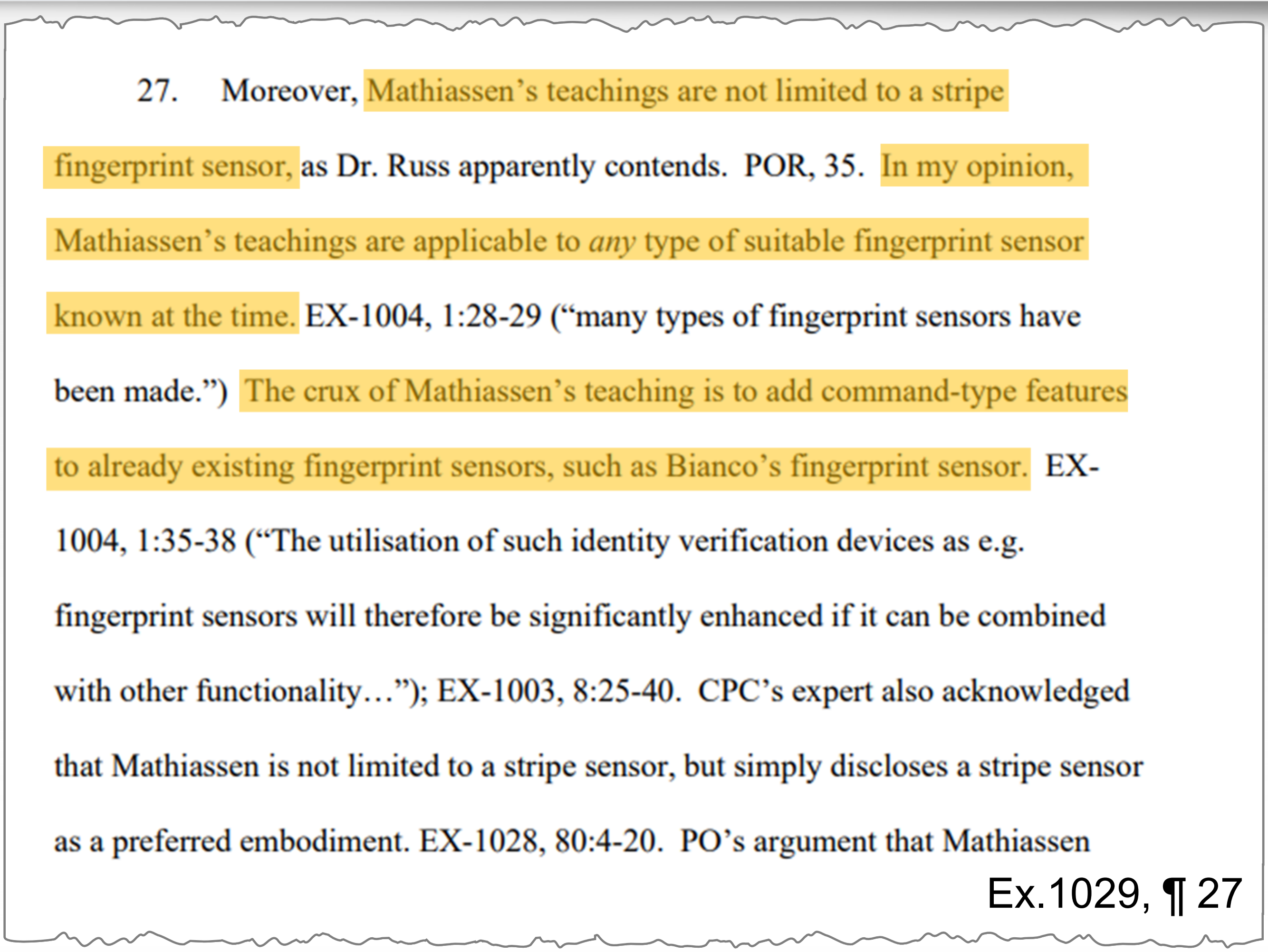
cases a question of available space on the device. The utilisation of such identity verification devices as e.g. fingerprint sensors will therefore be significantly enhanced if it can be combined with other functionality, and especially if it thereby can replace other devices. These two aspects will be illustrated for some typical information and communication devices below.

Ex.1004, 1:35-2:3

Pet. at 54-58; Reply, 14-16; Ex.1004, 1:26-2:3

Mathiassen Teaches Many Types of Fingerprint Sensors

Petitioners' Expert
Stuart Lipoff



27. Moreover, Mathiassen's teachings are not limited to a stripe fingerprint sensor, as Dr. Russ apparently contends. POR, 35. In my opinion, Mathiassen's teachings are applicable to *any* type of suitable fingerprint sensor known at the time. EX-1004, 1:28-29 ("many types of fingerprint sensors have been made.") The crux of Mathiassen's teaching is to add command-type features to already existing fingerprint sensors, such as Bianco's fingerprint sensor. EX-1004, 1:35-38 ("The utilisation of such identity verification devices as e.g. fingerprint sensors will therefore be significantly enhanced if it can be combined with other functionality…"); EX-1003, 8:25-40. CPC's expert also acknowledged that Mathiassen is not limited to a stripe sensor, but simply discloses a stripe sensor as a preferred embodiment. EX-1028, 80:4-20. PO's argument that Mathiassen

Ex.1029, ¶ 27

Pet. at 41-46; Ex-1004, 1:28-38; Ex-1003, 8:25-40; Reply, 15-16; Ex-1028, 80:4-20; Ex-1029, ¶ 27

PO's Shifting Argument: "Biometric Signal"

Patent Owner

Proposed Construction: "physical attribute of the user (i.e., fingerprint, facial pattern, iris, retina, voice, etc.)"

POR, 9

ASSA ABLOY

Petitioner

Mathiassen teaches a "fingerprint sensor…scans the fingerprint…to analyse the fingerprint…to detect the finger movement…"

Ex.1004, 21:15-19, 8:25-38

Patent Owner

Biometric Signal must "captur[e] the ridges and valleys of the **entire fingerprint**."

POR, 35

ASSA ABLOY

Petitioner

Mathiassen teaches "many types of fingerprint sensors have been made" and "fingerprint sensors will therefore be significantly enhanced if it can be combined with other functionality."

Ex.1004, 1:26-2:3

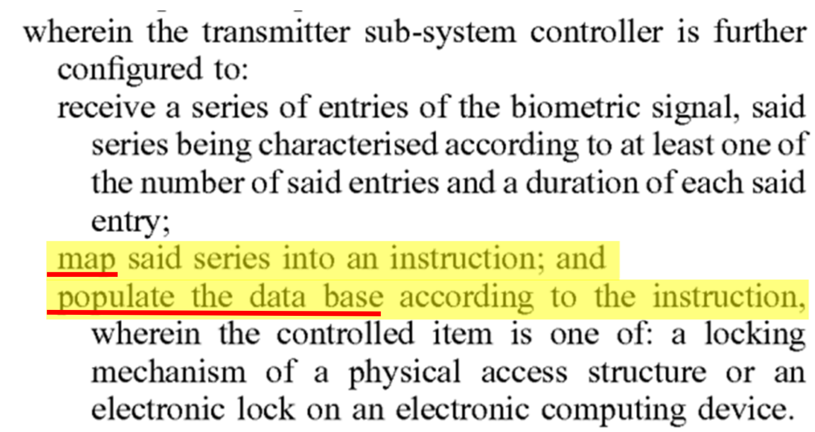
Pet. at 41-46; Reply, 14-16; Ex.1004, 1:26-2:3, 21:15-19, 8:25-38; Ex-1029, ¶ 27

IV. Mathiassen/Bianco Teach Mapping Into an Instruction and Populating the Database

IPR2022-01006 Pet. at 46-52; Ex.1002, ¶¶ 171-182; IPR2022-01045 ‘208 Pet. at 46-55; Ex.1002, ¶¶ 189-207; IPR2022-01089 Pet. at 44-52; Ex.1002, ¶¶ 377-383

The Mapping and Populating Limitations

US 9,665,705

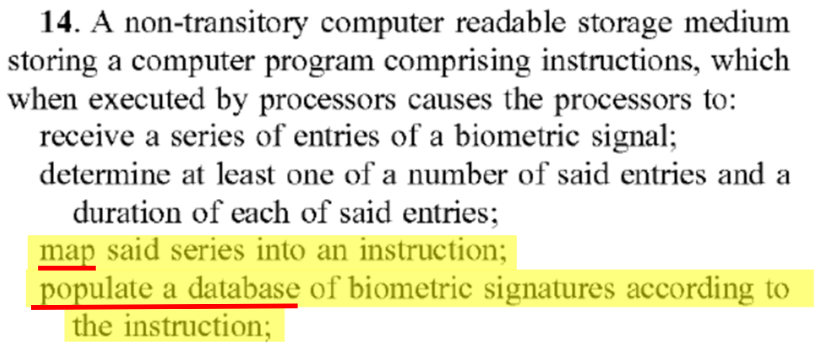


wherein the transmitter sub-system controller is further configured to:

receive a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

map said series into an instruction; and

populate the data base according to the instruction, wherein the controlled item is one of: a locking mechanism of a physical access structure or an electronic lock on an electronic computing device.



14. A non-transitory computer readable storage medium storing a computer program comprising instructions, which when executed by processors causes the processors to:

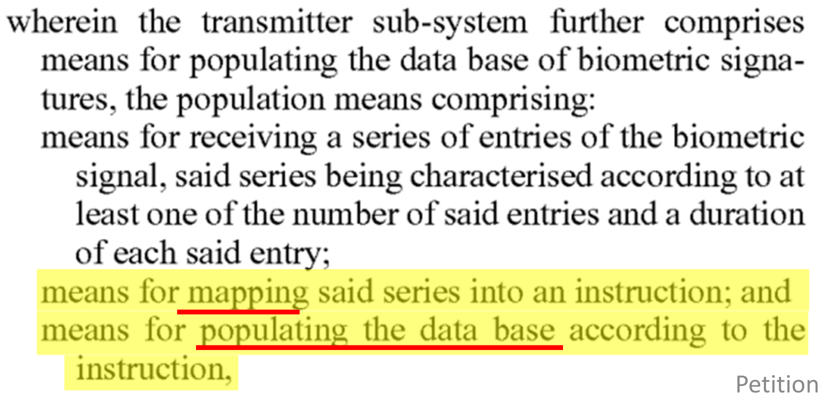
receive a series of entries of a biometric signal;

determine at least one of a number of said entries and a duration of each of said entries;

map said series into an instruction;

populate a database of biometric signatures according to the instruction;

US 9,269,208

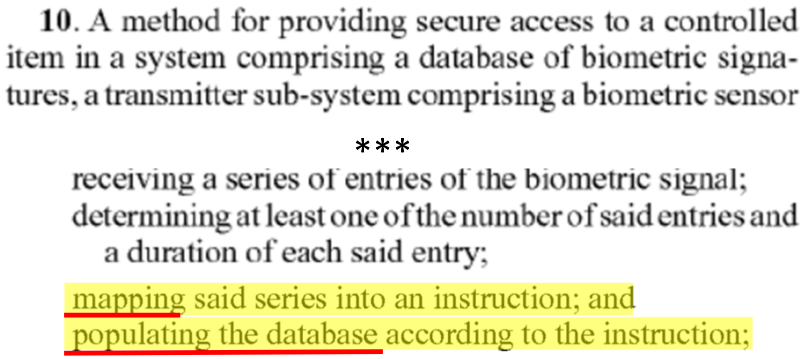


wherein the transmitter sub-system further comprises means for populating the data base of biometric signatures, the population means comprising:

means for receiving a series of entries of the biometric signal, said series being characterised according to at least one of the number of said entries and a duration of each said entry;

means for mapping said series into an instruction; and

means for populating the data base according to the instruction,



10. A method for providing secure access to a controlled item in a system comprising a database of biometric signatures, a transmitter sub-system comprising a biometric sensor

***

receiving a series of entries of the biometric signal;

determining at least one of the number of said entries and a duration of each said entry;

mapping said series into an instruction; and

populating the database according to the instruction;

Petitioners' Demonstratives, not evidence

Ex-1001 ('705 Patent), Cl.1, 14 (excerpted and annotated); Ex-1001 ('208 Patent), Cl.1, 9, 10 (excerpted and annotated)

Mathiassen/Bianco Teach Mapping Into an Instruction and Populating the Database

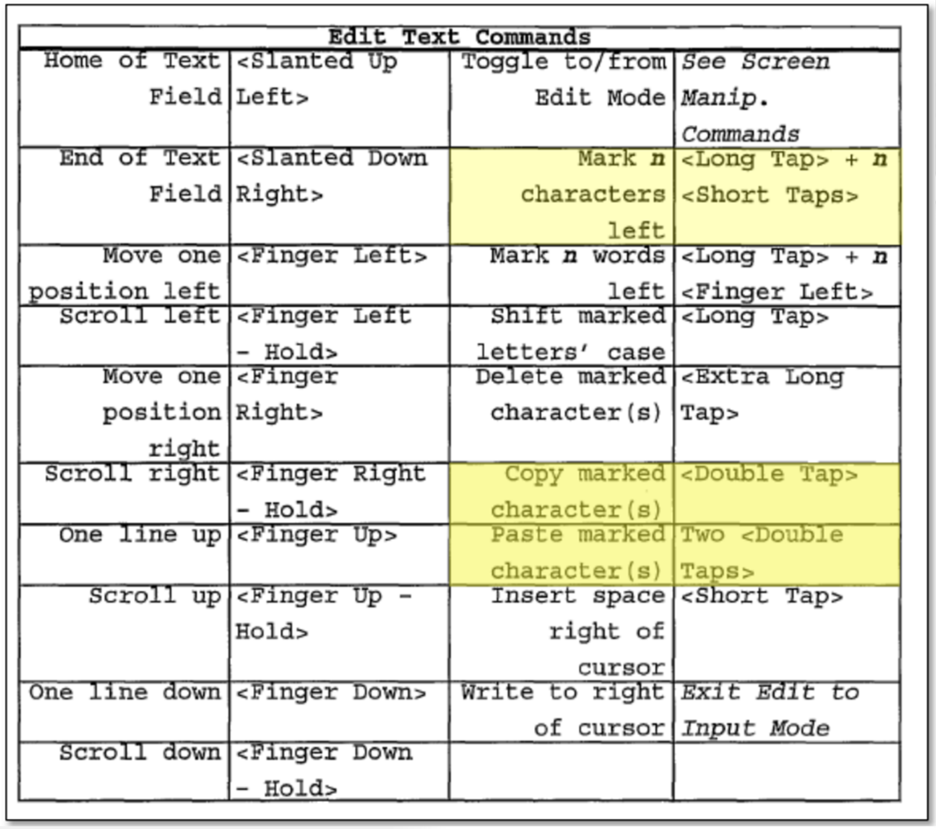
ASSA ABLOY

Petitioner

- Mathiassen Teaches its Finger Commands are "instructions"
- Bianco Teaches Instruction Can Be Used to Enroll A User in a Database
- PO Does Not Dispute Mathiassen Teaches Mapping Finger Presses Into Instructions
- PO Challenges Only Whether Mathiassen's Finger Presses are "Entire" Fingerprints

Pet. at 46-52, 54-58; Reply at 17-18; EX-1004, 14:14-21, 18:29-38; EX-1001, 10:56-11:7; POR, 38-41

Mathiassen Teaches Mapping Fingerprint Sensor Inputs Into an Instruction



Edit Text Commands

Home of Text Field	<Slanted Up Left>	Toggle to/from Edit Mode	*See Screen Manip. Commands*
End of Text Field	<Slanted Down Right>	Mark *n* characters left	<Long Tap> + *n* <Short Taps>
Move one position left	<Finger Left>	Mark *n* words left	<Long Tap> + *n* <Finger Left>
Scroll left	<Finger Left – Hold>	Shift marked letters' case	<Long Tap>
Move one position right	<Finger Right>	Delete marked character(s)	<Extra Long Tap>
Scroll right	<Finger Right – Hold>	Copy marked character(s)	<Double Tap>
One line up	<Finger Up>	Paste marked character(s)	Two <Double Taps>
Scroll up	<Finger Up – Hold>	Insert space right of cursor	<Short Tap>
One line down	<Finger Down>	Write to right of cursor	*Exit Edit to Input Mode*
Scroll down	<Finger Down – Hold>		

Ex.1004, Table 2

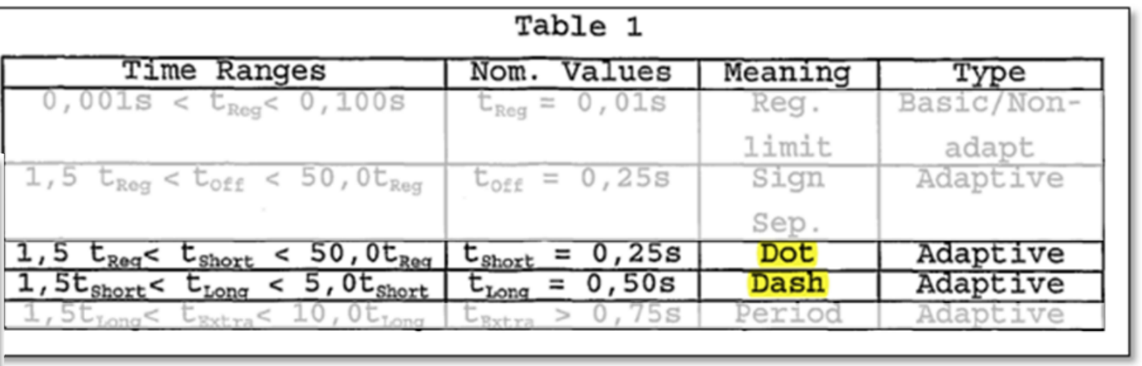
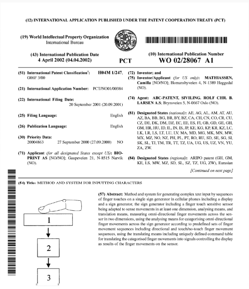


Table 1

Time Ranges	Nom. Values	Meaning	Type
$0,001s < t_{Reg} < 0,100s$	$t_{Reg} = 0,01s$	Reg. limit	Basic/Non-adapt
$1,5\ t_{Reg} < t_{off} < 50,0t_{Reg}$	$t_{off} = 0,25s$	Sign Sep.	Adaptive
$1,5\ t_{Reg} < t_{Short} < 50,0t_{Req}$	$t_{Short} = 0,25s$	Dot	Adaptive
$1,5t_{Short} < t_{Long} < 5,0t_{Short}$	$t_{Long} = 0,50s$	Dash	Adaptive
$1,5t_{Long} < t_{Extra} < 10,0t_{Long}$	$t_{Extra} > 0,75s$	Period	Adaptive

Ex.1004, Table 1

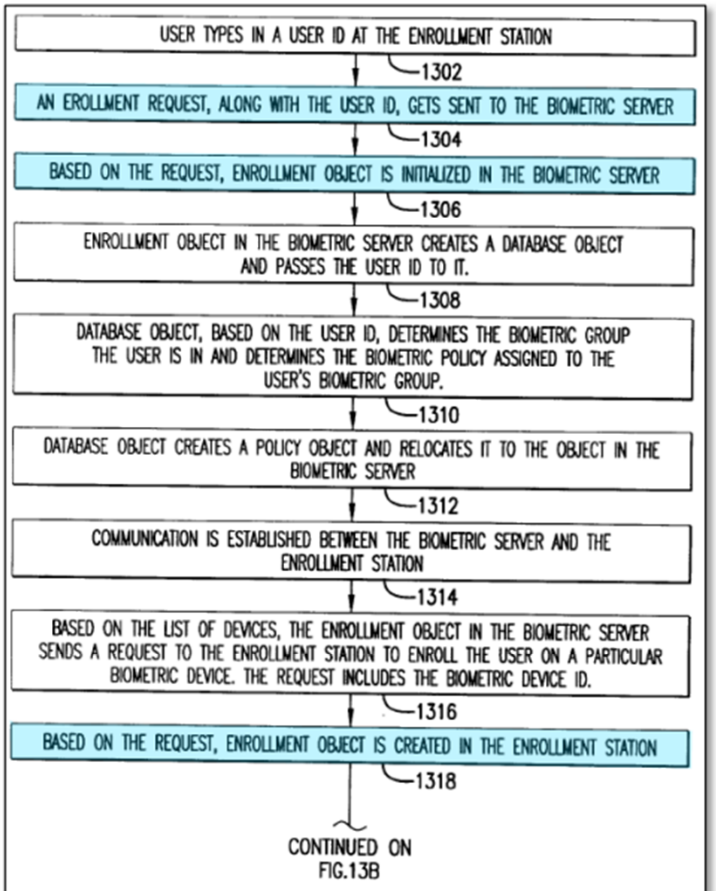


Ex. 1004 Mathiassen

Pet. at 46-49; Reply, 14-16; Ex.1004, 7:5-8, 14:14-21, 18:29-38, 20:2-5, 21:15-19

Bianco Teaches Instruction Can Be Used to Enroll A User

Ex. 1003
Bianco



USER TYPES IN A USER ID AT THE ENROLLMENT STATION — 1302

AN EROLLMENT REQUEST, ALONG WITH THE USER ID, GETS SENT TO THE BIOMETRIC SERVER — 1304

BASED ON THE REQUEST, ENROLLMENT OBJECT IS INITIALIZED IN THE BIOMETRIC SERVER — 1306

ENROLLMENT OBJECT IN THE BIOMETRIC SERVER CREATES A DATABASE OBJECT AND PASSES THE USER ID TO IT. — 1308

DATABASE OBJECT, BASED ON THE USER ID, DETERMINES THE BIOMETRIC GROUP THE USER IS IN AND DETERMINES THE BIOMETRIC POLICY ASSIGNED TO THE USER'S BIOMETRIC GROUP. — 1310

DATABASE OBJECT CREATES A POLICY OBJECT AND RELOCATES IT TO THE OBJECT IN THE BIOMETRIC SERVER — 1312

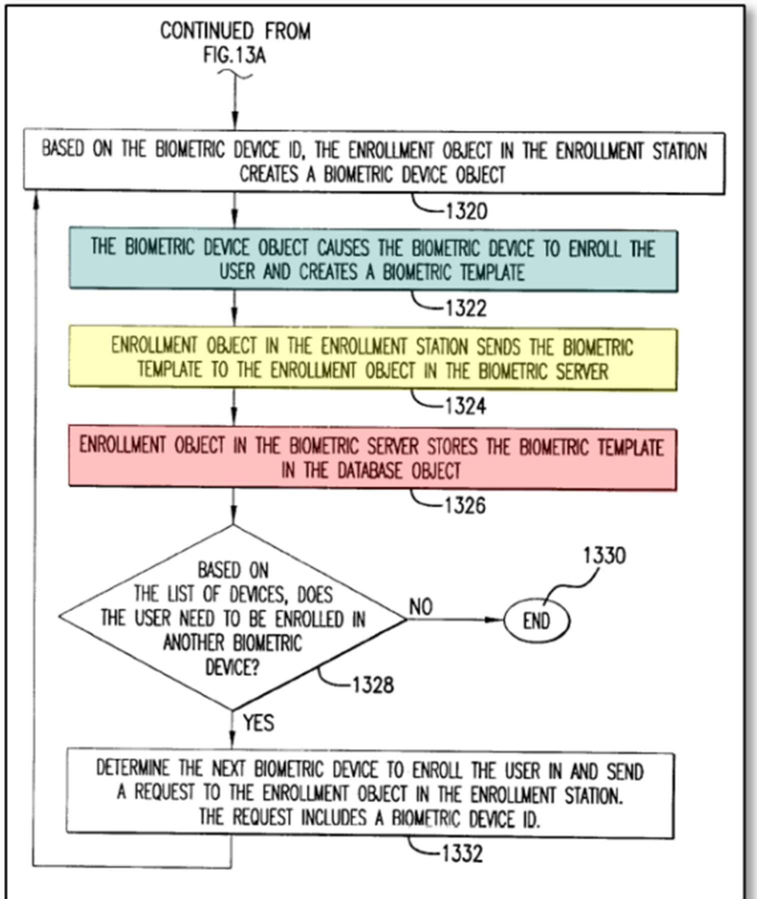
COMMUNICATION IS ESTABLISHED BETWEEN THE BIOMETRIC SERVER AND THE ENROLLMENT STATION — 1314

BASED ON THE LIST OF DEVICES, THE ENROLLMENT OBJECT IN THE BIOMETRIC SERVER SENDS A REQUEST TO THE ENROLLMENT STATION TO ENROLL THE USER ON A PARTICULAR BIOMETRIC DEVICE. THE REQUEST INCLUDES THE BIOMETRIC DEVICE ID. — 1316

BASED ON THE REQUEST, ENROLLMENT OBJECT IS CREATED IN THE ENROLLMENT STATION — 1318

CONTINUED ON FIG.13B

FIG. 13A



CONTINUED FROM FIG.13A

BASED ON THE BIOMETRIC DEVICE ID, THE ENROLLMENT OBJECT IN THE ENROLLMENT STATION CREATES A BIOMETRIC DEVICE OBJECT — 1320

THE BIOMETRIC DEVICE OBJECT CAUSES THE BIOMETRIC DEVICE TO ENROLL THE USER AND CREATES A BIOMETRIC TEMPLATE — 1322

ENROLLMENT OBJECT IN THE ENROLLMENT STATION SENDS THE BIOMETRIC TEMPLATE TO THE ENROLLMENT OBJECT IN THE BIOMETRIC SERVER — 1324

ENROLLMENT OBJECT IN THE BIOMETRIC SERVER STORES THE BIOMETRIC TEMPLATE IN THE DATABASE OBJECT — 1326

BASED ON THE LIST OF DEVICES, DOES THE USER NEED TO BE ENROLLED IN ANOTHER BIOMETRIC DEVICE? — 1328

NO → END — 1330

YES

DETERMINE THE NEXT BIOMETRIC DEVICE TO ENROLL THE USER IN AND SEND A REQUEST TO THE ENROLLMENT OBJECT IN THE ENROLLMENT STATION. THE REQUEST INCLUDES A BIOMETRIC DEVICE ID. — 1332

FIG. 13B

Pet. at 46-52; Reply, 14-16; Ex.1003, Figs. 13A-13B, 28:6-12, 17:38-48

Petitioners' Demonstratives, not evidence

Bianco Teaches Instruction Can Be Used to Enroll A User

(12) United States Patent
Bianco et al.

(10) Patent No.: US 6,256,737 B1
(45) Date of Patent: Jul. 3, 2001

(54) SYSTEM, METHOD AND COMPUTER PROGRAM PRODUCT FOR ALLOWING ACCESS TO ENTERPRISE RESOURCES USING BIOMETRIC DEVICES

(75) Inventors: Peter Garrett Bianco, Potomac, MD (US); William Taylor Boon, Bristow, VA (US); Robert Brewster Sterling, Kensington, MD (US); Karl Roger Ware, Washington, DC (US)

(73) Assignee: BioNetrix Systems Corporation, Vienna, VA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

WO 98/57247 12/1998 (WO) G06F/1/00

OTHER PUBLICATIONS

International Search Report for PCT Appl. No. PCT/US00/05722.

Avolio, F.M., "Identity confirmed," Network World, Aug. 24, 1998, vol. 18, No. 34.

"Beyond Speech Recognition," Fortune, Nov. 23, 1998, p204(1). (Computer Select printout, 2 pages).

(List continued on next page.)

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Assistant Examiner—Pierre E. Elisca
(74) Attorney, Agent, or Firm—Sterne, Kessler, Goldstein & Fox P.L.L.C.

(57) ABSTRACT

Ex. 1003
Bianco

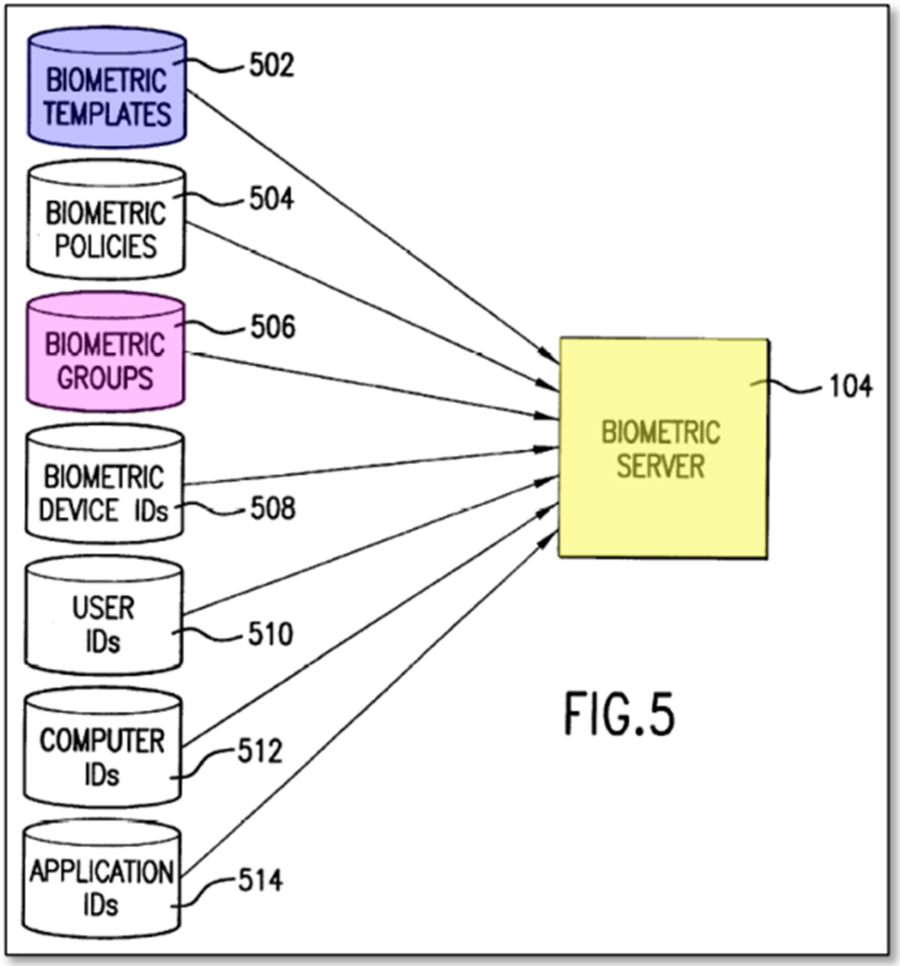


FIG.5

Pet. at 46-52; Reply, 14-16; Ex.1003, Fig. 5, 28:6-12, 17:38-48

V. Strong Motivation to Combine Bianco and Mathiassen

IPR2022-01006 Pet. at 54-58; Ex.1002, ¶¶ 188-202; IPR2022-01045 '208 Pet. at 57-61; Ex.1002, ¶¶ 214-228; IPR2022-01089 Pet. at 68-73; Ex.1002, ¶¶ 214-228.

Motivation to Combine Bianco with Mathiassen

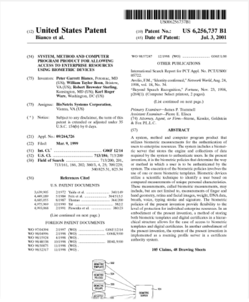
ASSA ABLOY

Petitioner

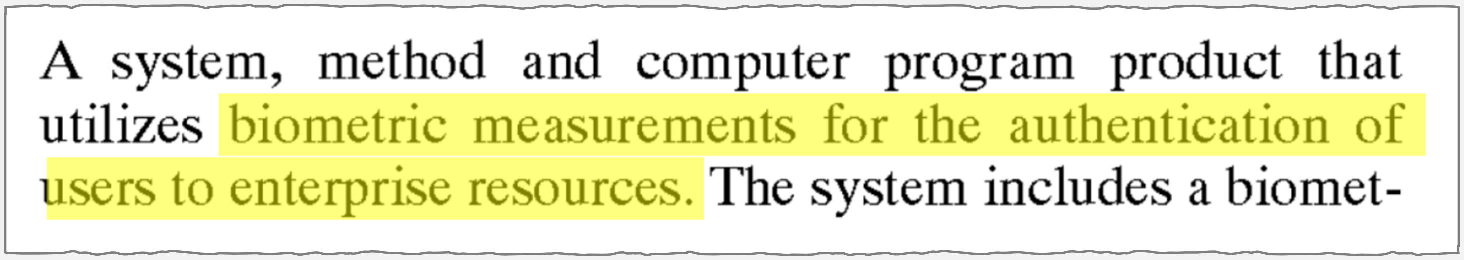
- **Same Field of Endeavor** – Authentication/Access Control
- Mathiassen's **Express Motivation** – Combine touchpad and fingerprint sensor for cost/space savings
- **Reasonable Expectation of Success** – Bianco's and Mathiassens Fingerprint Sensors perform same function

Pet. at 54-58; Reply at 18-20; Ex.1003, Abstract, 1:9-17, 10:56-61, 57:8-26, ; Ex.1004, 1:20-24, 4:9-16, 5:27-39, 7:5-8, 20:2-5

Mathiassen and Bianco: Same Field of Endeavor

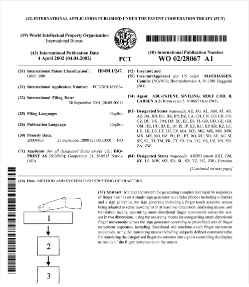


Ex. 1003
Bianco

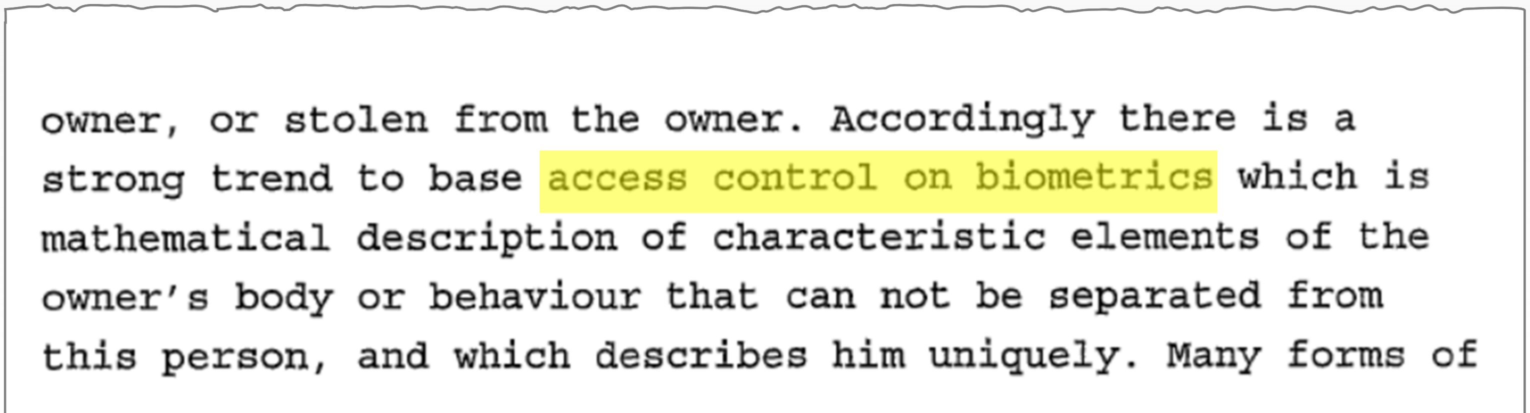


A system, method and computer program product that utilizes biometric measurements for the authentication of users to enterprise resources. The system includes a biomet-

Ex.1003, Abstract



Ex. 1004
Mathiassen



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owner, or stolen from the owner. Accordingly there is a
strong trend to base access control on biometrics which is
mathematical description of characteristic elements of the
owner's body or behaviour that can not be separated from
this person, and which describes him uniquely. Many forms of
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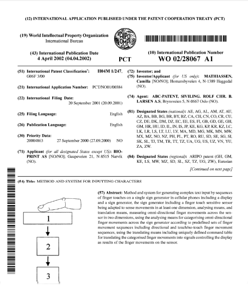
Ex.1004, 1:20-24

Pet. at 54-55; Reply, 18-20; Ex.1003, Abstract, 1:9-17, 10:56-61, 57:8-26 ; Ex.1004, 1:20-24, 4:9-16, 5:27-39, 7:5-8, 20:2-5

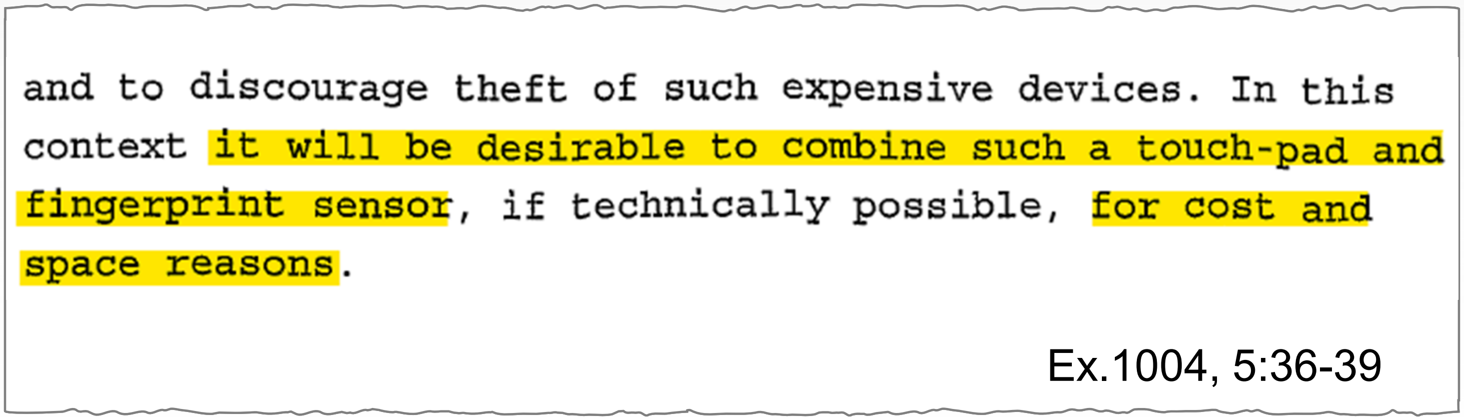
Express Motivation to Combine Bianco and Mathiassen

Patent Owner

"neither Petitioners nor Mr. Lipoff provide any explanation as to why a POSITA at the time of the invention would have been motivated to modify the biometric security means of Bianco by adding to it the number or duration of non-biometric finger movements of Mathiassen." POR, 42



Ex. 1004 Mathiassen



and to discourage theft of such expensive devices. In this context it will be desirable to combine such a touch-pad and fingerprint sensor, if technically possible, for cost and space reasons.

Ex.1004, 5:36-39

POR, 42; Reply, 19; Ex. 1004-5:36-39

Mathiassen and Bianco: Reasonable Expectation of Success

ASSA ABLOY

Petitioner

- Bianco's and Mathiassens Fingerprint Sensors perform same function – reading biometric data
- Bianco teaches reading a series of multiple biometric signatures
- Bianco teaches it can read the durations of biometric signatures

Pet. at 54-55; Reply, 18-20; Ex-1003, 8:43-45; Ex-1004, 21:15-19, 8:25-38

VI. The Petition Is Not Time Barred

-01006 Reply to POPR; -01006 Reply at 20-28; -01045 Reply to POPR; -01045 Reply at 20-28; -01089 Reply to POPR; -01089 Reply at 20-28

The Petitions Were Not Filed At Apple's Behest

- Apple does not direct, control, fund, or contributed to these Petitions.

- "Petitioners have not had any communications with Apple, directly or through counsel, regarding [the IPRs], other than…seeking Apple's permission to produce documents..."
  Ex-1022, Petitioners ROG Responses

Reply to POPR at 2; Reply at 21-22

Apple and Petitioners Have A Standard Business Relationship

- Apple's click-through application developer agreement has been accepted by 34 million Apple business partner

- Apple does not direct, control, fund, or contributed to these Petitions

Reply to POPR at 2-4; Reply at 22-23

Developer Agreement Does Not Support RPI

- Developer Agreement merely requires representatation and warranty “to the best of [the subscriber’s] knowledge and belief,” whether rights are clear for use

- Does not require the subscriber to take any action

- Subscriber is not required to make any legal review of allegedly infringing patents

Reply to POPR at 4-8; Reply at 23-25

Sending Products for Compliance/Certification

- CPC cites no authority that compliance testing makes Apple an RPI

- Apple requires all MFi ("Made for iPhone/iPod/iPad") certified products be submitted for compliance testing

Reply to POPR at 8; Reply at 25

CPC's "Clear Beneficiary" Argument Is Meritless

- Apple filed its IPRs months *before* Petitioners
- Apple's own IPRs were instituted

Reply to POPR at 8-9; Reply at 26

Apple Is Not In Privity with Petitioners

- No agreement binds Petitioners to the Apple action
- No privity in business relationship between Apple and Petitioners
- Petitioners have no control or representation in the Apple action.
- Petitioners are not acting as Apple's proxy

Reply to POPR at 9-10; Reply at 26-28