

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

CARDWARE INC.,
Patent Owner.

Case No. IPR2025-01147
U.S. Patent No. 10,628,820

PATENT OWNER'S PRELIMINARY RESPONSE

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PATENT OWNER’S UPDATED EXHIBIT LIST

No.	Exhibit Description
2001	Memorandum for Interim Processes for PTAB Workload Management, dated March 26, 2025
2002	Interim Director Discretionary Process <i>available at</i> https://www.uspto.gov/patents/ptab/interim-director-discretionary-process
2003	Agreed Scheduling Order in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. May 20, 2025)
2004	Standing Order Governing Proceedings (OGP)—Patent Cases for cases before Judge Albright (dated Mar. 5, 2025)
2005	DocketNavigator Time to Trial Statistics for Patent Cases before Judge Albright
2006	Judges’ Directory and Biographies for the U.S. District Court for the Western District of Texas, <i>available at</i> https://www.txwd.uscourts.gov/judges-information/judges-directory-biographies/
2007	Complaint in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. Nov. 4, 2024)
2008	First Agreed Scheduling Order in <i>CardWare Inc. v. Google LLC</i> , No. 7:24-cv-00278-DC-DTG (W.D. Tex. Mar. 6, 2025)
2009	Complaint in <i>CardWare Inc. v. Google LLC</i> , No. 7:24-cv-00278-DC-DTG (W.D. Tex. Mar. 6, 2025)
2010	Invalidity Contentions Cover Pleading in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. Apr. 7, 2025)
2011	Defendants’ Notice of Subpoena to Apple, Inc. in <i>CardWare Inc. v. Samsung Elecs. Co., Ltd.</i> , No. 2:22-cv-00141-JRG-RSP (E.D. Tex. Dec. 9, 2022)
2012	Apple Inc.’s Response and Objections to Defendants’ Subpoena in <i>CardWare Inc. v. Samsung Elecs. Co., Ltd.</i> , No. 2:22-cv-00141-JRG-RSP (E.D. Tex. Dec. 23, 2022)
2013	Letter from CardWare, Inc. to Apple Inc. dated October 10, 2023 “RE: Patent Portfolio of CardWare Inc.”
2014	Proof of Delivery to Apple Inc. dated October 11, 2023, for Letter from CardWare, Inc. to Apple Inc. dated October 10, 2023 “RE: Patent Portfolio of CardWare Inc.”
2015	DocketNavigator Time to Trial Statistics for Patent Cases in the Western District of Texas

No.	Exhibit Description
2016	Apple’s Opening Claim Construction Brief in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. May 27, 2025)
2017	CardWare’s Responsive Claim Construction Brief in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. June 17, 2025)
2018	Apple’s Reply Claim Construction Brief in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. July 1, 2025)
2019	CardWare’s Sur-Reply Claim Construction Brief in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. July 17, 2025)
2020	Joint Claim Construction Statement in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. July 18, 2025)
2021	Comparison Chart for References Relied Upon in Apple’s Invalidity Contentions in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex.)
2022	Excerpts from Defendant Google LLC’s Invalidity Contentions in <i>CardWare Inc. v. Google LLC</i> , No. 7:24-cv-00278-DC-DTG (W.D. Tex. Apr. 3, 2025)
2023	Claim Construction Order in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. Aug. 29, 2025)
[New] 2024	Transcript from <i>Markman</i> Hearing in <i>CardWare Inc. v. Apple Inc.</i> , No. 1:25-cv-00446-ADA (W.D. Tex. Aug. 28, 2025)
[New] 2025	Excerpt from Microsoft Corp., Microsoft Computer Dictionary (5th ed. 2002)

I. INTRODUCTION

On June 27, 2025, Apple Inc. (“Petitioner”) filed a Petition requesting *inter partes* review (“IPR”) of claims 1-20 (“Challenged Claims”) of U.S. Patent No. 10,628,820 (“the ’820 Patent”) (EX1001), entirely on obviousness grounds (Grounds 1-6). Paper 1 (“Petition” or “Pet.”). On July 16, 2025, the Board issued a Notice of Filing Date Accorded for the Petition and set the time for filing Patent Owner’s Preliminary Response. Paper 5.

The Board should deny institution because Petitioner fails to meet its burden of demonstrating that its prior art references render obvious any of the Challenged Claims. Patent Owner focuses this Preliminary Response on issues present in the independent claims (claims 1, 11, and 15), as they are dispositive of Petitioner’s Grounds.

First, for **Grounds 1-4** (collectively challenging independent claim 1 and dependent claims 2-10), Petitioner has failed to meet its burden of demonstrating that the proposed combination of *Walker* and *Brown* discloses or renders obvious “wherein further the limited-use payment information is to be used in place of card issuer payment information *for payment transactions* by said device at payment card reader facilities,” as recited in limitation 1(f) of independent claim 1. The term “transactions” is plural, meaning that the same “limited-use payment information” that is the subject of this claim (and is facility-limited) is re-usable in *multiple*

transactions at the specific reader facilities to which it is limited-in-use. *Walker*, on the other hand, is specifically directed to *single-use* payment information. Petitioner repeatedly emphasizes the single-use nature of *Walker*, including in connection with its discussion of limitation 1(f). Petitioner does not identify any disclosure of multiple uses of limited-use information in *Walker* (and, in fact, emphasizes the opposite) and does not rely on *Brown* for any limited-use information at all in connection with limitation 1(f).

Second, for these same **Grounds 1-4**, Petitioner has failed to show that the proposed combination of *Walker* and *Brown* discloses “a thin shaped body having no fixed payment numbers disposed thereon ... for payment transactions by said device at payment card reader facilities,” as required by limitation 1(a). Rather, *Walker* discloses that a portion of the number on the display remains fixed.

Third, Petitioner fails to meet its burden as it concerns **Grounds 5-6** (collectively challenging independent claims 11 and 15 and dependent claims 12-14 and 16-20). Both of independent claims relate to “online” transactions. But Petitioner’s primary reference, *Collinge*, is entirely focused on in-store (*i.e.*, *not* online) payments. It is directed to a process for allowing NFC transactions using mobile phones that lack a secure element (and therefore cannot securely store payment credentials on the device).

Lastly, claim 15 requires payment information that is used in “online transactions” (again, plural). Petitioner’s references (and its corresponding arguments in its Petition) are very clearly single-use, similar to the issue with respect to claim 1.

For these reasons, and those explained below, Patent Owner respectfully submits that Petitioner has failed to show a reasonable likelihood of success for any challenged claim, and the Board should therefore deny institution.

II. THE ’820 PATENT

When David Wyatt conceived of the invention claimed in the ’820 Patent, over a decade ago, there were “several different types of credit cards available in the marketplace.” EX1001, 1:35-36.

As the patent explains:

A first type of credit card is a conventional, standard piece of plastic with a magnetic strip, which is readily available and in wide commercial use. The advantage of this first type of credit card is that a large portion of the infrastructure for credit card transactions is built around this type of card, and consequently such a card works in a wide array of vendors’ credit card machines, automated teller machines (ATMs), and other devices that support the present credit card and banking infrastructure.

EX1001, 1:36-44.

The '820 Patent also recognizes that “[s]ecurity is an area of concern for credit card holders, as the small form factor makes theft quite easy, and additionally there are many ways for a malicious third-party to record the account number of a credit card in order to later make fraudulent transactions on the account.” EX1001, 9:56-60. The claimed invention “address[es] security concerns of a credit card owner on several fronts” while remaining compatible with the existing credit card infrastructure. *See* EX1001, 9:60-62.

The claims of the '820 Patent recite payment devices and online payment systems that address many of the security concerns. For example, claim 1 claims a payment device having a thin shaped body (*e.g.*, a payment card) that conveys payment information, including limited-use payment information to be used at payment card reader facilities (*e.g.*, card-present transactions) in place of card issuer payment information in *multiple payment* transactions. As another example, claims 11 and 15 claim online payment systems including a thin shaped body and a computing device that generates and transmits limited-use payment information for use in *online* transactions (rather than in-store transactions), in place of a card issuer payment information.

Moreover, instead of a conventional credit card device that bears all of the static payment information necessary for completing a card-present (*e.g.*, in-store) or card-not-present (*e.g.*, online) transaction printed on it, the '820 Patent claims a

credit card device with *no fixed payment numbers*. Specifically, the '820 Patent teaches an “electronic credit-card-like multi-function electronic device that has no fixed payment information.” EX1001, 3:60-63; EX1001, 11:36-39 (“Effectively, embodiments of the present disclosure provide a multi-function electronic device that has no fixed number....”). This *no fixed payment numbers* device specifically protects against certain security risks from card-present (in-store) transactions, including the risk that an onlooker copies usable payment numbers visible on a physical card and uses them at a later time for fraudulent card-not-present (online) transactions.

Indeed, the intentional absence of visibly imprinted fixed payment numbers limits the use of the card device to facility interface of the card. And rather than relying a display on the card, the claim recites interfaces to a user’s personal computing device (where online transaction would be performed) to convey generated payment numbers necessary for the safer performance of online transactions. *See* EX1001, 12:49-13:11.

The claims of the '820 Patent recite payment devices and online payment systems that include many of the foregoing features, among others. For example, Claim 1 recites a payment device having a thin shaped body (*i.e.*, a card) that conveys payment information, including limited-use payment information to be used at payment card reader facilities (*i.e.*, card-present transactions). As another

example, Claims 11 and 15 recite online payment systems including the thin shaped body (*i.e.*, the payment card) and a computing device that generates and transmits limited-use payment information for use in online transactions (*i.e.*, card-not-present transactions), in place of a card issuer payment information, as would normally have been imprinted on the face of the card payment device.

III. PETITIONER’S PURPORTED PRIOR ART

Petitioner relies upon seven references in its Grounds (*Walker, Brown, Eng, Gauthier, Patel, Collinge, Kranzley*). In Ground 1, Petitioner presents the combination of *Walker* and *Brown* to challenge independent claim 1 and dependent claims 8 and 10. In Ground 2, Petitioner adds a third reference (*Gauthier*) to Ground 1’s combination to challenge dependent claim 2. In Ground 3, Petitioner adds a third reference (*Eng*) to Ground 1’s combination to challenge dependent claims 4 to 7 and 9. In Ground 4, Petitioner adds a third reference (*Patel*) to Ground 1’s combination to challenge dependent claim 3. In Ground 5, Petitioner presents the combination of *Collinge, Kranzley, and Brown* to challenge independent claims 11 and 15 and dependent claims 13, 14, and 17 to 20. In Ground 6, Petitioner adds a fourth reference (*Eng*) to Ground 5 to challenge dependent claims 12 and 16.

Patent Owner provides an overview of the relevant references, for purposes of this Preliminary Response, in this Section III. Patent Owner then explains in the following sections how Petitioner’s Grounds using such references fail to

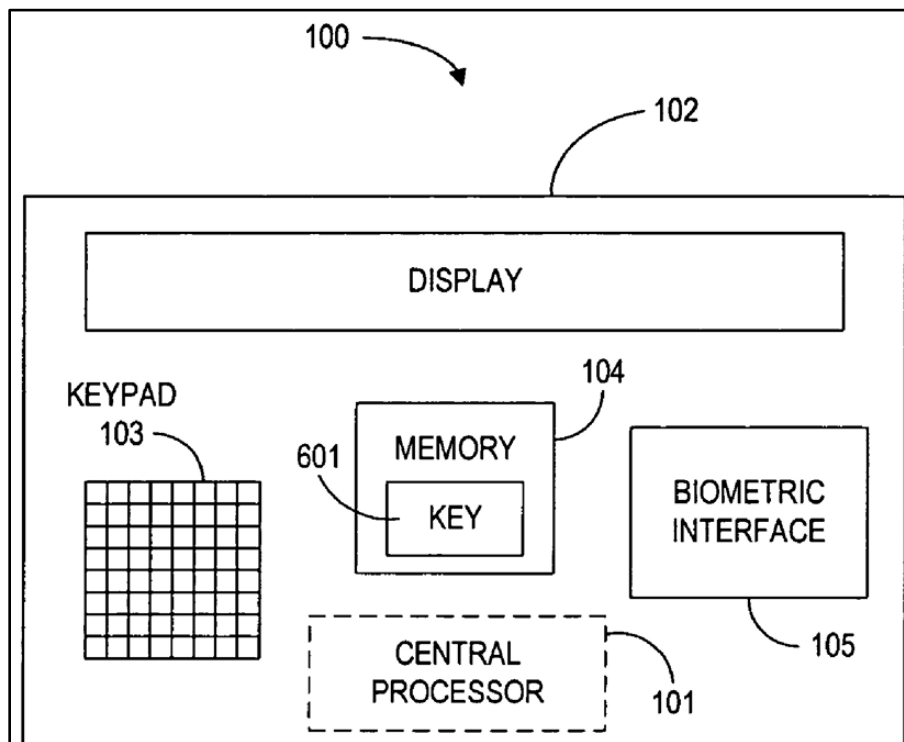
demonstrate a reasonable likelihood of success that any Challenged Claim is obvious.

A. *Walker*

U.S. Patent App. Pub. No. 2006/0122931 (“*Walker*”) is directed to a smart card for “generating a single-use, transaction-specific financial account number.” EX1009, [0001]. Petitioner repeatedly emphasizes that *Walker* is “single-use,” and only “single use,” including in connection with limitation 1(f) (which, as set out below, requires a limited-use number that is used in “transactions,” plural, and thus is not met by a single-use number). *See, e.g.*, Pet., 27-28.

The smart card of *Walker* receives a request for generating a single-use credit card number from a cardholder. The smart card retrieves a nonce and an initialization variable (IV) from the smart card memory. The nonce is encrypted using the cardholder’s private key K and the IV. EX1009, [0060]. The smart card then retrieves “the account number from the device memory ... the encrypted nonce C, the initialization variable IV, and account number A are concatenated to form an encrypted, single-use credit card number.” EX1009, [0061]. “The resulting credit card number CCN is then displayed on the display screen 102 (step 806) and read, shown or otherwise transmitted to the merchant. The merchant transmits this number to the issuer’s central processor 400 for authorization of the transaction.” EX1009, [0063]. “To verify the card number, the credit card issuer’s central processor first

extracts the encrypted nonce C, the initialization variable IV, and account number A from the credit card number (step 902). The processor then retrieves the extracted account number from the cardholder account database 411 (step 903) and determines whether the account number is valid (step 904).” EX 1009, [0065].



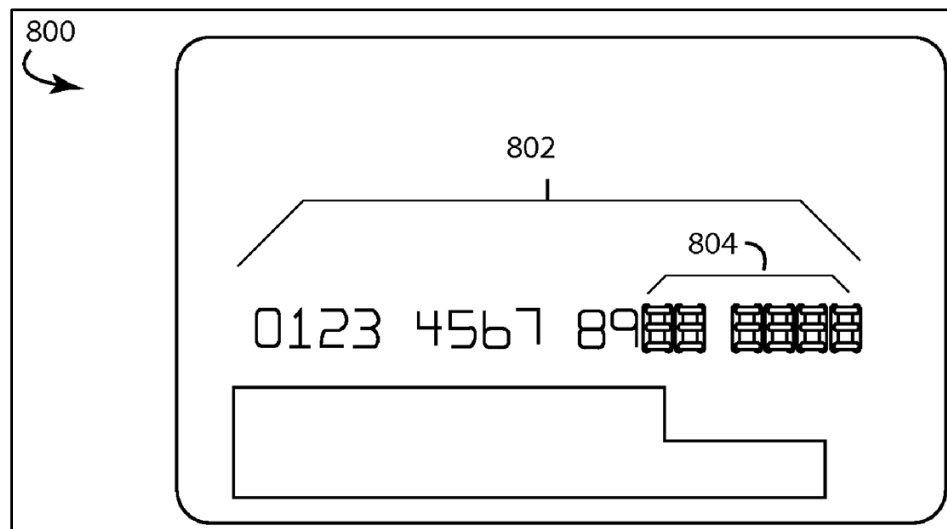
EX1009, FIG. 1.

B. *Brown*

U.S. Patent App. Pub. No. 2007/0208671 (“*Brown*”) is directed to a payment card with a visual display for displaying a personal account number (“PAN”) that is variable. The payment card includes “dynamic magnetic stripes and/or displays that change the personal account number (PAN), expiration date, and/or card verification value (CVV2/4DBC) according to precomputed values loaded into Crypto tables

embedded in each card. Each transaction produces a new combination of PAN, expiration date, and CVV that is unique and useful only once.” EX1010, [0041]. “A variable portion 1008 of a PAN 1010 provides for card-not-present transactions, while a QChip 1012 embedded in a magnetic stripe 1014 provides for card-present transactions.” EX1010, [0199].

A portion of the PAN is variable, as shown in Figure 8 below.



EX1010, FIG. 8.

C. *Collinge*

U.S. Patent App. Pub. No. 2013/0262317 (“*Collinge*”) is directed to techniques for “generating and provisioning payment credentials to a mobile device lacking a secure element.” EX1004, Abstract. *Collinge* explains that the system relies on two computing devices to perform its methods. EX1004, [0007], FIGs. 1-4, 6, and 7. *Collinge* explains that such a two computer system is necessary because

“not all mobile devices have secure elements.” EX1004, [0004]. “As a result, a consumer who has a NFC-capable mobile device may not be able to use their device to conduct payment transactions if their mobile device lacks a secure element.” EX1004, [0004]. Therefore, “there is a need for a technical solution to enable a mobile device lacking a secure element to conduct contactless payment transactions.” EX1004, [0005].

Collinge solves this problem by creating a provisioning system comprising a mobile device lacking a secure element and therefore is not suitable for secure storage of the payment credentials. Therefore, during the transaction, the payment credentials are transmitted to the mobile device from a second device that comprises a remote secure element (SE). EX1004, [0068]. The mobile device then uses a single-use key provided by the remote-SE system to generate a cryptogram. EX1004, [0069]. Then, the mobile device “transmit[s] the generated cryptogram and payment credentials to a point-of sale terminal” to complete the transaction. EX1004, [0070]. Based on the validation of both the cryptogram and the payment credentials, the transaction is authorized. EX1004, [0070].

D. *Kranzley*

U.S. Patent App. Pub. No. 2010/0125509 (“*Kranzley*”) is directed to a method for “using mobile devices to conduct payment transactions over a network.” EX1013, [0010]. The method includes “activating a payment application of a mobile

device, generating, using the payment application, an optical image representing payment account information associated with said payment application, said payment account information including at least one of a payment account number, an expiry date of said payment account number, and a dynamic verification code generated by said payment application; and presenting said optical image to a merchant transaction terminal for scanning to conduct said payment transaction.”

EX1013, [0010]. A “static VPAN 15 (which is displayed in plain text on a display device 14 of the mobile device 12 along with an expiry date and dynamic data) is entered into the point of sale device (e.g., it may be key entered by a clerk, or by the customer) ... the static VPAN (and expiry and dynamic data) are used to create a transaction authorization request message that is transmitted from the merchant to a payment network for authorization processing.” EX1013, [0035]. At least some of the numbers in the VPAN generated are fixed, as shown in Figure 5 below.

500 

VPAN <u>502</u>	PAN <u>504</u>	STATIC CARD VERIFICATION CODE <u>506</u>	COUNTER <u>508</u>	VPAN EXPIRY <u>510</u>
5555-5555-5555-5555	5422-4343-2324-1332	432	0	04/01/2009
5555-5457-4381-3243	5489-2382-1818-4343	312	4	04/30/2009
5555-5929-3453-1242	5982-2381-2848-1281	647	9	05/4/2009
5555-2438-3422-4629	5898-2428-5421-0938	321	0	03/28/2009

EX1013, FIG. 5.

E. Petitioner's Proposed Combinations

Petitioner's proposed obviousness combination for Grounds 1 to 4 is based on a combination of *Walker* and *Brown* (additionally with *Gauthier* in Ground 2, *Eng* in Ground 3, and *Patel* in Ground 4).

Relevant to this Preliminary Response and as further discussed below, as best that Patent Owner can discern, for Grounds 1 to 4, Petitioner proposes that *Walker* is the primary reference, including its smart card that generates a single-use credit card number. Petitioner appears to propose that it would have been obvious to “implement Walker's payment device 100 with a thin-shaped body” as taught by *Brown*, to “configure Walker's device to include a reader interface comprising a dynamic magnetic stripe and/or NFC interface” as taught by *Brown*. Pet., 20, 25-27.

Petitioner's proposed obviousness combinations for remaining Grounds 5 and 6 are based on a combination of *Collinge*, *Kranzley*, and *Brown* (additionally with *Eng* in Ground 6). Relevant to this Preliminary Response and as further discussed below, as best that Patent Owner can discern, for Grounds 5 and 6, Petitioner proposes that *Collinge* is the primary reference, including its payment system “that includes generating and ‘provisioning of payment credentials to mobile devices’ for ‘use in mobile payment transactions.’” Pet., 56-58. Petitioner further appears to propose “to modify Collinge's mobile device to display payment credentials to

complete an online payment transaction, as taught by Kranzley,” including to use “the touch-screen display of Collinge’s mobile device ... to select the payment method for the POS transaction and enter an authentication PIN.” Pet., 59-61, 70-71. Petitioner further appears to propose “to use Brown’s payment card device free of any fixed payment numbers visible thereon with Collinge’s NFC-enabled computing device (i.e., cell phone) and payment system.” Pet., 63-65.

IV. CLAIM CONSTRUCTION

For the purposes of this Preliminary Response only, Patent Owner believes that the claims should carry their plain and ordinary meaning. As set out below, Patent Owner believes that Petitioner is wrong that several claim terms are subject to the printed matter doctrine (as discussed in Section VI.A, below).

V. LEVEL OF ORDINARY SKILL IN THE ART

For purposes of this Preliminary Response , Patent Owner does not challenge Petitioner’s proposed level of ordinary skill in the art.

VI. ARGUMENT

A. The Challenged Claims are Not Directed to Printed Matter.

Petitioner asserted that “[t]he Challenged Claims include several limitations that are directed to printed matter that has no structural or functional relationship to the claimed substrate on which the information is disposed or printed.” Pet., 5-6. Patent Owner respectfully disagrees, as relevant here and as it concerns the at-issue

limitations in claims 1, 11, 12 (in part), 15 and 16 (in part).¹ Moreover, Petitioner already lost these same arguments as it concerns these same claim terms in the parties’ parallel district court litigation. *See* EX2023, 3 (finding that Petitioner’s identified “printed matter terms” are “[n]ot subject to the printed matter doctrine”) (emphasis added).

First, the disputed limitations in the ’820 Patent (*e.g.*, “having no fixed payment numbers disposed thereon”) recite the *absence* of functional information that would typically be present in conventional payment cards. *Pet.*, 6. Petitioner does not address the two-step test for evaluating whether a claim term is printed matter² or controlling Federal Circuit precedent on this issue. *See* *Pet.*, 5-6. Instead, Petitioner points to a prior preliminary institution decision on the ’820 Patent that

¹ Patent Owner does not dispute—for purposes of Petitioner’s IPR Petition and this Preliminary Response—that the limitation that Petitioner identifies on page 6 of its Petition in (i) claim 2 (but only the part of this claim reciting “the fixed payment information includes only ...” and not the part reciting “free of any ...”), and (ii) claims 12 and 16 (but only the part of these claims starting with “bears only...” and not the part reciting “bears no fixed payment numbers.”) are subject to the printed matter doctrine.

² *See, e.g., IOENGINE, LLC v. Ingenico Inc.*, 100 F.4th 1395, 1404 (Fed. Cir. 2024).

was issued before the district court rejected these same arguments, and before the Acting Director’s September 16, 2025 Memorandum concerning “PTAB consideration of prior findings of fact and conclusions of law.”

Regardless, none of these limitations constitute printed matter because they do not “claim[] the content of information.” *In re Distefano*, 808 F.3d 845, 848, 851 (Fed. Cir. 2015) (finding that “although the selected web assets can and likely do communicate some information, the content of the information is not claimed.”). Instead, the disputed limitations claim the *absence* of unlimited-use information that would normally be present on payment devices (*e.g.*, credit cards), to serve a security-related purpose (*e.g.*, hiding payment information from would-be thieves).

For instance, independent claim 1 of the ’820 Patent—which is representative of the three independent claims for this issue for purposes of this Preliminary Response—discloses a payment card device that, unlike conventional credit cards, does *not* bear visible payment information like an embossed credit card number or expiration date or printed card validation value (“CVV”) (*i.e.*, as “having no fixed payment numbers disposed thereon”). *See also, e.g.*, EX1001, FIG. 11 (disclosing “No Fixed Payment Numbers”).

Instead of using fixed numbers on a payment card, the payment device of independent claim 1 conveys limited-use payment information to the payment card reader facility (“wherein payment information for a transaction is operable to be

conveyed via the reader interface and comprises limited-use payment information”) and then validated by a card issuer authority. Thus, the payment device of claim 1 need not convey visible payment information (which is inherently unlimited in use, and thus a wider security risk), instead the payment device of claim 1 is configured to convey “the limited-use payment information ... used in place of card issuer payment information for payment transactions by said device at payment card reader facilities.”

Claim 1 does not claim the communicative content of the payment information; to the contrary, it claims a system that intentionally omits this information. Because printed matter only encompasses “information claimed for its communicative content” and *not* the absence of information, for example, to improve security, these claim terms are not directed to printed matter. *Cf. Distefano*, 808 F.3d at 848 (a “limitation is printed matter *only* if it claims the content of information” at step 1) (emphasis added); *IOENGINE*, 100 F.4th at 1405 (finding doctrine did not apply at step 1 and giving limitation patentable weight); *id.* at 1404 (“As discussed above, printed matter is matter that is claimed for its communicative content—i.e., the *content specifically being communicated*. The fact that there is a communication itself is not content; content is what the communication actually says. Nor is the form of a communication, such as whether the communication is encrypted, considered to be content. Printed matter encompasses *what* is

communicated—the content or information being communicated—rather than the act of a communication itself.”) (emphasis in original).

Neither case that Petitioner cites (Pet., 6), supports its position that the *absence* of information is the equivalent of the *presence* of information. In fact, Petitioner took the position in the parallel district court litigation that this issue (*i.e.*, the absence of information) “is an issue of first impression.” EX2024, 11:15-17. The district court in that case disagreed with Petitioner’s assertion and ruled that these terms are **not** subject to the printed matter doctrine. EX2024, 22:10-13; EX2023, 3. Because the limitations are not printed matter, the printed-matter inquiry should thus stop here at step 1. *See IOENGINE*, 100 F.4th at 1405; *Distefano*, 808 F.3d at 850.

Even if the Board proceeds to step 2, these terms should be afforded patentable weight because they are functionally related to the claimed devices. *See Distefano*, 808 F.3d at 850-51. For example, the claimed “no fixed payment numbers” (and similar claim terms) enhance the security of the claimed systems by removing the possibility that—as the ’820 Patent explains—“a malicious third-p arty [*sic*] [would] record the account number of a credit card in order to later make fraudulent transactions on the account.” EX1001, 9:56-62. Further, the absence of the fixed payment numbers ensures that “[o]nly the [limited-use payment information] generated at the instant the [claimed systems are] being used matters,” because it is the only payment information in the claimed systems that is provided to a merchant.

EX1001, 11:36-45, 18:1-6. Because there is a functional relationship between the absence of fixed payment information and the security features of the claimed invention, the Challenged Claims that recite the absence of fixed payment information should be given patentable weight. *In re Gulack*, 703 F.2d 1381, 1386 (Fed. Cir. 1983) (“[T]he critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate”).

B. Petitioner Fails to Meet Its Burden as to Grounds 1-4.

- 1. Petitioner fails to meet its burden of showing that its proposed combination discloses “the limited-use payment information is to be used in place of card issuer payment information *for payment transactions* by said device at payment card reader facilities” as recited in limitation 1(f).**

Petitioner fails to show that its proposed obviousness combination in Ground 1 discloses or renders obvious “the limited-use payment information is to be used in place of card issuer payment information for payment transactions by said device at payment card reader facilities” as required by limitation 1(f). This is also dispositive of Grounds 2-4 (challenging dependent claims).

Independent claim 1 recites, in relevant part:

[1pre] 1. A payment device comprising:

...

[1c] a cryptographic processor coupled to the memory;

and

...

[1e] wherein payment information for a transaction is operable to be conveyed via the reader interface and comprises limited-use payment information, and

[1f] wherein further the limited-use payment information is to be used in place of card issuer payment information ***for payment transactions*** by said device at payment card reader facilities.

EX1001, 19:58- 20:7 (emphasis added).

It is well established that when a claim recites a plural term, in accordance with common English usage, the plural term refers to “two or more items.” *See, e.g., Apple Inc. v. MPH Techs. Oy*, 28 F.4th 254, 261-62 (Fed. Cir. 2022) (“In accordance with common English usage, we presume a plural term refers to two or more items”; finding that the Board did not err in construing the claim limitation because the term “information fields” is plural, thus requiring more than one field, and nothing in the claim language or written description suggested otherwise); *Leggett & Platt, Inc. v. Hickory Springs Mfg. Co.*, 285 F.3d 1353, 1357-58 (Fed. Cir. 2002) (“At the outset, the claim recites ‘support wires’ in the plural, thus requiring more than one welded ‘support wire.’”).

Here, limitation 1(f) recites that “the limited-use payment information is to be used in place of card issuer payment information ***for payment transactions*** by said device at payment card reader facilities.” Thus, by its plain language, the claimed

“payment transactions” is plural, meaning that the “limited-use payment information” must be usable for at least two payment transactions (*i.e.*, more than one).

Petitioner does not attempt to show this in the prior art and instead relies entirely on *Walker*’s disclosure of a “single-use” number. For example, Petitioner asserts that “Walker’s single-use credit card number (*i.e.*, the limited use payment information) is to be used in place of a conventional credit card number (*i.e.*, card issuer payment information).” Pet., 28 (emphasis in original). Petitioner further states that “Walker teaches that ‘[a] cardholder 301, wishing to purchase goods or services from a merchant 302 ... transmits a single-use credit card number 300 to the merchant’ and ‘[t]he merchant 302 transmits the single-use credit card number 300 to a credit card issuer 303.’” Pet., 28 (citing EX1009, [0045], FIG. 3A). The single-use nature of the *Walker* credit card number is fundamental to the Petition—Petitioner repeatedly emphasizes this both in connection with limitation 1(f) and in connection with limitation 1(a) as supposed circumstantial proof that the *Walker* smart card embodiment does not have “fixed” payment numbers (*i.e.*, *because* it is single use). Pet., 18. Petitioner’s expert does the same. EX1003 ¶¶88, 139-40.

Petitioner also relies on *Brown* in connection with limitation 1(f) but only for the proposition that a merchant’s payment terminal includes a “payment card reader.” Pet., 28-29. Petitioner does not rely on *Brown* to show a modification of the

“single use” nature of *Walker* or otherwise explain how or why a POSITA would use that single use number in multiple transactions (e.g., a facility-based type of limitation of use, as opposed to simply a single transactional usage limitation). *See* Pet., 28-29. Nor does *Walker* propose limitations of use on a per-facility interface basis. *See generally* EX1009.

The distinction in independent claim 1 is important. The limited-use nature of this information is a facility-based limitation, as claim 1 itself indicates that “the limited-use payment information is to be used in place of card issuer payment information *for payment transactions by said device at payment card reader facilities.*” The limitation in claim 1 is not about single-use cryptogram or single-use credit card number (as Petitioner wrongly seems to premise its arguments in its Grounds on).

For at least the foregoing reasons, Petitioner has failed to show a reasonable likelihood of success for its Ground 1 (as well as Grounds 2-4, which each concern claims depending from claim 1 and rely on the same flawed combination of *Walker* and *Brown*).

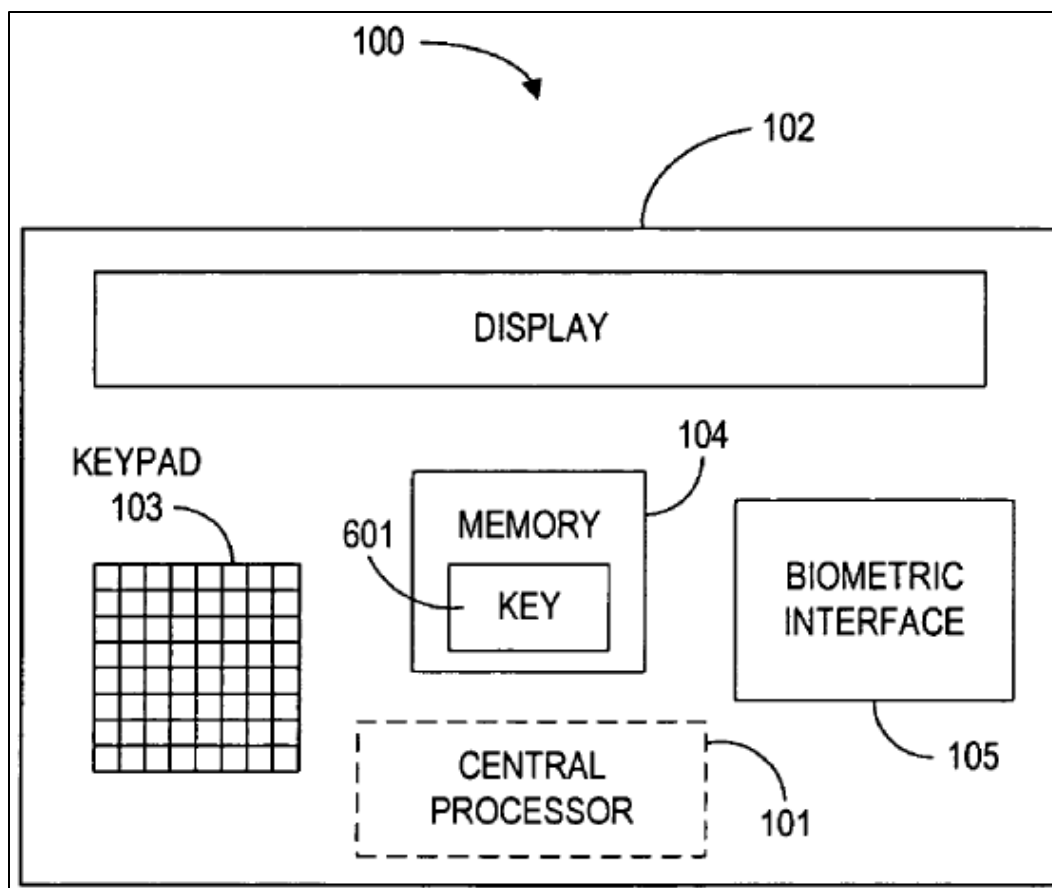
2. **Petitioner fails to meet its burden of showing that its Proposed Combination has “a thin shaped body having no fixed payment numbers disposed thereon” as recited in limitation 1(a).**

Petitioner also fails to show that its proposed obviousness combinations in Grounds 1-4 (collectively challenging independent claim 1 and dependent claims 2-

10) include “a thin shaped body having *no fixed payment numbers disposed thereon*” as recited in limitation 1(a).

For the limitation that the thin shaped body “hav[e] no fixed payment numbers disposed thereon,” Petitioner points primarily to *Walker*. Pet., 17-18.

Walker is directed to a smart card for “generating a single-use credit card number.” EX1009, [0043]. *Walker* discloses that “[t]he single-use credit card number is preferably a *16-digit number* that can be recognized as a conventional credit card number.” EX1009, [0047] (emphasis added). That 16-digit number is then displayed on display screen 102 of device 100, as shown in Figure 1, reproduced below. EX1009, [0043]; EX1009, [0063] (discussing Figure 8 and explaining that “[t]he resulting credit card number CCN is then displayed on the display screen 102 (step 806)...”); EX1009, [0090] (discussing Figure 10 and explaining that “[i]f a single-use credit card number is available (step 1005), it is displayed on the device display screen 102 (step 1007)”); *see also* EX1009, [0044], [0046]-[0047], FIGs. 2, 3B.



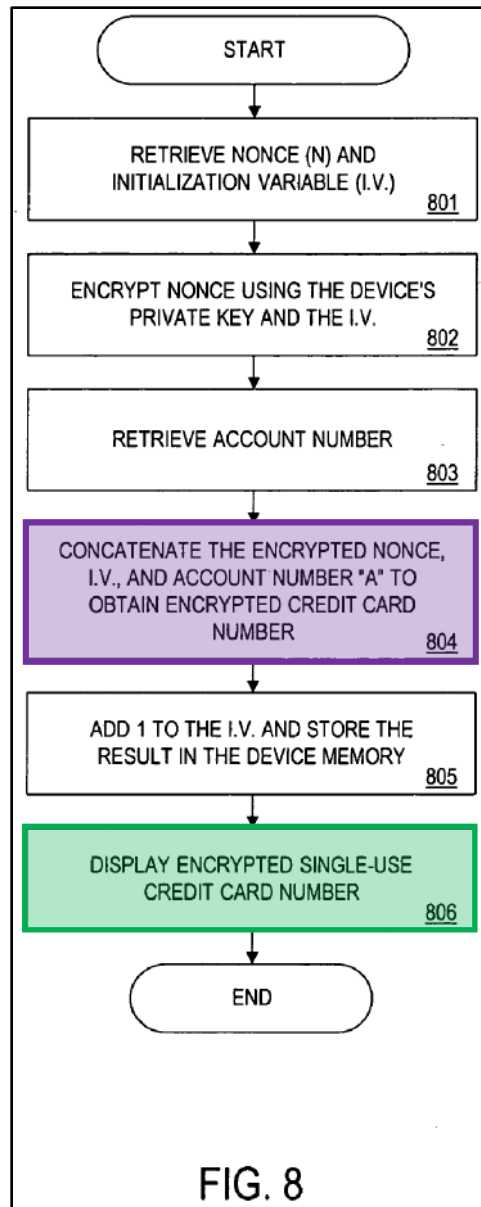
EX1009, FIG. 1.

Although Petitioner asserts that *Walker* has no fixed numbers, Figure 13, reproduced below, discloses that the “Credit Card Number” is at least partly fixed (*e.g.*, for Tim Johnson’s account, the number always includes “**3122**” and for Sue Marvin’s account, the number always includes “**1454-8000**”):

CARDHOLDER ACCOUNT NUMBER 501	CARDHOLDER NAME 502	CREDIT CARD NUMBER 1301	STATUS 1302
2222-3333- 4444-5555	TIM JOHNSON	3122 2222-3333-6644	USED
		3122 1222-3333-7697	NOT USED
		⋮	⋮
		3122 1222-3394-4181	NOT USED
9999-8888- 7777-6666	SUE MARVIN	1454-8000 3366-7171	USED
		1454-8000 3366-7172	USED
		⋮	⋮
		1454-8000 3989-6097	NOT USED

EX1009, FIG. 13 (annotated).

Walker separately discusses how this works. With respect to Figure 8, reproduced below, *Walker* discloses the process of generating a single-use credit card number where a portion of the number is fixed. EX1009, [0060]-[0063] Specifically, *Walker* discloses that “[i]n **step 804**, the encrypted nonce C, the initialization variable IV, and account number A are *concatenated* to form an encrypted, single-use credit card number CCN.” EX1009, [0061] (emphasis added). In **step 806**, the “resulting credit card number CCN is then displayed on the display screen 102” EX1009, [0063].



EX1009, FIG. 8 (annotated).

The “concatenate[d]” portion of the number (including the account number, etc.) is fixed. EX2025, 3 (“concatenate *vb*. To join sequentially (for example, to combine the two strings ‘hello’ and ‘there’ into the single string ‘hello there’)”). In other words, if the encrypted nonce C, the initialization variable IV, and account

number A are linked together in a series to form the single-use credit card number CCN, then *Walker*'s CCN is at least partially fixed.

Petitioner also asserts that *Brown* has no fixed numbers but does not explain how or why a POSITA would apply that teaching to *Walker*. Further, the relied-upon disclosure in *Brown* is for a card-not-present transaction, rather than card-present transactions as required by claim 1 (“for payment transactions by said device *at* payment card reader facilities” as claimed) in claim 1 of the '820 Patent. *See* Pet., 19-20; EX1010, [0200]. More particularly, *Brown* discloses that “[i]n FIG. 11, a payment card 1100 includes a PAN with a digital display 1102 *for card-not-present transactions*.” EX1010, [0200] (emphasis added). Similarly, in Figure 12, “[a] PAN 1210 provides *for card-not-present transactions*[.]” EX1010, [0200] (emphasis added). Therefore, the relied upon portions of *Brown* disclose a PAN with a digital display for “card-not-present” transactions, and not “for payment transactions by said device at payment card reader facilities,” as recited in independent claim 1 of the '820 Patent.

Petitioner has thus failed to show a reasonable likelihood of success for Grounds 1-4 for a second, independent reason.

C. Petitioner Fails to Meet Its Burden as to Grounds 5-6.

1. Petitioner has failed to demonstrate that a POSITA would have used the payment information of *Collinge* for an online transaction as required by independent claims 11 and 15.

Claim 11 is directed to an “*online* payment system” (per the preamble of claim 11) and requires a “display operable to provide a visual user-interface operable for performing *online* transactions” (per limitation 11(f) per the Petition), as well as generated “limited-use payment information” (per limitation 11(i) per the Petition). *See* EX1001, 22:10, 22:19-20, 22:24-26 (emphases added); Pet., 56, 68, 76, 97-98. Claim 15 is similarly directed to an “*online* payment system” (per the preamble of claim 15) and requires use in “*online* transactions” (per limitation 15(i) per the Petition). *See* EX1001, 23:39, 23:56-58 (emphases added); Pet., 83, 85, 99. Petitioner relies on the combination of *Collinge* and *Kranzley* for these limitations but fails to explain how or why a POSITA would use the cryptogram (limited-use payment information) of *Collinge* in an online transaction. *See* Pet. at 56-61, 68-71, 76-77 (discussing *Collinge* plus *Kranzley* combination); Pet, 83-85 (Petitioner referring back to claim 11 for relevant portions of claim 15 analysis).

Collinge is specifically directed to in-store (not online) NFC transactions. Indeed, the entire purpose of *Collinge* is to address problems with mobile devices lacking a secure element (such that payment account credentials cannot be securely stored). EX1004, [0003]-[0005] (“Thus, there is a need for a technical solution to

enable a mobile device lacking a secure element to conduct contactless payment transactions.”). In one representative embodiment, *Collinge* uses a “remote-SE (remote-secure element) system 110,” such as that shown in Figure 1 for storing and “provisioning [payment credentials] to the mobile device 104.” EX1004, [0042]. The remote-SE system builds a “payment token payload” for the mobile device that may include a “card profile 116 and a single use key 118.” EX1004, [0043]. With this, the mobile device can “generate a payment cryptogram valid for a single payment transaction.” EX1004, [0043].

This remote-SE to mobile-device approach makes no sense in an online environment or outside of an in-store transaction; why would a *remote* system provision a payment token payload to a mobile device only to turn around use that payment token to make a *remote* payment (online)? In other words, the payment token is already coming from a remote location, and if the mobile device has security access such that it can obtain the payment token payload from the remote-SE system, it would be far more logical, secure, and efficient to simply command the remote-SE system to send the payment credentials (or the cryptogram) directly to the online merchant, without requiring the mobile phone itself to act as an intermediary. Using the phone as an intermediary unnecessarily exposes the payment credentials to hacking when they are wirelessly transmitted to and from the phone. The *Collinge* approach also requires a cryptographic processor on the mobile phone, or at least

storage and execution of an algorithm on the phone that could otherwise run entirely through the remote system. This makes sense in connection with in-store payments because the mobile phone must have a way to provide the payment information itself to a reader facility. But it does not make any sense in the context of an online transaction. Not surprisingly, *Collinge* does not say anything—not even a suggestion—that the disclosure is applicable to online transactions. Nor does any other reference that Petitioner cites.

Petitioner nonetheless argues that a “POSITA would have appreciated that performing an online transaction using Collinge’s payment credentials and mobile payment application would have beneficially provided the user with flexibility to shop in more places with Collinge’s secure payment credentials.” Pet., 60. Petitioner goes on to make generic and conclusory obviousness arguments—reasonable chance of success, combining known elements for a predicable result, etc.—as a reason why a POSITA would have combined *Collinge* with *Kranzley*. Pet., 60-61. Petitioner’s expert largely parrots the same points, asserting—in conclusory fashion—that a POSITA would have re-imagined *Collinge* to use a VPAN instead of a PAN as part of the token load received from the remote-SE. EX1003 ¶219. At no point, however, does Petitioner or its expert address the more fundamental question of why a POSITA would even begin with *Collinge* to address online payment security issues when *Collinge* has nothing at all to do with online payments and is instead entirely

focused on in-store payments with mobile phones that lack a secure element. Accordingly, the entire premise of Petitioner’s combination fails—it is a mish-mosh of incompatible references addressing very different technical problems.

2. The references in the proposed combination do not disclose that the “payment information provided by the computing device is used in *online transactions*” as required by limitation 15(i).

Claim 15 is directed to an “online payment system” and requires, per limitations 15(h)-(i), dynamically generated limited-use payment information that is “used in online transactions.” EX1001, 23:54-59, Pet., 85, 99. Petitioner asserts that limitation 15(i) is met (via cross-reference to limitation 11(k)) by the CVC3 disclosure in paragraphs 50 and 77 of *Collinge*. See Pet., 78, 85.

In addition to the reasons explained above (*i.e.*, *Collinge* is directed to in-store and not online payments), Petitioner fails as to claim 15 because it requires use in “online transactions” (plural) whereas *Collinge* discloses a single-use cryptogram that cannot be used in multiple transactions. See, e.g., EX1004, [0050] (“The single use key 118 may be a payment token used one time to generate a payment cryptogram to be used in a payment transaction.”); EX1004, [0077] (“The mobile payment application 106 may then generate a payment cryptogram using the generating key included in the *single use key* 118.”) (emphasis added); see also EX1004, [0007] (“generating a payment cryptogram valid for a single financial transaction”); EX1004, [0043] (“generate a payment cryptogram valid for a single

payment transaction.”). *See also Apple*, 28 F.4th at 261-62; *Leggett & Platt*, 285 F.3d at 1357-58.

For at least the foregoing reasons, Petitioner has failed to show a reasonable likelihood of success for its Ground 5 for this additional reason.

VII. CONCLUSION

Petitioner has failed to show a reasonable likelihood of success for any challenged claim. Patent Owner thus respectfully submits that the Board should deny institution.

Dated: October 16, 2025

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

I hereby certify that this paper complies with the type-volume limitation of 37 C.F.R. §42.24 (as determined by the Microsoft Word word-processing system used to prepare this paper) because it contains 6,039 words, excluding the parts of the paper exempted by 37 C.F.R. §42.24(a).

Dated: October 16, 2025

/Matt Berkowitz/

Matthew G. Berkowitz (Reg. No. 57,215)

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6, the undersigned certifies that on October 16, 2025, a copy of the foregoing document, along with any exhibits not previously served, were served by email to counsel for Petitioner:

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