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DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Status of Claims

2. This action is in response to the Amendment dated **August 27, 2020**.
3. **Claims 1 and 11** have been amended, and are hereby entered.
4. **Claims 1-3, 5, 7, 9-12, 14, and 16-20** are currently pending, and have been examined.
5. **Claims 1-3, 5, 7, 9-12, 14, and 16-20** have been rejected.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. **Claims 1-3, 5, 7, 9-12, 14, and 16-20** are rejected under 35 U.S.C. § 101 because the claimed invention because the claimed invention is not directed to statutory subject matter. Specifically, the invention of claims 1-3, 5, 7, 9-12, 14, and 16-20 is directed to an abstract idea without significantly more.
8. **Independent claims 1, and 11** are directed to a method (claim 1), and a system (claim 11). Therefore on its face, each of claims 1, and 11, is directed to a statutory category of invention under Step 1 of the 2019 PEG. However each of claims 1, and

11, is also directed to an abstract idea without significantly more, under Step 2A (Prong One and Prong Two) and Step 2B of the 2019 PEG which is a judicial exception to 35 U.S.C. 101, as detailed below. Using the language of **independent claim 1** to illustrate the claim recites the limitations of, (i) processing network payments, (ii) initiating a payment instruction with a payment originator bank, (iii) validating the payment instruction, (iv) posting and committing the payment instruction as a debit to a payment originator account, (v) posting and committing the payment instruction, (vi) receives the payment instruction, (vii) posts the payment instruction as a credit to a payment beneficiary account, (viii) posts and commits acknowledgment of the payment instruction, and (ix) wherein the payment originator bank and the payment beneficiary bank reconcile. In other words, the claims provide systems and methods for the application of distributed ledgers for network payments as financial exchange settlement and reconciliation under the broadest reasonable interpretation covers methods of organizing human activity specifically commercial or legal interactions -- legal obligations, but for the recitation of generic computer components but for the recitation of generic computers and generic computer components. (Independent claim 11 recites similar limitations and the analysis is the same).

9. That is, other than reciting a distributed ledger, a payment originator, a payment beneficiary, a middleware communication layer, an internal payment originator bank non-distributed banking ledger, a peer-to-peer network, an internal payment beneficiary bank non-distributed banking ledger (claim 1), a distributed ledger, a payment originator bank middleware communication layer, an internal payment originator bank non-distributed banking ledger, a payment beneficiary bank middleware communication

layer, an internal payment beneficiary bank non-distributed banking ledger, a peer-to-peer payment network (claim 11) nothing in the claim precludes the steps from being directed to methods of organizing human activity specifically commercial or legal interactions but for the recitation of generic computer components. If a claim limitation under its BRI, covers methods of organizing human activity but for the recitation of generic computers, then the limitations fall within the “methods of organizing human activity” grouping of abstract ideas. Therefore, claim 1 recites an abstract idea under Step 2A Prong One of the Revised Patent Subject Matter Eligibility Guidance 84 Fed.Reg 50 (“2019 PEG”).

10. This “methods of organizing human activity” is not integrated into a practical application under Step 2A prong Two of the 2019 PEG. In particular claim 1 recites the following additional elements of, a distributed ledger, a payment originator, a payment beneficiary, a middleware communication layer, an internal payment originator bank non-distributed banking ledger, a peer-to-peer network, an internal payment beneficiary bank non-distributed banking ledger (claim 1), a distributed ledger, a payment originator bank middleware communication layer, an internal payment originator bank non-distributed banking ledger, a payment beneficiary bank middleware communication layer, an internal payment beneficiary bank non-distributed banking ledger, a peer-to-peer payment network (claim 11). This judicial exception is not integrated into a practical application. In particular, the claim only recites the additional elements – a distributed ledger, a payment originator, a payment beneficiary, a middleware communication layer, an internal payment originator bank non-distributed banking ledger, a peer-to-peer network, an internal payment beneficiary bank non-distributed

banking ledger (claim 1), a distributed ledger, a payment originator bank middleware communication layer, an internal payment originator bank non-distributed banking ledger, a payment beneficiary bank middleware communication layer, an internal payment beneficiary bank non-distributed banking ledger, a peer-to-peer payment network (claim 11).

11. The *distributed ledger, payment originator, payment beneficiary, middleware communication layer, internal payment originator bank non-distributed banking ledger, peer-to-peer network, internal payment beneficiary bank non-distributed banking ledger* (claim 1), *a distributed ledger, a payment originator bank middleware communication layer, an internal payment originator bank non-distributed banking ledger, a payment beneficiary bank middleware communication layer, an internal payment beneficiary bank non-distributed banking ledger, a peer-to-peer payment network* (claim 11), are recited at a high level or generality (*i.e.* as a generic computer performing generic computer functions) such that, they amount to no more than generally linking the use of the judicial exception to a particular technological environment or field of use (*i.e.* a peer-to-peer network) (see MPEP 2106.05(h)). Accordingly these additional elements do not integrate the abstract idea into a practical application because they do not impose any meaningful limits on practicing the abstract idea. The claims are directed to an abstract idea.

12. Under Step 2B of the 2019 PEG independent claim 1 does not include additional elements that are sufficient to amount to significantly more than the abstract idea. The claim(s) do not include additional elements that are sufficient to amount to significantly more than the judicial exception. As discussed above with respect to integration of the

abstract idea into a practical application, the additional elements of using a distributed ledger, a payment originator, a payment beneficiary, a middleware communication layer, an internal payment originator bank non-distributed banking ledger, a peer-to-peer network, an internal payment beneficiary bank non-distributed banking ledger (claim 1), a distributed ledger, a payment originator bank middleware communication layer, an internal payment originator bank non-distributed banking ledger, a payment beneficiary bank middleware communication layer, an internal payment beneficiary bank non-distributed banking ledger, a peer-to-peer payment network (claim 11), processing network payments, initiating a payment instruction with a payment originator bank, validating the payment instruction, posting and committing the payment instruction as a debit to a payment originator account, posting and committing the payment instruction, receives the payment instruction, posts the payment instruction as a credit to a payment beneficiary account, posts and commits acknowledgment of the payment instruction, and wherein the payment originator bank and the payment beneficiary bank reconcile amounts to generally linking the use of the judicial exception to a particular technological environment or field of use (*i.e.* a peer-to-peer network).

The claims are not patent eligible.

13. The dependent claims have been given the full two part analysis including analyzing the additional limitations both individually and in combination. The Dependent claim(s) when analyzed both individually and in combination are also held to be patent ineligible under 35 U.S.C. 101 because for the same reasoning as above and the additional recited limitation(s) fail to establish that the claim(s) are not directed to an abstract idea. The additional limitations of the dependent claim(s) when considered

individually do not amount to significantly more than the abstract idea. Claims 2-3, 5, 7, 9-10, 12, 14, and 16-20 merely further explain the abstract idea.

14. When viewed individually the additional limitations do not amount to a claim as a whole that is significantly more than the abstract idea. Accordingly **claims 1-3, 5, 7, 9-12, 14, and 16-20** are ineligible.

Claim Rejections - 35 USC § 103

15. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

16. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.

17. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103 are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating

obviousness or nonobviousness.

19. **Claims 1-3, 5, 7, and 9-12, 14, and 16-20** are rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Pat. Pub. No. 2018/0247302 A1 dated August 30, 2018 to Armstrong et al. in view of U.S. Pat. Pub. No. 2017/0148016 A1 dated May 25, 2017 to Davis (hereinafter, "Davis").

20. **Regarding claim 1:**

Armstrong et al., as shown, discloses the following limitations:

- *a method for processing network payments using a distributed ledger* (see at least Armstrong et al. at paras. [0094], [0128], and [0165]-[0171] and Figs. 1, 7, 13-14 which discloses a system and method to facilitate settlement of financial transactions that use a distributed ledger operating on blockchain principles (paras. [0169]-[0170]);
- *a payment originator initiating a payment instruction to a payment beneficiary with a payment originator bank* (see at least Armstrong et al. at paras. [0007]-[0008], [0025]-[0027], [0094], [0104], and [0149]-[0150] and Figs. 1-3, 7, and 9 which discloses a first user instructs the first intermediary server 126 to process a financial transaction request involving a second user (para. [0094]), the financial

transaction request includes the first user making a payment to the second user, or vice versa, and "a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a second transacting entity 912 has a respective account 915, 916 at their respective intermediary entities" (see, paras. at, [0150]);

- *the payment originator bank validating the payment instruction* (see at least Armstrong et al. at paras. [0007]-[0008], [0011], [0013], [0015], [0089], [0095]-[0100], [0104], [0106], [0113], and [0129]-[0133] and Figs. 1-3 and 7 which discloses the first intermediary server 126 transmits a financial transaction request including metadata and corresponding token, to a second intermediary server 128 via a messaging bus 118, the first intermediary server 126 generates an enriched data record from the metadata (paras. [0011], [0013], [0098]-[0099], and [0129]) by, extracting a plurality of attributes (paras. [0011], [0013], [0099], and [0130]-[0132]), hashing the attributes (paras. [0013], [0099], and [0132]), and combining the respective hashes (paras. [0013], [0099], and [0132]), the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (para. [0129]) via a communication link and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);
- *a middleware communication layer at the payment originator bank posting and committing the payment instruction to an internal payment originator bank non-distributed banking ledger as a debit to a payment originator account* (see at

least Armstrong et al. at paras. [0095]-[0096], [0160]-[0162], and [0206]-[0208] and Figs. 1-3 and 7 which discloses the first intermediary server 126 transmits a request including metadata, relating to a financial transaction to a second intermediary server 128 (para. [0096]) via a messaging bus 118 and “payers bank debits payers account: payers bank sends notice to payer bank gateway: payers bank gateway calls token database 1023 to get approved token” (see, paras. at, [0160] and [0206]) and “[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt” (see, paras. at, [0161] and [0207]), and “[c]learing: payer’s bank Nostro account is debited subject to bank institution rules” (see, paras. at, [0162] and [0208]).

- *the middleware communication layer at the payment originator bank posting and committing the payment instruction to a distributed ledger on a peer-to-peer network* (see at least Armstrong et al. at paras. [0007], [0098]-[0100], [0113], [0129], [0161], and [0207] and Figs. 1-3 and 7 which discloses “[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt” (see, paras. at, [0161] and [0207]) and the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]) via a communication link and the token provides a pointer to the request’s enriched data record in the blockchain 124 (para. [0007]);

- *wherein a middleware communication layer at a payment beneficiary bank receives the payment instruction from the distributed ledger on the peer-to-peer network (see at least Armstrong et al. at paras. [0007], [0011], [0013], [0098]-[0100], and [0129] which discloses the first intermediary server 126 transmits a financial transaction request including metadata and corresponding token, to a second intermediary server 128, the first intermediary server 126 generates an enriched data record from the metadata (paras. [0011], [0013], [0098]-[0099], and [0129]), the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]), and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);*
- *wherein the middleware communication layer at the payment beneficiary bank posts the payment instruction to an internal payment beneficiary bank non-distributed banking ledger as a credit to a payment beneficiary account (see at least Armstrong et al. at paras. [0149]-[0153] and Figs. 1-3 and 9 which discloses "a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a second transacting entity 912 has a respective account 915, 916 at their respective intermediary entities" (see, paras. at, [0150]), "[s]ettlement is effected by communication of the token 921 to bank A and then to bank B together with the appropriate flow of funds" (see, para. at, [0151]).*

21. Armstrong is silent on the limitations of, wherein the middleware communication layer at the payment beneficiary bank posts and commits acknowledgment of the

payment instruction to the distributed ledger on the peer-to-peer network, wherein the payment originator bank and the payment beneficiary bank reconcile the internal payment originator bank non-distributed banking ledger and the internal payment beneficiary bank non-distributed banking ledger with the distributed ledger on the peer-to-peer network. However, Davis, as shown, discloses the following limitation:

- *wherein the middleware communication layer at the payment beneficiary bank posts and commits acknowledgment of the payment instruction to the distributed ledger on the peer-to-peer network (see at least Davis at paras. [0051] and [0116]-[0119] and Figs. 1-2 and 10 which discloses the acquirer processing server 102 includes a transaction database 206 which stores transaction profiles 208 of data associated with respective electronic transactions, each transaction profile 208 includes a key-value pair including, a hash value as a key, and transaction-related data as the corresponding transaction value, the transaction-related data includes new data related to confirmation of crediting of the corresponding merchant transaction account and a new block which is based on the new hash value, is generated and added to the blockchain upon validation by nodes of the blockchain (i.e. Davis' teaching of confirmation of crediting and generation of a new block equals "posts and commits acknowledgement).*
- *wherein the payment originator bank and the payment beneficiary bank reconcile the internal payment originator bank non-distributed banking ledger and the internal payment beneficiary bank non-distributed banking ledger with the distributed ledger on the peer-to-peer network (see at least Davis at paras. [0076], [0091], [0099], and [0116]-[0119] and Figs. 1, 3, 6-7, and 10 which*

discloses newly generated blocks 704 are transmitted and stored within each node of the blockchain 702 for inclusion in the blockchain 702, each of the newly generated blocks is confirmed by one or more nodes before being appended to the blockchain 702).

22. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the system and method for processing electronic financial transactions using a blockchain disclosed by Armstrong et al. (and discussed above) to include the limitation of, wherein the middleware communication layer at the payment beneficiary bank posts and commits acknowledgment of the payment instruction to the distributed ledger on the peer-to-peer network, wherein the payment originator bank and the payment beneficiary bank reconcile the internal payment originator bank non-distributed banking ledger and the internal payment beneficiary bank non-distributed banking ledger with the distributed ledger on the peer-to-peer network as taught by Davis, in order to provide a robust system that ensures that payment transactions are processed successfully with minimal error and downtime (see at least Davis at paras. [0136] and [0139]).

23. **Regarding claim 2:**

The combination of Armstrong et al. and Davis discloses the limitations of claim 1, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *wherein the payment instruction is for a confirmed transaction* (see at least Armstrong et al. at paras. [0007], [0157]-[0162], [0180], and [0203]-[0208] and Figs. 10B, 15A, and 17 which discloses before token generation, the token database 1023 communicates with the second intermediary entity 1014 (para.

[0158]) to verify that funds are located in payer's account 1016 that are sufficient to settle the financial transaction (para. [0159]) such that, each block of the blockchain structure includes verified transactions, the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]).

24. Regarding claim 3:

The combination of Armstrong et al. and Davis discloses the limitations of claim 1, (as discussed above). Davis, as shown, discloses the following limitation:

- *wherein the payment instruction is for an unconfirmed transaction* (see at least Davis at paras. [0135]-[0136] and Fig. 11 which discloses if the issuing financial institution 1102 is unavailable to perform authorization of the payment account due to, unavailable communication paths, a transaction processing server 1112 performs "stand-in processing" on behalf of the issuing financial institution 1102, once communications is re-established, the transaction processing server 1112 transmits the retained data to the issuing financial institution 1102 so that, the payer's transaction accounts can be processed accordingly).

25. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the system and method for processing electronic financial transactions using a blockchain disclosed by Armstrong et al. (and discussed above) to include the limitation of, wherein the payment instruction is for an unconfirmed transaction as taught by Davis, in order to provide a robust system that ensures that payment transactions are processed successfully with minimal error and downtime (see at least Davis at paras. [0136] and [0139]).

26. Regarding claim 5:

The combination of Armstrong et al. and Davis discloses the limitations of claim 1, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *the payment beneficiary bank validating and processing the payment instruction through a payment beneficiary bank internal system and crediting a beneficiary account* (see at least Armstrong et al. at paras. [0108]-[0109] and [0149]-[0153] and Figs. 1-3 and 9 which discloses the second intermediary server 128 sends a validation successful response to the first intermediary server 126, the second intermediary server 128 transmits a request including metadata, and corresponding token, related to a financial transaction to the first intermediary server 126 via the messaging bus 118, the first intermediary server 126 generates a response based on the request from the second intermediary server 128, and transmits the response and corresponding token to the second intermediary server 128 via the messaging bus 118 and the agreed settlement amount of the financial transaction is transmitted to the specific accounts 815, 816 of the transacting entities (paras. [0150]-[0151]).

27. Regarding claim 7:

The combination of Armstrong et al. and Davis discloses the limitations of claim 1, (as discussed above). Davis, as shown, discloses the following limitation:

- *wherein the distributed ledger comprises an account structure that replicates an account structure on one of the internal banking non-distributed ledgers* (see at least Davis at paras. [0076], [0091], [0099], and [0116]-[0119] and Figs. 1, 3, 6-7, and 10 which discloses the issuer processing server 104 includes a memory 320 that stores a copy of the blockchain 702 including, newly generated blocks from

the blockchain system 114 (para. [0076]), the acquirer processing server 102 also receives a copy of the blockchain 702 from the blockchain system 114 (para. [0091]) or from another node associated with the blockchain 702).

28. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the system and method for processing electronic financial transactions using a blockchain disclosed by Armstrong et al. (and discussed above) to include the limitation of, wherein the distributed ledger comprises an account structure that replicates an account structure on one of the internal banking non-distributed ledgers as taught by Davis, in order to maintain data quality of the blockchain by for example, requiring confirmation of the blockchain's contents by various nodes (or devices) associated with the blockchain before newly generated blocks are added to the blockchain, each node of the blockchain includes a copy of the blockchain in its internal memory for confirmation purposes (see at least Davis at para. [0076]).

29. **Regarding claim 9:**

The combination of Armstrong et al. and Davis discloses the limitations of claim 1, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *wherein the payment instruction is for an inter-bank payment transaction, and the payment originator bank and payment beneficiary bank are not associated with the same financial institution* (see at least Armstrong et al. at para. [0089] and Figs. 1-3 which discloses the first intermediary server 126 represents a first financial institution and the second intermediary server 128 represents a second

financial institution, the first and second financial institutions are different branches of different banks).

30. Regarding claim 10:

The combination of Armstrong et al. and Davis discloses the limitations of claim 1, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *wherein the payment instruction is conducted in a single currency* (see at least Armstrong et al. at para. [0220] which discloses the currency is the same on both sides of the financial transaction).

31. Regarding claim 11:

Armstrong et al. discloses the following limitations:

- *a system for processing network payments using a distributed ledger* (see at least Armstrong et al. at paras. [0094], [0128], and [0165]-[0171] and Figs. 1, 7, 13-14 which discloses a system and method to facilitate settlement of financial transactions that use a distributed ledger operating on blockchain principles (paras. [0169]-[0170]);
- *a payment originator bank* (see at least Armstrong et al. at paras. [0007]-[0008], [0025]-[0027], [0094], [0104], and [0149]-[0150] and Figs. 1-3, 7, and 9 which discloses a first user instructs the first intermediary server 126 to process a financial transaction request involving a second user (para. [0094]), the financial transaction request includes the first user making a payment to the second user, or vice versa and "a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a second transacting entity 912 has a respective

account 915, 916 at their respective intermediary entities" (see, paras. at, [0150]);

- *a payment originator bank middleware communication layer* (see at least Armstrong et al. at paras. [0095]-[0096], [0160]-[0162], and [0206]-[0208] and Figs. 1-3 and 7 which discloses the first intermediary server 126 transmits a request including metadata, relating to a financial transaction to a second intermediary server 128 (para. [0096]), via a messaging bus 118 and "payers bank debits payers account: payers bank sends notice to payer bank gateway: payers bank gateway calls token database 1023 to get approved token" (see, paras. at, [0160] and [0206]) and "[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt" (see, paras. at, [0161] and [0207]), and "[c]learing: payer's bank Nostro account is debited subject to bank institution rules" (see, paras. at, [0162] and [0208]);
- *an internal payment originator bank non-distributed banking ledger* (see at least Armstrong et al. at paras. [0149]-[0153] and Figs. 1-3 and 9 which discloses "a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a second transacting entity 912 has a respective account 915, 916 at their respective intermediary entities" (see, paras. at, [0150]), "[s]ettlement is effected by communication of the token 921 to bank A and then to bank B together with the appropriate flow of funds" (see, para. at, [0151]);

- *a payment beneficiary bank* (see at least Armstrong et al. at paras. [0007], [0011], [0013], [0098]-[0100], and [0129] which discloses the first intermediary server 126 transmits a financial transaction request including metadata and corresponding token, to a second intermediary server 128, the first intermediary server 126 generates an enriched data record from the metadata (paras. [0011], [0013], [0098]-[0099], and [0129]), the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]) and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);
- *a payment beneficiary bank middleware communication layer* (see at least Armstrong et al. at paras. [0007], [0011], [0013], [0098]-[0100], and [0129] which discloses the first intermediary server 126 transmits a financial transaction request including metadata and corresponding token, to a second intermediary server 128, the first intermediary server 126 generates an enriched data record from the metadata (paras. [0011], [0013], [0098]-[0099], and [0129]), the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]), and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);
- *an internal payment beneficiary bank non-distributed banking ledger* (see at least Armstrong et al. at paras. [0149]-[0153] and Figs. 1-3 and 9 which discloses "a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a

second transacting entity 912 has a respective account 915, 916 at their respective intermediary entities" (see, paras. at, [0150]), "[s]ettlement is effected by communication of the token 921 to bank A and then to bank B together with the appropriate flow of funds" (see, para. at, [0151]);

- *a peer-to-peer payment network* (see at least Armstrong et al. at paras. [0007], [0098]-[0100], [0113], [0129], [0161], and [0207] and Figs. 1-3 and 7 which discloses "[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt" (see, paras. at, [0161] and [0207]) and the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]), via a communication link and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);
- *wherein the payment originator bank and the payment beneficiary bank are participant members of the peer-to-peer payments network* (see at least Armstrong et al. at paras. [0007], [0098]-[0100], [0113], [0129], [0161], and [0207] and Figs. 1-3 and 7 which discloses "[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt" (see, paras. at, [0161] and [0207]) and the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]), via

a communication link and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);

- *a distributed ledger* (see at least Armstrong et al. at paras. [0007], [0098]-[0100], [0113], [0129], [0161], and [0207] and Figs. 1-3 and 7 which discloses "[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt" (see, paras. at, [0161] and [0207]) and the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]) via a communication link and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);
- *wherein: the payment originator bank validates a payment instruction* (see at least Armstrong et al. at paras. [0007]-[0008], [0011], [0013], [0015], [0089], [0095]-[0100], [0104], [0106], [0113], and [0129]-[0133] and Figs. 1-3 and 7 which discloses the first intermediary server 126 transmits a financial transaction request including metadata and corresponding token, to a second intermediary server 128 via a messaging bus 118, the first intermediary server 126 generates an enriched data record from the metadata (paras. [0011], [0013], [0098]-[0099], and [0129]) by, extracting a plurality of attributes (paras. [0011], [0013], [0099], and [0130]-[0132]), hashing the attributes (paras. [0013], [0099], and [0132]), and combining the respective hashes (paras. [0013], [0099], and [0132]), the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (para. [0129]), via a communication link

and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);

- *the payment originator bank middleware communication layer posts and commits the payment instruction to the internal payment originator bank non-distributed banking ledger as a debit to a payment originator account (see at least Armstrong et al. at paras. [0095]-[0096], [0160]-[0162], and [0206]-[0208] and Figs. 1-3 and 7 which discloses the first intermediary server 126 transmits a request, including metadata, relating to a financial transaction to a second intermediary server 128 (para. [0096]) via a messaging bus 118 and "payers bank debits payers account: payers bank sends notice to payer bank gateway: payers bank gateway calls token database 1023 to get approved token" (see, paras. at, [0160] and [0206]) and "[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token database 1023 of receipt" (see, paras. at, [0161] and [0207]) and "[c]learing: payer's bank Nostro account is debited subject to bank institution rules" (see, paras. at, [0162] and [0208]);*
- *the payment originator bank middleware communication layer posts the payment instruction on the distributed ledger on the payment peer-to-peer network (see at least Armstrong et al. at paras. [0007], [0098]-[0100], [0113], [0129], [0161], and [0207] and Figs. 1-3 and 7 which discloses "[s]ettlement: gateway of payers bank sends by way of non-limiting example XRP (the native currency of the Ripple protocol) to billers bank gateway: payers bank gateway notifies token*

database 1023 of receipt" (see, paras. at, [0161] and [0207]) and the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]) via a communication link and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);

- *the payment beneficiary bank middleware communication layer receives the payment instruction from the distributed ledger on the peer-to-peer network (see at least Armstrong et al. at paras. [0007], [0011], [0013], [0098]-[0100], and [0129] which discloses the first intermediary server 126 transmits a financial transaction request including, metadata and corresponding token, to a second intermediary server 128, the first intermediary server 126 generates an enriched data record from the metadata (paras. [0011], [0013], [0098]-[0099], and [0129]), the first intermediary server 126 adds the enriched data record of the request and corresponding token to a blockchain 124 (paras. [0098], [0100], and [0129]) and the token provides a pointer to the request's enriched data record in the blockchain 124 (para. [0007]);*
- *the payment beneficiary bank middleware communication layer posts the payment instruction to an internal payment beneficiary bank non-distributed banking ledger as a credit to a payment beneficiary account (see at least Armstrong et al. at paras. [0149]-[0153] and Figs. 1-3 and 9 which discloses "a respective first intermediary entity 913 and a second intermediary entity 914 in the form of bank A and bank B. Each of the first transacting entity 911 and a second transacting entity 912 has a respective account 915, 916 at their*

respective intermediary entities" (see, paras. at, [0150]), "[s]ettlement is effected by communication of the token 921 to bank A and then to bank B together with the appropriate flow of funds" (see para. [0151]);

- *the payment beneficiary bank reconcile the internal payment originator bank non-distributed banking ledger and the internal payment beneficiary bank non-distributed banking ledger with the distributed ledger on the peer-to-peer network* (see at least Armstrong et al. at paras. [0016], [0089], [0105]-[0106], [0136]-[0137], and [0149]-[0153] and Figs. 1-3 and 9 which discloses "the first intermediary server 126 and the second intermediary server 128 represent a first financial institution and a second financial institution, respectively. In one embodiment of the invention, the respective first and second financial institutions are different branches of different of different banks" (see, para. at, [0089]) the first intermediary server 126 receives the generated response and corresponding token from the second intermediary server 128, the first intermediary server 126 verifies the generated response through comparison with the enriched data record of the associated request in the blockchain 124 (as indicated by the token) (paras. [0016], [0106], and [0137]), the second intermediary server 128 hashes the received response to re-generate the response hash which is then compared to the enriched data record of the associated request in the blockchain 124 thereby ensuring that the received response is for the same request as (and is the same as) the generated response from the second intermediary server 128 (paras. [0016], [0106], and [0137]) and the agreed settlement amount of the

financial transaction is transmitted to the specific accounts 815, 816 of the transacting entities (paras. [0150]-[0151]).

32. Armstrong et al. is silent on the limitation of, the payment beneficiary bank middleware communication layer posts a acknowledgment of the payment instruction to the distributed ledger on the peer-to-peer network. However, Davis, as shown, discloses the following limitation:

- *the payment beneficiary bank middleware communication layer posts a acknowledgment of the payment instruction to the distributed ledger on the peer-to-peer network (see at least Davis at paras. [0051] and [0116]-[0119] and Figs. 1-2 and 10 which discloses the acquirer processing server 102 includes a transaction database 206 which stores transaction profiles 208 of data associated with respective electronic transactions, each transaction profile 208 includes a key-value pair including, a hash value as a key, and transaction-related data as the corresponding transaction value, the transaction-related data includes new data related to confirmation of crediting of the corresponding merchant transaction account and a new block which is based on the new hash value, is generated and added to the blockchain upon validation by nodes of the blockchain).*

33. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the system and method for processing electronic financial transactions using a blockchain disclosed by Armstrong et al. (and discussed above) to include the limitation of, the payment beneficiary bank middleware communication layer posts a acknowledgment of the payment instruction to the

distributed ledger on the peer-to-peer network as taught by Davis, in order to provide immediate verification of transaction completion.

34. Regarding claim 12:

The combination of Armstrong et al. and Davis discloses the limitations of claim 11, (as discussed above). Davis, as shown, discloses the following limitation:

- *wherein the payment beneficiary bank confirms the payment instruction by comparing the payment instruction on the distributed ledger to the credit to the beneficiary account (see at least Davis at para. [0051] and Figs. 1-2 which discloses the acquirer processing server 102 includes a transaction database 206 which stores transaction profiles 208 of data associated with respective electronic transactions, each transaction profile 208 includes a key-value pair including, a hash value as a key and transaction-related data as the corresponding transaction value and the transaction-related data further includes confirmation of crediting of the related merchant transaction account).*

35. It would have been obvious to one of ordinary skill in the art before the effective filing date of the claimed invention to modify the system and method for processing electronic financial transactions using a blockchain disclosed by Armstrong et al. (and discussed above) to include the limitation of, wherein the payment beneficiary bank confirms the payment instruction by comparing the payment instruction on the distributed ledger to the credit to the beneficiary account as taught by Davis, in order to provide a robust system that ensures that payment transactions are processed successfully with minimal error (see at least Davis at paras. [0136] and [0139]).

36. Regarding claim 14:

Claim 14 has similar limitations found in claim 7 above and is therefore rejected using the same art and rationale.

37. Regarding claim 16:

The combination of Armstrong et al. and Davis discloses the limitations of claim 11, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *wherein the payment originator bank and the payment beneficiary bank are associated with the same financial institution (see at least Armstrong et al. at para. [0089] and Figs. 1-3 which discloses the first intermediary server 126 represents a first financial institution and the second intermediary server 128 represents a second financial institution, the first and second financial institutions are different branches of a single bank).*

38. Regarding claim 17:

The combination of Armstrong et al. and Davis discloses the limitations of claim 11, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *wherein the payment instruction is an inter-bank payment transaction, and the payment originator bank and payment beneficiary bank are not associated with the same financial institution (see at least Armstrong et al. at para. [0089] and Figs. 1-3 which discloses the first intermediary server 126 represents a first financial institution and the second intermediary server 128 represents a second financial institution, the first and second financial institutions are different branches of different banks).*

39. Regarding claim 18:

Claim 18 has similar limitations found in claim 10 above and is therefore rejected using the same art and rationale.

40. **Regarding claim 19:**

The combination of Armstrong et al. and Davis discloses the limitations of claim 11, (as discussed above). Armstrong et al., as shown, discloses the following limitation:

- *wherein the payment instruction comprises a currency conversion (see at least Armstrong et al. at para. [0220] which discloses the financial instruction requires a conversion from one currency to another).*

41. **Regarding claim 20:**

Claim 20 has similar limitations found in claim 3 above and is therefore rejected using the same art and rationale.

Response to Arguments

42. Applicant's arguments filed **August 27, 2020** have been fully considered but they are not persuasive.

The Applicants' Argument(s) Regarding 101 Rejection(s)

43. The Applicant argues "the claims recite technical solutions to, for example, the delays associated with foreign exchange of funds, the delays associated with traditional settlement, etc. Instead, the transaction may be effected on the payment originator side and the payment beneficiary side once the payment instruction is written to the distributed ledger, which provides an immutable and cryptographically verifiable transaction record" (see, Amendments at, pages 8-9).

44. The Applicant argues "because the amended claims are not directed to an abstract idea, and the additional elements, such as the claimed middleware communication layers, and the distributed ledger, integrate the claims into a practical application. Applicant respectfully submits that independent claims 1 and 11, and all claims dependent thereon, are directed to statutory subject matter" (see, Amendments at, page 9). The Examiner argues the claim(s) do not include additional elements that are sufficient to amount to significantly more than the judicial exception. The additional elements of using a a distributed ledger, a payment originator, a payment beneficiary, a middleware communication layer, an internal payment originator bank non-distributed banking ledger, a peer-to-peer network, an internal payment beneficiary bank non-distributed banking ledger (claim 1), a distributed ledger, a payment originator bank middleware communication layer, an internal payment originator bank non-distributed banking ledger, a payment beneficiary bank middleware communication layer, an internal payment beneficiary bank non-distributed banking ledger, a peer-to-peer payment network (claim 11), processing network payments, initiating a payment instruction with a payment originator bank, validating the payment instruction, posting and committing the payment instruction as a debit to a payment originator account, posting and committing the payment instruction, receives the payment instruction, posts the payment instruction as a credit to a payment beneficiary account, posts and commits acknowledgment of the payment instruction, and wherein the payment originator bank and the payment beneficiary bank reconcile amounts to generally linking the use of the judicial exception to a particular technological environment or field of use (*i.e.* a peer-to-peer network). The claims are not patent eligible.

The Applicants' Argument(s) Regarding 102 Rejection(s)

45. The "Applicants' amendments and arguments regarding the 102 rejections are persuasive and therefore the Examiner has withdrawn the rejections.

The Applicants' Argument(s) Regarding 103 Rejection(s)

46. The Examiner has applied Davis to overcome the deficiencies of Armstrong. As discussed above, Davis discloses newly generated blocks 704 are transmitted and stored within each node of the blockchain 702 for inclusion in the blockchain 702, each of the newly generated blocks is confirmed by one or more nodes before being appended to the blockchain 702. (See at least Davis at paras. [0076], [0091], [0099], and [0116]-[0119] and Figs. 1, 3, 6-7, and 10).

Conclusion

47. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARLA HUDSON whose telephone number is (571)272-1063. The examiner can normally be reached on M-F 8:30 a.m. - 4:30 p.m. ET.

48. Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an

interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

49. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Bennett Sigmond** can be reached on **(303) 297-4411**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

50. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M.H./
Examiner, Art Unit 3694

/BENNETT M SIGMOND/
Supervisory Patent Examiner, Art Unit 3694