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(54) Title: ASSET-CLASS BACKED TOKENIZATION PLATFORM

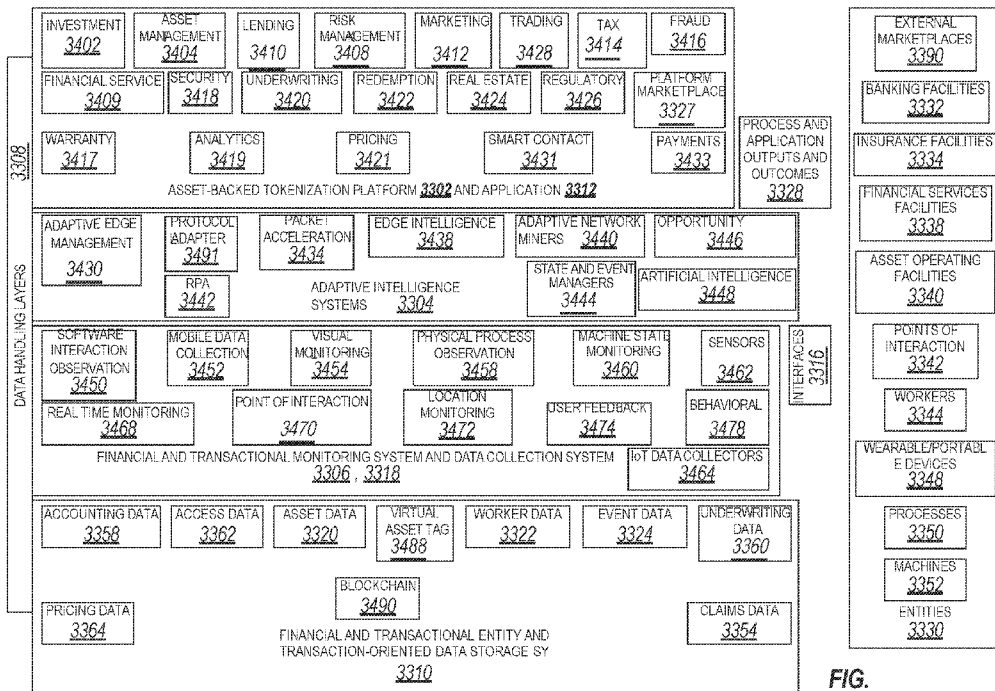


FIG. 1

(57) Abstract: Systems, methods and apparatus relating to asset-class backed tokens are described. The systems, methods, and apparatus include and use a set of interconnected tools, services and applications to enable users to design, develop, simulate, deploy, monitor and analyze cryptographically secure, tradeable tokens, such as ones that are linked to or backed by one or more other asset classes.



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## INTERNATIONAL SEARCH REPORT

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC - INV. G06Q 30/0283; G06N 20/00; G06Q 40/04 (2023.01) ADD. G06N 3/08; G06Q 20/06; G06Q 20/08 (2023.01) CPC - INV. G06Q 30/0283; G06N 20/00; G06Q 40/04; H04L 9/50  ADD. G06N 3/08; G06Q 20/06; G06Q 20/08; G06Q 2220/00; H04L 2209/56 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) See Search History document  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched See Search History document  Electronic database consulted during the international search (name of database and, where practicable, search terms used) See Search History document		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2021/0279778 A1 (CLAROVIA HOLDINGS, LLC) 09 September 2021; the entire document	1-87
A	WO 2022/204425 A1 (STRONG FORCE TX PORTFOLIO 2018, LLC) 29 September 2022; the entire document	1-87
A	US 2022/0230240 A1 (VERONA HOLDINGS SEZC) 21 July 2022; the entire document	1-87
A	US 2020/0042989 A1 (RAMADOSS, R et al.) 06 February 2020; the entire document	1-87
A	WO 2020/223332 A1 (SECURENCY, INC.) 05 November 2020; the entire document	1-87
A	US 2022/0058700 A1 (OPTDYN, INC.) 24 February 2022; the entire document	1-87
A	US 2019/0095880 A1 (KOWALA CAYMAN SEZC) 28 March 2019; the entire document	1-87
A	US 2020/0380476 A1 (ERIS DIGITAL HOLDINGS, LLC) 03 December 2020; the entire document	1-87
A	US 11,087,313 B1 (WINKLEVOSS IP, LLC) 10 August 2021; the entire document	1-87
A	US 2021/0110386 A1 (COINBASE, INC.) 15 April 2021; the entire document	1-87
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "D" document cited by the applicant in the international application "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 28 March 2024 (28.03.2024)		Date of mailing of the international search report <b>MAY 20 2024</b>
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer Shane Thomas Telephone No. PCT Helpdesk: 571-272-4300

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US23/77998

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
- 2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
- 3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:  
-\*\*\*-Please See Supplemental Page-\*\*\*-

- 1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
- 2.  As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
- 3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
- 4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US23/77998

-\*\*\*-Continued From Box No. III: Observations where unity of invention is lacking-\*\*\*-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fee must be paid.

Group I: Claims 1-10 are directed towards a method for simulating a value of an asset-class backed token linked to a product in development.

Group II: Claims 11-30, 86/11-86/30, and 87/11-87/30 are directed towards a method for generating an asset-class backed tokens using a tokenization platform.

Group III: Claims 31-50, 86/31-86/50, and 87/31-87/50 are directed towards a method of minting a plurality of asset-class backed tokens on a distributed ledger.

Group IV: Claims 51-70, 86/51-86/70, and 87/51-87/70 are directed towards a method for configuring at least one smart contract on a distributed ledger to manage a plurality of asset-class backed tokens.

Group V: Claims 71-85, 86/71-86/85, and 87/71-87/85 are directed towards a method of configuring a deployment of an automated market maker (AMM) smart contract on a blockchain.

The inventions listed as Groups I-V do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I include at least receiving an asset component specification for the product in development, wherein the asset component specification specifies a plurality of components for manufacturing the product; receiving, for at least one of the plurality of components, a material input specification defining materials used in manufacturing the component; simulating, by the tokenization platform, a development of the plurality of components, wherein the simulating is based on the material input specification, wherein the AI model is trained to simulate the development of the plurality of components in different market conditions; aggregating, by the tokenization platform, the simulation of the development of the plurality of components in different market conditions and the simulation of the performance of the product in different market conditions to generate simulation outputs; estimating a value of a plurality of asset-class backed tokens linked to the product based on the simulation outputs; generating a sales listing for the asset-class backed token, wherein the value of the sales listing is based on the estimated value; and receive second revenue related to sales of the asset-class backed tokens, which are not present in Groups II-V.

The special technical features of Group II include at least prioritizing, by the tokenization platform, the plurality of asset performance attributes; a model to trained to detect conflicts between the plurality of asset performance attributes and to rank the plurality of asset performance attributes; mapping, by the tokenization platform, the prioritized plurality of asset performance attributes to a plurality of real-world assets, wherein the mapping comprises determining types and numbers of assets that correspond to the prioritized plurality of token performance attributes; iteratively adjusting the types and numbers of assets based on the simulated performance to improve the mapping between the plurality of real-world assets and the prioritized plurality of token performance attributes; wherein the asset-class backed non-fungible token is backed by a first number of a first asset and a second number of a second asset selected from the iteratively adjusted type and number of assets; wherein the asset class backed non-fungible token comprises a plurality of token attributes including a first asset identifier attribute that identifies the first asset, a first asset amount attribute that identifies a portion of the first asset, a second asset identifier attribute that identifies the second asset, and a second asset amount attribute that identifies a portion of the second asset, which are not present in Groups I and III-V.

The special technical features of Group III include at least a minting party; responsive to one or more purchase requests received by the tokenization platform, initiating, by the tokenization platform, the first function of the smart contract to cause minting of the plurality of asset-class backed tokens and assignment of each minted asset-class backed token to the blockchain address of a purchasing user; and periodically invoking, by the tokenization platform, the second function, which are not present in Groups I-II and IV-V.

The special technical features of Group IV include at least wherein the at least one smart contract is configured to: authorize token transfers from a first distributed ledger account to a second distributed ledger account in accordance with one or more governance rules, wherein the governance rules are configured to prohibit transfer to the second distributed ledger account if the second distributed ledger account does not meet qualifications specified by the one or more governance rules; monitor a distributed ledger oracle for one or more asset-related events; receive revenue related to the plurality of assets, which are not present in Groups I-III and V.

The special technical features of Group V include at least an AMM configuration using a trained machine learning model, wherein the AMM configuration comprises at least one trading pair and a trading function, wherein one of the tokens of the trading pair is the asset-class backed token, wherein the trading function defines a formula for trading a first type of token for the asset-class backed token and for trading the asset-class backed token for the first type of token; deploying, by the tokenization platform, an AMM smart contract on the blockchain, wherein the deployed AMM smart contract is configured to receive revenue into a liquidity pool managed by the AMM smart contract and to implement the trading function for the trading pair; generating, by the tokenization platform, a graphical user interface configured to allow a user that owns at least a first amount of the first type of token of the trading pair to exchange the first amount of the first type of token for at least a second amount of a second token of the trading pair based on the trading function; receiving, by the tokenization platform, an AMM trading request from a user associated with a user blockchain account; generating, by the tokenization platform, an AMM trading transaction for signature by the user using a private key associated with the blockchain account; and transmitting, by the tokenization platform, the signed AMM trading transaction to the blockchain, wherein the signed AMM transaction causes an exchange of tokens using the AMM smart contract based on the trading function, which are not present in Groups I-IV.

The common technical features shared by Groups I-V are: an asset-class backed token; and a tokenization platform.

Additional common technical features shared by Groups I and II are: an artificial intelligence (AI) model; and simulating a performance using a second AI model.

Additional common technical features shared by Groups I, III, IV, and V are: a smart contract to a blockchain, wherein the smart contract is configured to: mint a plurality of asset-class backed tokens.

-\*\*\*-Continued Within the Next Supplemental Box-\*\*\*-

\*\*\*-Continued from previous Supplemental Box-\*\*\*

Additional common technical features shared by Groups I, III, and IV are: distributing revenue to current owners of the asset-class backed tokens.

Additional common technical features shared by Groups II, IV, and V are: at least two different types of assets.

Additional common technical features shared by Groups III, IV, and V are: a token configuration indicating a plurality of assets.

However, these common features are previously disclosed by US 2020/0184431 A1 to Pontoro Inc. (hereinafter "PONTORO"). PONTORO discloses an asset-class backed token (a two-tier tokenization process that creates a digital representation of large-scale financial and physical assets; para [0024]); and a tokenization platform (a platform for the two-tier tokenization process; paras [0023]-[0024]); an AI model (provide artificial intelligence driven user support services; paras [0023], [0150], [0152]); and simulating a performance using a second AI model (artificial intelligence mechanisms enable participants to economically create portfolios that match their strategy, risk, return, and other preferences, and promote liquidity in the asset tokens through continuous portfolio recommendations; paras [0031], [0150]); a smart contract to a blockchain (smart contracts function on blockchains; para [0024]), wherein the smart contract is configured to: mint a plurality of asset-class backed tokens (create (mint) specific asset tokens representing fractional shares of assets from the general asset pool, through the two-tier tokenization process, subject to the technical protocols, ownership concentration limits, and bidding and allocation schema established by the present platform; para [0024]); distributing revenue to current owners of the asset-class backed tokens (payment manager may periodically calculate, transact, and record transmission of principal and interest to a general asset token user or a specific asset token user holding beneficial interest in such payments; para [0046]); at least two different types of assets (different types of assets; paras [0024], [0087]); and a token configuration indicating a plurality of assets (general asset tokens are mapped, by an application, to the general asset pool and a specific asset token maps to a portion of specific assets of the assets in the general asset pool; para [0032]).

Since the common technical features are previously disclosed by PONTORO, these common features are not special and so Groups I-V lack unity.