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(54) Title: BLOCKCHAIN-BASED TRUSTABLE GUARANTEES

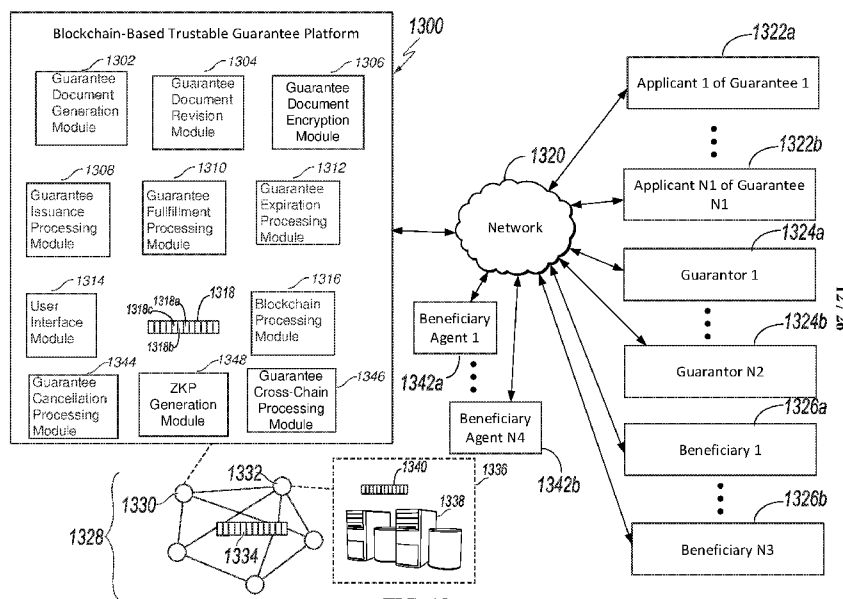


FIG. 13

(57) **Abstract:** Methods, systems, and apparatus, including computer programs encoded on computer storage media, for processing blockchain-based guarantee information. One of the methods includes receiving a first cyphertext of a first digital document specifying a guarantee from a first computing device associated with at least a first guarantor and one or more zero-knowledge proofs (ZKPs) related to one or more values associated with the guarantee, and the first digital document specifies one or more predetermined conditions of executing the guarantee; verifying that the one or more ZKPs are correct; upon verifying that the one or more ZKPs are correct, storing the first cyphertext to a blockchain based on performing a consensus algorithm; receiving a first message from a second computing device associated with a beneficiary or a representative of the beneficiary, the first message including a request to modify the guarantee; sending a second message about the request to modify the guarantee to the first computing device; and receiving from the first computing





OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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26 November 2020 (26.11.2020)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2020/074243

A. CLASSIFICATION OF SUBJECT MATTER

G06F 21/60(2013.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F; G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, CNKI, WPI, EPODOC: authentication, transfer, identify, proof, node, blockchain, guarantee, cyphertext, modify, ZKP

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 110419055 A (ALIBABA GROUP HOLDING LIMITED) 05 November 2019 (2019-11-05) description, paragraphs [0019]-[0073], figures 1-5	1-14
A	CN 101512535 A (INTERNATIONAL BUSINESS MACHINES CORPORATION) 19 August 2009 (2009-08-19) the whole document	1-14
A	CN 109558517 A (SUN YAT-SEN UNIVERSITY) 02 April 2019 (2019-04-02) the whole document	1-14
A	CN 109614820 A (SHANDONG UNIVERSITY) 12 April 2019 (2019-04-12) the whole document	1-14
A	US 2019205898 A1 (CHRONICLED, INC) 04 July 2019 (2019-07-04) the whole document	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

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“&” document member of the same patent family

Date of the actual completion of the international search

10 October 2020

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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