

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
10 September 2021 (10.09.2021)



(10) International Publication Number
WO 2021/176342 A1

(51) International Patent Classification:
H04L 9/32 (2006.01)

(21) International Application Number:
PCT/IB2021/051718

(22) International Filing Date:
02 March 2021 (02.03.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
16/808,296 03 March 2020 (03.03.2020) US

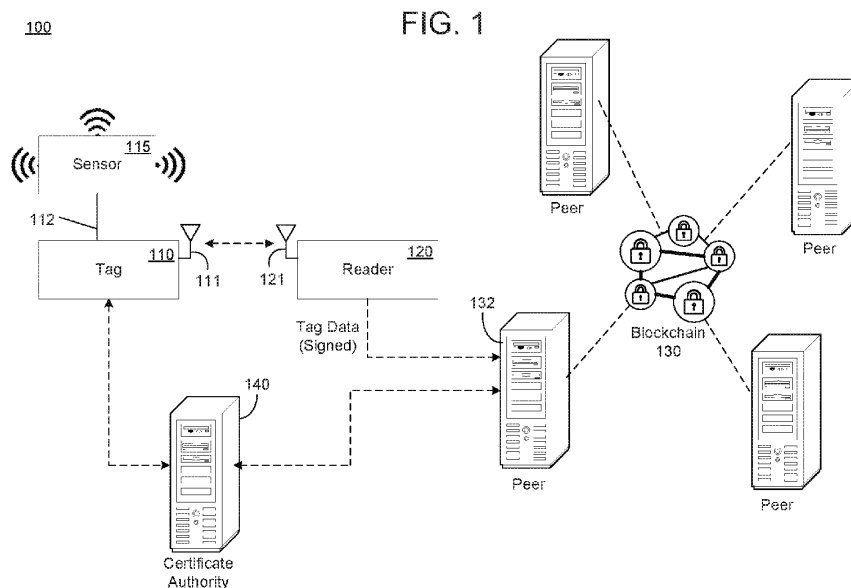
(71) Applicant: **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, New York 10504 (US).

(71) Applicants (for MG only): **IBM UNITED KINGDOM LIMITED** [GB/GB]; PO Box 41, North Harbour, Portsmouth, Hampshire PO6 3AU (GB). **IBM (CHINA) INVESTMENT COMPANY LIMITED** [CN/CN]; 25/

F, Pangu Plaza, No. 27, Central North 4th Ring Road, Chaoyang District, Beijing 100101 (CN).

(72) Inventors: **NARAYANASWAMI, Chandrasekhar**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **FRIEDMAN, Daniel, Joseph**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **HINDS, Nigel**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **NARENDRA, Abhilash**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **PAIDIMARRI, Arun**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **RAYFIELD, James, Thomas**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **VACULIN, Roman**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US). **LI, Zhiyuan**; IBM Corporation, 1101 Kitchawan Road, Yorktown Heights, New York 10598 (US).

(54) Title: STORAGE AND COMMUNICATION ENVIRONMENT FOR CRYPTOGRAPHIC TAGS



(57) Abstract: An example operation may include one or more of receiving, via a network, tag data that is read from a tag associated with a physical object and signed with a key assigned to the tag, determining, via a blockchain peer, that the signed tag data is validly signed based on a corresponding key pair of the tag which is accessible to the blockchain peer, determining, via the blockchain peer, whether the tag data satisfies of one or more predefined conditions of the physical object, and storing the determination via a blockchain database.

[Continued on next page]

(74) **Agent: ROBERTSON, Tracey;** IBM United Kingdom Limited, Intellectual Property Law, Hursley Park, Hursley, Winchester, Hampshire SO21 2JN (GB).

(81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, 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).

Published:

- with international search report (Art. 21(3))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE