

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
13 July 2023 (13.07.2023)



(10) International Publication Number
WO 2023/132784 A1

(51) International Patent Classification:

B09B 3/40 (2022.01) **F27D 11/06** (2006.01)
C09C 1/48 (2006.01) **B09B 101/80** (2022.01)
H05H 1/30 (2006.01) **F23G 5/027** (2006.01)
H05H 1/32 (2006.01)

(21) International Application Number:

PCT/SG2022/050007

(22) International Filing Date:

06 January 2022 (06.01.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant: **GLOBAL ENVIRO HOLDING PTE. LTD.**
[SG/SG]; 24 Raffles Place, #28-00 Clifford Centre, Singapore 048621 (SG).

(72) Inventor: **PASKALOV, George**; 22002 Linda Dr., Torrance, California 90503 (US).

(74) Agent: **YUSARN AUDREY LLC**; 4 Shenton Way, #14-03, SGX Centre 2, Singapore 068807 (SG).

(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,

(54) Title: METHOD AND APPARATUS FOR TIRE RECYCLING

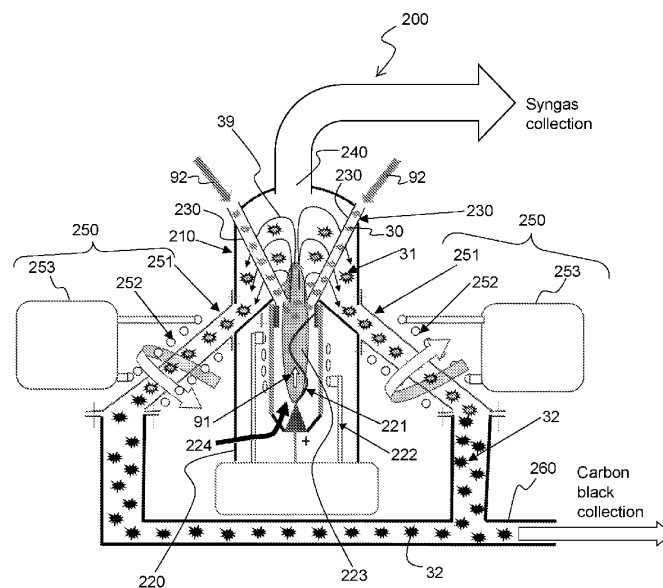


Fig. 2

(57) Abstract: A method of tire recycling, the method comprising the steps of: a) a hybrid plasma torch comprising an arc plasma torch and a radio frequency (RF) plasma torch generating a plasma jet in a first direction; b) injecting rubber powder obtained from comminuting waste tires into the plasma jet in a second direction against the first direction and obtaining a synthesis gas (syngas) by plasma pyrolysis of the rubber powder; c) heating unpyrolyzed rubber powder remaining after step b) in a low frequency (LF) induction heater to obtain carbon black; and d) using a portion of the obtained syngas as plasma gas by the hybrid plasma torch.

[Continued on next page]

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *with amended claims (Art. 19(1))*