



- (51) International Patent Classification:
B28C 7/02 (2006.01) *G01N 15/0205* (2024.01)
C04B 20/00 (2006.01) *G06Q 50/08* (2012.01)
C04B 40/00 (2006.01) *G16C 60/00* (2019.01)
- (21) International Application Number:
PCT/US2024/034766
- (22) International Filing Date:
20 June 2024 (20.06.2024)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
63/509,473 21 June 2023 (21.06.2023) US
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- (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,

(54) Title: SYSTEM AND METHOD FOR DETERMINING MINIMUM PASTE ADDITION

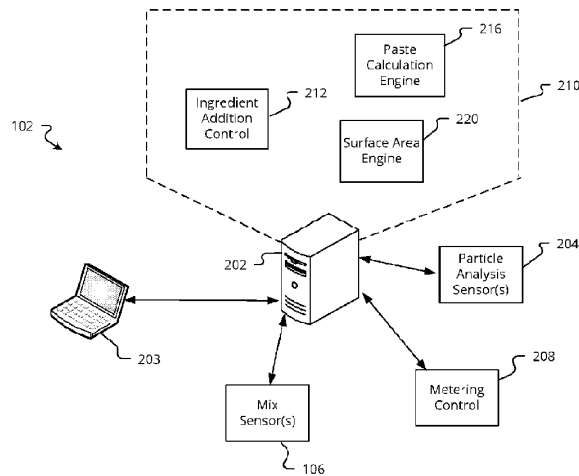


FIG. 2

$$v_i^p \text{ (I)} \quad s_i^p \text{ (II)} \quad a_i^p \text{ (III)} \quad v_i^s \text{ (IV)} \quad s_i^s \text{ (V)}$$

(57) **Abstract:** This disclosure involves a system, non-transitory computer readable medium, and a method for determining a minimum amount of paste to be added to a concrete mix. This includes measuring a plurality of n particles, and for each particle i determining: a particle volume (I), a particle surface area (II), a particle maximum dimension (III), a spherical volume (IV) and spherical surface area (V) associated with a sphere having a diameter equal to the particle maximum dimension (III), and a residual free surface S_i . Then, for the plurality of particles, a shape irregularity factor n is determined based on the residual free surface S_i and the particle volume (I) for all n particles. The shape irregularity factor is used to determine a minimum amount of paste for combination with the plurality of n particles to create a workable concrete mixture, and a control signal is sent to a concrete preparation system.

[Continued on next page]

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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

— *with international search report (Art. 21(3))*