

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
3 August 2006 (03.08.2006)

PCT

(10) International Publication Number  
**WO 2006/081080 A3**

(51) International Patent Classification:  
*E04B 1/35* (2006.01) *E04C 3/04* (2006.01)

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number:  
PCT/US2006/001237

(22) International Filing Date: 13 January 2006 (13.01.2006)

(25) Filing Language: English

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(26) Publication Language: English

(30) Priority Data:  
60/647,017 27 January 2005 (27.01.2005) US  
11/319,748 29 December 2005 (29.12.2005) US

(71) Applicant (for all designated States except US): UNITED STATES GYPSUM COMPANY [US/US]; 550 West Adams Street, Chicago, Illinois 60661-3637 (US).

Published:  
— with international search report  
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(72) Inventors: TONYAN, Timothy; 722 N. Wheaton Avenue, Wheaton, Illinois 60187 (US). ULLETT, James, M.; 3210 Sunrise View, McHenry, Illinois 60050 (US). REICHERTS, James, E.; 12 Oak Drive, Cary, Illinois 60013 (US).

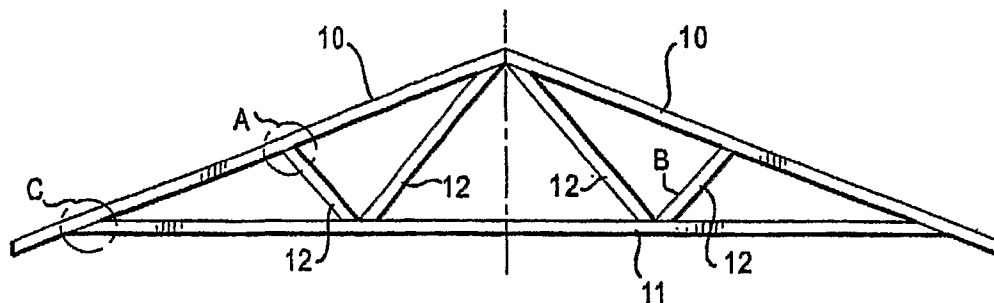
(88) Date of publication of the international search report:  
17 January 2008

(74) Agents: JANCI, David et al.; United States Gypsum Company, 700 North Highway 45, Libertyville, Illinois 60048 (US).

(15) Information about Correction:  
Previous Correction:  
see PCT Gazette No. 33/2007 of 16 August 2007

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(54) Title: NON-COMBUSTIBLE REINFORCED CEMENTITIOUS LIGHTWEIGHT PANELS AND METAL FRAME SYSTEM FOR ROOFING



(57) Abstract: A roofing system including horizontal or sloped metal framing members, for example, C-joists, U-joists, open web joists, or other metal frame systems that support a reinforced, lightweight, dimensionally stable SCP panel. The roofing system is non-combustible, water durable, mold and rot resistant, termite resistant and is capable of resisting shear loads equal to or exceeding shear loads provided by plywood or oriented strand board panels. The panels employ one or more layers of a continuous phase resulting from the curing of an aqueous mixture of inorganic binder, for example, calcium sulfate alpha hemihydrate, hydraulic cement, an active pozzolan and lime. The continuous phase is reinforced with glass fibers and contains lightweight filler particles, for example, ceramic microspheres.

WO 2006/081080 A3

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US06/01237

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - E04B 1/35; E04C 3/04 (2007.01) USPC - 52/90.1, 639, 745.08 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) IPC(8) - E04B 1/24, 1/35; E04C 3/04, 3/11; E04D 3/04, 11/02 (2007.01) USPC - 52/90.1, 408, 639, 745.06, 745.07, 745.08 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) MicroPatent		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,620,487 B1 (TONYAN et al) 16 September 2003 (16.09.2003) entire document	1-39
Y	GB 2 334 045 A (COLVER) 11 August 1999 (11.08.1999) entire document	1-39
Y	US 4,435,940 A (DAVENPORT et al) 13 March 1984 (13.03.1984) entire document	28, 29
Y	US 4,736,561 A (LEHR et al) 12 April 1988 (12.04.1988) entire document	29, 30
Y	US 2,590,687 A (CRAFTON) 25 March 1952 (25.03.1952) entire document	35-39
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "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 02 July 2007		Date of mailing of the international search report <b>23 NOV 2007</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774