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(54) **MODULAR LATTICE-CONFIGURED PANEL FIXTURES AND METHODS FOR MANUFACTURING THE SAME**

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CPC .. ***E04B 9/04*** (2013.01); ***E04B 9/225*** (2013.01)

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,721,338 A * 7/1929 Gagnon A47H 13/02 16/87.8
2,314,456 A * 3/1943 Nadell B63B 3/26 52/267
2,571,052 A * 10/1951 Mount F16G 11/00 403/57
3,407,560 A * 10/1968 Baumann E04B 1/19 29/433
3,429,607 A * 2/1969 White E04B 1/4142 294/89
4,505,019 A * 3/1985 Deinzer B21F 27/128 228/120
4,611,450 A * 9/1986 Chen E04C 2/22 428/222
4,757,665 A * 7/1988 Hardigg B29C 45/26 52/782.1
5,163,492 A * 11/1992 Remington ..... E06B 9/307 160/176.1 V
6,993,879 B1 * 2/2006 Cantley E04C 3/28 446/124
8,833,000 B1 * 9/2014 Nadeau E04B 1/34 52/63
9,127,450 B2 * 9/2015 Rivers E04B 1/19
2004/0107669 A1 * 6/2004 Francom E04C 3/08 52/697
2009/0274865 A1 * 11/2009 Wadley C23C 16/045 428/110
2011/0005160 A1 * 1/2011 Nihei B25J 9/1075 52/645
2011/0283873 A1 * 11/2011 Wadley F41H 5/023 89/36.02

* cited by examiner

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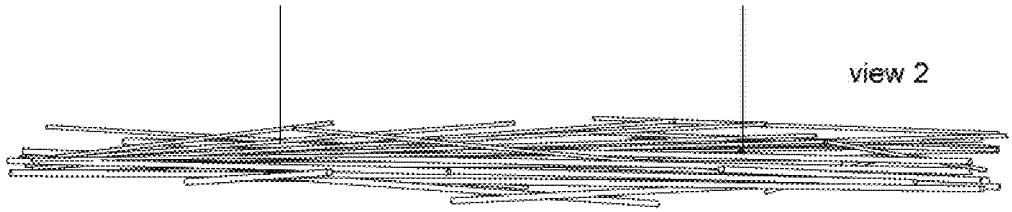
(57) **ABSTRACT**

The invention provides lattice-configured panel fixtures that include a plurality of rods joined together in a predetermined pattern, articles for supporting the panel fixtures from a support structure, and automated systems and methods for manufacturing the panel fixtures.

24 Claims, 11 Drawing Sheets