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Spreen

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(54) **ENVIRONMENTALLY RESPONSIBLE
INSULATING CONSTRUCTION BLOCKS
AND STRUCTURES**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,799,982 A * 1/1989 Vicino B28B 7/22
156/71
5,860,262 A * 1/1999 Johnson E04B 1/14
52/293.1
7,073,306 B1 * 7/2006 Hagaman E04B 1/35
249/20

(Continued)

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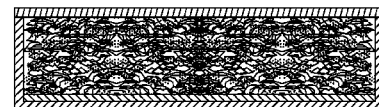
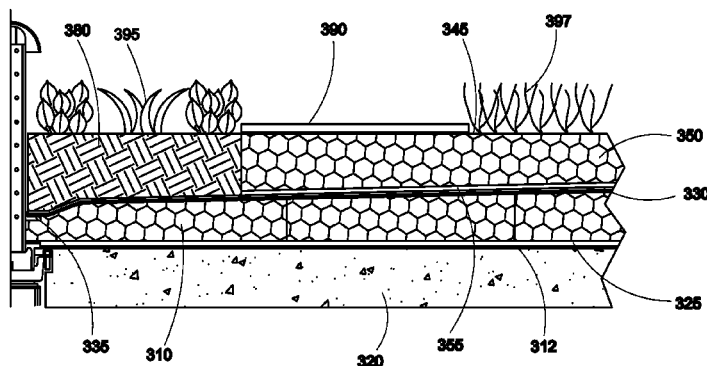
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(57)

ABSTRACT

Environmentally responsible insulating construction blocks and structures constructed primarily of recycled materials are disclosed. The environmentally friendly construction blocks and structures comprise shredded rubber tire pieces coated with silica fume, slag cement and cement, which are then mixed with water and formed in a mold. A layer of grout or a fireproof material may be disposed on one side of the environmentally responsible insulating construction block. The environmentally responsible insulating construction blocks provide high insulation as well as strength for applications such as green roofing, wall construction and green roofing decks. Environmentally friendly structures can be built by pouring the coated shredded rubber tire pieces into molds to form walls, and then to pour a layer of the coated shredded rubber tire pieces as a roof deck, thereby creating a self-supporting structure in a monolithic pour.

4 Claims, 22 Drawing Sheets



(56)

References Cited

U.S. PATENT DOCUMENTS

8,182,605	B2 *	5/2012	Wallner	.....	C04B 28/30
					106/685
8,535,435	B2 *	9/2013	Nasrallah	.....	C04B 28/04
					106/716
8,615,938	B2 *	12/2013	Arbour	.....	E04B 2/88
					52/173.3
9,382,160	B2 *	7/2016	Al-Aqeeli	.....	C04B 28/02
9,670,095	B2 *	6/2017	Al-Aqeeli	.....	C04B 28/02
10,059,626	B2 *	8/2018	Al-Aqeeli	.....	C04B 28/02
2003/0125425	A1 *	7/2003	Lee	.....	C04B 18/22
					524/2
2006/0059825	A1 *	3/2006	Wiercinski	.....	C09J 5/00
					52/506.01
2008/0098935	A1 *	5/2008	Roth	.....	B65D 19/0073
					108/57.17
2008/0107852	A1 *	5/2008	Rubb	.....	C08J 9/20
					428/36.5
2008/0250739	A1 *	10/2008	Krupinski	.....	B65D 1/22
					52/309.4
2010/0222457	A1 *	9/2010	Wallner	.....	C04B 28/30
					524/4
2011/0258945	A1 *	10/2011	Arbour	.....	E04B 2/88
					52/173.3
2014/0087158	A1 *	3/2014	Ciuperca	.....	B32B 7/02
					428/215
2015/0144032	A1 *	5/2015	Brush	.....	C04B 28/02
					106/730
2016/0185665	A1 *	6/2016	Al-Aqeeli	.....	C04B 28/02
					524/2
2017/0226014	A1 *	8/2017	Al-Aqeeli	.....	C04B 28/02
2018/0251402	A1 *	9/2018	Al-Aqeeli	.....	C04B 28/02
2018/0282997	A1 *	10/2018	Chen	.....	E04B 1/665

* cited by examiner