



US008079188B2

(12) **United States Patent**  
**Swartz et al.**

(10) **Patent No.:** **US 8,079,188 B2**  
(45) **Date of Patent:** **Dec. 20, 2011**

(54) **ENERGY ABSORBING BLAST WALL FOR BUILDING STRUCTURE**

(75) Inventors: **Allan J. Swartz**, Gardnerville, NV (US);  
**Gregory Kulpa**, Tustin, CA (US); **A. Carleton Elliott**, Newport Beach, CA (US)

(73) Assignee: **Specialty Hardware L.P.**, Newport Beach, CA (US)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 427 days.

(21) Appl. No.: **12/336,524**

(22) Filed: **Dec. 16, 2008**

(65) **Prior Publication Data**

US 2009/0158679 A1 Jun. 25, 2009

**Related U.S. Application Data**

(60) Provisional application No. 61/015,195, filed on Dec. 20, 2007.

(51) **Int. Cl.**  
**E04B 1/00** (2006.01)

(52) **U.S. Cl.** ..... **52/281**; 52/479; 52/481.1; 52/653.1; 52/710; 52/167.1

(58) **Field of Classification Search** ..... 52/745.09, 52/281, 236.7, 241, 243.1, 474, 479, 480, 52/481.1, 482, 483.1, 653.1, 653.2, 710, 52/712, 714, 715, 1, 137.1, 167.4

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,120,031 A \* 2/1964 Bohnsack ..... 52/241  
4,086,734 A \* 5/1978 Hayashi ..... 52/126.4

4,103,463 A \* 8/1978 Dixon ..... 52/126.4  
4,188,758 A 2/1980 Swann .....  
4,450,658 A \* 5/1984 Legeai ..... 52/126.3  
5,768,841 A \* 6/1998 Swartz et al. .... 52/281  
6,176,053 B1 \* 1/2001 St. Germain ..... 52/232  
6,279,278 B1 \* 8/2001 Morris et al. .... 52/239  
6,612,087 B2 \* 9/2003 diGirolamo et al. .... 52/712  
7,299,593 B1 \* 11/2007 diGirolamo et al. .... 52/241

(Continued)

FOREIGN PATENT DOCUMENTS

JP 06-058006 U 8/1994

(Continued)

OTHER PUBLICATIONS

refer to the included document Information Disclosure Statement, for a complete listing of the NPL reference.\*

(Continued)

Primary Examiner — Jessica Laux

(74) Attorney, Agent, or Firm — Jerry Turner Sewell

(57) **ABSTRACT**

A wall system protects a building structure from pressure caused by explosive blasts. The wall system includes vertical studs. Outer blast wall panels and inner blast wall panels are secured to the opposing sides of the vertical studs. An upper mounting system is attached to the building structure. An upper mounting system includes a fixed track, a movable mounting track, and an energy absorbing system that flexibly couples the movable mounting track to the fixed track. The upper ends of the vertical studs are attached to movable mounting track. A lower mounting system includes a mounting track that aligns the lower ends of the vertical studs. A respective attachment clip is attached to a lower portion of vertical stud. Each attachment clip is attached to the building structure with an energy absorption pad that resists vertical and lateral movement of lower end of the respective vertical stud.

**16 Claims, 11 Drawing Sheets**

