



US007690483B2

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

(10) **Patent No.:** **US 7,690,483 B2**
(45) **Date of Patent:** **Apr. 6, 2010**

(54) **ELEVATOR INCLUDING ELEVATOR
RESCUE SYSTEM**

(56) **References Cited**

U.S. PATENT DOCUMENTS

(75) Inventors: **Dirk Heinrich Tegtmeier**, Berlin (DE);
Michael Mann, Berlin (DE); **Armando
Servia**, Madrid (ES); **Ricardo Cano**,
Madrid (ES)

4,228,396	A	10/1980	Palombo et al.	
4,446,946	A	5/1984	Kajiyama et al.	
4,898,263	A	2/1990	Manske et al.	
5,058,710	A	10/1991	Iwasa	
5,274,203	A *	12/1993	Skalski et al.	187/393
6,264,005	B1 *	7/2001	Kang et al.	187/290
6,269,910	B1 *	8/2001	Fargo et al.	187/287
7,637,357	B2 *	12/2009	Nakagawa et al.	187/393
2001/0035315	A1	11/2001	Lindegger et al.	
2003/0121731	A1 *	7/2003	Santos et al.	187/391
2007/0056806	A1 *	3/2007	Okamoto et al.	187/290
2008/0202859	A1 *	8/2008	Tegtmeier et al.	187/290
2009/0000877	A1 *	1/2009	Izard et al.	187/288
2009/0178889	A1 *	7/2009	Harkonen et al.	187/373
2010/0006378	A1 *	1/2010	Blasko	187/290

(73) Assignee: **Otis Elevator Company**, Farmington,
CT (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 512 days.

(21) Appl. No.: **11/813,222**

(22) PCT Filed: **Jan. 11, 2005**

(86) PCT No.: **PCT/EP2005/000174**

§ 371 (c)(1),
(2), (4) Date: **Jul. 2, 2007**

(87) PCT Pub. No.: **WO2006/074688**

PCT Pub. Date: **Jul. 20, 2006**

(65) **Prior Publication Data**

US 2008/0185233 A1 Aug. 7, 2008

(51) **Int. Cl.**
B66B 3/02 (2006.01)

(52) **U.S. Cl.** **187/394; 187/313; 187/290**

(58) **Field of Classification Search** **187/247,**
187/277, 287, 289, 293, 296, 297, 305, 391-394,
187/290, 313

See application file for complete search history.

OTHER PUBLICATIONS

PCT International Preliminary Report on Patentability for Interna-
tional application No. PCT/EP2005/000174 filed Jan. 11, 2005.

PCT International Search Report and Written Opinion of the Inter-
national Searching Authority for International application No. PCT/
EP2005/000174 filed Jan. 11, 2005.

* cited by examiner

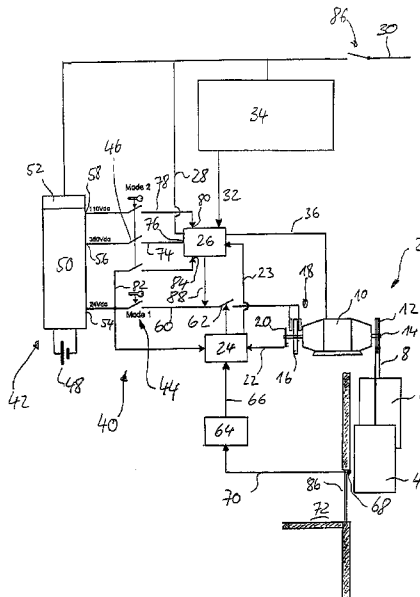
Primary Examiner—Jonathan Salata

(74) *Attorney, Agent, or Firm*—Carlson, Gaskey & Olds PC

(57) **ABSTRACT**

Elevator comprising a car, a drive motor driving the car, a
motor drive unit for controlling the drive motor and supplying
power thereto, an encoder for sensing movement of the car,
and an elevator rescue system for rescue operation in case of
an emergency situation, wherein the elevator comprises one
single encoder only for normal and rescue operation.

10 Claims, 2 Drawing Sheets





US007703579B2

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

(10) **Patent No.:** **US 7,703,579 B2**
(45) **Date of Patent:** ***Apr. 27, 2010**

(54) **POSITIONING METHOD IN AN ELEVATOR SYSTEM**

5,864,104 A 1/1999 Tawada et al.
6,854,565 B2 2/2005 Perala et al.
7,073,632 B2 7/2006 Martin

(75) Inventors: **Tapio Tyni**, Hyvinkaa (FI); **Pekka Perala**, Kerava (FI); **Nils-Robert Roschier**, Vantaa (FI); **Simo Makimattila**, Espoo (FI)

(Continued)

(73) Assignee: **Kone Corporation**, Helsinki (FI)

FOREIGN PATENT DOCUMENTS

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

JP 6-247647 A 9/1994

This patent is subject to a terminal disclaimer.

(Continued)

Primary Examiner—Jonathan Salata

(21) Appl. No.: **12/345,331**

(74) *Attorney, Agent, or Firm*—Birch, Stewart, Kolasch & Birch, LLP

(22) Filed: **Dec. 29, 2008**

(65) **Prior Publication Data**

(57) **ABSTRACT**

US 2009/0166133 A1 Jul. 2, 2009

Related U.S. Application Data

(62) Division of application No. 12/026,406, filed on Feb. 5, 2008, now Pat. No. 7,484,598.

(51) **Int. Cl.**
B66B 3/00 (2006.01)
B66B 5/02 (2006.01)

(52) **U.S. Cl.** **187/393**; 187/291; 187/316

(58) **Field of Classification Search** 187/277, 187/284, 291, 293, 301, 303, 313, 316, 391–394
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,750,591 A 6/1988 Coste et al.
4,880,082 A 11/1989 Kahkipuro et al.
4,930,604 A 6/1990 Schienda et al.
5,760,350 A 6/1998 Pepin et al.
5,780,787 A 7/1998 Kamani et al.

A method and a system for the positioning of the elevator car and the door of the elevator in the condition monitoring system are provided. In the method the accelerations of the elevator car and the door of the elevator are measured with a sensor. By integrating the acceleration information two times in relation to time the position information is determined. When the condition monitoring system detects a fault, forecasts a malfunction occurring in the future or detects a significant change in the operation of the elevator or in the measuring signals related to the elevator, it is possible to attach to this information the location of the fault or event i.e. the position of the elevator or the position of a door of a certain floor level on the slide path. The position information can be synchronized to a separate reference point by means of a positioned switch by making an adjustment to the position information at the reference point. The measuring error caused by the misalignment of the position of the sensor is compensated for either with electronics or using a program.

45 Claims, 1 Drawing Sheet

