



US007650967B2

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

(10) **Patent No.:** **US 7,650,967 B2**
(45) **Date of Patent:** **Jan. 26, 2010**

(54) **COMMUNICATING TO ELEVATOR PASSENGERS RE CAR MOVEMENT TO PIT OR OVERHEAD**

(75) Inventors: **Cheong SikShin**, Seoul (KR); **Theresa Christy**, West Hartford, CT (US); **Arthur Hsu**, Manchester, CT (US); **Hansoo Shim**, Seoul (KR); **Harry Terry**, Avon, CT (US); **Frank Sansevero**, Glastonbury, CT (US)

(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 357 days.

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(86) PCT No.: **PCT/US2005/005072**

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(65) **Prior Publication Data**

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(52) **U.S. Cl.** **187/249**; 187/391

(58) **Field of Classification Search** 187/249,
187/391-396, 902

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

849,840 A 4/1907 Foster

(Continued)

FOREIGN PATENT DOCUMENTS

EP 1371596 A1 12/2003

(Continued)

OTHER PUBLICATIONS

International Search Report and Written Opinion of the International Searching Authority for International application No. PCT/US05/105072 mailed Jul. 18, 2006.

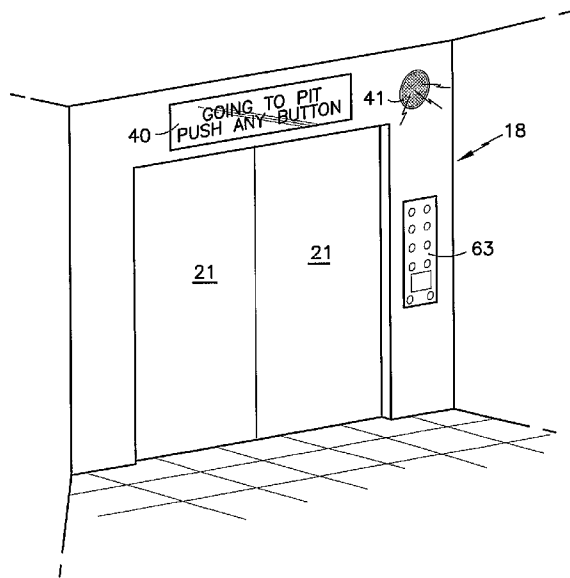
Primary Examiner—Jonathan Salata

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

(57) **ABSTRACT**

One of a plurality of cars (17, 18) traveling in a hoistway (10) of an elevator system (9) may be diverted to the hoistway overhead (31) or pit (36) to enable another of the cars to gain access to a floor near or at a terminal floor (11, 14). When such car is at its last stop with doors open, visual (40) and audible (41) indicators present (57, 58) messages to the effect that this is the last stop and passengers should exit. After car doors are closed (66), visual and audible messages (68, 69) relate to the car going to the pit or overhead and that passengers may push any button (to reopen doors). Thereafter, the car moves (75, 76) to the overhead (31) or the pit (36) and presents (82, 83) visual and audible messages to the effect that passengers did not exit at the correct floor and must wait while the other car makes a stop. Once the terminal floor is clear, the diverted car will run (87-89) to that floor, presenting (92, 93) visual and audible messages to the effect that passengers should exit once the doors are open and reenter their service requests.

8 Claims, 3 Drawing Sheets





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

(10) **Patent No.:** **US 7,650,968 B2**
(45) **Date of Patent:** **Jan. 26, 2010**

(54) **ELEVATOR RESCUE OPERATION CONTROL SYSTEM INCLUDING SELECTIVE TRANSFORMER WINDING ENERGIZATION**

(75) Inventors: **Robert Oesterle**, Berlin (DE); **Marvin Dehmloew**, Berlin (DE); **Axel Friedrich**, Berlin (DE)

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

4,516,665	A *	5/1985	Watanabe	187/296
4,666,020	A *	5/1987	Watanabe	187/290
5,058,710	A	10/1991	Iwasa	
5,285,029	A *	2/1994	Araki	187/290
5,698,823	A *	12/1997	Tanahashi	187/296
5,864,474	A	1/1999	Jang	
5,893,432	A *	4/1999	Nguyen et al.	187/290
6,315,081	B1 *	11/2001	Yeo	187/290
7,275,622	B2 *	10/2007	Hall et al.	187/290
2004/0020726	A1	2/2004	Chen	

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 418 days.

FOREIGN PATENT DOCUMENTS

JP 07242376 9/1995

(21) Appl. No.: **11/577,876**

(22) PCT Filed: **Dec. 31, 2004**

(86) PCT No.: **PCT/EP2004/014875**

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(65) **Prior Publication Data**

US 2009/0127029 A1 May 21, 2009

(51) **Int. Cl.**
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(52) **U.S. Cl.** 187/290; 187/393

(58) **Field of Classification Search** 187/277,
187/278, 293, 296, 290, 391, 393

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,706,357 A * 12/1972 Simpson 187/290

OTHER PUBLICATIONS

PCT International Search Report and Written Opinion for International Application No. PCT/EP2004/014875 mailed Nov. 15, 2005.

* cited by examiner

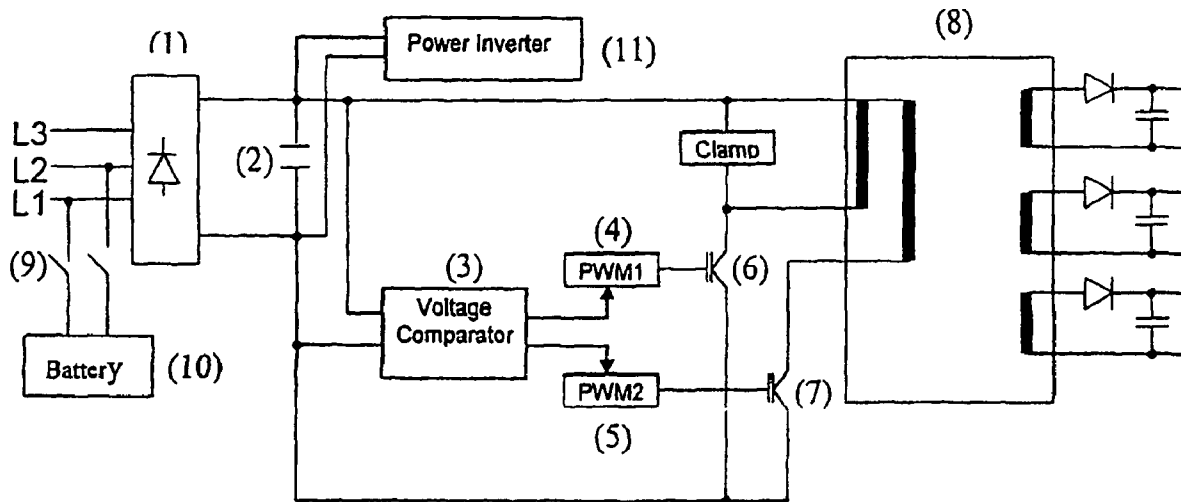
Primary Examiner—Jonathan Salata

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

(57) **ABSTRACT**

A power supply for an elevator drive includes a voltage input, a comparator for comparing the input voltage with a predetermined threshold, a transformer having a primary winding and a secondary winding connected to the elevator drive. The transformer has a single tapped primary winding. When the input voltage exceeds the predetermined threshold input, the comparator output causes power to be supplied to the primary winding via one of an end of the winding or the tapping of the winding, and when the input voltage is below the predetermined threshold, input power is supplied to the primary winding via the other of the end of the primary winding and the tapping of the winding.

5 Claims, 1 Drawing Sheet





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

(10) **Patent No.:** **US 7,650,969 B2**
(45) **Date of Patent:** **Jan. 26, 2010**

(54) **SAFETY DEVICE FOR USE IN AN ELEVATOR SYSTEM INCLUDING A TRIGGERING MEMBER FOR ACTIVATING A SAFETY BRAKE**

(75) Inventors: **Andres Monzon**, Madrid (ES); **Fernando Del Rio**, Madrid (ES); **Antonio de Miguel**, Madrid (ES); **Jose Caballero**, Madrid (ES); **Elviro Lorenzo**, Madrid (ES); **Francisco Manuel Cervera Morales**, Madrid (ES)

(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 441 days.

(21) Appl. No.: **11/576,273**

(22) PCT Filed: **Dec. 3, 2004**

(86) PCT No.: **PCT/US2004/040690**

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(65) **Prior Publication Data**

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B66B 1/26 (2006.01)

(52) **U.S. Cl.** **187/300**; 187/360

(58) **Field of Classification Search** 187/300,
187/301, 360, 370, 391, 393, 287-289, 316,
187/317, 414, 313; 49/25, 26, 28; 318/466-469,
318/280-286

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

503,486 A	8/1893	Labatt
1,069,070 A	7/1913	Magnuson
1,182,240 A	5/1916	Bemies
1,223,819 A	4/1917	Mitchell
2,765,874 A	10/1956	Staley
3,211,258 A	10/1965	Dickmann
3,674,113 A	7/1972	Richmon

(Continued)

FOREIGN PATENT DOCUMENTS

EP 0985623 A2 3/2000

(Continued)

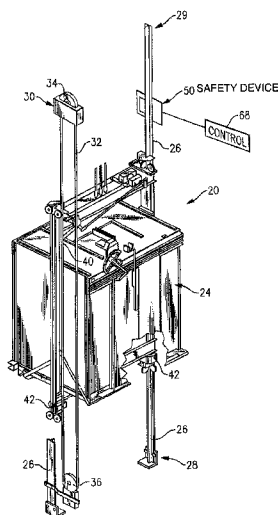
Primary Examiner—Jonathan Salata

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

(57) **ABSTRACT**

An elevator system includes a safety device strategically positioned within a hoistway to provide overhead or under car clearance during an inspection procedure, for example. An example safety device includes a triggering member that is selectively moved into a stopping position to engage a safety brake for preventing movement of an elevator car beyond a selected vertical position. The triggering member is selectively moveable in an automated manner between a retracted position and a stopping position. When the triggering member is in a retracted position, it has no effect on normal elevator system operation. When the triggering member is in the stopping position, it provides for maintaining adequate clearance between an elevator car assembly and another surface or structure within an elevator hoistway.

25 Claims, 4 Drawing Sheets





US007650970B2

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

(10) **Patent No.:** **US 7,650,970 B2**
(45) **Date of Patent:** **Jan. 26, 2010**

(54) **ELEVATOR DOOR LOCK SENSOR DEVICE INCLUDING PROXIMITY SENSOR ELEMENTS IN A SELECTED GEOMETRIC PATTERN**

(75) Inventors: **Muhidin A. Lelic**, Manchester, CT (US); **Pei-Yuan Peng**, Manchester, CT (US); **Bryan Robert Siewert**, Westbrook, CT (US); **Jacek F. Gieras**, Glastonbury, CT (US); **Michael Tracey**, Cromwell, CT (US); **Thomas Malone**, Avon, CT (US)

(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 0 days.

(21) Appl. No.: **11/570,892**

(22) PCT Filed: **Sep. 27, 2004**

(86) PCT No.: **PCT/US2004/031729**

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(65) **Prior Publication Data**

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(51) **Int. Cl.**
B66B 13/14 (2006.01)

(52) **U.S. Cl.** **187/316**; 187/391

(58) **Field of Classification Search** 187/247, 187/313, 316, 317, 391-394; 49/26, 28

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

- 1,344,430 A 6/1920 Wigmore et al.
- 3,554,326 A 1/1971 Hallene et al.
- 3,638,762 A 2/1972 Johns
- 4,410,067 A 10/1983 Leiner et al.
- 4,934,488 A 6/1990 Umemura
- 5,174,417 A 12/1992 Pillsbury

(Continued)

FOREIGN PATENT DOCUMENTS

- JP 3102091 4/1991

(Continued)

OTHER PUBLICATIONS

PCT International Preliminary Report on Patentability relating to International Application No. PCT/US2004/031729 mailed Feb. 14, 2007.

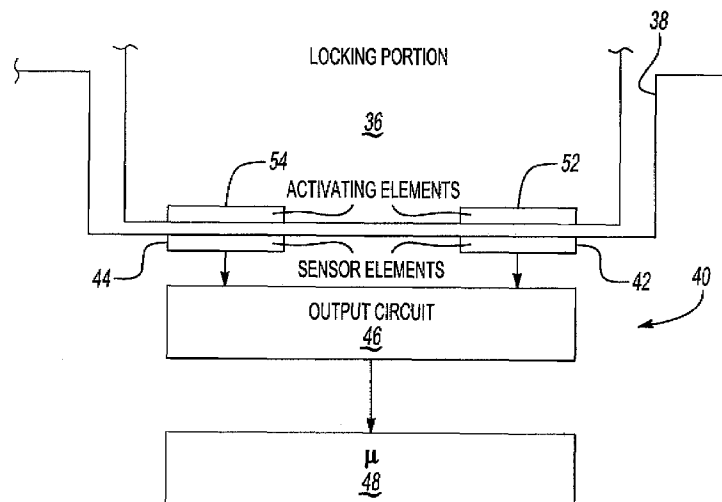
Primary Examiner—Jonathan Salata

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

(57) **ABSTRACT**

An elevator door lock assembly (30) includes a sensor device (40) for providing an indication of a properly locked door. A plurality of proximity sensor elements (42, 44) interact with activating elements (52, 54) when the door lock assembly (30) is properly locked. In disclosed examples, a specific geometric pattern of the sensor elements (42, 44) and the activating elements (52, 54) provides redundancy and tampering protection. In a disclosed example, an output from the sensor device (40) provides an indication of a condition of the door lock and a building level location of a plurality of sensor devices.

20 Claims, 2 Drawing Sheets





US007650971B2

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

(10) **Patent No.:** **US 7,650,971 B2**
(45) **Date of Patent:** **Jan. 26, 2010**

(54) **SAFETY LOCK FOR ELEVATOR LANDING DOOR DETECTING INTRUSION IN THE SHAFT THROUGH THE LANDING DOOR AND ELEVATOR THUS EQUIPPED**

(56) **References Cited**

U.S. PATENT DOCUMENTS

1,466,900 A * 9/1923 Harper, Sr. 70/399

(75) Inventors: **David Pillin**, Saint-Brisson sur Loire (FR); **Sébastien Fougeron**, Les Bordes (FR); **Gérard Sirigu**, Gien (FR)

(Continued)

FOREIGN PATENT DOCUMENTS

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

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(Continued)

OTHER PUBLICATIONS

(21) Appl. No.: **11/815,330**

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(22) PCT Filed: **Feb. 3, 2005**

(86) PCT No.: **PCT/IB2005/000276**

Primary Examiner—Walter Benson
Assistant Examiner—Eduardo Colon-Santana
(74) *Attorney, Agent, or Firm*—Carlson, Gaskey & Olds PC

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(2), (4) Date: **Aug. 2, 2007**

(57) **ABSTRACT**

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(65) **Prior Publication Data**

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F16P 3/08 (2006.01)
E05B 65/10 (2006.01)

(52) **U.S. Cl.** **187/331; 187/325; 70/277; 70/465**

(58) **Field of Classification Search** **187/301, 187/307, 314, 325, 331, 335; 70/277, 278.2, 70/278.3, 278.6, 279.1, 91, 399, 465**

See application file for complete search history.

The invention relates to a safety lock (1) for an elevator landing door detecting intrusion of a person in the shaft through the landing door, activating a bistable switch (21) through its spindle lever (11) putting the elevator into safe operation when the landing door is opened by turning the corresponding key, it being impossible to reset the switch (21) manually from the inside of the shaft, which comprises a device (17) fixing the lock in the open position with the door open, that is released when the door is closed such that the switch (21) can be reset by turning the lock (1) in the closing direction of the door in which the key is turned in the opposite direction to the opening direction, the switch (21) being reset mechanically by a mechanical means connected to the spindle lever (11).

10 Claims, 5 Drawing Sheets

