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

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(54) **ELEVATOR APPARATUS**

(75) Inventors: **Takaharu Ueda**, Tokyo (JP); **Masunori Shibata**, Tokyo (JP); **Masaya Sakai**, Tokyo (JP)

(73) Assignee: **Mitsubishi Electric Corporation**, Tokyo (JP)

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B66B 1/28 (2006.01)

(52) **U.S. Cl.** **187/293; 187/247**

(58) **Field of Classification Search** **187/247, 187/277, 289, 290, 293-297, 391, 393, 380-388; 318/66-77, 268**

See application file for complete search history.

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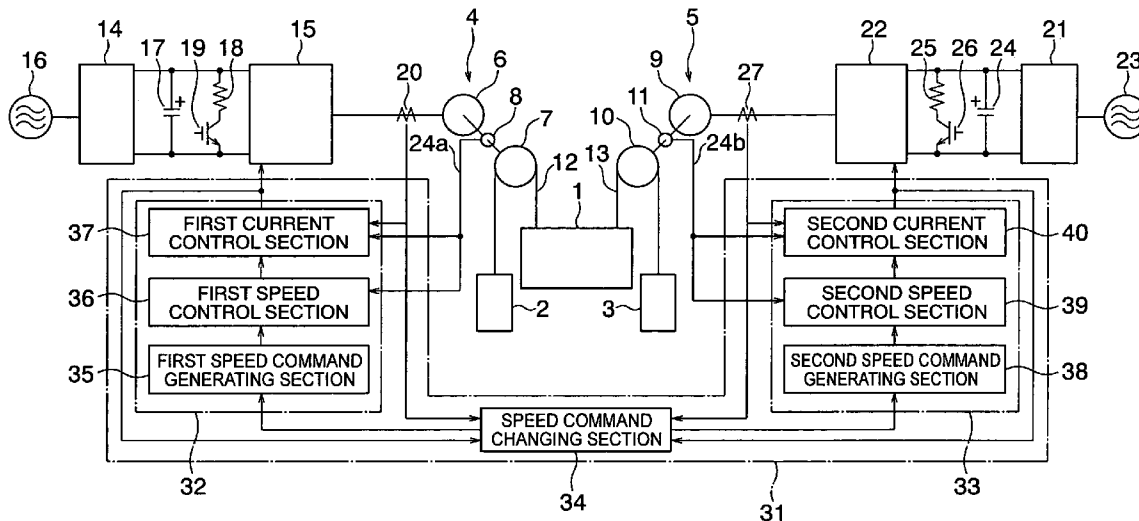
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Primary Examiner—Jonathan Salata
(74) *Attorney, Agent, or Firm*—Oblon, Spivak, McClelland, Maier & Neustadt, L.L.P.

(57) **ABSTRACT**

In an elevator apparatus, a single car is raised and lowered by a plurality of hoisting machines. An elevator control device for controlling the hoisting machines generates speed commands separately for the hoisting machines. When a current value of one of the hoisting machines reaches a current set value, which is set in advance during acceleration of the car, the elevator control device applies the speed command for that one of the hoisting machines, whose current value has reached the current set value, to the other hoisting machine as well.

4 Claims, 6 Drawing Sheets





US007753175B2

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

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(45) **Date of Patent:** **Jul. 13, 2010**

(54) **ELEVATOR CAR HAVING AN ANGLED UNDERSLUNG ROPING ARRANGEMENT**

(58) **Field of Classification Search** 180/256, 180/262, 266, 249, 250-252, 254, 257, 401
See application file for complete search history.

(75) Inventors: **Loren Fanion**, Bristol, CT (US); **John Ferrisi**, Southington, CT (US); **Kevin Gleason**, Burlington, CT (US); **Daniel Greer**, Bristol, CT (US); **Robert Hammell**, Killingworth, CT (US); **Dave Jarvis**, West Hartford, CT (US); **John Kriss**, East Hampton, CT (US); **John Milton-Benoit**, West Suffield, CT (US); **Harry Terry**, Avon, CT (US); **Boris Traktoenko**, Avon, CT (US); **Ken Woronoff**, Portland, CT (US)

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Primary Examiner—John Q Nguyen

Assistant Examiner—Stefan Krueer

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

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

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(21) Appl. No.: **11/816,314**

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B66B 11/02 (2006.01)

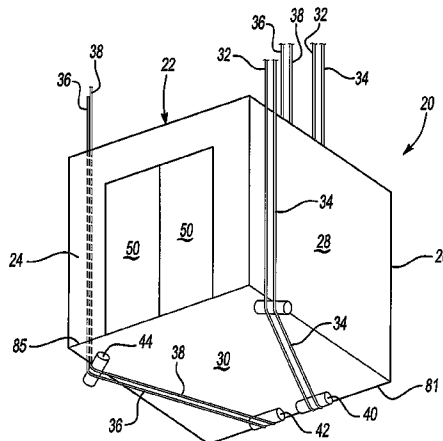
B66B 9/02 (2006.01)

(52) **U.S. Cl.** **187/266; 187/250; 187/251; 187/401**

(57) **ABSTRACT**

An elevator system (20) includes an underslung car (22). A plurality of load bearing members (32-38) are closer together behind the elevator car and spaced farther apart near a front of the elevator car (22). A plurality of sheaves (40-44) are supported for vertical movement with the car and rotational movement relative to the car (22) such that the load bearing members (32-38) can be arranged in a 2:1 roping ratio and extend underneath the car (22). A disclosed example includes sheaves (40-44) rotatable about sheave axes that are at oblique angles relative to corresponding edges of the elevator car (22).

10 Claims, 2 Drawing Sheets





US007753190B2

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

(10) **Patent No.:** **US 7,753,190 B2**
(45) **Date of Patent:** **Jul. 13, 2010**

(54) **TRANSPORTATION DEVICE WITH DEFLECTOR APPARATUS**

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(75) Inventors: **Michael Matheisl**, Vosendorf (AT);
Norbert Frim, Vienna (AT); **Kurt Streibig**, Rekawinkel (AT)

(73) Assignee: **Inventio AG**, Hergiswil (CH)

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

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(21) Appl. No.: **12/204,360**

(22) Filed: **Sep. 4, 2008**

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Primary Examiner—James R Bidwell

(65) **Prior Publication Data**

US 2009/0057097 A1 Mar. 5, 2009

(74) Attorney, Agent, or Firm—Ladas & Parry LLP

(57) **ABSTRACT**

(30) **Foreign Application Priority Data**

Sep. 5, 2007 (EP) 07115761

An escalator or moving walk has respectively a step band and steps, or a moving walk with a pallet band and pallets. A balustrade has a handrail that is held by a balustrade skirt. Arranged on the balustrade skirt is a wedging guard apparatus or deflector apparatus that prevents wedging or pinching of objects and persons between the steps and the balustrade skirt. The wedging guard or deflector apparatus has a carrier or base section and a brush unit that is arranged on a vertical area of the balustrade skirt. The carrier or base section has fastening parts for vertical mating or joining with the brush unit.

(51) **Int. Cl.**
B65G 17/00 (2006.01)

(52) **U.S. Cl.** **198/323**; 198/326

(58) **Field of Classification Search** 198/321,
198/323, 324, 326

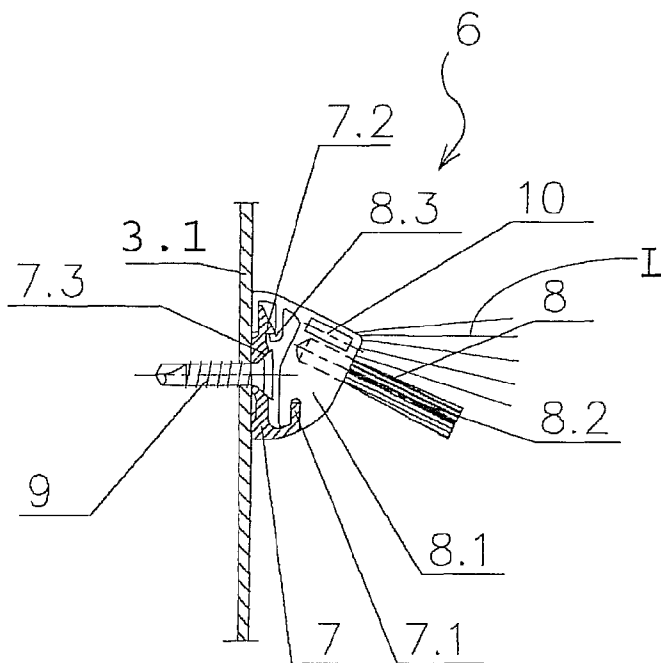
See application file for complete search history.

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10 Claims, 4 Drawing Sheets





US007762376B2

(12) **United States Patent**
Kocher

(10) **Patent No.:** **US 7,762,376 B2**
(45) **Date of Patent:** **Jul. 27, 2010**

(54) **ELEVATOR WITH TWO ELEVATOR CARS WHICH ARE DISPOSED ONE ABOVE THE OTHER IN A SHAFT**

2004/0007428 A1* 1/2004 Teramoto et al. 187/249
2006/0070818 A1* 4/2006 Ach et al. 187/250

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(75) Inventor: **Hans Kocher**, Udligenswil (CH)
(73) Assignee: **Inventio AG**, Hergiswil NW (CH)
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 85 days.

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(30) **Foreign Application Priority Data**

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B66B 7/08 (2006.01)
(52) **U.S. Cl.** **187/249**
(58) **Field of Classification Search** 187/249
See application file for complete search history.

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Primary Examiner—Thomas J. Brahan
(74) *Attorney, Agent, or Firm*—Fraser Clemens Martin & Miller LLC; William J. Clemens

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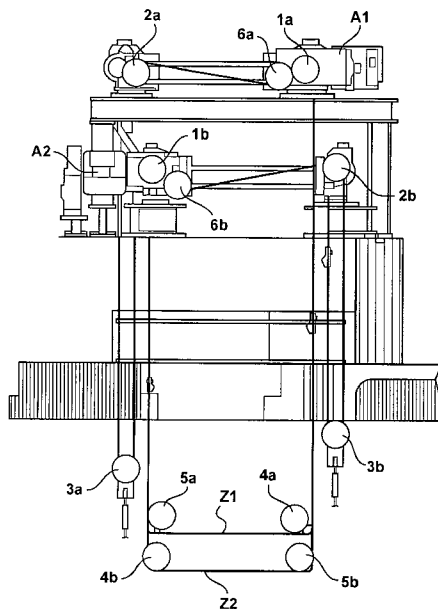
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(57) **ABSTRACT**

An elevator has at least two elevator cars, which are disposed one above the other in a shaft, which cars are vertically movable and which each have a drive, a counterweight and a traction device, wherein one drive is fixed at a first shaft wall and a second drive is fixed at an opposite second shaft wall and each drive has at least one drive pulley. At least one first deflecting roller is associated with each drive and is positioned the shaft wall that is opposite the drive and above the counterweight associated with the drive. The traction device is led from the counterweight over the deflecting roller to the drive pulley and from there to the elevator car.

19 Claims, 4 Drawing Sheets





US007762378B2

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

(10) **Patent No.:** **US 7,762,378 B2**
(45) **Date of Patent:** **Jul. 27, 2010**

(54) **ELEVATOR INSTALLATION WITH COMPENSATING-MEANS GUIDE**

(56) **References Cited**

(75) Inventors: **Peter Möri**, Rothenburg (CH); **Franz Weingartner**, Ebikon (CH); **Karsten Gensicke**, Buchrain (CH)

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(73) Assignee: **Inventio AG**, Hergiswil NW (CH)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 861 days.

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(21) Appl. No.: **11/081,242**

(22) Filed: **Mar. 16, 2005**

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(30) **Foreign Application Priority Data**

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Primary Examiner—John Q Nguyen

Assistant Examiner—Stefan Krueer

(74) *Attorney, Agent, or Firm*—Fraser Clemens Martin & Miller LLC; William J. Clemens

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B66B 7/06 (2006.01)

F16H 57/00 (2006.01)

F16N 7/16 (2006.01)

(57) **ABSTRACT**

(52) **U.S. Cl.** **187/414**; 187/404; 184/21; 474/92

An elevator installation with an elevator car and a counterweight, a suspension cable suspending the elevator car and the counterweight, and a compensating cable compensating the effect of the weight of the suspension cable, is equipped with a compensating cable guide which for the purpose of guiding the compensating cable has at least one brush.

(58) **Field of Classification Search** 187/404, 187/407, 414; 184/21; 474/92; 198/496; 15/88.1, 268, 256.6, 398; **B66B 7/06, 7/12**

See application file for complete search history.

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