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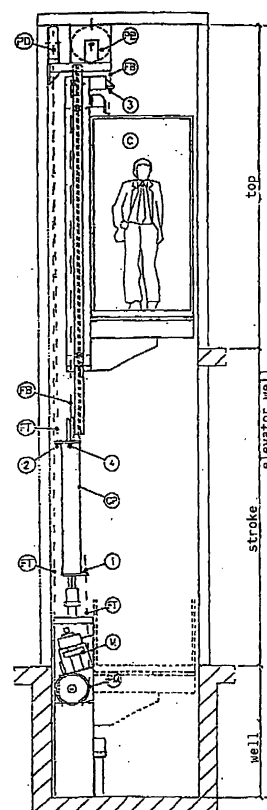
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(54) **Roping for elevator**

(57) Lifting apparatus consisting of a traction system and of a balancing system. The traction system consists of a motor (M), a deviation pulley (PD) and a set of traction cables (FT). The traction cables (FT) are firmly connected to the counterweight (CP); they start from point 1, wind to the driving pulley (PM), extend vertically along the hoistway and, by means of the deviation pulley (PD), descend again onto the counterweight (CP) at point 2. The balancing system consists of a cabin (C), a counterweight (CP), a pulley (PB) and a set of balancing cables (FB). The balancing cables (FB) start from point 3 located at the top of the cabin (C), extend vertically on the deviation pulley (PD) and descend to point 4 on the counterweight (CP).



Description

Claims

[0001] The elevator load cabin is guided during the movement by traditional steel guides fixed along a vertical side of the hoistway, the load cabin being suspended by a counterweight which is also guided by steel guides fixed to the hoistway.

[0002] The two weights are connected by steel cables which extend along the hoistway up to its upper point.

[0003] Two transmission pulleys are fixed to the top of the hoistway, one of which allows the alternate motion of the two weights (when the cabin is at the top, the counterweight is at the bottom and *vice versa*). The counterweight is calculated so as to require the least driving force. In the ideal condition, i.e. with a load in the cabin which is half its capacity, the system is mechanically balanced.

[0004] The vertical movement of the cabin is generated and controlled by a motor positioned in the lowest part of the hoistway, under the counterweight. This motor transmits its power by means of a pulley which adheres to more metal cables or belts and generates the vertical movement.

[0005] Said cables are fixed to the counterweight and transmitted by the second pulley fixed to the top and are kept in tension by means of a biasing system. An electromechanical device will control the value of the tension.

[0006] The apparatus has therefore two cable systems, one for the balancing and one for the movement.

[0007] The motor and the cabin motion control are operated by a device which is positioned quite close to the hoistway inside a metal box, the control levers for the manual emergency operation being arranged in said metal box.

[0008] The cabin, the doors, the supporting mechanical part of the cabin and the safety devices such as locking bolts, switches, alarms, parachutes, shock absorbers, etc., are all in accordance with the safety regulations presently in force and are not an object of the patent.

[0009] This lifting apparatus, capable of vertically transporting people and objects, is innovative since, unlike the conventional apparatuses, it consists of two separate cable systems, which allow to satisfy the present market requirements:

1. energy saving; on account of the counterweight and since the static loads of the moving organs do not rest on the motor, the force of the motor is reduced by 50%;
2. elimination of the machine housings since the motor is placed inside the hoistway;
3. reduced acoustic pollution;
4. reduced risk in the ordinary and extraordinary maintenance operations since the machine is always positioned in the hoistway at 0 level and for this reason it is easily accessible by the operators.

1. Hauling of the counterweight.

5 2. Double cable system: traction cables and balancing cables.

3. Positioning of the motor under the counterweight in the hoistway.

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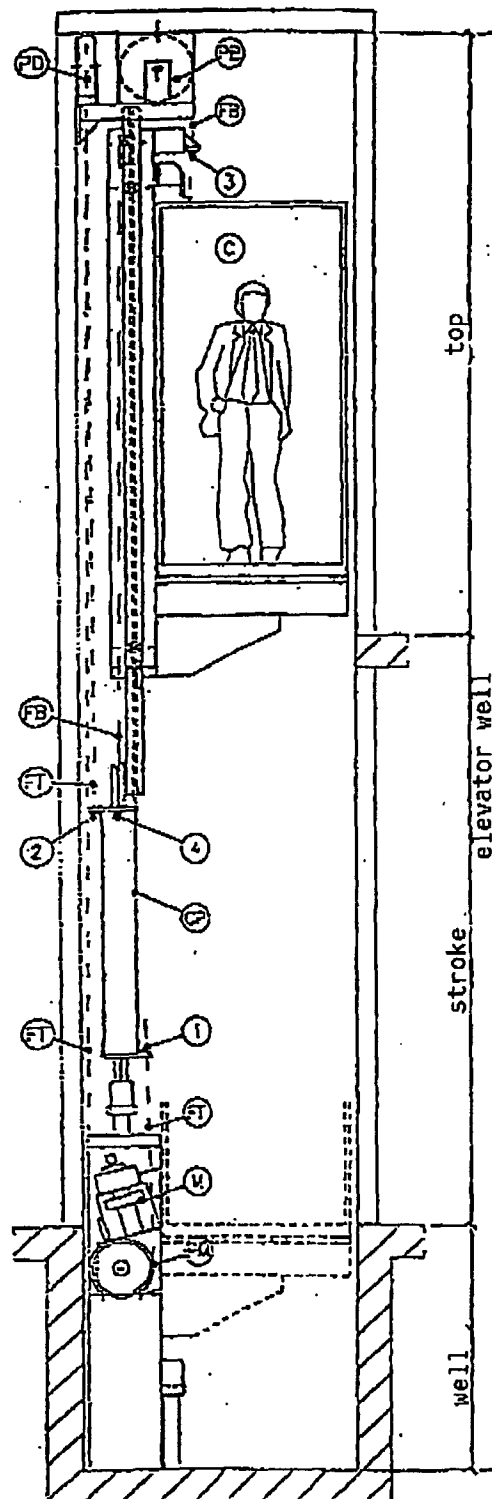
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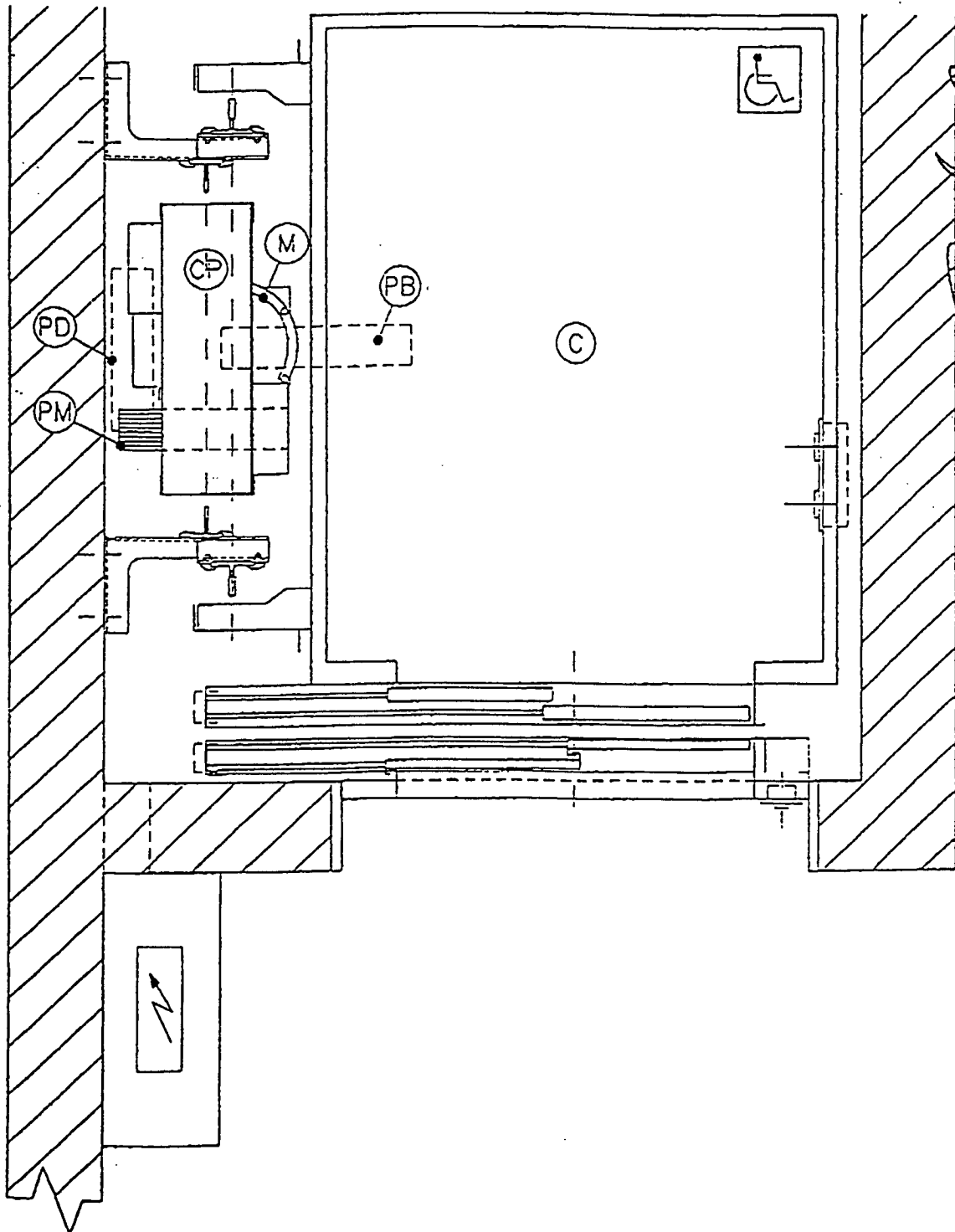
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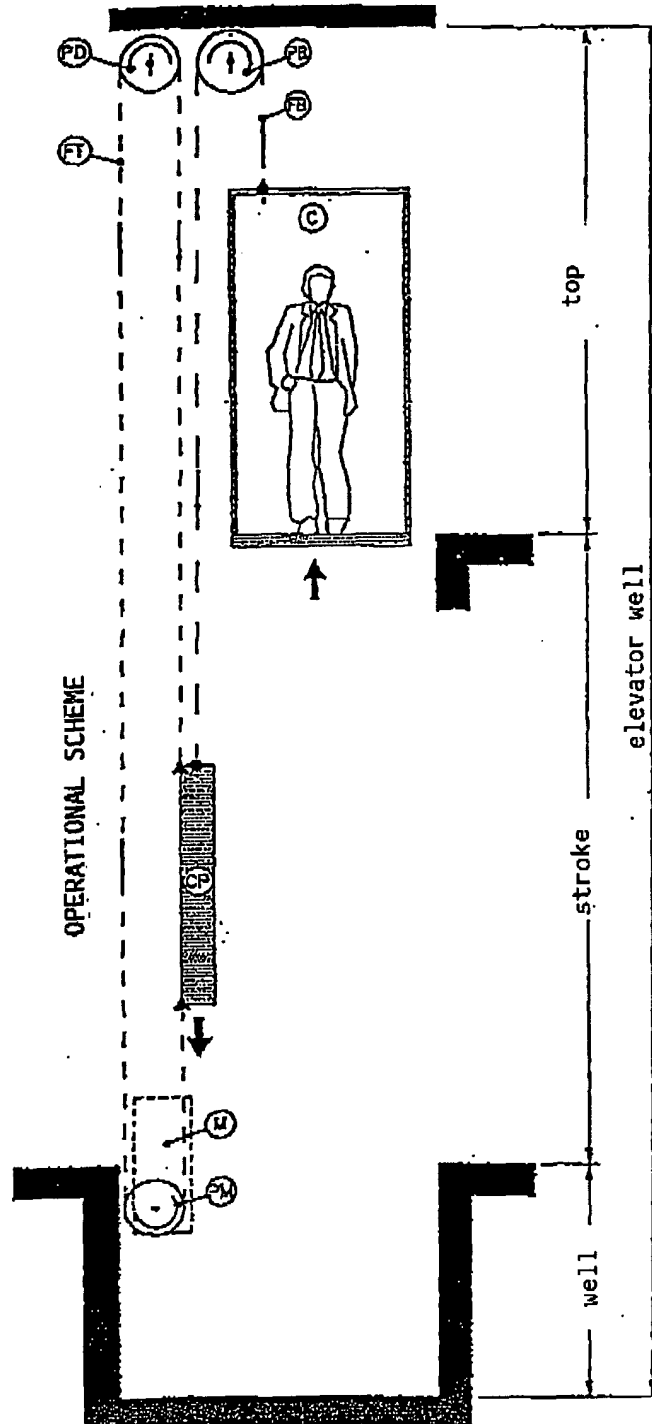
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Application Number
EP 02 02 2907

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 February 2003	Examiner Janssens, G
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p>			

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