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54 **Laterally suspending structure for elevator car.**

57 A laterally suspending structure for an elevator car composed of support members secured to both side surfaces of an elevator car and rope fastening members supported and secured to the upper surfaces of the support members, the rope fastening members for suspending said car being set at a level slightly below the roof surface of said car.

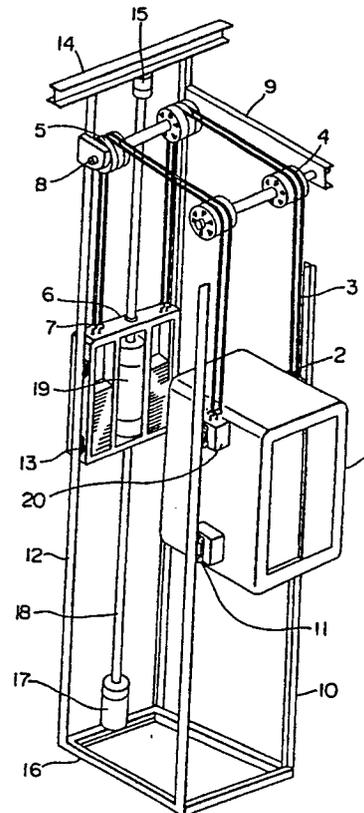


Fig. 1

Laterally Suspending Structure for Elevator Car

The present invention relates to a laterally suspending structure for an elevator car, and particularly to a laterally suspending structure of an elevator car of a type having its entire width smaller than that of a balance weight.

In general, a structure for suspending an elevator car is of a roof suspending type as shown in Fig. 2, in order to stabilize the attitude of the elevator car during movement.

Accordingly, in the case of the above-mentioned conventional roof suspending type elevator, it has been necessary to ensure a space for attaching a rope fastening support member projected from the upper surface of the roof section of the car, and accordingly, there has been caused a problem such that the moving stroke of the car is inevitably decreased by a value corresponding to the attaching space.

One object of the present invention is to provide an elevator having a moving stroke which is greater than that of a roof suspending type elevator car, within a fixed moving space.

To attain the above-mentioned object, in an elevator according to the present invention, there is provided a laterally suspending structure for an elevator car composed of support members secured to both side surfaces of the elevator car and rope fastening members supported and secured to the upper end faces of the support members, the rope fastening members for suspending the car being set at a level slightly lower than that of the roof surface of the car.

With the laterally suspending structure for the elevator car arranged as mentioned above, the fastening rope fastening ends are set at a level slightly lower than that of the upper surface of the roof of the car. Further, due to that the rope fastening members secured to the support members are arranged at equal distances with respect to the vertical line passing through the gravitational center of the car, suitable blancing is taken for suspending the car.

In an embodiment, referring to the drawings in which Figs. 1 and 2 show an elevator using a cylindrical linear motor, Fig. 1 is a schematic perspective view illustrating a laterally suspending structure for a car according to the present invention, and Fig. 2 is a schematic perspective view illustrating a conventional roof suspending type structure for a car. Referring to Fig. 1, an elevator car 1 is fastened to first ends of ropes 3 by rope fastening members 2. These rope fastening members 2 are tightly fixed to support members 20 arranged on both side surfaces of the upper section of the car at a level slightly lower than the

upper surface of the roof of the car. Meanwhile, the second ends of the ropes 3 are fastened to rope fastening members 7 secured to the upper end of a balance weight 6, the ropes 3 being guided about first sheaves 4 and second sheaves 5 which are rotatably supported in the upper section of a building. The first sheaves 4 and the second sheaves 5 are supported to sheave support beams 9 in an elevator machine room by means of sheave shafts 8. The car has car guide rollers 11 attached to both sides thereof and engaged with car guide rails 10. Meanwhile, a balance weight has balance weight guide rollers 13 engaged with balance weight guide rails 12. The balance weight 6 is arranged so as to carry out linear motion in the vertical direction along a column 18 which is supported at both ends thereof to an upper end support part 15 fixed a ceiling beam 14 and a lower end support part 17 fixed to a floor frame 16, the column 18 being the secondary conductor of a linear induction motor. Reference numeral 19 denotes the primary conductor of the induction motor carrying out linear motion. In the case of the linear induction motor shown in this embodiment, it is of a type such that the secondary conductor is held at the position of installation while the primary conductor alone carries out linear motion. With this arrangement, in the case of the laterally suspending type elevator according to the present invention, in a predetermined movable space for the car, it is possible to obtain a moving stroke which is greater than that of the elevator of the type in which the car is suspended at its roof, as shown in Fig. 2. This is due to the provision of the attaching spaces on the side surfaces of the car instead of the provision of the attaching space for the support member which projects from the upper surface of the roof of the car in the roof suspending type elevator.

The present invention is optimum particularly for an elevator of such a type that the entire width of a car is smaller than that of the balance weight.

Further, although the present invention has been explained in the above-mentioned embodiment using a cylindrical linear motor driven elevator, the laterally suspending structure for a car, according to the present invention should not be limited to the cylindrical shape linear motor driven elevator, and the present invention can be applied for every type of elevators.

The present invention can be practiced in various forms without departing the spirit and main principal of the present invention.

The present invention is arranged as mentioned above, and therefore offers the following

advantages.

Since the rope fastening ends for the car are set at a level slightly lower than that of the upper surface of the roof of the car, the moving stroke of the car within a predetermined moving space can be made to be maximum. Further, the rope fastening members are arranged at equal distances with respect to the vertical line passing through the gravitational center of the car, and accordingly, optimum balancing is taken for suspending the car.

Fig. 1 is a schematic perspective view illustrating an elevator having a laterally suspending structure according to the present invention; and Fig. 2 is a schematic perspective view illustrating a conventional car roof suspending type elevator.

Claims

1. A laterally suspending structure for an elevator car composed of support members secured to both side surfaces of an elevator car and rope fastening members supported and secured to the upper surfaces of the support members, the rope fastening members for suspending said car being set at a level slightly below the roof surface of said car.

2. A laterally suspending structure for an elevator car as set forth in claim 1, wherein said support members are positioned at equal distances on both side surfaces of said elevator car with respect to the vertical line passing through the gravitational center of said car.

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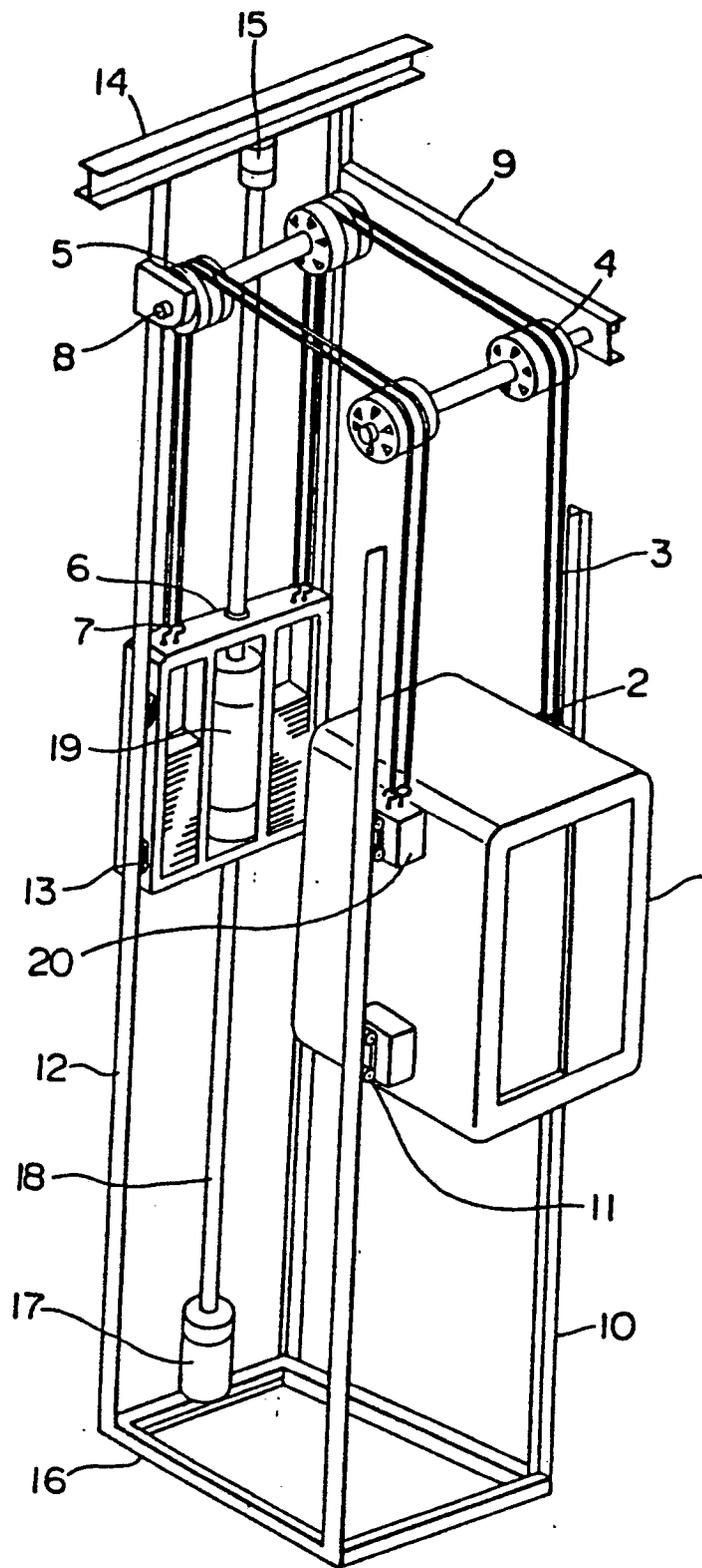


Fig. 1

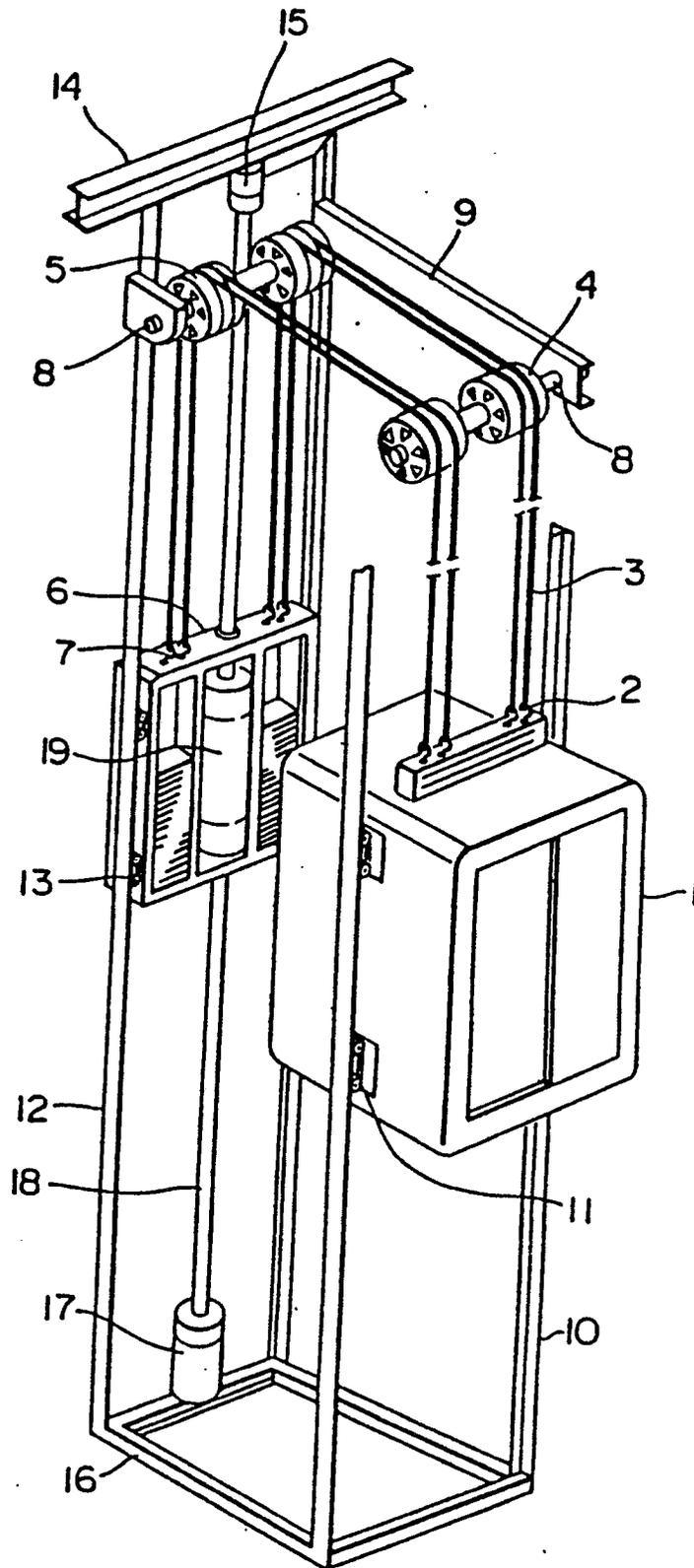


Fig. 2