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"OVERLOAD PROTECTION SYSTEM FOR A BUILDER'S HOIST"

The invention relates to a building elevator with an elevator mast and an elevator car and with at least one electric drive motor for the elevator car, for moving the same along the elevator mast, an overload-prevention means being provided.

Building elevators of this type are known in principle. Such building elevators are used for transporting passengers or materials, the design of the elevator car differing in dependence on the carrying purpose. In particular in the case of building elevators for transporting passengers, an overload-prevention means is provided, i.e. it has to be ensured that the elevator is deactivated if the load which is to be transported exceeds a predetermined maximum value.

In the case of building elevators with an electric geared motor as the drive motor, it is known to allow the torque arm of said geared motor to act on a limit switch. With corresponding deflection of the torque arm of the geared motor as a result of overload, the overload-prevention means is then automatically actuated by the limit switch being triggered. This solution is suitable for building elevators with one electric motor as the drive. However, should a building elevator which can transport greater loads be equipped with two drive motors (as known, for example, from US-A-4 498 556), such an overload-prevention means is not suitable.

The object of the invention is to provide an overload-prevention means in the simplest manner possible for a building elevator with at least two drive motors.

This object is achieved according to the invention, in the case of a building elevator of the type described in the introduction, in that at least two drive motors are provided and the overload-prevention means has a device which is intended for adding the forces occurring in the abutments of the drive motors and is connected to a limit switch.

The invention provides a solution which easily achieves an overload-prevention means even for building elevators with two or more drive motors. In this case, the



forces occurring in the abutments of the motors are added and the resultant force is conducted to an adjustable limit switch. This arrangement thus achieves the situation where the forces from the motor drives are added and the exact load can thus be adjusted (by corresponding adjustment of the limit switch). If the permissible maximum load is exceeded, the elevator is correspondingly deactivated.

This overload-prevention means can be achieved particularly advantageously in design terms in that the drive motors are arranged one above the other and the device for adding the forces is formed by a rocker link which is arranged between the drive motors and is connected thereto.

The resultant forces are then thus passed on to the limit switch via a rocker link.

Provision is particularly preferably made in design terms for the rocker link to be coupled in an articulated manner in each case to connecting members which are connected to the respective drive motor. This means that it is particularly simple for the two motors to be coupled to the common rocker link for the addition of the forces from the two motors.

Furthermore, provision is advantageously made, in a manner known per se, for it to be possible for the limit switch to be subjected to the action of the rocker link counter to the force of an adjustable spring.

A further advantageous configuration makes provision for the overload-prevention means to be designed such that it can be bypassed electrically. This provides the considerable additional advantage of avoiding the situation where, during travel, the limit switch could be triggered by oscillations. The invention is explained in more detail hereinbelow by way of example with reference to the drawing, in which: Figure 1 shows a perspective illustration of a building elevator,

Figure 2 shows the overload-prevention means according to the invention of the building elevator, and Figure 3 shows a side view of the overload-prevention means according to Figure 2.

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A building elevator is designated in general terms by 1 in Figure 1. In the case of the exemplary embodiment illustrated, said building elevator has an elevator platform 2 which is to be anchored on a ground surface. Fastened on said elevator platform 2 is an elevator mast 3 which, depending on the use purpose, may have a variable vertical extent. Said elevator mast is equipped, inter alia, with a rack, which is not illustrated in Figure 1. The elevator mast 3 serves for allowing the vertical movement of an elevator car, which is designated in general terms by 4.

For this purpose, in the case of the building elevator according to the invention, the elevator car 4 is equipped with two electric geared motors 5, 6 (Figure 2) which are arranged one above the other and are each fastened on a fastening member 7 of the elevator car. Said geared motors 5, 6 each interact with the rack 9 of the elevator mast 3 via a gearwheel 8.

The two geared motors 5, 6 each have a connecting member 10, 11, and these are connected on the end sides in each case, via an articulation 12, to a common rocker link 13. This rocker link 13 essentially forms the overload-prevention means of the building elevator and is connected operatively on the end side to a limit switch 14, it being possible for the limit switch 14 to be adjusted by means of an adjustable cylindrical compression spring 15 such that triggering of the limit switch 14 by the rocker link 13 is only possible when the rocker link 13 is located in the position which corresponds to an overload deflection.

This arrangement of the two geared motors 5 and 6 and the connection via the rocker link 13 ensure that the forces from the two geared motors 5 and 6 are added and exact overload prevention is thus ensured. Of course, the limit switch 14 is connected to the control means of the building elevator in a suitable manner, which is known to a person skilled in the art and will thus not be explained in any more detail here.

In order to avoid triggering of the limit switch 14 on account of oscillations during travel, provision is made, although not illustrated in the drawing, for the

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limit switch 14 to be designed such that it can be bypassed electrically.

Of course, the invention is not restricted to the exemplary embodiment illustrated. Thus, of course, the overload-prevention means is suitable not just for the type of elevator illustrated in Figure 1, but basically for all types of elevator with two drive motors arranged one above the other.

Patent claims:

1. A building elevator with an elevator mast and an elevator car and with at least one electric drive motor for the elevator car, for moving the same along the elevator mast, an overload-prevention means being provided, wherein at least two drive motors (5,6) are provided and the overload-prevention means has a device which is intended for adding the forces occurring in the abutments of the drive motors (5,6) and is connected to a limit switch (14).
2. The building elevator as claimed in claim 1, wherein the drive motors (5,6) are arranged one above the other and the device for adding the forces is formed by a rocker link (13) which is arranged between the drive motors (5,6) and is connected thereto.
3. The building elevator as claimed in claim 2, wherein the rocker link (13) is coupled in an articulated manner (12) in each case to connecting members (10,11) which are connected to the respective drive motor (5,6).
4. The building elevator as claimed in claim 2 or 3, wherein the limit switch (14) is subjected to the action of the rocker link (13) counter to the force of an adjustable spring (15).
5. The building elevator as claimed in claim 1 or one of the following claims, wherein the overload-prevention means is designed such that it can be bypassed electrically.