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"BUILDER'S HOIST"

The invention relates to a building elevator with an elevator platform, with an elevator mast and an elevator car which can be moved along the elevator mast and has at least one basic car module with exchangeable side-wall parts. Such a building elevator is known from WO-A-9522502.

Various configurations of building elevators are known in general terms. They serve for transporting either passengers or goods (materials) to different scaffolding levels, the configuration of the elevator car having to meet different requirements depending on the load (passengers or materials). It is thus common for passenger elevators which are also suitable for transporting materials to have a closed elevator car with a door and roof in order to ensure that, during travel, the passenger in the elevator car cannot fall out of the car or be struck by objects falling downward from the scaffolding or the like. This safety aspect is of secondary importance in the case of elevators intended purely for carrying goods. These goods elevators usually have just a cage-like car with loading ramps, but such goods elevators must not be used for transporting passengers.

DE-U 18 24 142 discloses a building elevator with protective grilles all the way round which is suitable as a passenger elevator. It has two platforms which can be rotated through 360°. Although this elevator can also be used as a goods elevator, it involves too much outlay to be used purely for this purpose. DE-U 73 38 852 discloses an elevator which is intended purely for carrying goods and is not suitable as a passenger elevator. DE-U 84 12 972 discloses an elevator car for a building elevator in a case of which a wall protecting the elevator car all the way round is designed as a pivotable ramp.

This juxtaposition of known passenger and goods elevators ultimately means that two different types of building elevators have to be provided, which involves corresponding outlay and expense, in particular when just one elevator is necessary, rather than both types of elevator being required at the same time.

The object of the invention is to provide a building elevator which is suitable, in the simplest manner possible, for transporting both passengers and goods.



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This object is achieved according to the invention, by a building elevator of the type described in the introduction, in that the elevator car has a carrying platform and at least one side wall which is fixed thereto and is designed for the releasable arrangement of a roof covering on its top side, and in that, in addition to the at least one fixed side wall, exchangeable side-wall parts are provided.

A building elevator of modular construction is thus provided, the elevator car of which essentially comprises at least one basic car module which, depending on the use purpose, can be converted extremely easily from a passenger car into a goods carrier and vice versa by the exchangeable side-wall parts correspondingly being exchanged or removed completely and the roof covering being fitted or removed.

An advantageous configuration makes provision for the roof covering to be equipped with a plug which can be connected to the circuit of the elevator control means. When the roof covering is placed in position, the plug provided on the roof covering is then also connected at the same time to the circuit of the elevator control means, which is designed such that, with the plug inserted, the control means detects that the elevator is in passenger mode. This means that the control means then changes automatically to the passenger mode or, if the roof covering is not fitted, into the materials-transporting mode. In this mode, a dummy plug is preferably inserted.

For the purely goods-carrying function, provision is preferably made for the exchangeable side-wall parts to be designed as ramps which can be pivoted in and out.

For transporting passengers, provision is made for the exchangeable side-wall parts to be designed as a door, preferably a telescopic door. These exchangeable side-wall parts are configured such that they can easily be installed and removed, and they are thus preferably arranged in frame parts or the like which can be easily fitted into the fixed side walls of the basic car module, or anchored thereon in some other way, with the result that the conversion can be carried out with low outlay in terms of fitting.

If an elevator car with a larger transporting volume is required, this can easily be achieved in that the elevator car comprises at least two basic car modules which are

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fastened on one another, the exchangeable side-wall parts being arranged at the two respectively open ends. Clearly, all that is necessary is to provide basic car modules of a certain size, from which, depending on requirements, it is then possible, by combining two or more basic car modules, to produce a correspondingly larger car.

If an elevator car correspondingly comprising two basic car modules is used as the passenger car, provision is advantageously made for two roof coverings arranged one beside the other to be provided. It is then also the case that there no need to provide a roof covering with different dimensions; rather, it is sufficient to use two conventional roof coverings.

It is particularly expedient here for the elevator platform to comprise a basic frame and two additional frame parts which can be fastened releasably on the sides of said basic frame. If the elevator is used with a larger car comprising two basic modules, then the platform can easily be enlarged with the aid of the additional frame parts.

Clearly, the basic modules and basic structural parts (ramps, doors, roof coverings) also allow further possible modular-construction combinations in order to achieve different sizes and configurations of the elevator car, without there being any need to give any further details here.

Furthermore, a particularly advantageous configuration makes provision for there to be arranged on the elevator platform a device which is connected to the control means of the motor drive of the elevator car and is intended for monitoring the space above the elevator platform. This device is preferably formed by light barriers, particularly preferably by infrared light barriers. Said device dispenses with the need for a protective surround of the elevator platform since the device can monitor whether the space above the elevator platform is free of individuals or objects. If this is not the case, during downward travel, the elevator car is automatically stopped via the control means of the motor drive.

The invention is explained in more detail herein below by way of example with reference to the drawing, in which, in perspective illustrations in each case:

- Fig. 1 shows a basic car module of the elevator car of the building elevator according to the invention,
- Fig. 2 shows a side-wall part designed as a ramp,
- Fig. 3 shows a side-wall part designed as a telescopic door,
- Fig. 4 shows a roof covering,
- Fig. 5 shows a building elevator according to the invention for transporting the materials,
- Fig. 6 shows a building elevator according to the invention for transporting passengers,
- Fig. 7 likewise shows a building elevator for transporting passengers, with an enlarged elevator car,
- Fig. 8 shows an elevator platform for a building elevator according to Figs 5 and 6,
- Fig. 9 shows an enlarged elevator platform for a building elevator according to Fig. 7, and
- Fig. 10 shows a further building elevator according to the invention for transporting passengers.

A building elevator according to the invention is distinguished essentially in that, depending on the use purpose, an elevator car can be assembled in modular fashion, to be precise from standard structural parts. The essential structural part of the elevator car is illustrated in Fig. 1; specifically, the elevator car has, in principle, at least one basic car module 1 which comprises a carrying platform 2 and at least one opposite side wall 3, preferably two opposite side walls 3, the latter being fixed to said carrying platform. Said basic car module 1 is thus open on two sides and, depending on the use purpose of the car, these sides may be closed off in different ways.

If the intention is for the building elevator to be used for transporting goods, then the elevator car has to be designed as a goods carrier, for which purpose there are arranged in an exchangeable manner, between the opposite, fixed side walls 3 of the basic car module 1, side-wall parts which are designed as ramps 4 (Fig. 2) which can be pivoted in and out and are each arranged in a frame element 5. Said side-wall part 4, 5 formed in this way can easily be fastened releasably on the basic car module 1, for which purpose there are obviously various possible methods available to the person skilled in the art; in this case a form-fitting connection is possible, for example the frame part 5 may be fitted into the side walls 3 and it is

possible to provide a magnetic connection, a screw connection and the like.

If the elevator car is to be suitable for carrying passengers, the basic car module 1 is equipped with different side-wall parts, specifically it is preferably equipped on both sides with a telescopic door (Fig. 3), which is likewise arranged in a frame element 7. Said side-wall part 6,7 formed in this way can be fastened releasably on the basic car module 1 in the same way as the side-wall part 4, 5 which serves for transporting goods.

When the elevator car is used for transporting passengers, provision is also made for the elevator car to be provided with a roof covering, which is illustrated in Fig. 4. Said roof covering 8 has a frame part 9 and a type of folding roof 10. It is easily possible for the roof covering 8 to be fastened likewise releasably on the basic car module 1, preferably merely by connection to the fixed side walls 3, it being possible for the ends 9a of the frame part 9 simply to be plugged into the vertical tube strut 3a of said side walls.

For automatic detection of the elevator mode, the roof covering 8 is equipped with a plug which can be connected to the circuit of the elevator control means, but is not illustrated in the drawing. If the building elevator is used as a passenger elevator and the roof covering 8 is consequently fitted, then the plug of the roof covering is connected to the circuit of the elevator control means by being plugged, for example, into a socket on the carriage. The circuit of the elevator control means is designed such that, with the plug inserted, the elevator control means automatically detects that the elevator is to be operated as a passenger elevator, and the control means then automatically changes into passenger mode. If the elevator is used as a goods elevator, i.e. without a roof covering, a dummy plug is plugged into the relevant socket, and the control means then changes automatically to materials or goods mode.

A building elevator for transporting goods is illustrated in its entirety in Fig. 5. The building elevator also has, as is conventional, an elevator platform 11 and an elevator mast 12 along which the elevator car 13 can be moved in a suitable manner. The elevator car 13 is thus preferably equipped with at least one geared motor and can

be moved, with the aid of the same, along a rack (not illustrated specifically) of the elevator mast 12. It can be seen that, in the case of the exemplary embodiment according to Fig. 5, the elevator car 13 comprises the basic car module with carrying platform 2, fixed side walls 3 and two ramps 4.

Fig. 6 shows a building elevator for transporting passengers. In this case, the elevator car 13 has, between the two side walls 3, in each case the telescopic door 6, which is illustrated in Fig. 3 and is fastened releasably on the fixed side walls 3 by the frame elements 7. On the top side, the elevator car 13 is closed off by the roof covering 8.

Fig. 7 shows a slightly modified embodiment of the building elevator according to Fig. 6. In the case of this embodiment, the elevator car 3 is designed to be double the size, which can easily be achieved in that the elevator car 13 comprises two basic car modules 1 which are arranged one beside the another and are fastened on one another. In this case, the two open sides are each closed off, in turn, by doors 6.

Fig. 8 shows the elevator platform 11 with elevator mast 12 for a building elevator with a car which comprises just one basic car module 1. The elevator platform 11 comprises a basic frame 14.

Fig. 9 shows an enlarged elevator platform 11 for a building elevator with a car which comprises two basic car modules 1. For this purpose, in addition to the basic frame 14, the elevator platform 11 has, on two sides, additional frame parts 15 which are fastened releasably on the basic frame 14.

Fig. 10 illustrates a further variant of a building elevator according to the invention which is used as a passenger elevator, to be precise as a so-called "city platform". In contrast to the embodiment according to Fig. 6, this elevator car 13 has just one fixed side wall 3 adjoining the mast 12; the other side-wall parts, which are removable, are designed as telescopic doors 6 arranged in frame elements 7.

Of course, the invention is not restricted to the exemplary embodiments illustrated. If, for example, the

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intention is to realize a goods elevator with double the size of elevator car 13, then said elevator car 13 simply comprises two basic car modules 1 (in the same manner as in Fig. 6) which are arranged one beside the other and, at both ends, are closed off by ramps 4 on the open sides. Moreover, it is also possible for the fixed side walls 3 to be designed merely as post-like side parts.

Patent Claims:

1. A building elevator with an elevator platform (11), with an elevator mast (12) and an elevator car (13) which can be moved along the elevator mast (12) and has at least one basic car module (1) with exchangeable side-wall parts, wherein the elevator car (13) has a carrying platform (2) and at least one side wall (3) which is fixed thereto and is designed for the releasable arrangement of a roof covering (8) on its top side and wherein, in addition to the at least one fixed side wall (3), exchangeable side-wall (4, 5; 6, 7) are provided.

2. The building elevator as claimed in claim 1, wherein roof covering (8) is equipped with a plug which can be connected to the circuit of the elevator control means.

3. The building elevator as claimed in claim 1 or 2, wherein the exchangeable side-wall parts are designed as ramps (4, 5) which can be pivoted in and out.

4. The building elevator as claimed in claim 1 or 2, wherein the exchangeable side-wall parts are designed as a door (6, 7), preferably a telescopic door.

5. The building elevator as claimed in claim 1 or one of the following claims, wherein the elevator car (13) comprises at least two basic car modules (1) which are fastened on one another, the exchangeable side-wall parts (4, 5; 6, 7) being arranged at the two respectively open ends.

6. The building elevator as claimed in claim 5, wherein two roof coverings (8) arranged one beside the other are provided.

7. The building elevator as claimed in claim 5 or 6, wherein the elevator platform (11) comprises a basic frame (14) and two additional frame parts (15) which can be fastened releasably on the sides of said basic frame.

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8. The building elevator as claimed in claim 1 or one of the following claims, wherein arranged on the elevator platform (11) is a device which is connected to the control means of the motor drive of the elevator car (13) and is intended for monitoring the space above the elevator platform (11).