(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 176 281 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
24.08.2005 Bulletin 2005/34

(51) Int Cl.[7]: **E05F 17/00**, B66B 13/08

(21) Application number: **01500154.8**

(22) Date of filing: **22.06.2001**

(54) **Movement transmitting device for telescopic leaves of elevator doors**

Bewegungsübertragungssystem für teleskopische Flügel von Aufzugstüren

Dispositif pour transmettre le mouvement aux vantaux télescopiques d'une porte d'ascenseur

(84) Designated Contracting States:
DE ES FR IT

(30) Priority: **27.07.2000 ES 200002010 U**

(43) Date of publication of application:
30.01.2002 Bulletin 2002/05

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(56) References cited:
ES-A- 2 017 309

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Description

OBJECT OF THE INVENTION

[0001] As expressed in the title of this specification, the following patent refers to a movement transmitting device for telescopic leaves of elevator doors, which is to be installed in elevator doors of telescopic leaves where in the closing and opening of the door the rapid leaf conveys in its movement the slow leaf, in such a way that a pair of horizontally aligned wheels, used to move and guide the slow carriage by the guide of the support plates, defines two channels, one to be coupled to the guide and the other for passing and conveying the cable for transmitting movement to the slow carriage.

[0002] In this way, a pair of wheels for conveying and guiding the slow carriage has a double channel and hence it is not necessary to install specific pulleys for the cable transmitting movement from the rapid carriage to the slow carriage. This simplifies the structure of the slow carriage itself and the manufacturing thereof, reducing the number of pieces and the nuts and bolts, which implies a reduction in labor, thus achieving a reduction of costs.

FIELD OF APPLICATION

[0003] The movement transmitting device that is presented is applicable to elevator doors comprised of some telescopic leaves, which are connected to the corresponding conveying and guiding carriage, in such a way that the rapid carriage transmits movement to the slow carriage by means of the corresponding movement transmitting cable.

BACKGROUND OF THE INVENTION

[0004] Conventionally, the telescopic leaves of elevator doors are fastened to the corresponding conveying and guiding carriage by the movement guide in the opening and closing operations, in such a way that in order to transmit movement from the rapid carriage to the slow carriage, the conveying and guiding carriage has a transmitting cable installed between a pair of pulleys assembled in the structure of the slow carriage itself, and whose cable is fastened to the structure of the rapid carriage, whereby when the pin relative to the cabin door conveys the rapid carriage in the closing and opening of the door said carriage is moved and the transmitting cable transmits movement to the slow carriage.

[0005] In this way, the slow carriage is conveyed by the corresponding guide of the support plate by two pairs of wheels that permit stable movement as each pair is aligned with respect to the guide and for the assembly of the cable transmitting movement to the slow carriage from the rapid carriage, the slow carriage should include a pair of pulleys between which there is the cable that is fastened to the rapid carriage and that in turn is fastened to the support plate itself.

[0006] Hence, the slow carriage should be mechanized so that the two pairs of guiding wheels of the carriage and the pair of assembly pulleys of the cable transmitting movement from the rapid carriage to the slow carriage are mounted in the slow carriage. The cited cable is connected by its ends to the support plate itself which permits the rapid carriage in its movement in the closing and opening to travel double the space traveled by the slow carriage.

[0007] With this structure it is necessary to include two pairs of wheels in order to convey and guide the slow carriage to which the corresponding leaf of the door and a pair of pulleys between which the cable transmitting movement from the rapid carriage to the slow carriage is mounted, are fastened. This involves the corresponding group of pieces and nuts and bolts, as well as the assembly time used therein.

[0008] A background to the invention can be found in document ES2017309, which discloses some improvements to systems for moving automatic doors in lifts. They consist in that the sliding rail of the pulleys secured to the panels of the door, which is fixed to the lintel, is defined in the actual lintel and has, in order to carry out its function, a pair of longitudinal channels. The threshold element is also a guide for the panels. The panels, a rapid one and another, slow one, are suspended from respective pairs of pulleys and, on the shafts of those corresponding to the slow panel, are also supported the pulleys for sliding of the transmission cable. There are four guide points for each one of the panels, its vertical position with regulation of the screws for fastening the panels to their suspension supports being ensured.

[0009] Another background to the invention is disclosed in document DE1456404, showing a sliding door for lift compartments which comprises at least a door element, shifted by a motor and driven by a chain device, characterized in that the door element is coupled to a rotating magnetic field motor being with a constant potential difference, in such a way that at end positions it is kept by means of cushioning means with a relatively long cushioning stroke.

[0010] A further background to the invention can be found in document EP0709333, which discloses an apparatus for synchronising the movements of the door panels of a telescopic elevator door. The door panels of a telescoping elevator door are suspended by means of a roller arrangement. Said apparatus for synchronising the movements of the door panels comprises a flexible synchronising means. Two rollers in the roller arrangement are provided with a guide adapted for the synchronising means. The synchronising means is passed in the roller arrangement over two rollers provided with a guide.

DESCRIPTION OF THE INVENTION

[0011] The present specification describes a movement transmitting device as claimed, that is to be assembled in elevator doors of telescopic leaves that are fastened to the corresponding carriage that mounts some pairs of wheels in order to convey and guide the carriage by the guide of the support plate, transmitting the movement in the opening and closing of the door from the rapid carriage to the slow carriage by means of a transmitting cable assembled between two pulleys of the slow carriage and anchored to the rapid carriage. The transmitting device is defined by a wheel, aligned horizontally, of each pair of wheels for conveying and guiding the carriage, having on its surface two channels. One channel is for the positioning thereof in the guide of the support plate and the cable transmitting movement from the rapid carriage to the slow carriage is assembled in the second channel, which is considerably smaller than the channel guiding both wheels.

[0012] In this way, the installation of the pair of conventional pulleys in which the transmitting cable is assembled, as well as the group of pieces and nuts and bolts necessary for this purpose, is avoided. Furthermore, there is a reduction of labor which results in a lower economic cost.

[0013] This advantages have been achieved thanks to an arrangement object of the invention, in which the guide in the support plate is common to the pairs of wheels for conveying and guiding the carriages; in which the guide in the support plate and the pairs of wheels for conveying and guiding the carriages are contained in a plane parallel to leaves; and in which the carriages are arranged on a common side with respect to the support plate plane.

[0014] In order to complement the description that is going to be made hereinafter and providing a better understanding of the characteristics of the invention, the present specification is accompanied by a set of drawings, in whose figures the most characteristic details of the invention are represented in an illustrative and non-restrictive manner.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

Figure 1 shows a front detailed view of the pair of telescopic leaves, components of an elevator door, showing how they are anchored to the respective conveying and guiding carriage, as well as the cable transmitting movement from the rapid carriage to the slow carriage assembled between a pair of wheels for conveying and guiding the slow carriage, for which purpose said wheels have on their surface a double channel.

Figure 2 shows a schematic sectioned view, according to sections I-I of the preceding figure with regard to a diametric vertical plane with respect to the wheels for conveying and guiding the slow carriage, showing how one of them has a double channel, one channel for adaptation thereof to the conveying guide and the other considerably smaller channel for the passing of the movement transmitting cable.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0016] In view of the commented figures and in accordance with the numbering used, we can see how the telescopic leaves (1) and (2) that comprise the corresponding elevator door are fastened to the respective carriage (3) and (4) for conveying and guiding same by the guide of the mechanism support plate (5), in such a way that the carriages (3) and (4) have two pairs of wheels, each one of them for conveyance thereof by the guide of the support plate (5).

[0017] A wheel (6) of each one of the two pairs for conveying and guiding the slow carriage has a double channel, in such a way that by means of the channel (7) it is arranged in the guide of the support plate (5) and by the channel (8), which is considerably smaller, the cable (9) transmitting movement from the rapid carriage (4) to the slow carriage (3) being made to pass through.

[0018] As it conventionally happens, the cable (9) transmitting movement from the rapid carriage (4) to the slow carriage (3) is fastened by one of its ends at a place (10) and it can be appropriately tightened, whereas at the other place, the cable is fastened to the structure of the rapid carriage (4), in such a way that the movement of said rapid carriage (4) causes movement of the cable (9) and in turn of the slow carriage (3).

[0019] Given that the wheels themselves (6) are materialized by a double channel (7) and (8) in order to guide them by the guide of the support plate (5) and for the guiding of the transmitting cable (9), the need to adapt the structure of the slow carriage for the installation of two pulleys in order to assemble the transmitting cable, as well as the two pulleys themselves and the corresponding elements for the assembly thereof is avoided. Consequently, the material cost and labor are reduced, and thus a reduction of the overall cost is obtained.

Claims

1. A movement transmitting device for telescopic leaves (1, 2) of elevator doors comprising:

a slow leaf (1);
a rapid leaf (2);
a slow carriage (3) for fastening the slow leaf (1);
a rapid carriage (4) for fastening the rapid leaf (2);

a guide in a support plate (5);
pairs of wheels for conveying and guiding the carriages (3, 4) along the guide of the support plate (5);
a cable (9) for transmitting movement from the rapid carriage (4) to the slow carriage (3) when opening and closing the door, said cable (9) being assembled between two pulleys of the slow carriage (3) and being anchored to the rapid carriage (4);
a horizontally aligned pair of wheels (6) of the slow carriage (3), said wheels (6) being provided on their surface with two channels (7, 8),
a channel (7) for positioning the wheel (6) in the guide of the support plate (5);
a channel (8) for guiding the cable (9);
the channel (8) being considerably smaller than the channel (7);

characterized in that
the guide in the support plate (5) is common to the pairs of wheels for conveying and guiding the carriages (3, 4);
the guide in the support plate (5) and the pairs of wheels for conveying and guiding the carriages (3, 4) are contained in a plane parallel to leaves (1,2);
the carriages (3, 4) are arranged on a common side with respect to the support plate (5) plane.

Patentansprüche

1. Bewegungsübertragungsvorrichtung für Teleskop-Blätter (1, 2) von Fahrstuhltüren, die umfasst:

ein langsames Blatt (1);

ein schnelles Blatt (2);

einen langsamen Wagen (3) zum Befestigen des langsamen Blattes (1);

einen schnellen Wagen (4) zum Befestigen des schnellen Blattes (2);

eine Führung in einer Trageplatte (5);

ein Paar Räder zum Transportieren und Führen der Wagen (3, 4) entlang der Führung der Trageplatte (5);

ein Seil (9) zum Übertragen von Bewegung von dem schnellen Wagen (4) auf den langsamen Wagen (3) beim Öffnen und Schließen der Tür, wobei das Seil (9) zwischen zwei Seilrollen des langsamen Wagens (3) montiert und an dem schnellen Wagen (4) verankert ist;

ein horizontal ausgerichtetes Paar Räder (6) des langsamen Wagens (3), wobei die Räder an ihrer Oberfläche mit zwei Rillen (7, 8) versehen sind, d.h.

einer Rille (7) zum Positionieren des Rades (6) in der Führung der Trageplatte (5);

einer Rille (8) zum Führen des Seils (9);

und die Rille (8) erheblich kleiner ist als die Rille (7);

dadurch gekennzeichnet, dass:

die Führung in der Trageplatte (5) von den Paaren von Rädern zum Transportieren und Führen der Wagen (3, 4) gemeinsam genutzt wird;

die Führung in der Trageplatte (5) und die Paare von Rädern zum Transportieren und Führen der Wagen (3, 4) in eine Ebene parallel zu den Blättern (1, 2) eingeschlossen sind;

die Wagen (3, 4) auf einer gemeinsamen Seite in Bezug auf die Ebene der Trageplatte (5) angeordnet sind.

Revendications

1. Dispositif de transmission de mouvement à des vantaux télescopiques (1, 2) de portes d'ascenseur comprenant :

un ventail lent (1) ;
un ventail rapide (2) ;
un chariot lent (3) pour fixer le ventail lent (1) ;
un chariot rapide (4) pour fixer le ventail rapide (2) ;
un guide dans une plaque de support (5) ;
des paires de roues pour convoyer et guider les chariots (3, 4) le long du guide de la plaque de support (5) ;
un câble (9) pour transmettre un mouvement du chariot rapide (4) au chariot lent (3) lors de l'ouverture et le fermeture de la porte, ledit câble (9) étant assemblé entre deux poulies du chariot lent (3) et étant ancré au chariot rapide (4) ;
une paire de roues (6) alignées horizontalement du chariot lent (3), lesdites roues (6) étant munies sur leur surface de deux canaux (7, 8),
un canal (7) pour posibionner la roue (6) dans le guide de la plaque de support (5) ;
un canal (8) pour guider le câble (9) ;
le canal (8) étant considérablement plus petit que le canal (7) ;

caractérisé en ce que

le guide dans la plaque de support (5) est commun aux paires de roues pour convoyer et guider les chariots (3, 4) ;

le guide dans la plaque de support (5) et les paires de coures pour convoyer et guider les chariots (3, 4) sont contenus dans un plan parallèle aux vantaux (1, 2) ;

les chariots (3, 4) sont agencés sur un côté commun par rapport au plan de la plaque de support (5).

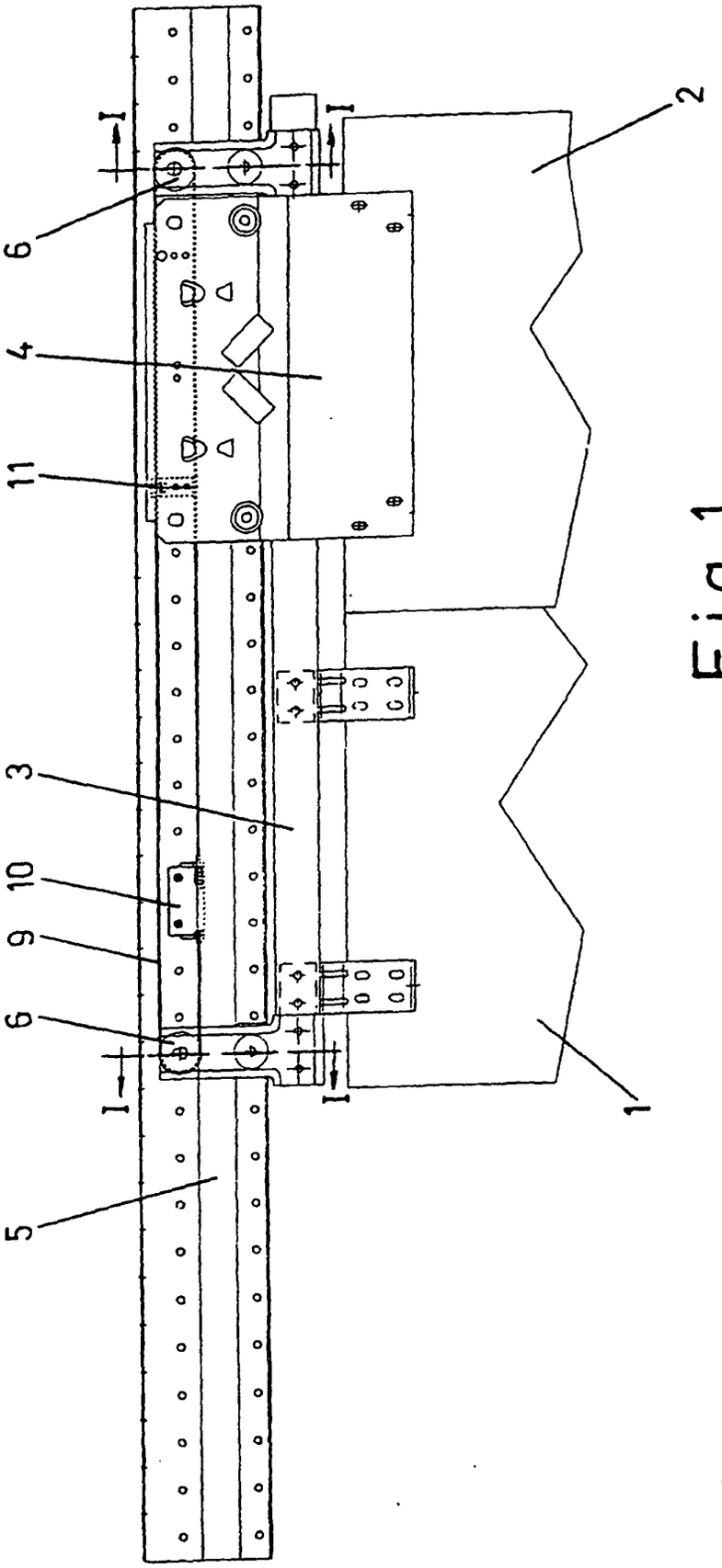

Fig.1

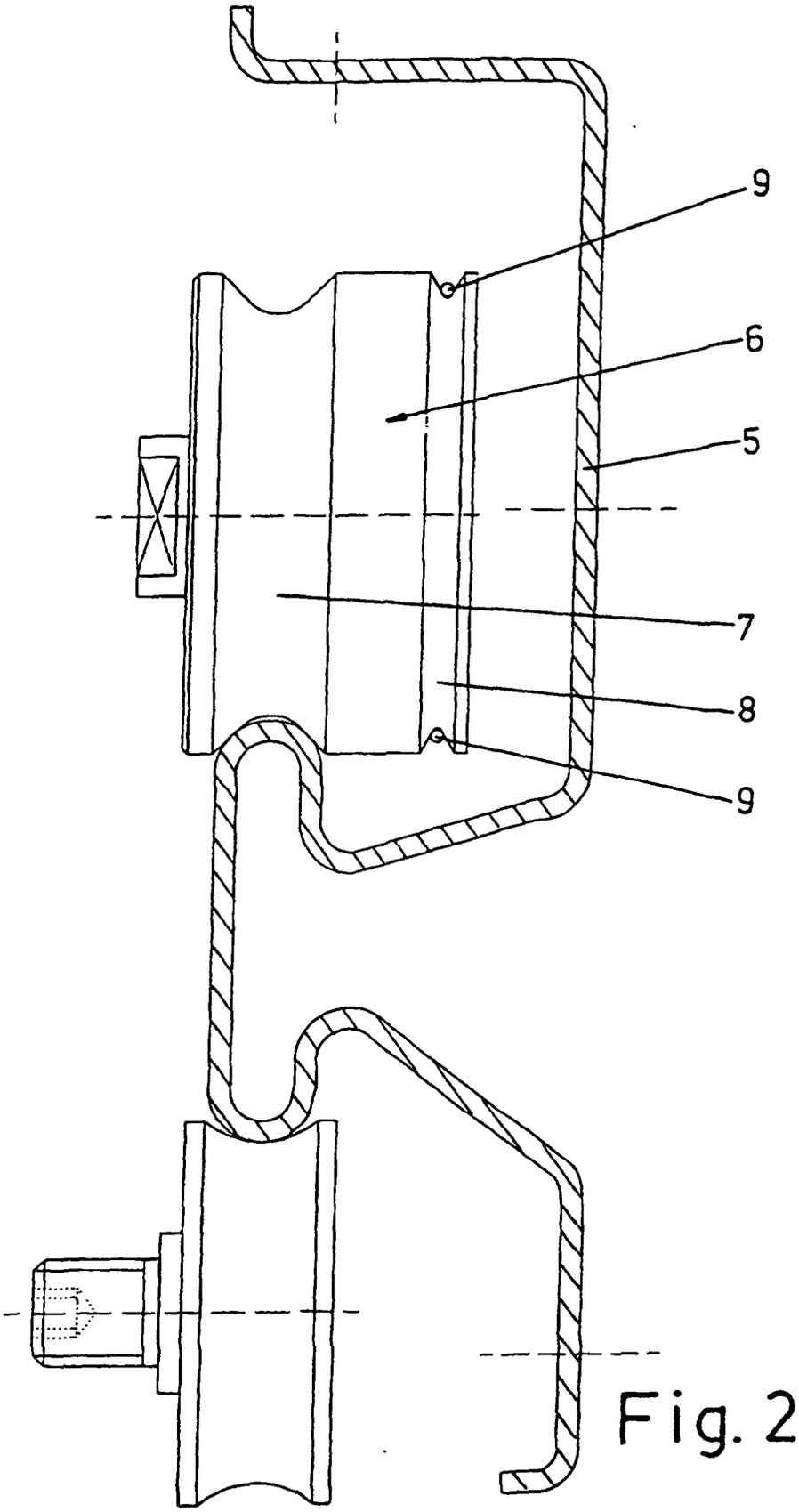

Fig. 2