

**Elevator installation having a self-centering
car door mounting**

5 [001] The present invention relates to an elevator
installation where an elevator car and a counter weight
run along guide rails in an elevator shaft and are
driven in opposite directions. The invention relates in
particular to the mounting and the drive of the car
10 doors.

[002] Elevator cars usually have car doors in the
form of a double sliding door, the door elements of
which are arranged so as to be displaceable on rails,
15 in the majority of cases by means of rollers, in a so-
called door frame or door cross member. The English
designation transom is also increasingly customary in
the appropriate German technical terminology. Said
transom is normally fixedly arranged on the elevator
20 car and houses a drive for the opening and closing of
the car door.

[003] The safety regulations for the operation of an
elevator installation require that, in normal
25 operation, actuation of the car door is possible only
when the elevator car is in a position in which the car
door corresponds with a shaft door. For this purpose,
entrainment rollers are usually arranged on the shaft
doors or in a door frame of a shaft door, said
30 entrainment rollers acting on a mechanical unlocking
means or on entrainment brackets on the elevator car
such that actuation of the car door is triggered only
in the corresponding region.

35 [004] Also for safety reasons, an opening of a shaft
door is only provided in normal operation if an
elevator car is situated correspondingly in front of
said shaft door. This is also effected by means of the
described entrainment brackets and entrainment rollers

by the car door drive usually driving the car door elements with the entrainment brackets fastened thereon, the entrainment brackets, in turn, driving or entraining the shaft-side entrainment rollers and said
5 rollers, in turn, opening or closing the shaft door elements. In principle, it is possible for the shaft-side entrainment rollers to be arranged directly on the shaft door elements or else in a door frame of a shaft door.

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[005] However, as a result of the elevator car being loaded in a one-sided manner, a tilting position of the same can occur which, even within the predetermined tolerances or within the play in the guides on the
15 guide rails, leads to an alignment error of the elevator car transom. Said alignment error of the elevator car transom, in turn, results in the entrainment brackets, at the entrainment rollers of a shaft door which are usually arranged in pairs or in
20 fours, being triggered in an asymmetrical manner or in the absolute non-actuation of the mechanical unlocking and releasing of the opening of the car door possibly connected hereto. Consequently, actuation of the car door and of the shaft door does not function reliably
25 or false alarms blocking the car door are triggered.

[006] In the final analysis, the cause of said faults is always an alignment error of the elevator car with reference to the shaft door, which possibly occurs due
30 to the elevator car being loaded in a one-sided manner, or a lack of positional correspondence between the elevator car and the shaft door.

[007] The publication document JP-A-11011841
35 discloses a door frame for a story door, said door frame being fastened on the shaft wall by means of elongated holes and a suspension housing such that shaft door elements expanding through the effect of

heat in the event of a fire do not spring out of the guides. The disclosed arrangement is limited to vertically arranged elongated holes because anything else is technically difficult to realize and because
5 the shaft door elements are higher than they are wide. Dispensing with the fact that just a door frame of a shaft door and not of a car door is described, an equalizing movement of the door frame of the shaft door into a direction other than the vertical does not
10 occur. Consequently, neither is there any suggestion of a proposal to solve the above-described problem of a lack of positional correspondence between the elevator car and the shaft door.

15 [008] A further publication document JP-A-05178570 discloses a restrictively pivotable and consequently positionally accurate mounting of a door frame of a shaft door by means of several screws with an eccentric shaft. However, once mounted, no further equalizing
20 movement is provided.

[009] The object of the present invention is to eliminate the disadvantages shown or, where possible, the disturbances occurring, which may arise as a result
25 of an uneven load in the elevator car.

[0010] The achievement of the object is first of all in the design and arrangement of a car door transom which, irrespective of error positions of the elevator
30 car, allows for a self-centering equalizing or aligning movement of the car door transom during operation of said elevator car. For this purpose, in the mounted operating state, the car door transom is mounted so as to be movable on the elevator car.

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[0011] As claimed in a first development variant of a self-centering movable arrangement, the car door transom is rotatably mounted in a central point by

means of a pivot bearing. The central pivot bearing, in this connection, can be developed freely such that an independent aligning movement of the car door transom takes place purely on account of the force of gravity.

5 In this connection, the aligning movement can be supported by the car door transom having at its distal ends two identical weight centers of gravity which are as far away as possible from the centrally arranged central pivot bearing. Said pivot bearing can be
10 brought about by forming the car door transom or the frame thereof in a corresponding manner, by correspondingly placing the car door drive or, however, also by the arrangement of weights.

15 [0012] To avoid a possible seesawing of the freely rotatable car door transom, it is possible to provide movement-delaying springs or shock absorbers which are identical on both sides.

20 [0013] One development variant of a car door transom with a central pivot bearing has a pivot bearing which is not so freely accessible that the force of gravity suffices for the aligning movement. Instead of which, it is carried out by the entrainment rollers on the
25 shaft door or on the door frame of the shaft door when the elevator car goes past. The pivot bearing, for this reason, can have an elevated frictional resistance or can be developed as a torsionally elastic pivot bearing.

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[0014] The pivot bearing can be a ball bearing, roller bearing or needle bearing which allows for the aligning movement in one plane. However, it can also be a ball-and-socket joint which is able to carry out an aligning
35 movement with reference to any arbitrary tilting position of the elevator car.

[0015] A further development variant of a car door transom which is arranged in a central pivot bearing, be it in the freely designed, frictionally elevated or torsionally elastic development variant, has arcuate
5 guides additionally on the distal ends of the car door transom. Said guides support the rotational aligning movement of the car door transom and reduce the stress on the central pivot bearing.

10 [0016] A further development variant of a movably arranged car door transom has at least one flexible bearing, for example in the form of an elastic coupling element. In this way, aligning movements of the car door transom can take place in any direction within a
15 certain, flexible region by the entrainment rollers on the shaft door or on a door frame of a shaft door exerting the necessary pressure for aligning or centering the car door transom when the elevator car passes.

20 [0017] A further development variant of a moveably arranged car door transom is characterized in that at least two rotatably mounted retaining levers hold the car door transom like a seesaw. In this way, a self-
25 centering aligning movement can take place at least in one direction.

[0018] In the case of a further development variant of a movably mounted car door transom, guides are
30 provided, along which, for example by means of rollers, the car door transom is freely displaceable. Over and beyond this, it is also possible to arrange springs for example at the distal ends of the car door transom, such that the aligning movement is effected in a sprung
35 manner or always returns to an initial point.

[0019] By means of the described movable bearing arrangement variants, a dislocated car door transom is

centered even out of the tilting position into a centrally aligned and approximately vertical position which ensures fault-free functioning of the actuating of the car door and of the actuating of the shaft door
5 which is coupled thereto. The aligning force or the aligning pulse, which is decisive for the aligning movement of the car door transom, comes from the entrainment rollers on the side of the shaft door.

10 [0020] However, it is also possible to allow the aligning force or the aligning pulse to be exerted by a shaft-side correcting rail which acts on one or several aligning rollers on the car door transom. Said correcting rail can be fastened directly to the shaft
15 wall independently of the shaft door and can be mounted in each case intermittently in the region of a shaft door or, however, can also extend over the entire conveying height of the elevator car. The advantage of the latter development variant is that the aligning
20 movement does not occur every time a shaft door is passed and traveling comfort does not suffer.

[0021] The car doors are certainly able to remain in the tilting position of the elevator car in the case of
25 the described car door transom arrangements. Accordingly, a further development variant of a movable, self-centering car door transom arrangement provides that the car door or the car door elements describe the aligning movement at the same time. For
30 this purpose, the car door elements are naturally displaceable in the longitudinal direction with the car door transom, but are connected in a relatively play-free manner and are movable with respect to the frame of the elevator car. The advantage of this is that,
35 irrespective of a possible tilting position of the elevator car, not just the car door transom but also the car door elements are aligned parallel with respect to the shaft doors which always stand vertically. The

car door elements, in this connection, can be arranged suspended on the car door transom, or inside a door frame which, with reference to the car door transom, is fastened fixedly to the frame of the elevator car, but
5 with reference to the frame of the elevator car is fastened movably.

[0022] It is possible to combine the described development variants of a car door transom with each
10 other insofar as, for example, the development variants with a central pivot bearing can be provided in addition with flexible bearings and/or with springs such that the rotation only takes place in a restricted or sprung region. The same also applies to the seesaw-
15 shaped development variant with at least two rotatably mounted retaining levers. In addition, all the development variants of a car door transom, even the combinations described latterly, can be combined as required with the coupling of the car door elements to
20 the aligning movement of the car door transom, described in the preceding paragraph. In addition, all the development variants of a movable car door transom can be operated by either the force of gravity, or/and the shaft-door-side entrainment rollers or/and the
25 correcting rail - intermittently or continuously - exerting the aligning force or the aligning pulse for the aligning movement of the car door transom.

[0023] Compared to a conventional car door mounting or
30 compared to an elevator installation with a conventional car door mounting, a car door mounting or an elevator installation provided with a car door mounting provides the following advantages:

- Tilting positions of the elevator car brought
35 about by one-sided load situations of the same no longer result in dislocation of the car door transom.
- Fault situations and false alarms arising as a result are excluded as extensively as possible.

- Mechanical stresses and wear are reduced.
- The requirement for and the costs with regard to the precision of the guide rails and guide shoes of the elevator car are reduced.

5 - Elevator installations equipped as claimed in the invention gain in mechanical comfort and conveying comfort through shortened conveying time, so-called "fly time".

10 [0024] Further or advantageous developments of a car door mounting or of an elevator installation as claimed in the invention with a car door mounting on the elevator car form the objects of the dependent claims.

15 [0025] The invention is explained in more detail in a symbolic and exemplary manner by way of the figures. The figures are described in a contiguous and overlapping manner. Identical references signify identical components, references with different indices
20 specify operationally identical or similar components.

[0026] In this case:

figure 1 shows a schematic representation of an elevator installation as claimed in the prior
25 art;

figure 2 shows a schematic representation of a car door mounting with two flexible bearings in an elevator installation according to figure
1;

30 figure 3 shows a schematic representation of a second development variant of a car door mounting with a central pivot bearing;

figure 4 shows a schematic representation of a third development variant of a car door mounting
35 which has arcuate guides in addition to the first development variant from figure 3;

figure 5 shows a schematic representation of a fourth development variant of a car door mounting with two rotatably arranged retaining levers;
figure 6 shows a schematic representation of a fifth development variant of a car door mounting which is arranged in a retaining frame so as to be movable by means of rollers and springs and
figure 7 shows a schematic representation of a sixth development variant of a car door mounting with a door frame which is arranged fixedly on the same and in contrast is fastened on the elevator car so as to be movable.

[0027] Figure 1 shows an exemplary conventional elevator installation 100 with an elevator car 2 which can be moved in an elevator shaft 1 and is connected to a counterweight 4 by means of a support and drive means 3. The support and drive means 3 is driven in operation by way of a driving pulley 5 of a drive unit 6. The exemplary embodiment shows a friction driven elevator, other types of elevator with a car door mounting as claimed in the invention are also possible. The elevator car 2 and the counterweight 4 are guided by means of guide rails 7a and 7b, which extend over the shaft height, for the elevator car 2, or by means of a (visible) guide rail 7c for the counterweight 4. The elevator installation 100 has an uppermost story with an uppermost shaft door 8, a second-uppermost story with a second-uppermost shaft door 9, further stories with a further shaft door 10 and a bottommost story with a bottommost shaft door 11.

[0028] The elevator shaft 1 is formed by shaft side walls 12a and 12b, a shaft cover 13 and a shaft floor 14. The support and drive means 3 is fastened to the shaft cover 13 at a first support means fixing point 15a and is guided by a pulley roller 16 of the

counterweight 4 and by the driving pulley 5 of the drive unit 6. From there, once again the support and drive means 3, for example looping under the elevator car 2, is guided by two support rollers 17a and 17b of the elevator car 2 and once again to a second support means fixing point 15b on the shaft cover 13. A conveying height h for the elevator car 2 is produced in this manner.

10 [0029] The drive unit 6 is arranged in a shaft head or machine room 18. A buffer 19a for the counterweight 4 is arranged on the shaft floor 14, as well as two buffers 19b and 19c for the elevator car 2.

15 [0030] Figure 2 shows an elevator installation 100a which basically corresponds to a prior art elevator installation shown in figure 1. However, the elevator installation 100a has an elevator car 2a which is formed essentially from a support frame 20, a car door threshold 21 arranged thereon, a car frame 22 and cladding surfaces 23a and 23b. In addition, a car door mounting or a car door transom 24a is arranged on the car frame 22, to be precise in the form of a movable bearing arrangement 200a by means of two flexible
20 bearings 27a and 27b or two movable couplings. As indicated by way of double arrows, as a result an aligning movement M_1 of the car door transom 24a is possible in all three directions.

30 [0031] The car door transom 24a includes a motor 25, a belt or chain drive 26 and a guide rail arrangement 28 as well as two entrainment plates 37a and 37b which are movable in a relatively play-free manner by means of guide rollers (not shown in any more detail) on the
35 guide rail arrangement 28 in the direction of an opening and closing direction 38. Car door elements 29a and 29b, which together form a car door 36, are arranged in each case on said entrainment plates 37a

and 37b. Entrainment brackets 30a and 30b, which are realized preferably in an approximately C-shaped manner and as a symmetrical pair, are arranged on each of the entrainment plates 37a and 37b.

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[0032] The grey, curved arrow shows that the car door 36 in an elevator shaft 1a of the elevator installation 100a and a shaft door 10a are situated opposite each other. Said shaft door 10a is arranged in brickwork 33 or a side wall of the elevator shaft 1a and includes a shaft door transom 31 with a guide rail arrangement 28a for shaft door elements 32a and 32b which run therein in a guided manner. Usually the shaft door elements 32a and 32b are also guided inside a guide channel (not shown in any more detail) in a door threshold 34 of the shaft door 10a.

[0033] One pair of entrainment rollers 35a or 35b, into which the entrainment brackets or the pairs of entrainment brackets 30a and 30b engage when the elevator installation 100a is in operation, is arranged on each of the shaft door elements 32a and 32b. In this way, the opening or closing force of the motor 25 is transferred to the pairs of entrainment rollers 35a and 35b and the shaft door elements 32a and 32b are opened or closed together with the car door elements 29a and 29b.

[0034] If the elevator car 2a were to be tilted as a result of a one-sided load inside the car guide rails, (not shown in any more detail in figure 2), the pairs of entrainment rollers 35a and 35b exert an aligning force or an aligning pulse, which is transferred via the entrainment plates 37a and 37b onto the car door transom 24a, onto the entrainment brackets or pairs of entrainment brackets 30a and 30b which are then also tilted. As a result of the car door transom 24a being movably mounted in the flexible bearings 27a and 27b,

it describes a self-centering aligning movement M_1 , which is directed counter to a tilting position axis S corresponding to the tilting position, toward a vertical V.

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[0035] The aligning force or the aligning pulse is increased when a distance A between the pairs of entrainment brackets 30a and 30b or between the pairs of entrainment rollers 35a and 25b increases.

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[0036] Figure 3 shows a schematic representation of part of an elevator car 2b in an indicated elevator installation 100b or an indicated elevator shaft 1b. A development variant of a car door transom 24b is arranged on the elevator car 2b by means of a movable bearing arrangement 200b in the form of a central pivot bearing 39. An aligning force or an aligning pulse, which acts against pairs of entrainment brackets 30c and 30d each on an entrainment plate 37c and 37d, aligns the car door transom 24b corresponding to an aligning movement M_2 . In this connection, a car door 36a consisting of car door elements 29c and 29d can be developed so as to pivot at the same time or also not to pivot at the same time. Front cladding surfaces 23c and 23d of the elevator car 2b, in contrast, do not pivot at the same time because they are connected fixedly to the latter.

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[0037] Figure 4 shows a schematic representation of part of a further development variant of a car door transom 24c which is arranged on an elevator car 2c in a movable bearing arrangement 200c by means of a central pivot bearing 39a. The elevator car 2c is situated in an indicated elevator installation 100c or an indicated elevator shaft 1c. The car door transom 24c is distinguished in that, in addition to the development variant from figure 3, it has arcuate guides 40a and 40b in each of which a guide roller or a

guide bolt 41a and 41b runs along. Said guide roller or guide bolt 41a and 41b are connected to the frame of the elevator car 2c and consequently give an aligning movement M_3 of the car door transom 24c more stability or relieve the central pivot bearing 39a.

[0038] In addition, figure 4 shows that weights 42a and 42b are arranged at the distal ends of the car door transom 24c, said weights, on their own, being able to exert the necessary aligning force or the necessary aligning pulse for the aligning movement M_3 of the car door transom 24c or being able to act in a supporting manner to the aligning force or the aligning pulse by means of the shaft-side entrainment rollers or the shaft-side correcting rail.

[0039] Figure 5 shows a schematic representation of part of an elevator car 2d in an indicated elevator installation 100d or an indicated elevator shaft 1d, said elevator car including two front cladding surfaces 23e and 23f and one car door 36b consisting of two car door elements 29e and 29f. The latter overlap the cladding surfaces 23e and 23f in the case of an opening movement. In addition, the elevator car 2d has a retaining device 43 for a movable bearing arrangement 200f in the form of a car door transom 24d which is suspended in a seesaw-shaped manner and is able to carry out an aligning movement M_4 corresponding to a movement direction 46 because it is held by at least two retaining levers 44a and 44b which, in turn, are in each case rotatably mounted with a pivot bearing 45a and 45b each in the retaining device 43 and with a pivot bearing 45c and 45d each in the car door transom 24d.

[0040] Figure 6 shows a schematic representation of part of an elevator car 2e in an indicated elevator installation 100e or an indicated elevator shaft 1e, on

which elevator car a retaining device 43a for a car door transom 24e is arranged. The car door transom 24e is movable in a movement direction 49 by means of a movable bearing arrangement 200e because it is
5 suspended on the retaining device 43a by way of support rollers 47a and 47b. The support rollers 47a and 47b roll along a running surface 55, inside two stops 56a and 56b. Over and above this, an aligning movement M_5 of the car door transom 24e is sprung by way of springs
10 48a and 48b.

[0041] By way of support rollers 47a and 47b in the form of ball rollers and by way of a running surface 55 in the form of a planar or also lightly curved plate,
15 an aligning movement M_5 can be achieved in any arbitrary direction.

[0042] Figure 7 shows a schematic representation of an elevator car 2f in an indicated elevator installation
20 100f or an indicated elevator shaft 1f, said elevator car being situated in a tilting position corresponding to a tilting position axis S_1 . In the upper region of the elevator car 2f, a car door transom 24f is pivotably arranged by means of a movable bearing
25 arrangement 200f in the form of a central pivot bearing 39b. Aligning rollers 50a-50d, which run along on correcting rails 51a or 51b, are arranged on the sides of the car door transom 24f. The correcting rails 51a and 51b can be arranged for this purpose simply in the
30 region of a shaft door, but also continuously over the entire conveying height of the elevator installation 100f. In addition, several aligning rollers 50a-50d can be arranged on only one correcting rail 51a or 51b in two or several horizontal directions such that an
35 aligning movement M_6 of the car door transom 24f can be effected in several directions - in particular in combination with the fastening thereof by means of flexible bearings (figure 2).

[0043] The described arrangements of aligning rollers 50a-50d can replace one or several of the usual guide shoes, by way of which the elevator car 2f runs along
5 in a guided manner on the guide rails 7a and 7b according to figure 1.

[0044] A door frame 52, in which a car door 36c or car door elements 29g and 29h are displaceably arranged
10 and, when opening, overlap cladding surfaces 23g and 23h of the elevator car 2f, is fastened fixedly on the bottom side of the car door transom 24f. The door frame 52 is pivotably arranged in the bottom region by means of arcuate guides 53a and 53b and guide bolts or guide
15 rollers 54a and 54b running therein on the bottom region of the elevator car 2f such that the car door transom 24f including the door frame 52 is able to remain in a vertical V_1 and consequently parallel and aligned with respect to respective shaft door elements
20 of a shaft door located opposite. The guide bolts or guide rollers 54a and 54b can be developed so as to be stop-free and longer than necessary such that the simultaneous describing of the aligning movement M_6 away from the tilting position axis S_1 , toward the vertical
25 V_1 is then also possible, within certain limits, when the tilting position axis S_1 should not lie in the drawing plane. I.e. not only lateral tilting positions of the elevator car 2f but also tilting positions forward or rearward or diagonally are able to be
30 corrected, within the play between the guide bolts or guide rollers 54a and 54b in the arcuate guides 53a and 53b.

[0045] The door frame 52, which consequently describes
35 the aligning movement M_6 of the car door transom 24f at the same time, can also be combined with the other disclosed development variants of a movable mounted car door transom.

Claims

1. An elevator installation (100, 100a-100f) having at least one elevator car (2, 2a-2f) which is movable
5 along guide rails (7a, 7b) in an elevator shaft (1, 1a-1f) with a car door mounting (24a-24f) for a car door (36, 36a-36c), wherein the car door mounting (24a-24f) is arranged so as to be movable on the elevator car (2a-2f) by means of at least one movable bearing
10 arrangement (200a-200f) such that when the elevator installation (100a-100f) is operating, a self-centering aligning movement (M_1 - M_6) of the car door mounting (24a-24f) can be carried out from a tilting position of the elevator car (2a-2f) corresponding to a tilting
15 position axis (S, S_1) into an approximately vertical and centered position of the car door mounting (24a-24f) corresponding to a vertical (V, V_1).
2. The elevator installation (100a) as claimed in
20 claim 1, wherein the movable bearing arrangement (200a) includes at least one flexible bearing (27a, 27b).
3. The elevator installation (100b, 100c, 100f) as claimed in claim 1, wherein the movable bearing
25 arrangement (200b, 200c, 200f) includes a central pivot bearing (39, 39a, 39b).
4. The elevator installation (100b, 100c, 100f) as claimed in claim 3, wherein weights (42a, 42b) are
30 arranged at the distal ends of the car door mounting (24c).
5. The elevator installation (100b, 100c, 100f) as claimed in claim 3 or 4, wherein the central pivot
35 bearing (39, 39a, 39b) has elevated friction values.

6. The elevator installation (100b, 100c, 100f) as claimed in one of claims 3-5, wherein the central pivot bearing (39, 39a, 39b) is torsionally elastic.

5 7. The elevator installation (100b, 100c, 100f) as claimed in one of claims 3-6, wherein the central pivot bearing (39, 39a, 39b) is a ball-and-socket joint.

10 8. The elevator installation (100b, 100c, 100f) as claimed in one of claims 3-6, wherein the car door mounting (24b, 24c) or a door frame (52) fixedly connected to the car door mounting (24f) has arcuate guides (40a, 40b, 53a, 53b).

15 9. The elevator installation (100a-100f) as claimed in one of the preceding claims, wherein the aligning movement (M_1 - M_6) of the car door mounting (24a-24f) is damped by at least two identical, symmetrically arranged springs (48a, 48b) or shock absorbers.

20 10. The elevator installation (100a-100f) as claimed in one of the preceding claims, wherein the aligning force or the aligning pulse for the aligning movement (M_1 - M_6) of the car door mounting (24a-24f) is the force
25 of gravity.

11. The elevator installation (100a-100f) as claimed in one of the preceding claims, wherein the aligning force or the aligning pulse for the aligning movement
30 (M_1 - M_6) of the car door mounting (24a-24f) is at least one pair of entrainment rollers (35a, 35b) on a shaft door (10a), said pair of entrainment rollers acting on at least one pair of car-side entrainment brackets (30a, 30b).

35 12. The elevator installation (100a-100f) as claimed in one of the preceding claims, wherein the aligning force or the aligning pulse for the aligning movement

(M₁-M₆) of the car door mounting (24a-24f) is at least one correcting rail (51a, 51b) which is mounted in the elevator shaft (1a-1f) and acts on at least one aligning roller (50a-50d) on the car door mounting
5 (24a-24f).

13. The elevator installation (100a-100f) as claimed in claim 12, wherein the at least one correcting rail (51a, 51b) extends over a conveying height (h) of the
10 elevator installation (100a-100f).

14. The elevator installation (100d) as claimed in one of the preceding claims 1, 9-13, wherein the movable bearing arrangement (200d) of the car door mounting
15 (24d) includes at least two retaining levers (44a, 44b) which are rotatably mounted by way of at least two first pivot bearings (45a, 45b) on a retaining device (43) of the elevator car (2d) and by way of at least two second pivot bearings (45c, 45d) on the car door
20 mounting (24d).

15. The elevator installation (100e) as claimed in one of the preceding claims 1, 9-13, wherein the movable bearing arrangement (200e) of the car door mounting
25 (24e) includes at least two support rollers (47a, 47b) which are arranged so as to be able to roll along a running surface (55) of a retaining device (43a) of the car door mounting (24e).

30 16. A method for aligning a car door mounting (24a-24f) of an elevator car (2a-2f), wherein the following method steps are carried out when the elevator car has assumed a tilting position and the car door mounting is decentered or dislocated:

35 - exerting an aligning force or an aligning pulse provided by the force of gravity or/and by a pair of entrainment rollers (35a, 35b) which are arranged on the shaft side or/and by a correcting rail (51a, 51b)

such that when the tilting position is present, an aligning movement (M_1 - M_6) of the car door mounting (24a-24f) takes place into an approximately vertical and centered position of the car door mounting (24a-24f) corresponding to a vertical (V, V_1);

5 - stopping the exerting of the aligning force or of the aligning pulse as soon as the tilting position is no longer present; such that the car door mounting (24a-24f) assumes a non-corrected, approximately vertical

10 and centered position.