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(54) Sealing between the wall of an elevator car and the shaft wall

Dichtung zwischen der Wand einer Aufzugskabine und der Schachtwand

Etanchéité entre la paroi d'une cabine d'ascenseur et la paroi de la cage

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Description

The present invention relates to a system for sealing the space between the wall of an elevator car and the wall of the elevator shaft.

In fast and high-quality elevators, travelling comfort has become an increasingly important objective. For the operation of the elevator, it is important to seal the elevator shaft against draught and moisture when the car and landing doors are open, and also against other climatic changes due to variations in weather conditions.

An example of previously known technology is found in invention reference EP 0 353 424 A1, in which a sealing band is mounted between the car door and landing door to keep draught and temperature changes due to weather away from the shaft. The sealing band is hollow inside and is mounted around the door opening. When the car is at a landing, the sealing band is pressed against the shaft wall. The sealing band is controlled from the control unit of the elevator. Its action depends on the state of the doors. A drawback is found in the fact that the sealing band is always in sight and can be abraded by contact with the shaft wall or damaged in the case of vandalism.

Another example of previously known technology is found in reference US 4 058 191, which also concerns a sealing apparatus designed to seal the space between the car door and shaft door. The apparatus functions automatically and has a fully mechanic construction. Its kinetic energy is obtained from the motion of the car doors and it can withstand light movements of the car doors resulting from varying car loads. When the doors are opened, the seal is compressed against the shaft wall, and when the doors are closed again, it is disengaged from contact with the wall. The apparatus is complex and expensive to manufacture.

To remedy the drawbacks referred to, the present invention proposes a sealing apparatus comprising a seal built in a wall and fastened to a cutout with a base by means of fixing elements, with a planar part mounted in front of the seal. The seal protrudes only when required, i.e. when the elevator car is at a landing. The elevator car of the invention is characterized by what is presented in the characterization part of claim 1. Other embodiments of the invention are characterized by the features presented in the other claims.

The advantages include the following:

- This sealing system prevents climatic changes caused by draught and weather, such as the access of moisture and cold air into the elevator shaft.
- During elevator travel, the seal is in a retracted condition and cannot be rubbed against the shaft wall.
- The seal cannot be easily damaged by vandalism.

In the following, the invention is described in detail by referring to the attached drawing, in which

fig. 1 presents a seal 2 built in the door wall of an elevator car.

Fig. 1 presents a seal 2 as provided by the invention. The seal is built in the door wall 3 of the elevator car 1 preferably by providing the wall with a cutout 4 in which the seal 2 is fitted. Mounted in front of the seal 2 is a substantially planar part 6 or some other kind of stopper. This planar part 6 essentially covers the cutout in the door wall. The portion of the seal facing towards the shaft is so formed as to cover the cutout 4. The seal 2 is fastened to the cutout 4 by means of a base 5 which is attached to the bottom of the cutout by means of fixing elements 7. The seal 2 is so constructed that it will retract depending on the situation so that it is completely hidden from view. The seal can be implemented according to different designs as required and it can be made of an elastic material such as rubber. The action required to close the gap by means of the seal 2 can also be started during the opening movement of the doors and/or departure of the elevator car 1 from the landing before the seal 2 has completely retracted can be disabled. The planar part 6 prevents the seal from protruding except when it is required to protrude. It is also possible to operate the seal by means of a known actuator, allowing the functional movements of the seal 2 to be timed independently of other door functions. The seal 2 may also be a rubber seal of a bellows-type design. By increasing the pressure inside the seal, the height of the bellows seal from the base to the sealing face can be increased until the gap is closed. By reducing the pressure, the seal is caused to retract into the cutout 4. When the elevator car 1 is at a landing with doors open, the seal 2 is thrust out against the shaft wall 8.

The seal may be made of different materials and its actuator may consist of e.g. the door operating mechanism of the elevator or an equivalent control system. It is also possible to use different fixing mechanisms to attach the seal to the door wall of the elevator car. The shape of the seal may also be chosen as required by the situation. The planar part may be part of the seal, e.g. a widened edge of the seal or a separate plate that retracts or turns aside when required. The seal is filled with air or some other substance. The planar part functions as a stopper ensuring that the seal will not protrude from the cutout except when necessary.

Claims

1. Apparatus for sealing the space between the door wall of an elevator car and the shaft wall, **characterized** in that a cutout (4) is formed in the door wall (3) of the elevator car (1) and a protrusile seal (2) is fitted in the cutout (4).
2. Apparatus according to claim 1, **characterized** in that the height of the seal (2) can be increased by increasing the pressure inside the seal (2).

3. Apparatus according to claim 1 or 2, **characterized** in that the portion of the seal (2) facing towards the shaft is provided with a substantially planar part (6) which essentially covers the cutout (4) in the door wall (3).

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4. Apparatus according to any one of the preceding claims, **characterized** in that the seal (2) can be caused to retract by removing the air or other substance inside it.

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tions précédentes, caractérisé en ce que la rétraction de l'élément d'étanchéité (2) peut être effectuée par évacuation de l'air ou d'une autre substance se trouvant à l'intérieur de l'élément.

Patentansprüche

1. Vorrichtung zum Abdichten des Raums zwischen der Türwand einer Aufzugskabine und der Schachtwand, **dadurch gekennzeichnet**, daß ein Ausschnitt (4) in der Türwand (3) der Aufzugskabine (1) ausgebildet ist und eine ausfahrbare Abdichtung (2) in den Ausschnitt (4) eingepaßt ist.

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2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, daß die Höhe der Abdichtung (2) erhöht werden kann, indem man den Druck im Inneren der Abdichtung (2) erhöht.

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3. Vorrichtung nach Anspruch 1 oder 2, **dadurch gekennzeichnet**, daß der zu dem Schacht weisende Abschnitt der Abdichtung (2) mit einem im wesentlichen ebenen Teil (6) ausgestattet ist, der den Ausschnitt (4) in der Türwand (3) im wesentlichen abdeckt.

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4. Vorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß ein Einziehen der Abdichtung (2) verursacht werden kann, indem man Luft oder eine andere Substanz in ihr entfernt.

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Revendications

1. Dispositif d'obturation de l'espace entre la paroi de porte d'une cabine d'ascenseur et la paroi de la cage, caractérisé en ce qu'une découpe (4) est formée dans la paroi de porte (3) de la cabine d'ascenseur (1), et un élément d'étanchéité expansible (2) est monté dans la découpe (4).

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2. Dispositif suivant la revendication 1, caractérisé en ce que la hauteur de l'élément d'étanchéité (2) peut être augmentée par augmentation de la pression à l'intérieur de l'élément d'étanchéité (2).

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3. Dispositif suivant la revendication 1 ou 2, caractérisé en ce que la partie de l'élément d'étanchéité (2) tournée vers la cage comporte une partie sensiblement plane (6) qui couvre sensiblement la découpe (4) de la paroi de porte (3).

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4. Dispositif suivant une quelconque des revendica-

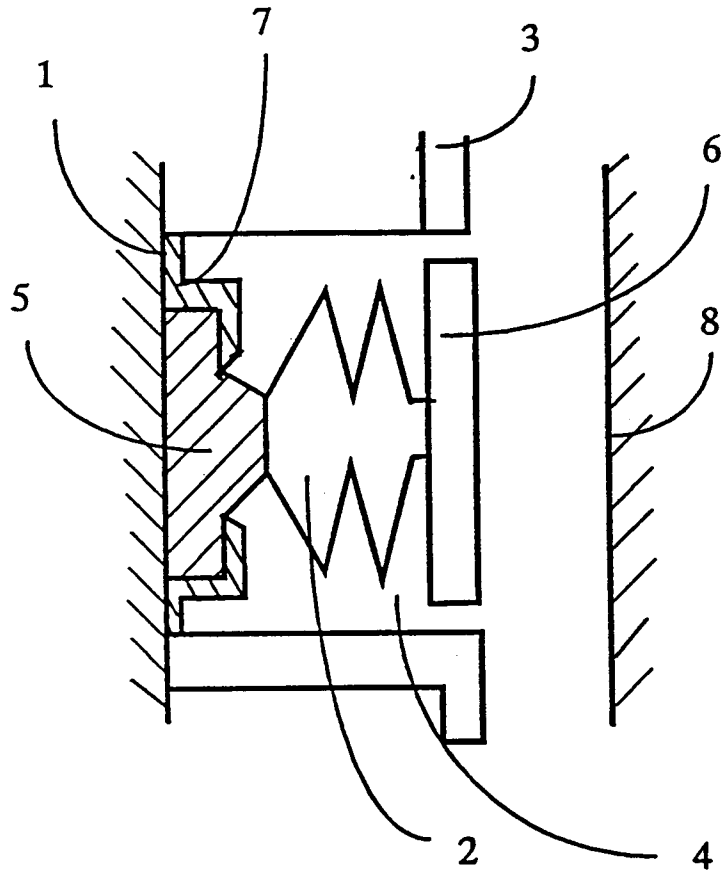


FIG. 1