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DOOR SEAL ASSEMBLY

5 This invention relates to a seal assembly, and in particular to such an assembly for a sliding door such as an elevator car landing door.

10 An elevator car landing has door panels that slide relative to a door frame or architrave provided at each landing. A gap is thus defined between the door panel and the door frame, and this gap can be the cause of accidents. For example, it is possible for fingers, hands or parts of a persons clothing to be become caught
15 in the gap, especially as the door opens.

 According to the present invention there is therefore provided a seal for a sliding door, the door comprising a panel which slides relative to a frame in
20 use, the seal comprising an elongate sealing strip extending generally at right angles to the sliding movement of the door panel, one longitudinal edge of the strip being connected to the said frame and the other longitudinal edge of the strip being resiliently biased
25 by spring means into engagement with the door panel, the spring means being hidden from view during the normal operation of the door.

 By means of this arrangement, at least in preferred
30 forms, the gap is covered up by the seal assembly and thus foreign objects such as items of clothing or parts of the body cannot be caught between the door frame and the sliding door panel.

35 In a preferred embodiment, the edge of the sealing strip that engages the door panel is provided with a protecting tube of substantially circular or arcuate

cross-section. Such a protecting tube minimises the area of contact between the door panel and the sealing strip so as to reduce friction as the door slides against the strip. To further reduce friction the protecting tube, or the sealing strip itself where such a tube is not provided, may be formed of a low friction material.

Preferably the sealing strip is pivotably mounted, and may be mounted directly to the door frame. Preferably, however, a mounting strip is secured to the door frame and the sealing strip is pivotably joined to the mounting strip. The mounting strip may also include one or more recesses for receiving the spring means in the form of one or more tension springs. Such a mounting strip would allow the seal assembly to be retrofitted to existing doors.

The sealing strip may be pivotably mounted by forming one edge of the strip with a portion of substantially circular cross-section. This portion may then be received in a socket of corresponding cross-section formed in, for example, the mounting strip when provided.

To provide complete protection, the sealing strip will preferably extend for the full height of the door. However, a substantial degree of protection may be provided with a sealing strip of shorter length, or a number of such sealing strips, provided in the most critical regions.

According to another aspect of the present invention there is provided a seal for a sliding door, the door comprising a panel which slides relative to a frame in use, the seal comprising a sealing strip and a mounting strip, said mounting strip being adapted to be

secured to the door frame, and said sealing strip being pivotably connected to said mounting strip along a longitudinal edge, spring means being provided in said mounting strip to act on said sealing strip so as to
5 urge said sealing strip into engagement with a door panel in use, the spring means being arranged such that they are hidden from view during the normal operation of the door.

10 An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings in which:-

Fig. 1 illustrates a lift landing,
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Fig. 2 is a perspective view of a sealing strip connected to a mounting strip,

Fig. 3 is a sectional view through a combined
20 sealing strip and mounting strip,

Fig. 4 is a rear view of the combined sealing strip and mounting strip,

25 Fig. 5 is a sectional view through Fig. 4 showing the biasing means, and

Fig. 6 is a sectional detail of Fig. 1 showing the location of the sealing strip relative to the door frame
30 and door panel.

Referring firstly to Fig. 1, there is illustrated the doors of an elevator car landing. The doors comprise two door panels 1, 2 that open slidably
35 relative to a door frame or architrave 3. The doors are conventionally opened when an elevator car is at the landing and persons wish to enter or leave the elevator

car. Seal assemblies 4 are provided at both edges of the door opening to seal, in a manner to be described in further detail below, the gap that would otherwise be defined between the sliding door panels 1, 2 and the door frame 3.

Referring in particular to Figs 2 and 3, the seal assembly comprises an elongate sealing strip 5 and a corresponding elongate mounting strip 6. The sealing strip 5 extends in the vertical direction of the door, and the two vertical edges are each formed with bulbous portions having substantially circular cross-sections. One such bulbous vertical edge 7 (Fig. 3) is received within a corresponding vertically extending socket S formed along the length of the mounting strip 6. By means of this socket connection the sealing strip 5 is adapted to move pivotably relative to the mounting strip 6.

Turning to Figs 4 and 5, it will be seen that at selected vertical locations the end 7 of the sealing strip 5, and the mounting strip 6, are provided with respective anchoring pins 9, 10. Between each such respective pair of anchoring pins 9, 10 is disposed a tension spring 11. The tension spring 11 acts through anchoring pin 9 to urge the sealing strip 5 to pivot in an anti-clockwise manner, as viewed in Fig.s. The tension springs 11 are received within recesses 12 formed in the rear of the mounting strip. Anchoring pin 9 also serves to hold the sealing strip 5 in position with the mounting strip 6.

The other vertical edge 13 of the sealing strip 5 is also provided with a bulbous portion having a substantially arcuate or circular cross-section. About this bulbous edge 13 is provided a protecting tube 14 that has a recess corresponding to the bulbous edge so

that it may be securely fitted to the sealing strip 5. The protecting tube may be formed of a tough material of low friction, for example PTFE.

5 As is shown in Fig. 6, the mounting strip 6 is secured to the door frame or architrave by a number of screws 15 or similar fixing elements such as rivets. The screws 15 are counter-sunk in holes 16 provided in the mounting strip 6. The holes 16 are then covered by a
10 covering strip 17 to improve the appearance of the seal assembly. The tension springs 11, not shown in Fig. 6, urge the sealing strip 5 to pivot in an anticlockwise manner, as viewed in Fig. 6 so as to be biased into engagement with the elevator landing door. Because of
15 the arcuate surface of the protecting tube 14, the actual area of engagement between the sealing strip and the landing door is quite small. This minimises the friction that would otherwise occur as the door slides against the strip. The reduction of this friction may
20 also be enhanced if the protecting tube is made of a low friction material. The remaining components of the seal assembly may be made of any suitable material, e.g. plastics or elastomeric materials.

25 As can be seen from the Figures, the seal assembly extends for substantially the complete height of the door. However, adequate protection could possibly be obtained with a seal assembly that extended only for a substantial portion of the door height. The biasing of
30 the seal strip against the door panel ensures that the seal assembly completely covers the gap at all times as the door panels are slidably moved to open and close the elevator landing door.

35 Although the present invention has been described with reference to the doors provided at an elevator landing, it will be appreciated that the invention is

not limited thereto and may be applied to any situations in which a door or door panel is moved slidably relative to a door frame and it is desired to provide a door seal to close the gap that would otherwise be defined.



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Claims

1. A seal for a sliding door, the door comprising a
5 panel which slides relative to a frame in use, the seal
comprising an elongate sealing strip extending generally
at right angles to the sliding movement of the door
panel, one longitudinal edge of the strip being
connected to the said frame and the other longitudinal
10 edge of the strip being resiliently biased by spring
means into engagement with the door panel, the spring
means being hidden from view during the normal operation
of the door.
- 15 2. A seal according to claim 1 wherein the edge of
said strip contacting the door panel is provided with a
protecting tube.
- 20 3. A seal according to claim 1 or 2 wherein the edge
of said strip contacting the door panel is formed of a
low friction material.
- 25 4. A seal according to any preceding claim wherein
said strip is pivotably connected to said frame.
- 30 5. A seal according to claim 4 wherein said sealing
strip is pivotably connected to a vertically extending
mounting strip, said mounting strip being fixed to said
frame.
- 35 6. A seal according to claim 5 wherein said sealing
strip is provided with a bulbous vertical edge of
substantially circular cross-section, said bulbous edge
being received in a corresponding vertically extending
socket formed in said mounting strip.



7. A seal according to claim 6 wherein the sealing strip is biased by a plurality of tension springs, said springs being received within recesses formed in said mounting strip and acting between anchoring pins formed on said mounting strip and the pivotably mounted edge of said sealing strip.

8. A seal according to any preceding claim wherein the sealing strip extends for substantially the complete vertical height of the door.

9. A seal substantially as hereinbefore described with reference to any of the accompanying drawings.

10. A seal for a sliding door, the door comprising a panel which slides relative to a frame in use, the seal comprising a sealing strip and a mounting strip, said mounting strip being adapted to be secured to the door frame, and said sealing strip being pivotably connected to said mounting strip along a longitudinal edge, spring means being provided in said mounting strip to act on said sealing strip so as to urge said sealing strip into engagement with a door panel in use, the spring means being arranged such that they are hidden from view during the normal operation of the door.

11. A seal according to claim 10 wherein said spring means comprises a plurality of tension springs, said springs being received within recesses formed in said mounting strip and acting between anchoring pins formed on said mounting strip and the pivotably mounted edge of said sealing strip.

12. An elevator car door and landing door assembly including a door frame and a seal as claimed in claim 10 or 11 fixed to said frame.
