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(54) A guide track.

(57) A guide track (20) for receiving a guide bracket (26) of a sliding door (1), the guide track (20) including a longitudinal opening (22) having a width adapted to accommodate and guide a guide bracket (26), during use, and an internal channel (24) within the track (20) communicating with the longitudinal opening (22) along the length of the track (20), wherein the width of the internal channel (24) is greater than the width of the longitudinal opening (22). This arrangement enables debris falling into the guide track to be swept along the internal channel (24) without blocking the track (20) and causing malfunction of the sliding doors.

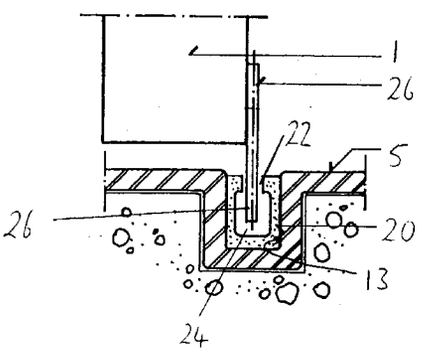

FIGURE 3

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This invention relates to guide tracks, and in particular to a guide track for receiving a guide bracket of a sliding door, such as a lift door.

Most prior art lift doors (1) have guide shoes (3) attached to their bottoms for sliding in grooves of a door sill (5) to guide the doors (1) as they open and close (c.f. Figures 1 and 2). Each door (1) is moved by drive means (7) towards and away from the other door (1). To enable the system to know when the two doors are closed, an electro-mechanical interlock operates between the two doors (1). If this electro-mechanical interlock (not shown) is not triggered, the lift is not allowed to ascend or descend from its starting position. Hence, it is essential that the doors (1) travel in the same plane so that this electromechanical interlock can function. This is why it is necessary for the doors (1) to be guided by means of the guide shoes (3) and sill (5) at the bottom of each door.

Prior art guide shoes (3), as shown in Figure 2, comprise a plate (9) for attachment (using screws) to the bottom of a lift door (1) and a bulbous end (11) for travelling in a groove (13) of a door sill (5). The bulbous portion (11) of a prior art guide shoe (3) is usually made of nylon, cloth or moulded plastics adhered to the plate (9) and wears heavily in the sill groove (13), as does the sill (5) itself. This is partly due to accumulation of debris in the door sill which obstructs the motion of the guide shoe (3) along the sill groove (13). Indeed, if the debris build-up is substantial, it can result in complete failure of the lift doors because the guide shoes (3) become jammed and the doors (1) cannot close.

The present invention aims to improve upon the prior art mentioned above by reducing the problems associated with debris in a door sill. With this in mind, the present invention provides a guide track for receiving a guide bracket of a sliding door, the guide track including a longitudinal opening having a width adapted to accommodate and guide a guide bracket, during use, and an internal channel within the track communicating with the longitudinal opening along the length of the track, wherein the width of the internal channel is greater than the width of the longitudinal opening. This form of guide track minimises the possibility of jamming of the sliding doors due to debris in the track. Further, articles which are smaller than the width of the longitudinal opening can drop into the track and be accommodated in the internal channel without affecting the motion of the guide brackets along the longitudinal opening of the track. Furthermore, loose articles which fall into the guide track can be swept by the guide brackets along the track and may be pushed completely out of the track, thereby keeping the track relatively free from debris.

Preferably the width of the longitudinal opening increases towards the internal channel. This arrangement helps to ensure that any debris falling into the guide track will not jam the longitudinal opening, but will fall into the internal channel from where it can be swept out of the guide track.

Preferably the width of the internal channel is more than twice the width of the longitudinal opening. Clearly the larger the cross section of the internal channel in relation to the longitudinal opening, the less likelihood there is that the track will become blocked by debris.

The guide track is preferably made of a low friction material, thereby reducing the wear of the track on the guide bracket, during use.

The guide track is preferably bendable so that it can be accommodated within any shape of door sill. Furthermore, if the guide track is resilient, it can be readily inserted into a door sill and removed therefrom when it is worn out. A replacement guide track can then be simply inserted into the sill without any need to dismantle the guide bracket from the sliding door or, indeed, the sliding door from its own drive support.

Preferably the guide track is manufactured by extrusion from plastics materials. It will, however, be appreciated that any other suitable material or manufacturing technique could equally well be used.

According to another aspect of the present invention, there is provided a sliding door guide apparatus comprising a guide bracket for mounting on a sliding door and a guide track according to the present invention, wherein the guide bracket is substantially planar and has a thickness slightly less than the width of the longitudinal opening of the guide track, thereby enabling the bracket to move along the longitudinal opening as the door slides, during use. Due to the guide bracket being substantially planar, the manufacturing cost of the component is significantly reduced. Further, by using such a guide apparatus, it will normally only be necessary to replace the guide track because the guide bracket, which is preferably metal, will have a very long service life.

A specific embodiment of the present invention is now described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a schematic front view of a pair of lift doors;

Figure 2 is a cross-sectional view along a prior art guide track showing a conventional guide shoe;

Figure 3 is a cross-sectional view through a guide track according to the present invention showing a guide bracket in position in the guide track; and

Figure 4 is an enlarged cross-sectional view along a guide track according to the present invention.

With reference to Figures 1, 3 and 4, a guide track (20) according to the present invention comprises an extruded length of plastics material defining a longitudinal opening (22) and an internal channel (24) communicating with the longitudinal opening (22). The width of the longitudinal opening (22) increases

towards the internal channel (24), as shown in Figure 4.

In use, the guide track (20) is slotted into a door sill groove (13) and accommodates a planar guide bracket (26) extending into the longitudinal opening (22). The width of the longitudinal opening (22) is slightly larger than the thickness of the guide bracket (26), thereby enabling the guide bracket (and hence the sliding door) to be guided by the guide track (20) without actually gripping the guide bracket (26).

Since the guide bracket (26) is manufactured from metal, it does not wear quickly and therefore has a long service life. Furthermore, due to the fact that the guide track (20) is extruded from plastics materials, the guide track (20) is very cheap to manufacture and is slightly resilient. This enables the guide track (20) to be inserted into the door sill groove (13), or removed therefrom when it is worn out, very easily. Indeed, when replacing a portion of guide track (20) it is not necessary to remove the guide bracket (26) from the sliding door (1) or to remove the sliding door (1) from its own driving support (not shown).

The width of the internal channel (24) is substantially larger than that of the longitudinal opening (22) and can have any suitable depth. The larger the cross-sectional area of the internal channel (24), the less likelihood there is that debris falling into the channel will block the sliding motion of the guide bracket (26) along the longitudinal opening (22). Thus, due to the arrangement of guide track (20) according to the present invention, sliding doors (1) incorporating such a guide apparatus are far less prone to failure. Indeed, due to the relative space in the internal channel (24), debris falling therein is generally swept along the channel and out of the end of the guide track (20) by the guide bracket (28) during opening and closing of the sliding doors (1).

It will of course be understood that the present invention has been described above purely by way of example, and that modifications of detail can be made within the scope of the invention.

Claims

1. A guide track for receiving a guide bracket of a sliding door, the guide track including a longitudinal opening having a width adapted to accommodate and guide a guide bracket, during use, and an internal channel within the track communicating with the longitudinal opening along the length of the track, wherein the width of the internal channel is greater than the width of the longitudinal opening.

2. A guide track as claimed in claim 1, wherein the width of the longitudinal opening increases towards the internal channel.

3. A guide track as claimed in claim 1 or claim 2, wherein the width of the internal channel is more than twice the width of the longitudinal opening.

4. A guide track as claimed in any preceding claim which is made of a low friction material.

5. A guide track as claimed in any preceding claim which is manufactured by extrusion from a plastics material.

6. A guide track as claimed in any preceding claim which is resilient and bendable.

7. A guide track substantially as hereinbefore described with reference to and as shown in figures 3 and 4 of the accompanying drawings.

8. A sliding door guide apparatus comprising a guide bracket for mounting on a sliding door and a guide track as claimed in any preceding claim, wherein the guide bracket is substantially planar and has a thickness slightly less than the width of the longitudinal opening of the guide track, thereby enabling the bracket to move along the longitudinal opening as the door slides, during use.

9. A sliding door guide apparatus as claimed in claim 8, wherein the guide bracket is a planar metal plate.

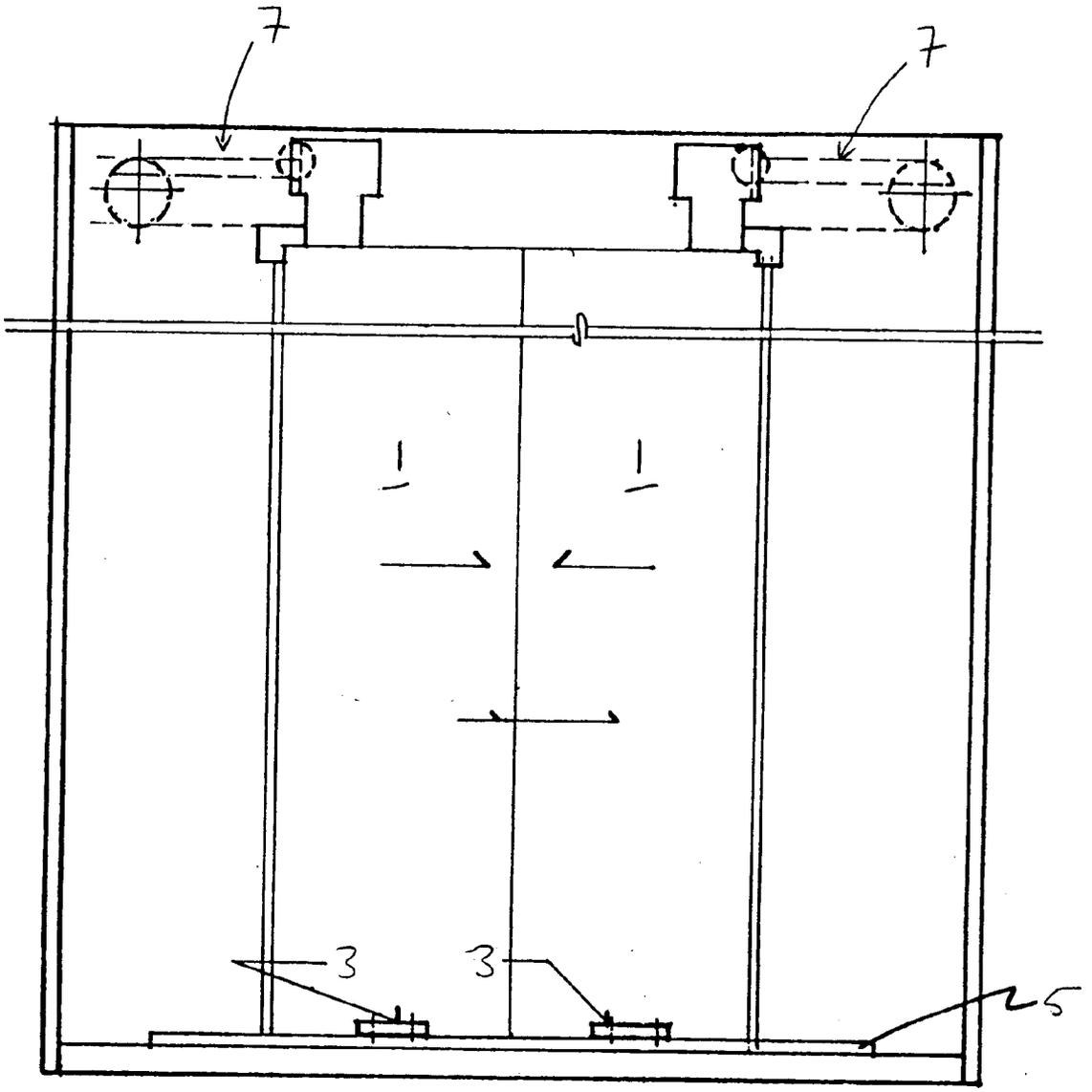

FIGURE 1

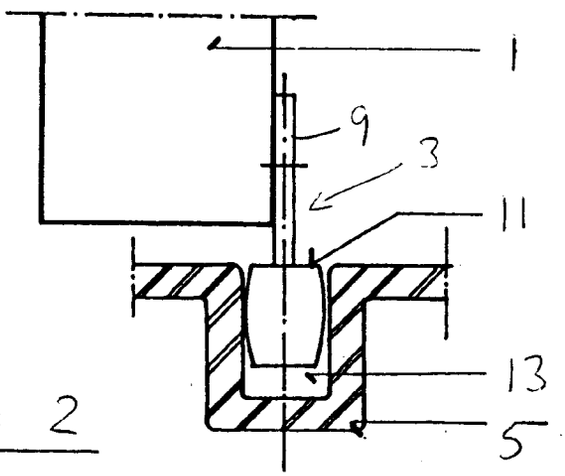

FIGURE 2

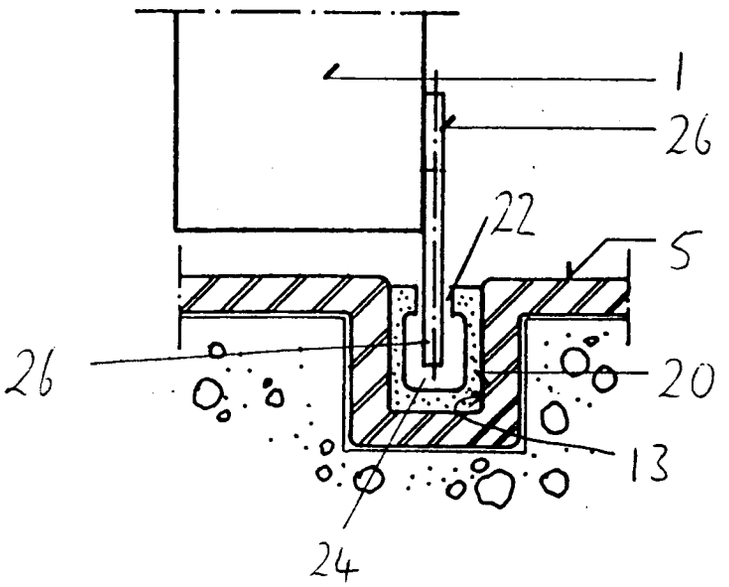

FIGURE 3

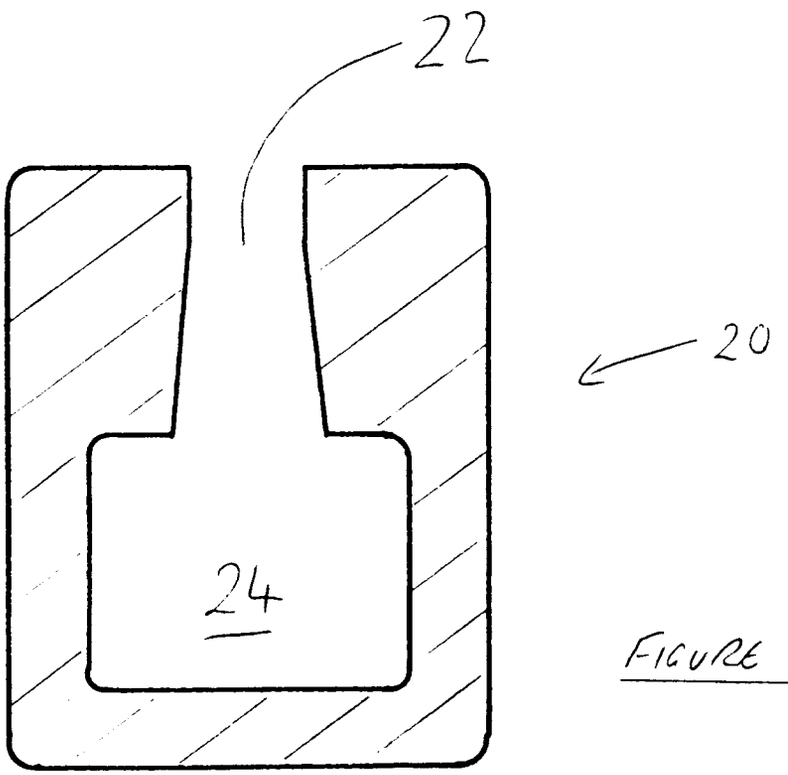

FIGURE 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 92 30 8297

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X A	US-A-3 523 390 (MC AULAY, JR) * column 1, line 66 * * column 2, line 51 - line 69 * * column 3, line 41 - line 50; figures 1,3,4 *	1 8	E05D13/00
X	US-A-2 784 445 (GREIG) * column 2, line 62 - column 3, line 2; figure 1 *	1,2	
X	US-A-3 368 235 (MC CLENAN) * column 2, line 7 - line 14; figure 2 *	1-3	
X	US-A-2 659 939 (GREIG) * column 3, line 28 - line 37 * * column 4, line 20 - line 27 * * column 4, line 59 - line 65 * * figures 1,4,6 *	1-3	
X	US-A-4 095 310 (GOVERNALE) * column 2, line 18 - line 29 * * column 3, line 44 - line 46; figures 1-4 *	1-3	TECHNICAL FIELDS SEARCHED (Int. Cl.5)
X A	US-A-4 912 807 (FUTCH) * column 2, line 28 - line 30 * * column 3, line 3 - line 22 * * column 3, line 59 - line 62; figures 1,3 *	1,4-6 8	E05D
X	DE-A-3 343 942 (BEER) * page 5, line 6 - line 10 * * page 6, line 12 - line 18; figures 2,3 *	1,8,9	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15 DECEMBER 1992	VAN KESSEL J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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