

COVER ELEMENT FOR A SLIDE CHANNEL

Description

The invention relates to a cover element for a slide channel, the cover element being secured against lateral shifting in longitudinal direction of a slide channel. The slide channel, in connection with a door closer or the like, is instrumental in opening and/or closing a door.

A slide channel is disclosed in DE 10 2004 012 638, which is covered by a U-shaped cover element. This cover element is open at the frontal sides thereof and has latching projections protruding to the inside, which correspond to latching openings in the guiding rail. If the slide channel is in operation, loads are generated at the slide channel, which are transferred to the cover element. This circumstance results in the disadvantage that, over the time, the cover element is laterally shifting away from its proper position into the longitudinal direction of the slide channel. This shifting depends on how frequently the slide channel is used. The more often the slide channel is performing its function, the more the cover element will shift. In order to convey the cover element back to its proper position, it is necessary to manually push it to the proper position. This pushing back is not only performed by individuals who are used to mount such slide channels, but in the majority of cases by someone from among the users. Furthermore, the cover element is latched in such a way that it can be removed by hand. It is thereby possible that unauthorized individuals manipulate the slide channel.

Therefore, it is the object of the present invention to provide a cover element for a slide channel of the type described in the introduction, which has a simple design, includes a shifting protection, functions reliably and can be produced cost-effectively. Furthermore, it is the object of the present invention to provide a cover element, which, on a cost-effective basis, can only be disassembled by means of tools.

A cover element having the features of claim 1 is proposed as the solution to this problem. Preferred further developments are explained in the dependent claims.

For this purpose and according to the invention, it is intended that the cover element presents at least one provision, which, for limiting the shifting movement, positively bears against a corresponding provision of the guiding rail and/or of the mounting adapters. The provisions are corresponding surfaces and/or edges or the like, which are provided at the cover element and/or the guiding rail and/or the mounting adapters. Furthermore, the cover element is U-shaped, during manufacturing a pre-tensioning being applied to the cover element.

The advantage is given hereby to stop the lateral movement of the cover element, which movement is manifested in the longitudinal direction of the slide channel, in order to hold the cover element in its proper position during the functioning of the slide channel, as well as to achieve a spring-like function of the two open legs of the cover element.

Another advantage is given by the fact that a shifting of the cover element is prevented through surfaces of the cover element, as well as through surfaces of the guiding rail.

The required surfaces at the cover element are cost-effectively directly included when manufacturing the cover element. On the other hand, the usable surfaces of the guiding rail already exist without any additional expenses, as the frontal sides of the guiding rail are used, which are created as soon as the guiding rail is produced to the required length.

Another advantage is that at least one section of the cover element together with a section of the guiding rail forms a gap.

This gap can be used for a tool to disassemble the cover element from the guiding rail. Furthermore, this has the advantage that the surface of the cover element is not damaged in the visible area, when disassembling the cover element.

Another enhancement is the U-shape of the cover element which thereby provides a pre-tensioning during manufacturing and thus the latching connection is able to hold the cover element at the guiding rail, as well as at the mounting adapters such that the cover element can only be disassembled with a tool. Unauthorized manipulation at the slide channel is thus made more difficult.

The invention will be described by way of example based on the following drawings, in which

Figure 1: shows the individual parts, relevant for the invention, of the inventive slide channel in a perspective exploded view,

Figure 2: shows an enlargement of a detail from Figure 1,

Figure 3: shows the individual parts, relevant for the invention, of the inventive slide channel in the assembled condition in a perspective exploded view,

Figure 4: shows an enlargement of a detail from Figure 3,

Figure 5: shows the individual parts, relevant for the invention, of the inventive slide channel in the assembled condition in a view from below,

Figure 6: shows an enlargement of a detail from Figure 5,

Figure 7: shows an enlargement of a detail from Figure 6.

Figure 1 shows the individual parts, relevant for the invention, of the slide channel, which are illustrated in an exploded view. For clarity's sake, the slider, required for

the proper functioning, is not illustrated. The cover element 1 has surfaces 6 and 6a, which are provided at sections of the respective terminal areas of the cover element 1. The cover element 1 has a U-shape and latching elements 1a, 1b and 1c. The guiding rail 2 has surfaces 7 and 7a, which are provided at frontal sides respectively at the end of the guiding rail. The mounting adapters 3 and 4 are inserted into the guiding rail 2 at the frontal sides thereof and are attached to the guiding rail 2 with the screws 5.

Figure 2 shows the individual parts, relevant for the invention, of the slide channel in an enlargement of a detail from Figure 1. The surfaces 6 and 8, as well as the latching elements 1b and 1c can be seen at the cover element 1. The surface 7, which is located at the frontal side at one end of the guiding rail 2, is illustrated at the guiding rail 2. In addition, the surface 9 is illustrated at the guiding rail 2. Furthermore, the mounting adapter 4 is illustrated, at which the locating surface 4a is provided. The screw 5 fastens the mounting adapter 4 to the guiding rail 2.

Figure 3 shows an assembled condition of the inventive individual parts. The mounting adapters 3 and 4 are inserted at the respective end of the guiding rail 2 and fastened by means of the screws 5, the cover element 1 being latched via the guiding rail and the mounting adapters 3 and 4. The oblong holes 10 are intended for fastening and adjusting the height of the slide channel at a door, at a door frame, at a wall or the like.

Figure 4 shows an enlargement of a detail from Figure 3. Here, the position of the cover element 1 in relation to the guiding rail 2, as well as to the mounting adapter 4 is illustrated in the mounted condition, the latter being fastened to the guiding rail 2 by means of the screw 5. Furthermore, the surfaces 1d of the cover element 1, as well as 2b of the guiding rail 2 form one plane. The oblong hole 10 is intended for fastening and adjusting the height of the slide channel at a door, at a door frame, at a wall or the like.

Figure 5 shows a view from below of the assembled slide channel and indicates a detail X. The position of the cover element 1 in relation to the guiding rail 2 is visible. In this case again, the slider, required for the proper functioning, is not illustrated for clarity's sake.

Figure 6 shows the detail X indicated in Figure 5. Here, a gap A, which is located within the detail Y, is visible between the cover element 1 and the guiding rail 2.

Figure 7 shows the detail Y indicated in Figure 6. The gap A between the cover element 1 and the guiding rail 2 is formed by the surfaces 8 and 9. Furthermore, the surface 6 of the cover element 1, as well as the surface 7 of the guiding rail 2 are illustrated.

In the illustrations only the parts relevant for the invention are illustrated. For the sake of clarity, all other functional elements are not illustrated.

The slide channel, which is used in conjunction with a door closer or door opener for opening and/or closing a door or the like, is mounted to a door, to a door frame, to a wall or the like via two mounting adapters 3, 4 by means of the oblong holes 10. The mounting adapters 3 and 4 are inserted into the respective ends of the guiding rail 2 as far as to the locating surface 4a, which then bears against the guiding rail, and are fastened respectively with a screw 5. The cover element 1 is pushed onto the guiding rail 2 and latched thereon such that the cover element 1 partially covers the guiding rail 2 and the two mounting adapters 3, 4. At least in the section, in which the not-illustrated slider needs to be easily accessible for its functioning, the guiding rail 2 is not covered by the cover element 1. The cover element 1 has a U-shape and is open at its respective ends. The latching of the cover element 1 is accomplished via a positive latching connection at the guiding rail 2, as well as at the mounting adapters 3 and 4. The surface 1d of the cover element 1, as well as the surface 2b of the guiding rail 2 form one plane at this section, leading to the fact that there is no protruding edge.

As Figure 3 illustrates, in the assembled condition, the cover element 1 is connected to the guiding rail 2 and to the mounting adapters 3 and 4.

On account of load, which is applied to the slide channel when the door is being used and transferred to the cover element 1, the respective corresponding surfaces 6 and 7 or 6a and 7a are bearing against each other, the position of the cover element 1 being held by these surfaces bearing against each other. When loads are applied to the slide channel and thus to the cover element 1, the cover element 1 is only shifted until one of the surfaces 6 or 6a is bearing against its corresponding surface 7 or 7a. In order to achieve the smallest possible shifting of the cover element 1 until these surfaces are bearing against each other, the distance between the surfaces 6 and 7, as well as 6a and 7a is kept to a minimum, while respecting manufacturing tolerances. On account of the corresponding surfaces 6 and 7 or 6a and 7a bearing against each other, the cover element 1 is prevented from further shifting in the shifting direction. The shifting direction is the direction of the longitudinal axis of the slide channel.

During manufacturing, the cover element 1 is formed with pre-tension such that, once installed, it holds a firm seat on the guiding rail 2, as well as on the mounting adapters 3 and 4. This firm seat is selected such that the cover element 1 can not be removed manually and that a tool is necessary. Furthermore, the cover element 1 has a surface 8, which, together with another surface 9 of the guiding rail 2, forms a gap A. With the intention to avoid any damage to the surface of the cover element 1 during disassembly of the cover element 1 with a tool, the gap A is adapted to allow for introducing a tool into the gap A, in order to be able to pry the cover element 1 away from the guiding rail 2 and to disassemble it.

If the inside width of the surfaces 6 and 6a of the cover element 1 is compared to the distance of the surfaces 7 and 7a of the guiding rail 2, the measure between the surfaces 6 and 6a of the cover element 1 is larger than the distance measured between the surfaces 7 and 7a of the guiding rail 2. It is thus guaranteed that the cover element 1 can be positively pushed onto the guiding rail 2, as well as onto the

mounting adapters 3 and 4, and latched thereon, and that the corresponding surfaces 6 and 7, as well as 6a and 7a respectively have a distance to each other. The distance of the surfaces 6 and 7, as well as 6a and 7a is to be selected as small as possible, while respecting the manufacturing tolerances. This distance is reduced when the cover element 1 is shifting in longitudinal direction of the slide channel, until the surfaces 6 and 7 or 6a and 7a are bearing against each other. On account of the surfaces 6 and 7 or 6a and 7a bearing against each other, the cover element 1 is prevented from further shifting in the longitudinal direction of the slide channel.

Therefore, it is of importance that the distance of the respective corresponding surfaces is made as small as possible, in order to keep the occurring shift at a minimum, by allowing the corresponding surfaces to move the smallest possible distance, until they bear against each other in order to prevent a further shifting distance of the cover element 1.

The cover element 1 can be manufactured from a plastic material or from an extruded profile. Furthermore, there is the possibility to manufacture the cover element 1 from a stamped and bent component.

The areas of the surfaces 6, 6a, 7, 7a, 8 and 9, indicated in this invention, are illustrated by way of example only. It should be understood that the indicated surfaces could be likewise disposed at different areas of the cover element 1, of the guiding rail 2, as well as of the mounting adapters 3, 4, in order to prevent the cover element 1 from shifting and furthermore, in order to guarantee disassembling of the cover element 1 from the guiding rail 2.

Furthermore, a plurality of corresponding surfaces can be provided both at the cover element 1 and the guiding rail 2, as well as at the mounting adapters 3, 4. Furthermore, the surfaces indicated in this exemplary embodiment, as well as their corresponding surfaces could be selected to be abutting elements of the most different type, whereby pins could be used for example as limit stops for the shifting

directions. In this case again the abutting elements are employed such that the distance between the proper abutting elements and/or the corresponding abutting elements is selected as small as possible, while respecting tolerances. These abutting elements could be likewise provided at both the cover element 1 and the guiding rail 2, as well as at the mounting adapters 3, 4.

Furthermore, it is likewise possible to simply use edges of the cover element 1, as well as of the guiding rail 2, in order to realize a lateral limitation of the shifting of the cover element 1, as well as a gap for the tool for disassembling the cover element 1 from the guiding rail.

Moreover, the present invention is applicable to cover elements for door closers, door openers, to automatic drives for doors, or the like.

List of reference numerals

1	cover element
1a	latching element
1b	latching element
1c	latching element
2	guiding rail
3	mounting adapter
4	mounting adapter
4a	locating surface
5	screw
6	surface
6a	surface
7	surface
7a	surface
8	surface
9	surface
10	oblong hole
A	gap

Claims

1. A cover element (1) for a slide channel of a door closer, as well as a of door opener, comprising a guiding rail (2) for a slider, as well as mounting adapters (3, 4), the guiding rail (2) being encased with a cover element (1), the cover element (1) being open at its frontal sides and the cover element (1) being held at the guiding rail (2), as well as at the mounting adapters (3, 4) via a latching connection, characterized in that, for limiting the shifting movement of the cover element (1), provisions are provided at the cover element (1), which cooperate with provisions of the guiding rail (2) and/or provisions of the mounting adapters (3, 4).
2. A cover element (1) for a slide channel according to claim 1, characterized in that the cover element (1) is prevented from shifting through surfaces (6, 6a) of the cover element (1), as well as through surfaces (7, 7a) of the guiding rail (2).
3. A cover element (1) for a slide channel according to claim 1, characterized in that the latching connection keeps the cover element (1) at the guiding rail (2), as well as at the mounting adapters (3, 4) such that the cover element (1) must be disassembled with a tool.
4. A cover element (1) for a slide channel according to claim 2, characterized in that at least one surface (7) of the guiding rail (2) cooperates with at least one corresponding surface (6) of the cover element (1).
5. A cover element (1) for a slide channel according to claim 2, characterized in that at least one surface (7a) of the guiding rail (2) cooperates with at least one corresponding surface (6a) of the cover element (1).

6. A cover element (1) for a slide channel according to claim 4, characterized in that the surface (6) and the corresponding surface (7) have a distance in relation to each other.
7. A cover element (1) for a slide channel according to claim 5, characterized in that the surface (6a) and the corresponding surface (7a) have a distance in relation to each other.
8. A cover element (1) for a slide channel according to claim 3, characterized in that the surfaces (8) and (9) form a gap (A), the gap (A) being formed such that the gap (A) is able to receive a tool for disassembling the cover element (1).
9. A cover element (1) for a slide channel according to claim 1, characterized in that the cross-section of the cover element (1) is U-shaped.