

Title: Rail guide for a suspended and guided sliding component

Description

The invention relates to a rail guide for a suspended and
5 guided sliding component having a drive mechanism of a
carriage, guided in the rail guide in a rolling manner, in a
side-by-side disposition the rail guide consisting of two
guiding rails that are disposed mirror-inverted with regard
to one another, each guiding rail presenting a running path
10 for at least one carrying roller and at least one guiding
roller of the drive mechanism, and two carriages, which are
spaced apart, being assigned to each sliding component.

The sliding components guided in the aforementioned rail
guide may be executed differently, for example as wood
15 panels or glass panels, in simple or double disposition. In
the extended disposition, the sliding components form a
closed wall and they can be displaced by guiding them in
the rail guide into a stacking area, normally in a side-by-
side disposition. As generally two carriages are assigned to
20 each sliding component – provided that the spaced apart
carriages of a sliding component are guided at a single
guiding rail only – one turnout is required for conveyance
into a stacking area, which diverts respectively one of the
spaced apart carriages towards the guiding rail leading into

the stacking area. However, in the case of a rail guide being formed by two adjacent guiding rails disposed side-by-side, respectively one of the spaced apart carriages is guided in one guiding rail and the other one is guided in the adjacent guiding rail, one of the two adjacent guiding rails forming the branch leading into the stacking area. The invention is based on this type of device.

The document DE 42 42 597 A1 discloses a device of this species, whereby in relation to both carriages assigned to one sliding component, both carriages are respectively guided with one carrying roller and one guiding roller in respectively one of the adjacent guiding rails. In the aforementioned known device, a branching into a stacking position is only possible by utilizing an additional expensive turnout. According to the present invention, the device of this species thus uses two guiding rails which are disposed mirror-inverted with regard to one another; however, guidance of the carriages in the adjacent guiding rails is different from the subject matter of the application in that the characteristics described in the inventive object cannot be realized with the state-of-the-art according to DE 42 42 597 A1.

The document DE 38 14 535 C2 describes a roller device for a suspended sliding wall, wherein a guiding rail, integral in cross section, is realized, being symmetrical in relation to

a vertical centre longitudinal axis of the cross section. In this case, one of the two carriages, respectively assigned to one sliding component, is positively guided by means of carrying rollers and guiding rollers in the right region of the guiding rail and the other one in the left region. The device
5 allows for branching – as intended with the present invention – without involving a turnout; however, due to the required division of the guiding rail, a special section has to be provided in the branching region. The known device is
10 particularly disadvantageous in that each carriage, in the region of the main track, being only supported either in the left region or in the right region of the guiding rail, that is to say, only half of the provided profile is used by the respective carriage.

15 From the document EP 0 679 788 B1 is known a drive mechanism for the suspension of a door wherein the tilting moment considered to be disadvantageous, with a lateral suspension of the door, should be avoided by centrically supporting the carrying rollers of a carriage in the guiding
20 rail, which laterally engage with the guiding rail, the guiding rollers sitting close to the guiding rail on the exterior side thereof. In this case, two of the above described guiding rails are provided at a trunnion, which is suspended at a sub-construction, such that, in relation to a door, two
25 spaced-apart carriages are guided in respectively one of

the adjacent guiding rails. A branching is obviously not intended, and likewise could not be realized because of the trunnion that is common to the guiding rails. Moreover, the known structure requires an extraordinary construction
5 width and increased technical expense.

It is an object of the invention to propose a rail guide on the basis of the state-of-the-art according to DE 42 42 597 C2, in which the rail itself is improved, particularly in relation to the manufacturing process, however, it has to be
10 considered that the rail profile and the corresponding embodiment of the carriage in a branching region of a stacking area, allows for abandoning a turnout without modifying the profile. Furthermore, substantially over the displacement path of the sliding component, that is to say
15 over the so-called main track, the complete profile of the rail guide should possibly be used by the carriage. Finally, a particular embodiment of the guiding rails should guarantee a smooth transition from one rail section to an adjoining rail section.

20 The invention solves of the given problem with the teaching according to claim 1.

According to the characterizing teaching of claim 1, two profiles of a guiding rail are used, which are inexpensive in manufacturing and shaping, and can be joined to form a

smooth rail guide, whereby the assignment and embodiment of the carriages allows for the support of the carriages at the entire rail guide over the main track and the branching can be realized without needing a turnout.

- 5 Further features of the invention are characterised by the dependent claims.

As mentioned above, with a mirror-inverted embodiment of the guiding rails, the guiding rollers assigned to one carriage are formed with different heights, that is to say that
10 the higher formed guiding roller is subject to positive guidance on both sides and, for example in a branch region, must thus follow the assigned guiding rail, however, the adjacent lower formed guiding roller is able to leave the assigned guiding rail. Therefore, while travelling on the
15 main track, the lower formed guiding rail has a lateral guiding function only, namely in the region of the contact at the vertical strut of the guiding rail. It should be understood that for the deviation into the branch region of a stacking area, the guiding rollers of the respective advancing and
20 following carriage have to be disposed offset correspondingly.

In order to guarantee the above described guiding function, it has proven to be advantageous that a flange, oriented against the carriage, is positioned at the free end of the

upper horizontal leg of the guiding rail, which flange practically guarantees the positive guidance on both sides of the higher formed guiding roller.

As is known *per se* from DE 38 15 535 C2, the upper
5 horizontal leg of the guiding rail, at the surface thereof oriented against a sub-construction, presents an undercut groove for the accommodation of attachment screws. According to a specification of the inventive solution, the sub-construction is formed such that it presents a web-like
10 suspended plate, whereby a hook-like projection of a bracket, for covering a ceiling cover, engages with the groove extending between the adjacent suspended plates. Thus, the groove fulfils two functions, on the one hand, it serves as an attachment for the guiding rails at the sub-
15 construction and, on the other hand, it serves as the attachment for the covering of a ceiling cover.

The invention will now be explained in more detail, reference being made to one embodiment example, in which:

20 Figure 1: shows a diagrammatical plan view on a rail guide.

Figure 2: shows a cross section through the rail guide with an assigned carriage.

Figure 3: shows in an enlarged illustration compared to Figure 2 the cross section of a guiding rail.

Figure

4 and 5: show the detailed illustrations B and A
5 according to Figure 3.

Figure 1 shows a rail guide 1 which, in the region of a main track, consists of guiding rails 6 and 6' joined to form a line of rails 28. In this case the guiding rail 6 is formed diverted by means of a branching 27 leading into a stacking area.

10 According to the cross sectional illustration of Figure 2, a sliding component 2, presenting two panels 3 in this embodiment example, is suspended at a carriage 5 via a suspension bolt 15. The separate guiding rails 6 and 6', which are disposed mirror-inverted with regard to one
15 another, each substantially consist of a vertically extending strut 11, upper legs 12 and 12' disposed facing each another, as well as lower legs 13 and 13' disposed facing each another, between which a longitudinal slot 14 is left for the passage of the suspension bolt 15. A drive
20 mechanism 4, presenting carrying rollers 8 rolling on running paths 7 of the lower horizontal legs 13 and 13' as well as guiding rollers 9 and 10, is assigned to the carriage 5. In relation to the guiding roller 10, the guiding roller 9 is executed higher and, due to the positive guidance (see

Figure 1), when entering the stacking area, will thus follow a flange 18 of the upper horizontal leg 12 oriented against the carriage 5. In this case during the branching action, the lower guiding roller 10 is able to run below the above mentioned flange 18 without even contacting it. As can be seen in Figure 2, as well as particularly in Figures 3 to 5, both in the region of the upper horizontal legs 12 and 12' and in the region of the lower horizontal legs 13 and 13', aligned apertures 16 respectively 17 are provided, into which centring elements (not illustrated) can be inserted, guaranteeing an accurate alignment of the butt joints of adjoining guiding rails 6, respectively 6'.

The guiding rails 6 and 6' are attached at a sub-construction having the reference numeral 19, a surface 20, oriented towards the sub-construction, of the upper horizontal legs 12, respectively 12', sitting close to a suspended plate 23, which is web-like formed. An undercut groove 21 is assigned to each of the horizontal legs 12 and 12' in this case, with which attachment screws 22 engage. At the same time, the undercut groove 21 serves for the attachment of a bracket 24 for covering a ceiling cover (not illustrated), which engages with a hook-like projection 25 with the undercut groove 21. The entire sub-construction 19 may be attached at a ceiling construction (not illustrated), for example by means of threaded rods 26.

References

	1	rail guide
	2	sliding component
	3	panel
5	4	drive mechanism
	5	carriage
	6	guiding rail
	6'	guiding rail
	7	running path
10	8	carrying roller
	9	guiding roller
	10	guiding roller
	11	strut
	12	leg
15	12'	leg
	13	leg
	13'	leg
	14	longitudinal slot
	15	suspension bolt
20	16	apertures
	17	apertures
	18	flange
	19	sub-construction
	20	surface
25	21	undercut groove

	22	attachment screws
	23	suspended plate
	24	bracket
	25	hook-like projection
5	26	threaded rod
	27	branching
	28	line of rails

Patent claims

1. A rail guide (1) for a suspended and guided sliding component (2) having a drive mechanism (4) of a carriage (5) being guided in the rail guide (1) in a rolling manner, in a side-by-side disposition the rail guide (1) consisting of two guiding rails (6, 6') that are disposed mirror-inverted with regard to one another, each guiding rail (6, 6') presenting a running path (7) for at least one carrying roller (8) and at least one guiding roller (9, 10) of the drive mechanism (4), and two carriages (5), which are spaced apart, being assigned to each sliding component (2), characterized in that each guiding rail (6, 6') substantially consists of a vertical strut (11) and an upper horizontal and a lower horizontal leg (12, 12', 13, 13') respectively, each being oriented against legs (12, 12', 13, 13') of the adjacent guiding rail (6, 6'), in that a longitudinal slot (14) for the passage of a suspension bolt (15) is provided between the lower legs (13, 13'), in that, at least in the region of the adjoining frontal butt joints of the guiding rails (6, 6') of a line of rails (28), aligned apertures (16, 17) are disposed at the upper and lower legs (12, 12', 13, 13') for the

5 accommodation of centring elements, and in that
the carrying roller(s) (8) of the carriage (5) are
supported in the region of the main track on the
running paths (7) of both legs (13, 13') oriented
towards each other, of the adjoining guiding rails
(6, 6'), whereas the guiding roller(s) (9, 10) of the
first of the spaced apart carriages (5) is (are)
positively guided in one guiding rail (6) and the
guiding roller(s) (9, 10) of the second carriage (5)
10 is (are) positively guided in the adjacent guiding
rail (6').

2. A rail guide according to claim 1, characterized in
that the guiding roller(s) (9, 10), assigned to the
adjacent guiding rails (6, 6') of the rail guide (1) of
a carriage (5), are executed having different
15 heights.

3. A rail guide according to claim 1 and 2,
characterized in that, at the free end of the upper
horizontal leg (12, 12') of the guiding rail (6, 6'), a
flange (18) is disposed oriented against the
20 carriage (5).

4. A rail guide according to any of the claims 1 to 3,
characterized in that the upper horizontal leg (12,
12') of the guiding rail (6, 6'), at the surface (20)

thereof oriented against a sub-construction (19), presents an undercut groove (21) for the accommodation of attachments screws (22).

5. 5 A rail guide according to claim 4, characterized in that the sub-construction (19) presents a web-like suspended plate (23) and a hook-like projection (25) of a bracket (24), for covering a ceiling cover, engages with the groove (21) extending between the adjacent suspended plates (23).