

Profile-rail system

The invention relates to a profile-rail system according to the preamble of patent claim 1.

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A large number of profile-rail systems for the abovementioned purposes are known from practise, these systems differing, in particular, by way of their installation method. In particular, it is known for
10 profile-rail systems of the abovementioned type to be designed such that they are formed by a base profile which is secured, for example, in a joint. A cover profile is fastened on this base profile by being clipped or screwed in. This cover profile has at least
15 one covering wing, which covers over the floor-covering periphery. It is thus ensured, in particular, that the floor-covering periphery and the joint formed are covered. Nevertheless, it is ensured that the floor covering can execute a horizontal movement in order to
20 isolate the floor-covering elements from destructive forces. These profile-rail systems thus allow for the principle of floating floor laying.

The object of the invention is to provide a profile-rail system of the type mentioned in the introduction which is distinguished by improved installation.

This object is achieved according to the invention by the features of patent claim 1.

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The profile-rail system according to the invention serves for bridging floor-covering transitions and terminations and/or stair or step edges. The profile-rail system is formed essentially by a cover profile
35 which is assigned, if appropriate, a base profile. The cover profile may also be connected integrally to the base profile. In particular, it is also conceivable for the cover profile not to have a covering function and not to be visible in the installed position of the

profile-rail system. The base profile is usually secured directly on the floor. Various methods are possible for this purpose. For example, the base profile could be screwed or adhesively bonded to the floor. As an alternative, the base profile could also grip beneath the floor-covering elements by way of a crosspiece, this producing a clamping grip together with the cover profile. It would be possible, if appropriate, to provide, between the base profile and the cover profile, a connecting part which allows for additional adaptation to different floor-covering thicknesses. In order that the profile-rail system can cover over the floor-covering periphery, it has at least one covering wing. This covering wing is pushed resiliently against the floor covering. This ensures that the covering wing butts flush against the floor-covering elements and, in particular, that the profile-rail system does not loosen in any way under footfall impact. Moreover, the resilient covering wing has the particular advantage that, for example, cables or the like can also be laid subsequently in the joint beneath the covering wing. All that is required for this purpose is for the covering wing to be raised counter to the force of that at least one spring and for the cable to be laid. The covering wing is then pivoted into its covering position again, with the result that the joint is concealed. It is basically immaterial here as to whether the cover profile as a whole or just the covering wing thereof is adjustable and resiliently prestressed. The desired effect occurs in both cases, so that the person skilled in the art can select the design suitable for the application case in hand. In order to facilitate inspection work in particular, the at least one spring is of bistable design. It is conceivable here, in particular, for the at least one spring to push the covering wing or the cover profile, on the one hand, into a covering position, in which the covering wing is pushed against the floor covering, and, on the other hand, into an upwardly adjusted

installation position. A dead center is provided between the two positions and has to be overcome in order for it to be possible to assume the respectively other position. This measure also facilitates the
5 installation of the profile-rail system since the covering wing and the cover profile can remain in the installation position during installation without having to be blocked separately for this purpose. Moreover, the covering wing can also arrest floating
10 floors to good effect without any further fastening measures being necessary for this purpose.

(If only the covering wing is to be adjusted, then it is advantageous if it is retained on the cover profile
15 such that it can be pivoted via a pivot bearing. In this case, the at least one spring biases the covering wing in the pivoting direction such that the free end of the covering wing is pushed against the floor covering. The pivot bearing is preferably designed such
20 that it has an extrudable form. The cover profile and the covering wing can thus be produced particularly straightforwardly and thus cost-effectively. This design of the cover profile has the particular advantage, in particular in the case of cover profiles
25 with two covering wings, that the two covering wings are pushed against the respective floor covering, by spring force, independently of one another. This compensates for different covering heights automatically and without any separate adjustment and
30 adaptation measures being required. In order for it to be possible to introduce, at a later point in time, for example a cable into the joint in which the profile-rail system is secured, all that is required, moreover, is for just one of the covering wings to be pivoted up
35 in each case, while the other covering wing remains in its covering position. Subsequent inspection work is thus particularly straightforward and easy to carry out.

As an alternative, or in addition, the cover profile may be retained such that it can be adjusted in height in relation to the base profile. This design is preferable, in particular for cover profiles with a
5 covering wing on one side, since, in this case, there is no need for any individual height adjustment of the individual covering wings.

In particular, it is conceivable for the cover profile
10 together with the at least one covering wing to be connected to the base profile prior to the latter being secured, with the result that the profile-rail system as a whole can be installed in the joint. This installation can be done without obstruction in the
15 installation position of the at least one covering wing. This does away with any complicated assembly work of the individual profiles on site.

Moreover, it is advantageous if the cover profile or
20 the covering wing can be adjusted between a covering position, in which they are pushed, with prestressing, against the floor covering, and an installation position, in which the space beneath the covering wing is released.

25 In particular in the case of the covering wing being mounted for pivoting action, it is advantageous if the at least one spring acts, on the one hand, on the at least one covering wing and, on the other hand, on the
30 cover profile. This means that the spring action is always the same, irrespective of any height adjustability of the cover profile which may be provided.

35 In the case of a preferred development of the profile-rail system, the spring engages in grooves of the covering profile or cover profile and is retained sufficiently securely therein. At least one of these grooves here is oriented at an acute angle in relation

to the floor-covering plane, with the result that the spring can engage in the groove to different depths, depending on the pivoting angle of the covering wing. This realizes a straightforward dead center for the pivoting of the covering wing. In particular, it is conceivable for the groove to be designed such that the spring engages in the groove to a deeper extent in the installation position than in the covering position. An advantageous side effect here is that the contact-pressure force of the covering wing against the floor covering is greater than against the stop in the installation position.

In addition, it is advantageous if the grooves are spaced apart from the pivot bearing. This results in a greater adjustment path for the spring when the covering wing is pivoted, which leads to a correspondingly higher level of spring stressing and thus to a high contact-pressure force of the covering wing on the floor covering.

As an alternative, in order to realize the profile-rail system as straightforwardly as possible, it is advantageous if the groove provided on the covering wing is formed in the pivot bearing for the at least one covering wing. This results in a particularly compact construction of the cover profile.

In particular in the case of the height-adjustable cover profile, it is advantageous if the at least one spring acts, on the one hand, on the cover profile and, on the other hand, on the base profile or a separate connecting part. In this way, the at least one spring can pull the cover profile very easily against the base profile in order to push the at least one covering wing against the floor covering.

The desired dead center can be realized particularly effectively by at least one guide being provided on the

base profile, on the cover profile and/or on the covering wing. At least one follower, which is resiliently prestressed in the axial direction, follows this guide, in contact therewith. The desired force
5 action can thus be set very easily with the aid of the guide. In order that the covering wing or the cover profile remains in the installation position, the follower is not subjected to any adjustment force by the guide in at least one region. This can be realized,
10 for example, by a stop or the like.

In order to achieve symmetrical force distribution, it is advantageous if at least two of the guides are directed toward one another. The follower is arranged
15 between the two guides and, in this case, is axially telescopic and follows both guides, in contact therewith.

A straightforward alternative realization to a bistable
20 spring is achieved if the at least one spring is formed by a leaf spring which is curved transversely to the bending direction. Such a leaf spring has two stable forms, between which a dead center is provided. The two stable forms of the leaf spring here are selected such
25 that the covering and installation positions are provided within the two stable positions, but on either side of the dead center.

In order for the profile-rail system to be universally
30 applicable, it is advantageous if the cover profile is retained such that it can additionally be adjusted in height and/or pivoted in relation to the base profile.

Finally, it is advantageous if at least two covering
35 wings are provided, these overlapping at least in the covering position. The two covering wings here can preferably be pivoted in relation to one another, the cover profile, on which they are secured, not having any covering function. In the covering position, the

covering wings can thus only be seen from above, with the result that the surface configuration of the cover profile may be as desired. This facilitates, in particular, the storage of the covering profile, since
5 one covering profile can be used for a wide variety of different floors.

Further advantages and features of the present invention are explained in the following detailed
10 description with reference to the associated figures, which contain a number of exemplary embodiments of the present invention. It should be understood, however, that the drawing only serves the purpose of illustrating the invention, and does not restrict the
15 scope of protection of the invention. In the drawing:

Figure 1 shows a cross-sectional illustration of a profile-rail system with a covering wing, in the covering position,
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Figure 2 shows the profile-rail system according to figure 1 in the installation position,

Figure 3 shows a profile-rail system with two covering wings, in the covering position,
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Figure 4 shows an alternative embodiment of the profile-rail system in the covering position,

30 Figure 5 shows an associated sectional illustration through the profile-rail system according to figure 4 along section line V-V,

Figure 6 shows the profile-rail system according to
35 figure 4 in the installation position,

Figure 7 shows an associated sectional illustration along section line VII-VII,

Figure 8 shows a cross-sectional illustration of a further alternative embodiment of the profile-rail system, and

5 Figure 9 shows a cross-sectional illustration of a modified embodiment of the profile-rail system according to figure 8.

A profile-rail system 1 according to figure 1 comprises
10 a base profile 2 and a cover profile 3. In the present exemplary embodiment, a connecting part 4 is also provided between the two profiles 2, 3, this connecting part ensuring that the cover profile 3 is retained securely on the base profile 2.

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The base profile 2 is of essentially L-shaped design and has a horizontal transverse leg 5 and a vertical longitudinal leg 6. The transverse leg 5 is provided with a series of bores 7 which serve for accommodating
20 screws (not illustrated). By means of these screws, the base profile 2 can easily be secured on the underlying surface. In particular, it is conceivable for the screw to be driven directly into the underlying surface or, in particular in the case of an underlying surface of
25 mineral composition, to place a plug in position as a connecting part.

As a further alternative, the base profile 2 could also be adhesively bonded to the underlying surface. For
30 this purpose, the transverse leg 5 has a series of grooves 8 which can be filled with adhesive. This results in particularly secured adhesive bonding to the underlying surface. The longitudinal leg 6 is provided, in the top region, with a corrugated surface 9, which
35 allows the cover profile 3 to be adjusted in height with latching action.

The connecting part 4, which has an inner contour 10 matching the corrugated surface 9, is plugged on the

longitudinal leg 6. The connecting part 4 can thus be adjusted in relation to the base profile 2 by a certain number of corrugations. This method of adjustment serves, in particular, for adaptation to different
5 floor-covering thicknesses. In its top region, the connecting part 4 has a cylindrical outer contour 11 which produces the connection to the cover profile 3.

The cover profile 3 has an inner contour 12 which is
10 adapted to the outer contour 11 of the connecting part 4. This inner contour 12 is formed by two partially cylindrical contours arranged one above the other. The contours 11, 12 allow the cover profile 3 to be pushed onto the connecting part 4 at two different heights in
15 order, by this means too, to achieve further adjustability in height.

A pivot bearing 13, which accommodates a covering wing 14 in a pivotable manner, is provided on the cover
20 profile 3. This covering wing 14 engages over a floor-covering end 15 and rests flush on a floor covering 16. The pivot bearing 13 is formed by an arm 17 which projects laterally beyond the cover profile 3 and has a cylindrical, inner bearing shell 18 provided at its
25 end. This cylindrical bearing shell 18 is gripped by a cylindrical inner contour 19 of the covering wing 14. Also formed in the cover profile 3 is a cylindrical inner contour 20, which is part of an outer bearing shell 21. Accordingly, the covering wing 14 is mounted
30 sufficiently securely by the two bearing shells 18, 21, with the result that there is no need for the covering wing 14 to engage in the pivot bearing 13 through more than 180° in order to achieve a secure retaining action.

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In addition, a groove 22 is formed in the inner bearing shell 18, this groove accommodating at least one leaf spring 23. In the case of long profile rails, it is conceivable for a plurality of leaf springs 23 to be

distributed over their length in order to achieve a uniform pivoting force. The leaf spring 23 is retained, at its opposite end, in a further groove 24 of the covering wing 14. The groove 22 of the bearing shell 18
5 here is arranged at an acute angle to the extent of the plane of the floor covering 16, with the result that the spring 23 can engage in the groove 22 to different depths depending on the pivoting position of the covering wing 14. This realizes a dead center which has
10 to be overcome in order for the covering wing 14 to be transferred from the covering position illustrated into the installation position according to figure 2.

Figure 2 shows the profile-rail system 1 according to
15 figure 1 in the installation position. It can be seen here that the at least one spring 23 penetrates considerably more deeply into the groove 22, as a result of which the direction of force of the spring 23 turns round. In this position, the covering wing 14 is
20 pushed upward by the force of the spring 23 until it butts against a stop formed by the arm 17. In this position, a line can be laid, for example, very straightforwardly in the free space beneath the covering wing 14. Moreover, it is conceivable for the
25 base profile 2 to be secured on the floor in this position since the screws (not illustrated) are freely accessible in this position.

Figure 3 shows an alternative embodiment of the
30 profile-rail system according to figure 1, the same reference numerals being used to designate the same parts. The essential difference from the profile-rail system 1 according to figure 1 is in the design of the cover profile 3 with two covering wings 14. For this
35 reason, the cover profile 3 thus has two pivot bearings 13 and springs 23 for the two covering wings 14.

The contours 11, 12 allow limited pivoting of the cover profile 3 in relation to the base profile 2. Moreover,

the cover profile 3 can be pushed onto the connecting part 4 at two different heights in order, by this means too, to achieve further adjustability in height.

5 Figure 4 shows an alternative embodiment of the profile-rail system according to figure 1, the same reference numerals being used, once again, to designate the same parts. In the case of this embodiment, the at least one covering wing 14 is fixed to the cover
10 profile 3. Instead of the covering wing 14 being designed in a pivotable manner, in this case the cover profile 3 as a whole is connected to the base profile 2 such that it can be adjusted in height.

15 In order to achieve the desired spring action, a mechanism which will be explained in more detail hereinbelow with reference to figure 5 is provided in the longitudinal leg 6 of the base profile 2.

20 The longitudinal leg 6 according to figure 5 has internal guides 25 of self-centering design. These guides 25 are set, more or less over the entire length, at an acute angle to the displacement direction 26 and transmit the horizontal force of a follower 27 in a
25 vertical tensile force, which pulls the cover profile 3 downward. It is only in the top end region 28 that the guide 25 is oriented parallel to the displacement direction 26, with the result that the follower 27 does not subject the cover profile 3 to any vertical force
30 in this region. Accordingly, the position of the cover profile 3 is stable in this top end region 28, while, in all other positions, the cover profile 3 has the covering legs 14 pulled toward the floor covering 16.

35 The follower 27 comprises a tube 29 in which a helical spring 23 is retained. This helical spring 23 pushes two contact heads 31 axially outward, as a result of which the follower 27 exerts an axial force against the guides 25. By virtue of the inclination of the guides

25, this axial force is converted into the desired vertical adjustment force of the covering profile 3.

Figures 6 and 7 show the profile-rail system 1 according to figures 4 and 5 in the installation position. In this case, the follower 27 is located in the region of the top end 28 of the guides 25, in which it remains in a stable position. In this position, the cover profile, which is connected to the follower 27, has been displaced upward to a pronounced extent and can also be pivoted about the follower 27 as an axis of rotation. This facilitates access to the free space beneath the covering wings 14.

Figure 8 shows a further alternative embodiment of the profile-rail system 1, the same reference numerals being used, once again, to designate the same parts. The design of this profile-rail system 1 constitutes a further modification of the profile-rail system 1 according to figure 3, and only the differences from the latter will be discussed.

The cover profile 3 in this embodiment is connected integrally to the base profile 2, this profile 3 not performing any covering function for the floor-covering joint. Rather, the covering function is performed, in full, by the two covering wings 14. For this purpose, the covering legs 14 overlap in the covering position illustrated. This overlapping is achieved by a slight beveling 32 of the mutually facing end surfaces of the two covering wings 14.

In order for it to be possible to pivot the covering wings despite the mutual overlapping in the covering position, the pivot bearing 13 of the two covering wings 14 has been shifted downward via a crosspiece 33. By virtue of this measure, the covering leg 14 can also cover over the pivot bearing 13, with the result that the cover profile 3 cannot be seen from above in the

covering position illustrated. The beveling 32 is preferably oriented tangentially to the axis of one of the two pivot bearings 13.

5 The groove 22 which accommodates the spring 23, moreover, is integrally formed on the crosspiece 33. The screw 23 here is spaced apart from the pivot bearing 13 in order thus to realize a relatively large adjustment path for the spring 23. The opposite end of
10 the spring 23 is retained in the groove 24 of the cover profile 3. This groove 24 here is directed obliquely downward in order to prestress the spring 23 correspondingly. These measures give an enhanced spring force in the covering position, with the result that
15 the covering wing 14 pushes to a correspondingly pronounced extent against the floor covering 16.

Finally, figure 9 shows an alternative embodiment of the profile-rail system 1. The construction corresponds
20 essentially to the profile-rail system 1 according to figure 8, and only the differences will be discussed hereinbelow. The profile-rail system 1 according to figure 9 comprises the base profile 2 and the cover profile 3, which is designed as a separate component.
25 The cover profile 3 is retained in the base profile 2 such that it can be adjusted in height, the two parts being latched to one another by way of the corrugated surface 9 of the longitudinal leg 6. The cover profile 3 has the pivot bearing 13, in which the covering wing
30 14 is supported in a pivotable manner. Moreover, a fixed covering wing 34 is integrally formed on the cover profile 3, this fixed covering wing overlapping the pivotable covering wing 14.

35 Since a number of exemplary embodiments of the present invention have not been shown or described, it should be understood that a large number of changes and modifications to these exemplary embodiments described are possible without departing from the essential idea

and the scope of protection of the invention defined by the claims.

List of reference numerals

1	Profile-rail system	31	Contact head
2	Base profile	32	Beveling
3	Cover profile	33	Crosspiece
4	Connecting part	34	Covering wing
5	Transverse leg		
6	Longitudinal leg		
7	Bore		
8	Groove		
9	Corrugated surface		
10	Inner contour		
11	Outer contour		
12	Inner contour		
13	Pivot bearing		
14	Covering wing		
15	Floor-covering end		
16	Floor covering		
17	Arm		
18	Bearing shell		
19	Cylindrical inner contour		
20	Cylindrical inner contour		
21	Bearing shell		
22	Groove		
23	Spring		
24	Groove		
25	Guide		
26	Displacement direction		
27	Follower		
28	Top end region		
29	Tube		

Patent Claims

1. A profile-rail system for at least one of the following purposes
 - a: for floors,
 - 5 b: for ceilings,
 - c: for walls,
 - d: as a cable duct,the profile-rail system having at least one cover profile and at least one covering wing, at least one of the parts formed by the cover profile and covering
10 wing being adjustable and being prestressed by at least one spring designed bistable and/or as a separate part.
2. A profile-rail system as claimed in claim 1 for at least one of the following purposes
 - 15 a: for bridging floor-covering transitions,
 - b: for bridging floor-covering terminations,
 - c: for bridging stair or step edges,
 - d: as a baseboard,wherein the at least one covering wing engages over a floor-covering
20 end.
3. The profile-rail system as claimed in claim 1 or 2, wherein the at least one covering wing is retained on the cover profile such that it can be pivoted via a pivot bearing.
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4. The profile-rail system as claimed in one of claims 1 to 3, wherein the cover profile is retained such that it can be displaced in height in relation to a base profile secured on the floor, and it is biased in the displacement direction by at least one spring.
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5. The profile-rail system as claimed in one of claims 1 to 4, wherein at least one of the parts formed by the cover profile and covering wing can be adjusted between a covering position, in which they are pushed, with

prestressing, against the floor covering, and an installation position, in which the space beneath the covering wing is released.

6. The profile-rail system as claimed in one of claims 1 to 5, wherein the at
5 least one spring acts on at least one covering wing and on the cover profile.

7. The profile-rail system as claimed in one of claims 1 to 6, wherein the at
least one spring is retained in grooves, of which at least one is oriented at an
acute angle in relation to the floor covering.

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8. The profile-rail system as claimed in claim 7, wherein the grooves are
spaced apart from the pivot bearing.

9. The profile-rail system as claimed in claim 7 or 8, wherein at least one of
15 the grooves is provided on the covering wing and is formed in the pivot bearing
for the at least one covering wing.

10. The profile-rail system as claimed in one of claims 1 to 9, wherein the at
least one spring acts on the cover profile and on a base profile.

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11. The profile-rail system as claimed in one of claims 1 to 10, wherein the at
least one spring acts on the cover profile and on a connecting part which
connects the cover profile to the base profile.

25 12. The profile-rail system as claimed in one of claims 1 to 11, wherein the at
least one spring is formed by a leaf spring which is curved preferably
transversely to the bending direction.

13. The profile-rail system as claimed in one of claims 1 to 12, wherein the
30 cover profile is retained such that it can additionally be adjusted in height in
relation to the base profile.

14. The profile-rail system as claimed in one of claims 1 to 13, wherein the cover profile is retained such that it can additionally be pivoted in relation to the base profile.

5 15. The profile-rail system as claimed in one of claims 1 to 14, wherein at least two of the covering wings are provided, these overlapping at least in the covering position.

10 16. The profile-rail system as claimed in one of claims 1 to 15, wherein the at least one spring is of bistable design.

17. A profile-rail system substantially as herein described with reference to the accompanying drawing.