

Description

Technical field

[0001] The present invention relates to a guide for a cloth of a screen device for shielding window or door openings, or terraces and the like. Such cloths comprise thickenings applied to the sides of the cloth - so-called zips - which move in a zip guide when the cloth is rolled up and unrolled. The zip guide thus provides the lateral guidance of the cloth.

Prior art

[0002] Such zip guides are known from DE 20 2020 103 347 U1, 30 July 2020. This zip guide comprises a mounting bracket, a guide for the zip of the screen and two side legs mounted on the mounting bracket, on either side of the guide. Each of the side legs comprises a first portion attached to the mounting bracket, disposed substantially perpendicular to the plane of the mounting bracket, and a second portion extending from the first portion at an angle to the first portion so that the second portions of the side legs are directed away from each other.

[0003] The side legs of the zip guide are made of an elastic material and can be cast onto the mounting bracket. They therefore provide a resilient effect to absorb the forces acting on the cloth (wind, shrinkage or expansion due to temperature variations, etc.). Moreover, by attaching the side legs to the mounting bracket, one single product is obtained that allows faster and simpler mounting compared to, for example, BE 1021505 B1. In the latter document, the zip guide is resiliently arranged with the aid of resilient members to be fitted separately.

[0004] A resilient zip guide is also known from DE 20 2014 006 527 U1, 4 December 2014. The zip guide comprises a mounting bracket, a guide and two positioning lips arranged on either side of the guide. The positioning lips are co-extruded from a softer plastic onto the mounting bracket, which is made from a hard plastic. The positioning lips have a zigzag shape and can have a Z-shaped cross-section, a double Z-shaped cross-section or an S-shaped (wave-shaped) cross-section. In this way a resilient effect is obtained. A problem with such positioning lips, as already stated in DE 20 2014 006 527, is that they are very flexible and during assembly there is a great chance that they will not be positioned in the right place in the side guide, resulting in greater wear. DE 20 2014 006 527 solves this problem by manufacturing the positioning lips in a different colour, making it easy to identify incorrect mounting and to correct it.

[0005] With wind-resistant blinds (e.g. "screens") it is important that the cloth between the guides is held in place under wind load. Due to varying wind pressures, the cloth has to deal with varying loads that the zip guide has to be able to absorb as well. Furthermore, this cloth must also be kept sufficiently tensioned so that it remains

taut in every position. Tolerances on the cloth confection and placement must also be possible to accommodate. Proper spring adjustment of the zip guide is important to meet the above requirements. However, it has been found that under certain circumstances there is an increased friction between the zip and the zip guide, resulting in premature wear of the zip and the zip guide, and unpleasant squeaking noises when the cloth is rolled up and down. In BE 1021505 B1 this is solved by providing a zone with a lower wear factor in the guide of the zip, via co-extrusion. However, this increases the complexity and the cost of the zip guide.

Summary

[0006] It is an aim of the present invention to overcome the above-mentioned disadvantages of the prior art. It is, among others, an aim to provide a zip guide that is resiliently mounted to absorb the forces acting on the cloth under all circumstances and that also offers one or more of the following advantages: a simple assembly, a long service life and a limited manufacturing cost.

[0007] According to the invention there is therefore provided a zip guide as set out in the appended claims. The zip guide comprises a support which is preferably flat, a guide configured to guide the zip, and a first and a second resilient member arranged on both sides of the guide. The first and the second resilient member each comprise at least three portions, which are preferably slat-shaped and arranged successively from the support onwards and are preferably arranged in a zigzag shape. Thus, the first and the second resilient member each comprise a first portion, a second portion and a third portion, and the resilient members are preferably three-membered. Any two adjacent portions are preferably hingedly attached to each other via a folding rib. For example, a first folding rib is arranged between the first and second portions and a second folding rib is arranged between the second and third portions.

[0008] The support preferably has a substantially rectangular cross-section. The support is preferably plate-shaped, with a front side and a rear side. At least one of the front side and the rear side are preferably planar and can define a plane of the support. Preferably, the guide, the first resilient member and the second resilient member are arranged at the front side. Preferably, the first and second resilient members are mirror-symmetrically arranged with respect to a median plane of the zip guide perpendicular to a plane of the support and parallel to the longitudinal direction of the zip guide.

[0009] According to a first aspect of the invention, in an idle state of the zip guide, two first adjacent portions are folded towards each other at a first angle. Two second adjacent portions, which are arranged farther from the support than at least one of the two first adjacent portions, are folded towards each other at a second angle. Therefore, the second angle is disposed farther from the support than the first angle. In absolute value the second

angle is smaller than the first angle. The first angle and the second angle are preferably located on opposite sides of the corresponding resilient member.

[0010] A first portion of the two first adjacent portions is located closer to the support than the other of the two adjacent portions. The two second adjacent portions are formed by a second portion and a third portion. The third portion is arranged farther from the support than the second portion and than the first portion. The second portion can also form the other portion of the two first adjacent portions, so that the second portion is common between the two first adjacent portions and the two second adjacent portions.

[0011] The portion adjacent to the support (e.g. the first portion) is advantageously attached to the support in a fixed orientation relative to the support (i.e. not hinged). By way of example, this portion can be cantilevered departing from the support, wherein the portion and (a plane of) the support enclose a (fixed) angle, which is preferably acute. An advantage of such an acute angle is that a direction of deformation of the portion adjacent to the support is well defined under load.

[0012] By varying the angles enclosed by the different portions, wherein the enclosed angle becomes smaller with increasing distance from the support, a variable and stepwise increasing resilience with increasing load of the screen cloth on the zip guide is advantageously achieved. By varying the angular magnitudes in such a way, as the load increases, stepwise first the outer portion of the resilient member is excited, followed by the inner parts to an increasing extent. Moreover, by clamping the portion adjacent to the support in a fixed orientation to the support, an even greater variation in the resistance to deformation is advantageously obtained. At smaller loads and deformations, only the outer portions, which can hinge around the folding ribs are excited, so that the resilience advantageously remains limited and the friction between the zip and the guide also remains small. This limits wear and increases service life. Larger loads can then be absorbed by the clamped part, so that even with these larger loads the deformation of the screen cloth remains limited, with less risk of damage. The clamped part also prevents the resilient members from deforming too much and leading to incorrect assembly, as described in DE 20 2014 006 527.

[0013] According to a second aspect of the invention, in an idle state of the zip guide, the third portion forms a third angle with a plane parallel to the support and the second portion forms a fourth angle with the plane, the third angle being smaller than the fourth angle. Preferably, the second portion forms a fourth angle with the plane parallel to the support and the first portion forms a fifth angle with the plane, the fourth angle being smaller than the fifth angle.

[0014] According to a third aspect of the invention, in an idle state of the zip guide, in an orthogonal projection onto a plane perpendicular to a plane of the support the third portion has a third length greater than a second

length of the second portion. Preferably, in an orthogonal projection onto a plane perpendicular to a surface of the support, the first portion has a first length greater than a second length of the second portion and greater than a third length of the third portion.

[0015] A zip guide according to the invention may comprise one or more of the first, second and third aspects. With each of these aspects, in particular due to the different angular magnitudes and/or different lengths, the above mentioned variable and stepwise increasing resilience with increasing load of the screen cloth on the zip guide is advantageously achieved.

[0016] It goes without saying that the resilient member can comprise more than three portions, which are arranged in a zigzag shape and wherein the angular magnitudes between the successive portions can be different.

[0017] According to the invention, there is also provided a screen device as set out in the present claims. The screen device comprises, for a single screen cloth, at least one, preferably two of the zip guides from the first aspect. It is possible to provide screen devices with several screen cloths arranged next to one another (so-called coupled screen devices), wherein for each screen cloth two zip guides are provided.

Brief description of the drawings

[0018] Aspects of the invention will be explained in the following detailed description with reference to the appended drawings. Whenever the same reference numeral is used in the drawings, this refers to the same feature.

Figure 1 represents a perspective view of a screen device according to the invention.

Figure 2 represents a cross-section along the section line A-A of the cloth of the screen device of Fig. 1.

Figure 3 represents a cross-section along the section line A-A of a side guide of the screen device of Fig. 1.

Figure 4 represents a perspective view of the zip guide according to the invention.

Figure 5 represents a cross-section of the zip guide of Fig. 4.

Figure 6 represents the cross-section of the side guide of Fig. 3, in which the resilient members of the zip guide are deformed at maximum load.

Detailed description

[0019] With reference to Fig. 1, a screen device 10 generally comprises a roller shaft 11 and a pair of side guides 13, 14 arranged at the ends of the roller shaft 11. The (screen) cloth 12 is unrolled from the roller shaft 11 according to a winding direction 120, in which the sides 121, 122 (lateral ends) of the cloth 12 move in the corresponding side guides 13, 14. The roller shaft 11 may be arranged in a roller box 15, which forms a housing that protects the cloth 12 against environmental influences when the cloth is rolled up on the roller shaft 11. A

bottom bar 16 can be provided on the underside of the cloth 12. The bottom bar 16 can comprise a rod of a heavier material (e.g. steel) to assist the downward movement of the cloth 12.

[0020] In the context of the present invention, the term cloth should be interpreted as any fabric, woven or not, that can be rolled up and serve as a shield against weather influences (e.g. sun) or environmental influences (e.g. insects). The cloth 12 is preferably a so-called "screen" for shielding against solar radiation and is preferably made of synthetic material, such as, for example, polyester. The screen device 10 can be configured to shield an opening in a building, such as a window or door opening, or as covering and/or shielding of, for example, a terrace.

[0021] The cloth 12 can be attached to the roller shaft 11 according to known techniques, such as by gluing to a cloth fastening profile which further engages in a slot in the roller shaft (not shown). Alternatively, it is possible to apply a thickening at the end of the cloth 12 and have this thickening engage in a slot in the roller shaft 11.

[0022] With reference to Fig. 2, the cloth 12 is provided on both lateral ends 121, 122 with thickenings, so-called zips 123, which are fixedly attached to the cloth. The zips 123 can be applied using known techniques, e.g. by gluing or welding.

[0023] With reference to Fig. 3, each of the side guides 13, 14 comprises a housing 131 provided for attachment to a wall or partition 9. The housing 131 is preferably made of an extruded material, such as aluminum, and can be configured to be attached to the wall 9 via screws 8. The housing 131 can include one or more mounting profiles 132, 133, which are configured to be mounted in or on top of each other to form the housing 131. The housing 131 can be configured for outside mount or inside mount.

[0024] The housing 131 of the side guides 13, 14 comprises a chamber 134 configured to accommodate a zip guide 17. The chamber 134 comprises an outer wall 135, located on the side of the cloth 12. An access slot 136 extending in the winding direction 120 of the cloth 12 is provided in the outer wall 135 and provides access to the chamber 134. The access slot 136 divides the outer wall 135 into two portions 135' and 135'' extending on either side of the access slot 136. Both portions 135' and 135'' form walls of chamber 134. The portions 135' and 135'' can have an L-shaped cross-section, in which one leg of the "L" extends along the direction of the access slot.

[0025] The zip guide 17 comprises a support 171 with a guide 172 for the zip 123 attached thereto. The zip guide 17 further comprises two resilient members 18, 18' arranged on either side of the guide 172. The resilient members 18, 18' are configured to resiliently mount the zip guide 17 relative to the housing 131.

[0026] With reference to Fig. 4 and Fig. 5, the support 171 is elongated, with a longitudinal direction 179 according to the winding direction of the cloth 12. The sup-

port 171 preferably has a substantially rectangular cross-section and is therefore substantially plate-shaped. The support 171 comprises a preferably flat front side 171a and rear side 171b. In the present example, the guide 172 and the two resilient members 18, 18' are arranged on the front side 171a of the support 171, though other embodiments are possible. The guide 172 comprises a chamber 173 extending in a longitudinal direction 179 which is configured to house the zip 123. An access slot 174 running in parallel to the longitudinal direction of the chamber 173 provides access thereto. The access slot 174 preferably has a width that is smaller than the zip 123 to prevent the zip from being pulled out of the chamber 174.

[0027] When assembling the zip guide, as shown in Fig. 3, the access slot 174 is directed towards the cloth 12. The access slot 174 is preferably provided in a wall of the chamber 173 which is in a raised position relative to the support 171. Preferably, the chamber 173 is formed by two ribs 175, 176 substantially facing each other which are arranged side by side on the support 171, thus enclosing a volume, which forms the chamber 173. The ribs 175, 176 are preferably substantially L-shaped, but a different configuration, preferably adapted to the shape of the zip 123, is also possible.

[0028] The support 171 preferably protrudes laterally on both sides of the guide 172. The pair of resilient members 18, 18' is attached to these laterally projecting parts of the support 171.

[0029] Each of the resilient members 18, 18' is illustratively three-membered, with three members foldably attached to each other: a first member 181, a second member 182 and a third member 183. Each of the three members 181, 182, 183 is preferably slat-shaped, with a substantially rectangular cross-section. It is possible to provide more than three members; for example, each of the resilient members can be four- or five-membered. A first member 181 is attached with a first side to the support 17 and is connected with a second, opposite side to a first side of the second member 182. The first member 181 and the second member 182 are secured adjacent to each other via a first folding rib 184, so that the second member 182 can pivot about the first folding rib 184 relative to the first member 181. The second member 182 is connected with a second side opposite the first side of the second member to a first side of the third member 183. The second member 182 and the third member 183 are attached adjacent to each other via a second folding rib 185, so that the third member 183 can pivot about the second folding rib 185 relative to the second member 182. The third member 183 preferably has a free end.

[0030] In an idle state (unloaded state), in which no forces are exerted on the resilient members 18, 18', the three members 181, 182 and 183 are arranged at an angle to each other, such that they are arranged in a zigzag shape. More specifically, the concave sides formed by the first member 181, the first folding rib 184 and the second member 182 on the one hand, and by

the second member 182, the second folding rib 185 and the third member 183 on the other hand, are located on opposite sides of the corresponding resilient member. The folding ribs 184, 185 are set to arrange the respective adjacent members at a predetermined angle and are additionally set to provide a certain resistance to an angle change. A resilient effect is hereby obtained. The resilient effect can be further adjusted by appropriately shaping the folding ribs 184, 185.

[0031] The two resilient members 18, 18' are preferably mirror-symmetrical with respect to a median plane of the zip guide 17 along the longitudinal direction 179 and perpendicular to the plane 170 of the support 171.

[0032] According to an aspect of the invention, the three members 181, 182, 183 are arranged at different angles in an idle state of the zip guide. A first angle α between the first member 181 and the second member 182 (i.e., the angle of the first folding rib 184) is preferably greater in absolute value than a second angle β between the second member 182 and the third member 183 (i.e., the angle of the second folding rib 185). By making the angles α and β different from each other, a stepwise resilient effect is easily obtained, with variable resilience that preferably increases with increasing deformation or compression. Since the second angle β is smaller, this angle will be excited first at a small load. Due to the smaller second angle β , the second folding rib 185 will offer a lower resistance to deformation compared to the first folding rib 184. As a result, the third member 183 will fold (pivot relative to the second folding rib 185) first. Since the first angle α is larger, it will only be excited at higher loads, and the second member 182 will therefore only fold (pivot relative to the first folding rib 184) at higher loads. Preferably, the difference between the absolute values of the first angle α and the second angle β is at least 5°, preferably at least 10°, preferably at least 15°, and preferably less than or equal to 40°, preferably less than or equal to 30°. The first angle α preferably lies in absolute value between 140° and 170°, preferably between 145° and 165°, preferably between 148° and 160°. The second angle β preferably lies in absolute value between 90° and 150°, preferably between 105° and 145°, preferably between 120° and 140°. With such large angles, greater distances can advantageously be bridged by the resilient member.

[0033] According to an alternative approach, the adjustment angle of each of the first, second and third members relative to the plane 170 of the support 171 (or any plane parallel to plane 170) is considered. The third member 183 is arranged at a third angle γ with respect to the plane 170. The second member 182 is arranged at a fourth angle δ relative to the plane 170. The first member 181 is arranged at a fifth angle ε with respect to the plane 170. In this case, preferably, the third angle γ is smaller in absolute value than the fourth angle δ . Preferably, the fourth angle δ is smaller in absolute value than the fifth angle ε . Preferably, the difference between the absolute values of the fourth angle δ and the third angle γ is at

least 5°, preferably at least 7°, preferably between 5° and 15°. Preferably, the difference between the absolute values of the fifth angle ε and the fourth angle δ is at least 5°, preferably at least 7°, preferably between 5° and 15°. Preferably, the third angle γ is between 45° and 67°, preferably between 55° and 65°. Preferably, the fourth angle δ is between 68° and 76°, preferably between 70° and 75°. Preferably, the fifth angle ε is between 77° and 87°, preferably between 78° and 85°. Thus, a stepwise resilient effect is also obtained as described above.

[0034] The arrangements with first angle α and second angle β on the one hand and with third angle γ , fourth angle δ and fifth angle ε on the other, as described above, can further be combined with each other.

[0035] An established advantage of such a stepwise resilient effect is that with smaller loads on the resilient members, the friction between the zip 123 and the guide 172 remains limited when the cloth 12 is rolled up and down, which leads to a longer service life without further costs or interventions being required.

[0036] Such stepwise resilient effect is further enhanced when the first member 181 is attached to the support 171 in a fixed orientation (non-foldable), preferably an orientation with a fifth angle ε as described above. It is hereby obtained that the first member 181 will behave like a cantilever beam, being clamped at the point of attachment with the support 171. This prevents a pivoting action of the first member 181, which will only deform by cantilevering, and is therefore only excited at extreme loads, as shown in Fig. 6. At increasing load, the second and third members 182, 183 will first fold towards each other as much as possible. Thereby, the second folding rib 185 is preferably configured to fold completely, wherein the second angle β as well as the fourth angle δ become practically 0. Only in a subsequent stage, a deformation of the first member is excited.

[0037] Referring again to Fig. 5, the first member 181, the second member 182 and the third member 183 preferably have different lengths. Measured in a direction perpendicular to the plane 170 of the support 171, it is advantageous that the length L_1 of the first member 181 is greater than the length L_2 of the second member 182 and the length L_3 of the third member 183. The lengths L_2 of the second member 182 and L_3 of the third member 183 can be equal or different. Preferably L_3 is greater than L_2 , so that $L_1 > L_3 > L_2$. By so doing it is obtained that, when the second and third members are fully folded, the first folding rib 184, in orthogonal projection on the plane 170, is located between the sides (ends) of the third member 183, such that the action of forces of the first member 181 is optimally utilized with greater resistance to deformation. This can lead to better stability of the zip guide under load and a greater variation of the resilience. Alternatively, it is possible to make L_2 at least as long as L_3 , i.e. $L_1 > L_2 \geq L_3$.

[0038] The resilient members 18, 18' are preferably arranged such that the members at the free end (the third members 183 in the present example) are directed away

from each other when viewed in a direction from the support towards the cloth. The orientation of the other members then follows logically when a zigzag shape is assumed. By way of example, the second members 182 face each other and the first members 181 are directed away from each other.

[0039] It is advantageous to manufacture the resilient members 18, 18' on the one hand and the support 171 and guide 172 on the other hand from different materials. The support and the guide are preferably made of a harder material, such as a hard plastic, e.g. polyvinyl chloride (PVC), acrylonitrile butadiene styrene (ABS), or a combination of both. The resilient members are preferably made of a softer and preferably resilient material, such as an elastomer, e.g. ethylene propylene diene monomer (EPDM) or polyurethane (PUR), preferably a PUR with shape memory, so that the spring pressure is guaranteed for longer. Preferably, the members and the folding ribs of the resilient members are manufactured from the same (synthetic) material, in which the folding ribs are obtained by providing a weakening, such as, for example, a removal of material. The zip guide is preferably made by co-extrusion of the harder material for the support and guide and the softer material for the resilient members. As a result, a simple and better clamping of the first member to the support can be obtained. In addition, the zip guide is ready for use after extrusion and no further actions are required to mount the resilient members, so that this manufacturing method is cost effective. It is of course possible to manufacture the zip guide according to other known techniques.

[0040] The zip guide preferably has a length that is substantially equal to the length of the side guide 13, 14 or even longer, when the zip guide extends e.g. into the housing 15 (Fig. 1). The resilient members 18, 18' preferably extend over the full length of the guide 172, as a result of which a uniform resilience can be ensured when rolling up and down. With reference to Fig. 3, the guide 172 and the resilient members 18, 18' are arranged on the same side of the support 171. The guide 172 is preferably sized to fit into the access slot 136. In order to mount the zip guide 17 in the side guide 13, 14, the mounting profile 133 is preferably detachable from the base profile 132, so that the chamber 134 is better accessible and the zip guide can be easily arranged in the chamber 134.

[0041] Aspects of the present invention are set out in the following alphanumerically ordered clauses.

A1. Zip guide (17) for guiding a zip (123) provided on a lateral side of a screen cloth (12), the zip guide comprising:

a support (171),
a guide (172) arranged to guide the zip (123),
a first resilient member (18) and a second resilient member (18'), arranged on either side of the guide (172),

wherein each of the first and second resilient members comprises:

at least three portions (181, 182, 183) arranged sequentially from the support (171) onwards, wherein each two adjacent portions are hingedly attached to each other via a folding rib (184, 185), characterised in that the portion (181) adjacent to the support is attached to the support (171) in a fixed orientation, and in that in an idle state, two first adjacent portions (181, 182) are folded towards each other at a first angle (α), and two second adjacent portions (182, 183) are folded towards each other at a second angle (β), wherein the second angle (β) is arranged farther from the support (171) than the first angle (α), wherein in absolute values the second angle (β) is smaller than the first angle (α).

A2. Zip guide according to clause A1, wherein the at least three portions (181, 182, 183) are substantially slat-shaped.

A3. Zip guide according to clause A1 or A2, wherein the first angle (α) and the second angle (β) are arranged on opposite sides of the respective resilient member.

A4. Zip guide according to any one of the clauses A1-A3, wherein the difference between the absolute values of the first angle (α) and the second angle (β) is at least 5°, preferably at least 10°.

A5. Zip guide according to any one of the clauses A1-A4, wherein the second angle (β) in absolute value is between 90° and 150°, preferably between 120° and 140°.

A6. Zip guide according to any one of the clauses A1-A5, wherein the first angle (α) in absolute value is between 140° and 170°, preferably between 148° and 160°.

A7. Zip guide according to any one of the clauses A1-A6, wherein a first portion (181) of the two first adjacent portions is arranged closer to the support and wherein the two second adjacent portions comprise a second portion (182) and a third portion (183), wherein the third portion (183) is arranged farther from the support than the first portion and than the second portion (182).

A8. Zip guide according to clause A7, wherein the second portion (182) further constitutes a portion of the two first adjacent portions.

A9. Zip guide according to clause A7 or A8, wherein the first portion (181) is adjacent to the support (171).

A10. Zip guide according to any one of the clauses A7 to A9, wherein the third portion (183) comprises a free end.

A11. Zip guide according to clause A10, wherein the third portions (183) of the first and second resilient

members are directed away from each other.

A12. Zip guide according to any one of the clauses A7 to A11, wherein the third portion (183) makes a third angle (γ) with a plane (170) parallel to the support and the second portion (182) makes a fourth angle (δ) with the plane (170), wherein in absolute values the third angle (γ) is smaller than the fourth angle (δ).

A13. Zip guide according to any one of the clauses A7 to A12, wherein the third portion (183) makes a third angle (γ) with a plane (170) parallel to the support (171), wherein the third angle (γ) has an absolute value between 45° and 67° , preferably between 55° and 65° .

A14. Zip guide according to any one of the clauses A7 to A13, wherein the second portion (182) forms a fourth angle (δ) with a plane (170) parallel to the support, wherein the fourth angle (δ) has an absolute value between 68° and 76° , preferably between 70° and 75° .

A15. Zip guide according to any one of the clauses A7 to A14, wherein the second portion (182) forms a fourth angle (δ) with a plane (170) parallel to the support and the first portion (181) makes a fifth angle (ϵ) with the plane (170) of the support, wherein in absolute values the fourth angle (δ) is smaller than the fifth angle (ϵ).

A16. Zip guide according to any one of the clauses A7 to A15, wherein the first portion (181) makes a fifth angle (ϵ) with a plane (170) parallel to the support, wherein the fifth angle (ϵ) has an absolute value between 77° and 87° , preferably between 78° and 85° .

A17. Zip guide according to any one of the clauses A7 to A16, wherein, measured along a direction perpendicular to a plane (170) of the support (171), the first portion (181) has a first length (L_1) greater than a second length (L_2) of the second portion (182) and greater than a third length (L_3) of the third portion (183).

A18. Zip guide according to any one of the clauses A7 to A17, wherein, measured along a direction perpendicular to a plane (170) of the support (171), the third portion (183) has a third length (L_3) smaller than a second length (L_2) of the second portion (182).

A19. Zip guide according to any one of the clauses A1-A18, wherein the first and the second resilient members are made of an extruded material.

A20. Zip guide according to any one of the clauses A1-A19, wherein the first and the second resilient members (18, 18') extend in a longitudinal direction (179) of the zip guide for a distance substantially equal to a length of the guide (172).

A21. Screen device (10), comprising a screen cloth (12) provided with a zip (123) on a lateral side (121, 122), and a zip guide (17) according to any one of the clauses A1-A20, wherein the zip guide extends according to a winding direction (120) of the screen

cloth and wherein the zip (123) is configured to move in the guide (172) of the zip guide.

A22. Zip guide according to clause A21, further comprising a roller shaft (11) on which the screen cloth (12) is rolled up, a pair of side guides (13, 14), configured to be arranged on either side of the roller shaft (11), wherein each of the pair of side guides comprises the zip guide (17), wherein each of the pair of side guides comprises a housing (132) provided with a through passage (136) for the screen cloth (12), wherein the zip guide (17) is arranged in the housing and substantially extends over the full length of the housing (132).

Claims

1. Zip guide (17) for guiding a zip (123) provided on a lateral side of a screen cloth (12), the zip guide comprising:

a support (171),
a guide (172) configured to guide the zip (123),
a first resilient member (18) and a second resilient member (18'), arranged on either side of the guide (172),

wherein each of the first and second resilient members comprises a first portion (181), a second portion (182) and a third portion (183) arranged sequentially from the support (171) onwards, wherein each two adjacent portions of the first, the second and the third portions are hingedly attached to each other via a folding rib (184, 185),

wherein the first portion (181) and the second portion (182) form two first adjacent portions and the second portion (182) and the third portion (183) form two second adjacent portions, wherein the first portion is adjacent to the support (171) and the third portion (183) is farther from the support than the first portion and than the second portion (182),

characterised in that the first portion (181) is clamped to the support (171) so as to prevent pivoting action of the first portion relative to the support, and

in that in an idle state, the first portion (181) and the second portion (181) are folded towards each other at a first angle (α), and the second portion (182) and the third portion (183) are folded towards each other at a second angle (β), wherein the second angle (β) is arranged farther from the support (171) than the first angle (α), wherein in absolute values the second angle (β) is smaller than the first angle (α).

2. Zip guide according to claim 1, wherein the at least three portions (181, 182, 183) are substantially slat-

shaped.

3. Zip guide according to any one of the preceding claims, wherein the difference between the absolute values of the first angle (α) and the second angle (β) is at least 5° , preferably at least 10° . 5
4. Zip guide according to any one of the preceding claims, wherein the second angle (β) in absolute value is between 90° and 150° , preferably between 120° and 140° . 10
5. Zip guide according to any one of the preceding claims, wherein the first angle (α) in absolute value is between 140° and 170° , preferably between 148° and 160° . 15
6. Zip guide according to any one of the preceding claims, wherein the third portion (183) comprises a free end. 20
7. Zip guide according to claim 6, wherein the third portions (183) of the first and second resilient members are directed away from each other. 25
8. Zip guide according to any one of the preceding claims, wherein the third portion (183) makes a third angle (γ) with a plane (170) parallel to the support and the second portion (182) makes a fourth angle (δ) with the plane (170), wherein in absolute values the third angle (γ) is smaller than the fourth angle (δ). 30
9. Zip guide according to any one of the preceding claims, wherein the third portion (183) makes a third angle (γ) with a plane (170) parallel to the support (171), wherein the third angle (γ) has an absolute value between 45° and 67° , preferably between 55° and 65° . 35
10. Zip guide according to any one of the preceding claims, wherein the second portion (182) forms a fourth angle (δ) with a plane (170) parallel to the support, wherein the fourth angle (δ) has an absolute value between 68° and 76° , preferably between 70° and 75° . 40
11. Zip guide according to any one of the preceding claims 7 to 14, wherein the second portion (182) forms a fourth angle (δ) with a plane (170) parallel to the support and the first portion (181) makes a fifth angle (ϵ) with the plane (170) of the support, wherein in absolute values the fourth angle (δ) is smaller than the fifth angle (ϵ). 50
12. Zip guide according to any one of the preceding claims, wherein the first portion (181) makes a fifth angle (ϵ) with a plane (170) parallel to the support, wherein the fifth angle (ϵ) has an absolute value be- 55

tween 77° and 87° , preferably between 78° and 85° .

13. Zip guide according to any one of the preceding claims, wherein, measured along a direction perpendicular to a plane (170) of the support (171), the first portion (181) has a first length (L_1) greater than a second length (L_2) of the second portion (182) and greater than a third length (L_3) of the third portion (183), preferably wherein the third length (L_3) is smaller than the second length (L_2). 5
14. Zip guide according to any one of the preceding claims, wherein the first and the second resilient members are made of an extruded material, preferably wherein the first and the second resilient members (18, 18') extend in a longitudinal direction (179) of the zip guide for a distance substantially equal to a length of the guide (172). 10
15. Screen device (10), comprising a screen cloth (12) provided with a zip (123) on a lateral side (121, 122), and a zip guide (17) according to any one of the preceding claims, wherein the zip guide extends according to a winding direction (120) of the screen cloth and wherein the zip (123) is configured to move in the guide (172) of the zip guide, preferably further comprising a roller shaft (11) on which the screen cloth (12) is rolled up, a pair of side guides (13, 14), configured to be arranged on either side of the roller shaft (11), wherein each of the pair of side guides comprises the zip guide (17), wherein each of the pair of side guides comprises a housing (132) provided with a through passage (136) for the screen cloth (12), wherein the zip guide (17) is arranged in the housing and substantially extends over the full length of the housing (132). 15

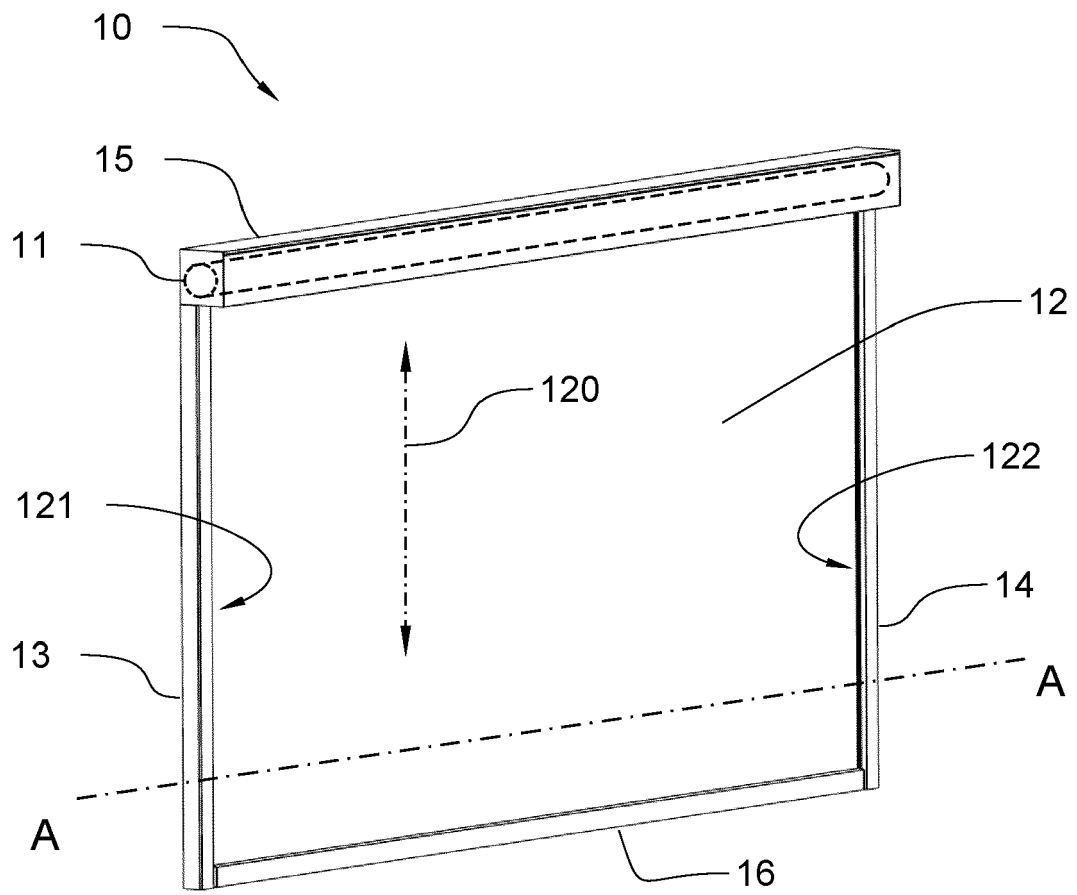


FIG 1

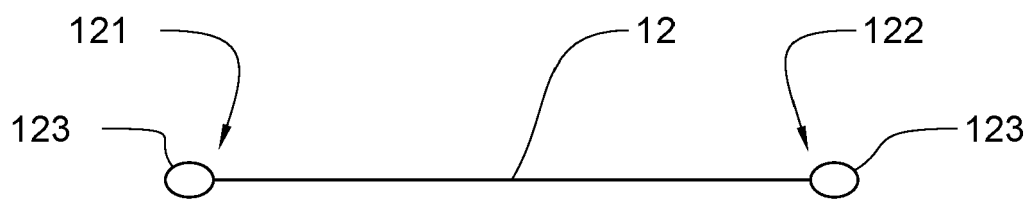


FIG 2

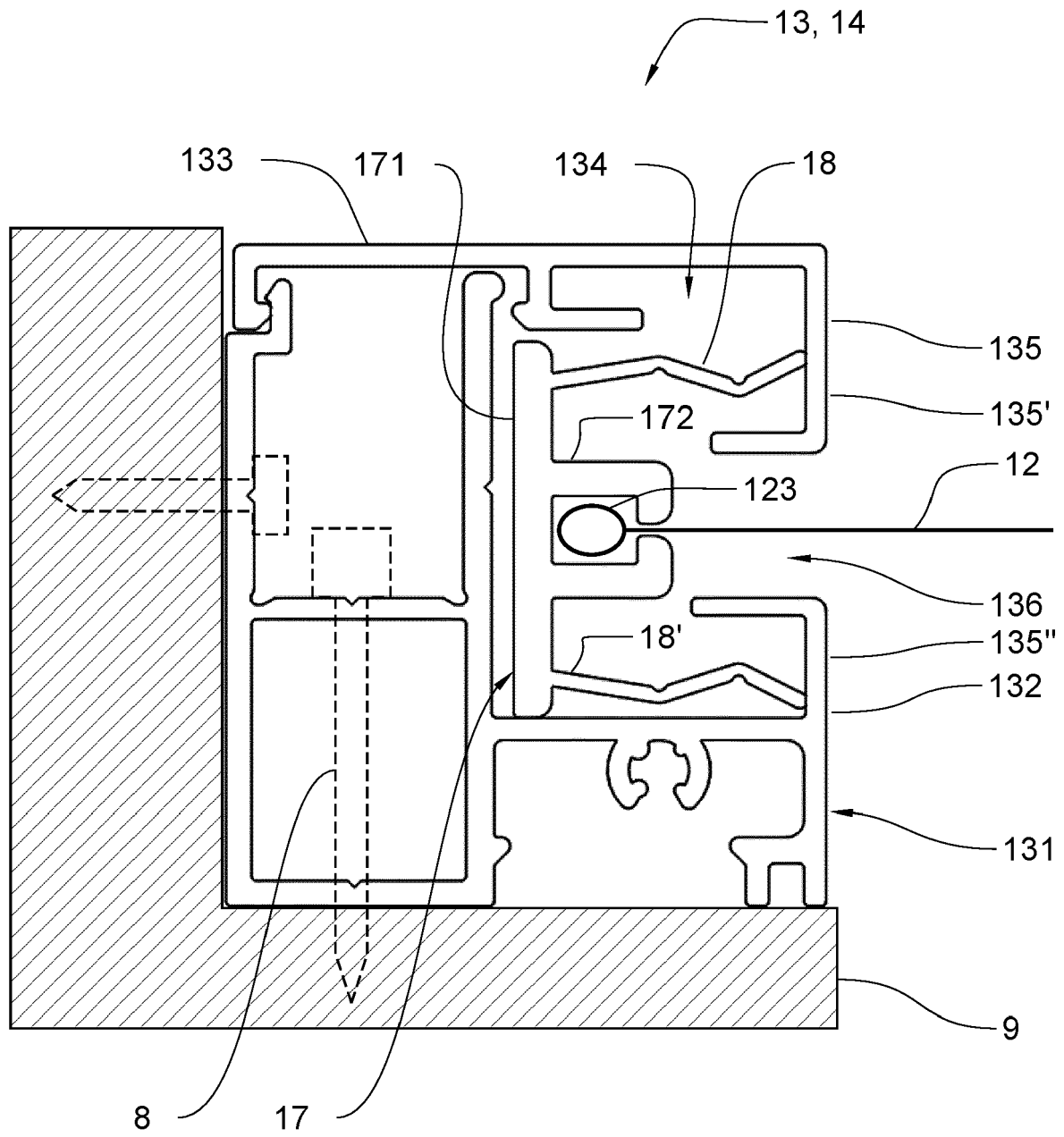


FIG 3

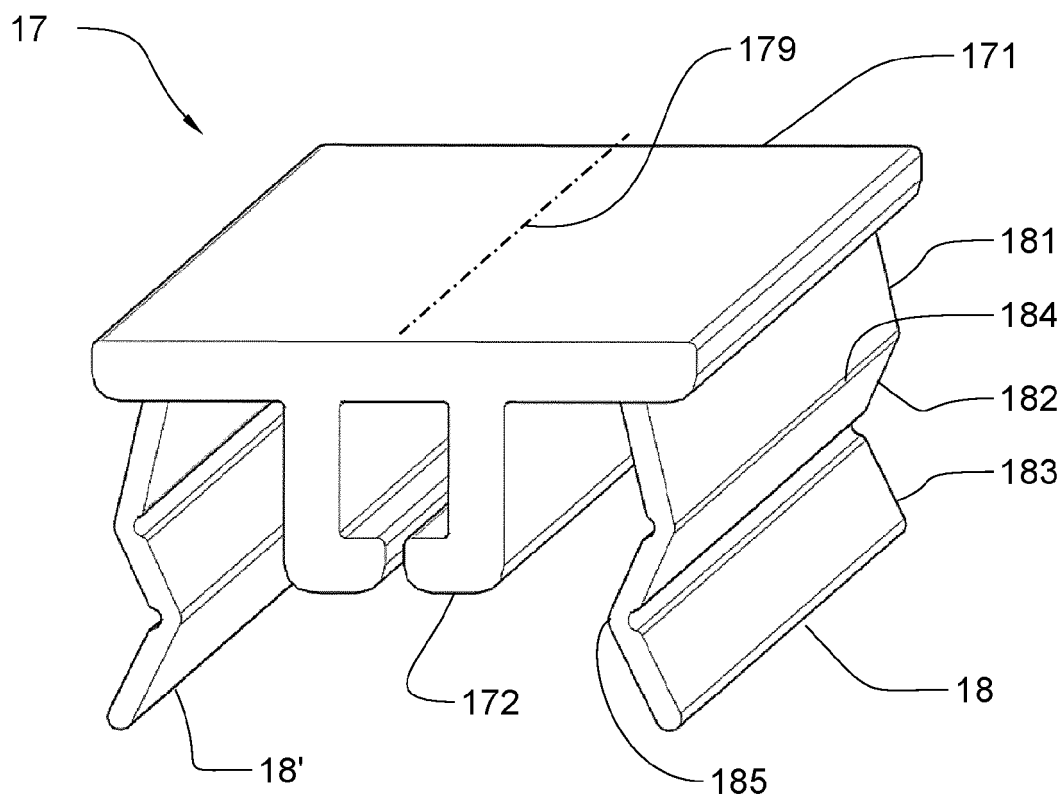


FIG 4

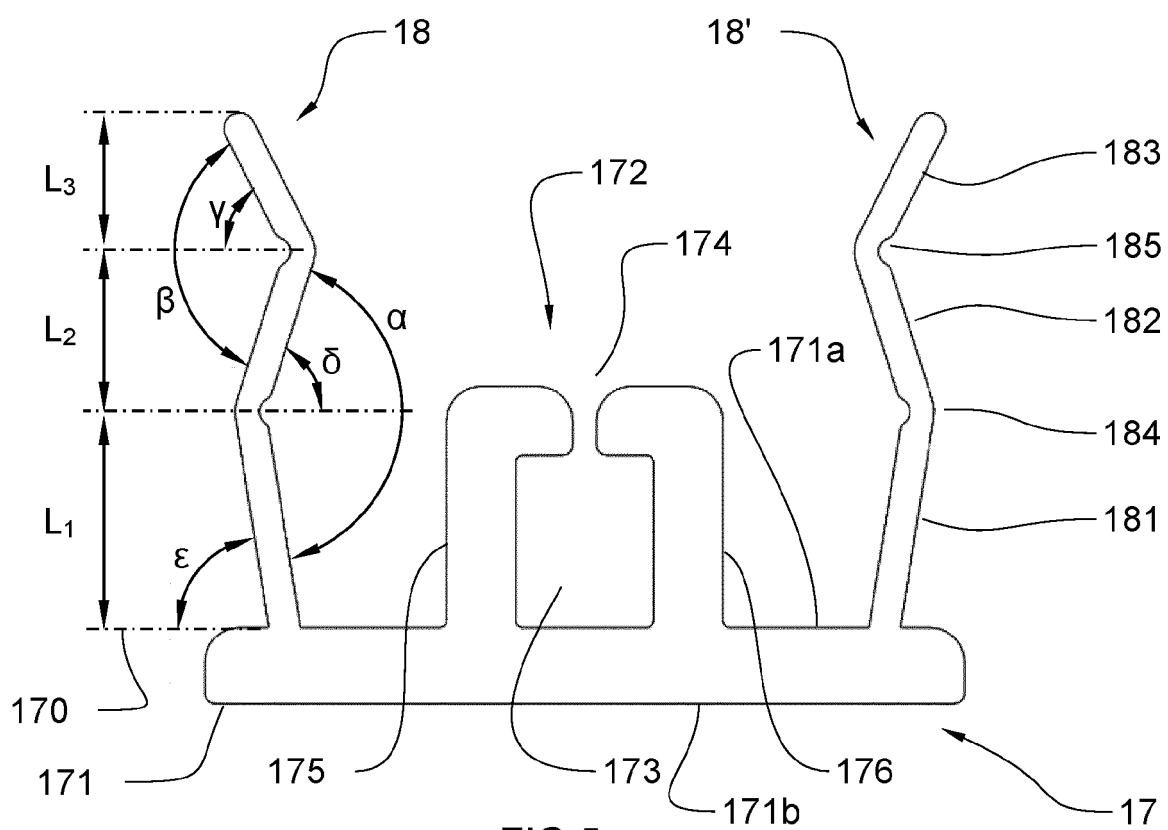


FIG 5

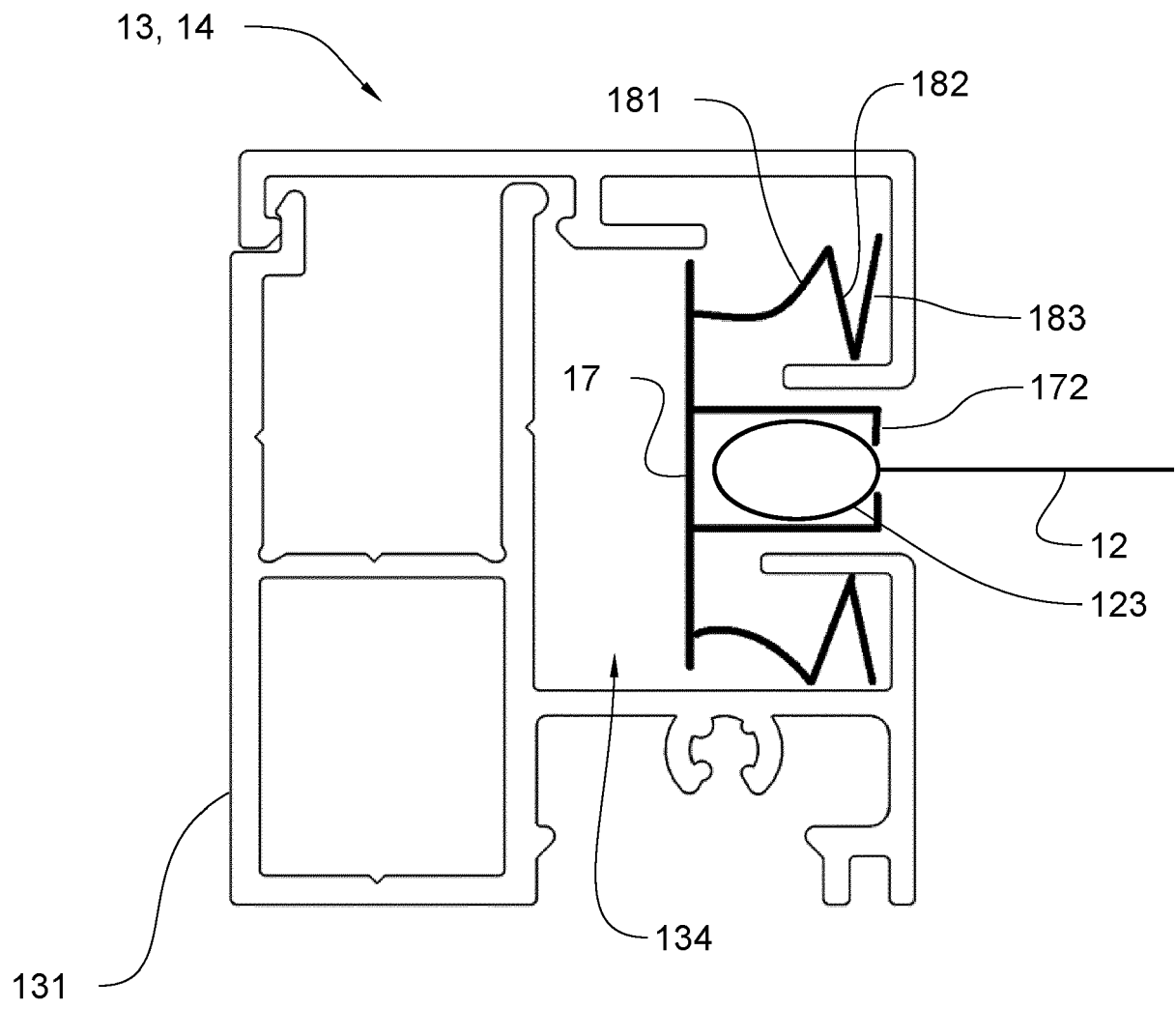


FIG 6



EUROPEAN SEARCH REPORT

Application Number

EP 23 19 2998

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			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 February 2024	Examiner Wehland, Florian
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ON EUROPEAN PATENT APPLICATION NO.

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