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(71) Applicant: **Wilms, Erik**
2400 Mol (BE)

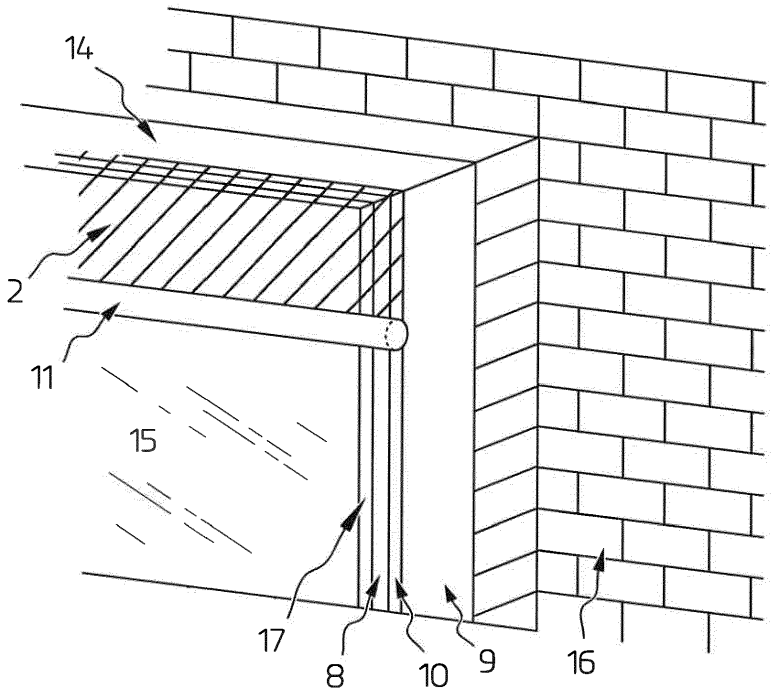
(72) Inventor: **Wilms, Erik**
2400 Mol (BE)

(74) Representative: **Philippaerts, Yannick et al**
Arnold & Siedsma
Sweelinckplein 1
2517 GK The Hague (NL)

(54) **Lateral guides**

(57) Screen device comprising a screen roller (3) and a screen (2) rollable onto and unrollable from this screen roller and attached on one of its sides to the screen roller, wherein the screen device comprises a frame with at least a protective casing (7) and two lateral guides, wherein the lateral guides each comprise a first profile (6) having a first rail for guiding the screen roller and each comprise two further profiles (8,9) which, when the two further profiles are connected to said first profile, together form a second rail (10) for guiding the lateral sides of the screen when the screen is rolled up and unrolled.

FIG 3



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Description

[0001] The invention relates to a screen device comprising a screen roller and a screen rollable onto and unrollable from this screen roller and attached on one of its sides to the screen roller, the screen device further comprising a frame with a protective casing and two or more lateral guides.

[0002] Such screen devices are known and are typically placed at windows or doors as sunblind or roll-down shutter. The protective casing of the screen device can here be either built in or surface-mounted. In the case of both build-in and surface-mounted protective casings access to the casing has to remain available to allow repairs and maintenance of the components of the screen device to be carried out. For roll-down shutters an opening is typically provided on the inner wall, via which the interior of the protective casing is accessible. Typically provided for sunblinds is an opening on the outside wall, via which the interior of the protective casing is accessible.

[0003] Two trends make the application of the above stated known openings on a build-in protective casing difficult in modem house-building. It is on the one hand a trend to conceal as many building elements as possible from view. This trend originates from so-called 'minimalist' architecture, which is characterized by large, continuous surfaces both outside and inside a dwelling. It is on the other hand a trend to make walls thicker for energy-related reasons. A thicker wall can contain more insulation, whereby heat loss through the wall can be minimized.

[0004] It is an object of the present invention to provide a screen device which can be built in and the protective casing of which is readily accessible.

[0005] The invention provides for this purpose a screen device comprising a screen roller and a screen rollable onto and unrollable from this screen roller and attached on one of its sides to the screen roller, wherein the screen device comprises a frame with at least a protective casing and two lateral guides, wherein the lateral guides each comprise a first profile having a first rail for guiding the screen roller and each comprise two further profiles which, when the two further profiles are connected to said first profile, together form a second rail for guiding the lateral sides of the screen when the screen is rolled up and unrolled.

[0006] By providing two rails each of the rails can be optimized for guiding the respective object. The second rail can thus be optimized for guiding the screen and the first rail can be optimized for guiding the screen. When two rails are provided, properties such as the width (intermediate distance between opposite rails), the depth (which corresponds to the thickness of the elements for guiding) and other properties can be selected per rail and thereby optimized.

[0007] Because the two rails are formed by separate profiles they can also be individually designed and dimensioned. The first profile is formed and designed here so as to embody the first rail and the two further profiles are formed so as to embody the second rail. The two further profiles can be connected to the first profile and so together form the second rail. The two further profiles can as a result also be released from the first profile, wherein the first rail is left clear over the full length of the profile. The second rail is formed by connecting the two further profiles to the first profile. As a result of the placing of the two further profiles the first rail will typically be filled with the two further profiles, whereby the first rail is no longer operational when the two further profiles are connected to the first profile. Connecting the two further profiles to the first profile in order to form the second rail is however typically done when the screen roller is placed in the protective casing and when the screen roller has been arranged in place via the first rail. In this phase of the assembly of the screen device the first rail has fulfilled its function, and this rail being rendered unusable by the placing of these two further profiles forms no limitation to the operation of the screen device. The second rail can then be formed such as to guide the lateral sides of the screen during rolling up and unrolling of the screen. It is advantageous here for the second rail to be formed by two further profiles. During assembly or reassembly of the screen device in a window opening or other opening a first of the two further profiles can thus be placed first, following which the screen is positioned correctly relative to the first profile, after which the second profile can be placed so as to form the second rail. If only one further profile were used to form the second rail, this further profile would have to be correctly positioned simultaneously with the lateral sides of the screen during placing or replacing of the screen device. This causes practical problems which are solved by forming the second rail from two further profiles.

[0008] Said first profile preferably comprises a back wall and two side walls so that an elongate channel is formed which comprises said first rail and which is further provided so as to at least partially receive said two further profiles.

[0009] By manufacturing a first profile with a back wall and two side walls an elongate channel is formed which has a cavity in which further profiles can be received. By receiving the further profiles in the channel formed in the first profile these further profiles are concealed from view when the first profile is built into a wall. When they are received in the first profile the further profiles also form a closure for the elongate channel formed by the first profile.

[0010] The side walls preferably have inward directed end flanges.

[0011] Providing the side walls of the first profile with inward directed end flanges simplifies the building in of the first profile. Such profiles are typically flush-mounted in the plane of a wall (frame wall) and secured via sealing agents such as adhesives. Providing the side walls with end flanges creates a zone to which the adhesive or the sealing material can adhere without the opening formed

by the first profile thereby being affected. If end flanges were not provided and the two further profiles were mounted in the first profile, these two further profiles could be fixedly attached to the first profile by the sealing agent if the sealing agent were to extend slightly beyond the edge of the first profile. This would make assembly or disassembly of the screen device more difficult. Providing a flange prevents such inconvenience.

[0012] The first rail is preferably formed integrally by the first profile.

[0013] Because the first rail is formed integrally by the first profile, the width of the rail is substantially determined by the width of the profile. The rail hereby has about the same width as the profile, and the widest possible first rail is thus obtained. Because the width of the first profile determines the overall width of the screen device, obtaining a wide first rail relative to the profile has the result that the screen device can be given a slim form. So because the first rail is formed integrally by the first profile an additional width not absolutely essential to the operation of the screen device is not provided therein. A narrow screen device can be obtained as a result.

[0014] The second rail is preferably formed as elongate chamber, the walls of which are formed on a first side by a first of the two further profiles and on a second side by a second of the two further profiles.

[0015] Because the walls are formed on a first side by a first of the two further profiles and the walls of the second side are formed by a second of the two further profiles, the chamber can be opened by moving the two profiles apart. Such an arrangement simplifies assembly and disassembly of the screen device. Particularly the assembly and correct positioning of the lateral sides of the screen in the second rail are greatly simplified in that the chamber forming the second rail can be opened by moving the two profiles apart.

[0016] The first of the two further profiles preferably extends integrally on one side of the plane of the screen.

[0017] Assembly and disassembly of the screen device is simplified because one of the two further profiles extends integrally on one side of the plane of the screen.

[0018] The first profile preferably extends into the protective casing.

[0019] Because the first profile extends into the protective casing, the first rail also continues into this protective casing. The screen roller can hereby be guided into the protective casing, where the screen roller can be placed in its operating position. The first profile can further form the side wall of the protective casing, this simplifying the technical assembly of the protective casing.

[0020] The two further profiles preferably extend at least as far as the underside of the protective casing.

[0021] Because the two further profiles extend at least as far as the underside of the protective casing, the first profile is finished and filled over the full height up to the protective casing. The two further profiles preferably extend no more than partially into the protective casing so that these two profiles can be released and removed from the first profile without the protective casing having to be fully disassembled. This makes disassembly of the screen device simple after placing thereof. Components can hereby be removed from the protective casing after placing and be replaced.

[0022] The screen roller is preferably retained by at least one guide element compatible with the first rail such that the guide element is movable along the guide, and wherein a mounting accessory is provided to secure the guide element relative to the guide in a predetermined operating position of the screen device, wherein the screen roller extends in the protective casing.

[0023] Because the screen roller is situated on a guide element which can move along the first rail of the guides, the screen roller can be moved into and out of the protective casing by moving the guide element along the guides. An opening need not therefore be provided on the front side or rear side of the protective casing since the screen roller can be removed via the same opening through which the screen can come out. This opening is typically placed such that it is concealed from view. This in contrast to openings on the outside wall or in the inner wall, which are typically always visible. Any wall thickness will further be suitable for building-in of such a screen device, since an extra opening need not be provided to an inner or outer wall. The mounting accessory allows a positioning of the screen roller in the protective casing by retaining the guide element at a predetermined position. The predetermined position is here the position in which the screen roller extends in the protective casing. This is possible in that the guide extends at least partially into the protective casing.

[0024] The lateral guide preferably extends in a longitudinal direction and the at least one guide element is provided so as to move in longitudinal direction along the guides. The screen roller can hereby be moved directly out of the protective casing via a movement in the longitudinal direction. The protective casing can as a result be manufactured with a minimal depth, since the screen roller requires no further space to move and can move directly out of the protective casing via a longitudinal movement. This in contrast to screen rollers mounted in the protective casing in other ways, wherein a transverse movement of the screen roller is often necessary to allow the screen roller to be moved out of the protective casing.

[0025] The mounting accessory preferably forms a stop for the at least one guide element such that this latter is blocked in at least one direction in a movement along the guides. Placing of a stop can be performed in technically simple manner. The stop will further prevent a movement in longitudinal direction out of the protective casing, whereby the stop is mounted at the position where the screen roller can leave the protective casing. This location is typically sufficiently accessible to allow a simple mounting of the mounting accessory.

[0026] The guides preferably extend at least partially into the protective casing in that the first profile extends at least halfway into the protective casing such that at

least half of at least one side wall of the protective casing is formed by the first profile. The guide elements can be guided via the first rail into the protective casing when the profile forming the first rail extends into the casing. The guide elements can be moved at least halfway into the protective casing when half of the side wall of the casing is formed by the first profile.

[0027] At least one side wall of the protective casing is preferably formed substantially wholly by the first profile. This simplifies the construction of the casing since the side wall comprises substantially one element. This further allows guiding of the guide elements, and so also of the screen roller, deep into the protective casing.

[0028] The said mounting accessory is preferably mountable via a movement transversely of the longitudinal direction, whereby the mounting accessory slides in a groove of the guide. A groove provided in the guide can be realized in technically simple manner. A stop can be obtained for the guide elements by sliding a plate-like guide in this groove. A mounting through sliding in a groove transversely of the longitudinal direction can be realized easily and quickly. The assembly/disassembly of the screen roller in the protective casing can hereby be performed in very simple manner and in a short time.

[0029] An auxiliary profile is preferably provided in the second rail for the purpose of guiding the lateral side of the screen, wherein the mounting accessory comprises a further stop for the auxiliary profile so that the auxiliary profile strikes against the mounting accessory when the screen is rolled up. The mounting accessory acquires a further function here in addition to that of positioning the guide element, i.e. that of defining the uppermost position of the auxiliary profile. The mounting accessory is typically situated at the bottom of the screen roller in order to prevent downward sliding of the guide elements. The mounting accessory can then simultaneously comprise a stop for the auxiliary profile so that the auxiliary profile strikes against the mounting accessory when the screen is rolled up. When the screen is rolled up the screen pulls the auxiliary profile upward with it (owing to the friction force between screen and auxiliary profile). Without a stop the auxiliary profile would be pulled all the way up to the screen roller and would block the screen device.

[0030] The mounting accessory is preferably provided for fixing of a lower cover plate of the protective casing thereagainst. The mounting accessory hereby has a further function in addition to that of retaining the guide elements and (optionally) the stop for the bottom slat. The underside of the protective casing can be closed via the cover plate such that the screen can still move through the remaining opening but the screen roller can no longer pass therethrough. The casing is hereby protected from dirt and vermin.

[0031] The mounting accessory preferably has a protrusion which extends in longitudinal direction and is provided for fixing of the cover plate thereagainst. By providing a protrusion the cover plate can be fixed in simple manner against the mounting accessory and at a distance (length of the protrusion) therefrom.

[0032] The mounting accessory is preferably placed in the protective casing. The mounting accessory can retain the guide elements in the protective casing. The further functions, such as a stop for the bottom slat and the fixing of the cover plate, can also be fulfilled by the mounting accessory when it is placed in the protective casing. The mounting accessory is further concealed from view when it is placed in the protective casing.

[0033] The mounting accessory is preferably formed symmetrically. Forming the mounting accessory symmetrically, preferably line-symmetrically, enables it to be used on two opposite sides in the protective casing. The symmetrical form allows free interchange between opposite sides.

[0034] The screen roller is preferably held on either side in guides via a guide element and two mounting accessories are provided to secure the guide elements on either side of the screen roller relative to the guides. Guide elements and rails on either side allow simple assembly and disassembly of the screen roller in the protective casing.

[0035] The invention will now be further described on the basis of an exemplary embodiment shown in the drawing.

[0036] In the drawing:

figure 1 is an exploded view of a screen device according to an exemplary embodiment of the invention;
figure 2 shows a cross-section of a protective casing and a lateral guide of the screen device according to an exemplary embodiment of the invention;
figure 3 shows a screen device built into a dwelling;
figure 4 shows a cross-section of a lateral guide according to an embodiment of the invention;
figure 5 shows a cross-section of the first profile, the guide element and the screen roller;
figure 6 shows a cross-section of the first profile connected to the two further profiles;
figure 7 shows a cross-section of the first profile at the position of the mounting accessory; and
figure 8 is a front view showing assembly and/or disassembly of the screen device.

[0037] The same or similar elements are designated in the drawing with the same reference numerals.

[0038] Figure 1 is an exploded view of a screen device according to the invention. The figure shows some (but not all) elements of the screen device. The figure shows a screen roller assembly 1 comprising a screen 2 rolled onto a screen roller shaft 3. The screen is attached here on one of its sides to shaft 3. The screen roller is typically retained by a guide element 4. Guide element 4 has an opening 5 in which shaft 3 of screen roller 1 can be rotatably mounted. Guide element 4 has a shape compatible to that of first profile 6 so that it can be held fast in this first profile. First profile 6 forms a rail in which guide

element 4 can slide in (only) the longitudinal direction of the profile. First profile 6 is preferably formed from two parts, an upper part which is attached to protective casing 7 and a lower part extending under the protective casing. This allows the protective casing to be supplied fully assembled to a construction site where the screen device is placed. If the first profile were to consist of one part, this profile would protrude at a right angle to the protective casing, which would make transport much more difficult. The two parts from which first profile 6 is formed are provided with fixing means (not shown) such that the parts can be fixed to each other so as to thereby obtain one continuous profile. The screen device further comprises two further profiles 8 and 9 which can be attached to first profile 6 and which together form a second rail 10. The two further profiles 8 and 9 extend at least as far as the underside of the protective casing and preferably extend into the protective casing. The profiles preferably extend no further than to the mounting accessory (which is further described below). Second rail 10 is provided for the purpose of guiding the lateral sides of screen 2 when the screen is rolled up or unrolled. The figure further shows a cover plate for covering the upper side of the first profile so that the protective casing is closed.

[0039] Figure 2 shows a schematic cross-sectional view of the screen device. The components of the screen device are shown spaced apart here for the sake of clarity such that different components can be made clearly visible. In practice the components will however often lie against one another. The figure shows a protective casing 7, the side wall of which is wholly formed by first profile 6. Formed in this first profile is a first rail in which guide element 4 can slide. The figure shows how guide element 4 has substantially the same width as first profile 6 and can thus move only in the longitudinal direction of the first rail. The guide element is alternatively formed for placing between protrusions in the first profile. Such a guide element is narrower than the width of the profile. The advantage hereof would be that the guide element can be placed deeper in the first profile, whereby the screen roller can also be wider and can extend partially in the first profile. The lateral ends of the screen hereby extend in the first profile so that they can here also be retained in the second rail.

[0040] The screen roller is mounted on guide element 4 with the screen roller shaft 3, to which screen 2 is attached. Guide element 4 is held in a predetermined position in protective casing 7 by mounting accessory 12. This mounting accessory 12 is attached fixedly relative to first profile 6 and forms a blocking for guide element 4 so that guide element 4 is prevented from sliding downward. Mounting accessory 12 also serves as a stop for a bottom slat 11. Bottom slat 11 is attached to screen 2 on the side opposite the side with which the screen is attached to the screen roller shaft 3. Protective casing 7 is preferably formed such that the bottom slat can be pulled up into the protective casing. The underside of the bottom slat (when in the uppermost position) preferably lies here substantially parallel to the underside of protective casing 7. Mounting accessory 12 preferably comprises a protrusion 13 extending at right angles to the mounting accessory, preferably from a central point in the mounting accessory, to a position close to an underside of the protective casing (in the assembled position). A cover plate 14 can be fixed here against protrusion 13 of mounting accessory 12. The cover plate preferably extends from a lower edge of protective casing 7 (in the figure the lower edge on the right-hand side of the casing). Cover plate 14 is preferably provided with a protrusion provided for the purpose of engaging in a groove of the casing so that the plate can be attached on the one hand to the casing via the protrusion-groove connection. On the other hand the plate can be attached here to the casing using the protrusion of the mounting accessory via fastening means such as screw or bolt. The mounting accessory further forms a stop for an auxiliary profile (not shown in figure 2) placed in the second rail in order to retain the lateral side of the screen. When the screen is rolled up this auxiliary profile is pulled along (by friction) with the screen. The mounting accessory prevents the auxiliary profile being pulled all the way up to the screen roller.

[0041] The above description makes clear that mounting accessory 12 has three main functions, i.e. positioning of the guide element and thus the screen roller, functioning as a stop for the bottom slat of the screen in the uppermost position and for the auxiliary profile, and functioning as attachment for mounting of the lower cover plate 14. The figure further shows how first profile 6 extends further under protective casing 7. First profile 6 which forms the side wall of the protective cover and first profile 6 which extends further downward can here be formed integrally (not shown) or be connected so as to form one whole. Two further profiles 8 and 9 are received in the first profile. The two further profiles 8 and 9 extend to the underside of protective casing 7. The two further profiles 8 and 9 together form the second rail 10 which is provided for the purpose of guiding screen 2 during rolling up and unrolling.

[0042] The bottom slat can alternatively be formed such that it can pass over the mounting accessory and be pulled as far as the screen roller. The mounting accessory in this case does not form a stop for the bottom slat.

[0043] Figure 3 shows a screen device which is incorporated in a dwelling as screen for a window 15. The figure shows an outside wall 16 in which a window 15 is placed. The window has a window frame 17. The screen device is placed substantially recessed, preferably wholly recessed, between window frame 17 and outside wall 16. Protective casing 7 of the screen device hereby does not have an opening to the outside via the outside wall. Nor is there an opening via the inner wall, since the screen device is mounted on the outer side of the window.

[0044] Figure 3 shows screen 2 with bottom slat 11. The figure shows how lower cover plate 14 lies at the

height of the outside wall at the position of the top side of the window. The front side of the protective casing is hereby fully concealed from view by the outer wall facing 16. The protective casing is hereby only accessible via its underside. The figure further shows how the lateral guides of the screen device, which are formed by profiles 6, 8 and 9, also lie in line with the window frame such that the front side of the lateral guides is concealed from view by the outer wall facing 16. The figure shows how the two further profiles 8 and 9 together form second rail 10 in which screen 2 is guided.

[0045] Figure 4 shows a cross-section of a specific example of a first profile 6. Profile 6 has a back wall and two upright side walls. The two upright side walls are provided with an inward directed flange 20. This flange 20 ensures that, when first profile 6 is incorporated in a wall and is for instance adhered fixedly in order to seal the opening between the wall and the first profile, the sealing adhesive which is typically used does not affect the open side of the first profile. This adhesive is typically not only applied against the outer side of the side wall (which would be ideal), but is also applied to a part of the front wall. The inward directed flanges 20 make this possible without further mounting of elements in profile 6 being made more difficult (due to adhesive entering the opening).

[0046] Figure 4 further shows how first profile 6 is formed wholly symmetrically, whereby it is usable on both sides of the protective casing as lateral guide. The figure shows the two further profiles 8 and 9. These two further profiles 8 and 9 are formed so as to be received in first profile 6. The first profile and the two further profiles comprise for this purpose complementary grooves and protrusions. A first of two further profiles 8 thus has a protrusion complementary to flange 20 so as to hook behind flange 20 when the further profile is placed in the first profile in order to prevent a movement of this further profile 8 out of first profile 6 at the position of the flange. The second of the further profiles 9 preferably comprises a protrusion compatible with a groove at the position of flange 20 of the first profile in order to thus position the further profile correctly relative to the first profile. Further profile 9 further preferably comprises a protrusion or groove compatible with a protrusion or groove on the first of the two further profiles 8 such that the second of the two further profiles can be correctly positioned relative to the first of the two further profiles. A further advantage of providing a protrusion on the second of the two further profiles 9 and a complementary groove on the first of the two further profiles is that, when the second of the two further profiles 9 is attached via fixing means to first profile 6, this also automatically secures the first of the two further profiles 8 relative to the first profile.

[0047] The second of the further profiles 9 preferably comprises fixing means complementary to fixing means on first profile 6 so that second profile 9 can be attached to first profile 6. An example is shown here in figure 4 by providing a bolt in further profile 9, which bolt is provided for the purpose of engaging on a nut provided in first profile 6. Further profile 9 can thus be attached to the first profile.

[0048] Figure 4 further shows the screen 2 provided on the lateral side of a lateral screen end 18. A zip fastening element is in practice often provided as lateral screen end. This lateral side 18 of the screen is typically slid into an auxiliary profile 19. This auxiliary profile 19 is preferably a plastic profile extending in the second rail 10 formed by the two further profiles 8 and 9. The plastic auxiliary profile 19 has a length here which is preferably greater than the length of the two further profiles 8 and 9 such that the plastic auxiliary profile 19 extends at least partially into the protective casing (the two further profiles 8 and 9 do not necessarily extend into the protective casing, but at least to a position against the underside of the protective casing). The reason for this is that the plastic auxiliary profile can guide the screen up to its uppermost point, this being the point where the underside of the bottom slat of the screen is parallel to the underside of the protective casing, wherein the lateral sides of the screen have thus been pulled up into the protective casing. The auxiliary profile is provided to strike against the mounting accessory so that it is not pulled up as far as the screen roller during rolling up of the screen.

[0049] The bolt-nut connection as shown in figure 4 could be formed such that the nut has an elongate form such that the long outer dimension is greater than the width of the channel in which the nut is placed (such that the nut cannot rotate in this channel), while the short outer dimension of the nut is smaller than the access opening to the channel (so that the nut can be placed in the channel through the access opening). Such an arrangement allows positioning and securing of a nut in an elongate channel. The bolt provided in further profile 9 preferably has a head which is flat and the upper side of which lies parallel to the outer surface of further profile 9. The bolt is hereby countersunk into further profile 9.

[0050] Figure 5 shows a cross-section of the first profile 6 at the position of the screen roller. The figure shows how a guide element 4 is placed in a first rail formed by first profile 6. This guide element is provided to enable movement along the first profile in the longitudinal direction of this profile. This guide element 4 is retained by the first rail such that it cannot move in directions other than the longitudinal direction of the profile. Guide element 4 has an opening in which shaft 3 of the screen roller is held. Although the figure shows an exemplary embodiment wherein the shaft protrudes wholly through the guide element, it will be apparent that guide elements with a blind opening, wherein the shaft is only partially inserted into the guide element, are likewise suitable for application in the invention. Screen 2 is rolled onto screen roller shaft 3. The screen can be rolled up and unrolled via the screen roller.

[0051] The opening provided in guide element 4 preferably has an oval shape such that the largest outer dimension of the oval lies in line with the longitudinal di-

rection of the first profile. Such an oval opening gives the screen roller shaft 3 the freedom to tilt relative to the guide element. When a screen roller is removed from the protective casing, and the one side of the screen roller would be displaced more in the lateral guide than the other side of the screen roller (as shown in figure 8), the screen roller comes to lie at an incline. Lying at an incline is interpreted here as lying at an angle differing from the angle formed by the screen roller relative to the guide element in its operating position. By providing an oval opening in the guide element the screen roller can come to lie at an incline in the guide element without appreciable torsional forces occurring. By being placed at an incline relative to its ideal operating position, the screen roller can in such a way be taken out from between the guides and thus removed. The oval opening hereby facilitates the disassembly of the screen roller by moving the guide element in the first rail. This is further illustrated in figure 8, where a screen roller 3 is shown between two guide elements 4 in an operating position 26. This screen roller can be pushed downward by moving the guide elements in the first rail to an assembly and/or disassembly position 27, wherein the screen roller is placed at an angle relative to its ideal operating position. The screen roller can hereby be removed from the screen device as illustrated in figure 8.

[0052] Figure 6 shows a cross-section of the first profile 6 connected to two further profiles 8, 9. Figure 6 shows how the two further profiles 8, 9 are wholly received in first profile 6. The two further profiles 8, 9 together form second rail 10 which forms an elongate chamber 21. Chamber 21 has an opening through which the screen can pass. A lateral end of the screen can be retained via this opening. Holding of the lateral end of the screen typically takes place via an auxiliary profile 19. This auxiliary profile 19 extends in chamber 21 and has dimensions which prevent it being possible to remove auxiliary profile 19 from chamber 21 via the opening for screen 2. The lateral end of screen 18 is retained in auxiliary profile 19, which is in turn retained in the second rail formed by the two further profiles 8 and 9. Auxiliary profile 19 is preferably formed here such that forces exerted on the screen (such as wind) can be absorbed by auxiliary profile 19. The auxiliary profile typically functions as spring element, wherein a bias is applied to screen 2.

[0053] The chamber 21 forming the second rail has a first side which is formed by the first of the two further profiles 8 (being the right-hand and lower side of the chamber in figure 6), and has a second side which is formed by the second of the further profiles 9 (being the left-hand side of the chamber in figure 6).

[0054] The disassembly of the lateral guides of the screen device takes place in the following steps: the second of the two further profiles 9 is first removed by releasing the fastening elements and removing profile 9 from first profile 6. The left-hand side of chamber 21 is hereby removed and auxiliary profile 19 can be removed from the second rail. Finally, the first of the two further profiles 8 can be removed in order to make the first rail wholly accessible so that guide element 4 can move along the first profile. The two further profiles are typically removed only once the screen has been fully raised. In this raised position the bottom slat extends in protective casing 7 and this bottom slat does not therefore prevent the two further profiles 8 and 9, which extend only as far as the protective casing, from being removed from first profile 6. As mentioned above however, auxiliary profile 19 does extend into the protective casing. Auxiliary profile 19 is preferably given an angular finish on its upper side so that a first part extends beyond the mounting accessory in order to here hold and guide the lateral side of the screen, while a second part strikes against the mounting accessory and so prevents further upward movement of the auxiliary profile.

[0055] During reassembly of the lateral guides of the screen device the first of the two further profiles 8 will first be placed in first profile 6. Auxiliary profile 19 is then placed. This auxiliary profile extends into the protective casing and, because the second of the two further profiles 9 has not yet been placed, can be correctly positioned there without much difficulty. Lateral side 18 of the screen will more specifically be placed in the further auxiliary profile 19, after which the auxiliary profile is correctly positioned relative to the first of the two further profiles. The second of the two further profiles 19 is subsequently placed and secured, so fixing the first of the two further profiles 8 and auxiliary profile 19.

[0056] Figure 7 shows a cross-section of the first rail at the position of mounting accessory 12. The figure shows how in cross-section the mounting accessory 12 partially overlaps with the first profile when in the mounted position. A groove 22 is provided in the first profile at the position of this overlap. Mounting accessory 12 can hereby be carried into the groove by a movement transversely of the longitudinal direction of the first rail (in the direction indicated by arrow 23). Due to the mounting accessory being carried into the groove of first profile 6 with a movement 23 the mounting accessory forms a blocking to movements in the longitudinal direction of the first rail. Guide element 4, which can move in the first rail, will thus strike against zone 24 of the mounting accessory. Mounting accessory 12 prevents a movement of guide element 4 beyond a predetermined position. Mounting accessory 12 further forms a stop for the auxiliary profile of screen 2 via zone 25. A protrusion 13 is further provided on mounting accessory 12 against which the lower cover plate of the protective casing can be mounted. The mounting accessory takes a line-symmetrical form so that it can be used as mounting accessory on both opposite lateral guides.

[0057] Figure 8 shows screen roller 3 in an operating position 26 in protective casing 7. The screen roller is mounted on either side here in guide elements 4. These guide elements 4 are held in place by mounting accessories (not shown in figure 8) which prevent guide elements 4 sliding downward. Removing these mounting

accessories 12 (during disassembly of the screen device) and removing the two further profiles from the first profile enables guide elements 4 to move downward along the first rail so that the screen roller is removable from the screen device (as shown in position 27 of figure 8).

[0058] Referring to figure 2, the steps for disassembly and reassembly of the elements of the screen device are described below. In order to disassemble the screen device the lateral guides are disassembled as according to the above described steps. The lower cover plate 14 is also removed from protective casing 7. Mounting accessory 12 can then be removed, whereby guide element 4 can run along the first profile 6 (the first rail being left clear by the removal of the further profiles and by removal of the mounting accessory) in order to remove the screen roller (and optionally also other elements of the screen device) from protective casing 7.

[0059] In order to reassemble the screen device the screen roller is slid via guide elements 4 into its operating position 26, after which mounting accessory 12 is placed in the groove of the first profile. Mounting accessory 12 hereby prevents guide elements 4 sliding back downward. The two further profiles 8, 9 (see above for the steps for mounting the lateral guides) and the lower cover plate 14 can then be remounted. Such a method for assembly and disassembly of the screen device has the advantage that the overall depth of the screen device does not have to be much greater than the thickness of the screen roller. This is because the screen roller can be removed from the screen device only via movements in the longitudinal direction of the lateral screen guides.

[0060] The above described exemplary embodiments serve solely for the purpose of illustrating the invention and are not intended to limit the scope of protection.

Claims

1. Screen device comprising a screen roller and a screen rollable onto and unrollable from this screen roller and attached on one of its sides to the screen roller, wherein the screen device comprises a frame with at least a protective casing and two lateral guides, wherein the lateral guides each comprise a first profile having a first rail for guiding the screen roller and each comprise two further profiles which, when the two further profiles are connected to said first profile, together form a second rail for guiding the lateral sides of the screen when the screen is rolled up and unrolled.

2. Screen device as claimed in claim 1, wherein said first profile comprises a back wall and two side walls so that an elongate channel is formed which comprises said first rail and which is further provided so as to at least partially receive said two further profiles.

3. Screen device as claimed in claim 2, wherein the side walls have inward directed end flanges.

4. Screen device as claimed in claim 1 or 2, wherein the first rail is formed integrally by the first profile.

5. Screen device as claimed in any of the foregoing claims, wherein the second rail is formed as elongate chamber, the walls of which are formed on a first side by a first of the two further profiles and on a second side by a second of the two further profiles.

6. Screen device as claimed in claim 4, wherein the first of the two further profiles extends integrally on one side of the plane of the screen.

7. Screen device as claimed in any of the foregoing claims, wherein the first profile extends into the protective casing.

8. Screen device as claimed in any of the foregoing claims, wherein the two further profiles extend at least as far as the underside of the protective casing.

9. Screen device as claimed in any of the foregoing claims, wherein the screen roller is retained by at least one guide element compatible with the first rail such that the guide element is movable along the guide, and wherein a mounting accessory is provided to secure the guide element relative to the guide in a predetermined operating position of the screen device, wherein the screen roller extends in the protective casing.

10. Screen device as claimed in claim 9, wherein the guides extend in a longitudinal direction and wherein the at least one guide element is provided so as to move in longitudinal direction along the guides.

11. Screen device as claimed in claim 10, wherein the mounting accessory forms a stop for the at least one guide element such that this latter is blocked in at least one direction in a movement along the guides.

12. Screen device as claimed in any of the foregoing claims, wherein the first profile extends at least halfway into the protective casing such that at least half of at least one side wall of the protective casing is formed by the first profile.

13. Screen device as claimed in any of the foregoing claims and claim 9, wherein said mounting accessory is mountable via a movement transversely of the longitudinal direction, whereby the mounting accessory slides in a groove of the guide.

14. Screen device as claimed in any of the foregoing claims and claim 9, wherein an auxiliary profile is provided in the second rail for the purpose of guiding

the lateral side of the screen, wherein the mounting accessory comprises a further stop for the auxiliary profile so that the auxiliary profile strikes against the mounting accessory when the screen is rolled up.

15. Screen device as claimed in any of the foregoing claims, wherein the screen roller is held on either side in guides via a guide element and wherein two mounting accessories are provided to secure the guide elements on either side of the screen roller relative to the guides.

FIG 1

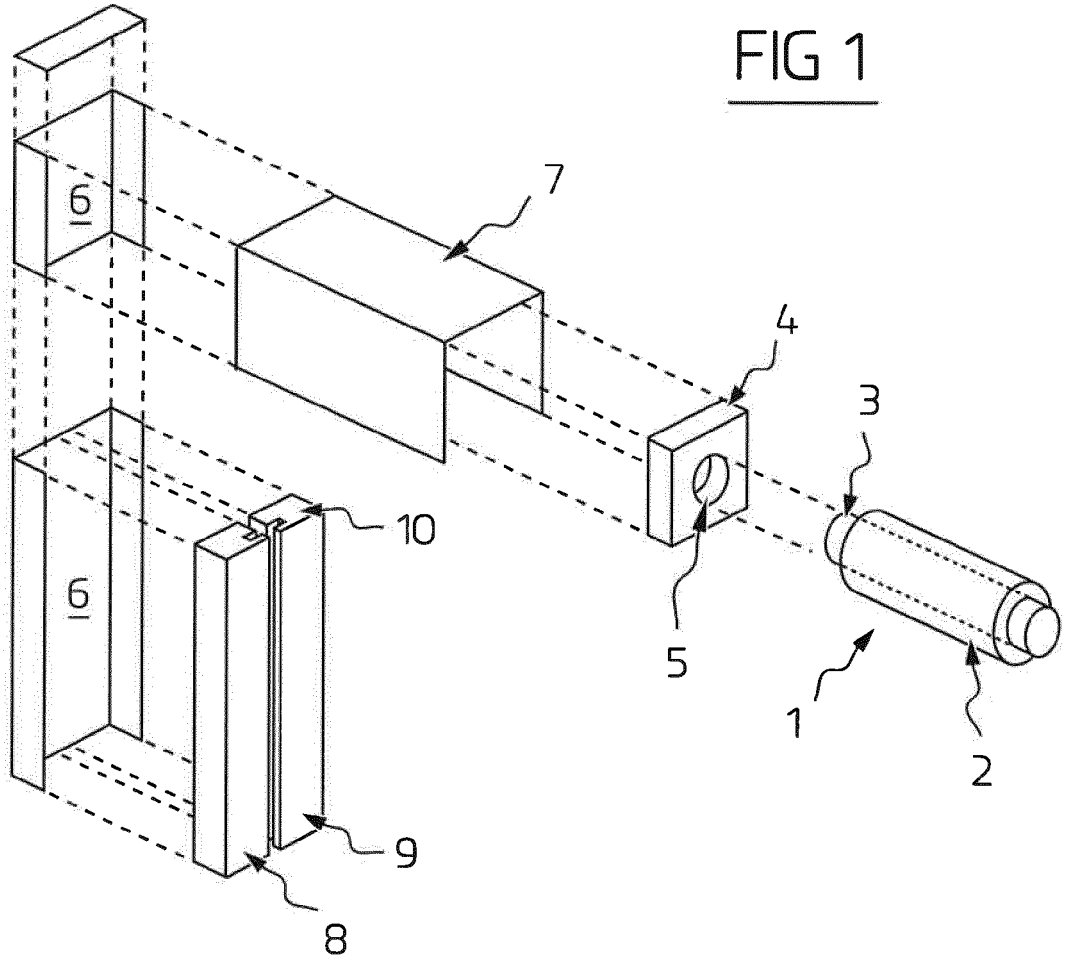


FIG 2

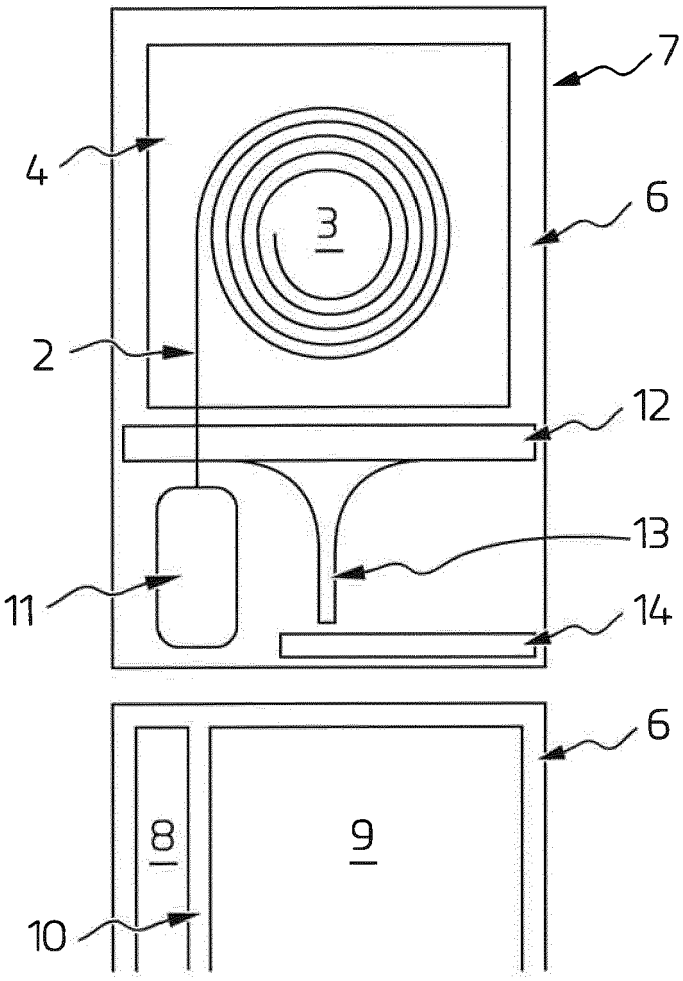


FIG 3

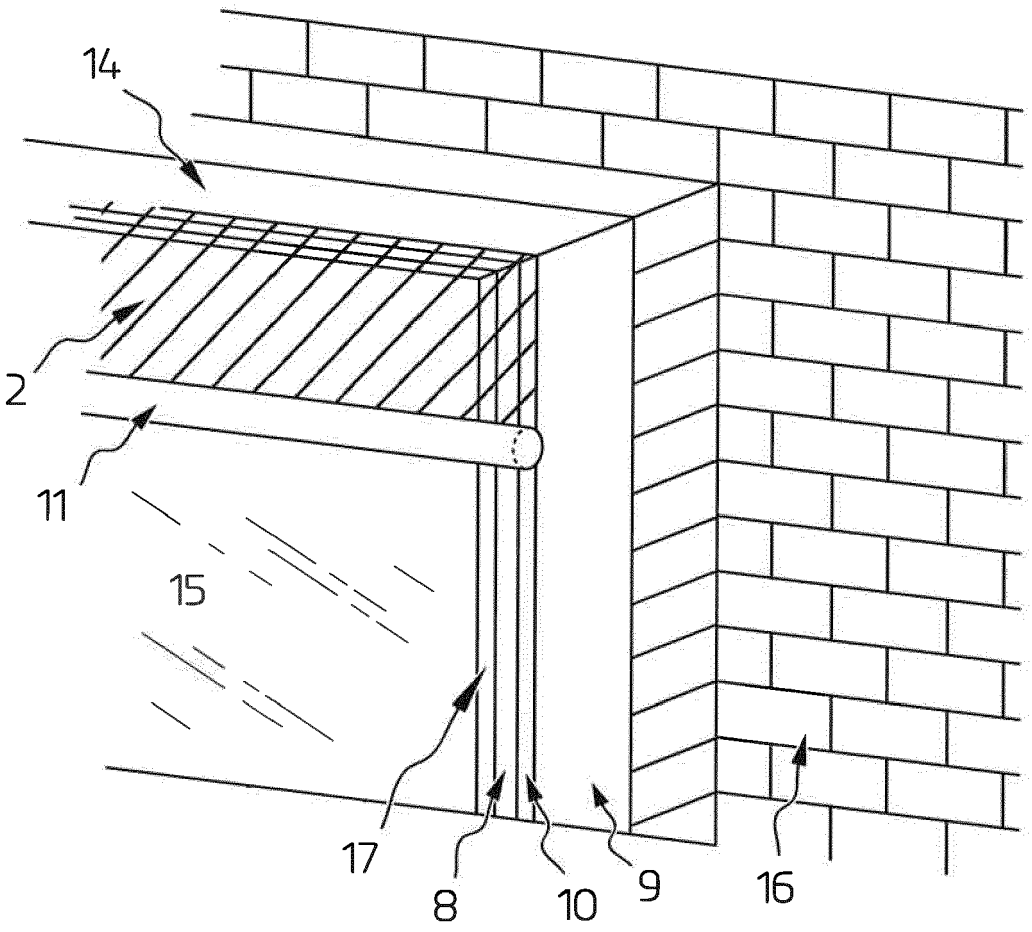


FIG 4

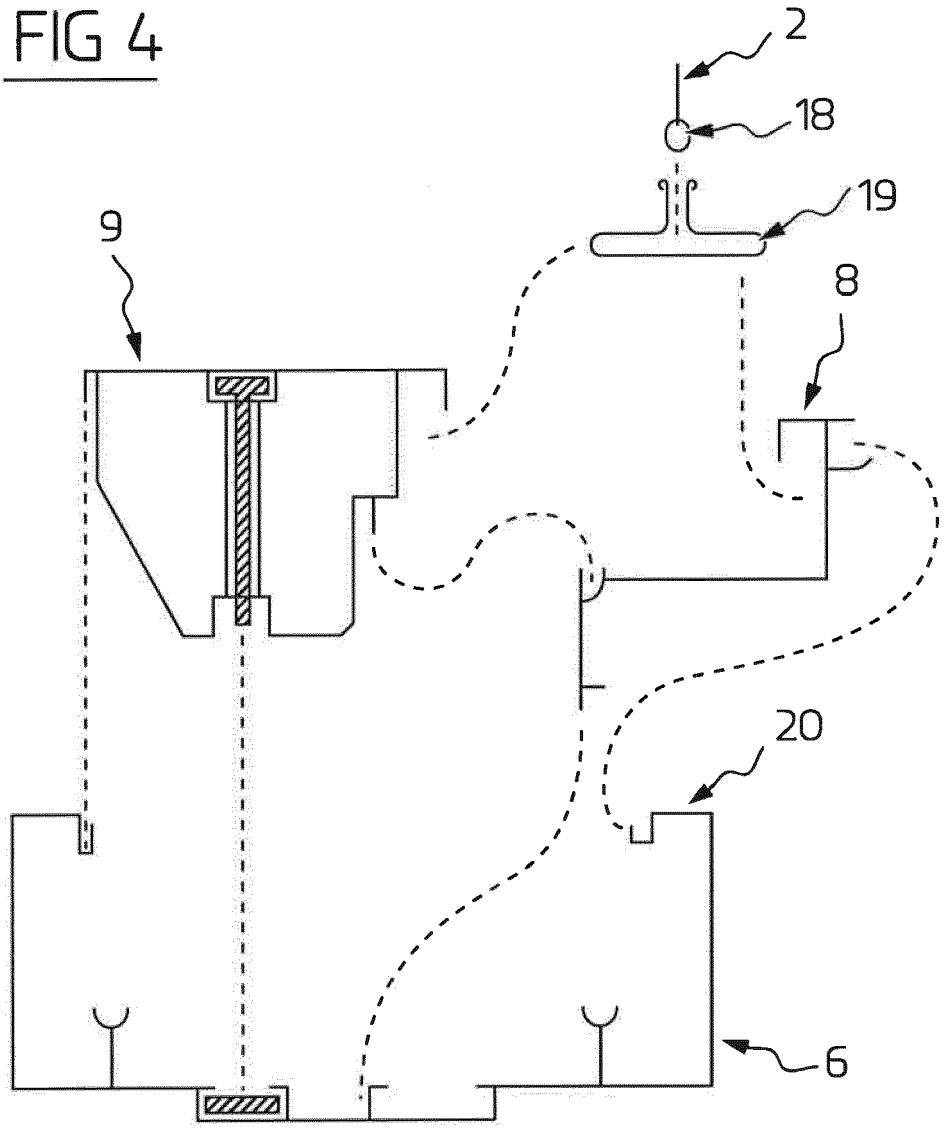


FIG 5

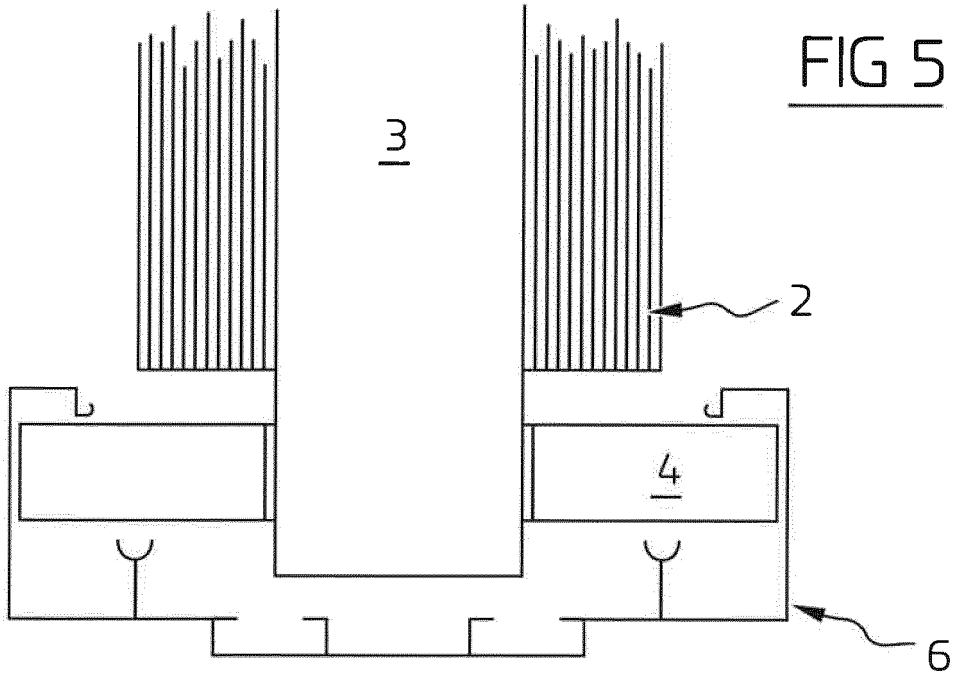


FIG 6

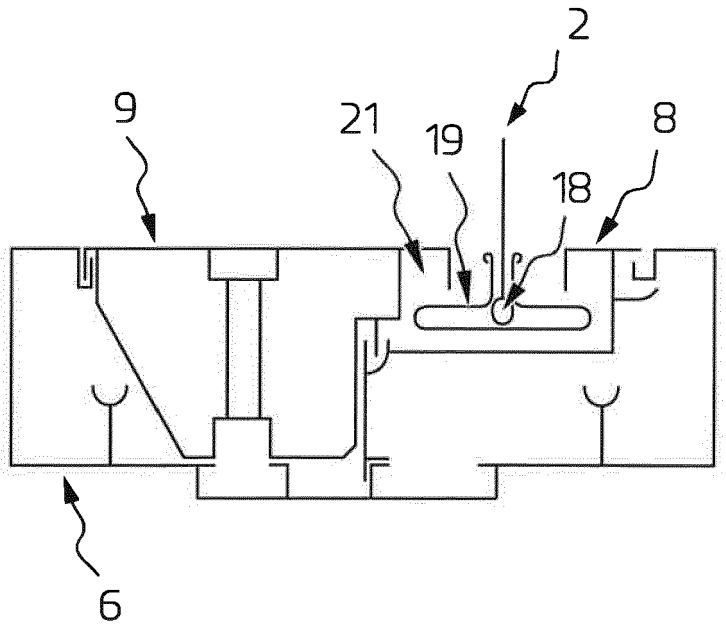


FIG 7

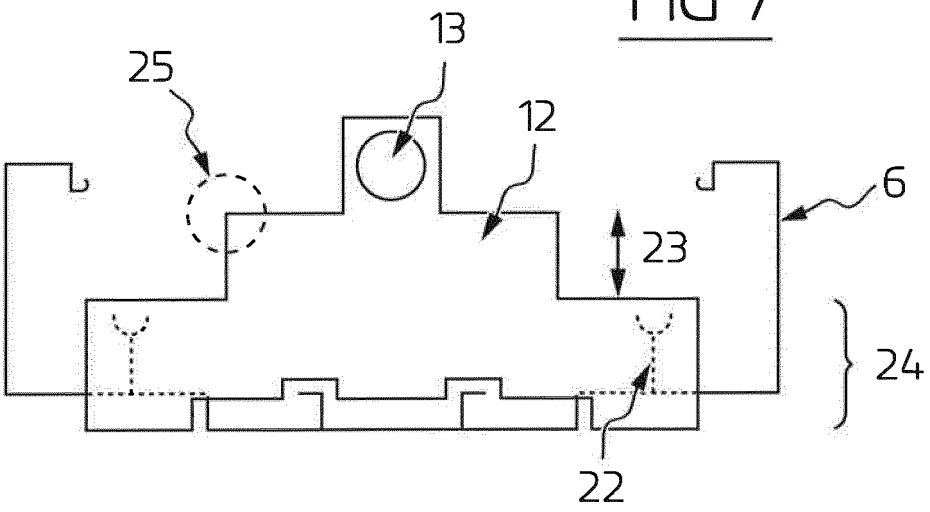
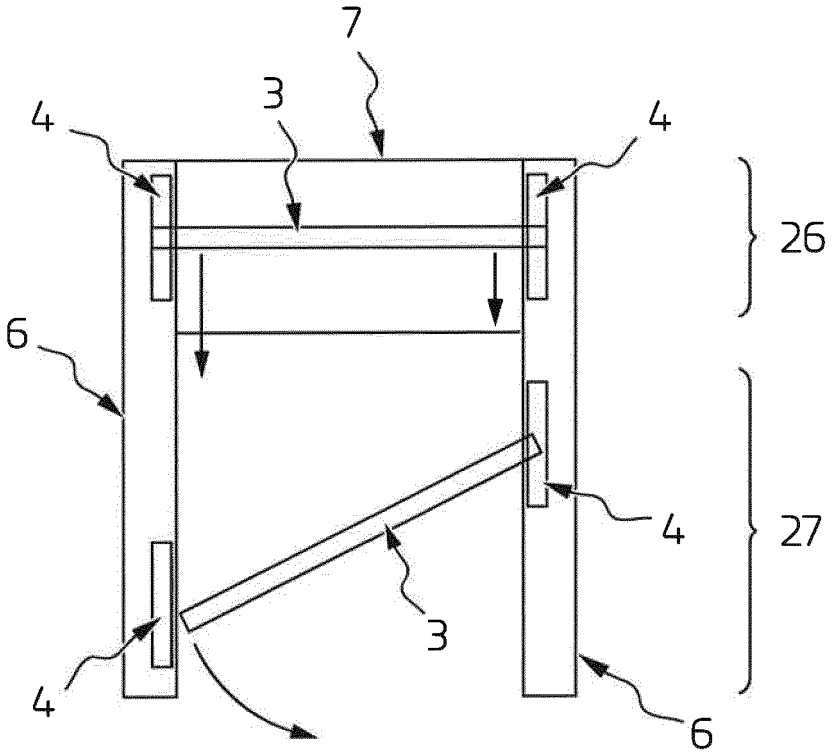


FIG 8



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EUROPEAN SEARCH REPORT

Application Number
EP 13 18 9086

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 84 35 301 U1 (BESLER, ARMIN) 21 March 1985 (1985-03-21) * page 10, paragraph 2 - page 11, paragraph 1; figure 1 * -----	1	INV. E06B9/17 E06B9/174 E06B9/50 E06B9/58
			TECHNICAL FIELDS SEARCHED (IPC) E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	3 March 2014	Peschel, Gerhard

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03-03-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 8435301 U1	21-03-1985	NONE	

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