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(72) Inventors:
• **Ghijs, Ludo**
9700 Oudenaarde (BE)
• **Jennis, Dirk**
8800 Roeselare (BE)

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(74) Representative: **Hostens, Veerle et al**
KOB NV
Patents
President Kennedypark 31 C
8500 Kortrijk (BE)

(71) Applicant: **Argent Alu nv**
9770 Kruishoutem (BE)

(54) **Coupling element, method for suspending a sliding door leaf from a roller body and method for releasing a sliding door leaf from a roller body**

(57) The present invention relates to a coupling element (1) for suspending a sliding door leaf (2) from a roller body (3), comprising a fastening body (6) having a fitting cavity (7) with insertion opening (8) and shoulder (9), a retaining element (10) which is hingeable about a hinge pin (11) next to the shoulder (9) remote from the insertion opening (8) in order to open or close the insertion opening (8), and a releasing element (12) between

the shoulder (9) and the hinge pin (11) above the retaining element (10) which is adjustable to a position for the retaining element (10) to be hingeable and to a position for retaining the retaining element (10) in order to open the insertion opening (8).

The present invention also relates to methods for suspending and releasing a sliding door leaf (2) having such a coupling element (1).

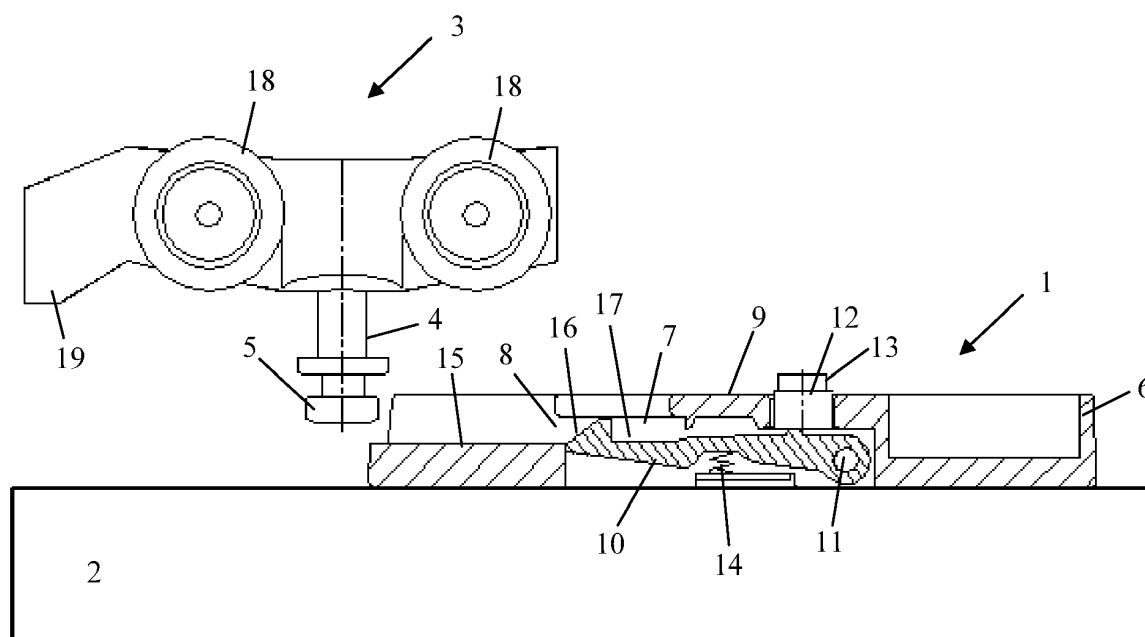


Fig. 1

Description

[0001] The present invention relates to a coupling element for suspending a sliding door leaf from a roller body of a sliding door assembly, wherein said roller body for this purpose comprises a downwardly hanging shaft having a widened section at the bottom, comprising

- a fastening body for fastening the coupling element to the sliding door leaf, having a fitting cavity for fitting the shaft with its widened section into the fastening body, comprising an insertion opening through which the widened section is fittable in the fitting cavity and a shoulder which extends next to the insertion opening, underneath which shoulder the widened section is at least partially fittable via the insertion opening, in order for said widened section to engage underneath said shoulder;
- a retaining element which is arranged at the bottom of the fitting cavity in such a way that it is hingeable about a substantially horizontal hinge pin between an upper position in which it prevents the moving of the widened section in and out of the insertion opening and a lower position in which it leaves the insertion opening open for the insertion of the widened section;
- and a releasing element which is displaceable between a first position in which the retaining element is hingeable about its hinge pin and a second position for retaining the retaining element in its lower position.

[0002] The present invention also relates to an assembly of such a coupling element and a roller body of a sliding door assembly, wherein said roller body comprises a downwardly hanging shaft having a widened section at the bottom.

[0003] The invention furthermore relates to a sliding door assembly, comprising a sliding door leaf, a supporting profile, two roller bodies which are rollably fittable in the supporting profile and each comprise a downwardly hanging shaft having a widened section at the bottom, and two coupling elements according to the present invention which are attached to the top of the sliding door leaf for suspending the sliding door leaf from the roller bodies.

[0004] In addition, the present invention also relates to a method for suspending a sliding door leaf from a roller body of a sliding door assembly, wherein the roller body for this purpose comprises a downwardly hanging shaft having a widened section at the bottom, and wherein a coupling element is for this purpose attached to the sliding door leaf.

[0005] Finally, the present invention comprises a further method for releasing a sliding door leaf from a roller body of a sliding door assembly, wherein a downwardly hanging shaft of the roller body having a widened section at the bottom is fitted in a fitting cavity of a coupling ele-

ment which is attached to the sliding door leaf.

[0006] A considerable number of coupling elements have already been developed for the purpose of attaching a sliding door leaf to a roller body of a sliding door assembly.

[0007] A sliding door assembly to which the invention relates comprises a supporting profile in which typically two or more roller bodies are rollably fittable. For this purpose, the roller bodies comprise one or more running wheels. Each roller body typically comprises a downwardly hanging shaft with a widened section at the bottom. A coupling element to which the invention relates is configured to be able to be hooked onto each downwardly hanging shaft having a widened section at the bottom. The coupling elements corresponding to the roller bodies are attached to a sliding door leaf. When the sliding door leaf is hooked onto the corresponding shafts of the roller bodies having widened sections by means of said coupling elements, and when the roller bodies are rollably fitted in the supporting profile, said sliding door leaf is therefore rollably suspended from said supporting profile. Said sliding door leaf is in that case typically configured to be able to open and close an opening in a wall.

[0008] Most of the existing coupling elements comprise a fastening body which is attached to the sliding door leaf. Said fastening body typically comprises a fitting cavity having an insertion opening through which the widened section is slideable into the fitting cavity and having a shoulder underneath which the widened section can engage. In this case the insertion opening is usually configured such that the sliding door leaf is displaced in a sideways movement - viewed with respect to the supporting profile - towards the roller bodies which are arranged in the supporting profile. The fastening bodies are hooked onto the roller bodies by inserting the respective widened sections through the respective insertion openings in the respective fitting cavities. The sliding door leaf must then be held securely in place and at the same time a nut has to be screwed onto the respective shafts up to the respective shoulder, so that the sliding door leaf is securely suspended from the roller bodies.

[0009] Attaching a sliding door leaf to roller bodies in this manner is relatively laborious and requires several people.

[0010] A variant of such a coupling element is described, for example, in EP 1 092 073 A2.

[0011] In a further variant, as described in US 3,829,929, instead of providing a nut on the shaft, it is possible to provide a hook on the fastening body in order to hook the shaft in place after the widened section has been fitted in the fitting cavity. By unhooking the shaft, it is then possible to remove the widened section from the fitting cavity again in order to unhook the sliding door leaf from the roller bodies. In this case, too, several people are required to suspend a sliding door leaf.

[0012] In these variants in which a sliding door leaf hooks sideways - as viewed with respect to the supporting profile - onto the roller bodies, a lateral force is also

exerted on the supporting profile when the coupling elements are hooked onto the roller bodies (hooking the widened section into the fitting cavity), which lateral force often causes the supporting profile to deform, with it being less readily possible to push the sliding door leaf into said supporting profile following deformation.

[0013] There are also a number of coupling elements by means of which a sliding door leaf can be attached to the roller bodies in a far simpler manner.

[0014] Examples of these are described in EP 1 600 589 B1 or in BE 1 017 960 A6. These coupling elements comprise a retaining element which is displaceable between a first position in which it prevents the widened section from moving into and out of the insertion opening and a second position in which it leaves the insertion opening open for the insertion of the widened section. A spring force is exerted on said retaining element which pushes the retaining element towards its first position. When fitting the widened section in the fitting cavity, said widened section can move the retaining element into its second position counter to said spring force. Conversely, said widened section is not able to move the retaining element into its second position when it is removed from the fitting opening. In that case, it is necessary to manually hold the retaining element in its second position in order to thus open the insertion opening to unhook the widened section. BE 1 017 960 A6 describes a coupling element according to the introductory part of Claim 1. In order to release a sliding door leaf, said coupling element comprises a releasing element to hold the retaining element in its second position. In the case of these coupling elements from EP 1 600 589 B1 and BE 1 017 960 A6, several people are once again required in order to release a sliding door leaf. One person can hold the retaining element in its second position while another person unhooks the sliding door leaf.

[0015] In the case of these embodiments from EP 1 600 589 B1 and BE 1 017 960 A6, the sliding door leaf is hooked onto the roller bodies in the longitudinal direction - as viewed with respect to the supporting profile, so that no lateral force is exerted on the supporting profile when the coupling elements are hooked onto the roller bodies (hooking the widened section into the fitting cavity).

[0016] The object of the present invention is to provide a coupling element by means of which one person is readily able to attach a sliding door leaf to a roller body and release it therefrom.

[0017] This object of the invention is achieved by providing a coupling element for suspending a sliding door leaf from a roller body of a sliding door assembly, wherein said roller body for this purpose comprises a downwardly hanging shaft having a widened section at the bottom, comprising

- a fastening body for fastening the coupling element to the sliding door leaf, having a fitting cavity for fitting the shaft with its widened section into the fastening

body, comprising an insertion opening through which the widened section is fittable in the fitting cavity and a shoulder which extends next to the insertion opening, underneath which shoulder the widened section is at least partially fittable via the insertion opening, in order for said widened section to engage underneath said shoulder;

- a retaining element which is arranged at the bottom of the fitting cavity in such a way that it is hingeable about a substantially horizontal hinge pin between an upper position in which it prevents the moving of the widened section in and out of the insertion opening and a lower position in which it leaves the insertion opening open for the insertion of the widened section;
- a releasing element which is displaceable between a first position in which the retaining element is hingeable about its hinge pin and a second position for retaining the retaining element in its lower position;

wherein the hinge pin about which the retaining element is hingeably arranged is arranged on the other side of the shoulder from the insertion opening, and wherein the releasing element is arranged above the retaining element and is adjustable to its first position and to its second position.

[0018] By positioning the hinge pin of the retaining element on the other side of the shoulder from the insertion opening, it is possible to enable the releasing element to engage with the top of the retaining element in order to keep said retaining element in its lower position. This is not possible on the same side of the shoulder as the insertion opening, since otherwise this would block the insertion opening and prevent the widened section from being inserted therein. On this other side, there is also more space and it is simpler to configure the releasing element in such a way that it is not only displaceable between its first position and its second position, but is also adjustable to its first position and adjustable to its second position.

[0019] There are a considerable number of feasible embodiments in which this is possible. For example, when the releasing element is a pin which is displaceable in a groove, such as in BE 1 017 960 A6, then it is readily possible, for example, to provide a hook element which can be hooked around the pin when the pin has been moved out of its first position into its second position in the groove, in order to keep said pin in said second position and to thus adjust said pin to said second position. Analogously, said pin may also, for example, be provided so as to be laterally displaceable, wherein the groove may be provided with side grooves in the first position and in the second position into which the pin can be pushed in order to adjust it to said position. Instead of using such a pin which is displaceable in a groove as the releasing element, it is also possible to provide, for example, a double-acting push-button as the releasing element. When said push-button is in a first position and

is pressed, it is then adjusted to a second position. When it is pressed again, it returns to its first position.

[0020] In addition, it is also possible, for example, to provide an adjusting screw as the releasing element, as described below.

[0021] Due to the fact that the releasing element is adjustable to its second position, it is no longer necessary to hold said releasing element in this position while suspending a sliding door leaf (or releasing it again). It is now possible for a sliding door leaf to be suspended or released again by a single person. This person merely has to secure the releasing element in its second position in order to thus be able to slide the widened section in and/or out of the fitting cavity and then hook the sliding door leaf to the downwardly hanging shaft of the roller body having a widened section using both hands.

[0022] By enabling the releasing element to engage with the top of the retaining element in order to move said retaining element into its lower position, it is moreover possible, in a particular embodiment, to design the releasing element to be compact, as viewed in the direction at right angles to the sliding door leaf, so that in this direction the releasing element does not protrude beyond the fastening body of the coupling element. Since said releasing element must not extend beyond the fastening body of the coupling element, as viewed at right angles to the sliding door leaf, it is also optionally possible to fully integrate the fastening body in a cavity at the top of the sliding door leaf, so that the coupling element is no longer visible or is only just visible in the mounted state of the sliding door assembly.

[0023] More specifically, the releasing element of a coupling element according to the present invention may be arranged between the shoulder and the hinge pin.

[0024] In a specific embodiment, the releasing element is configured to be rotatable between its first position and its second position about a substantially vertical axis, in order for it to be displaceable between its first position and its second position. More specifically, the releasing element may for this purpose be configured as an adjusting screw. Such an adjusting screw is rotatable about its own central axis, being said substantially vertical axis. With such an adjusting screw, it is particularly simple to realize a releasing element which is adjustable to its first position and to its second position.

[0025] Preferably, such a rotatable releasing element is provided with engaging means around its periphery above its screw thread, in order for a hand tool to engage with the outside thereof in order to rotate said releasing element. Such a hand tool can therefore be inserted between the fastening body and a rail (supporting profile) in which the roller body is arranged rollably, in order to thus displace the releasing element between its first position and its second position.

[0026] The insertion opening, the shoulder and the hinge pin of a coupling element according to the present invention are preferably arranged one behind the other, as viewed in a direction according to the sliding move-

ment of the sliding door leaf. In a sliding door assembly comprising a supporting profile, roller bodies and such a coupling element according to the present invention, said insertion opening, shoulder and hinge pin are therefore arranged one behind the other as viewed in the longitudinal direction of the supporting profile. It is therefore possible for the widened section to be moved in and out of the fitting cavity as viewed in a direction according to the sliding movement of the sliding door leaf. If the roller body is arranged in a supporting profile, no lateral force is exerted on said supporting profile when the widened section is hooked into or unhooked from the fitting cavity.

[0027] A coupling element according to the present invention preferably also comprises a resilient element which is arranged under the retaining element and exerts a force on the retaining element which pushes the retaining element into its upper position.

[0028] In such an embodiment, the retaining element at its end remote from the hinge pin is preferably provided at its top with an engaging incline with which the widened section engages as it is inserted into the fitting cavity, such that the widened section pushes the retaining element counter to the spring force into its lower position as it engages with the engaging incline. It is therefore not necessary to move the releasing element into its second position in order to be able to fasten the sliding door leaf to the roller body. It is possible to leave the releasing element in its first position and to move the retaining element downwards by enabling the widened section to engage with the engaging incline as it is inserted. This also has the advantage that the retaining element will automatically return back to the top under the spring force when the widened section engages with the fitting cavity. In this case there is a clicking sound when the widened section is inserted into the fitting cavity, so that it is possible to know for certain that the coupling has been carried out correctly.

[0029] The retaining element of a coupling element according to the present invention is further preferably provided at its top with a cavity for accommodating the widened section when said widened section is fitted in the fitting cavity and when the retaining element is situated in its upper position.

[0030] The object of the present invention is also achieved by providing an assembly of a coupling element according to the present invention and a roller body of a sliding door assembly, wherein said roller body comprises a downwardly hanging shaft having a widened section at the bottom.

[0031] Furthermore, the object of the present invention is also achieved by providing a sliding door assembly, comprising a sliding door leaf, a supporting profile, two roller bodies which are rollably fittable in the supporting profile and each comprise a downwardly hanging shaft having a widened section at the bottom, wherein said sliding door assembly comprises two coupling elements according to the present invention which are attached to the top of the sliding door leaf for suspending the sliding

door leaf from the roller bodies.

[0032] In such a sliding door assembly according to the present invention, the top of the sliding door leaf preferably comprises two cavities, in each of which is mounted a fastening body of one said coupling element in order to fasten said coupling element to the top of said sliding door leaf.

[0033] The object of the present invention is furthermore also achieved by providing a method for suspending a sliding door leaf from a roller body of a sliding door assembly, wherein the roller body for this purpose comprises a downwardly hanging shaft having a widened section at the bottom, wherein a coupling element according to the present invention is for this purpose attached to the sliding door leaf, wherein the releasing element is adjusted to its second position, wherein the sliding door leaf is lifted and the widened section is fitted into the insertion opening, wherein the sliding door leaf is pushed sideways and the widened section is fitted under the shoulder, and wherein the releasing element is adjusted to its first position.

[0034] In addition, the object of the present invention is achieved by providing a method for releasing a sliding door leaf from a roller body of a sliding door assembly, wherein a downwardly hanging shaft of the roller body, having a widened section at the bottom, is fitted in a fitting cavity of a coupling element which is attached to the sliding door leaf, wherein the coupling element is a coupling element according to the present invention, wherein the releasing element is adjusted to its second position, and wherein the sliding door leaf is pushed sideways and the widened section is pushed out from under the shoulder and removed from the coupling element through the insertion opening.

[0035] In said method according to the present invention, the sliding door assembly preferably comprises a stop element towards which the roller body is rollable in order to hold the roller body in an end position, and, prior to setting the releasing element to its second position, the roller body preferably rolls towards the stop element so that the stop element holds the roller body in said end position.

[0036] The present invention will now be explained in more detail by means of the following detailed description of a preferred coupling element for suspending a sliding door leaf from a roller body of a sliding door assembly, a method for suspending a sliding door leaf from a roller body with the aid of such a coupling piece and a method for releasing a sliding door leaf from a roller body according to the present invention. The aim of this description is solely to give illustrative examples and to indicate further advantages and details of the present invention, and cannot therefore be interpreted as a limitation of the area of application of the invention or of the patent rights defined in the claims.

[0037] In this detailed description, reference numerals are used to refer to the attached drawings, in which

- Figure 1 shows an assembly of a roller body and a coupling element according to the present invention with the roller body in a side view and the coupling element in a longitudinal section, attached to the top of a sliding door leaf, with the roller body in the extended state separate from the coupling element and the retaining element of the coupling element in its upper position;
- Figure 2 shows the assembly from Figure 1, partially in side view and partially in cross section, with the roller body ready to be pushed into the coupling element and the retaining element of the coupling element in its upper position;
- Figure 3 shows the assembly from Figure 1, partially in side view and partially in cross section, with the roller body partially pushed into the coupling element and the retaining element of the coupling element in its lower position;
- Figure 4 shows the assembly from Figure 1, partially in side view and partially in cross section, with the roller body pushed into the coupling element and the retaining element of the coupling element in its upper position;
- Figure 5 shows the assembly from Figure 1, partially in side view and partially in cross section, with the roller body pushed into the coupling element and the retaining element of the coupling element in its lower position;
- Figure 6 shows the assembly from Figure 1, in top view, with the coupling element attached to the top of a sliding door leaf and with the roller body ready to be pushed into the coupling element;
- Figure 7 shows the assembly from Figure 1, in top view, with the coupling element attached to the top of a sliding door leaf and with the roller body pushed into the coupling element.

[0038] The illustrated assembly of a roller body (3) and a coupling element (1) forms part of a sliding door assembly. Said sliding door assembly comprises a supporting profile (not illustrated). The illustrated roller body (3) is rollably fittable in said supporting profile together with a roller body which is not illustrated. Apart from the illustrated coupling element (1), the sliding door assembly also comprises a coupling element (1) which is not illustrated. Both coupling elements (1) are attachable to the top of a sliding door leaf (2) which is partially illustrated in Figure 1. The roller bodies (3) can be securely coupled to the sliding door leaf by coupling said roller bodies (3) to the respective coupling elements (1). It is therefore possible to suspend the sliding door leaf (2) slidably in the supporting profile.

[0039] Said sliding door leaf (2) is slidable from an open position, in which it releases an opening, to a closed position, in which it closes said opening.

[0040] The sliding door assembly further comprises a stop element (not illustrated) behind which the hook element (19) of the roller body (3) can hook in order to

temporarily hold the roller body (3) in a fixed position and thus securely hold the sliding door leaf (2) temporarily in its open position or in its closed position.

[0041] The illustrated roller body (3) comprises four wheels (18) by means of which said roller body (3) can roll in the supporting profile. However, said roller body (3) could also comprise more or fewer wheels (18), as is the case with other known roller bodies (6).

[0042] In order to be able to couple the roller body (3) to the coupling element (1), said roller body (3) comprises a downwardly hanging shaft (4) having a widened section (5).

[0043] The coupling element (1) comprises a fastening body (6) for fastening the coupling element (1) to the sliding door leaf (2). Said fastening body (6) may be attached to the top of the sliding door leaf (2) with the aid of screws (20), as illustrated. However, with a coupling element (1) according to the present invention, it is also possible to provide the sliding door leaf (2) with a fitting cavity in which the fastening body (6) can be fitted and fixed with the aid of screws (20) in order to attach the fastening body (6) to the sliding door leaf (2). In this way it is possible to ensure that the fastening body (6) is no longer visible when the sliding door assembly is in the mounted state.

[0044] A fitting cavity (7) is provided in the fastening body (6) of the coupling element (1), in which fitting cavity (7) the widened section (5) of the roller body (3) is fittable in order to couple the roller body (3) to the coupling element (1). For this purpose, the fastening body (6) is further provided with an insertion opening (8) through which the widened section (5) is fittable in the fitting cavity (7) and a shoulder (9) which extends next to the insertion opening (8), underneath which shoulder (9) the widened section (5) can engage in the fitting cavity (7).

[0045] The illustrated fitting cavity (7), insertion opening (8) and shoulder (9) may also be described as a key-hole opening into which the shaft (4) having the widened section (5) is fittable. In said keyhole opening, the widened section (5) can be pushed from an insertion position, in which it can be moved into and out of the coupling element (1), to an engaging position, in which it engages behind the shoulder (9) and can only be moved back out of this position through the insertion opening (8).

[0046] In the first position, the widened section (5) can either be pushed horizontally into and out of the fitting cavity (7) via the insertion opening (8), as illustrated in the figures, or can be moved into and out of the coupling element (1) (horizontally or vertically in the illustrated embodiment). When the widened section (5) is inserted into the coupling element (1) it abuts a guide surface (15) which is provided in order to guide the sliding-in movement for sliding the widened section (5) into the fitting cavity (7) via the insertion opening (8). When the roller body (3) is fitted in the supporting profile and the coupling element (1) is attached to the sliding door leaf (2), the widened section (5) can be pushed horizontally into and out of the fitting cavity (7) via the insertion opening (8) in

a manner guided by said guide surface (15), as illustrated in the figures. To this end, the sliding door leaf (2) is held in a lifted position, with the widened section (5) being held against the guide surface (15), and either the roller body (3) is moved towards the sliding door leaf (2) or the sliding door leaf (2) is moved towards the roller body (3). It is possible for a single person to undertake the latter method if said person fixes the roller body (3) in place using the stop element.

[0047] When the sliding door leaf (2) is left hanging with the widened section (5) in the second position, the sliding door leaf (2) will be suspended from the widened section (5) under the influence of gravity, since the widened section (5) engages behind the shoulder (9).

[0048] In order to prevent the widened section (5) - which is fitted into the fitting cavity (7) when the sliding door assembly is in the mounted state - from being able to slip back out of the fitting cavity (7), the coupling element (1) comprises a retaining element (10) for retaining the widened section (5) in the fitting cavity (7). Said retaining element (10) is hingeably arranged at the bottom of the fitting cavity (7). In this case, the hinge pin (11) about which said retaining element (10) can hinge is arranged on the other side of the shoulder (9) from the insertion opening (8). In this case, said hinge pin (11) extends substantially horizontally, so that the retaining element (10) can be displaced between an upper position, as illustrated in Figures 1, 2 and 4, in which it prevents the moving of the widened section (5) into and out of the insertion opening (8), and a lower position, as illustrated in Figures 3 and 5, in which it leaves the insertion opening (8) open for the insertion of the widened section (5).

[0049] A compression spring (14) is arranged under the retaining element (10) in order to push said retaining element (10) into its upper position. A force counter to the spring force of said compression spring (14) must be exerted on the retaining element (10) in order to be able to move the retaining element (10) into its lower position.

[0050] When inserting the widened section (5) into the fitting cavity (7), said counterforce can be exerted by enabling the widened section (5) to engage with an oblique engaging incline (16) of the retaining element (10), as illustrated in Figures 1-4. Said engaging incline (16) is provided at the top of the retaining element (10) pointing towards the insertion opening (8).

[0051] When the widened section (5) is fitted in the fitting cavity (7) and the retaining element (10) is situated in its upper position under the influence of the spring force (14), the widened section (5) is situated in a cavity (17) of the retaining element (10). Said cavity (17) is provided on the top of the retaining element (10) behind the engaging incline (16). When the widened section (5) engages in said cavity (17), the widened section (5) is prevented from sliding out of the fitting cavity (7) and the retaining element (10) cannot be moved back into its lower position by means of the widened section (5), so that the widened section (5) cannot accidentally slip out of

the fitting cavity (7). In order in this case to be able to move the retaining element (10) into its lower position, the coupling element (1) comprises an adjusting screw (12) which is arranged above the retaining element (10) between the shoulder (9) and the hinge pin (11). Said adjusting screw (12) can be rotated between an upper position, as illustrated in Figures 1-4, in which it enables the retaining element (10) to hinge, and a lower position, as illustrated in Figure 5, in which it keeps the retaining element (10) in its lower position. In order to be able to rotate the adjusting screw (12), the top of said adjusting screw (12) is provided with engaging means (13) around its periphery, with which engaging means (13) a hand tool can engage.

[0052] In order to be able to suspend the sliding door leaf (2) from the roller bodies (3) in a simple manner, the adjusting screw (12) may also be rotated downwards for suspending the sliding door leaf (2). In that case, it is not necessary to exert any force on the engaging incline (16) in order to be able to move the widened section (5) into the fitting cavity (7). After the widened section (5) has been fitted into the fitting cavity (7), the adjusting screw (12) will then be rotated upwards, as illustrated in Figure 4, so that the retaining element (10) is moved into its upper position under the influence of the spring force (14) and retains the widened section (5) in its cavity (17).

[0053] In order to release the sliding door leaf (2) again, the adjusting screw (12) is rotated downwards again, as illustrated in Figure 5, so that the widened section (5) can move back out of the fitting cavity (7).

Claims

1. Coupling element (1) for suspending a sliding door leaf (2) from a roller body (3) of a sliding door assembly, wherein said roller body (3) for this purpose comprises a downwardly hanging shaft (4) having a widened section (5) at the bottom, comprising
 - a fastening body (6) for fastening the coupling element (1) to the sliding door leaf (2), having a fitting cavity (7) for fitting the shaft (4) with its widened section (5) into the fastening body (6), comprising an insertion opening (8) through which the widened section (5) is fittable in the fitting cavity (7) and a shoulder (9) which extends next to the insertion opening (8), underneath which shoulder (9) the widened section (5) is at least partially fittable via the insertion opening (8), in order for said widened section (5) to engage underneath said shoulder (9);
 - a retaining element (10) which is arranged at the bottom of the fitting cavity (7) in such a way that it is hingeable about a substantially horizontal hinge pin (11) between an upper position in which it prevents the moving of the widened section (5) in and out of the insertion opening (8)

and a lower position in which it opens the insertion opening (8) for the insertion of the widened section (5);

- a releasing element (12) which is displaceable between a first position in which the retaining element (10) is hingeable about its hinge pin (11) and a second position for retaining the retaining element (10) in its lower position;

characterized in that the hinge pin (11) about which the retaining element (10) is hingeably arranged is arranged on the other side of the shoulder (9) from the insertion opening (8), and **in that** the releasing element (12) is arranged above the retaining element (1) and is adjustable to its first position and to its second position.

2. Coupling element (1) according to Claim 1, **characterized in that** the releasing element (12) is arranged between the shoulder (9) and the hinge pin (11).
3. Coupling element according to Claim 1 or 2, **characterized in that** the releasing element (12) is rotatable between its first and its second position about a substantially vertical axis.
4. Coupling element (1) according to Claim 3, **characterized in that** the releasing element (12) is configured as an adjusting screw (12).
5. Coupling element (1) according to Claim 4, **characterized in that** the releasing element (12) is provided with engaging means (13) around its periphery above its screw thread, in order for a hand tool to engage with the outside thereof in order to rotate said releasing element (12).
6. Coupling element (1) according to one of the preceding claims, **characterized in that** the insertion opening (8), the shoulder (9) and the hinge pin (11) are arranged one behind the other as viewed in a direction according to the sliding movement of the sliding door leaf (2).
7. Coupling element (1) according to one of the preceding claims, **characterized in that** it comprises a resilient element (14) which is arranged under the retaining element (10) and exerts a force on the retaining element (10) which pushes the retaining element (10) into its upper position.
8. Coupling element (1) according to Claim 7, **characterized in that** the retaining element (10) at its end remote from the hinge pin (11) is provided at its top with an engaging incline (16) with which the widened section (5) engages as it is inserted into the fitting cavity (7), such that the widened section (5) pushes

the retaining element (10) counter to the spring force into its lower position as it engages with the engaging incline (16).

9. Coupling element (1) according to one of the preceding claims, **characterized in that** the retaining element (10) is provided at its top with a cavity (17) for accommodating the widened section (5) when said widened section (5) is fitted in the fitting cavity (7) and when the retaining element (10) is situated in its upper position. 5
10. Assembly of a coupling element (1) according to one of the preceding claims and a roller body (3) of a sliding door assembly, wherein the roller body (3) comprises a downwardly hanging shaft (4) having a widened section (5) at the bottom. 10
11. Sliding door assembly, comprising a sliding door leaf (2), a supporting profile, two roller bodies (3) which are fittable in the supporting profile such that they are rollable and each comprise a downwardly hanging shaft (4) having a widened section (5) at the bottom, **characterized in that** the sliding door assembly comprises two coupling elements (1) according to one of Claims 1 to 9 which are attached to the top of the sliding door leaf (2) for suspending the sliding door leaf (2) from the roller bodies (3). 20
12. Sliding door assembly according to Claim 11, **characterized in that** the top of the sliding door leaf comprises two cavities, in each of which is mounted a fastening body (6) of a said coupling element (1) in order to fasten said coupling element (1) to the top of said sliding door leaf (2). 25
13. Method for suspending a sliding door leaf (2) from a roller body (3) of a sliding door assembly, wherein the roller body (3) for this purpose comprises a downwardly hanging shaft (4) having a widened section (5) at the bottom, and wherein a coupling element (1) is for this purpose attached to the sliding door leaf (2), **characterized in that** the coupling element (1) is a coupling element (1) according to one of Claims 1 to 9, **in that** the releasing element (12) is adjusted to its second position, **in that** the sliding door leaf (2) is lifted and the widened section (5) is fitted into the insertion opening (8), **in that** the sliding door leaf (2) is pushed sideways and the widened section (5) is fitted under the shoulder (9), and **in that** the releasing element (12) is adjusted to its first position. 30
14. Method for releasing a sliding door leaf (2) from a roller body (3) of a sliding door assembly, wherein a downwardly hanging shaft (4) of the roller body (3), having a widened section (5) at the bottom, is fitted in a fitting cavity (7) of a coupling element (1) which 35

is attached to the sliding door leaf (2), **characterized in that** the coupling element (1) is a coupling element (1) according to one of Claims 1 to 9, **in that** the releasing element (12) is adjusted to its second position, and **in that** the sliding door leaf (2) is pushed sideways and the widened section (5) is pushed out from under the shoulder (9) and removed from the coupling element (1) through the insertion opening (8).

15. Method according to Claim 13 or 14, **characterized in that** the sliding door assembly comprises a stop element towards which the roller body (3) is rollable in order to hold the roller body (3) in an end position, and **in that**, prior to adjusting the releasing element (12) to its second position, the roller body (3) rolls towards the stop element so that the stop element holds the roller body (3) in said end position. 40

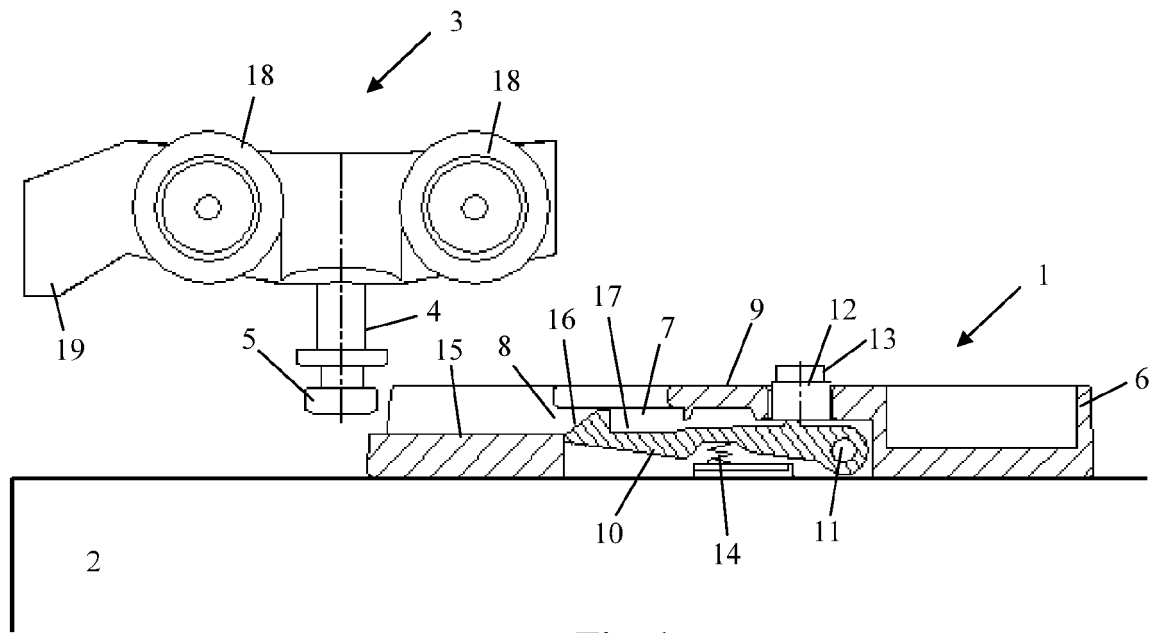


Fig. 1

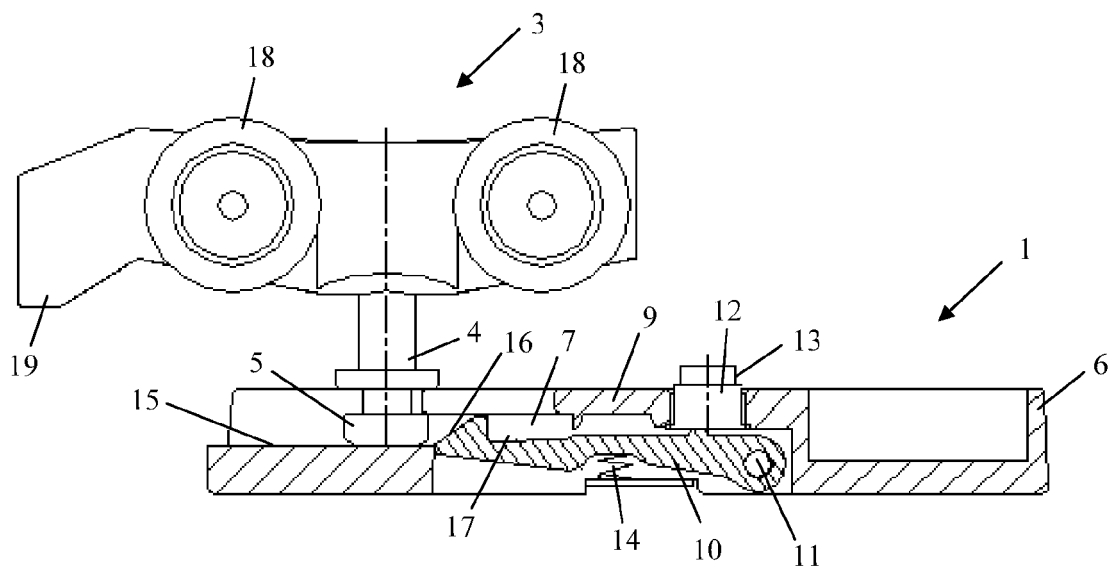


Fig. 2

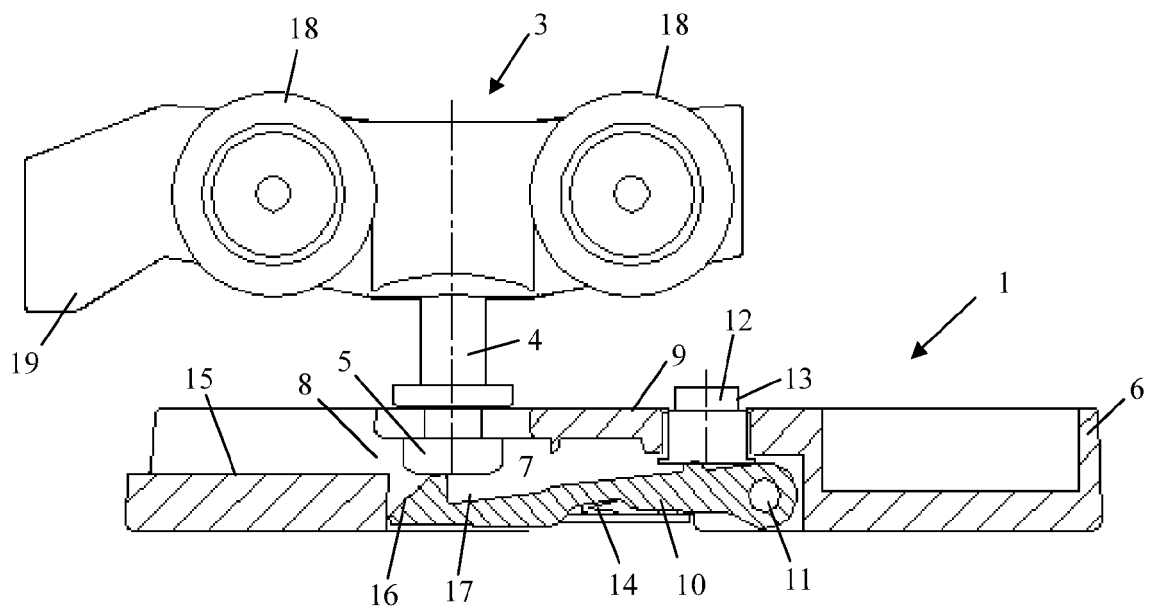


Fig. 3

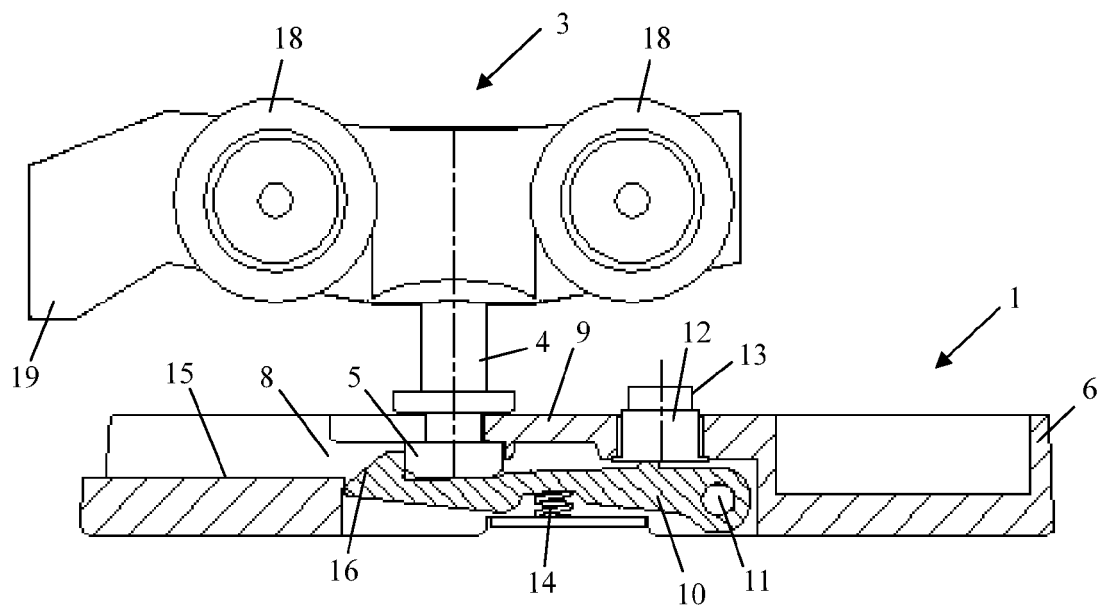


Fig. 4

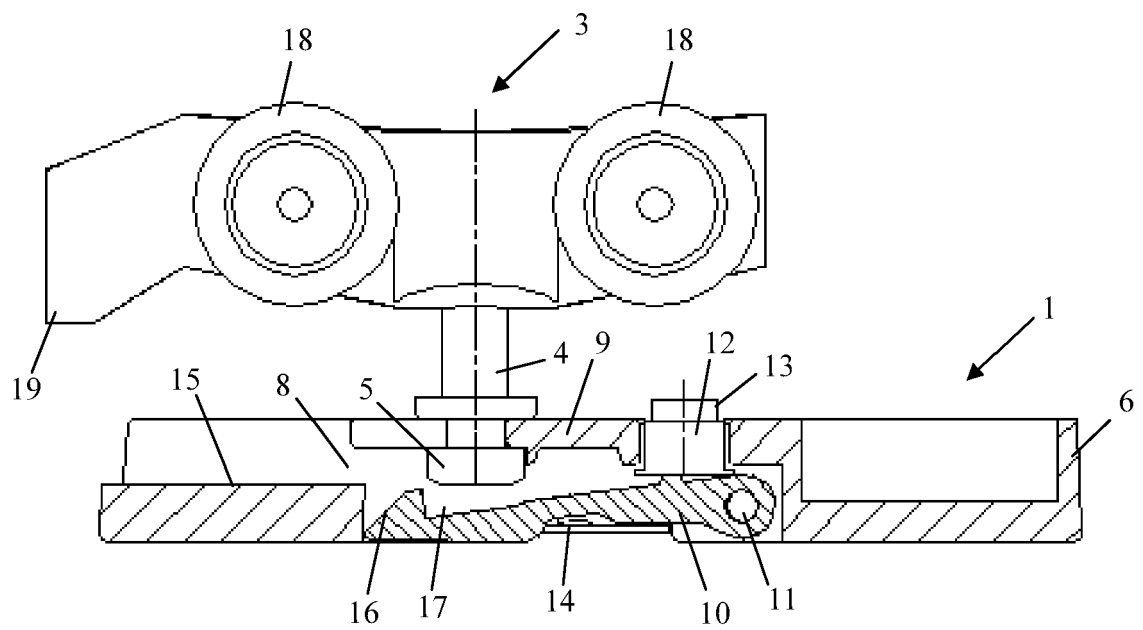


Fig. 5

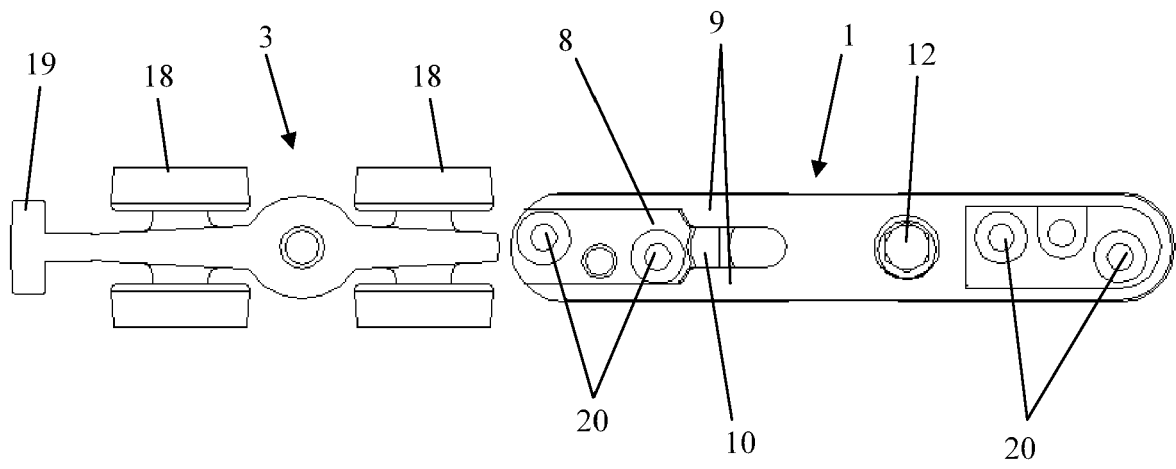


Fig. 6

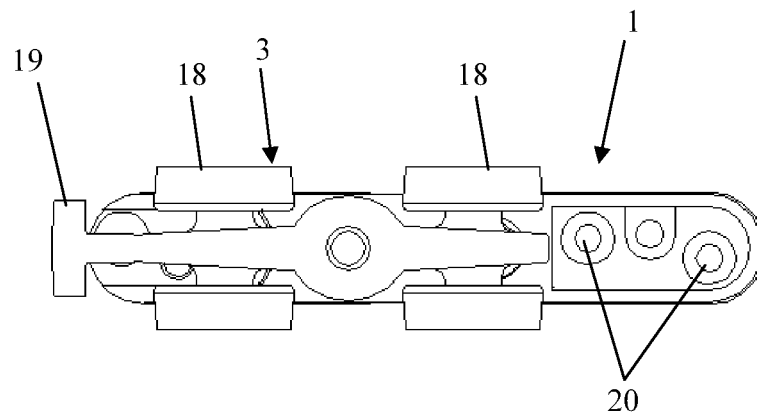


Fig. 7



EUROPEAN SEARCH REPORT

Application Number
EP 15 15 0395

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,D	BE 1 017 960 A6 (LOUAGE EN WISSELINCK NV [BE]) 2 February 2010 (2010-02-02) * claim 1; figures 1-4 * -----	1,13,14	INV. E05D15/06
			TECHNICAL FIELDS SEARCHED (IPC)
			E05D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 5 March 2015	Examiner Guillaume, Geert
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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05-03-2015

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BE 1017960	A6	02-02-2010	NONE

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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