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(54) **SLIDING DOOR DEVICE**

(57) A sliding door device (1) comprising: a support profile (2) and a runner (3) mounted rollably therein and configured for suspending a door leaf (4) thereon. The support profile has at least one hook-shaped fastening means on its upper side and at least one alignment means on a side wall. The sliding door device further comprises: a substantially L-shaped wall fastening profile and/or a spacer and a shield cover. This allows one unique support profile to be used in three or more different configurations of sliding door devices.

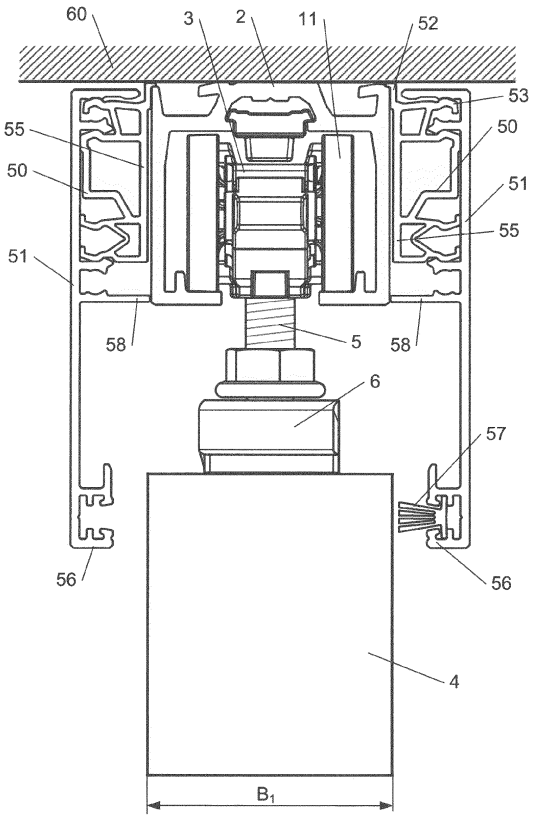

Fig. 2A

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Description

Technical field

[0001] The present invention relates to a sliding door device. More specifically, the present invention relates to sliding door devices in which the door leaf is suspended on its upper side from a runner in a support profile.

Prior art

[0002] A known sliding door device comprises a support profile for supporting a runner configured to suspend thereon a door leaf of the sliding door device, which support profile, in its transverse cross-section, is provided with: an upper wall extending between two ends; two side walls facing each other and extending at least from a proximal end near a respective end of the upper wall to a distal end; two lower walls each extending from near a distal end of a respective side wall towards each other, which lower walls together form a running surface for said runner, wherein the upper wall, the side walls and the lower walls each have an outer side and an inner side, which inner sides face each other.

[0003] Such a sliding door device is disclosed in US 9,388,622 B1. The support profile is intended to be firmly fastened to a wall or ceiling in a room. Depending on the application, the support profile may be fastened directly to the ceiling or embedded in a wall as shown in Figure 12 of US 9,388,622 B1. In other applications, a connection profile can be used to fasten the support profile to a wall as shown in Figure 13 of US 9,388,622 B1.

[0004] A known problem with such sliding door devices is the amount of customisation and/or the number of standard parts that may be required to provide sufficient variation in the design options. For example, as shown in US 9,388,622 B1, there are different support profiles for different applications.

[0005] Such a sliding door device is also disclosed in EP 1 431 491 A1. In this case, the support profile is further provided on its upper side in the extension of one of the side walls with a hook for fastening the support profile to a wall using a wall fastening profile. On the opposite side wall, alignment means and fastening means are provided for aligning and fastening a spacer and shield cover to the support profile.

Description of the invention

[0006] It is an object of the present invention to provide a sliding door device which is usable in various applications with a low number of standard parts.

[0007] This object is achieved in that the upper wall of the support profile is provided with at least one hook-shaped fastening means on its outer side and that at least one of the side walls is provided with at least one alignment means on its outer side, wherein the sliding door device is further provided with: a substantially L-shaped wall fastening profile comprising a first leg and a second leg, wherein the first leg is configured to be fastened to a wall, wherein the second leg is provided with at least one further hook-shaped fastening means, wherein the support profile is fastened to the wall fastening profile at least by hooking together the hook-shaped fastening means; and/or a spacer and a shield cover, which spacer comprises at least one further alignment means and at least one fastening means, wherein the spacer is fastened to said at least one of the side walls and is positioned by mutual engagement of the alignment means, which shield cover comprises at least one further fastening means, wherein the shield cover is fastened to the spacer by mutual engagement of the fastening means, and in that said at least one hook-shaped fastening means comprises an inclined portion for aligning the support profile with the wall fastening profile, and in that the spacer comprises multiple fastening means and the shield cover comprises multiple further fastening means that together allow the shield cover to be placed in at least two different positions relative to the spacer.

[0008] The present invention is based on providing one unique support profile that can be used in different applications. This is made possible by providing the support profile on its upper side with a hook-shaped connecting means which allows the support profile to be hooked, i.e. fastened, to another profile, as well as by providing the support profile with an alignment means which contributes to the correct placement of the support profile relative to another profile.

[0009] According to the present invention, the sliding door device is intended for different configurations. In a first configuration, the sliding door device comprises such a support profile in combination with a substantially L-shaped wall fastening profile. Here, the wall fastening profile is intended to be fastened to a wall with one leg and the other leg is provided with a hook means to which the support profile is hooked. In a second configuration, the sliding door device comprises such a support profile in combination with a spacer and a shield cover which are interconnected via fastening means. The spacer is fastened to a side wall of the support profile and is correctly positioned using the alignment means so that the shield cover also has the desired placement relative to the support profile. In this configuration, the support profile is then fastened directly to a ceiling. In a third configuration, the sliding door device comprises such a support profile in combination with the substantially L-shaped wall fastening profile and with the spacer and the shield cover so that wall fastening of the support profile is possible.

[0010] According to the present invention, there is therefore only a need for one unique support profile for three (or more) different applications, such that the number of standard components is limited. In particular, as described in more detail below, the present invention allows up to ten different configurations of sliding door devices to be implemented using one unique support profile and five other profiles (i.e. two different wall fastening

profiles, two or more different spacers and one shield cover).

[0011] The inclined portion contributes to the correct placement of the support profile on the wall fastening profile.

[0012] In an embodiment of the present invention, said at least one hook-shaped fastening means comprises an upright wall and a projecting wall, which upright wall extends from said upper wall to a distal end, in particular substantially parallel to said side walls, which projecting wall forms said inclined portion and extends from near the distal end of the upright wall to one of said side walls. Preferably, said upright wall and said projecting wall (or generally the inclined portion and side wall) form an angle relative to each other, which angle is between 60° and 89°, which angle in particular is not more than 85° and more particularly not more than 83°, which angle in particular is at least 70° and more particularly at least 75°. Providing a upright wall and a protruding wall allows the hook means to be provided as a separate hook on a wall, as opposed to embedding a hook in a wall, which is more difficult in terms of production. The inclination angle is selected firstly so as not to make hooking too complicated or difficult, in which case the angle is preferably as large as possible, and secondly to have a sufficient inclination to obtain an alignment, in which case the angle is preferably as small as possible.

[0013] In an embodiment of the present invention, said at least one hook-shaped fastening means comprises at least two separate hook-shaped fastening means, each preferably comprising an inclined portion for aligning the support profile with the wall fastening profile, which inclined portions are further preferably substantially parallel to each other. The use of two separate connections is advantageous compared to only one connection. This is because there is less play, which could give rise to incorrect positioning. A greater load can also typically be supported by two connections than by one connection in the case of similar connections (i.e. connections with the same design, materials, etc.). The inclined portions contribute to the correct placement of the support profile on the wall fastening profile.

[0014] In an embodiment of the present invention, each side wall is provided with at least one alignment means. This allows the spacer and shield cover to be placed against both side walls so as to obtain further configurations of the sliding door device with one unique support profile.

[0015] In an embodiment of the present invention, said at least one alignment means is formed near an end, preferably the proximal end, of the corresponding side wall. Forming the alignment means at one end of the side wall allows it to be formed without, or at least with little, impact on the rest of the support profile, whose design can then be optimized for the runner. Forming said alignment means at the proximal end, i.e. the top of the support profile, also largely obscures it from the view of a person observing the mounted sliding door device.

[0016] In an embodiment of the present invention, said at least one alignment means is formed by the proximal end of the corresponding side wall or by a notch at the proximal end of the corresponding side wall. These options leave room to adapt the design of the support profile according to other requirements, e.g. production engineering requirements.

[0017] In an embodiment of the present invention, the lower walls are each provided on their inner side with an upright wall for aligning said runner in the support profile. This makes it possible to use a narrower runner but still have a support profile as wide as the door leaf fastened underneath. A narrower runner is often easier to insert into the support profile. This also requires less material to be produced, and often has a lower weight, lower rolling resistance, etc.

[0018] In an embodiment of the present invention, the upper wall of the support profile is provided with a plurality of first openings and a plurality of second openings, wherein the first openings are configured to receive first fastening means for the purpose of fastening the support profile to a ceiling and wherein the second openings are configured to receive second fastening means for the purpose of fastening the support profile to the wall fastening profile. Thus, these openings contribute to the use of the same support profile in different configurations. In addition, implementing these openings differently (e.g. with a different diameter) makes mounting easier as there can be no confusion as to which openings should be used in which application.

[0019] In an embodiment of the present invention, the second leg of the wall fastening profile is provided on its side facing the support profile with an alignment means for the purpose of aligning the support profile with the wall fastening profile. This contributes to the correct positioning of the support profile relative to the wall fastening profile. Moreover, this may also be combined with the alignment resulting from an inclined hook means as described above.

[0020] In an embodiment of the present invention, the wall fastening profile is selected from a plurality of mutually different wall fastening profiles, wherein the first leg of each wall fastening profile has a wall side and a side facing the support profile, wherein a shortest distance between these sides is different for each of said mutually different wall fastening profiles. In practice, there are typically two possible situations with a wall fastening, i.e. a flat wall or a wall where there is a floor plinth on the underside. The use of different wall fastening profiles allows the support profile to be placed at a variable distance from the wall so that the door leaf fits tightly on its underside against the wall or against the plinth.

[0021] In an embodiment of the present invention, the spacer is selected from a plurality of mutually different spacer profiles, wherein each spacer has a side facing the support profile and a side facing the shield cover, wherein a shortest distance between these sides is different for each of said mutually different spacer profiles.

The use of different spacers allows different thicknesses of door leaf to be used, wherein the shield cover fits tightly against the upper side of the door leaf.

[0022] In an embodiment of the present invention, the fastening means together form one or multiple snap connections. The shield cover can therefore be quickly and easily snapped onto the spacer without tools.

[0023] In an embodiment of the present invention, the shield cover is provided near its lower end with a holder configured to hold a brush seal. A brush seal helps prevent dust, dirt, insects, etc. from entering the support profile and interfering with or disrupting operation there. The holder provided on the shield cover is advantageous because it avoids the need for different shield covers (i.e. one with a brush seal and one without a brush seal).

Brief description of the drawings

[0024] The invention will be explained in further detail below with reference to the following description and to the accompanying drawings.

Figure 1 shows a general view of an upper part of a sliding door device according to the present invention.

Figures 2A to 2G show a side view of different configurations of a sliding door device according to the present invention. For simplicity, only a runner and its connection to the door leaf are shown in Figure 2A but these have been omitted in Figures 2B to 2G.

Embodiments of the invention

[0025] The present invention will be described hereinafter using specific embodiments and with reference to certain drawings, but the invention is not limited thereto and is defined only by the claims. The drawings shown herein are only schematic representations and are not limiting. In the drawings, the dimensions of certain components may be shown enlarged, meaning that the components in question are not shown to scale, for illustrative purposes only. The dimensions and relative dimensions do not necessarily correspond to actual practical implementations of the invention.

[0026] In addition, terms such as "first", "second", "third" and the like are used in the description and in the claims to distinguish between similar elements and not necessarily to indicate a sequential or chronological order. The terms in question are interchangeable under appropriate circumstances and the embodiments of the invention may operate in different orders than those described or illustrated herein.

[0027] Moreover, terms such as "left", "right", "front", "rear" and the like are used in the description and in the claims for descriptive purposes. The terms thus used are interchangeable under appropriate circumstances and the embodiments of the invention may operate in different orientations than those described or illustrated herein.

[0028] Terms such as "top", "bottom", " upper", "under" and the like are used in the description and in the claims for descriptive purposes with reference to the usual orientation of the sliding door device in which the support profile is located above the door leaf.

[0029] The term "comprising" and derived terms, as used in the claims, should or should not be interpreted as being limited to the means mentioned each time thereafter; the term does not preclude other elements or steps. The term should be interpreted as specifying the listed properties, whole numbers, steps or components referred to, while not precluding the presence or addition of one or more additional properties, whole numbers, steps or components, or groups thereof. Therefore, the scope of an expression such as "a device comprising the means A and B" is not limited to devices consisting solely of components A and B. On the contrary, what is meant is that, as far as the present invention is concerned, the only relevant components are A and B.

[0030] Figure 1 shows a partial view of the upper side of a sliding door device 1. The sliding door device 1 comprises a support profile 2 intended to be firmly fastened to a wall or a ceiling in a room. This can be either direct fastening where the support profile is fastened to the wall or ceiling by means of conventional fastening means (bolts, gluing, etc.) or indirect fastening where the support profile is fastened to the wall or ceiling by means of an intermediate connection profile. Various configurations are described below with reference to Figures 2A to 2G.

[0031] One or multiple runners 3 are arranged in the support profile 2 and can be rolled therein. The door leaf 4 is suspended via its upper side from the runners 3 present. For this purpose, a mechanical connection between the door leaf 4 and the runners 3 is provided. In the design shown, this mechanical connection comprises a mounting bracket 6 fastened to the door leaf and a bolt 5 that serves as a connection between the mounting bracket 6 and a runner 3. Figure 1 shows one runner 3, but it should be clear that in the design shown there is typically also at least one second runner present near the opposite end of the upper side of the door leaf 4. In this way, the upper side of the door leaf 4 is fastened at both ends to a runner 3.

[0032] The door leaf 4 can be made in different materials (e.g. wood, plastic, metal, etc.), shapes (e.g. full, hollow, with openings, etc.), sizes (e.g. width, height, thickness, etc.), etc. according to the wishes and/or needs of the application (e.g. indoors, outdoors, etc.).

[0033] The shown runner 3 comprises a generally hook-shaped end forming a stop wall. In a design not shown, the hook-shaped end engages in a clamp (not shown) at the end of the support profile 2. In this case, a leaf spring (not shown) is provided that is pushed open by the hook-shaped end and then snaps closed again to hold the hook-shaped end. This is a standard stop device for determining the end position of the door leaf 4.

[0034] The sliding door device 1 shown further comprises a damper device 7 that cooperates with the runner

3. The damper device 7 is mechanically coupled to the runner 3 via the hook-shaped end and is therefore firmly connected to the runner 3. The damper device 7 thus slides along in the support profile 2. Internally, the damper device 7 is provided with a hydraulic damper and a spring. The spring serves to pull the door leaf 4 into its open or closed position (double-acting) after activation, while the damper dampens this movement. The spring and hydraulic damper are connected in parallel and fitted with a hook on each side. Said hook engages an activator (not shown) that is fastened in the support profile 2 and determines the closing position. The damper device 7 thus forms a soft-close for the end position of the door leaf 4.

[0035] In yet another embodiment, a push-open functionality may also be provided. In this case, a user can push the door leaf 4 into its retracted state (i.e. door open) to partially push it out of the door pillar. Such a push-open functionality is known and typically comprises a spring system, e.g. a gas spring, which develops a counter-pressure due to the user pushing in order to push the door leaf 4 out of its end position. In an advantageous design, 3 magnetic elements (e.g. two permanent magnets or one permanent magnet and a ferromagnetic material) are placed on the spring system and on the runner. Such additional magnetic coupling contributes to the correct placement of the door leaf 4 in the retracted position.

[0036] The runners 3 further comprise a body. Typically, this is manufactured from a rigid plastic, e.g. by injection moulding. However, other materials (e.g. metal) and/or production techniques (e.g. additive manufacturing, also known as 3D printing) are possible. The bolt 5 is typically connected to the body of the runner 3. Each runner comprises multiple wheels 11, i.e. four in the designs shown. In this case, opposite wheels 11 are mounted together on an axle (not shown) that extends through the body of the runner. A bearing (e.g. a roller bearing, ball bearing, etc.) may, if desired, be present between the axle and the body. Alternatively, a bearing may be provided for each wheel 11 between the wheel 11 and the axle. The use of one or multiple bearings ensures smoother rotation of the wheels 11 relative to the body of the runner. In the design shown, the runner 3 comprises four wheels 11, which improves stability and carrying capacity. However, it is also possible to use only two wheels 11 per runner; these may or may not be coaxial, although non-coaxial placement is desirable for the stability of the runner. More than four wheels 11 per runner is also furthermore possible, as is an odd number of wheels 11.

[0037] In general, the invention provides a sliding door device 1 which is composed of a combination of different profiles, namely: a support profile 2, a mainly L-shaped wall fastening profile 40, 40', a spacer 50, 50' and a shield cover 51. The idea behind the invention is to provide one unique support profile 2 that can be used by the other profiles in various configurations as shown in Figures 2A to 2G.

[0038] The support profile 2, the wall fastening profile 40, 40', the spacer 50, 50' and the shield cover 51 are typically made of a rigid material. This can be aluminium, for example. Aluminium has advantages as a profile material, as it is simultaneously robust and light, resistant to adverse weather conditions and requires little maintenance. However, other materials are also suitable and their advantages or disadvantages are assumed to be known by the person skilled in the art. These profiles can be produced using various techniques depending on the material, including extrusion, milling, setting, casting, welding, and so on, with extrusion being preferred. The appropriate production technique is assumed to be known by the person skilled in the art.

[0039] The support profile 2 is generally U-shaped with the opening on the underside. The support profile 2 therefore comprises: an upper wall 30 with ends 30a; two side walls 31 extending between a first end 31a near the upper wall 30 and a second end 31b opposite the first end 31a; and two lower walls 32 extending between a first end 32a near a side wall 31 and a second end 32b opposite the first end 32a. A tread 33 for the wheels 11 of the runner 3 is formed by (part of) the lower walls 32. In the design shown, the support profile 2 is further provided with upright walls 38 that serve to guide the runner 3 in the width direction of the support profile 2. Alternatively, these upright walls 38 may be omitted and the width guidance is for example provided by the side walls 31 (e.g. by a wider runner 3 or a narrower support profile 2). In the design shown, however, the upright walls 38 have been chosen in order to thus have a relatively narrow runner 3 in combination with a support profile 2 having a width corresponding to the most common width dimension B_1 for door leaves 4.

[0040] According to the present invention, the support profile 2 is provided at its upper wall 30 with at least one hook-shaped fastening means. In the designs shown, there are two hook-shaped fastening means 34, 35. The use of two fastening means enhances the strength of the connection, but mainly contributes to the correct relative positioning of the profiles. Indeed, if only one connection is used for two profiles, there is more play in the relative positioning, which may give rise to anomalous positioning.

[0041] In the design shown, each hook-shaped fastening means 34, 35 comprises an inclined wall portion 34a, 35a extending from a projecting wall portion 34b, 35b. This inclination contributes to the correct placement of the support profile 2 relative to the wall fastening profile 40, 40' since, due to this inclination, the wall profile 2 tends to slide towards the wall fastening profile 40, 40'. As already described above, the angle β relative to the side wall 31 (or more generally the vertical direction) is between 60° and 89°, which angle β in particular is not more than 85° and more particularly not more than 83°, which angle β in particular is at least 70° and more particularly at least 75°.

[0042] According to the present invention, the support

profile 2 is provided on at least one of the side walls 31 with at least one alignment means. In the design shown, each side wall 31 is provided with an alignment means 36, 37 which enables another profile (i.e. the spacer 50, 50') to be correctly aligned with any of the side walls 31.

[0043] In the design shown, both alignment means 36, 37 are formed at the upper end 31a of the side walls 31. In particular, the alignment means 36 is formed by a groove (or generally a notch) in the hook-shaped fastening means 35, with the result that one part of the support profile 2 has a dual function. The alignment means 37 is formed by making one side wall 31 shorter than the other side wall 31 as shown in Figure 2A. This saves material compared to a side wall 31 that also extends to the top and has a groove or notch therein.

[0044] The upper wall 30 of the support profile 2 is further provided with openings (not shown) in the design shown, and in particular with two sets of openings having different diameters. In this case, one set of openings for receiving fastening means 39 serves to fix the support profile 2 to the wall fastening profile 40, 40'. The other set of openings is then used for the configuration shown in Figure 2A, wherein the support profile 2 is fastened directly to a ceiling 60. Of course, openings that are all identical can also be used as well as other conventional fastening means (such as gluing).

[0045] In certain configurations of the present invention, the support profile 2 is used together with a spacer 50, 50' and a shield cover 51. The spacer 50, 50' is fastened to the support profile 2 by conventional fastening means (such as bolts, screws, gluing, etc.). Typically, this is done by fastening the inner wall 55 of the spacer 50 to the side wall 31. On the upper side, the spacer 50, 50' is provided with an alignment means 52, such as a hook or other projecting element, which fits into the alignment means 46, 47 provided on the support profile 2. This ensures the correct placement of the spacer 50, 50' relative to the support profile 2. In the design shown, also provided on the underside is an alignment means 58 that engages with the lower end 31b of the side walls 31, which improves relative placement. On the outside, the spacer 50, 50' is provided with at least one fastening means 53 and in total even four fastening means 53a, 53b, 53c, 53d in the design shown. Typically, these are formed by projecting walls with one or multiple bends and/or thickened portions. These allow a shield cover 51 to be fastened to the spacer 50, 50', in various configurations as described below. For this purpose, the shield cover 51 is provided with at least one corresponding fastening means 54, and therefore four fastening means 54a, 54b, 54c, 54d in the design shown. These are also formed as projecting walls with one or multiple bends and/or thickened portions. In the design shown, the shield cover 51 is further provided on its underside with a holder 56 in which a seal 57 (e.g. a brush seal) may or may not be present. The advantages thereof have already been described above.

[0046] In certain configurations of the present invention, the support profile 2 is used together with a substantially L-shaped wall fastening profile 40, 40'. The wall fastening profile 40, 40' comprises a first leg 41, 41' intended to be placed against and preferably fastened to a wall 62 and a second leg 42, 42' to which the support profile 2 is fastened. The first leg 41, 41' is typically fastened with its outside side directly to the wall 62 via conventional fastening means (such as bolts, screws, gluing, etc.). On the inside of the first leg 41, 41', in the design shown, alignment means 45 are provided which serve as a stop for the side wall 31 of the support profile 2. The second leg 42, 42' may be placed at its upper side against the ceiling 60 and optionally fastened thereto by conventional fastening means (such as bolts, screws, gluing, etc.). However, this is not necessary and the second leg 42, 42' may also be free at its upper side with a certain distance from the ceiling. On the underside, the second leg 42, 42' is provided with at least one hook-shaped fastening means for suspending the support profile 2 thereon. In the design shown, there are two such hook-shaped fastening means 43, 44, which cooperate with corresponding hook-shaped fastening means 34, 35 on the support profile 2. Accordingly, the design of these hook-shaped fastening means 43, 44 corresponds to that of the hook-shaped fastening means 34, 35, such that an inclined wall portion is also provided. Additional fastening of the support profile 2 to the wall fastening profile 40, 40' is also shown in the form of bolts, levelling screws or the like 39 that firmly fasten the support profile 2 to the wall fastening profile 40, 40'.

[0047] Below, the various configurations in which the support profile 2 can be used are described with reference to Figures 2A to 2G. Generally, the intention is to denote profiles having the same placement and functionality but different design due to a modified application with the same reference numeral by using no or one accent mark, e.g. wall fastening profile 40, 40' and spacer 50, 50'.

[0048] Figure 2A shows an initial configuration of a sliding door device 1 intended to be fastened in a free-standing manner to a ceiling 60. For this purpose, the support profile 2 is fastened directly to the ceiling 60 using conventional fastening means. The side walls 31 of the support profile 2 are free-standing and thus a spacer 50 with a shield cover 51 is fastened to each side. The shield cover 51 is attached to the spacer 50 via connecting elements 53a, 54a; 53b, 54b; and 53d, 54c which together form one or multiple snap connections. Here, the shield cover 51 is in a first height configuration relative to the support profile 2 in which the upper side of the shield cover 51 almost reaches the ceiling 60 and is therefore in line with the upper wall 30 of the support profile 2. The spacers 50 have a width such that the inside of the shield cover 51 is at a distance D_1 (indicated in Figure 2D) from the outside of the side walls 31 and this constitutes a first width configuration of the shield cover relative to the support profile 2. The door leaf 4 has a width B_1 corresponding to the width of the support profile 2. There is a vertical

distance between the support profile 2 and the door leaf 4 as indicated by H_1. In the configuration shown, a brush seal 57 is provided on only one shield cover 51.

[0049] In summary, Figure 2A shows a first configuration of the sliding door device 1 in which the support profile 2 is fastened directly to the ceiling 60 with a shield cover 51 on both sides in a first height configuration and a first width configuration relative to the support profile 2. In this case, the door leaf 4 has a width corresponding to the support profile 2 with a vertical gap H_1 as the first height configuration.

[0050] Figure 2B shows a second configuration of a sliding door device 1 intended to be fastened to a wall 62. For this purpose, the wall fastening profile 40 is fastened with its first leg 41 to the wall. In the illustrated design, the second leg 42 is placed with its upper side against a ceiling 60, although this is not necessary. On the underside of the second leg 42, the support profile 2 is fastened by way of the cooperation between the hook-shaped fastening means 34, 43 and 35, 44. An additional fastener 39 is also present between the support profile 2 and the wall fastening profile 40. The alignment means 45 on the inside of the first leg 41 serve as a stop for the outside of the side wall 31 and, together with the inclined portions of the hook-shaped fastening means 34, 43 and 35, 44, provide the desired alignment of the support profile 2 relative to the wall fastening profile 40. The first leg 41 has a width such that the outside of the side wall 31 of the support profile 2 is at a distance D3 (indicated in Figure 2C) from the wall 62 and this constitutes an initial width configuration of the support profile 2 relative to the wall 62. No shield cover is provided on the other side of the support profile 2. This is not necessary in the illustrated configuration as the vertical distance between the door leaf 4 and the support profile 2 (denoted H_2) is sufficiently small. An observer cannot see any of the operating components of the sliding door device 1 in this configuration in any case due to the small vertical distance, in contrast to the sliding door device of Figure 2A. The door leaf 4 has a width B_1 corresponding to the width of the support profile 2.

[0051] In summary, Figure 2B shows a second configuration of the sliding door device 1 in which the support profile 2 is fastened via the wall fastening profile 40 to the wall 62 in a first width configuration of the support profile 2 relative to the wall 62. In this case, the door leaf 4 has a width corresponding to the support profile 2 with a vertical gap H_2 as the second height configuration.

[0052] Figure 2C shows a third configuration of a sliding door device 1 intended to be fastened to a wall 62. For this purpose, the wall fastening profile 40 is fastened with its first leg 41 to the wall. In the illustrated design, the second leg 42 is placed with its upper side against a ceiling 60, although this is not necessary. On the underside of the second leg 42, the support profile 2 is fastened by way of the cooperation between the hook-shaped fastening means 34, 43 and 35, 44. An additional fastener 39 is also present between the support profile 2 and the wall fastening profile 40. The alignment means 45 on the inside of the first leg 41 serve as a stop for the outside of the side wall 31 and, together with the inclined portions of the hook-shaped fastening means 34, 43 and 35, 44, provide the desired alignment of the support profile 2 relative to the wall fastening profile 40. The first leg 41 has a width such that the outside of the side wall 31 of the support profile 2 is at a distance D3 from the wall 62, i.e. the first width configuration of the support profile 2 relative to the wall 62. A spacer 50 with a shield cover 51 is provided on the other side of the support profile 2. The shield cover 51 is attached to the spacer 50 via connecting elements 53a, 54b; 53c, 54c; and 53d, 54d which together form one or multiple snap connections. In this case, the shield cover 51 is in a second height configuration relative to the support profile 2 in which the upper side of the shield cover 51 is in line with the upper side of the second leg 42 of the wall fastening profile 40. The spacer 50 has a width such that the inside of the shield cover 51 is at a distance D_1 (indicated in Figure 2D) from the outside of the side walls 31, i.e. the first width configuration of the shield cover relative to the support profile 2. The door leaf 4 has a width B_1 corresponding to the width of the support profile 2. There is a vertical distance H_1 between the support profile 2 and the door leaf 4.

[0053] In summary, Figure 2C shows a third configuration of the sliding door device 1 in which the support profile 2 is fastened to the wall 62 via the wall fastening profile 40 in the first width configuration of the support profile 2 relative to the wall 62 with a shield cover 51 on one side in the second height configuration and the first width configuration relative to the support profile 2. In this case, the door leaf 4 has a width corresponding to the support profile 2 with a vertical distance H_1 as the first height configuration.

[0054] Figure 2D shows a fourth configuration of a sliding door device 1 intended to be fastened to a wall 62. For this purpose, the wall fastening profile 40' is fastened with its first leg 41' to the wall. In the illustrated design, the second leg 42 is placed with its upper side against a ceiling 60, although this is not necessary. On the underside of the second leg 42', the support profile 2 is fastened by way of the cooperation between the hook-shaped fastening means 34, 43 and 35, 44. An additional fastener 39 is also present between the support profile 2 and the wall fastening profile 40'. The alignment means 45 on the inside of the first leg 41' serve as a stop for the outside of the side wall 31 and, together with the inclined portions of the hook-shaped fastening means 34, 43 and 35, 44, provide the desired alignment of the support profile 2 relative to the wall fastening profile 40'. The first leg 41' has a width such that the outside of the side wall 31 of the support profile 2 is at a distance D_4 from the wall 62, i.e. a second width configuration of the support profile 2 relative to the wall 62. This larger width D_4 (compared to D_3) is useful, for example, if plinths are placed at the bottom of the wall 62. A spacer 50 with a shield cover 51 is provided on the other side of the support profile 2. The

shield cover 51 is attached to the spacer 50 via connecting elements 53a, 54b; 53c, 54c; and 53d, 54d which together form one or multiple snap connections. In this case, the shield cover 51 is in the second height configuration relative to the support profile 2, wherein the upper side of the shield cover 51 is in line with the upper side of the second leg 42 of the wall fastening profile 40'. The spacer 50 has a width such that the inside of the shield cover 51 is at a distance D_1 from the outside of the side wall 31, i.e. the first width configuration of the shield cover relative to the support profile 2. The door leaf 4 has a width B_1 corresponding to the width of the support profile 2. There is a vertical distance H_1 between the support profile 2 and the door leaf 4.

[0055] In summary, Figure 2D shows a fourth configuration of the sliding door device 1 in which the support profile 2 is fastened to the wall 62 via the wall fastening profile 40' in the second width configuration of the support profile 2 relative to the wall 62 with a shield cover 51 on one side in the second height configuration and the first width configuration relative to the support profile 2. In this case, the door leaf 4 has a width corresponding to the support profile 2 with a vertical distance H_1 as the first height configuration.

[0056] Figure 2E shows a fifth configuration of a sliding door device 1 intended to be fastened to a wall 62. For this purpose, the wall fastening profile 40' is fastened with its first leg 41' to the wall. In the illustrated design, the second leg 42 is placed with its upper side against a ceiling 60, although this is not necessary. On the underside of the second leg 42', the support profile 2 is fastened by way of the cooperation between the hook-shaped fastening means 34, 43 and 35, 44. An additional fastener 39 is also present between the support profile 2 and the wall fastening profile 40'. The alignment means 45 on the inside of the first leg 41' serve as a stop for the outside of the side wall 31 and, together with the inclined portions of the hook-shaped fastening means 34, 43 and 35, 44, provide the desired alignment of the support profile 2 relative to the wall fastening profile 40'. The first leg 41' has a width such that the outside of the side wall 31 of the support profile 2 is at a distance D_4 from the wall 62, i.e. the second width configuration of the support profile 2 relative to the wall 62. No shield cover is provided on the other side of the support profile 2. The door leaf 4 has a width B_1 corresponding to the width of the support profile 2.

[0057] In summary, Figure 2E shows a fifth configuration of the sliding door device 1 in which the support profile 2 is fastened via the wall fastening profile 40' to the wall 62 in the second width configuration of the support profile 2 relative to the wall 62. In this case, the door leaf 4 has a width corresponding to the support profile 2 with a vertical gap H_2 as the second height configuration.

[0058] Figure 2 shows a sixth configuration of a sliding door device 1 intended to be fastened to a wall 62. For this purpose, the wall fastening profile 40' is fastened with its first leg 41' to the wall. In the illustrated design, the second leg 42 is placed with its upper side against a ceiling 60, although this is not necessary. On the underside of the second leg 42', the support profile 2 is fastened by way of the cooperation between the hook-shaped fastening means 34, 43 and 35, 44. An additional fastener 39 is also present between the support profile 2 and the wall fastening profile 40'. The alignment means 45 on the inside of the first leg 41' serve as a stop for the outside of the side wall 31 and, together with the inclined portions of the hook-shaped fastening means 34, 43 and 35, 44, provide the desired alignment of the support profile 2 relative to the wall fastening profile 40'. The first leg 41' has a width such that the outside of the side wall 31 of the support profile 2 is at a distance D_4 from the wall 62, i.e. the second width configuration of the support profile 2 relative to the wall 62. A spacer 50' with a shield cover 51 is provided on the other side of the support profile 2. The shield cover 51 is attached to the spacer 50' via connecting elements 53a, 54b; 53c, 54c; and 53d, 54d which together form one or multiple snap connections. In this case, the shield cover 51 is in the second height configuration relative to the support profile 2, wherein the upper side of the shield cover 51 is in line with the upper side of the second leg 42 of the wall fastening profile 40'. The spacer 50' has a width such that the inside of the shield cover 51 is at a distance D_2 from the outside of the side wall 31, i.e. a second width configuration of the shield cover relative to the support profile 2. The door leaf 4 has a width B_2 larger than the width of the support profile 2. There is a vertical distance H_1 between the support profile 2 and the door leaf 4a.

[0059] In summary, Figure 2F shows a sixth configuration of the sliding door device 1 in which the support profile 2 is fastened to the wall 62 via the wall fastening profile 40' in the second width configuration of the support profile 2 relative to the wall 62 with a shield cover 51 on one side in the second height configuration and the second width configuration relative to the support profile 2. In this case, the door leaf 4a has a width larger than the support profile 2 with a vertical distance H_1 as the first height configuration.

[0060] Figure 2G shows a seventh configuration of a sliding door device 1 intended to be fastened in a free-standing manner to a ceiling 60. For this purpose, the support profile 2 is fastened directly to the ceiling 60 using conventional fastening means. The side walls 31 of the support profile 2 are free-standing and thus a spacer 50' with a shield cover 51 is fastened to each side. The shield cover 51 is attached to the spacer 50' via connecting elements 53a, 54a; 53b, 54b; and 53d, 54c which together form one or multiple snap connections. Here, the shield cover 51 is in the first height configuration relative to the support profile 2, wherein the upper side of the shield cover 51 almost reaches the ceiling 60 and is therefore in line with the upper wall 30 of the support profile 2. The spacers 50' have a width such that the inside of the shield cover 51 is at a distance D_2 (indicated in Figure 2F) from the outside of the side walls 31, i.e. the second width

configuration of the shield cover relative to the support profile 2. The door leaf 4a has a width B_2 larger than the width of the support profile 2. There is a vertical distance H_1 between the support profile 2 and the door leaf 4. In the configuration shown, a brush seal 57 is provided on only one shield cover 51.

[0061] In summary, Figure 2G shows a seventh configuration of the sliding door device 1 in which the support profile 2 is fastened directly to the ceiling 60 with a shield cover 51 on both sides in the first height configuration and the second width configuration relative to the support profile 2. In this case, the door leaf 4a has a width corresponding to the support profile 2 with a vertical distance H_1 as the first height configuration.

[0062] It should be clear from the above that each configuration of the sliding door device 1 uses the same support profile 2 as well as the same shield cover 51 (if present), such that the visible components are the same regardless of the configuration.

[0063] It should also be clear that other configurations are possible for the sliding door device besides those shown in Figures 2A to 2G, e.g. a configuration having a wide door leaf 4a with the vertical spacing H_2; or a configuration having a wide door leaf 4a and the first width configuration relative to the wall 62; etc.

[0064] Although certain aspects of the present invention have been described with respect to specific embodiments, it is clear that these aspects can be implemented in other forms within the scope of protection as defined by the claims.

Claims

1. A sliding door device (1) comprising a support profile (2) for supporting a runner (3) configured to suspend thereon a door leaf (4) of the sliding door device, which support profile, in its transverse cross-section, is provided with: an upper wall (30) extending between two ends (30a); two side walls (31) facing each other and extending at least from a proximal end (31a) near a respective end of the upper wall to a distal end (31b); two lower walls (32) each extending from near a distal end of a respective side wall towards each other, which lower walls together form a running surface (33) for said runner, wherein the upper wall, the side walls and the lower walls each have an outer side and an inner side, which inner sides face each other,

   characterised in that the upper wall is provided with at least one hook-shaped fastening means (35) on its outer side and that at least one of the side walls is provided with at least one alignment means (36) on its outer side, wherein the sliding door device is further provided with:

   - a substantially L-shaped wall fastening profile (40; 40') comprising a first leg (41; 41') and a second leg (42; 42'), wherein the first leg is configured to be fastened to a wall, wherein the second leg is provided with at least one further hook-shaped fastening means (44), wherein the support profile is fastened to the wall fastening profile at least by hooking together the hook-shaped fastening means; and/or
   - a spacer (50; 50') and a shield cover (51), which spacer comprises at least one further alignment means (52) and at least one fastening means (53), wherein the spacer is fastened to said at least one of the side walls and is positioned by mutual engagement of the alignment means, which shield cover comprises at least one further fastening means (54), wherein the shield cover is fastened to the spacer by mutual engagement of the fastening means,

   in that said at least one hook-shaped fastening means comprises an inclined portion (35a) for aligning the support profile with the wall fastening profile, and
   in that the spacer comprises multiple fastening means and **in that** the shield cover comprises multiple further fastening means that together allow the shield cover to be placed in at least two different positions relative to the spacer.

2. The sliding door device according to claim 1, **characterised in that** said at least one hook-shaped fastening means comprises an upright wall (35b) and a projecting wall (35a), which upright wall extends from said upper wall to a distal end, in particular substantially parallel to said side walls, which projecting wall forms said inclined portion and extends from near the distal end of the upright wall to one of said side walls.

3. The sliding door device according to claim 1 or 2, **characterised in that** said inclined portion forms an angle (β) relative to the side walls, which angle is between 60° and 89°, which angle in particular is not more than 85° and more particularly not more than 83°, which angle in particular is at least 70° and more particularly at least 75°.

4. The sliding door device according to any one of the preceding claims, **characterised in that** said at least one hook-shaped fastening means comprises at least two separate hook-shaped fastening means (34, 35).

5. The sliding door device according to claim 4, **characterised in that** each hook-shaped fastening

means comprises an inclined portion (34a, 35a) for aligning the support profile with the wall fastening profile, which inclined portions are preferably substantially parallel to each other.

6. The sliding door device according to any one of the preceding claims, **characterised in that** each side wall is provided with at least one alignment means (36, 37).

7. The sliding door device according to any one of the preceding claims, **characterised in that** said at least one alignment means is formed near an end, preferably the proximal end, of the corresponding side wall.

8. The sliding door device according to claim 7, **characterised in that** said at least one alignment means is formed by the proximal end (37) of the corresponding side wall or by a notch (36) at the proximal end of the corresponding side wall.

9. The sliding door device according to any one of the preceding claims, **characterised in that** the lower walls are each provided on their inner side with a upright wall (35) for aligning said runner in the support profile.

10. The sliding door device according to any one of the preceding claims, **characterised in that** the upper wall of the support profile is provided with a plurality of first openings and a plurality of second openings, wherein the first openings are configured to receive first fixers for the purpose of fastening the support profile to a ceiling and wherein the second openings are configured to receive second fixers (39) for the purpose of fixing the support profile to the wall fastening profile.

11. The sliding door device according to any one of the preceding claims, **characterised in that** the second leg of the wall fastening profile is provided on its side facing the support profile with an alignment means (44) for the purpose of aligning the support profile with the wall fastening profile.

12. The sliding door device according to any one of the preceding claims, **characterised in that** the wall fastening profile is selected from a plurality of mutually different wall fastening profiles (40, 40'), wherein the first leg of each wall fastening profile has a wall side and a side facing the support profile, wherein a shortest distance (D_3, D_4) between these sides is different for each of said mutually different wall fastening profiles.

13. The sliding door device according to any one of the preceding claims, **characterised in that** the spacer is selected from a plurality of mutually different spacer profiles (50, 50'), wherein each spacer has a side facing the support profile and a side facing the shield cover, wherein a shortest distance (D_1, D_2) between these sides is different for each of said mutually different spacer profiles.

14. The sliding door device according to any one of the preceding claims, **characterised in that** the fastening means together form one or multiple snap connections.

15. The sliding door device according to any one of the preceding claims, **characterised in that** the shield cover is provided near its lower end with a holder (56) configured to hold a brush seal (57).

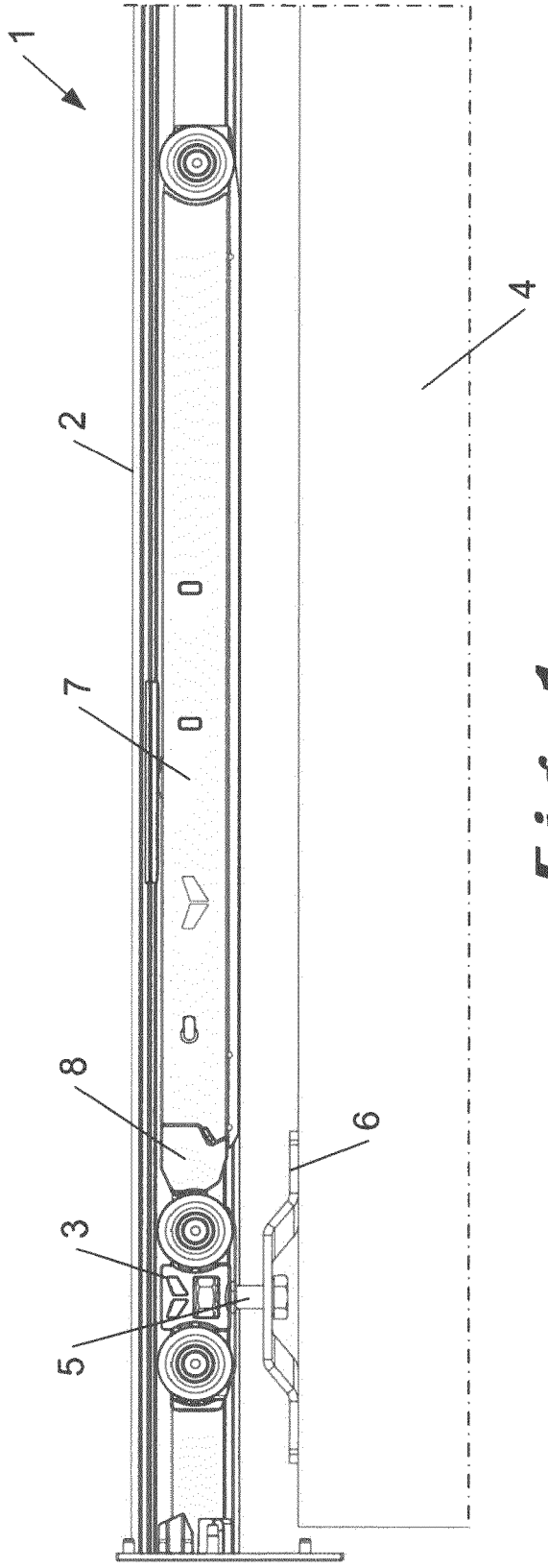

Fig. 1

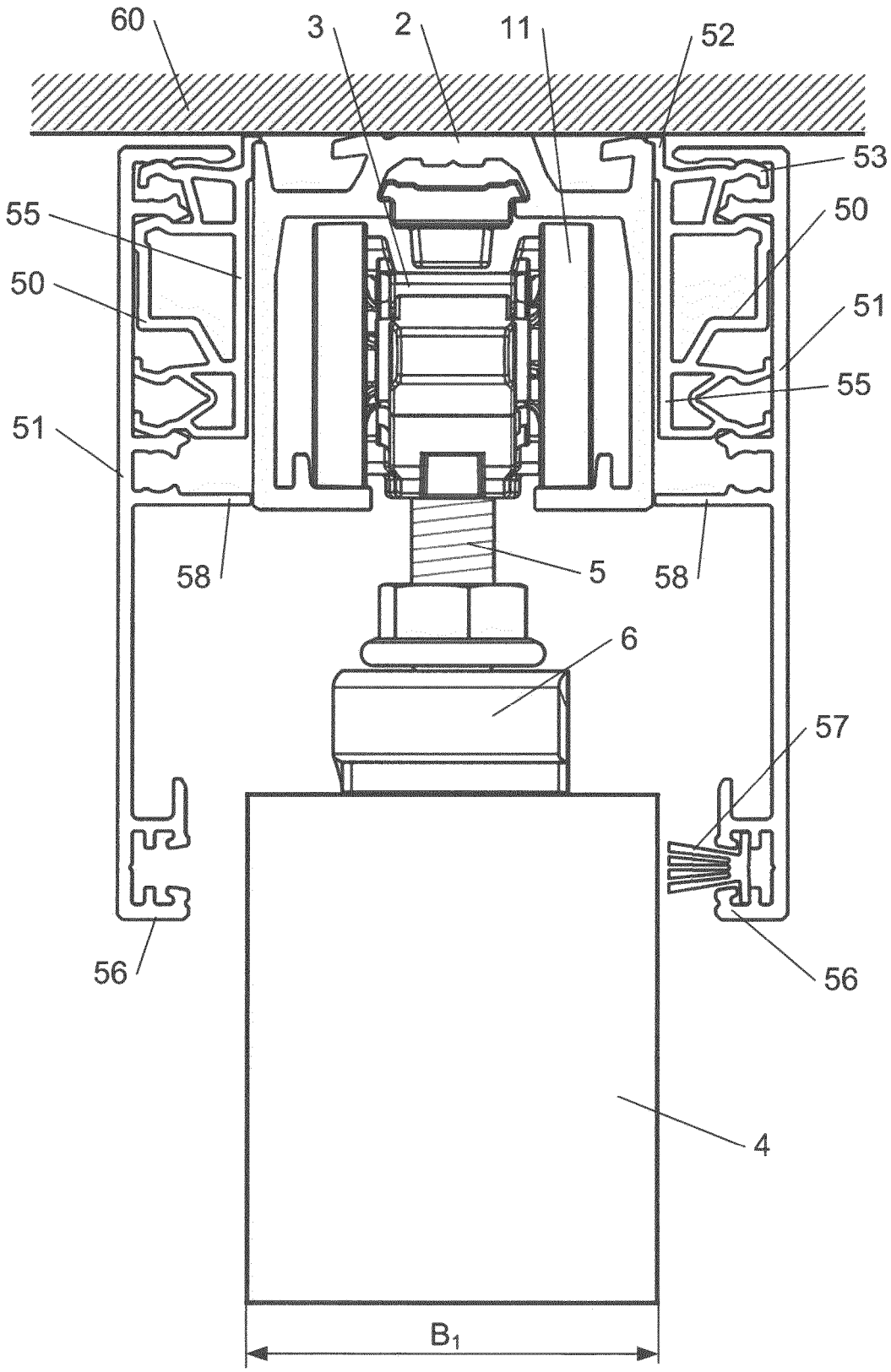

Fig. 2A

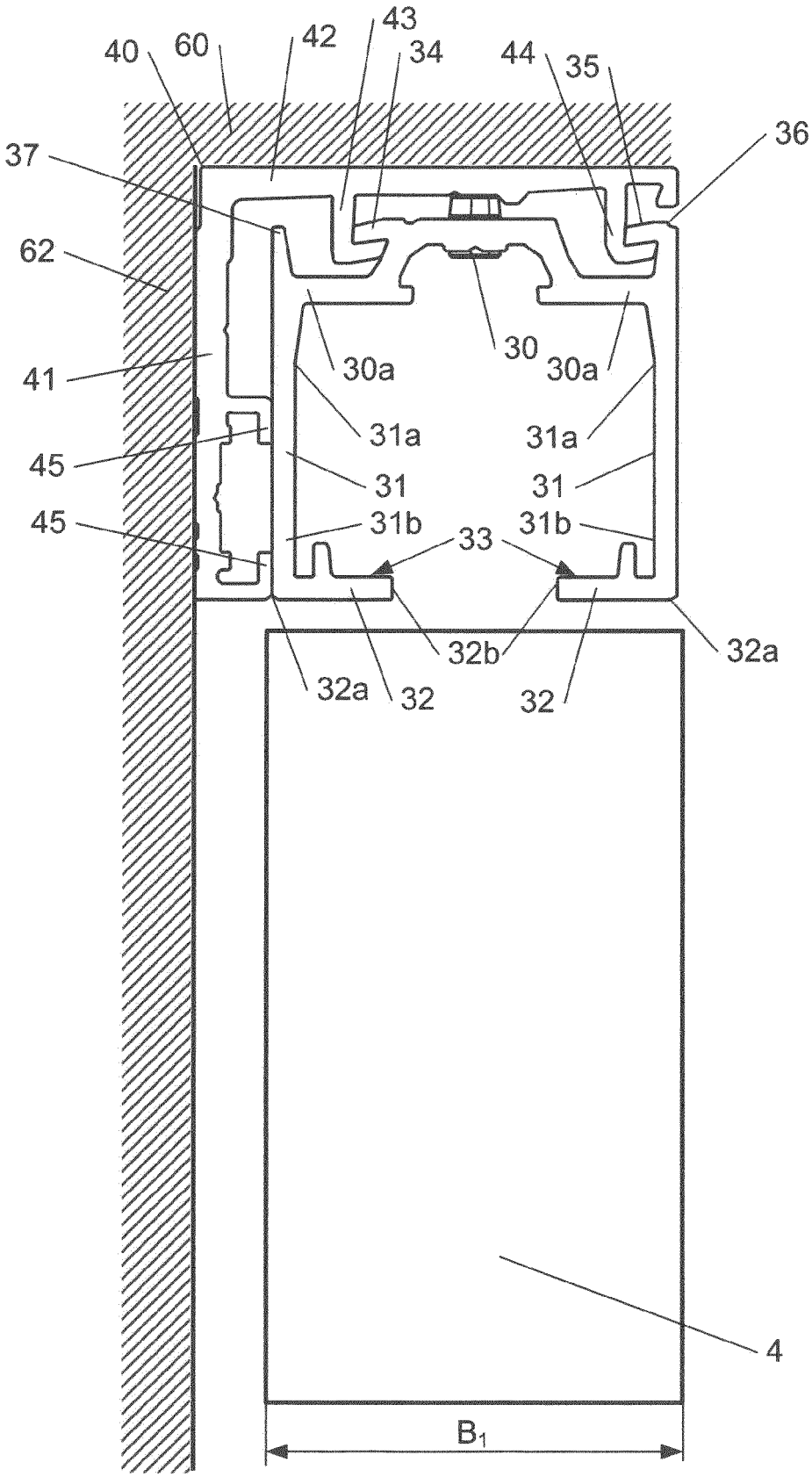
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Fig. 2B

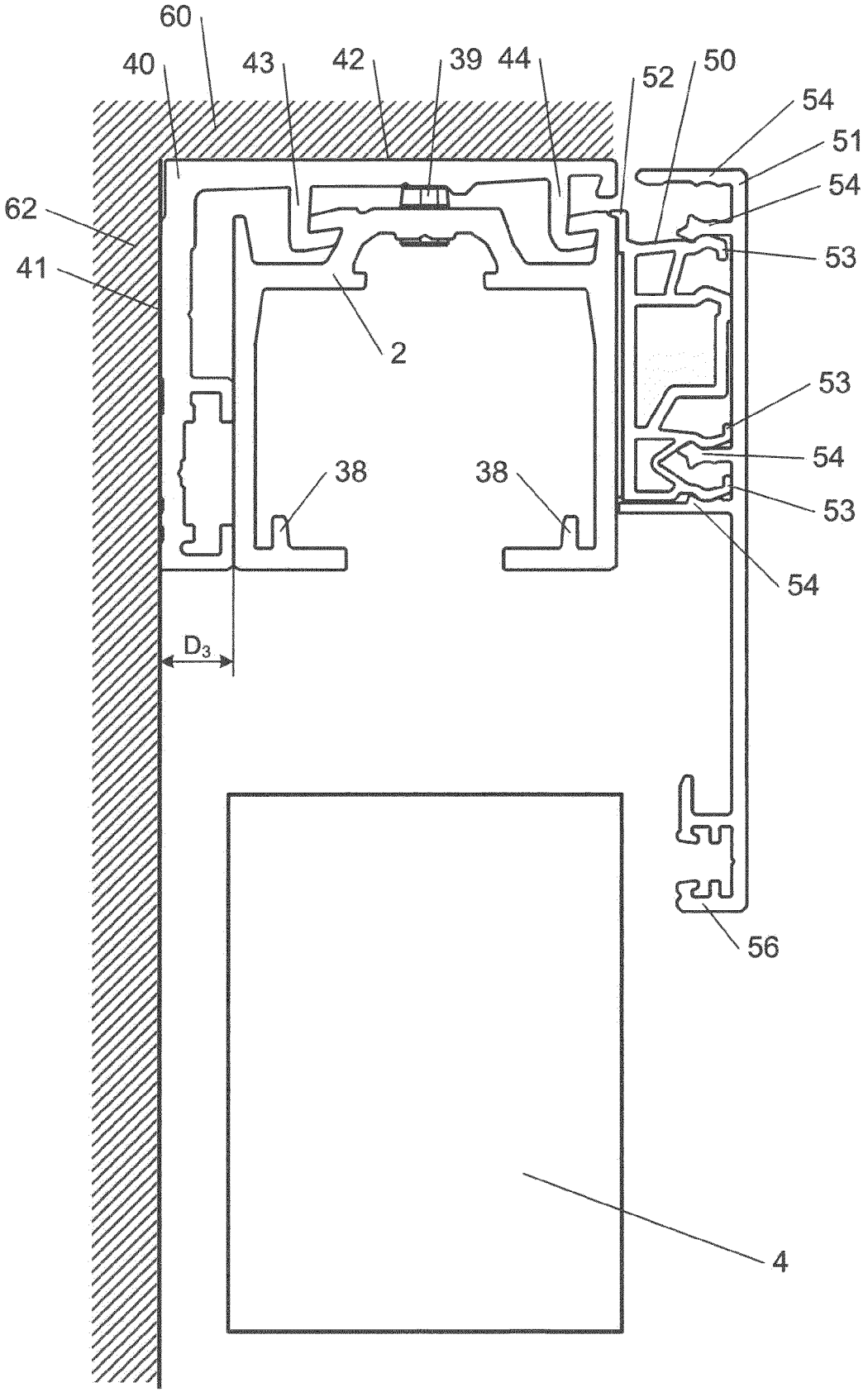

Fig. 2C

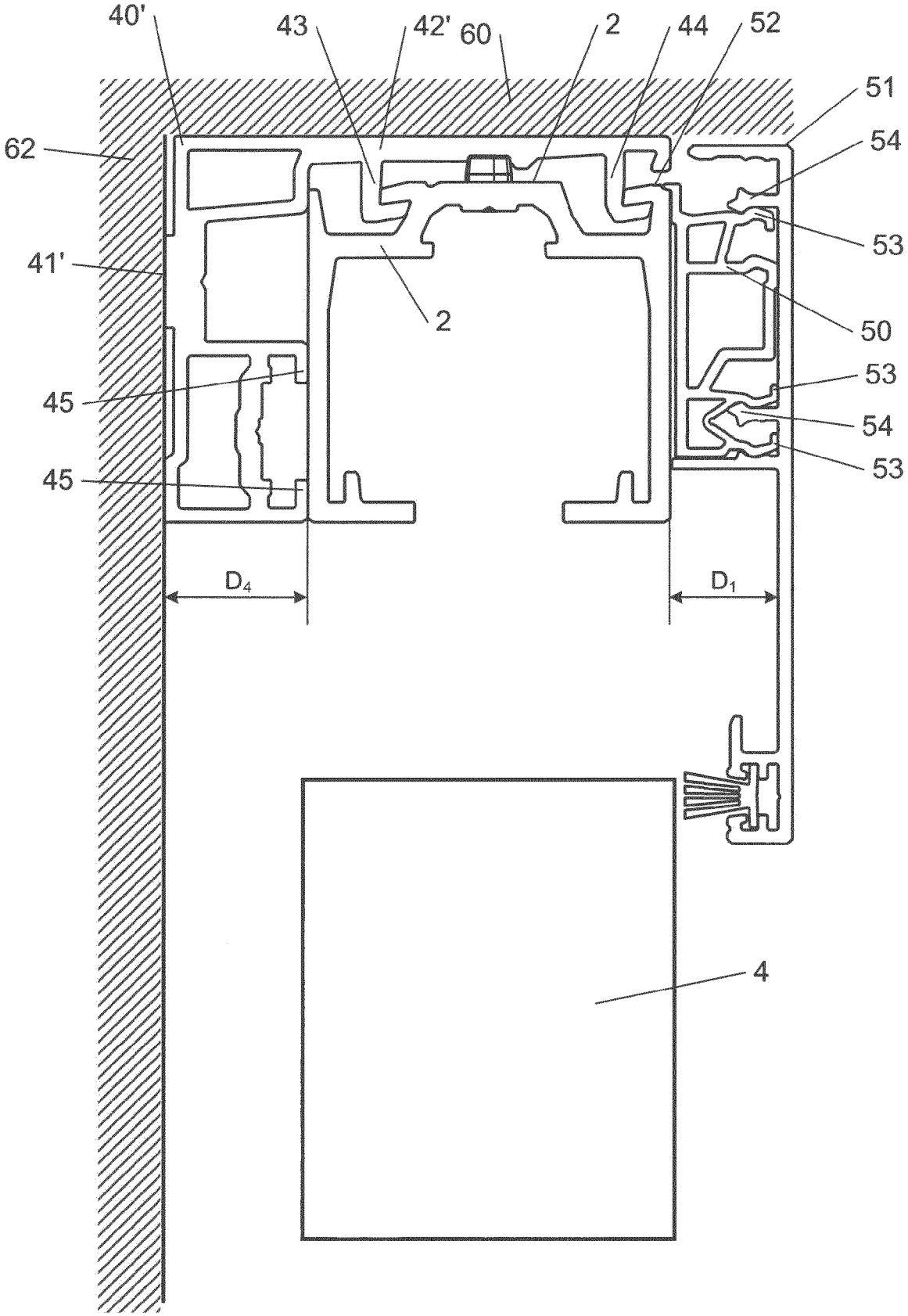

Fig. 2D

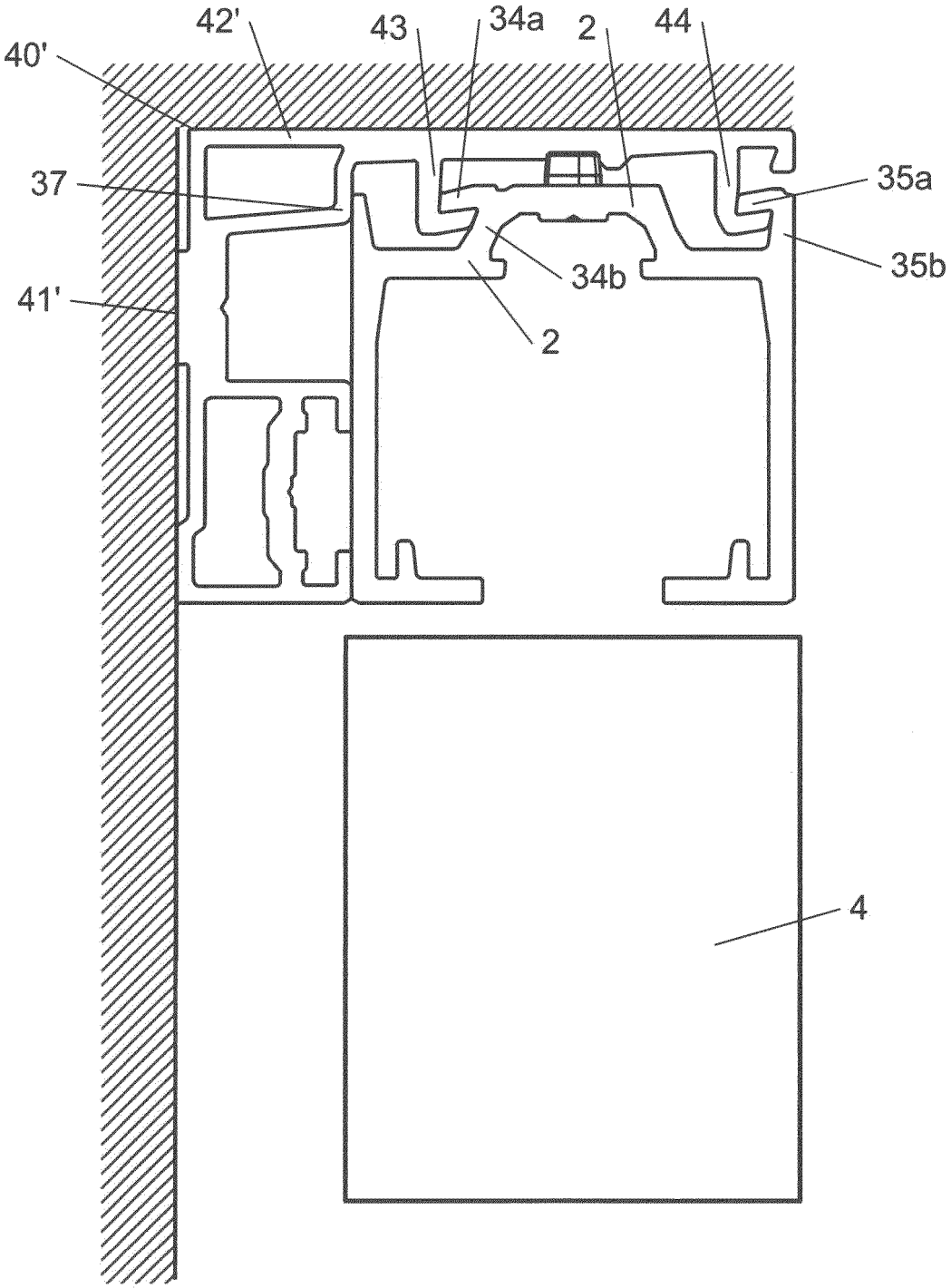

Fig. 2E

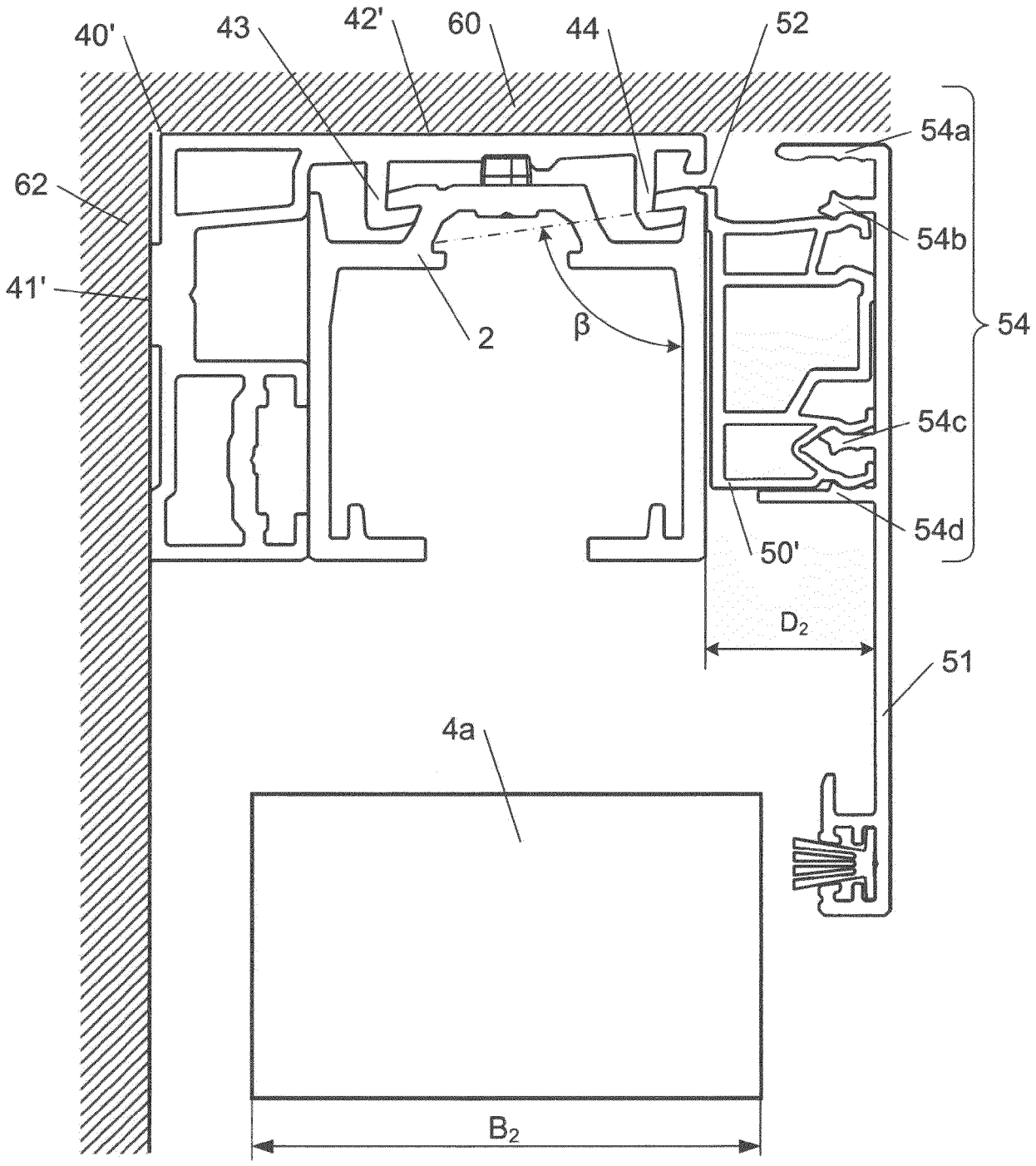

Fig. 2F

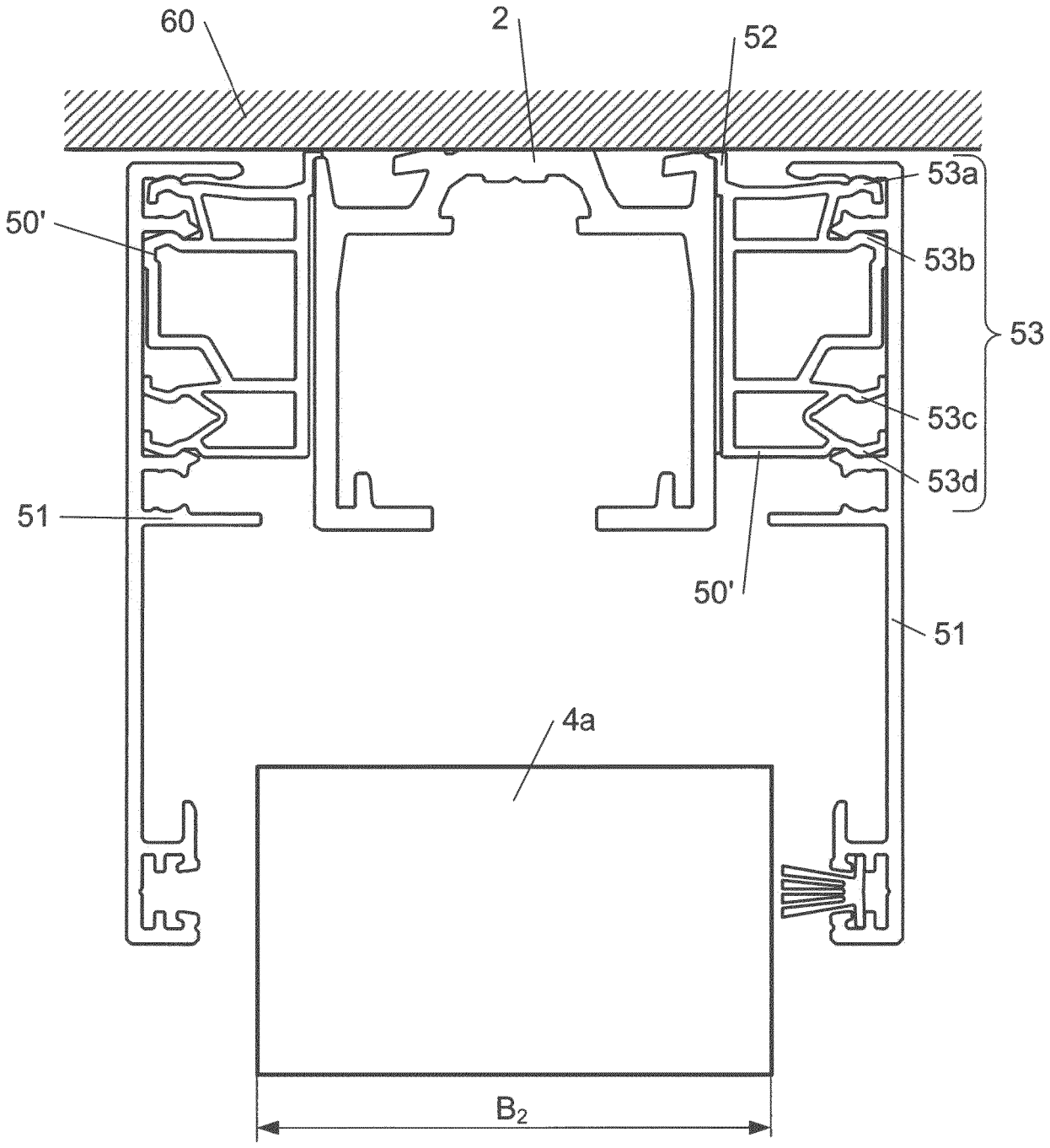

Fig. 2G

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EUROPEAN SEARCH REPORT

Application Number
EP 24 16 9692

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	EP 1 431 491 A1 (PORTALP INTERNAT [FR]) 23 June 2004 (2004-06-23) * paragraphs [0024] - [0033] * * figure 5 *	1-15	INV. E05D15/06
A	WO 2009/025607 A1 (GSAB GLASMAESTERIBRANSCHENS SE [SE]) 26 February 2009 (2009-02-26) * page 2, line 5 - page 3, line 13 * * figure 2 *	1-15	
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TECHNICAL FIELDS SEARCHED (IPC)

E05D
E05F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	6 September 2024	Mund, André

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06-09-2024

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- EP 1431491 A1 **[0005]**