

(19)



(11)

EP 3 889 382 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
06.10.2021 Bulletin 2021/40

(51) Int Cl.:
E05D 15/06 (2006.01) E06B 5/16 (2006.01)

(21) Application number: **20167177.3**

(22) Date of filing: **31.03.2020**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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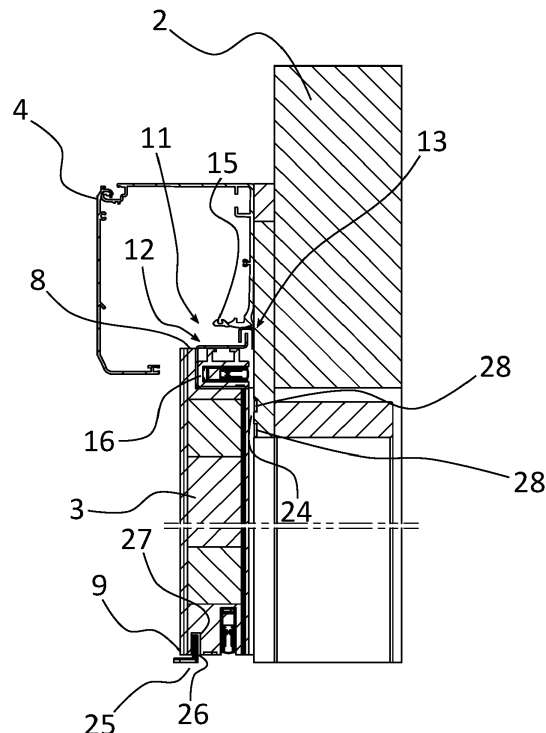
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(54) SLIDING DOOR ASSEMBLY

(57) The present invention relates to a sliding door assembly (1) comprising a door frame (2), a door leaf (3), a pelmet (4), at least partly inside of which is provided a door suspension arrangement (10) arranged to guide said door leaf (3) in sliding between an open position and a closed position, wherein said sliding door assembly (1)

comprises a support arrangement (11), wherein said support arrangement (11) comprises a pair of horizontally elongated metal profiles (12, 13) configured to mate with one another, one of which (12) is provided along an upper side (8) of said door leaf (3), and one of which (13) is provided between said door leaf (3) and said pelmet (4).

**Fig. 2a****EP 3 889 382 A1**

Description

FIELD OF THE INVENTION

[0001] The present invention relates to a sliding door assembly having a support arrangement.

BACKGROUND OF THE INVENTION

[0002] Certain sliding door assemblies used today are not able to provide the same soundproofing and fireproofing capabilities as hinged doors may. For this reason, hinged doors are more often used when soundproofing or fireproofing is of great importance.

[0003] A problem with using a hinged door compared to a sliding door is that it requires space to swing open, taking up more space in the room it is to be used in than a sliding door does. For this reason, choosing doors to be used in tight spaces is often a trade-off between space utilization on one hand, and soundproofing and fireproofing on the other.

SUMMARY OF THE INVENTION

[0004] It is an object of the present invention to alleviate at least some of the mentioned drawbacks of the prior art and to provide a door that is space efficient and has good fireproofing capabilities. This and other objects, which will become apparent in the following, are accomplished by a sliding door assembly as defined in the accompanying independent claim.

[0005] The term exemplary should in this application be understood as serving as an example, instance or illustration.

[0006] The present invention is at least partially based on the realisation that the fireproofing capabilities of regular sliding doors are less than optimal, as they fall outwards from the door frame when there is a failure of the suspension arrangement on which the door leaf hangs. This leaves the door frame opening completely unprotected, allowing fire to spread from one room to another. Therefore, the present invention provides a support arrangement configured to prevent or limit the distance the door leaf may fall away from the door frame if the suspension arrangement fails. This is beneficial since it increases the time it takes for a fire to spread from one side of the sliding door assembly to the other.

[0007] The present invention is furthermore based on the realisation that the pelmet will melt when exposed to a fire, and preventing the molten pelmet from entering a space between the door leaf and the door frame is beneficial from a fireproofing perspective.

[0008] According to the first aspect of the present invention, a sliding door assembly is provided. The sliding door assembly comprises a door frame, a door leaf, and a pelmet, at least partly inside of which is provided a door suspension arrangement arranged to guide said door leaf in sliding between an open position and a closed position.

The sliding door assembly further comprises a support arrangement, wherein the support arrangement comprises a pair of horizontally elongated metal profiles configured to mate with one another, one of which is provided along an upper side of the door leaf, and one of which is provided between the door leaf and the pelmet.

[0009] It should be understood that the door leaf may alternatively be referred to as a door blade, and that the door leaf has a striker side, a trailing side, an upper side and a lower side. The striker side is the side of the door leaf on which the striker mechanism is provided. The trailing side is the opposite side of the door leaf compared to the striker side. The upper side is the side of the door leaf that is connected to the door suspension arrangement. The door leaf is dimensioned to cover a door opening in the door frame. The pelmet may for example be made from aluminium, while the pair of horizontally elongated metal profiles are made from a metal having a higher melting point than the pelmet material, such as steel.

[0010] According to one example embodiment, the support arrangement is configured to limit the distance the door leaf may fall away from the door frame should the door suspension arrangement fail. The door suspension arrangement may for example fail when a fire causes the pelmet to melt, thus exposing the door suspension arrangement to the fire and removing the support it had from the pelmet.

[0011] According to one example embodiment, the door suspension arrangement comprises at least one roller arranged to roll on a guide surface on the pelmet, thus guiding the door leaf in sliding between an open position and a closed position.

[0012] According to one example embodiment, the horizontally elongated metal profile provided between the door leaf and the pelmet is arranged to cover a gap between the door leaf and the door frame. The horizontally elongated metal profile provided between the door leaf and the pelmet covers a gap between the door leaf and the door frame when viewed from a top-down view. This profile covers the gap so as to, in case of a fire, prevent the melting pelmet from dripping down into the gap between the door leaf and the door frame.

[0013] According to one example embodiment, the sliding door assembly further comprises a floor guide arranged to distance the door leaf from a floor and guide the door leaf in sliding between an open position and a closed position. The floor guide comprises a guiding protrusion provided on a floor or on a doorstep portion of the door frame. The lower side of the door leaf comprises a recessed portion arranged to receive the guiding protrusion and guide the lower side of the door leaf in sliding between an open position and a closed position.

[0014] According to one example embodiment, a distance between the floor and a lower side of the door leaf is between 3 and 9 mm, preferably between 4 and 8 mm, most preferably between 5 and 7 mm.

[0015] According to one example embodiment, the horizontally elongated metal profile that is provided be-

tween the door leaf and the pelmet extends at least 75 % of a length of the suspension arrangement, preferably at least 90 %, and most preferably at least 100 %. Thus, this profile covers a portion of the upper side of the door leaf, such that the door leaf is protected from being damaged by a melting pelmet in case of fire.

[0016] According to one example embodiment, the horizontally elongated metal profile that is provided along an upper side of the door leaf covers a portion of the suspension arrangement, when viewed from a top-down view.

[0017] According to one example embodiment, the suspension arrangement comprises a slide adaptor and rollers. The slide adaptor extends along and is connected to an upper side of the door leaf. The rollers are connected to the slide adaptor by means of a friction fit or by mechanical fasteners. The horizontally elongated metal profile that is provided along an upper side of the door leaf covers the portions of the slide adaptor at which the rollers are not connected. Consequently, the rollers and the horizontally elongated metal profile that is provided along an upper side of the door leaf jointly cover the slide adaptor.

[0018] According to one example embodiment, said horizontally elongated metal profile that is provided between said door leaf and said pelmet has a length that is at least twice the width of the door leaf. This allows the door leaf to slide between an open position and a closed position while still being covered by the horizontally elongated metal profile.

[0019] According to one example embodiment, the horizontally elongated metal profile that is provided between said door leaf and said pelmet has a concave surface and a convex surface, wherein the convex surface faces said pelmet and the concave surface faces said door leaf and is configured to mate with the horizontally elongated metal profile provided thereon.

[0020] According to one example embodiment, the horizontally elongated metal profile that is provided between the door leaf and the pelmet is U-shaped. The U-shaped metal profile is oriented such that the bottom part of the U is facing upwards, towards the pelmet. In other words, the U-shaped metal profile does not have a gutter-like function. This prevents molten aluminium from the pelmet from flowing along the length of the U-shaped metal profile and pooling at either end thereof. Instead, the molten aluminium is directed away from the door frame by first the U-shaped metal profile, and then the horizontally elongated metal profile provided along the upper side of the door leaf. This reduces the risk of a fire spreading from one side of the sliding door assembly to the other.

[0021] According to one example embodiment, there is a vertical clearance and a horizontal clearance between the pair of horizontally elongated metal profiles.

[0022] According to one example embodiment, the pair of horizontally elongated metal profiles are arranged to form a contactless mate. This allows for frictionless

movement of the pair of metal profiles in relation to each other, while still maintaining the supporting function in case the suspension arrangement fail.

[0023] According to one example embodiment, the horizontal clearance is between 2 and 6 mm on either side of the horizontally elongated metal profile provided along the upper side of the door leaf, preferably between 3 and 5 mm, and wherein the vertical clearance is between 1 and 5 mm, preferably between 2 and 4 mm. This allows for contactless mating between the two metal profiles and for the metal profiles to provide support for the door leaf should the suspension arrangement fail.

[0024] According to one example embodiment, the horizontally elongated metal profile that is provided between the door leaf and the pelmet has a frame connecting side and a supporting side, and wherein the horizontally elongated metal profile provided along an upper side of the door leaf protrudes between the door frame connecting side and the supporting side.

[0025] According to one example embodiment, the frame connecting side is connected to the door frame and wherein the supporting side is configured to limit the distance the door leaf may fall away from the door frame should the suspension arrangement fail.

[0026] According to one example embodiment, the height of the supporting side is at least as great as the sum of the distance between the door leaf and the floor and the vertical clearance between the pair of horizontally elongated metal profiles. This prevents the door leaf from falling away from the door frame in case the door suspension arrangement and the floor guide arrangement are damaged and fail, for example due to a fire.

[0027] According to one example embodiment, the vertical distance between the lower end of the supporting side and the upper end of the metal profile that protrudes between the door frame connecting side and the supporting side is at least 6 mm, preferably at least 7 mm, most preferably at least 8 mm.

[0028] According to one example embodiment, the supporting side has a height measured in a vertical direction that is at least 6 mm, preferably at least 8 mm, and most preferably at least 9 mm.

[0029] According to one example embodiment, the pair of horizontally elongated metal profiles of the support arrangement mate to form a labyrinth seal. This increases the fireproofing capabilities of the sliding door assembly, as the rate of fire gases moving from one side of the door leaf to the other is reduced. Additionally, this also increases the soundproofing capabilities of the sliding door assembly.

[0030] According to one example embodiment, the sliding door assembly comprises intumescent seals provided at positions between said door leaf and said door frame. An intumescent seal is a piece of material arranged around a door leaf or a door frame that when exposed to heat, such as from a fire, expands. This expansion serves to close any clearance or gaps between the door leaf and the door frame, thus preventing the fire

from spreading for a period of time.

[0031] According to one example embodiment, the intumescent seals are arranged to expand and at least partly fill a clearance provided at the support arrangement. This serves to further increase the fire proofing capabilities of the sliding door assembly by reducing the rate at which fire gasses may move from one side of the door leaf to the other.

[0032] According to another aspect of the present invention, a sliding door assembly is provided, comprising a door frame, a door leaf, and a door suspension arrangement arranged to guide said door leaf in sliding between an open position and a closed position. Said sliding door assembly comprises a plurality of support arrangements, wherein a first support arrangement is a vertically elongated metal pocket provided on said door frame and which is arranged to receive a striker side of said door leaf, wherein a second support arrangement is a pair of vertically elongated metal profiles configured to mate with one another when the door leaf slides into a closed position, one of which is provided on an opposite side of said door leaf compared to said striker side, and one of which is provided on said door frame, wherein a third support arrangement is a pair of horizontally elongated metal profiles configured to mate with one another, one of which is provided along an upper side of said door leaf, and one of which is provided between said door leaf and said door suspension arrangement.

[0033] According to one example embodiment, said support arrangements are configured to limit the distance said door leaf may fall away from said door frame should said upper door guide fail.

[0034] According to one example embodiment, said pocket is dimensioned to support said striker side of said door leaf. The pocket has a bottom, as well as opposite side walls. The side walls may for example be parallel with one another.

[0035] According to one example embodiment, said first support arrangement is a vertically elongated metal pocket extending at least 75 % of a height of said door leaf, preferably at least 90 %, and most preferably at least 100 %.

[0036] According to one example embodiment, said pocket has a width that is between 4 and 14 mm larger than a thickness of said door leaf, preferably between 6 and 12 mm larger, and most preferably between 8 and 10 mm larger.

[0037] According to one example embodiment, said pocket has a depth that is between 23 and 28 mm, preferably between 24 and 27 mm, and most preferably between 25 and 26 mm.

[0038] According to one example embodiment, said first support arrangement comprises a pair of flexible sealing members arranged on side walls of said pocket. The flexible sealing members extend along a length of the pocket so as to form a seal between the door leaf and the pocket when the door leaf is in the closed position.

[0039] According to one example embodiment, the pair

of vertically elongated metal profiles of said second support arrangement mate to form a labyrinth seal when said door leaf is in said closed position.

[0040] According to one example embodiment, there is provided a clearance between the pair of vertically elongated metal profiles, such that a contactless mate is formed therebetween when the door leaf is in the closed position. The clearance is between 2 mm and 6 mm, and preferably between 3 and 5 mm.

[0041] Generally, all terms used in the description are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to "a/an/the [element, device, component, means, step, etc.]" are to be interpreted openly as referring to at least one instance of said element, device, component, means, step, etc., unless explicitly stated otherwise.

BRIEF DESCRIPTION OF THE DRAWINGS

[0042] These and other features and advantages of the present invention will now be further clarified and described in more detail, with reference to the appended drawings showing different embodiments of a sliding door assembly according to the present invention.

Figure 1 is a front view of a sliding door assembly according to the present invention,
Figure 2a is a section side view of the sliding door assembly of Figure 1,
Figure 2b is a detailed section view of the support arrangement,
Figure 3 is a perspective view of the sliding door assembly of Figure 1,
Figure 4 is a section top view of the sliding door assembly of Figure 1.

DETAILED DESCRIPTION OF EMBODIMENTS

[0043] In the following detailed description, some embodiments of the present invention will be described. However, it is to be understood that features of the different embodiments are exchangeable between the embodiments and may be combined in different ways, unless anything else is specifically indicated. Even though in the following description, numerous specific details are set forth to provide a more thorough understanding of the present invention, it will be apparent to one skilled in the art that the present invention may be practiced without these specific details. In other instances, well known constructions or functions are not described in detail, so as not to obscure the present invention.

[0044] In the following, any spatial references such as upper, lower, front, back, inner, outer, etc. are to be interpreted according to their ordinary meaning from the perspective of the sliding door assembly when used according to its intended use.

[0045] Figure 1 is a front view of a sliding door assembly

bly 1 according to the present invention. The sliding door assembly 1 shown in Fig. 1 comprises a door frame 2, a door leaf 3, and a pelmet 4. The door frame 2 is a rectangular structure made of wood that defines a door opening 5, which is to be covered by the door leaf 3 when this is in a closed position as illustrated in Fig. 1. The door leaf 3 has a striker side 6, a trailing side 7, an upper side 8 and a lower side 9. The striker side 6 is the side of the door leaf 3 on which the striker mechanism is provided. The trailing side 7 is the opposite side of the door leaf 3 compared to the striker side. The upper side 8 is the side of the door leaf 3 that is connected to a door suspension arrangement 10 arranged to guide the door leaf 3 in sliding between an open position and a closed position, as described below.

[0046] The sliding door assembly 1 further comprises a support arrangement 11, arranged to prevent or limit the distance the door leaf 3 may fall away from the door frame 2 should the door suspension arrangement 10 fail due to a fire. The pelmet 4 shown in Fig. 1 is made from aluminium, and covers at least a portion of the door suspension arrangement 10. The support arrangement 11 comprises a pair of horizontally elongated metal profiles 12, 13, which are made from steel, as steel has a higher melting point than aluminium. The pair of metal profiles 12, 13 are configured to mate with each other, as is shown in Figs. 2a and 2b below. This allows the support arrangement 11 to survive a fire longer than the pelmet 4 and the door suspension arrangement 10 do, thus increasing the fireproofing capabilities of the sliding door assembly 1. The pelmet 4 extends from a position on the door frame 2 adjacent to the striker side 6 of the door leaf 3, to a position on the door frame 2 on the opposite side of the door opening 5, and onwards in that direction. The length of the pelmet 4 is approximately twice that of the door leaf 3 width, thus allowing the door leaf 3 to slide between a completely closed position to a completely open position.

[0047] The sliding door assembly 1 is seen from the front side in Fig. 1, alternatively referred to as the pelmet side, which is the side of the sliding door assembly 1 on which the pelmet 4 is arranged. Two section lines are illustrated, namely section line A-A and section line B-B.

[0048] Figure 2a is a section side view of the sliding door assembly 1, along the section line A-A illustrated in Fig. 1. This figure shows the door leaf 3 from a side view, sectioned such that only the upper side 8 and lower side 9 of the door leaf 3 is shown. Inside the pelmet 4, there is a door suspension arrangement 10 arranged to guide said door leaf 3 in sliding between an open position and a closed position. The door suspension arrangement 10 comprises two rollers 14, shown in Fig. 3, arranged to roll on a guide surface 15 on the pelmet 4, thus guiding the door leaf 3 in sliding between an open position and a closed position. The door suspension arrangement 10 further comprises a slide adaptor 16 extending along a portion of the upper side 8 of the door leaf 3. The slide adaptor 16 is connected to the upper side 8 of the door

leaf 3, while the rollers 14 are connected to the slide adaptor 16 by means of a friction fit or by mechanical fasteners.

[0049] Shown in Fig. 2a is the support arrangement 11 of the sliding door assembly 1, which comprises the abovementioned pair of horizontally elongated metal profiles 12, 13. Figure 2b shows this support arrangement 11 in more detail. One metal profile 13 is U-shaped and provided along the upper side 8 of the door leaf 3, and the other metal profile 12 is provided between the door leaf 3 and the pelmet 4 and is arranged to protrude between the two ends 17, 18 of the U-shaped metal profile 13. The support arrangement 11 is thus configured to limit the distance the door leaf 3 may fall away from the door frame 2 should the door suspension arrangement 10 fail. For example, if a fire causes the pelmet 4 to melt, thus exposing the door suspension arrangement 10 to the fire and removing the support it had from the pelmet 4, the pair of horizontally elongated metal profiles 12, 13 will prevent the door leaf 3 from falling away from the door frame 2.

[0050] The U-shaped metal profile 13 is oriented such that the bottom part of the U is facing upwards, towards the pelmet 4. In other words, the U-shaped metal profile 13 does not have a gutter-like function, which would be the case should the U-shaped metal profile 13 be oriented in the opposite direction. This prevents molten aluminium from the pelmet 4 from flowing along the length of the U-shaped metal profile 13 and pooling at either end thereof. Instead, the molten aluminium is directed away from the door frame 2 by first the U-shaped metal profile 13, and then the horizontally elongated metal profile 12 provided along the upper side 8 of the door leaf 3. This reduces the risk of a fire spreading from one side of the sliding door assembly 1 to the other.

[0051] Being U-shaped, the horizontally elongated metal profile 13 provided between the door leaf 3 and the pelmet 4 has a concave surface and a convex surface. The convex surface faces the pelmet 4 and the concave surface faces the door leaf 3. The concave surface is configured to mate in a contactless manner with the horizontally elongated metal profile 12 provided along the upper side 8 of the door leaf 3.

[0052] The contactless mate between the two metal profiles 12, 13 is achieved by having a vertical clearance 19 and a horizontal clearance 20 between the pair of horizontally elongated metal profiles 12, 13. The horizontal clearance 20 is approximately 4 mm on either side of the horizontally elongated metal profile 12 provided along the upper side 8 of the door leaf 3, and the vertical clearance 19 is approximately 3 mm. This allows for frictionless movement of the pair of metal profiles 12, 13 in relation to each other, while still maintaining the supporting function in case the door suspension arrangement 10 fail.

[0053] The U-shaped horizontally elongated metal profile 13 that is provided between the door leaf 3 and the pelmet 4 has a frame connecting side 21 that is connected to the door frame 2, and a supporting side 22 that is

arranged to support the door leaf 3 should the door suspension arrangement fail 10. The supporting side 22 and the door frame connecting side 21 are the two side walls of the U-shaped metal profile 13. The horizontally elongated metal profile provided 12 along an upper side 8 of the door leaf 3 protrudes between the door frame connecting side 21 and the supporting side 22 of the U-shaped metal profile 13. Thus, the pair of horizontally elongated metal profiles 12, 13 support the door leaf 3 in case of a door suspension arrangement 10 failure.

[0054] The vertical distance between the lower end 17 of the supporting side 22 and the upper end 23 of the metal profile 12 that protrudes between the door frame connecting side 21 and the supporting side 22 is approximately 7 mm. The supporting side 22 has a height measured in a vertical direction that is approximately 10 mm.

[0055] Given the contactless mate between the pair of horizontally elongated metal profiles 12, 13 of the support arrangement 11 and the relatively small clearances 19, 20 in both vertical and horizontal directions, a labyrinth seal therebetween is formed. This seal increases the fireproofing capabilities of the sliding door assembly 1, as the rate of fire gases moving from one side of the door leaf 3 to the other is reduced. Additionally, this also increases the soundproofing capabilities of the sliding door assembly 1.

[0056] The horizontally elongated metal profile 13 provided between the door leaf 3 and the pelmet 4 covers a clearance gap 24 between the door leaf 3 and the door frame 2, when viewed from a top-down view, as is understood from Figs. 2a and 3. This metal profile 13 covers the gap 24 so as to, in case of a fire on the pelmet side of the door leaf 3, prevent the melting pelmet 4 from dripping down into the gap 24 between the door leaf 3 and the door frame 2, thus potentially igniting the door leaf 3 or another flammable object located near the door leaf 3.

[0057] This metal profile 13, which covers the gap 24 between the door leaf 3 and the door frame 2, is arranged at least partly between the slide adaptor 16 and the door leaf 3, and is attached to the door leaf 3 by means of the same fasteners as is used to attach the slide adaptor 16 to the door leaf 3. This reduces the total number of fasteners needed and provides a good connection of the metal profile 13 to the door leaf 3.

[0058] The portion of the horizontally elongated metal profile 12 that protrudes between the two ends 17, 18 of the U-shaped metal profile 13 extends along approximately 50 % of the upper side 8 of the door leaf 3. In total, the metal profile 12 extends along the entire length of the upper side 8 of the door leaf 3. Thus, this metal profile 12 covers a portion of the upper side 8 of the door leaf 3, such that the door leaf 3 is protected from being damaged by a melting pelmet 4 in case of fire. The portions of the upper side 8 of the door leaf 3 that are not covered by the horizontally elongated metal profile 12 are partly covered by the rollers 14 that are connected thereto, along with the slide adaptors 16 that they are connected to. This is illustrated in Fig. 3.

[0059] Consequently, the rollers 14 and the horizontally elongated metal profile 12 that is provided along the upper side 8 of the door leaf 3 jointly cover a portion of the slide adaptor 16 and the upper portion 8 of the door leaf 3, such that at least the middle portion of the upper side 8 of the door leaf 3 is protected. Tests have shown that this provides increased fireproofing capabilities.

[0060] The sliding door assembly 1 comprises a floor guide 25 arranged to distance the door leaf 3 from the floor and guide the door leaf 3 in sliding between an open position and a closed position. The floor guide 25 comprises a guiding protrusion 26 provided on the floor or on a doorstep portion of the door frame 2. The lower side 9 of the door leaf 3 comprises a recessed portion 27 arranged to receive the guiding protrusion 26 and guide the lower side 9 of the door leaf 3 in sliding between an open position and a closed position. A distance between the floor and a lower side of the door leaf is approximately 6 mm.

[0061] The sliding door assembly 1 comprises intumescent seals 28 provided at positions between the door leaf 3 and the door frame 2. An intumescent seal 28 is a piece of material arranged around a door leaf 3 or a door frame 2 that when exposed to heat, such as from a fire, expands. This expansion serves to close any clearance or gaps between the door leaf 3 and the door frame 2, thus preventing the fire from spreading for a period of time. The intumescent seals 28 are arranged to expand and fill a clearance 24 provided between the door frame 2 and the door leaf 3 at the support arrangement 11. This serves to further increase the fire proofing capabilities of the sliding door assembly 1 by reducing the rate at which fire gasses may move from one side of the door leaf 3 to the other.

[0062] As is seen in Fig. 3, the U-shaped horizontally elongated metal profile 13 that is provided between the door leaf 3 and the pelmet 4 has a length that is more than twice that of the width of the door leaf 3. Specifically, the U-shaped profile 13 extends along the entire length of the pelmet 4. This allows the door leaf 3 to slide all the way between the open position and the closed position while still being covered by the horizontally elongated metal profile 13 connected to the door frame 2. Thus, the position of the door leaf 3 between its open and closed position does not affect its coverage by the support arrangement 11.

[0063] Finally, Fig. 4 illustrates another aspect of the present invention. Herein, a sliding door assembly 1 is shown. The sliding door assembly 1 comprises a door frame 2, a door leaf 3, and a door suspension arrangement 10 arranged to guide the door leaf 3 in sliding between an open position and a closed position. The sliding door assembly 1 comprises three separate but cooperating support arrangements 11, 11', 11".

[0064] The first support arrangement 11' is a vertically elongated metal pocket 29 provided on the door frame 2. This pocket 29 is arranged to receive and support a striker side 6 of the door leaf 3. The pocket 29 has a

bottom, as well as two opposite and parallel side walls. The pocket 29 has a width that is approximately 9 mm larger than the thickness of the door leaf 3, when measured between the two opposite and parallel side walls, and it extends along the entire height of the door leaf 3. In the illustrated embodiment, the pocket 29 has a depth that is approximately 26 mm. Thus, the striker side 6 of the door leaf 3 may be received therein. Finally, on the opposite and parallel side walls of the pocket there are a pair of flexible sealing members 30 arranged. The flexible sealing members 30 extend along a length of the pocket 29 so as to form a seal between the door leaf 3 and the pocket 29 when the door leaf 3 is in the closed position.

[0065] The second support arrangement 11 is a pair of vertically elongated metal profiles 31, 32 configured to mate with one another when the door leaf 3 slides into a closed position. One metal profile 31 is provided on the trailing side 7 of the door leaf 3, and the other metal profile 32 is provided on the door frame 2. The two metal profiles 31, 32 are arranged to mate in a contactless manner, by having a clearance provided between them. This allows a contactless mate to be formed therebetween when the door leaf 3 is in the closed position. The clearance is approximately 4 mm. When mating, the two vertically elongated metal profiles 31, 32 form a labyrinth seal, the benefits of which is described above.

[0066] The third support arrangement 11 is the same as the support arrangement 11 of the first aspect of the present invention, which has been illustrated in Figs. 1-3.

[0067] As with the first aspect of the present invention, the three support arrangements 11, 11', 11" are configured to limit the distance the door leaf 3 may fall away from the door frame 2 should the door suspension arrangement 10 fail. The three support arrangements 11, 11', 11" synergize to provide this supporting effect.

[0068] The person skilled in the art realizes that the present invention by no means is limited to the embodiments described above. The features of the described embodiments may be combined in different ways, and many modifications and variations are possible within the scope of the appended claims. In the claims, any reference signs placed between parentheses shall not be construed as limiting to the claim. The word "comprising" does not exclude the presence of other elements or steps than those listed in the claim. The word "a" or "an" preceding an element does not exclude the presence of a plurality of such elements.

Claims

1. A sliding door assembly (1) comprising
 - a door frame (2),
 - a door leaf (3),
 - a pelmet (4), at least partly inside of which is provided
 - a door suspension arrangement (10) arranged to
 - guide said door leaf (3) in sliding between an open

position and a closed position, wherein said sliding door assembly (1) comprises a support arrangement (11), wherein said support arrangement (11) comprises a pair of horizontally elongated metal profiles (12, 13) configured to mate with one another, one of which (12) is provided along an upper side (8) of said door leaf (3), and one of which (13) is provided between said door leaf (3) and said pelmet (4).

2. A sliding door assembly (1) according to claim 1, wherein said horizontally elongated metal profile (13) provided between said door leaf (3) and said pelmet (4) is arranged to cover a gap (24) between said door leaf (3) and said door frame (2).
3. A sliding door assembly (1) according to any one of the preceding claims, wherein said horizontally elongated metal profile (13) that is provided between said door leaf (3) and said pelmet (4) extends at least 75 % of a length of said suspension arrangement (10), preferably at least 90 %, and most preferably at least 100 %.
4. A sliding door assembly (1) according to any one of the preceding claims, wherein the horizontally elongated metal profile (13) that is provided between said door leaf (3) and said pelmet (4) has a concave surface and a convex surface, wherein the convex surface faces said pelmet (4) and the concave surface faces said door leaf (3) and is configured to mate with the horizontally elongated metal profile (12) provided thereon.
5. A sliding door assembly (1) according to any one of the preceding claims, wherein there is a vertical clearance (19) and a horizontal clearance (20) between said pair of horizontally elongated metal profiles (12, 13).
6. A sliding door assembly (1) according to claim 5, wherein said horizontal clearance (20) is between 2 and 6 mm on either side of said horizontally elongated metal profile (12) provided along said upper side of said door leaf, and wherein said vertical clearance (19) is between 1 and 5 mm.
7. A sliding door assembly (1) according to any one of the preceding claims, wherein said horizontally elongated metal profile (13) that is provided between said door leaf (3) and said pelmet (4) has a frame connecting side (21) and a supporting side (22), and wherein said horizontally elongated metal profile (12) provided along an upper side (8) of said door leaf (3) protrudes between said door frame connecting side (21) and said supporting side (22).
8. A sliding door assembly (1) according to claim 7,

wherein said door frame connecting side (21) is connected to said door frame (2) and wherein said supporting side (22) is configured to limit the distance said door leaf (3) may fall away from said door frame (2) should said suspension arrangement (10) fail. 5

9. A sliding door assembly (1) according to any one of claims 7-8, wherein said supporting side (22) has a height measured in a vertical direction that is at least 4 mm, preferably at least 5 mm, and most preferably at least 6 mm. 10
10. A sliding door assembly (1) according to any one of the preceding claims, wherein said pair of horizontally elongated metal profiles (12, 13) of said support arrangement (11) mate to form a labyrinth seal. 15
11. A sliding door assembly (1) according to any one of the preceding claims, wherein said sliding door assembly (1) comprises intumescent seals (28) provided at positions between said door leaf (3) and said door frame (2). 20
12. A sliding door assembly (1) according to claim 11, wherein said intumescent seals (28) are arranged to expand and at least partly fill a clearance (24) provided at the support arrangement (11). 25

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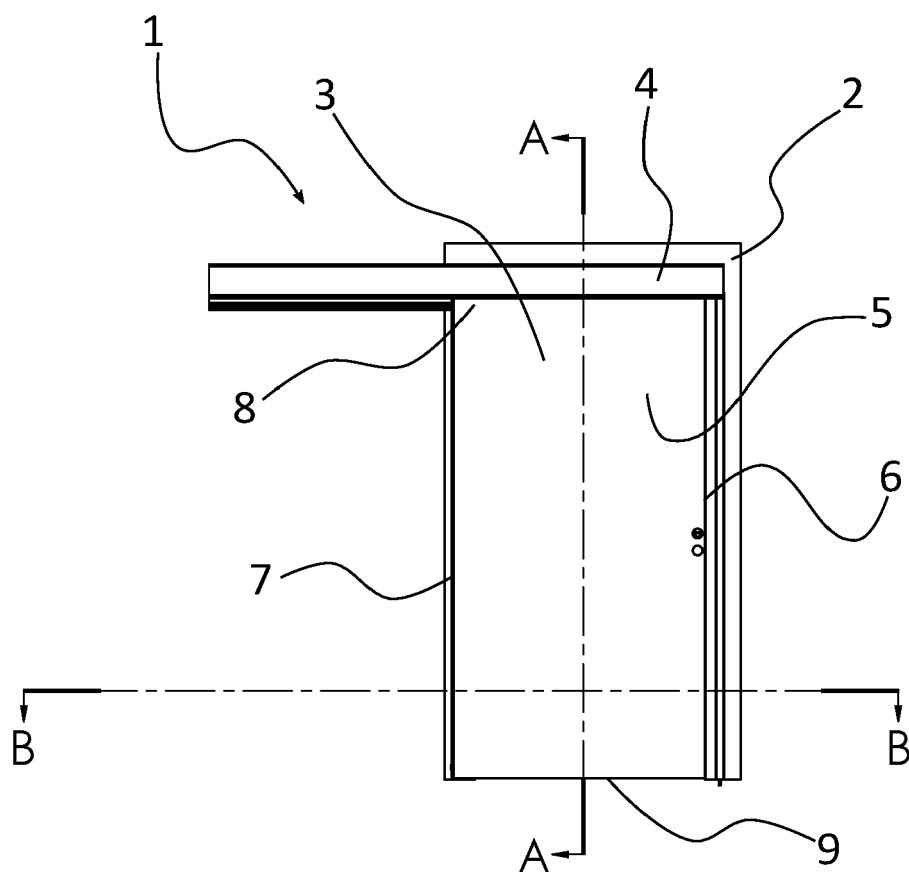


Fig. 1

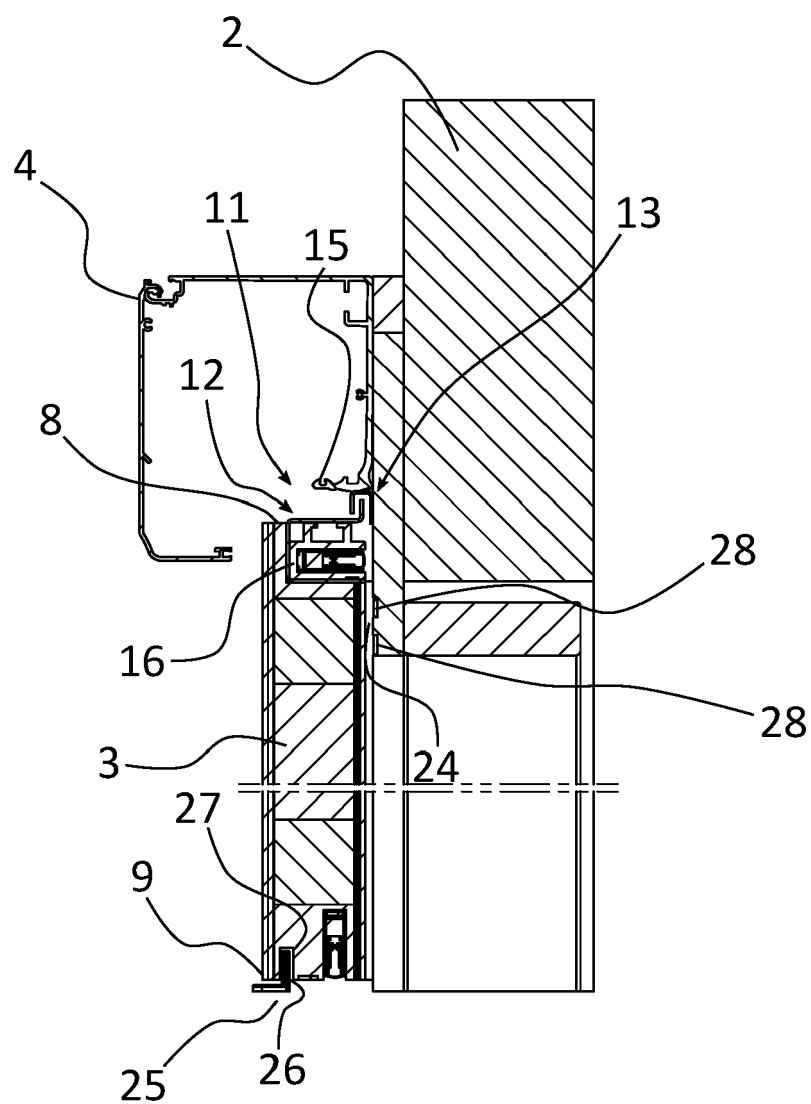


Fig. 2a

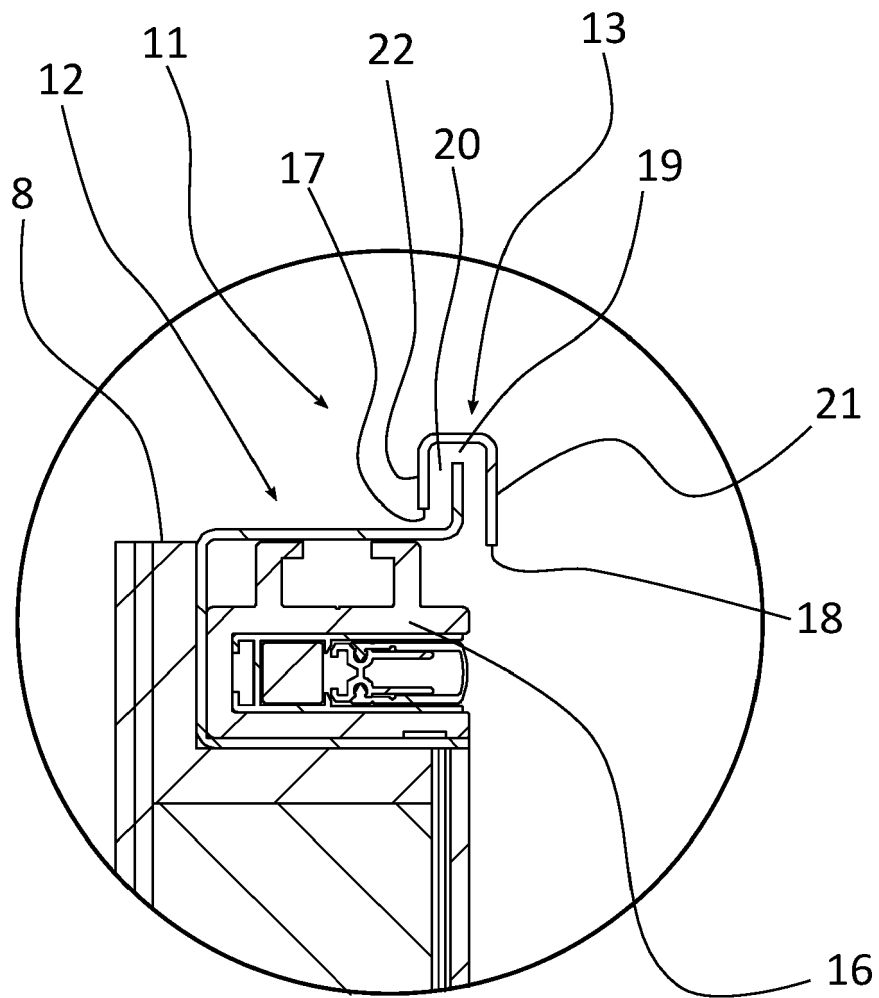


Fig. 2b

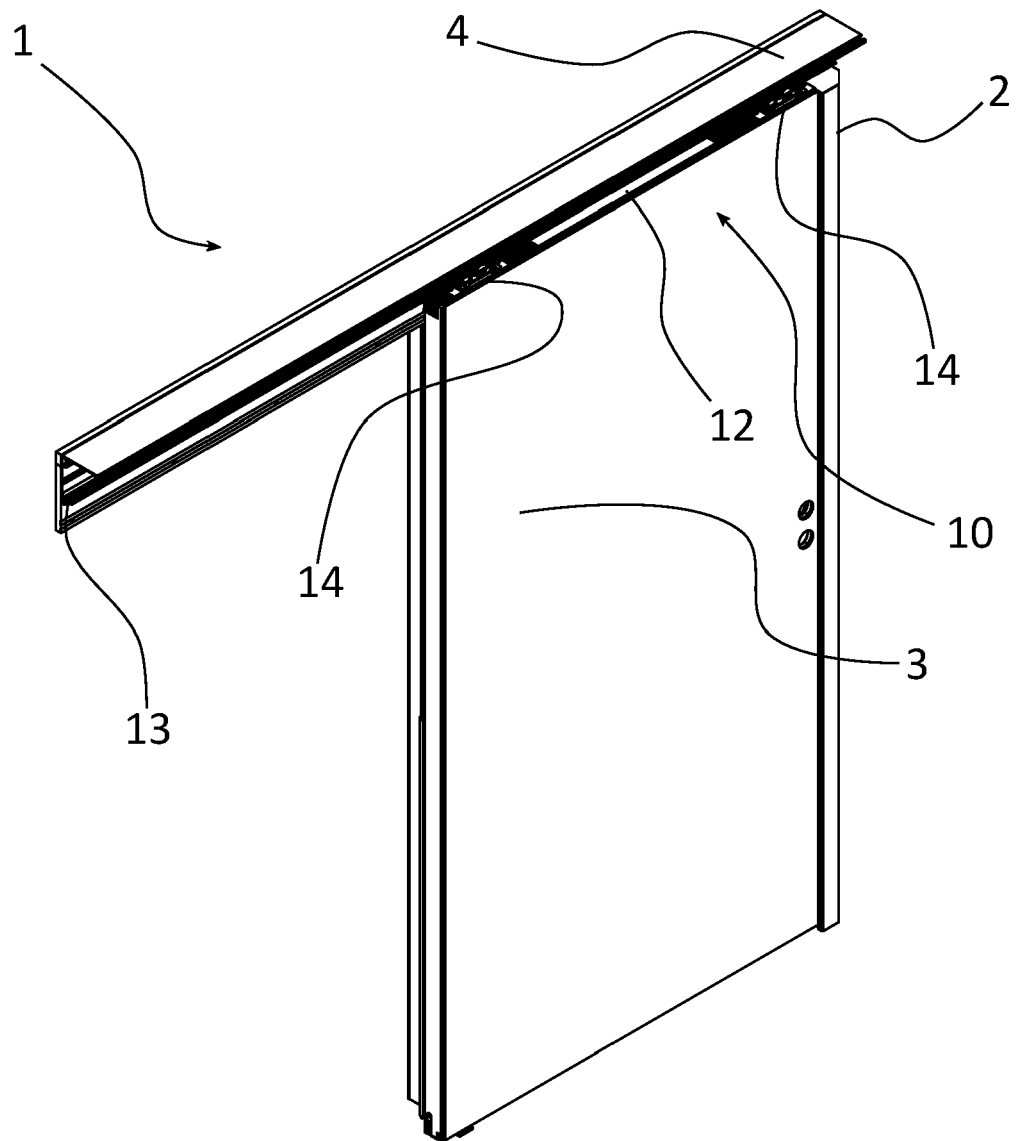


Fig. 3

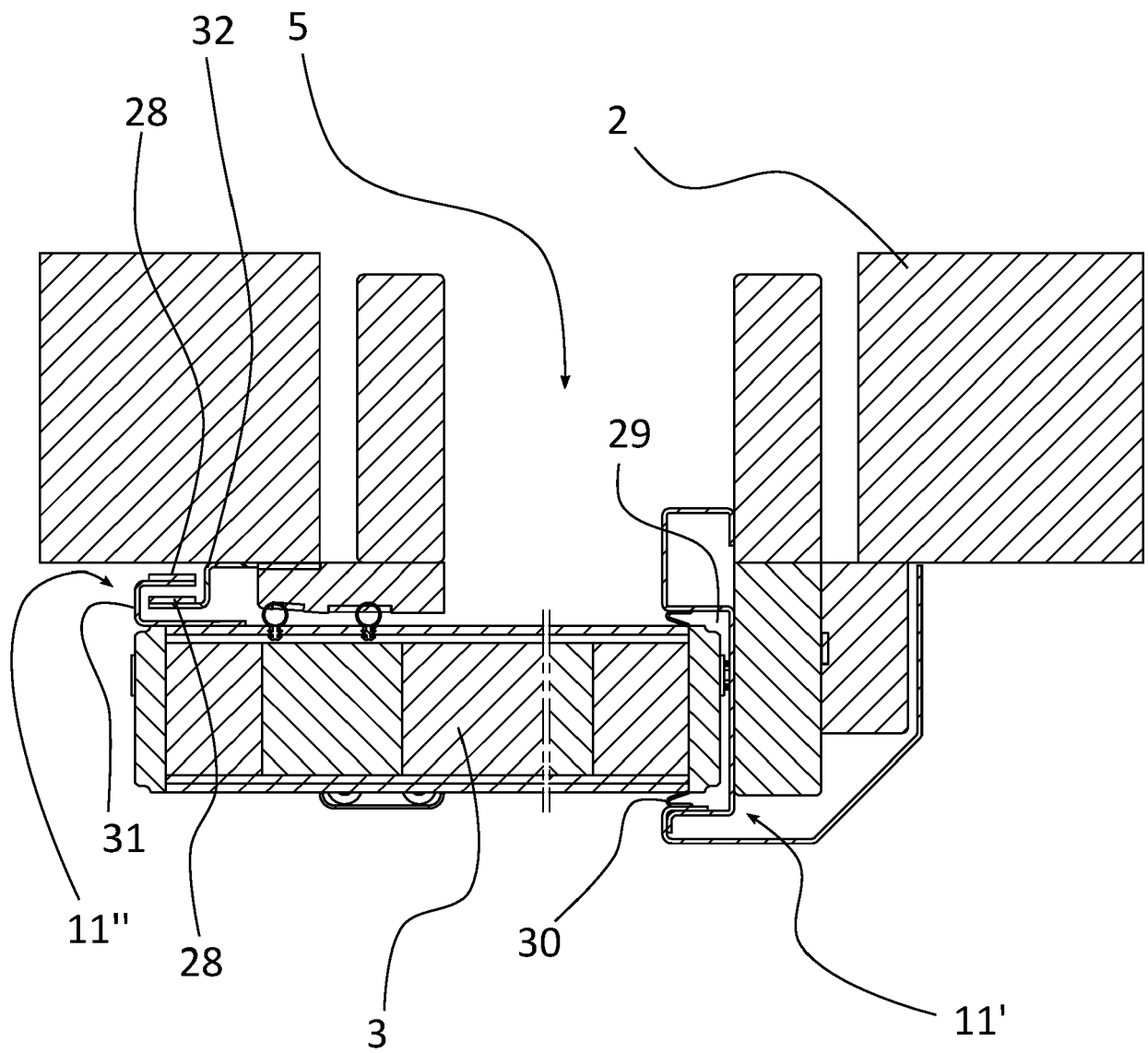


Fig. 4



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			TECHNICAL FIELDS SEARCHED (IPC)
			E05D E06B
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Place of search The Hague		Date of completion of the search 2 September 2020	Examiner Prieto, Daniel
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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