



Patent- og
Varemærkestyrelsen

(51) Int.Cl.: **E04B 2/78 (2006.01)**

(21) Ansøgningsnummer: **PA 2017 70722**

(22) Indleveringsdato: **2017-09-25**

(24) Løbedag: **2017-09-25**

(41) Alm. tilgængelig: **2019-03-26**

(45) Patentets meddelelse bkg. og publiceret den: **2019-04-03**

(73) Patenthaver:
Triplan International A/S, Industriskellet 12, 2635 Ishøj, Danmark

(72) Opfinder:
Klaus Groth Larsen, Lotusvej 21, 4030 Tune, Danmark

(74) Fuldmægtig:
Chas. Hude A/S, H.C. Andersens Boulevard 33, 1780 København V, Danmark

(54) Titel: **Frame for a wall element**

(56) Fremdragne publikationer:
EP 2985395 A1
US 6490828 B1
DE 9318663 U

(57) Sammendrag:
A frame element being an elongated frame element is proposed, where said elongated frame element is extending in a first direction and is for mounting along at least a part of the edge of a substantially plane wall unit, wherein said frame element is a U-shaped profile, and wherein the thickness of the wall unit is smaller than the distance between the two legs of the U-shaped profile enabling the wall unit to be positioned in a gap between legs of the U-shaped profile. The elongated frame element comprises at least two interconnected elongated profile elements; a first base element constituting the main part of said U-profile and a second attachable plate element constituting at least a part of one leg of said U-profile, and wherein said elongated profile elements comprise mutual engagement means enabling the second attachable plate element to be connected to a surface of the base element and locked to said base element by displacing said second attachable plate element along said surface of said first base element. Thereby, wall units may be mounted easily in the frame element without the need of screws or tools. In the mounting process, the first base element is secured to the building structure followed by inserting the wall unit into said base element. Due to the reduced height of the partial leg of the partially U-shaped base element, the wall unit may be inserted. Subsequently, when the wall unit is in place, the second attachable plate element is attached to the first base element through the disclosed displacement process, whereby the U-shaped frame element is formed with equally long legs of the U-shape, and the wall unit therefore cannot escape the groove of the U-shape.

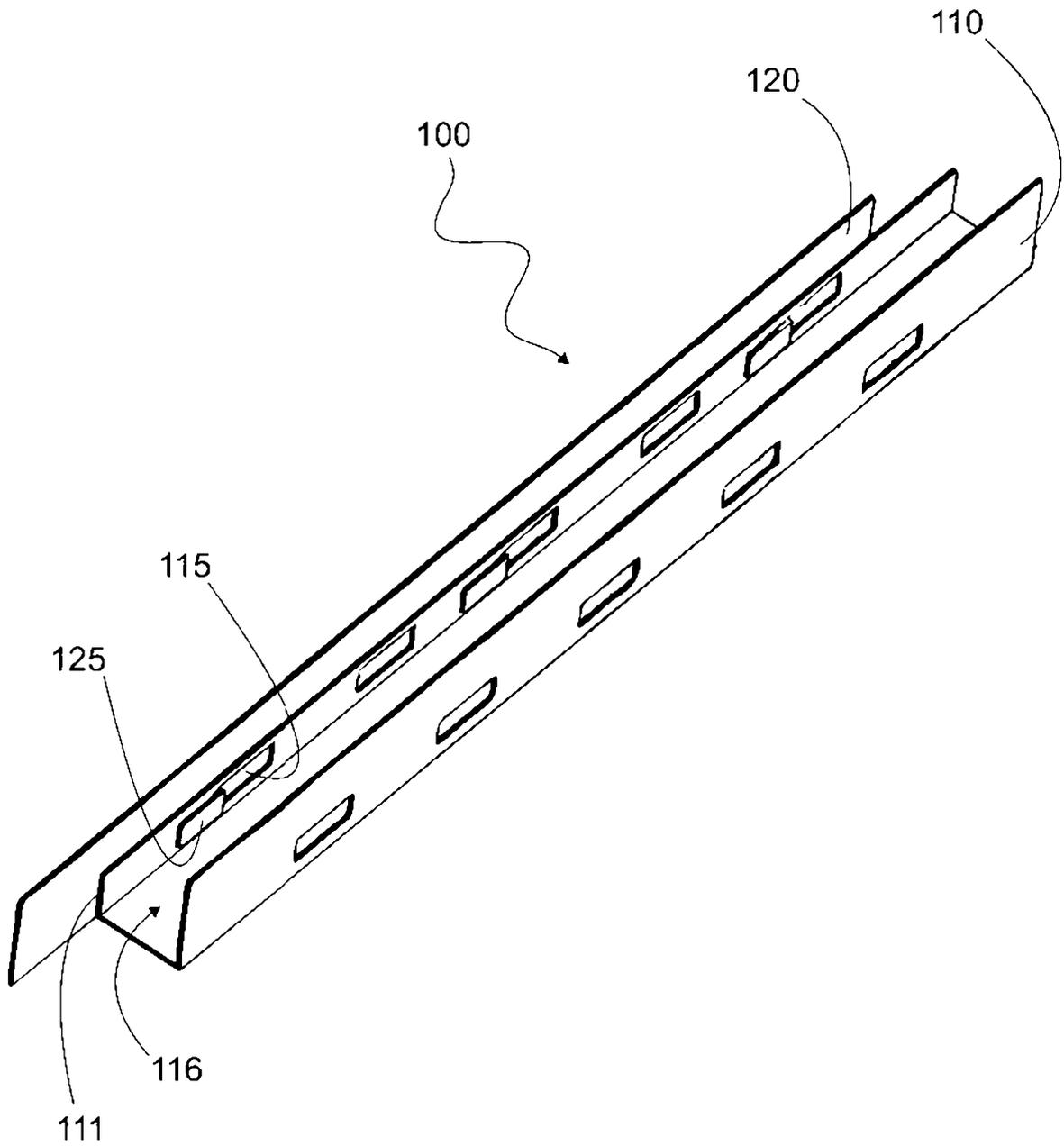


Fig. 2b

TITLE

Frame for a wall element

FIELD OF THE INVENTION

The present invention relates to a frame element for mounting a wall unit. In particular, the present invention relates to a fire shielding frame element having a minimalistic design with improved fire precaution features for mounting a wall unit to be used as a firewall.

BACKGROUND OF THE INVENTION

Wall units are commonly used in office buildings and similar work environments to provide partition of working spaces. Typically, such wall units are not part of the bearing building structure. Especially glass plates are widely used to provide partition without affecting the lighting of the rooms and to provide visual confirmation of the occupancy of a working space, e.g. a meeting room. Such wall units are commonly installed in the entire height of the room, i.e. from floor to ceiling, and therefore the mounting of such wall units are challenging. Especially the mounting of glass plates is difficult due to the brittle nature of the glass.

A second aspect of providing partition of working spaces is the sound and fire properties of the wall units. Preferably, the wall units should reduce noise and provide optimal fire resistance. In turn, such factors affect the possible mounting options. Finally, the trend within interior decoration demands that frames being part of the wall units, such as frames for glass plates are minimalistic in design, such that said frames may be regarded as invisible when considering the instalment as a whole.

Today, frames are typically produced and preassembled at a factory (e.g. using glue or welding which reduces the flexibility of using them in a building structure) and then transported to the construction site for mounting in a building. In order to be able to transport such premade frames, they need a stiffness and strength resulting in big frames based on thick frame elements. Further, the frames also need to be fire-resistant and today, enhancing the fire resistance of such frames typically includes adding a cooling material, such as gypsum, which further increases the weight of the frames.

These requirements result in thick frame elements which cannot fulfil the interest of a minimalistic design often required by architects and designers. Further, the frames are bulky to transport and heavy to manoeuvre into place in a building structure and the large, preassembled frame elements have to be installed using heavy equipment or special tools, and they are not detachable or adaptable for another building structure.

US 6490828 discloses an elongated frame element extending in a first direction and for mounting along at least a part of the edge of a substantially plane wall unit.

GENERAL DESCRIPTION

The object of the invention is to provide a fire shielding frame element providing enhanced flexibility, enhanced fire safety, and simple mounting. In view of this objective, a frame element being an elongated frame element is disclosed, where said elongated frame element is extending in a first direction and is for mounting along at least a part of the edge of a substantially plane wall unit, wherein said frame element is a U-shaped profile, and wherein the thickness of the wall unit is smaller than the distance between the two legs of the U-shaped profile thus enabling the wall unit to be positioned in a gap between legs of the U-shaped profile. The elongated frame element comprises at least two interconnected elongated profile elements; a first base element constituting the main part of said U-profile and a second attachable plate element constituting at least a part of one leg of said U-profile, and wherein said elongated profile elements comprise mutual engagement means enabling the second attachable plate element to be connected to a surface of the base element and locked to said base element by displacing said second attachable plate element along said surface of said first base element.

By a substantially plane wall unit is meant especially a wall unit suitable for use as partition wall, a wall unit which may be desired to remove easily, e.g. without the use of heavy tools, or wall units such as glass plates, where mounting options are limited. The wall unit may be classified to be used as a firewall.

By a frame element for mounting along at least a part of the edge of the wall unit is understood that the frame element provides a connection between the wall unit and a construction or building structure, such as an opening in a load bearing wall, where a wall unit is to be mounted. The wall unit may also be installed as part of an open space, where

the opening should be understood as the free space. The frame element may be said to form a skeleton for the wall unit to be held in place. Therefore, the frame element ensures that the wall unit is held in place relative to the building structure. Preferably, the frame element is U-shaped in order to receive the wall unit in the groove of the U-shape, whereby the legs of the U-shape embrace part of the sides of the wall unit. Preferably, the U-shape
5 comprise substantially right angles between the legs and a bottom part, where the bottom part connects said legs.

The thickness of the wall unit may be more than 6 mm, or more than 16 mm, or more than 41 mm. Therefore, in order for the U-shaped profile to receive the wall unit, it is preferred
10 that the distance between the legs of the U-shape is greater than the thickness of the wall unit. For example, the distance between the legs of the U-shape may be 2 mm, or 5 mm, or 8 mm greater than the thickness of the wall unit.

By the first base element of the frame element constituting the main part of the U-profile should be understood that said base element comprises at least one leg and the bottom
15 part of the U-shape, and preferably a part of the second leg of the U-shape. Thus, the first base element may be said to resemble a partial U-shape. Likewise, by the second attachable plate element constituting at least a part of one leg of the U-profile, it should be understood that said second attachable plate element is for completing the partial U-shape of the first base element, such that a complete U-shape is formed, i.e. where the lengths
20 of the legs are substantially equal in length. The first base element may be said to be L-shaped, whereas the second attachable plate element may be said to be I-shaped. When combined, the L-shape and the I-shape form the U-shape.

By mutual engagement means should be understood engagement means ensuring that the second attachable plate element may be attached to the first base element. Thus, by
25 mutual is meant corresponding means adapted to engage with each other to provide an attachment of the second attachable plate element to the first base element. According to the invention, the engagement involves displacing the second attachable plate element along and relative to the surface of the first base element, where the surface is preferably the partial leg of the partially U-shaped profile. By such displacement, the mutual
30 engagement means engage with each other. For example, the second attachable plate element may be provided with protrusions or tongues, and the first base element may be provided with openings. Preferably, the openings are provided at least in the partial leg of

the partially U-shaped first base element. By inserting the protrusions/tongues of the second attachable plate element into the openings of the first base element and displacing the second attachable plate element along and relative to the surface of the partial leg of the partially U-shaped first base element, the tongues and openings engage with each other. Thereby, the formed engagement prohibits at least a perpendicular detachment, i.e. a detachment caused by pulling away the second attachable plate element from the surface of the partial leg of the partially U-shaped first base element. Preferably, the friction between the tongues and the surface of the first base element prohibits easy detachment further when sliding in the opposite direction of the attachment direction. By easy detachment should be understood that a certain force has to be applied for detachment, but everyday use or accidents should not exert enough force to overcome the friction between the tongues and the surface of the first base element. At least two tongues may be provided in the second attachable plate element for making a secure connection to the first base element.

Thereby, wall units may be mounted easily in the frame element without the need of unusual tools. In the mounting process, the first base element is secured to the building structure followed by inserting the wall unit into said base element. Due to the reduced height of the partial leg of the partially U-shaped base element, the wall unit may be inserted. Subsequently, when the wall unit is in place, the second attachable plate element is attached to the first base element through the disclosed attachment/displacement process, whereby the U-shaped frame element is formed with equally long legs of the U-shape and therefore, the wall unit cannot escape the groove of the U-shape.

Furthermore, the frame element provides enhanced fire safety since the second attachable plate element is allowed to displace itself slightly from the first base element in case the heat of the fire causes the frame element or the wall unit to expand differently. In other words, the second attachable plate element may migrate relative to the first base element if stress or expansion is applied to the frame element thereby reducing the risk of fractures in the frame element or the wall element.

Finally, the frame element may be delivered in pieces to the construction site which opposes prior art according to which fireproof frame elements have to be assembled beforehand using glue or welding and subsequently manoeuvred into place in the building structure. Thereby, by a frame element according to the invention, heavy lifts are avoided,

and easy logistics, easy and quick mounting, and a minimalistic design are achieved. Thereby, architects and designers may be more prone to include a firewall in the interior design. Further, the frame element according to the invention is detachable and movable, such that said frame element may be reused in another setting or in another building structure thereby decreasing the environmental impact of the frame element.

In an embodiment, the first base element of the elongated frame element may be a partially U-shaped profile with a first leg of said U-shape being shorter than the second leg of said U-shape.

Preferably, the U-shaped profile comprises a first and a second leg, where said legs are connected through a bottom part. Preferably, said bottom part is arranged perpendicular to the legs, such that the U-shape comprises right angles between the legs and the bottom part.

Thereby, in a use situation, the shorter first leg is extended using the second attachable plate element, such that a wall unit installed in the groove formed by the U-shaped frame element cannot escape said groove. In other words, the shorter first legs make room for the insertion of a wall unit into the groove of the partial U-shaped first base element. Subsequently, in order to lock said wall unit into place, the first leg is extended by the second attachable plate element, such that the length of the first leg and the second leg are levelled.

In an embodiment, at least the first leg of the partially U-shaped first base element may comprise openings.

Preferably, the second leg of the partially U-shaped first base element comprises openings as well.

Thereby, the openings may receive and engage with the tongues of the second attachable plate element. In other words, said openings may constitute part of the engagement means according to the invention. Furthermore, said openings serve to reduce the amount of material used in order to reduce the amount of heat that may be stored in said material. Reducing the amount of heat is crucial with regard to fire precautions since the frame element is intended for use in building structures such as houses and office buildings.

A second aspect of the provision of openings in the first and/or second leg is with regard to the flexibility and thermal expansion properties of the material of which said legs are made, preferably a metal such as steel. More specifically, in case the frame element is used to mount a firewall, and a fire is present, one side of the wall may heat up prior to the second side of said wall. Such a thermal differential causes stress in the wall and/or building structure which lowers the strength/resistance of said wall and/or building structure if the wall is not allowed to move/yield. Thus, the provision of openings increases the flexibility of the frame element. Furthermore, due to the provision of engagement means as disclosed, the first base element and the second attachable plate element may yield relative to each other. In other words, the disclosed engagement means do not affix the two elements in a locked position. Instead, the second attachable plate element is allowed to move relative to the first base element (e.g. move in the direction used to detach the second attachable plate element from the first base element), where the amount of movement is simply governed by the length of the individual tongues in the direction parallel to the extension of the frame element. A further effect of the second attachable plate element being slidable relative to the first base element is that in general, the building structure may yield even if no temperature differential is present, such that the wall unit or the frame element does not break due to stress.

Further, a strip of thermal tape may be used to insulate the first base element from the second attachable plate element, such that said elements are not in direct contact which would otherwise increase the thermal conduction if said elements were made of a metal. Such insulation may serve to reduce the risk of fire-induced damages or to provide general insulation.

In an embodiment, the second attachable plate element of said elongated frame element may comprise tongues extending substantially parallel to the extension of said plate element.

The tongues may be formed in a process, wherein material of the second attachable plate element is punched out in certain regions. Another way of realising the tongues is by attaching the tongues in a welding process or a similar process. However, for the main part of this document, punched out tongues are considered. Preferably, the punch-out process leaves the tongues attached to the main part of the plate element through a single stem, i.e. the remaining edges of the individual tongues are free and displaced equally

from said plate element. For example, the tongues are rectangular, where one edge (the stem) remains attached to the plate element, and where the remaining three edges are free and displaced from said plate element. Thus, the stem is arranged more or less perpendicular to the surface of the plate element. Therefore, the tongues are an integral, but displaced part of the plate element. The tongues extend substantially parallel to the surface of the plate element from which they have been punched out.

Thereby, the tongues form a part of the engagement means since a gap is formed between the surface of the plate element from which the tongues have been punched out and a surface of the tongues. Said gap may receive part of the first leg of the first base element when the plate element has been arranged in parallel to the surface of said first leg and subsequently displaced, such that the engagement means engage.

In an embodiment, the mutual engagement means may comprise the tongues of the second attachable plate element and the openings in the first base element, where at least part of said openings is for receiving the tongues of the second attachable plate element, and where displacing said second attachable plate element along the surface of the first base element causes the tongues to engage with at least part of the openings in the first leg of the base element and subsequently the material of said first leg.

Thereby, a compact engagement system is provided which is easy to install without use of heavy tools. Further, the engagement system provides the opportunity to be detached easily, such that a wall unit mounted in the frame element may be dismounted at a later stage. Finally, since the engagement means are arranged in parallel to the extension of the frame element, the width of the U-shaped profile is minimally affected by the attachment of the second attachable plate element. This allows the frame element to be used in a situation where limited space is available, e.g. due to design considerations.

In an embodiment, the tongues of the second attachable plate element may form a gap between a surface of said plate element and a surface of the tongues, and where the size of said gap is of a size comparable to the thickness of the first leg of the first base element.

The gap is formed due to the tongues being displaced from the plate element as described above. Thereby, part of the first leg may enter the gap when the second attachable plate element is displaced along the surface of the first base element which comprises said first

leg. By being of a comparable size should be understood that a tight fit may be desired in order to provide an attachment which is not easily detached by accident. In case the tongues are springy, the thickness of the first leg may preferably be slightly larger than the gap, such that the tongues grasps the first base element tightly. For example, the
5 thickness of the first leg may be 5 mm and the size of the gap may be 4.75 mm.

In an embodiment, tongues may be arranged on the first base element and the second attachable plate element may comprise openings.

This is the opposite case of the engagement means described above. Nonetheless, the engagement process is the same, i.e. the second attachable plate element is disposed
10 along the surface of the first leg of the first base element and subsequently displaced in order for the tongues and openings to engage.

In an embodiment, the frame element is made of a metal.

The metal may for example be a steel such as stainless steel, or other types of steel, which should be understood as an alloy of iron and other elements. Other metals such as
15 aluminium or alloys commonly used in the field of frames are foreseen within the present invention. Further, composite materials, types of plastic, or reinforced plastics are likewise foreseen within the present invention.

Thereby, the frame element is strong which is required for the attachment to be secure. Especially the use of steel may be preferred when using the frame element to mount a
20 firewall since steel has a considerably higher melting point than commonly used aluminium. The steel may be punched and bended into the desired shape of the frame element, whereas aluminium may be extruded.

In an embodiment, the distance between the first and second leg of the U-shaped frame element may be greater than the thickness of a wall unit to be mounted in said frame
25 element.

For example, the thickness of the wall unit may be 1 cm, and the distance between the first leg and the second leg of the frame element may be 1.2 cm, whereby a free space of
30 2 mm is provided. The free space may be up to 8 mm. Thereby, the free space allows a varying thickness or uncertainty in the thickness of the wall unit. The free space may be filled with a filler or a rubber strip. In a fire incident, a foaming filler may be desired, such that the foam adjusts to changes.

According to a method of mounting a wall unit and assembling the frame element, the method may comprise the steps of securing the first base element to a building structure, disposing the wall unit in the U-shaped groove formed between the legs of said first base element, and attaching the second attachable plate element to the first base element.

- 5 The described method may be altered depending on the situation of use. Nonetheless, the method encompasses the general situation.

SHORT LIST OF THE DRAWINGS

In the following, example embodiments are described according to the invention, where

- 10 Fig. 1 illustrates an exploded view of an elongated frame element according to the invention.

Fig. 2 illustrates the process of attaching the second attachable plate element to the first base element according to the invention.

Fig. 3 illustrates a second exploded view of the elongated frame element according to the invention.

- 15 Fig. 4 illustrates an assembly comprising a plurality of frame elements according to the invention.

Fig. 5 illustrates side views of different tongues in the second attachable plate element according to the invention.

- 20 Fig. 6 illustrates further side views of different tongues in the second attachable plate element according to the invention.

DETAILED DESCRIPTION OF DRAWINGS

In the following, the invention is described in detail through embodiments thereof that should not be thought of as limiting to the scope of the invention.

Fig. 1 illustrates an exploded view of an elongated frame element according to the invention. The elongated frame element comprises a first base element 110 and a second attachable plate element 120. The first base element 110 has a U-shaped profile or cross section, where said U-shape is formed from a first leg 111, a second leg 112, and a bottom part 113 connecting the first leg 111 and the second leg 112. Preferably, the angle between the first leg 111 and the bottom 113 and the angle between the second leg 112 and the bottom 113 are approximately right angles. Therefore, the first leg 111 and the second leg 112 are arranged substantially parallel. The distance between the first leg 111 and the second leg 112 may be governed by the width of the bottom 113. Preferably, said distance between the legs 111, 112 is greater than the thickness of a wall unit to be installed in the elongated frame element. The length of the first leg 111 is shorter than the second leg 112, i.e. the first base element may be said to have a partial U-shape, or the first base element may be said to have an L-shape.

A first set of openings 114 is provided in the second leg 112, said openings being formed to reduce the amount of heat that may be contained by the material used to form the frame element. Preferably, the frame element is made of a metal, which may contain a large amount of heat, which is undesirable in respect of fire precautions. Therefore, by providing openings in the first base element, the safety of the frame element is increased. A second set of openings 115 is provided in the first leg 111, where said openings are partially for reducing the amount of material used with respect to the above fire precautions and partially for receiving the tongues 125 of the second attachable plate element 120. In the following, the second set of openings 115 is described with reference to its ability to receive said tongues 125 only. Thus, the second set of openings 115 and the tongues 125 form mutual engagement means. The process of attaching the second attachable plate element 120 to the first base element 110 is described with reference to Fig. 2. The second attachable plate element 120 is formed from a planar piece of material, preferably a metal, in which a plurality of tongues 125 are punched out. Said tongues 125 remain bonded to the planar piece of material through a single edge, referred to as the stem. Possible designs and cross sections of said tongues are shown in Fig. 5. Instead of being punched out, the tongues may be attached in a welding process or similar process. However, in the following, the tongues are described as being punched out.

Fig. 2 illustrates the process of combining the second attachable plate element 120 to the first base element 110.

Fig. 2a illustrates the situation in which the second attachable plate element 120 is disposed adjacent to the first base element 110. The tongues 125 have entered a part of the openings of the second set of openings 115 of the first base element 110. It should be noted how the separation of tongues 125 in the second attachable plate element 120 should match the separation of openings in the second set of openings 115 in the first base element 110 in order for the tongues 125 to enter the openings 115 along the entire length of the frame element.

Fig. 2b illustrates the situation where the second attachable plate element 120 has been displaced along the surface of the first leg 111 in a direction parallel to the extension of the first base element 110 and the second attachable plate element 120. Thereby, the elongated frame element 100 according to the invention is formed. The displacement causes the tongues 125 of the second attachable plate element 120 to engage with the second set of openings 115 in the first leg 111 of the first base element 110. The engagement causes the second attachable plate element 120 to be attached to the first base element 110 in a reversible manner, but where a pull exerted on the second attachable plate element 120 perpendicular to the extension of the frame element is hindered by the tongues 125 being disposed on an inner surface of the first leg 111, while the second attachable plate element 120 is otherwise disposed on an outer surface of said first leg 111.

When attached to the first base element 110, the second attachable plate element 120 is seen to increase the height of the first leg 111, whereby said first leg 111 reaches a height similar to that of the second leg 112. This results in the possibility of disposing a wall unit (not shown) in the groove 116 in the U-shape of the first base element, where the groove 116 should be understood as the volume partly confined by the first leg 111, the bottom 113, and the second leg 112. Thereby, the wall unit may be tilted into place in the first base element 110. In case said first base element 110 is arranged along the periphery or edge of an opening in a building structure, the wall unit is inserted into said first base element 110. In order to lock the wall unit into place, the second attachable plate element 120 is attached the first base element 110 to increase the height of the first leg 111, such that the wall unit cannot escape the groove 116 formed by the U-shape. A filler or a rubber strip may be used to fill any free space in the frame element when the wall unit has been installed.

To detach the second attachable plate element 120 from the first base element 110, said second attachable plate element 120 has to be displaced in the opposite direction of what was used to make the attachment. Preferably, the friction between the second attachable plate element 120, its tongues 125, and the first base element 110 is of a magnitude requiring a substantial force to make the attachment and/or detachment. Said force may for example be applied by hand or by a tool, such as a hammer. The friction may further be controlled by the tongues 125 being slightly springy, such that in a rest position, the tongues 125 are bending slightly inwards towards the surface of the second attachable plate element 120. Thereby, the tongues are forced outwards when engaging with the openings 115 of the first base element 110.

Fig. 3a illustrates the second attachable plate element 120 and the tongues 125 having been punched out. The extension E of the second attachable plate element 120 is illustrated by a double-arrow.

Fig. 3b illustrates the first base element 110. The first set of openings 114 and the second set of openings 115 are illustrated and it should be noted that it is required that the distance between the second set of openings 115 should match the distance between the tongues 125 in order for the tongues 125 to engage with said openings 115. The first set of openings 114 are primarily for reducing the amount of material used with a view to reducing the total amount of heat that can be contained by the frame element. The second set of openings 115 is partly serving to reduce the amount of material and partly for receiving the tongues 125 of the second attachable plate element 120.

Fig. 4 illustrates an assembly comprising a plurality of frame elements 100 and a wall unit 1. The frame elements 100 may be arranged along an inner periphery of an opening in a building structure (not shown) or the frame elements may form a skeleton in an open space, such that the wall unit creates a partition in said open space. The wall unit 1 is held in place by the second attachable plate element being attached to the first base element in a manner such that the wall unit 1 cannot escape the groove formed by the U-shaped profile of the frame element 100.

Fig. 5 illustrates side views of various tongues 125 which may be used in the present invention. The tongues are attached to the second attachable plate element 125 (shown as a hatched surface in Fig. 5a). Preferably, the tongues are rectangular when seen in a

top view, i.e. perpendicular to the surface. The details of each type of tongue is described briefly below. For like parts, similar reference numbers are used despite varying in shape and size.

5 Fig. 5a illustrates a tongue 125 comprising a right angle in the bend 128 between the end part 126 of the tongue and the stem 127. The end part 126 is arranged in parallel to the surface of the plate element 120. Note that in case the tongue 125 has been punched out, an opening (not shown) is left in the otherwise planar second attachable plate element. A gap 150 is provided between a first surface 155 of the tongue 125 and the surface 121 of the second attachable plate element 120. The gap 150 is meant for receiving part of the
10 first leg (not shown) of the first base element during engagement and subsequent attachment.

Fig. 5b illustrates a set of tongues 125 similar to the one shown in Fig. 5a. The tongues are punched out such that the end parts 126 are pointing in opposite directions. The advantage of such a configuration is the possibility of displacing the second attachable
15 plate element 120 in one of two directions in order to attach said plate element to the first base element (not shown). It should be noted that the opposite-directed end parts 126 may share the same stem 127. In such a configuration, the tongues may need to be mounted onto the second attachable end plate 120 in a welding process or a similar process, rather than being punched out.

20 Figs. 5c and Fig. 5d illustrate a tongue 125 comprising a curved bend 128, and where the end part 126 of the tongue is pointing towards the surface of the plate element 120. Such orientation of the end part 126 induces a springy effect in the tongue 125, such that the attachment of the second attachable plate element 120 to the first base element (not shown) becomes secure and tight.

25 Figs. 5e and Fig. 5f illustrate a tongue 125 embodied as a curved part without a distinct bend between an end part and a stem of the tongue. As was the case with the tongues illustrated in Figs. 5c-d, the curve induces a springy effect in the tongue.

30 Figs. 5g and Fig. 5h illustrate a tongue 125 comprising a first bend 128 and a second bend 129, where the first bend 128 connects the stem 127 to the end part 126 of the tongue, while the second bend 129 is bent outwards, such that the tip 126' of the end part 126

extends in a different direction than the majority of said end part 126. The majority of the end part 126 is pointing towards the surface of the plate element 120. The outward direction of the tip 126' of the end part eases the engagement with the openings in the first base element since the tongue 125 is guided by said outward-directed second bend 129
5 into the fully attached position.

Fig. 6 illustrates two kinds of tongues 125 having a shape different from the ordinary rectangular ones disclosed in previous figures. More specifically, where the shape of the previous tongues is preferably rectangular when seen from above, the shape may for example be a circle (Fig. 6c) or a set of displaced rectangles (Fig. 6a). By providing an
10 overhang of the tongue relative to its stem in multiple directions, a certain manipulation of the second attachable plate element is required to detach it from the first base element, where the certain manipulation is different from simply displacing it in one direction. It is noted that such overhang does not restrict slight movement of the second attachable plate element relative to the first base element which enhances fire safety as discussed
15 previously.

It should be noted that several of the above tongues may as well be designed as the shapes presented herein in relation to Fig. 6. However, for simplicity, the following discussion relates to the shapes illustrated in Fig. 6.

Fig. 6a illustrates a side view of a tongue 125 similar to the one shown in Figs. 5a-b, but
20 where the opposite-directed end parts 126 share the same stem 127. When seen from above, the end parts 126 resemble a set of displaced rectangles as seen from Fig. 6b. When the tongue has engaged with the opening in the first leg of the first base element, the displaced rectangles will require the second attachable plate element to be lifted or in another way manipulated in order to detach it from the first base element if needed.

Fig. 6c illustrates a tongue 125 having a stem 127 and a circular disk (Fig. 6d) forming
25 said tongue, said disk therefore resembling the end part 126 of the previously presented tongues. Having a circular-shaped tongue may be advantageous in several ways including ease of attachment and if a groove is carved into the first leg of the first base element, said groove may match the size of the disk, such that a tight fit is achieved when the
30 second attachable plate element is attached the first base element. Finally, since the disk forms an overhang in every direction relative to the centred stem, the second attachable

plate element is required to be lifted or in another way manipulated to detach it from the first base element (similar to the displaced rectangles in Figs. 6a-b).

REFERENCE NUMBERS

- 100 Elongated frame element
- 110 First base element
- 111 First leg
- 112 Second leg
- 113 Bottom
- 114 First set of openings
- 115 Second set of openings
- 116 Groove
- 120 Second attachable plate element
- 121 Surface of 120
- 125 Tongue
- 126 End part of 125
- 126' Tip of 126
- 127 Stem
- 128 Bend
- 129 Second bend
- 150 Gap
- 155 First surface of 125

Patentkrav

1. Aflangt rammeelement (100), som strækker sig i en første retning og er indrettet til montering langs i det mindste en del af kanten af en i alt væsentligt plan vægenhed (1), hvorved rammeelementet (100) er et U-formet profil, som har to
5 ben (111, 112), hvor det U-formede profil er indrettet til at optage en vægenhed (1) i en rille (116) imellem det U-formede profils ben (111, 112), **kendetegnet ved**, at det aflange rammeelement (100) omfatter i det mindste to indbyrdes forbundne aflange profilelementer, et første basiselement (110), som udgør U-profilets hoveddel, og et andet fastgørligt pladeelement (120), som udgør i det mindste
10 en del af U-profilets ene ben, og hvorved de aflange profilelementer (110, 120) omfatter indbyrdes indgrebsmidler, som muliggør at det andet fastgørlige pladeelement (120) kan forbindes med en overflade på det første basiselement (110) og låses fast til det første basiselement (110) ved forskydning af det andet
15 fastgørlige pladeelement (120) langs den nævnte overflade på det første basiselement (110).
2. Aflangt rammeelement ifølge krav 1, hvorved aflange rammeelements første basiselement er et delvis U-formet profil med U-formens første ben værende kortere end U-formens andet ben.
20
3. Aflangt rammeelement ifølge krav 1 og 2, hvorved i det mindste det delvist U-formede første basiselements første ben har åbninger.
- 25 4. Aflangt rammeelement ifølge krav 1, hvorved det aflange rammeelements andet fastgørlige pladeelement omfatter tunger, som strækker sig i alt væsentligt parallelt med pladeelementets udstrækning.
5. Aflangt rammeelement ifølge ethvert af de foregående krav, hvorved de indbyrdes indgrebsmidler omfatter det andet fastgørelige pladeelements tunger, og
30 åbningerne i det første basiselement, hvor i det mindste en del af åbningerne er indrettet til at optage det andet fastgørlige pladeelements tunger, og hvorved forskydning af det andet fastgørelige pladeelement langs det første basiselements

overflade bevirker at tungerne går i indgreb med i det mindste en del af åbningerne i basiselementets første ben.

6. Aflangt rammeelement ifølge ethvert af de foregående krav, hvorved det andet fastgørelige pladeelements tunger danner en spalte imellem en overflade på pladeelementet og en overflade på tungerne, og hvor størrelsen af spalten er af en størrelse, som kan sammenlignes med tykkelsen af det første basiselements første ben.

7. Aflangt rammeelement ifølge krav 1, hvorved tungerne er anbragt på det første basiselement, og det andet fastgørelige pladeelement omfatter åbninger.

8. Aflangt rammeelement ifølge ethvert af de foregående krav, hvorved rammeelementet er af et metalmateriale.

15

9. Aflangt rammeelement ifølge ethvert af de foregående krav, hvorved afstanden imellem det U-formede rammeelements første og andet ben er større end tykkelsen af en vægenhed, som skal monteres i rammeelementet.

10. Fremgangsmåde til montering af en vægenhed i et aflangt rammeelement (100) ifølge krav 1 - 9, hvorved fremgangsmåden omfatter trinnene fastgøring af det første basiselement (110) på en bygningskonstruktion, anbringelse af vægenheden (1) i den U-formede rille (116), som dannes imellem det første basiselements (110) ben (111, 112), og fastgøring af det andet fastgørlige pladeelement (120) til det første basiselement (110).

25

1 / 8

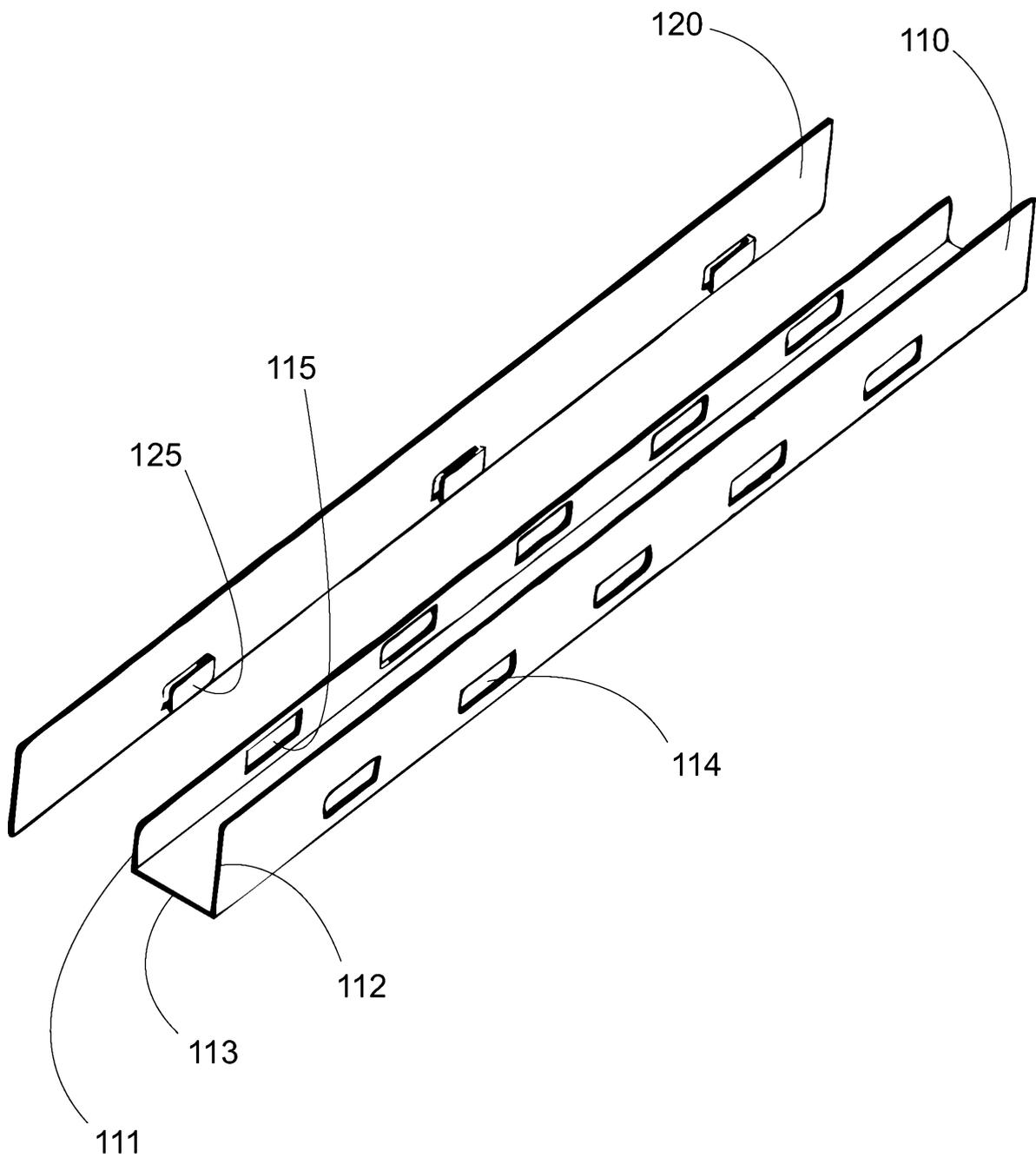


Fig. 1

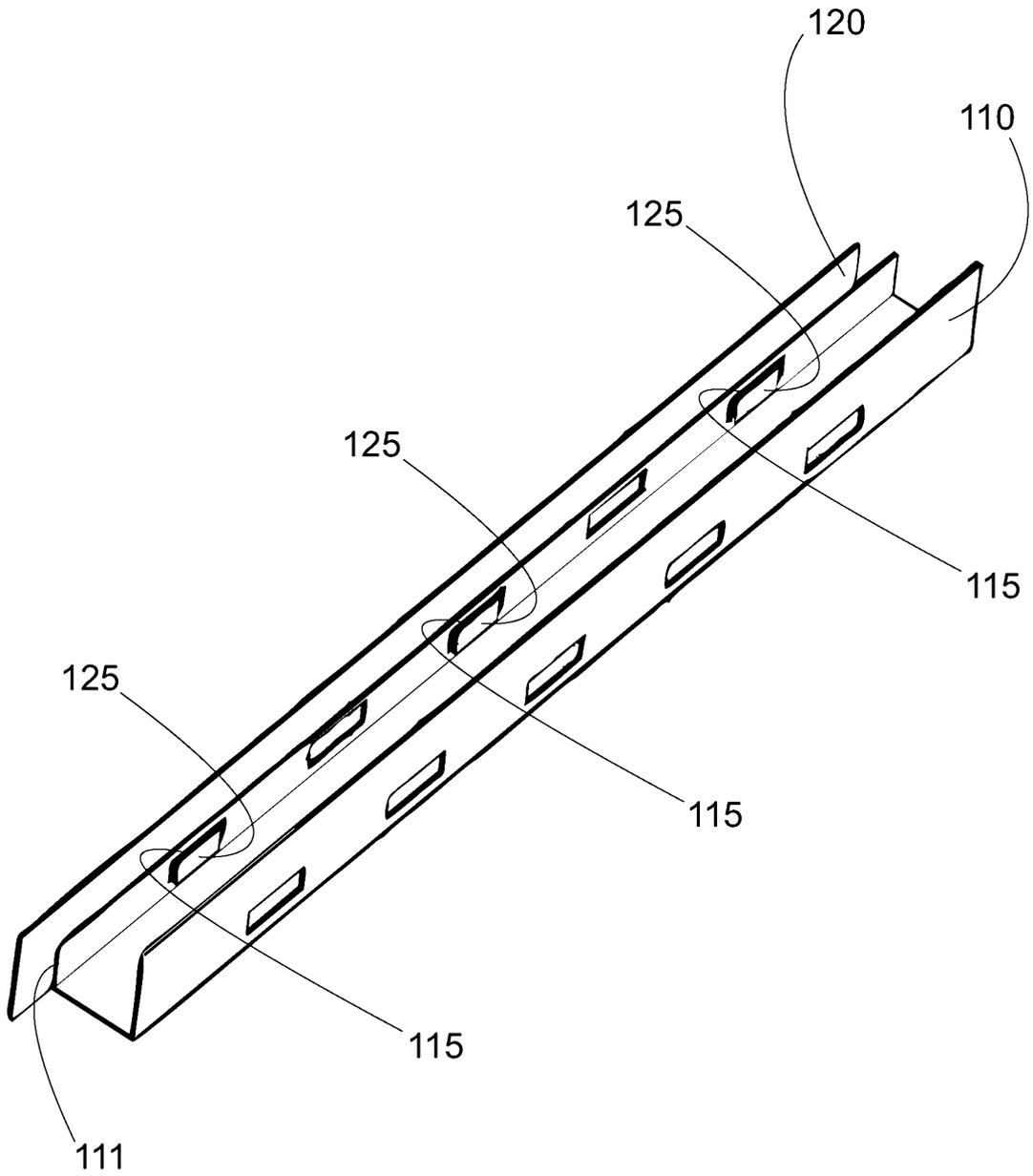


Fig. 2a

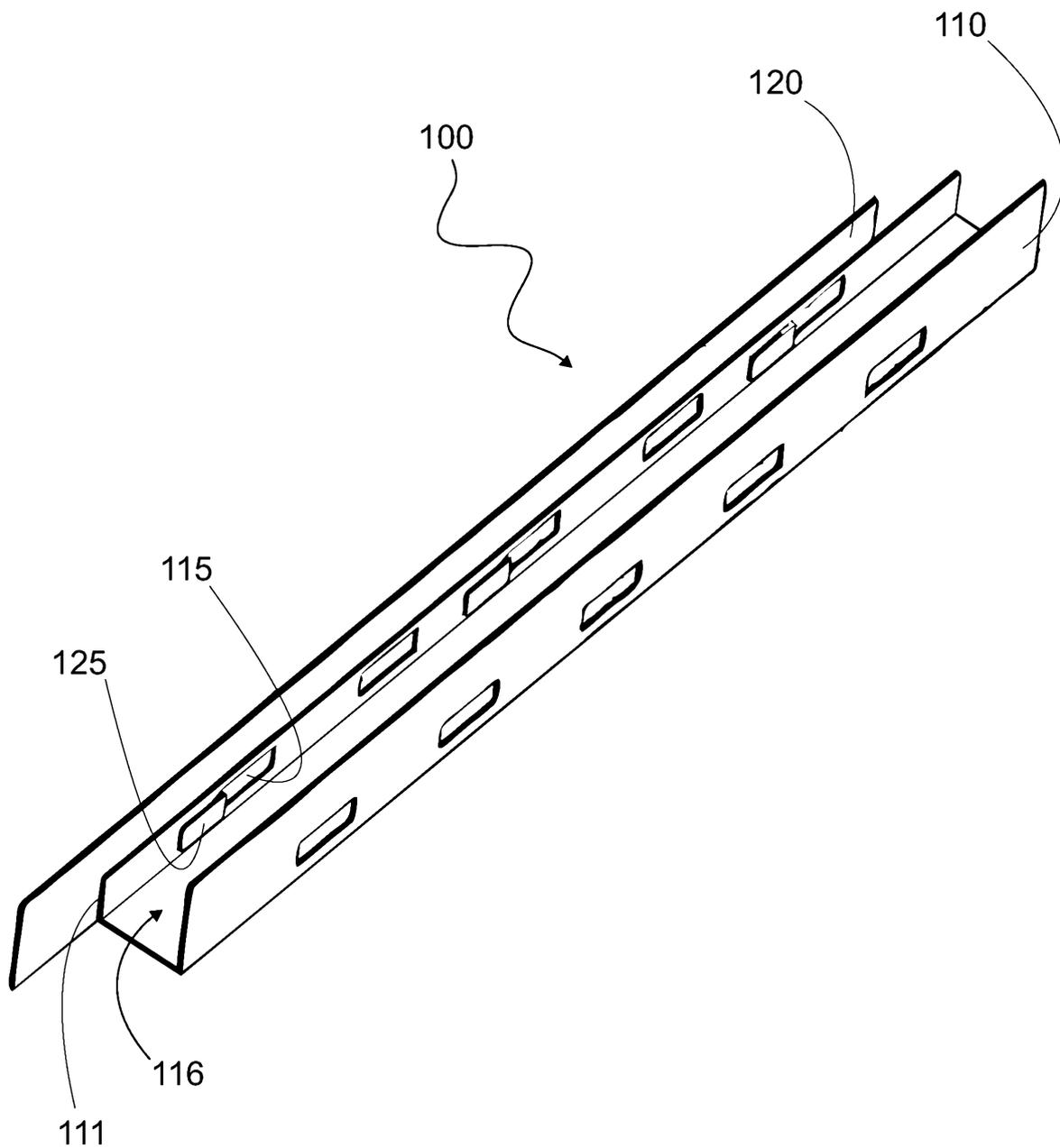


Fig. 2b

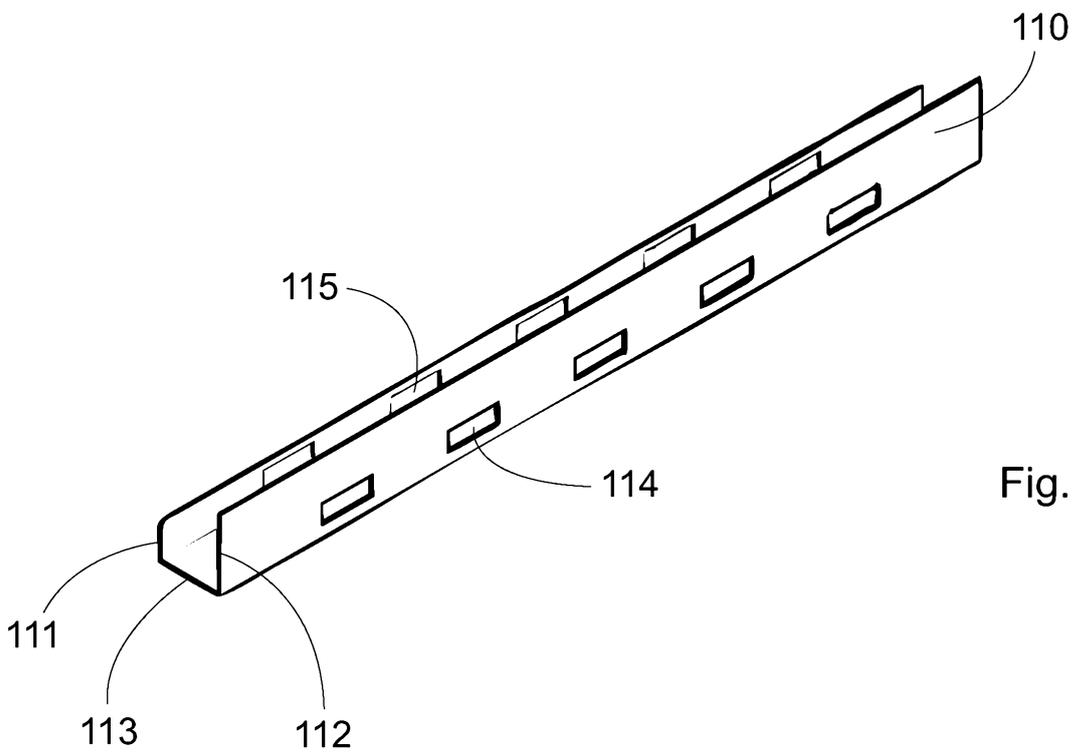
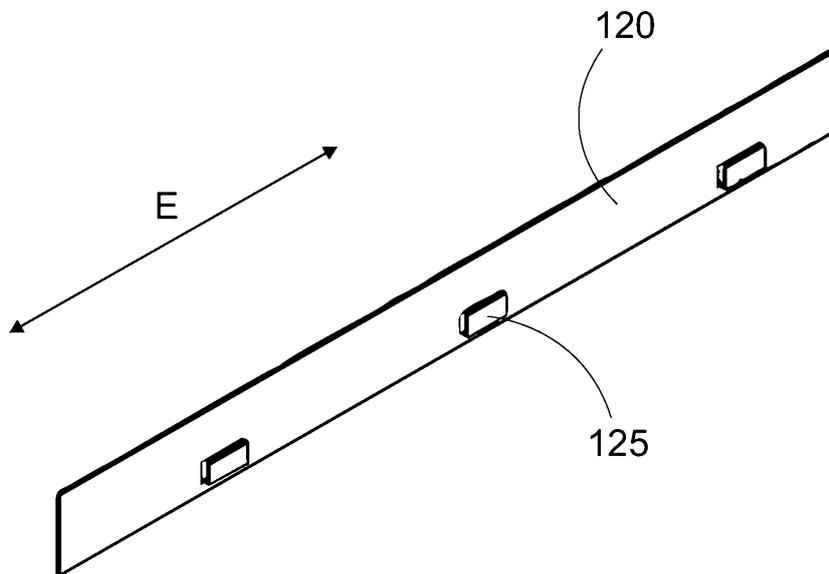


Fig. 3

5 / 8

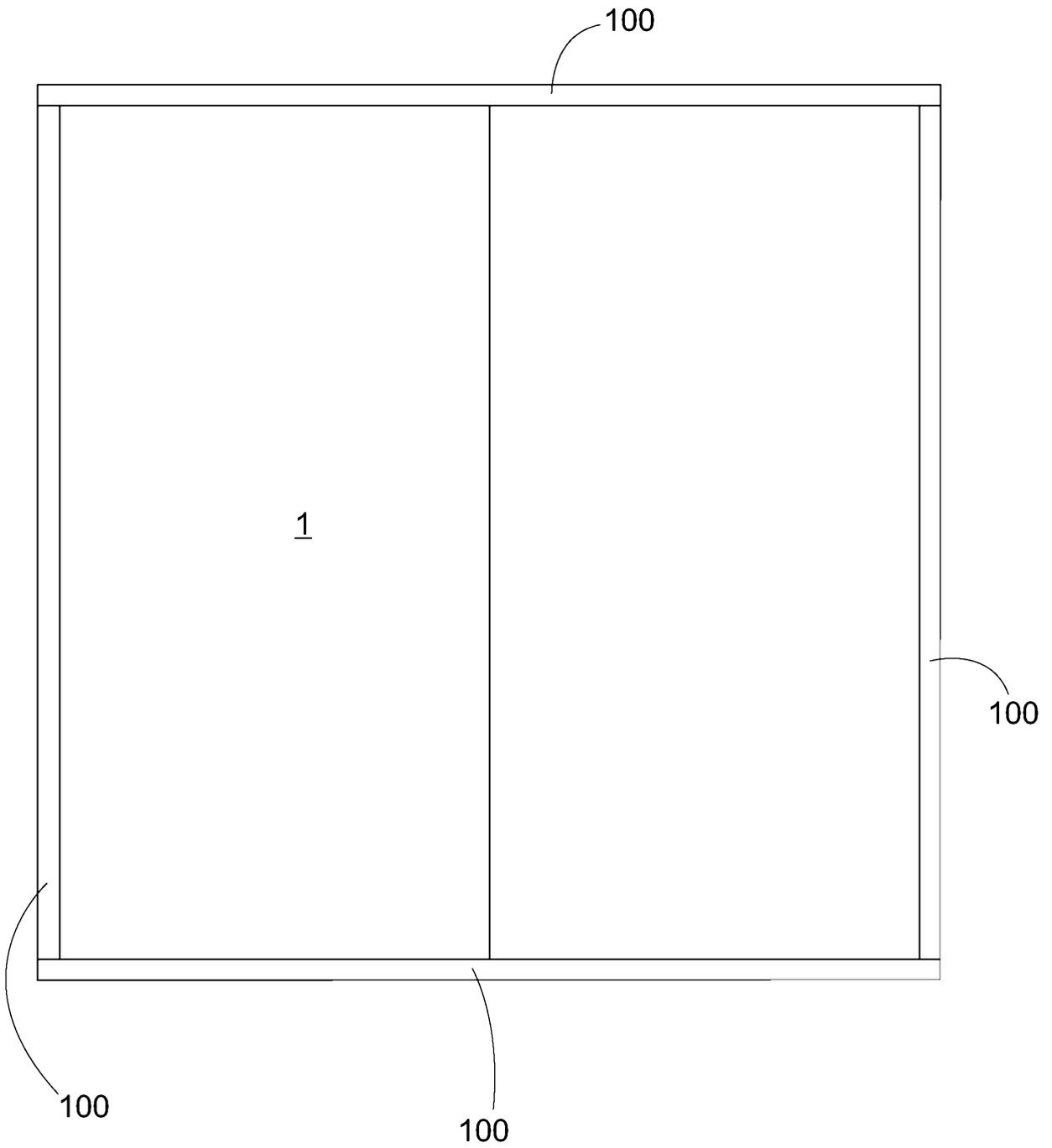


Fig. 4

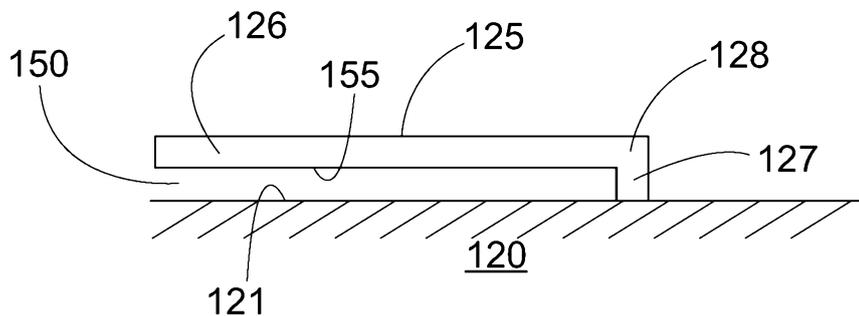


Fig. 5a

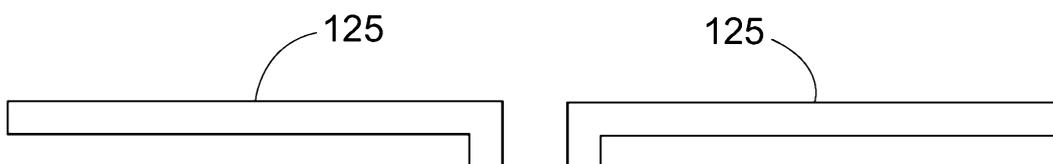


Fig. 5b

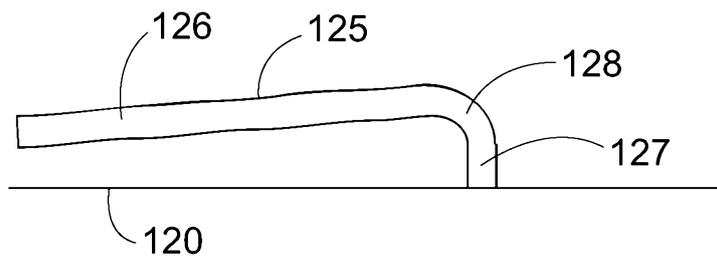


Fig. 5c

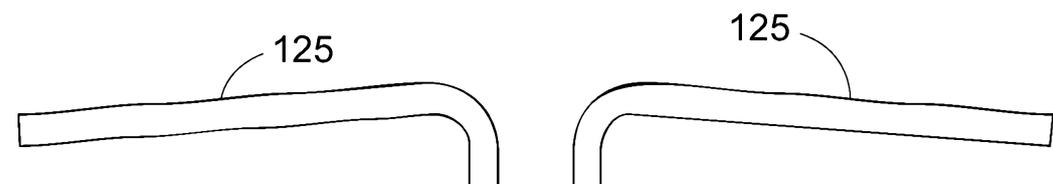


Fig. 5d

Fig. 5

7 / 8

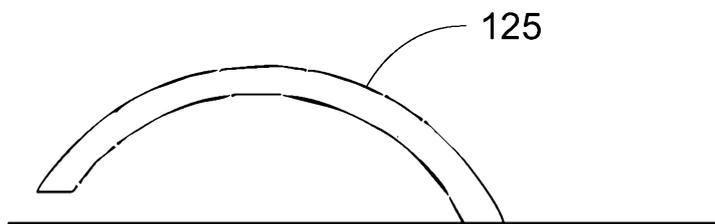


Fig. 5e

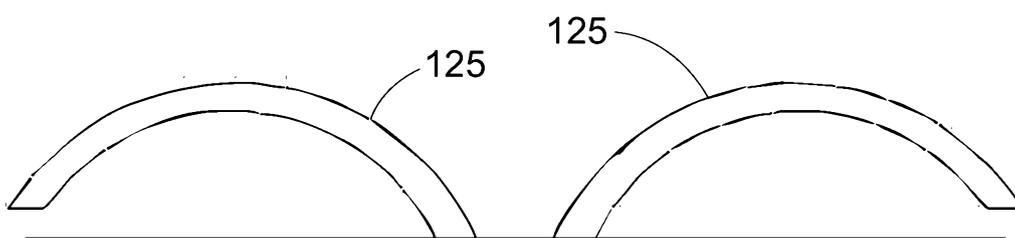


Fig. 5f

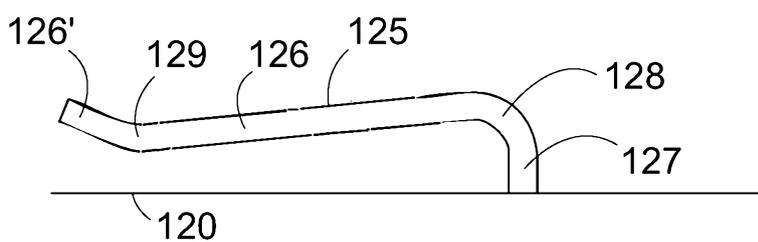


Fig. 5g

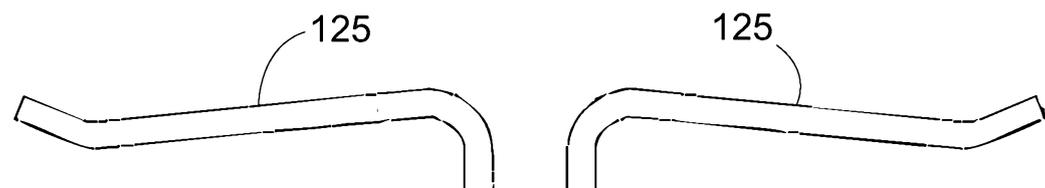


Fig. 5h

Fig. 5

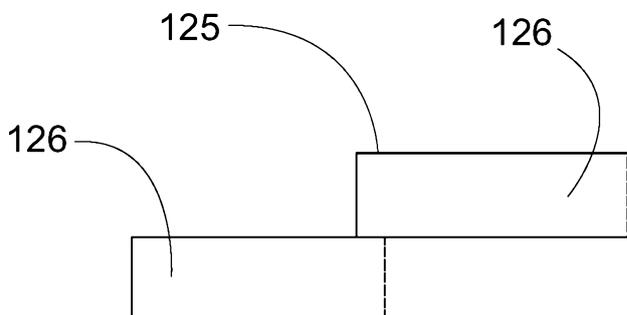


Fig. 6b

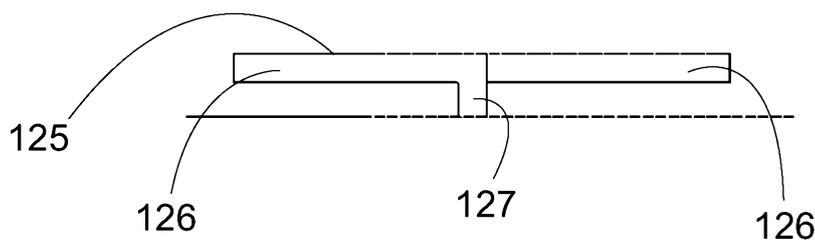


Fig. 6a

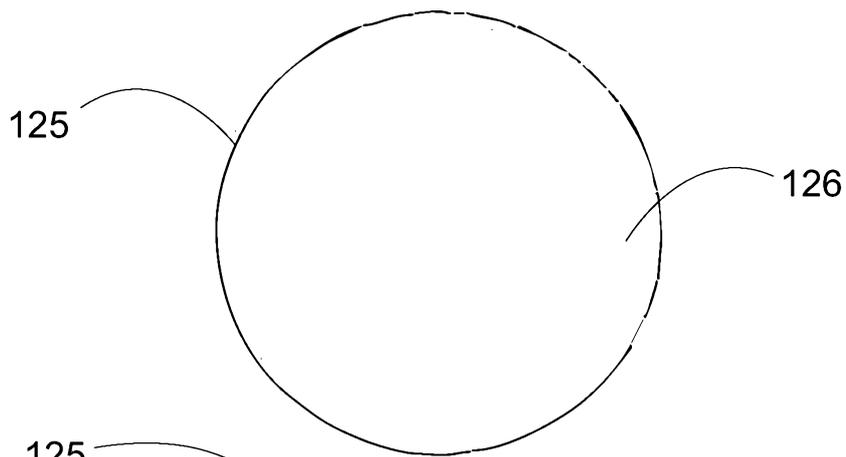


Fig. 6d

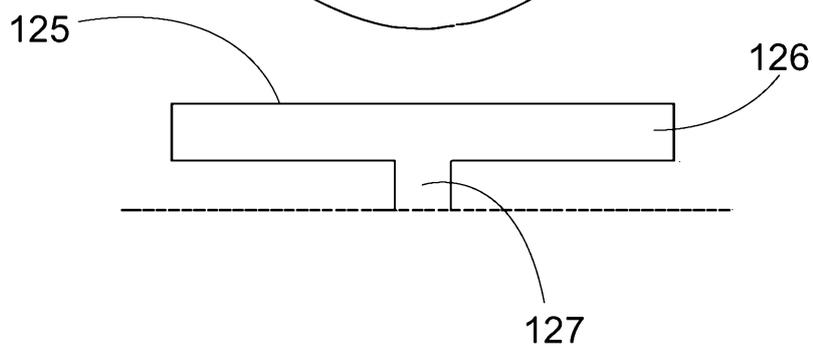


Fig. 6c

Fig. 6