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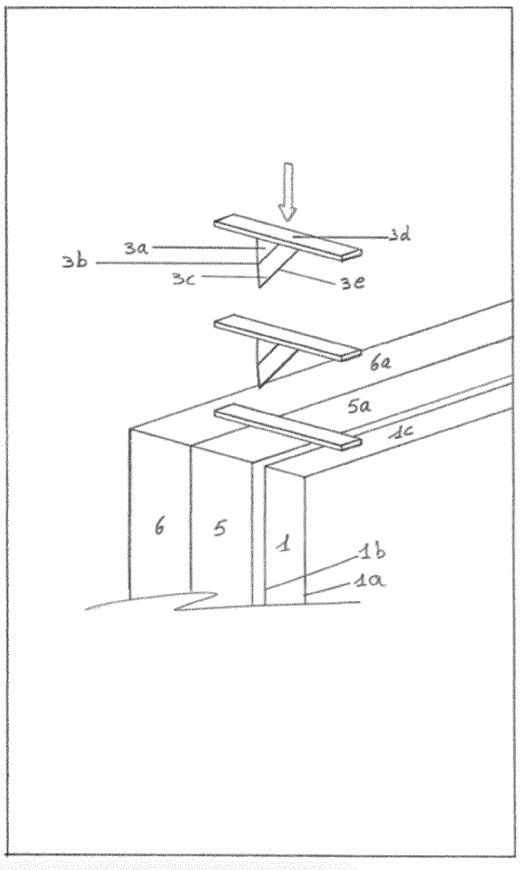
(54) **DEVICE FOR EASY INSTALLATION AND SUPPORT OF WINDOW AND DOOR SILLS WITH SELF-SUPPORTING SUPPORT STRUCTURE**

(57) The present invention involves a device for the simple installation and support of a window sill or door sill on the horizontal underlying opening of an exterior wall. In contrast to the usual methods of installation, which use only a mortar bed, the present invention comprises a universal support structure to support the window sill or door sill. Use of this universal support when installing a window sill or door sill ensures that the window sill or door sill does not tip downwards under load and/or during the placement of a window or door.

Figure 4



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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention involves a device for the simple installation and support of a window sill or door sill on the horizontal underlying opening of an exterior wall. In contrast to the usual methods of installation, which use only a mortar bed, the present invention comprises a universal support structure to support the window sill or door sill. Use of this universal support when installing a window sill or door sill ensures that the window sill or door sill does not tip downwards under load and/or during the placement of a window or door.

BACKGROUND OF THE INVENTION

[0002] The present invention involves a device to support window and door sills in the cavity between the interior and exterior walls, also known as the façade. As is known, a window sill or door sill may be composed of natural stone, wood, metal, concrete or PVC. Sills for windows and doors are typically natural stone, usually blue stone and/or granite.

[0003] Presently, a window sill or door sill is mounted to the horizontal underlying surface of a wall opening, also called an exterior wall. The window sill or door sill is anchored to the top of the exterior wall opening's horizontal underlying masonry using a mortar bed. The back of the window sill or door sill is placed farther behind the back of the façade stones to be able to install the window or door. The weight of the window or door will cause the sill to tip downwards parallel to the exterior wall cavity.

[0004] Additionally, installing a series of sills to the same depth is not self-evident. A solution to this was found through a universal support by means of the present invention, which provides sufficient support for the sill and/or window and is easily positioned at a specific depth.

[0005] The universal support is simply inserted into the top of the cavity insulation and is provided with a vertical fin to ensure a good incision (insertion) into the cavity insulation. The present support also features a horizontal top positioned perpendicular to the fin. In a specific embodiment, the fin has fully or partially bevelled faces angled towards the oblique edge on both sides to further improve insertion into the cavity insulation.

SUMMARY OF THE INVENTION

[0006] The present invention describes a universal support for adequate support and easy installation of a window sill or door sill on the horizontal underlying surface of an interior wall and underlying surface of an exterior wall. This universal support is characterised by the fact that the support has a top and a fin with a horizontal edge, vertical edge and oblique edge, where the top is positioned perpendicular to the fin and the fin's vertical edge is perpendicular to both the fin's horizontal edge and to the top.

The universal support's fin has fully or partially bevelled faces angled towards the oblique edge on both sides. In a specific embodiment, the fin has partially bevelled faces angled towards the oblique edge.

In a further aspect, the fin's oblique edge slants from the bottom rear to the top front.

In another embodiment of the universal support in accordance with the present invention, the length of the top exceeds the length of the fin's horizontal edge. Specifically, the top extends further back and forward than the fin's horizontal edge.

In a particular embodiment, the universal support in accordance with the present invention has a top with a width exceeding the thickness of the fin. More specifically, the width of the top is equal to at least twice, but preferably five or more times the thickness of the fin.

In another embodiment, the universal support has a T-shaped cross-section at the height of the fin.

[0007] The present invention also describes the use of multiple universal supports as described above, for the adequate support and easy installation of a window sill or door sill on the horizontal underlying surface of an exterior wall and underlying surface of an interior wall. In a further aspect of this use, the universal supports are placed on the top layer of the façade stones making up the exterior wall and the top layer of the interior wall of the window opening. In another aspect of this use, when positioning the universal supports, the vertical edge of the fin leans against the back of the interior wall. In another aspect, the universal supports are placed at regular intervals. In a further embodiment, when using the universal supports, insertion of the fin into the cavity insulation will position the top of the universal support against the horizontal underlying surface of the exterior wall and horizontal underlying surface of the interior wall.

[0008] In another aspect, the present invention comprises a method for the easy installation and proper sealing of a window sill or door sill whereby multiple universal supports are used in accordance with the present invention. A method is also described for the easy placement of a universal support in the cavity insulation between an exterior wall and an interior wall, whereby a universal support is used in accordance with all possible embodiments of the present invention and whereby the fin of this universal support is inserted into the cavity insulation.

BRIEF DESCRIPTION OF THE FIGURES

[0009]

Figure 1 shows a side view of a universal support in accordance with one of the embodiments.

Figure 2 shows an oblique side view of a universal support in accordance with one of the embodiments.

Figure 3 shows the different aspects of a universal support in accordance with one of the embodiments.

Figure 4 shows the placement of a universal support in a wall's cavity insulation.

Figure 5 shows a universal support in accordance with one of the embodiments, whereby the universal support is inserted into the cavity insulation and whereby a window sill and the associated window are installed on top of the universal support.

DETAILED DESCRIPTION OF THE INVENTION

[0010] A detailed description of the present invention is given below with reference to the attached figures. With specific reference to the figures, it must be emphasised that the specifics shown serve only as examples and for the purposes of illustrating the discussion of the various implementation forms of the invention under consideration.

[0011] Figure 1 shows a side view of a device in accordance with one embodiment of the present invention. The present invention consists of a universal support (3) to serve as a support for a window sill or door sill (2), whereby the window sill or door sill (2) is installed at an angle to the outside surface (1a) and at a depth extending beyond the back (1b) of the exterior wall, and whereby a window or door (4) is placed on the window sill or door sill at the back (1b) of the exterior wall (1), parallel to and near the interior wall (6) and the insulation (5).

Figures 1, 2 and 3 show the oblique edge (3e) of the fin (3a), which has a certain angle relative to the vertical inside surface (6b) of the interior wall (6). The presence of this fin allows the universal support to be easily inserted into the cavity insulation, with the fin acting as a blade to slice into the cavity insulation. More specifically, the fin (3a) is provided with fully or partially bevelled faces (3c) angled towards the oblique edge (3e) on both sides. In a further embodiment, the fin has partially bevelled faces (3c) angled towards the oblique edge (3e) on both sides. The bevelled faces may extend halfway across along the entire side of the fin (3a), for example. Specifically, the bevelled faces (3c) are shaped like a blade.

[0012] Figures 1, 2 and 3 show that the universal support (3) has a horizontal top (3d) positioned perpendicular to the fin (3a). The horizontal top (3d) provides for the universal support's supportive character, allowing a window sill or door sill (2) to be installed on top.

Figure 4 shows the vertical insertion of the universal support (3) with fin (3a) into the top (5a) of the cavity insulation (5).

[0013] In a specific embodiment and as shown in Figure 4, pressure to the top (3d) of the universal support (3) will cause the fin (3a), more specifically the blade shape (3c), to slice into the top (5a) of the cavity insulation (5). The universal support (3) in accordance with the present invention serves primarily to provide for easy installation and adequate support of a window sill or door sill (2) on the horizontal underlying surface (1c) of an exterior wall (1).

As is apparent from Figures 1 and 2, the universal support (3) in a preferred form in accordance with the present invention is characterised by having a top (3d) and a fin (3a) with a horizontal edge (3f), vertical edge (3b) and oblique edge (3e), whereby the top (3d) is positioned perpendicular to the fin and the vertical edge (3b) of the fin (3 a) is perpendicular to both the fin's horizontal edge (3f) and to the top (3d). The fin's vertical edge (3b) and oblique edge (3e) are therefore positioned at an angle; more specifically, at an angle between 0° and 90°; even more specifically, at an angle between 10° and 80°. The fin (3a) has fully or partially bevelled faces (3c) angled towards the oblique edge (3e) on both sides. In a further preferred form, the fin (3a) has partially bevelled faces (3c) angled towards the oblique edge (3e) on both sides. These bevelled faces may extend at least halfway across the sides of the fin, for example. In this way the fin (3a), and the fin's bevelled faces in particular, acts as a blade to slice into the cavity insulation during placement of the universal support. As shown in Figures 1, 2, 3 and 4, the bevels (3c) have a certain width. Figures 1, 2, 3 and 4 show a top (3d) positioned perpendicular to the fin (3a) on the universal support (3). In a further embodiment, the length of the top (3d) exceeds the length of the horizontal edge (3f) of the fin (3a). In particular, the top (3d) has parts that protrude beyond the fin (3a) longitudinally. The top therefore extends further back and forward than the fin's horizontal edge (3a).

In a specific embodiment and as shown in Figures 1, 2, 3 and 4, the top (3d) continues beyond the front and back of the fin (3a). In this embodiment and as shown in Figures 1, 2, 3 and 4, the top (3d) of the universal support (3) rests on the top (6a) of the interior wall (6) at the back of the fin (3a).

[0014] Furthermore, the top (3d) of the universal support (3) also continues from the front of the fin (3a) over the top (5a) of the cavity insulation (5) onto the top (1c) of the exterior wall (1). In this embodiment as well, the window sill or door sill can rest fully on the universal support (3) on the side adjacent to the inside (1b) of the wall (1).

In a further embodiment, the width of the top (3d) also exceeds the thickness of the fin (3a). More specifically, the width of the top is equal to at least twice, but preferably five or more times the thickness of the fin.

[0015] In a specific embodiment, the universal support (3) consists of plastic or fibreglass or a combination of these materials. Preferably, the universal support (3) in accordance with the present invention is made of plastic. Considering the application as a universal support (3) for window and door sills, it will be clear to the professional that the universal support (3) must be composed of materials of sufficient strength. Without wanting to limit ourselves in this area, the universal support is preferably made of a plastic material.

Figure 2 shows a perspective view of multiple universal supports (3) supporting a window sill or door sill (2) in accordance with one of the embodiments of the present invention. The universal support (3) in accordance with

the present invention is characterised by a vertical fin (3a) of the universal support (3) with a longitudinal slope. In a specific embodiment and as shown in Figures 1, 2 and 3, the fin (3a) has a vertical edge (3b) that leans against the inner surface (6b) of the interior wall (6).

This vertical edge (3b) of the fin (3a) ensures adequate support for the universal support (3) against the back (6b) of the interior wall (6). As shown in Figures 1, 2 and 3, the fin (3a) has an oblique side (3e) along the length and perpendicular to the vertical side (3b). More specifically, the oblique edge (3e) has bevelled faces (3e) in the plane of the fin (3a) along both sides of the fin (3a). Although the fin can also be inserted into the cavity insulation without these bevelled faces, the bevelled faces (3c) facilitate insertion into the upper surface (5a) of the cavity insulation (5) in order to firmly secure the universal support and position it perpendicular to the interior wall (6) and exterior wall (1).

[0016] It will also be clear to the professional that the universal supports (3) must be placed at regular intervals to ensure adequate support of the window sills and door sills (2). Figure 2 shows a top perspective view of the placement of two universal supports (3) in accordance with the present invention on the horizontal underlying surface (6a) of an interior wall (6) and the underlying surface (1c) of an exterior wall (1). This clearly shows that the universal supports in accordance with the present invention (3b) have their fins (3) leaning against the vertical surface (6b) of the interior wall (6). The present invention also comprises the use of multiple universal supports (3) in accordance with one of the embodiments as described above, for the easy installation of a window sill or door sill through the insertion of a fin (3a) into the top (6a) of the cavity insulation (6) and on the horizontal underlying surface (6a) of the interior wall (6) and the underlying surface (1c) of the exterior wall (1). The oblique edge (3b) of the fin (3a) on the universal support (3) also leans against the inside (6b) of the interior wall (6). In a specific embodiment of the present invention, the universal supports (3) are first placed on the horizontal underlying surface (6a) of the interior wall (6) and the underlying surface (1c) of the exterior wall (1). The universal supports (3) are placed at regular intervals on the horizontal underlying surface (6a) of the interior wall (6) and the underlying surface (1c) of the exterior wall (1) and inserted into the top (5a) of the cavity insulation (5) by means of the fin (3a), more specifically the bevelled faces (3c) of the fin (3a).

There are many advantages to the use of multiple universal supports (3) in accordance with the present invention for the easy installation of a window sill or door sill (2) on the horizontal underlying surface (1c) of the exterior wall (1). The universal supports can be installed easily at any time after completion of the shell construction. Then the window sill or door sill can be installed quickly and easily by means of a mortar bed (7) on the underlying surface (1c) of the exterior wall (1) and the top (3d) of the universal support (3). As a result, the window sill or door sill can be installed with great ease and speed without the risk of the window sill or door sill tipping down in line with the insulation (5).

The attached figures show schematic representations for illustrative purposes of an embodiment of a universal support for the support and installation of window sills and door sills.

[0017] In the images:

Figures 1 and 2 show a side view and perspective view of a universal support in accordance with the invention for the simple support of a window sill or door sill (2) using multiple universal supports (3) placed on the horizontal underlying surface (6a) of an interior wall (6) and the underlying surface (1c) of an exterior wall (1). The image shows that in this embodiment, the universal support (3) has a top (3d) and a fin (3a) with a horizontal edge (3f), vertical edge (3b) and oblique edge (3e), whereby the top (3d) is positioned perpendicular to the fin and the vertical edge (3b) of the fin (3a) is perpendicular to both the fin's horizontal edge (3f) and to the top (3d). Also specific to this embodiment is that the fin (3a) has partially bevelled faces (3c) angled towards the oblique edge (3e) on both sides.

Figure 3 contains a left side view (3A), top view (3B), front view (3C), right side view (3D) and perspective view (3E) of an embodiment of the universal support (3).

Figures 3A, 3D and 3E show that the vertical edge (3b) of the fin (3a) provides for adequate support against the back (6b) of the interior wall (6), giving the universal support its self-supporting character. In addition, the image in 3C makes it clear that the cross-section of the universal support (3) is T-shaped at the height of the fin (3a). Also visible in Figure 3C is that the width of the top (3d) exceeds the thickness of the fin (3a).

Furthermore, Figures 3A, 3D and 3E show that the length of the top (3d) exceeds the length of the fin's horizontal edge (3a). More specifically, the top extends further back and forward than the fin's horizontal edge (3a).

Figure 4 shows a perspective view of the "placement" method for the universal support. It is clear to see that the fin (3a), and more specifically the bevelled faces (3c) of the fin (3a), acts as a blade to slice into the top (5a) of the cavity insulation (5). It can also be clearly seen that when the fin (3a) is fully inserted into the cavity insulation (5), the protruding sections of the top (3d) of the universal support (3) rest on the underlying surface (6a) of the interior wall (6) and the underlying surface (1c) of the exterior wall (1), as a result of which the universal support (3) displays a self-supporting character.

Figure 5 shows a perspective view of the outside (1a) of the exterior wall (1) with the horizontal underlying surface (1c) of the exterior wall (1), fitted with a window frame and aluminium sill. This image clearly shows that the window is well-supported along the cavity and insulation (5).

[0018] It will be evident to the professional that these images are merely illustrative of an embodiment in accordance with the present invention, and that the latter is in no way restricted to the details of these embodi-

ments, but also extends to other equivalent embodiments which incorporate the innovative contribution of the invention. The scope of the invention is given by the attached claims and includes all modifications within the meaning and scope of equivalence of the claims.

Claims

1. A universal support (3) for the adequate support and easy installation of a window sill or door sill (2) on the horizontal underlying surface (6a) of an interior wall (6) and the underlying surface (1c) of an exterior wall (1), **characterised by** this universal support (3) having a top (3d) and a fin (3a) with a horizontal edge (3f), vertical edge (3b) and oblique edge (3e), whereby the top (3d) is positioned perpendicular to the fin and the vertical edge (3b) of the fin (3a) is perpendicular to both the fin's horizontal edge (3f) and to the top (3d), and **characterised by** the fin (3a) having fully or partially bevelled faces (3c) towards the oblique edge (3e) on both sides.

2. Universal support (3) in accordance with claim 1, whereby the oblique edge (3e) of the fin (3a) slants from the bottom rear to the top front.

3. Universal support (3) in accordance with one of the previous claims, whereby the length of the top (3d) exceeds the length of the fin's horizontal edge (3a).

4. Universal support (3) in accordance with claim 3, whereby the top extends further back and forwards than the fin's horizontal edge (3a).

5. Universal support (3) in accordance with one of the previous claims, whereby the width of the top (3d) exceeds the thickness of the fin (3a).

6. A universal support (3) in accordance with claim 5, whereby the width of the top (3d) is equal to at least twice, but preferably five or more times the thickness of the fin (3a).

7. Universal support (3) in accordance with one of the previous claims, whereby the universal support (3) has a T-shaped cross-section at the height of the fin (3a).

8. The use of multiple universal supports (3) as described in one of the previous claims, for adequate support and easy installation of a window sill or door sill (2) on the horizontal underlying surface (1c) of an exterior wall (1) and the underlying surface (6a) of an interior wall (6).

9. The use of multiple universal supports (3) as described in claim 8, whereby the universal supports are placed on top of the top layer of the façade stones making up the exterior wall and the top layer of the interior wall at the window opening.

10. The use of multiple universal supports (3) as described in the previous claims 8 or 9, whereby on placement of the universal supports (3), the vertical edge (3b) of the fins (3a) leans against the back (6b) of the interior wall (6).

11. The use of multiple universal supports (3) as described in one of the previous claims 8 to 10 (inclusive), whereby the universal supports (3) are placed at regular intervals.

12. The use of multiple universal supports as described in one of the previous claims 8 to 11 (inclusive), whereby insertion of the fin (3a) into the cavity insulation (5) positions the top of the universal support (3) against the horizontal underlying surface (1c) of the exterior wall (1) and the horizontal underlying surface (6a) of the interior wall (6).

13. Method for easy installation and adequate support of a window sill or door sill (2), whereby multiple universal supports (3) are used as described in one of the previous claims 1 to 7 (inclusive).

14. Method for easy installation of a universal support (3) in cavity insulation between an exterior wall and an interior wall, whereby a universal support (3) is used as described in one of the previous claims 1 to 7 (inclusive), and whereby the fin (3a) of this universal support (3) is inserted into the cavity insulation.

Figure 1

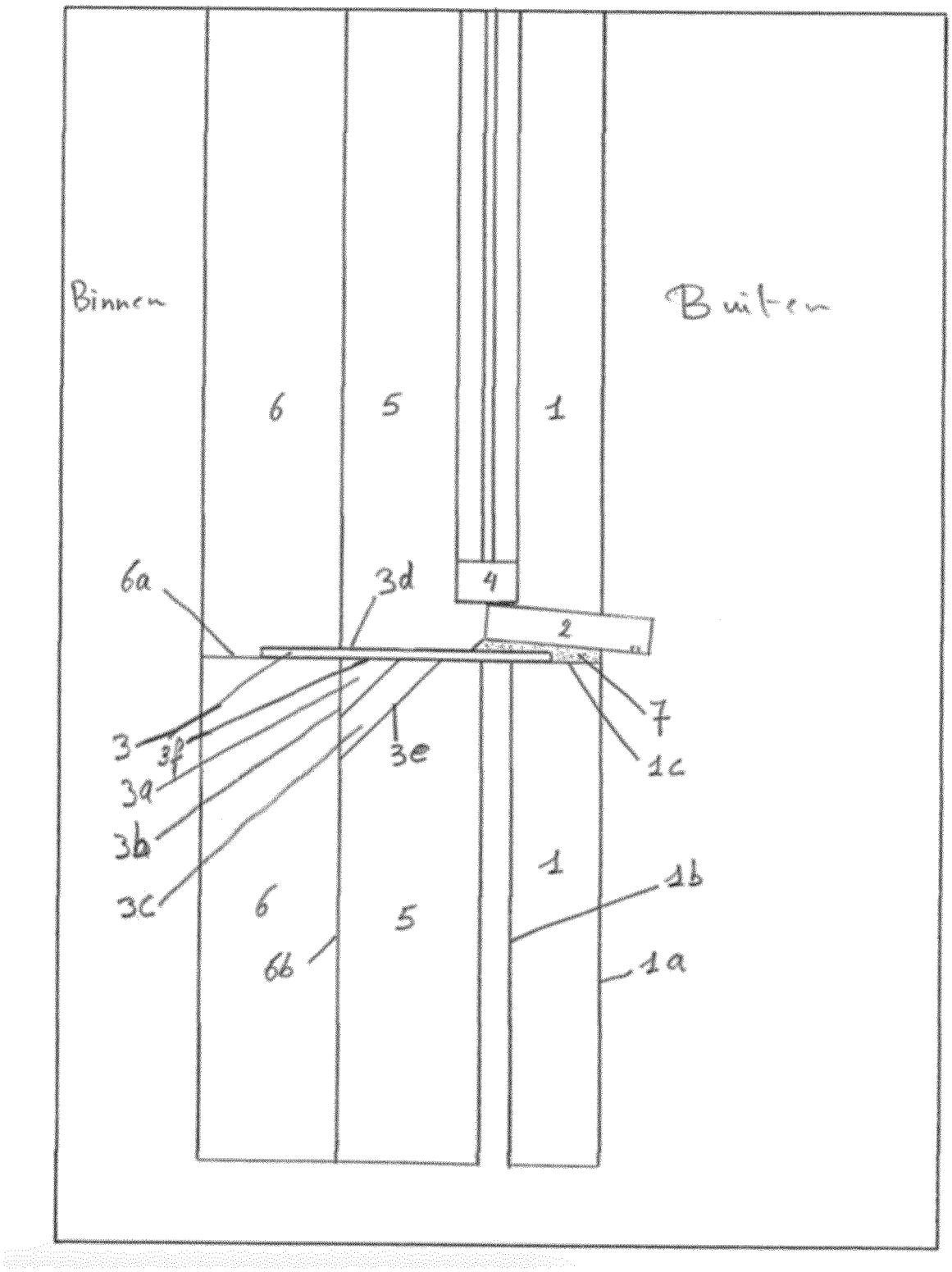

Figure 2

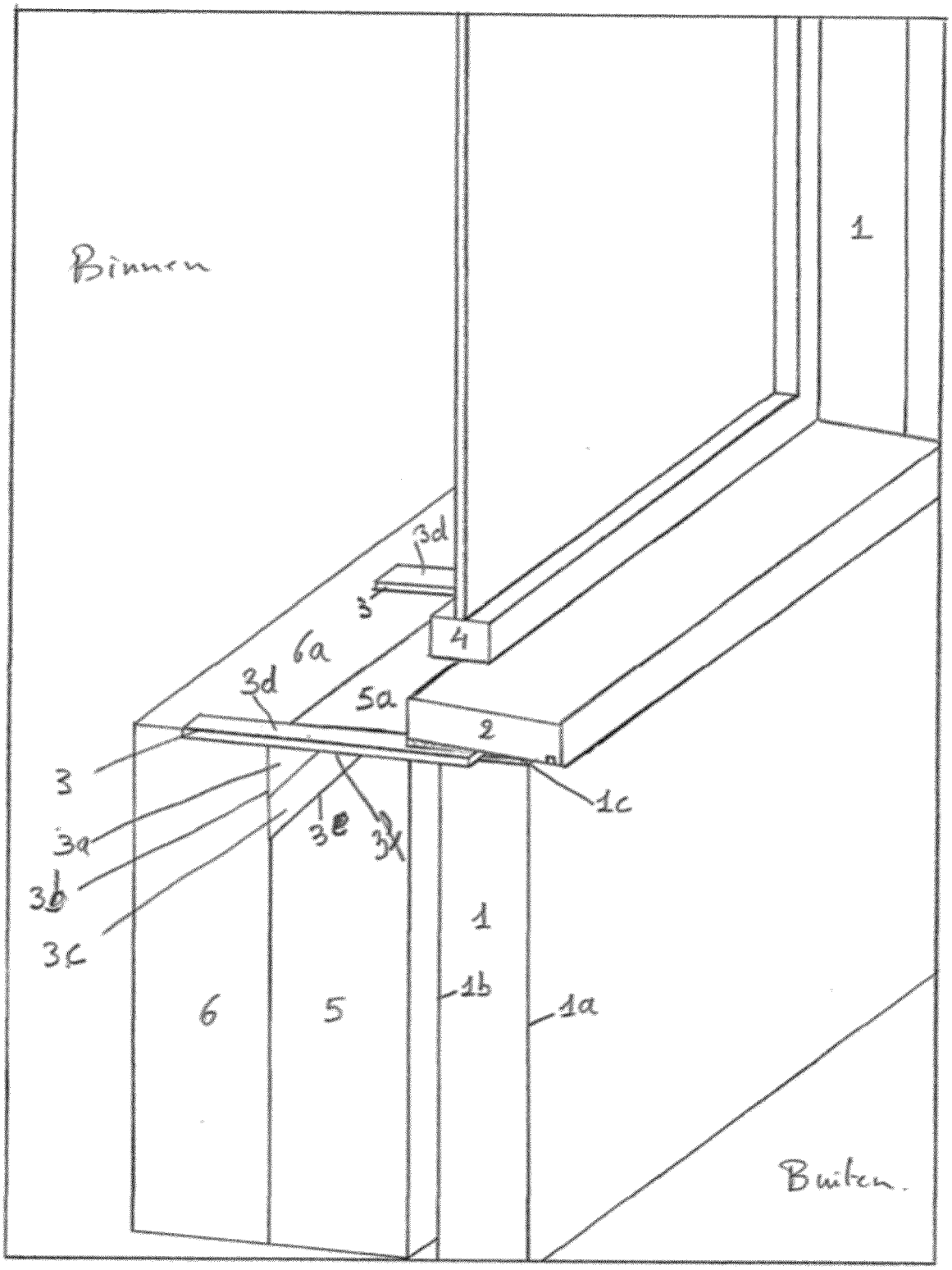

Figure 3

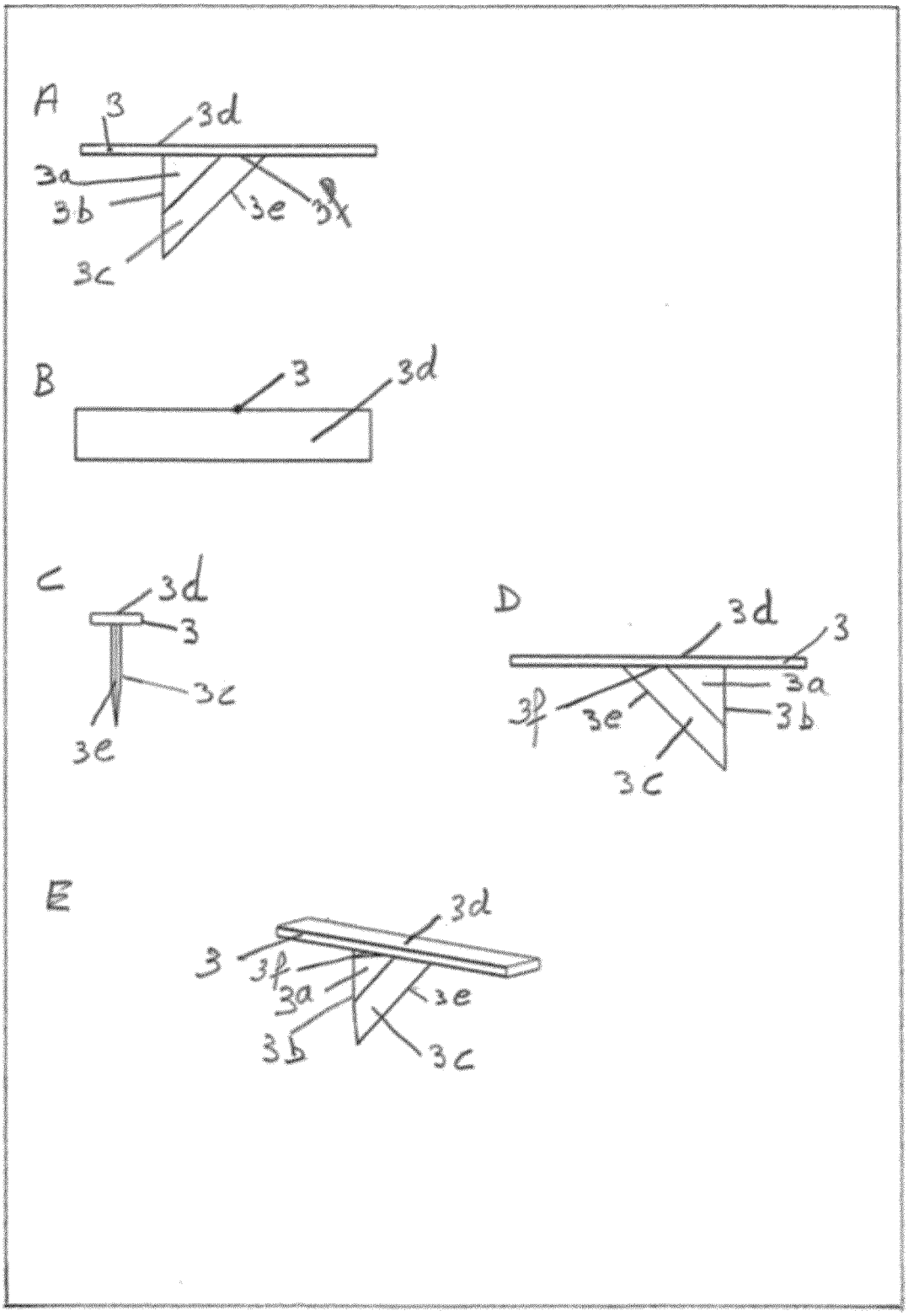
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Figure 4

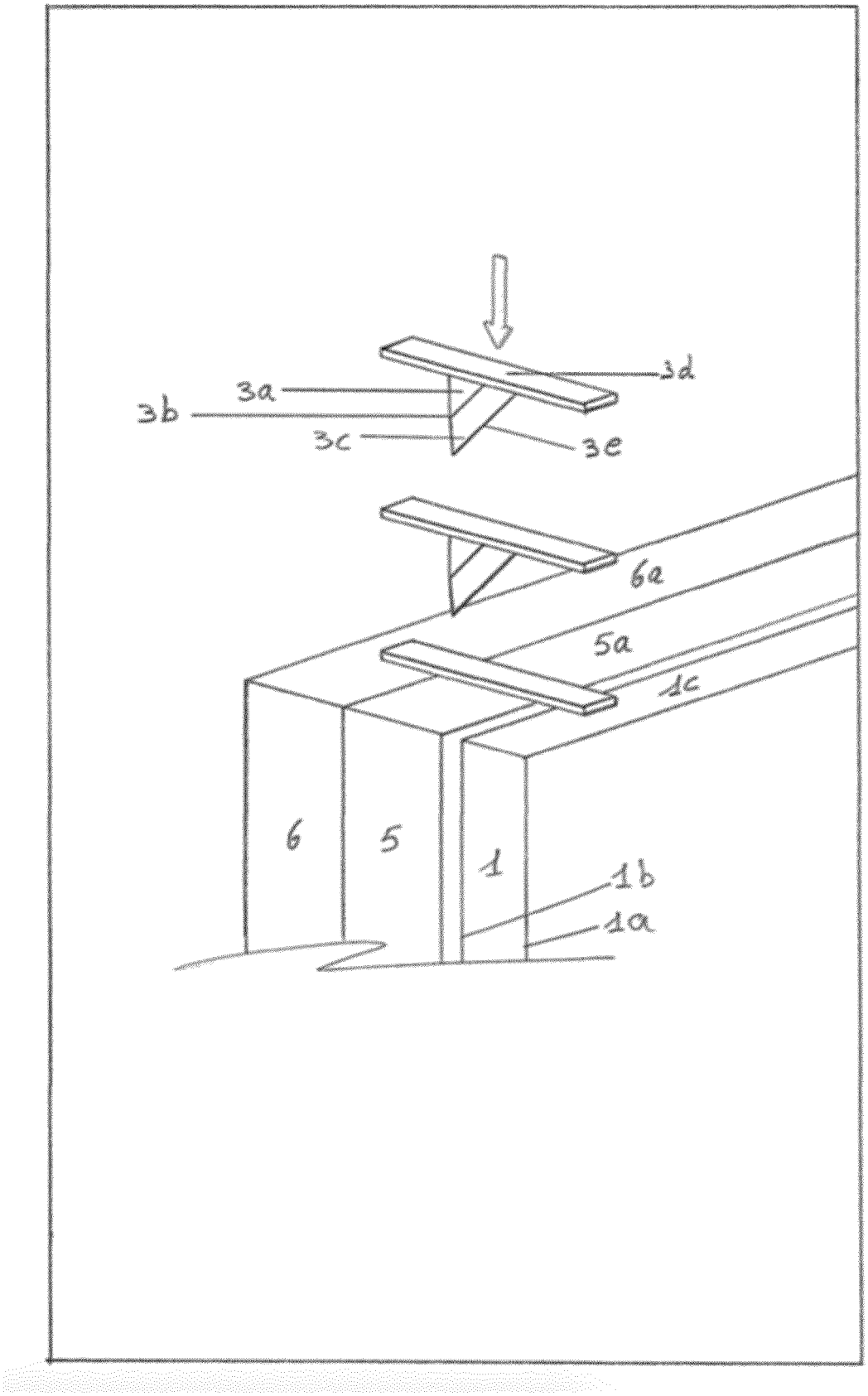
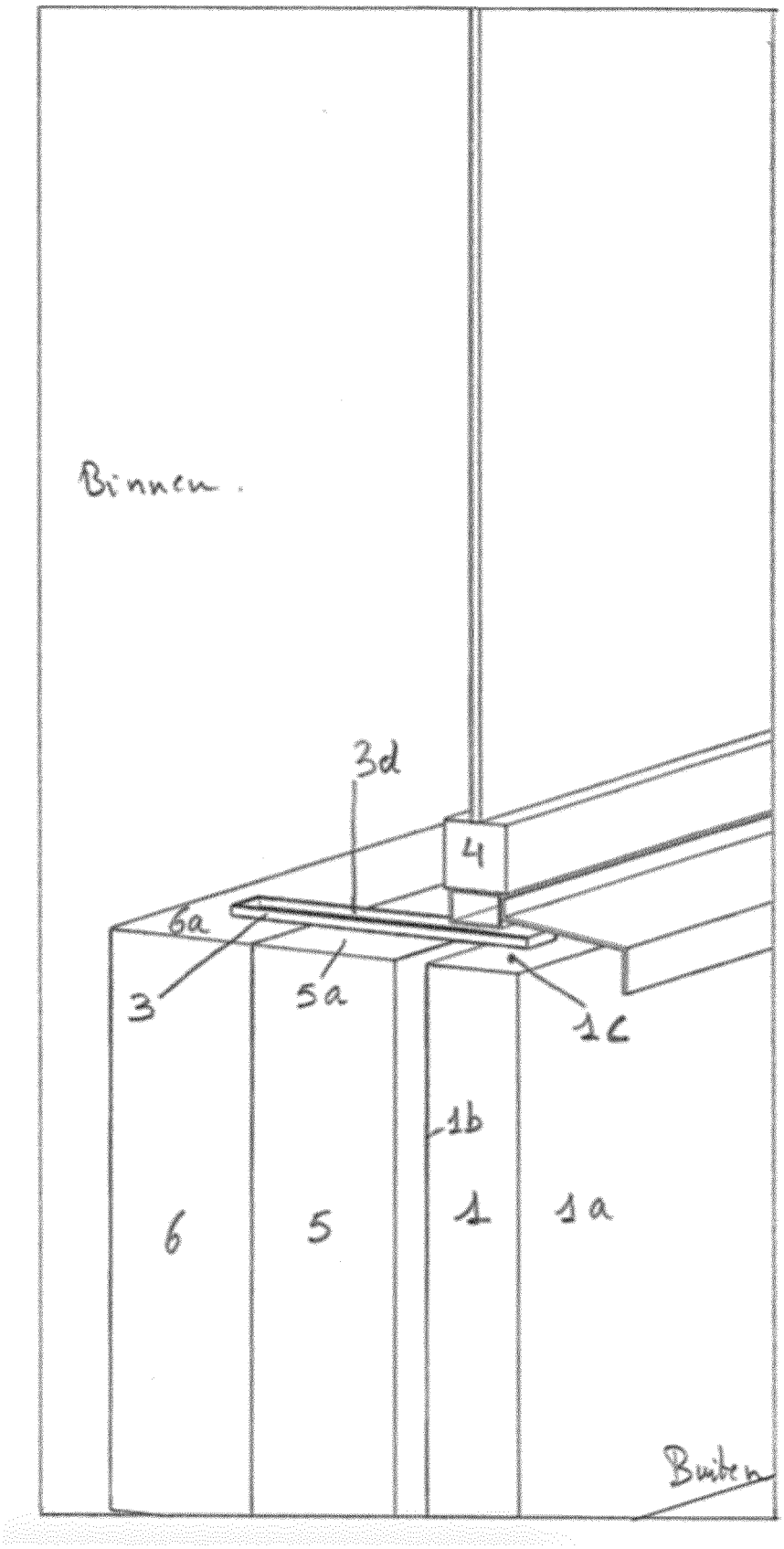


Figure 5



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EUROPEAN SEARCH REPORT

Application Number
EP 21 15 7212

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	DE 20 2004 002331 U1 (BMF BYGNINGSBESLAG AS ODDER [DK]) 15 April 2004 (2004-04-15) * figures 2-6 *	1-14	INV. E06B1/00
A	US 2018/058135 A1 (VOS JARON E [US]) 1 March 2018 (2018-03-01) * figures 4A,4B *	1-14	
A	EP 2 226 456 A1 (VKR HOLDING AS [DK]) 8 September 2010 (2010-09-08) * figures 15-18 *	1-14	

TECHNICAL FIELDS SEARCHED (IPC)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	6 July 2021	Verdonck, Benoit

CATEGORY OF CITED DOCUMENTS

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06-07-2021

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