(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 843 150 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
04.03.2015 Bulletin 2015/10

(51) Int Cl.:
E04D 13/035 *(2006.01)* ***E04D 13/03*** *(2006.01)*

(21) Application number: **14182374.0**

(22) Date of filing: **27.08.2014**

(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

(30) Priority: **28.08.2013 PL 40515513**

(71) Applicant: **FAKRO PP Sp. z o.o.**
33-300 Nowy Sacz (PL)

(72) Inventors:
- **Majoch, Waclaw**
  33-300 Nowy Sacz (PL)
- **Musial, Henryk**
  32-020 Wieliczka (PL)
- **Gruca, Tomasz**
  33-370 Muszyna (PL)

(54) **Window frame with fitting for roof window**

(57) A window frame equipped with fitting constituting at least an installation set of the window sash has at least one structural element connecting it with the roof, particularly in the form of a support flashing (2), located on the surface of the members (11) on the external side of the window. Above the support flashing (2), hinges for opening of the window as a pivot window or a tilt window are located; there may be also sets of hinges for opening in both these modes.

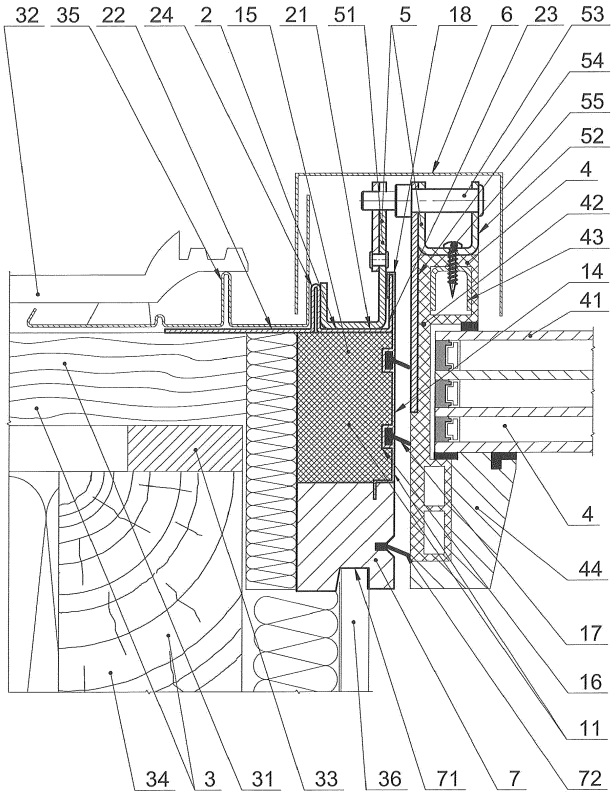

Fig 2

EP 2 843 150 A1

Description

[0001] The invention relates to a window frame with fitting, intended for a roof window, opened by rotation of the sash around a horizontal axis, as a pivoting window, or tilting window, or dual-action window: pivoting-tilting window. The window frame according to the invention is intended mainly for a window installed in a roof, with large immersion of the window sash in the layered structure of the roof.

[0002] **State of the art.** Patent description No. PL 200789 discloses a solution for a window frame of a roof window, having a rectangular recess on its bottom surface, the recess having a support surface being seated on elements of the roof structure. A significant part of this window frame, and consequently of the roof window, protrudes above the roof's surface. Patent description No. PL 214536 discloses a roof window, having a window frame fixed by runners penetrating the roof structure basically perpendicularly to its surface, the runners being covered on the side with a thin layer of thermal insulation. Also in this solution, a significant part of the window frame protrudes above the roof's surface, moreover the fixing runners form thermal bridges, facilitating escape of heat from the attic outwards. In known roof windows being opened at least as pivoting, called also pivot windows or reversible windows, the hinges, using which the sash is mounted, are immersed into the window between the side members of the window frame and the sash, forming thermal bridges with a high share of metal parts.

[0003] **Essence of the solution.** A window frame with fitting for a roof window, having the form of a frame, particularly a rectangular frame, seated in the roof structure, comprising: a top member, a bottom member, and two side members. At least one structural element of the window frame, connecting it with the roof, is located on the surface of the window frame members, located at the external side of the window, while the structural element connecting the window frame with the roof, protrudes beyond the outline of the window frame members. The window frame is equipped with fitting, constituting at least the fixing set of a window sash, the sash containing a glazing unit, and being situated in the opening of the window frame, at least when the window is closed, particularly a sash being rotated in order to open then window, around at least one horizontal geometrical axis, particularly located slightly above the surface of the window frame. The fixing set of the sash consists of particularly hinges, installed on the structural element of the window frame, connecting it with the roof. The window frame has also installed elements of a set for bolting the sash in relation in the closed position, moreover it mates with shields of gaps between the window frame and the window sash, and with a sealing set in these gaps.

[0004] In the first aspect of the invention, the structural element of the window frame connecting it with the roof, is a support flashing, adjacent to at least three of the window frame members, including both side members, protruding at least sideways beyond the outline of the members. In its members, the window frame has walls made of a material with a low thermal conductivity, preferably a plastic, situated along the support flashing, transversely to its surface resting on the roof. These walls are situated at least at the side of the window sash, forming - on at least three members, the top one and both side ones - a circumferential wall surrounding the opening in the window frame. In the walls situated in the window frame members from the side of the window sash, there are longitudinal grooves, particularly with a T-shaped cross-section. These grooves serve the purpose of mounting the seals situated between the window frame and the window sash. Outside the walls, the window frame members seated in the roof structure, have a filling made of an insulating material, preferably a porous one, with a lower resistance than the material of the walls in the window frame, but with a higher thermal performance than the material of walls. Basically, the external surface of the filling does not require an exposure, but it may be equipped with a second wall the same type of plastic, as the wall from the side of the window sash. A variation of the members is also possible, which do not have a separation of materials to a more mechanically resistant wall and a filling with improved thermal performance, but they are made of a material uniting both these properties. Grooves for the seals are then situated directly in this material of the members.

[0005] In a second aspect of the invention, the structural element of the window frame connecting it with the roof is constituted by bearing strips, adjacent to the side members of the window frame, on the external side of the window. The bearing strips protrude beyond the outline of the window frame members on its opposite sides, and it may be a protrusion of the strips sideways of the window, or a protrusion along the side members, upwards and downwards, beyond the top member and the bottom member of the window frame. The window frame according to the second aspect of the invention has in its members, similarly as according to the first aspect, walls made of a material with a low thermal conductivity, preferably a plastic, which are situated at least from the side of the window sash, forming on at least three members, the top one and both side ones, a circumferential wall surrounding the opening in the window frame. In the walls situated in the window frame members from the side of the window sash, there are longitudinal grooves, particularly with a T-shaped cross-section. These grooves serve the purpose of mounting the seals situated between the window frame and the window sash. Outside the walls, the window frame members seated in the roof structure, have a filling made of an insulating material, preferably a porous one, with a lower resistance than the material of the walls in the window frame, but with a higher thermal performance than the material of walls. Basically, the external surface of the filling does not require an exposure, but it may be equipped with a second wall of a plastic; a variation of the members is also possible, made

of a uniform material, with grooves for the seals situated directly in this material - as in the first aspect of the invention.

[0006] The fixing set of the sash, belonging to the fitting system of the window frame, and containing hinges fixed on the structural element of the window frame, connecting it with the roof, that is on the support flashing, or on bearing strips; occurs in three aspects.

[0007] The first aspect of the fitting belonging to the window frame, is constituted by hinges situated on both side members of the window frame, in the middle section of the length of these members, above the middle of the window height, on its external side. The hinges are intended for opening of the window in the pivoting mode, i.e. by rotation of the sash around a geometrical axis, located usually slightly below the middle of the window height, so as to the lower part of the window sash during opening of the window moves towards the exterior of the roof, and the upper part of the sash moves towards the interior of the attic. The hinges, are defined in this description as "pivoting hinges", on the account of opening of the window in the pivoting mode. The hinges are mounted on the external surface of the structural element of the window frame connecting the frame with the roof, that is on the external surface of the support flashing, or on the external surfaces of both bearing strips.

[0008] The second aspect of the fitting belonging to the window frame is constituted by window sash hinges situated near the top edge of the window, serving the purpose of opening of the window in the tilting mode, hereinafter defined as "tilting hinges". The hinges are mounted on the external surface of the structural element of the window frame connecting the frame with the roof, that is on the external surface of the support flashing, or on the external surfaces of both bearing strips. In the tilting hinges, arms are seated, terminated with pivoting hinges, while both the tilting and pivoting hinges, as well as the arms connecting them, are situated on the external side of the window. The hinges according to this aspect, enable using the window as a dual-action window, by opening it as a pivot window or a tilt window. During opening of the window in the pivoting mode, the window sash rotates in the pivoting hinges, as in the first aspect of the fitting, while the tilting hinges are blocked, and the arms connecting both types of hinges rest on the window frame. During opening of the window in the tilting mode, the window sash together with the arms connecting both types of hinges, rotate in the tilting hinges.

[0009] The third aspect of the fitting belonging to the window frame is constituted by hinges for a window sash, situated near the top edge of the window, i.e. tilting hinges, in which the window sash is mounted directly. The hinges are placed on the external side of the window. The window according to the third aspect of the invention is being opened only in the tilting mode.

[0010] In all aforementioned aspects, the window frame with fitting may have an additional frame, preferably wooden, situated at the internal side of the window, that is from the side of the attic. On the additional frame, elements locking the window are installed, mating with locking elements corresponding to them, seated on the frame of the sash. These are for instance bolt sockets, mating with the bolt of the handle. On the other hand, the window frame has on its external surface, on the external side of the window, installation elements for connecting the window frame with the flashings of the window, which seals the connection of the window frame with the roof. Preferably it is an installation frame, upon which properly bent edges of the detailing of the window are laid, resting on the roof and adjacent to the window.

[0011] **Advantages of the invention.** Thanks to its design enabling its immersion in the roof structure, the window frame with fitting for a roof window for immersing also the the sash of the roof window in this structure, increasing thermal performance of the whole window. Metal elements of the window frame, having large volume and mass, such as: hinges, support flashing, or bearing strips, are situated on the external side of the window frame, and do not have components penetrating the interior of the roof structure, or the interior of the opening in the window frame for a sash; optionally these parts constitute a small share in metal fitting subsets, so there are no thermal bridges in the window frame, which could lead to thermal losses from the attic by outflow of heat to the outside of the building.

[0012] **Embodiments.** A window frame with fitting for a roof window, being the subject of the invention is presented by its embodiments in the drawing, with the individual Figures showing:

Fig. 1 - A window frame with the support flashing, for a pivoting window, seated on battens in the roof structure, according to the first embodiment - in an axonometric view.

Fig. 2 - A side window frame member from Fig. 1 and a pivoting hinge with a fragment of the sash - in a cross-section transverse in relation to the side member.

Fig. 3 - A detail of mounting of the additional frame in the window frame from

Fig. 1 - in a cross-section transverse in relation to the side window frame member.

Fig. 4 - A window frame with bearing strips for a dual-action window, pivoting & tilting, seated on battens of the roof structure, according to the second embodiment - in an axonometric view.

Fig. 5 - A side window frame member from Fig. 6 with a tilting hinge and a fragment of the window sash - in a cross-section transverse in relation to the side window frame member.

Fig. 6 - A side window frame member and pivoting hinge with a fragment of the window sash, according to the third embodiment - in a cross-section transverse in relation to the side window frame member.

[0013] The window frame with fitting for a roof window, according to the invention, is also presented in embodiments not supplemented with a drawing, but described through indication of their mutual features with the drawn embodiments and features differing them from the drawn embodiments.

[0014] **Example 1.** The window frame has a form of a rectangular frame **1,** with the following main elements: two side members **11,** a top member **12** and a bottom member **13.** On the external side of the window, the window frame has a support flashing **2** in the form of an open frame, placed at the external side of the window on the side window frame members **11** and the top window frame member **12.** The support flashing **2** is adjacent to the window frame members: side **11** and top **12** with its flat internal area **21,** while it protrudes beyond the outline of the window frame members: side **11** and top **12** with its flat external area **22,** sideways and towards the upper section of the roof plane, while being adjacent only partially to terminal fragments of surfaces of these members on the external side of the window. The flat internal area **22** of the support flashing **2** rests on the supporting structure 3 of the roof, on horizontal tile battens **31,** being a support for roofing-tiles **32,** while the tile battens rest on counter battens **33** laid on rafters **34,** being basic supporting elements of the roof structure.

[0015] Both side window sash members **11** have thin walls **14** with a low thermal conductivity, made of a plastic, situated in the window frame from the side of the sash **4** of the window, while the main bulk of the side window frame member is formed by the filling **15** made of an insulating material, particularly a porous one. In the walls **14,** T-shaped grooves **16** are situated along the window frame members, and in these grooves seals **17** are mounted, with freely moving flaps adjacent, in a closed window, to the side surfaces of the sash **4.** On the external side of the window, the walls **14** have a connecting lip **18,** by which these walls are connected with an internal bend **23** of the support flashing. The filling **15** of the side frame members is glued both to the plastic walls **14,** and to the support flashing **2** of the window frame. The top member of the window frame (not shown in the cross-section) is built in the same way, and the wall of the frame member situated from the side of the window sash, is connected with the walls **14** of the side members at its ends, forming, together with them, a frame surrounding the opening in the window frame for a sash 1 from at least three sides.

[0016] On the support flashing **2,** on its side sections, which rest on the side members **11** of the window frame, on the external side of the window, pivoting hinges **5** are installed, situated slightly above the middle of length of the side window frame members **11.** In the pivoting hinges **5,** both their stationary parts **51** fixed to the support flashing **2,** and moving parts **52,** mating with the sash **4** of the window, as well as axes **53** of the hinge, are situated above the support flashing **2,** as well as above the glazing unit **41** in the sash **4** of the window, the unit consisting of four panes separated with internal frames. Only a small strip **54** belonging to the moving part **52** of the pivoting hinge, enters partially the space between the side member **11** of the window frame and the side wall **42** of the sash **4,** in order to stabilise this part of the hinge on the sash **4.** Movable parts **52** of the pivoting hinges **5** are connected with the side walls **42** of the sash **4** using a reinforcing insert **43,** placed in the duct of the side wall **42** of the sash **4** on the external side of the window. The movable part **52** of the pivoting hinge **5** is connected with the reinforcing insert **43** using threaded fasteners **55.** In the pivoting hinges **5,** during opening of the window, the window sash **4** rotates so as to the lower part of the sash, situated below these hinges, moves towards the exterior of the roof, and the upper part of the sash situated above of these hinges moves towards the interior of the attic.

[0017] In the sections rested on the side members **11** and on the top member **12,** between its flat internal area **21** and flat external area **22,** the support flashing **2** has a lip, forming an open installation frame **24** in these three sections of the flashing, for connection of the detailing **35** of the window, installed in the roof structure, to the support flashing **2.** The purpose of the detailing **35** is to seal the mounting of the window in the roof structure. At external edges of its side sections, the support flashing **2** has a series of holes **25** for threaded fasteners, particularly screws, fixing this support flashing to battens **31** of the roof structure. The holes **25** in the support flashing **2** and the threaded fasteners seated in them are covered with the detailing **35.**

[0018] Above the support flashing **2,** as well as above the pivoting hinges **5,** shields **6** of the side gaps are situated, the gaps being located between the side members **11** of the window frame and the sash **4** of the window. The shields **6** (shown in Fig. 2, omitted in Fig. 3) are divided, as a common practice in pivoting windows, and sections of the shields situated in the upper part of the window, are installed immovably on the window frame, while sections of the shields situated in the lower part of the window are installed on the sash and move during opening of the window together with the lower part of the sash, outwards.

[0019] The window frame has also a wooden additional frame **7,** located from the side of the attic. In the wooden additional frame **7,** locking elements of the window are seated, for instance sockets for a handle bolt, mating with their respective locking elements mounted on the sash **4,** in its additional frame **44.** Moreover, from the side of the attic, the additional frame **7** has a groove **71,** in which an edge of lining **36** of the window opening in the roof is seated; the frame has also an additional groove for mounting of the seal **72,** having a free flap adjacent, in a closed window, to the surface of the sash **4.** The wooden

additional frame **7** of the window frame is fixed to the support flashing **2** using screws **73,** placed in bushings **72** running through the side window frame member. Identically, in the section mating with the top window frame member **13,** the additional frame is fixed to the upper section of the flashing using screws, and has a groove for the lining.

[0020] **Example 2.** The window frame has a form of a rectangular frame **1,** with the following main elements: two side members **11,** a top member **12** and a bottom member **13.** On the external side of the window, the window frame has two support strips **8** laid on its side members **11.** The bearing strips **8** are adjacent to the side window frame members **11** with their flat internal areas **81,** while they protrude beyond the outline side window frame members **11** with their flat external areas **82,** sideways and along these members towards the upper (above the window) and the lower (below the window) sections of the roof plane, while being only partially adjacent to the terminal fragments of surfaces of the side members. In both bearing strips **8,** their flat external areas **82,** as well as sections of the strips protruding outwards along the side members **11,** rest on the supporting structure **3** of the roof, on horizontal tile battens **31,** being a support for roofing-tiles **32,** while the tile battens rest on counter battens **33** laid on rafters **34,** being basic supporting elements of the roof.

[0021] Both side window frame members **11** have thin walls **14** with a low thermal conductivity, made of a plastic, situated in the window frame from the side of the sash **4** of the window, while the main bulk of the side member is formed by the filling **15** made of an insulating material, particularly a porous one. In the walls **14,** T-shaped grooves **16** are situated along the window frame members, and in these grooves, weather strips **17** are mounted, with freely moving flaps adjacent, in a closed window, to the side surfaces of the sash **4.** On the external side of the window, the walls **14** have a connecting lip **18,** by which these walls are connected with internal lips **83** of the support flashings. The filling **15** of the side frame members is glued both to the plastic walls **14,** and to the support flashing **2** of the window frame. The top member of the window frame (not shown in the cross-section) is built in the same way, and the wall of the frame member situated from the side of the window sash, is connected with the walls **14** of the side members at its ends, forming, together with them, a frame surrounding the opening in the window frame for a sash 1 from at least three sides.

[0022] On the bearing strips **8** which rest on the side members **11** of the window frame, in upper sections of the strips, near the top member **12** of the window frame, tilting hinges **9** are installed, connected with the pivoting hinges **5** by their intermediate arms **91,** and the tilting hinges are situated slightly above the middle of length of the window. In the tilting hinges **9,** both their stationary parts **92** fixed to the bearing strips **8,** and moving parts **93** mating with their intermediate arms **91,** as well as the axes **94** of these hinges, are situated above the bearing strips **8,** and also above the glazing unit **41** in the window sash **4,** the unit consisting of two panes separated with internal frames. Also the pivoting hinges **5** are situated above the bearing strips **8,** and above the glazing unit in the window sash. Movable parts of the pivoting hinges are connected with the sash through reinforcing inserts placed in ducts of the side walls of the sash on the external side of the window - identically as in the first embodiment of the invention.

[0023] The window frame according to the second embodiment, particularly its fitting, is intended for a dual-action window, opened as a pivot window or a tilt window. During pivoting opening, the intermediate arms **91** rest on the window frame along its side members **11** (Fig. 5, the right-hand arm), and the window sash rotates in the pivoting hinges **5 -** as in the first embodiment. During tilting opening, the window sash rotates in the tilting hinges **9,** and the intermediate arms **91** raise together with the sash (Fig. 5, the left-hand arm).

[0024] Between their flat internal areas **81** and flat external areas **82,** the bearing strips **8** have a bend forming a mounting lip **84** in every strip, for connection of the window detailing **35,** installed in the roof structure, to the bearing strips **8.** The purpose of the detailing **35** is to seal the mounting of the window in the roof structure. Near their external edges, the bearing strips **8** have a series of holes **85** for threaded fasteners, particularly screws, fixing these bearing strips to battens **31** of the roof structure. The holes **85** in the bearing strips and the fasteners seated in them are covered with detailing **35.**

[0025] Above the bearing strips **8,** as well as above the pivoting hinges **5,** the tilting hinges **9,** and the intermediate arms **91,** shields **6** of the side gaps are situated, the gaps being located between the side members **11** of the window frame and the window sash **4.** The shields **6** are divided; their sections situated in the upper part of the window are installed on the intermediate arms, while the sections situated in the lower part of the window are installed on the sash. During pivoting opening, the upper sections of the shields rest together with the intermediate arms on the side members of the window frame, and the lower sections move together with the lower part of the sash. During tilting opening, the window sash moves as a whole towards the exterior of the roof, and both lower and upper sections of the shields, move together with the sash.

[0026] The window frame has also a wooden additional frame **7,** situated from the side of the attic, as in the first embodiment. In the wooden additional frame **7,** locking elements of the window are seated, for instance sockets for a handle bolt, mating with their respective locking elements mounted on the sash **4,** in its additional frame **44.** From the side of the attic, the additional frame **7** has a groove **71,** in which an edge of lining **36** of the window opening in the roof is seated; in this frame, also a seal **72** is mounted, having a free flap adjacent, in a closed window, to the surface of the sash **4.** The wooden additional frame **7** of the window frame is fixed to the bearing

strips **9,** using screws **73** placed in bushings **72,** running through the side window frame member **11.**

[0027] **Example 3.** The window frame has a form of a rectangular frame, with the following main elements: two side members **19,** a top member and a bottom member - as in both previous embodiments. On the external side of the window, the window frame has a support flashing **2** in the form of an open frame, placed at the external side of the window on the side window frame members **19** and the top window frame member **12.** The support flashing **2** is adjacent to the window frame members: side **11** and top (not shown in Fig. 6) with its flat internal area **21,** while it protrudes beyond the outline of the window frame members: side **19** and top with its flat external area **22,** sideways and towards the upper section of the roof plane, while being adjacent only partially to terminal fragments of surfaces of these members on the external side of the window. The flat internal area **22** of the support flashing **2** rests on the supporting structure **3** of the roof, on horizontal tile battens **31,** being a support for roofing-tiles **32,** while the tile battens rest on counter battens **33** laid on rafters **34,** being basic supporting elements of the roof structure.

[0028] In this embodiment, unlike in the previous embodiments, the side window sash members do not have thin plastic walls, situated in the window frame from the side of the window sash **4.** In this embodiment, the side window sash members **18** are made of a uniform material, constituting both a support structure of the window frame, and thermal insulation. The T-shaped grooves **16,** situated along the window frame members, and intended for mounting of the seals **17,** are located directly in the uniform member **18.**

[0029] On the support flashing **2,** on its side sections, which rest on the side members **18** of the window frame, on the external side of the window, pivoting hinges **5** are installed, situated slightly above the middle of length of the side window frame members 11. In these hinges, both their stationary parts **51** fixed to the support flashing **2,** and moving parts **52** mating with the window sash **4,** as well as the axes **53** of the hinge, are situated above support flashing **2,** as well as above the glazing unit **41** in the window sash **4,** the unit consisting of two panes separated with internal frames. Movable parts **52** of the pivoting hinges **5** are connected with the side walls **42** of the sash **4** using a reinforcing insert **43,** placed in the duct of the side wall **42** of the sash **4** on the external side of the window, and the threaded fasteners **55.**

[0030] The support flashing **2** has a lip forming an open installation frame **24** for connection of the detailing **35** of the window, installed in the roof structure, to the support flashing **2.** The purpose of the detailing **35** is to seal the mounting of the window in the roof structure. At external edges of its side sections, the support flashing has a series of holes for threaded fasteners, particularly screws, fixing the support flashing to battens **31** of the roof structure. The holes in the support flashing **2** and the threaded fasteners seated in them are covered with the detailing **35.** Above the support flashing **2,** as well as above the pivoting hinges **5,** shields **6** are situated - as in previous embodiments.

[0031] The window frame has also a wooden additional frame **7,** located from the side of the attic. In the wooden additional frame **7,** locking elements of the window are seated, for instance sockets for a handle bolt, mating with their respective locking elements mounted on the sash **4,** in its additional frame **44.** Moreover, from the side of the attic, the additional frame **7** has a groove **71,** in which an edge of lining **36** of the window opening in the roof is seated; the frame has also an additional groove for mounting of the seal **72,** having a free flap adjacent, in a closed window, to the surface of the sash **4.** The wooden additional frame **7** of the window frame is fixed to the support flashing **2** using screws **73,** placed in bushings **72** running through the side window frame member. Identically, in the section mating with the top window frame member **13,** the additional frame is fixed using screws to the upper section of the flashing and has a groove for the lining.

[0032] **Example 4.** The window frame has a form of a rectangular frame, with a support flashing, as in the first embodiment. On the side members, near the top member, tilting hinges are fixed, situated above the support flashing, and under the shields of the side gaps. Movable parts of the tilting hinges connected directly with the window sash, are fixed to reinforcing inserts placed in ducts in the side walls of the sash, in the sections of these walls situated at upper ends of the side walls. According to this embodiment of the invention, the window frame with fitting allows for opening of the window only in the tilting mode, that is by rotation of the sash around a horizontal axis located at the top edge of the window.

[0033] The embodiments presented do not exhaust possibilities for realisation of the invention. Mating of the indicated technical means other than that described above, is possible. The window frame may have a support frame, as in the first embodiment, and a set of tilting and pivoting hinges, for dual-action of the window, as in the second embodiment. Also a reversed combination is possible, i.e. bearing strips and pivoting hinges only. The window frame may be installed in roofs with other structures, for instance in a roof with profiled sheets seated on battens, or in a roof flat rooftop, with roofing sheets or roof paper.

Claims

1. A window frame with fitting for a roof window, having the form of a frame, particularly a rectangular frame, seated in the roof structure, comprising: a top member, a the bottom member and two side members, equipped with fitting constituting at least an installation set of the window sash, comprising a glazing unit, the window sash being situated in the opening of the window frame at least when the window is

closed, particularly a sash being rotated in order to open the opening, around at least one horizontal geometrical axis particularly located slightly above the surface of the window frame, as well as having elements of a locking set of the sash in a closed position installed, the window frame mating with shields of gaps between the window frame and the window sash, and a set of seals in these gaps, **characterised in that** at least one structural element **(2, 8)** of the window frame, connecting it with the roof, is located on the surface of the window frame members **(11, 12, 18),** the window frame being located on the external side of the window, while the structural element of the window frame connecting it with the roof protrudes beyond the outline of the window frame members, and hinges **(5, 9)** are installed on it.

2. A window frame with fitting, according to claim 1, **characterised in that** the structural element of the window frame connecting it with the roof is constituted by a support flashing**(2)** adjacent to at least three of the window frame members, including both side members**(11, 18)**, the support flashing protruding at least sideways beyond the outline of the members.

3. A window frame with fitting, according to claim 2, **characterised in that** it has walls **(14)** made of a material with a low thermal conductivity, preferably a plastic, situated in the window frame members at least from the side of the window sash **(4),** along the support flashing **(2),** transversely to its surface resting on the roof.

4. A window frame with fitting, according to claim 3, **characterised in that** the walls**(14)** situated in its frame members**(11)** from the side of the window sash**(4)**, have longitudinal grooves **(16),** particularly with a T-shaped cross-section, for mounting of the seals **(17).**

5. A window frame with fitting, according to claim 1, **characterised in that** the structural element of the window frame connecting it with the roof is constituted by bearing strips **(8),** adjacent do side window frame members **(11),** protruding beyond the outline of the window frame members on its opposite sides.

6. A window frame with fitting, according to claim 1, or 2, or 3, or 4, or 5, **characterised in that** on the side window frame members **(11),** in the middle section of the length of these members, above the middle of the window height, on its external side, hinges **(5)** for a window sash are installed, for opening of the window in the pivoting mode, defined as "pivoting hinges", fixed to the structural element **(2, 8)** of the window frame connecting the frame with the roof.

7. A window frame with fitting, according to claim 1, or 2, or 3, or 4, or 5, **characterised in that** it has hinges **(9)** for a window sash **(4)** situated near the top edge of the window, for opening it in the tilting mode, hereinafter defined as "tilting hinges", fixed to the structural element of the window frame **(2, 8)** connecting the frame with the roof, and in these hinges, arms **(91)** terminated with pivoting hinges **(5)** are seated, while both the tilting hinges, and the arms are situated on the external side of the window.

8. A window frame with fitting, according to claim 1, or 2, or 3, or 4, or 5, **characterised in that** it has hinges situated near the top edge of the window, on its external side, for opening of the window in the tilting mode, defined as "tilting hinges", fixed to the structural element of the window frame connecting the frame with the roof, and in these hinges, the window sash is seated directly.

9. A window frame with fitting, according to claim 1, or 2, or 3, or 4, or 5, or 6, or 7, or 8, **characterised in that** the elements of its members seated in the roof structure are made of an insulating material, preferably a porous one.

10. A window frame with fitting, according to claim 1, or 2, or 3, or 4, or 5, or 6, or 7, or 8, or 9, **characterised in that** it has an additional frame **(7),** preferably wooden, situated on the internal side of the window, on which the locking elements of the window are installed, mating with their respective locking elements mounted on the sash.

11. A window frame with fitting, according to claim 1, or 2, or 2a, or 3, or 4, or 5, or 6, or 7, or 8, or 9, or 10, **characterised in that** on its external surface on the external side of the window, it has installation elements **(24, 84)** for connection of the window frame with the flashings **(35)** of the window.

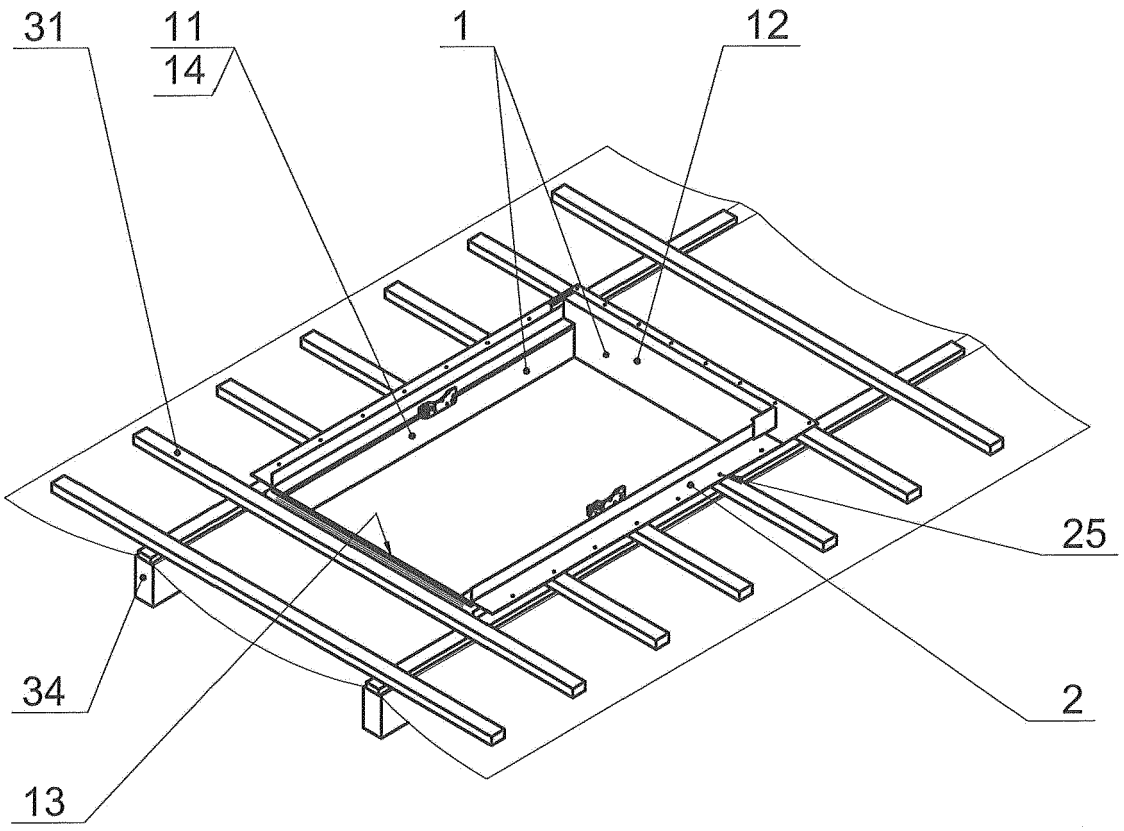

Fig 1

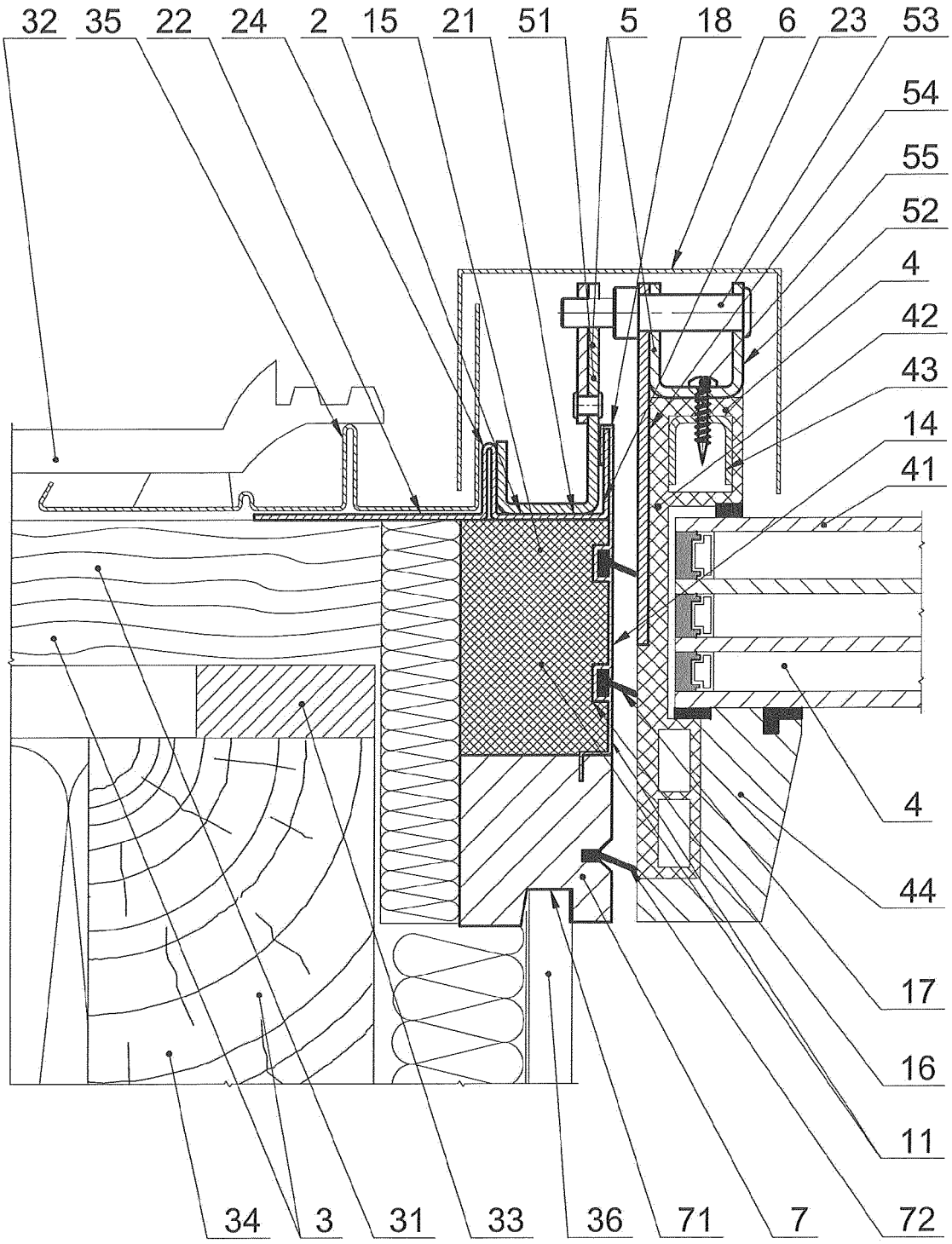
32
35
22
24
2
15
21
51
5
18
6
23
53
54
55
52
4
42
43
14
41
4
44
17
16
11
34
3
31
33
36
71
7
72

Fig 2

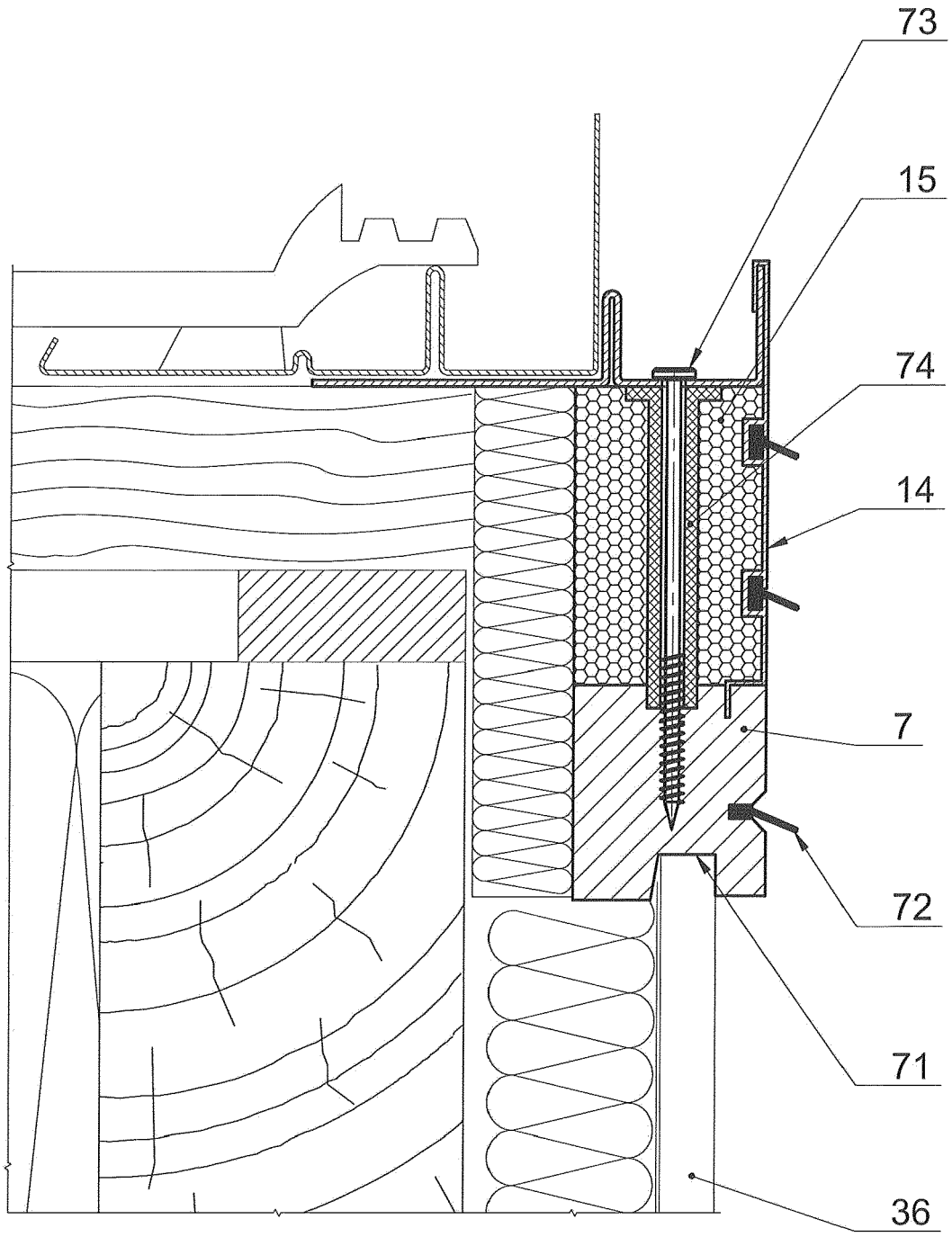

Fig 3

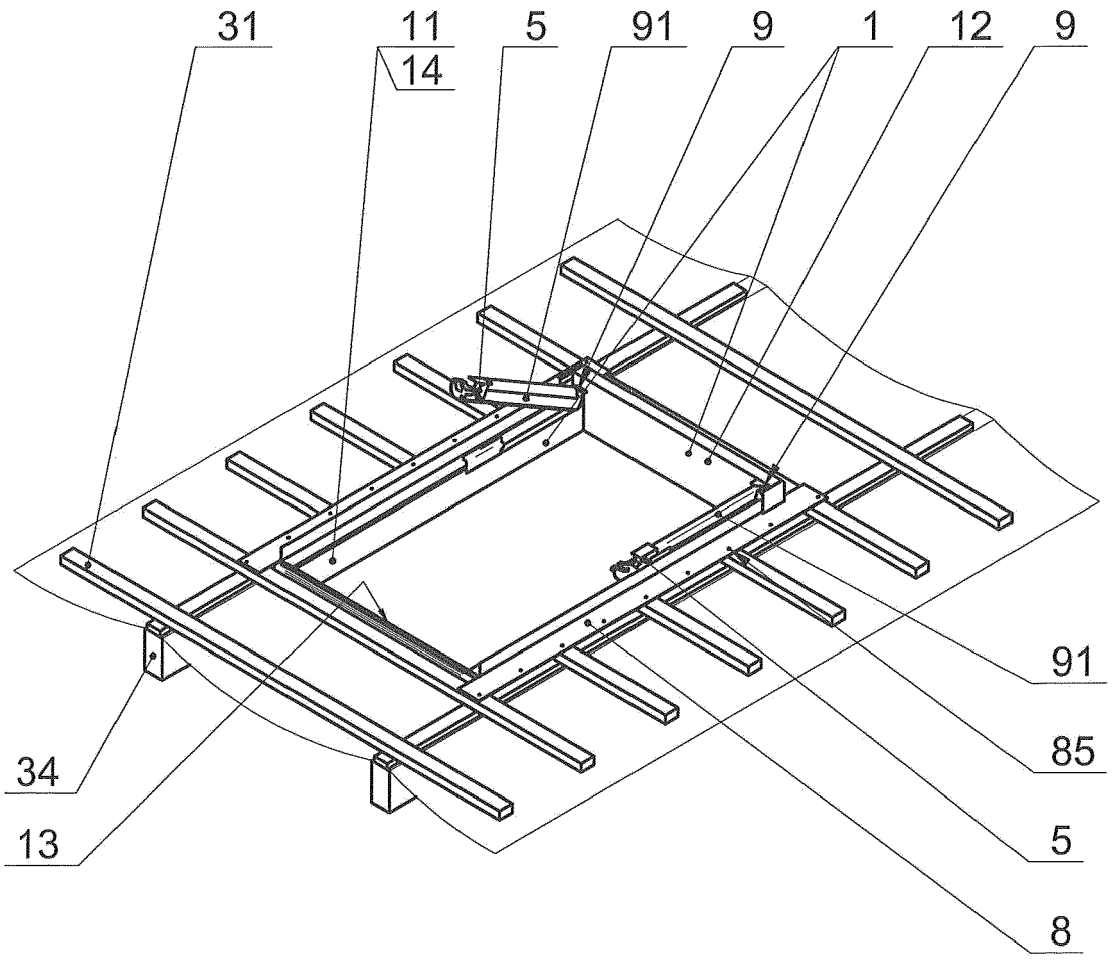

Fig 4

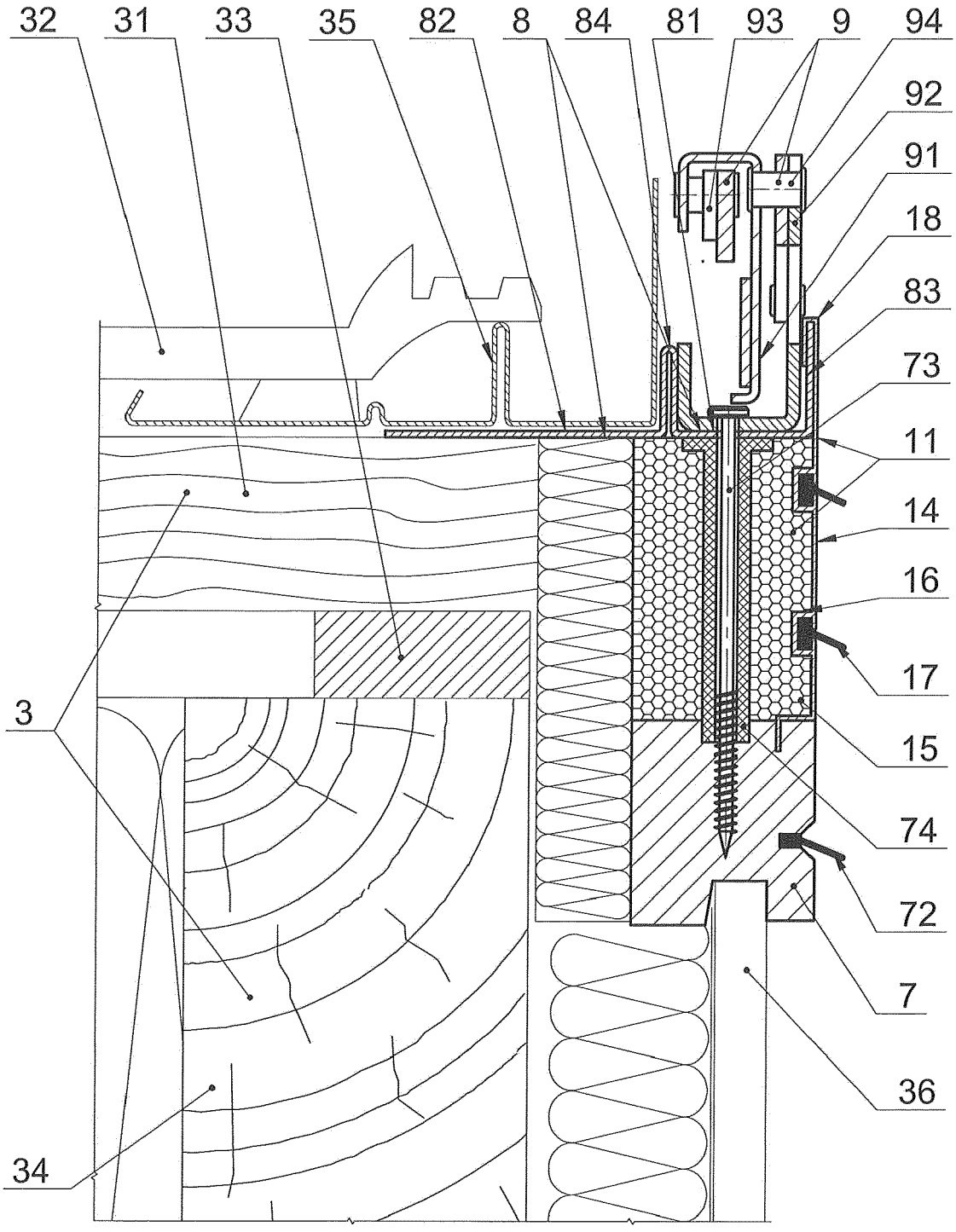
32
31
33
35
82
8
84
81
93
9
94
92
91
18
83
73
11
14
16
17
15
74
72
7
36
3
34

Fig 5

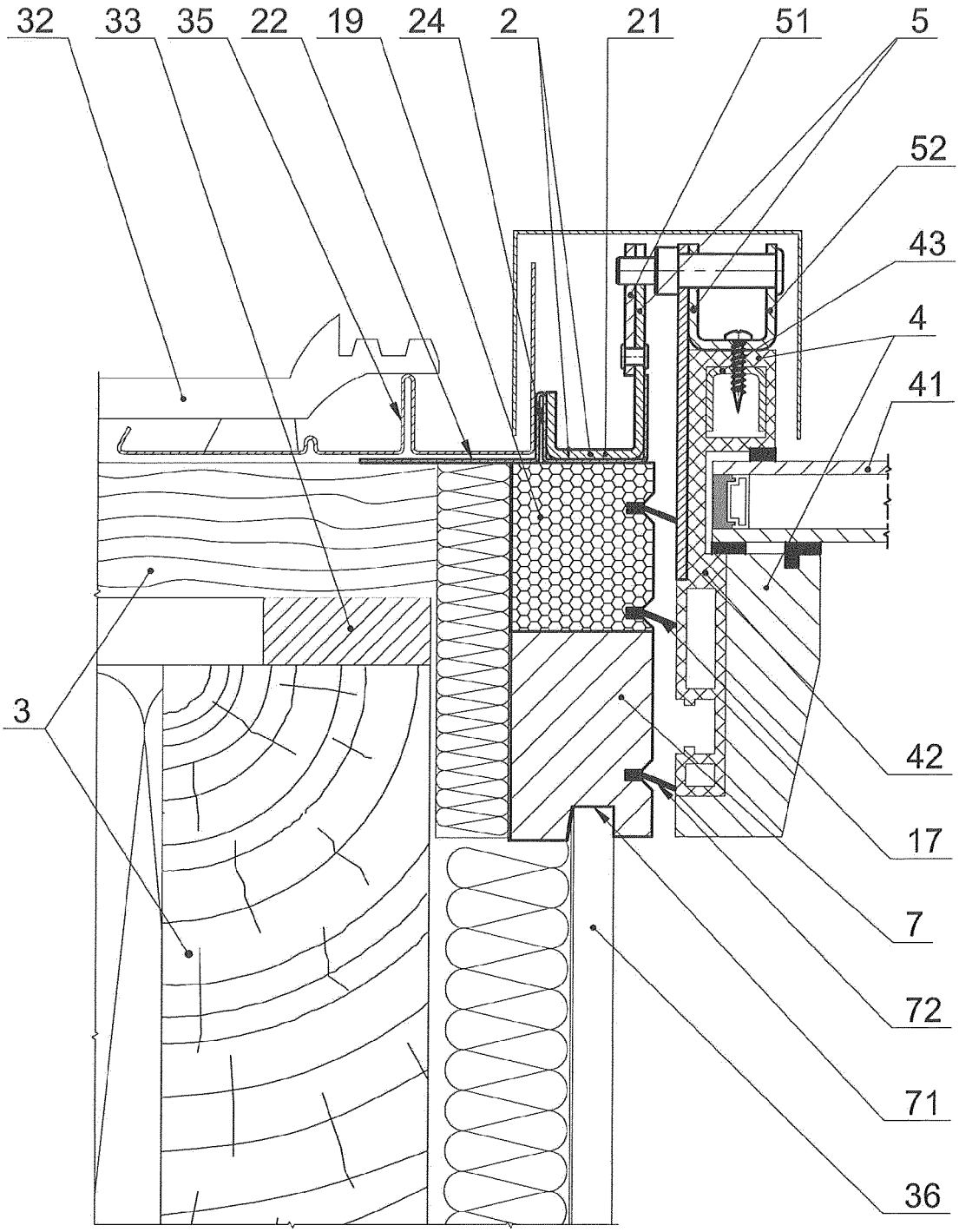

Fig 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 14 18 2374

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 2 500 487 A1 (FAKRO PP SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA [PL]) 19 September 2012 (2012-09-19) * figures *	1	INV. E04D13/035 E04D13/03
A	CN 201 206 302 Y (VKR HOLDING AS [DK]) 11 March 2009 (2009-03-11) * figures 1-3 *	1	
A	DE 26 58 463 A1 (MUELLER ALFRED) 29 June 1978 (1978-06-29) * figures 1,2,9,10 *	1	

TECHNICAL FIELDS SEARCHED (IPC)
E04D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 January 2015	Tran, Kim Lien

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 18 2374

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

12-01-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2500487 A1	19-09-2012	NONE	
CN 201206302 Y	11-03-2009	NONE	
DE 2658463 A1	29-06-1978	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- PL 200789 **[0002]**
- PL 214536 **[0002]**