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

(11) **EP 2 910 723 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.08.2015 Bulletin 2015/35

(51) Int Cl.:
E06B 1/02 *(2006.01)* ***E06B 1/60*** *(2006.01)*

(21) Application number: **14460007.9**

(22) Date of filing: **23.02.2014**

(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

(71) Applicants:
- **Bruzi, Krzysztof**
  63-330 Dobrzyca (PL)
- **Bruzi, Renata**
  63-330 Dobrzyca (PL)

(72) Inventors:
- **Bruzi, Krzysztof**
  63-330 Dobrzyca (PL)
- **Bruzi, Renata**
  63-330 Dobrzyca (PL)

(74) Representative: **Piatkowska, Elzbieta**
Kancelaria Patentowa
Skorzewo, ul. Truskawkowa 12
60-185 Poznan (PL)

Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) Insulating window frame

(57) The invention relates to an insulating window frame built in a window opening, and that frame hampers heat flow between the building wall and the window frame. This frame may be used to install windows in conventional and skeleton buildings, especially in energy-saving and passive ones.

A insulating window frame comprising longitudinal insulation covers which adhere on a perimeter basis to the window frame and to the window opening in a building wall, characterized in that the insulation covers (2, 3, 4) adhere to the jamb (8) of the window opening (5) within the load-bearing layer (9) of the wall (6), wherein the upper insulation cover (2) adheres from below to the beam lintel (10), which delimits the window opening (5) from above.

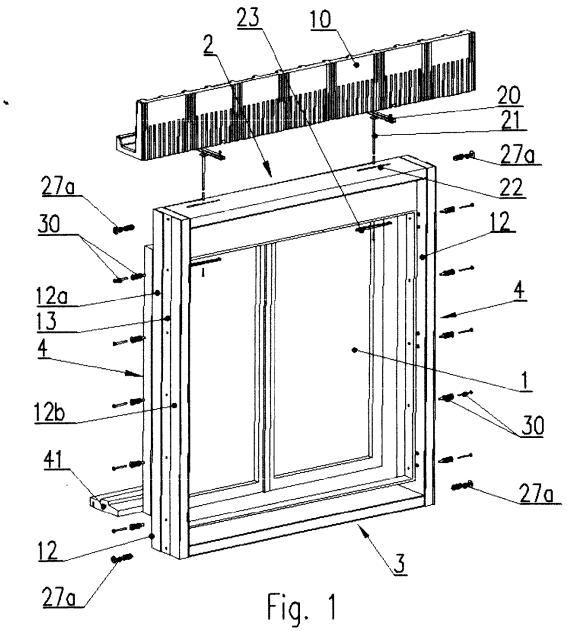

Fig. 1

EP 2 910 723 A1

Description

[0001] The invention relates to an insulating window frame built in a window opening, a frame that hampers heat flow between the building wall and the window frame. This frame may be used to install windows in conventional and skeleton buildings, especially in energy-saving and passive ones.

[0002] A window frame is known from patent description EP 2639394 A2, made out of four longitudinal support and insulation covers which adhere on a perimeter basis to the window frame and to the edges of the rectangular window opening in a building wall. The support and insulation covers are arranged along the edges of this opening and attached to the front surface of the load-bearing layer of the wall. When a window is fixed in a frame comprising covers located in this way, the window frame protrudes outside the wall and beyond the opening formed in the load-bearing layer of the wall. Only when it is covered with an outer insulation layer, most often of foamed polyester or mineral wool, does the window frame with the window fixed therein remain within this cladding, generally outside the load-bearing layer of the wall. The cross-section of the known support and insulation cover is similar to a triangle or a trapezoid. In a variant of this known solution, a set of two adjoining covers is used, each having a triangle cross-section. One cover acts as a support and is made of a thermal insulation material of a large mechanical strength, and the other one is made of a foamed thermal insulation material. In both known cases, the insulating window frame is tightly surrounded by the insulation cladding of the wall.

[0003] Moreover, a roof insulating window frame is known from patent description PL 202876, constructed out of longitudinal profile insulation covers which form a quadrilateral set and are joined in the corners. This known insulating frame adheres on a perimeter basis to the window frame and is attached to the rafters and battens of the roof skeleton by means of flanged joints.

[0004] An insulating window frame comprising longitudinal covers which adhere on a perimeter basis to the window frame and to edges of the window opening in a building wall **is characterised** according to the invention in that the insulation covers adhere to the window opening frame within the load-bearing layer of the wall, wherein, the upper insulation cover adheres to the beam lintel from below, one which delimits the window opening from above. In an embodiment of the invention which is particularly useful in conventional buildings, insulation covers are made up of single insulation layers of a rectangular cross-section that are faced with plate cladding of a non-metallic material. The plate cladding of the lower and side insulation covers are located on the inner and outer side of the frame. In a preferred embodiment of the invention, the plate cladding on the outer side of the lower insulation cover and each of the side insulation covers consists of two longitudinal, mutually parallel sections which are mounted on the edges of these insulation covers and separated by a free space. Such a structure of the outer plate cladding prevents screw elements from protruding beyond the outline of the insulation covers. In another embodiment of the invention, which is useful both in conventional buildings as well as in skeleton ones, the lower insulation cover and the side ones are constructed out of two adjoining insulation layers of a rectangular cross-section. Both insulation layers are separated by a longitudinal reinforcing partition and faced from the outside with plate cladding of a non-metallic material. In order to provide good mechanical strength, the upper cover features a skeleton comprising at least one longitudinal reinforcing partition crossed with transverse reinforcing partitions, wherein the grate cavities of the skeleton are filled with insulation layers. The best result in terms of strength is achieved when the skeleton has two parallel, longitudinally arranged reinforcing partitions crossed with transverse reinforcing partitions. To provide preferable insulation properties, the plate cladding of the insulation covers as well as the reinforcing partitions and skeletons thereof are made out of wood-like mineral plates or composite plates with mineral filling. The upper insulation cover is attached to the lintel by means of metal joints, each consisting an anchoring strip mounted in the lintel, and a respective shank with its lower end joined with the upper insulation cover. In order for the frame to be moved horizontally and vertically, the upper cover has longitudinal openings in its insulation layer, each limited from below by an abutment and slide strip, wherein the shanks of connectors go vertically through these openings and are attached to the abutment and slide strips by means of thread elements. Each anchoring strip has a longitudinal seat with a nearly C-shaped outline, in which the head of the upper part of the shank is embedded. For the fixed outline of the frame, the lower and upper ends of the side insulation covers are joined with the ends of the upper and lower insulation cover by corner connectors. The corner connectors are in the form of a screw which go through and across the side insulation covers and are driven in the insulation layers of the upper and lower insulation cover. In a preferable embodiment of the invention, these screws go through the side insulation cover within the free space that separates both sections of the outer plate cladding. All insulation covers are separated from the window frame by a gap all the way round, one where an expanding tape is located. The fixed width of the gap is maintained because at least the lower insulation cover and the side insulation covers are attached to the window frame by screw spacing connectors. Each of them consists of a spacing sleeve mounted in the insulation cover with its abutment end protruding into the outline of the perimeter gap, as well as of a thread mounting element which goes through the spacing sleeve and joins the insulation cover with the window frame. In a preferable embodiment of the invention all insulation covers are attached to the window frame by means of screw spacing connectors. In order for the insulating frame together with the window frame to be seat-

ed properly in the window opening, at least the side insulation covers are equipped with adjustable spacing supports with thread elements protruding to the outside and which are embedded in the perimeter gap separating the insulation covers from the jambs of the window opening. In a preferable embodiment of the invention the adjustable spacing supports are located in the lower insulation cover and in the side ones. The adjustable spacing support is a sleeve with a nut seated therein, a nut into which a thread element is driven and is in the form of a spacing screw which goes transversely through the perimeter gap, and the end of which rests on the jamb of the window opening. When the insulating frame together with the window frame have been installed in the window opening, and the perimeter gap filled with installation foam, the spacing screws may remain in spacing supports. If the load-bearing layer of the wall has a relatively low mechanical strength, it is preferable to remove the spacing screws and replace them with thread elements in the form of mounting screws. In this case a mounting screw goes transversally through the perimeter gap and is embedded in the load-bearing layer of the wall. If the window is equipped with pivoting shutters, brackets to which the hinges of the shutters are attached are mounted one on another in the side insulation covers. When the side insulation covers lack reinforcement, then the brackets of the hinges are nearly U-shaped, and their lateral arms are mounted between the plate cladding and the insulation layer of the side insulation cover. If reinforcing partitions are seated in the side insulation covers, then the brackets of the hinges are in the form of flat plates clamped between the plate cladding and the insulation layer of the side insulation cover.

[0005] According to the invention, the insulating frame which adheres to the jamb of the window frame within the area of the load-bearing layer of the wall, and having high mechanical strength, makes it possible to reliably install a window as well as to maintain a low heat transfer coefficient.

[0006] The subject of the invention is shown as an embodiment in the drawing, where Fig.1 presents a perspective view of the insulating window frame with a distant lintel and connecting elements, Fig. 2 - a front view of the frame and the lintel joined with it, Fig.3 -a perspective view of the frame with uniform cladding, Fig.4 - a perspective view of the frame with two-piece cladding, Fig.5 - an enlarged cross-section of the corner joint of the insulation covers, Fig.6 - an enlarged cross-section of the transverse spacing connector with a screw, Fig.7 - an enlarged cross-section of the spacing connector with a tap screw, Fig.8 - an enlarged cross-section of the spacing sleeve, Fig.9 - a vertical cross-section of the frame, Fig.10 - an enlarged cross-section of the spacing support with a spacing screw, Fig.11 - an enlarged cross-section of the spacing support with a mounting screw, Fig.12

- a front view of the frame with shutter brackets, Fig. 13 - a horizontal section of the frame according to Fig.12, Fig.14 - an enlarged fragment of the section according to Fig.13, Fig.15 - a horizontal section of the frame with a bracket and a shutter joined with it, Fig.16 - a longitudinal and vertical section of the connector between the upper insulation cover and the lintel, Fig.17 - a vertical cross-section of the frame according Fig.12, Fig.18 - an enlarged fragment of the cross section of the frame according to Fig. 17, Fig.19 - a front view of the frame with a window installed in a building wall, Fig.20 - perspective view of the frame with a window according to Fig.19, Fig. 21 - a vertical cross-section of the frame adapted for a roller blind, Fig.22
- an enlarged fragment of the section according to Fig. 21, Fig. 23 - a perspective view of a reinforced insulating frame with a distant lintel and the connecting elements thereof, Fig.24 - a horizontal section of a reinforcing skeleton with a single longitudinal partition, Fig.25 - a horizontal section of the skeleton with two longitudinal partitions, Fig.26 - a front view of the frame including a section of the connector joining it with the lintel,
  Fig.27 - a vertical cross-section of the frame connected to the lintel, Fig.28-an enlarged cross-section of the upper insulation cover and the lintel, Fig.29
- a perspective view of the frame and a window installed in a building wall, Fig.30 - a perspective view of the frame with a window and shutters, Fig.31 - a vertical cross-section of the frame with the window according to Fig.30, and Fig.32 - a horizontal section of the frame and the shutter connected thereto.

[0007] Insulating window frame **1** comprises longitudinal insulation covers **2, 3, 4** of a cuboid outline. When window **1** is installed in window opening **5** of wall **6** of a building, insulation covers **2, 3, 4** adhere on a perimeter basis to window frame **7** and to jamb **8** of window opening **5** within load-bearing layer **9** of wall **6.** Upper insulation cover **2** adheres from below to basically known beam lintel **10** above it of a nearly L-shaped outline, one that is built in wall **6** and delimits window opening **5** from above. In a frame without reinforcing elements, insulation covers **2, 3, 4** comprise single insulation layers **11** made of a thermal insulation material, especially foamed polystyrene. Insulation layers **11** have rectangular outlines and are faced from the outside with plate cladding **12** of a non-metallic material. Plate cladding **12** of lower insulation covers and side ones **3, 4** is located on the inner and outer side of the frame. Cladding **12,** on the outer side of lower insulation cover **3** and both side ones **4** have the form of uniform plates or consist of two longitudinal and parallel sections **12a** and **12b**, which are mounted on the edges of the insulation covers and separated by a free space **13.** In a reinforced insulating frame, lower insulation cover **3** and side ones **4** are made up of two adjoining insulation layers **11a, 11b** of a rectangular cross-section. Insulation layers **11a, 11b** are separated by longitudinal reinforcing partition **14** and faced from the

outside with plate cladding **12** of a non-metallic material. Upper insulation cover **2** has skeleton **15,** made up of longitudinal reinforcing partition**14** crossed with transverse reinforcing partitions **16.** Grate cavities **17** of skeleton **15** are filled with insulation layers **11a, 11b.** Skeleton **15** may also have two parallel and longitudinal reinforcing partitions **14a** and **14b** crossed with transverse reinforcing partitions **18.** Plate cladding **12** of insulation covers **2, 3, 4,** as well as reinforcing partitions **14** and skeletons thereof **15** are mostly made of wood-like plates, mineral plates or composite plates with mineral filling. Upper insulation cover **2** is attached to lintel **10** by means of metal connectors **19.** Each of them consists of anchoring strip **20** mounted in lintel **10** and shank **21** joined with it, the lower end of which is connected to upper insulation cover **2.** In insulation cover **11, 11a** or **11b** of upper insulation cover **2** there are longitudinal openings **22,** each limited from below by an abutment and slide strip **23.** Shanks **21** of metal connectors **19** go vertically through openings **22** and are attached to abutment and slide strips **23** by means of thread elements **24** in the form of screws or nuts. Each anchoring strip **20** has longitudinal seat **25** of a nearly C-shaped outline where head **26** of the upper part of shank **21** is embedded. The lower and upper ends of side insulation covers **4** are connected with the ends of upper insulation cover **2** and lower one **3** by means of corner connectors **27,** wherein the adjoining surfaces of insulation covers **2, 3, 4** are additionally coated with polyurethane adhesive. Corner connectors **27** are in the form of tap screws 27a, going through and across side insulation covers **4** and are driven into insulation layers **11, 11a** or **11b** of upper and lower insulation cover **2, 3.** In the embodiment of the frame, the outer cladding **12** of which consists of longitudinal sections **12a** and **12b,** tap screws **27a** go through side insulation cover **4** within free space **13** separating sections **12a, 12b.** Insulation covers **2, 3, 4** are separated for window frame **7** perimeter gap **28** where there is foam expanding tape **29,** and are attached to frame **7** by means of screw spacing connectors **30.** Each of them consists of spacing sleeve **31,** which is mounted in insulation cover **2, 3, 4** with its abutment end **32** protruding into perimeter gap **28** from a thread mounting element in the form of screw **33** or tap screw **34,** which goes through spacing sleeve **31** and joins insulation cover **2, 3, 4** with window frame **7.** In lower insulation cover **3** and side ones **4** are mounted adjustable spacing supports **35** with thread elements protruding to the outside, ones that are embedded in perimeter gap **36** separating insulation covers **3, 4** from jamb **8** of window opening **5.** Spacing support **35** is sleeve **37** with nut **38** mounted within, in which is driven a thread element in the form of spacing screw **39** going transversely through perimeter gap **36** and resting with end **40** on jamb **8** of window opening **5.** If load-bearing layer **9** of wall **6** is made of a material of a relatively low mechanical strength, for example structural clay tiles, then when perimeter gap **36** is filled with polyurethane installation foam **41,** spacing screw **39** is removed from spacing support **35** and replaced with mounting screw **42,** which goes transversely through perimeter **36** and is embedded in load-bearing layer **9** of wall **6.** If window **1** has pivoting shutters **43,** then in side insulation covers **4,** brackets **44** are mounted one above another **44,** to which hinges **45** of shutters **43** are attached. When side insulation covers **4** lack reinforcement, brackets **44** of hinges **45** have are nearly U-shaped in cross-section, wherein their side arms **46** are located between plate cladding **12, 12a** or **12b** and insulation layer **11** and secured by means of tap screws **47.** If reinforcing partitions **14** are mounted in side insulation covers **4,** then brackets **44** of hinges **45** are in the form of flat plates **48,** which are clamped between plate cladding **12, 12a** or **12b** and insulation layer **11b** and secured by tap screws **49.** When shutters **43** are installed, it is advisable to use upper insulation cover **2** with single insulation layer **11** according to Fig.12. In order for the frame according to the invention to be adapted for installing a shutter which was not shown, upper insulation cover **2** according to Fig. 21 and Fig. 22 is equipped with insulation fitting **50,** which adheres from below to insulation layer **11** and makes it possible to install a roller blind mechanism which was not shown. In the process of installing the insulating frame, the ends of insulation covers **2, 3, 4** are joined by means of tap screws **27a.** Then frame **7** of window **1** faced with expanding tape **29** and sill **51** shown in Fig. 1 are mounted in the frame, and next the frame is connected with window frame **7** by means of screw spacing connectors **30,** and, at the same time, the width of gap **28** is determined, in which expanding tape **29** is located. The next step is to install the set of the insulating frame and frame **7** of **1** in window opening **5** prepared beforehand and delimited from above by lintel **10.** The width of perimeter gap **36,** which separates insulation covers **3, 4** from jamb **8** of window opening **5,** is controlled by adjustable spacing supports **35.** Afterwards perimeter gap **36** is filled with installation foam **41,** and when it has hardened, spacing screws **39** are left in spacing sleeves **37** or replaced with mounting screws **42.** After these installation activities are completed, the outer surface of wall **6** and insulating window frame **1** is covered with insulation layer **52** in the form of foamed polystyrene or mineral wool, and then with a layer of plaster **53.**

Designations

[0008]

- **1** - window
- **2** - insulation cover
- **3** - insulation cover
- **4** - insulation cover
- **5** - window opening
- **6** - wall
- **7** - window frame
- **8** - jamb
- **9** - load-bearing layer
- **10** - lintel

11- insulation layer
11a - inner layer
11b - outer layer
12 - plate cladding
12a - cladding section
12b - cladding section
13 - free space
14 - reinforcing partition
14a - reinforcing partition
14b - reinforcing partition
15 - skeleton
16 - reinforcing partition
17 - grate cavity
18 - reinforcing partition
19 - connector
20 - anchoring strip
21- shank
22 - opening
23 - abutment and slide strip
24 - thread element
25 - seat
26 - shank head
27 - corner connector
27a - tap screw
28 - gap
29 - expanding tape
30 - spacing connector
31 - spacing sleeve
32 - sleeve end
33 - screw
34 - tap screw
35 - spacing support
36 - gap
37 - sleeve
38 - nut
39 - spacing screw
40 - screw end
41 - installation foam
42 - tap screw
43 - shutter
44 - hinge bracket
45 - hinge
46 - arm
47 - tap screw
48 - hinge plate
49 - tap screw
50 - insulation fitting
51 - windowsill
52 - insulation coating
53 - plaster layer

Claims

1. A insulating window frame comprising longitudinal insulation covers which adhere on a perimeter basis to the window frame and to the window opening in a building wall ***characterized in that*** the insulation covers **(2, 3, 4)** adhere to the jamb **(8)** of the window opening **(5)** within the load-bearing layer **(9)** of the wall **(6),** wherein the upper insulation cover **(2)** adheres from below to the beam lintel **(10),** which delimits the window opening **(5)** from above.

2. The frame according to claim 1 ***characterised in that*** the insulation covers **(2, 3, 4)** comprise single insulation layers **(11)** of a rectangular cross-section, ones that are faced from the outside with plate cladding **(12)** of a non-metallic material.

3. The frame according to claim 2 ***characterised in that*** the plate cladding **(12)** of the lower insulation cover and the side ones **(3, 4)** are located on the outer and inner side of the frame.

4. The frame according to claim 1 ***characterised in that*** the plate cladding **(12)** on the outer side of the lower insulation cover and both side ones **(3, 4)** consists of two longitudinal parallel sections **(12a, 12b),** which are mounted on the edges of the insulation covers and separated by a free space **(13).**

5. The frame according to claim 1 ***characterised in that*** the lower insulation cover **(3)** and the side insulation covers **(4)** are made up of two adjoining insulation layers **(11a, 11b)** of a rectangular cross-section, ones that are separated by a longitudinal reinforcing partition **(14)** and faced from the outside with plate cladding **(12)** of a non-metallic material.

6. The frame according to claim 1 ***characterised in that*** the upper insulation cover **(2)** has a skeleton **(15)** comprising at least one longitudinal reinforcing partition **(14, 14a, 14b)** crossed with transverse reinforcing partitions **(16, 18),** wherein the grate cavities **(17)** of the skeleton **(15)** are filled with insulation layers **(11a, 11b).**

7. The frame according to claim 6 ***characterised in that*** the skeleton **(15)** has two parallel and longitudinal reinforcing partitions **(14a, 14b)** crossed with transverse reinforcing partitions **(18).**

8. The frame according to claims 2 to 7 ***characterised in that*** the plate cladding **(12)** of the insulation covers **(2, 3, 4)** and the reinforcing partitions **(14)** and skeletons **(15)** thereof are made out of wood-like plates.

9. The frame according to claims 2 to 7 ***characterised in that*** the plate cladding (12) of the insulation covers **(2, 3, 4)** and the reinforcing partitions **(14)** and the skeletons **(15)** thereof are made of mineral plates.

10. The frame according to claims 2 to 7 ***characterised in that*** the plate cladding **(12)** of the insulation covers **(2, 3, 4)** and the reinforcing partitions **(14)** and the

skeletons **(15)** thereof are made of composite plates with mineral filling.

11. The frame according to claims 1, 2, 6 and 7 ***characterised in*** **that** the upper insulation cover **(2)** is attached to the lintel **(10)** by means of connectors **(19),** each comprising an anchoring strip **(20)** mounted in the lentil **(10)** and a shank **(21)** joined with the strip, and with its lower end attached to the upper insulation cover **(2).**

12. The frame according to claim 6 ***characterised in that*** the upper insulation cover **(2)** has in its insulation layer **(11, 11a, 11b)** longitudinal openings **(22),** each limited from below by an abutment and slide strip **(23),** wherein the shanks **(21)** of the connectors **(19)** go vertically through these openings and are attached to the abutment and slide strips **(23)** by means of thread elements **(24).**

13. The frame according to claim 11 ***characterised in that*** each anchoring strip **(20)** has a longitudinal, nearly C-shaped seat **(25)** where the head **(26)** of the upper part of the shank **(21)** is embedded.

14. The frame according to claims 1 to 5 ***characterised in that*** the lower and upper ends of the side insulation covers **(4)** are joined with the ends of the upper and the lower insulation cover **(2, 3)** by means of corner connectors **(27).**

15. The frame according to claim 14 ***characterised in that*** the corner connectors **(27)** are in the form of tap screws **(27a)** which go through and across the side insulation covers **(4)** and are driven into the insulation layers **(11, 11a, 11b)** of the upper and the lower insulation cover **(2, 3).**

16. The frame according to claim 14 ***characterised in that*** the tap screws **(27a)** go through the side insulation cover **(4)** within the free space **(13)** separating two sections **(12a, 12b)** of the outer plate cladding. **(12).**

17. The frame according to claims 1 to 5 ***characterised in that*** the insulation covers **(2, 3, 4)** are separated from the window frame **(7)** by a perimeter gap **(28)** where an expanding tape **(29)** is located.

18. The frame according to claim 17 ***characterised in that*** at least the insulation cover and the side ones **(3, 4)** are attached to the window frame **(7)** by means of spacing screw connectors **(30),** each consisting of a spacing sleeve **(31)** mounted in the insulation cover **(3, 4),** and with its abutment end **(32)** protruding into the perimeter gap **(28),** as well as of a thread mounting element **(33, 34)** going through the spacing sleeve **(31)** and connecting the insulation cover **(3, 4)** with the window frame **(7).**

19. The frame according to claim 18 ***characterised in that*** all insulation covers **(2, 3, 4)** are attached to the window frame **(7)** by means of screw spacing connectors **(30).**

20. The frame according to claim 1 ***characterised in that*** at least the side insulation covers **(4)** are equipped with adjustable spacing supports **(35)** with thread elements **(39, 42)** which protrude to the outside and are embedded in the perimeter gap **(36)** separating the insulation covers **(4)** from the jamb **(8)** of the window opening **(5).**

21. The frame according to claim 20 ***characterised in that*** the adjustable spacing supports **(35)** are mounted in the lower insulation cover and the side ones **(3, 4).**

22. The frame according to 20 and 21 ***characterised in that*** the adjustable spacing support **(35)** is a sleeve **(37)** with a nut mounted inside **(38),** into which a thread element is driven and is in the form of a spacing screw **(39)** going transversely through the perimeter gap **(36)** with its end **(40)** resting on the jamb **(8)** of the window opening **(5)**.

23. The frame according to 20 and 21 ***characterised in that*** the adjustable spacing support **(35)** is a sleeve **(37)** with a nut mounted inside **(38),** into which a thread element is driven and is in the form of a mounting screw **(42)** going transversely through the perimeter gap **(36)** and embedded into the load-bearing layer **(9)** of the wall **(6).**

24. The frame according to claims 1, 2, 3 and 5 ***characterised in that*** in the side insulation covers there are brackets **(44, 48)** mounted one above another **(44, 48)** to which the hinges **(45)** of shutters **(43)** are attached.

25. The frame according to claim 24 ***characterised in that*** the brackets **(44)** of the hinges **(45)** are nearly C-shaped in cross-section, with their side arms **(46)** mounted between the plate cladding **(12)** and the insulation layer **(11)** of the side insulation cover **(4).**

26. The frame 24 ***characterised in that*** the supports **(48)** of the hinges **(45)** are in the form of flat plates which are clamped between one plate cladding **(12)** and the outer insulation layer **(11b)** of the side insulation cover **(4)**.

Amended claims in accordance with Rule 137(2) EPC.

1. An insulating window frame comprising longitudinal insulation covers 2, 3 and 4 which adhere on a perimeter basis to window frame 7 and the edges of window opening 5 in building wall 6 in which beam lentil 10 is embedded, delimiting window opening 5 from above, wherein:

   a) insulation covers 2, 3 and 4 comprise single insulation layers 11 of a rectangular cross-section that are faced from the outside with plate cladding 12 of a non-metallic material;
   b) plate cladding 12 of lower insulation cover and side ones 3, 4 is located on the outer and inner side of the frame ***(former claims 1,2,3)***
   characterised in that the insulation covers **(2, 3, 4)** adhere to the jamb **(8)** of the window opening **(5)** within the load-bearing layer **(9)** of the wall **(6).**

2. The frame according to claim 1 ***characterised in*** **that** the plate cladding **(12)** on the outer side of the lower insulation cover and each of the side ones **(3, 4)** consists of two mutually parallel longitudinal sections **(12a, 12b),** which are mounted on the edges of the insulation covers and separated by a free space **(13).** ***(former claim 4)***

3. The frame according to claim 1 ***characterised in that*** the lower insulation cover **(3)** and the side insulation covers **(4)** are made up of two adjoining insulation layers **(11a, 11b)** of a rectangular cross-section, ones that are separated by a longitudinal reinforcing partition **(14)** and faced from the outside with the plate cladding **(12)** of a non-metallic material. ***(former*** *claim* 5)

4. The frame according to claim 1 ***characterised*** **in that** the upper insulation cover **(2)** has a skeleton **(15)** comprising at least one longitudinal reinforcing partition **(14, 14a, 14b)** crossed with transverse reinforcing partitions **(16, 18),** wherein the grate cavities **(17)** of the skeleton **(15)** are filled with insulation layers (11a, 11b). ***(former claim 6)***

5. The frame according to claim 4 ***characterised in that*** the skeleton **(15)** has two parallel and longitudinal reinforcing partitions **(14a, 14b)** crossed with the transverse reinforcing partitions (18). ***(former*** *claim* ***7)***

6. The frame according to claims 1 and 2 ***characterised in*** **that** the plate cladding **(12)** of the insulation covers **(2, 3, 4)** and the reinforcing partitions **(14)** and skeletons **(15)** thereof are made out of wood-like plates. ***(former claim 8)***

7. The frame according to claims 1 and 2 ***characterised in that*** the plate cladding (12) of the insulation covers **(2, 3, 4)** and the reinforcing partitions **(14)** and skeletons **(15)** thereof are made of mineral plates. ***(former claim 9)***

8. The frame according to claims 1 and 2 ***characterised in*** **that** the plate cladding **(12)** of the insulation covers **(2, 3, 4)** and the reinforcing partitions **(14)** and skeletons **(15)** thereof are made of composite plates with mineral filling. ***(former claim 10)***

9. The frame according to claims 1 and 4 ***characterised in*** **that** the upper insulation cover **(2)** has in its insulation layer **(11, 11a, 11b)** longitudinal openings **(22),** each limited from below by an abutment and slide strip **(23),** wherein the shanks **(21)** of connectors **(19)** fixing this cover to the lentil **(10)** go vertically through these openings and are attached to the abutment and slide strips **(23)** by means of thread elements **(24).** ***(combination of former claims 11 and 12)***

10. The frame according to claim 1 ***characterised in that*** the insulation covers **(2, 3, 4)** have corner connectors **(27)** in the form of tap screws **(27a)** which go through and across the side insulation covers **(4)** and are driven into the insulation layers **(11, 11a, 11b)** of the upper and the lower insulation cover **(2, 3).** ***(combination of former claims 14 and 15)***

11. The insulating frame according to claims 2 and 10 ***characterised in*** **that** the tap screws **(27a)** go through the side insulation cover **(4)** within the free space **(13)** separating the two sections **(12a, 12b)** of the outer plate cladding **(12).** ***(former*** *claim* ***16)***

12. The frame according to claim 1, ***characterised in that*** at least the side insulation covers **(4)** are equipped with adjustable spacing supports **(35)** in the form of sleeves **(37)** with a nut mounted inside **(38),** into which a thread element is driven in the form of a spacing screw **(39)** going transversely through the perimeter gap separating the insulation covers **(4)** from the jamb **(8)** of the window opening **(5)** with its end **(40)** resting on the jamb **(8).** ***(combination of*** **claim** ***20*** **and** ***22)***

13. The frame according to claim 10 ***characterised in that*** a least the side insulation covers **(4)** are equipped with the adjustable spacing supports **(35)** in the form of the sleeves **(37)** with a nut mounted inside **(38),** into which a thread element is driven in the form of a mounting screw **(42)** going transversely through the perimeter gap (36) and embedded into the load-bearing layer **(9)** of the wall **(6).** ***(former claim 23)***

14. The frame according to claim 1 ***characterised in that*** in the side insulation covers **(4)** there are brackets **(44, 48)** mounted one above the other to which the hinges **(45)** of the shutters **(43)** are attached. ***(former*** claim ***24)***

15. The frame according to claim 14 ***characterised in that*** the brackets **(44)** of the hinges **(45)** are nearly U-shaped in cross-section, with their side arms **(46)** mounted between the plate cladding **(12)** and the insulation layer **(11)** of the side insulation cover **(4).** ***(former claim*** *25)*

16. The frame according to claim 14 ***characterised*** **in that** the supports **(48)** of the hinges **(45)** are in the form of flat plates which are clamped between the plate cladding **(12)** and the outer insulation layer **(11b)** of the side insulation cover **(4).** ***(former claim 26*****)**

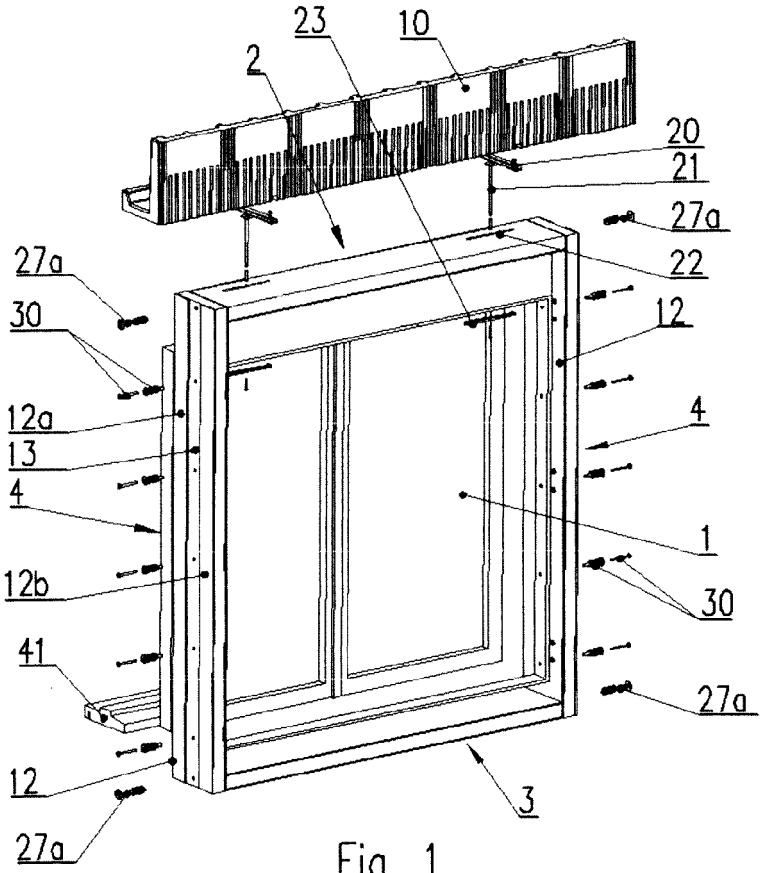
23
10
2
20
21
27a
22
27a
30
12
12a
4
13
4
1
12b
30
41
27a
12
3
27a

Fig. 1

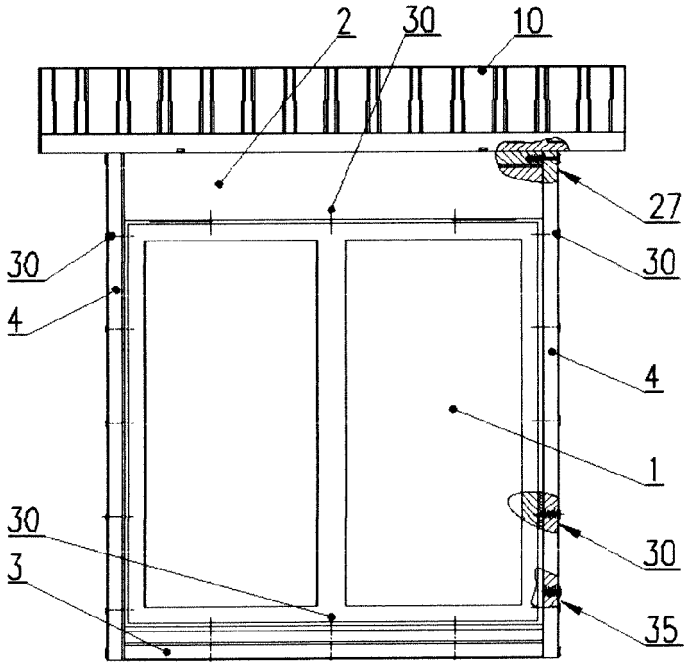
2
30
10
27
30
30
4
4
1
30
30
3
35

Fig. 2

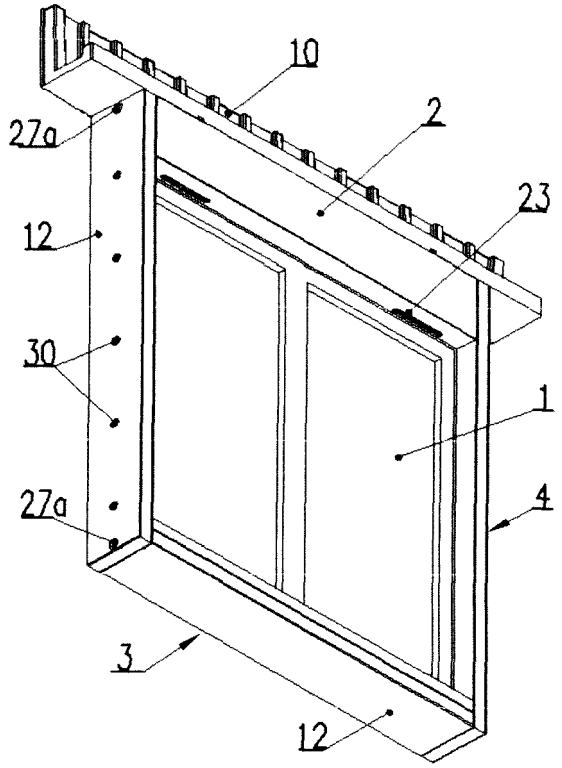

Fig. 3

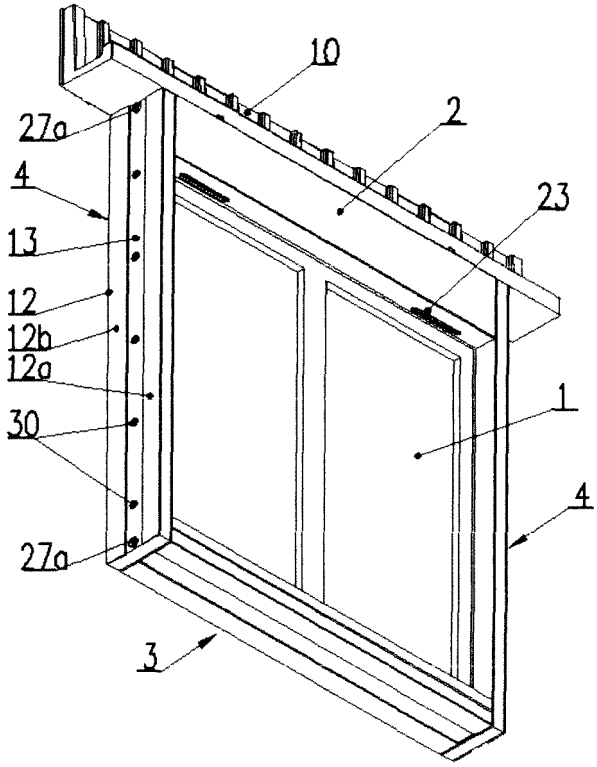

Fig. 4

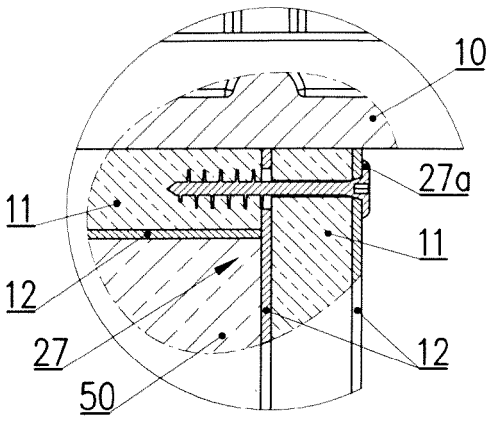

Fig. 5

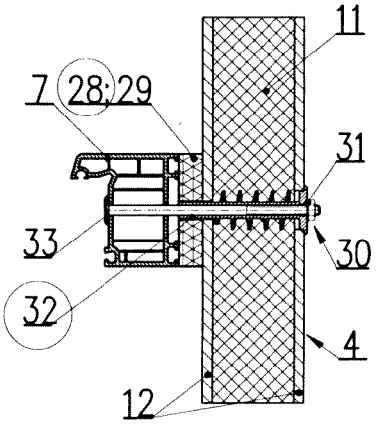

Fig. 6

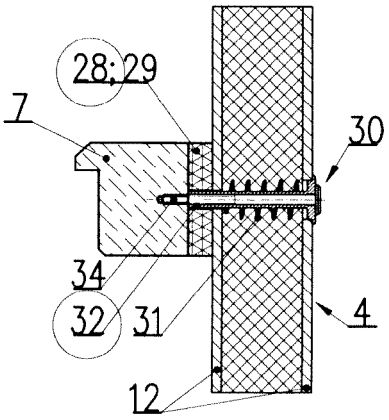

Fig. 7

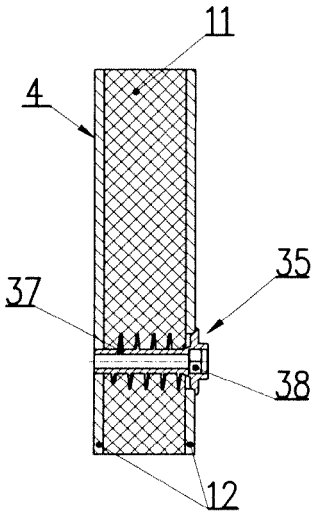

Fig. 8

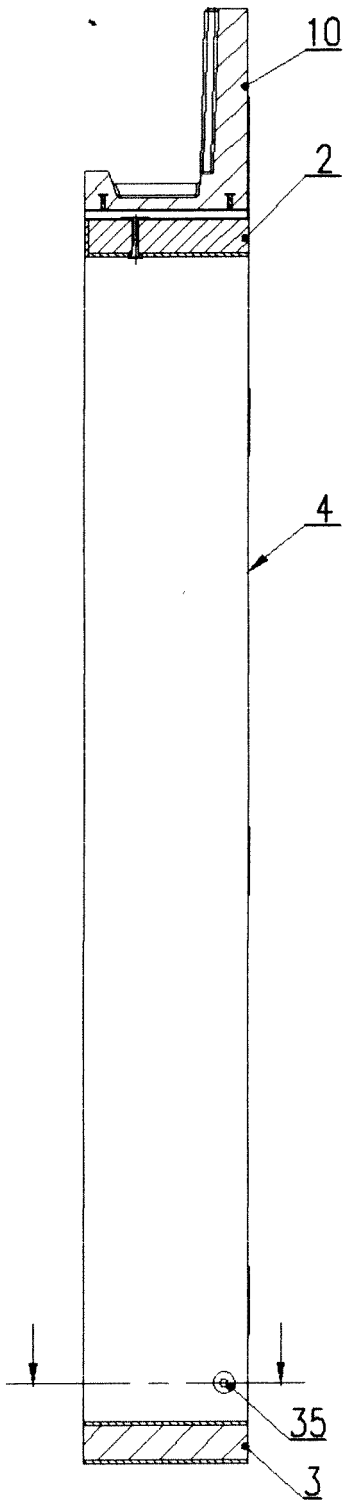

Fig. 9

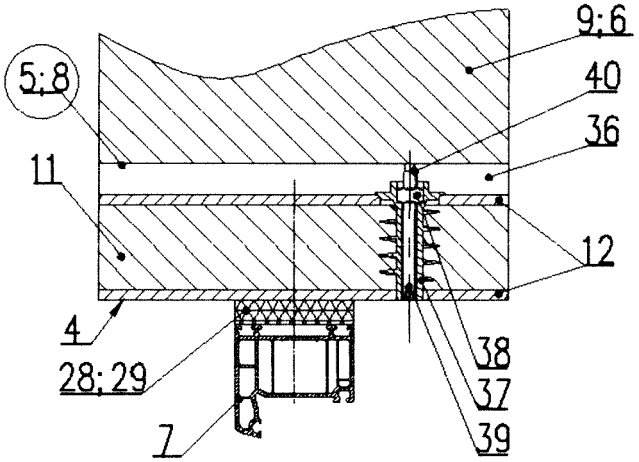

Fig. 10

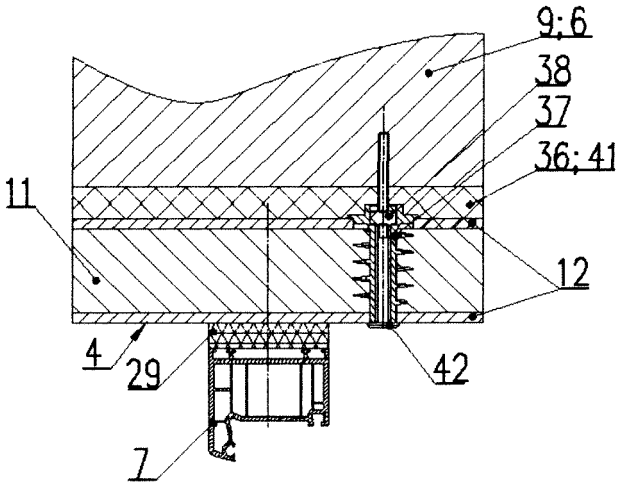

Fig. 11

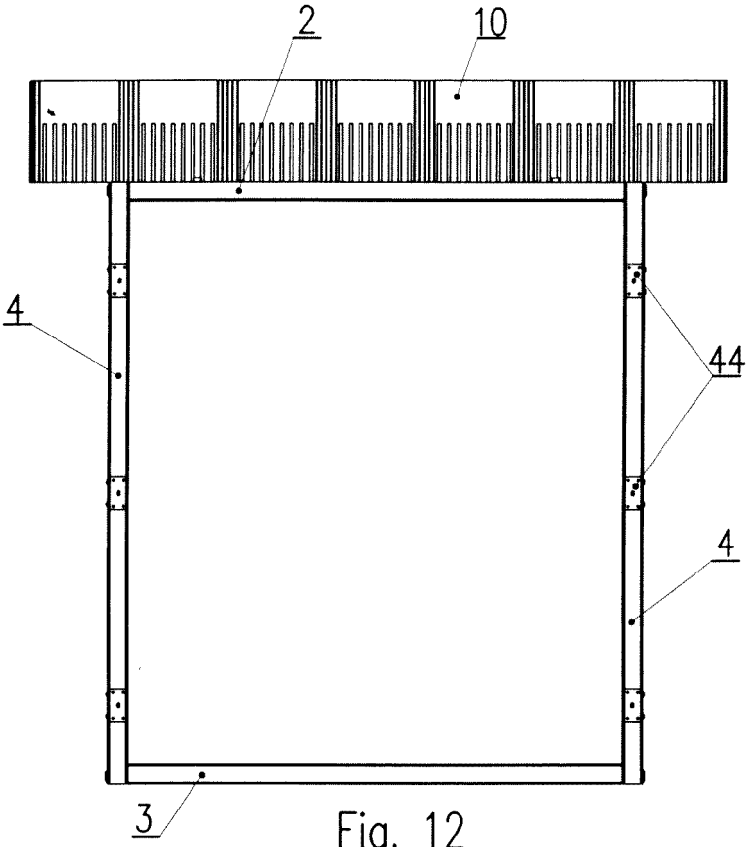

Fig. 12

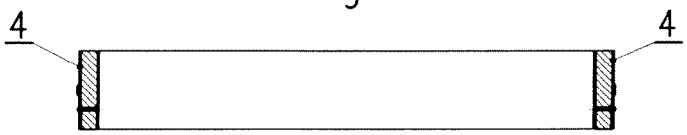

Fig. 13

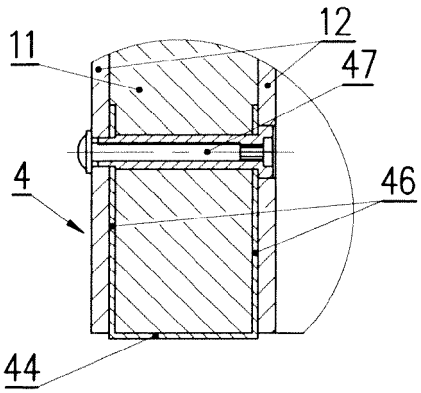

Fig. 14

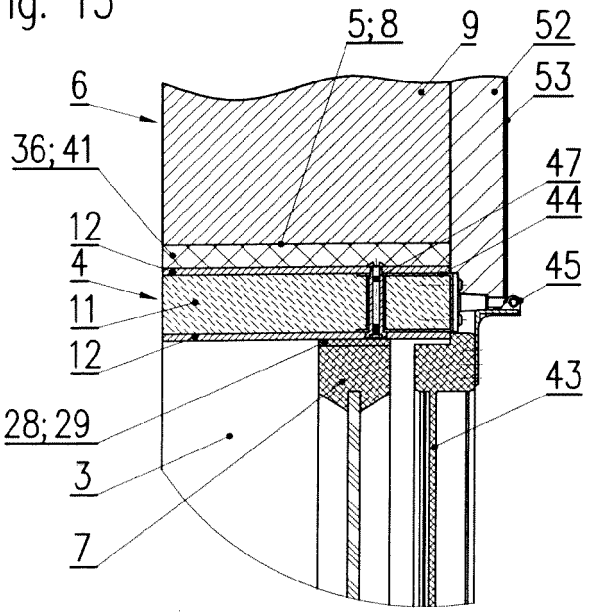

Fig. 15

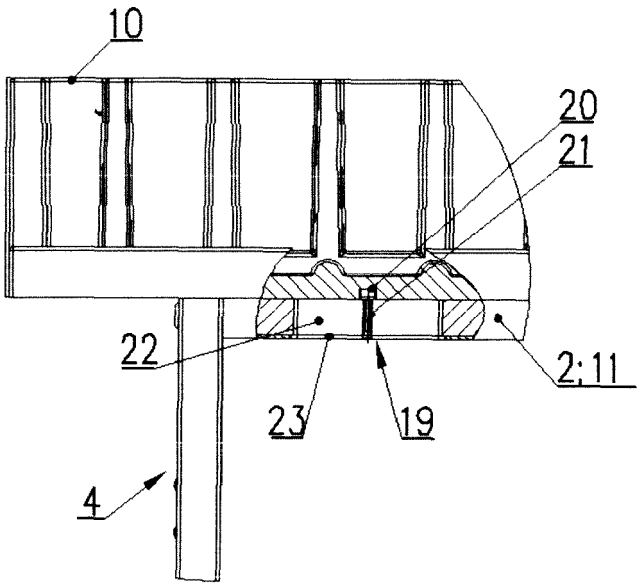

Fig. 16

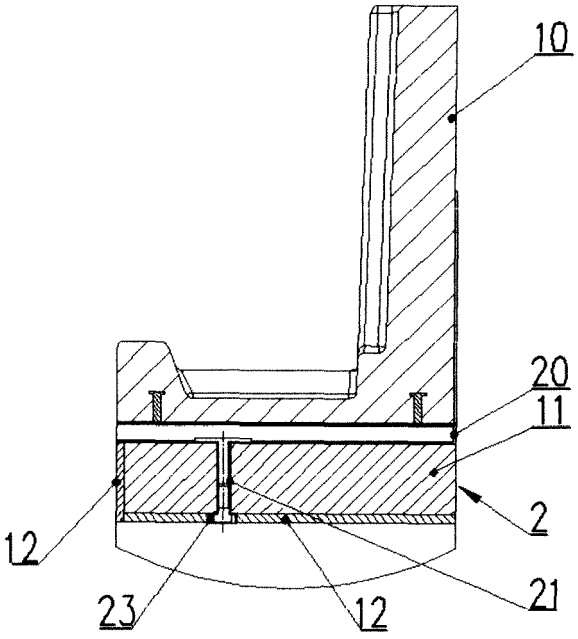

Fig. 18

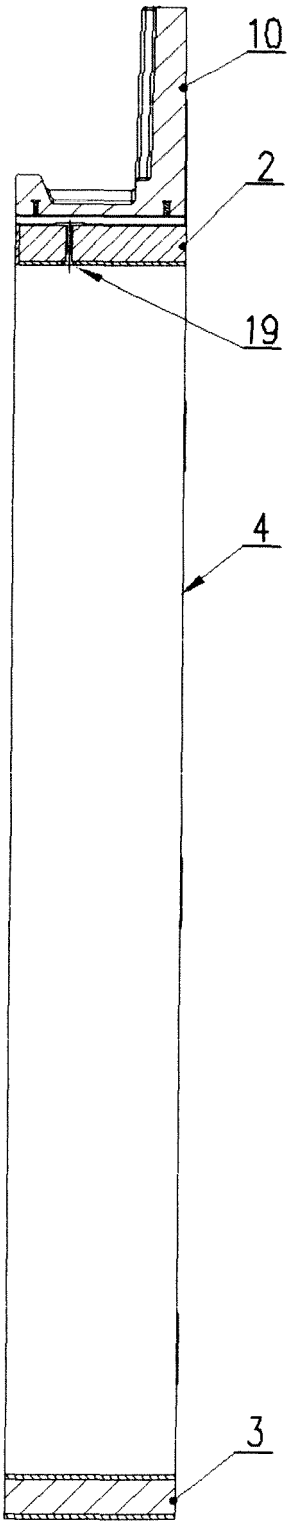

Fig. 17

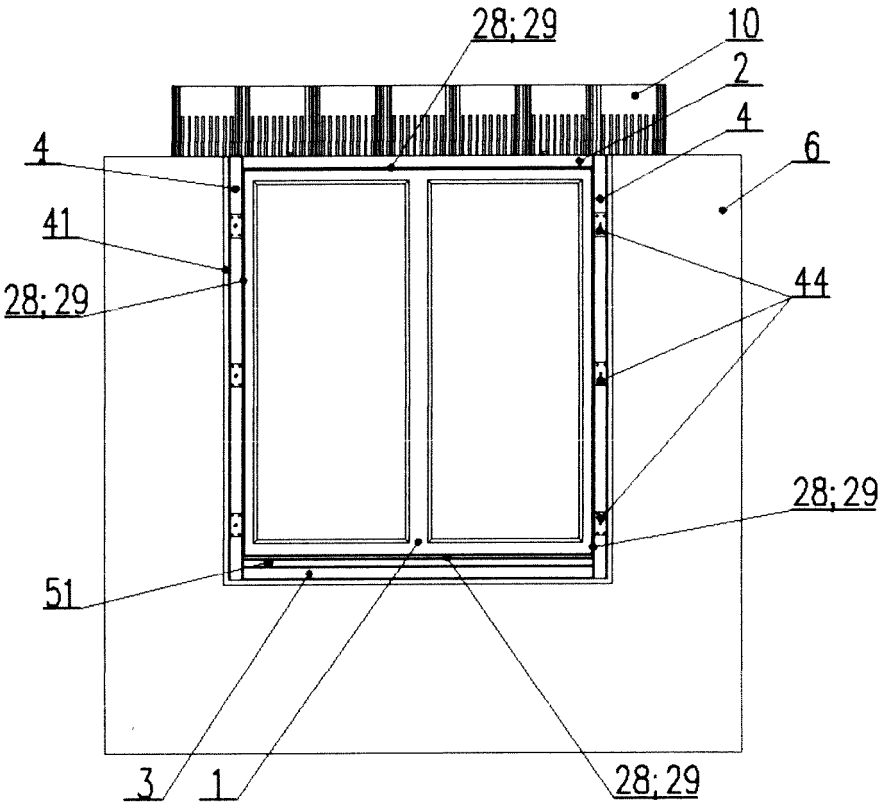

Fig. 19

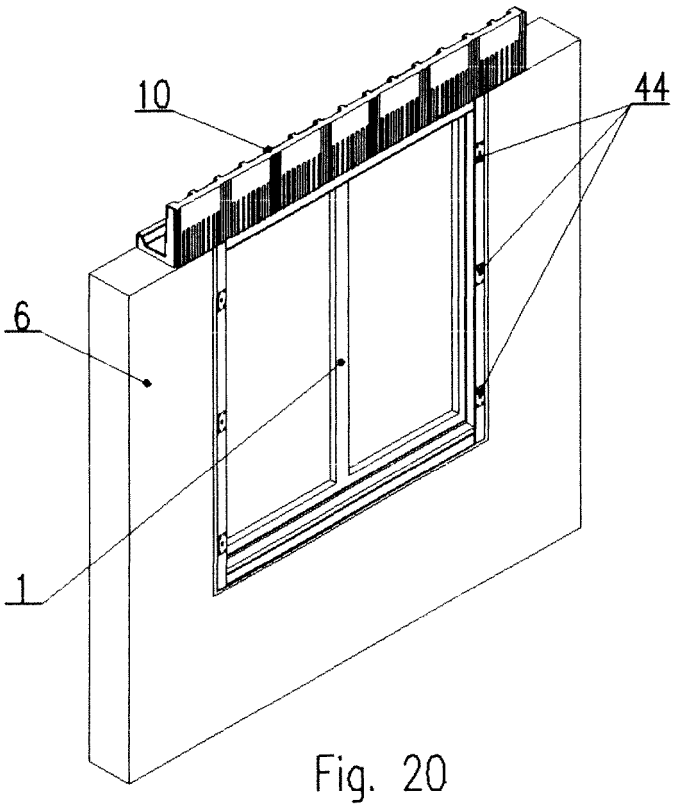

Fig. 20

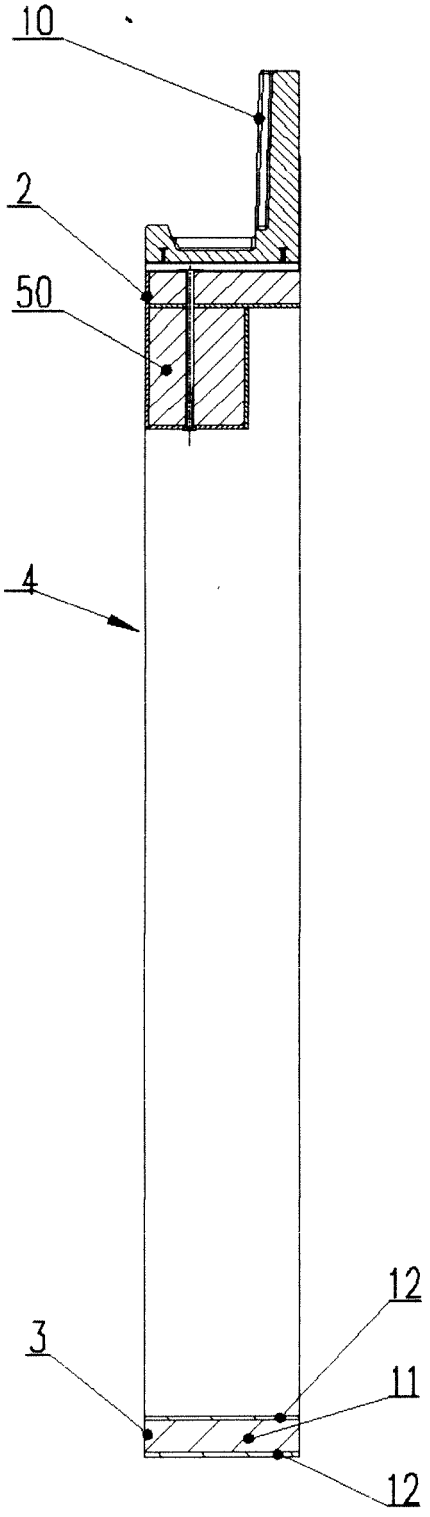

Fig. 21

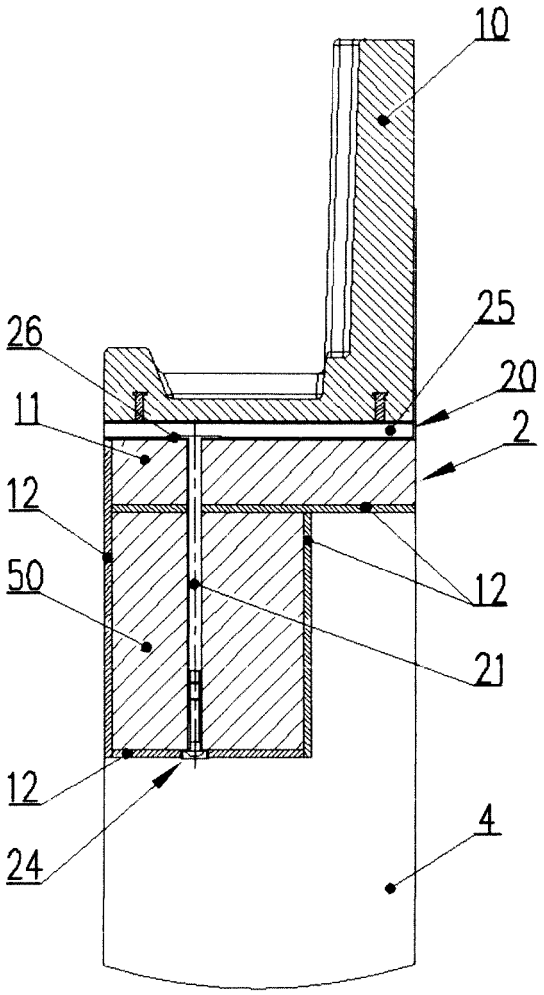

Fig. 22

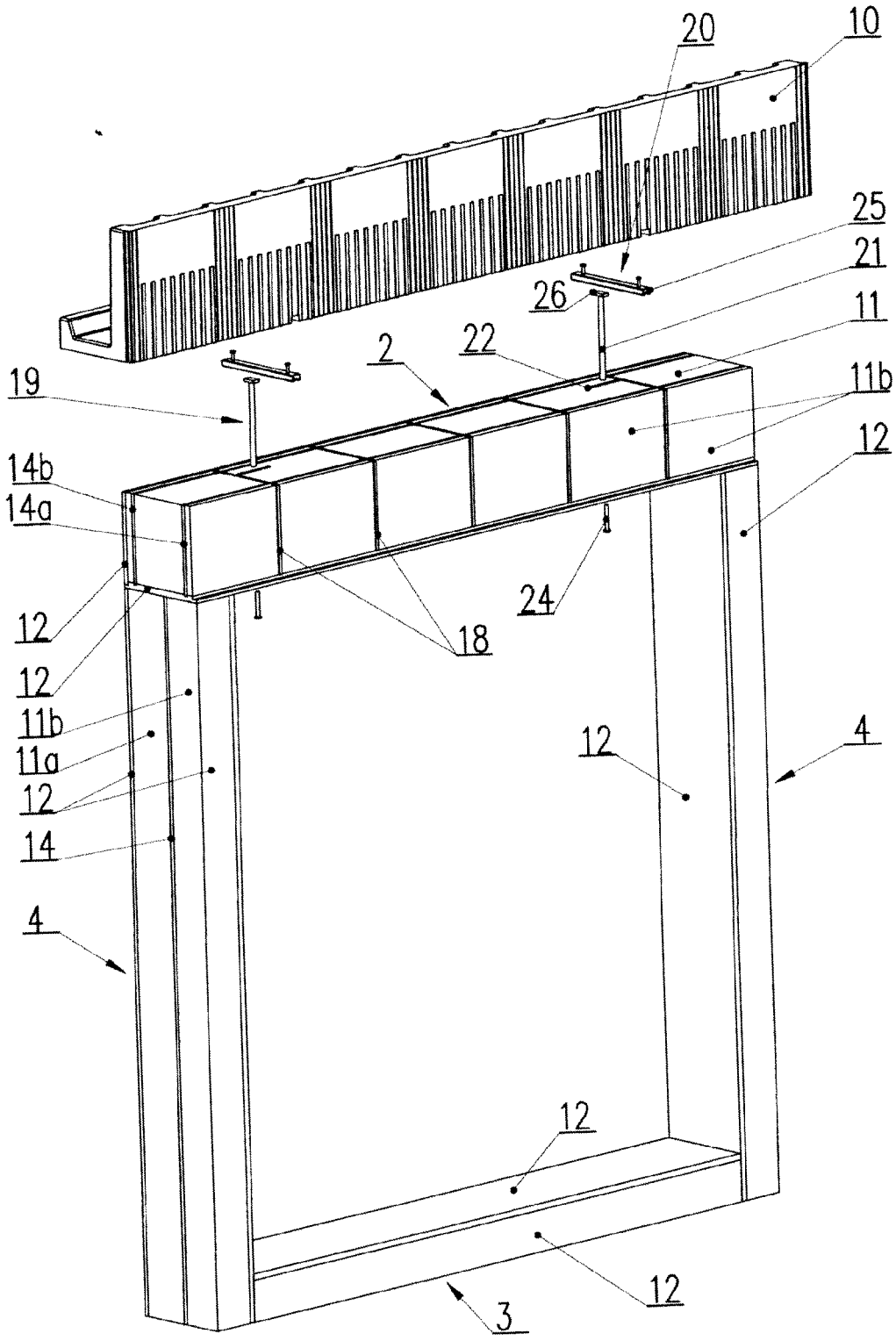
20
10
25
21
26
11
22
2
19
11b
12
14b
14a
24
18
12
12
11b
11a
12
14
4
12
4
12
12
3

Fig. 23

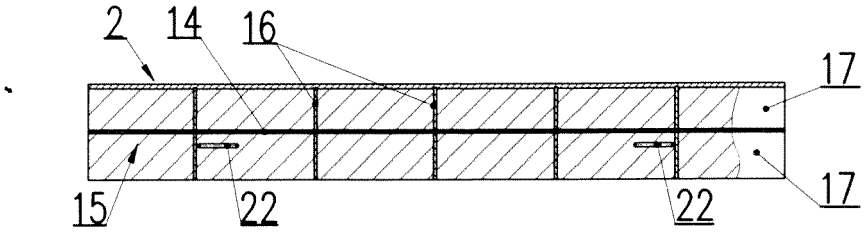

Fig. 24

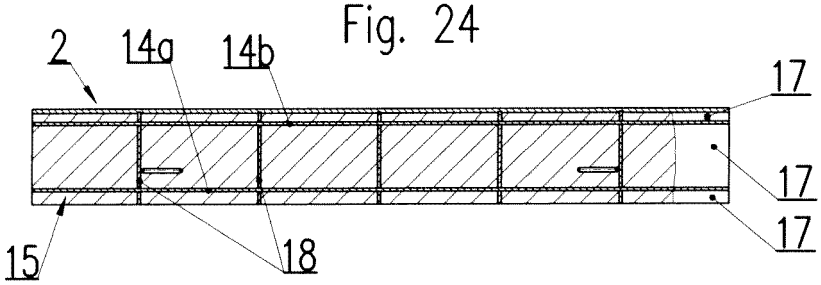

Fig. 25

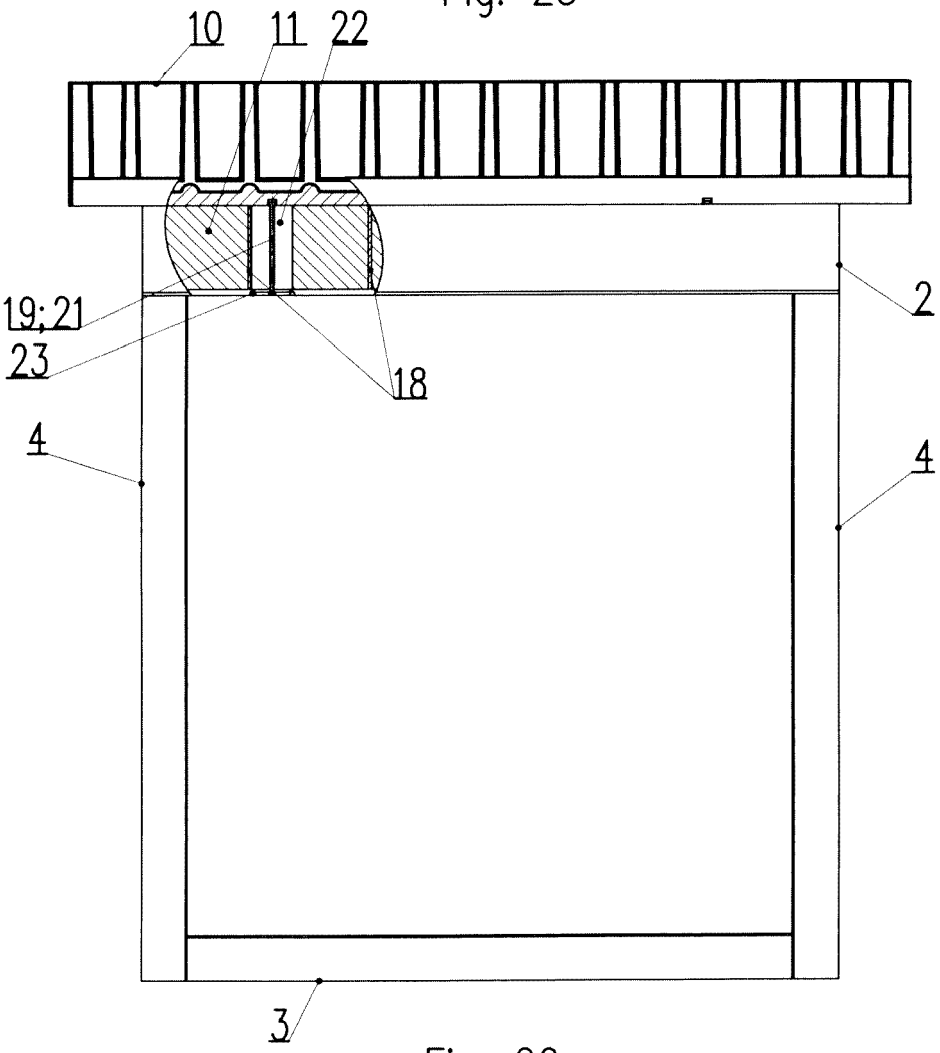

Fig. 26

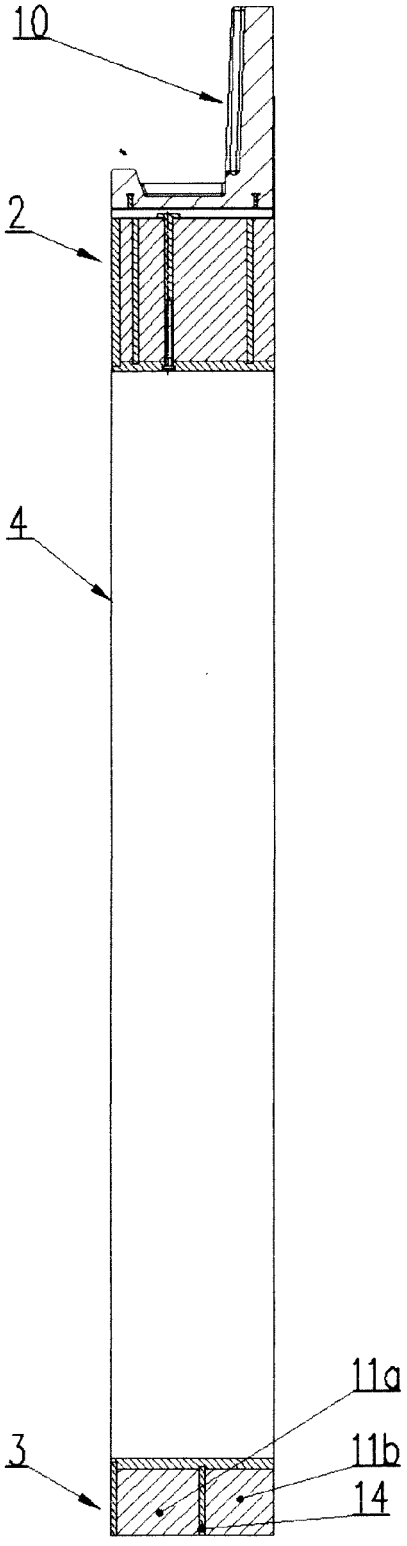

Fig. 27

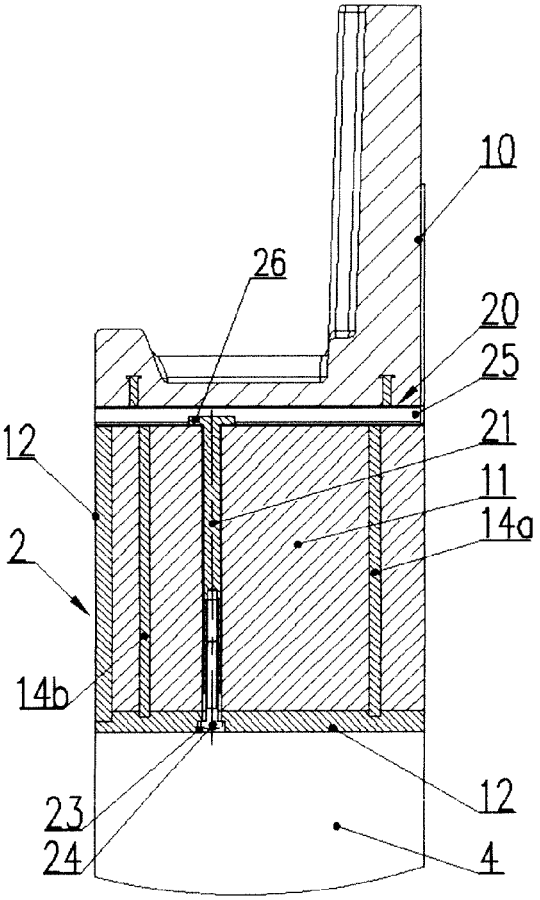

Fig. 28

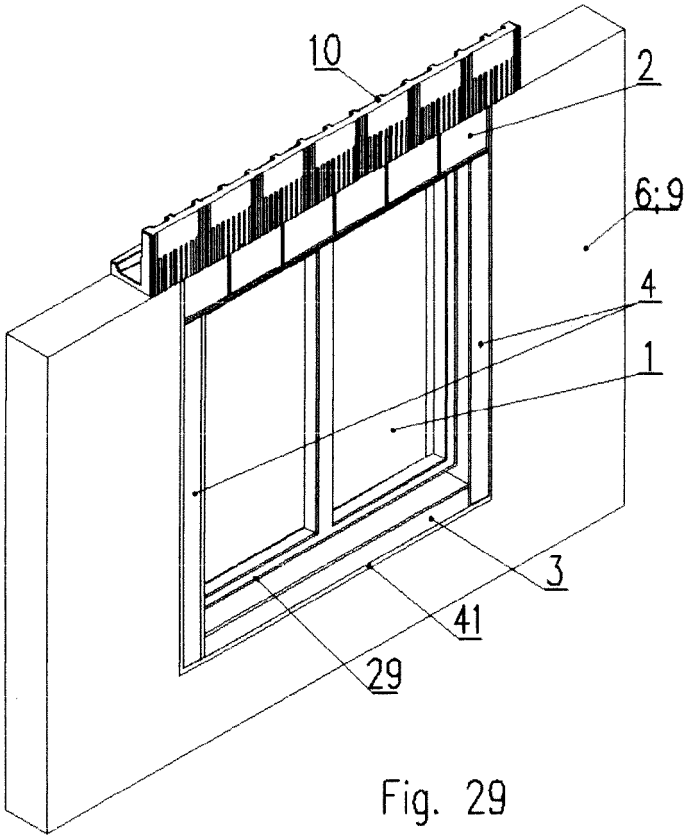

Fig. 29

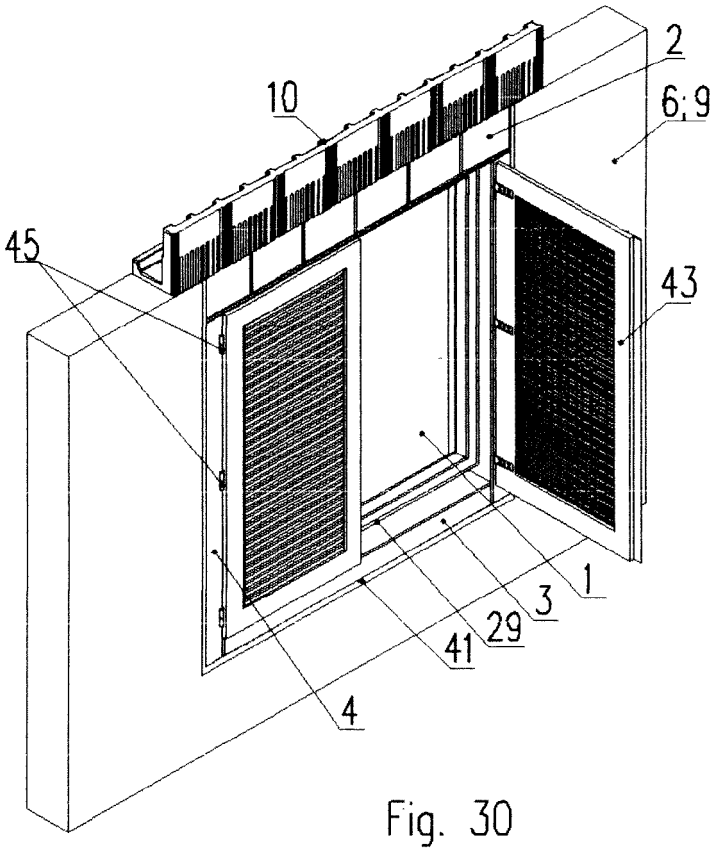

Fig. 30

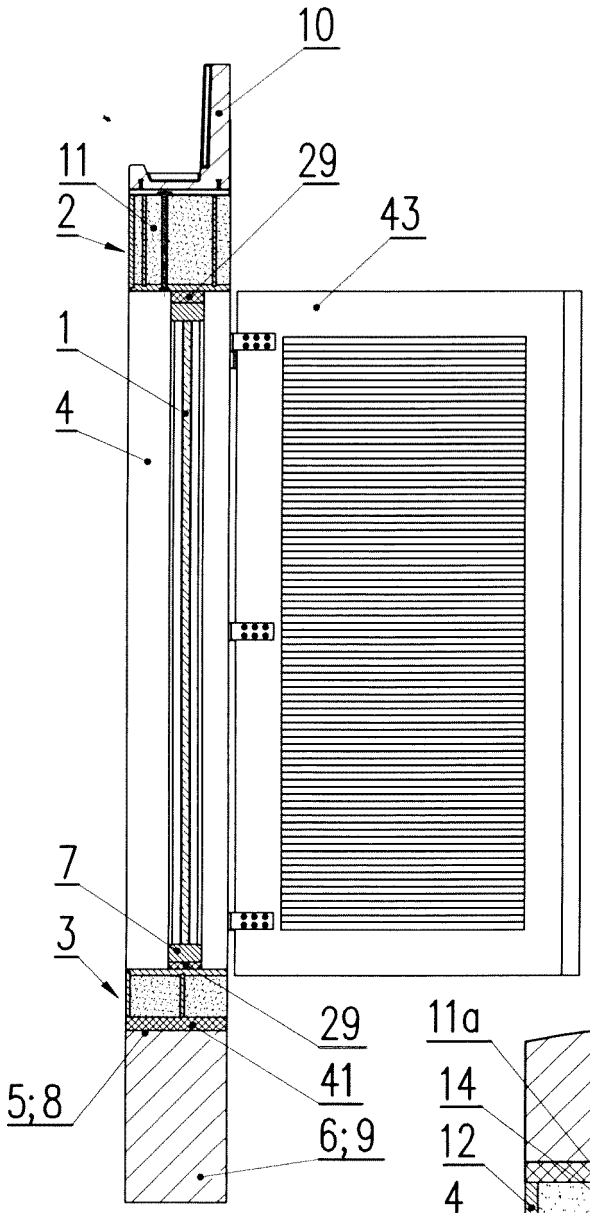
10
11
2
29
43
1
4
7
3
29
41
5;8
6;9

Fig. 31

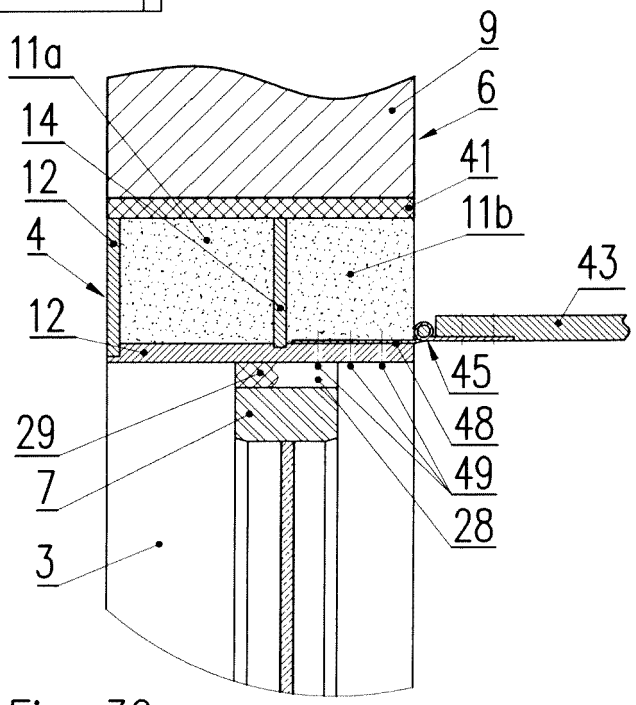
11a
9
6
14
41
12
11b
4
43
12
45
48
29
49
7
28
3

Fig. 32

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 14 46 0007

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
E	WO 2014/056823 A1 (ROCKWOOL INT [DK]) 17 April 2014 (2014-04-17) * figures 1, 3 *	1-3	INV. E06B1/02 E06B1/60
X	NL 8 801 186 A (WAVIN BV) 1 December 1989 (1989-12-01) * page 4, last paragraph; figure 3 *	1-26	
X	EP 1 788 181 A2 (KURT STEINEBERG GMBH [CH]) 23 May 2007 (2007-05-23) * figure 2 *	1-26	
X	EP 2 628 881 A1 (SLS KUNSTSTOFFVERARBEITUNGS GMBH & CO KG [DE]) 21 August 2013 (2013-08-21) * figure 2 *	1-26	
X	GB 2 290 573 A (EPWIN GROUP PLC [GB]) 3 January 1996 (1996-01-03) * figures 1, 2 *	1-26	
			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	14 May 2014	Cobusneanu, D

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 46 0007

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.

14-05-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2014056823 A1	17-04-2014	NONE	
NL 8801186 A	01-12-1989	NONE	
EP 1788181 A2	23-05-2007	NONE	
EP 2628881 A1	21-08-2013	NONE	
GB 2290573 A	03-01-1996	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

- EP 2639394 A2 **[0002]**
- PL 202876 **[0003]**