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

(11) **EP 4 279 679 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
22.11.2023 Bulletin 2023/47

(21) Application number: **23173307.2**

(22) Date of filing: **15.05.2023**

(51) International Patent Classification (IPC):
E04D 13/03 *(2006.01)* ***E06B 7/10*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
E04D 13/0325; E06B 7/10

(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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **18.05.2022 PL 44121122**

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

(72) Inventors:
- **Stoklosa, Lukasz**
  33-300 Nowy Sacz (PL)
- **Majoch, Waclaw**
  33-300 Nowy Sacz (PL)
- **Dziurzynski, Tomasz**
  33-300 Nowy Sacz (PL)

(54) WINDOW FRAME WITH AIR SUPPLY DUCT

(57) A plastic window frame for a roof window comprising an upper stile (1), a lower stile (2) and two side stiles (3) joined using a heat welding method so that the frame stiles are attached to each other in window frame corners, chambers are located in the window frame stiles, and in the upper stile there is a ventilation channel with outlet opening (61) and inlet opening (62), and vent (4) is located in the ventilation channel which constitutes the ventilation air flow path, and vent (4) is a plastic element and its volume is limited by its back wall (41) and front wall (42).

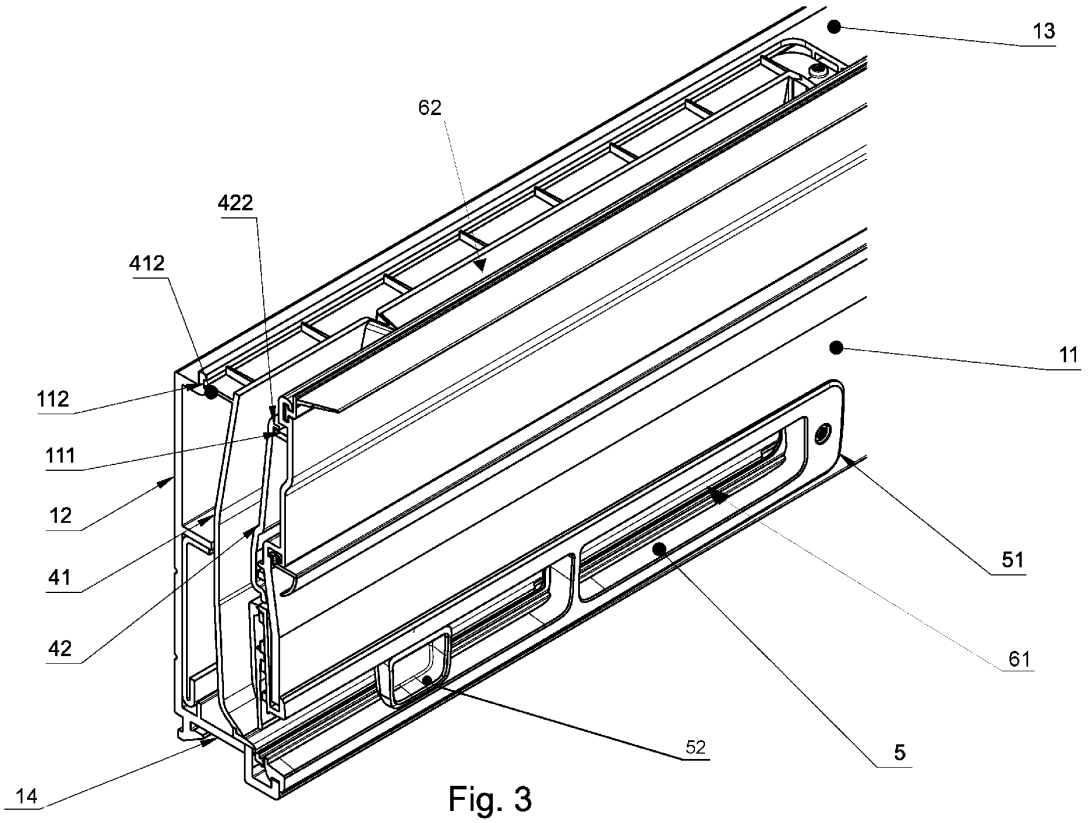

Fig. 3

EP 4 279 679 A1

Description

[0001] The object of the invention is a window frame, and in particular a roof window with a ventilation channel in the window frame upper stile.

[0002] A roof window with a ventilation channel in the frame upper stile is disclosed in patent PL217419B1. The timber frame comprises a ventilation channel, wherein its outlet terminating with a ventilation grille and the inlet located under the roof window hood.

[0003] The aim of the invention is a plastic window frame, comprising an upper stile, a lower stile and two side stiles joined using a heat welding method. Window frame stiles comprises a chamber structure and are constructed out of an inner wall, an outer wall as well as a top wall and a bottom wall. There is a ventilation channel in the chambers of the upper stile. The ventilation channel comprises a vent, in the form of a plastic element, wherein the vent determines the air flow path of the ventilation air. The volume of the vent is limited by its back wall and front wall, which are joined, preferably by a snap connector. The vent's ventilation channel inlet opening is located in the upper stile top wall, between the vent front wall and vent back wall. The outlet opening located in the vent front wall leads to the ventilation channel outlet in the inner wall of the frame upper stile. The intake opening and the outlet opening are essentially perpendicular relative to one another. The vent back wall abuts the upper stile bottom wall, and the vent front wall and back wall comprises a back wall shelf and a front wall shelf respectively to seat them on an appropriate window frame upper stile outer wall stub and inner wall stub. The vent outlet opening is terminated with a ventilation air flow adjuster. The air flow adjuster also comprises a flange, attached using a means of attachment, and in particular an attachment screw, to the upper stile inner wall. There is sealing material between the upper stile inner wall and air flow adjuster flange. Air flows through the ventilation channel outlet opening. The flow is adjustable. To that end the air flow adjuster features a slider to adjust the shutter. In the ventilation channel fully open position, the shutter is retracted into the vent. Once the ventilation channel is closed, the shutter fills the opening in the window frame upper stile inner wall, blocking ventilation air flow. The window frame vent may also feature a shutter to adjust the air flow depending on pressure or humidity differences between the interior and exterior sides of the window frame.

[0004] Use of the vent in the window frame ventilation channel makes it possible to stop air from penetrating into chambers inside the stile causing condensation and ensures laminar flow of ventilation air stream.

[0005] The illustration depicts the window frame according to the invention, with given figures depicting the following:

Fig. 1 spatial view of window frame,

Fig. 2 spatial view of vent,

Fig. 3 cross-section of upper stile with vent and air flow adjuster.

[0006] The window frame according to the invention comprising a plastic upper stile 1, lower stile 2 and two side stiles 3. Each stile comprises an inner wall 11, an outer wall 12 as well as a top wall 13 and a bottom wall 14. There are chambers between stile walls. Inside the upper stile there is a ventilation channel with inlet opening 62 in upper stile top wall 13 and outlet opening 61 in upper stile inner wall 11. Vent 4 is in the ventilation channel.

[0007] Vent 4 is a plastic element and comprises a back wall 41, and a front wall 42 with opening 421 leading to ventilation channel outlet opening 61. The opening leading to ventilation channel inlet opening 62 is located in the top part of the vent, between front wall 42 and back wall 41. Whereas front wall 42 and back wall 41 are joined by a snap fastener along the vent side edge. Air flow adjuster 5 is located in ventilation channel outlet opening 61. Air flow adjuster 5 comprises a flange 51, which, once installed, is located on upper stile 1 inner wall 11. Air flow adjuster 5 also comprises a slider 52 to control the position of its shutter which is inside vent 4 when the ventilation channel is open. Vent front wall 42 features front wall shelf 422 and back wall 41 features back wall shelf 412 to seat them on appropriate upper stile 1 inner wall stub 111 and outer wall stub 112.

Claims

1. The window frame for a roof window, made out of plastic, comprising:

   - an upper stile (1),
   - a lower stile (2),
   - two side stiles (3), so that the frame stiles are attached to each other in window frame corners by a welding,
   - a chambers are located in the window frame stiles, and in the upper stile there is a ventilation channel with an inlet opening (61) and an outlet opening (62), and vent (4) is located in the ventilation channel which constitutes the ventilation air flow path, **characterized in that** vent (4) is a plastic element and its size is limited by its back wall (41) and front wall (42).

2. The window frame according to claim 1 **characterized in that** the inlet opening (62) and the outlet opening (61) are essentially perpendicular relative to one another.

3. The window frame according to claim 1, or 2 **characterized in that** the opening leading to ventilation

channel inlet opening (62) is located between vent front wall (42) and vent back wall (41) and that in the front wall an opening (421) is located which leads to ventilation channel outlet opening (61).

4. The window frame according to claim 1 or 2, or 3 **characterized in that** upper stile (1) comprises an outer wall (12), an inner wall (11), a top wall (13) and a bottom wall (14) so that vent (4) air flow adjuster (5) is located in inner wall (11) in the outlet opening (61).

5. The window frame according to claim 1 or 2, or 3, or 4 **characterized in that** vent (4) front wall (42) and vent back wall (41) comprises a front wall shelf (422) and a back wall shelf (412) arranged to be respectively seated on appropriate upper stile (1) inner wall stub (111) and an outer wall stub (112).

6. The window frame according to claim 1 or 2, or 3, or 4, or 5 **characterized in that** vent back wall (41) abuts window frame upper stile (1) bottom wall (14).

7. The window frame according to claim 1 or 2, or 3, or 4, or 5, or 6 **characterized in that** the vent features a shutter to adjust ventilation air flow.

8. The window frame according to claim 7 is **characterized in that** the shutter is controlled on the basis of pressure differences between the interior and exterior sides of the window frame.

9. The window frame according to claim 7 is **characterized in that** the shutter is controlled on the basis of humidity differences between the interior and exterior sides of the window frame.

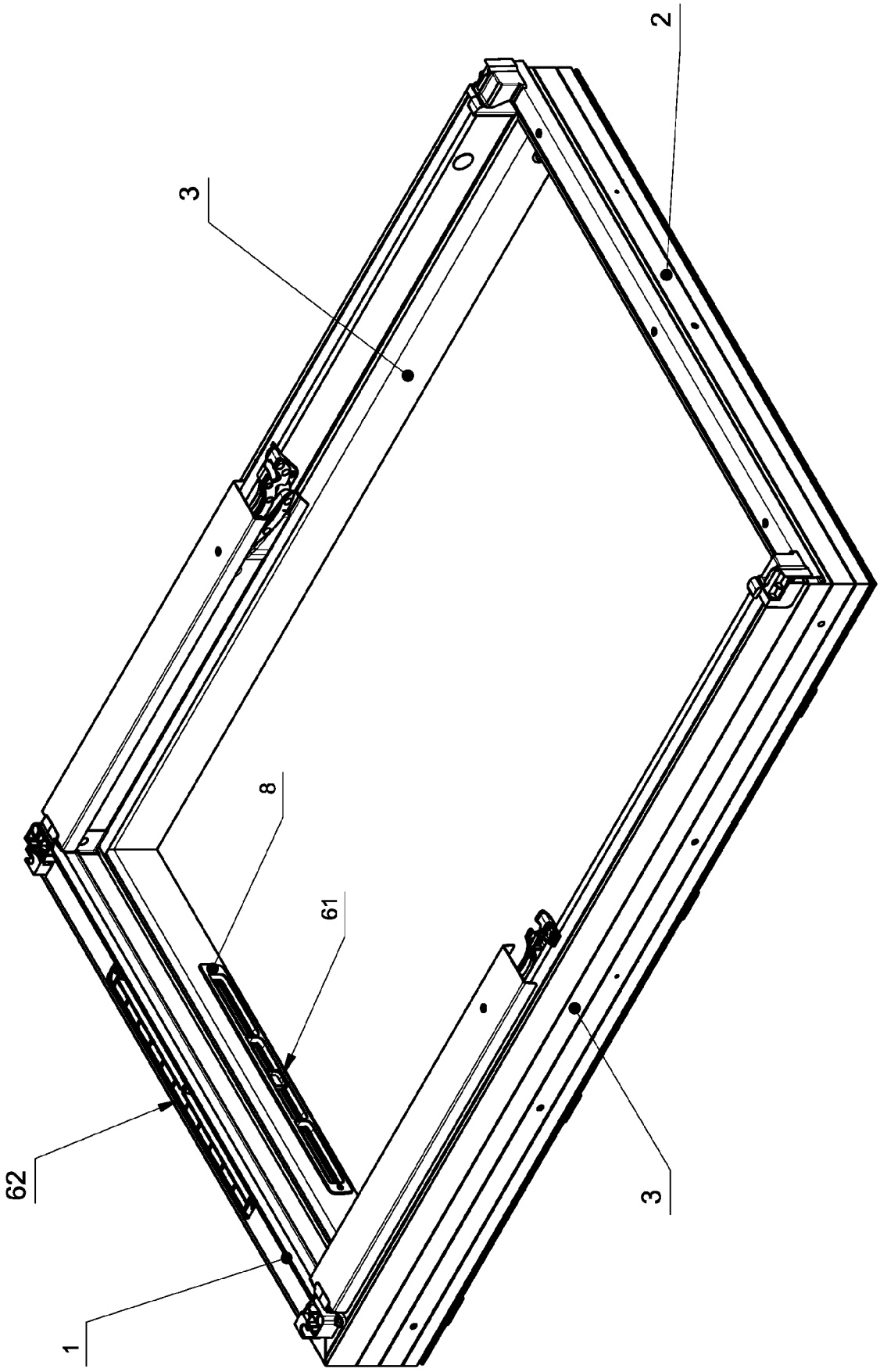

Fig. 1

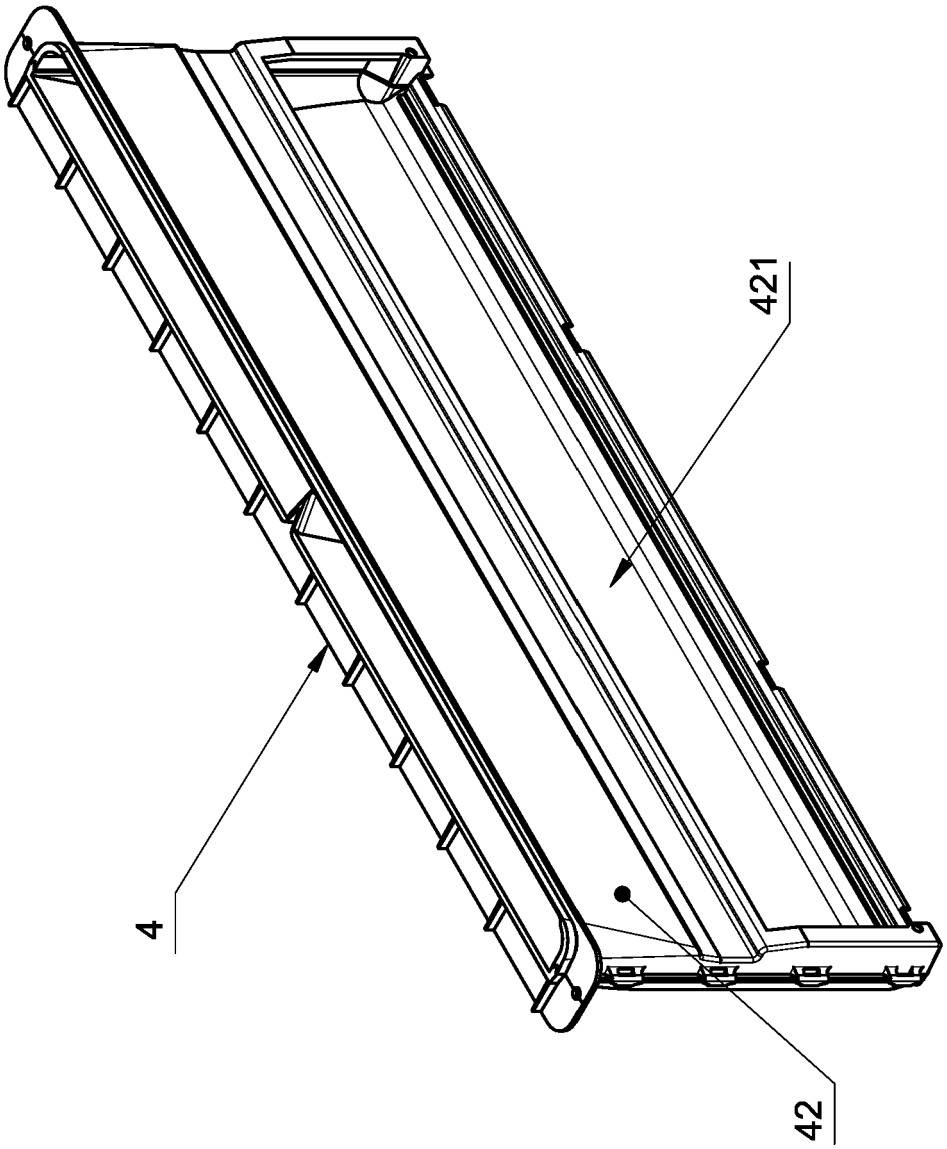

Fig. 2

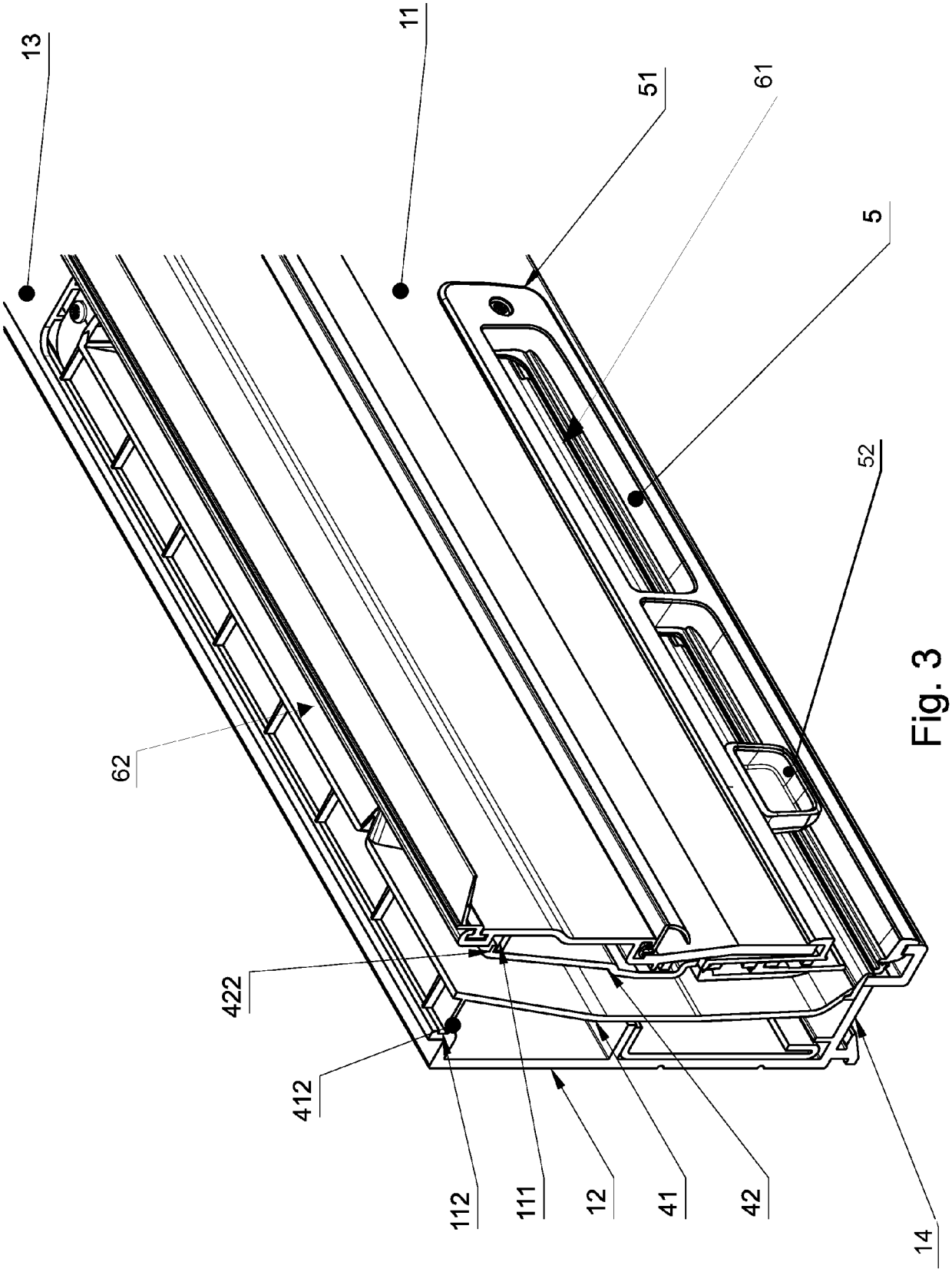

Fig. 3

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 23 17 3307

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 3 896 246 A1 (ROTO FRANK DACHSYSTEM TECH GMBH [DE]) 20 October 2021 (2021-10-20)	1-4,6-9	INV. E04D13/03 E06B7/10
A	* figures 5,6 *	5	
Y	WO 2004/070155 A1 (HARDING JANE CYNTHIA MARGARET [GB]) 19 August 2004 (2004-08-19)	1-4,6-9	
A	* page 1, paragraph 22-27; figure 2 *	5	
Y	EP 1 153 250 B1 (NEMCEK MILAN [SK]) 27 April 2005 (2005-04-27)	1-4,6-9	
A	* figure 3 *	5	
Y	EP 2 813 632 A1 (ROTO FRANK AG [DE]) 17 December 2014 (2014-12-17)	2-4,7	
A	* figures 3,4 *	5	
A	EP 2 235 312 B1 (VKR HOLDING AS [DK]) 5 October 2011 (2011-10-05) * figures 7,8 *	1-9	
A	EP 2 947 217 A1 (ROTO FRANK AG [DE]) 25 November 2015 (2015-11-25) * figure 2 *	1-9	TECHNICAL FIELDS SEARCHED (IPC) E04D E06B
A	DE 298 11 969 U1 (POHL BENEDIKT [DE]) 24 September 1998 (1998-09-24) * figure 2 *	1-9	
A,D	PL 217 419 B1 (FAKRO PP SP. Z O.O.) 31 July 2014 (2014-07-31) * figures *	1-9	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	3 October 2023	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 23 17 3307

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.

03-10-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 3896246 A1	20-10-2021	DE 102020204389 A1	07-10-2021
		EP 3896246 A1	20-10-2021
WO 2004070155 A1	19-08-2004	NONE	
EP 1153250 B1	27-04-2005	AT E294363 T1	15-05-2005
		AU 2586100 A	25-08-2000
		CZ 20012642 A3	16-01-2002
		EP 1153250 A1	14-11-2001
		WO 0046555 A1	10-08-2000
EP 2813632 A1	17-12-2014	NONE	
EP 2235312 B1	05-10-2011	AT 527426 T	15-10-2011
		DK 2235312 T3	23-01-2012
		EP 2235312 A1	06-10-2010
		WO 2009076953 A1	25-06-2009
EP 2947217 A1	25-11-2015	DE 102014007842 A1	26-11-2015
		EP 2947217 A1	25-11-2015
		PL 2947217 T3	31-10-2018
DE 29811969 U1	24-09-1998	NONE	
PL 217419 B1	31-07-2014	AT 517217 T	15-08-2011
		CN 101778980 A	14-07-2010
		EP 2150658 A2	10-02-2010
		PL 217419 B1	31-07-2014
		WO 2008133539 A2	06-11-2008

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 217419 B1 **[0002]**