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

(11) **EP 2 803 776 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
19.11.2014 Bulletin 2014/47

(51) Int Cl.:
E04B 2/02 *(2006.01)*

(21) Application number: **14168221.1**

(22) Date of filing: **14.05.2014**

(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: **14.05.2013 BE 201300340**

(71) Applicant: **Wuytack, Gerry**
9190 Stekene (BE)

(72) Inventor: **Wuytack, Gerry**
9190 Stekene (BE)

(74) Representative: **Van hunsel, Lieven M.S.**
Archimedes Patents
P.O. Box 34
2900 Schoten (BE)

(54) **Device and method for bricklaying a wall or the like**

(57) Device for bricklaying a wall or the like, which wall is built of bricks or building blocks with a given width, length and height, provided in bricklayers, and separated from one another and connected to one another by means of mortar, glue or another binding agent which determines the joint, characterised in that it comprises two open structure walls which are essentially perpendicular to one another, whereby each open structure wall itself defines two parallel planes provided at a certain distance from one another.

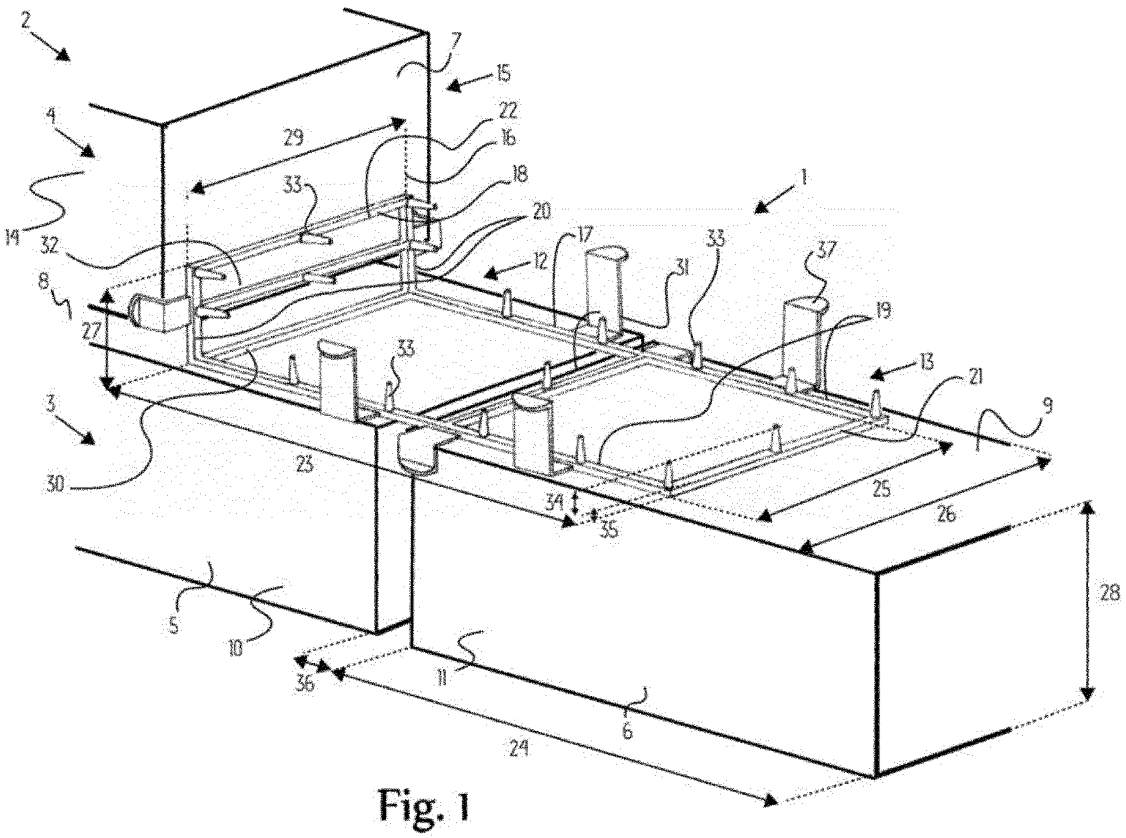

Fig. 1

EP 2 803 776 A1

Description

[0001] The present invention concerns a device for bricklaying a wall or the like.

[0002] By bricklaying a wall or the like is understood a building technique whereby bricks or blocks are put against and on top of one another in a specific brickwork bond by means of mortar, glue or another binding agent in order to obtain a strong, stable and yet attractive wall.

[0003] The layer of mortar, glue or another bonding agent between the bricks or blocks is called the joint. In a brickwork bond, the continuous, horizontal joint is called an edge joint, and the short, upright joint is called a head joint.

[0004] In order to obtain maximum strength and a desired aesthetic appearance of the brickwork, it is appropriate that all joints have the same width. For the same reason, the bricks or blocks may not tilt forward or backward while bricklaying or they may not be placed diagonally.

[0005] Thus, it is known that the mason uses masonry sections for building up a wall perpendicularly.

[0006] These are rectangular wooden or metal sections placed at right angles on the corners or at the end of the wall. When all sections are put in place, a water level is conventionally provided one meter from the finished floor. Then, by means of a gauge rod, downwards as of the meter level, the layer distribution is conveyed to the masonry sections so as to be able to start level.

[0007] A layer comprises the brick or the block and the edge joint.

[0008] Next, a masonry thread is drawn from one section to the other, starting as of the bottom layer.

[0009] Finally, for bricklaying, mortar or glue is provided over the large length of the brick on the substrate, somewhat more thickly than the ultimately desired thickness of the joint.

[0010] A first brick or block is then applied against the section with the top side parallel to the masonry thread.

[0011] The brick or block is then briefly moved from left to right in the recently applied mortar or glue or tapped with a trowel, such that it sinks in the desired position and is well located in the binding agent.

[0012] Excess mortar or glue is removed again with a trowel or another suitable tool.

[0013] In order to apply a subsequent brick or block, a layer of binding agent is applied onto the already applied brick with a thickness that is slightly larger than the width of the head joint.

[0014] The brick or block is then briefly moved back and forth again in the binding agent or tapped with a trowel, so that it sinks in the desired position and so as to leave no free space between the brick and binding agent.

[0015] Such a conventional manner of bricklaying has several disadvantages, however.

[0016] A common shortcoming is that the bricks or blocks can be easily laid in a tilted manner, which not only adversely affects the stability of the masonry but also its aesthetic aspect.

[0017] This can only be remedied with a thorough professional training accompanied by a certain skill and long professional experience, along with repeated measuring and correcting of the brick layer where appropriate and as long as it is still possible.

[0018] A further known disadvantage is that, when bricklaying, only a limited number of layers can be provided on top of one another.

[0019] Indeed, one must wait for the binding agent in the lower layers to cure sufficiently in order to prevent it from being compressed or pressed out of the joints due to the weight of the upper layers.

[0020] A further known disadvantage is that the abundant use of mortar or binding agent results in a high material consumption and labour costs.

[0021] A further disadvantage is that by having to remeasure each time, correcting if necessary, and scraping off excess binding agent, the bricklaying speed is considerably reduced.

[0022] Yet another disadvantage is that the lower joints which have not cured sufficiently yet may be compressed by the weight of the upper masonry, as a result of which the lower edge joints will be narrower than the ones on top and the lower head joints may be subjected to tensile deformation too early, which may easily lead to subsequent cracking or splitting.

[0023] A further known disadvantage is that if the lower edge joints which have not sufficiently cured yet are unevenly and unilaterally compressed and squeezed out, the masonry will begin to tilt in one direction and lean over, which nullifies the stability of the wall and the aesthetic effect.

[0024] Another known disadvantage is that the abundant use of binding agent and the possible squeezing out of insufficiently cured material may result in bridges being formed, in particular between the two sheets of a cavity wall, which in turn gives rise to thermal or acoustic leaks or unwanted water transport.

[0025] The present invention aims to remedy the above-mentioned and other disadvantages.

[0026] To this end, the invention consists of a device for bricklaying a wall or the like, further referred to in short as device, which wall is built up from bricks or building blocks with a given width, length and height, arranged in bricklayers and separated from one another and connected to one another with mortar, glue or another binding agent which determines the joint, whereby the device comprises two substantially perpendicular, open structure walls facing each other, wherein each open structure wall itself defines two parallel planes provided at a certain distance from each other.

[0027] Thus, an open structure wall may consist essentially of a level frame, one side of which defines a first plane and on whose other side are provided studs or protrusions whose free ends define a second plane.

[0028] Alternatively, the open structure wall may also

consist of a framework, possibly essentially flat, which is provided with studs or projections on both sides, whose free ends define two parallel planes.

[0029] In both variants as mentioned above, the studs or projections may have a sharp or pointed end in order to prevent the mortar, glue or another binding agent from entering between the far ends of the studs or projections and the brick.

[0030] According to a preferred variant, the protrusions have a long-stretched shape, or the studs or projections are positioned close to each other as in a comb, such as to prevent them from sinking in any possible gaps or cavities as provided in a high-speed building brick.

[0031] According to another embodiment, the open structure wall may essentially consist of two flat frameworks which are mutually connected by transverse connecting rods or the like.

[0032] According to an alternative embodiment, an open structure wall consists of a crosslinked wire structure or an open foam structure.

[0033] Various alternatives can be conceived, and it is clear that the provision of reinforcement ribs and the like are among the possibilities.

[0034] From the application of the device it is clear, however, what the minimum requirements are.

[0035] Indeed, by placing the first wall structure, which is preferably provided with a larger linear measure than the second wall structure, horizontally on an already built underlying brick layer, and by also placing the second open structure wall against the end face of an already laid brick of a brick layer to be put up, a support is provided for a brick to be applied, whereby such a placement guarantees a dimensionally stable joint width.

[0036] In a preferred embodiment, the first and second wall structures are each formed of a four-sided frame connected by a common side. The first frame is hereby provided at right angles to the second frame, and both frames are provided with means to provide the device as centred in an edge joint and a head joint on the one hand, and with means which allow to adjust these joints to a predetermined thickness.

[0037] In a preferred embodiment, the means which allow to adjust the joints to a predetermined thickness consist of truncated cones of equal height which are fixed perpendicularly to each frame with their thickest ends.

[0038] This is advantageous in that the spot subjected to the strongest mechanical stress also has the largest thickness. This also facilitates the demoulding of the device when it is produced with an injection moulding technique.

[0039] A further advantage of such a device is that both constituent frames are entirely open in the middle and consequently are easily embedded in the mortar or the binding agent, so that all the spaces between the bricks or blocks are entirely filled to ensure maximum strength and durability of the masonry.

[0040] Another advantage is that by setting pre-calibrated joints, they will have the desired thickness over the entire length and depth, guaranteeing maximum strength, durability and the desired aesthetic appearance of the masonry.

[0041] A further advantage is that it is virtually impossible to apply any tilted or slanting bricks or blocks, so that the bricklaying can be done more easily in a fast and flawless manner by less experienced bricklayers.

[0042] According to the most preferred embodiment, the means which make it possible to provide the device centrally in an edge joint and a head joint consist of laterally protruding lips provided symmetrically on the frames which, bent at an angle of 90°, engage the sides of an underlying, overlying or adjacent brick or block.

[0043] In a practical embodiment, lips are provided symmetrically on opposite sides of the device as well which engage the newly laid brick.

[0044] The advantage thereof is that also the newly laid brick is centred and aligned with respect to the underlying layer and the lateral layer.

[0045] These lips are preferably broken down after the mortar has cured, by bending along the outside, as a result of which the masonry can be pointed without hindrance.

[0046] Another advantage is that, thanks to the central positioning of the device in the joints, the pressure exerted on the latter by overlying layers as long as the mortar has not cured yet, is evenly distributed.

[0047] A further advantage is that, thanks to the central positioning, mortar is provided with a uniform thickness and depth along the sides of the device, which facilitates a more even curing and strongly reduces the risk of microcracks or subsequent frost damage occurring.

[0048] Yet a further advantage is that only the required amount of mortar or binding agent should be applied, so that there is no unnecessary loss of material or labour.

[0049] According to a preferred characteristic of the invention, the device is made of a synthetic material. This offers the advantage that it can be easily produced in different sizes and shapes, for example by injection moulding of thermoplastics such as polyvinyl chloride, polystyrene or polypolyesters.

[0050] It offers the additional advantage that the material is free from corrosion, nor induces corrosion, that it is moisture-resistant and moisture-insensitive, and can be recycled without problems where appropriate.

[0051] A further advantage is that the device is lightweight and with limited dimensions, which makes its handling, packaging, transport and storage cheap and advantageous.

[0052] A further advantage is that such a device can be produced easily, environmentally-friendly, inexpensively and in large numbers.

[0053] Yet another advantage is that the device can be easily produced in different sizes, whereby a different colouring to indicate the different sizes can be effortlessly performed according to the known techniques in order to prevent errors.

[0054] In order to better explain the characteristics of

the invention, the following preferred embodiment of a device according to the invention is described without being limitative in any way, with reference to the accompanying drawings, in which:

Figure 1 shows the device according to the invention schematically and in perspective.

[0055] Figure 1 shows the device 1 according to the invention schematically and in perspective as it is used in a wall 2 under construction.

[0056] The skilled worker will immediately recognize that the wall 2 is built of an underlying brick layer 3, represented here by bricks 5 and 6, and an overlying brick layer 4, represented here by brick 7, and that the respective bricks 5, 6 and 7, or also the bottom brick layer 3 and the top brick layer 4, are provided in relation to one another in a stretching bond.

[0057] The lower bricks 5 and 6 each have a horizontal upward facing flat side 8 and 9, which is referred to as the upper face of the brick, and a vertical flat side 10 and 11 each time directed forward, i.e. according to the perspective from figure 1, referred to as the stretch of the brick, along with a parallel, vertical, rearward directed side 12 and 13.

[0058] The brick 7 of the top brick layer 4 analogously has a forward directed vertical side 14 and a parallel rearward directed vertical side 15.

[0059] The brick 7 moreover has a second vertical side 16 which is called the head of the brick 7. Resting on the horizontal upward directed flat sides 8 and 9 of the bricks 5 and 6 of the bottom brick layer 3, and adjacent to the head 16 of the overlying brick 7 of the upper brick layer 4, the device 1 of the invention is provided.

[0060] Where appropriate, it is built of two flat, rectangular open frames provided at an angle of 90° with respect to each other and thus forming a horizontal framework or frame 17 and a vertical framework or frame 18.

[0061] Every frame hereby consists of at least two parallel extending rod members 19 for the horizontal frame 17 and of at least two parallel extending rod members 20 for the vertical frame 18, each connected at the ends by means of cross connections 21, 22 respectively arranged thereon.

[0062] The length 23 of the horizontal frame 17 is preferably equal to the length 24 of the brick 5, 6 or 7, and the width 25 of the frame 17 amounts to 80% of the width 26 of the brick 5, 6 or 7.

[0063] The height 27 of the vertical frame 18 is preferably equal to two thirds of the height 28 of the brick 5, 6 or 7, and the width 29 of the vertical frame 18 amounts to 80% of the width 26 of the brick 5, 6 or 7 and therefore is equal to the width 25 of the horizontal frame 17.

[0064] Where appropriate, the horizontal frame 17 is connected to the vertical frame 18 via a common cross connection or rod member 30.

[0065] Where appropriate, the horizontal frame 17 as well as the vertical frame 18 each have an additional cross connection 31 or 32 respectively.

[0066] The rod members 19 and 21 of the horizontal frame 17 as well as the rod members 18 and 22 of the vertical frame 18 are provided with studs or protrusions 33 here, which are provided symmetrically and at an appropriate distance from one another.

[0067] Where appropriate, these studs or projections 33 are carried out as truncated cones, but preferably provided with a sharp or pointed end, and with their axis at right angles to the frame concerned, fixedly connected to the aforesaid rod members and/or cross connections 31 and 32 of the frame 17 and 18.

[0068] Since all the studs 33 are given the same height 34, and all rod members of the frame 17 or 18 have the same thickness 35, and the free ends of the studs 33 will abut against the bottom flat side of the brick provided thereon or the head of the brick provided against the latter, the common height of the studs 33 and the frame 17 or 18 will determine the width 36 of the edge joint and the head joint to be formed respectively.

[0069] For the same reason, the non-compressible or non-deformable studs or protrusions 33 prevent the joint from being compressed or unilaterally deformed.

[0070] Symmetrically opposing lips 37 are provided laterally protruding on the sides of the horizontal frame 17 as well as of the vertical frame 18, which first extend sideways as of the frame 17 and 18 and in the plane of the frame 17 and 18, and then perpendicular to the plane of the frame 17 and 18, possibly in both directions, upwards and downwards in the figure, and thus can engage the stretch or the head of the underlying and/or of the overlying and/or adjacent brick layer 3 and 4.

[0071] This has for a result that the device 1 of the invention as well as the new brick to be provided are always positioned centrally and only in relation to the underlying and/or adjacent bricklayers 3 and 4.

[0072] In a preferred embodiment, these lips 37, after the binding agent has cured sufficiently in the joint, are broken off the frame 17 and 18 again from the outside, so that the joint can be pointed without any hindrance afterwards.

[0073] The use of the device according to the invention is very simple and as follows.

[0074] Starting point is an already built underlying brick layer 3 and a last laid brick 7 of the overlying brick layer 4.

[0075] First, the device 1 according to the invention is positioned on the underlying brick layer 3 and against the last applied brick 7, whereby the wall structure 17 with the largest linear measure 23 is placed flat and horizontally on the top side 8, 9 of the underlying brick layer 3, and the laterally protruding lips 37 are used as guides.

[0076] The wall structure 18 with the smaller linear measure 27 is subsequently placed flat and vertically against the head 16 of the last laid brick 7 of the overlying brick layer 4, whereby the laterally protruding lips 37 are used as positioning means.

[0077] Next, the binding agent is provided over the large length of the brick on the underlying brick layer 3

and also against the head of the last laid brick 7 of the overlying brick layer 4, after which the brick is positioned between the laterally protruding lips 37 of the device 1.

[0078] The newly laid brick is then pressed down until it abuts laterally as well as from the bottom against all studs or projections 33 of the device 1 and there are no more open spaces left between adjacent bricks themselves.

[0079] Any excess binding agent or mortar can be removed and recycled, after which the binding agent is allowed to sufficiently harden.

[0080] Finally, all the laterally protruding lips 37 are broken off from the outside, after which the joints can be pointed effortlessly without any hindrance, possibly after the removal of any excess binding agent.

[0081] The present invention is by no means restricted to the embodiment described by way of example and illustrated in figure 1; on the contrary, such a device 1 according to the invention can be made in all sorts of shapes and dimensions while still remaining within the scope of the invention.

Claims

1. Device for bricklaying a wall or the like, which wall is built of bricks or building blocks with a given width, length and height, provided in bricklayers, and separated from one another and connected to one another by means of mortar, glue or another binding agent which determines the joint, **characterised in that** it comprises two open structure walls which are essentially perpendicular to one another, whereby each open structure wall itself defines two parallel planes provided at a certain distance from one another.

2. Device (1) according to claim 1, **characterised in that** the first wall structure has a larger linear measure than the second wall structure.

3. Device (1) according to claim 1 or 2, **characterised in that** each open structure wall comprises a flat framework, one side of which defines a first plane and onto which studs or projections (33) are provided on the other side whose far ends define a second plane.

4. Device (1) according to one or several of the preceding claims, **characterised in that** the distance between parallel planes is equal to the aimed width of the joint.

5. Device (1) according to one or several of the preceding claims, **characterised in that** an open structure wall is provided with one or several laterally protruding lips (37) which are directed or comprise at least a part which is essentially perpendicular to the parallel planes defined by the wall structure and thus can engage to the stretch and/or the head of the underlying and/or of the overlying and/or adjacent brick.

6. Device according to claim 5, **characterised in that** the lips (37) are provided with preformed breaks.

7. Device (1) according to claim 1, **characterised in that** the open structure walls mainly consist of two flat frameworks (17 and 18) which are mutually connected by transverse connecting rods (21, 22) or the like.

8. Method for bricklaying a wall (2), **characterised in that** it consists of the following steps:

   offering a device (1) according to claim 1;
   positioning the device (1) on the underlying brick layer (3) and against the last laid brick (7) whereby the wall structure (17) with the largest linear measure comes to lie flat and horizontally on the top side (8,9) of the underlying brick layer (3), and the wall structure (18) with the smaller linear measure will abut flat and vertically against the last laid brick (7) of the overlying brick layer (4); providing binding agent on the head and lower surface of the brick to be laid; positioning this brick inside the laterally protruding lips (37) of the device (1); pressing this brick until it abuts laterally as well as from the bottom against all the studs or projections (33) of the device (1) and there are no open spaces left between adjacent bricks themselves; letting the binding agent cure; and finally breaking off the laterally protruding lips (37) .

9. Wall (2) or the like formed of bricks or blocks which are laid in a specific brickwork bond on and against one another with mortar, glue or another binding agent, **characterised in that** it comprises a device (1) between the bricks or blocks comprising two open structure walls directed essentially perpendicular to one another, whereby each open structure wall itself defines two parallel planes provided at a certain distance from one another, and **in that** this device is entirely embedded in the binding agent.

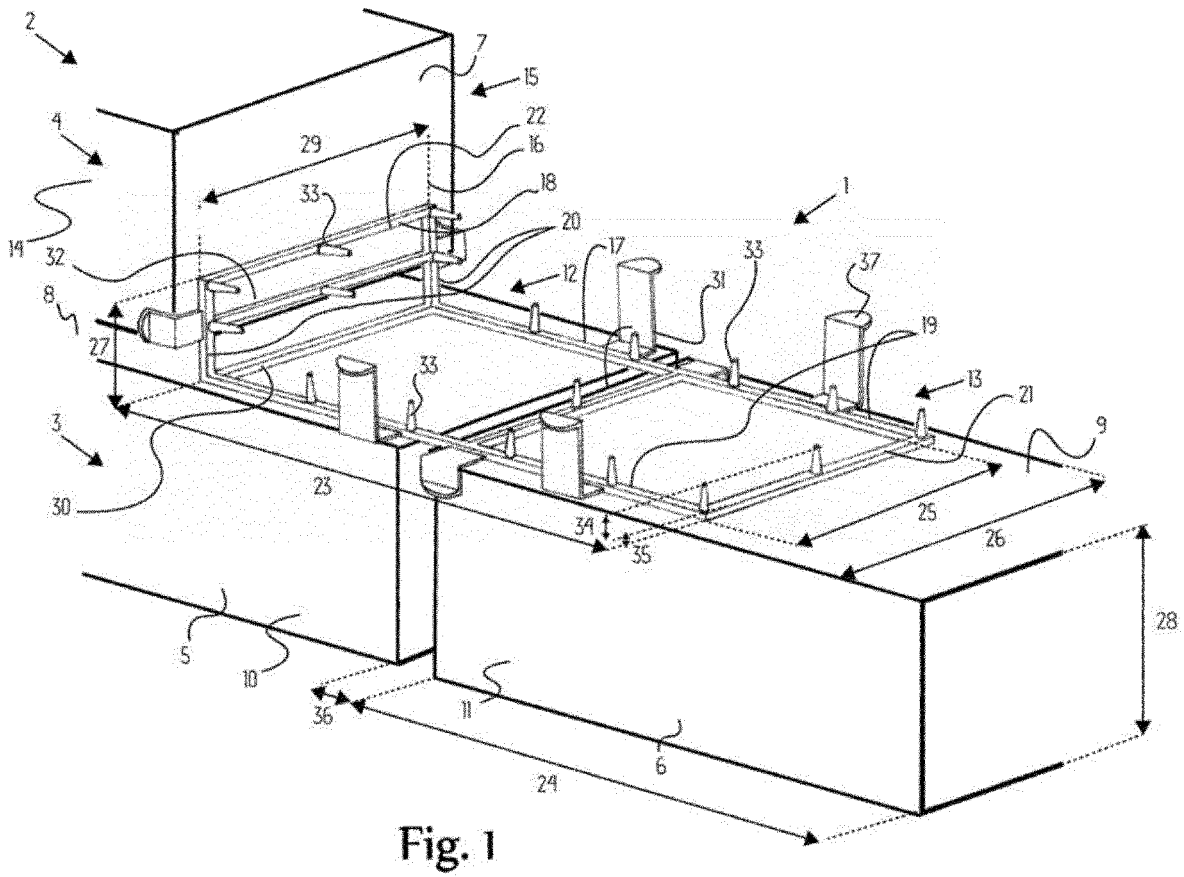
2
7
15
4
22
29
16
18
1
33
20
14
32
17
33
37
12
31
8
19
27
13
21
33
3
9
30
23
25
26
34
35
28
5
10
36
11
6
24

Fig. 1

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 14 16 8221

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	DE 197 33 793 A1 (REIMANN KLAUS [DE]) 20 May 1999 (1999-05-20) * column 4, line 18 - line 40; claim 1; figures 1,2,7 *	1-4,7-9 5,6	INV. E04B2/02
Y	US 2008/302046 A1 (BURGESS WILLIAM J [US]) 11 December 2008 (2008-12-11) * paragraph [0012]; figures 1A-D, 2A-D, 3A-D *	5,6	
X	US 3 902 296 A (THOMAS ROBERT EDMUND BAILEY) 2 September 1975 (1975-09-02) * figure 8 *	1	
			TECHNICAL FIELDS SEARCHED (IPC) E04B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 August 2014	Mysliwetz, Wolfgang

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 16 8221

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.

11-08-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19733793 A1	20-05-1999	NONE	
US 2008302046 A1	11-12-2008	NONE	
US 3902296 A	02-09-1975	AU 472200 B2	20-05-1976
		AU 7012074 A	18-12-1975
		CA 1017591 A1	20-09-1977
		GB 1474266 A	18-05-1977
		JP S547133 B2	04-04-1979
		JP S5035919 A	04-04-1975
		US 3902296 A	02-09-1975

EPO FORM P0459

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