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

(11) **EP 3 540 308 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.09.2019 Bulletin 2019/38

(51) Int Cl.:
F21V 33/00 *(2006.01)*

(21) Application number: **18212763.9**

(22) Date of filing: **14.12.2018**

(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
Designated Validation States:
KH MA MD TN

(30) Priority: **14.03.2018 IT 201800003553**

(71) Applicant: **Simes S.p.A.**
25040 Nigoline di Corte Franca, Brescisa (IT)

(72) Inventor: **BOTTI, Roberto**
I-25040 Corte Franca, BRESCIA (IT)

(74) Representative: **Chimini, Francesco**
Jacobacci & Partners S.p.A.
Piazza della Vittoria 11
25122 Brescia (IT)

(54) **ASSEMBLY AND METHOD FOR MAKING A LAMP INCORPORATED IN A WALL OR WALL CALDDING**

(57) An assembly for making a lamp incorporated into a wall of perforated bricks or blocks, or into a panel cladding of a wall, comprising a front body (10) wherein is made a light emission cavity, a lamp housing (18) that forms a lamp seat (182) suitable to house a lamp body (8), and a rear body (20) forming a housing seat (22) suitable to receive with shape-coupling the lamp housing protruding from the rear of the front body (10). The rear body (20) is suitable to be coupled to the front body (10) so as to form a monobloc panel (30) substantially parallelepiped in shape which completely incorporates the lamp housing and which is suitable to be inserted and fixed between the bricks, blocks or panels forming the wall or a cladding of the wall.

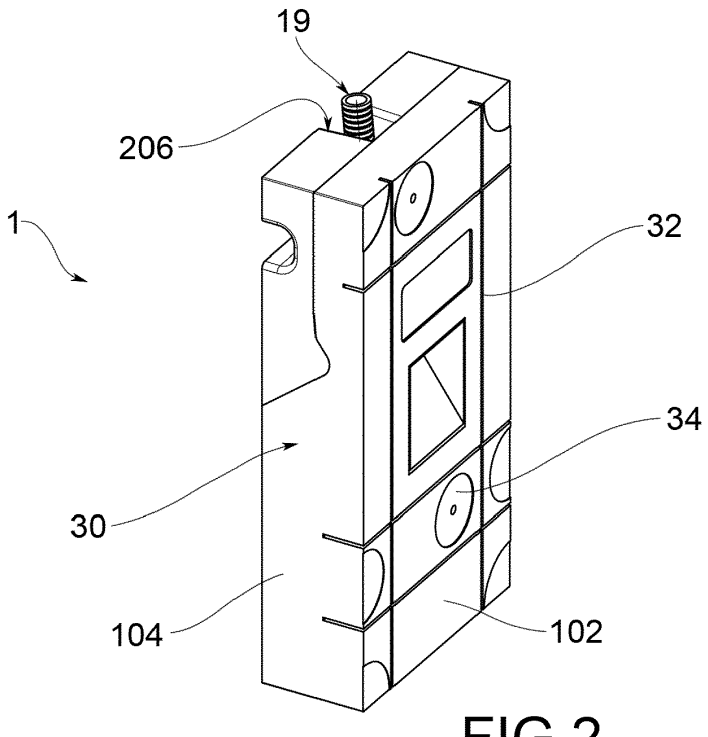

FIG.2

EP 3 540 308 A1

Description

[0001] The present invention concerns an assembly and a method for making a lamp incorporated in a wall or in a wall cladding, in particular in a polystyrene insulation wall cladding, or in a wall made of perforated bricks or blocks of other heat-insulating and/or sound-absorbing materials.

[0002] Recessed lamps are already well known, i.e. those having the housing that houses the light source placed in a seat obtained in a wall or extending inside a cavity made from a plasterboard panel.

[0003] A gap is usually made in the wall and, after positioning the lamp, the wall is restored, taking care to connect the visible surface of the wall to the edge of the lamp that delimits the emission opening of the light beam.

[0004] Even though maximum care is taken in restoring the wall around the lamp, an attentive eye will always note the difference between the original wall and the portion reconstructed around the lamp.

[0005] Sometimes, to hide the connection area between the reconstructed wall and the lamp, large frames are used around the emission opening of the light beam.

[0006] In the case of installation in a masonry wall, in order to overcome such drawbacks, in a previous patent application with publication number WO 2017/081653 A1, in the name of the same applicant, an assembly and a method for making a lamp incorporated in a masonry wall, for example a load-bearing wall made of reinforced concrete, have been proposed. Such an assembly comprises a lamp housing which delimits a lamp seat suitable for housing a lamp body and which is intended to be incorporated within the masonry wall, and a mold suitable to be removably fixed to the lamp housing and having a front opening suitable to be placed in contact with the inner side of a formwork. After casting the cement into the formwork, the mold forms a light emission cavity, which is suitable to rigidly support the lamp housing before and during casting of the cement and is provided with mold fixing means suitable to removably fix the mold to the inner side of the formwork.

[0007] The object of the present invention is to propose an assembly and a method for obtaining a lamp inside a wall made of perforated bricks, blocks of another material or in an outer coating of the wall, in particular an insulation layer made of polystyrene panels.

[0008] Another object of the invention is to propose an assembly and a method that allow even a non-specialized operator, such as the mason himself, to incorporate a lamp into a wall cladding, such as an insulation layer, quickly, safely and, at the same time, very precisely.

[0009] Said objects are achieved with an assembly according to claim 1 and with a method according to claim 10. The dependent claims describe preferred embodiments of the invention.

[0010] The features and advantages of the assembly of the method according to the invention will, in any case, become evident from the following description of their preferred examples of embodiment, provided by way of indicative and non-limiting examples, with reference to the accompanying figures, wherein:

- figure 1 is a perspective view in separate parts of the assembly according to the invention, in one embodiment;
- figure 2 is a perspective view of the assembled assembly;
- figures 3 and 3a are a front view and a side view of the assembly;
- figure 3b is an axial section of the assembly, assembled and provided with a lamp body;
- figure 4 shows a portion of the wall with a cladding insulation layer and lamp incorporated in the insulation layer by means of an assembly in the preceding figures;
- figure 5 is a perspective view in separate parts of the assembly according to the invention, in a variant embodiment;
- figure 6 is a perspective view of the assembly in figure 5 assembled;
- figures 7 and 7a are a front view and a side view of the assembly in figure 6;
- figure 8 shows a wall portion made of perforated bricks and a lamp incorporated in the wall by means of an assembly in figures 5-7; and
- figure 9 shows a wall portion made of heat-insulating and/or sound-absorbing blocks and a lamp incorporated in the wall by means of an assembly in figures 5-7.

[0011] In the rest of the description, elements common to the different embodiments, or equivalent to each other, will be indicated at the same reference numbers.

[0012] Moreover, unless otherwise specified, features described with reference to one embodiment may also be employed in other embodiments.

[0013] In the description below, the terms 'front' and 'rear' are used to refer to the wall, or a wall cladding thereof, which has a front side, facing outwards, and a rear side, opposite to the front side.

[0014] Figures 1-4 illustrate an assembly 1 to make a lamp incorporated in an insulation layer 2 of a wall cladding 3, consisting of polystyrene panels 4.

[0015] The assembly 1 comprises a front body 10 wherein a light emission cavity 12 is obtained.

[0016] The light emission cavity 12 extends from a rear body opening 14 to a front body opening 16. For example, the light emission cavity 12 is delimited by a substantially flat top wall 12' and a lower wall 12" inclined so that the light is emitted from the cavity 12 illuminating such inclined lower wall 12".

[0017] The front body 10 forms a substantially flat front surface 102 extending around the front body opening 16.

[0018] Moreover, the front body 10 forms two side walls 104 that define the thickness of the front body 10.

[0019] The assembly 1 comprises a lamp housing 18

which forms internally a lamp seat 182 suitable to house a lamp body 8 (figure 3b).

[0020] The lamp housing 18 delimits a rear housing opening 184 for the passage of the power supply cables of the lamp body and a front housing opening 186, for the emission of the light beam generated by the lamp body 8.

[0021] For example, the front housing opening 186 is closed by an optical element 82.

[0022] In one embodiment, the rear housing opening 184 is suitable for the passage of a corrugated tube 19 that carries the power cables.

[0023] The front housing opening 186 is suitable to face or be partially inserted into the rear body opening 14.

[0024] The assembly 1 further comprises a rear body 20 forming a housing seat 22 suitable to receive with shape-coupling the lamp housing 18 protruding from the rear of the front body 10.

[0025] The rear body 20 is suitable to be coupled to the front body 10 so as to form a monobloc panel 30 substantially parallelepiped in shape which completely incorporates the lamp housing 18.

[0026] This monobloc panel 30 is suitable to be inserted and fixed in a corresponding volume formed between panels or blocks that form the cladding of the wall.

[0027] In addition, the front surface 102 is suitable to receive a finishing layer 5 of the wall cladding.

[0028] In the example of figures 1-4, the monobloc panel 30 has at least the same thickness, preferably the same dimensions, as the polystyrene panels 4 and is used to replace one of these panels, as shown in figure 4.

[0029] Preferably, the front 10 and rear 20 bodies are also made of polystyrene, so that the assembly 1, in addition to obtaining the lamp incorporated in the insulation, also performs the function of thermal insulation like the other panels 4.

[0030] In one embodiment, in the front body 10, precut incisions 32 are made, which may be used to resize the front body 10 according to the dimensions of the polystyrene panels between which the monobloc panel 30 is to be inserted.

[0031] In addition, in one embodiment, on the front surface 102 of the front body 10, reference marks 34 are made for the application of bolts 35 for fastening the monobloc panel 30 to the wall 3. The reference marks 34 are positioned in such a way that the bolts pass through the monobloc panel 30 in areas where the optical, electrical and mechanical elements of the assembly 1 are not present.

[0032] In one embodiment, the rear body 20 is equipped with coupling pins 36 that fit into corresponding coupling holes made in a rear wall of the front body 10.

[0033] In one embodiment, the front body 10 forms, in an upper portion thereof, a rear cutout 38 that is filled by the rear body 20.

[0034] In one embodiment, such rear cutout 38 is delimited below by an inclined support wall 40 wherein the light emission cavity 12 leads, forming the rear body opening 14.

[0035] Correspondingly, the rear body 20 has a lower wall 202 inclined to complement the inclined support wall 40 and suitable to rest on such inclined support wall 40.

[0036] In the rear body 20 there are, moreover, one or more recesses 204, 206, for example in the vertical and/or lateral direction, for passing and guiding the power cables, preferably inserted in the corrugated tube 19.

[0037] In one embodiment, the lamp housing 18 is provided, in a front portion thereof, with a perimeter flange 188 adapted to abut against the inclined support wall 40 of the front body 10, which delimits the rear body opening 14.

[0038] In one embodiment, between the perimeter flange 188 and the inclined support wall 40 there is interposed an annular plate 42 made of metallic material, for example steel. Especially in the case of a polystyrene front body 10, the annular plate 42 serves as a reference and protection for supporting the lamp housing 18. While assembling the assembly 1, in effect, if the lamp housing 18 is pressed too hard against the inclined support wall 40, the latter could yield, compromising the perfect alignment between the lamp body 8 and the light emission cavity 12.

[0039] In one embodiment, illustrated in figures 5-7 but also applicable to the assembly 1 described above, the front body opening 16 is delimited by an opening edge 44 protruding relative to the front surface 102 which receives the finishing layer 5. The height of this opening edge 44 is substantially equal to the thickness of the finishing layer 5 so that the front opening 16 lies in an opening plane coplanar to the outer surface of the finishing layer 5.

[0040] This contrivance allows the desired effect of perfect coplanarity to be obtained between the outer surface of the finishing layer 5 and the edge that delimits the front body opening 16, highlighted on the left side of figures 4, 8 and 9, even in the case of a finishing layer of a certain thickness, such as for example in the case of plaster.

[0041] In one embodiment, the opening edge 44 is connected to the front surface 102 by means of an inclined joining surface 46 wherein it is also possible to obtain a Greek key corrugated pattern 48 for adhering to the finishing layer 5.

[0042] Figures 5, 6 and 7 show an assembly 100 that is particularly suitable for use in a perforated brick wall 104 (figure 8) or in blocks 106 made of a heat-insulating and/or sound-absorbing material, for example the cement-based material marketed under the name of Leca®.

[0043] The assembly 100 differs from the assembly 1 described above in that, in the side parts 104 of the front body 10, grooves 108 are made suitable to facilitate the connection with the adjacent bricks or blocks by means of cement.

[0044] Also object of the invention is a method for incorporating a lamp into a wall, or wall cladding, with panels 4, perforated bricks 104 or blocks 106, using an as-

sembly 1, 100 as described above.

[0045] The method provides for laying the cladding panels on the wall or making the wall out of perforated bricks or blocks.

[0046] A space is made in the cladding or wall for the assembly to be inserted.

[0047] The assembly, equipped with a lamp body, is inserted in said space.

[0048] At this point, the assembly may be anchored to the wall or to adjacent panels, bricks or blocks.

[0049] Finally, an outer finishing layer may be applied on the panels, bricks or blocks and on the front surface of the assembly.

[0050] In one embodiment, before the application of the outer finishing layer, a protective cap is inserted into the light emission cavity 12, preferably slightly recessed with respect to the edge that delimits the front opening of the cavity. The protective cap protects the inside of cavity 12, and in particular the lower inclined wall 12", from dirt caused during the application of the finishing layer 5, especially in the case of plaster. After the application of the finishing layer, the protective cap may be removed.

[0051] If it is a question of incorporating the lamp into an insulation layer made of polystyrene panels, the assembly has at least the same depth as the polystyrene panels and the assembly is used in place of a polystyrene panel.

[0052] The assembly is then anchored to the wall using bolts.

[0053] If, on the other hand, a lamp is to be incorporated into a wall made of perforated bricks or thermo-insulating and/or sound-absorbing blocks, a recess is made in the wall having a volume substantially equal to that of the assembly.

[0054] The assembly is then positioned in the recess and fixed to the adjacent bricks or blocks by means of cement.

[0055] In all cases, the lamp is fully incorporated in the cladding or in the wall and the only visible part of it is the light emission cavity, with the outlet opening perfectly aligned with the outer surface of the finishing layer. The wall is perfectly continuous even at the monobloc panel and there is no trace of any joint.

[0056] The assembly is pre-assembled, transported to the construction site and inserted as a single block in the recess made in the wall.

[0057] In the case of an insulation layer made of polystyrene panels, the assembly is made in such a way as to form a polystyrene panel that is usable instead of a traditional panel.

[0058] To the embodiments of the assembly and the method according to the invention, one skilled in the art may, to satisfy contingent needs, make modifications, adaptations and substitutions of some elements with others that are functionally equivalent, without departing from the scope of the following claims. Each of the features described as belonging to a possible embodiment may be implemented independently from the other described embodiments.

Claims

1. Assembly for making a lamp incorporated in a wall of perforated bricks or blocks, or in a panel cladding of a wall, comprising:

   - a front body (10) wherein a light emission cavity (12) is obtained extending from a rear body opening (14) to a front body opening (16);
   - a lamp housing (18) forming a lamp seat (182) suitable to house a lamp body (8) and defining a rear housing opening (184) for the passage of the power supply cables of the lamp body and a front housing opening (186) suitable to face or be partially inserted into the rear body opening (14); and
   - a rear body (20) forming a housing seat (22) suitable to receive with shape-coupling the lamp housing protruding from the rear of the front body (10),

   wherein said rear body (20) is suitable to be coupled to the front body (10) so as to form a monobloc panel (30) substantially parallelepiped in shape which completely incorporates the lamp housing, which is suitable to be inserted and fixed between the bricks, blocks or panels forming the wall or a cladding of the wall, and having a front surface (102) suitable to receive a finishing layer (5) of the wall or cladding of the wall.

2. Assembly according to the preceding claim, wherein the front body (10) and the rear body (20) are made of polystyrene, the monobloc panel (30) having the same depth as polystyrene panels (4) for constructing insulation layers in a manner to be used in place of one of said polystyrene panels.

3. Assembly according to the preceding claim, wherein in the front body (10) pre-cut incisions (32) are made which may be used to resize the front body (10) according to the dimensions of the polystyrene panels between which the monobloc panel is to be inserted.

4. Assembly according to claim 2 or 3, wherein reference marks (34) are made in the front surface of the front body (10) for the application of bolts (35) for fastening the monobloc panel (30) to the wall.

5. Assembly according claim 1 or 2, wherein grooves (108) are made in the side walls (104) of the front body (10) to facilitate fastening the monobloc panel (30) to adjacent perforated bricks or blocks using cement.

6. Assembly according to any one of the preceding claims, wherein the front body opening (16) is delimited by an opening edge (44) protruding with respect to the front surface receiving the finishing layer, the height of said opening edge being substantially equal to the thickness of the finishing layer in such a way that the front opening lies in an opening plane coplanar to the outer surface of the finishing layer.

7. Assembly according to claim 6, wherein the opening edge (44) is joined to the front surface (102) by means of an inclined joining surface (46) wherein is made a Greek key corrugated pattern (48) for adhering to the finishing layer.

8. Assembly according to any one of the preceding claims, wherein the lamp housing (18) is provided, in a front portion thereof, with a perimeter flange (188) adapted to abut against an inclined support wall (40) of the front body, which delimits the rear body opening (14) .

9. Assembly according to the preceding claim, comprising an annular plate (42) made of a metallic material suitable to be interposed between said perimeter flange and said inclined support wall of the front body.

10. Method for incorporating a lamp into a wall made of perforated bricks or blocks, or in a paneling of a wall, by means of an assembly according to any one of the preceding claims, comprising the steps of:

    a) laying the panels on the wall or constructing the wall of perforated bricks or blocks;
    b) obtaining, between said panels, perforated bricks or blocks, a space for inserting the assembly;
    c) positioning the assembly provided with a lamp body in said space;
    d) fixing the assembly to the wall, or to the panels, or to the adjacent bricks or blocks;
    e) applying an outer finishing layer on the panels, bricks or blocks and on the front surface of the assembly.

11. Method according to the preceding claim, wherein the covering is an insulation layer formed of polystyrene panels, the assembly having at least the same depth as said polystyrene panels, and wherein:

    - steps b) and c) consist of using the assembly in place of a polystyrene panel;
    - step d) comprises fastening the assembly to the wall by means of fastening bolts.

12. Method according to claim 10, wherein

    - step b) comprises making a recess in a wall made of perforated bricks or blocks, the recess having a volume substantially equal to that of the assembly;
    - step d) comprises anchoring the assembly to the adjacent bricks or blocks by using cement.

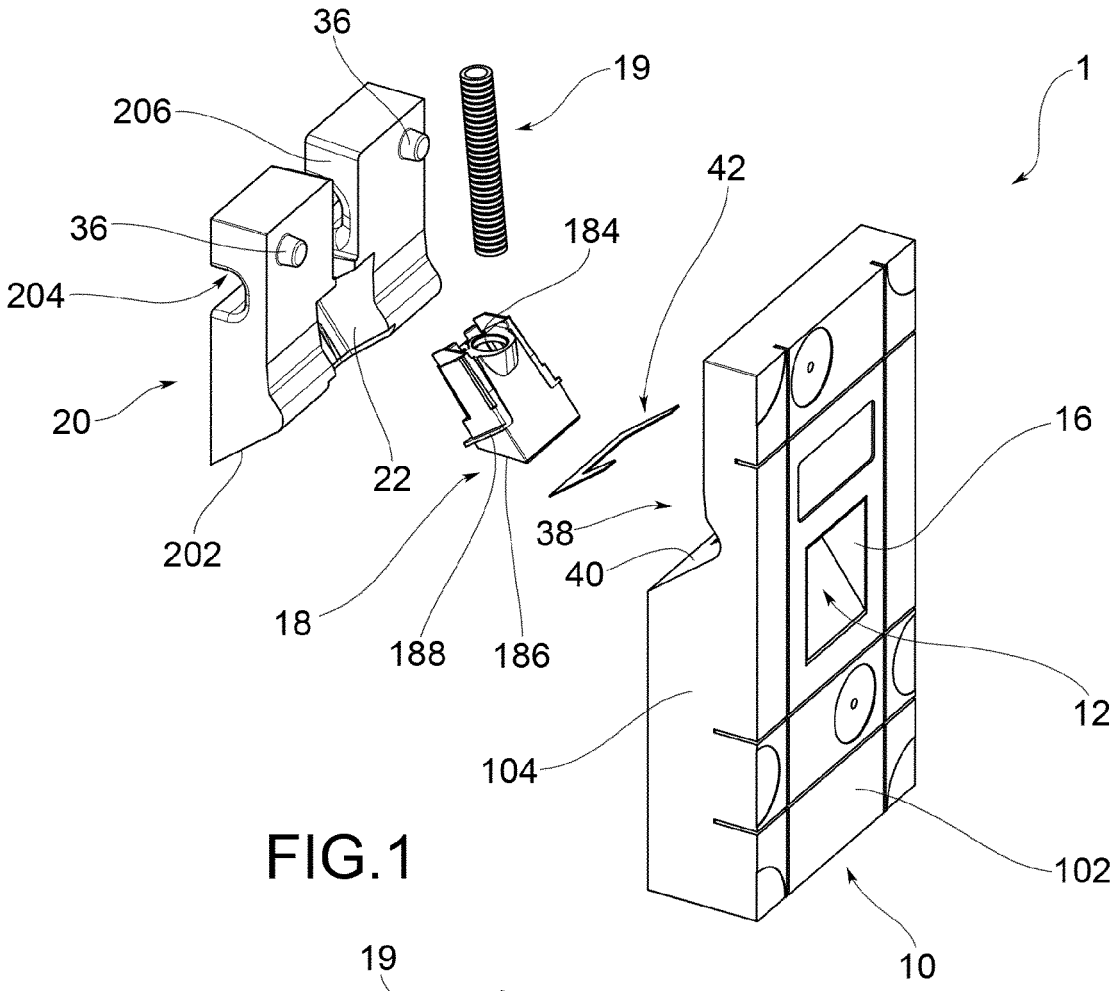
36
19
1
206
42
36
184
204
20
16
22
38
202
40
18
188
186
12
104
102
10

FIG.1

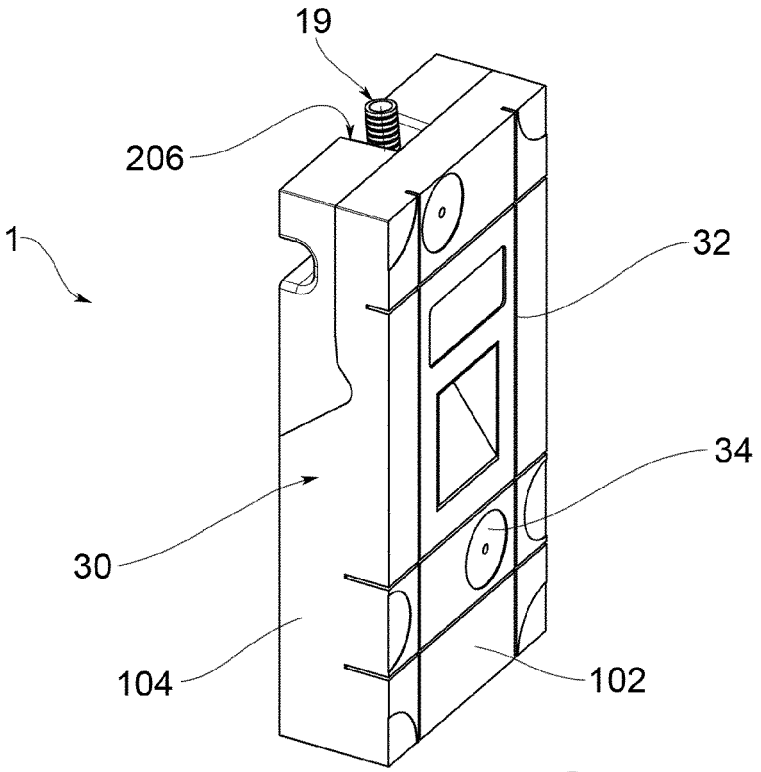
19
206
1
32
34
30
104
102

FIG.2

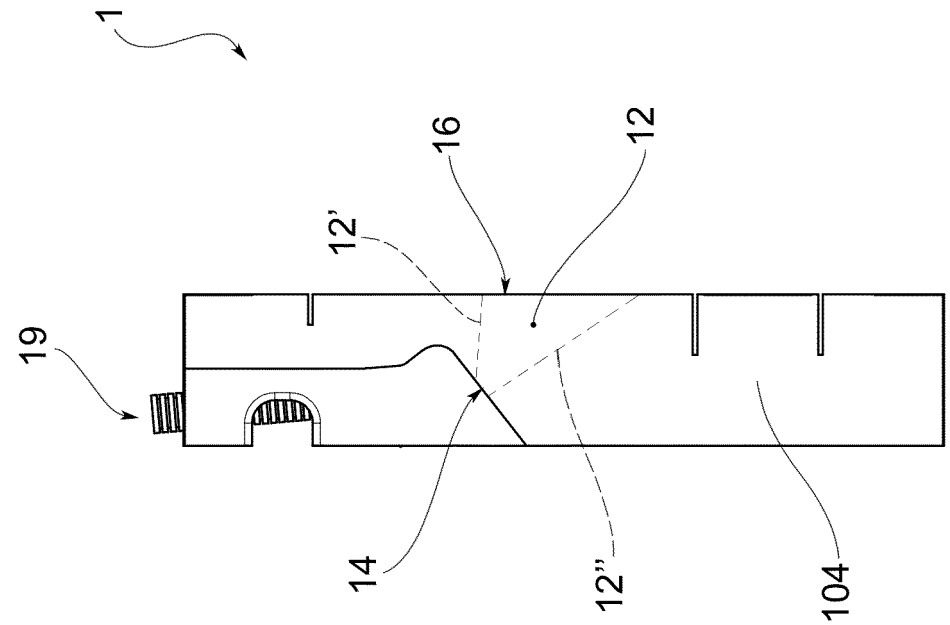

FIG.3a

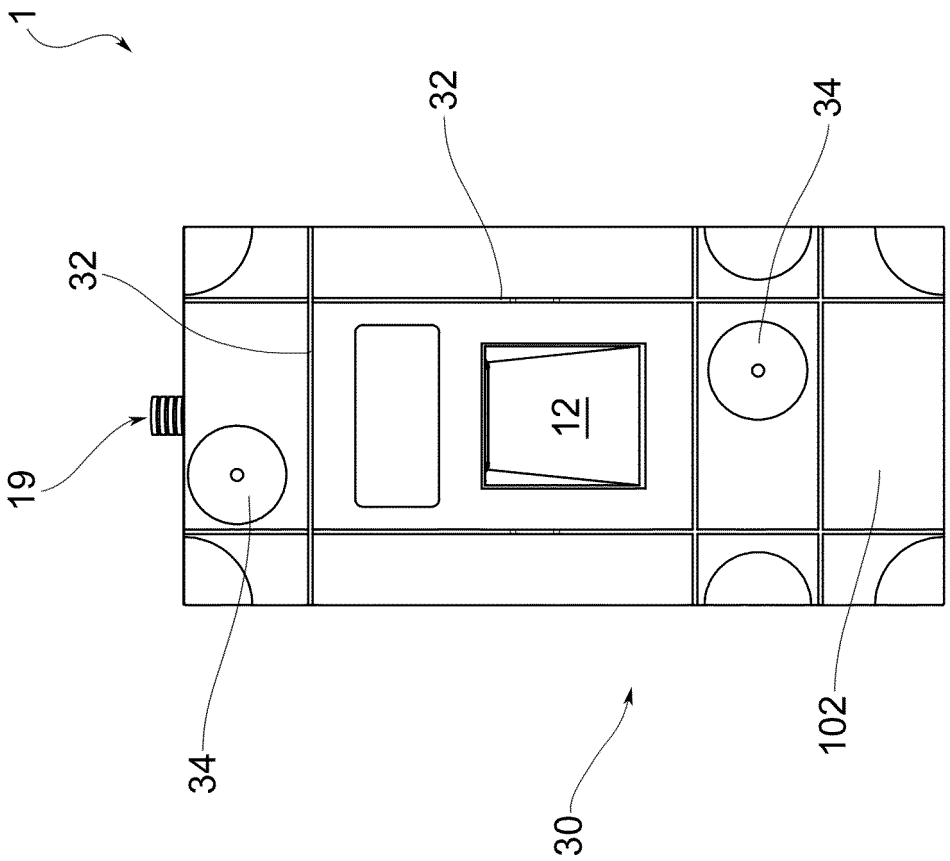

FIG.3

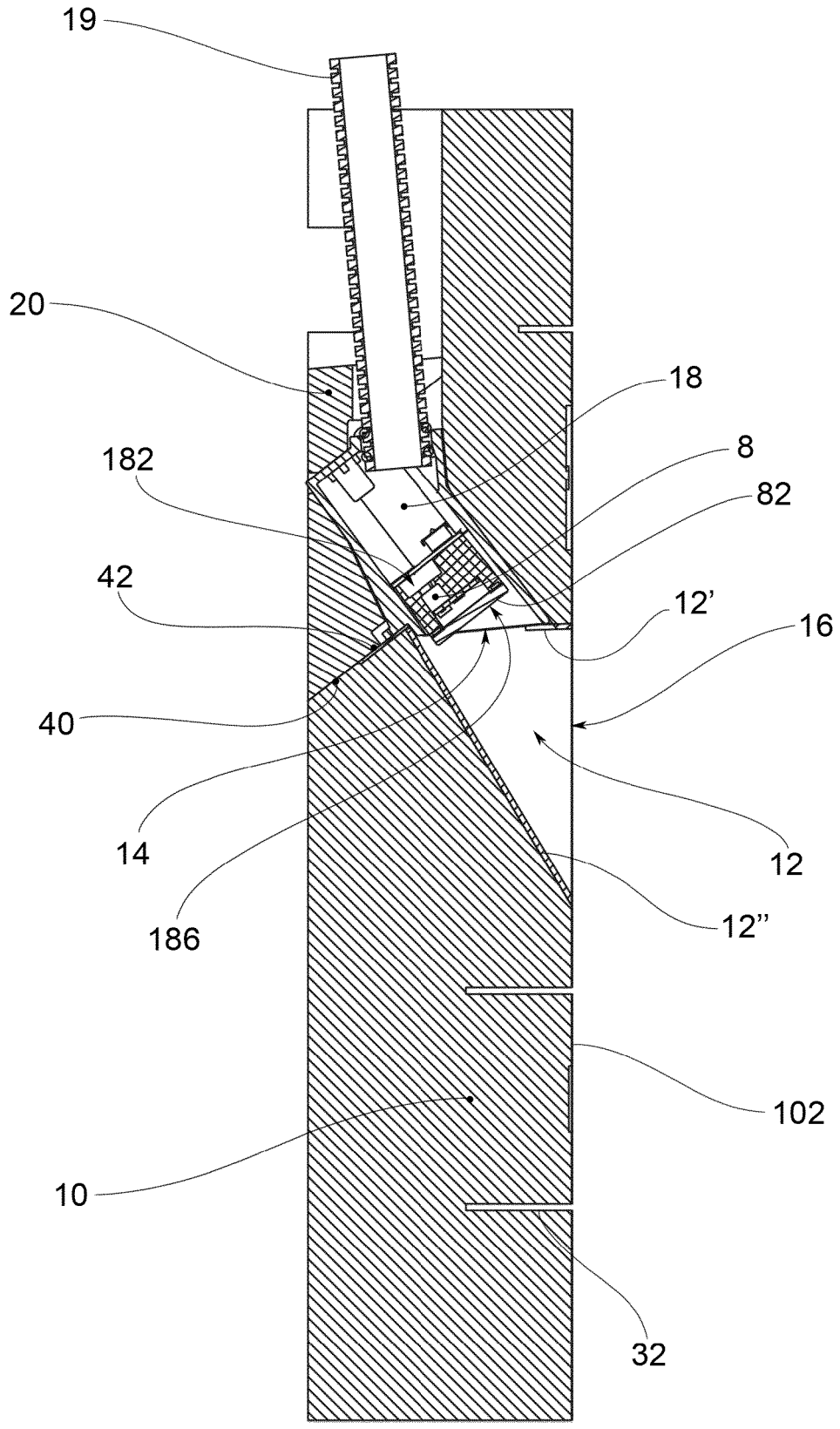

FIG.3b

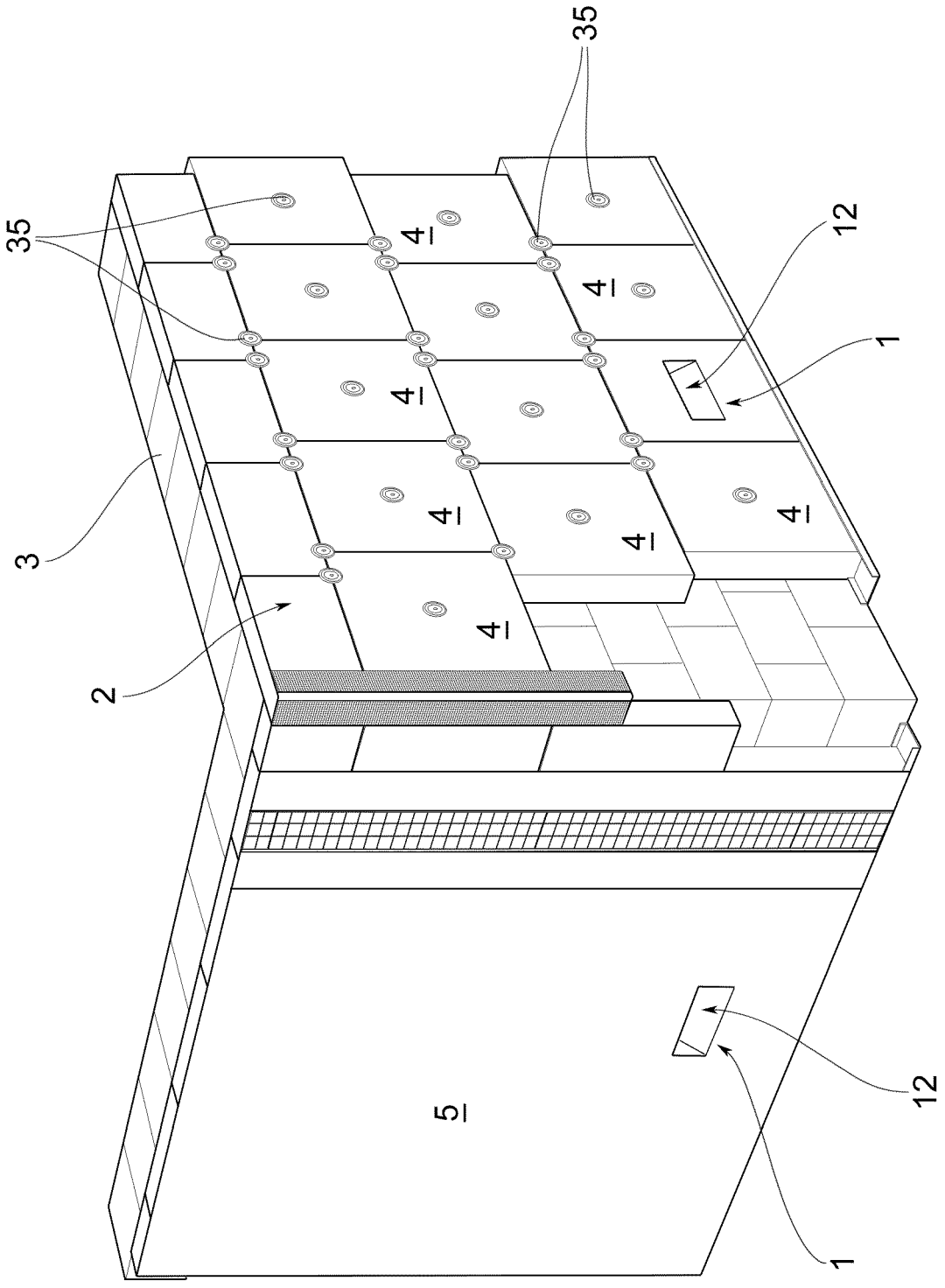

FIG.4

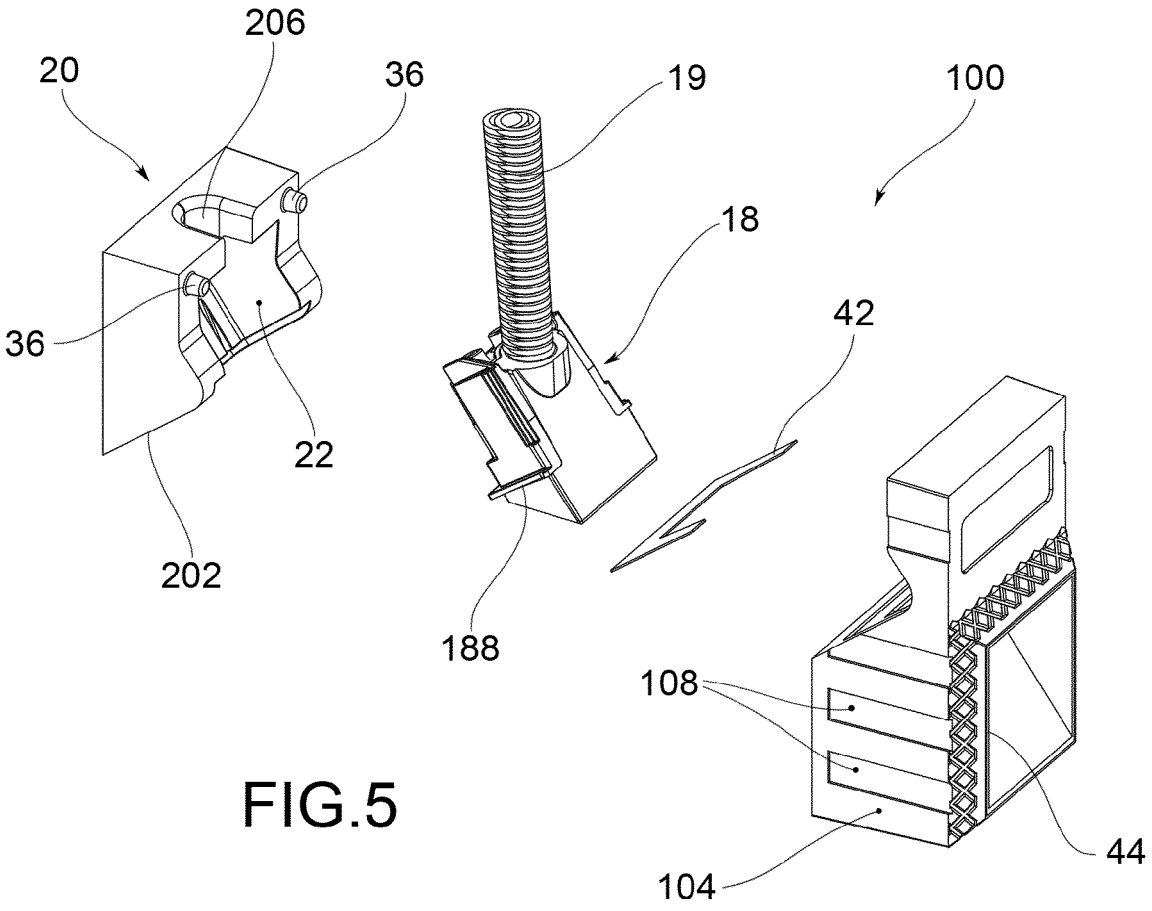
206
20
36
19
100
18
36
42
22
202
188
108
104
44

FIG.5

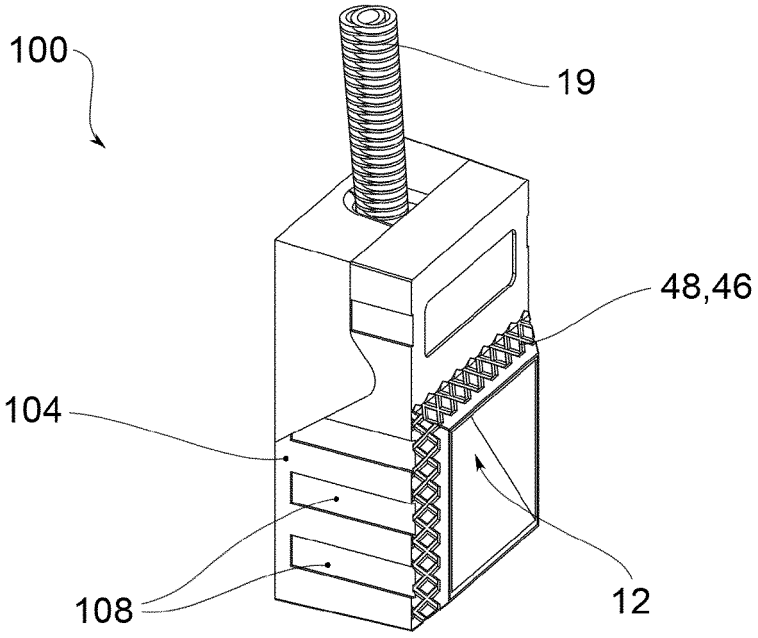
100
19
48,46
104
108
12

FIG.6

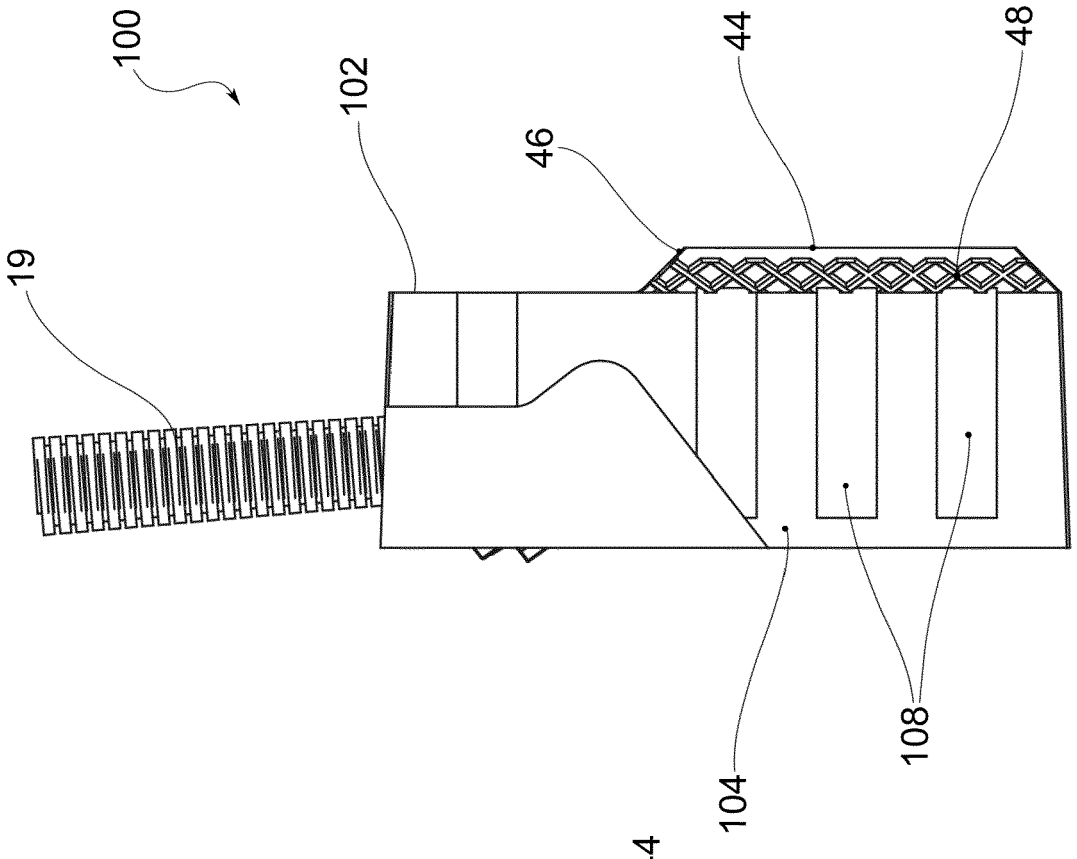

FIG.7a

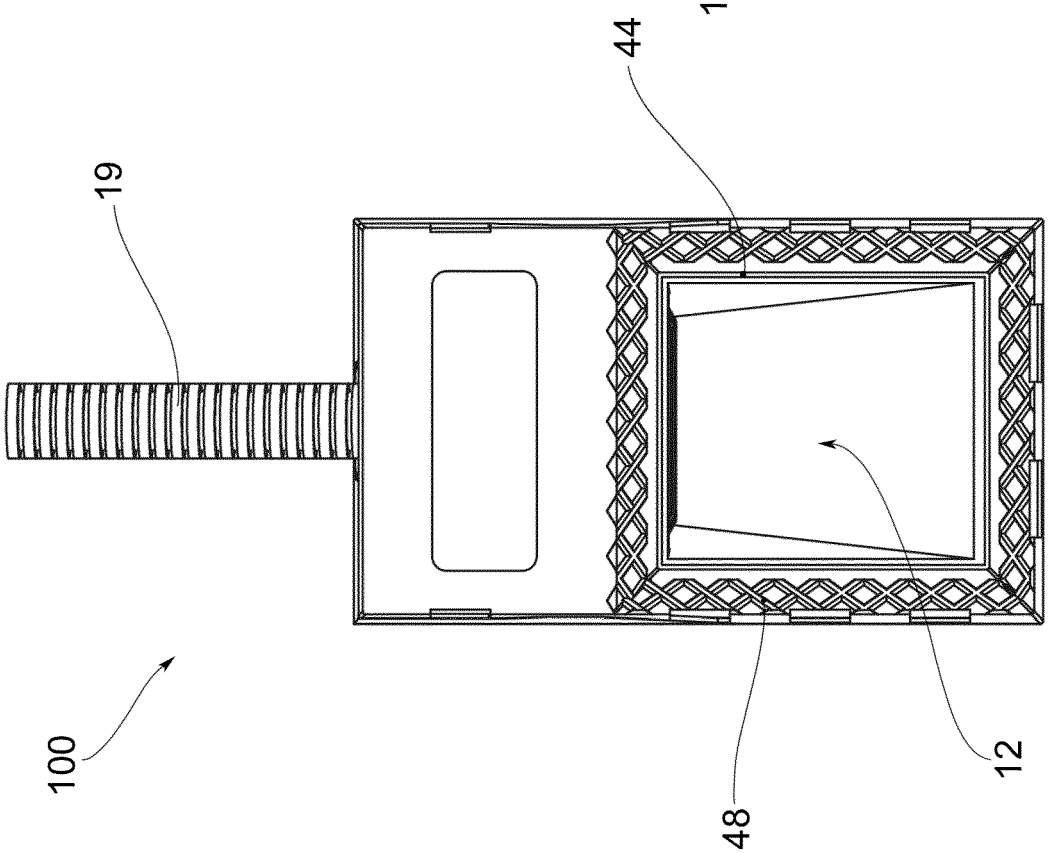

FIG.7

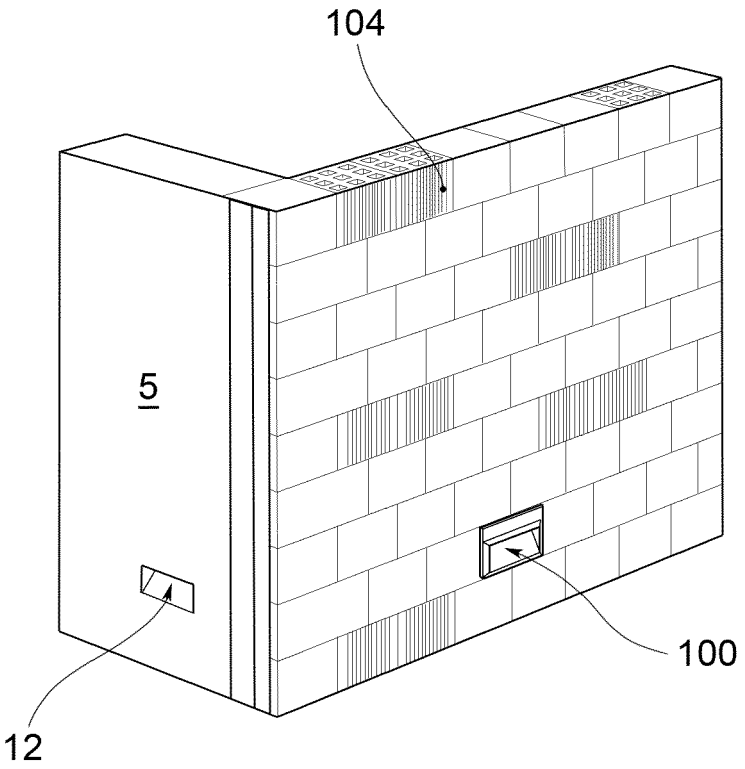

FIG.8

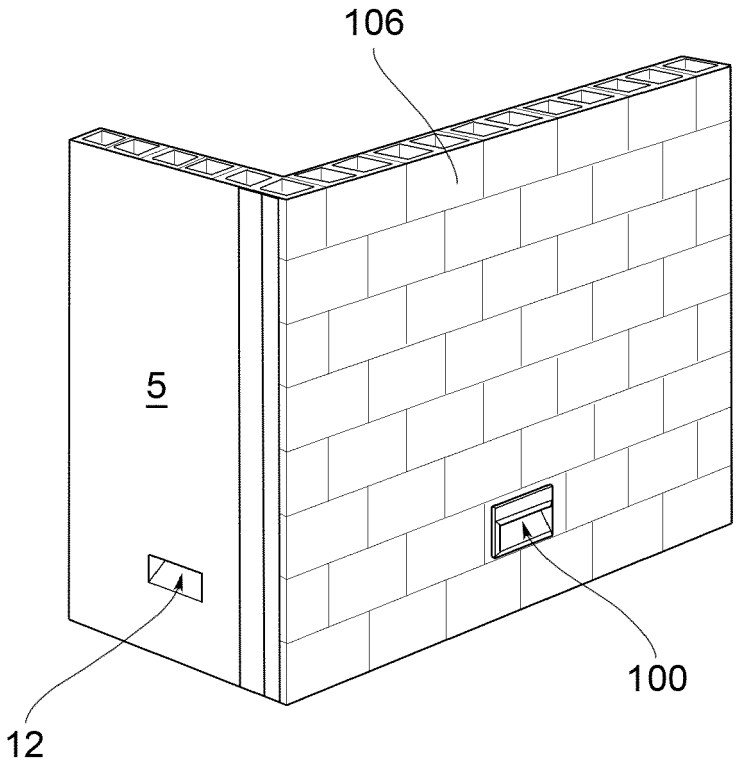

FIG.9

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 21 2763

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	US 2006/291196 A1 (BENAVENTE ROY C [US]) 28 December 2006 (2006-12-28) * figures 1, 2 * * paragraph [0006] - paragraph [0018] *	1,10-12 5	INV. F21V33/00
X	CN 2 837 671 Y (LIGITEK ELECTRONICS CO LTD [CN]) 15 November 2006 (2006-11-15) * figures 1-7 *	1,4, 10-12	
Y	CN 205 502 357 U (SHANGHAI DIDONG ARCH DESIGN CO LTD) 24 August 2016 (2016-08-24) * figures 1, 2 *	5	
A	EP 2 375 151 A2 (HIERZER ANDREAS [AT]) 12 October 2011 (2011-10-12) * figure 3 *	1-12	
A	CN 204 662 207 U (HUIZHOU LVHU GARDENING ENGINEERING CO LTD) 23 September 2015 (2015-09-23) * figures 1-4 *	1-12	
A,D	WO 2017/081653 A1 (SIMES [IT]) 18 May 2017 (2017-05-18) * the whole document *	1-12	TECHNICAL FIELDS SEARCHED (IPC) F21V F21S F21Y
A	US 2009/116251 A1 (HARBERS GERARD [US] ET AL) 7 May 2009 (2009-05-07) * the whole document *	8	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 July 2019	Sacepe, Nicolas

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 18 21 2763

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.

12-07-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006291196 A1	28-12-2006	NONE	
CN 2837671 Y	15-11-2006	NONE	
CN 205502357 U	24-08-2016	NONE	
EP 2375151 A2	12-10-2011	AT 509687 A1	15-10-2011
		EP 2375151 A2	12-10-2011
CN 204662207 U	23-09-2015	NONE	
WO 2017081653 A1	18-05-2017	EP 3374694 A1	19-09-2018
		JP 2019503029 A	31-01-2019
		WO 2017081653 A1	18-05-2017
US 2009116251 A1	07-05-2009	BR PI0817352 A2	31-03-2015
		CA 2703796 A1	14-05-2009
		CN 101842630 A	22-09-2010
		EP 2215400 A1	11-08-2010
		EP 2679880 A1	01-01-2014
		JP 2011503786 A	27-01-2011
		JP 2014067729 A	17-04-2014
		KR 20100093535 A	25-08-2010
		TW 200928192 A	01-07-2009
		US 2009116251 A1	07-05-2009
		US 2013135860 A1	30-05-2013
		WO 2009061650 A1	14-05-2009

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

- WO 2017081653 A1 **[0006]**