



INSTRUCTIONS

(a) If Convention application insert "Convention"

(a) CONVENTION

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(b) Delete one

APPLICATION FOR A (b) STANDARD/~~PETTY~~ PATENT

(c) Insert FULL name(s) of applicant(s)

I/We (c)

FISCHBACH GMBH & CO. KG

(d) Insert FULL address(es) of applicant(s)

of (d)

of Postfach 1760,
D-5908 Neunkirchen
FEDERAL REPUBLIC OF GERMANY

613019

(e) Delete one

hereby apply for the grant of a (e) Standard/~~Petty~~ Patent for an invention entitled

(f) Insert TITLE of invention

(f) Partition element for insertion into the side openings of a housing frame, constructed from special cross-section bars

(g) Insert "complete" or "provisional" or "petty patent"

which is described in the accompanying (g) complete specification.

(Note: The following applies only to Convention applications)

Details of basic application(s)

(h) Insert number, country and filing date for the/or each basic application

(h)

Application No.	Country	Filing Date
P 37 07 916.6	German Federal Republic	12 March 1987

Address for Service:

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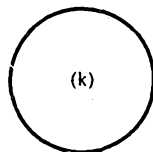
(i) Insert date of signing

Dated (i) 19 DECEMBER, 1990

(j) Signature of applicant(s) (For body corporate see headnote*)

(j) PHILLIPS ORMONDE & FITZPATRICK
Attorneys For:
FISCHBACH GMBH & CO. KG

(k) Corporate seal if any



Note: No legalization or other witness required

023084 211290 David B Fitzpatrick

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DECLARATION FOR A PATENT APPLICATION

INSTRUCTIONS

- (a) Insert "Convention" if applicable
(b) Insert FULL name(s) of applicant(s)

In support of the (a) convention application made by (b)

Fischbach GmbH & Co. KG

- (c) Insert "of addition" if applicable
(d) Insert TITLE of invention

(hereinafter called "applicant(s) for a patent (c) for an invention entitled (d)

PARTITION ELEMENT FOR INSERTION INTO THE SIDE OPENINGS OF A HOUSING FRAME, CONSTRUCTED FROM SPECIAL CROSS-SECTION BARS

- (e) Insert FULL name(s) AND address(es) of declarant(s) (See headnote*)

I/We (e) Rainer Fischbach of Postfach 1760, D-5908 Neunkirchen, FEDERAL REPUBLIC OF GERMANY

do solemnly and sincerely declare as follows:

1. I am/We are the applicant(s) (or, in the case of an application by a body corporate)
1. I am/We are authorized to make this declaration on behalf of the applicant(s).
2. ~~XXXXXX~~ (or, where the applicant(s) is/are not the actual inventor(s))
2. (f) Alfred Berscheid, Oberstr. 6, D-5561 Niederkail, Dipl.-Ing. Willy Burger: Blumenberg 13, D-5521 Friesenhagen Robert Gies: Am Palastgarten 6, D-5500 Trier all respectively in Federal Republic of Germany

is/are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are entitled to make the application are as follows:

(g)

Applicant is the assignee of the inventors in respect of the invention.

(Note: Paragraphs 3 and 4 apply only to Convention applications)

3. The basic application(s) for patent or similar protection on which the application is based is/are identified by country, filing date, and basic applicant(s) as follows:

(h)

GERMAN FEDERAL REPUBLIC
12th march, 1987
FISCHBACH GMBH & CO.KG

4. The basic application(s) referred to in paragraph 3 hereof was/were the first application(s) made in a Convention country in respect of the invention the subject of the application.

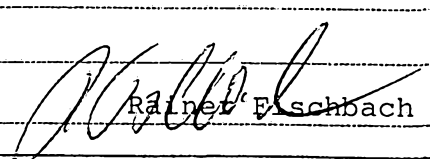
- (k) Insert PLACE of signing

Declared at (k) Neunkirchen

- (l) Insert DATE of signing

Dated (l) 12.09.1990

- (m) Signature(s) of declarant(s)

(m) 
Rainer Fischbach

Note: No legalization or other witness required

To: The Commissioner of Patents

(12) PATENT ABRIDGMENT (11) Document No. AU-B-13007/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 613019

(54) Title
**PARTITION ELEMENT FOR INSERTION INTO THE SIDE OPENINGS OF A HOUSING FRAME,
CONSTRUCTED FROM SPECIAL CROSS-SECTION BARS**

International Patent Classification(s)
(51)⁴ **E04B 002/60**

(21) Application No. : **13007/88**

(22) Application Date : **11.03.88**

(30) Priority Data

(31) Number	(32) Date	(33) Country
3707916	12.03.87	DE FEDERAL REPUBLIC OF GERMANY

(43) Publication Date : **15.09.88**

(44) Publication Date of Accepted Application : **25.07.91**

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(56) Prior Art Documents
DE 2731328
US 3392497
AU 72870/81 E04B 1/54

(57) Claim

1. A partition element for insertion into the side openings of a housing frame, whose side openings for the support of the partition element are each bordered by a continuous bearing flange which can be grasped from the back, said partition element having an external plate and an internal plate which are separated by a space filled with insulating material, said partition element being provided with locking mechanisms near its edges by which the partition element is lockable with the housing frame, characterized in that the partition element along its outer periphery consists of special cross-section bars which are adjacent to each other, and have on their sides parallel to the sides of the partition element flat surfaces, so that the external plate and the internal plate, both smoothly formed, are fixed to the flat surfaces of the special cross-section bars and that the locking mechanisms are arranged inside the special cross-section bars and are each provided with a locking bolt which can swing outwards from the narrow side of the partition element.

AUSTRALIA

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613019

COMPLETE SPECIFICATION

(ORIGINAL)

Class

Int. Class

Application Number:

Lodged:

Complete Specification Lodged:

Accepted:

Published:

Priority

Related Art:

APPLICANT'S REF.: 22 006

Name(s) of Applicant(s):

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Complete Specification for the invention entitled:

PARTITION ELEMENT FOR INSERTION INTO THE SIDE OPENINGS OF A HOUSING FRAME,
CONSTRUCTED FROM SPECIAL CROSS-SECTION BARS

The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

Partition element for insertion into the side openings of a housing frame, constructed from special cross-section bars.

The invention refers to a partition element for insertion into
5 the side openings of a housing frame, constructed from special cross-section bars. Such a partition element is basically known from the German utility model 7508449.

In case of the known partition element the locking mechanisms,
10 with which the partition element is connected to the housing frame, protrude through the internal side of the housing of the wall element, ^{which} ~~what is~~ ^{presents} often, a disadvantage. For reasons of cleanliness and hygiene, especially in the field of medicine, smooth internal walls are desired for the housings built from
15 partition elements. The protruding locking mechanisms could have a disadvantageous effect also with regard of flow technology, if the housings are used as channels for a flowing gas. A further disadvantage of the known partition element is in that, that the internal and external wall ^{plates} ~~panels~~ of the partition element must
20 be bent at their edges, thereby making their manufacture expensive.

Further, the achievement of a possibly good thermal and/or acoustic insulation of the interior of the housing from the
25 surroundings is often important. In case of the known partition element bridgings, transferring heat and sound are in existence, which are formed by the locking mechanisms and often through the direct contact between the internal and external sheets of the partition elements.

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~~The invention sets as its task to construct a partition element of the type mentioned in the introduction, which has a continuous smooth internal housing surface and which can be simply manufactured. Further, the partition element should be
35 constructed so, that preferably no well conducting heat and sound connections should be present between the internal and external sides of the partition element.~~



According to the present invention there is provided a partition element for insertion into the side openings of a housing frame, whose side openings for the support of the partition element are each bordered by a continuous bearing flange which can be grasped from the back, said partition element having an external plate and an internal plate which are separated by a space filled with insulating material, said partition element being provided with locking mechanisms near its edges by which the partition element is lockable with the housing frame, characterized in that the partition element along its outer periphery consists of special cross-section bars which are adjacent to each other, and have on their sides parallel to the sides of the partition element flat surfaces, so that the external plate and the internal plate, both smoothly formed, are fixed to the flat surfaces of the special cross-section bars and that the locking mechanisms are arranged inside the special cross-section bars and are each provided with a locking bolt which can swing outwards from the narrow side of the partition element.

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-1b-

~~To solve this task, a partition element in accordance with the~~
generic part of claim 1 is proposed, which in accordance with
the invention has the features named in the characterizing part
of claim 1.

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~~Advantageous developments of the invention are named in sub-~~
~~sequent claims.~~

The invention is explained in detail based on examples of
10 embodiment in the figures. In this

Fig.1 shows a corner section of a housing, which is constructed
with partition elements in accordance with the invention,
in a perspective view,

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Fig.2 shows a top view on the section shown in Fig.1,

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Fig.3 shows a perspective view of a section in cross-section
along the line A-A of Fig.1 at a place where a locking
mechanism is situated,

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Fig.4 shows the cross-section of the first example of
embodiment of a special cross-section bar for a
partition element in accordance with the invention,

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Fig.5 shows the cross-section of the second example of
embodiment of a special cross-section bar for
a partition element in accordance with the invention,

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Fig.6a and 6b show an example of embodiment for the actuating
shaft of a locking mechanism in side view and top view,

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Fig.7a and 7b show an example of embodiment for an attachable
handwheel for a locking mechanism, in side view and top
view.

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Figure 1 shows a corner of a cube or a rectangular shaped housing, which is constructed with partition elements in accordance with the invention. The housing frame consists of housing frame bars with special cross-section 6 three of which, cut at bevel, converge in each corner. These are held together by a corner piece 69, from which three connecting pieces protrude at right angle to each other, onto which the housing frame bars with special cross-section 6 are pushed. The connection between the bar with the special cross-section and the corner piece can be carried out by gluing, bolting or riveting, for example. Each housing frame bar with special cross-section has two bearing flanges 63, arranged at right angles to each other, which can be grasped at the back (see Figs. 2 and 3), which in case of an erected housing frame forms a continuous bearing flange, against which a partition element abuts with a corresponding bearing flange 22.

A partition element is constructed from four special cross-section bars 4 which are cut at bevel and are joined as a square or rectangular shaped frame. The external wall 15 and the internal wall 18 (Fig. 4) of the special cross-section bar show smooth surfaces 7 and 8, respectively, onto which the external ^{plate} ~~panel~~ 2 and the internal ^{plate} ~~panel~~ 3, which as an example may be made of aluminium sheet, are glued by means of a double-sided adhesive tape 9. The adhesive tape is preferably an elastic synthetic material and has a certain thickness of, for example, 0.8mm so, that thermal stresses between the various components of the partition element can be compensated due to the elastic deformation of this layer of adhesive band.

The connection between the four special cross-section bars can be produced exclusively by this adhesive tape. However, in case of large and/or heavily loaded partition elements additional metal angles can be set inside the special cross-section bars at the connecting positions where they border each other.



The space between the two ^{plates} ~~panels~~ 2 and 3 is filled out with insulating material, for example with mineral fibre-wool.

Fig.4 shows an example of ^{an} embodiment of a sectioned special cross-section bar for a partition element. The hollow section contains two intermediate walls 16,17, so that three chambers 11,12,13 are formed. One can recognise both smooth surfaces 7 and 8, respectively, to which the external ^{plate} ~~panel~~ 2 and the internal ^{plate} ~~panel~~ 3, respectively, are glued. The wall 19 of the special cross-section bar, which forms the narrow external side of the partition element, is provided at both its ends with a projection 19a,19b, which form a stop-edge for the to-be-glued ^{plates} ~~panels~~ 2 and 3 and facilitate the adjustment of the ^{plates} ~~panels~~ during the gluing process. The bearing flange 22 is formed by a section protruding at right angles from the wall 19 of the special cross-section bar by which the bearing flange 19 is mechanically stiffened on one hand, and on the other a completely smooth external surface of the partition element is achieved. However, in principle, a simple protruding from the wall 19 of the special cross-section bar wall would suffice as bearing flange. The bearing flange 22 is provided with a groove 23 to accept a seal 24. This seal is constructed preferably as a highly effective double-lip rubber seal, which seals reliably the inside space of the housing for both vacuum and pressure.

The locking mechanism 40 for ~~the~~ fixing ~~of~~ the partition element on the housing frame consists of a locking bolt 41 and an actuating shaft 42 for ~~the~~ turning ~~of~~ the locking bolt. The intermediate walls 16 and 17 of the bar with special cross-section 4 are positioned so, that the leaf-shaped locking bolt 41 is guided between the long side walls of the chamber 12 and is fixed by these in its position at right angle to the plane of the wall element. To retain good guide surfaces for the locking bolt 41, both long walls of the internal chamber 12 are provided with projecting webs 14 which during the milling of the slots 44 are also milled to the exact dimension for the locking bolt.



These webs also serve for good anchoring of the above mentioned possibly used stiffening at the connecting positions of the bordering special cross-section bars, while the stiffening angle is inserted in the chambers 12 of the special cross-section bars.

actuating shaft 42
The, used in the example of embodiment ~~actuating shaft 42~~ for the locking bolt consists of a first cylindrical section 43a (Fig.6a and 6b), a cam-shaped portion 43b and a second cylindrical section 43c. The cam-shaped portion is constructed as a square and fits into the corresponding square hole of the locking bolt 41. The actuating shaft is mounted with its first cylindrical section 43a in the corresponding holes of the external wall 15 and the intermediate wall 16 and with the second cylindrical section 43b in the second intermediate wall 17.

The assembly of the locking mechanism 40 is carried out in such a manner, that a short slot 44 (Fig.4) is milled into the wall 19 of the special cross-section bar, through which the locking bolt is pushed into the chamber 12 from the narrow side of the partition element. Subsequently, the actuating shaft is pushed from the front side of the partition element into the position shown in Fig.3. A falling out of the actuating shaft is prevented by the outer plate 2. The actuating shaft is provided with a preferably square-shaped axial hole or continuous conduit 39 so, that by inserting a square-shaped key from the outside through an opening in the outer ^{plate} ~~panel~~ 2 the locking bolt can be turned so that it swings out through the slot 44 in the special cross-section bar and shifts behind the bearing flange 63 of the housing frame bar with the special cross-section and the partition element pushes strongly with its seal against the bearing flange 63 of the housing frame bar with the special cross-section.



To achieve a high heat transfer resistance at right angle to the plane of the partition element, the special cross-section bars of the partition element can be made of poor heat conducting synthetic material, preferably with glass fibre reinforcement.

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Fig.5 shows in cross section the possible construction of a special cross-section bar in the case when this has to be made of metal, but the heat conductivity at right angle to the plane of the partition element has to be low. The special cross-section bar in this case consists of two bar sections 4a and 4b, the first one of which forms both chambers 11 and 12 to accomodate the locking mechanism. The second bar section is an essentially smooth wall portion 18, which is connected with the first part by two insulating web-walls 20. The web-walls are dovetail shaped at their ends. Another possibility of their construction is to bend them at their ends as it is shown for the insulating web-walls 65 of the housing frame bars with special cross-section in Fig.2.

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On the sides of both bar sections connected by the insulating web-walls there are correspondingly shaped protrusions 26,27 to accomodate the insulating web-walls. Firstly, the relatively narrow protrusion 26 of the extruded bar section is bent to a lesser degree and is pressed against the insulating web-walls after their insertion, resulting in a rigid and solid connection.

30

To actuate the locking mechanism, a permanently mounted actuating member 45 could be provided instead of a square-shaped key, as this is illustrated in Figs.7a and 7b. This actuating member consists of a spindle 47, one end of which is constructed as a slotted square 46, on the tip of which locating lugs 46a are situated. This square is inserted into the square-shaped hole 39 of the actuating shaft 42 and is located with the locating lugs 46a behind the internal face of the actuating shaft 42 so, that the actuating member cannot be removed

35

portion of the spindle 47
once the housing is closed. On the, protruding through the
partition element ~~portion of the spindle 47a~~, star-shaped for
example, handwheel 48 can be put on fixed or rotatably. In the
latter case the ^{portion of the spindle 47} protruding through the partition element ~~portion~~
5 ~~of the spindle 47~~ is constructed of two cylindrical sections
47a, 47b, having different diameters so, that the hand wheel 48
with its correspondingly shaped hole section is fixed in the
axial direction by the smaller diameter. An actuation of the
locking bolt 41 is possible only then, when the hand wheel 48 is
10 connected with the spindle 47 in the direction of rotation. For
this purpose on the face of the top cylindrical section 47a
there is a slot 49 situated, and in the upper part of the bore
in the hand wheel 48 there are two axially running diametrically
opposed grooves 52. By inserting a correspondingly shaped flat
15 key 51 into the slot 49 and the grooves 52, the hand wheel 48
and spindle 47 are connected with each other in the direction of
rotation so that an actuation of the locking mechanism becomes
possible.

20 The above described partition elements can be varied in many
ways within the framework of the claims. For example, the
chamber 13 in Fig. 4 may be omitted and the intermediate wall 17
may take the function of the directed towards the internal side
of the housing external wall 18. A protrusion of the cylindrical
25 section 43c of the actuating shaft 42 from the intermediate wall
17 is not necessary. The second cylindrical section 43c of the
actuating shaft 42 of the locking mechanism can also be omitted
completely.

30 The thickness of a partition element can be, for example, 40 mm
and the span up to 2 to 3 meters. The ^{plates} ~~panels~~ 2, 3 have, for
example, a thickness of 1 mm.

The number of required locking mechanisms per partition element
35 depends from the size of the partition element and the required
quality of the seal.



The claims defining the invention are as follows:

1. A partition element for insertion into the side openings of a housing frame, whose side openings for the support of the partition element are each bordered by a continuous bearing flange which can be grasped from the back, said partition element having an external plate and an internal plate which are separated by a space filled with insulating material, said partition element being provided with locking mechanisms near its edges by which the partition
10 element is lockable with the housing frame, characterized in that the partition element along its outer periphery consists of special cross-section bars which are adjacent to each other, and have on their sides parallel to the sides of the partition element flat surfaces, so that the external plate and the internal plate, both smoothly formed, are fixed to the flat surfaces of the special cross-section bars and that the locking mechanisms are arranged inside the special cross-section bars and are each provided with a locking bolt
20 which can swing outwards from the narrow side of the partition element.
2. A partition element in accordance with claim 1, characterized in that the fixing of the external ^{plate} ~~panel~~ and the internal ^{plate} ~~panel~~ on the flat surfaces is produced by adhesion.
3. A partition element in accordance with claim 2, characterized in that the adhesion is formed by double-sided adhesive tape.
4. A partition element in accordance with any one of the preceeding claims, characterized in that the special
30 cross-section bars are formed as hollow sections with at least two chambers positioned at right angles to the partition element plane, that the locking bolt is arranged in one of these chambers and that in the external wall of the partition element bordering this chamber there is a slot for the protrusion of the locking bolt.
5. A partition element in accordance with any one of the preceeding claims, characterized in that the special cross-section bars are made of synthetic material and contain



three chambers, and that the locking bolt of each of the locking mechanisms is arranged in the middle chamber and is carried by an actuating shaft, which is rotatably mounted in the walls parallel to the plane of the partition element.

6. A partition element in accordance with any one of claims 1 to 4, characterized in that the special cross-section bars consist of a first metal section with two chambers and a basically smooth second metal section, which forms the smooth surface for the fixing of the internal plate and is connected with at least two insulating web-walls with the first section.

7. A partition element in accordance with claim 6, characterized in that the insulating web-walls have dovetailed or angled ends and the adjoining sides of the sections are provided with corresponding protrusions to accomodate the ends of the insulating web-walls,

8. A partition element in accordance with any one of the preceeding claims, characterized in that the surfaces for the support of the partition element are formed on the bearing flange of the housing frame from a bearing flange of each of the special cross-section bars, in which the slots for the locking bolt of each of the special cross-section bars are present, said bearing flange protrudes through the side wall between the slots and the external wall of the special cross-section bars.

9. A partition element in accordance with claim 8, characterized in that the flange is shaped as a closed side chamber of the special cross-section bars.

10. A partition element in accordance with either one of claims 8 or 9, characterized in that the bearing flange is provided with a groove to accomodate the sealing strip.

11. A partition element in accordance with claim 10, characterized in that the sealing strip has two diverging lips to achieve a seal for both pressure and vacuum.

12. A partition element in accordance with any one of the previous claims, characterized in that forming the narrow external side of the partition element wall of the special cross-section bars is provided on one or both ends with



projections for the adjustment of the position of the external ^{plate}~~panel~~ and/or internal ^{plate}~~panel~~.

13. A partition element in accordance with any one of the preceeding claims, characterized in that the actuating shaft for the locking bolt is provided with a suitable cam section, preferably square section, with which the actuating shaft is guided through a correspondingly shaped hole in the locking bolt, that the actuating shaft is mounted at least in the corresponding holes of the walls of the special cross-section bars which form the outer chamber and that the width of the chamber which accommodates the locking bolt is dimensioned at right angle to the plane of the partition element so, that the locking bolt is guided practically without clearance between the walls of this chamber.

14. A partition element in accordance with claim 13, characterized in that the actuating shaft is mounted additionally with a cylindrical end spigot in the wall of the special cross-section bar lying close to the internal side of the partition element.

15. A partition element in accordance with either one of claims 13 or 14, characterized in that the actuating shaft is provided at least on its outward pointing end with a parallel to the axis hole section, preferably a square hole, and that the external ^{plate}~~panel~~ is provided with a hole which provides access from the outside to the mentioned hole section.

16. A partition element in accordance with any one of the preceeding claims, characterized in that into the hole section of the actuating shaft a hand wheel with a corresponding shaft section is solidly inserted, that this shaft section which forms one end of a spindle, whose other end is cylindrical and carries a freely rotatable, fixed in axial direction hand wheel and that the spindle is provided on its external face with a slot and the bore of the hand wheel is provided at least on its external end with one or two diametrically opposed grooves for the insertion of a key for rotatably connecting the hand wheel on the shaft.

17. A partition element in accordance with any one of the preceeding claims, characterized in that the special



cross-section bars or the bar sections from which the special cross-section bars are made up, are produced by extrusion.

18. A housing frame with partition elements in accordance with any one of the claims 1 to 17 inserted into the side openings of said housing frame, characterized in that the housing frame is built of special cross-section bars, which are formed from two separated by insulating web-walls metal bar sections with special cross-section, where each of the bar sections with special cross-section is provided with two sliding grooves arranged at a right angle to each other, and that the interdependent dimensions of the partition elements and the special cross-section bars of the frame are adapted to each other so, that the housing forms smooth walls both on the inside and the outside.

19. A partition element in accordance with any one of claims 1 to 18 characterised in that the special cross-section bars are cut in a bevel form.

20. A partition element substantially as herein before described with reference to the accompanying drawings.

21. A housing frame according to claim 18, substantially as herein described with reference to the accompanying drawings.

DATED: 19 DECEMBER, 1990

PHILLIPS ORMONDE & FITZPATRICK

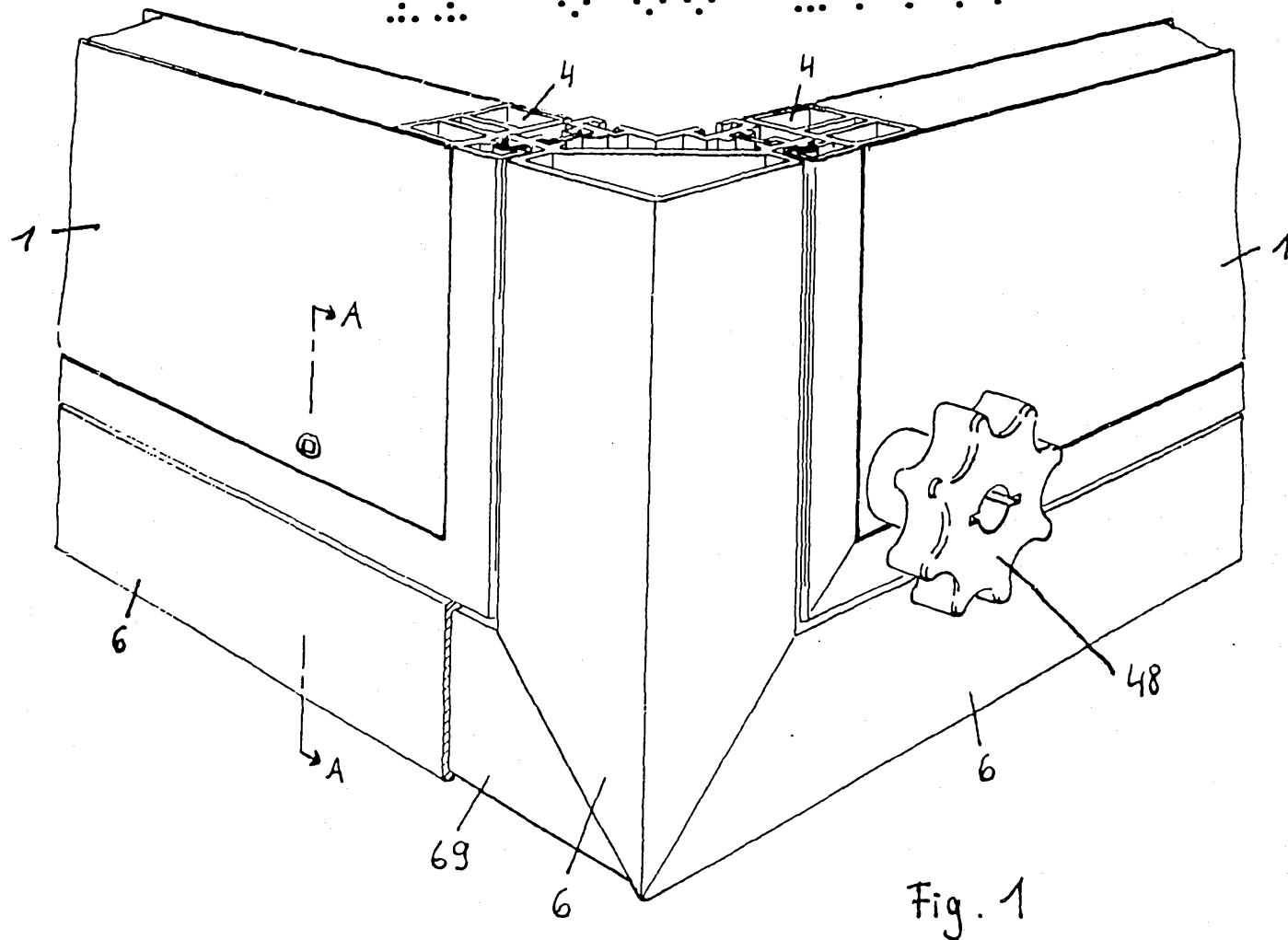
Attorneys For:

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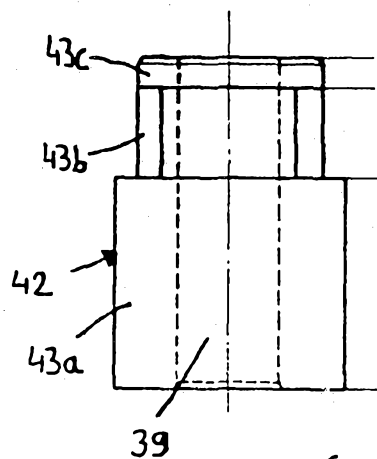


Fig. 6a

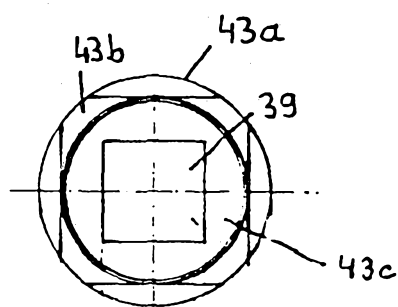


Fig. 6b

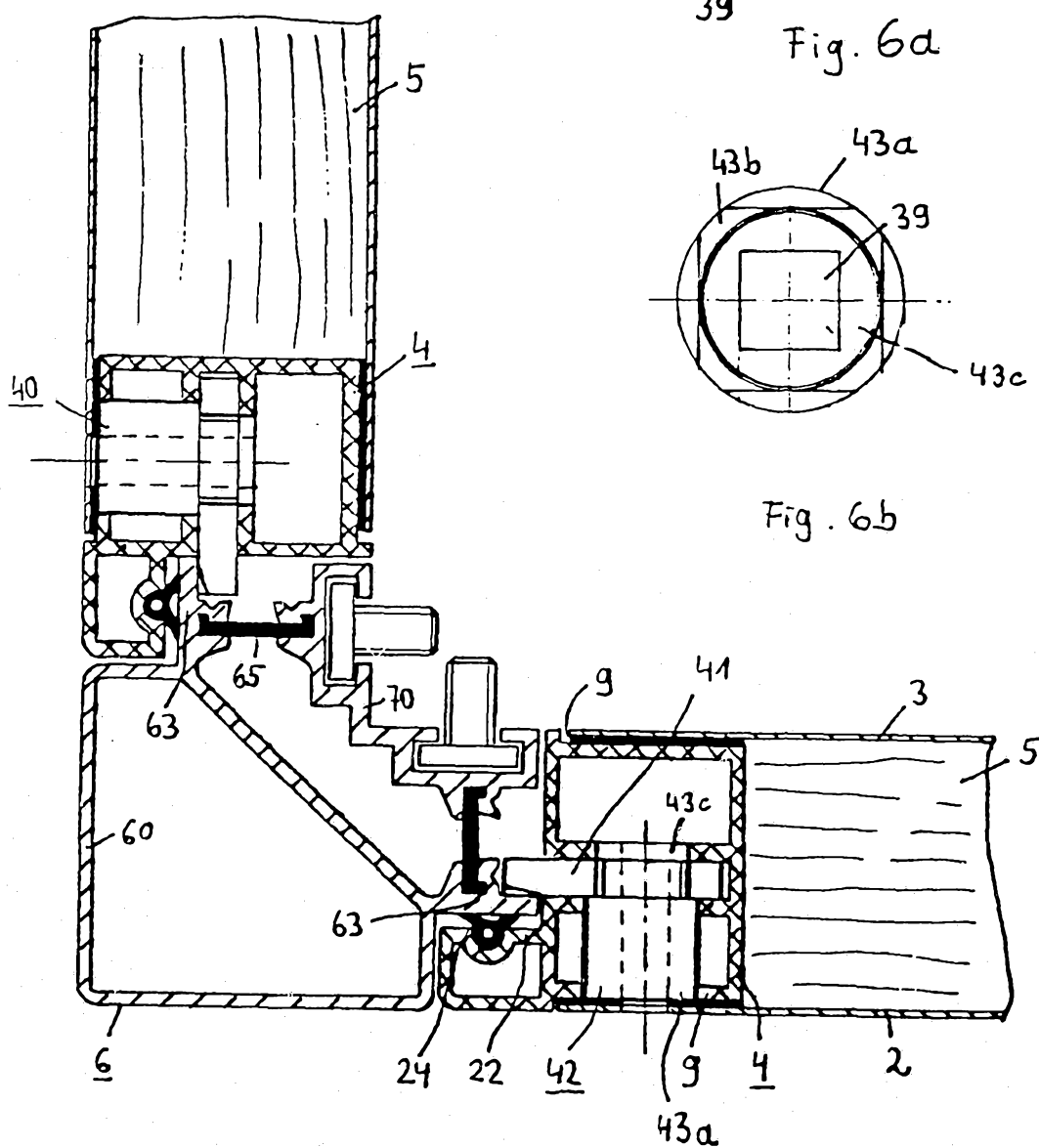
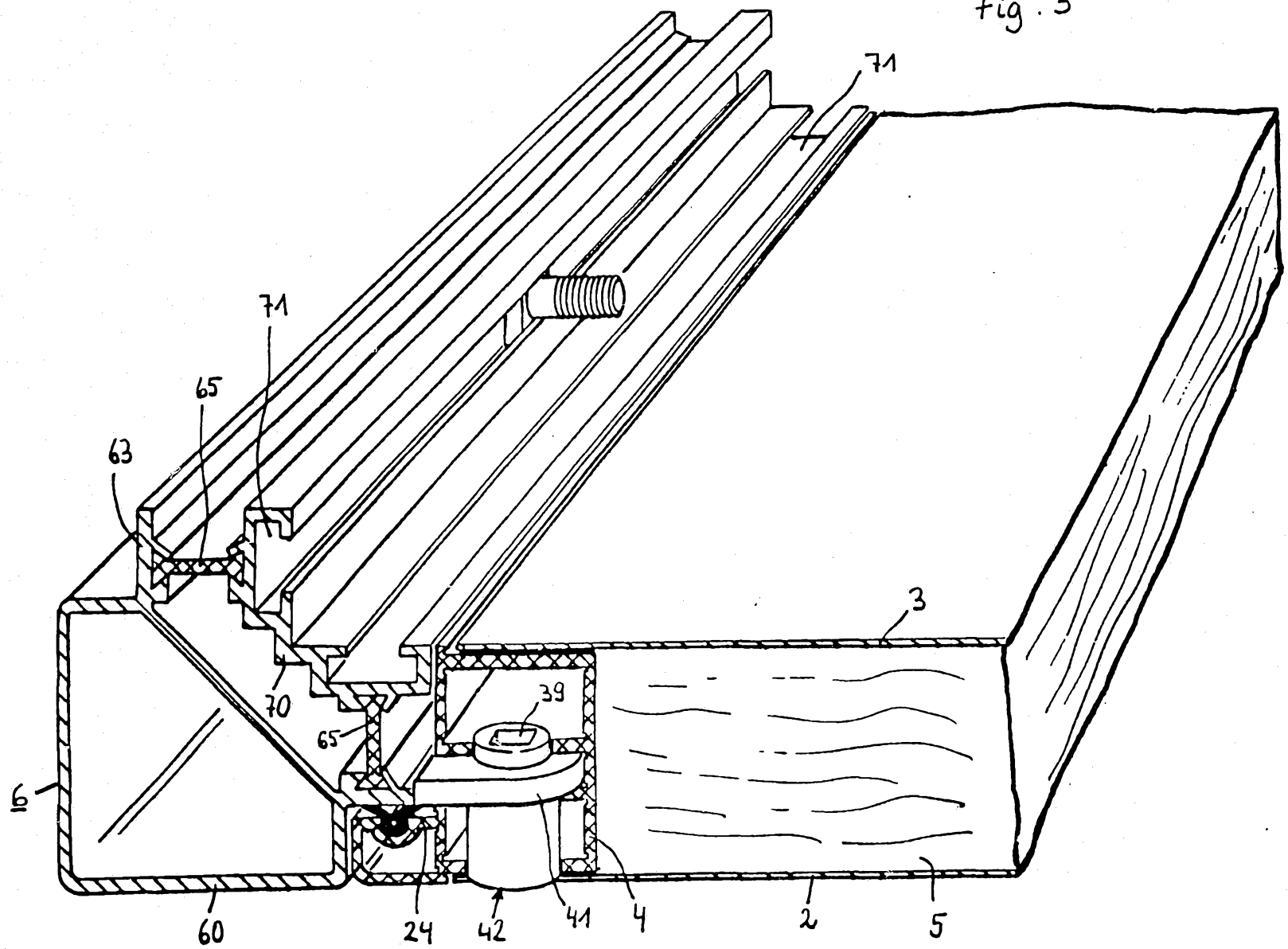


Fig. 2

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Fig. 3



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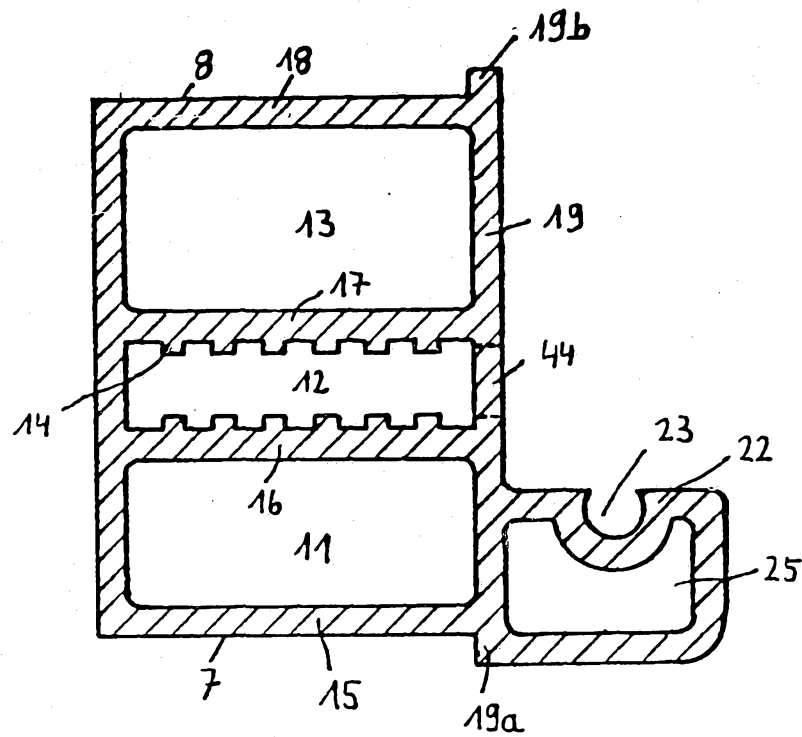


Fig. 4

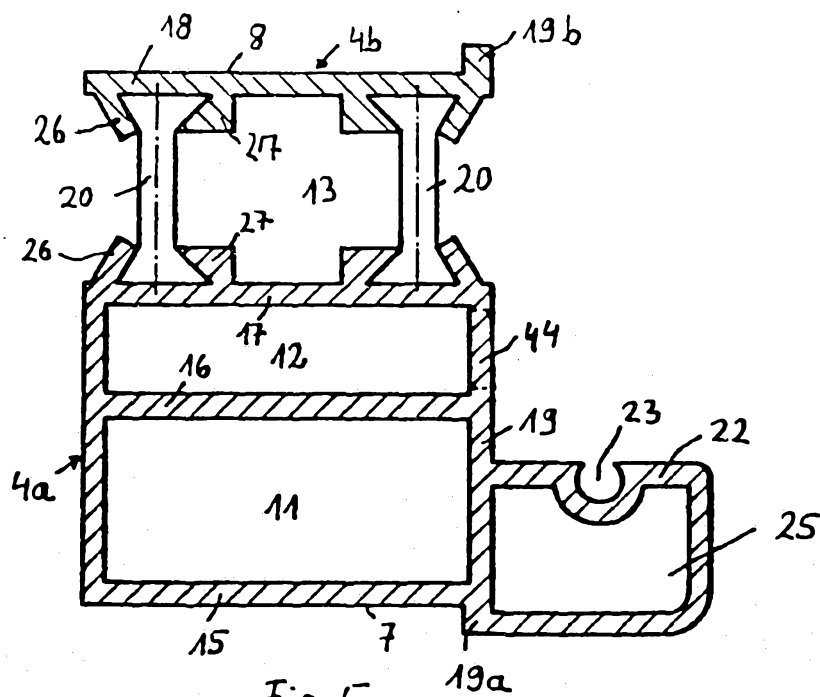


Fig. 5

26. Febr. 1988
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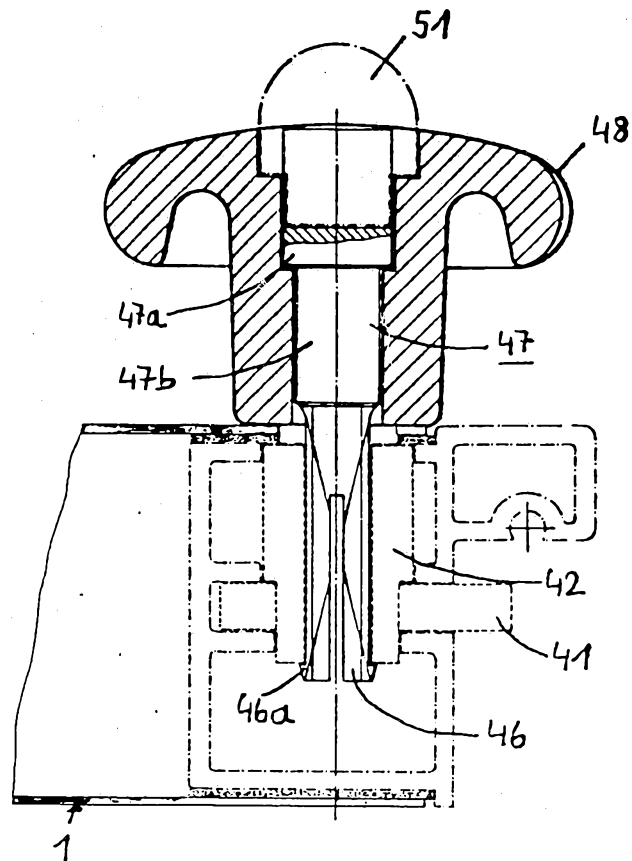


Fig. 7a

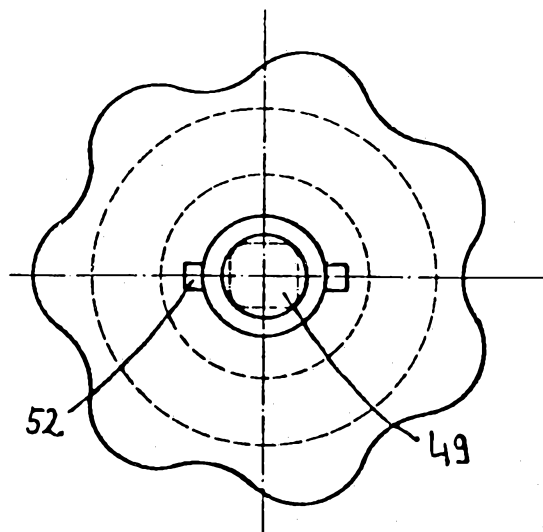


Fig. 7b