



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.05.2011 Bulletin 2011/20

(51) Int Cl.:
E04G 21/32 (2006.01) E04H 1/12 (2006.01)

(21) Application number: **10172467.2**

(22) Date of filing: **11.08.2010**

(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 SE SI SK SM TR
Designated Extension States:
BA ME RS

(72) Inventors:
• **Montalto, Carmelo**
10127 Torino (IT)
• **Montalto, Daniele**
10127 Torino (IT)

(30) Priority: **16.11.2009 IT TO20090876**

(74) Representative: **Jorio, Paolo et al**
STUDIO TORTA S.r.l.
Via Viotti, 9
10121 Torino (IT)

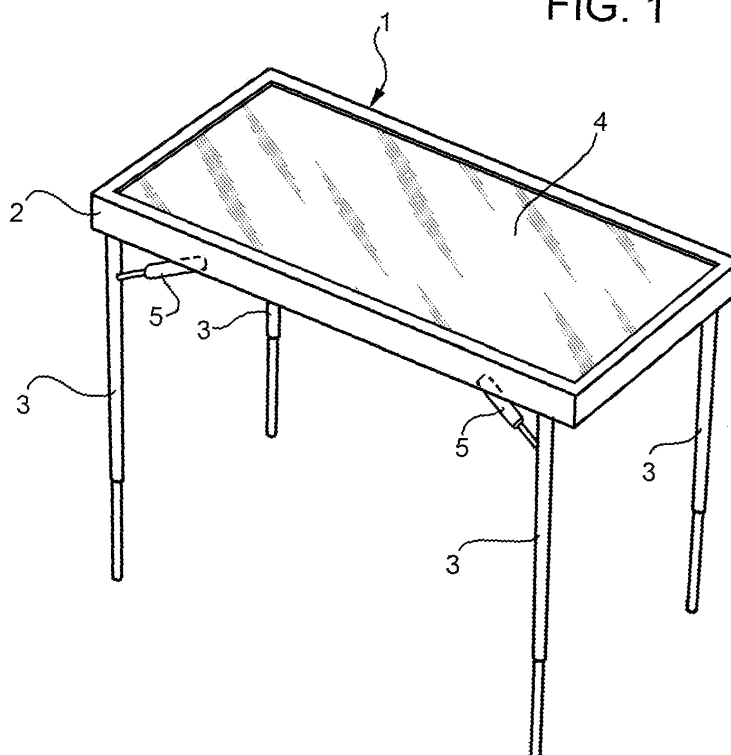
(71) Applicant: **Big Astor S.r.l.**
Torino (IT)

(54) **Modular covering element preferably for protecting pedestrians**

(57) A modular covering element (1) comprises a frame (2), a continuous plate (4), fixed to the frame (2) for preferably protecting a pedestrian passing under the element (1), a plurality of supporting legs (3), hinged to the frame (2), a connecting profiled element (8), which is carried by the frame (2) for coupling together a plurality

of said modular covering elements (1), and wherein the connecting profiled element (8) is continuous so as to close a passage between one covering element (1) and the adjacent one and prevent any body that might drop by gravity, for example rainwater, from reaching the pedestrian passing between one covering element and the adjacent one.

FIG. 1



Description

[0001] The present invention relates to a covering element that can be used, for example, for covering walkways on an urban worksite, for example, when works of restoration or renewal are being carried out on a facade in order to protect the pedestrians walking along a pavement.

[0002] During a work of restoration on a worksite in an urban area, for example, when work is being carried out overhead using cranes and elevator platforms, it is preferable to protect any pedestrians passing in the area underneath and in the neighbourhood of where the work is being carried out.

[0003] The document No. DE8100831 regards platforms with foldable legs for carrying out work of decoration, which have an average height from the ground of approximately 0.5 m. Each platform comprises a shaped profiled element for connecting in series a plurality of platforms, and said profiled element, in use, is configured for defining a simple resting element. In this way, when one platform is connected to an adjacent one, the legs of the latter must necessarily be in an extracted position (Figures 5 and 3). In addition, the legs are joined by rungs to provide a ladder on which the user can climb to be able to carry out work in a raised position.

[0004] The document No. DE2054840 regards a covered way for protecting pedestrians, in which connecting means are provided for connection between adjacent covering elements in order to protect the pedestrians from rainwater. However, the covered way can present a rigid and dismantlable structure, consequently requiring a relatively long time for installation. According to an alternative embodiment, the cover can be monolithic and in this case has dimensions that do not enable transport thereof in a convenient way. In addition, also in this case, the connection means define a simple resting element.

[0005] The document No. US4222459 regards a modular cover, in which each module comprises a protective grill, hinged to a single pair of legs. Consequently, each module must be connected to a previous module for defining a covered way. In addition, on account of the fact that each module comprises a single pair of legs, said pair of legs is connected to the previous pair of legs and to the cover via a system of tie rods and struts that stiffen the structure but force the user to follow exclusively rectilinear paths. In addition, a mesh is illustrated, which provides only a partial protection from debris and requires a pedestrian walking underneath to wear a protective helmet.

[0006] The aim of the present invention is to provide a modular covering element that can be adapted to paths that are other than simply rectilinear and that is able to increase the safety of a pedestrian passing underneath.

[0007] The aim of the present invention is achieved via a covering element according to Claim 1.

[0008] The invention will now be described with reference to the annexed drawings, which illustrate non-limiting examples of embodiment thereof, and in which:

Figure 1 is a perspective view of a covering element according to the present invention;

- Figure 2 is a perspective view of a non-limiting configuration of assembly of two covering elements according to the present invention;
- Figure 3 is a perspective view of a sectioned detail of Figure 2;
- Figure 4 is a perspective view of a plurality of modules according to the present invention stacked for transport and/or warehousing;
- Figure 5 is a perspective view from beneath of a detail of Figure 2;
- Figure 6 is a perspective view of a second embodiment of a detail of a covering element according to the present invention; and
- Figures 7 to 10 are respective perspective views of the details of Figure 6; in particular, Figures 9 and 10 are perspective views according to different angles of one and the same component.

[0009] Figures 1 and 2 illustrate respectively one covering element 1 and a pair of elements 1 connected to one another for protecting a passage for pedestrians from objects, fragments, rainwater, etc., that fall from above, for example when work is being carried out overhead.

[0010] Each module 1 comprises a polygonal frame 2, preferably rectangular, at least four supporting legs 3, connected to the frame 2, and a cover 4, fixed to the frame 2.

[0011] According to the present invention, the supporting legs 3 are foldable and, in a closed position, have a size such that they can be housed in hide-away fashion in the frame 2. In other words, the maximum transverse dimension of the supporting legs 3, i.e., the maximum diameter if the legs are tubular, is smaller than the thickness of the frame 2. In addition, the supporting legs 3 are coupled to a releasable retention element configured so as to maintain each leg 3 either in the extracted position or in the closed position even against the action of the force of gravity when the covering element 1 is moved. For example, the releasable retention element is a gas cylinder 5 connected to the corresponding leg 3 on one side and to the frame 2 on the other. In this way, manoeuvring of the covering element 1 is extremely simple and safe even for a single user. Advantageously (Figure 5) the covering element 1 comprises a safety device, which is added to the gas cylinder 5 for blocking the supporting legs either in the open position or in the closed position. In particular, the safety device comprises an extractable pin 15.

[0012] In order to enable the maximum freedom of configuration when two or more elements 1 are connected to one another, each supporting leg 3 can be folded in a way independent of the other legs 3. In this way, moreover, the passage for the pedestrians can be as wide and convenient as possible without jeopardizing the stability

of the element 1.

[0013] Preferably, the supporting legs 3 have an adjustable length and are advantageously telescopic. The fact that the legs 3 can be folded independently of one another means that the element 1 can be adapted to rough terrains or else areas having architectural elements and/or elements providing urban decoration such as wayside stones, plantpots, steps or stairways, etc.

[0014] Figure 3 illustrates a cross section of a profiled element 6 constituting preferably all the sides of the frame 2 and having a purposely devised geometry. Each profiled element 6 comprises a hollow main body 7, having a substantially rectangular cross section, connecting profiled elements 8, which come out from one side of the main body 7, and a retention portion 9, which is set preferably on the opposite side of said connecting profiled elements with respect to said main body 7.

[0015] In particular, the connecting profiled elements 8 have a cross section such as to define a coupling that opposes recession of two assembled covering elements 1 from one another. Preferably, the connecting profiled elements 8 are continuous along the respective profiled element 6 so as to prevent objects and/or rainwater that drops by gravity from reaching a pedestrian walking along the covered way defined between one element 1 and the adjacent one. Advantageously, the connecting profiled elements 8 have an L-shaped cross section having one flange constrained to the main body 7 and the other flange free.

[0016] On the opposite side of the connecting profiled elements 8, the profiled element 6 has the retention portion 9 for fixing the cover 4 to the frame 2, for example a plane plate preferably made of polymeric material, for example, translucent polycarbonate.

[0017] According to a preferred embodiment of the present invention, the main body 7 defines a closed and box cross section having a central portion 10 and two portions 11, 12, respectively, a top one and a bottom one in a configuration in which the covering element 1 has the supporting legs 3 open and is in use. Preferably, the top portion 11 and bottom portion 12 jut out with respect to the central portion 10 in the direction in which the connecting profiled elements 8 act and provide the connection between two adjacent covering elements 1. Both the top portion 11 and the bottom portion 12 have a respective connecting profiled element 8 in such a way that the profiled elements 8 themselves project with respect to the central portion 10 and hence can be coupled together in a simpler way. Preferably, the main body 7, the connecting profiled elements 8, and the retention portion 9 are provided in a single profiled element obtained by extrusion. In addition, the connecting profiled elements 8 are set at a distance in a direction transverse with respect to a rectilinear axis of each profiled element so as to define a constraint that is stiff in regard to the bending and/or twisting moment generated by the weight for example of the cover 4 and not only for opposing separation by translation between two covering elements 1 connect-

ed together.

[0018] On the opposite side of the connecting profiled element 8, the top portion 11 supports the retention portion 9, which comprises flanges 13 and 14 set in cantilever fashion and at a distance from one another by a height greater than or equal to the thickness of the cover 4 so as to enable sliding coupling. In addition, the flange that is loaded by the weight of the cover 4 when the covering element 1 is in use, is set at a distance from the bottom portion 12 by a height such as to enable housing in hide-away fashion of the supporting legs 3 when the latter are in the retracted position (represented dashed in Figure 2).

[0019] In this way (Figure 4), the elements 1 can be stacked easily and then be transported and rested on the resting surface of a transport vehicle with extreme ease and advantage due to their compactness.

[0020] Figures 6-10 illustrate a device alternative to the one illustrated in Figure 5 for adjusting and blocking the angular position of the legs 3. In particular, the device comprises a grooved element 16, fixed to the main body 7 underneath the cover 4 via a plane base 17 perpendicular to the axis of the grooved element, a grooved sleeve 18, which can be engaged selectively in the grooved element 16 and is fixed to a corresponding leg 3, a detent 19 for delimiting the position of the grooved sleeve 18 along an axis B of the grooved element 16, and a spring 20 (illustrated only schematically) for keeping the grooved sleeve 18 in a position of engagement with the grooved element 16.

[0021] In particular, the detent 19 is fixed at a distance along the axis B such that the sleeve 18 can be completely disengaged from the grooved element 16 against the action of the spring 20 via a rectilinear translation.

[0022] In use, when the legs 3 are in an extracted position transverse to the cover 4, the sleeve 18 bears upon the base 17 and is held in said position by the action of the spring 20.

[0023] When it is necessary to house the legs 3 in hide-away fashion in the frame 2, the sleeve 18 is brought manually against the action of the spring 20 towards the detent 19. When the sleeve 18 is not engaged by the grooved element 16, the leg 3 rotates so as to become parallel to the main body 7 of the profiled element connected to the base 17. In said position, the sleeve 18 can be again coupled to the grooved element 16 and thus be angularly blocked.

[0024] In the case where two legs 3 are connected on opposite sides of one and the same profiled element 6 and have a length such as to interfere when they are both closed, the device of Figure 6 can be configured for enabling said legs to be set alongside one another and, at the same time, ensuring blocking of both of them both in the working position and in the hide-away position. For example, the extension along the axis B of the grooved element is such that the sleeve 18 engages at least partially even though, in the hide-away position, it is set on the opposite side of the profiled element 6 with respect

to the other leg 3. Alternatively, it is possible to envisage that the leg 3 opposite to the profiled element 6 is set at a distance from the latter in a different way, and in particular at a greater distance, as compared to the leg 3 immediately adjacent to the profiled element 6 both in the position of extraction and in the hide-away position.

[0025] With the present invention, a covered way for protecting a pedestrian from the accidental dropping of working material or debris and/or from rainwater can consist of a single module that can be easily transported when the legs are folded in hide-away fashion and can be mounted with a wide range of combinations since it is possible to raise the legs individually and allow the pedestrian a high degree of freedom of movement under the cover 4. In particular, when two profiled elements 6 of two adjacent covering elements are connected to one another, it is possible to raise the two pairs of legs 3 adjacent to the profiled elements connected together since the geometry is such as to withstand also the bending and twisting moments. In this way, numerous configurations can be provided by eliminating the superfluous legs 3.

[0026] Finally, it is clear that modifications or variations may be made to the covering element 1 described and illustrated herein, without thereby departing from the sphere of protection as specified by the annexed claims.

[0027] For example, the covering elements 1 can be connected to one another for defining also a gazebo. For instance, the gazebo may be made up of nine covering elements in such a way that a central covering element is completely surrounded by other elements. The connecting profiled elements 8 are such as to withstand the load of bending and/or twisting moment due to the weight of the central covering element and support the latter even when, for reasons of encumbrance, all its supporting legs 3 are closed in hide-away fashion.

[0028] In addition, the uses of the covering element can comprise also use as sunshade structure in a seaside resort or else a cover suitable for protecting a vehicle or motorcycle when parked.

Claims

1. A modular covering element (1), comprising a frame (2), a continuous plate (4), fixed to said frame (2) for preferably protecting a pedestrian passing under said element (1), and a plurality of supporting legs (3), hinged to said frame (2), said covering element being **characterized in that** it comprises a connecting profiled element (8), carried by said frame (2) for coupling together a plurality of said modular covering elements (1) and wherein said connecting profiled element (8) is continuous so as to close a passage between one covering element (1) and the adjacent one and prevent any body that might drop by gravity, for example rainwater, from reaching the pedestrian as he is passing between one covering element and

the adjacent one, wherein said profiled element (8) is configured in such a way as to withstand a bending and/or twisting moment generated by the weight at least of said continuous plate (4) so that it is possible to raise all of said legs (3) adjacent to a connecting profiled element (8) coupled to an adjacent modular covering element (1).

2. The covering element according to Claim 1, **characterized in that** it comprises a device for adjusting the position of each of said legs (4) along an hinge axis (B) about which said legs (4) are hinged to said frame (2).
3. The covering element according to Claim 2, **characterized in that** said device comprises a releasable grooved coupling (16, 18) for connecting each leg (3) to said frame (2) and defining the angular position of said legs (3).
4. The covering element according to Claim 3, **characterized in that** it comprises a spring (20), which acts so as to keep each leg (3) coupled via said releasable grooved coupling (16, 18).
5. The covering element according to Claim 4, **characterized in that** said releasable grooved coupling (16, 18) has a length such that two legs (3) that are able to turn about respective mutually parallel axes can be blocked in the hide-away position alongside one another.
6. The covering element according to any one of the preceding claims, **characterized in that** said connecting profiled element (8) has an L-shaped cross section.
7. The covering element according to any one of the preceding claims, **characterized in that** it comprises at least one releasable retention element (5, 15) for keeping said legs (3) in a closed position or alternatively in an open position.
8. The covering element according to any one of the preceding claims, **characterized in that** said legs (3) are configured so as to have a variable length.
9. The covering element according to any one of the preceding claims, **characterized in that** said legs (3) are hinged to said frame (2) independently of one another in such a way that each can have an angular position of its own.

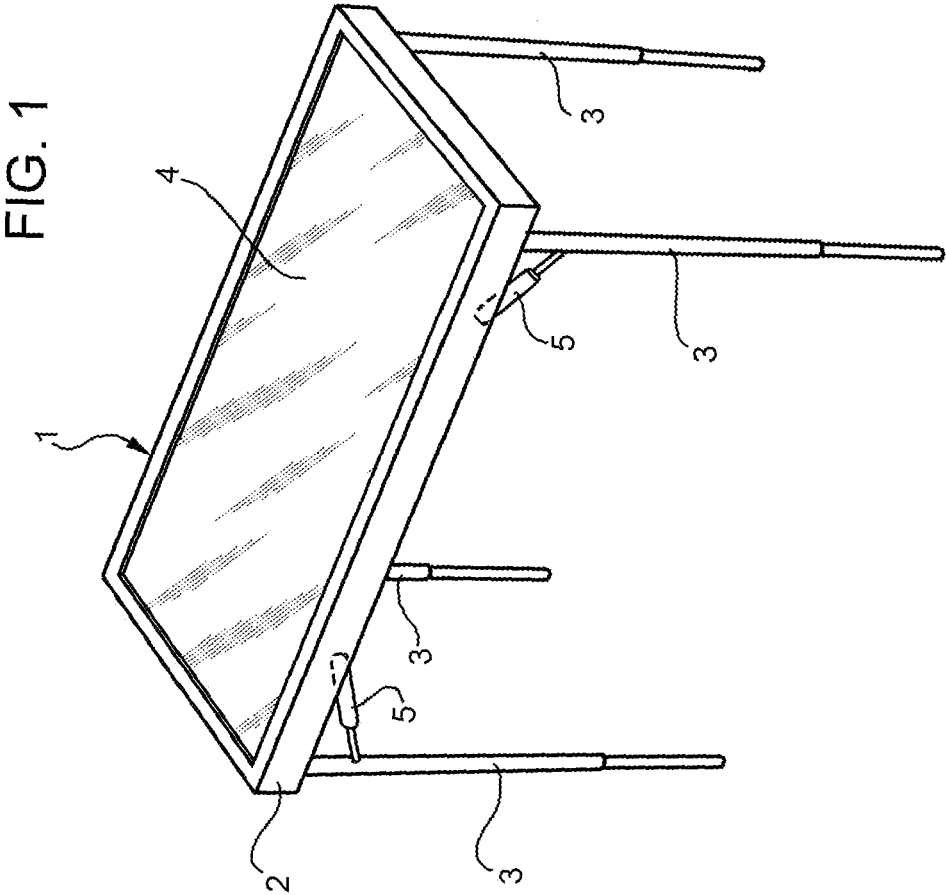
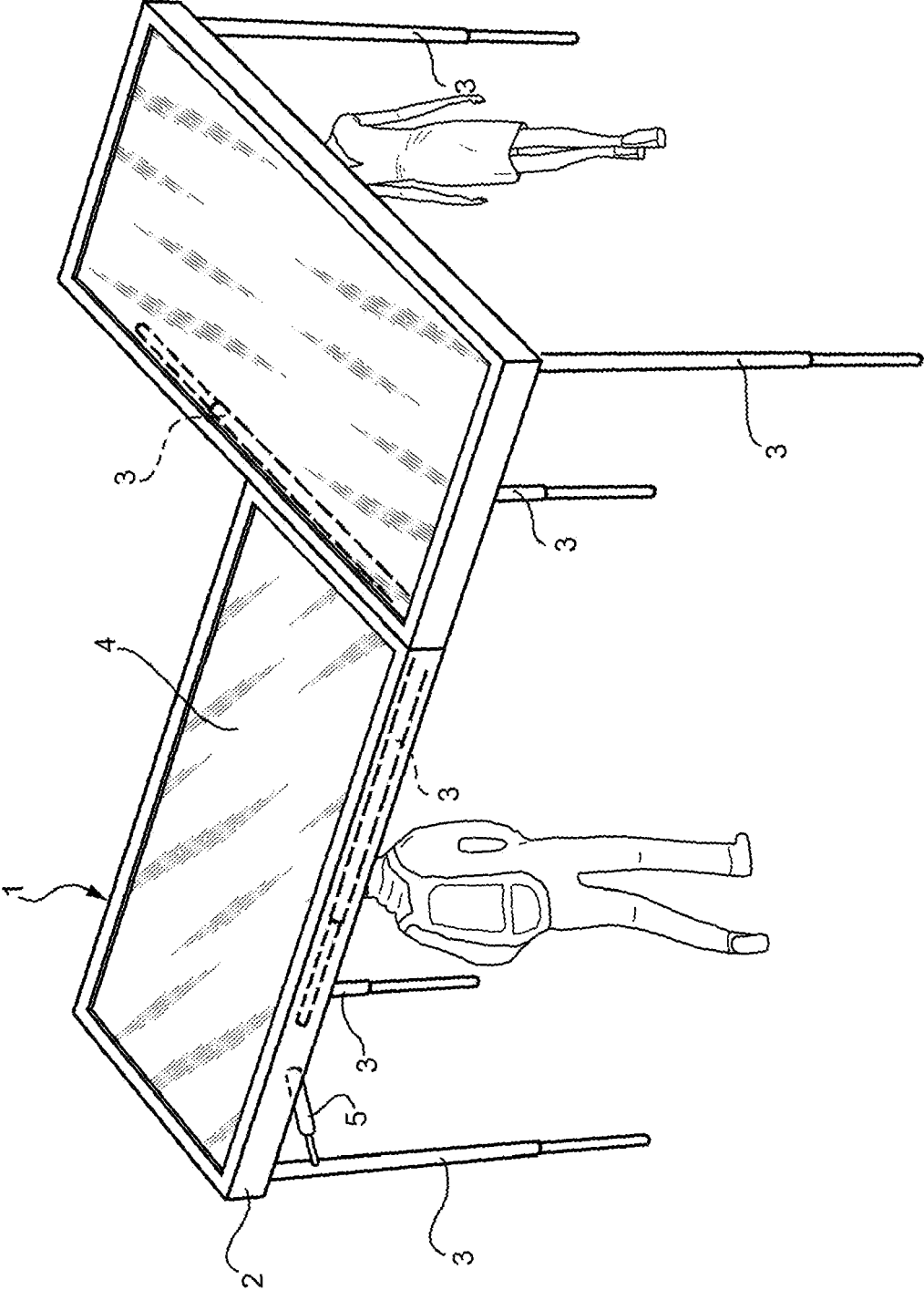


FIG. 2



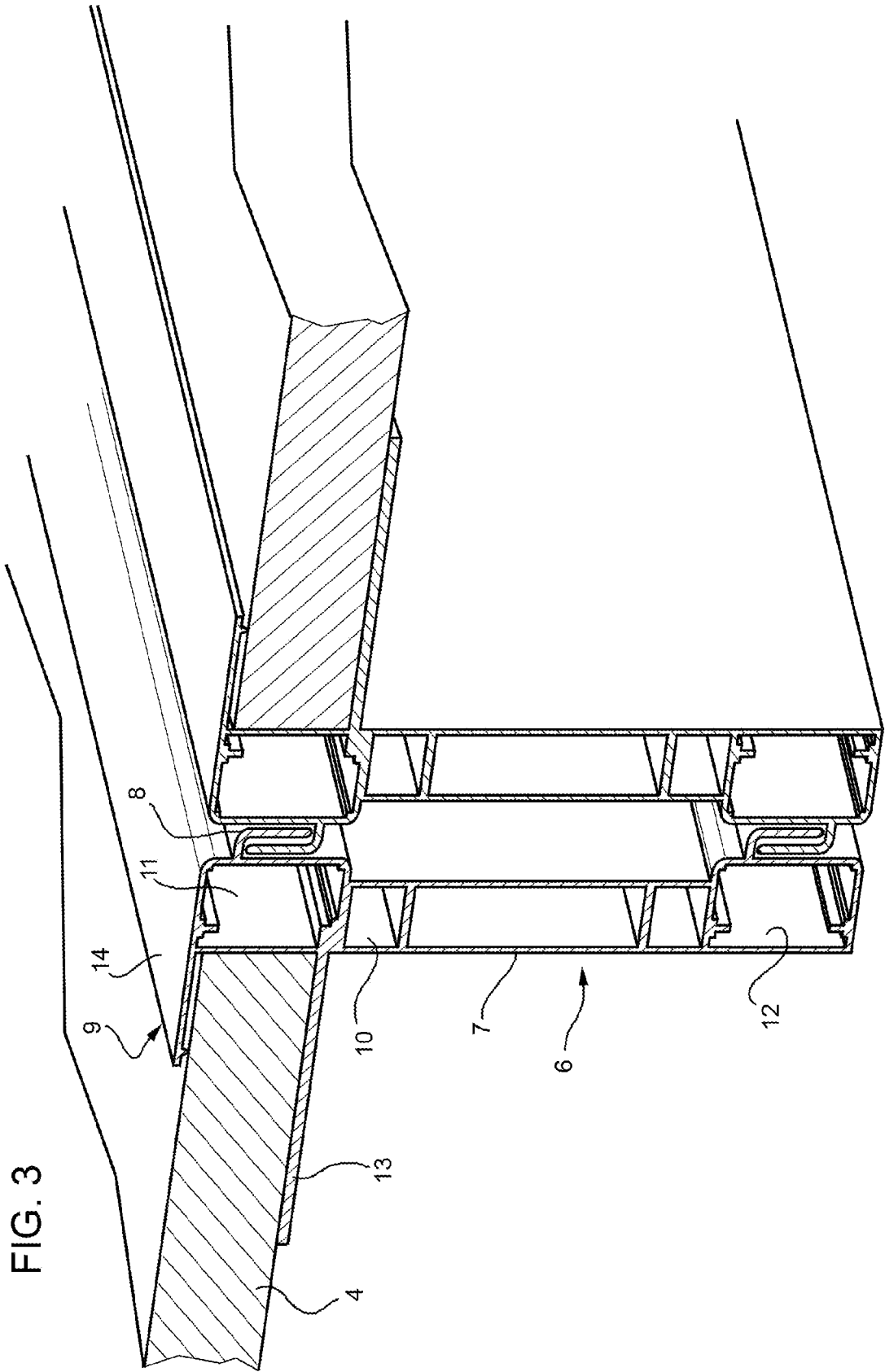


FIG. 4

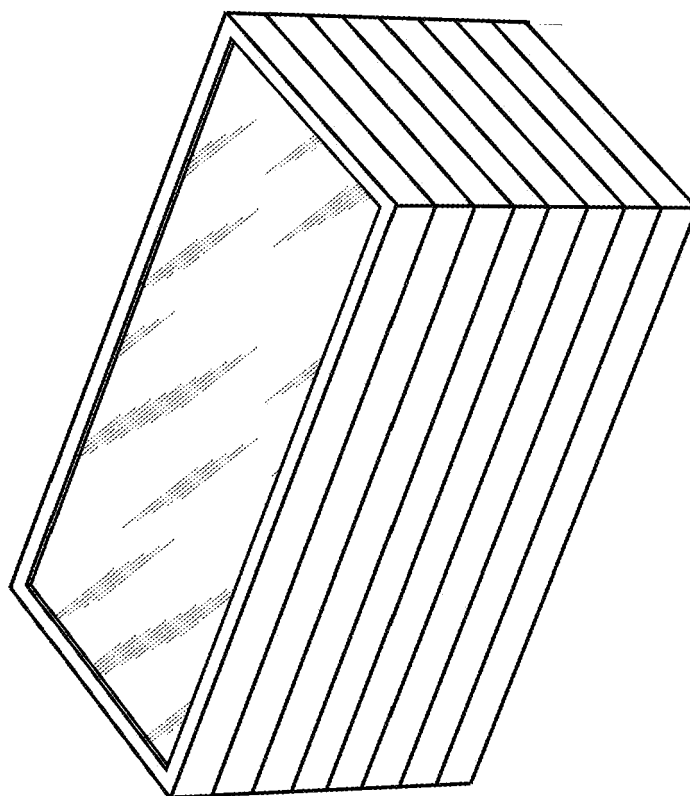


FIG. 5

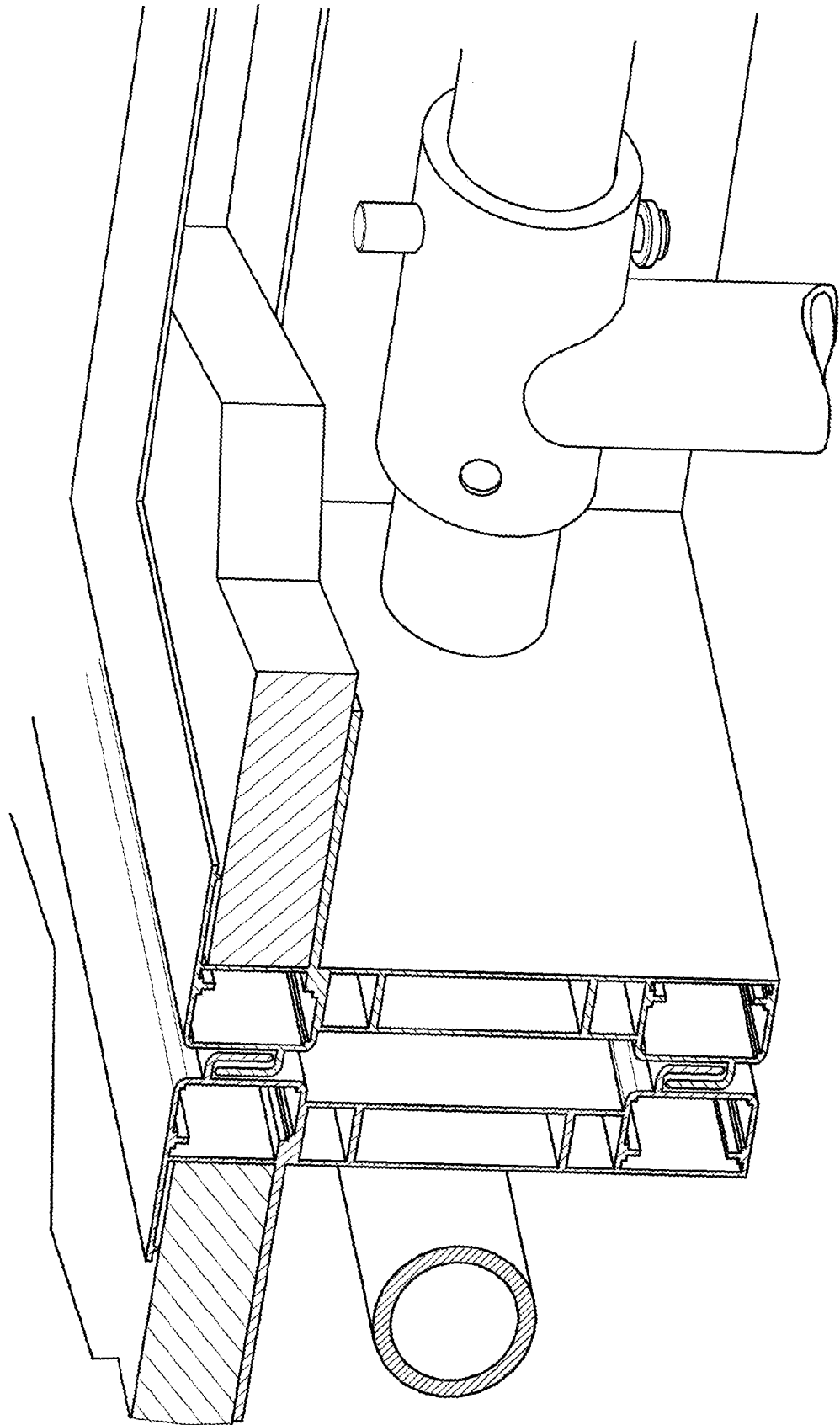
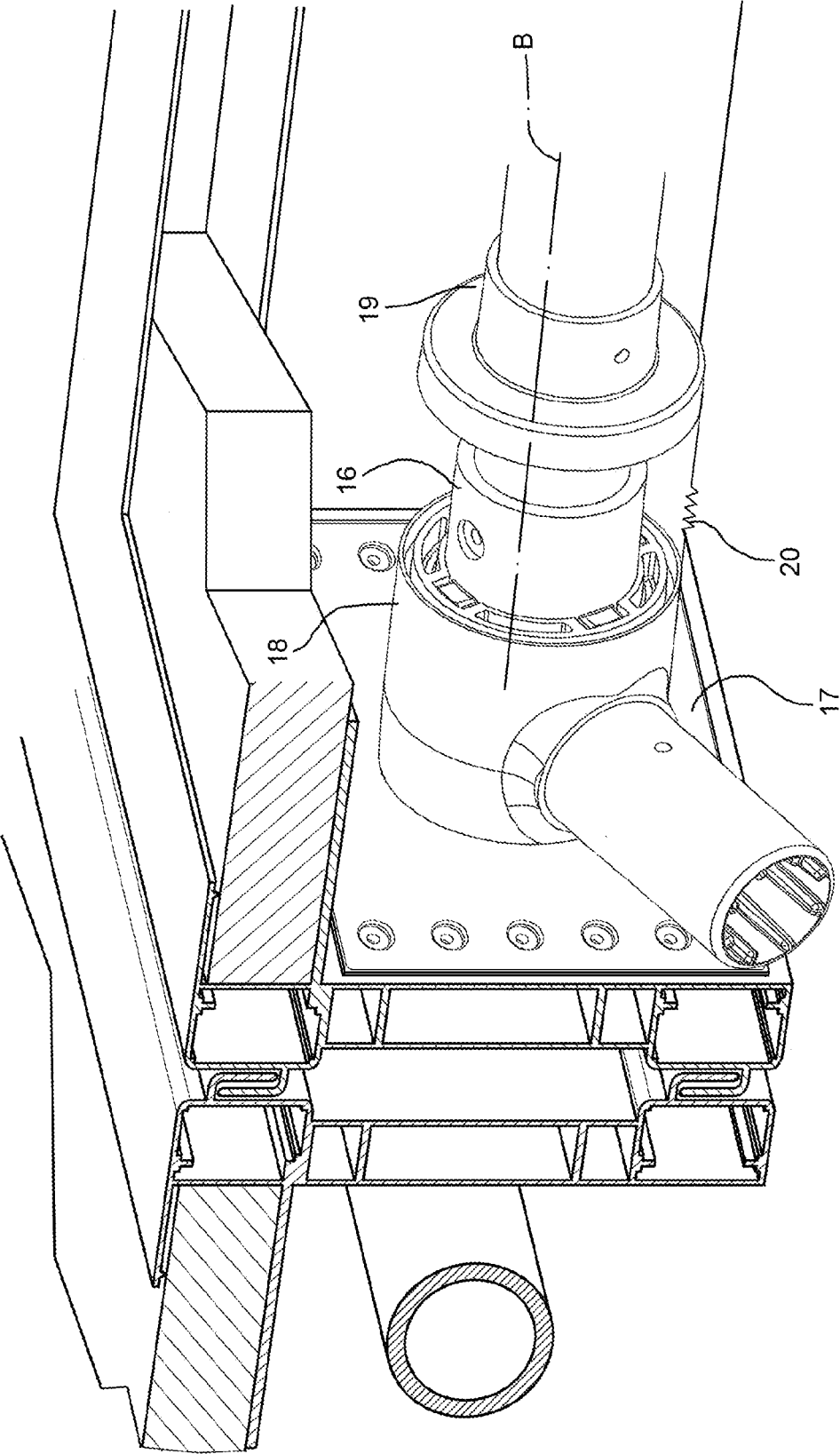


FIG. 6



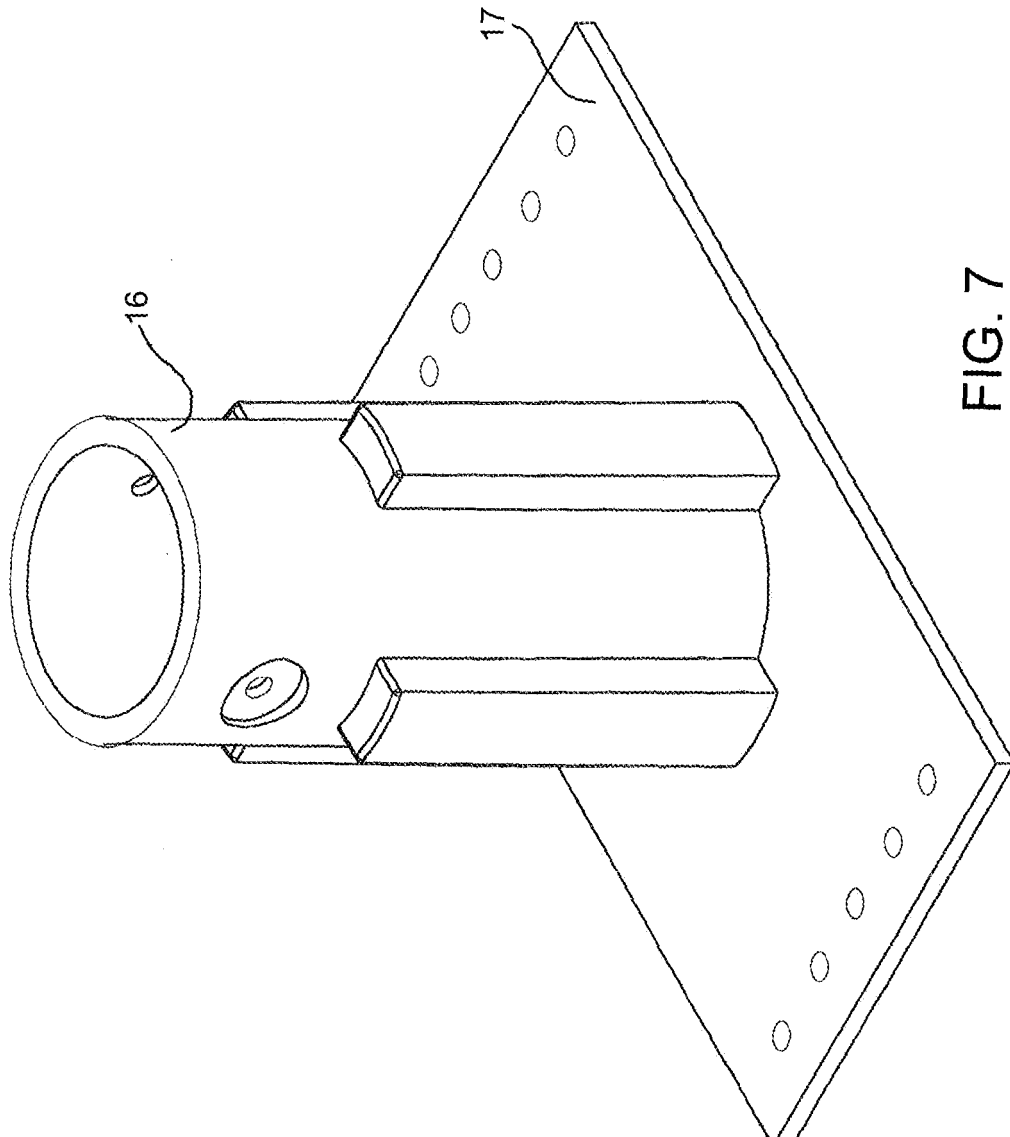


FIG. 8

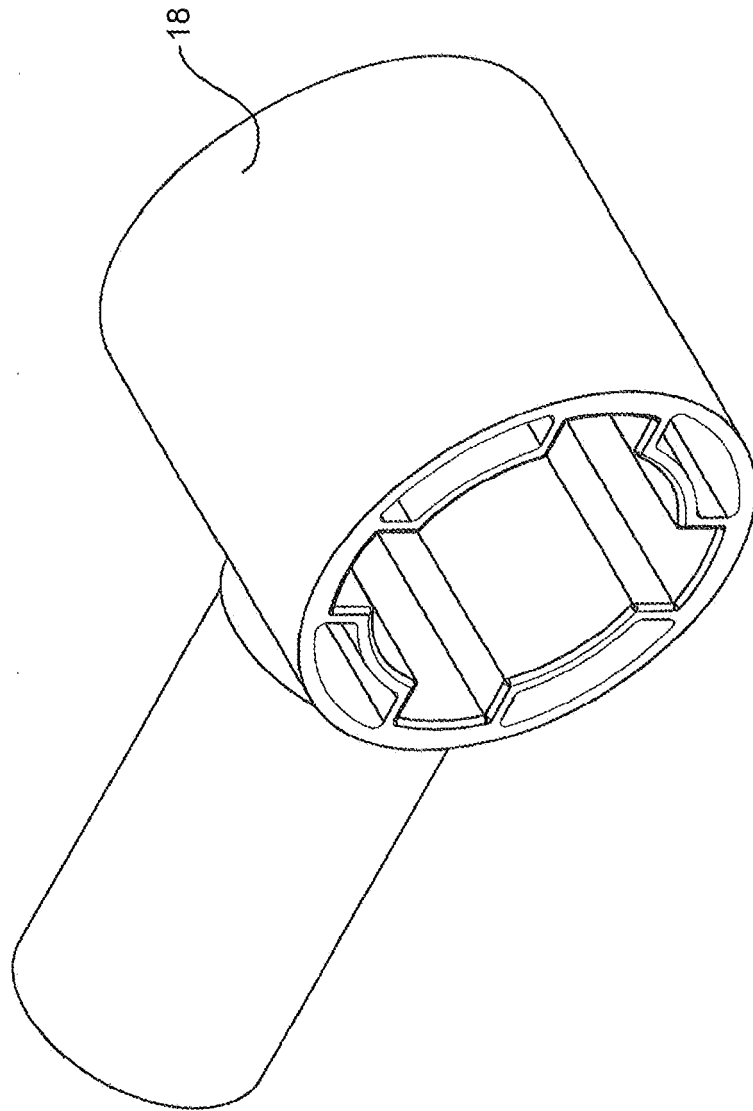


FIG. 10

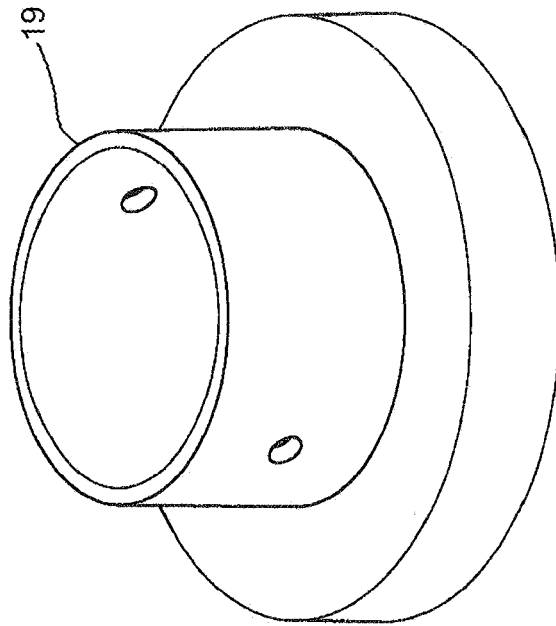
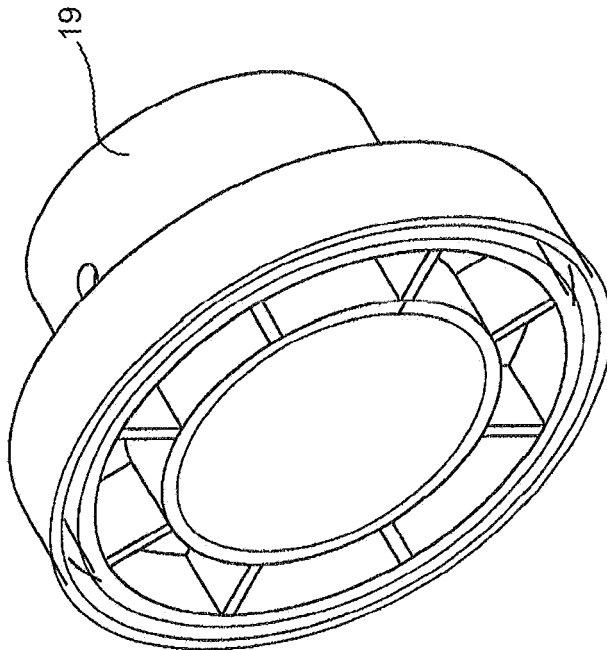


FIG. 9





EUROPEAN SEARCH REPORT

Application Number
EP 10 17 2467

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	DE 81 00 831 U1 (SCHWECHHEIMER, J.) 30 July 1981 (1981-07-30) * page 2, lines 4-15, 25-28 * * page 4, lines 9-19, 25-27 * * figures 1, 2, 5, 6, 7, 8, 9, 10, 11 * -----	1,2,6-8	INV. E04G21/32 E04H1/12
X	US 2007/138366 A1 (DAVIS ADAM [US] ET AL) 21 June 2007 (2007-06-21) * paragraphs [0001], [0005], [0034], [0047], [0049]; figures 1, 2, 3, 4, 5, 12, 13, 15 * -----	1-5,7,9	
A	US 4 222 459 A (HARD THOMAS ET AL) 16 September 1980 (1980-09-16) * column 1, lines 5-7, 53 - column 2, line 11 * * column 2, line 49 - column 3, line 35 * * column 4, lines 30-39 * * figures 1, 2, 6, 10, 12-16 * -----	1	
A	DE 20 54 840 A1 (PORSCHE KG) 10 May 1972 (1972-05-10) * the whole document * -----	1	TECHNICAL FIELDS SEARCHED (IPC) E04G E04H
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 February 2011	Examiner Decker, Robert
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			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 17 2467

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09-02-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 8100831	U1	19-06-1981	NONE
US 2007138366	A1	21-06-2007	US 2009148228 A1 11-06-2009
US 4222459	A	16-09-1980	NONE
DE 2054840	A1	10-05-1972	NONE

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 8100831 [0003]
- DE 2054840 [0004]
- US 4222459 A [0005]