



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.06.2016 Bulletin 2016/22

(51) Int Cl.:
E04F 11/02 (2006.01) A61H 3/00 (2006.01)

(21) Application number: **15382452.9**

(22) Date of filing: **17.09.2015**

(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:
MA

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(30) Priority: **26.09.2014 ES 201431422**

(27) Previously filed application:
26.09.2014 ES 201431422

(54) **AUXILIARY STAIRS FOR PEOPLE WITH REDUCED MOBILITY**

(57) Auxiliary stairs for people with reduced mobility.

The object of this invention is aimed to make easier for people with reduced mobility to go upstairs or downstairs. In order to reduce the height of the steps of a stairs already manufactured, it is put in between one of its laterals an integral assembly working like auxiliary steps, which can be adjusted in height and length, narrower than the original steps on which the assembly is placed, following the pattern described by the figure above.

The user of the stairs mentioned previously manufactured can use this invention in an auxiliary way, putting one or two feet on the assembly before moving to the next step. Thus, it is reduced the effort necessary to climb the step of the stairs on which it is assembled, as well as the height to which the feet must be raised, especially useful for aged people and for people with joint problems.

The stairs of the invention is aimed to make traffic easier for people with reduced mobility. With the aim of reducing the height of the original steps, some auxiliary steps are placed among them. These auxiliary steps are adjustable in height and length, with a smaller wide than the original step, following this pattern

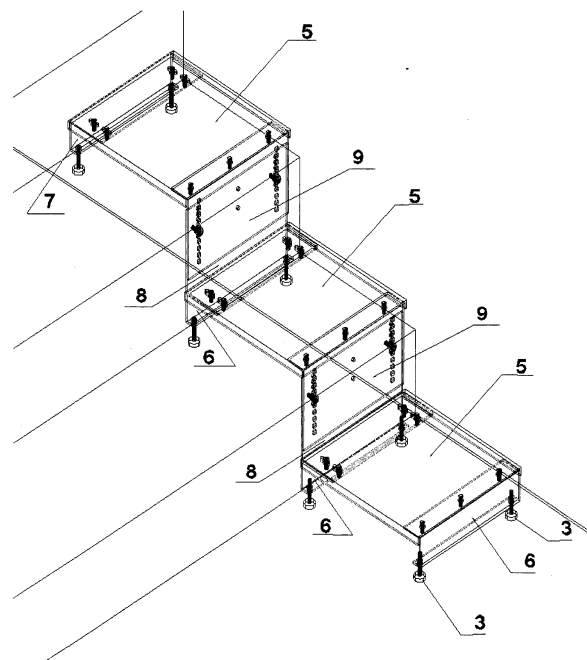


Figure 1

Description

[0001] Auxiliary stairs with a system of adjustment in length and height, dependent of a fixed flight of steps on which it is settled.

Object of the invention.

[0002] The current patent application aims to the register of *auxiliary stairs for people with reduced mobility* that incorporates significant innovations and advantages in order to improve the adaptation of people with their motor abilities reduced.

Background.

[0003] In the field of building it is usual to see all kind of adaptations in order to improve the quality of life of people with problems of mobility. In fact, the legislation in force rules all kind of new construction to this aim.

[0004] The main problem can be found in private houses or buildings built before the passing and implementation of the legislation above-mentioned. As a consequence, these constructions might have plenty of problems of adaptability. Both unworkable elevators and narrow sections of stairs are part of the set of problems that can be faced by a person with motor problems daily in their home.

[0005] The *auxiliary stairs for people with reduced mobility* matter of this application solves part of the problems above-mentioned, bringing, therefore, an essential improvement in the quality of life of people who are self-sufficient but have limitations so as to represent an effort a sort of daily movements unlike what happens to the majority of us.

Description of the invention.

[0006] The invention consists of a flight of auxiliary self-supporting steps which, placed over a stairs already built, reduce the height of the steps on which walk. Such steps are less wide than the steps of the stairs on which they are placed for the user to be able to put the two feet on one step of the stairs formerly built in order to, next, put one foot or both feet on the step belonging to the auxiliary stairs disclosed in this specifications and son on up to walk over all the flight of the steps. Thus, reducing the height between the steps, it is possible to reduce the effort required to climb them.

[0007] Likewise and, with the aim of making the idea accessible to all kinds of users, the invention must be especially simple, adaptable to many different cases and, hence, easy to be manufactured, transported and assembled. Special attention has been paid to cut the prices of manufacture in order to make easier its purchase by any potential user.

[0008] Another feature of the auxiliary stairs for people with reduced mobility is that it is a self-supporting system

fully adjustable in height and length with respect to all and every step, so that it is not necessary either to modify or to damage the original stairs, even if the height and length of its steps is irregular.

[0009] The auxiliary stairs is fixed over an existing stairs and covers a smaller width, so that the user can walk alternately between the original stairs and the auxiliary stairs object of this application. The steps are made up of a fixed basis - tread - and a set of pieces that work as risers and support brackets. The bases that shape each tread of the auxiliary stairs are fixed to the legs by means of screws. Some vertical pieces are also included and they allow the adjustment in height of the bases that work as tread.

[0010] In order to fulfill the description we are about to disclose and with the aim of providing a better understanding of its features, a set of drawings is enclosed hereby whose figures, in an explanatory and not restrictive way, comprise the most significant details of the invention.

Brief description of the drawings.

[0011]

Figure 1: view of the auxiliary stairs installed over a fixed stairs

Figure 2: Detail of the join

Figure 3: Detail of the join

Figure 4: Detail of the adjustment in height of the legs

Figure 5: Base piece of the step

Figure 6: Front piece of the beginning of the stairs

Figure 7: Support piece for the back legs

Figures 8 and 9: Link pieces between steps

Description of a preferred embodiment.

[0012] In view of the figures detailed and the planes submitted, we can disclose a preferred embodiment even though not restrictive of the invention, which consists of auxiliary stairs for people with reduced mobility.

[0013] Figure 1 shows a view of the auxiliary stairs placed over a fixed stairs. Pieces 5 work as the tread of the stairs, pieces 6, 7, 8 and 9 work as riser and/or support base, depending on whether it is the first step, the last step or the middle steps. At the beginning, four supports corresponding to the piece 3 of the plan are screwed to the pieces 6, making the riser of the first step on the front side and the base of support for the back legs on the other side of the step.

[0014] In the following steps the treads been being built

by the piece 5 but the risers are made up by a combination of the pieces 8 and 9. The base supports of the steps are made up by the joint of the pieces 6 and the pieces 5. Two rubber legs will be screwed to the piece 6 corresponding to the pieces 3 of the sketch.

[0015] On the closing step, the last base support will be made up by the joint of the piece 5 with a piece 7. On piece 7 there are screwed other two legs corresponding to the pieces 3.

[0016] Figure 2 shows a maximized detail of the joint between pieces 8 and 9, making the riser. Such pieces have a combination of holes to different lengths with the aim of achieving adaptability in height of the system and thus adjusting it to different stairs.

[0017] Figures 3 and 4 show in detail the way in which piece 3 is fastened to pieces 6 or 7, along with the system conceived to adapt in length the auxiliary stairs to the stairs on which it is placed.

[0018] Figure 3 comprises all the steps except for the closing step. In such figure we can see a detail of the joint between pieces 5, 6 and 8, pieces 8 and 9, pieces 3 and 6.

[0019] Figure 4 shows a detail of the joint between figures 5 and 7, figures 7 and 3. This case would be the closing step in its final part.

[0020] Both figures show the detail of the slanted holes corresponding to the adjustment in length of figure 5.

[0021] Figure five is a detail corresponding to the piece 5 of the perspective view.

[0022] Figure 6 corresponds to the piece 6 of the perspective view. It is a "U" containing two holes on which the threaded rod corresponding to the piece 3 of the sketch are screwed. There are always two units for each piece.

[0023] On the other side of the "U" there are three holes to screw the piece to the front or back part of the piece 5. In the case of the front part, the three holes will be used whereas in the case of the back part, only the two side holes will be used.

[0024] Figure 7 is a detailed view of the piece 7. The piece is similar to the piece 6 and it is built on the same way as in the rest of the steps to its back part, the main difference is in its measures and that instead of having three holes to screw the piece 5, four slanted holes are made with the aim of adjust greater sturdiness in this last part of the closing step.

[0025] Figure 8 corresponds to the piece 8 of the perspective view. It is an "L" that is assembled in the bottom part of the tread (piece 5) so that, along with piece 9, they make the riser and the binding mechanism between the steps and adjustment of their height.

[0026] Figure 9 contains the same number of piece (9) in its perspective view. It makes together with piece 8 the riser and the binding and adjustment mechanism of the height of the steps. It is joint by means of screws to the piece 8 on one side and to the beginning of the piece 5, on its bottom part, like it is joint to the piece 8 -screw and nut - With respect to the piece 3 of the sketch, we would

like to point out that no design plan has been submitted as long as they are legs of industrial manufacture the same as the other ironworks and fasteners applied to the assembly.

[0027] The steps are made up from a fixed basis-piece 5- on which the stretchers, which shape the bases for the legs, are screwed. This fixed basis works as tread. In the case of the first step it is screwed on the front part of the piece 6. On the last step, like a closing, the piece 7 is screwed, in its last part. On the other hand, in order to join a step with the next one, both steps hold screwed another two pieces which are assembled among themselves by means of screws and nuts - pieces 8 and 9 -. This system, at the same time, is used as support for the next step and works as riser.

[0028] The height adjustment is achieved through the pieces aforementioned - pieces 8 and 9 -, which have a set of holes near their edges. These holes can overlap and be screwed on the required height. With the aim to improve stability and reduce the risk of an ill fitting, both pieces have been given a code of letters and numbers and a series of holes placed to different distances so that it is only possible to assemble the two part in a manner, as it is detailed in the plans corresponding to figures 2 and 3.

[0029] The legs will also be adjustable in height, not only to correct any kind of irregularity in the manufacture of the original stairs, but also to achieve an adjustment margin even wider and more precise following the plans of the assembly in detail corresponding to figures 3 and 4.

[0030] As it is shown in the figures the stairs of the invention is characterized by being self-supporting. On the basis of the steps (5) the rest of the pieces the stairs is made up are screwed (6, 7, 8 and 9). Figures 8 and 9 have an alphanumeric code in order to make easier the assembly and repeat the same combination of letters and number in all the steps.

[0031] Being modular it can be used for sections in all kinds of stairs, just by adding new units.

[0032] According to other aspects of the invention, the flat surface or tread (5) of each of the steps of which the stairs consists can hold anti-slip elements (not represented).

[0033] The fastening and assembly system is the following:

a. First step. The trade is screwed by its front side to the piece corresponding to the riser. On its back side, figure 5 is screwed with figures 6 and 8 so as to build the combination corresponding to the stretcher on which the supporting legs are joint afterwards, on the one hand, and makes the combination corresponding to the front of the following step, on the other side. The combination is screwed by means of two countersunk screws M6x18 and their respective nuts.

b. Middle step. In the case of ensembles of two steps

this step will not be taken into account jumping directly to the next one.

The basis of this step where the user will put his feet, the same way as on the others of the ensemble, will be figure 5. Such step will be made up by the joint of the pieces corresponding to figure 8 and figure 9 on the front side and, again, figure 8 and figure 9 on its back side. The binding mode between figure 5 and the other figures will be, like in all the cases, by means of countersunk screws M6x18 and their respective nuts.

Aiming at the adaptation to all possible irregularities in the stairs over which this invention will be assembled, figure 5 has some slots in its final part (detail in figure 3) and thus it will be possible the adaptation in height of the combination.

Figures 8 and 9 are screwed by means of screws DIN-603E, M6x15, and their corresponding nuts on the not visible side. The adjustment in height of the ensemble is given by the combination of the holes in both figures, as shown in detail in figures 2 and 3. Once all these pieces are put together, we can place the rubber legs adjustable, model SR5726, M6x38. They are assembled in the holes provided for that on the pieces corresponding to figure 6. They are joined to these pieces by means of two nuts M6 for each leg, as explained in figures 3 and 4.

We can repeat this procedure as many times as necessary to reach the penultimate step of the stairs we need to save. In this point we are going to the step 3.

c. Last step. The front side of this step is similar to the one explained in detail in the previous point. Figure 9 is screwed on figure 5 by means of countersunk screws, and at the same time it is screwed on figure 8 by means of screws DIN-603E + nut.

On the back side of the ensemble a piece corresponding to figure 7 is screwed exactly as the pieces corresponding to figure 6 have been joined to the back side of the steps. Once the piece has been assembled we can screw two legs as done in the former steps.

The way to adjust in height is achieved thanks to the two vertical pieces that are folded in one of their edges to 90. These pieces are overlapped so that the folds are placed opposite to each other. The adjustment is achieved through a series of holes placed near the edges of the pieces mentioned and, when they overlap, they allow the holes of both pieces to coincide and can be fixed thanks to the set screw.

[0034] The details, shapes, size and other secondary elements, as well as the materials used in the auxiliary stairs for people with reduced mobility, can be properly replaced by others which are technically equivalent and move neither aside the essence of the invention nor the scope defined by the following claims.

Claims

1. Auxiliary stairs for people with reduced mobility, **characterized by** being assembled jointly to a stairs already built and designed to make traffic easier, by means of the installation on a lateral of the stairs already built, of steps with a width minor to the width of the stairs on which they are placed. It is basically made up of modular subassemblies that comprise:

- A basis manufactured by an iron piece, depending on the tread,
- Two vertical and overlapping shaped plate pieces on which the basis rests, (8,9) manufactured with the same material, with at least one of the upper or lower ends of each of the pieces folded squarely, depending on the tread adjusted in height. Same width as the basis
- Vertical piece of joint, with "C" contour (6 and 7) being the length of the upper branch notably bigger than the length of the lower branch. Same width as the basis.
- Two legs adjustable in height that are supported on the horizontal surface, either the floor, or the treads of the permanent stairs and they are fixed on the ancillary vertical piece.

2. Auxiliary stairs for people with reduced mobility, following claim 1 **characterized by** the basis manufactured with an iron piece, depending on the tread, it is folded in its two lateral edges in "U" shape, and the two vertical pieces overlapping in the shape of a flat bar have folds on at least one of their upper or lower ends in order to make easier the joint to the bases and the auxiliary piece.

3. Auxiliary stairs for people with reduced mobility, following claim 1 **characterized by** the ending step having on its bottom only one joint piece 7.

4. Auxiliary stairs for people with reduced mobility, following claim 1 **characterized by** the fact that the basis, the two vertical supporting pieces and the joint pieces are manufactured of iron.

5. Auxiliary stairs for people with reduced mobility, following claim 1 **characterized by** the adjustment in height of the riser by means of a series of vertical holes that make a combination in the vertical and overlapping pieces so that the holes of both plates are overlapped to the chosen height and are fixed by means of screws or any other suitable means.

6. Auxiliary stairs for people with reduced mobility, following claim 1 **characterized by** the adjustment in extension of the tread is achieved through some oblong holes in the joint pieces 6 and 7 and the back ends of the basis.

7. Auxiliary stairs for people with reduced mobility, following claim 1, extendable by means of adding new subsets of bases, supports, risers and legs.

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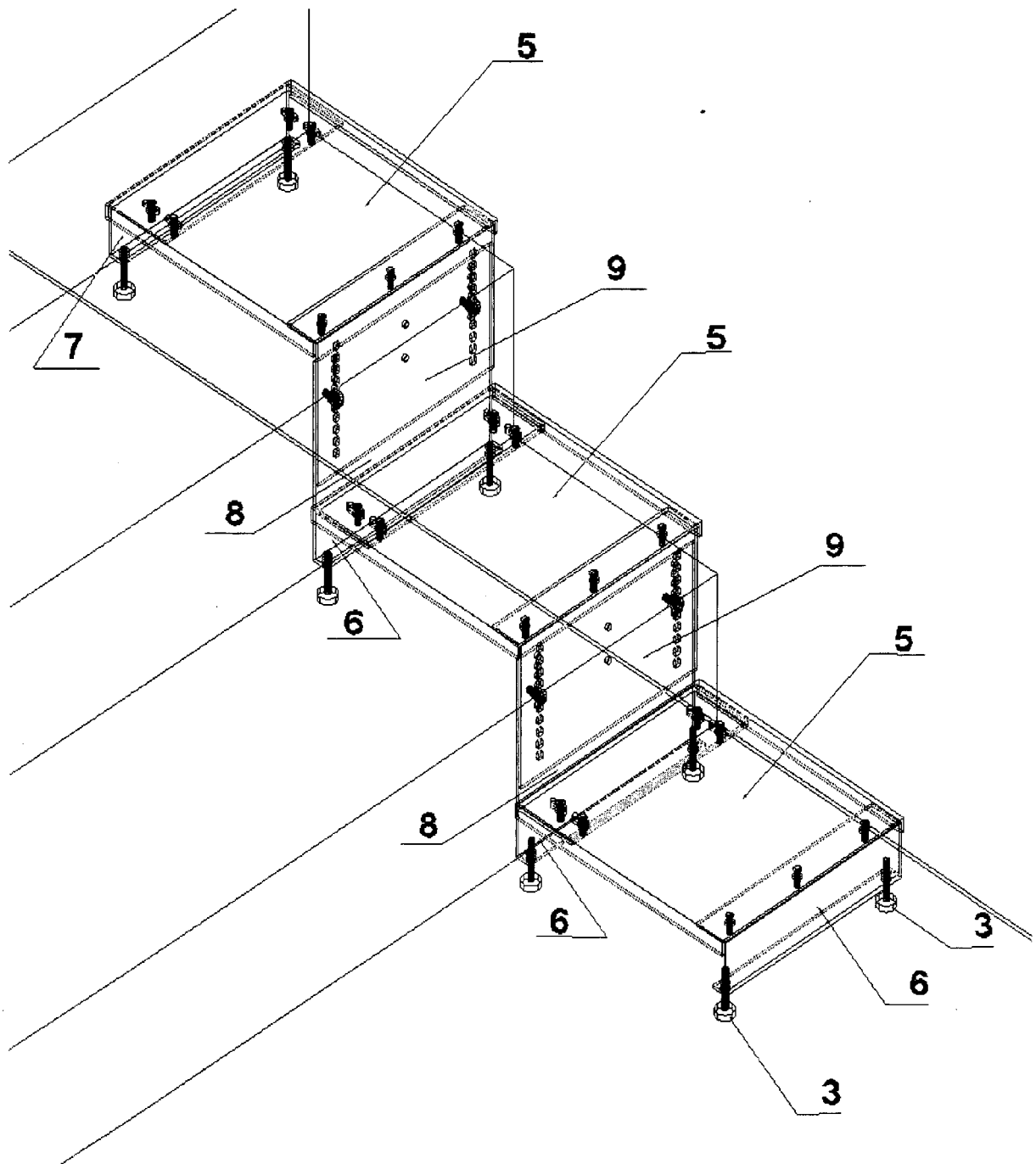
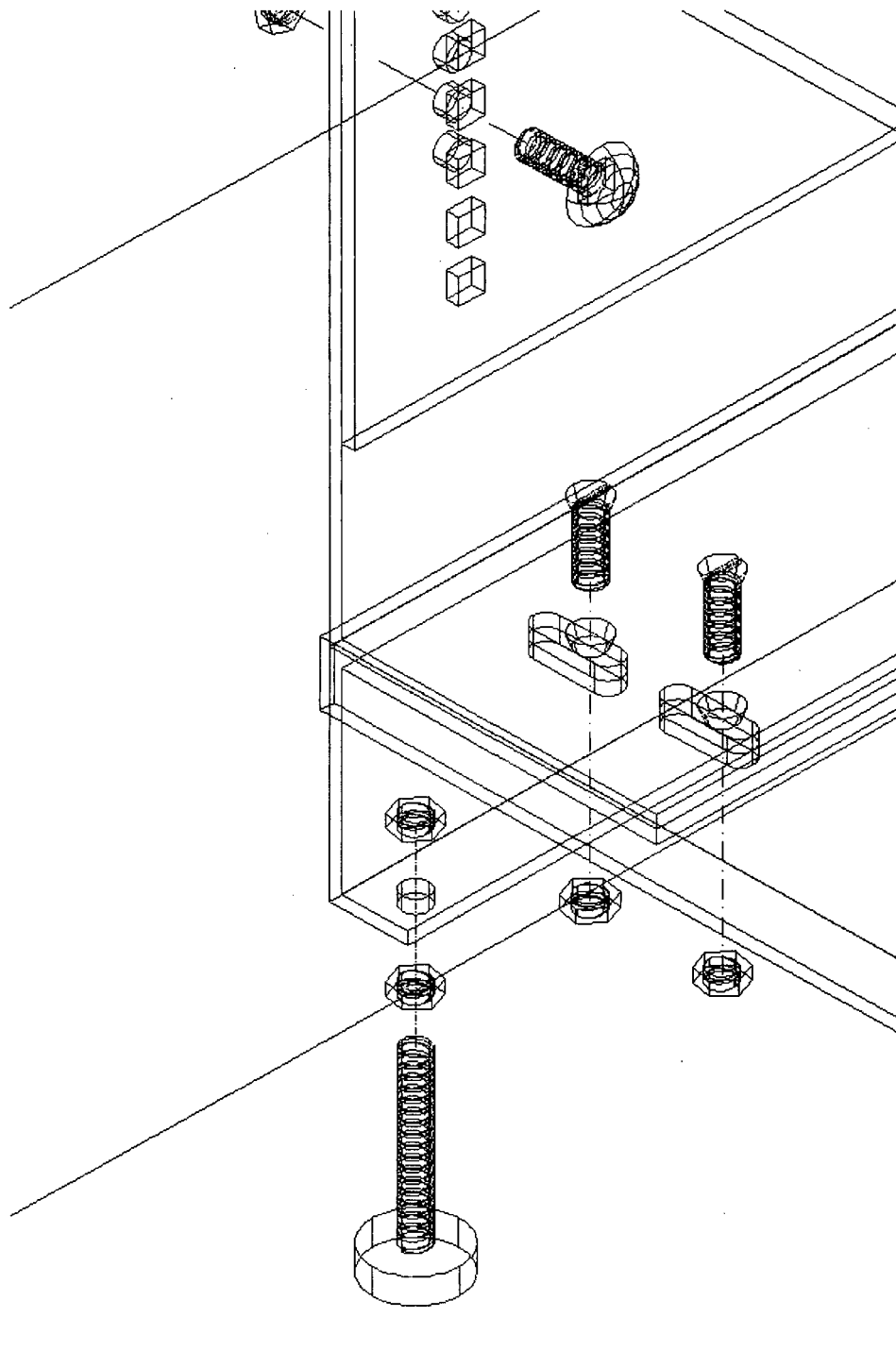


Figure 1



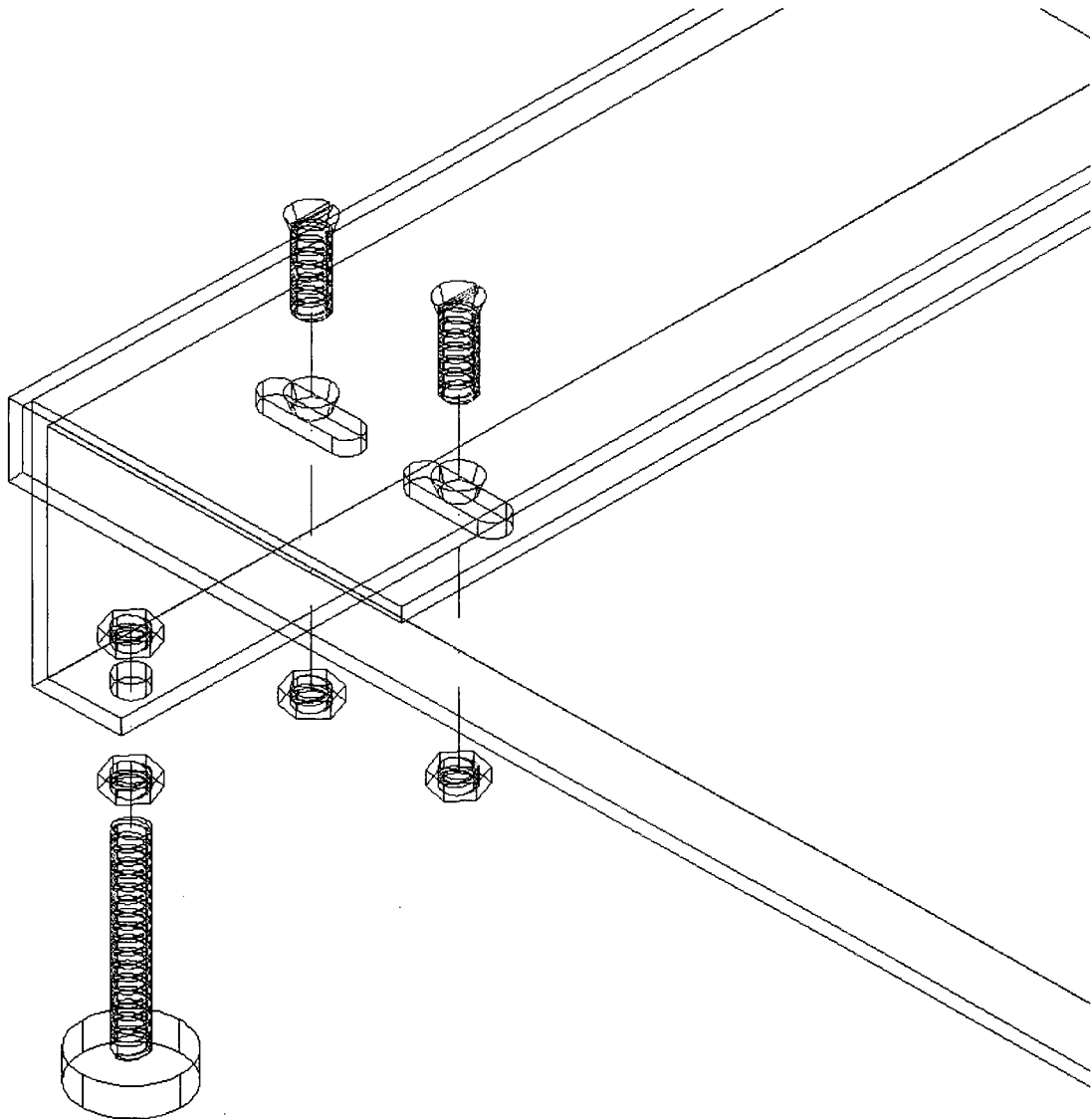


Figure 4

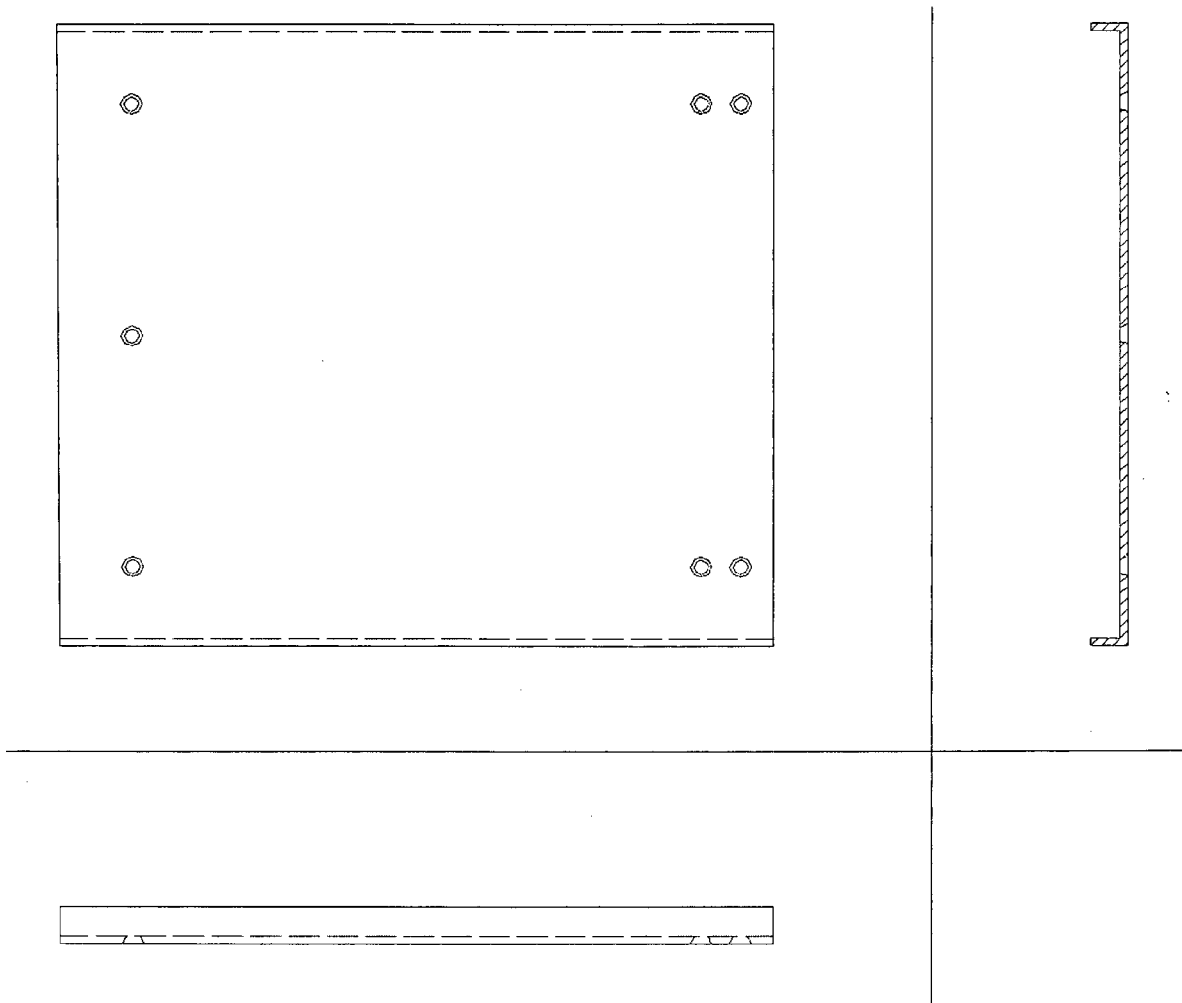


Figure 5

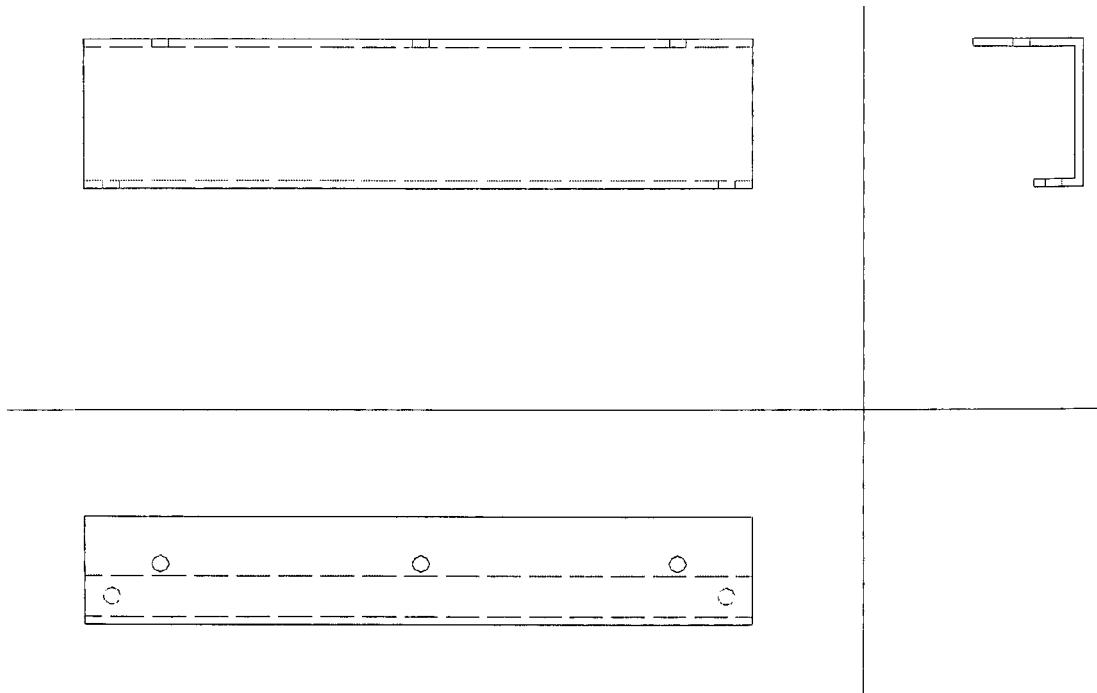


Figure 6

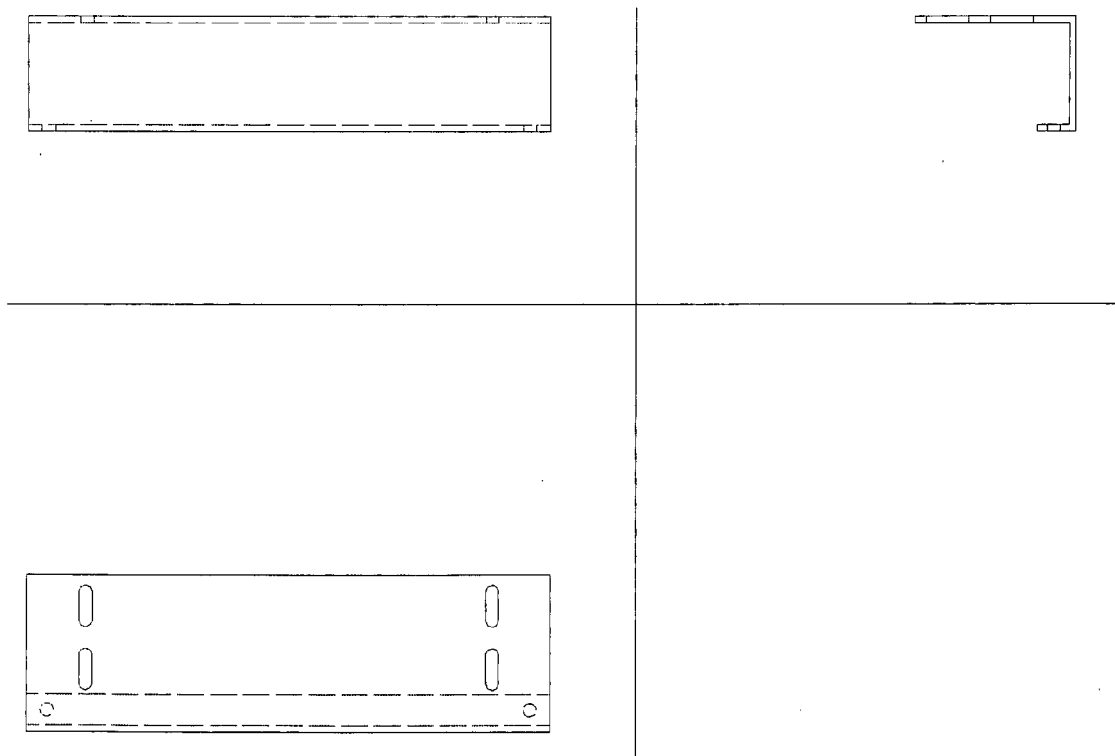


Figure 7

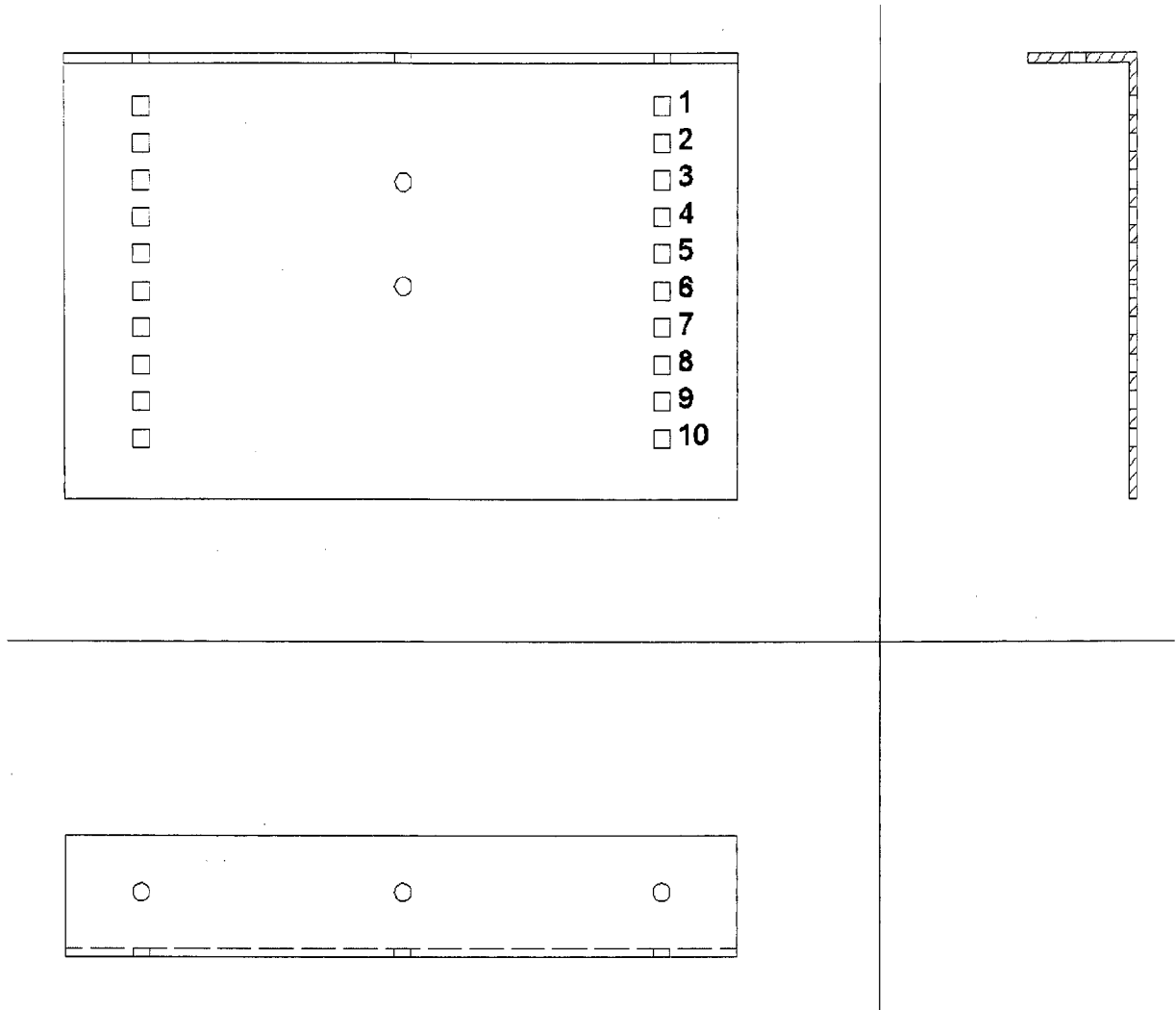


Figure 8

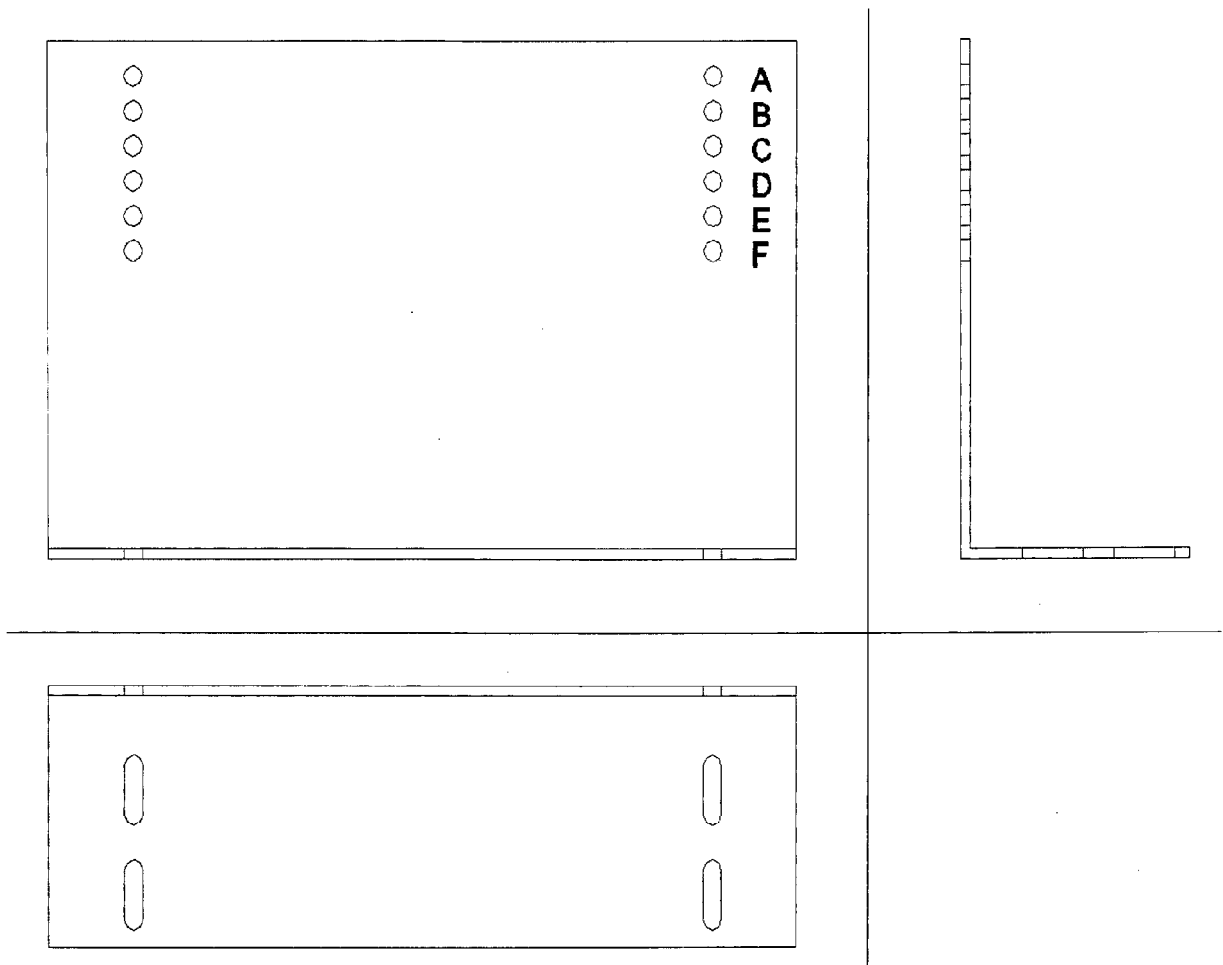


Figure 9



EUROPEAN SEARCH REPORT

Application Number
EP 15 38 2452

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 924 249 A (KROLL WILLIAM P [US] ET AL) 20 July 1999 (1999-07-20) * column 1, line 16 - line 25 * * column 3, line 60 - line 63 * * column 4, line 19 - line 28 * * column 4, line 62 - line 66 * * figures 7,8 *	1-7	INV. E04F11/02 ADD. A61H3/00
A	US 2008/257650 A1 (SCHMIDT HELENE E [US]) 23 October 2008 (2008-10-23) * paragraphs [0016], [0017], [0057], [0058] * * figures 1a,25,26 *	1-7	
A	US 2 206 862 A (BOYD JAMES R [US]) 9 July 1940 (1940-07-09) * column 1, line 1 - column 2, line 2 * * figure 1 *	1-7	
A	US 2013/212960 A1 (FREUND KURT [US]) 22 August 2013 (2013-08-22) * paragraphs [0005], [0025], [0031] * * figures 1A, 1B, 2, 4A *	1-7	TECHNICAL FIELDS SEARCHED (IPC) E04F A61H
A,P	JP 2014 240563 A (YUNITE KK; SHINDO CORP) 25 December 2014 (2014-12-25) * paragraphs [0003], [0033] * * figures 1-5 *	1-7	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 April 2016	Examiner Arsac England, Sally
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 15 38 2452

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5924249 A	20-07-1999	AU 1355497 A	28-07-1997
		US 5664379 A	09-09-1997
		US 5924249 A	20-07-1999
		WO 9724498 A1	10-07-1997

US 2008257650 A1	23-10-2008	NONE	

US 2206862 A	09-07-1940	NONE	

US 2013212960 A1	22-08-2013	NONE	

JP 2014240563 A	25-12-2014	NONE	

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