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Applicant: Aquilani, Enrico
01019 Vetralla (VT) (IT)

(72)

Inventor: Aquilani, Enrico
01019 Vetralla (VT) (IT)

(74)

Representative: Cipriani, Guido
C&C Brevetti e Marchi s.r.l.
Via Prisciano, 28
00136 Roma (IT)
- (30)

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(54)

ABOVE GROUND POOL STRUCTURE

- (57)

An above ground pool structure consists of modular components that can be assembled on the pool installation site. The modular components include: corner posts (1), side posts (2), support beams for a base (3) on which the corner posts (1) and the side posts (2) are vertically fixed, and horizontal connecting joists (4) designed to join the corner posts (1) and the side posts (2).
- Each corner post (1) and each side post (2) has at least a combination of a reticular pillar (10; 20) and a pair of side-by-side profiles (11, 12; 21, 22). Each side-by-side profile (11, 12; 21, 22) has a C-shaped cross-section with perforated wings (18; 28), provided with a plurality of holes (13; 23).

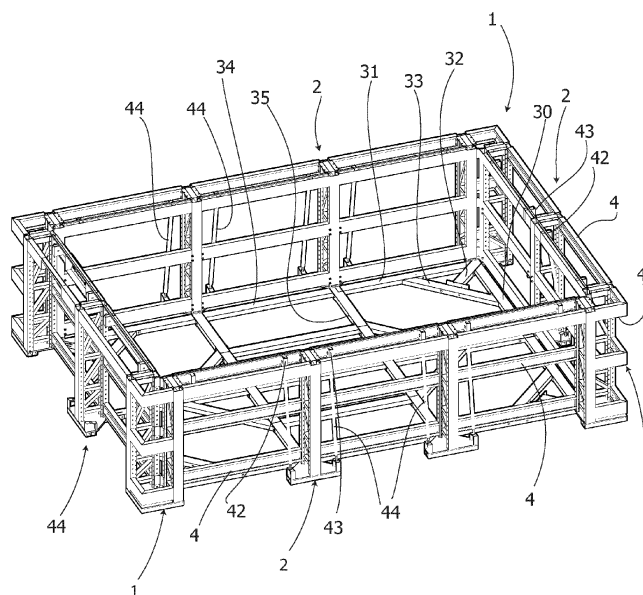


Fig. 1

Description

[0001] The present invention relates to an above ground swimming pool structure.

[0002] The Italian patent application 102013902161420 A1 describes a modular support structure for an above ground swimming pool comprising a plurality of modular components, suitable for being arranged to form a seat for the swimming pool. Each of the modular components includes a platform section, substantially horizontal, designed to form a portion of a walkable pool edge. It can be read in the description of the cited document and observed in the drawings that the modular components used are connected to each other via quick coupling joints and mechanical closures. It should be understood that the structure as proposed is not capable of supporting a pool with its load of water and the stresses caused by bathers. In particular, the corners of the quadrilateral structure are poorly reinforced and resistant. CN106193677A and CN202970013U also describe swimming pools with easily assembled and dismantled structures which do not appear to guarantee the non-deformability which, in addition to the requirements of resistance and safety, meets the normal aesthetic characteristics required of a swimming pool.

[0003] The present invention aims to provide a structure that can be easily assembled on site and capable of supporting a tank.

[0004] The main purpose is to give a joinable structure the same characteristics of resistance, safety and construction precision normally obtained with a fixed masonry construction.

[0005] In particular, the structure according to the present invention has the advantage of being obtained starting from components that can be easily assembled and disassembled and adjusted in position, maintaining the shapes and dimensions required for a swimming pool over time.

[0006] The structure consists of modular components that include corner posts, side posts, base support beams, a base on which the corner posts and side posts are fixed, and connecting joists that join the corner posts and side posts.

[0007] These and other purposes and advantages are achieved by an above ground swimming pool structure as defined in the main claim and in the dependent claims attached to the present description.

[0008] One of its embodiments is set out in the detailed description that follows, making reference to the attached drawings in which:

- figure 1 is an overall perspective view of an above ground swimming pool structure according to the present invention;
- figure 2 is a perspective view of a corner post for the structure in figure 1;
- figure 3 is an enlarged top plan view of the corner

post in figure 2;

- figure 4 is a plan elevation view of the corner post in figure 2;
- figure 5 is a section obtained along line A-A in figure 4;
- figure 6 is a perspective view of a lateral upright for the structure in figure 1, with hatched longitudinal beams;
- figure 7 is an enlarged scale top plan view of the side upright in figure 2;
- figure 8 is a plan elevation view of the side upright in figure 6;
- figure 9 is a section obtained along the line B-B in figure 8; and
- figure 10 is a partial perspective view, on an enlarged scale, from the outside and from above, of the corner post in figure 2.

[0009] Reference is made initially to figure 1 which is an overall perspective view of an above ground swimming pool structure according to the present invention. The structure is made up of modular components that can be assembled on site where the pool is designed to be installed. The modular components include corner posts indicated generically with 1 and side posts indicated generically as 2, support beams for a base indicated overall as 3. The base 3 is made up of coplanar support beams, designed to be connected to the corner posts 1 and side posts 2 and to support a swimming pool tank.

[0010] The support beams of a corner post 1 include mutually perpendicular perimeter beams 30, 31 and a diagonal beam 32, i.e. diagonal with respect to the perimeter beams 30, 31. Conveniently, the mutually perpendicular perimeter beams 30, 31 are connected by a beam connection 33.

[0011] The support beams of a side post 2 include mutually coaxial perimeter beams 31, 34 and a beam 35 perpendicular to the mutually coaxial perimeter beams 31, 34.

[0012] Base 3 is completed by other beams not marked with reference numbers. Mutual fixing of coplanar beams may be achieved by any suitable means.

[0013] Above the base 3, the corner posts 1 and the side posts 2 are connected by horizontal connecting joists. These horizontal connecting joists, generically indicated with 4, are preferably on three levels. The connection of the horizontal connecting joists 4 with the corner posts 1 and the side posts 2 will be explained after the description of the corner posts 1 and the side posts 2.

[0014] Reference is made to figures 2, 3, 4 and 5 which are, respectively, a perspective view, an enlarged top plan view, an elevation plan view of the corner post 1, and a section taken along the line A-A of figure 4.

[0015] Each corner posts 1 includes a combination of two reticular pillars, generically indicated as 10, arranged mutually orthogonal to each other, and a double pair of side-by-side profiles 11, 12. Each pair of side-by-side profiles 11, 12 includes an internal profile, which embrac-

es the respective reticular pillar 10 so as to face the tank, and an external profile 12 which embraces the same reticular pillar 10 on the opposite side. Each side-by-side profile 11, 12 has a C-shaped section with perforated wings 18, equipped with a plurality of holes, indicated generically as 13. As better shown in figure 4 and in figure 10, which is a partial perspective view from the outside and from above of the corner post 1, the two mutually orthogonal reticular pillars 10, 10 are joined together by an internal corner element 14 which joins the internal side-by-side profiles 11, 11 and an external corner element 15 which joins the external side-by-side profiles 12, 12. The pair of reticular pillars 10, 10 and the double pair of side-by-side internal profiles 11, 11 and side-by-side external profiles 12, 12 are integral with a corner plate 16. The corner plate 16 is configured so as to be fixed on the mutually perpendicular perimeter beams 30, 31 and on the diagonal beam 32 of the base 3. The mutually perpendicular perimeter beams 30, 31 and the beam diagonal 32 are connected to the remaining beams of the base 3 not further described.

[0016] On the side opposite to the corner plate 16, each reticular pillar 10 is covered by a plate, generically indicated as 17, useful for applying a covering surface over the corner post 1.

[0017] Reference is made now to figures 6, 7, 8 and 9 which are, respectively, a perspective view, an enlarged top plan view, an elevation plan view of the side posts 2, and a section obtained along the line B-B in figure 8.

[0018] Each side post 2 includes a combination of a reticular pillar, indicated generically as 20, and a pair of side-by-side profiles 21, 22. The pair of side-by-side profiles 21, 22 is made up of an internal profile 21, which embraces the reticular pillar 20 so as to face the tank, and an external profile 22 which embraces the same reticular pillar 20 on the opposite side. Like the side-by-side profiles 11, 12, the side-by-side profiles 21, 22 have a C-shaped section with perforated wings 28, equipped with a plurality of holes, indicated generically as 23.

[0019] The reticular pillar 20, the internal side by side profile 21 and the external side by side profile 22 are integral with a side plate 24. The side plate 24 is configured, preferably, with a pentagonal plan, to be fixed on the mutually axial perimeter beams 31, 34 and on the perpendicular beam 35 of the base 3. The mutually axial perimeter beams 31, 34 and the perpendicular beam 35 are connected to the remaining beams of the base 3 not further described.

[0020] The side plate 24 of each side post 2 is equipped with first attachment members 25, 26 for tie rods, as described in greater detail below. Tie rods, indicated generically as 44, are provided between the first attachment members 25, 26 on the side plate 24 of the side post 2 and the second attachment members 42, 43 for tie rods, provided on horizontal connecting joists 4, represented with broken lines and described in detail below. Conveniently, the side plate 24 is pentagonal.

[0021] On the side opposite to the side plate 24, the

reticular pillar 20 is covered by a plate 27, useful for applying the covering surface as above the corner post 1.

[0022] Referring to figure 10, a detail of the corner post 1 is shown. It can be seen that the reticular pillars 10, 10 are connected to the internal side-by-side profiles 11, 11 which are joined by the internal corner element 14 preferably by welding. The internal corner element 14 has a winged profile, perforated at the sides intended to be welded onto the internal side-by-side profiles 11, 11. Essentially, the holes of the internal corner element 14 are coaxial with the holes 13 of the internal side-by-side profiles 11, 11. Connection means, such as a threaded rod 40 and related nut 41 or alternatively a bolt, are provided between the horizontal connecting joists 4, which are located at the highest level in the structure according to the present invention, and the perforated wings 18 of internal side-by-side profile 11.

[0023] As mentioned above with reference to figure 6 and shown in figure 1, the horizontal connecting joists 4, which are located at the highest level in the structure, are equipped with second attachment members 42, 43 for tie rods.

[0024] The tie rods 44 are provided between the first attachment members 25, 26 on the side plate 24 of the side post 2 and the second attachment members 42, 43 for tie rods. In this way the tie rods 44, adjustable as usual with a threaded area and an end nut, are useful for maintaining a perfect horizontal arrangement of the horizontal connecting joists 4 and consequently of the entire structure of the swimming pool according to the present invention.

[0025] Furthermore, the arrangement of tie rods between the side plate 24 of the side post 2 and the highest horizontal connecting joists 4 serves to regulate the verticality of the structure, at least on the internal side in contact with the tank.

[0026] This respect for verticality achieves the purposes that the invention sets itself in a simple and effective way.

Claims

1. Above ground pool structure consisting of modular components that can be assembled on the pool installation site, said modular components including:

- corner posts (1),
- side posts (2),
- support beams for a base (3) on which the corner posts (1) and the side posts (2) are vertically fixed, and
- horizontal connecting joists (4) designed to join the corner posts (1) and the side posts (2),

characterized in that each corner post (1) and each side post (2) comprises at least a combination of a reticular pillar (10; 20) and a pair of side-by-side pro-

files (11, 12; 21, 22), each side-by-side profile (11, 12; 21, 22) having a C-shaped cross-section with perforated wings (18; 28), provided with a plurality of holes (13; 23).

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2. Structure according to claim 1, wherein each corner post (1) comprises two reticular pillars (10, 10) arranged mutually orthogonal and joined together by both an internal corner element (14) and an external corner element (15) and by a corner plate (16) configured to be fixed on said base (3). 10
3. Structure according to claim 1, wherein each lateral post (2) comprises a reticular pillar (20) joined to a side plate (24) equipped with first attachment members (25, 26) for tie rods. 15
4. Structure according to claim 1, in which joining means are provided between said horizontal connecting joists (4) and said perforated wings (18; 28) of side-by-side profile (11, 12; 21, 22) of the corner posts (1) and of the side posts (2). 20
5. Structure according to claim 4, wherein said joining means are selected from the group comprising bolts and threaded rods provided with end nuts. 25
6. Structure according to claim 1, wherein said horizontal connecting joists (4) are provided with second attachment members (42, 43) for tie rods. 30
7. Structure according to claims 3 and 6, in which tie rods (44) are provided between said first attachment members (25, 26) for tie rods and said second attachment members (42, 43) for tie rods. 35
8. Structure according to claim 1, in which said base (3) is formed by coplanar support beams, suitable to be connected to the corner posts (1) and to the side posts (2), and to support a pool. 40
9. Structure according to claim 8, wherein said support beams of a corner post (1) comprise mutually perpendicular perimeter beams (30, 31) and a diagonal beam (32) with respect to said perpendicular perimeter beams (30, 31). 45
10. Structure according to claim 8, wherein said supporting beams of a lateral post (2) comprise mutually coaxial perimeter beams (31, 34) and a perpendicular beam (35) that is perpendicular to said mutually coaxial perimeter beams (31, 34). 50

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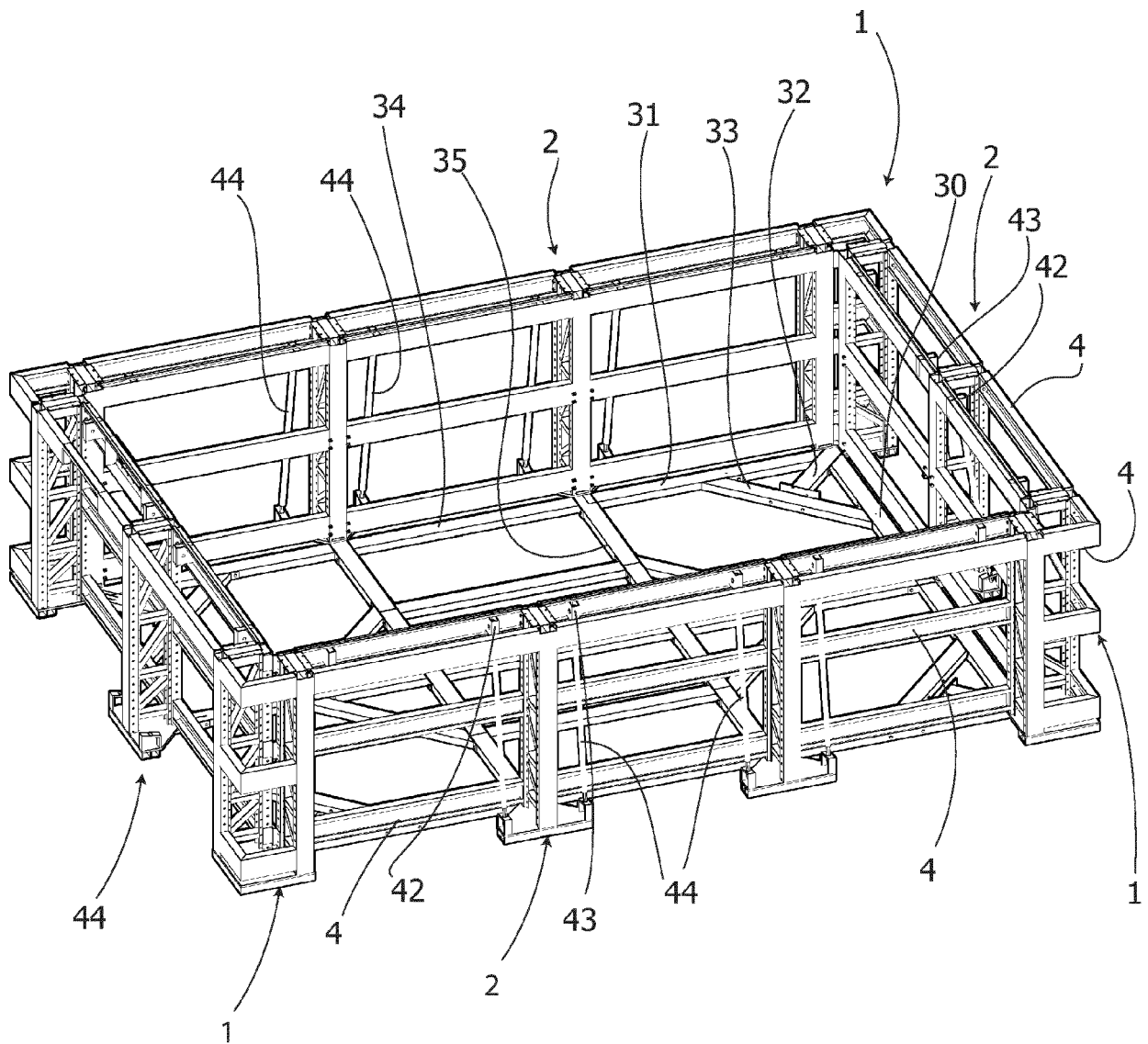


Fig. 1

Fig. 2

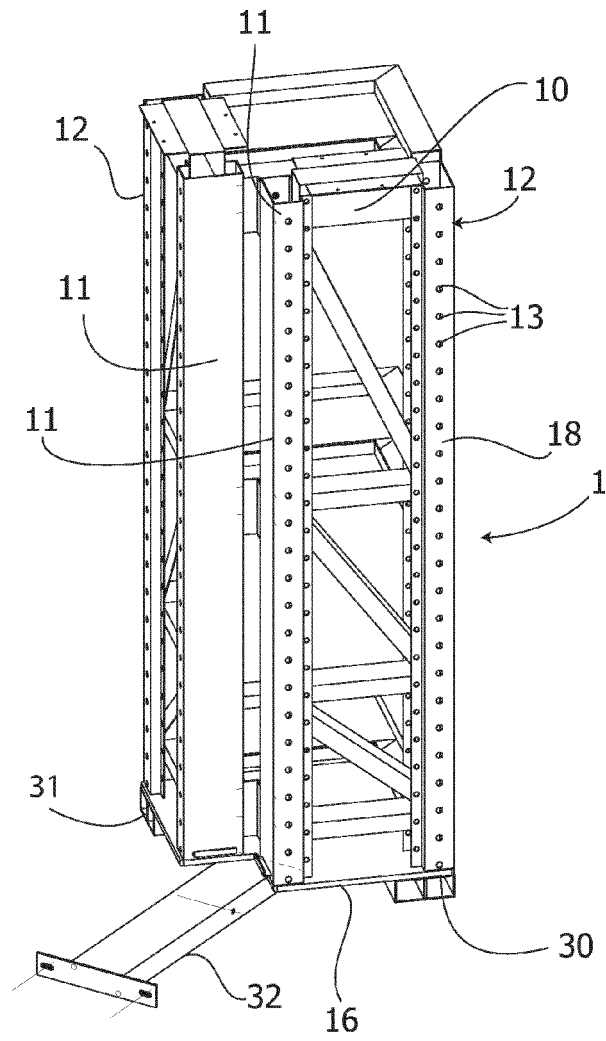
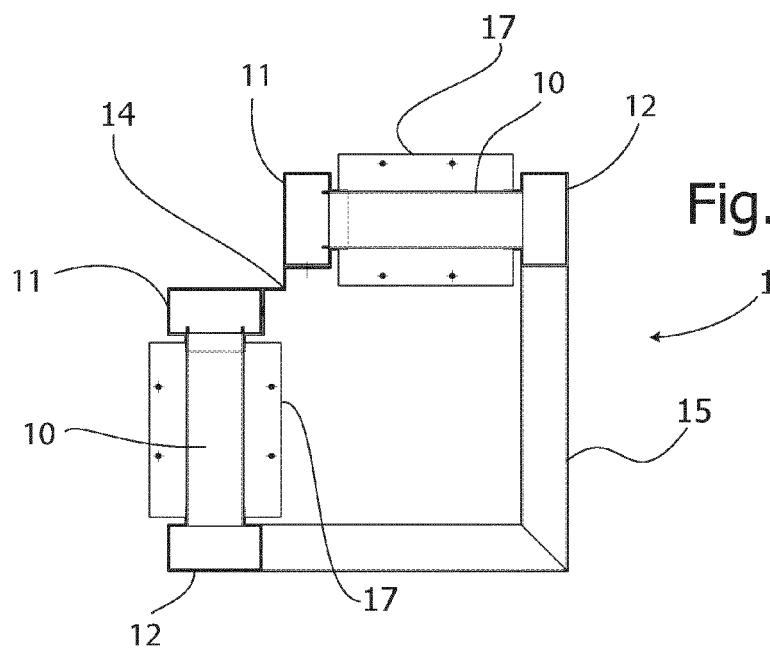
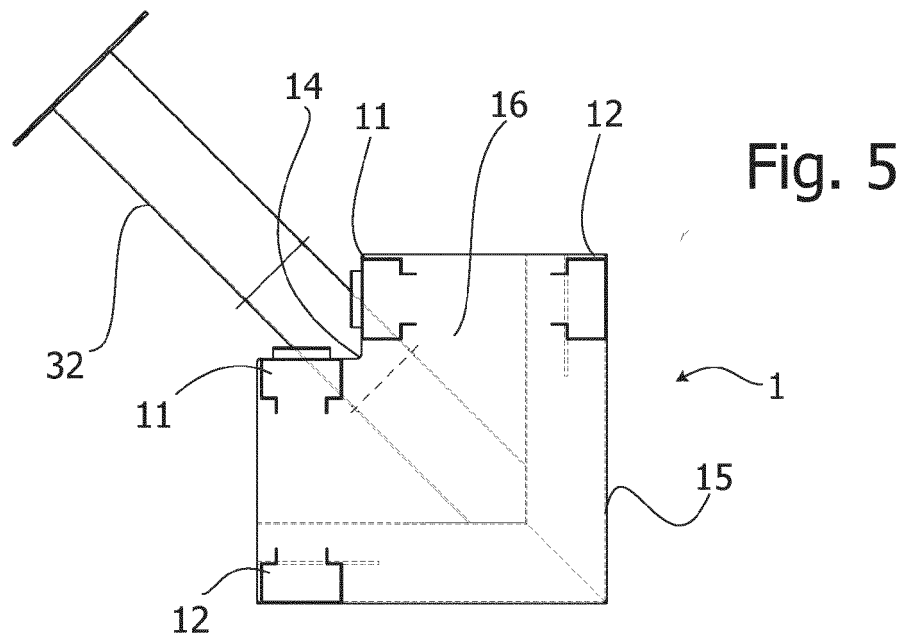
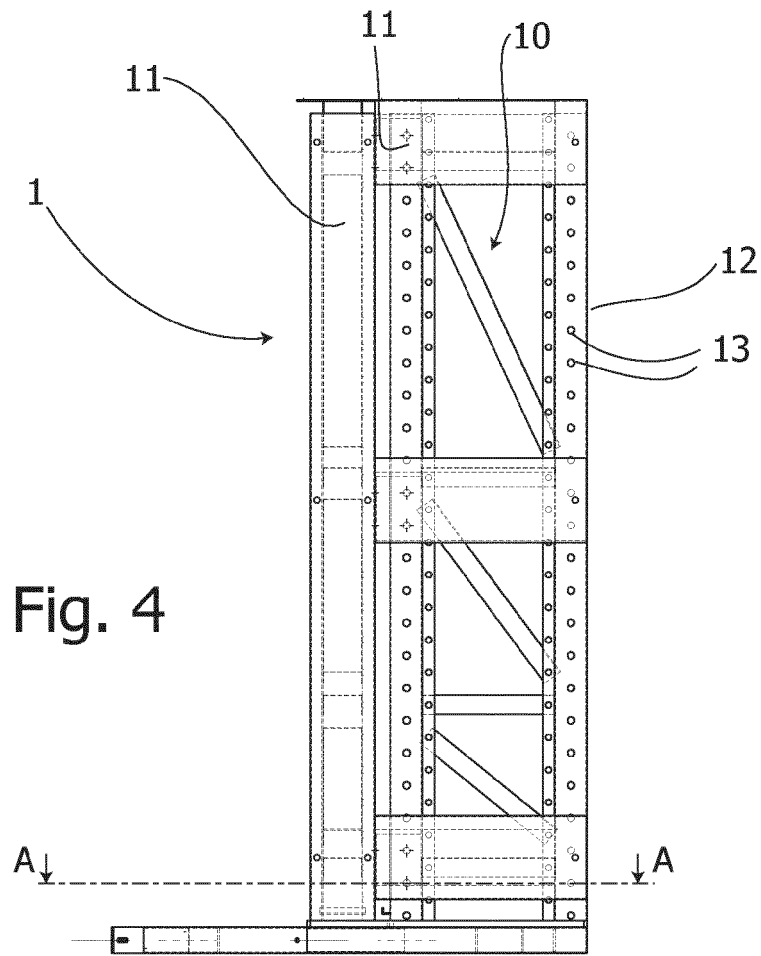
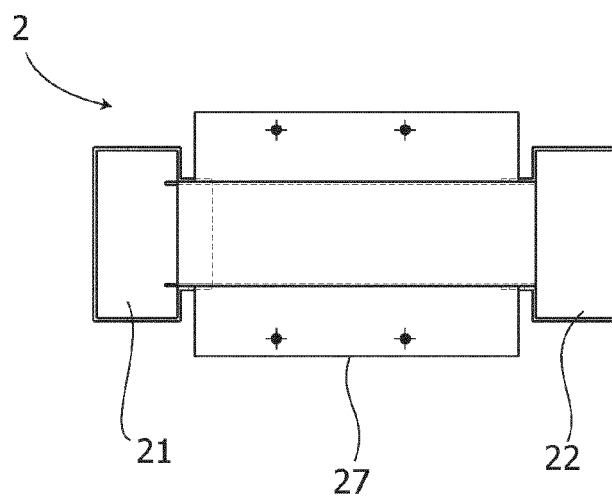
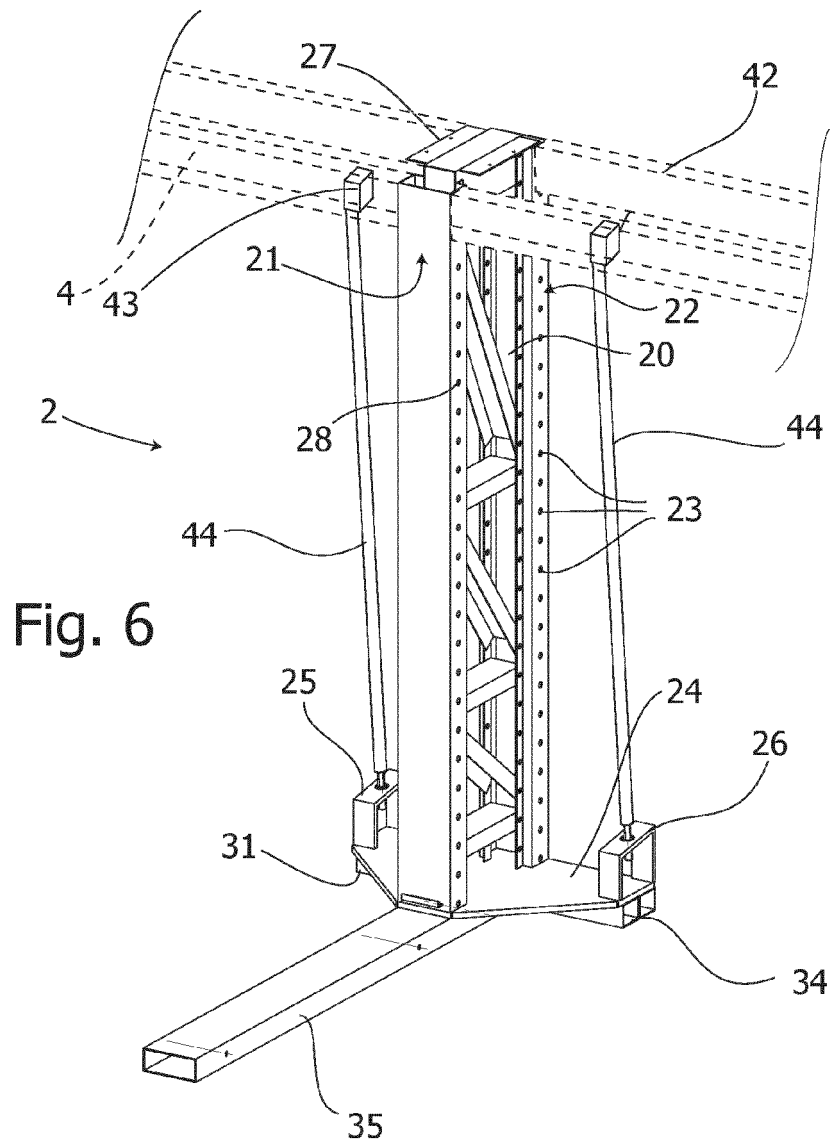
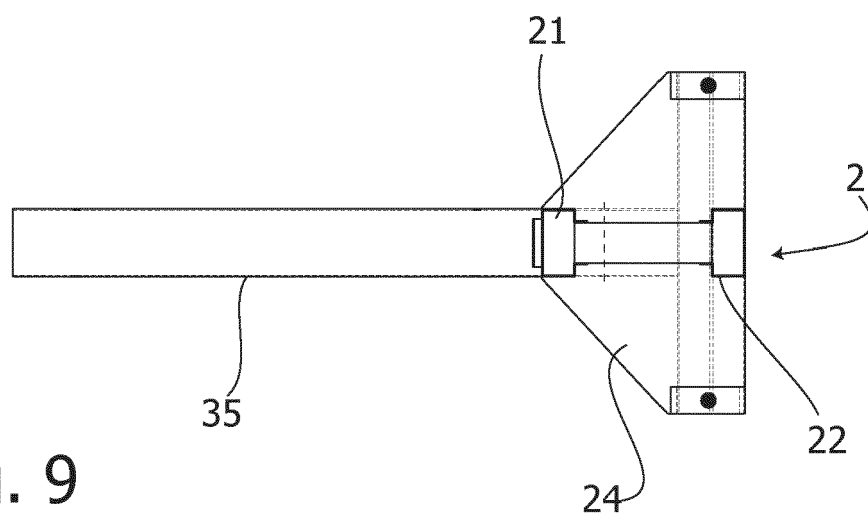
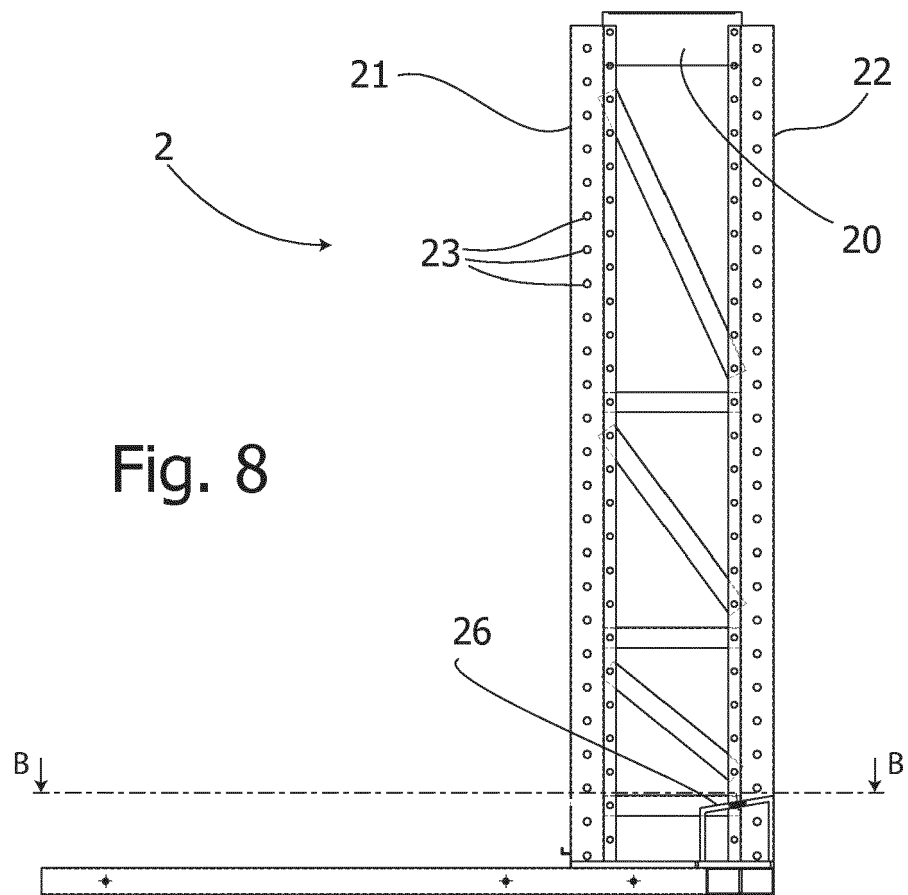


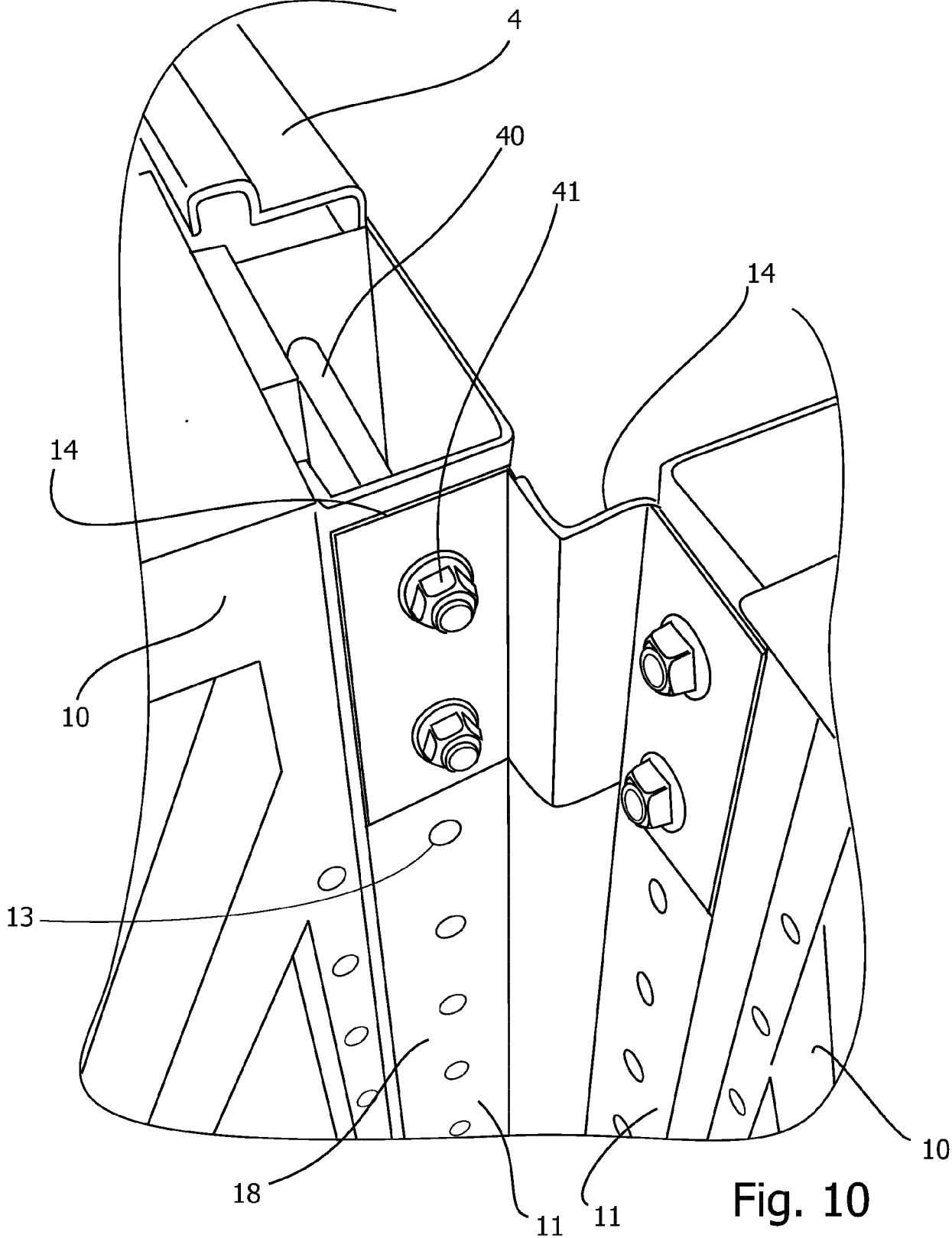
Fig. 3













EUROPEAN SEARCH REPORT

Application Number

EP 23 20 9378

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 2018/044934 A1 (HALL DAVID E [US]) 15 February 2018 (2018-02-15) * figures 2-4 *	1-10	INV. E04H4/00 A61H33/00
A	SE 1 000 568 A1 (TOERNROOS CHRISTIAN [SE]) 28 November 2011 (2011-11-28) * figures 2, 3 *	1-10	
A	EP 3 781 762 B1 (BERNDORF METALL UND BAEDERBAU GMBH [AT]) 25 May 2022 (2022-05-25) * figure 3d *	1-10	
A	EP 3 351 705 A1 (PROCOPI [FR]) 25 July 2018 (2018-07-25) * figure 2 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04H A61H
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		20 March 2024	Brucksch, Carola
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 23 20 9378

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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20-03-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2018044934 A1	15-02-2018	NONE	
SE 1000568 A1	28-11-2011	NONE	
EP 3781762 B1	25-05-2022	AT 521113 A1	15-10-2019
		EP 3781762 A1	24-02-2021
		WO 2019191796 A1	10-10-2019
EP 3351705 A1	25-07-2018	EP 3351705 A1	25-07-2018
		ES 2814604 T3	29-03-2021
		FR 3062150 A1	27-07-2018

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- IT 102013902161420 A1 [0002]
- CN 106193677 A [0002]
- CN 202970013 U [0002]