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(54) Extensible table top

(57) A table top (2) for an extensible table comprises two external surfaces (3,4), which lie in one shared surface and form a table surface (6), said external surfaces (3,4) being able to be drawn together and parted, and a surface to be inserted (7) that can be introduced between the two external surfaces (3,4) when these are separated, and which can be positioned beneath the external surfaces (3,4), when the external surfaces (3,4) are drawn together. Connecting means (9,11) connect the two external surfaces (3,4) in a sliding manner along one direction of extension (E) to allow them bo be drawn together and separated and a mobile connecting part (14) connects the surfaces to be inserted (7) with both of the external surfaces (3,4), so that the surface to be inserted (7):

A) slides along said direction of extension (E) and;
B) inclines in relation to the external surfaces (3,4) around a first axis (I) that is transversal to the direction of extension (E) and basically parallel to the surface to be inserted (7) and;
C) rotates around a second axis (II) that is transversal to the first axis (I) and basically normal to the surface to be inserted (7), said second axis (II) being inclinable in relation to the external surfaces (3,4) by oscillation of the surface to be inserted (7) around the first axis (I) and;
D) slides along said second axis (II).

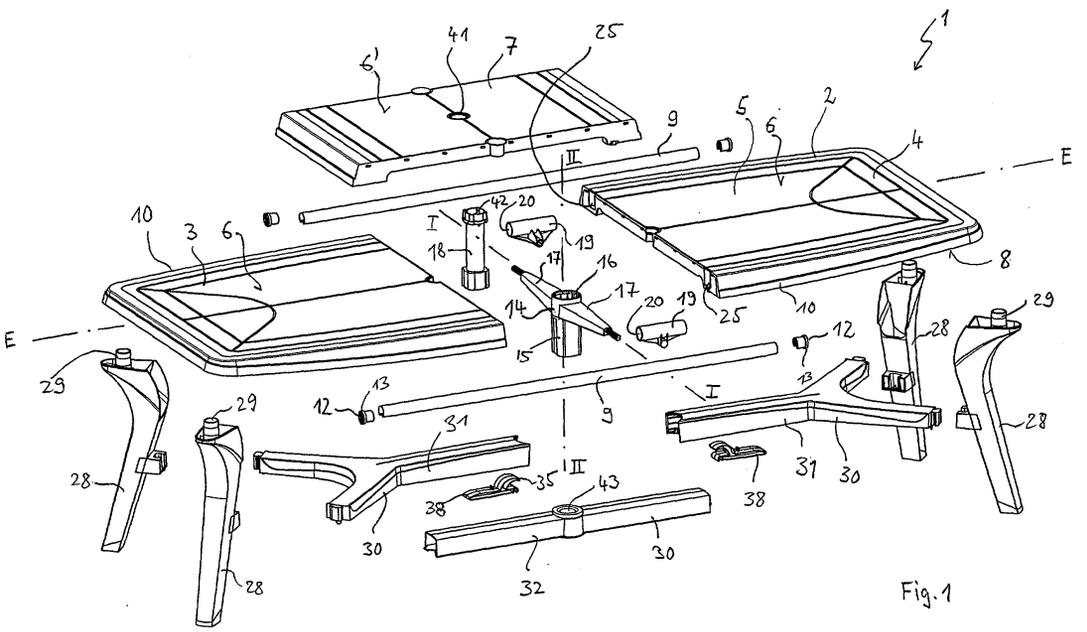

Fig.1

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Description

[0001] The subject of the present invention regards an extensible table top, in particular for extensible outdoor tables, as well as an extensible table.

[0002] It is known of tables with a table top made up of two parts, which can be separated in one shared surface to create a space between them to hold a surface to be inserted. The surface to be inserted can be a plate separated from the table or a plate connected to it and set in a resting position beneath the table top that can recline from the resting position into a usable position in the table top between the two separated external parts.

[0003] A known solution provides that the two external parts, which can be separated from the table top are slidingly supported by a supporting structure that is itself invariable. Consequently, the table legs are always the same distance and, in the open configuration, the table top, particularly the two external parts, jut out overhanging far beyond the supporting structure.

[0004] Besides causing elevated flexion of the overhanging parts of the table top, this leads to the risk of the table overturning when loaded only on one side.

[0005] Moreover, the supporting structure must serve two functions, which are not particularly compatible: it must support the table top and at the same time create the mechanism for extending or lengthening the table top.

[0006] A second known solution provides that the supporting structure itself is extensible, so that when the two parts, which can be separated from the table top, are separated, the table legs also separate, thus resolving the problem of the excessive overhanging length of the table top. In this case, however, the distance between the table legs increases and consequently also the flexion length not only of the central part of the work top, but also that of the supporting structure itself. This makes it necessary to have a supporting structure with an elevated supporting capacity and an extension mechanism with a transversal play of movement that is as reduced as possible. The known solutions are mechanically complex, awkward and heavy and almost always require the combination of various materials, for example wood and metal.

[0007] Outdoor tables are also exposed to changes in temperature, the sun, the rain and damp, which cause variations in volume and deformations of the wooden parts, as well as corrosion of the metallic parts of the supporting structures and of the extension mechanism, compromising its working.

[0008] Tables in synthetic material, for example PVC, polyamide or polyethylene are much more resistant to climatic stress, but they are subject to considerable deformations with loads due to their reduced elastic modulus.

[0009] Finally, extensible tables of the prior art are particularly subject to scratching and damage of the exposed surfaces, as a result of the repeated action of the extension mechanism.

[0010] The aim of the present invention is therefore to make a table top available, as well as an extensible table with a simplified and reliable extension mechanism, with such characteristics to resolve the stated problems referring to the prior art.

[0011] A further aim of the present invention is to make a table top available, as well as an extensible table that is particularly suitable for synthetic material to be used for its construction.

[0012] These and other aims are achieved by means of a table top according to claim 1 and a table according to claim 13.

[0013] For a better comprehension of the invention and to appreciate its advantages, one of its embodiments will be described below, referring to the accompanying drawings, wherein:

[0014] figure 1 is an exploded view of the table according to the invention;

[0015] figures from 2 to 9 are perspective views, which show the table according to the invention in different configurations during lengthening;

[0016] figure 10 is a section view of a detail of the table according to the invention;

[0017] figure 11 is a section view of a further detail of the table according to the invention.

[0018] figures from 12A to 12D are enlarged perspective views of some details of the table in drawing 1.

[0019] With reference to the drawings, an extensible table is globally indicated with reference numeral 1.

[0020] Table 1 comprises a table top 2 with two external surfaces 3, 4 that lie in one shared surface and form a table surface 6 on one of their upper sides 5. The external surfaces 3, 4 can be drawn together to form the "closed" table surface 6 and separated from each other to create a space in which a surface to be inserted 7 can be introduced to form an "open" or extended table surface 6, 6'.

[0021] The surface to be inserted 7 can also be positioned beneath a lower side 8 of the external surfaces 3, 4 opposite the upper side 5 in a resting position where it stays when the external surfaces 3, 4 are drawn together.

[0022] The two external surfaces 3, 4 are connected by means of special connecting devices, sliding along one direction of extension E to allow them to be drawn together and separated in the aforesaid shared surface.

[0023] Preferably, the two connecting bars 9 are arranged near two longitudinal sides 10 of the table top 2 and set sliding in integrally connected guide components 11 that are preferably formed of one piece with the external surfaces 3, 4.

[0024] According to one embodiment, two guide components 11 are formed along each longitudinal side 10 of each external surface 3, 4, and they are distanced from each other and define bolt holes in which the relative connecting bar 9 is inserted.

[0025] The guide bars 9 are preferably metallic tubu-

lar sections, for example made of iron, which are closed at the ends by plugs 12 made of synthetic material.

[0026] The plugs 12 have a protruding edge 13 that is suitable for abutting against a corresponding edge of the guide component 11 to create stop devices for the connecting bar 9.

[0027] A mobile connecting part 14 connects the surface to be inserted 7 by means of the connecting bars 9 with both of the external surfaces 3, 4, so that with the external surfaces 3, 4, separated, the surface to be inserted 7 be:

[0028] A) sliding along the direction of extension E and

[0029] B) inclinable in relation to the external surfaces 3, 4 around a first transversal axis I that is preferably perpendicular to the direction of extension E and basically parallel to the surface to be inserted 7 and

[0030] C) rotating around a second transversal axis II that is preferably perpendicular to the first axis I and normal to the surface to be inserted 7, in which the second axis II is inclinable in relation to the external surfaces 3, 4 by oscillation of the surface to be inserted 7 around the first axis I and

[0031] D) sliding along said second axis II.

[0032] In particular, the surface to be inserted 7 slides along the second axis II between a withdrawn position, which allows the surface to be inserted 7 to be positioned beneath the lower side 8 of the external surfaces 3, 4 and a protracted position, which allows the surface to be inserted 7 to be positioned and moved above the upper side 5 of the external surfaces 3, 4 above their table surface 5 and separated from this.

[0033] By rotating the surface to be inserted 7 around the second axis II, it is possible to orient it in a longitudinal position, which allows the surface to be inserted 7 to be positioned beneath the lower side 8 of the external surfaces 3,4, as well as in a transversal position, which allows the surface to be inserted 7 to be introduced between the external surfaces 3,4 to create the extended table surface 6, 6'.

[0034] The mobile connecting part 14 comprises a basic body 15 with a guide slot 16, which extends along the second axis II with two arms 17, which extend transversally to the second axis II. A column 18 is received in the guide slot rotating around the second axis II and sliding along the axis. In turn, the column 18 is connected integrally with the surface to be inserted 7, preferably by means of self-thread screwing.

[0035] A sliding block 19 is connected to each arm 17 rotating around the first axis I. Each sliding block 19 defines a sliding slot 20 that engages one of the two connecting bars 9 respectively sliding along the direction of extension E.

[0036] Circumferential 21 and longitudinal 22 cavities and/or projections are made in the guide slot 16, which interact with corresponding longitudinal 24 and circumferential 23 projections and/or cavities of the column 18 to guide the movements of the surface to be inserted 7 in relation to the external surfaces 3,4 in a controlled manner.

[0037] The aforesaid projections and/or cavities 21, 22, 23, 24 allow the surface to be inserted 7 to rotate around the second axis II only when said surface to be inserted 7 stops in the extracted position. This prevents the surface to be inserted 7 from moving, which could scratch the table surface 6 of the external surfaces 3, 4.

[0038] Moreover, said projections and/or cavities 21, 22, 23, 24 are made to allow the surface to be inserted 7 to slide along the second axis II only when the surface to be inserted 7 is oriented in a longitudinal or transversal position and prevent this sliding during rotation of the surface to be inserted 7 between these two positions.

[0039] The table top 2 also comprises rapid hooking devices 25 for movable connection of the two external surfaces 3, 4 when these are drawn together and for connection of the separated external surfaces 3, 4 with the surface to be inserted 7, when this is inserted between them to create the extended table surface 6, 6'.

[0040] Four coupling slots 26 are made on the lower side 8 of the table top 2 to connect the table top 2 with a supporting structure 27, in particular with four legs 28, to support the table top 2 and form the extensible table 1.

[0041] The coupling slots 26 present a basically truncated form that is suitable for receiving a corresponding truncated coupling part 29 of the legs 28, preferably with interference.

[0042] According to one embodiment, two legs 28 are connected to each external surface 3, 4 and the four legs 28 are interconnected by means of a union crosspiece 30, which is also extensible along the direction of extension E. The union crosspiece 30 comprises two Y shaped external parts 31 and a central part 32 with an extended form that is slidingly connected with both of the external parts 31 to allow lengthening and shortening of the union crosspiece 30. Each of the external parts 31 is movably connected respectively with two legs 28 and these are connected with the same external surface 3 or 4 of the table top 3 and the central part 32 is connected telescopically with the two external parts 31.

[0043] Advantageously, locking devices are foreseen, which can be operated manually to allow the crosspiece 30 to be locked in predetermined extension configurations.

[0044] According to one embodiment, said locking devices comprise first openings 33 that are made in each external part 31 and one or more second openings 34 made in the central part 32 in such positions as to overlap the first openings 33 in said predetermined extension configurations, as well as one or more bolts 35 that can be inserted in the first and second opening 33, 34 to prevent sliding of the central part in relation to the external parts 33.

[0045] Each bolt 35 comprises a driving lever 38, preferably made of one piece with said bolt and rotatingly connected with the relative external part 31 of the union

crosspiece 30.

[0046] According to one embodiment shown in the drawings, the bolts 35 have a tapered crescent curved shape.

[0047] Advantageously, a catch is provided that is integral with the bolt 35 and adapted to engaging a corresponding small edge 37 of the union crosspiece 30 with a click to lock the bolt 35 in its locking position.

[0048] According to one embodiment, the central part 32 of the union crosspiece 30 comprises two edges 39 set at the opposite ends of said central part 32 and adapted to engaging a corresponding edge 40 of the external parts 31 to prevent a complete, involuntary extraction of the central part 32 from the external parts 31.

[0049] The external surfaces 3, 4 and/or the surface to be inserted 7 delineate a first pass-through opening 41 for an umbrella stem that is aligned with a second pass-through opening 42 created in the mobile connecting part 14, in particular in the column 18, and with a third pass-through opening 43 created in the union crosspiece 30, in particular in its central part 32, so that an umbrella stem inserted into said pass-through openings is sustained in several points.

[0050] The first pass-through opening 41 can be adapted to the diameter of the umbrella stem by means of compass shaped inserts of varying diameters with helical cams to allow them to be inserted by screwing into the first pass-through opening 41.

[0051] Advantageously, the table top 2 and table 1 are completely made of synthetic material, preferably polypropylene, except for the two connecting bars 9, which are advantageously tubular sections made of metallic material, preferably iron that can easily be protected from corrosion thanks to the continuous convexity of their exposed surface.

[0052] All of the components of the table top and table described and shown above in drawing 1 as single parts are produced separately, preferably by means of die-casting (except for the connecting bars) and they can be movably interconnected to allow easy and not particularly awkward storage and transport.

[0053] The working of the table according to the invention will be described below.

[0054] The two external surfaces 3, 4 are drawn together with the table closed (figure 2) and connected with the rapid hooking devices 25. The surface to be inserted 7 is oriented longitudinally and parked in its resting position beneath the lower side 8 of the external surfaces 3, 4 and the union crosspiece 30 appears fully shortened.

[0055] To extend the table, the rapid hooking devices 25 of the table top and the bolts 35 of the union crosspiece are released and the table is extended along the direction of extraction E (figure 3). In order to be able to position the surface to be inserted 7 between the separated external surfaces 3,4, it is necessary to slide the surface to be inserted to the inner edge of one of the external surfaces, incline it around the first axis I (figures 4, 5) and slide it towards the other external surface, so that one end of the surface to be inserted is above the external surfaces (figure 6). At the same time, the surface to be inserted is extracted along the second axis II so as to bring the second end of the surface to be inserted 7 above the external surfaces 3, 4. Only now is it possible to rotate the surface to be inserted around the second axis II into its transversal position (figure 7). During rotation of the surface to be inserted 7 from a longitudinal position into a transversal position, it cannot slide along the second axis II and, so, not lower onto the table surface 6 of the external surfaces 3, 4, thus eliminating the risk of scratching.

[0056] When the surface to be inserted is oriented transversally (figure 8), it slides along the second axis II, as a result of its own weight, towards the bottom until it rests on the bars 9 (figure 9) and lies in the same surface as the external surfaces, which are drawn to the surface to be inserted and coupled to it by means of the rapid hooking devices 25.

[0057] It is possible to lock the extended configuration of the supporting structure by using the bolts 35.

[0058] The table can be shortened in a similar manner.

[0059] The table top and table according to the invention present numerous advantages. They are particularly simple, not too awkward and reliable. The table top and table according to the invention are particularly suited to the use of synthetic material for their construction and present considerable flexion resistance.

[0060] The table top and table are very easily extended and shortened and reduce the risk of scratching the table surface due to the action of the extension mechanism.

[0061] Lastly, thanks to the modular system and movable connection of the table parts, it is easy to transport and store in limited spaces.

[0062] Clearly, the person skilled in the art can make further modifications and variations to the table top and table according to the present invention to satisfy specific, contingent needs, which are furthermore all contained within the scope of protection of the invention, as defined by the following claims.

Claims

1. Table top (2) for an extensible table, wherein said table top (2) comprises:

   - two external surfaces (3, 4), which lie in one shared surface and form a table surface (6) on one of their upper sides (5), said external surfaces (3, 4) being able to be drawn together and parted;
   - a surface to be inserted (7) that can be introduced between the two external surfaces (3, 4) when these are parted, and which can be posi-

tioned beneath a lower side (8) of the external surfaces (3, 4) opposite the upper side (5), when the external surfaces (3, 4) are drawn together;

- connecting means (9, 11) that connect the two external surfaces (3, 4) in a sliding manner along one direction of extension (E) to allow them to be drawn together and parted in said shared surface,

wherein the table top (2) comprises a mobile connecting part (14), which connects the surface to be inserted (7) by means of said connecting devices (9, 11) with both of the external surfaces (3, 4), said mobile connecting part (14) comprising:

A) means that permit the surface to be inserted (7) to slide along said direction of extension (E) and;
B) means for inclining the surface to be inserted (7) in relation to the external surfaces (3, 4) around a first axis (I) that is transversal to the direction of extension (E) and basically parallel to the surface to be inserted (7) and;
C) menas for rotating the surface to be inserted (7) around a second axis (II) that is transversal to the first axis (I) and basically normal to the surface to be inserted (7), said second axis (II) being inclinable in relation to the external surfaces (3, 4) by oscillating the surface to be inserted (7) around the first axis (I) and;
D) means for sliding the surface to be inserted (7) along said second axis (II).

2. Table top (2) according to claim 1, wherein said first axis (I) is basically perpendicular to the direction of extension (E).

3. Table top (2) according to claim 1 or 2, wherein said second axis (II) is basically perpendicular to the first axis (I) .

4. Table top (2) according to any one of the previous claims, wherein said surface to be inserted (7) slides along the second axis (II) between a withdrawn position of the surface to be inserted (7) that allows it to be positioned beneath the lower side (8) of the external surfaces (3, 4) and a protracted position of the surface to be inserted (7), which allows it to be positioned and moved above the upper side (5) of the external surfaces (3, 4) distanced from their table surface (6).

5. Table top (2) according to claim 4, comprising means for guiding the movements of the surface to be inserted (7) in relation to the external surfaces (3, 4) in a controlled manner, to allow it to rotate around the second axis (II) only when said surface to be inserted (7) stops in said extracted position.

6. Table top (2) according to any one of the previous claims, wherein said surface to be inserted (7) can be oriented around the second axis (II) between a longitudinal position of the surface to be inserted (7), which allows it to be positioned beneath the lower side (8) of the external surfaces (3, 4) and a transversal position of the surface to be inserted (7), which allows it to be introduced between the external surfaces (3, 4) .

7. Table top (2) according to claim 6, comprising means for guiding the movements of the surface to be inserted (7) in relation to the external surfaces (3, 4) in a controlled manner to allow the surface to be inserted (7) to slide along the second axis (II) only when the surface to be inserted (7) is oriented in a longitudinal or transversal position.

8. Table top (2) according to any one of the previous claims, wherein said connecting means (9, 11) comprise two connecting bars (9) set near two longitudinal sides (10) of the table top (2) and slidingly set in guide components (11), which are integrally connected with the external surfaces 3, 4).

9. Table top (2) according to claim 8, wherein said mobile connecting part (14) comprises:

- a basic body (15) with a guide slot (16), which extends along said second axis (II) and two arms (17) that extend transversally to the second axis (II);
- a column (18) received in the guide slot (16) rotating around the second axis (II) and sliding along the second axis (II), said column being integrally connected with the surface to be inserted (7);
- two sliding blocks (19) connected with said arms (17) rotating around the first axis (I), wherein each sliding block (19) defines a slot for sliding (20) that engages one of the two connecting bars (9) respectively in a sliding manner along the direction of extension (E).

10. Table top (2) according to any one of the previous claims, wherein said means for guiding the movements of the surface to be inserted (7) in a controlled manner in relation to the external surfaces (3, 4) comprise projections or cavities (21, 22) made in the guide slot (16), which interact with corresponding cavities and/or projections (23, 24) of the column (18).

11. Table top (2) according to any one of the previous claims, comprising rapid hooking devices (25) for movable connection of the two external surfaces (3,

4) when these are drawn together and rapid hooking devices (25) for connecting the separated external surfaces (3, 4) with the surface to be inserted (7), when this is introduced between them to form an extended table surface (6, 6').

12. Table top (2) according to any one of the previous claims, wherein said table top (2) is completely made of synthetic material, preferably polypropylene, except for the two connecting bars (9), which are tubular sections made of metallic material, preferably iron.

13. Extensible table (1), comprising an extensible table top (2) according to any one of the previous claims and a supporting structure (27) with four legs (28), wherein each of the external surfaces (3, 4) is connected with two legs (28), the four legs (28) being interconnected with a union crosspiece (30) that is extensible along the direction of extension (E).

14. Extensible table (1) according to claim 13, wherein said union crosspiece (30) comprises two connected external parts (31), each with two legs (28) and a central part (32) connected in a sliding manner with both of the external parts (31) to allow the union crosspiece (30) to lengthen and shorten.

15. Extensible table (1) according to claim 14, wherein the central part (32) is connected telescopically with the external parts (31).

16. Table according to any one of the claims from 13 to 15, wherein said union crosspiece (30) comprises manually operated locking means, which allow the union crosspiece (30) to be locked in predetermined extension configurations.

17. Extensible table (1) according to claim 16, wherein said locking means comprise a first opening (33) made in the external part (31) and at least one second opening (34) made in the central part (32) overlapping the first opening (33) in said predetermined extension configurations, as well as a bolt (35) that can be inserted in the first and second opening (33, 34) to prevent sliding of the central part (32) in relation to the external part (31).

18. Extensible table (1) according to claim 16 or 17, comprising means for stopping the bolt (35) in the locking position.

19. Extensible table (1) according to any one of the claims from 17 to 19, comprising an operating lever (38) made with one piece with said bolt (35).

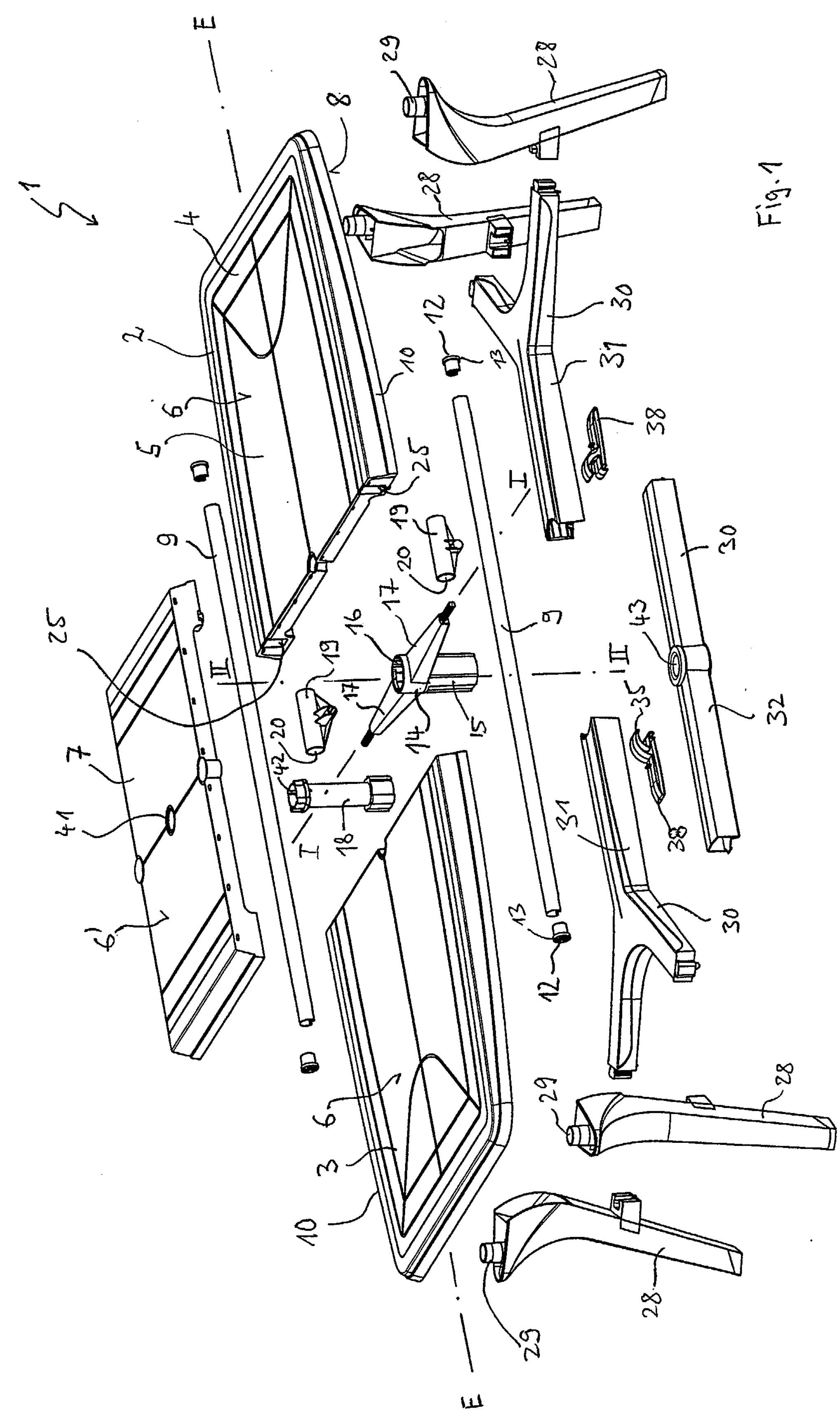

Fig. 1

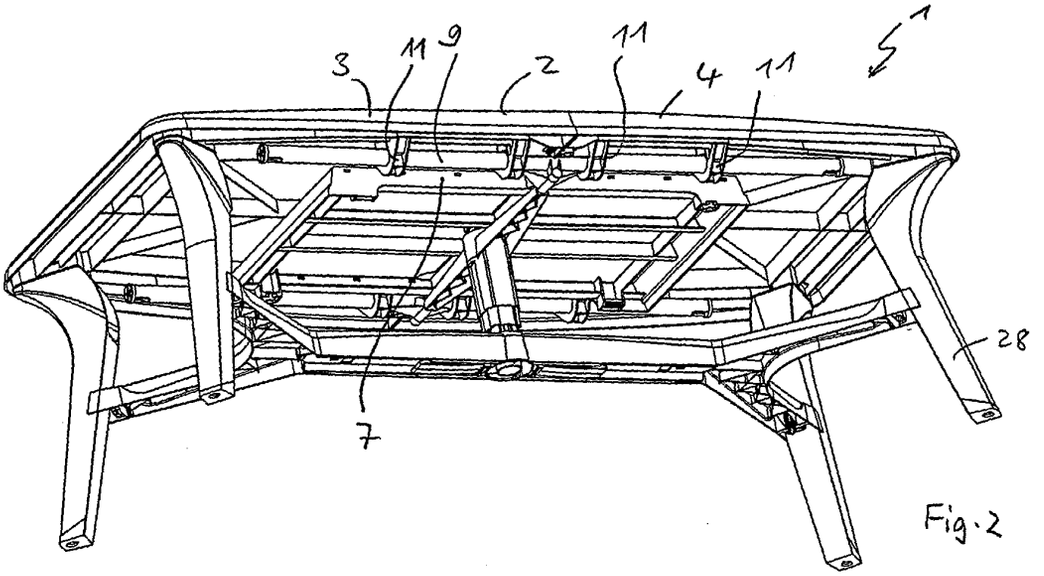

Fig.2

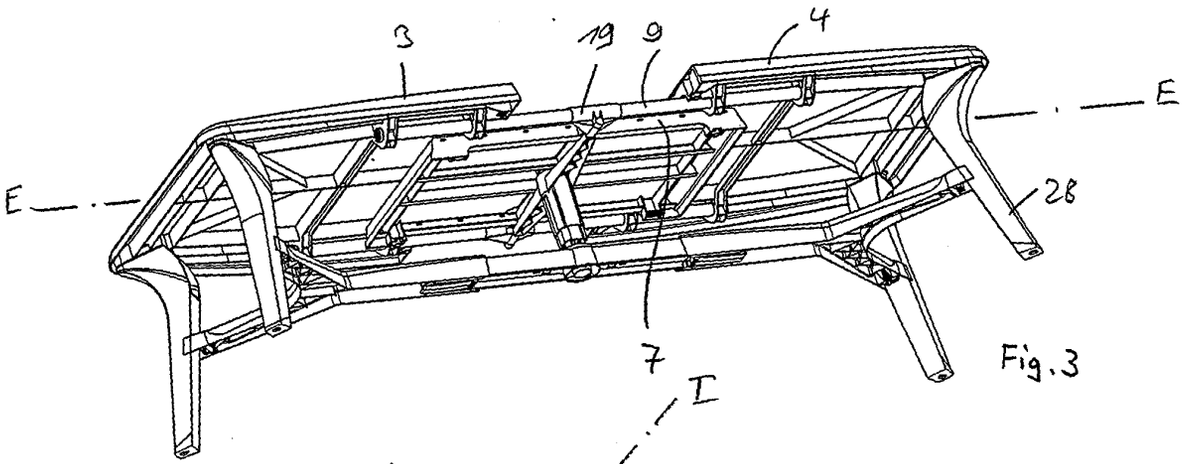

Fig.3

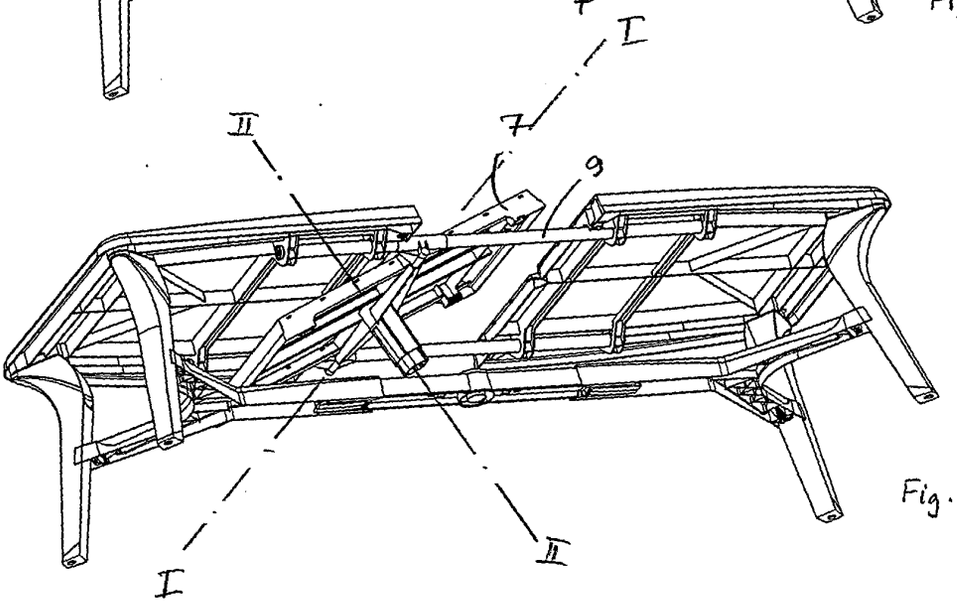

Fig.4

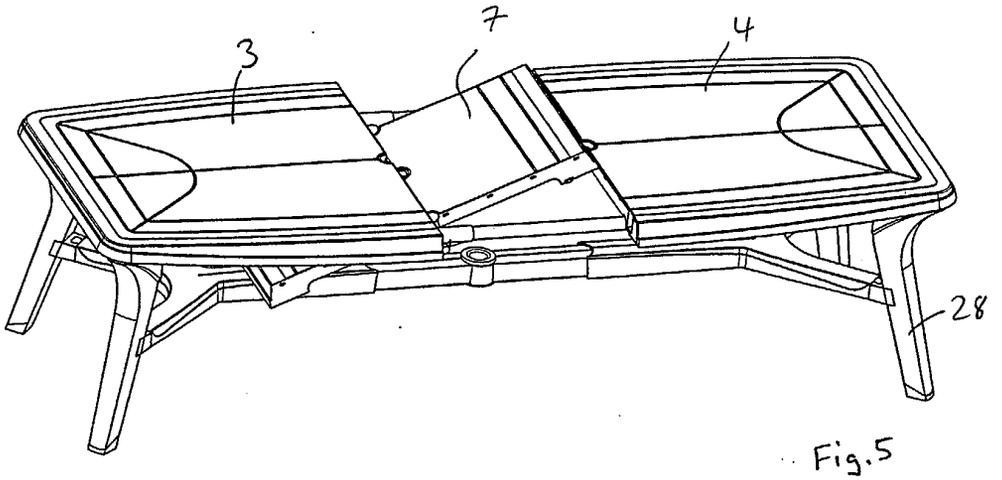

Fig.5

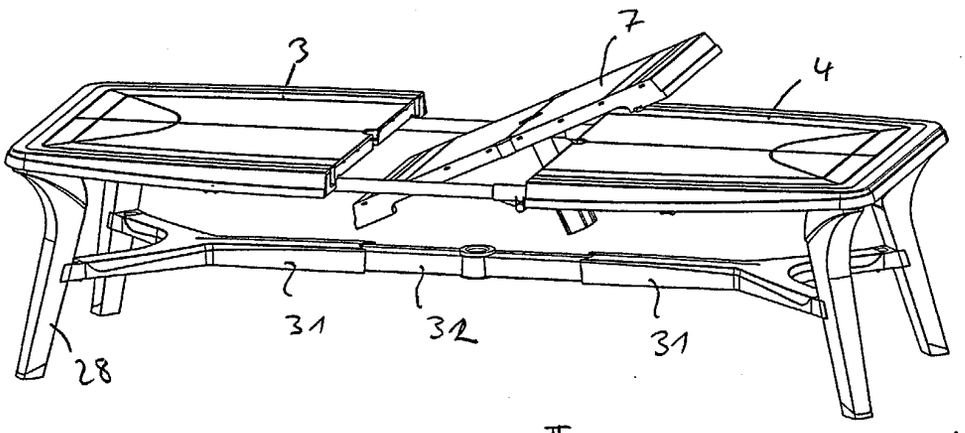

Fig.6

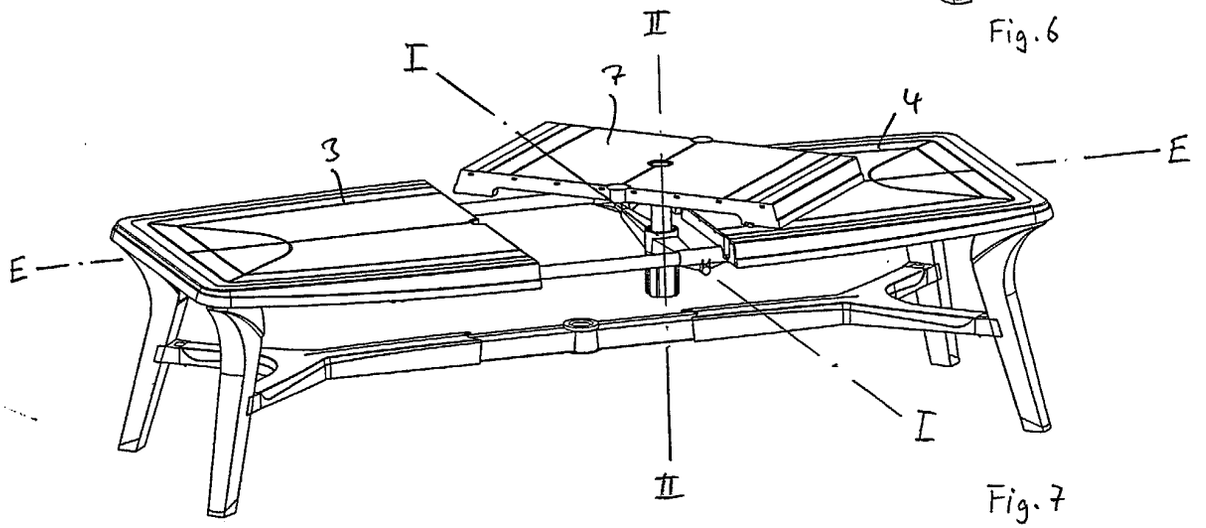

Fig.7

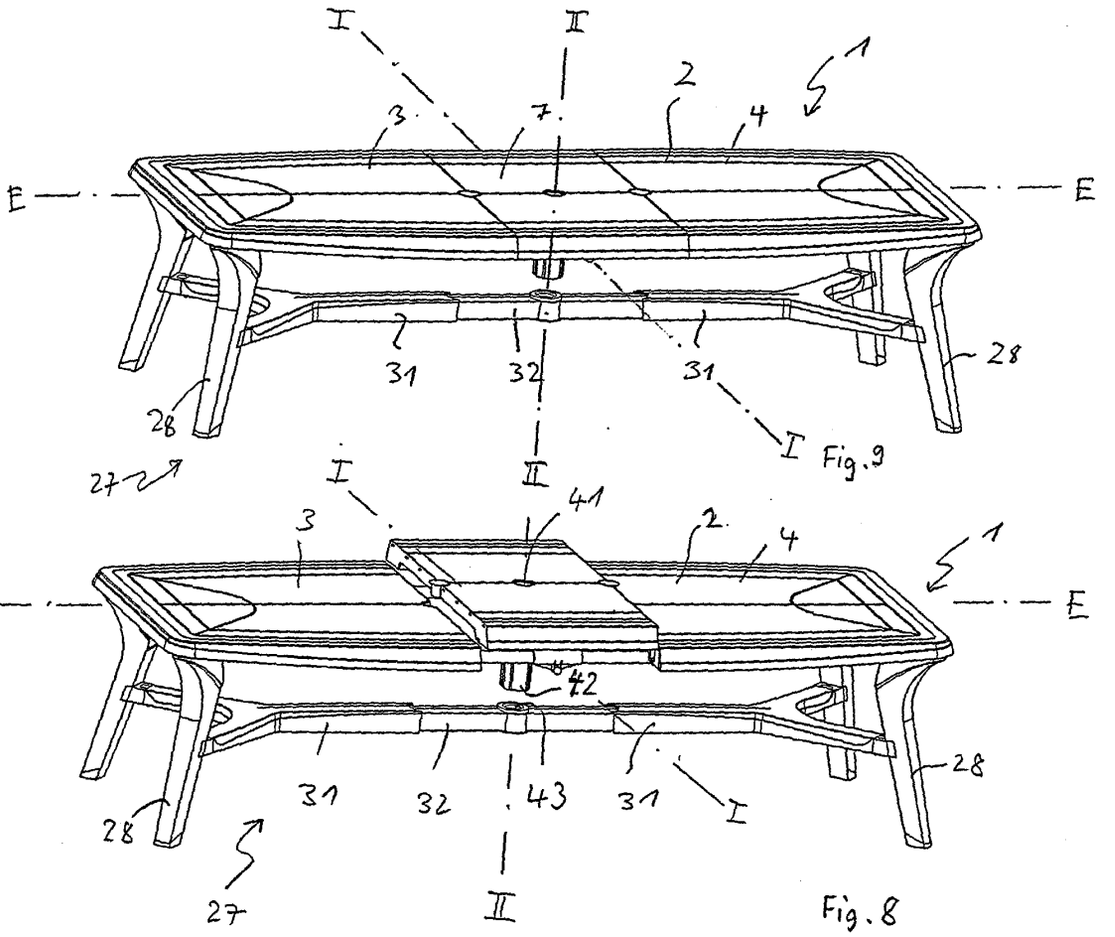
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Fig. 9

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Fig. 8

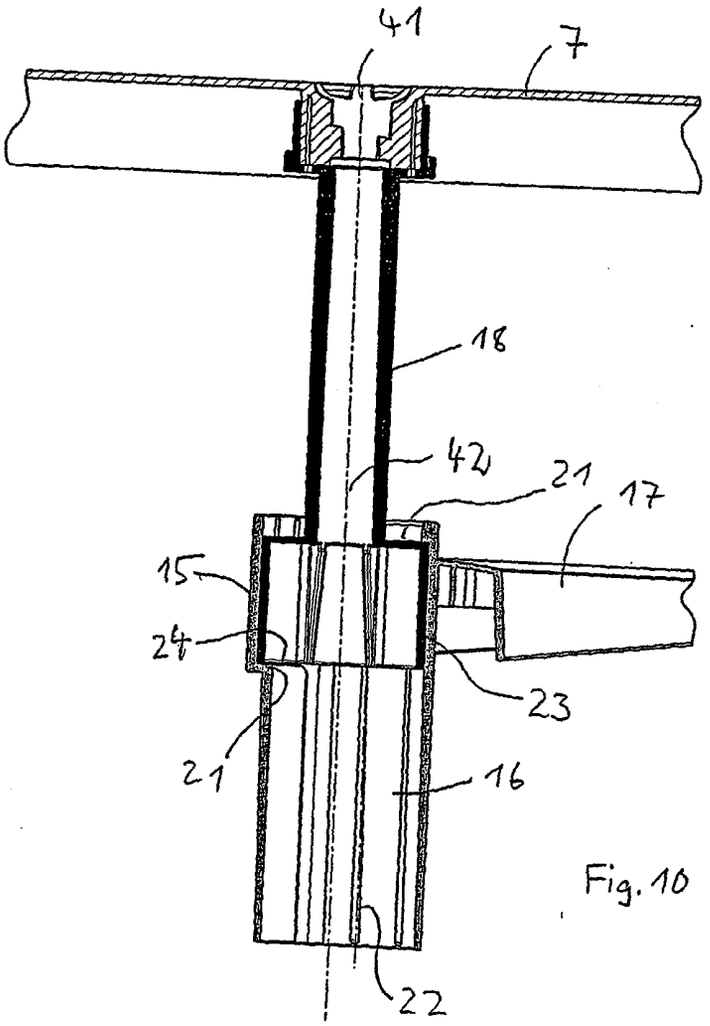

Fig. 10

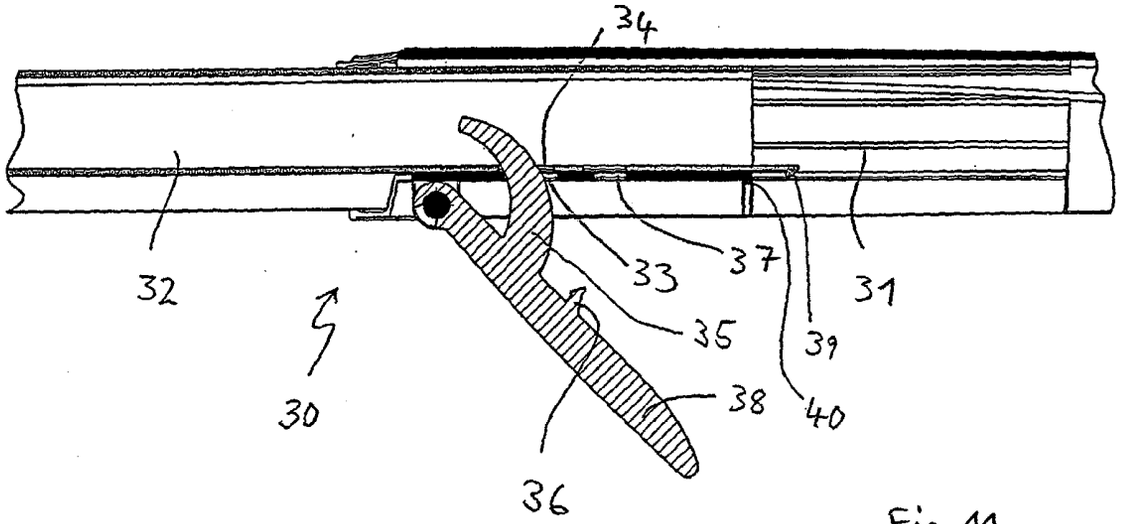

Fig. 11

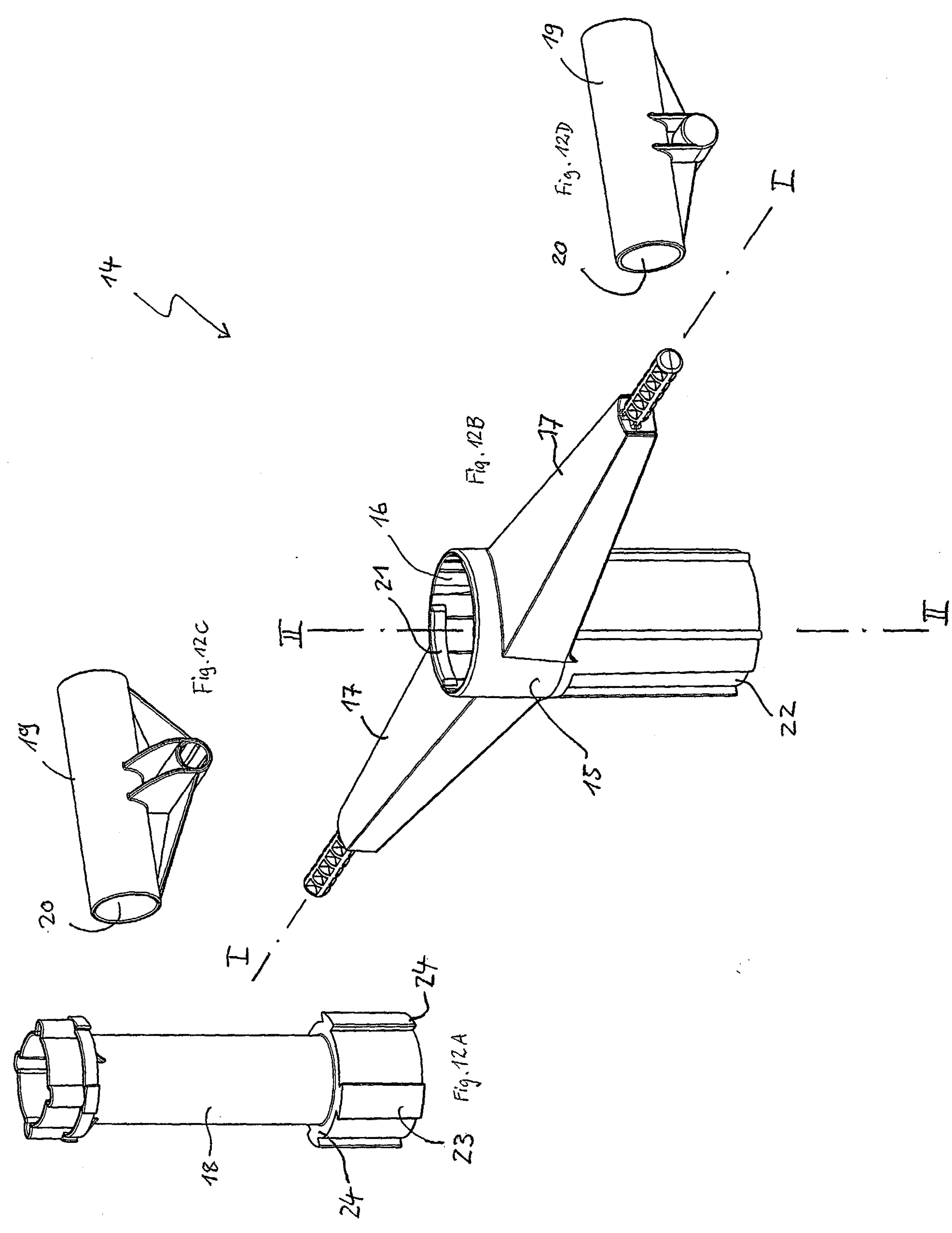
Fig. 12A
Fig. 12B
Fig. 12C
Fig. 12D
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European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 42 5382

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	DE 85 35 142 U (OMT-MÖBELWERKE HELMUT SEIDEL GMBH & CO.) 20 February 1986 (1986-02-20) -----	1	A47B1/03 A47B37/04 A47B1/08
A	US 2003/192459 A1 (ANNAS TIMOTHY L) 16 October 2003 (2003-10-16) -----	1	
A	US 1 940 897 A (MAX WURM) 26 December 1933 (1933-12-26) -----	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	27 October 2004	Alff, R

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 42 5382

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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27-10-2004

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