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(71) Applicant: **Terry Store-Age S.p.A.**
20147 Milano (IT)

(72) Inventors:
- **Di Blasi, Ottavio**
  20147 Milano (IT)
- **Guizzardi, Massimo**
  20147 Milano (IT)

(74) Representative: **Rapisardi, Mariacristina**
Ufficio Brevetti Rapisardi S.r.l.,
Via Serbelloni, 12
20122 Milano (IT)

(54) Modular structure with modular component parts for making shelves and closets

(57) A modular structure with modular component parts for making shelving and cabinets comprising a plurality of modular members (2) cooperating with uprights (3) and/or twin or single pins, cooperating with twin holes provided at the angles of said members (2), for extending said structure both horizontally and vertically. The structure according to the invention allows to lay the cabinet members and/or the shelf members one upon the other and/or to lay them side by side, also at different times thus maintaining the initial investment.

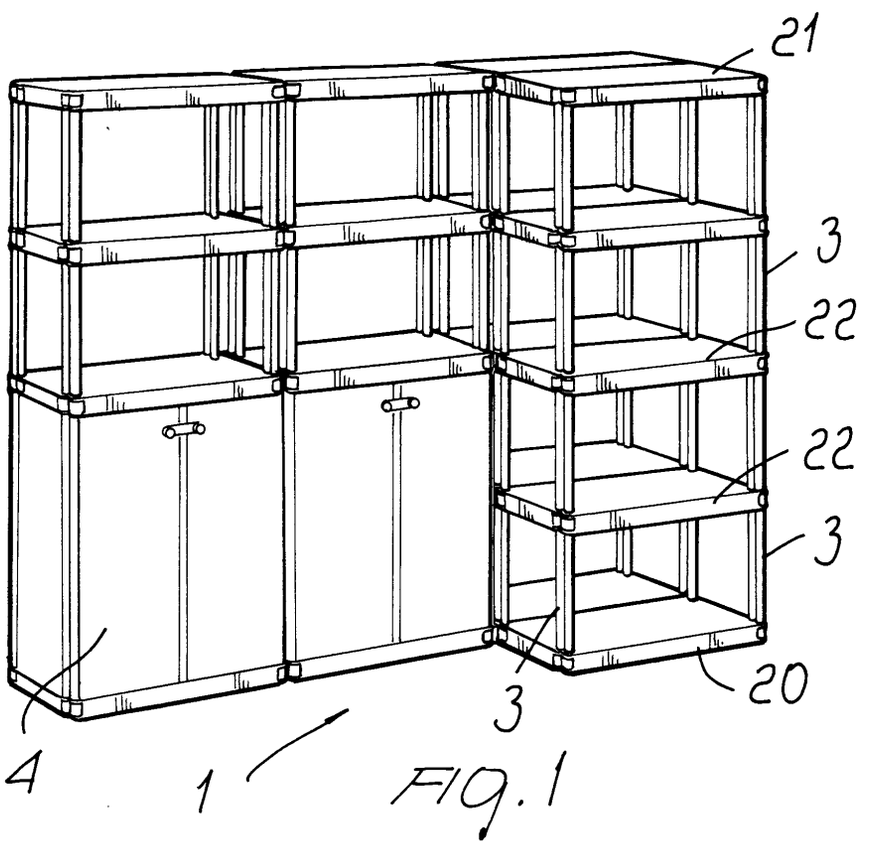

FIG. 1

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Description

[0001] The present invention relates to a novel modular shelving and cabinet structure which is particularly easy to install and use.

[0002] The present shelving and cabinet modular structures, which are applied to walls, have the drawback of being dimensionally rigid and therefore difficult to be subsequently expanded. The conventional structures also have the drawback of being composed by a considerable number of component parts which make these structures difficult to assemble and more expensive.

[0003] The aim of the present invention is to provide a novel modular structure with modular component parts, for making shelvings and cabinets, which, contrary to the conventional structures, is dimensionally flexible and allows to subsequently add further shelving and cabinets to the former ones.

[0004] A further aim of the invention is to provide a novel modular structure with modular component parts for making shelves and cabinets, which is extremely simple to assemble both vertically and horizontally, as well as stable and with a great capacity.

[0005] The above and other aims are achieved by a modular structure with modular component parts for making shelves and cabinets as claimed in the characterizing part of claim 1.

[0006] Further preferred embodiments of the invention are claimed in the dependent claims.

[0007] With respect of the conventional modular shelving and cabinet structures, the structure according to the present invention offers the advantage of allowing to lay the cabinet members and/or the shelf members one upon the other and/or to lay them side by side, also at different times thus maintaining the initial investment.

[0008] The structure according to the invention also allows to expand the system both horizontally and vertically by means of rapid and simple operations, requiring a minimum number of component parts thus optimizing the storing capability and providing a high stability and capacity for this type of structures.

[0009] Further characteristics and advantages of the invention will be more apparent by the description of a preferred but not exclusive embodiment of the structure according to the invention illustrated, by way of indicative but not exclusive example in the enclosed drawings wherein:

FIG. 1 is a perspective view of a composition of shelvings and cabinets made by the structure according to the invention;

FIG. 2 is a top plan view of the structure of FIG. 1;

FIG. 3 is an exploded view of the shelving member of the composition of FIG. 1;

FIG. 3 is an exploded view of the cabinet member of the composition of FIG. 1;

[0010] FIG. 5 is a perspective view of the links that by being inserted in adapted seats in the doors of the cabinet, allow to provide a member which is twice the high of the base member.

[0011] In the embodiment shown in FIG. 1, the modular structure according to the invention has been used to provide a piece of furniture 1 formed by a composition of cabinets and shelvings composed by the base member 2 defining a shelf 20, a base 21 and a cover 22, supported by uprights 3.

[0012] Preferably, all the component parts of the illustrated structure are made of plastics even though the use of other materials is not precluded.

[0013] As shown in FIGs 2 and 3, the intermediate shelves 22, the bottoms 20 and the covers 21 are constituted by the same modular member 2 having a substantially rectangular shape and provided with twin holes, respectively 5-6, 7-8, 9-10, 11-12, at its corners. The lower ends 13 and 14 of uprights 3 are inserted inside the twin holes and are constituted by pillars 15 and 16 which are joined by rigid cross links 17 in order to be parallel and spaced apart by a distance equal to the distance between each twin hole. The same pillars are provided with upper ends 18, 19 inserted in corresponding holes in the upper shelf.

[0014] The uprights are assembled by inserting the ends inside the shelf twin holes 5-6, 7-8, 9-10, 11-12.

[0015] According to an important feature of the present invention, the pillars 15, 16 and twin holes 5-12 on the modular members 2 allow to rapidly and stably superimpose and/ore lay side by side different shelf members 20, 21, 22 as shown in FIGs. 2 and 3.

[0016] To this end, the modular members 2 may be coupled, on the horizontal plane, by inserting the uprights 3 across the connecting lines between the same members 2. In this case, the pillar 15 of an upright is inserted in the outermost hole of the twin holes of a first modular member 2, while the pillar 16 of the same upright is inserted in the outermost hole of the corresponding twin holes of the adjacent modular member. In this case, for example, the lower ends 13, 14 of an upright 3 are inserted in holes 11, 5 respectively, of two adjacent modular members 20 , while the upper ends 18, 19 of the same upright 3 are inserted in the corresponding holes 11, 5 of the upper shelves 22 (FIG. 3).

[0017] A mutual connecting bridge is thus provided, on the horizontal plane, between adjacent modular members 2, by using to this end the same uprights 3 that serve for expanding the piece of furniture 1 vertically.

[0018] In order to provide greater stability to the piece of furniture, the above described twin holes in the corners of the modular members 2 also allow the insertion of two pillars 3 at a same corner on the mutual connection section between two adjacent members 2 (FIG. 3).

In this manner, each modular member is anchored at eight points and is therefore extremely stable and adapted to carry a considerable weight.

[0019] The two shorter sides of the modular members 2 are laterally closed by a stiffening profile 23 which is slidingly inserted inside the members 2 and is provided with holes in the same position of the holes 5-12 described above. Caps 24 are provided for closing the holes that are not used for the connections between the modular members 2. The ends of the uprights 3 are provided with a circular shoulder 25 which, once the structure is assembled, rests on the surface of the members 2 which is arranged around the holes 5-12.

[0020] The modular members 2, together with the side members 23 used for providing the above described shelving, may be used for constructing cabinets 4 of FIGs. 1 and 4. In this case, the mutual connection, on the horizontal plane, between adjacent modular members 2, is provided by means of twin pins 26 having a construction similar to the above described construction of the uprights 3 with the difference that the pins are considerably shorter.

[0021] For the above reason, the twin pins 26 allow to expand the structure horizontally, according to a system similar to the system described above for the uprights 3. These pins 26 are in fact arranged with their ends across adjacent modular members 2 and inserted in respective holes at the corners.

[0022] The vertical expansion of the cabinet 4 which is based on said pins 26 is instead achieved by means of wings 27, 28 and 33 of the cabinet. More particularly, adjacent rear wings 28 are joined together and fastened to respective bottom modular member 20 and cover modular member 21, at their junction line, by means of a twin pin 26 inserted on one hand into holes 29, 30 provided on the corresponding longitudinal side of the same modular member 20 and 21, and, on the other hand, in respective holes (not illustrated) provided at the ends of the same wings.

[0023] The "L" shaped mutual connection between the rear fixed wings 28 and the respective side fixed wing 27 is provided by engaging a peg 31 of the twin pin 26 into the rear wing and the remaining peg 32 into the side wing. The other end of these pegs is instead arranged into holes 5, 6 and 11, 12 of the modular members 2, in the manner already described with reference to FIGs. 1 and 3.

[0024] The side wing 27 is fastened to the member 2 also by a single pin 37 arranged, on one hand, in the hole provided on the remaining end of wing 27 and, on the other hand, into the innermost hole 7, 10 of the respective modular member 2. The twin pins 26 and the single pin 37 are also provided with peripheral annular shoulder 38 having the same height of ridges 39 that function for centering the position of the fixed wings on the modular member 2.

[0025] The mobile wings 33 are provided with closure end caps 34 that are in turn provided, on the inner side, with pegs 35 insertable in the wing. A pin 36 is provided on the outer side of caps 34, i.e. on the side opposite to that of pegs 35. Pin 36 is arranged in the respective outer hole 8, 9 of modular member 20 or 21 of the cabinet thus defining a hinge for the wing acting as a door.

[0026] The pegs 35 are further locked in this wing by an elastic tang 40 projecting from their side surface and snapping inside a slot 41 formed in the wing. The wing caps 34 are also provided with hollow cylinders 42 adapted to lock on the body of the wing at corresponding cylindrical seats 43.

[0027] A projecting tang 44 is provided on the ends of caps 34 opposite to the ends provided with the outer pegs 34. The projecting tang 44 is adapted to snap on the closure of wing 33 in corresponding seats 45 provided on the sides of the modular members 20 and 21 where the wing closes.

[0028] Racks 46 are also provided for supporting shelves 47 of the cabinet 4. In the embodiment shown in FIG. 5, pins 26 and 37 are made integral with a connecting strip 48 provided with cylinders 49 and functioning in a manner similar to that of cap 34 described above.

[0029] As shown in FIG. 1, the shelves of FIG. 3 and the cabinets of FIG. 4 may be combined together to form a composition wherein the modular members 2 form the intermediate shelves 22 as well as the bottom 20 and the cover 21 of both the cabinets and of the shelving. In this embodiment, the combined engagement of the uprights 3 and of the single and twin pins 26, 37 inside holes 5-12 of the modular elements 2 allow to superimpose and/or to lay side by side several cabinets 4 and shelving 22 thus obtaining a composite structure as the one shown in FIG. 1.

[0030] The above described composite structure allows to expand the shelving both horizontally and vertically, also at different times, and by using modular components that make the assembling easy and reduce the overall production costs.

[0031] The modular structure according to the invention may be modified within the scope of the following claims. In fact, as said above, the materials may be different from plastics. Also the shape of modular members may be different from the shape illustrated and the structure mutual connecting means may be substituted with functionally equivalent connecting means.

Claims

1. A modular structure for making shelving and cabinets characterized in that it comprises means adapted to expand said shelving and cabinets both horizontally and vertically.

2. The modular structure, according to claim 1, characterized in that said means comprises a plurality of modular members (2) adapted to cooperate with

either uprights (3) or pins (26, 37) or with both uprights and pins, in order to form a composition of shelving, of cabinets, or of both, mutually superimposed and/or laid side by side, stably.

3. The modular structure, according to one or more of the preceding claims, characterized in that said modular members (2) have a substantially rectangular shape, each corner being provided with twin holes (5-6, 7-8, 9-10, 11-12)

4. The modular structure, according to one or more of the preceding claims, characterized in that said uprights (3) are formed by twin pins (15, 16) associated by means of links (17) in order to be mutually parallel and spaced by a distance equal to the distance between each hole of said twin holes.

5. The modular structure, according to one or more of the preceding claims, characterized in that said pins (15, 16) have lower ends (15, 16) inserting into corresponding twin holes provided in the modular member (2) which forms the bottom (20) or the lower shelf of the shelving, as well as into the upper ends (18, 19) arranged into the corresponding twin holes provided in the modular member (2) which forms the cover (21) or the upper shelf of the shelving.

6. The modular structure, according to one or more of the preceding claims, characterized in that said uprights (3) are arranged across the connecting line of the adjacent modular members (2), wherein pins (15, 16) of the same upright (3) are respectively arranged one (15) into one of the outer holes (5, 11, 8, 9) of a modular member (2), and the other one (16) into one of the corresponding outer holes of the modular member (2) adjacent to the former one.

7. The modular structure, according to one or more of the preceding claims, characterized in that each modular member (2) forming the inner shelf of the shelving is fastened in eight points.

8. The modular structure, according to one or more of the preceding claims, characterized in that said pins (15, 16) are provided with a circular shoulder (25) at their ends (13, 14, 18, 19), said shoulder resting on the surface of the modular member (2) which lies along the contour of said holes (5-12).

9. The modular structure, according to one or more of the preceding claims, characterized in that said pins (26) are twin pins having a construction similar to the construction of the uprights (3) and are shorter than said uprights, said pins being adapted to lock the fixed wings of the cabinets of said modular members (2).

10. The modular structure, according to one or more of the preceding claims, characterized in that said pins (26) are adapted to engage, on one hand, inside said holes of said modular members (2) forming the bottom (20) and the cover (21) of a cabinet (4) and, on the other hand, in respective holes provided at the ends of the fixed wings (27, 28).

11. The modular structure, according to one or more of the preceding claims, characterized in that each twin pin (26) is provided with pegs (31, 32) mutually associated and spaced apart, and insertable in holes (29, 30) of the modular members (2) in order to lock the rear wings (28)of the cabinet.

12. The modular structure, according to one or more of the preceding claims, characterized in that peg (31) of the twin pin (26) is locked on the rear fixed wing (28), while the remaining peg (32) of the same pin (26) is locked inside the side fixed wing (27) adjacent to the preceding one (28).

13. The modular structure, according to one or more of the preceding claims, characterized in that it comprises a plurality of single pins (37) arranged, on one hand, into the outermost hole of the fixed side wing (27) and, on the other hand, into the innermost hole (7, 10) of the respective modular member (2).

14. The modular structure, according to one or more of the preceding claims, characterized in that the surface of said modular members (2) on which said fixed wings (27, 28) rest, is provided with centering ridges (39) for said wings, and said pins (26, 37) are provided with a peripheral annular shoulder (38) having the same height of said ridges (39).

15. The modular structure, according to one or more of the preceding claims, characterized in that it comprises front moving wings (33) provided with end caps (34) which are in turn provided with pegs (35) inserting inside the same wing and with an outer peg (36) arranged in the respective outer hole (8, 9) of the modular member (2) forming the bottom (20) or the cover (21) of the cabinet (4).

16. The modular structure, according to one or more of the preceding claims, characterized in that said pegs (35) are provided with an elastic tang (40) for snap locking inside a corresponding slot (41) of the respective mobile wing (33).

17. The modular structure, according to one or more of the preceding claims, characterized in that said caps (34) are provided with cylinders (42) adapted to lock inside corresponding cylindrical holes (43) on the body of the respective wing (33).

18. The modular structure, according to one or more of the preceding claims, characterized in that a projecting tang (44) is provided on the ends of caps (34) opposite to the ends provided with the outer pegs (34), said projecting tang (44) being adapted to snap on the closure of wing (33) in corresponding seats (45) provided on the sides of the modular members (2).

19. The modular structure, according to one or more of the preceding claims, characterized in that racks (46) are further provided for supporting shelves (47) inside said cabinet (4).

20. The modular structure, according to one or more of the preceding claims, characterized in that said pins (26 and 37) are made integral with a connecting strip (48) provided with cylinders (49) and functioning in a manner similar to that of cap (34), said strip functioning as connecting strip of the lower and upper wings constituting the cabinet and having a height which is twice the height of the base modular cabinet.

21. The modular structure, according to one or more of the preceding claims, characterized in that said modular members (2) have, at their ends, stiffening profiles (23) which are slidingly inserted inside the same members (2) and are provided with holes in the same position of said holes (5-12).

22. The modular structure, according to one or more of the preceding claims, characterized in that said uprights (3) and said pins (26, 37) are provided with a circular shoulder (25, 38).

23. The modular structure, according to one or more of the preceding claims, characterized in that it comprises caps (24) for closing those of said holes (5-12) which are not used for the uprights that may also have the function of connecting said modular members.

24. The modular structure, according to one or more of the preceding claims, characterized in that it is entirely made of plastics.

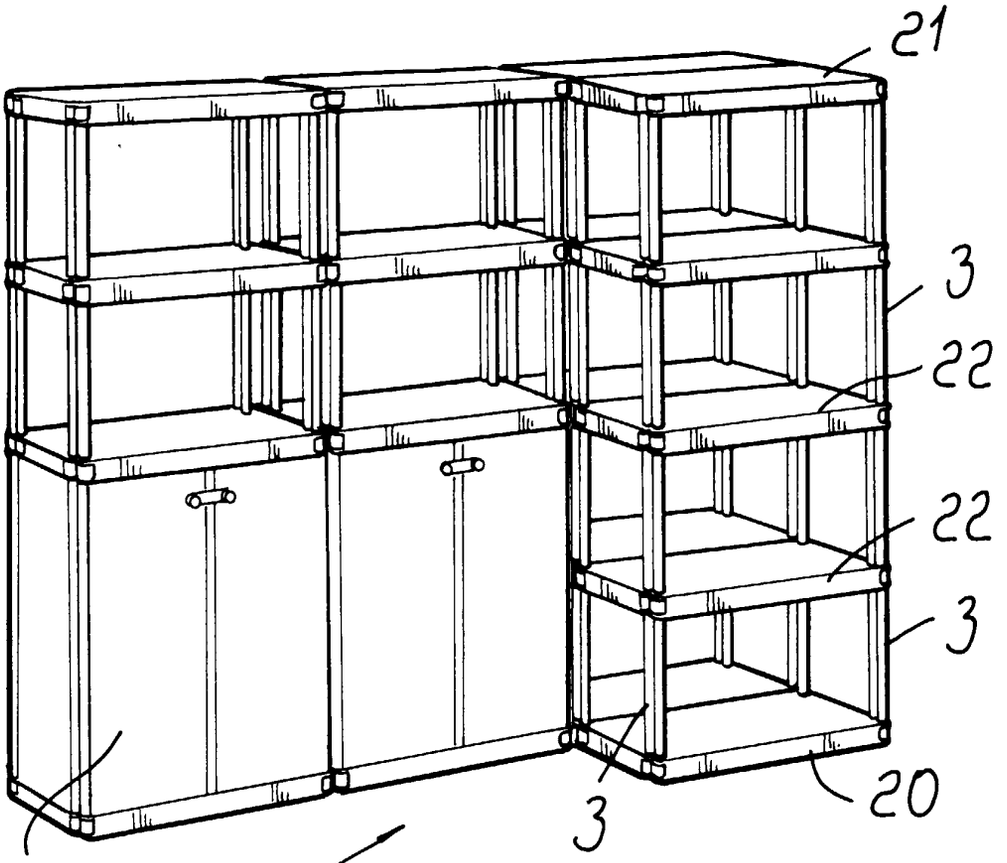

FIG. 1

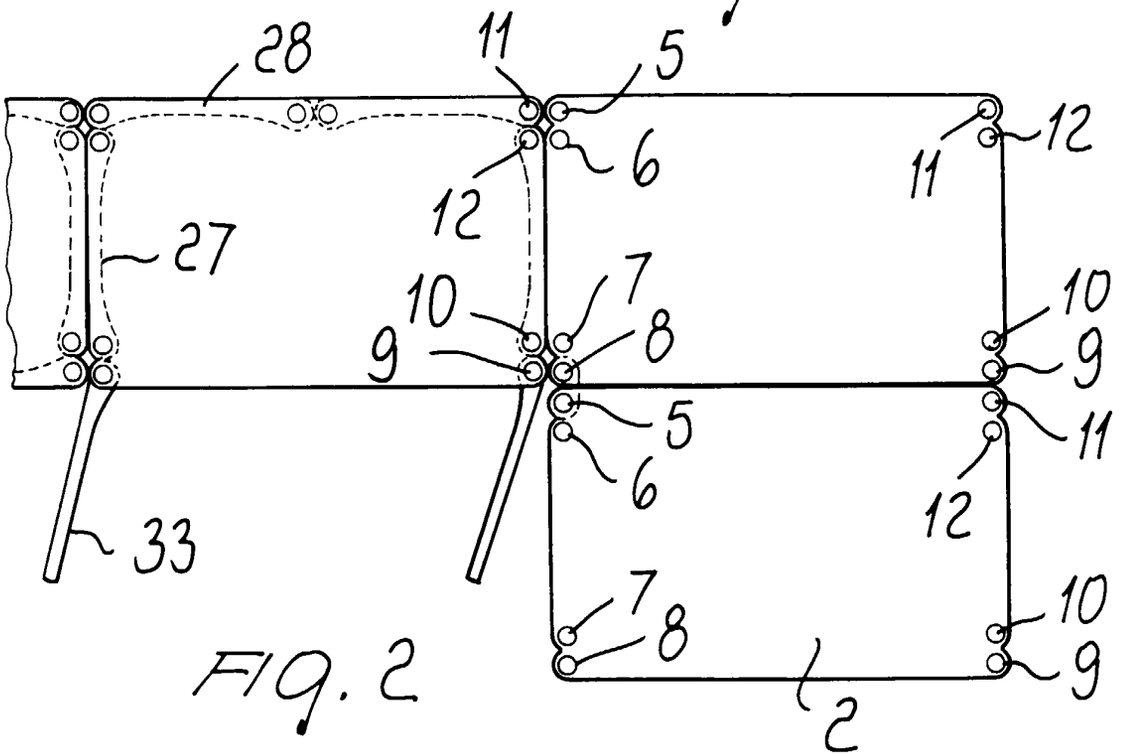

FIG. 2

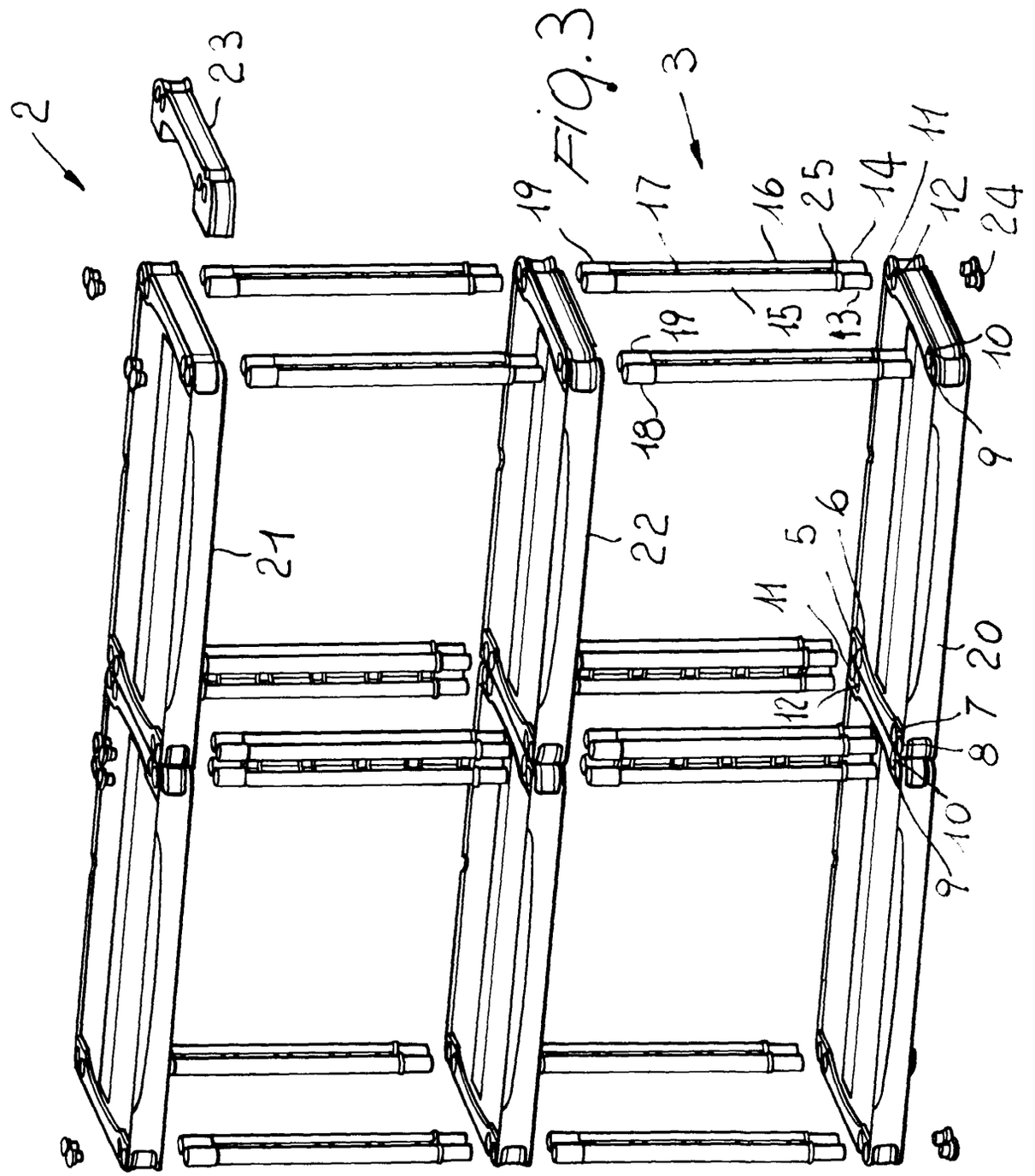

Fig. 3

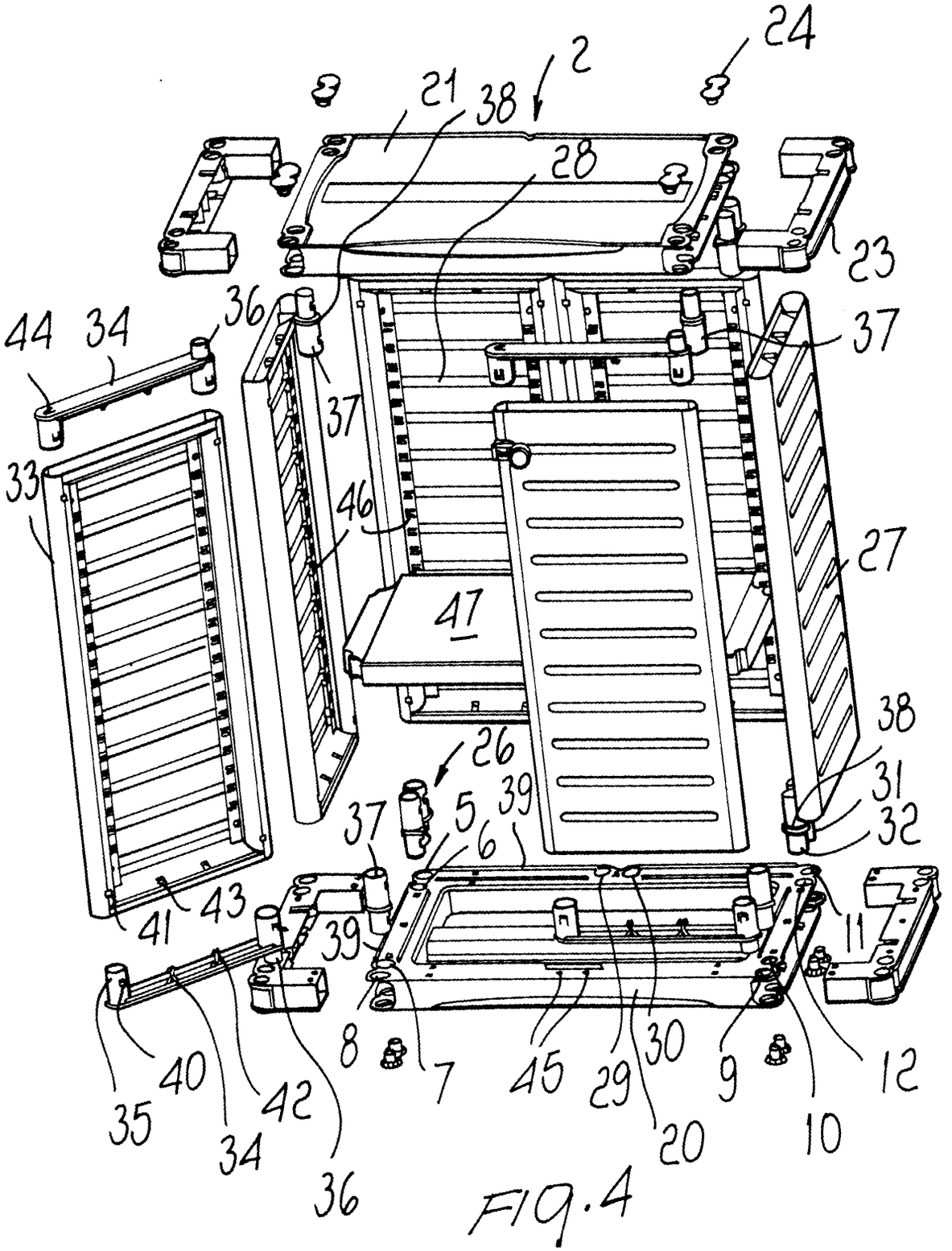
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FIG.4

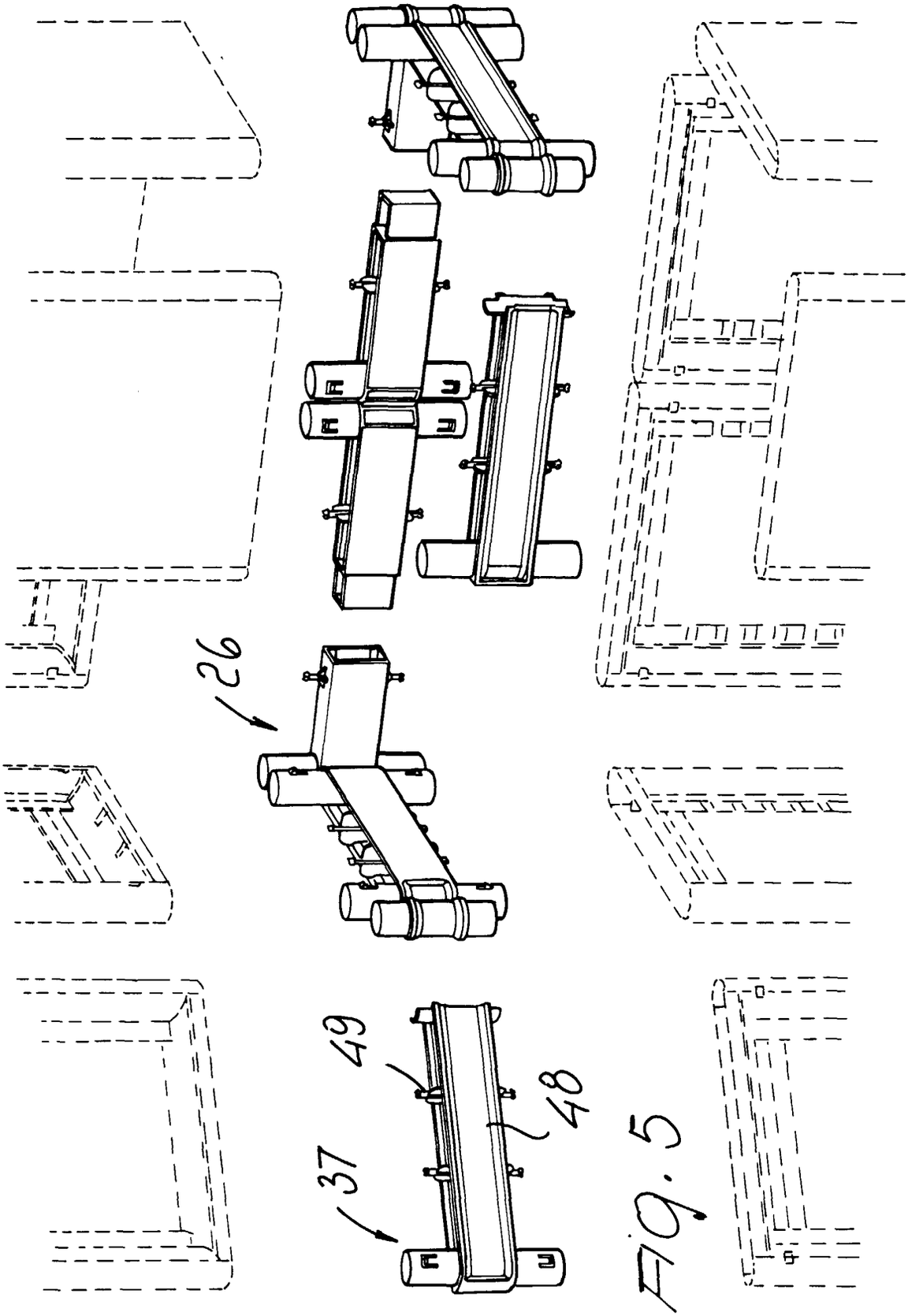

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 99 11 1491

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	31 May 2000	Jones, C

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