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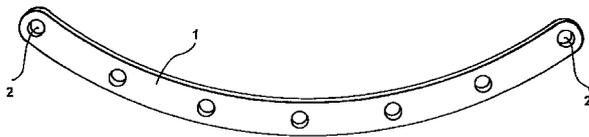
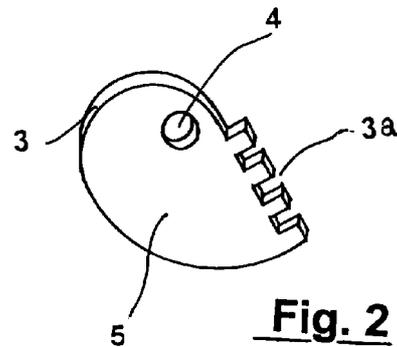
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(54) **Method for the production of articles for interior and outdoor furnishing and furnishing articles produced thereby**

(57) A method for the production of articles for interior and outdoor furnishing, such as pieces of furniture and the like, which includes the steps of forming first modular members, each consisting of a curved rod (1), and second modular members, each consisting of a plate (5) with an outline in the shape of an arch of spiral the ends of which are tangentially joined by a toothed portion (3a), combining said first and second modular members with other first and second modular members to compose said furnishing articles, as well as fixing said first and/or second modular members to each other by connection means.



**Fig.1**

**Fig. 2**

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## Description

**[0001]** The present invention relates to a method for the manufacture of articles for interior and outdoor furnishing, in particular articles of furniture, items for entertainment or ornamental purposes, and the like. The invention also relates to the furnishing articles produced with this method.

**[0002]** Designers of the furnishing field constantly confront with the problem of matching the typical user's needs, mainly concerned with functionality, aesthetic worth and, in the modern furnishing, design essentiality and product originality, with the needs of the manufacturers, which are certainly interested to the originality of the proposal, but primarily are concerned with the issues related to the production costs. As a matter of fact, amongs proposals characterized by the same degree of originality in the field of the products destined to furnishing, preference will be given to those featured by the highest ease of manufacture, series production ability and possibility of an automatic production.

**[0003]** The object of the present invention is to provide a production method for articles of interior and outdoor furnishing which, while requiring only a very limited number of modular elements, allows for the manufacture of these articles while satisfying in an optimal way the above referenced needs.

**[0004]** The above object is achieved with the production method according to the present invention the feature of which consists in forming two modular elements, consisting of a curved rod and, respectively, a plate with an outline in the shape of an arch of spiral the ends of which are joined by a toothed portion and combining two or more rod members to each other, two or more plate members to each other or said rod members and said plate members to each other, and joining them by connection means to make these products.

**[0005]** The features and advantages of the production method according to the invention will become apparent from the following description of practical, exemplifying embodiments thereof, made with reference to the attached drawings, in which:

- Figure 1 shows a first modular member for the production method according to the invention;
- Figure 2 shows a second modular member for the production method according to the invention;
- Figure 3 shows a first example of use of the modular member for the production method according to the invention embodied in a rocking-horse;
- Figure 4 is a bottom side perspective view of a table made according to the production method of the invention;
- Figure 5 is a side elevational view of the table of figure 4;
- Figures 6, 7 and 8 show in a perspective view, side view and, respectively, front view, a chair made with the production method of the invention;
- Figures 9, 10 and 11 show a first model of deck-chair in a perspective view, side view and, respectively, front view made with the production method of the invention;
- Figures 12, 13 and 14 show a second model of deck-chair in perspective view, side view and, respectively, front view made with the production method of the invention;
- Figures 15 and 16 show a clothes tree in a side and, respectively, bottom perspective view made with the production method of the invention;
- Figures 17 and 18 are perspective views of details of the clothes tree according to figure 15;
- Figures 19 and 20 show, in an open and, respectively, closed elevational side view, a foldable version of the deck-chair shown in figures 12, 13 and 14;
- Figures 21 show, in a open elevational side view, a foldable version of the deck-chair shown in figures 9 and 10;
- Figures 22 and 23 show two further variations of the type of chair according to figures 6, 7, 8.

**[0006]** With reference to figures 1 and 2, there are shown two basic modular members provided for use with the production method according to the invention. The first modular member, shown in figure 1, is formed by a curved rod 1, which is advantageously provided with a pair of through holes 2 at the respective ends and optionally additional holes along its length. The other modular member, shown in figure 2, is formed by a plate 5, advantageously provided with an eccentric through hole 4 and having an outline 3 formed by a spiral arch which, starting from, approximately, near hole 4, extends for about 360°, the ends of said outline being joined by a toothed profile 3a tangent to the spiral profile at the beginning point thereof near hole 4.

**[0007]** The above described modular members 1 and 5 are preferably made of wood, but they can be advantageously be made of other materials which are common in the field of furnishing, such as metal or plastics.

**[0008]** By combining curved rod members to each other or toothed plate members to each other or also one or more curved rod members to one or more toothed plate members a large number of furnishing articles can be obtained which are valuable from both the functional and aesthetic point of view and, at the same time, very advantageous from the production point of view. A significant role as to the production convenience is also played by the fact that the connection means between the basic members characteristic of the production method according to the invention are extremely simple, insofar as they essentially consist of connection rods engaging, preferably by means of a fixed joint, with the through holes formed at the ends of the curved rod members or with the eccentric hole of the toothed plate. Other connection means, such as

screws or the like, may be used as they fall anyway within the type of simple and usual means of connection, available on the market and not requiring any special processing of the modular member for their use.

**[0009]** In the figures 3 to 23 some possible articles which can be made by variously combining the modular members according to the production method of the invention are shown. In figure 3 is shown by way of example a combination of modular curved rod members 1 and toothed plate members 5 to make a stylized rocking-horse which may constitute a pleasant furnishing article, as well as a children entertainment article in a children-room. In particular, three pair of curved rod 11, 21 and 31, parallel two by two, and two plates 25 and 35 are used, the only other structural elements necessary to make the rocking-horse shown in figure 3 being connection members, i.e. pegs 6 connecting the pair of curved rods 11, forming the base of the rocking-horse, to each other and to the pairs of curved rods 21 and 31 forming rear legs and, respectively front legs and horse neck, as well as further pegs 7 connecting a further curved rod 8, forming the back of the horse, to the front and rear legs and to toothed plate 35 forming the tail of the horse. Two further protruding pegs 9, connected to the pair of curved rods 31, forming the front legs form a support for the children feet and a hand grip, the latter having also the function of connecting curved rods 31 to a second toothed plate 25 forming the horse head. The various components can be made of wood and fixedly connected to each other and optionally by means of adhesive.

**[0010]** In figures 4 and 5 there is shown how, by means of two pairs of curved rods 41 and 51 parallel two by two, it is possible to make a base for a table. In this case too, to form the two pair of curved rods, these are mutually connected two by two through pegs 10 fixedly engaged within end holes of said curved rods. To form the base of a table the two pair of curved rods are then arranged on one another in a crossed way with opposite concavities, in particular the lower pair of curved rods is turned downwardly and the upper pair upwardly. In order to stabilize the connection between the two pair of curved rods there can be used common metallic angled brackets, not shown, fixed by screws to the curved rods.

**[0011]** Figures 6, 7 and 8 show another possible combination of the curved rods to form a folding chair with a fabric seat support 12 and a foam-rubber padding 13. In this case a first pair of curved rods 71 is hinged at one end to an intermediate point of a second pair of curved rods 61, to which fabric support 12 and padding 13 are fixed. The two pair of curved rods are then connected by a cross peg 14 and a pair of longitudinal tie rods 16. In a variation of this type of chair, shown in figure 22, the two pairs of curved rods are mutually hinged at respective intermediate points. In the variation shown in figure 23 pair 61, furthermore, has opposite concavity with respect to that of the corresponding pair of curved

rods of the chairs of figures 6 and 22. Moreover, in the chairs of figures 22 and 23, fabric support 12 is fixed frontwise to pair 71 and rearwise to pair 61.

**[0012]** In figures 9, 10 and 11 there is shown an adjustable inclination chair made of two pair of curved rods 81 and 91 hingedly and adjustably connected to each other and comprising fabric and padding elements generally indicated at 17, or inflatable and dismountable elements and, for example, usable as a beach mattress. In this case the two pairs of curved rods 81 and 91 are mutually connected so as to define a seat surface comprising a concave portion acting as a back and a convex portion acting as a support for the user body and legs. The concave portion is defined by the first pair of curved rods 81, which turn their concavity upwardly, whilst the convex portion is defined by the second pair of curved rods 91 which turn their concavity downwardly. The first pair 81 is hingedly connected at an intermediate point of second pair 91 and has usual means for releasably adjusting the inclination, not shown.

**[0013]** Figures 12, 13 and 14 show a further possible combination of two pairs of curved rods 101 and 111 to form a deck-chair. In this case the two pairs of curved rods are arranged one after the other and are mutually connected through respective ends so as to exhibit opposite concavities. The seat plane of the deck-chair is formed by a plurality of inflatable tubular members 18 crosswise arranged between the rods of each pair and parallel to each other. Advantageously the inflatable tubular members 18 can be mutually connected by a cloth or fabric member in such a way that the resulting assembly can be used as a beach mattress once dismounted from the deck-chair. The curved rods of each pair are, as in the previous examples, connected to each other by cross pegs 19 which extend between the respective rod ends.

**[0014]** In order to allow for the mutual folding of the two frames, hinged to each other, constituted by the first and the second pair of curved rods in the models of chairs shown in figures 6 to 14, in order to reduce their encumbrance when stored, it is advisable that the hinge would be eccentric with respect to the longitudinal axis of the curved rods. In figures 19 and 20 a deck-chair or bed, of the same type as that shown in figures 12-14, is shown in the open and, respectively, closed condition and made, in the present embodiment, of aluminium and with the seat plane made of aluminium staves 20. In this case the ends of curved rods 101 and 111, hinged to each other, each have a side extension 22 for supporting the hinge pin. The hinge eccentricity, i.e. the distance between the pin axis and the axis of the curved rod, can be varied according to the construction needs. For example, in the case shown in figures 19 and 20, in which support legs formed by two pairs of curved rods 23 and 24 are provided to raise from the ground level the seat plane, the eccentricity of the articulation was designed such as the two parts, once folded on each other, delimit a room sufficient to house said support

legs in a folded condition.

**[0015]** The same solution with an eccentric articulation can be provided for the deck-chair shown in figures 9, 10 and 11. As shown in figure 21, depicting a variation of said deck-chair made of aluminium, the ends of the pair of curved rods 81 forming the rear frame, or back, comprise respective side extensions 26 supporting the pins for the hinge connection to an intermediate point of the pair of curved rods 91 forming the front frame. In this case too the function of the eccentric articulation is essentially to enable the closure of the chair by folding the two pairs of curved rods on each other without creating dimensional interferences.

**[0016]** Advantageously, the curved rods can comprise linear end portions 81a and 91a to raise the seat plane and make resting to the back more comfortable.

**[0017]** In figures 15, 16, 17 and 18 a possible use of the toothed plates 5 to make a clothes tree is shown. Substantially, in a possible embodiment, this piece of furniture comprises a base 27 formed by two plates 45, 55 connected by fixedly engaging their respective toothed portions with one another, a first tubular upright 18 extending from base 27 and connected to it at the eccentric hole of one of the plates, intermediate shelves 29 formed by toothed plates 65 and 75, a second tubular upright 30 vertically aligned to first tubular upright 28 and arranged above intermediate shelves 29 and finally four toothed plates 85, 95, 105, 115 connected to upright 30 through their respective , mutually aligned eccentric holes. Plates 85, 95, 105, 115 are angularly spaced apart with respect to one another making available their respective toothed portions for hanging clothes or the like. Advantageously, an open tubular member 32 extends from base 27, close to first upright 28, with the function of an umbrella stand.

**[0018]** The above described examples are sufficient to demonstrate the versatility of the production method according to the invention and it is clear that a large number of useful and very pleasant items of furniture can be made thereby. The particularly interesting aspect from the production standpoint lies in the extreme standardization of the production of the modular members, in the control of the stocks of these modular members to the end of a quick carrying out of the orders and in the elimination of the production surplus, as the components of an article can be reused to make another one.

**[0019]** Moreover, thanks to the extreme simplicity of assembling of the articles obtained with the production method according to the invention, these articles can be made available as a kit leaving to the user the task, and the pleasure, of their assembling.

**[0020]** Variations and/or modifications can be brought to the production method according to the present invention, without departing from the scope thereof as set forth in the appended claims.

## Claims

1. A method for the production of articles for interior and outdoor furnishing, such as pieces of furniture and the like, characterized in that it comprises the steps of providing first modular members, each consisting of a curved rod (1), and second modular members, each consisting of a plate (5) with an outline (3) in the shape of an arch of spiral the end of which are tangentially joined by a toothed portion (3a), combining said first and second modular members with other first and second modular members to compose said articles of furnishing, and fixing said first and/or second modular members through connection means.
2. The production method according to claim 1, wherein said toothed plate (5) has an accentric through hole (4), said outline in the shape of an arch of spiral (3) starting close to said hole (4) and extending for about 360°, the ends of said outline being joined by said toothed portion (3a) tangent to the outline in the shape of an arch of spiral at the beginning point close to said hole (4).
3. The production method according to claim 1, wherein said curved rod (1) has through holes (2) at its ends.
4. The production method according to anyone of the previous claims wherein said connection means are formed by pegs (6,7,10,14,19) engageable within said holes, preferably in a fixed way.
5. The production method according to anyone of the previous claims, wherein two pairs of curved rods (41,51), parallel two by two, are combined so as to be arranged on each other in a crossed way and turning their concavities toward opposed directions so as to form a base for a table.
6. The production method according to claim 1, wherein a first pair of curved rods (71) is hinged at an intermediate point of a second pair of curved rods (61), to which a fabric (12) constituting a seat is fixed, so as to form a folding chair.
7. The production method according to claim 1, wherein a first and a second pair of curved rods (81, 91) are combined to each other so as to define a support and sitting surface comprising a concave part acting as a back and a convex part acting as a support for the user body and legs, said pair of curved rods carrying support and sitting means (17), the concave part, defined by the first one (81) of said pairs, being turned upwardly, the convex part, defined by the second one (91) of said pairs, being turned downwardly, said first pair of curved

- rods (81) being connected to the second pair of curved rods (91) at an intermediate point thereof in an articulated and adjustable way, thus allowing the production of an adjustable dock-chair.
8. The production method according to claim 7, wherein the ends of said first pair (81) of curved rods which are connected to said second pair (91) have respective side extensions (26) supporting articulation pins eccentric with respect to the axis of the curved rods of said first pair (81).
9. The production method according to claim 1, wherein a first and a second pair of curved rods (101, 111) are combined one after the other and connected to each other at respective ends in such a way to have concavities turned opposedly, said pairs of curved rods carrying support and sitting means (18) and forming a dock-chair.
10. The production method according to claim 9, wherein said ends of said first and second pair of curved rods (101, 111) have respective side extensions (22) at which they are connected two by two by means of articulation pins eccentric with respect to the axes of the curved rods of said pairs (101, 111).
11. The production method according to claims 7 or 9, wherein said support and sitting means (17, 18) comprise a plurality of inflatable tubular members transversely and removably mounted on said pairs of curved rods and optionally connected to each other by a cloth or fabric element.
12. The production method according to anyone of the previous claims, wherein each curved rod is formed with a linear portion at least at one of their ends.
13. The production method according to anyone of the claims 1 to 4, wherein two of said toothed plates (45, 55) are connected through their respective toothed portions fixedly engaged with each other to form a base (27), from which a first tubular upright (28) extends for carrying shelves formed by other toothed plates (65, 75), from which a second tubular upright (30) extends, at the upper end of which further toothed plates (85, 95, 105, 115) are mounted, said further toothed plates being angularly spaced apart with respect to each other so as to turn outwardly their toothed portions which can be used as hanging points for clothes.
14. The production method according to anyone of claims 1 to 4, wherein said modular members in the shape of curved rod and toothed plate are used to make a stylized rocking-horse by forming a pair of curved rods (11) as a base of the rocking-horse, connected by a pair of pegs (6) for connecting said pair of curved rods (11) to two further pairs of curved rods (21, 31) forming rear legs, front legs and neck of the horse, as well as further pegs (7) connecting a curved rod (8), forming the back of the horse, to the front legs and rear legs and to a toothed plate (35), forming the tail, two further protruding pegs (9) being provided connected to the pair of curved rods (31) forming the front legs, in turn constituting a support for the user foot and an hand grip, said further protruding pegs (9) also serving to connect the two curved rods (31) forming the front legs to a second toothed plate (25) forming the head of the horse.
15. Articles of interior and outdoor furnishing made with the production method according to anyone of the previous claims.
16. Articles of interior and outdoor furnishing according to anyone of the claims 5 to 14.

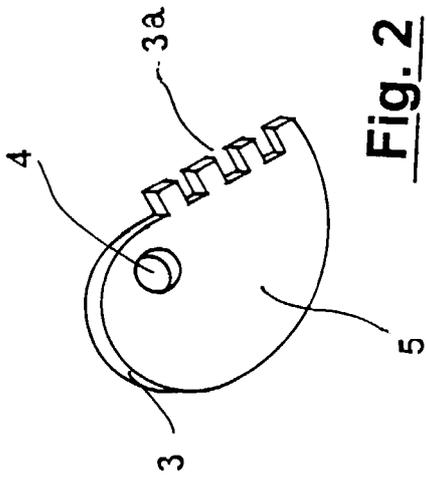


Fig. 2

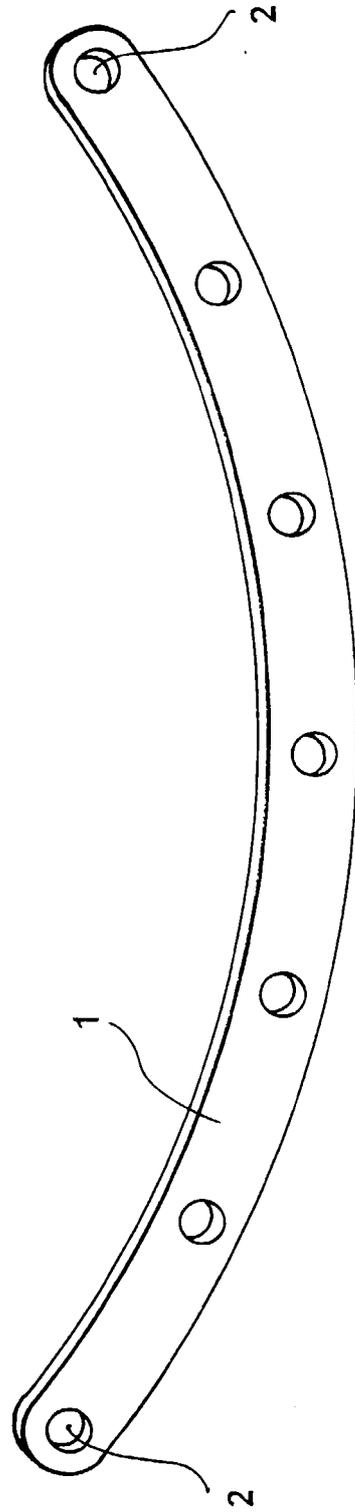
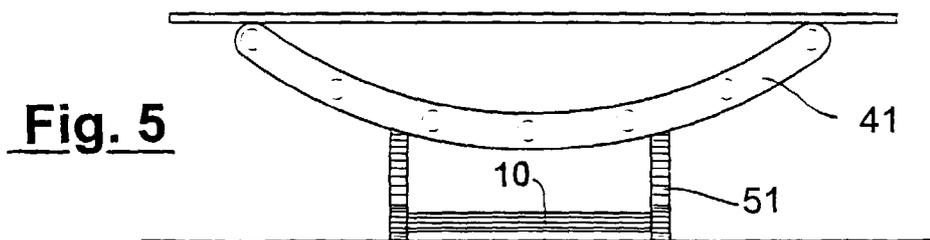
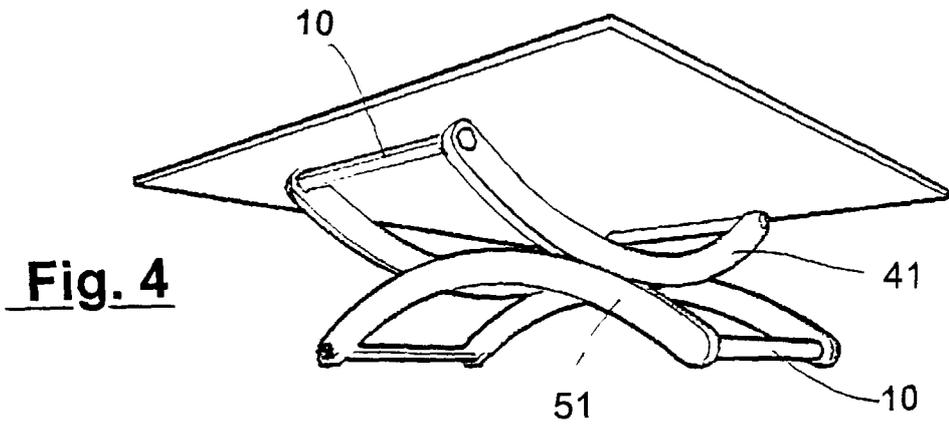
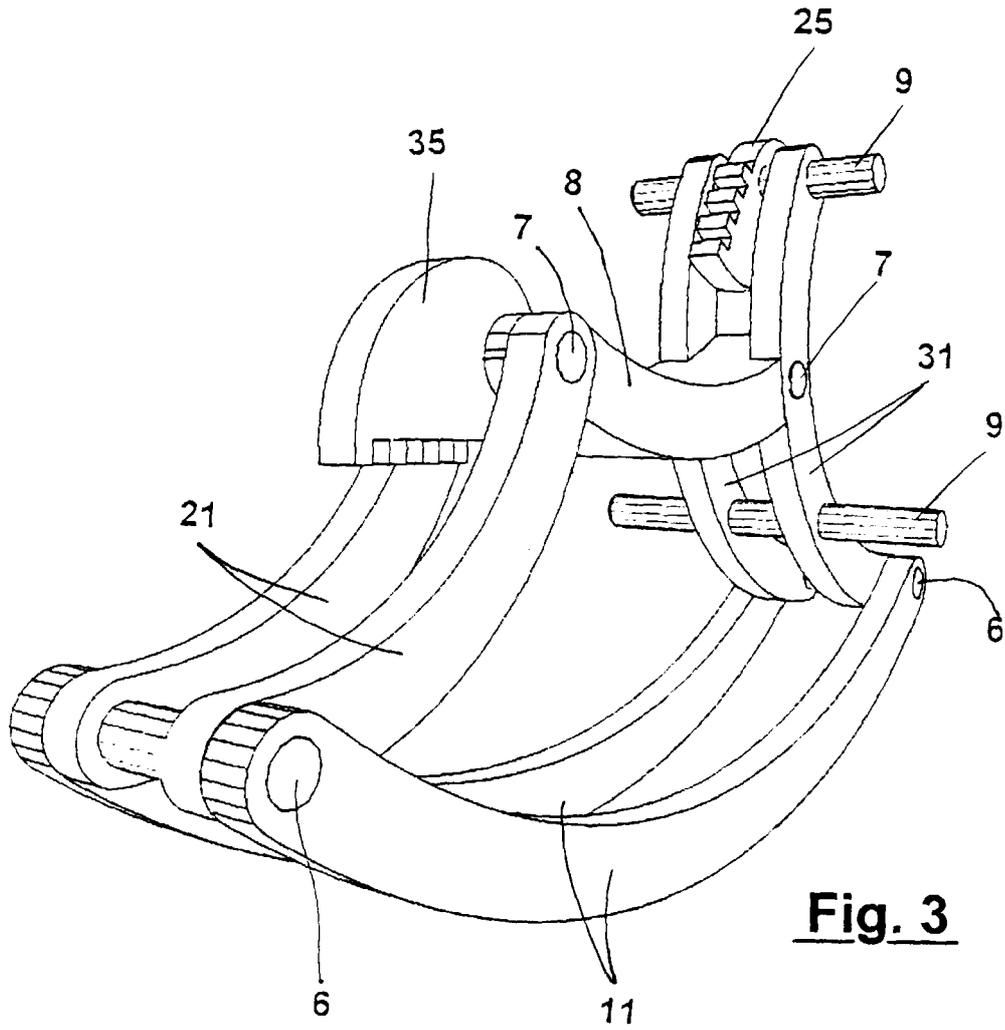
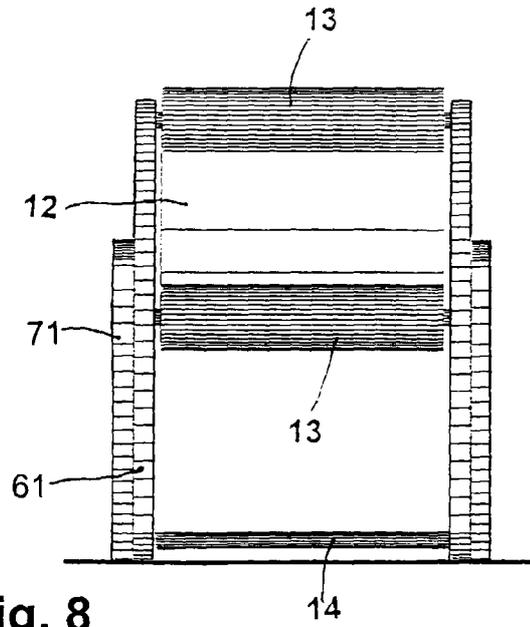
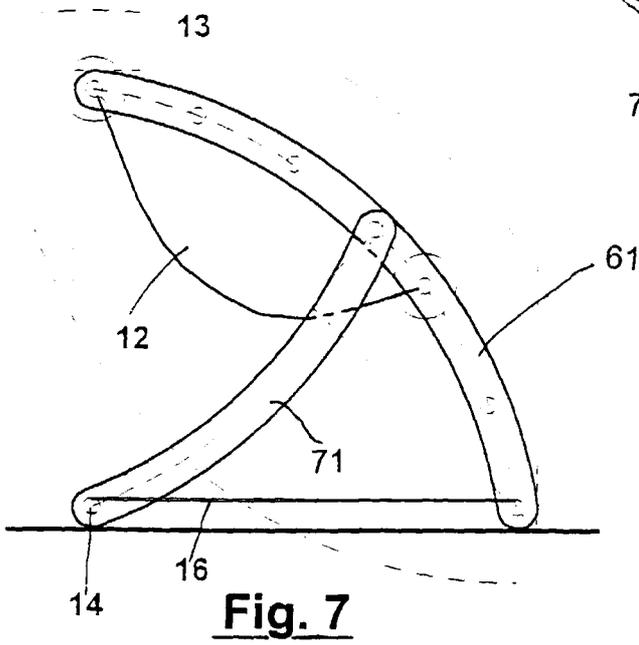
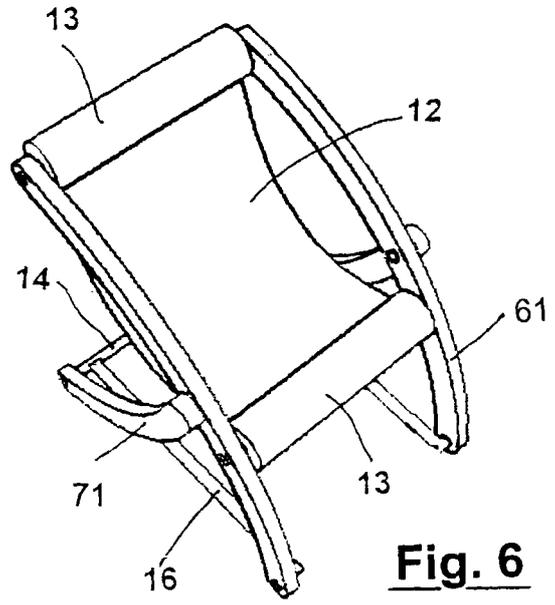
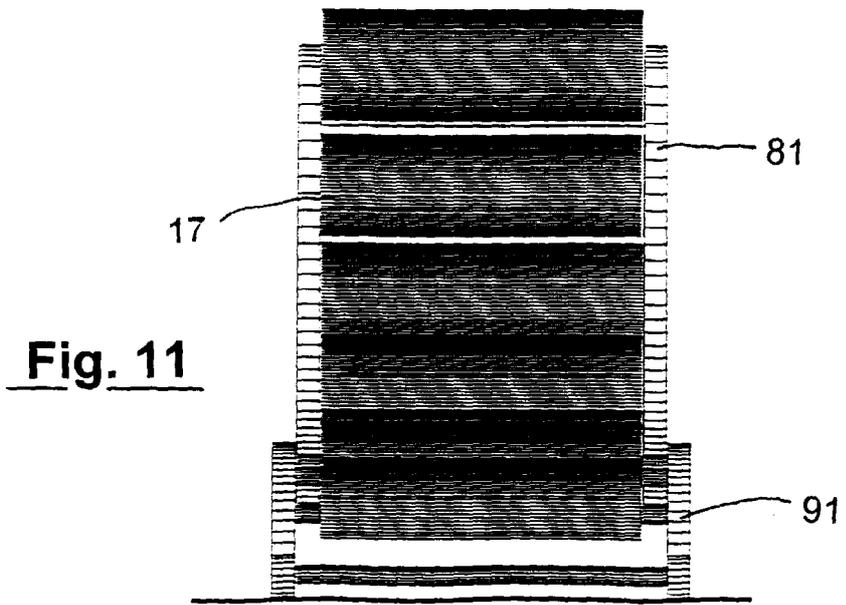
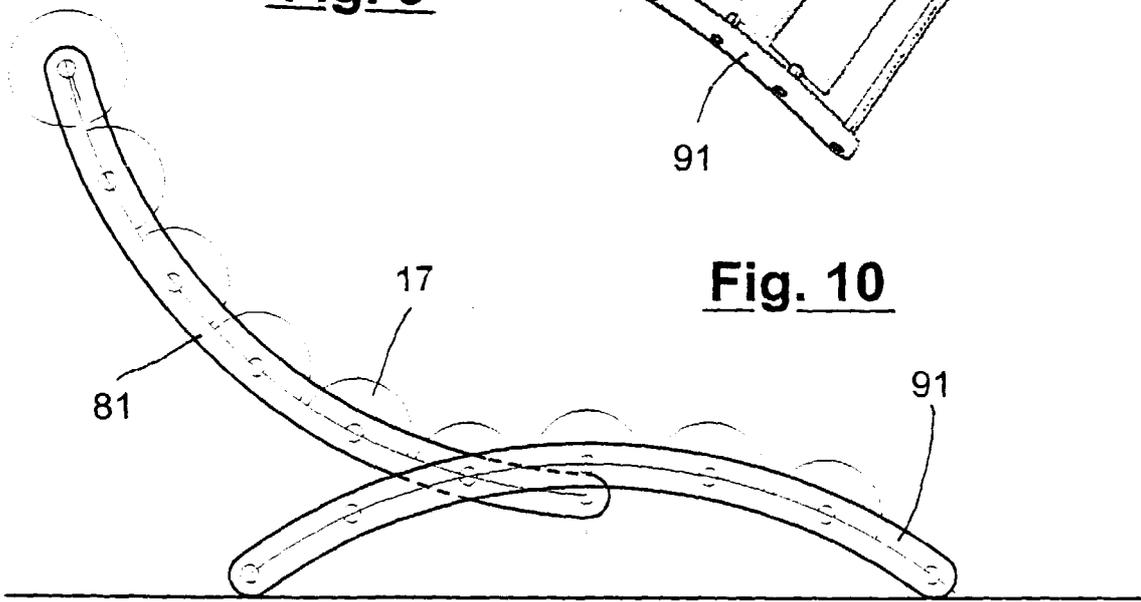
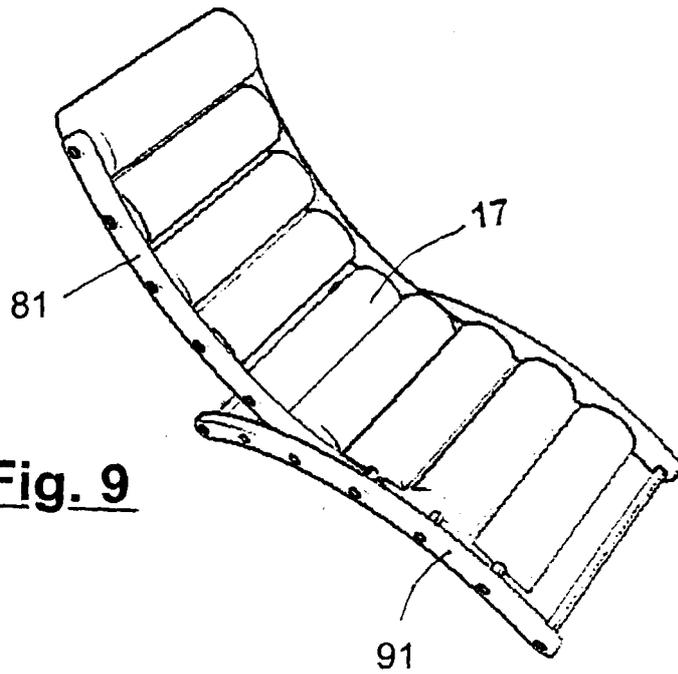


Fig. 1







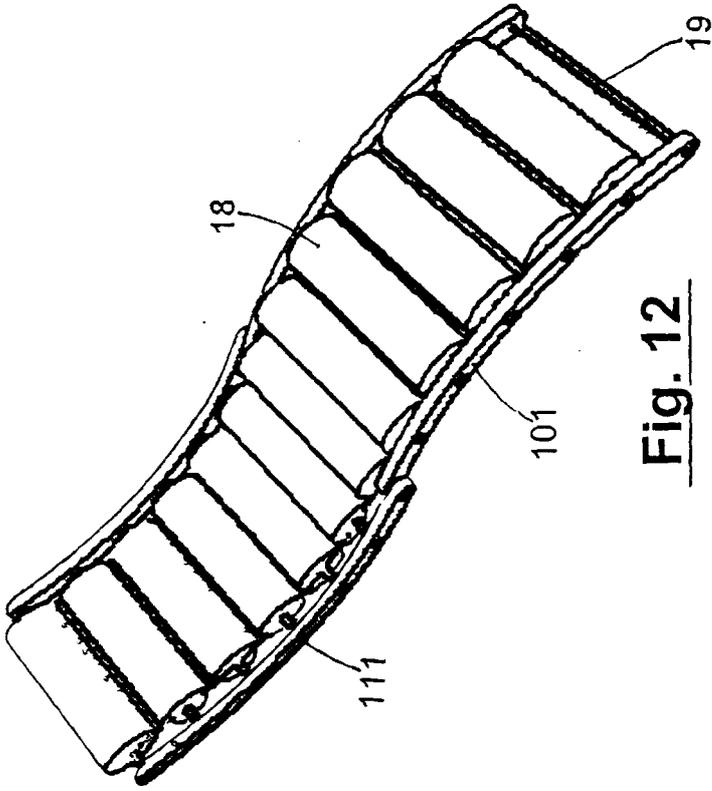


Fig. 12

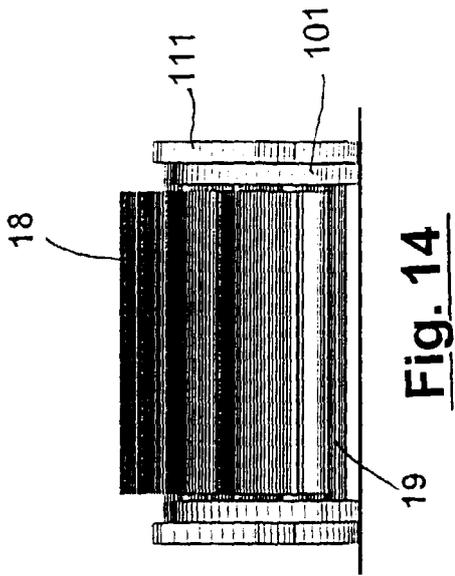


Fig. 14

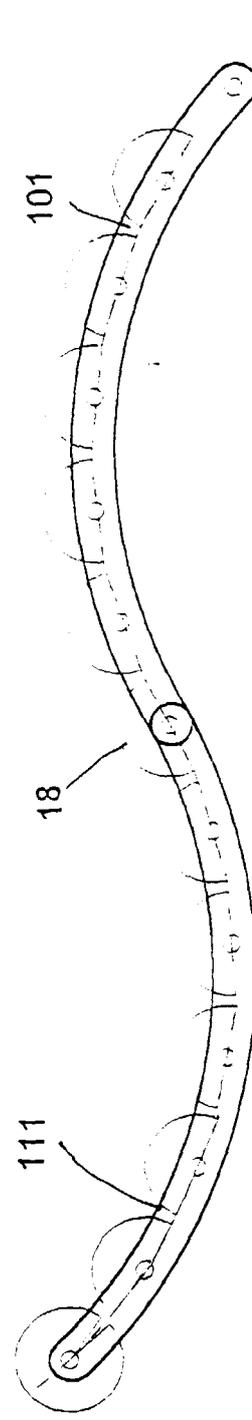
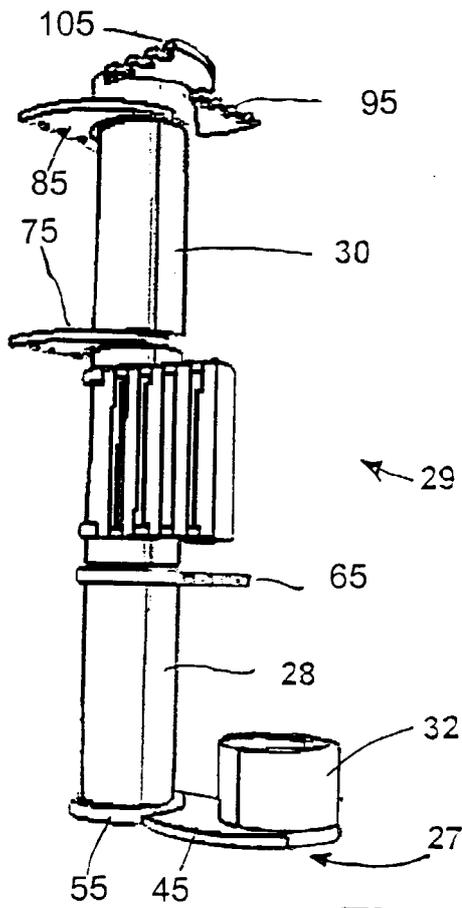
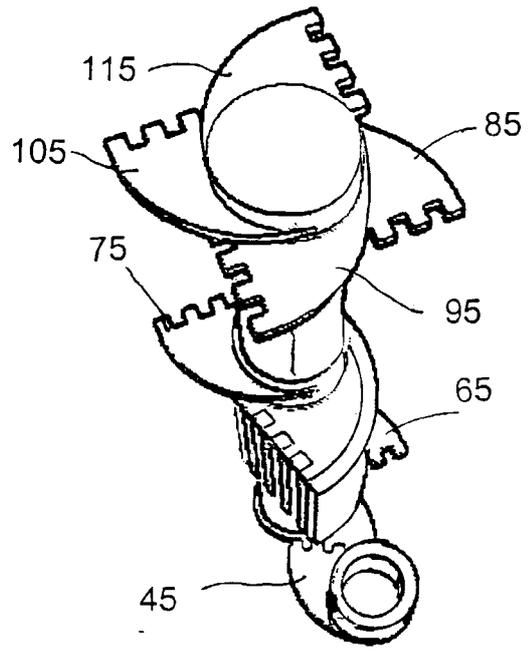


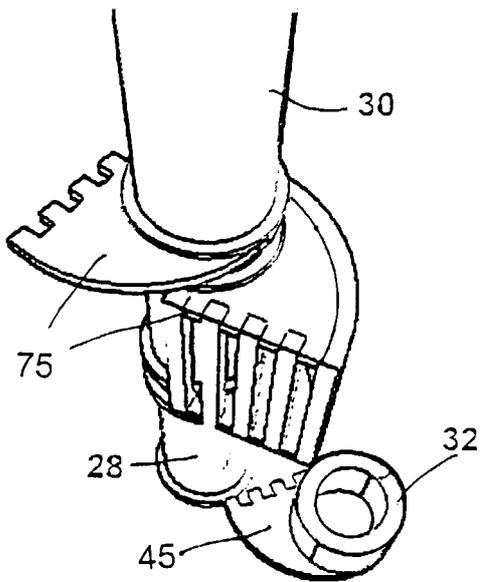
Fig. 13



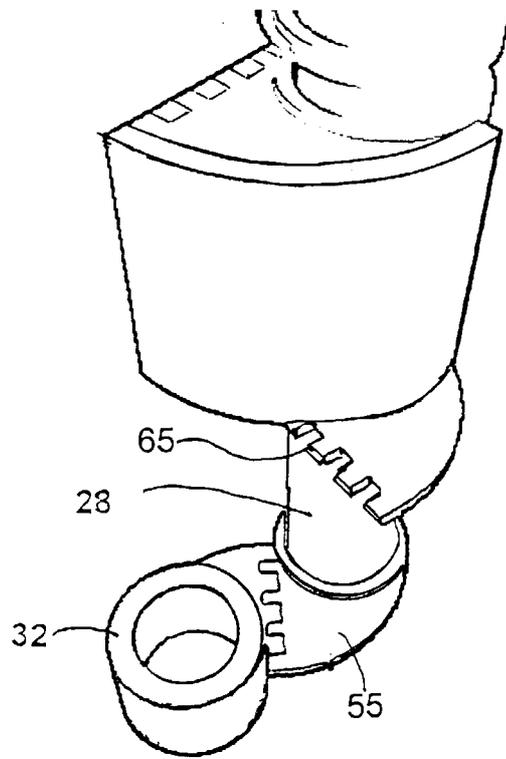
**Fig. 15**



**Fig. 16**



**Fig. 17**



**Fig. 18**

Fig. 19

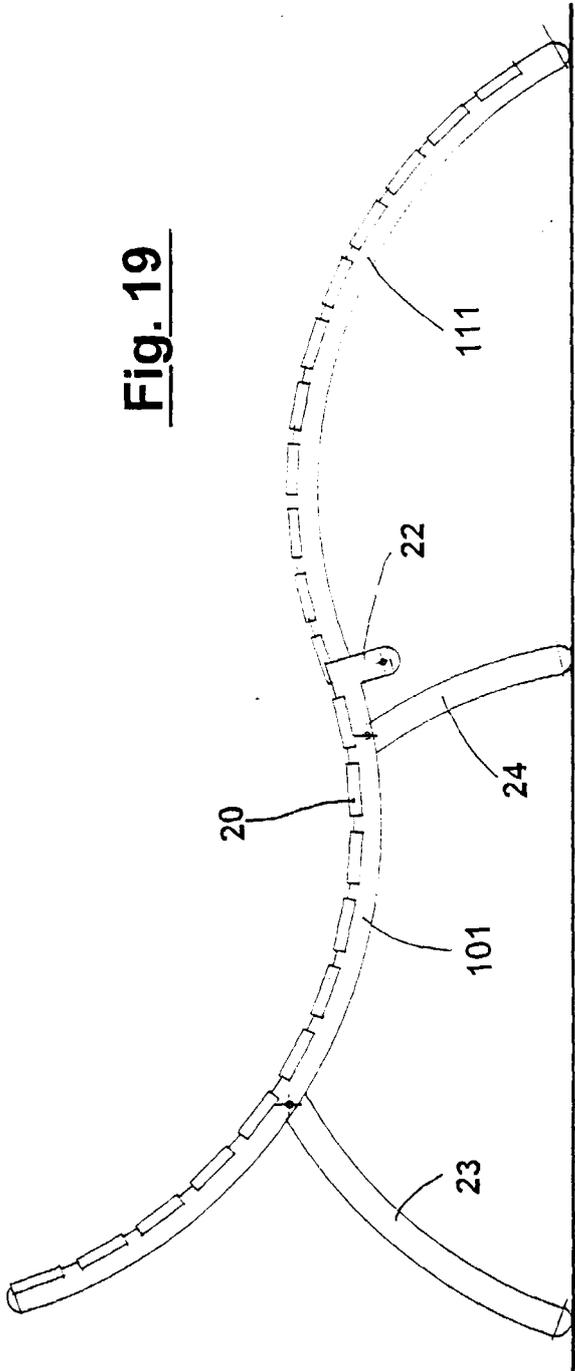


Fig. 20

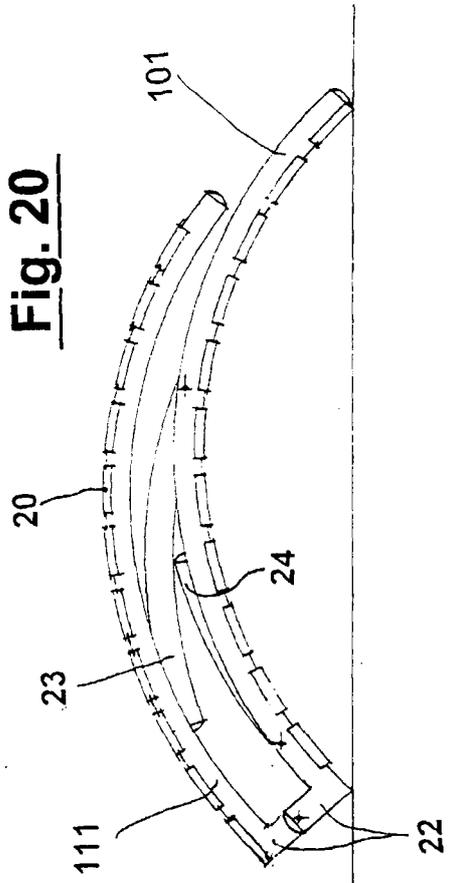
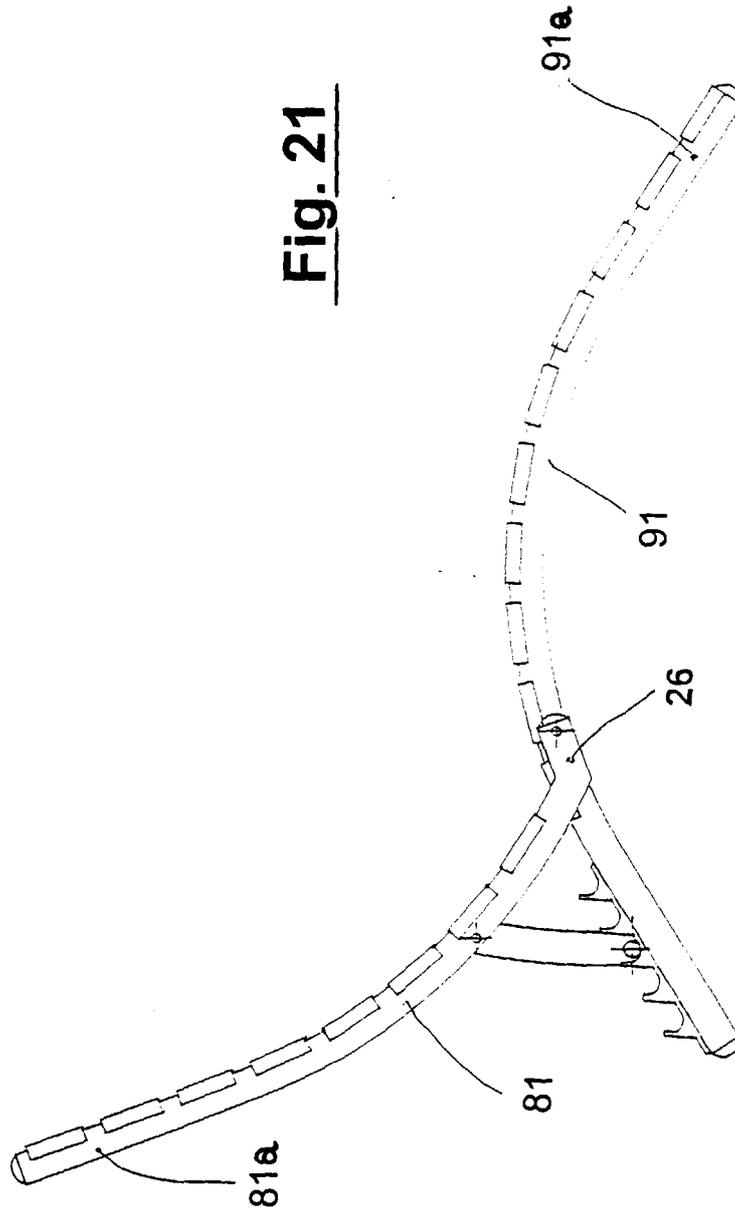
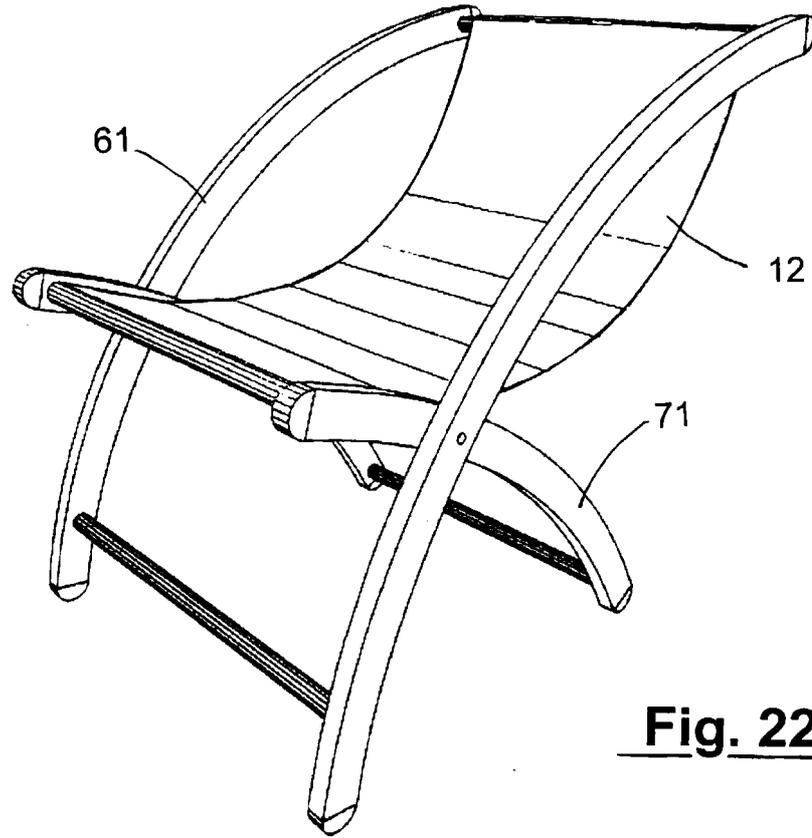
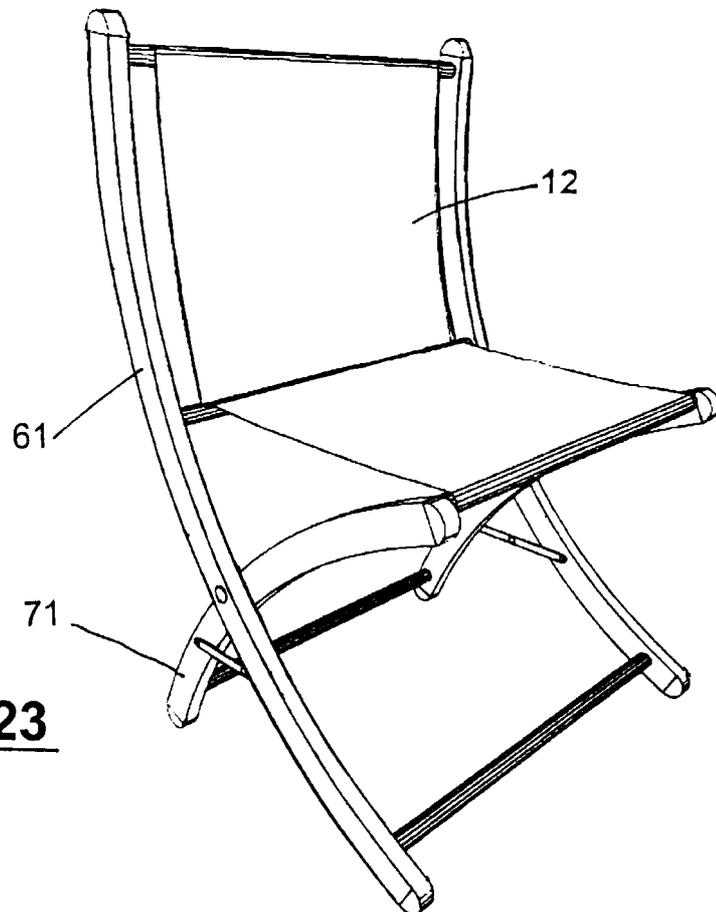


Fig. 21





**Fig. 22**



**Fig. 23**



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EUROPEAN SEARCH REPORT

Application Number  
EP 00 11 3778

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)
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A47C A47D A47B A63G A63H
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>3 October 2000</b>	Examiner <b>Amghar, N</b>
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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	

EPO FORM 1503 03.82 (P04C01)

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

EP 00 11 3778

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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