



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

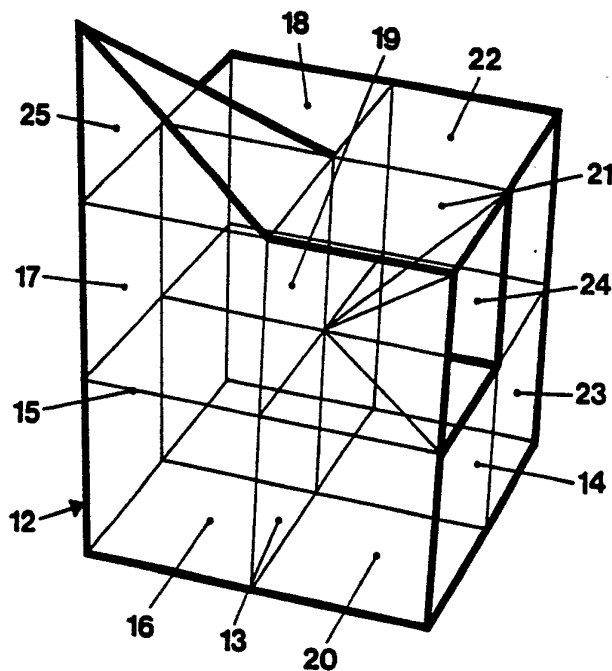
<p>(51) International Patent Classification <sup>5</sup> : <b>A63H G09B</b></p>	<p><b>A1</b></p>	<p>(11) International Publication Number: <b>WO 91/13663</b> (43) International Publication Date: 19 September 1991 (19.09.91)</p>
<p>(21) International Application Number: PCT/DK90/00065 (22) International Filing Date: 9 March 1990 (09.03.90) (71) Applicant (for all designated States except US): OLE FRIIS PETERSEN APS [DK/DK]; Skindergade 8, DK-1159 København K (DK). (72) Inventor; and (75) Inventor/Applicant (for US only) : PETERSEN, Ole, Friis [DK/DK]; Blanksevej 3, Mogenstrup, DK-4340 Tølløse (DK). (74) Agents: SIMONSEN, Christian, Rosendal et al.; International Patent-Bureau, Høje Taastrup Boulevard 23, DK-2630 Taastrup (DK).</p>		<p>(81) Designated States: AT, AT (European patent), AU, BE (European patent), CA, CH, CH (European patent), DE*, DE (Utility model)*, DE (European patent)*, DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GB, GB (European patent), IT (European patent), JP, KR, LU (European patent), NL, NL (European patent), NO, SE, SE (European patent), US.</p> <p><b>Published</b> With international search report. With amended claims and statement. In English translation (filed in Danish).</p>

(54) Title: A SYSTEM OF STRUCTURAL FORM BODIES

(57) Abstract

In a system of form bodies for use as toy building blocks, decorative objects, in particular for display use, furniture structures, sculptural building components etc., each form body has the shape of a polyhedron (12), in which polygonal side faces with each other form polyhedral outward extending protuberances (25) and/or polyhedral inward extending notches (24) for the assembling of differently shaped bodies into spatial structures. In a first group of form bodies each form body is shaped on the basis of a cube (12) and the protuberances (25) and/or

notches (24) of the form body are shaped on the basis of a subbody (A) of a cube and with a shape like a pyramid with a square base (9), two of the side faces being perpendicular to the base at adjacent sides thereof and each of them has the form of an isosceles orthogonal triangle. In a second and third group form bodies are formed on the basis of a prism with a base as an equilateral triangle or an isosceles orthogonal triangle, respectively, having an end length or cathetus length, respectively, corresponding to the lateral length of the cube used as the basic body of the first group.



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A system of structural form bodies.

The invention relates to a system of form bodies for use as toy building blocks, decorative objects, in particular for display use, furniture structures, sculptural building components etc., in which each form  
5 body has the shape of a polyhedron, in which polygonal side faces with each other form polyhedral outward extending protuberances and/or polyhedral inward extending recesses for assembling differently shaped bodies into spatial structures.

10 Such systems or building kits of geometrical form bodies are known, e.g. from DE-C-601 533, DE-A-1 907 044, DE-A-2 207 676 and from US patents Nos 1 292 188, 2 440 836, 3 787 996 and 4 051 621.

The disclosure of various of said references  
15 deals with systems in which the form bodies are shaped as or include pyramidal modules. Thus, DE-A-1 907 044 discloses a form body composed of two pyramidal bodies hingedly connected along an edge and DE-A-2 207 676 discloses the design of pyramidal hollow bodies by  
20 folding comparatively stiff cardboard blanks.

The invention provides for obtaining a system of form bodies of the above type that is characterized in that each form body in a first group of form bodies is shaped on the basis of a cube and that protuberances  
25 and/or recesses in the form body are shaped on the basis of a subbody of a cube and with a shape like a pyramid with a square base, two of the lateral faces being perpendicular to the base at adjacent sides thereof and each of them having the form of an  
30 isosceles orthogonal triangle.

The subbody indicated as a basis of the protuberances or recesses is obtained as a subbody of a geometric cube with a base corresponding to a side face of the cube and a pyramid apex positioned at one of

the vertices of the opposite lateral face of the cube and with edges extending from said vertex to each of the vertices of the base.

5 Any cube may be divided into three such pyramidal subbodies with a common apex at one of the vertices of the cube and with the diagonally opposed vertex point as a common zero point for the three mutually orthogonal side faces forming the base in a respective one of the three subbodies.

10 Since, moreover, any cube may be divided into smaller partial cubes, each with a lateral length corresponding to half the lateral length of the initial cube, thereby forming  $2^3 = 8$  partial cubes, any of said partial cubes may also be divided into three pyramidal  
15 subbodies, i.e. the initial cube into 24 such subbodies.

Each of said 8 partial cubes may still be divided into further 8 smaller partial cubes having a lateral length corresponding to one fourth of the  
20 initial cube then accommodating  $4^3 = 64$  such smaller partial cubes, each of which again accommodates 3 pyramidal subbodies corresponding in total to 192 subbodies.

As it also appears from the following description with reference to the drawings, an infinite number  
25 of different form bodies may be provided from the basic module by multiplication of a common smallest basic module. The form bodies may be equipped with outward extending protuberances and inward extending recesses  
30 which likewise appear as multiples of the common basic module.

In view of the fact that the shape of the basic module is determined by a single lateral length corresponding to the lateral length of the cube of  
35 which the basic module constitutes a subbody, the form bodies and their protuberances and/or recesses may

include subbodies in the form of multiples of a common basic module.

Moreover, a system of form bodies according to the invention may include a second group of form bodies, of which each form body is shaped on the basis of a prism with a base as an equilateral triangle and adapted to the form bodies in the first group, in that the base has the same lateral length and the prismatic body the same height as the cube used as the basis of form bodies in the first group, protuberances and/or notches being shaped as pyramids with a base constituted by one of the opposite end faces of the prism.

Such a system may further comprise a third group of form bodies, in which each form body is shaped on the basis of a prism with a base as an isosceles orthogonal triangle and adapted to the form bodies of the first and/or second group, in that the cathetus of the base and the height of the prismatic body correspond to the lateral length of the cube used as the basis of form bodies in the first group and the lateral length of the base of the prism used as the basis of the form bodies in the second group, respectively, protuberances and/or notches being shaped as pyramids with a base constituted by one of the opposite end faces of the prism.

In such form bodies with prismatic basic figures, the apex of the protuberances and/or recesses shaped as pyramids may be positioned to a normal of the base either through the geometric centre point thereof, through one of its vertices or, as regards the last mentioned design with the base as an isosceles, orthogonal triangle through the centre point of the hypotenuse of the base.

Form bodies for a system according to the invention may be manufactured as hollow bodies, for instance by folding plane blanks of cardboard or similar stiff

materials. This design is appropriate in the manufacture of decorative objects for display stands, because the form bodies may be produced on site and storage and transportation is thereby facilitated.

5 For other purposes the form bodies may, however, be designed as solid bodies, in particular moulded plastic blanks, and the form body system according to the invention of such a design is suited for the manufacture of kits of toy building blocks for children.  
10 In the production of concrete elements solid form bodies may for instance also be used in designing sculptural building components.

The form bodies may as a supplementary possibility, e.g. for decorative use in connection with display stands, be designed as grid structures of tubular elements constituting the edges of the form body and being connected by joint links constituting the vertices of the body.  
15

Such grid structures may in a manner known per se be collapsible in that the tubular elements are hingedly connected with the joint links.  
20

The invention will now be explained in detail with reference to the schematical drawings, in which

Figs 1 and 2 illustrate the geometric structure of a basic module for a group of form bodies in a system according to the invention,  
25

Fig. 3 illustrates the principle in designing a form body on the basis of the basic module shown in Figs 1 and 2,

30 Figs 4 to 13 a non-exhaustive number of examples of form bodies on the basis of the basic module shown in Figs 1 and 2,

Fig. 14 illustrates the design of a form body by bending a plane blank, and

35 Fig. 15 shows a form body shaped as a grid structure of tubular elements.

5

The basic module for a first group of form bodies in a system according to the invention is obtained as illustrated in Fig. 1 by dividing a geometric cube into three uniform subbodies having the shape as a pyramid with a square base, two of the side faces being perpendicular to the base at its adjacent sides and having each the form of an isosceles, orthogonal triangle.

The vertices of the cube have the reference numerals 1 to 8 and it appears that a subbody A has its cubical side with the vertex points 2, 3, 6 and 7 as the base and its apex at the vertex point 1 that is the common apex of all three subbodies. The bases of the two other subbodies B and C are defined at the cubical sides by the vertices 3, 4, 7, 8 and 5, 6, 7, 8, respectively.

The three subbodies thus obtained are shown in a retracted mode in Fig. 2. As mentioned above and as shown for subbody A, each of said basic modules has the shape of an orthogonal pyramid with a square base 9, in which two side faces 10 and 11 are at right angles to the base at adjacent sides thereof, each having the form of an isosceles orthogonal triangle.

On the basis of said basic module an infinite number of variants of form bodies may in practice be obtained, each of which has the shape of a polyhedron, in which the polygonal side faces with each other form polyhedral outward extending protuberances and/or polyhedral inward extending recesses.

In a very simple example Fig. 3 illustrates the design of such a possible form body. The example illustrates a cube 12 which by means of three bisecting planes 13, 14 and 15 in a known manner is divided into eight partial cubes 16 to 23. In view of the fact that each of said cubes, as shown in Fig. 1, may be divided into three basic modules, it has

been shown for the partial cube 21 how an inward extending recess 24 in the form body is obtained by removing a subbody corresponding to a basic module.

Moreover, as regards the partial cube 17 it  
5 has been shown how an outward extending protuberance 25 may be provided by addition of a basic module.

It will easily appear that a further development of this principle caters for an infinite number of different possibilities of designing form bodies of the  
10 first group by providing notches and/or protuberances in comparison with a basic structure in the form of a geometric cube.

Figs 4 to 13 show a limited, but in now way exhaustive number of examples of such form bodies, all  
15 of which are obtainable from a cubic structure.

The form bodies may be designed as hollow bodies with walls e.g. from rigid plastic material or cardboard, joined at the edges by adhesion or in any other known manner.

20 As illustrated in Fig. 14 the form bodies may also be obtained by bending plane blanks along folding lines, some of which constitute edges of the polyhedron defined by the form body.

For use e.g. as kits of toy building blocks for  
25 children the form bodies may also be produced as solid bodies, in particular moulded plastic blanks, and solid designs may as well be manufactured from concrete or similar building materials for use in the structure of sculptural building components.

30 When designing the form bodies as hollow bodies different side faces of the same form body may be given different colours and form bodies may as well be fabricated wholly or partly with transparent side faces to obtain desired light effects.

35 The protuberances and recesses of the form bodies may be mating, thereby allowing such mutually



engaging form bodies to be combined into complex self-supporting spatial structures.

For instance for use as decorative elements on display stands and for other kinds of decoration, the form bodies may be designed as grid structures of tubular elements, e.g. aluminium tubes as illustrated in Fig. 15. The individual tubular elements 26, 27, 28, 29 and 30 have lengths corresponding to the practised sizes of modules and constitute the edges of the form body when connected in joining links. By making the connections between the tubular elements and the joining links demountable to a necessary extent, such grid structures may in a manner known per se be made collapsible.

As shown in Figs 16 to 19, a system of form bodies according to the invention may further include a second and/or third group of form bodies, each body being fomed on the basis of a prism.

Figs 16 and 17 show an example of such a prismatic body 31 with base as an equilateral triangle 32, while Figs 18 and 18 show an example of a prismatic body 33 with base as an isosceles orthogonal triangle 34. Form bodies of the second and the third group within the same system of form bodies according to the invention conform to each other and to the form bodies in the first group, in that the lateral length of the base shaped as an equilateral triangle of form bodies in the second group and the cathetus length of the base shaped as an isosceles orthogonal triangle of form bodies in the third group, respectively, are the same as the lateral length of the cube forming the basis of the form bodies of the first group.

In the form bodies of the second and third group there are provided protuberances and/or recesses in the form of pyramids with a base formed by the end faces of the prismatic body 31 or 33. A form body of the

second group may thus, as shown in Fig. 16, have a pyramidal recess or groove 35 from the one end face with apex 36 on a normal thereto through the geometric apex 37 of the end face and, moreover, a uniform, pyramidal protuberance at the other end face. As shown the apex 40 for a pyramidal protuberance may also be positioned on a normal to the base through one of its vertices 41.

As illustrated in Fig. 18, form bodies of the third group also include pyramidal protuberances and/or recesses from the end faces of the prismatic body. The apices of such protuberances or notches may be positioned as described above concerning the form body in Fig. 16 but may also, as shown by 42, be positioned on a normal to the base through the centre point 43 of this hypotenuse.

Form bodies of the second and the third group may be mutually combined with form bodies of the first group to obtain more complicated spatial structures. As a single example it is thus possible from two uniform prismatic form bodies of the second group to obtain a prismatic form body with base as a rhomb and from two uniform form bodies of the third group to obtain a prismatic body with base in the form of a parallelogram with sides corresponding to a cathetus and the hypotenuse, respectively, of the base figure of the third group of form bodies.

In the combination with form bodies of the first group the prismatic form bodies from the second and the third group have a lateral length of the base and a height corresponding to the lateral length of the cube forming the basis of form bodies of the first group.

## P A T E N T C L A I M S

1. A system of form bodies for use as toy building blocks, decorative objects, in particular for display use, furniture structures, sculptural building components etc., in which each form body has the shape of a polyhedron (12), in which polygonal side faces with each other form polyhedral outward extending protuberances (25) and/or polyhedral inward extending recesses (24) for assembling differently shaped bodies into spatial structures, characterized in that each form body of the first group (Figs 1 to 13) is shaped on the basis of a cube (12) and that protuberances (25) and/or recesses (24) in the form body are shaped on the basis of a subbody (A) of a cube and with a shape like a pyramid with a square base (9), two of the lateral faces being perpendicular to the base at adjacent sides thereof and each of them having the form of an isosceles orthogonal triangle.

2. A system of form bodies as claimed in claim 1, characterized in that form bodies and their protuberances and/or recesses include uniform modules of different size.

3. A system of form bodies as claimed in claim 1 or 2, characterized in that protuberances and/or recesses in a form body of the first group extend from two opposite cubical sides.

4. A system of form bodies as claimed in claim 1, characterized in that each form body (31) of the second group is designed on the basis of a prism with base (32) as an equilateral triangle and adapted to the form bodies in the first group, in that the base has the same lateral length and the prismatic body the same height as the cube used as the basis of form bodies of the first group, protuberances and/or recesses being shaped as pyramids with a base constituted by one of the opposite end faces of the prism.

5. A system of form bodies as claimed in claim 1 or 4, characterized in that each form body (33) of the third group of form bodies is shaped on the basis of a prism with a base (34) as an isosceles orthogonal triangle and adapted to the form bodies of the first and/or second group, in that the cathetus of the base and the height of the prismatic body correspond to the lateral length of the cube used as the basis of form bodies in the first group and the lateral length of the base of the prism used as the basis of the form bodies in the second group, respectively, protuberances (38) and/or recesses (35) being shaped as pyramids with a base constituted by one of the opposite end faces of the prism.

6. A system of form bodies as claimed in claim 1, 4 or 5, characterized in that the apex (36, 39) of protuberances (38) and/or recesses (35) formed as pyramids is positioned on a normal to the base through its geometric centre point (37).

7. A system of form bodies as claimed in claim 1, 4 or 5, characterized in that the apex (40) of the protuberances and/or recesses shaped as pyramids is positioned on a normal to the base through one of its vertices (41).

8. A system of form bodies as claimed in claim 5, characterized in that the apex (40) of the protuberances and/or recesses shaped as pyramids is positioned on a normal to the base through the centre point (43) of its hypotenuse.

9. A system of form bodies as claimed in any of the preceding claims, characterized in that the form bodies are designed as hollow bodies.

10. A system of form bodies as claimed in claim 9, characterized in that form bodies are obtained by bending plane blanks along folding lines constituting the edges of the polyhedron (14) defined by each element (Fig. 14).

11. A system of form bodies as claimed in any of claims 1 to 7, characterized in that the form bodies are made as solid bodies, in particular by moulding.

5 12. A system of building elements as claimed in any of claims 1 to 7, characterized in that the form bodies are designed as grid structures of tubular elements (26 to 30) constituting edges in said polyhedrons and being connected in joining links (31) forming vertices in the polyhedrons.

10 13. A system of form bodies as claimed in claim 12, characterized in that said grid structures gratings are made collapsible, the tubular elements being hingedly connected with the joining links.

15 14. A system of form bodies as claimed in any of the preceding claims, characterized by its use in the structure of spatial decorative structures in display stands.

20 15. A system of form bodies as claimed in any of claims 1 to 11, characterized by its use as kits of toy building blocks.

16. A system of form bodies as claimed in any of claims 1 to 11, characterized by its use as a modular system in the construction of architecture models of building works.

## AMENDED CLAIMS

[received by the International Bureau on 3 July 1991 (03.07.91); original claims 1, 4 and 5 replaced by amended claim 1, new claims 7 and 8 added; claims 6-8 renumbered as 4-6; other claims unchanged (3 pages)]

1. A system of form bodies for use as toy building blocks, decorative objects, in particular for display use, furniture structures, sculptural building components etc., in which each form body has the shape  
5 of a polyhedron (12), in which polygonal side faces with each other form polyhedral outward extending protuberances (25) and/or polyhedral inward extending recesses (24) for assembling differently shaped bodies into spatial structures, characterized in that it  
10 comprises form bodies of a first group and/or form bodies of a second group and/or form bodies of a third group, wherein

- each form body of the first group (Figs 1 to 13) is shaped on the basis of a cube (12) and that protuberances (25) and/or recesses (24) in the form body  
15 are shaped on the basis of a subbody (A) of a cube and with a shape like a pyramid with a square base (9), two of the lateral faces being perpendicular to the base at adjacent sides thereof and each of them having the form  
20 of an isosceles orthogonal triangle,

- each form body (31) of the second group is designed on the basis of a prism with base (32) as an equilateral triangle and adapted to the form bodies in the first group, in that the base has the same lateral  
25 length and the prismatic body the same height as the cube used as the basis of form bodies of the first group, protuberances and/or recesses being shaped as pyramids with a base constituted by one of the opposite end faces of the prism, and

30 - each form body (33) of the third group of form bodies is shaped on the basis of a prism with a base (34) as an isosceles orthogonal triangle and adapted to the form bodies of the first and/or second group, in that the cathetus of the base and the height of the  
35 prismatic body correspond to the lateral length of the

cube used as the basis of form bodies in the first group and the lateral length of the base of the prism used as the basis of the form bodies in the second group, respectively, protuberances (38) and/or recesses  
5 (35) being shaped as pyramids with a base constituted by one of the opposite end faces of the prism.

2. A system of form bodies as claimed in claim 1, characterized in that form bodies and their protuberances and/or recesses include uniform modules of  
10 different size.

3. A system of form bodies as claimed in claim 1 or 2, characterized in that protuberances and/or recesses in a form body of the first group extend from  
15 two opposite cubical sides.

4. A system of form bodies as claimed in claim 1, characterized in that the apex (36, 39) of protuberances (38) and/or recesses (35) formed as pyramids in  
20 form bodies of the second or third group is positioned on a normal to the base through its geometric centre point (37).

5. A system of form bodies as claimed in claim 1, characterized in that the apex (40) of the protuberances and/or recesses shaped as pyramids in form bodies  
25 of the second or the third group is positioned on a normal to the base through one of its vertices (41).

6. A system of form bodies as claimed in claim 1, characterized in that the apex (40) of the protuberances and/or recesses shaped as pyramids in form  
30 bodies of the third group is positioned on a normal to the base through the centre point (43) of its hypotenuse.

7. A system of form bodies as claimed in claim 1, characterized in that it includes prismatic form bodies with rhombic base composed of two uniform form  
35 bodies of the second group.

8. A system of form bodies as claimed in claim 1, characterized in that it includes prismatic form

bodies with a base shaped as a parallelogram and composed of two uniform form bodies of the third group.

9. A system of form bodies as claimed in any of the preceding claims, characterized in that the form  
5 bodies are designed as hollow bodies.

10. A system of form bodies as claimed in claim 9, characterized in that form bodies are obtained by bending plane blanks along folding lines constituting the edges of the polyhedron (14) defined by each element (Fig. 14).

11. A system of form bodies as claimed in any of claims 1 to 5, characterized in that the form bodies are made as solid bodies, in particular by moulding.

12. A system of building elements as claimed in  
15 any of claims 1 to 5, characterized in that the form bodies are designed as grid structures of tubular elements (26 to 30) constituting edges in said polyhedrons and being connected in joining links (31) forming vertices in the polyhedrons.

20 13. A system of form bodies as claimed in claim 12, characterized in that said grid structures are made collapsible, the tubular elements being hingedly connected with the joining links.

25 14. A system of form bodies as claimed in any of the preceding claims, characterized by its use in the structure of spatial decorative structures in display stands.

30 15. A system of form bodies as claimed in any of claims 1 to 11, characterized by its use as kits of toy building blocks.

16. A system of form bodies as claimed in any of claims 1 to 11, characterized by its use as a modular system in the construction of architecture models of building works.



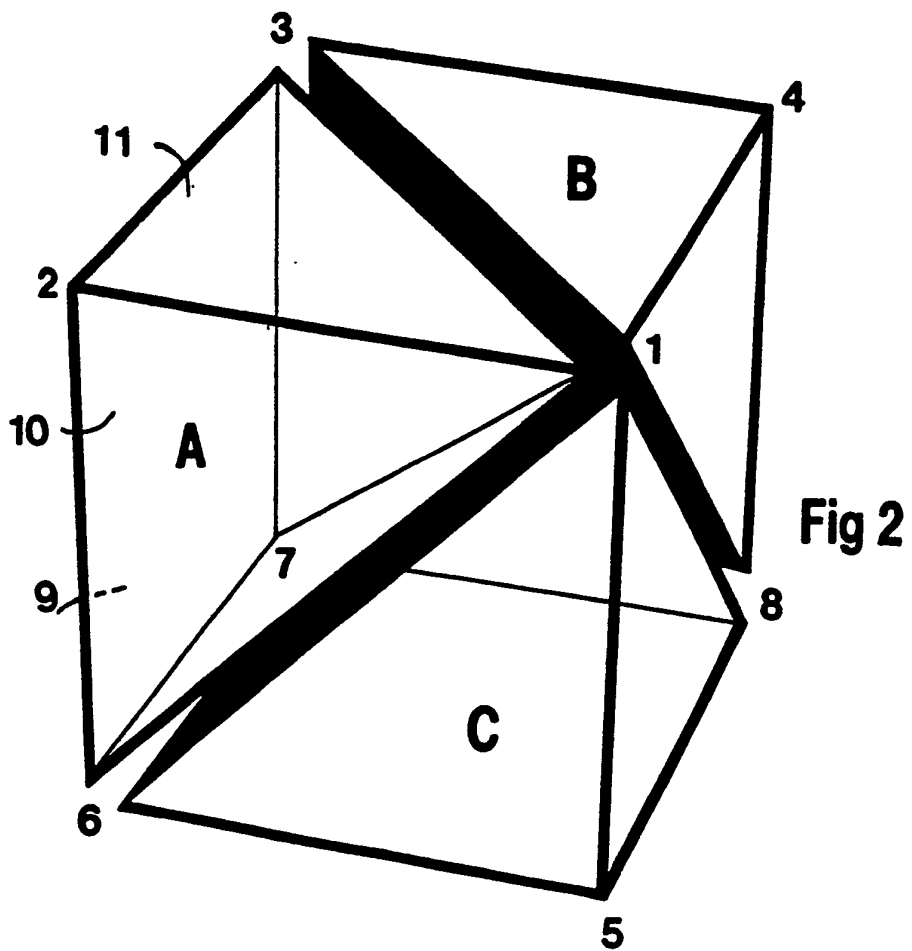
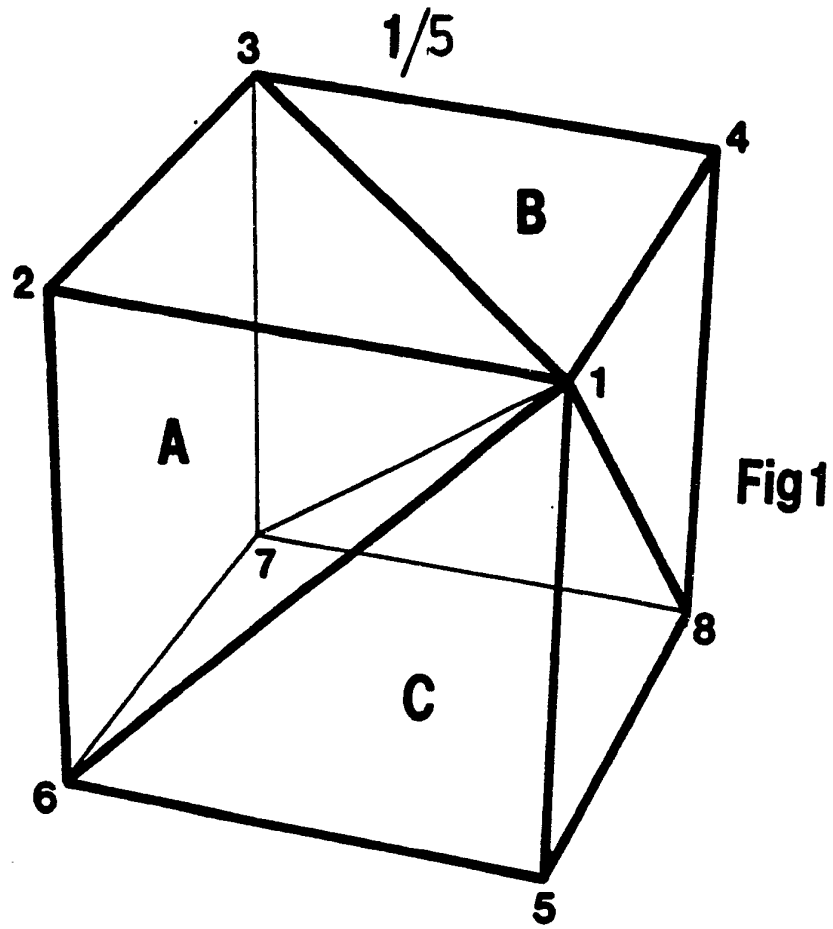
## STATEMENT UNDER ARTICLE 19

Original claims 4 and 5 have been introduced as alternatives into the characterizing portion of claim 1.

Original claims 6 to 8 have been renumbered into 4 to 6 with a corresponding amendment of the references to preceding claims.

New claims 7 and 8 have been added relating to the features described on page 8, lines 17 to 20 and lines 20 to 25, respectively, of the original Danish specification (page 8, lines 20 to 22 and 23 to 27 of the English translation).

In claims 11 and 12 the reference to preceding claims has been amended to "1 to 5".



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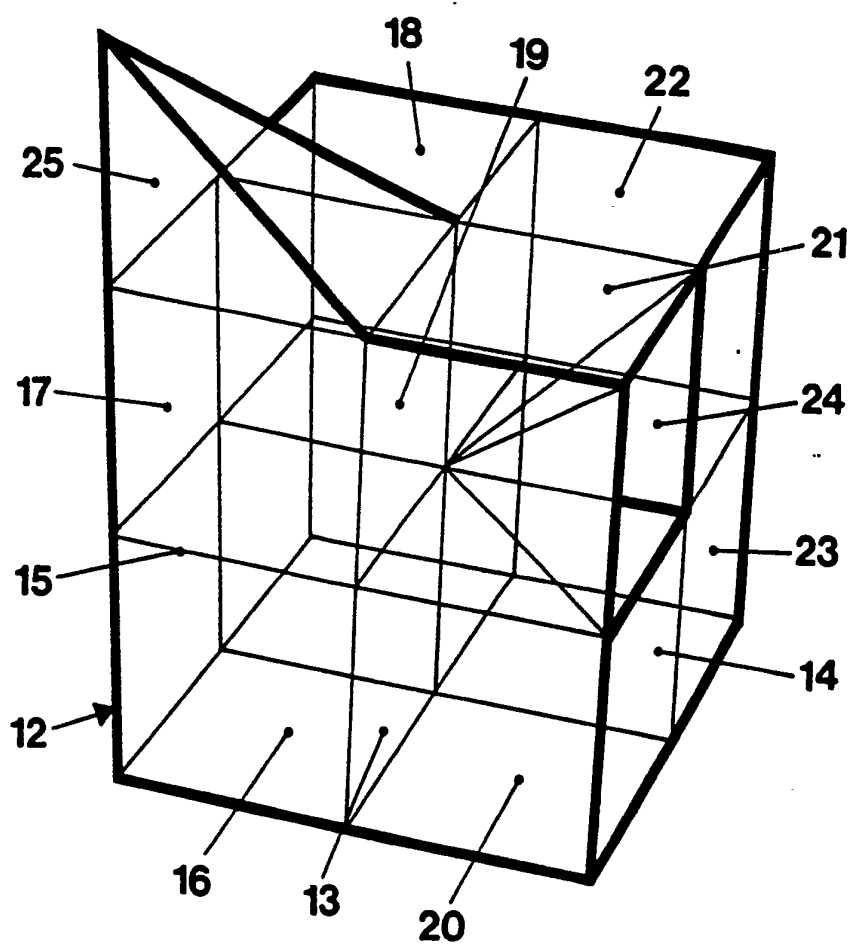
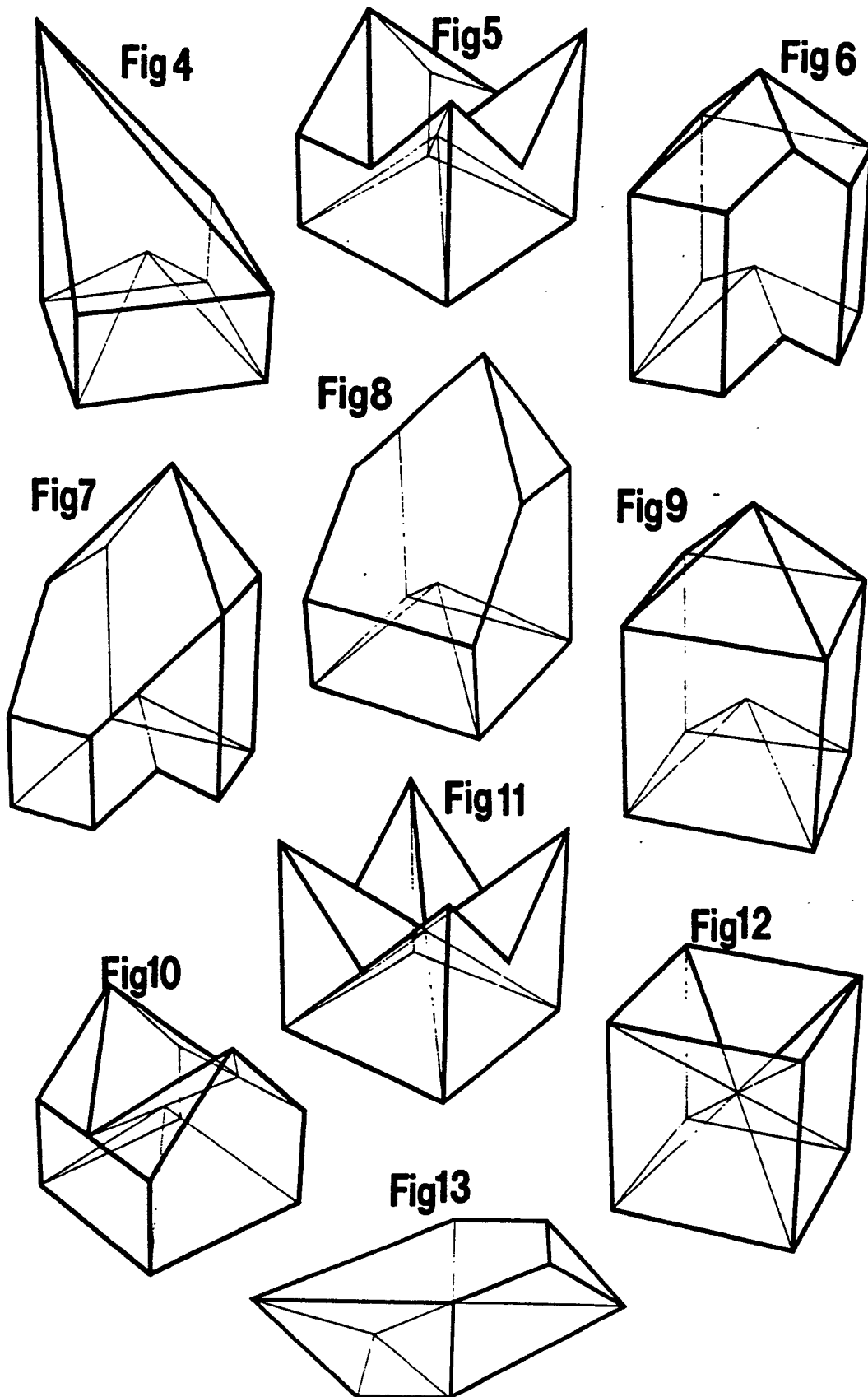


Fig 3

3/5



4/5

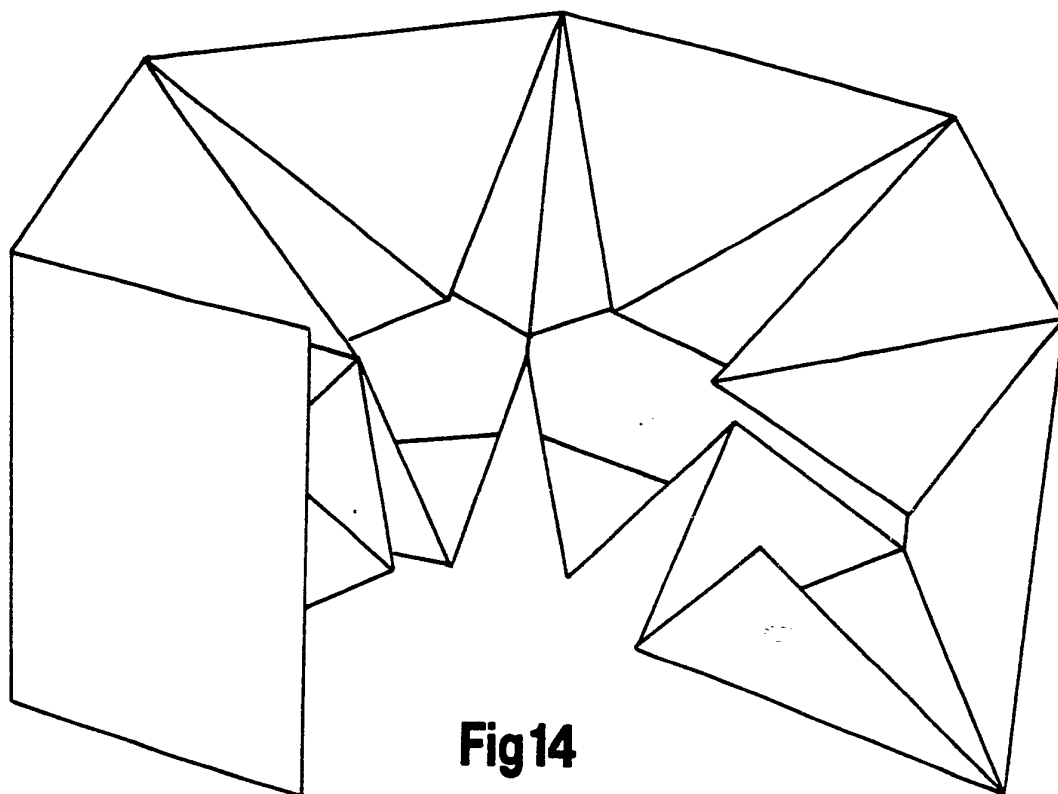
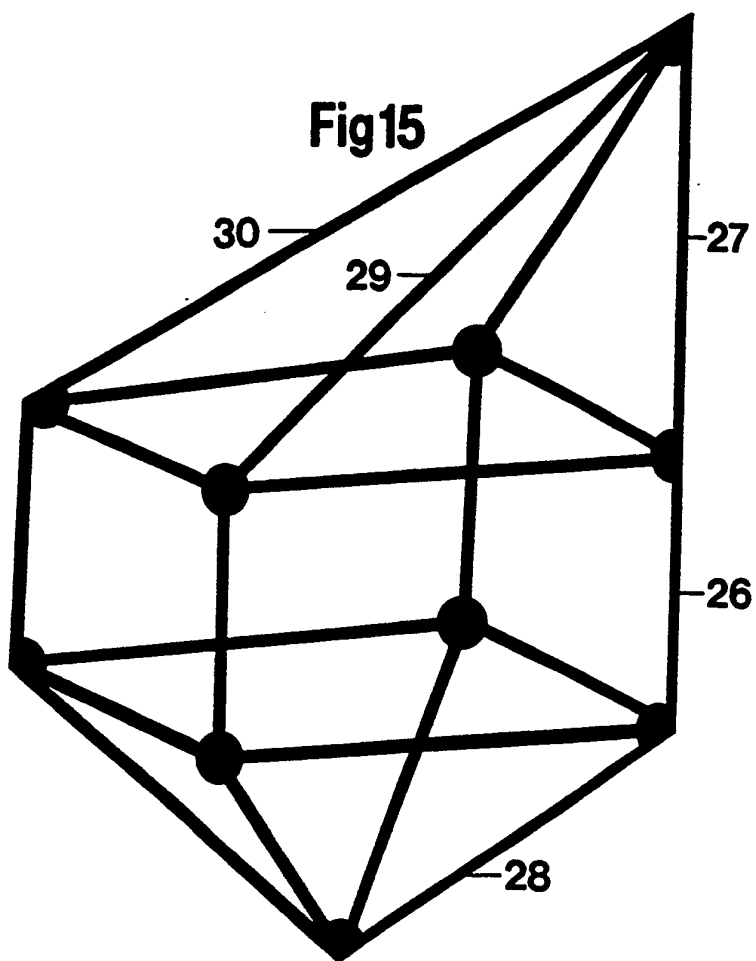


Fig14

Fig15



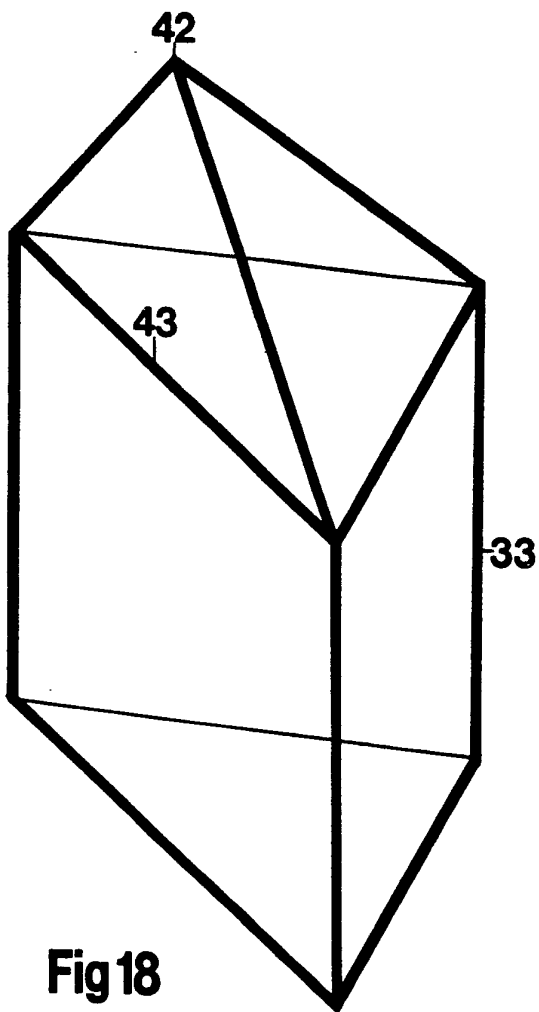


Fig 18

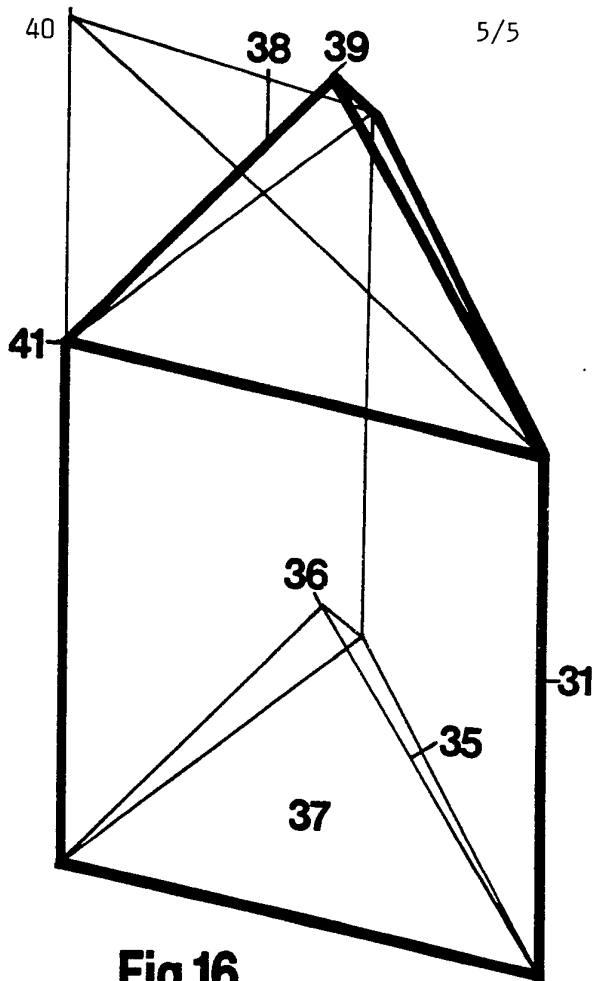


Fig 16

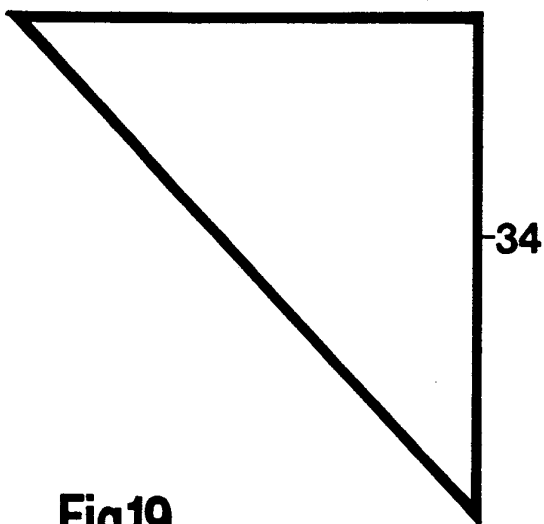


Fig 19

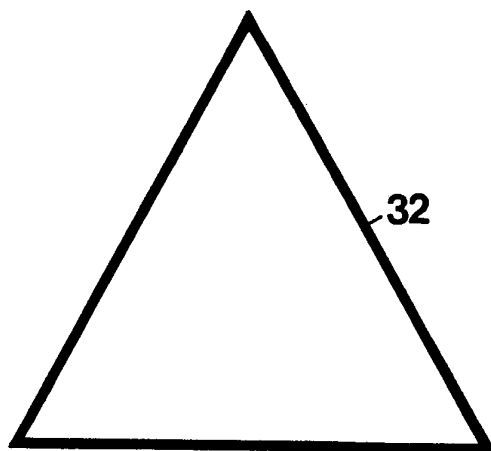


Fig 17

# INTERNATIONAL SEARCH REPORT

International Application No PCT/DK 90/00065

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: A 63 H; G 09 B		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
IPC5	A 63 H 33/16	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched <sup>8</sup>		
SE,DK,FI,NO classes as above		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>9</sup></b>		
Category *	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
A	DE, C, 601533 (EUGEN BECKER) 20 August 1934, see the whole document --	1-6
A	DE, A, 1907044 (BJÖRNSSON-PRODAN, MARIA ELENA) 23 October 1969, see the whole document --	1-16
A	DE, A, 2207676 (GEYER, DOROTHEA) 30 August 1973, see the whole document --	1,4,5
A	US, A, 2440836 (O.E. TURNGREN) 4 May 1948, see figures 1-10 --	1
<p>* Special categories of cited documents: <sup>10</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&amp;" document member of the same patent family</p>		
<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search		Date of Mailing of this International Search Report
18th October 1990		1990 -10- 24
International Searching Authority		Signature of Authorized Officer
SWEDISH PATENT OFFICE		<i>Manfred Weiss</i> Manfred Weiss

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	US, A, 3787996 (SMITH ET AL) 29 January 1974, see the whole document --	1,4,5
A	US, A, 4051621 (HOGAN) 4 October 1977, see the whole document --	1,4,5
A	SU, A, 1349767 (AP TJERENKOV AND VP CHRAMOV) 7 November 1987, see the whole document -- -----	1-6



**ANNEX TO THE INTERNATIONAL SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the Swedish Patent Office EDP file on **90-09-27**. The Swedish Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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